Facility: Indian Point 3 Scenario No.: 1 Op-Test No.: _____

Examiners: _____ Operators: _____

Initial Conditions: Approx. 75% Power, power ascension in progress to 100% power IAW 3-POP-2.1, Attachment 2. 2 Condensate Pumps are in service. Fuel is Conditioned.

Turnover: Continue power ascension to 100% IAW 3-POP-2.1, Attachment 2 Returning from maintenance on 32 MBFP (oil leak). 32 Charging Pump is out of service, tagged due to a packing leak (maintenance has pump disassembled).

Event No.	Malf. No.	Event Type*	Event Description
1		R (ATC) N (BOP) N (CRS)	Raise load IAW 3-POP-2.1
2		I (BOP) I (ATC) TS (CRS)	31 Steam Generator Loop 1B (419B) Steam Flow Channel fails high.
3		TS (CRS)	33 Accumulator Low Pressure Alarm actuates.
4		C (ALL)	32 MBFP trips.
5		C(ALL)*	IF crew does not trip reactor due to 32 MBFP trip, insert MTG Voltage Regulator Failure and within 3 minutes a direct MTG Trip from Buchannan.*
6		M(ALL)	Automatic Turbine / Reactor Trip / Safety Injection. Coincident with the Reactor Trip, #31 SG Safety Valve will fail open.
7		C (CRS) C(BOP)	31 Safety Injection Pump fails to auto start.
8		M(ALL)	31 SG Tube Rupture

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

Simulator Exam Scenario # 1 Summary

The evaluation begins with the plant at 75% power and power ascension in progress to 100% power IAW 3-POP-2.1, Attachment 2. 2 Condensate Pumps are in service. Fuel is conditioned. The plant is returning from maintenance on 32 MBFP (oil leak). 32 Charging Pump is out of service, tagged due to a packing leak (maintenance has pump disassembled).

After starting the 3rd Condensate Pump and raising power approximately 3-5%, 31 Steam Generator Loop 1B (419B) Steam Flow Channel fails high. The team will take actions in accordance with AOP-INST-1, "Instrument / Controller Failures".

After selecting the NON-affected channel for both SG Transfer Switches and tripping the appropriate bistables, an "ACUMULATOR #33 PRESS" on Panel SBF-1 will annunciate. The crew will respond IAW 3-ARP-004 and restore 33 accumulator pressure to within technical specification limits.

Once the CRS has identified the appropriate technical specification and action requirements, the scenario will continue with a trip of the 32 MBFP. Crew responds IAW 3-AOP-FW-1, reduces power if necessary to stabilize and match steam flow / feed flow. The crew may trip the reactor depending on current power level (i.e. > 80% per AOP).

If the crew doesn't trip the reactor, an MTG Voltage Regulator failure will occur following plant stabilization. The team will take actions to stabilize the plant per ARP-8 or may manually trip the unit and enter E-0. They may place the voltage regulator in manual (test). If the team does not trip the unit, 3 minutes after regulator failure, a direct MTG trip from Buchanan will occur. The team will implement E-0, "Reactor Trip or Safety Injection".

Coincident with the reactor trip, #31 SG Safety valve will fail open. The team will respond per E-2, "Faulted Steam Generator Isolation". While in E-0, the BOP should recognize that 31 Safety Injection Pump failed to start. The BOP operator manually starts 31 SI Pump IAW 3-RO-1. After the team identifies and attempts to isolate the faulted SG in E-2, they should transition to E-3, "SGTR" due to a faulted /ruptured SG. The team will then transition to and take actions per ECA-3.1, "SGTR with Loss of Reactor Coolant - Subcooled Recovery Desired" at either Step 5 (SG pressure < 400#) or at Step 16. The event will be terminated once a cooldown to cold shutdown conditions at the highest achievable rate but < 100°F/hr is initiated.

Procedure flow path: POP-2.1, AOP-INST-1, ARP-4, AOP-FW-1, ARP-8, E-0, E-2, E-3, ECA-3.1

Scenario # 1

At Time	On Event	Action	Description
00:00:00	None	Insert malfunction MAL-SGN002B to 1400.00000 in 5 on event 2	STEAM GENERATOR PRESSURE TRANSMITTER FAILURE (PT-419B)
00:00:00	None	Insert malfunction MAL-ATS004B on event 4	MAIN FEEDWATER PUMP 32 TRIP
00:00:00	None	Insert malfunction MAL-GEN001 to 30.00000 in 5 on event 5	MAIN GENERATOR VOLTAGE REGULATOR FAILURE
00:00:00	None	Insert malfunction MAL-GEN002 after 180 on event 5	MAIN GENERATOR TRIP
00:00:00	None	Insert malfunction MAL-SGN004A after 20 to 0 on event 30	STEAM GENERATOR SAFETY VALVE FAILURE (MS-45A)
00:00:00	None	Insert malfunction MAL-SGN004B to 0 on event 9	STEAM GENERATOR SAFETY VALVE FAILURE (MS-46A)
None	None	Insert malfunction MAL-SIS003C to 20.00000 on event 3	ACCUMULATOR 33 NITROGEN LEAKAGE
00:00:00	None	Insert malfunction MAL-SIS004A to FAILURE_TO_AUTOSTART	SAFETY INJECTION PUMP 31 FAILURES
00:00:00	None	Create Event 30 JPPLP4(1)==1 -desc Set Trigger 30 to actuate after Reactor Trip	
00:00:00	None	Insert malfunction MAL-SGN005A after 10 to 30.00000 on event 8	STEAM GENERATOR 31 TUBE LEAK

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 1 Page 1 of 11

Event Description: Raise load to 100% Power IAW 3-POP-2.1, Attachment 2

Time	Position	Applicant's Actions or Behavior
	ATC / BOP	Raise Load IAW 3-POP-2.1, Attachments 1 and 2. • ADJUST governor control and/or load limits to desired load • ADJUST T_{avg} using Control Rods AND Boron concentration changes as required. (Follow Reactivity Plan with Rods in Auto) o MAINTAIN T_{avg} AND T_{ref} within +/- 0.5°F o T_{avg} AND T_{ref} NOT to exceed +/- 4.0°F • MAINTAIN PRZR Pressure • MAINTAIN PRZR Level • MAINTAIN SG narrow range levels
	ATC / BOP	WHEN Turbine power is approximately 800 Mwe, THEN PERFORM the following: • NOTIFY Watch Chemist to verify secondary chemistry is satisfactory, PRIOR to starting third condensate pump per 3-SOP-C-002, Condensate System Operation. • NOTE: Normal MBFP Suction Pressure for starting the third condensate pump is approximately 400 psig.
Booth Instructor		*When contacted, inform the crew that Secondary Chemistry conditions are satisfactory.*
	ATC / BOP	WHEN secondary chemistry conditions are satisfactory, THEN START third condensate pump per 3-SOP-C-002. Condensate Pump Operation. • NOTE: Seal injection booster pumps may restart if Seal Water Drain temperature is 180°F or greater. WHEN THIRD CONDENSATE PUMP IS RUNNING AND Seal Water Drain temperature is less than 180°F, THEN PERFORM the following: • SHUTDOWN MBFP seal injection booster pumps (one at a time) AND PLACE control switches in AUTO.
		NOTE: Evaluator may move on to the next event once the 3rd Condensate Pump is started and/or power has been raised approximately 3-5%.

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 2 Page 2 of 11

Event Description: 31 Steam Generator Loop 1B (419B) Steam Flow Channel fails high.

Booth Instructor	*When directed by the lead evaluator, activate 31 Steam Generator Loop 1B (419B) Steam Flow Channel fails high malfunction.*

Time	Position	Applicant's Actions or Behavior
	ATC	1. Are both SG Transfer Switches selected to the NON affected channel? a. Select both SG Transfer Switches to the NON affected channel. 2. Restore affected SG level to program as necessary.
	CRS	3. Refer to the following TS tables for required actions: a. 3.3.1-1 b. 3.3.2-1
	BOP	4. Are all redundant bistable status lights for failed instrument listed in Attachment 4 (Steam Flow Tables) Table 1 (Page 117) extinguished? a. H-13: SG 31 LO LEVEL LC417G b. I-8: HI STM FLOW LP32 FC429A c. J-8: HI STM FLOW LP32 FC429B d. I-9: HI STM FLOW LP33 FC439A e. J-9: HI STM FLOW LP33 FC439B f. I-10: HI STM FLOW LP34 FC449A g. J-10: HI STM FLOW LP34 FC449B 5. Trip bistables for failed instrument listed in Attachment 4 (Steam Flow Tables) Table 2 (Page 121) **Protection Rack White A-9** a. Loop 1B, SF > FWF b. Loop 1B, High SF SI 6. Are all bistable lights for failed instrument listed in Attachment 4 (Steam Flow Tables) Table 3 (Page 123) illuminated? a. J-7: HI STM FLOW LP31 FC419B b. F-12: STM-FW FL DEV LP31 FC418F
	ATC	7. Return controls for unaffected equipment used to stabilize plant conditions to auto as desired.

Booth Instructor	*When directed by the lead evaluator, continue to the next event.*

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 3 Page 3 of 11

Event Description: 33 Accumulator Low Pressure Alarm actuates.

Time	Position	Applicant's Actions or Behavior
Booth Operator		*When directed by lead evaluator, insert the 33 Accumulator Low Pressure Alarm malfunction. (leak - lowers to less than 600#)*
	ATC/ BOP	Operator responds to the annunciator alarm or "ACCUMULATOR #33 PRESS" on Panel SBF-1 IAW 3-ARP-004. • VERIFY alarm by observing both pressure channels. • IF channel failure has occurred, THEN NOTIFY I&C of failure. • CHECK Accumulator #33 level to see if pressure change was caused by a level change.
	CRS	• **IF pressure is above the high OR low Technical Specification limit, THEN REFER TO Technical Specifications LCO 3.5.1, Action B.**
	ATC/ BOP	• RETURN accumulator pressure to within operating band using 3-SOP-SI-001, Safety Injection System Operation. o VERIFY SI-HCV-943 is closed. o OPEN NNE-AOV-863, PORV's & Accumulators N2 Supply Containment Isolation. o OPEN applicable supply isolation: ▪ SI-AOV-891C, 33 Accumulator N_2 Supply Isolation o ADJUST NNE-PCV-942, PORV's and Accumulators N_2 Supply Pressure Control Valve, as necessary, to VERIFY outlet pressure is between 660 and 700 psig AND NOTE the number of turns. • WHEN SI accumulator reaches desired pressure, THEN: o IF no additional accumulators are to be pressurized, THEN ADJUST NNE-PCV-942, PORVs & Accumulators N_2 Supply Pressure Control Valve, as necessary, to the number of turns noted above. o CLOSE applicable supply isolation: SI-AOV-891C, 33 Accumulator N_2 Supply Isolation o CLOSE NNE-AOV-863, PORVs & Accumulator N2 Containment Isolation.
Booth Instructor		*Lead Evaluator may move on to the next event when the CRS identifies the required Technical Specification Action.*

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 4 Page 4 of 11

Event Description: 32 MBFP trips. Crew responds IAW 3-AOP-FW-1. Reduces power if necessary to stabilize & match steam flow/feed flow. (May trip reactor depending on power level, i.e.>80%)

Booth Instructor		*When directed by lead evaluator, insert 32 MBFP trip malfunction.*
Time	**Position**	**Applicant's Actions or Behavior**
	ALL	1. Are both MBFPs operating? No a. If reactor power is >80%, then trip the reactor and go to E-0. 2. Is a MBFP running? Yes 3. Are steam flow and feed flow matched? No a. Initiate load reduction as necessary per Attachment 1 (Approximate Unit Load With Various Pump Configurations)

Main Boiler Feed Pumps[1]	Condensate Pumps	Heater Drain Pumps	Approximate Allowable MWE
2	3	2	Full Load
2	2	2	900 MWE[2]
2	3	1	700 MWE[2]
1	3	2	650 MWE[2]
1	2	2	600MWE[2]
2	2	1	550 MWE[2]
1	2	1	500 MWE[2]
2	2	0	400 MWE[2]

b. Adjust running MBFP speed as necessary to accomplish the following:
   i. Match steam flow and feed flow
   ii. Maintain MBFP suction pressure > 350 psig
   iii. Maintain MBFP discharge pressure < 1390 psig
   iv. Refer to Attachment 5 (Main Feedwater Regulating Valves Program ΔP) (Page 55)

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 4 cont. Page 5 of 11

Event Description: 32 MBFP trips. Crew responds IAW 3-AOP-FW-1. Reduces power if necessary to stabilize & match steam flow/feed flow. (May trip reactor depending on power level, i.e.>80%)

Time	Position	Applicant's Actions or Behavior
	ALL	4. Are all available condensate pumps running? a. Start all available condensate pumps as necessary to maintain MBFP suction > 350 psig. 5. Are 31 and 33 ABFP running? 6. Start 31 and 33 ABFPs Are all SGBD isolation valves closed? a. Close all SGBD isolation valves 7. Is recirculation valve for tripped MBFP closed? a. Close recirculation valve for the tripped MBFP. 8. Maintain SG levels on program by performing the following as necessary: a. Adjusting turbine load or steam dumps (as applicable) b. Placing MBFP control in manual and adjusting speed c. Placing MFRVs in manual and adjusting flow d. Refer to Attachment 5 (Main Feedwater Regulating Valves Program ΔP) (Page 55)
Booth Instructor		**IF crew does not trip reactor due to 32 MBFP trip, insert MTG Voltage Regulator Failure and within 3 minutes a direct MTG Trip from Buchannan.**

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 5 Page 6 of 11

Event Description: As necessary: MTG Voltage Regulator Failure and within 3 minutes a direct MTG trip from Buchannan.

Time	Position	Applicant's Actions or Behavior
	(All)	**IF crew does not trip reactor due to 32 MBFP trip, insert MTG Voltage Regulator Failure and within 3 minutes a direct MTG Trip from Buchannan.** 1. Crew responds to the alarm response procedure 2. Possibly places voltage regulator in manual

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 6 Page 7 of 11

Event Description: Automatic Turbine Trip / Reactor Trip / Safety Injection. Coincident with the Reactor Trip #31 SG Safety Valve will fail open.

Booth Instructor	*Coincident with the Reactor Trip, 1st #31 SG Safety failure is inserted.* *Use 2 SG Safeties, 2nd one to differentiate SG pressure. One (1) safety for SI, after SI put second safety in.*

Time	Position	Applicant's Actions or Behavior
	All	1. Crew enters E-0, Reactor Trip or Safety Injection and performs immediate actions 2. Crew determines that Safety Injection is required if not automatically initiated. 3. Crew progresses through E-0 to step 15: a. Determine if SGs are Faulted i. Any SG Pressures decreasing in an uncontrolled manner? Yes ii. Any completely depressurized? 4. Go to 3-E-2, Faulted Steam Generator Isolation
	BOP	While in E-0, the BOP should recognize that 31 Safety Injection Pump fails to auto start. The operator manually starts 31 SI Pump IAW 3-RO-1. (Step 2)
	Critical Task (CT)	**E-2 - - A; Isolate the faulted SG before transition out of E-2.**

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 7 Page 8 of 11

Event Description: 31 Safety Injection Pump fails to auto start

Time	Position	Applicant's Actions or Behavior
	(CRS) (BOP)	While in E-0, the BOP should recognize that 31 Safety Injection Pump fails to auto start. The operator manually starts 31 SI Pump IAW 3-RO-1. Step 2 – Verify SI pumps – Running • Three HHSI pumps (only 2) • Two RHR pumps RNO – Manually START pumps

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 8 Page 9 of 11

Event Description: Rupture on #31 SG

Booth Instructor	*At E-2 transition, insert SGTR malfunction on #31 SG. NOTE: Crew should see Rad Monitor R62A rising. Subcooling should drop significantly as well (109°F to 58°F). If crew doesn't recognize the rising trend on R-62A and they have contacted HP to perform contact radiation readings, then inform them that 31 SG is ruptured.*

Time	Position	Applicant's Actions or Behavior
	(ALL)	1. Crew transitions to E-2; Faulted Steam Generator Isolation 2. Main Steam Line Isolation Check a. MSIVs and Bypasses closed 3. Identify faulted SG - #31 (Stuck Open Safety or Safeties - 2) 4. Isolate Faulted SG - #31 (Stuck Open Safety) 5. Check Secondary Radiation? a. R-15 b. R-19 **c. R-62A-D** **i. GO To 3-E-3, Steam Generator Tube Rupture** d. Check SG levels – STABLE i. If level in any SG is increasing in an uncontrolled manner, then GO To 3-E-3, Steam Generator Tube Rupture **6. GO To 3-E-3, Steam Generator Tube Rupture**
	Critical Task (CT)	**E-2 - - A; Isolate the faulted SG before transition out of E-2.**

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 8 cont Page 10 of 11

Event Description: Rupture on #31 SG

Time	Position	Applicant's Actions or Behavior
	(ALL)	1. Determine if RCPs should be stopped. 2. Identify Ruptured SG 3. Isolate Flow from Ruptured SG 4. Check Ruptured SG Level a. Caution – If any Ruptured SG is Faulted, Feed Flow to the SG should remain isolated during subsequent recovery actions unless needed for RCS cooldowm. 5. Check Ruptured SG Pressure – Greater than 400 psig a. If pressure less than 400#, Go to 3-ECA-3.1, SGTR with Loss of Reactor Coolant – Subcooled Recovery Desired. 6. Go to 3-ECA-3.1, SGTR with Loss of Reactor Coolant – Subcooled Recovery Desired. 7. OR 8. Step 16 – Check Ruptured SG Pressure – Stable or Increasing? a. If ruptured SG pressure can NOT be maintained at least 250 psi above the pressure of the intact SG used for cooldown, Then GO to 3-ECA-3.1, SGTR with Loss of Reactor Coolant – Subcooled Recovery Desired. 9. **Transition to ECA-3.1 at Step 5 OR Step 16 depending on plant conditions.**

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 8 cont Page 11 of 11

Event Description: Rupture on #31 SG

Time	Position	Applicant's Actions or Behavior
	CRS	1. Direct actions of ECA-3.1, SGTR w / Loss of Reactor Coolant – Subcooled Recovery Desired: a. Initiate Attachment 1, Plant Equipment Status Evaluation b. Commence C/D to CSD
	ATC	1. Place Pressurizer Modulating Heaters to TPO 2. Place Pressurizer backup Heaters to OFF 3. Start all Charging pumps and establish maximum charging flow 4. Establish plant C/D to CSD at less than 100°F / hr using Atmospherics
	BOP	1. Stop RHR pumps and place in Auto 2. Perform Attachment 1, Plant Equipment Status Evaluation
	Critical Task (CT)	**ECA-3.1 - - B; Cool down the RCS to cold shutdown conditions at the highest achievable rate but less than 100°F per hour in all RCS cold legs.**
		Terminate scenario when RCS C/D established

Facility: Indian Point 3 Scenario No.: 2 Op-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: 100% Reactor Power, Fuel is Conditioned.

Turnover: Unit in a 7 day Technical Specification due to RWST Level Instrumentation. Tech Spec LCO 3.5.4.B in effect (7-day). LIC-921 and LC-923 are inoperable, maintenance is waiting for parts to repair. Parts delivery expected tomorrow. #32 Charging Pump is out of service, tagged due to a packing leak (maintenance has pump disassembled).

Event No.	Malf. No.	Event Type*	Event Description
1		C (ATC) TRM/TS (CRS)	The in service #31 Charging Pump trips. TRM 3.1.C.1 action A and TRM 3.7.B.3
2		C (ALL) TS (CRS)	Loss of RWST Level. Fork lift truck crashes into RWST resulting in level lowering to about 11 feet over 40 minutes.
3		R (ATC) R (CRS) N (BOP)	Tech Spec Required Shutdown due to inoperable RWST (volume). Team commences shutdown. (Call as Operations Manager if necessary to start shutdown)
4		C (ALL)	# 32 RCP Seal Malfunction, high vibrations and #1 Seal degradation.
5		C (ALL)	#32 RCP Seal leak rises to > 6 gpm.
6		C (ATC)	Automatic & Manual Turbine Trip fails.
7		M (ALL)	Hot Leg SBLOCA approx. 800 gpm develops.
8		C (BOP)	31 RHR Pump fails to start.
9			Team transitions to E-1, then ES-1.3, then ECA-1.1 due to loss of Emergency Coolant Recirculation.

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

Simulator Exam Scenario # 2 Summary

The evaluation begins with the plant at 100% power. Fuel is conditioned. 32 Charging Pump is out of service, tagged due to a packing leak (maintenance has pump disassembled). The Unit is in a 7 day Technical Specification action statement due to RWST Level Instrumentation. Tech Spec LCO 3.5.4.B is in effect (7-day), LIC-921 and LC-923 are inoperable, maintenance is waiting for parts to repair. Parts delivery is expected tomorrow.

After taking the watch, #31 Charging Pump will trip. The crew will take actions in accordance with AOP-AOP-CVCS-1. The ATC operator will start # 33 Charging Pump.

A fork lift truck crashes into the RWST resulting in level lowering to about 11 feet over 40 minutes. RWST Low Level Alarm annunciates at 36"2", Operators respond to the alarm response procedure ARP-012 and dispatch an operator. Field observation is a large hole (split open weld) in the RWST at approximately 12 feet from the bottom of the tank (1/3 of the way up). Water is gushing from the tank. The crew will perform actions of the ARP for RWST Lo Level and determine that a TS required shutdown must commence.

Once the appropriate technical specification has been identified by the CRS and a load reduction has commenced (3-5% power reduction), a 32 RCP Number 1 Seal malfunction will occur. The operators will observe 32 RCP #1 Seal Return flow > 5 gpm but < 6 gpm. The crew will also observe slowly rising 32 RCP vibration as well. Operators will respond in accordance with ARP-009, ARP-013, and AOP-RCP-1.

Following the crew's initial implementation of AOP-RCP-1, the seal degradation will continue, causing leakage > 6 gpm and shaft vibrations rising as well > 15 mils at > 1mil/hr (both IAAT conditions for a reactor trip). The operator will trip the reactor, stop 32 RCP and initiate E-0. Concurrently, the operator will perform immediate actions of E-0 and also manually close the affected RCP Seal Return Valve (261B). While performing the immediate actions of E-0, the operator will recognize the failure of the turbine to trip automatically or manually. The operator will initiate MSIV closure.

The failure of the turbine to trip and the resultant cooldown will cause an AUTO SI. #31 RHR Pump will fail to auto start, the BOP operator will start 31 RHR Pump per RO-1. During the immediate actions, a Hot Leg SBLOCA will occur (approx. 800 gpm).

The RWST level will continue to lower. The crew will determine that the RCS is not intact and transition to E-1, Loss of Reactor or Secondary Coolant. When RWST level lowers to 11.5 feet a transition to ES-1.3, Transfer to Cold Leg Recirculation will occur. The containment sump level will be inadequate for recirculation requiring a transition to ECA-1.1, Loss of Emergency Coolant Recirculation.

The crew will make up to the RWST and minimize outflow before the end of the scenario.

Procedure flow path: AOP-CVCS-1, ARP-012, POP-2.1, AOP-RCP-1, E-0, E-1, ES-1.3, ECA-1.1.

Scenario # 2

At Time	On Event	Action	Description
00:00:00	None	Insert malfunction MAL-RHR001A to FAILURE_TO_AUTOSTART	RHR PUMP 31 FAILURES
00:00:00	None	Insert malfunction MAL-CVC005A on event 1	CHARGING PUMP 31 TRIP
00:00:00	None	Insert malfunction MAL-RCS007B to 9.00000 in 600 on event 4	RCP 32 VIBRATION
00:00:00	None	Insert malfunction MAL-RCS012B to 1.30000 in 30 on event 4	RCP 32 NUMBER 1 SEAL FAILURE
00:00:00	None	Insert malfunction MAL-RCS007B to 20.10000 on event 5	RCP 32 VIBRATION
00:00:00	None	Insert malfunction MAL-RCS012B to 100.00000 on event 5	RCP 32 NUMBER 1 SEAL FAILURE
00:00:00	None	Insert malfunction MAL-SIS009 to 10000.00000 on event 1	RWST WATER LEAK (HOLE IN TANK)
00:00:00	None	Insert malfunction MAL-TUR002A	TURBINE PROTECTION TRIP FAILURE (ELECTRICAL)
00:00:00	None	Insert malfunction MAL-TUR002B	TURBINE PROTECTION TRIP FAILURE (MECHANICAL)
00:00:00	None	Insert malfunction MAL-RCS005F to 50.00000 on event 29	RCS LEAK (LOOP 2 HOT LEG)
00:00:00	None	Create Event 29 jpplp4(1)==1 -desc Set Event 29 to actuate after Reactor Trip	
None	3	Insert remote LOA-CVC023 to 0	297 BLENDER TO CHARGING PUMP HEADER ISO
None	3	Insert remote LOA-CVC016 to 1.00000	350 BLENDER TO RWST ISO
None	4	Insert remote LOA-RHR005 to ENERGIZE	NONE LOA TO DEENERGIZE V882
None	5	set rrhh882=0	Locally Close 882 in manual

Op-Test No.: 5/11/15 Scenario No.: 2 Event No.: 1 Page 1 of 11

Event Description: #31 Charging Pumps Trips. Crew responds IAW 3-AOP-CVCS-1

Time	Position	Applicant's Actions or Behavior
Booth Instructor		*Start RWST Leak Malfunction, 10,000 gpm leak, 1'/min.* *When directed, initiate 31 Charging Pump trip malfunction.*
	ATC	RO recognizes the trip of #31 Charging Pump. Recommends to CRS to enter 3-AOP-CVCS-1. RO performs step 4.2, using RNO starts another (32 or 33) Charging Pump OR RO performs steps 4.2 through 4.20, starts another (32 or 33) Charging Pump and restores letdown to service IAW (step 4.14) Attachment 1, Charging and Letdown Restoration (Page 45). CRS identifies and enters Technical Requirements Manual (TRM): TRM 3.1.C.1 action A and TRM 3.7.B.3
	CRS	Implement 3-AOP-CVCS-1
	CRS	CRS identifies and enters Technical Requirements Manual (TRM): TRM 3.1.C.1 action A and TRM 3.7.B.3
Booth Instructor		***NOTE: Evaluator may more on to the next event once the CRS identifies and enters the TRM actions.***

Op-Test No.: 5/11/15 Scenario No.: 2 Event No.: 2 Page 2 of 11

Event Description: Loss of RWST Level. Fork lift truck crashes into RWST

Time	Position	Applicant's Actions or Behavior
Booth Instructor		*When operators respond to the RWST Low Level Alarm at 36.2" and dispatch an NPO, then after 3 minutes respond from the field:* *Field observation is a large hole (split open weld) in the RWST at approximately 12 feet from bottom of tank. (1/3 of the way up). Water is gushing from the tank. Appears that a fork lift truck has crashed into the RWST.*
	ALL BOP	Diagnose Lowering RWST Level RWST Low Level Alarm annunciates at 36'2", Operators respond to the alarm response procedure 3-ARP-012 (Panel SJF - page 12 of 62). • Perform ARP for alarm panel SJF REFUELING WATER STORAGE TANK LO LEVEL • Direct watch personnel to check the following: o Check piping for breaks
Booth Instructor		*Call as Operations Manager if necessary to start shutdown.*
	CRS	Tech Spec Required Shutdown due to inoperable RWST (volume). Team commences shutdown. Evaluate TS 3.5.4 o Determine RWST is not operable o Determine Condition C applies and unlikely to restore operability within one hour o Determine Condition D applies and plant shutdown to mode 3 in 6 hours and mode 5 in 36 hours required.
Booth Instructor		*Scenario may continue after CRS completes Technical Specification determination.*

Op-Test No.: 5/11/15 Scenario No.: 2 Event No.: 3 Page 3 of 11

Event Description: Tech Spec Required Shutown due to inoperable RWST (volume).

Time	Position	Applicant's Actions or Behavior
	CRS	Implement POP-2.1 Attachment 3, Reactor Power Reduction Checklist • Develop reactivity plan to place unit in mode 3 within 6 hours • Direct shutdown activities during TS required shutdown • Initiate notifications • Perform pre-job brief
	ATC	Borate the RCS at rate determined by reactivity plan • Energize all pressurizer heaters • Monitor TAVE and TREF • Monitor Delta-Flux and ensure control rods insert when required to maintain TAVE on program and Delta-flux within target band
	BOP	Initiate generator load reduction at rate directed by CRS.
Booth Instructor		***NOTE: Scenario may move to the next event after an approximate 3-5% power reduction.***

Op-Test No.: 5/11/15 Scenario No.: 2 Event No.: 4 Page 4 of 11

Event Description: #32 RCP Seal Malfunction, high vibrations and #1 Seal degradation within 3-AOP-RCP-1 monitoring actions. Crew responds IAW 3-AOP-RCP-1

Time	Position	Applicant's Actions or Behavior
Booth Instructor		**Instructor:** *Insert malfunction MAL-RCS012B to 0.90000 in 30 on event 3* — *RCP 32 NUMBER 1 SEAL FAILURE* *RCP No.1 Seal Return High Flow (Common) alarm* *Show rising shaft vibration as well – slow ramp to 14 mils* ***(SKF alarm at 14.8 mils shaft, 3.3 mils frame)***
	ATC	Diagnose increased seal return flow 32 RCP o Observe 32 RCP #1 Seal Return flow > 5 gpm but < 6 gpm. o Observe rising shaft vibration as well?
	BOP	Perform ARPs for associated Alarms: • ARP-013, REACTOR COOLANT PUMP HIGH VIBRATIONS? • ARP-009, RCP No, 1 SEAL RETURN HIGH LOW FLOW o Observe 32 RCP is affected.
	CRS	Supervise activities of the crew during response to high seal return flow o Enter AOP-RCP-1 o Determine immediate reactor trip is not required o Perform seal section of AOP o Review / perform shaft vibration section as well? o Ensure notifications are made o **Steps 4.17, 4.18, 4.19, 4.39-4.43 (Seal Leak)** o **Steps 4.17, 4.113-?**
Booth Instructor		***NOTE: Once AOP is entered and progress through seal section is made, evaluator may move to the next event.*** ***We want the leak to then be on a timer to progress to IAAT numbers for both shaft vibration & seal leakage.***

Op-Test No.: 5/11/15 Scenario No.: 2 Event No.: 5 Page 5 of 11

Event Description: #32 RCP Seal leak rises to above the AOP IAAT condition, requiring manual trip of the RCP IAW 3-AOP-RCP-1 and initiation of E-0; Reactor Trip or Safety Injection.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		***Timer for Seal degradation continues to rise, causing leakage > 6 gpm and shaft vibration rising as well > 15 mils at >1 mil/hr. (IAAT conditions)***
	ATC CRS	1. Re-enter AOP-RCP for increased seal leakage & shaft vibration 2. Trip the Reactor 3. Stop 32 RCP 4. INITIATE E-0 5. Steps 4.6 & 4.7 – no action required (seal inlet temperature < 225°F 6. GO TO Step 4.12 7. IAAT affected RCP has stopped rotating, then manually close affected RCP Seal Return Valve (261B)
Booth Instructor		***NOTE: Scenario moves to next event triggered by the previously inserted auto turbine trip malfunction.***

Op-Test No.: 5/11/15 Scenario No.: 2 Event No.: 6 Page 6 of 11

Event Description: Automatic & Manual Turbine Trip fails, requiring MSIV Closure.

Time	Position	Applicant's Actions or Behavior
	CRS	Supervise the actions of the crew during E-0, Reactor Trip or Safety Injection o Direct the BOP to perform RO-1 o Concurrently supervise completion of required actions in AOP-RCP-1 o Close seal return valve 261B when pump stops rotating ▪ Loop flow for affected RCP stabilized at approximately 20-30%
	ATC	Verify reactor is tripped Verify turbine is tripped – **NO** o **Manually TRIP turbine – NO** o **Close MSIVs** Verify 480V bus status Check SI status o Concurrently complete required actions in AOP-RCP-1 o Close seal return valve 261B when pump stops rotating ▪ Loop flow for affected RCP stabilized at approximately 20-30%
Booth Instructor		***NOTE: Scenario will continue as a Hot Leg SBLOCA (approx. 800 gpm) is inserted. Evaluator may want to ensure seal return valve is also closed per the AOP first.*** ***Insert Hot Leg SBLOCA (approx. 800 gpm) as directed by lead evaluator or coincident with reactor trip.*** ***NOTE: If turbine doesn't trip, they will cooldown enough to cause AUTO SI. They will need to initiate MSIV closure. SI causes loss of stop valve indications to verify turbine trip, they will have to use 1st stage pressure.***

Op-Test No.: 5/11/15 Scenario No.: 2 Event No.: 7 Page 7 of 11

Event Description: After manual turbine trip is initiated, a 800 gpm Hot Leg SBLOCA is initiated, resulting in eventual low pressure SI actuation. (AUTO or Manual)

Time	Position	Applicant's Actions or Behavior
Booth Instructor		**Depending on the ramped in SBLOCA, they may transition to 3-ES-0.1, Reactor Trip Response.** **Would prefer to have RCS pressure dropping rapidly enough that they initiate SI manually during read through of immediate actions?**
	CRS	Supervise the actions of the crew during E-0, Reactor Trip or Safety Injection o Direct the BOP to perform RO-1
	ATC BOP	Verify reactor is tripped Verify turbine is tripped Verify 480V bus status **Check SI status?**
	BOP	Perform RO-1, BOP Actions During Use of EOPs
	CRS ATC	Verify FW isolation – manually closes all SGBD isolation valves Verify SI flow Verify CS Check RCP seal cooling Check Tavg stable Check if RCPs should be stopped o Check subcooling and SI pumps o Stop all RCPs
Critical Task		**WOG CT: E-1 – C** **Trip all RCPs before completion of E-1, step 1?**

Op-Test No.: 5/11/15 Scenario No.: 2 Event No.: 7 cont Page 8 of 11

Event Description: After manual turbine trip is initiated, a 800 gpm Hot Leg SBLOCA is initiated, resulting in eventual low pressure SI actuation. (AUTO or Manual)

Time	Position	Applicant's Actions or Behavior
	CRS ATC	Check PORVs, safeties and spray valves closed Check if SGs are faulted Check if SG tubes are intact **Check if RCS is intact** **Go to E-1**
Booth Instructor		***NOTE: Event 8 is a failure of 31 RHR Pump to auto start, BOP operator starts 31 RHR pump per 3-RO-1. Scenario continues as transition to E-1 occurs and RWST level continues to lower to 11.5'.***

Op-Test No.: 5/11/15 Scenario No.: 2 Event No.: 8 Page 9 of 11

Event Description: 31 RHR Pump fails to start, BOP operator starts 31 RHR pump per 3-RO-1.

Time	Position	Applicant's Actions or Behavior
	(BOP)	31 RHR Pump fails to start, BOP operator starts 31 RHR pump per 3-RO-1
Booth Instructor		***NOTE: Event 8 is a failure of 31 RHR Pump to auto start, BOP operator starts 31 RHR pump per 3-RO-1. Scenario continues as transition to E-1 occurs and RWST level continues to lower to 11.5'.***

Op-Test No.: 5/11/15 Scenario No.: 2 Event No.: 9 Page 10 of 11

Event Description: Team transitions to E-1, then ES-1.3, then ECA-1.1 due to loss of Emergency Coolant Recirculation.

Time	Position	Applicant's Actions or Behavior
	CRS	Supervise actions of the crew during execution of E-1 **When RWST level is 11.5 feet, a transition to ES-1.3 is required.**
	ATC CRS BOP	Perform E-1 Actions o Check RCPs o Check for faulted SG o Check intact SG levels o Check SI reset o Reset Phase A o Check for ruptured SG o Check PORVs and block valves
	ALL	Transition to ES-1.3 o Determine if transfer to cold leg recirc is required o Evaluate if recirculation flow from containment can be established (per the ES-1.3 foldout page) o Judge VC level is inadequate to support recirculation flow and go to ECA-1.1, Loss of Emergency Coolant Recirculation
	CRS	Supervise the activities of the crew during ECA-1.1
	CRS ATC	Verify recirc trains not affected by sump blockage Check emergency coolant recirculation equipment available Verify FCUs Status Check RWST level greater than 1.5 feet Determine CS requirements Makeup to RWST
Critical Task		**WOG CT: ECA-1.1 -- B** **Make up to the RWST and minimize outflow before the end of the scenario.**
Booth Instructor		***(Instructor – potential for scenario to end here (two critical tasks completed).***

Op-Test No.: 5/11/15 Scenario No.: 2 Event No.: 9 cont Page 11 of 11

Event Description: Team transitions to E-1, then ES-1.3, then ECA-1.1 due to loss of Emergency Coolant Recirculation.

Time	Position	Applicant's Actions or Behavior
Critical Task		**WOG CT: ECA-1.1--C** **Establish makeup flow from charging pumps at a rate equal to VCT makeup capability when required per ECA-1.1 before Core Cooling orange path develops.**
	ATC	Depressurize intact SGs
Critical Task		**WOG CT: ECA-1.1--D** **Depressurize intact SGs at a maximum rate to inject the contents of the accumulators before a core cooling orange path develops.**
	CRS, ATC BOP	When RWST level reaches 1.5 feet, stop pumps taking suction from RWST and place in pullout: o RHR pumps, HHSI pumps, Charging pumps, Containment Spray pumps
Critical Task		**WOG CT: ECA-1.1 -- A** **Stop ECCS pumps with suction aligned to the RWST before RWST decreases to < 1.5 ft.**
Booth Instructor		**NOTE: Terminate scenario at the discretion of the lead evaluator.**

Facility: Indian Point 3 Scenario No.: 3 Op-Test No.: _____

Examiners: _____ Operators: _____

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Initial Conditions: 100% Power, # 31 Component Cooling Water Pump is out of service for Maintenance (Motor replacement)

Turnover: 100% Power, # 31 Component Cooling Water Pump is out of service for Maintenance (Motor replacement) . Maintain 100%

Event No.	Malf. No.	Event Type*	Event Description
1		C BOP/CRS R (ATC) TS (CRS)	#33 Condensate Pump Trips, crew responds IAW 3-AOP-FW-1. Technical Specification for delta I (discuss at minimum after scenario)
2		I (ATC or BOP) TS (CRS)	32 SG Controlling level channel fails low (LT427B).
3		M (ALL)	Steam Leak in Turbine Building.
4		C/M (ALL)	The reactor will not trip from the control room and the crew responds per FR-S-1, ATWS
5		C (BOP)	Following SI actuation, #32 RHR Pump and #33 SI did not start. BOP starts pumps per 3-RO-1 RNO.
6		M (ALL)	Failure of MSIVs to close from Control Room. (2 will be closed locally after AFW is throttled to 100 gpm per ECA-2.1).

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

Simulator Exam Scenario # 3 Summary

The evaluation begins with the plant at 100% power. Fuel is conditioned. 32 Component Cooling Water Pump is out of service for Maintenance (Motor replacement).

After taking the watch, #33 Condensate Pump will trip. The crew will take actions in accordance with AOP-AOP-FW-1. Operators will initiate a load reduction as necessary to maintain FW Flow > STM Flow and SGFP Suction pressure > 265#.

Once the plant is stable, 32 Steam Generator controlling level channel fails low (LT-427B). The crew responds IAW AOP-INST-1 to again stabilize the plant and trip bistables.

Following the tripping of bistables for the SG level channel failure, a steam break will occur in the Turbine Building. The crew will attempt to manually trip the plant, close MSIVs, and perform actions of E-0, Reactor Trip or Safety Injection.

The reactor will not trip from the Control Room and the team will respond per FR-S.1, Response to Nuclear Power Generation / ATWS and will S/D the reactor by manually inserting control rods and initiating Emergency Boration. The reactor trip breakers will be locally opened and the team will transition to E-0, Reactor Trip or Safety Injection. Following SI actuation, 32 RHR Pump and 33 SI pump do not auto start. BOP starts pumps per RO-1 RNO.

The MSIVs will fail to auto close and cannot be closed from the control room. The team will take actions per ECA-2.1, Uncontrolled Depressurization of All Steam Generators. When at least one MSIV is closed locally, the team will transition to E-2, Faulted Steam Generator Isolation. The team will complete E-2 and transition to E-1, Loss of Reactor or Secondary Coolant.

Procedure flow path: AOP-FW-1, AOP-INST-1, AOP-UC-1, E-0, FR-S.1, E-0, E-2, ECA-2.1, E-2, E-1.

Scenario # 3

At Time	On Event	Action	Description
00:00:00	None	Insert malfunction MAL-CFW005C to 0 on event 1	CONDENSATE PUMP 33 TRIP DUE TO BRG FAILURE
00:00:00	None	Insert malfunction MAL-SGN001F to 0 on event 2	STEAM GENERATOR LEVEL TRANSMITTER FAILURE (LT-427B)
00:00:00	None	Insert malfunction MAL-RHR001B to FAILURE_TO_AUTOSTART	RHR PUMP 32 FAILURES
00:00:00	None	Insert malfunction MAL-SIS004C to FAILURE_TO_AUTOSTART	SAFETY INJECTION PUMP 33 FAILURES
00:00:00	None	Insert malfunction MAL-RPS002A to ALL_FAIL	REACTOR TRIP BREAKERS FAIL TO OPEN (AUTO FAILURE)
00:00:00	None	Insert malfunction MAL-RPS002B	REACTOR TRIP BREAKERS FAIL TO OPEN (AUTO & MANUAL)
00:00:00	None	Insert malfunction MAL-MSS009A to 1000000.43750 in 300 on event 3	MAIN STEAM HEADER BREAK (EAST HEADER)
00:00:00	None	Insert malfunction MAL-MSS013A to FAIL_OPEN on event 3	MAIN STEAM ISOLATION VALVE FAILURES LOOP 1
00:00:00	None	Insert malfunction MAL-MSS013B to FAIL_OPEN on event 3	MAIN STEAM ISOLATION VALVE FAILURES LOOP 2
00:00:00	None	Insert malfunction MAL-MSS013C to FAIL_OPEN on event 3	MAIN STEAM ISOLATION VALVE FAILURES LOOP 3
00:00:00	None	Insert malfunction MAL-MSS013D to FAIL_OPEN on event 3	MAIN STEAM ISOLATION VALVE FAILURES LOOP 4

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 1 Page 1 of 10

Event Description: #33 Condensate Pump trips, crew responds IAW 3-AOP-FW-1.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		Insert malfunction MAL-CFW005C to 0 on event 1; 33 Condensate Pump Trip due to bearing failure.
	ATC	RO responds IAW 3-AOP-FW-1, step 4.39. 1. **INITIATE** load reduction as necessary to maintain the following: a. Feed flow ≥ steam flow b. MBFP suction pressure > 265 psig. 2. **IAAT** MBFP suction pressure cutback actuates, **THEN** perform steps 4.42-4.43 if directed by CRS a. Take manual control of MBFP speed to maintain suction pressure > 265 psig. 3. **IAAT** Loss of Load Interlock is NOT reset, **THEN** reset Loss of Load Interlock for Condenser Steam Dumps. NOTE: Per Attachment 1 of procedure, load reduction to approximately 900 MW(e) should be necessary. Load will be limited by MBFP suction pressure. Per 3-SOP-FW-001, the suction pressure lower limit is 350 psig during normal operation. At 310 psig, the Standby Condensate Booster Pumps will automatically start (if in AUTO) and CD-AOV-521 (POLISHER VESSELS AND POST FILTERS BYPASS) automatically opens. An automatic low suction pressure cutback actuates at 265 psig to lower MBFP speed. 4. **IAAT** level in any SG is > 60%, **THEN** perform one of the following: a. Place MFRV for affected SGs in manual and reduce feed flow below steam flow. b. Place MBFP speed control in manual and reduce feed flow below steam flow. 5. Adjust Tave within 1.5°F of program using boration and /or rod insertion. 6. Is Δ Flux in target band? a. Borate RCS as necessary to restore Δ Flux to target band.
	CRS	Refer to TS 3.2.3, Axial Flux Difference – AFD) *This discussion can occur after the scenario, especially if AFD stays in band during load reduction.*
Booth Instructor		***NOTE: Evaluator may more on to the next event once the CRS identifies the Technical Specification for AFD or evaluator discretion.***

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 2 Page 2 of 10

Event Description: 32 SG Controlling level channel fails low. Team responds per AOP-INST-1 to stabilize the plant and trip bistables.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		*Insert malfunction MAL-SGN001F to 0 on event 2* — *STEAM GENERATOR LEVEL TRANSMITTER FAILURE (LT-427B)* • *SG Low Level Alarms* • *Channel 427 indicates downscale* • *32 SG Feedwater flow increase* • *Actual level increases*
	ATC	1. Diagnose SG level instrument failure 2. Take manual actions as necessary to control parameters and stabilize the plant. a. Place 32 SG FRV in Manual and match 32 SG feed and steam flows. b. Control 32 SG FRV position to maintain 32 SG level on program.
	CRS	Direct the team during performance of AOP-INST-1 • Directs RO to perform immediate actions and verifies completion of the immediate actions using the procedure • Supervise actions of the team during subsequent actions. • Reviews Technical Specifications: o TS Table 3.3.1-1 Function 13 o TS Table 3.3.2-1 Function 5.b o TS Table 3.3.2-1 Function 6.b o TRM Table 3.3D-1 Function TRO 3.3.D.8 o Determines bistables require tripping within 6 hours • Directs BOP to trip bistables.
	BOP	1. Are all redundant bistable status lights for failed instrument listed in Attachment 1 (Steam Generator Level Tables) Table 1 (Page 79) extinguished? a. E-8; SG 32 LO-LO LVL LC427D b. H-8; SG 32 LO-LO LVL LC427B c. I-4; SG 32 HI LEVEL LC427C d. L-4; SG 32 HI LEVEL LC427A 2. Trip bistables for failed instrument listed in Attachment 1 (Staeam Generator Level Tables) Table 2 (Page 83). **Protection Rack Blue B-2)** a. Loop 2B, High Level b. Loop 2B, Low Level

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 2 cont Page 3 of 10

Event Description: 32 SG Controlling level channel fails low. Team responds per AOP-INST-1 to stabilize the plant and trip bistables.

Time	Position	Applicant's Actions or Behavior
	BOP	3. Are all bistable status lights for failed instrument listed in Attachment 1 (Steam Generator Level tables) Table 3 (Page 87) illuminated? a. G-8; SG 32 LO-LO LVL LC427F b. K-4; SG 32 HI LEVEL LC427E
Booth Instructor		***Scenario may continue after CRS completes Technical Specification determination.***

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 3 Page 4 of 10

Event Description: Steam Header Leak in Turbine Building. Team diagnoses steam leak and initiates reactor trip per AOP-UC-1, Uncontrolled Cooldown.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		*Insert malfunction MAL-MSS009A to 1000000.43750 in 300 on event 2* — *MAIN STEAM HEADER BREAK (EAST HEADER)* *Crew should see rising reactor power, loss of 10-30 MWe load, small Tave reduction. Fire alarms will sound indicating issue in Turbine Building.* ***If necessary call as NPO and state a large steam leak exists in the turbine building.***
	ALL	Diagnose steam leak.
	CRS	1. Implement AOP-UC-1; Uncontrolled Cooldown. • Determine continued operation is unsafe • Perform a crew update 2. Direct RO/BOP to trip reactor and close MSIVs
	ATC	1. Manually actuate reactor trip • Diagnose reactor did not trip • Attempt to trip reactor from supervisory panel
	CRS	Direct team to perform immediate actions of E-0, Reactor Trip or Safety Injection.
	ATC	Attempt to initiate reactor trip • Diagnose reactor is not tripped • Manually trip the reactor • Observe both reactor trip breakers are closed • Dispatch NPO to trip reactor using posted operator aid • Observe reactor power greater than 5% Inform crew that entry into FR-S.1 is required.
	CRS	Direct team to perform 3-FR-S.1; Response to Nuclear Power Generation / ATWS.
Booth Instructor		***Scenario continues based on ATWS. Do not locally trip the reactor until ATC inserts control rods manually and the crew is implementing 3-FR-S.1.***

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 4 Page 5 of 10

Event Description: The reactor will not trip from the control room and the crew responds per FR-S-1, ATWS.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		***Entered in setup:*** *Insert malfunction MAL-RPS002A to ALL_FAIL* — *REACTOR TRIP BREAKERS FAIL TO OPEN (AUTO FAILURE)* *Insert malfunction MAL-RPS002B* — *REACTOR TRIP BREAKERS FAIL TO OPEN (AUTO & MANUAL)*
	CRS	Direct actions of the crew IAW 3-FR-S.1.
	ATC	Manually insert control rods.
Booth Instructor		***Trip the reactor trip breakers locally once the ATC has established manual control rod insertion IAW 3-FR-S.1 and NPO has been dispatched.***
	BOP	1. Dispatch NPO to locally trip the reactor. 2. Manually TRIP Turbine. 3. Establish greater than 686 gpm total AFW flow. 4. Initiate Emergency Boration of RCS a. Check a charging pump running b. Open MOV-333, Emergency Boration valve c. Close BAST recirc control valves i. HCV-104 ii. HCV-105
	ATC/ BOP	5. Start both boric acid pumps in high speed: a. PLACE switches in FAST b. RESTART pumps 6. Transfer operating Charging pump to manual control and increase speed to maximum. 7. Check Pressurizer Pressure < 2235 psig.
	Critical Task (CT)	**FR.S-1—C; Insert negative reactivity into the core by inserting rods and / or emergency boration.**

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 4 cont Page 6 of 10

Event Description: The reactor will not trip from the control room and the crew responds per FR-S-1, ATWS.

Time	Position	Applicant's Actions or Behavior
	CRS ATC BOP	Continue with FR-S.1 actions: o Verify Containment ventilation isolation o Check SI status o Check is reactor is subcritical • Power Range < 5% • Intermediate Range – zero or negative SUR • All control rods < 20 steps o Secure Emergency Boration • Close CH-MOV-333 • Place both BATPs in Slow • Open HCV-104 and 105 to 25% open o Verify RCP seal cooling established o Control Charging pump speed to maintain seal injection o Verify adequate S/D margin • All control rods < 20 steps • Direct watch chemist to sample RCS • Adjust RCS M/U to establish > CSD boron per graph RCS-4 Transition to E-0
Booth Instructor		*Event continues based on earlier failures included in simulator scenario setup (following SI actuation, #32 RHR Pump and #33 SI Pump did not start.) (MSIVs failed to close as well).* ***BOP may start the 32 RHR and 33 SI Pumps during the implementation of FR-S.1, step 6; CHECK SI – ACTUATED by performing step 35 of 3-E-0.***

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 5 Page 7 of 10

Event Description: Following SI actuation, #32 RHR Pump and #33 SI did not start. BOP starts pumps per 3-RO-1 RNO.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		*Inserted during initial simulator setup:* *MAL-RHR001B to FAILURE_TO_AUTOSTART* *MAL-SIS004C to FAILURE_TO_AUTOSTART* ***BOP may start the 32 RHR and 33 SI Pumps during the implementation of FR-S.1, step 6; CHECK SI – ACTUATED by performing step 35 of 3-E-0.*** ***OR*** ***BOP may start the pumps during the implementation of 3-RO-1 RNO.***
	CRS BOP	BOP will recognize that 32 RHR Pump and 33 SI Pumps have not started in Auto following the SI actuation. VERIFY SI Pumps – RUNNING • Three HHSI pumps • Two RHR pumps RNO • Manually START pump(s).
Booth Instructor		*Event continues based on earlier failures included in simulator scenario setup (MSIVs fail to close).*

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 6 Page 8 of 10

Event Description: Failure of MSIVs to close from Control Room. (2 will be closed locally after AFW is throttled to 100 gpm per ECA-2.1)

Time	Position	Applicant's Actions or Behavior
Booth Instructor		***Entered when Event 3 was actuated or during initial simulator setup:*** *MAL-MSS013A to FAIL_OPEN on event 3* *MAL-MSS013B to FAIL_OPEN on event 3* *MAL-MSS013C to FAIL_OPEN on event 3* *MAL-MSS013D to FAIL_OPEN on event 3*
	CRS	Supervise the actions of the crew during E-0
	CRS ATC	Perform E-0 subsequent actions • Try to stop the RCS Cooldown • Attempt to close MSIVs • Dispatch NPOs to locally close MSIVs and bypass valves • Diagnose all SGs are faulted. • Go to 3-E-2, Faulted Steam Generator Isolation
Booth Instructor		*Event continues based on transition to 3-E-2, Faulted Steam Generator Isolation. (Step 15 of 3-E-0, Reactor Trip or Safety Injection)*

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 6 cont Page 9 of 10

Event Description: Failure of MSIVs to close from Control Room. (2 will be closed locally after AFW is throttled to 100 gpm per ECA-2.1)

Time	Position	Applicant's Actions or Behavior
	CRS	Supervise the actions of the crew during E-2
	ATC	Diagnose all SGs are faulted • Checks MSIVs cannot be closed from the CCR • Diagnose none of the SGs are intact
	CRS	Transition to ECA-2.1
	ALL	Check secondary pressure boundary: • MSIVs • MSIV bypass valves • Main Feed Reg valves • Bypass FRVs • MS-41 and 42 • SG atmospheric steam dumps • SG blowdown isolation valves • SG sample valves • Steam traps
	ALL	Control AFW Flow to minimize RCS cooldown • Verify control rods inserted • Check cooldown rate < 100°F / hr • Decrease AFW flow to 100 gpm per SG
	Critical Task (CT)	**ECA-2.1 – A, Control AFW flow to not less than 100 gpm per SG to minimize RCS cooldown rate before a severe (orange path) challenge develops to the integrity CSF.**
Booth Instructor		*After AFW flow has been reduced, close 31 and 32 MSIVs locally.*
	ALL	Observe MSIVs closed • Observe rising pressure in 31 and 32 SGs • Transition to E-2, Faulted SG Isolation

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 6 cont Page 10 of 10

Event Description: Failure of MSIVs to close from Control Room. (2 will be closed locally after AFW is throttled to 100 gpm per ECA-2.1)

Time	Position	Applicant's Actions or Behavior
	CRS	Supervise the actions of the crew during E-2
	CRS ATC BOP	Check MSIVs for 31 and 32 SGs closed Determine 31 and 32 SGs are intact Identify 33 and 34 SGs are faulted Isolate Faulted SGs • Dispatch NPO to close MS-42 • Isolate MFW FRVs or MOVs • Isolate Bypass FRVs or MOVs • Isolate AFW flow • Verify SG Atmospherics closed • Verify SG Blowdown valves closed • Close SG sample valves • Isolate upstream traps on faulted SGs • Reestablish SG sampling: o Reset Phase A o Depress pushbuttons 17 thru 24
	Critical Task (CT)	**E-2 – A, Isolate the faulted SG before transition out of E-2**
	CRS	Determine E-3 is not required
	CRS	Go to E-1, Loss of Reactor or Secondary Coolant
Booth Instructor		**Terminate scenario at this point or at Lead Evaluator's discretion.**

Facility: Indian Point 3 Scenario No.: 4 Op-Test No.: _____

Examiners: _____ Operators: _____

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Initial Conditions: 100% Power with 31 EDG out of service due to malfunctioning governor.

Turnover: 100% Power with 31 EDG out of service due to malfunctioning governor. Maintain 100% power. 31 Charging Pump I/S.

Event No.	Malf. No.	Event Type*	Event Description
1	MAL-SWS001C	C (BOP)	33 SWP trips
2	MAL-EPS005C	C (ALL)	480V Bus 5A Fault
3	N/A	R (ATC) TS (CRS)	Tech Spec required shutdown
4	MAL-NIS006A	C (ATS) C (CRS) TS (CRS)	Power Range Channel 41 Upper Detector Fails High
5	MAL-EPS001	M(ALL)	Station Blackout
6	MAL-DSG001A	C (BOP)	32 EDG fail to start
7	MAL-PRS003D	C (ATC)	PZR PORV Fails Open (455C fails open after loss of all AC, we need to isolate block valve later)
8	MAL-SWS001E	C (BOP)	SW pump does not auto start after bus energized 32 EDG comes back, 6A bus back. Failure of 36 SW pump to auto start.

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

Simulator Exam Scenario # 4 Summary

The scenario begins with the plant at 100% power. Fuel is conditioned. 32 EDG is out of service due to a malfunctioning governor. 31 Charging Pump is in service.

After taking the watch, #33 Service Water Pump will trip. The crew will take actions in accordance with ARP-012 and start another Service Water Pump. 480V Bus 5A then faults. Crew enters AOP-480V-1 to stabilize the plant. The CRS evaluates technical specifications following feedback from the field that there is significant damage to the 5A Bus. CRS determines that a shutdown must commence.

Once the plant shutdown is commenced, a failure of Power Range channel N41 upper detector occurs. Control rods auto insert until the ATC places rods in manual. The CRS implements AOP-NI-1, Nuclear Instrument Failure to stabilize the plant and perform required actions.

During performance of the subsequent actions of the nuclear instrument failure procedure, a loss of grid and loss of offsite power occur. The unit trips and the cew responds per E-0. 33 EDG is the only diesel running, but the 5A bus is faulted and cannot be energized. 31 EDG is tagged and 32 EDG fails to start or tripped. Crew diagnoses that no 480V bus is energized and transitions to ECA-0.0, Loss of All AC.

PRZR PORV 455C fails open and cannot be isolated due to the loss of all AC. PORV block valve will need to be isolated when power is restored to the 6A bus with 32 EDG. Operators will be dispatched to attempt to emergency stat the 32 EDG IAW SOP-EL-1.

BOP operator manually aligns 32 ABFP to supply AFW to the SGs.

Operators implement ECA-0.0 and depressurize intact SGs to 275 psig at maximum rate. Once the SGs are depressurized at a maximum rate to less than 275 psig, then the field NPO will be able to emergency start 32 EDG and supply power to the 6A 480V Bus. However, 36 Service Water Pump will not automatically start to provide cooling for the 32 EDG. Crew manually starts the 36 SWP and manually closes the PORV block valve.

Procedure flow path: ARP-012, AOP-480V-1, POP-2.1, AOP-NI-1, E-0, ECA-0.0, .

Scenario # 4

At Time	On Event	Action	Description
00:00:00	1	Insert malfunction MAL-SWS001C to TRIP on event 1	SERVICE WATER PUMP 33 FAILURES
00:00:00	2	Insert malfunction MAL-EPS005C on event 2	LOSS OF 480 V BUS 5A
00:00:00	None	Insert remote LOA-DSG031 to OFF	D/G #31 MAN/OFF/AUTO MODE SWITCH
00:00:00	5	Insert malfunction MAL-EPS001 on event 5	STATION BLACKOUT
00:00:00	5	Insert malfunction MAL-DSG001B on event 5	DIESEL 32 GENERATOR FAILURE
00:00:00	5	Insert malfunction MAL-PRS003C to 100.00000 on event 5	PRESSURIZER RELIEF VALVE 455C VALVE POSITION FAILURE
00:00:00	None	Insert malfunction MAL-SWS001F to FAILURE_TO_AUTOSTART	SERVICE WATER PUMP 36 FAILURES
00:00:00	4	Insert malfunction MAL-NIS006A to 5.00000 on event 4	POWER RANGE CHANNEL 41 DETECTOR A FAILURE
None	9	Delete malfunction MAL-DSG001B	DIESEL 32 GENERATOR FAILURE
None	9	Insert remote LOA-DSG029 to RESET	D/G #32 TRIP RESET
None	9	Insert remote LOA-DSG032 after 15 to MAN	D/G #32 MAN/OFF/AUTO MODE SWITCH
None	9	Insert remote LOA-DSG045 after 20 to ACTIVE_LOA	D/G #32 MANUAL START PUSHBUTTON

Op-Test No.: 5/11/15 Scenario No.: 4 Event No.: 1 Page 1 of 9

Event Description: 33 Service Water Pump Trips. Team responds per ARP and starts a SWP.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		*Insert malfunction MAL-SWS001C to TRIP on event 1, 33 SWP Failure*
	BOP	Diagnose trip of 33 Service Water Pump • Perform ARP-012 for alarm "Service Water Header (31,32,33) High Low Pressure" • Refers to SOP-RW-5 and starts 31 Service Water Pump • Dispatch NPO to investigate 33 SWP. • Operator may take 33 SWP Switch to "pull to lock" to clear "480V SWGR Motor Trip" Alarm.
	CRS	Direct BOP operator response to service water transient. The CRS may evaluate TS 3.7.9 Service Water System: • The LCO is satisfied with 2 pumps and required flow path or the nonessential SWS header operable.
Booth Instructor		***Continue to the next event at the discretion of the Lead Evaluator.***

Op-Test No.: 5/11/15 Scenario No.: 4 Event No.: 2 Page 2 of 9

Event Description: 480V Bus 5A Fault.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		*Insert malfunction MAL-EPS005C on event 2, LOSS OF 480 V BUS 5A.*
	ATC	Diagnose bus 5A de-energized • Start Charging Pump due to the loss of 31 Charging Pump on the 5A bus fault.
	BOP	Diagnose bus 5A de-energized • Perform ARPs • Dispatch NPO to investigate
	CRS	Implement 3-AOP-480V-1, Loss of 480V Bus • Direct crew actions of AOP-480V-1.
	ATC / BOP	Verify Charging pump running Verify CCW pumps running Check SW essential and non-essential headers > 60 psig Perform ARPs Verify IRPIs energized Verify condenser vacuum stable Dispatch an NPO to monitor the EDGs
Booth Operator		*NPO reports back **significant damage** to the 5A bus.*
	CRS	Evaluate Technical Specification 3.8.9 (Distribution Systems – Operating) • OAP-34 to determine if loss of safety function exists • CRS determines that with a fault on 5A 480V Bus and 31 EDG tagged a shutdown must commence. • ***Need to determine if TS 3.0.3 is applicable*** • ***If not cue as operations manager to initiate a shutdown based on reports of significant damage to bus 5A and no chance of 31 EDG being returned in the next 48 hours.***
Booth Operator		*Proceed to next event once the CRS has determined Tech Spec applicability and initiated a shutdown. Shutdown requirement may be called in by Operation Manager if necessary.*

Op-Test No.: 5/11/15 Scenario No.: 4 Event No.: 3 Page 3 of 9

Event Description: Technical Specification required shutdown.

Time	Position	Applicant's Actions or Behavior
	CRS	Refers to POP-2.1, Operation at Greater than 45% Power • Implements Attachment 3, Reactor Power Reduction Checklist • Perform a brief with the crew • Directs reactivity changes • Directs load changes
	ATC	• Energize all pressurizer backup heaters • Dispatch NPO to swap boric acid transfer pumps o 31 BA transfer pump is de-energized due to loss of bus 5A o Ensures 32 BA Transfer Pump aligned to blender • Commence Boration per 3-SOP-CVCS-003, Reactor Coolant System Boron Concentration Control • Monitor Tavg, rod position, delta flux, and RCP seal injection o Maintain Tavg on Program o Maintain ΔI within target band
	BOP	Initiate generator load reduction at rate directed by CRS Maintain SG Level on Program Coordinate load reductions with the ATC
Booth Instructor		***Proceed to the next event when sufficient load reduction has been observed per the lead evaluator.***

Op-Test No.: 5/11/15 Scenario No.: 4 Event No.: 4 Page 4 of 9

Event Description: Power Range Channel 41 Upper Detector Fails High.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		*Insert malfunction MAL-NIS006A to 5.00000 on event 4, POWER RANGE CHANNEL 41 DETECTOR A FAILURE.*
	ATC	Diagnose failed nuclear instrument. Place Control Rods in manual to stop auto rod insertion.
	CRS	Direct actions of the team during AOP-NI-1, Nuclear Instrument Failure.
	BOP	Perform ARPs for alarms associated with the failed instrument.
	CRS/ ATC	Adjust control rods, boron concentration, or turbine load as necessary to Maintain Tavg at programmed Tref.
	CRS	Evaluate Technical Specifications • TS 3.3.1 Function 2a • TS 3.3.1 Function 2b • TS 3.3.1 Function 5 • TS 3.3. 1 Function 17.b • TS 3.3.1 Function 17.c • TS 3.3.1 Function 17.d
Booth Instructor		***Scenario continues to next event once CRS determines the applicable Technical Specifications.***

Op-Test No.: 5/11/15 Scenario No.: 4 Event No.: 5 Page 5 of 9

Event Description: Station Blackout.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		***Ensure simulator initial setup included the following malfunctions:*** *Remote LOA-DSG031 to OFF, D/G #31 MAN/OFF/AUTO MODE SWITCH* *MAL-SWS001F to FAILURE_TO_AUTOSTART, SERVICE WATER PUMP 36 FAILURES* ***Insert the following malfunctions for event 5:*** *MAL-EPS001 on event 5, STATION BLACKOUT* *MAL-DSG001B on event 5, DIESEL 32 GENERATOR FAILURE* *MAL-PRS003C to 100.00000 on event 5, PRESSURIZER RELIEF VALVE 455C VALVE POSITION FAILURE*
	CRS	Direct crew to perform immediate actions of E-0, Reactor Trip or Safety Injection.
	ATC	Verifies reactor is tripped Verifies turbine is tripped
	BOP	Diagnose none of the 480V buses are energized. • Observe that the only EDG running is 33 EDG and bus 5A cannot be energized due to the fault. 31 and 32 EDGs are not running. 31 EDG is tagged. 32 EDG tripped. • Informs CRS that transition to ECA-0.0, Loss of All AC Power is required.
	CRS	Transitions to ECA-0.0, Loss of All AC Power and directs crew actions during implementation of ECA-0.0. NOTE: Crew may have directly entered ECA-0.0.
Booth Instructor		*Event continues based on earlier failures included in simulator scenario setup (32 EDG fails to start/trips, PORV 455C fails open)*

Op-Test No.: 5/11/15 Scenario No.: 4 Event No.: 6 Page 6 of 9

Event Description: 32 EDG fails to start / trips.

Time	Position	Applicant's Actions or Behavior
	ALL	Crew recognizes that the only EDG running is 33 EDG and bus 5A cannot be energized due to the fault. 31 and 32 EDGs are not running. 31 EDG is tagged. 32 EDG tripped. • Crew shuts down 33 EDG because it has no Service Water Cooling, • Crew dispatches an NPO to investigate the loss of 32 EDG and attempt to emergency start it per SOP-EL-1.
Booth Instructor		*Event continues based on earlier failures included in simulator scenario setup (PORV 455C fails open).*

Op-Test No.: 5/11/15 Scenario No.: 4 Event No.: 7 Page 7 of 9

Event Description: PZR PORV Fails Open (455C fails open after loss of all AC, we need to isolate block valve later when power is restored).

Time	Position	Applicant's Actions or Behavior
	ATC/ BOP	Operator recognizes that the PORV (455C) is failed open • Recognizes also that the block valve has no power. • Operator may place the block valve (535) in the "pull to lock close" position. o This will ensure it goes closed when power is restored to the block valve. o If not the crew needs to remember to close the block valve once power is restored. o Power to the block valve can be restored via the restoration of 32 EDG.
	Critical Task (CT)	**ECA-0.0 - - B; manually close the open PORV or associated block valve upon restoration of power to block valve.**
Booth Instructor		*Event continues based on earlier failures included in simulator scenario setup (Station Blackout) and continued implementation of ECA-0.0.*

Op-Test No.: 5/11/15 Scenario No.: 4 Event No.: 8 Page 8 of 9

Event Description: Depressurization of intact SGs at maximum rate. 32 EDG comes back energizing 6A bus, but 36 SW Pump fails to auto start.

Time	Position	Applicant's Actions or Behavior
	CRS ATC BOP	Crews implements ECA-0.0, Loss of All AC Power • Verify Reactor Trip • Close all MSIVs • Close Letdown Isolation Valves • Maintain SG levels using Turbine-Driven AFW Pump (32) o Adjust 32 ABFP FCV-405A, B, C, and D as necessary to maintain total feed flow > 365 gpm. o Preferentially feed 32 or 33 SG (selects one and feeds at a higher rate). o Maintain feed flow in all other SGs at ≤ 100 gpm. • Try to restore power to any 480V AC Safeguards Bus o Dispatch NPO to investigate and attempt to emergency start 32 EDG per SOP-EL-1.
	Critical Task (CT)	**ECA-0.0 - - B; establish at least 365 gpm AFW flow to SGs before SG WR level decreases to below 16%.**
Booth Instructor		***Do not allow 32 EDG to start until the crew has initiated SG depressurization.***
	CRS ATC BOP	Crews continues to implement ECA-0.0, Loss of All AC Power • Place Control Switches on De-enegized buses in TRIP / PULLOUT / OFF, o PRZR Heaters o Containment Spray Pumps o FCUs o SI Pumps o Motor-driven AFW Pumps o RHR Pumps o CCW Pumps • Isolate RCP Seals (NPO dispatched) • Check DC Bus Loads • **Depressurize Intact SGs to 275 psig**
	Critical Task (CT)	**ECA-0.0 - - G; depressurize intact SGs at maximum rate**

Op-Test No.: 5/11/15 Scenario No.: 4 Event No.: 8 cont Page 9 of 9

Event Description: Depressurization of intact SGs at maximum rate. 32 EDG comes back energizing 6A bus, but 36 SW Pump fails to auto start.

Time	Position	Applicant's Actions or Behavior
Booth Operator		***Once the SGs are depressurized at a maximum rate to less than 275 psig, then allow the NPO to emergency start 32 EDG.*** *Insert remote LOA-DSG029 to RESET, D/G #32 TRIP RESET* *Insert remote LOA-DSG032 after 15 to MAN, D/G #32 MAN/OFF/AUTO MODE SWITCH* *Insert remote LOA-DSG045 after 20 to ACTIVE_LOA, D/G #32 MANUAL START PUSHBUTTON*
	ALL	Crew recognizes that the 32 EDG has been restarted and aligned to the 6A 480V bus. They also recognize that 36 Service Water Pump has not started to provide cooling. **Crew manually starts 36 SWP and also potentially starts 39 Backup SW Pump as well.**
	Critical Tasks (CT)	**ECA-0.0; Start 36 Service Water Pump to provide cooling for 32 EDG.** **ECA-0.0 - - B; manually close the open PORV or associated block valve upon restoration of power to block valve.**
Booth Instructor		**Terminate scenario at this point or at Lead Evaluator's discretion.**

Facility: Indian Point 3 Scenario No.: 5 – low power Op-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: 4% Reactor Power, Plant startup following a forced outage, power ascension IAW 3-POP-1.3. #32 Component Cooling Water Pump is out of service for Maintenance (Motor replacement). Raise power to 10%, the warm up the MTG and place in service.

Turnover: 4% Reactor Power, Plant startup following a forced outage, power ascension IAW 3-POP-1.3. #32 Component Cooling Water Pump is out of service for Maintenance (Motor replacement). Raise power to 10%, the warm up the MTG and place in service. Fuel is conditioned.

Event No.	Malf. No.	Event Type*	Event Description
1		R ATC N CRS / BOP	Perform power ascension to 10% IAW 3-POP-1.3; Plant Startup from Zero to 45% Power.
2	XMT-RCS052	C ATC / BOP TS CRS	Thot fails high. Crew responds per 3-AOP-INST-1 and Technical Specifications
3	MAL-RCS005A	M ALL / TS CRS	Initiate RCS Leakage, starting at 23 gpm. Crew to respond IAW 3-AOP-Leak-1.
4	MAL-RCS005B	M ALL	Raise RCS leakrate to approximately 223 gpm. Crew will trip RX and initiate manual SI.
5		C ALL	AUTO SI Fails, manual initiation required. If manually initiated, then no failure.
6	MAL-RCS001A	M ALL	LBLOCA
7		C BOP	#31 RHR and #32 SI Pump did not start and #34 Fan Cooler Unit dampers did not reposition.
8		M ALL	Once SI has been verified by the BOP and reset, a loss of Off-Site Power occurs.
9		C ALL	Crew establishes required SI loads on Diesels.

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

Simulator Exam Scenario # 5 Summary

The scenario begins with the plant at 4% power. Plant startup is in progress following a forced outage IAW POP-1.3. 32 Component Cooling Water Pump is out of service for Maintenance (Motor replacement).

Crew will initiate a reactor power increase to between 6% and 12% to establish MODE 1 conditions IAW POP-1.3. During the power ascension, Loop 4 Thot fails high. Crew responds in accordance with AOP-INST-1 and trips bistables.

Once the plant is stable and actions per AOP-INST-1 have been completed, an RCS leak of approximately 23 gpm is initiated. Crew responds per AOP-LEAK-1, reduces letdown to 45 gpm and starts a second charging pump. Once the crew estimates the RCS leak rate and the CRS determines technical specification applicability, then the leak rate increases to 223 gpm.

The crew responds to the increased RCS leakage and IAW AOP-LEAK-1 IAAT statements trips the reactor, initiates SI, and enters E-0. The auto SI actuation does not occur, manual SI is required by the operators if not initiated IAW the AOP. Once SI is initiated the RCS leak will then degrade into a LBLOCA. The crew implements E-0 and transitions to E-1. The operators will recognize that 31 RHR Pump and 32 SI Pumps did not start and will manually start then per RO-1.

Following the verification of Safety Injection and the subsequent resetting of the SI signal, then a loss of offsite power will occur. Following a loss of offsite power after SI has been reset, the operators will suspend performance of the procedure in effect and will refer to LOOP-1 to restore equipment to the conditions in effect prior to the loss of offsite power. Once LOOP-1 is complete, the operator returns to the procedure and step in effect.

Procedure flow path: POP-1.3, AOP-INST-1, AOP-LEAK-1, E-0, E-1, LOOP-1, E-1.

Scenario # 5

At Time	On Event	Action	Description
00:00:00	None	Insert malfunction MAL-SIS001A	SAFETY INJECTION FAILURE TRAIN A
00:00:00	None	Insert malfunction MAL-SIS001B	SAFETY INJECTION FAILURE TRAIN B
00:00:00	None	Insert malfunction XMT-RCS052 to 640.00000 on event 2	HOT LEG NR MICROPROC LOOP 4 TEMPERATURE
00:00:00	None	Insert malfunction MAL-RCS005A to 1.00000 on event 3	RCS LEAK (LOOP 1 COLD LEG)
00:00:00	None	Insert malfunction MAL-RCS005B to 10.00000 on event 4	RCS LEAK (LOOP 2 COLD LEG)
00:00:00	None	Insert malfunction MAL-RHR001A to FAILURE_TO_AUTOSTART	RHR PUMP 31 FAILURES
00:00:00	None	Insert malfunction MAL-SIS004B to FAILURE_TO_AUTOSTART	SAFETY INJECTION PUMP 32 FAILURES
00:00:00	None	Insert malfunction MAL-EPS001 on event 8	STATION BLACKOUT
00:00:00	None	Insert malfunction MAL-RCS001A to 100.00000 on event 6	RCS RUPTURE (LOOP 1 COLD LEG)

Op-Test No.: 5/11/15 Scenario No.: 5 Event No.: 1 Page 1 of 10

Event Description: Perform power ascension to 10% IAW 3-POP-1.3; Plant Startup from Zero to 45% Power.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		*Simulator setup is 4% Reactor Power, all steps of 3-POP-1.3; Plant Startup from Zero to 45% Power are signed off up to step 4.30.* ***Cue that all Mode 1 prerequisites and MODE change signoffs are completed.***
	ATC	INIITATE a Reactor power increase to between 6% and 12% to establish Mode 1 conditions. • Steam Dumps are in pressure mode of control set at 1005# • Operator will withdraw control rods and / or dilute to raise power. NOTE: The T-AVG/T-REF DEVIATION ALARM (Panel SCF) may annunciate while performing the power increase. Entry into the ARP is NOT required until after the Turbine is synchronized.
Booth Instructor		***NOTE: Evaluator may more on to the next event once power has been raised to 7-8% reactor power.***

Op-Test No.: 5/11/15 Scenario No.: 5 Event No.: 2 Page 2 of 10

Event Description: HOT LEG NR MICROPROC LOOP 4 TEMPERATURE Transmitter fails high. Team responds per AOP-INST-1.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		*Insert malfunction XMT-RCS052 to 640.00000 on event 2, HOT LEG NR MICROPROC LOOP 4 TEMPERATURE. Loop 4 Thot fails high.*
	ATC	1. Diagnose Loop 4 Thot channel instrument failure, Loop 3 Thot fails high. 2. Place charging pumps in manual control 3. Maintain PRZR level in normal band per Graph RCS-2 (Pressurizer Level vs Tavg)
	CRS	Direct the team during performance of AOP-INST-1 • Directs RO to perform immediate actions and verifies completion of the immediate actions using the procedure • Supervise actions of the team during subsequent actions. • Reviews Technical Specifications: o TS Table 3.3.1-1 Function 5 o TS Table 3.3.1-1 Function 6 o TS Table 3.3.2-1 Function 4.d o Determines bistables require tripping within 6 hours • Directs BOP to trip bistables.
	BOP	1. PERFORM the following or affected channel using Attachment 8 (Defeating Failed RCS Temperature Channels/Circuits): a. Place ΔT DEFEAT (Rack b-8) in position specified in Table 1 (page 137) (Black Key). i. 3T/411B in DFT CH IV b. Place TAVG DEFEAT (Rack D-8) in position specified in Table 2 (Page 139) (Black Key). i. T/412B in LOOP B UNIT-2 2. Are all redundant bistable status lights for failed instrument listed in Attachment 9 (RCS Temperature Tables) Table 1 (Page 141) extinguished? a. I-11; LO TAVG LOOP 31 TC412D b. J-11; LO TAVG LOOP 32 TC422D c. K-11; LO TAVG LOOP 33 TC432D d. A-11; OT ΔT LOOP 1 TC411A e. B-11; OT ΔT LOOP 2 TC421A f. C-11; OT ΔT LOOP 3 TC431A g. A-12; OP ΔT LOOP 1 TC411C h. B-12; OP ΔT LOOP 2 TC421C i. C-12; OP ΔT LOOP 3 TC431C

Op-Test No.: 5/11/15 Scenario No.: 5 Event No.: 2 cont Page 3 of 10

Event Description: HOT LEG NR MICROPROC LOOP 4 TEMPERATURE Transmitter fails high. Team responds per AOP-INST-1.

Time	Position	Applicant's Actions or Behavior
	BOP	3. Trip bistables for failed instrument listed in Attachment 9 (RCS Temperature Tables) Table 2 (Page 145). **Protection rack Yellow B-10** a. Loop 4, Over Power Trip b. Loop 4, Over Temp Trip c. Loop 4, Low Tavg
	BOP	4. Are all bistable status lights for failed instrument listed in Attachment 9 (RCS Temperature Tables) Table 3 (Page 147) illuminated? a. L-11; LO TAVG LOOP 34 TC442D b. D-11; OT ΔT LOOP 4 TC441A c. D-12; OP ΔT LOOP 4 TC441C
Booth Instructor		***Scenario may continue after CRS completes Technical Specification determination. Lead evaluator may determine that the bistables are not going to be tripped.*** ***NOTE: Crew may Place Steam Dump Control switch to RESET and return to TEMP CONT. IAW step 4.147 of 3-AOP-INST-1. They should recognize the need to leave steam dump control in Pressure Mode of control per 3-POP-1.3, but if they do we can still more on to the next event. Will only cause the atmospheric dump valves to open.*** ***Crew may also leave charging pump control in manual, also will not affect moving on to the next event.*** ***Follow-up questions can be asked by the evaluators after the scenario is complete.***

Op-Test No.: 5/11/15 Scenario No.: 5 Event No.: 3 Page 4 of 10

Event Description: RCS Leakage starting at approximately 23 gpm, crew responds IAW 3-AOP-LEAK-1 and Technical Specifications.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		*Insert malfunction MAL-RCS005A to 1.00000 on event 3, RCS LEAK (LOOP 1 COLD LEG). Approximately 23 gpm RCS leak in containment.*
	ALL	Crew responds to indications of an RCS leak. Containment environment parameters rising (dew point, radiation, VC Sump).
	ATC	Approximates RCS Leak rate using CVCS parameters (Charging, Letdown, Seal Injection, Seal Return, VCT Level, PZR Level).

	CRS	Enters 3-AOP-LEAK-1; Sudden Increase in Reactor Coolant System Leakage.
		• Directs actions IAW Procedure
		• Reviews RCS Leakage Technical Specifications
		  o TS 3.4.13
		  o Recognizes that they have exceeded both identified and unidentified leakage limits. Need to reduce Leakage within limits within 4 hours.
		• Possible brief with review of procedure IAAT statements regarding PRZR level and pressure operating limitations

	ATC/ BOP	Perform the following as necessary to maintain PRZR level: • Increase charging pump speed. • Start second charging pump. • Reduce letdown to 45 gpm
	ALL	Are there indications of leakage inside containment? • R-2 (80' VC Area Monitor • R-7 (Incore Inst Room Area) • R-11 (VC Particulate) • R-12 (VC Radiogas) • Sump level • Humidity • FCU weir leak rate Initiate preparations for VC entry per OAP-007.
Booth Instructor		***Scenario continues to next event once crew estimates the RCS leak rate and the CRS determines Technical Specification applicability.***

Op-Test No.: 5/11/15 Scenario No.: 5 Event No.: 4 Page 5 of 10

Event Description: .

Time	Position	Applicant's Actions or Behavior
Booth Instructor		*Insert malfunction MAL-RCS005B to 10.00000 on event 4 to raise RCS Leakage to approximately 223 gpm.* *Also ensure the simulator setup has the failure of AUTO Safety Injection inserted:* *MAL-SIS001A, SAFETY INJECTION FAILURE TRAIN A* *MAL-SIS001B, SAFETY INJECTION FAILURE TRAIN B* ***And*** *MAL-RHR001A to FAILURE_TO_AUTOSTART, 31 RHR Pump fails to auto start* *MAL-SIS004B to FAILURE_TO_AUTOSTART, 32 SI Pump fails to auto start*
	ALL	Crew responds to increased RCS Leakage and recognizes that one of the following IAAT statements from 3-AOP-LEAK-1 applies: **1. IAAT** PRZR pressure decreases to ≤ 1930 psig, **THEN ...** **2. IAAT** PRZR level can **NOT** be maintained with two charging pumps in service **AND** letdown flow ≤ 45 gpm **OR** PRZR level decreases to < 14, **THEN** perform the following: a. Trip the reactor b. Initiate SI. c. GO TO E-0
	Critical Task (CT)	**E-0 - - D, Manually actuate at least one train of SIS actuated safeguards before transition to any E-1 series.**
Booth Instructor		***NOTE: Crew may not initiate manual SI and wait for AUTO actuation. If AUTO actuation signal is received, crew will need to initiate Safety Injection manually (event 5 only if necessary). Otherwise scenario continues to event 6 (LBLOCA).***

Op-Test No.: 5/11/15 Scenario No.: 5 Event No.: 5 Page 6 of 10

Event Description: AUTO SI Fails, manual initiation required. If manually initiated, then no failure.

Time	Position	Applicant's Actions or Behavior
	ALL	1. Crew recognizes that Safety Injection did not automatically initiate based on reaching actuation setpoint. 2. Crew manually initiates Safety Injection. NOTE: Crew could manually ACUATE SI per step 5.b of E-0 also.
	Critical Task (CT)	**E-0 - - D, Manually actuate at least one train of SIS actuated safeguards before transition to any E-1 series.**
Booth Instructor		***NOTE: Crew may not initiate manual SI and wait for AUTO actuation. If AUTO actuation signal is received, crew will need to initiate Safety Injection manually (event 5 only if necessary). Otherwise scenario continues to event 6 (LBLOCA).*** *Event continues based on earlier failures included in simulator scenario setup (#31 RHR Pump and #32 SI Pump did not start and #34 Fan Cooler Unit dampers did not reposition.)*

Op-Test No.: 5/11/15 Scenario No.: 5 Event No.: 6 Page 7 of 10

Event Description: Following Reactor Trip and manual SI actuation, a Large Break LOCA occurs.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		*Insert malfunction MAL-RCS001A to 100.00000 on event 6, RCS RUPTURE (LOOP 1 COLD LEG) as soon as Safety Injection has been manually initiated.*
	ALL	Crew implements 3-E-0; Reactor Trip or Safety Injection • Completes immediate actions • AFW Status • Direct BOP Operator to Perform 3-RO-1; BOP Operator Actions During Use of EOPs. • Verify Feedwater Isolation • Verify SI Flow • Containment Spray? • RCP Seal Cooling • Establish Charging Flow • Check RCS Average Temperature • **Check If RCPs Should Be Stopped** • **PRZR PORVs, Safety Valves, Spray Valves** • **Faulted SG** • **Ruptured SG** • **RCS Intact** o **GO TO 3-E-1, Loss of Reactor or Secondary Coolant**
	Critical Task (CT)	**E-1 - - C, Trip all RCPs so that CET temperatures do not become superheated when forced circulation in the RCS stops.**
Booth Instructor		*Event continues based on earlier failures included in simulator scenario setup (#31 RHR Pump and #32 SI Pump did not start and #34 Fan Cooler Unit dampers did not reposition).*

Op-Test No.: 5/11/15 Scenario No.: 5 Event No.: 7 Page 8 of 10

Event Description: #31 RHR Pump and #32 SI Pump did not auto start on the SI actuation and #34 Fan Cooler Unit Dampers did not reposition.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		*Event continues based on earlier failures included in simulator scenario setup (#31 RHR Pump and #32 SI Pump did not start and #34 Fan Cooler Unit dampers did not reposition).*
	CRS BOP	BOP will recognize that 31 RHR Pump and 32 SI Pumps have not started in Auto following the SI actuation. VERIFY SI Pumps – RUNNING • Three HHSI pumps • Two RHR pumps RNO • Manually START pump(s).
	CRS BOP	Place FCU damper control switches in – INCIENT MODE position Check FCU dampers for all FCUs – IN INCIDENT MODE POSITION • Dampers A/B – CLOSED (inlet dampers) • Damper C – CLOSED (bypass damper) • Damper D – OPEN (filter outlet damper)
Booth Instructor		*BOP operator should start the pumps and reposition the dampers IAW steps 2 and 3 of 3-RO-1; BOP Operator Actions During Use of EOPs.* ***Event continues based on transition to 3-E-1; Loss of Reactor or Secondary Coolant.***

Op-Test No.: 5/11/15 Scenario No.: 5 Event No.: 8 Page 9 of 10

Event Description: Once SI has been verified by the BOP and reset, a loss of Off-Site Power occurs.

Time	Position	Applicant's Actions or Behavior
Booth Operator		*Monitor operator actions and once the BOP has verified SI and reset SI per step 14 of 3-RO-1; BOP Operator Actions During Use of EOPs, then insert malfunction for loss of offsite power.* ***MAL-EPS001 on event 8, Station Blackout***
	CRS	Supervise the actions of the crew during E-1 **NOTE: Crew could trip the RCPs and Reset SI in 3-E-1, steps 1 and 4 depending on the BOP Operator's progression through 3-RO-1.**
	BOP	Continue performance of 3-RO-1 1. RESET SI as Follows: a. PRESS both SI reset buttons on panel SBF-2: • Train 1 SI Reset • Train 2 SI Reset b. CHECK SI – RESET • SI ACTUATED light EXTINGUISHED
Booth Instructor		*Scenario continues with the loss of offsite power.* ***MAL-EPS001 on event 8, Station Blackout***

Op-Test No.: 5/11/15 Scenario No.: 5 Event No.: 9 Page 10 of 10

Event Description: Crew establishes required SI loads on Diesels following the loss of offsite power.

Time	Position	Applicant's Actions or Behavior
Booth Operator		*Following a loss of offsite power after SI has been reset, the operator will suspend performance of the procedure in effect and will refer to LOOP-1 to restore equipment to the conditions in effect prior to the loss of offsite power. Once LOOP-1 is complete, the operator returns to the procedure and step in effect.*
	CRS	Directs the performance of LOOP-1; Loss of Offsite Power After SI. Supervise the actions of the crew during implementation of LOOP-1.
	ATC / BOP	1. VERIFY Power to 480V AC Buses 2. **ALIGN Essential SW** And CCW Pumps And Letdown • **Start Essential SW pumps as required.** • PLACE CCW pumps in TRIP PULLOUT. • Ensure letdown is ISOLATED. 3. RESTART SI Or Recirculation Equipment: • HHSI pumps • RHR pumps • Fan Cooler Units • Containment Spray pumps • AFW pumps • Recirculation pumps **RNO: START or STOP equipment to re-establish equipment line-up prior to Loss of Offsite Power.**
	Critical Task (CT)	**Ensure Service Water Pumps are started to cool the Diesel Generators IAW step 2 of 3-LOOP-1.**
Booth Instructor		**Terminate scenario at this point or at Lead Evaluator's discretion. Ensure adequate (reasonable) time to meet critical task.**

Facility: Indian Point 3 Task No: _____

Task Title:
Respond to Turbine First Stage Pressure Transmitter Failure

K/A Reference: 001000A2.11
RO – 4.4 SRO – 4.7

Job Performance Measure No: Simulator 1

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Reactor at 41% Power.
- Startup in progress IAW 3-POP-1.3; Plant Startup from Zero to 45% Power.
- Control Rods are in AUTO.

Required Materials: None

General References: 3-AOP-INST-1; Instrument / Controller Failures
3-AOP-ROD-1; Rod Control and Indication System Malfunction

Initiating Cue: You are the ATC.

Time Critical Task:

Validation Time: No

Task Standard:

Performance Information

(Denote critical steps with a check mark √)

√**1. Performance Step:** Take manual actions as necessary to control parameters and stabilize the plant.

Standard: Place Rod Control in Manual.

Comment: Procedure Step 3.1

2. Performance Step: Has an instrument failure occurred?

Standard: Determine an instrument failure has occurred; PT-412A has failed low.

Comment: Procedure Step 4.1 (Includes identification of 3-AOP-INST-1 as the appropriate mitigating procedure.)

3. Performance Step: GO TO applicable step for the indicated failure.

Standard: Identify Turbine 1st Stage Pressure, step 4.174 as the affected step.

Comment: Procedure Step 4.2

4. Performance Step: Has Channel A failed?

Standard: Determine PT-412A has failed low.

Comment: Procedure Step 4.174.

Performance Information

(Denote critical steps with a check mark √)

5. Performance Step: Are control rods in manual control?

Standard: Rod control should be in manual at this time.

Comment: Procedure Step 4.175.

6. Performance Step: Determine T_{ref} based on PT-412B using Graph RPC-9 (T_{ref} vs 1st Stage Pressure).

Standard: Using Graph determine T_{ref}.

Comment: Procedure Step 4.176. (Student may note previous T_{ave} value and wish to return to previous temperature)

√ **7. Performance Step:** Is T_{ave} within 1.5°F of T_{ref}? Control any of the following as necessary to maintain T_{ave} and T_{ref} on program for current reactor power:

- Rod control
- Boron concentration
- Turbine load

CUE: The CRS directs restoring T_{ave} using Control Rods. (Restore to previous rod height is acceptable)

Standard: Withdraw Control Rods to restore T_{ave}. (Restore to previous rod height is acceptable)

Comment: Procedure Step 4.177 & RNO.

NOTE: Malfunction of rods to occur while withdrawing. Continuous outward rod motion.

Performance Information

(Denote critical steps with a check mark √)

8. Performance Step: Observe Rods continuing to withdraw in Manual after In-Hold-Out switch released.

Standard: Observe step counters and IRPI continuing outward motion.

Comment: The following steps are from procedure 3- AOP-ROD-1. The candidate may just trip the reactor and GO TO 3-E-0.

9. Performance Step: Was this procedure entered due to continuous Unwarranted rod motion?

Standard: Determines Yes.

Comment: Procedure Step 4.1.

10. Performance Step: Is rod control in manual?

Standard: Determines rod control is in manual.

Comment: Procedure Step 4.2.

11. Performance Step: Does continuous unwarranted rod motion exist?

Standard: Determines Yes.

Comment: Procedure Step 4.3.

Performance Information

(Denote critical steps with a check mark √)

√ **12. Performance Step:** Trip the Reactor and GO TO E-0.

Standard: Trips the Reactor. (Manual Action)

Comment: Procedure Step 4.4

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

Approximately 41% Power IC

PT-412A, First Stage Turbine Pressure fails low.

Continuous Outward Unwarranted Rod Motion in Manual
(Malfunction will be inserted when rod motion is initiated)

Initial Conditions:

- Reactor at 41% Power.
- Startup in progress IAW 3-POP-1.3; Plant Startup from Zero to 45% Power.
- Control Rods are in AUTO.

Initiating Cue:

You are the ATC.

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 3 Task No: _____

Task Title: Place Excess Letdown In Service

K/A Reference: 004000A406 RO – 3.6 SRO – 3.1 Job Performance Measure No: Simulator 2

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Reactor at 100% Power.
- A packing leak exists on CH-AOV-202; Letdown Isolation Valve in the PAB.
- Maintenance has requested that normal letdown be isolated to allow them to adjust the packing gland.
- 33 Charging Pump is in service.

Required Materials: None.

General References: 3-SOP-CVCS-002; Charging, Seal water, and Letdown Control

Initiating Cue: The CRS has directed that you transfer normal letdown to excess letdown IAW 3-SOP-CVCS-002, section 4.2.3. All Precautions and Limitations have been reviewed as well as Initial Conditions verified.

Time Critical Task: No

Validation Time:

Task Standard: Establish Excess Letdown flow to the VCT within operating limits.

Performance Information

(Denote critical steps with a check mark √)

1. Performance Step: PLACE Charging Pumps in Manual to minimize PZR level fluctuations.

Standard: Places 33 Charging Pump in Manual.

Comment: Procedure Step 4.2.3.1. Note that 33 Charging Pump is already I/S. Also if necessary, cue that the CRS has determined that this is not being considered an Infrequently Performed Task and Evolution.

2. Performance Step: CONTROL running charging pump speed to maintain Seal Injection between 6 and 12 gpm, and PZR level stable.

Standard: Maintains Seal Injection between 6 and 12 gpm.

Comment: Procedure Step 4.2.3.3.

Instructor Note: Ensure CCW Header Pressure is sufficient to avoid Auto Start of CCW Pump.

√ **3. Performance Step:** OPEN the following valves to establish CCW flow to Excess Letdown HX:

a) AC-AOV-793, HX CCW Outlet Isolation

b) AC-AOV-796, HX CCW Outlet Isolation

c) AC-AOP-791, HX CCW Inlet Isolation

d) AC-AOV-798, HX CCW Inlet Isoaltion

Standard: Opens the CCW Isolation Valves IAW step 4.2.3.6.

Comment: Procedure Step 4.2.3.6.

Performance Information

(Denote critical steps with a check mark √)

4. Performance Step: VERIFY CH-HCV-123, Excess Letdown Flow Control Valve, is Closed.

Standard: Verify valve is closed.

Comment: Procedure Step 4.2.3.9.

5. Performance Step: VERIFY CH-AOV-215, Excess Letdown Diversion Valve, is in DIVERT to align Letdown flow to RCDT.

Standard: Verify valve is selected to DIVERT.

Comment: Procedure Step 4.2.3.10

6. Performance Step: CRACK OPEN CH-HCV-123, Excess Letdown Flow Control Valve (about 10% open) to preclude pressure surge on CVCS side of heat exchanger.

Standard: Opens valve approximately 10%.

Comment: Procedure Step 4.2.3.11.

√ **7. Performance Step:** OPEN the following top valves:

- CH-AOV-213A, Excess Letdown Stop Valve
- CH-AOV-213B, Excess Letdown Stop Valve

Standard: Opens both valves.

Comment: Procedure Step 4.2.3.12.

Performance Information

(Denote critical steps with a check mark √)

√**8. Performance Step:**	Slowly OPEN CH-HCV-123 to allow HX warm-up.
Standard:	Slowly opens CH-HCV-123 and ensues that Excess Letdown HX outlet temperature is less than 160°F as indicated on TI-122.
Comment:	Procedure Step 4.2.3.13. Note Caution before step, "When using RCDT pump(s), then Excess Letdown HX outlet temp SHALL be maintained less than 160°F as indicated on TI-122."

√ **9. Performance Step:**	WHEN VCT Level changes (2% - 4%), THEN Slowly CLOSE CH-HCV-123 to minimize RCP seal perturbation. • PLACE CH-AOV-215 in NORMAL to align Letdown flow to VCT. • THROTTLE CH-HCV-123 to achieve desired flow.
Standard:	Directs Excess Letdown Flow to the VCT and adjusts CH-HCV-123 to achieve design excess letdown flow (approx. 20 gpm) without exceeding temperature restrictions in caution.
Comment:	Procedure Step 4.2.3.14. Note Caution before step, "Excess Letdown HX outlet temp SHALL NOT be allowed to exceed 200°F as indicated on TI-122."

10. Performance Step:	NOTIFY HP, Excess Letdown has been placed in service AND surveys should be conducted due to changes in radiation fields.

Standard: Notifies HP via instructor.

Instructor Cue: HP has been notified.

Comment: Procedure Step 4.2.3.15.

Performance Information

(Denote critical steps with a check mark √)

√ **11. Performance Step:** IF Normal Letdown is in service, THEN CLOSE the following valves:

- CH-AOV-200a, Letdown Valve
- CH-AOV-200B, Letdown Valve
- CH-AOV-200C, Letdown Valve
- CH-LCV-459, Loop 31 INT
- CH-LCV-460, Loop 31 INT

Standard: Closes or verifies closed the above valves.

Comment: Procedure Step 4.2.3.17.

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

Any 100% IC

Ensure 33 Charging Pump is in Service

Ensure CCW Header Pressure is sufficient to avoid Auto CCW Pump starts.

Initial Conditions:

- Reactor at 100% Power.
- A packing leak exists on CH-AOV-202; Letdown Isolation Valve in the PAB.
- Maintenance has requested that normal letdown be isolated to allow them to adjust the packing gland.
- 33 Charging Pump is in service.

Initiating Cue:

The CRS has directed that you transfer normal letdown to excess letdown IAW 3-SOP-CVCS-002, section 4.2.3. All Precautions and Limitations have been reviewed as well as Initial Conditions verified.

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 3 Task No: _____

Task Title: Adjust Accumulator Level and/or Pressure as Required

K/A Reference: 006000A1.13 Job Performance Measure No: Simulator 3 (RO Only)

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- The plant is at 100% power
- 31 SI Accumulator has a low level
- The Refueling Water Purification pump is NOT in service
- System Engineering has been informed that the accumulator is to be filled
- 32 SI Pump motor starting requirements are satisfied

Required Materials: 3-SOP-SI-001; Safety Injection System Operation

General References: 3-SOP-SI-001; Safety Injection System Operation

Initiating Cue: The CRS has directed you to fill 31 SI accumulator to 24% using 32 SI Pump in accordance with SOP-SI-001, step 4.3.2.

Time Critical Task: No

Validation Time:

Task Standard: 31 SI Accumulator filled to 24% with 32 SI Pump secured.

Performance Information

(Denote critical steps with a check mark √)

1. Performance Step: ENTER LCO 3.5.2 Action Statement.

Standard: Recognizes applicability of Technical Specification LCO 3.5.2.

Comment: Procedure Steps 4.3.2.3 through 4.3.2.5.
When SI-859A, B and C valves are open, then a dedicated operator SHALL be stationed at SI-859C in continuous communication with the CCR to close SI-859C and SI-859A should SI actuation occur. (TS 3.6.3 Basis)

2. Performance Step: UNLOCK and OPEN the following valves:
   - SI-859A, Accumulator Drain/Safety Injection Test Line Isolation
   - SI-859C, Accumulator Drain/Safety Injection Test Line Isolation

   OPEN SI-859B, Accumulator Drain/Safety Injection Test Line Isolation.

Standard: Contacts NPO to open valves.

Comment: Procedure Steps 4.3.2.4 and 4.3.2.5

CUE: State that SI-859A, B, and C valves have been opened by the NPO in field. The NPO is also stationed at SI-859C in continuous communication with the CCR to close SI-859C and SI-859A should SI actuation occur.

3. Performance Step: PERFORM Step 1.0 of Attachment 2, Data Sheet for Monitoring PRT Level.

Standard: Records initial PRT level, date, and time on Attachment 2.

Comment: Procedure Step 4.3.2.7 and NOTE on Attachment 2; "Initial and final PRT levels are recorded to determine whether SI-855, Test Line Relief, leaks by while Safety Injection Pumps are in service."

Performance Information

(Denote critical steps with a check mark √)

√**4. Performance Step:** START 32 SI Pump AND VERIFY adequate discharge pressure.

Standard: 32 HHSIP running with adequate discharge pressure

Comment: Procedure Step 4.3.2.8

5. Performance Step: VERIFY SI pump recirc flow is 25 gpm or greater on FI-950, SI Pump Recirculation Flow Indicator. IF less than 25 gpm, THEN immediately STOP pump.

Standard: Request Recirculation Flow from NPO.

CUE: State that the NPO reports Recirculation Flow is 50 gpm.

Comment: Procedure Step 4.3.2.9.

6. Performance Step: VERIFY the following valves are closed:
- SI-HCV-943, Accumulator Vent Control
- NNE-AOV-863, PORVs And Accumulators N_2 Supply Containment Isolation

Standard: Verify valves closed.

Comment: Procedure Step 4.3.2.10.

Performance Information

(Denote critical steps with a check mark √)

√ 7. Performance Step: IF desired to fill 31 accumulator, THEN:

- OPEN SI-AOV-891A, 31 Accumulator N_2 Supply Isolation.
- OPEN SI-AOV-890A, 31 Accumulator Fill Isolation.
- MAINTAIN desired pressure by throttling SI-HCV-943.
- WHEN Desired level is reached, THEN CLOSE the following:
  - SI-HCV-943, Accumulator Vent Control
  - SI-AOV-890A, 31 Accumulator Fill Isolation
  - SI-AOV-891A, 31 Accumulator N_2 Supply Isolation

Standard: Recognizes the possible need to vent the accumulator while filling to 24%. Restores 31 Accumulator to required Tech Spec Level & Pressure.

Comment: Procedure Step 4.3.2.11.

√8. Performance Step: WHEN accumulator filling is complete, THEN STOP SI pump and PLACE control switch in AUTO.

Standard: Secures 32 HHSIP. Returns control switch to AUTO.

Comment: Procedure Step 4.3.2.16.

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

Any 100% IC

31 Accumulator Level is low, out of spec.

Initial Conditions:

- The plant is at 100% power
- 31 SI Accumulator has a low level
- The Refueling Water Purification pump is NOT in service
- System Engineering has been informed that the accumulator is to be filled
- 32 SI Pump motor starting requirements are satisfied

Initiating Cue:

The CRS has directed you to fill 31 SI accumulator to 24% using 32 SI Pump in accordance with SOP-SI-001, step 4.3.2.

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 3 Task No: _____

Task Title:
Depressurize the RCS following a SGTR (using PORVs) IAW 3-E-3.

K/A Reference: 010000A4.03 Job Performance Measure No: Simulator 4

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- A Steam Generator Tube Rupture has occurred in 32 SG.
- Procedure 3-E-3; Steam Generator Tube Rupture is completed up to and including step 15.
- Steam Generator 32 is isolated and RCS cooldown is complete.

Required Materials: 3-E-3; Steam Generator Tube Rupture

General References: 3-E-3; Steam Generator Tube Rupture

Initiating Cue: You are directed to depressurize the RCS to minimize break flow and refill Pressurizer in accordance with 3-E-3. Steps 1 through 15 of 3-E-3 are completed.

Time Critical Task: No

Validation Time:

Task Standard: RCS depressurized in accordance with 3-E-3.

Performance Information

(Denote critical steps with a check mark √)

1. Performance Step: Check Ruptured SG(s) Pressure – Stable or Increasing.

Standard: Observes ruptured SG pressure stable.

Comment: Procedure Step 16.

2. Performance Step: Observes NOTE prior to step 17.

Standard: Reviews NOTE prior to step 17, uses peacekeeping.

Comment: Subcooling is increasing.

3. Performance Step: Check RCS Subcooling Based On Qualified Core Exit TCs – Greater than 60°F.

Standard: Checks QSPDS for subcooling > 60 degrees.

Comment: Procedure Step 17.

4. Performance Step: Observes NOTE prior to step 18.

Standard: Reviews NOTE prior to step 17, uses peacekeeping.

Comment: Understands NOTE.

Performance Information

(Denote critical steps with a check mark √)

√ **5. Performance Step:** DEPRESSURIZE RCS Using PRZR Spray to Minimize Break Flow and Refill PRZR:

a. CHECK normal PRZR spray AVAILABLE

b. INITIATE maximum PRZR spray

c. CHECK RCS pressure DECREASING

Standard: Verifies normal spray available (RCPs running). Attempts to open both spray valves using Master Controller and/or Individual Controllers. Both spray valves fail to open. Uses RNO and goes to step 20.

Comment: Procedure Step 18.

---

6. Performance Step: Observes CAUTION and NOTE prior to step 20.

Standard: Reviews NOTE prior to step 20, uses peacekeeping.

Comment: Understands CAUTION and NOTE.

√ **7. Performance Step:** DEPRESSURIZE RCS Using PRZR PORV to Minimize Break Flow and Refill PRZR:

a. CHECK PRZR PORVs – ANY AVAILABLE

b. OPEN one PRZR PORV

c. CHECK RCS pressure DECREASING

Standard: Determines both block valves are open and both PORVs have power. Opens one PORV, verifies RCS pressure is decreasing.

Comment: Procedure Step 20. Should review termination criteria prior to initiating the depressurization with the open PORV. Pressure will drop rapidly; PZR Level will rise rapidly as well.

Performance Information

(Denote critical steps with a check mark √)

√**8. Performance Step:** DETERMINE If RCS Depressurization Using PRZR PORV Should Be Terminated:

a. CHECK ANY of the following conditions satisfied:

- BOTH of the following:
  1. RCS pressure – LESS THAN RUPTURED SG(s) PRESSURE
  2. PRZR level – GREATER THAN 14% (32%)

  OR
- PRZR level – GREATER THAN 73% (58%)

  OR
- RCS subcooling based on qualified core exit TCs – LESS THAN 40°F

b. CLOSE PRZR PORV

Standard: Verifies one of the three criteria is met and depressurization should be stopped. Closes open PORV.

Comment: Procedure Step 21. Should review termination criteria prior to initiating the depressurization with the open PORV. Pressure will drop rapidly; PZR Level will rise rapidly as well.

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

Reset Simulator to any 100% Power IC
Insert the following malfunctions:

SWI-AIR002A OFF (turns 1228 green lamp off)
SWI-AIR002B ON (turns 1228 red lamp on)
SWI-AIR002C OFF (keeps valve 1228 closed)
MAL-SGN005B 15 (initiates a tube rupture on 32 SG at ~ 325 gpm)

Perform the following to setup the JPM:

- Insert a SGTR in 32 SG MAL-SGN005B (~ 325 gpm)
- Initiate a Rx Trip and Safety Injection
- Perform the actions in E-0 and RO-1 and transition to E-3
- Perform steps 1-15 in E-3 and freeze the simulator

Initial Conditions:

- A Steam Generator Tube Rupture has occurred in 32 SG.
- Procedure 3-E-3; Steam Generator Tube Rupture is completed up to and including step 15.
- Steam Generator 32 is isolated and RCS cooldown is complete.

Initiating Cue:

You are directed to depressurize the RCS to minimize break flow and refill Pressurizer in accordance with 3-E-3. Steps 1 through 15 of 3-E-3 are completed.

Facility: Indian Point 3 Task No: _____

Task Title:
RHR Pump Trip while on shutdown cooling IAW 3-AOP-RHR-1

K/A Reference: 005000A2.03
RO – 2.9 SRO – 3.1

Job Performance Measure No: Simulator 5

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- MODE 5
- RCS Temperature is 180°F
- PRZR Level is 22% (Bubble still exits, RCS still pressurized)
- 31 RHR Pump in service for shutdown cooling

Required Materials: 3-POP-4.1; Operation at Cold Shutdown
3-AOP-RHR-1; Loss of RHR

General References: 3-POP-4.1; Operation at Cold Shutdown
3-AOP-RHR-1; Loss of RHR

Initiating Cue: Maintain Stable MODE 5 conditions with 31 RHR Pump in service for shutdown cooling.

Time Critical Task: No.

Validation Time:

Task Standard: Restore shutdown cooling by starting 32 RHR Pump IAW 3-AOP-RHR-1.

Performance Information

(Denote critical steps with a check mark √)

1. Performance Step: Operator recognizes the loss of 31 RHR Pump. Acknowledges Panel SHF – Electrical Annunciator Alarm; "480 V SWGR MOTOR TRIP (COMMON)".

Standard: Acknowledges Annunciator Alarm, recognizes that 31 RHR Pump has tripped.

Comment: Operator is monitoring MODE 5 shutdown cooling, should recognize the loss of 31 RHR Pump and enter 3-AOP-RHR-1. The operator may refer to the Annunciator Response Procedure (ARP) first. If a field operator is dispatched to the breaker, cue that the pump motor has tripped on overcurrent.

CUE: 31 RHR Pump Motor breaker has tripped on motor overcurrent. (Local breaker flags if NPO dispatched)

2. Performance Step: Operator recommends entry or enters 3-AOP-RHR-1 to respond to the loss of shutdown cooling.

Standard: Operator enters 3-AOP-RHR-1; Loss of RHR.

Comment: Cue student to enter procedure, if they recommend the SRO enter the procedure.

CUE: Cue student to enter 3-AOP-RHR-1 if recommended.

√ **3. Performance Step:** Is RCS temperature < 200°F?

Standard: Operator answers yes and continues to step 4.2 of procedure. Operator recognizes that RHR is out of service, utilizes core exit thermocouples to verify temperature < 200 degrees or RCS Wide Range Temperature < 200 degrees.

Comment: Procedure Step 4.1. RCS Wide Range Temperature indication may be utilized as well.

Performance Information

(Denote critical steps with a check mark √)

4. Performance Step: Is vacuum fill in progress?

Standard: Operator answers no and proceeds to step 4.4.

Comment: Procedure Step 4.2. RCS is still pressurized.

5. Performance Step: Is the RCS solid?

Standard: Operator answers no and proceeds to step 4.6.

Comment: Procedure Step 4.4.

6. Performance Step: Sound containment evacuation alarm.

Standard: Operator sounds the containment evacuation alarm.

Comment: Procedure Step 4.6.

7. Performance Step: Is RCS at reduced inventory (< 67"-6")?

Standard: Operator answers no and proceeds to step 4.15.

Comment: Procedure Step 4.7.

8. Performance Step: Has containment closure been established?

Standard: Operator answers no and ensures that the RNO task is initiated. "INITIATE containment closure to be achieved within 4 hours OR time to boil, whichever is shorter.

Comment: Procedure Step 4.15. Cue the operator that the Field Supervisor has initiated containment closure. Time to boil determination is not being tested.

CUE: Field Supervisor has initiated containment closure.

Performance Information

(Denote critical steps with a check mark √)

9. Performance Step: Have either of the following valves inadvertently closed?
   - AC-MOV-730
   - AC-MOV-731

Standard: Operator answers no and proceeds to step 4.19.

Comment: Procedure Step 4.16.

√**10. Performance Step:** Is an RHR pump running?

Standard: Operator answers no and performs steps in the RNO. Operator closes RHR heat exchanger flow control valve (SI-HCV-638/640). Operator determines that the pump was not stopped due to cavitation, but recognizes that 32 RHR Pump is available and proceeds to step 4.25.

Comment: Procedure Step 4.19 and associated RNO. Step 2 of the RNO is a two part; "IF RHR pump was stopped due to cavitation **OR** any RHR pump is available, **THEN GO TO** Step 4.25." Operator does not want to go to step 4.37 if a RHR pump is available (32).

11. Performance Step: Is RCS level > 62'-6"?

Standard: Operator answers yes and continues to step 4.26.

Comment: Procedure Step 4.25.

12. Performance Step: Dispatch an operator to monitor RHR pump restart for abnormal indications.

Standard: Operator dispatches an operator to 32 RHR Pump.

Comment: Procedure Step 4.26. Cue that operator is standing by for pump start.

CUE: Operator is standing by for pump start.

13. Performance Step: GO TO Step 4.31

Standard: Operator proceeds to step 4.31.

Comment: Procedure Step 4.27.

√**14. Performance Step:** Start an available RHR pump.

Standard: Operator starts 32 RHR while monitoring indications such as pump amps, recirc flow, etc.

Comment: Procedure Step 4.31.

CUE: Local operator reports no abnormal indications, pump running satisfactorily.

√ **15. Performance Step:** Slowly open <u>any</u> of the following to establish flow at ≥ 1170 gpm:

- SI-HCV-638
- SI-HCV-640

Standard: Operator establishes ≥ 1170 gpm flow for shutdown cooling.

Comment: Procedure Step 4.32.

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

- MODE 5
- RCS Temperature is 180°F
- PRZR Level is 22% (Bubble still exits, RCS still pressurized)
- 31 RHR Pump in service for shutdown cooling

- 31 RHR Pump trips on motor overcurrent.

Initial Conditions:

- MODE 5
- RCS Temperature is 180°F
- PRZR Level is 22% (Bubble still exits, RCS still pressurized)
- 31 RHR Pump in service for shutdown cooling

Initiating Cue:

Maintain Stable MODE 5 conditions with 31 RHR Pump in service for shutdown cooling.

Facility: Indian Point 3 Task No: _____

Task Title: Swap Essential Service Water Pumps (Check Valve on O/S pump not seated)

K/A Reference: 076000A2.02 RO – 2.7 SRO – 3.1 Job Performance Measure No: Simulator 6

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- MODE 1, 100% Power
- Service Water Pump Mode Selector Switch selected to 1-2-3.

Required Materials: 3-SOP-RW-005; Service Water System Operation
3-ARP-012; Panel SJF – Cooling Water and Air
3-AOP-SW-1; Service Water Malfunction

General References: 3-SOP-RW-005; Service Water System Operation
3-ARP-012; Panel SJF – Cooling Water and Air
3-AOP-SW-1; Service Water Malfunction

Initiating Cue: You have been directed to swap essential service water pumps IAW 3-SOP-RW-005; Service Water System Operation. System Engineering requests that 33 Service Water Pump be removed from service.

Time Critical Task: No

Validation Time:

Task Standard: Swap essential service water pumps IAW 3-SOP-AOP-SW-1, step 4.1.8.

Performance Information

(Denote critical steps with a check mark √)

1. Performance Step: REVIEW Unit Log to ensure motor starting requirements of 3-SOP-EL-004a; Electric Motor Operation, will be met.

Standard: Operator requests to review Unit Log.

Cue: Motor starting requirements of 3-SOP-EL-004A have been met.

Comment: Procedure Step 4.1.8.1. Cue operator that motor starting requirements have been met. Cold start criteria. Cue operator if needed that NPO in field has verified pump ready to start.

CUE: NPO in field has verified pump is ready to start.

√2. Performance Step: START desired SWP.

Standard: Operator starts desired SWP, observing and monitoring pump, motor, and system parameters.

Comment: Procedure Step 4.1.8.2. Operator should observe normal pump parameters including observing an increase in associated SW header pressure. Cue operator if needed that NPO in field has verified pump ready to start and has verified proper operation following start.

CUE: NPO in field has verified pump is operating properly.

3. Performance Step: WHEN pressure increase is noted on affected header, THEN SECURE desired SWP. (33 SWP per system engineering)

Standard: Operator secures 33 SWP monitoring service water header pressure.

Comment: Procedure Step 4.1.8.3.

Performance Information

(Denote critical steps with a check mark √)

√**4. Performance Step:** VERIFY affected header pressure stabilizes between 60 and 97.5 psig. Acknowledge Panel SJF Annunciator Alarm for low service water header pressure; "SERVICE WTR. HDR. (31,32,33) HIGH LOW PRESS", review and take appropriate actions IAW the Alarm Response Procedure (ARP).

IF low pressure condition exists, THEN:

- START 1 additional pump, as necessary.
- INVESTIGATE cause of alarm.

IF necessary, THEN GO TO 3-AOP-SW-1; Service Water Malfunction.

Standard: Operator acknowledges low header pressure condition, recognizes that it is not a normal response and refers to the ARP. Operator may go directly to the AOP. Operator also recognizes entry condition for AOP-SW-1. They may request NPO in field to investigate. If they have an NPO investigate in field, then cue that it appears that 33 SWP shaft is rotating backwards. Operator should start 1 additional pump, as necessary.

Comment: Procedure Step 4.1.8.4 and ARP step 3.2. (Pressure should stabilize below 60 psig, but above 50 psig)

CUE: (If NPO asked to investigate) It appears that 33 SWP shaft is rotating backwards.

---

5. Performance Step: Is essential header affected?

Standard: Operator enters 3-AOP-SW-1; Service Water Malfunction. Operator answers yes and proceeds to next step.

Comment: Procedure Step 4.1 of 3-AOP-SW-1.

---

6. Performance Step: Are Backup SW Pumps available?

Standard: Operator answers yes and proceeds to next step.

Comment: Procedure Step 4.2.

Performance Information

(Denote critical steps with a check mark √)

7. Performance Step: Start Backup SW Pumps as necessary to maintain 75 to 110 psig.

Standard: Operator starts Backup SW Pump if necessary.

Comment: Procedure Step 4.3. Operator should not need to start a backup pump, but may start one. They will start one if they failed to start a normal essential pump per the ARP.

8. Performance Step: **IAAT** SW Header pressure can **NOT** be maintained > 50 PSIG, **THEN PERFORM** one of the following based on system's ability to provide cooling:
   - Trip the reactor and **INITIATE** E-0.
   - **INITIATE** plant shutdown to MODE 3 ...

Standard: Operator recognizes that IAAT statement does not apply as header pressure is greater than 50 psig. Operator proceeds to next step.

Comment: Procedure Step 4.4.

9. Performance Step: **IAAT** a loss of all normal SW Pumps has occurred, **THEN GO TO** Step 4.50.

Standard: Operator recognizes that IAAT statement does not apply. Operator proceeds to next step.

Comment: Procedure Step 4.5.

10. Performance Step: **INITIATE** determination of affected header from pressure Indications and individual component temperatures.

Standard: Operator determines that the essential service water header is the only header affected.

Comment: Procedure Step 4.6.

Performance Information

(Denote critical steps with a check mark √)

11. Performance Step:	Dispatch operators as necessary to perform the following: • Determine cause of low pressure: o System leakage o SW pump discharge check **NOT** seated o SW TCV failed open o Strainer ΔP
CUE: (If NPO asked to investigate) It appears that 33 SWP shaft is rotating backwards.	
Standard:	Operator requests NPO in field to investigate. From field report, operator recognizes that the SW pump discharge check is NOT seated.
Comment:	Procedure Step 4.7. Cue as necessary to describe discharge check valve not seated.
√ 12. Performance Step:	**IAAT** A SW Pump discharge check valve is determined to be leaking back, **THEN** notify operator to close Associated SW pump outlet stop.
Standard:	Operator recognizes that the SW pump discharge check is NOT seated. Operator notifies field NPO to close associated SW pump outlet stop.
Comment:	Procedure Step 4.8. Have the simulator booth operator close the associated SW pump outlet stop.

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

Any 100% IC
Service Water Pump Mode Selector Switch selected to 1-2-3.
33 Service Water Pump I/S.

Discharge check valve failed such that pressure drops to less than 60 psig, but greater than 50 psig. (Ensure pressure does not drop below trip setpoint.)

Initial Conditions:

- MODE 1, 100% Power
- Service Water Pump Mode Selector Switch selected to 1-2-3.

Initiating Cue:

You have been directed to swap essential service water pumps IAW 3-SOP-RW-005; Service Water System Operation. System Engineering requests that 33 Service Water Pump be removed from service.

Facility: Indian Point 3 Task No: _____

Task Title:
Verify Containment Spray Operation IAW E-0, step 9.

K/A Reference: 026000A2.03
RO – 4.1 SRO – 4.4

Job Performance Measure No: Simulator 7

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- LOCA or Large Steam Break in Containment
- 3-E-0; Reactor Trip or Safety Injection completed through step 8.

Required Materials: 3-E-0; Reactor Trip or Safety Injection

General References: 3-E-0; Reactor Trip or Safety Injection

Initiating Cue: A LOCA or Large Steam Break in Containment is in progress, 3-E-0; Reactor Trip or Safety Injection has been completed through step 8. You have been directed to continue implementation of 3-E-0.

Time Critical Task: No

Validation Time:

Task Standard: Manually initiate Containment Spray and Phase B Isolation.

Performance Information

(Denote critical steps with a check mark √)

1. Performance Step: CHECK containment pressure – HAS REMAINED LESS THAN 22 PSIG

Standard: Operator observes than containment pressure is greater than 22 psig and proceeds to the RNO.

Comment: Procedure Step 9.a. NOTE: Containment Spray and Phase B Isolation has not initiated and will not manually initiate via the red pushbuttons on CR panel SBF-1.

2. Performance Step: ENSURE containment spray has initiated.

Standard: Operator recognizes that containment spray has not initiated although required.

Comment: Procedure Step 9, RNO step a.1).

√ **3. Performance Step:** IF containment spray has NOT initiated, THEN manually INITIATE.

Standard: Operator recognizes that spray has not initiated and attempts to manually initiate containment spray by simultaneously depressing both red pushbuttons on CR panel SBF-1.

Comment: Procedure Step 9, RNO step a.2).

√**4. Performance Step:** IF containment spray cannot be initiated manually, THEN manually START pumps and ALIGN valves.

Standard: Operator recognizes that simultaneously depressing both red pushbuttons on CR panel SBF-1 did not work. Operator then manually starts containment spray pumps and aligns appropriate valves to initiate spray flow.

Comment: Procedure Step 9, RNO step a.3).

Performance Information

(Denote critical steps with a check mark √)

5. Performance Step: Verify containment isolation phase B valves are closed.

Standard: Operator recognizes that containment phase B valves are not closed.

Comment: Procedure Step 9, RNO step a.4).

√ **6. Performance Step:** IF containment isolation phase B valves are NOT closed, THEN manually CLOSE valves.

Standard: Operator recognizes that all containment phase B valves are not closed and manually initiates closure from the control room. Operator verifies all containment phase B valves are closed.

Comment: Procedure Step 9, RNO step a.5). All valves will close from the control room.

√ **7. Performance Step:** STOP all RCPs.

Standard: Operator stops all RCPs.

Comment: Procedure Step 9, RNO step a.6).

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

LOCA or Large Steam Break in containment.
Containment Pressure > 22 psig.
Containment Spray and Phase B does not actuate automatically.
Containment Spray and Phase B red pushbuttons do not work.

Initial Conditions:

- LOCA or Large Steam Break in Containment
- 3-E-0; Reactor Trip or Safety Injection completed through step 8.

Initiating Cue:

A LOCA or Large Steam Break in Containment is in progress, 3-E-0; Reactor Trip or Safety Injection has been completed through step 8. You have been directed to continue implementation of 3-E-0.

Facility: Indian Point Task No: _____

Task Title:
Pressurizer Pressure Channel fails low, trip bistables.

K/A Reference: 012000A4.04
RO – 3.3 SRO – 3.3

Job Performance Measure No: Simulator 8

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- 100% Power.
- PZRZ Pressure Channel Defeat Switch is in the "Defeat III and IV" switch position.

Required Materials: 3-ARP-003; Panel SAF Annunciator Alarm Response
3-AOP-INST-1; Instrument/Controller Failures

General References: 3-ARP-003; Panel SAF Annunciator Alarm Response
3-AOP-INST-1; Instrument/Controller Failures

Initiating Cue: You are the ATC. Respond to changing plant conditions or events.

Time Critical Task: No

Validation Time:

Task Standard: Respond to Alarm Channel PT-456 failing low. Respond to alarms and remove the channel from service IAW 3-INST-1; Instrument/Controller Failures. Trip appropriate bistables.

Performance Information

(Denote critical steps with a check mark √)

1. Performance Step: Respond to the following two Panel SAF – Reactor Coolant System alarms using the appropriate alarm response procedure(s):
   - "PRESSURIZER LOW PRESS"
   - "PRESSURIZER LOW PRESS (SI) CHANNEL TRIP"

Standard: Operator acknowledges the annunciators on Panel SAF and enters either or both ARP(s).

Comment: Annunciator Alarm Response expectations. Student may recognize the failed alarm channel, recognize plant is stable, and then enter 3-AOP-INST-1; Instrument/Controller Failures directly.

2. Performance Step: VERIFY alarm by observing PRZR pressure to determine if a channel or controller has failed.

Standard: Operator observes that Pressurizer Pressure Channel II (PT-456) has failed low. Operator recognizes that this was the alarm channel and observes that pressurizer pressure is stable and remains on program.

Comment: Procedure Step 3.1 (ARP).

3. Performance Step: IF channel or controller failure has occurred, THEN GO TO 3-AOP-INST-1, Instrument/Controller Failures.

Standard: Operator recognizes that a channel failure low has occurred on Pressurizer Pressure Channel II (PT-456). Operator enters 3-AOP-INST-1, Instrument/Controller Failures.

Comment: Procedure Step 3.2 (ARP).

Performance Information

(Denote critical steps with a check mark √)

4. Performance Step: Take manual actions as necessary to control parameters and stabilize the plant.

Standard: Operator recognizes that this was the alarm channel and observes that pressurizer pressure is stable and remains on program. No manual control actions required.

Comment: Procedure Step 3.1 (AOP).

5. Performance Step: Has an instrument failure occurred?

Standard: Operator answers yes and proceeds to the next step. Operator recognizes that a channel failure low has occurred on Pressurizer Pressure Channel II (PT-456).

Comment: Procedure Step 4.1 (AOP).

6. Performance Step: **GO TO** the applicable step for the indicated failure.

Standard: Operator recognizes a PRZR Pressure channel failure and proceeds to step 4.83.

Comment: Procedure Step 4.2 (AOP).

7. Performance Step: Is PRZR pressure being controlled in auto?

Standard: Operator answers yes and proceeds to the next step.

Comment: Procedure Step 4.83 (AOP).

8. Performance Step: Has PI-457 failed high?

Standard: Operator answers no and proceeds to step 4.87.

Comment: Procedure Step 4.84 (AOP).

9. Performance Step: Has PI-474 failed high?

Standard: Operator answers no and proceeds to step 4.89.

Comment: Procedure Step 4.87 (AOP).

Performance Information

(Denote critical steps with a check mark √)

√**10. Performance Step:** **PERFORM** the following for affected instrument using Attachment 5 (Defeating Failed PRZR Pressure Channels)

- Place P/455A PRESS DEFEAT (Rack B-6) in position specified in Table 1 (Black Key).
- Place ΔT DEFEAT (Rack B-8) in position specified in Table 2 (Black Key).

Standard: Operator places P/455A PRESS DEFEAT (Rack B-6) in the "DFT CH II III" position.

Operator places 3T/411A ΔT Defeat Switch (Rack B-8) in the "DFT CH II" position.

Comment: Procedure Step 4.89 (AOP).

---

11. Performance Step: Is PRZR pressure recorder transfer switch selected to non-affected channel?

Standard: Operator answers yes and proceeds to next step.

Comment: Procedure Step 4.90 (AOP).

---

12. Performance Step: Return PRZR heater and spray controls to auto as desired.

Standard: Operator maintains controls in Auto.

Comment: Procedure Step 4.91 (AOP).

---

13. Performance Step: Refer to Technical Specifications.

Standard: Operator starts to review Technical Specifications per step 4.92.

CUE: **STA and the CRS have completed reviewing the Technical Specification actions, step 4.92 may be signed off.**

Comment: Procedure Step 4.92 (AOP). Cue operator that step 4.92 is complete.

√**14. Performance Step:** Are <u>all</u> redundant bistable status lights for failed instrument listed in Attachment 6 (PRZR Pressure Tables) Table 1 (Page 127) extinguished?

Standard: Operator verifies all redundant bistable status lights are extinguished.

Comment: Procedure Step 4.93 (AOP). Operator overtly points to the extinguished lights. If they don't overtly point, ask them to.

√ **15. Performance Step:** Trip bistables for failed instrument listed in Attachment 6 (PRZR Pressure Tables) Table 2 (Page 131).

Standard: Operator trips all required bistables per Attachment 6, Table 2 for PI-456.

Comment: Procedure Step 4.94 (AOP).

√ **16. Performance Step:** Are <u>all</u> bistable status lights for failed instrument listed in Attachment 6 (PRZR Pressure Tables) Table 3 (Page 133) illuminated?

Standard: Operator verifies all bistable status lights are illuminated per Attachment 6, Table 3 for PI-456.

Comment: Procedure Step 4.95 (AOP). Operator overtly points to the illuminated lights. If they don't overtly point, ask them to.

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

Any 100% IC
PZRZ Pressure Channel Defeat Switch is in the "Defeat III and IV" switch position.
Fail Pressurizer Pressure Channel II (selected for alarm) – PT-456 low.

Initial Conditions:

- 100% Power.
- PZRZ Pressure Channel Defeat Switch is in the "Defeat III and IV" switch position.

Initiating Cue:

You are the ATC. Respond to changing plant conditions or events.

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 3 Task No: _____

Task Title: Locally Start and Synchronize for Parallel Operation #31 EDG

K/A Reference: 064000A2.03 RO – 3.1 SRO – 3.1 Job Performance Measure No: In-Plant 1

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance X Actual Performance _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Unit is at 100% Power
- No equipment is out of service

Required Materials: 3-SOP-EL-001; Diesel Generator Operation

General References: 3-SOP-EL-001; Diesel Generator Operation

Initiating Cues:

1. The Shift Manager has directed you to manually start 31 EDG, synchronize for parallel operations to 2A Bus, and raise load to 500KW IAW 3-SOP-EL-001; Diesel Generator Operation.
2. All applicable precautions and limitations of 3-SOP-EL-001; Diesel Generator Operation have been reviewed, signed off and met.
3. The pre-start checklist has been completed for 31 EDG.
4. The procedure has been satisfactorily completed and signed off through step 4.1.9.

Time Critical Task: No

Validation Time:

Task Standard: 31 EDG started, paralleled with bus 2A and loaded to 500KW.

Performance Information

(Denote critical steps with a check mark √)

1. Performance Step: PLACE Lamp Test switch in ON and VERIFY alarm lights operational.

Standard: Place Lamp Test switch to ON and verify alarm lamps illuminated.

Comment: Procedure Step 4.1.10.

CUE: Test switch on, all lamps illuminated.

2. Performance Step: RETURN Lamp Test switch to OFF.

Standard: Place Lamp Test switch to OFF and verify alarm lamps extinguished.

Comment: Procedure Step 4.1.11.

CUE: Test switch OFF, all lamps extinguished.

√ **3. Performance Step:** VERIFY Lockout Relay switch is RESET.

Standard: The EDG 86 Lockout Relay turned to RESET.

Comment: Procedure Step 4.1.12.

CUE: 86 Relay RESET

4. Performance Step: VERIFY Voltage Regulator Unit-Parallel Switch is in UNIT.

Standard: Verify switch in UNIT

Comment: Procedure Step 4.1.13.

5. Performance Step: VERIFY Voltage Regulator Transfer Control switch is in AUTO.

Standard: Verify switch in AUTO

Comment: Procedure Step 4.1.14.

Performance Information

(Denote critical steps with a check mark √)

6. Performance Step: VERIFY Local Remote Switch is in LOCAL.

Standard: Verify switch in LOCAL

Comment: Procedure Step 4.1.15.

7. Performance Step: VERIFY the following relay flags on EDG cabinet are reset:

- Reverse Power Relay
- Overcurrent Phase 1, 2 & 3
- Under Over Voltage Relay

Standard: Verify all relay flags reset.

Comment: Procedure Step 4.1.16.

8. Performance Step: NOTIFY CCR that EDG will be started in manual.

Standard: Contact CR the EDG will be started.

Comment: Procedure Step 4.1.17.

CUE: Acknowledge as the CCR.

9. Performance Step: IF essential SW pressure is less than 75 psig, THEN START additional pumps, to return SW pressure to 75 psig or greater.

Standard: Verify SW Pressure > 75 psig.

Comment: Procedure Step 4.1.18.

CUE: Service Water Pressure is 80 psig.

Performance Information

(Denote critical steps with a check mark √)

√**10. Performance Step:** PLACE Engine Control switch in MAN.

Standard: Engine Control switch in MAN

Comment: Procedure Step 4.1.19.

CUE: Engine Control switch in MAN.

√ **11. Performance Step:** DEPRESS engine START pushbutton.

Standard: DEPRESS Engine Start pushbutton.

Comment: Procedure Step 4.1.20.

CUE: EDG started.

√**12. Performance Step:** WHEN engine speed stabilizes, THEN TEST the Generator frequency response using the Governor Raise Lower Switch as follows:

- RAISE frequency to 61 Hz.
- LOWER frequency to 59 Hz.
- ADJUST frequency to 60 Hz.

Standard: RAISE and LOWER frequency 1.0 Hz using Governor Switch. Return to 60 Hz.

Comment: Procedure Step 4.1.21.

CUE: Frequency increases and decreases 1.0 Hz. Frequency returns to 60 HZ.

Performance Information

(Denote critical steps with a check mark √)

√ **13. Performance Step:** TEST Generator Voltage response using the Automatic Voltage Control Rheostat as follows:

- RAISE voltage to 510 volts.
- LOWER voltage to 450 volts.
- RETURN voltage to 480 VAC.

Standard: RAISE and LOWER voltage using Auto Volt Control rheostat. Returns voltage to 480 volts using rheostat.

Comment: Procedure Step 4.2.22.

CUE: Voltage increases and decreases 30 volts. Voltage returns to 480 volts.

14. Performance Step: VERIFY the following Diesel Engine Gage Panel indications:

- Crankcase Exhauster ON light ILLUMINATED.
- Lube Oil Pressure is between 68 and 85 psig
- Fuel Oil Pressure is between 30 and 45 psig (may be as high as 50 psig with EDG unloaded)
- Jacket Water Pressure is between 30 and 35 psig
- Air Manifold Pressure is between 0 and 2 psig (no load)

Standard: Observe the above conditions.

Comment: Procedure Step 4.1.23.

CUE:

- **Crankcase exhauster ON**
- **Lube oil pressure is 73 psig**
- **Fuel oil pressure is 37 psig**
- **Jacket water pressure is 32 psig**
- **Air manifold pressure is 0 psig**

Performance Information

(Denote critical steps with a check mark √)

15. Performance Step: VERIFY Diesel Gen. Vent Hood Blower starter indicating light is ON.

Standard: Verifies Hood Blower starter indicating light is energized.

Comment: Procedure Step 4.1.24.

CUE: Light is illuminated.

16. Performance Step: VERIFY SERV WTR COOLING LOW FLOW alarm is clear.

Standard: Verifies alarm not illuminated.

Comment: Procedure Step 4.1.25.

CUE: Alarm not illuminated.

17. Performance Step: RECORD at least one set of running EDG Readings on applicable EDG Data Table.

Standard: Student starts to take readings using Attachment 1, 31 EDG DATA TABLE.

Comment: Procedure Step 4.1.26. Cue operator that readings are complete.

CUE: Attachment 1, 31 EDG DATA TABLE is complete. All readings are SAT.

18. Performance Step: IF the Diesel is being run for maintenance AND a shutdown is desired, THEN GO TO Step **Error! Reference source not found.**.

Standard: Operator recognizes that the step is N/A based on initiating cue and proceeds to section 4.2 of the procedure.

Comment: Procedure Step 4.1.27.

Performance Information

(Denote critical steps with a check mark √)

19. Performance Step: NOTIFY CCR that EDG is ready to be synchronized to 480V bus.

Standard: Operator informs CCR that 31 EDG is to be synchronized to 2A bus.

Comment: Procedure Step 4.2.1.

CUE: **CCR acknowledges that EDG is ready to be synchronized to 2A bus and directs you to continue synchronization and loading of 31 EDG.**

√ **20. Performance Step:** PLACE Voltage Regulator Unit-Parallel switch in PARALLEL.

Standard: Operator simulates placing Unit-Parallel switch in the parallel position.

Comment: Procedure Step 4.2.2.

CUE: Unit-Parallel switch indicates parallel.

√ **21. Performance Step:** PLACE applicable Synchroscope switch in ON.

Standard: Operator locates the synchronscope key and simulates turning the correct synchronoscope switch to the on position.

Comment: Procedure Step 4.2.3.

CUE: Synchroscope switch indicates on.

√ **22. Performance Step:** ADJUST EDG Voltage to match Incoming (EDG) and Running (Bus) AC Volts using the Automatic Voltage Control Rheostat.

Standard: Operator simulates adjusting automatic voltage control rheostat to match EDG voltage to bus voltage.

Comment: Procedure Step 4.2.4.

CUE: EDG and Bus voltage both read 490V.

Performance Information

(Denote critical steps with a check mark √)

√ **23. Performance Step:** ADJUST EDG speed, using the Governor RAISE LOWER switch, to rotate Synchroscope slowly in fast direction.

Standard: Operator simulates adjusting governor so synchroscope rotates slowly in the fast direction.

Comment: Procedure Step 4.2.5.

CUE: Synchroscope is rotating slowly in the fast direction.

√ **24. Performance Step:** WHEN Synchroscope is rotating slowly in fast direction AND indicates approximately 2 minutes before 12 o'clock, THEN CLOSE running EDG output breaker:

Standard: Operator simulates closing the EDG output BKR when the synchroscope indicates two minutes before the 12 o'clock position.

Comment: Procedure Step 4.2.6.

CUE: EDG output BKR indicates closed; Red BKR position light illuminates, green light extinguishes; synchroscope is stationary in the 12 o'clock position.

√ **25. Performance Step:** RAISE load to 50 to 100 KW using Governor Switch.

Standard: Operator simulates increasing load to 50 to 100 KW using the governor switch.

Comment: Procedure Step 4.2.7.

CUE: Load indicates 90 KW.

---

26. Performance Step: PLACE Synchroscope switch in OFF.

Standard: Operator simulates turning synchroscope switch off.

Comment: Procedure Step 4.2.8.

CUE: Synchroscope control switch indicates off.

Performance Information

(Denote critical steps with a check mark √)

√ **27. Performance Step:** Concurrently PERFORM the following:

- RAISE load using Governor Switch until required load is obtained.
- ADJUST Automatic Voltage Control rheostat to achieve and maintain 350 – 400 lagging KVARS.

Standard: Operator simulates adjusting load with the governor switch and VARS using the voltage control rheostat.

Comment: Procedure Step 4.2.9.

CUE: EDG load indicates 500 KW and VAR meter indicates 400 lagging KVARS.

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

N/A, In-Plant JPM

Initial Conditions:

- Unit is at 100% Power
- No equipment is out of service

Initiating Cue:

1. The Shift Manager has directed you to manually start 31 EDG, synchronize for parallel operations to 2A Bus, and raise load to 500KW IAW 3-SOP-EL-001; Diesel Generator Operation.
2. All applicable precautions and limitations of 3-SOP-EL-001; Diesel Generator Operation have been reviewed, signed off and met.
3. The pre-start checklist has been completed for 31 EDG.
4. The procedure has been satisfactorily completed and signed off through step 4.1.9.

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 3 Task No: _____

Task Title: Perform a Radioactive Liquid Release IAW 3-SOP-WDS-014

K/A Reference: 2.3.11 RO – 3.8 SRO – 4.3 Job Performance Measure No: In-Plant 2

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance X Actual Performance _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- 31 Monitor Tank has been on recirculation IAW 3-SOP-WDS-006; Monitor Tank Operations and has been appropriately sampled by Chemistry.
- The Most Restrictive Discharge Rate has been determined to be 1980 gpm.
- R-18 is operable and has been source checked satisfactorily.
- The CRS has reviewed the release alignment and release calculations for completeness and signed the release permit authorizing release.
- The Liquid Waste Releases procedure; 3-SOP-WDS-014, has been completed and signed off through step 4.1.14.

Required Materials: 3-SOP-WDS-014; Liquid Waste Releases

General References: 3-SOP-WDS-014; Liquid Waste Releases

Initiating Cue: Perform a release of the 31 Waste Monitor Tank IAW 3-SOP-WDS-014, Section 4.1.

Time Critical Task: No.

Validation Time:

Task Standard: Perform a release of the 31 Waste Monitor Tank IAW 3-SOP-WDS-014 and respond to all indications.

Performance Information

(Denote critical steps with a check mark √)

---

1. Performance Step: PLACE RCV-018 permissive to UNBLOCK.

Standard: Operator requests CCR to place RCV-018 permissive in UNBLOCK position.

Comment: Procedure Step 4.1.15.

CUE: RCV-018 permissive in UNBLOCK.

---

2. Performance Step: OPEN WD-RCV-018, Waste Condensate Discharge to River and PLACE in AUTO.

Standard: Operator requests CCR to OPEN WD-RCV-018 and place in AUTO.

Comment: Procedure Step 4.1.16.

Cue: WD-RCV-018 is OPEN.

---

3. Performance Step: Operator reviews NOTE and CAUTION prior to step 4.1.17.

Standard: Operator reviews and uses placekeeping.

Comment: NOTE and CAUTION prior to step 4.1.17.

√**4. Performance Step:** UNLOCK and THROTTLE OPEN WD-1785, Liquid Waste Discharge To River Isolation as necessary to maintain discharge flow rate to less than or equal to the Most Restrictive Discharge Rate from permit (**D**) as indicated on FT-1064, Release Line Flow Transmitter.

Standard: Operator locates the valve and throttles open. Operator recognizes that per the NOTE and CAUTION, the valve could be completely opened and still not exceed the 120 gpm maximum flow rate.

Comment: Procedure Step 4.1.17. Cue operator flow rate on FT-1064.

CUE: After operator simulates opening WD-1785 and after they view and overtly point to FT-1064, then tell them they read approximately 60 gpm. (60 x 1.5 = 90 < 120 gpm)

Performance Information

(Denote critical steps with a check mark √)

5. Performance Step: THROTTLE as necessary the applicable monitor tank pump discharge to obtain flow on FI-1064 less than or equal to Most Restrictive Discharge Rate from permit (**D**).

- CH-1242A; 31 Monitor Tank Pump Discharge Isolation
- CH-1242B; 32 Monitor Tank Pump Discharge Isolation

Standard: Operator recognizes that an appropriate flow rate has been achieved and that throttling the applicable monitor tank pump discharge valve (CH-1242A) is not necessary.

Comment: Procedure Step 4.1.18. If necessary cue operator that CH-1242A is appropriately throttled, FT-1064 still reads 60 gpm.

CUE: CH-1242A is appropriately throttled, FT-1064 still reads 60 gpm.

6. Performance Step: DETERMINE time required to release previously determined volume.

Standard: Operator calculates an approximate time required to release. Determines based on approximately 85% of tank volume at a release rate of 90 gpm.

Comment: Procedure Step 4.1.19.

7. Performance Step: VERIFY FT-1064 is operable by ensuring a non-zero value is displayed on digital waste release flow meter (55' PAB).

- CIRCLE Yes or No for "Discharge flow meter operable" on permit.

CUE: Report that FT-1064 is now reading zero (0). Appears failed.

Standard: Operator recognizes that the FT-1064 is not reading properly, could be inoperable or could be a lineup issue. The operator circles No for "Discharge flow meter operable" on permit.

Comment: Procedure Step 4.1.20. Ensure operator acknowledges (3-way communication) that the FT-1064 now reads zero (0).

Performance Information

(Denote critical steps with a check mark √)

8. Performance Step:	IF FT-1064 is inoperable or indicates 0 AND tank level is decreasing, THEN ESTIMATE discharge flow rate at about 1 hour into release by tank level change or pump performance curves and RECORD on permit.
CUE:	**FT-1064 is reading zero (0) and the 31 Monitor Tank Level is NOT decreasing. Level is staying the same.**
Standard:	Operator acknowledges that FT-1064 is reading zero (0) and that 31 Monitor Tank Level is NOT decreasing.
Comment:	Procedure Step 4.1.20.1. Again ensure 3-way communication is completed regarding the cue.
√ 9. Performance Step:	IF FT-1064 is inoperable or indicates 0 AND tank level is NOT decreasing, THEN TERMINATE release and investigate.
Standard:	Operator recognizes that the release needs to be terminated and terminates the release. He may call the control room (CCR) directly to close the WD-RCV-018. He may implement Attachment 10; Monitor Tank Release Termination Alignment.
Comment:	Procedure Step 4.1.20.2. Terminate this JPM when he has terminated the release per above standard. He may also locally terminate the release by closing the WD-1785.

CUE: WD-RCV-018 is closed. Release is terminated, this JPM is now complete.

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

N/A
In-Plant JPM

NOTE: Check on normal values on release permit. Used numbers from Attachment 2; "Example of Monitor Tank Release Permit." Also assumed that NOTE prior to step 4.1.17 meant that FT-1064 read 60 gpm which is actually 60 x 1.5 = 90 gpm, not 40 x 1.5 = 60 gpm?

Initial Conditions:

- 31 Monitor Tank has been on recirculation IAW 3-SOP-WDS-006; Monitor Tank Operations and has been appropriately sampled by Chemistry.
- The Most Restrictive Discharge Rate has been determined to be 1980 gpm.
- R-18 is operable and has been source checked satisfactorily.
- The CRS has reviewed the release alignment and release calculations for completeness and signed the release permit authorizing release.
- The Liquid Waste Releases procedure; 3-SOP-WDS-014, has been completed and signed off through step 4.1.14.

Initiating Cue:

Perform a release of the 31 Waste Monitor Tank IAW 3-SOP-WDS-014, Section 4.1.

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 3 Task No: _____

Task Title: Local Charging Pump Operation from RWST with CCW not available

K/A Reference: 008000A2.01 RO – 3.3 SRO – 3.6 Job Performance Measure No: In-Plant 3

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance X Actual Performance _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

Following an earthquake:

- The Reactor is Tripped and is being cooled by natural circulation.
- A number of CCR control functions have been lost including the ability to control charging from the control room.
- A loss of all Component Cooling Water has occurred.

Required Materials: 3-SOP-ESP-001; Local Equipment Operation and Contingency Actions

General References: 3-SOP-ESP-001; Local Equipment Operation and Contingency Actions

Initiating Cue: The CRS has directed you to start and establish local control of 31 Charging Pump with suction from the RWST and normal B/U City Water aligned for cooling to the charging pump IAW 3-SOP-ESP-001, Sections 4.10 and 4.11.

Time Critical Task: No

Validation Time:

Task Standard: Establish local control of 31 Charging Pump with City Water aligned for cooling.

Performance Information

(Denote critical steps with a check mark √)

√**1. Performance Step:** VERIFY suction supply is available from VCT or RWST

- VCT (LCV-112C OPEN)
- RWST (LCV-112B OR 288 OPEN)

Standard: Operator recognizes from initial cue that the CRS directed suction from the RWST. Operator verifies open or simulates opening LCV-112B or 288.

Comment: Procedure Step 4.10.1

CUE: **Neither LCV-112B or 288 is open. (Note: Once student describes how to open one of these valves, cue them it is now open.)**

---

2. Performance Step: VERIFY CCW is in service to support charging pump operation.

- IF CCW is NOT available, THEN ALIGN city water cooling per Section 4.11, Charging Pump Cooling Using City Water.

Standard: Operator recognizes from initial cue that CCW is not available and proceeds to Section 4.11.

Comment: Procedure Step 4.10.2. Remind operator about initial cue if necessary.

Performance Information

(Denote critical steps with a check mark √)

√ **3. Performance Step:** IF CCW can NOT be established, THEN PROVIDE Normal Backup City Water as follows:

- **CLOSE AC-756A, CC Supply Header to Charging Pumps Inlet Isolation.**
- **CLOSE AC-756B, CC Return Header from Charging Pumps Outlet Isolation.**
- **OPEN MW-26, City Water Emergency Cooling Supply to Charging Pumps Isolation.**
- **OPEN AC-701A, Emergency City Water Cooling Supply to Charging Pump Inlet Isolation.**
- **Verify flange next to AC-701B, Emergency City Water Cooling Return from Charging Pumps Outlet Drain, is REMOVED.**
- **OPEN AC-701B, Emergency City Water Cooling Return from Charging Pumps Outlet Drain.**

Standard: Operator locates and overtly describes (simulates) the positioning of the above valves. The operator then transitions back to step 4.10.2 to complete start and local control of 31 Charging Pump.

Comment: Procedure Step 4.11.1.

CUE: Following the student's overt valve operating description, tell them each valve is in the required / described position. Best to cue following each simulated manipulation.

√**4. Performance Step:** PLACE speed control of pump(s) to be run to MAN (Charging Pump Speed Control Station PL-6).

Standard: Operator locates and simulates places speed control station to MAN.

Comment: Procedure Step 4.10.3.

CUE: In Manual.

Performance Information

(Denote critical steps with a check mark √)

√ **5. Performance Step:** ADJUST speed controller to approximately 20% (Charging Pump Speed Control Station PL-6).

Standard: Operator locates and simulates adjusting speed controller to 20%.

Comment: Procedure Step 4.10.4.

CUE: Speed control knob set to 20%.

√ **6. Performance Step:** PLACE charging pump(s) emergency control switch to LOCAL (Charging, Letdown and 31 Pressurizer Heaters Local Control Panel on PL-2).

Standard: Operator locates and simulates placing control switch in LOCAL.

Comment: Procedure Step 4.10.5.

CUE: Control switch is in LOCAL.

√ **7. Performance Step:** START directed pump(s) via local START pushbutton (Charging, Letdown and 31 Pressurizer Heaters Local Control Panel on PL-2).

Standard: Operator locates and simulates starting 31 Charging Pump via local pushbutton.

Comment: Procedure Step 4.10.6.

CUE: 31 Charging Pump RUNNING.

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

N/A
In-Plant JPM

Initial Conditions:

Following an earthquake:

- The Reactor is Tripped and is being cooled by natural circulation.
- A number of CCR control functions have been lost including the ability to control charging from the control room.
- A loss of all Component Cooling Water has occurred.

Initiating Cue:

The CRS has directed you to start and establish local control of 31 Charging Pump with suction from the RWST and normal B/U City Water aligned for cooling to the charging pump IAW 3-SOP-ESP-001, Sections 4.10 and 4.11.

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 3 Task No: _____

Task Title: Electrical Verification – Offsite Power Sources Surveillance

K/A Reference: 1940002.1.18 RO – 3.6 Job Performance Measure No: RO Admin 1

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Unit is in MODE 1, 100% Power.
- 6.9 KV Gas Turbine Substation Bus is tagged for an emergent maintenance issue.
- 31 EDG is scheduled to be removed from service or scheduled preventative maintenance activities within the next 4 hours.

Required Materials: 3-PT-W019; Electrical Verification – Offsite Power Sources and DC Distribution

General References: 3-PT-W019; Electrical Verification – Offsite Power Sources and DC Distribution

Initiating Cue: The CRS has requested that you complete surveillance 3-PT-W019; Electrical Verification – Offsite Power Sources and AC Distribution. All procedure precautions, limitations, and prerequisites have been reviewed and signed off. Procedure sections 4.1 and 4.2 have also been completed, including verification that all offsite power feeders are available from the Consolidated Edison District Operator.

Time Critical Task: No

Validation Time:

Task Standard: Using indications in the simulator and scripted evaluator cues complete procedure sections 4.3 through section 7.0, step 7.1.1.

Performance Information

(Denote critical steps with a check mark √)

√**1. Performance Step:** VERIFY 138 K.V. MO. DISC. SW BKR. 5 is Closed (Panel SHF)

Standard: Student locates and verifies breaker is closed and initials step 4.3.1

Comment: Procedure step 4.3.1.

√**2. Performance Step:** VERIFY Station Auxiliary Transformer output voltage as indicated on 6900V Bus Voltmeter (Panel SHF) is between 7.0 and 7.25 kV.

Standard: Student locates and verifies voltage is between 7.0 and 7.25kV. Student initials step 4.3.2.

Comment: Procedure step 4.3.2.

√ **3. Performance Step:** VERIFY incoming voltage is indicated on Station Aux High Side Voltage (Panel SHF).

Standard: Student locates and verifies voltage. Student initials step 4.3.3.

Comment: Procedure step 4.3.3.

Performance Information

(Denote critical steps with a check mark √)

4. Performance Step: VERIFY the following with Unit 2 CCR:

- Breaker GT1 at 13.8 kV Gas Turbine Bus is closed.
- Breakers GT2 at 13.8 kV Gas Turbine Bus is closed.
- Unit 2 Appendix R Diesel Generator is NOT only source of power to 13.8KV Gas Turbine Bus

Standard: Student makes contact with Unit 2 CCR (simulates), records check marks and initials step 4.4.1.

CUE: Cue student that both breakers (GT1 and GT2) are closed and that Unit 2 Appendix R Diesel is NOT only source of power to 13.8KV Gas Turbine Bus.

Comment: Procedure step 4.4.1.

√ 5. Performance Step: VERIFY either GT-2F or GT-BT is Closed at Panel SHF and supplying Unit 3:

Standard: Student recognizes that both breakers are tagged and open. Student records the position of both as open.

Comment: Procedure step 4.4.2.

---

6. Performance Step: VERIFY APP R DG is NOT only source of power to 6.9 kV Gas Turbine Substation Bus.

Standard: Student verifies that the APP R DG is NOT only source of power based on cue if necessary. Student initials step 4.4.3.

CUE: Cue student that the APP R DG is NOT only source of power to 6.9 kV Gas Turbine Substation Bus. (Could be confusing because of the bus being tagged out.)

Comment: Procedure step 4.4.3.

Performance Information

(Denote critical steps with a check mark √)

7. Performance Step:	VERIFY 6.9kV Gas Turbine Substation Bus Voltage, as indicated at voltmeter on compartment labeled "Incoming Line from 3NBY02" at HSB 53', or at voltmeter labeled "AC Voltmeter Bus" on "Generator Bkr Compt" at Appendix R DG is between 6.8 and 7.2 kV.
Standard:	Student dispatches an NPO to read voltage locally. Student acknowledges "0" volts from the field.

CUE: Cue student that local voltage reading is zero (0) volts.

Comment: Procedure step 4.4.4.

√**8. Performance Step:**	VERIFY 6.9 kV buses are aligned and energized as follows:
Standard:	Student observes the control console indications an places a check mark next to the normal feeds for each of the 6.9kV buses. Student initials each for each bus.

Comment: Procedure step 4.5.1.

√ **9. Performance Step:**	IF in Modes 1, 2, 3, or 4, THEN VERIFY Essential Buses are aligned and energized as follows:
Standard:	Student observes the control console indications and recognizes that each of the 480V Buses are energized (STA SERV. TRANS, Supply and Normal Feed Breakers closed) and each 480V bus has acceptable bus voltage. Student also recognizes that the cross-tie breakers are open in the test position.
Comment:	Procedure step 4.6.1. Cue if necessary that the cross-tie breakers are in the test position.

Performance Information

(Denote critical steps with a check mark √)

10. Performance Step: IF in Mode 5 or 6, THEN VERIFY the necessary Safeguards Buses (2A, 3A, 5A or 6A) required to support LCO 3.8.10 are OPERABLE, by recording energized bus voltages and breaker positions:

Standard: Student N/As the step.

Comment: Procedure step 4.6.2. Unit is in MODE 1.

√ **11. Performance Step:** VERIFY the following MCCs are energized (breakers closed):

Standard: Student observes the control console and determines that MCC 36A through 36E are energized. **Student may require a cue for indication of MCC 311. Student should recognize that the MFW Isolation and Bypass valves are powered from MCC 311.**

Comment: Procedure step 4.7.1. **Cue if necessary that MCC 311 is energized.**

12. Performance Step: RECORD date/time test is completed:

Standard: Student records current date/time and initials step 4.8.1.

Comment: Procedure step 4.8.1.

13. Performance Step: Performer Prints name, initials, signs, and dates in Section 5.0.

Standard: Performer Prints name, initials, signs, and dates in Section 5.0.

Comment: Procedure step 5.0.

√**14. Performance Step:**	Offsite AC electrical power sources SHALL be considered OPERABLE in Modes 1 through 4, when the following is satisfied (IF in Modes 5 or 6, THEN "N/A" this table):
Standard:	Student circles acceptable YES for all sections (procedure steps) except steps 4.4.1 thru 4.4.4; 6.9kV Gas Turbine Substation Bus energized with voltage between 6.8 and 7.2 kV. Voltage was zero due to the bus being tagged. Student circles NO for steps 4.4.1 thru 4.4.4.

Comment: Procedure step 6.1.1.

15. Performance Step:	Offsite AC electrical power sources SHALL be considered OPERABLE in Modes 5 and 6, when the following is satisfied (IF in Modes 1 through 4, THEN "N/A" this table):
Standard:	Student N/As step.

Comment: Procedure step 6.1.2. Unit is in MODE 1.

√**16. Performance Step:**	Based on the recorded data, are all Acceptance Criteria of Section 6.1 satisfied for the current plant operating Mode?
Standard:	Student circles NO.
Comment:	Procedure step 7.1.1. Student may complete the remainder of section 7.0 but it is not necessary.

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

Any 100% IC
6.9 KV Gas Turbine Substation Bus is tagged for an emergent maintenance issue.

Initial Conditions:

- Unit is in MODE 1, 100% Power.
- 6.9 KV Gas Turbine Substation Bus is tagged for an emergent maintenance issue.
- 31 EDG is scheduled to be removed from service or scheduled preventative maintenance activities within the next 4 hours.

Initiating Cue:

The CRS has requested that you complete surveillance 3-PT-W019; Electrical Verification – Offsite Power Sources and AC Distribution. All procedure precautions, limitations, and prerequisites have been reviewed and signed off. Procedure sections 4.1 and 4.2 have also been completed, including verification that all offsite power feeders are available from the Consolidated Edison District Operator.

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 3 Task No: _____

Task Title: Hydrogen Recombiner Operation – Determine Required Heater Power

K/A Reference: 1940002.1.25 RO – 3.9 Job Performance Measure No: RO Admin 2

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Operators are implementing 3-ES-1.2; Post LOCA Cooldown and Depressurization step 27 and are preparing to place 31 Hydrogen Recombiner in service IAW 3-SOP-CB-007; H2 Recombiner Operation.
- 3-SOP-CB-007; H2 Recombiner Operation procedure is completed through step 4.1.4.
- Hydrogen Concentration is 2.2% by volume.
- 4 Containment FCUs are operating and have been operating throughout the accident.
- Current VC Pressure is 3.5 psig.
- Pre-LOCA VC Pressure was 0 psig.
- Pre-LOCA VC Temperature was 90°F

Required Materials: 3-SOP-CB-007; H2 Recombiner Operation.

General References: 3-SOP-CB-007; H2 Recombiner Operation.

Initiating Cue: Determine the Required Heater Power for 31 Hydrogen Recombiner IAW 3-SOP-CB-007. Calculate the value and record on Attachment 4.

Time Critical Task: No

Validation Time:

Task Standard: Calculate the Required Heater Power for 31 Hydrogen Recombiner IAW 3-SOP-CB-007, Attachment 4.

Performance Information

(Denote critical steps with a check mark √)

1. Performance Step: NOTE the following parameters:
   - Current VC Pressure
   - Pre-LOCA VC Pressure
   - Pre-LOCA VC Temperature

Standard: Operator records the above parameter values given as initial conditions.

Comment: Procedure Step 4.1.5.

√2. Performance Step: DETERMINE Pressure Correction Factor (Cp) using Attachments 1, 2, or 3 as follows:

1. USE applicable attachment that is closest to the Pre-LOCA VC Temperature noted in Step 4.1.5:
   - Attachment 1 (60°F)
   - Attachment 2 (90°F)
   - Attachment 3 (120°F)
2. DETERMINE Pressure Correction factor (Cp) for Current VC Pressure noted in Step 4.1.5:
   - USE interpolation between Pre-LOCA VC Pressure curves as necessary.

Standard: Operator determines that Attachment 2 (90°F) is applicable. Using 3.5 psig for current VC pressure finds the correction factor to be 1.2 (+/-.005).

Comment: Procedure Steps 4.1.6, 4.1.6.1, and 4.1.6.2. Note that the number should be recorded in the next step.

√ 3. Performance Step: RECORD Pressure Correction Factor (Cp) determined in Step 4.1.6.2 on Attachment 4.

Standard: Operator records the Pressure Correction Factor (Cp) as 1.2 (+/-.005) on Attachment 4.

Comment: Procedure Step 4.1.7.

Performance Information

(Denote critical steps with a check mark √)

√**4. Performance Step:** DETERMINE Required Heater Power using Attachment 4 as follows:

1. MULTIPLY Pressure Correction Factor (Cp) (from Step 4.1.7) by Reference Power (Pref) for Recombiner to be placed in service.
2. RECORD calculation on Attachment 4.

Standard: Operator multiplies 1.2 (+/-.005) X 42.3 KW resulting in 50.76 KW (+/-.2115). Operator records Required Heater Power as 50.76 KW (+/-.2115) on Attachment 4.

Comment: Procedure Step 4.1.8, 4.1.8.1 and 4.1.8.2.

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

N/A
Classroom Admin JPM

Initial Conditions:

- Operators are implementing 3-ES-1.2; Post LOCA Cooldown and Depressurization step 27 and are preparing to place 31 Hydrogen Recombiner in service IAW 3-SOP-CB-007; H2 Recombiner Operation.
- 3-SOP-CB-007; H2 Recombiner Operation procedure is completed through step 4.1.4.
- Hydrogen Concentration is 2.2% by volume.
- 4 Containment FCUs are operating and have been operating throughout the accident.
- Current VC Pressure is 3.5 psig.
- Pre-LOCA VC Pressure was 0 psig.
- Pre-LOCA VC Temperature was 90°F

Initiating Cue:

Determine the Required Heater Power for 31 Hydrogen Recombiner IAW 3-SOP-CB-007. Calculate the value and record on Attachment 4.

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 3 Task No: _____

Task Title: Determine Radiological Conditions, RWP Requirements, and Potential Dose

K/A Reference: 1940002.3.7 RO – 3.5 Job Performance Measure No: RO Admin 3

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

1. Unit is in MODE 1, 100% Power
2. You have been assigned to perform he 31 RHR Pump Functional Test IAW procedure 3-PT-Q134A.
3. You have been provided with a copy of the most recently completed survey of the radiological conditions in 31 RHR Cell when the pump was running for testing.
4. You have been provided with a copy of Radiological Work Permit (RWP) No: 20153002.

Required Materials: Radiological Work Permit (RWP) No; 20153002
31 RHR Cell Radiological Survey Data
3-PT-Q134A; 31 RHR Pump Functional Test

General References: Radiological Work Permit (RWP) No; 20153002
31 RHR Cell Radiological Survey Data
3-PT-Q134A; 31 RHR Pump Functional Test

Initiating Cue: In preparation for a pre-job briefing determine the following from the provided materials:

1. RWP Task Number
2. Dosimetry required
3. Dose Alarm setpoint
4. Dose Rate Alarm setpoint
5. Protective Clothing Requirements
6. Determine Lose Dose Waiting Area in 31 RHR Cell
7. Determine highest contamination reading and location from survey
8. Determine your maximum possible dose using the highest general area dose rate and a stay time of 90 minutes.
9. At what accumulated dose must you leave the RCA in accordance with RWP 20153002?

Time Critical Task: NO

Validation Time:

Task Standard: Student uses the RWP and Radiological Survey to properly answer the above questions in preparation for a pre-job briefing.

Performance Information

(Denote critical steps with a check mark √)

√**1. Performance Step:** RWP Task Number

Standard: Student determines that **Task 4** is the proper task for performing tests.

Comment:

√**2. Performance Step:** Dosimetry required

Standard: Student determines that a **Whole Body DLR / Electronic Dosimeter** is required.

Comment:

√ **3. Performance Step:** Dose Alarm setpoint

Dose Rate Alarm setpoint

Standard: Student determines that the dose alarm is set at **10.00 mrem** and the dose rate alarm is set at **100.00 mrem.**

Comment:

√**4. Performance Step:** Protective Clothing Requirements

Standard: Student determines that a contaminated entry requires **Protective Coveralls, High and Low Shoe covers, Hood, Hard Hat Cover, Cotton Liners and Gloves.**

Comment: If asked, cue that HP approval has not been granted for reduced protective clothing requirements.

√ **5. Performance Step:** Determine Lose Dose Waiting Area in 31 RHR Cell

Standard: Student determines from survey that the **Step off pad (SOP) areas** with 0.5 mrem/hr general area dose rates are the low dose waiting areas.

Comment:

Performance Information

(Denote critical steps with a check mark √)

√ **6. Performance Step:** Determine highest contamination reading and location from survey

Standard: Student determines that the pump pedestal area, **smear location 13 with a contamination level of 10,000 DPM/cm^2** is the highest level in cell.

Comment:

√ **7. Performance Step:** Determine your maximum possible dose using the highest general area dose rate and a stay time of 90 minutes.

Standard: Student determines that the highest general area radiation level is 2.5 mrem/hr and 90 minutes in that field would result in an accumulated dose of **3.75 mrem**.

Comment:

√**8. Performance Step:** At what accumulated dose must you leave the RCA in accordance with RWP 20153002?

Standard: Student determines that he must leave the RCA at 80% of the accumulated dose alarm setpoint. 80% of 10.0 mrem is **8.0 mrem**.

Comment:

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

N/A
RO Admin JPM in classroom

Initial Conditions:

1. Unit is in MODE 1, 100% Power
2. You have been assigned to perform he 31 RHR Pump Functional Test IAW procedure 3-PT-Q134A.
3. You have been provided with a copy of the most recently completed survey of the radiological conditions in 31 RHR Cell when the pump was running for testing.
4. You have been provided with a copy of Radiological Work Permit (RWP) No: 20153002.

Initiating Cue:

In preparation for a pre-job briefing determine the following from the provided materials:

1. RWP Task Number
2. Dosimetry required
3. Dose Alarm setpoint
4. Dose Rate Alarm setpoint
5. Protective Clothing Requirements
6. Determine Lose Dose Waiting Area in 31 RHR Cell
7. Determine highest contamination reading and location from survey
8. Determine your maximum possible dose using the highest general area dose rate and a stay time of 90 minutes.
9. At what accumulated dose must you leave the RCA in accordance with RWP 20153002?

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RADIOLOGICAL WORK PERMIT

RWP Title: Unit 3/NON VC-Operations tours and inspection, watch rounds, tests, surveilances, PTO's, peerchecking, training and other activities to support unit operations.	RWP No.: 20153002 Rev. 00
Comments: Contact HP prior to start of work	*20153002*

RWP Type: SPECIFIC	RWP Status: ACTIVE	Begin Date: 1/1/2015	Close On Date: 12/31/2015
Prepared By: WILSON, ROBERT	Job Supervisor:		

Estimated Dose:	Estimated Hours:	Actual Dose:	Actual Hours:
0.0 mrem	0.00	116.9 mrem	2,841.47

Locations

Buildings	Elevations	Rooms
All RCA Areas Non VC		All

Radiological Conditions

Description	Value	Unit
N/A		

Tasks

Task	Description	Status
1	Watch NPO rounds and log readings	Active
2	COL's, PTO's, walkdowns and peerchecking	Active
3	Training & tours	Active
4	Functional tests	Active

Requirements

Requirement Groups	Requirement Descriptions
N/A	

Additional Instructions

Instruction 1: STOP WORK/ ABORT
1.Stop work for any unbriefed ED alarms
2. Exit the RCA at 80% of the accumulated dose alarm set point.
3. >30% DAC if not posted airborne.
4. If any changes outside of the RWP requirements of job briefing occur.

Instruction 2: Job Coverage:
Intermittent RP coverage- Radiation oversight provided periodically as determined by RP or RWP requirements.

Continuous RP Coverage - Direct radiological surveillance by RP with the sole responsibility for providing constant monitoring during the entire period personnel are in the work area. Continuous surveillance may be provided as follows:
" Locally by maintaining visual or audible contact; OR
" Remotely by maintaining audible and telemetry, with visual contact, if available; OR
" Remotely by using stay times, time keeping, and audible contact.
IF Continuous Job Coverage by RMT is lost
THEN re-establish continuous job coverage per EN-RP-141, OR,
Suspend work activities and clear personnel from the work area.

Approvals

Approver Title	Name	Date
SUPERVISOR	TAMBURI, ROBIN	12/22/2014
TECHNICIAN	BORKOWSKI, MICHAEL	12/22/2014

Attachments

N/A

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RADIOLOGICAL WORK PERMIT

Task Number: 1			**RWP No.:** 20153002 **Rev.:** 00
Task Description: Watch NPO rounds and log readings			**Task Status:** Active
Estimate Dose:		**Estimate Hours:**	
Hi-Rad: Yes	**Hot Particle:** Yes	**Locked Hi-Rad:** No	**Hi-Contamination:** Yes

Alarm Settings			
Dose Alarm (mrem)	**10.00**	**Dose Rate** (mrem/hr)	**100.00**

Requirements

Requirement Groups	Requirement Descriptions
Contamination Control	Additional Requirement: 1. Notify the RP prior to contaminated system opening. 2. Removal of tools from a contaminated area requires RP permission. 3. Notify RP prior to any work in the overhead. 4. Upon exiting Contaminated Areas, worker must perform a hand and foot frisk at the nearest frisker station.
Dosimetry	Additional Requirement: 1.Whole Body DLR/ Electronic Dosimeter
Exposure Control	Additional Requirement: 1. Monitor dosimetry frequently. 2. Utilize Low Dose Waiting Areas. 3. Workers are to be aware for the radiological conditions in their work area. 4. The use of the RP Camera system can be utilized for workers to view work to minimize dose and time in area. 5. DO NOT adjust or move shielding. RP approval required.
Job Coverage	Additional Requirement: Intermittent
Precautions & Limitations	Additional Requirement: 1) Verbal Radiological brief required for entry into HRA's 2) If dose accrued is expected to exceed 500 mRem, a Stay Time is required.
Protective Clothing	Additional Requirement: 1) Contaminated Area Entry: Protective Coveralls, High and Low Shoe Covers, Hood, Hard Hat Cover, Cotton Liners and Gloves. 2) With HP approval, workers may wear partial protective clothing consisting of: High and Low Shoe Covers, Cotton Liners and Gloves while performing work of low radiological impact. General area contamination levels must be less than 10,000 dpm/100cm2; no climbing or ladder use. 3) High Contaminated Area Entry: Double set of PC's required. 4.)IF working on contaminated components or items that require hand entry only, THEN the RPT may allow the work to be completed with gloves and other appropriate controls. 5) If PCs become damaged exit the contaminated area and contact HP.
RP Personnel	Additional Requirement: 1) Particulate and Iodine Air Sampling is required when breaching radioactive systems when contamination is expected to be >50,000 dpm/100cm2. 2) RP escort required for RAM >100mr/hr @ 30cm2.
TRAINING REQUIREMENT	Rad Worker Training (RWTGEN - RWTSS - PRACFAC)

Additional Instructions

Instruction 1:

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RADIOLOGICAL WORK PERMIT

Task Number: 2				**RWP No.:** 20153002 **Rev.:** 00
Task Description: COL's, PTO's, walkdowns and peerchecking				**Task Status:** Active
Estimate Dose:		**Estimate Hours:**		
Hi-Rad: Yes	**Hot Particle:** Yes	**Locked Hi-Rad:** No		**Hi-Contamination:** Yes

Alarm Settings

Dose Alarm (mrem)	10.00	**Dose Rate** (mrem/hr)	100.00

Requirements

Requirement Groups	Requirement Descriptions
Contamination Control	Additional Requirement: 1. Notify HP prior to contaminated system opening. 2. Removal of tools from a contaminated area requires RP permission. 3. Notify RP prior to any work in the overhead. 4. Upon exiting Contaminated Areas, worker must perform a hand and foot frisk at the nearest frisker station.
Dosimetry	Additional Requirement: 1.Whole Body DLR/ Electronic Dosimeter
Exposure Control	Additional Requirement: 1. Monitor dosimetry frequently. 2. Utilize Low Dose Waiting Areas. 3. Workers are to be aware for the radiological conditions in their work. 4. The use of the RP Camera system can be utilized for workers to view work to minimize dose and time in area. 5. DO NOT adjust or move shielding. RP approval required.
Job Coverage	Additional Requirement: Intermittent
Precautions & Limitations	Additional Requirement: 1) Verbal Radiological brief required for entry into HRA's 2) If dose accrued is expected to exceed 500 mRem, a Stay Time is required
Protective Clothing	Additional Requirement: 1) Contaminated Area Entry: Protective Coveralls, High and Low Shoe Covers, Hood, Hard Hat Cover, Cotton Liners and Gloves. 2) With HP approval, workers may wear partial protective clothing consisting of: High and Low Shoe Covers, Cotton Liners and Gloves while performing work of low radiological impact. General area contamination levels must be less than 10,000 dpm/100cm2; no climbing or ladder use. 3) High Contaminated Area Entry: Double set of PC's required. 4.)IF working on contaminated components or items that require hand entry only, THEN the RPT may allow the work to be completed with gloves and other appropriate controls. 5) If PCs become damaged exit the contaminated area and contact HP.
RP Personnel	Additional Requirement: 1) Particulate and Iodine Air Sampling is required when breaching radioactive systems when contamination is expected to be >50,000 dpm/100cm2. 2) RP escort for RAM <100mr/hr @ 30cm.
TRAINING REQUIREMENT	Rad Worker Training (RWTGEN - RWTSS - PRACFAC)

Additional Instructions

Instruction 1:

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RADIOLOGICAL WORK PERMIT

Task Number: 3				**RWP No.:** 20153002 **Rev.:** 00
Task Description: Training & tours				**Task Status:** Active
Estimate Dose:		**Estimate Hours:**		
Hi-Rad: Yes	**Hot Particle:** Yes	**Locked Hi-Rad:** No		**Hi-Contamination:** Yes

Alarm Settings			
Dose Alarm (mrem)	**10.00**	**Dose Rate** (mrem/hr)	**100.00**

Requirements	
Requirement Groups	**Requirement Descriptions**
Contamination Control	Additional Requirement: 1. Notify the RP prior to contaminated system opening. 2. Removal of tools from a contaminated area requires RP permission. 3. Notify RP prior to any work in the overhead. 4. Upon exiting Contaminated Areas, worker must perform a hand and foot frisk as soon as practicable.
Dosimetry	Additional Requirement: 1.Whole Body DLR/ Electronic Dosimeter
Exposure Control	Additional Requirement: 1. Monitor dosimetry frequently. 2. Utilize Low Dose Waiting Areas. 3. Workers are to be aware for the radiological conditions in their work area. 4. The use of the RP Camera system can be utilized for workers to view work to minimize dose and time in area. 5. DO NOT adjust or move shielding. RP approval required.
Precautions & Limitations	Additional Requirement: 1) Verbal Radiological brief required for entry into HRA's 2) If dose accrued is expected to exceed 500 mRem, a Stay Time is required
Protective Clothing	Additional Requirement: 1) Contaminated Area Entry: Protective Coveralls, High and Low Shoe Covers, Hood, Hard Hat Cover, Cotton Liners and Gloves. 2) With HP approval, workers may wear partial protective clothing consisting of: High and Low Shoe Covers, Cotton Liners and Gloves while performing work of low radiological impact. General area contamination levels must be less than 10,000 dpm/100cm2; no climbing or ladder use. 3) High Contaminated Area Entry: Double set of PC's required. 4.)IF working on contaminated components or items that require hand entry only, THEN the RPT may allow the work to be completed with gloves and other appropriate controls. 5) If PCs become damaged exit the contaminated area and contact HP.
TRAINING REQUIREMENT	Rad Worker Training (RWTGEN - RWTSS - PRACFAC)

Additional Instructions
Instruction 1:
Instruction 2:
Instruction 4:
Instruction 5:

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RADIOLOGICAL WORK PERMIT

Task Number: 4				**RWP No.:** 20153002 **Rev.:** 00
Task Description: Functional tests				**Task Status:** Active
Estimate Dose:		**Estimate Hours:**		
Hi-Rad: Yes	**Hot Particle:** Yes	**Locked Hi-Rad:** No		**Hi-Contamination:** Yes

Alarm Settings			
Dose Alarm (mrem)	**10.00**	**Dose Rate** (mrem/hr)	**100.00**

Requirements

Requirement Groups	Requirement Descriptions
Contamination Control	Additional Requirement: 1. Notify the RP prior to contaminated system opening. 2. Removal of tools from a contaminated area requires RP permission. 3. Notify RP prior to any work in the overhead. 4. Upon exiting Contaminated Areas, worker must perform a hand and foot frisk as soon as practicable.
Dosimetry	Additional Requirement: 1.Whole Body DLR/ Electronic Dosimeter
Exposure Control	Additional Requirement: 1. Monitor dosimetry frequently. 2. Utilize Low Dose Waiting Areas. 3. Workers are to be aware for the radiological conditions in their work area. 4. The use of the RP Camera system can be utilized for workers to view work to minimize dose and time in area. 5. DO NOT adjust or move shielding. RP approval required.
Precautions & Limitations	Additional Requirement: 1) Verbal Radiological brief required for entry into HRA's 2) If dose accrued is expected to exceed 500 mRem, a Stay Time is required
Protective Clothing	Additional Requirement: 1) Contaminated Area Entry: Protective Coveralls, High and Low Shoe Covers, Hood, Hard Hat Cover, Cotton Liners and Gloves. 2) With HP approval, workers may wear partial protective clothing consisting of: High and Low Shoe Covers, Cotton Liners and Gloves while performing work of low radiological impact. General area contamination levels must be less than 10,000 dpm/100cm2; no climbing or ladder use. 3) High Contaminated Area Entry: Double set of PC's required. 4.)IF working on contaminated components or items that require hand entry only, THEN the RPT may allow the work to be completed with gloves and other appropriate controls. 5) If PCs become damaged exit the contaminated area and contact HP.
RP Personnel	Additional Requirement: 1) Particulate and Iodine Air Sampling is required when breaching radioactive systems when contamination is expected to be >50,000 dpm/100cm2. 2) RP escort for RAM <100mr/hr @ 30cm.
TRAINING REQUIREMENT	Rad Worker Training (RWTGEN - RWTSS - PRACFAC)

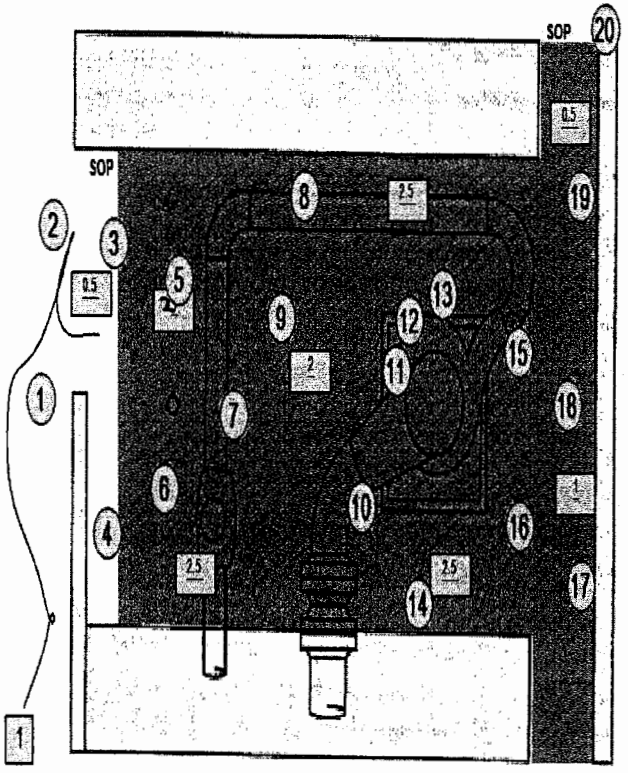
Additional Instructions

Instruction 1:
Instruction 2:

Survey: IPEC-1503-0004
Template: U3 PAB 15FT 31 RHR Cell

Indian Point

Printed: 03-26-2015 09:13:22
Page 1



U3 PAB 15FT 31 RHR

Smear Data (DPM/100cm2)

1	<MDA
2	<MDA
3	<MDA
SOP	
4	318.06
5	<1000
6	1000
7	<1000
8	2000
9	2000
10	3000
11	1000
SEAL	
12	3000
Pedestal	
13	10000
Leaking valve	
14	3000
15	<1000
16	<1000
17	<1000
18	<1000
19	<1000
20	<MDA
SOP	

LAS Data (ccpm/LAS)

1	ND

B/G to Alpha Ratio

12	NA
14	NA

Alpha Data (DPM/100cm2)

12	ND
14	ND

Survey Data

Unit: 3
Building: U3 PAB
Elevation: 15FT
Room: 31 RHR Cell
RxPwr: 96
Template: U3 PAB 15FT 31 RHR C
Frequency: Other
Survey Date: 03-01-2015
Survey Time: 15:04
Status: Archived
RWP: 20153001
Surveyed By: Delamater, Jesse
Badge: 1234
Reviewed By: Phelps, Tom
Notes:
Survey of 31 RHR following a pump run. Cell posted RA

Instruments Used

Instrument: RO-20 - 01617
Cal Due: 04-30-2015
SrcCk Date: 03-01-2015
D/C & Bkg: na na
MDA: NA

Instrument: BC-4 - 932
Cal Due: 01-31-2016
SrcCk Date: 03-01-2015
D/C & Bkg: 5.89 26
MDA: 116

Instrument: RM-14 - 5213
Cal Due: 10-31-2015
SrcCk Date: 03-01-2015
D/C & Bkg: 10 100
MDA: NA

Instrument: SAC-4 - 1376
Cal Due: 08-31-2015
SrcCk Date: 03-01-2015
D/C & Bkg: 3.99 .28
MDA: 18

All Radiation values are in mrem/hr unless otherwise noted
Smear contamination values in DPM/100cm2 unless otherwise noted
☐ Smear < 1000 DPM H.S. - denotes Hot Spot
*12/13 denotes gamma contact / 30cm
*12/13 B denotes beta contact / 30 cm

12.5 denotes gamma general area, T denotes RADS telemetry
*75 B denotes beta contact doserate
*12 denotes gamma contact doserate
(11) denotes smear locations
[12] denotes large area wipe locations.

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 3 Task No: _____

Task Title: Perform Initial Unusual Event Notification

K/A Reference: 1940002.4.39 RO – 3.9 Job Performance Measure No: RO Admin 4

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- A 15 GPM UNIDENTIFIED RCS Leak exists.
- Unit Shutdown IAW Technical Specifications has been initiated.
- The Shift Manager Declared an UNUSUAL EVENT based on EAL-SU6.1 five (5) minutes ago.

Required Materials: Simulator RECS phone
Completed NYS Radiological Data Form Part 1
Form EP-3N; NOTICE OF UNUSUAL EVENT Notification checklist

General References: IP-EP-115 Form EP-3, NUE Notification Checklist

Initiating Cue: You are the Spare RO, and the Shift Manager has directed you to perform the duties of the Control Room Offsite Communicator.

Time Critical Task: **YES**

Validation Time:

Task Standard: Notification of event complete to State and Counties within 15 minutes of event declaration by Shift Manager.

Performance Information

(Denote critical steps with a check mark √)

1. Performance Step: Obtain the Control Room Communicator Binder

Standard: Obtains Binder from Shift Manager Office

Comment: Provide student copy of Form EP-3N; NOTICE OF UNUSUAL EVENT Notification checklist

CUE: **Provide student copy of Form EP-3N; NOTICE OF UNUSUAL EVENT Notification checklist if necessary. Includes Page 1 completed by Shift Manager. (After he finds the Binder)**

2. Performance Step: Inform the Shift Manager that you have assumed the duties of the Control Room Communicator.

Standard: Student informs the Shift Manager they have assumed the duties of the Control Room Communicator.

Comment: **CUE: Acknowledge communication.**

√ **3. Performance Step:** Obtain the completed and signed NTS Radiological Emergency Data Form Part 1 (IP-EP-115 Form EP-1)

Standard: Student requests Form from the Shift manager.

Comment: Provide competed and signed form EP-1.

CUE: **Provide Candidate the completed EP-1 Form. *Mark the Emergency Declaration time on the form as present date and present time minus 5 minutes. Record Time minus 5 here:* _____**

4. Performance Step: Review the form to ensure all required information is entered including the Shift Manager (Emergency Director) Signature.

Standard: Student determines all necessary data is correctly entered.

Comment:

Performance Information

(Denote critical steps with a check mark √)

5. Performance Step: Verify Shift Manager has sent electronic Fax and e-mail of the NYS Radiological Emergency Data Form Part 1 to the State/Counties.

Standard: Student either contacts Shift Manager or reviews page 1 of the NOTICE OF UNUSUAL EVENT Notification Checklist and observes that the Shift Manager has initialed the appropriate steps of the bottom of page 1 (Form EP-3N) indicating completion of Fax & e-mail of EP-1.

Comment: Student initials the top line of page 2 of Form EP-3N. If necessary provide cue.

CUE: Fax and e-mail have been sent.

√ **6. Performance Step:** Pick up RECS Handset.

Standard: Student picks up the RECS Handset.

Comment: Note that this is step 1 on page 2 of the NUE Notification Checklist.

√ **7. Performance Step:** When you hear the message **"Welcome to Wave. Please enter session ID"**, Depress the **"7"** button.

Standard: Student depresses the "&" button on the phone.

Comment: Step 2 on page 2 of the NUE Notification Checklist.

---

8. Performance Step: **IF** RECS is unavailable, proceed to Alternate State and County Notification on Page 4 of 6.

Standard: Step is N/A, RECS is available and functioning.

Comment: Step 3 on page 2 of the NUE Notification Checklist. **Cue that the RECS is available and functional if necessary.**

Performance Information

(Denote critical steps with a check mark √)

√ **9. Performance Step:**	You will hear multiple rising tones, indicating facilities joining the call. Wait 15 seconds and State: "**This is to report an event at Indian Point Energy Center. Standby for roll call.**" Twice.
Standard:	After 15 seconds, student states: "**This is to report an event at Indian Point Energy Center. Standby for roll call.**" Twice.

Comment: Step 4 on page 2 of the NUE Notification Checklist.

√**10. Performance Step:**	Initiate roll call by asking **"(location title) are you on the line?"** for each of the following stations, stopping after each name is read to allow station to identify itself. Check off each location as they answer the roll call: 1. New York State 2. Westchester County 3. Putnam County 4. Rockland County 5. Orange County 6. Peekskill City 7. West Point
Standard:	Reads each station name, when station acknowledges, checks it on the NUE Notification Checklist.
Comment:	Steps 5 and 6 on page 2 of the NUE Notification Checklist.
CUE:	**If using the booth operator to acknowledge message, no CUE is needed (provided by booth operator). If acknowledging yourself then CUE candidate by acknowledging as each station above.**

√ **11. Performance Step:**	Enter time you receive the first response on the initial roll call: _____
Standard:	Student enters time on step 6 of the NUE Notification Checklist. (first response)
Comment:	Step 6 on page 2 of the NUE Notification Checklist.

Performance Information

(Denote critical steps with a check mark √)

√ **12. Performance Step:**	State, **"This is the Indian Point Energy Center. An Unusual Event has been declared. A Part 1 Notification # __1__ has been sent to you via FAX And/or Email."**
Standard:	Student reads statement.
Comment:	Step 7 on page 2 of the NUE Notification Checklist.
√ **13. Performance Step:**	Confirm the receipt of FAX or Email by asking: "(location Title), **do you acknowledge receipt of a FAX OR Email from IPEC?"** 1. New York State 2. Westchester County 3. Putnam County 4. Rockland County 5. Orange County 6. Peekskill City 7. West Point
Standard:	Reads roll call list and asks for acknowledgement. Checks off each station when acknowledgement is received.
Comment:	Step 8 on page 2 of the NUE Notification Checklist.
CUE:	**If using the booth operator to acknowledge message, no CUE is needed (provided by booth operator). If acknowledging yourself then CUE candidate by acknowledging as each station above.**
14. Performance Step:	**IF** any of above did not receive either a FAX **OR** Email, **THEN** verbally read the entire Part 1 form. **IF** all locations received (or you completed reading) proceed.
Standard:	Student proceeds to next step, all locations received FAX and/or Email.
Comment:	Step 9 on page 2 of the NUE Notification Checklist.

√ **15. Performance Step:**	End notification by saying **"Indian Point out at _____"**. Enter time. Press "End Call" button on RECS phone and hang up the handset, ensuring it is secured in the cradle.
Standard:	Student makes above statement and enters current time on line 10. ***The time entered at checklist step 10 must be within 15 minutes of the time of declaration used for the Part 1 form (EP-1).***
Comment:	Step 10 on page 2 of the NUE Notification Checklist.

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

N/A
RO Admin JPM

Initial Conditions:

- A 15 GPM UNIDENTIFIED RCS Leak exists.
- Unit Shutdown IAW Technical Specifications has been initiated.
- The Shift Manager Declared an UNUSUAL EVENT based on EAL-SU6.1 five (5) minutes ago.

Initiating Cue:

You are the Spare RO, and the Shift Manager has directed you to perform the duties of the Control Room Offsite Communicator.

THIS IS A TIME CRITICAL JPM.

New York State
Indian Point Energy Center
RADIOLOGICAL EMERGENCY DATA FORM - PART 1 Notification # 1

1. This is an: EXERCISE ACTUAL EMERGENCY at the Indian Point Energy Center

2. The Emergency Classification is:
A. Unusual Event B. Alert C. Site Area Emergency
D. General Emergency E. Emergency Terminated
This Emergency Classification declared on: today (Date) at T-5 minutes (Time 24 hr clock)

3. Release of Radioactive Materials due to the Classified Event:

To Atmosphere:	To Water:
A. NO Release	A. NO Release
B. Release BELOW Federal Limits	B. Release BELOW Federal Limits
C. Release ABOVE Federal Limits	C. Release ABOVE Federal Limits
D. Unmonitored Release Requiring Evaluation	D. Unmonitored Release Requiring Evaluation

4. The following Protective Actions are recommended to be implemented as soon as practicable:
A. NO NEED for PROTECTIVE ACTIONS outside the site boundary
B. EVACUATE and IMPLEMENT the KI PLAN for the following Sectors
C. SHELTER-IN-PLACE and IMPLEMENT the KI PLAN for the following Sectors

2 miles around 5-miles downwind:
In the following Sectors: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

2 miles around 10-miles downwind:
In the following Sectors: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

All remaining Areas MONITOR the EMERGENCY ALERT SYSTEM

NOTE: OFFSITE AUTHORITIES SHOULD CONSIDER SHELTER-IN-PLACE + TAKE KI IF EVACUATION IS NOT FEASIBLE

5. EAL#: SU6.1 — "UNIDENTIFIED OR PRESSURE BOUNDARY LEAKAGE > 10 GPM"
A 15 GPM UNIDENTIFIED RCS LEAK EXISTS IN CONTAINMENT.
UNIT SHUTDOWN DUE TECHNICAL SPECIFICATIONS HAS BEEN INITIATED.

Affected Location:
A. UNIT 2
B. UNIT 3
C. IPEC SITE

6. Reactor Status:
Unit 2: Operational or Shutdown at (Date) today (Time) T-5 minutes (24 hr clock)
Unit 3: Operational or Shutdown at (Date) today (Time) T-5 minutes (24 hr clock)

7. Wind Speed: 0.9 Meters/Sec at elevation 10 meters

8. Wind Direction: (From) 285 Degrees at elevation 10 meters

9. Stability Class: A B C D E F G

10. Reported by – Communicator: _____ Telephone # _____
(Communicator's Name)

11. Emergency Director Approval: EC / EC Date/Time: today T-5 minutes
(Director's Name)

Control Room Shift Mar. ger/Emergency Director
NOTICE of UNUSUAL EVENT Notification Checklist

NUE DECLARED?

If the Shift Manager does not feel it is safe to relocate personnel at this time,
DO NOT sound the Site Assembly Alarm or call for personnel to report to assigned facilities

Is this the Initial NUE declaration? - YES	**NO – update**
Time of Declaration: 5 minutes ago	Time: _____
ONSITE NOTIFICATION	
___ Designate **OR** Page an Offsite Communicator to the Control Room.	**UPDATE:** (30 minutes)
___ Contact opposite unit's Control Room **AND:**	____EOF is NOT operational; go to "**OFFSITE NOTIFICATION**" step.
1. Inform them of NUE, time, EAL#, and brief description.	OR
2. Activate **OR** Request opposite unit to activate Emergency Response Organization (ERO) Event Notification Only **OR** ERO mobilization by obtaining ERO Notification envelope **AND** completing steps in envelope.	____EOF is operational, STOP. (EOF will continue with Notifications; ensure proper turnover completed)
3. (Both units) Direct announcement of the following message over both Unit's P.A. systems, three (3) times: (**IF** determined **SAFE** to do so)	
___ **"Attention all personnel. An NUE has been declared. Staffing of facilities (is/~~is not~~) required."**	
N/A ___ If staffing of facilities (EOF/OSC/TSC/JIC/AEOF) is required, state the following: **"The following facilities are required to be staffed:** N/A **"** (fill in with appropriate facilities.)	
___ Go to "**OFFSITE NOTIFICATION**" step	

OFFSITE NOTIFICATION

VERIFY the following:

___ NYS Part I Form is completed **AND** printed.
___ NYS Part I Form is independently verified.
___ NYS Part I Form is signed for approval.
___ NYS Part I Form is electronically sent via FAX, then Email
___ Offsite Agencies are being notified by the Offsite Communicator or designee using page 2 – 6 **within 15 minutes** of an initial **OR** new declaration **OR** approximately 30 minutes for an update. (see Time above)

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 3 Task No: _____

Task Title: Update Electrical Power Availability for Shutdown Safety Assessment

K/A Reference: 1940002.1.18 SRO – 3.8 Job Performance Measure No: SRO Admin 1

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Unit Shutdown in progress due to 32 EDG inoperable and extensive maintenance and repair required to restore operability.
- The Unit has just entered MODE 4.
- The shift has just completed tagging out the 6.9 KV Gas Turbine Substation Bus due to an emergent issue.
- **No** Substation Work is in progress.

Required Materials: 6.9 KV Gas Turbine Substation Bus Tagout
Marked up drawing 9321-F-33853
IP-SMM-OU-104, Shutdown Risk Assessment Procedure
Completed IP-SMM-OU-104, Attachment 9.1
Blank IP-SMM-OU-104, Attachment 9.1

General References: Drawing 9321-F-33853, Electrical Distribution & Transmission System
IP-SMM-OU-104, Shutdown Risk Assessment Procedure

Initiating Cue: Given the above initial conditions, the Shift Manager has requested that you update the Electrical Power Availability section of the previously completed Shiftly Shutdown Safety Assessment in accordance with IP-SMM-OU-104. You have been provided a copy of the recently completed tagout.

Time Critical Task: No

Validation Time:

Task Standard: Update IP-SMM-OU-104, Attachment 9.1 to show that Electrical Power Availability is now YELLOW from a Shutdown Risk perspective. The Score should be a 5 which would constitute a YELLOW condition.

1. Number of Emergency Diesel Generators Available – (Two) – 2 pts
2. Offsite Power Sources Available – (One) - 1pt
3. Switchyard work in progress – (No) – 1pt
4. Outage Unit's Appendix R Diesel Available – (No) – 0pts
5. Severe weather OAP-008 in Effect with the potential for Loss of Offsite Power – (No) – 1 pt.

Total Points = 5 or YELLOW Condition

NOTE: The tagout for the 6.9KV Gas Turbine Substation Bus causes a loss of all available 13.8KV (credited offsite source) and the Unit 3 Appendix R Diesel.

Performance Information

(Denote critical steps with a check mark √)

1. Performance Step: Student reviews previously completed IP-SMM-OU-104, Attachment 9.1.

Standard: Student recognizes that per the initiating cue, that only the electrical section requires updating.

CUE: All other aspects of the Shutdown Safety Function Assessment remain unchanged, only the electrical portion requires updating. Complete just the Electrical Power Availability section on a blank Attachment 9.1.

Comment: Provide cue and blank form. Cue may be provided as a group in a classroom setting.

√**2. Performance Step:** Student completes the Number of Emergency Diesel Generators Available line and assigns points per the procedure.

Standard: Student recognizes that only 32 EDG is unavailable and assigns 2 points.

Comment: >= Two Diesels Available is 2 points.

√ **3. Performance Step:** Student completes the Offsite Power Sources Available line and assigns points per the procedure.

Standard: Student recognizes that no 13.8KV Offsite sources are available and assigns 1 point.

Comment: One (1) is 1 point. Attachment 9.2 guidance states only 1 source of 138KV is credited regardless of the number of live feeders.

Performance Information

(Denote critical steps with a check mark √)

√**4. Performance Step:** Student completes the Switchyard work in progress line and assigns points per the procedure

Standard: Student recognizes that **No** Switchyard work is in progress. The tagout is complete and **No** Substation work is in progress per the initial conditions. He assigns 1 point.

Comment: No switchyard work in progress results in 1 point. Attachment 9.2 guidance states: NOTE: If mitigating actions have been taken such that the work being performed can no longer be viewed as potential for inducing a LOOP event, then Attachment 1 "Switchyard Work In Progress" Power Availability Safety Function question should be recorded as a NO.

√ **5. Performance Step:** Student completes the Outage Unit's Appendix R Diesel Generator Available line and assigns points per the procedure.

Standard: Student recognizes that the Appendix R Diesel is unavailable and assigns zero (0) points.

Comment: Student recognizes that the tagout precludes the use of the Appendix R Diesel. No Appendix R Diesel = 0 points.

√ **6. Performance Step:** Student completes the Severe weather OAP-008 in Effect with the potential for Loss of Offsite Power line and assigns points per the procedure.

Standard: Student recognizes that Severe weather OAP-008 is not in effect and assigns 1 point.

Comment: Severe weather OAP-008 Not in effect = 1 point.

√ **7. Performance Step:**	Student completes the Electrical Power Availability Score by adding the respective points and determines the shutdown color for Electrical Power.
Standard:	Student adds the numbers and determines a Total of 5 points and a YELLOW Condition.

Comment: Total should add to 5 points and a YELLOW Condition.

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

N/A, SRO Admin JPM

Initial Conditions:

- Unit Shutdown in progress due to 32 EDG inoperable and extensive maintenance and repair required to restore operability.
- The Unit has just entered MODE 4.
- The shift has just completed tagging out the 6.9 KV Gas Turbine Substation Bus due to an emergent issue.
- **No** Substation Work is in progress.

Initiating Cue:

Given the above initial conditions, the Shift Manager has requested that you update the Electrical Power Availability section of the previously completed Shiftly Shutdown Safety Assessment in accordance with IP-SMM-OU-104. You have been provided a copy of the recently completed tagout.

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 3 Task No: _____

Task Title: Determine Isolation Boundaries for CCW Leak Using Plant Prints

K/A Reference: 1940002.2.41 SRO – 3.9 Job Performance Measure No: SRO Admin 2

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- The plant is in COLD SHUTDOWN on RHR.
- CCW Surge Tank level is lowering at approximately 0.5% per minute.
- The NPO in Containment reports a significant leak downstream of Check Valve 770; CCW Supply to RCPs.

Required Materials: **NEED DRAWING NUMBERS**

General References: **NEED DRAWING NUMBERS**

Initiating Cue: You are the FSS and the CRS has directed you to identify all valves that must be shut to isolate the leak just on Check Valve 770; CCW Supply to RCPs. Identify valves needed for isolation and list below.

Time Critical Task: No.

Validation Time:

Task Standard: Using appropriate plant drawings, identify and list the valves required to isolate a leak on Check Valve 770; CCW Supply to the RCPs.

Performance Information

(Denote critical steps with a check mark √)

---

1. Performance Step: Obtain Prints

Standard: Operator requests desired prints.

Comment: Plant drawings to be provided in classroom or operator may select appropriate drawings from a controlled file in simulator.

√**2. Performance Step:** Determine MOV-769 and/or MOV-797 must be shut.

Standard: Identifies that MOV-769 and/or MOV-797, RCP CCW Supply Isolation must be shut.

Comment: Operator lists these valves on the cue sheet as requiring isolation.

√ **3. Performance Step:** Determine 734C must be shut.

Standard: Identifies 734C, Rx Vessel Support Blocks supply must be shut.

Comment: Operator lists this valve on the cue sheet as requiring isolation.

√**4. Performance Step:** Determine 771A-D must be shut.

Standard: Identifies 771A-D, CC Supply (individual RCP) Inlet Isolations must be shut.

Comment: Operator lists these valves on the cue sheet as requiring isolation.

---

5. Performance Step: Determine Isolation Valve Seal Water System Valve **????,** RCPs Cooling Water Inlet Stop must be closed.

Standard: Identifies Isolation Valve Seal Water System Valve **????**, RCPs Cooling Water Inlet Stop must be closed.

Comment: Student may or may not identify this valve for isolation. This step is NOT critical. Operator lists this valve on the cue sheet as requiring isolation.

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

N/A
Classroom Admin JPM

Initial Conditions:

- The plant is in COLD SHUTDOWN on RHR.
- CCW Surge Tank level is lowering at approximately 0.5% per minute.
- The NPO in Containment reports a significant leak downstream of Check Valve 770; CCW Supply to RCPs.

Initiating Cue:

You are the FSS and the CRS has directed you to identify all valves that must be shut to isolate the leak just on Check Valve 770; CCW Supply to RCPs. Identify valves needed for isolation and **list below**.

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 3 Task No: _____

Task Title: Review Completed 33 Service Water Pump Surveillance

K/A Reference: 1940002.2.12 SRO – 4.1 Job Performance Measure No: SRO Admin 3

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- An NPO has just completed performing the 33 Service Water Pump Surveillance in accordance with 3-PT-Q092C.
- The completed surveillance has not been peer reviewed.

Required Materials: Completed 3-PT-Q092C; 33 Service Water Pump In-service Test.

General References: Completed 3-PT-Q092C; 33 Service Water Pump In-service Test.

Initiating Cue: Review the completed 33 Service Water Pump Surveillance for accuracy and then complete section 7.0, Test Acceptance. Document any discrepancies found if any.

Time Critical Task: NO

Validation Time:

Task Standard: Student reviews the completed surveillance, notes any errors, and determines operability status.

Performance Information

(Denote critical steps with a check mark √)

1. Performance Step: Calibration due dates recorded and instruments within calibration?

Standard: Student recognizes that all required calibration due dates are recorded and the instruments used are within calibration.

Comment: Calibration data recorded in step 3.1. All dates are SAT.

2. Performance Step: All required procedure steps completed?

Standard: Student recognizes that all steps have been completed or properly designated N/A per procedure use guidelines.

Comment: All procedure steps completed or properly designated N/A per procedure use guidelines.

√ 3. Performance Step: All calculations correct?

Standard: Student recognizes that the 33 SWP ΔP in psid has been improperly calculated in step 4.2.17. Student recognizes that the NPO subtracted the Suction Pressure Head value recorded in step 4.2.16 instead of adding that value to the recorded pump discharge pressure recorded in step 4.2.13. NPO came up with a value of 80.56 psid instead of the correct value of 87.44 psid.

Comment: Student may realize here that this means the pump is not in alert. Student may also determine that the pump surveillance needs to be run again with supervisory oversight to ensure operability.

4. Performance Step: All data properly transcribed?

Standard: Student recognizes that all data has been properly transcribed, but also recognizes that the real pump ΔP value should have been 87.44 psid.

Comment: All other data has been properly transcribed.

Performance Information

(Denote critical steps with a check mark √)

√ 5. Performance Step: Operability conclusions correct?

Standard: **Student recognizes that the 33 SWP ΔP in psid has been improperly calculated in step 4.2.17.** Student may realize here that this means the pump is not in alert. Student may also determine that the pump surveillance needs to be run again with supervisory oversight to ensure operability.

Comment: Key is that the student recognizes that the ΔP has been incorrectly calculated and that action is required to correct the error. Student may just make pen & ink corrections to step 4.2.17 and the recorded values / conclusions in Section 6.0.

√ 6. Performance Step: Complete Section 7.0; Test Acceptance

Standard: Student completes Section 7.0; Test Acceptance using the corrected ΔP value of 87.44. Student determines pump is in the acceptable range for all parameters including ΔP. (80.1 ≤ psid ≤ 87.6)

Comment: Student recognizes that the pump meets the IST required values for vibration and ΔP. If student wants to re-run surveillance, **cue the student to use the corrected ΔP value and complete Section 7.0 of the Surveillance.**

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

N/A
SRO Admin JPM in classroom

Initial Conditions:

- An NPO has just completed performing the 33 Service Water Pump Surveillance in accordance with 3-PT-Q092C.
- The completed surveillance has not been peer reviewed.

Initiating Cue:

Review the completed 33 Service Water Pump Surveillance for accuracy and then complete section 7.0, Test Acceptance. Document any discrepancies found if any.

Entergy
Nuclear Northeast

One Site, One Team, One Fleet
Indian Point Energy Center

Procedure Use Is:

☑ Continuous

☐ Reference

☐ Information

Control Copy: for JPM Training QA

Effective Date: for JPM Training QA

3-PT-Q092C, Revision 15
33 SERVICE WATER PUMP

Indian Point Operations

Approved By:

Training / for JPM purposes only

RPO or Designee: **Print Name / Sign / Date**

Team 3D

Procedure Owner

EDITORIAL REVISION

REVISION SUMMARY
(Page 1 of 1)

1.0 REASON FOR REVISION

1.1 Incorporated changes due to CR-IP3-2013-04174 [IP3-11715].

2.0 SUMMARY OF CHANGES

2.1 Made some wording and punctuation corrections, no rev bars **[Editorial change per IP-SMM-AD-102, step 4.6.1]**.

2.2 Revised Acceptance Criteria values in steps 6.1.1 and 6.1.3 (from *79.1* ≤ psid ≤ 87.6 to **80.1** ≤ psid ≤ 87.6); due to IST Engineer feedback (IP3-11715) **[Editorial change per step 4.6.13]**.

2.3 Added "Calculation No. IP-CALC-13-00063" to Development Docs step 9.2.15 **[Editorial change per IP-SMM-AD-102, step 4.6.11]**.

2.4 Deleted 'old' step 10.2 (Documentation) since this test does not produce any documents required for the IPEC Records Retention Schedule **[Editorial change per step 4.6.12]**.

Per EN-LI-100, Rev. 10, Section 5.2 [4], changes to those portions of the Inservice Inspection and Inservice Testing Programs that are controlled in accordance with 10 CFR 50.55a do not require PAD review.

TABLE OF CONTENTS

1.0 PURPOSE

1.1 This procedure establishes the requirements for the following:

- Obtaining and analyzing data for assessment of the operational readiness of 33 Service Water Pump (33 SWP) as required by the Inservice Test (IST) Program (Group A Test).
- Obtaining and analyzing data for assessment of the operational readiness of the following valves as required by the IST Program:
  - SWN-1-3, 33 SWP Discharge Check Valve
  - SWN-9-3, 33 Service Water Pump Vacuum Breaker
  - SWN-PCV-1207, SWP-33 Zurn Strainer Backwash Pressure Control Valve
- Verifying the backwash capability of 33 Zurn Strainer.
- Inspecting the material condition of SWN-PCV-1207.

1.2 This procedure applies to the following components:

COMPONENT	TESTING REQUIREMENTS (1)
33 SWP	OM ISTB
SWN-1-3	EC
SWN-9-3	EO EC
SWN-PCV-1207	EO EC FST-C
33 Zurn Strainer	FUNCTIONAL

(1) OM ISTB: IST Pump Test
EO: IST Exercise Open
EC: IST Exercise Close
FST-C: IST Fail Safe Test Closed

2.0 PRECAUTIONS AND LIMITATIONS

2.1 Precautions And Limitations

2.1.1 This test may be performed in any plant mode.

2.1.2 IF vibration near the top of the motor parallel and perpendicular to the discharge nozzle exceeds 0.7 in/sec, THEN 33 SWP SHALL be secured.

2.1.3 Technical Specification LCO 3.7.9 applies during performance of this procedure.

2.1.4 IF Service Water is supplied to the Component Cooling Water Heat Exchanger, THEN Service Water should be regulated to maintain component cooling water temperature above 70°F.

2.1.5 Pump start frequency should be in accordance with applicable limitations.

2.1.6 IF the actual value of 33 SWP ΔP or an IST required vibration point falls within the alert range, THEN the test frequency SHALL be doubled until the cause of the deviation is determined and the condition is corrected (Reference: 9.2.14).

2.2 General Information

2.2.1 Personnel directing this test SHALL read it in its entirety prior to performance. Personnel otherwise involved SHALL read applicable sections.

2.2.2 Test personnel SHALL complete Sections 3.0, 4.0, 5.0, 6.0, and 7.0, as applicable.

2.2.3 Any discrepancies found SHALL be identified in Section 5.0, Comments.

2.2.4 Recorded data may be transposed at any time during testing.

2.2.5 System pressure should be maintained between 60 and 97.5 psig to minimize stress on system components.

2.2.6 Fail Safe Testing of SWN-PCV-1207 is verified when the valve goes fully closed during the stroke time test.

2.2.7 An upper case "V" used as a column header in lineup tables or beneath an initial line for a step denotes the requirement for verification by a second individual. This verification may be performed concurrently or independently at the discretion of the SM/Designee.

2.2.8 This procedure has been upgraded to the requirements of ASME OM 2001 with Addenda through 2003. If a valve fails stroke time criteria, the following corrective action guidance SHALL be used.

- IF a valve fails to exhibit required change of valve position or exceeds stroke time acceptance criteria, THEN the valve SHALL be immediately declared inoperable.
- WHEN a valve exceeds its stroke time criteria, THEN it can be immediately stroke timed again (3 times) in accordance with Attachment 9. During this second test the valve should be observed locally if possible.
- IF the 3 additional stroke times meet stroke time acceptance criteria, THEN the cause of initial deviation SHALL be analyzed, results documented, and valve returned to service.
- IF any of the 3 additional stroke times do NOT meet stroke time acceptance criteria, THEN valve SHALL remain inoperable and the following options SHALL be pursued.
  - Valve may be repaired or replaced.

    OR

  - Second set of data may be analyzed, in accordance with Attachment 9, to verify new stroke time represents acceptable valve operation. New reference value and acceptance criteria shall be established and incorporated in the IST trending program and implementing procedure.

2.2.9 33 SWP flowrate will be adjusted to approximately 5400 gpm by a combination of valving in and throttling various service water loads.

2.2.10 The Required Ranges in Section 6.0, Acceptance Criteria, were established from the following Reference Values:

DATE	HEAD (psid)	FLOW (gpm)	VIBRATION (IPS)		
			Motor Top Horizontal North-South	Motor Top Horizontal East-West	Motor Axial
10/10/09	85	5400	0.08	0.11	0.13

2.2.11 Performing this test while 31 SWP is on the Essential Header during the colder months of the year is desirable due to the ease of throttling open SWN-TCV-1103, Containment Temperature Control Valve for more flow.

2.2.12 Pressure test gauges SHALL be calibrated to less than or equal to 1/4% accuracy. Gauge ranges may vary from those specified in Step 3.1 provided the range on the gauge does NOT exceed 3 times the expected value.

2.2.13 A discharge pressure Test Gauge SHALL be installed at the 2nd quarter of every odd year (2011, 2013, etc.) for the IST 2-Year Comprehensive Test. Test Gauge to be installed at the first fitting downstream of valve SWN-58-3, PI-1191 Isolation.

Initials

3.0 PREREQUISITES

3.1 Equipment required for test:

EQUIPMENT	M&TE No.	CAL DUE DATE
33 SWP Discharge Pressure Indicator	PI-1191	(4) 04-18-16
0 - 200 PSIG Test Gauge	(5) IP36A-03341	(5) 11-10-15
Vibrometer	MHA-04-10	2-24-16
Flow Indicator for 33 SWP	(1) FI-1142	(4) 10-01-15 (i)
Flow Indicator for 31 SWP	(2) FI-1144	(4) 10-01-15 (i)
Flow Indicator for 32 SWP	(3) FI-1143	(4) 10-01-15 (i)
Stopwatch	SW-009-10	11-8-15
Means of measuring from top of lower grating to river water level in inches	N/A	N/A

P.D.

(1) FI-1142 is the normal flow indicator, for 33 SWP, but an alternate flow indicator may be used. RECORD number of flow indicator actually used.

(2) FI-1144 is the normal flow indicator FOR 31 SWP, but an alternate flow indicator may be used. RECORD number of flow indicator actually used.

(3) FI-1143 is the normal flow indicator for 32 SWP, but an alternate flow indicator may be used. RECORD number of flow indicator actually used. This item may be marked N/A if flow indicator is NOT required.

(4) For installed instrumentation, this may be performed by verifying NO overdue calibration PMs or surveillances exist and documenting this in Section 5.0, Comments.

(5) Needed only for IST 2-Year Comprehensive Test (2nd Quarter of every odd year) OR directed by Test Supervisor.

3.2 Reason for Test – CHECK applicable listing:

☒ Normal Surveillance WO # 5258 4033-01

☐ Post Maintenance Test WO #_____

WO #_____

WO #_____

☐ Increased Test Frequency WO #_____

☐ Other _____

P.D.

Initials

4.0 PROCEDURE

4.1 Initial Conditions

4.1.1 OBTAIN permission from SM or Designated Alternate to perform this test.

PRT JJM TODAY

SM or Des. Alt. Signature / Date

4.2 Test Of 33 Service Water Pump

4.2.1 IF performing the IST 2-Year Comprehensive Test for 33 SWP OR as directed by Test Supervisor,
THEN INSTALL discharge pressure test gauge as follows: PJB

4.2.1.1 CLOSE SWN-58-3, PI-1191 Isolation
AND DISCONNECT first fitting downstream of valve. PJB

4.2.1.2 INSTALL test gauge at test connection. PJB

4.2.1.3 OPEN SWN-58-3. PJB

4.2.2 N/A IF 33 SWP is running, THEN RECORD present time as start time:

Start time: N/A N/A

4.2.3 IF 33 SWP is NOT in running,
THEN COORDINATE with Control Room to ensure another SWP on 31, 32, 33 SW header is in operation. CR.

Initials

NOTE

NO counter rotation demonstrates EC for SWN-1-3, 33 SWP Discharge Check Valve.

4.2.3.1 OBSERVE 33 SWP AND VERIFY EC of SWN-1-3, 33 SWP Discharge Check Valve:

Counter Rotation: (Circle one) Yes (No)

SWN-1-3 EC: (Circle one) (Yes) / No

PdS

4.2.3.2 VERIFY proper oil level in sight glass on upper portion of motor.

PdS

NOTE

The following alarms may be received during performance of the following step:

- SERVICE WTR HDR (31, 32, 33) HIGH/LOW PRESS (Panel SJF)
- SERVICE WATER TO LUBE OIL COOLERS HIGH/LOW PRESSURE (Panel SJF)
- SERVICE WATER TO H2 COOLERS HIGH/LOW PRESSURE (Panel SJF)

4.2.3.3 START 33 SWP and RECORD start time:

Start Time: (– 3 hours) from current time

PdS

Initials

NOTE

Exercise Open (EO) of SWN-9-3, 33 Service Water Pump Vacuum Breaker, is verified by 33 SWP running acceptably.

4.2.3.4 VERIFY water issued from SWN-9-3, 33 Service Water Pump Vacuum Breaker, when 33 SWP was started.

SWN-9-3 EO: (Circle one) (Yes) / No

RB

4.2.4 IF FI-1142 (33 SWP Flow Indicator) is to be used, THEN PLACE in service per Attachment 1, Instructions for Placing Service Water Flow Indicator in Service.

RB

4.2.5 IF FI-1142 (33 SWP Flow Indicator) is suspected to be inaccurate or out of calibration, THEN PLACE an alternate flow indicator in service per Attachment 2, Procedure for Using an Alternate Flow Indicator

N/A

4.2.5.1 NOTE the use of alternate flow indicator in Section 5.0, Comments.

N/A

N A

NOTE

Steps 4.2.6 through 4.2.9 are provided to allow placing the associated or alternate flow indicators in service for 31 and 33 SWPs when it is anticipated that the discharge valve of 1 or both of these pumps may need to be throttled to obtain required test flow on 32 SWP.

4.2.6 IF FI-1144 is to be used for 31 SWP, THEN PLACE in service per Attachment 3, Placing SW Flow Indicator FI-1144 in Service for 31 SWP.

N/A

V

Initials

4.2.7 IF FI-1144 (31 SWP Flow Indicator) is suspected of being inaccurate or is out of calibration, THEN: N/A

4.2.7.1 PLACE an alternate flow indicator in service per Attachment 4, Placing an Alternate SW Flow Indicator in Service for 31 SWP. N/A

4.2.7.2 NOTE use of alternate flow indicator in Section 5.0, Comments. N/A

4.2.8 IF FI-1143 is to be used for 32 SWP, THEN PLACE in service per Attachment 5, Placing SW Flow Indicator FI-1143 in Service for 32 SWP. N/A

4.2.9 IF FI-1143 (32 SWP Flow Indicator) is suspected of being inaccurate or is out of calibration, THEN:

4.2.9.1 PLACE an alternate flow indicator in service per Attachment 6, Placing an Alternate SW Flow Indicator in Service for 32 SWP. N/A

4.2.9.2 NOTE use of alternate flow indicator in Section 5.0, Comments. N/A

Initials

CAUTION

- Avoid running SWP for a prolonged period of time at flow rates less than 2500 gpm and NOT longer than 30 minutes at a flowrate of 2000 gpm.
- Avoid running any SWP at a flowrate greater than 7500 gpm.
- Throttling any SWP discharge valve will render the associated SWP inoperable.

NOTE

- Attachment 7, List of Various Service Water Loads / Valves, shows SW loads and recommended valves, which may be positioned as required to obtain desired flow rate. Attachment 7 is a guide and NOT necessarily all inclusive.
- Attachment 8, As-Found and As-Left Table, is used to track valve manipulations required to obtain desired flow rate.
- Throttling SWN-2-3, 33 SWP Discharge Isolation, may require entry into an AOT per LCO 3.7.9.

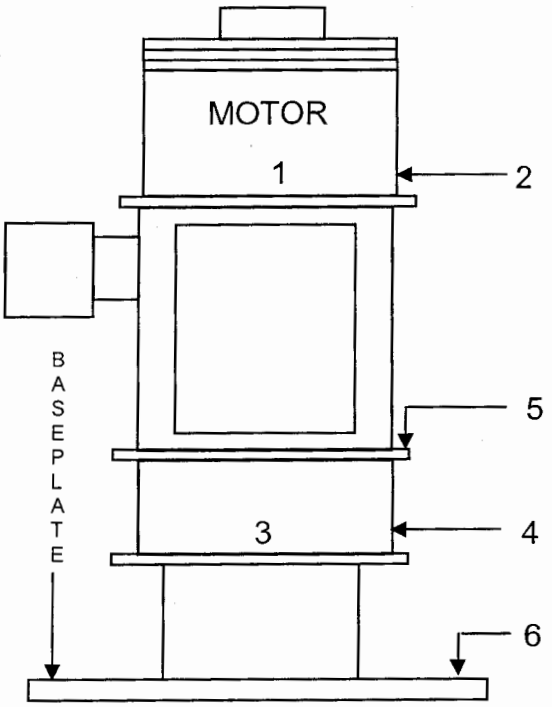
4.2.10 ADJUST 33 SWP flow to 5292 - 5508 gpm on FI-1142 or alternate flow instrument and RECORD flow **{Ref: 9.1.1}**:

33 SWP Flow: 5488 gpm P.D.

Initials

4.2.11 WHEN 33 SWP has run at least 2 minutes,
THEN OBTAIN vibration readings using hand-held vibrometer:

- PLACE probe on locations indicated on motor sketch.
- RECORD data in the velocity mode (in/sec) for all points.



33 SW PUMP LOCATION	ACTUAL (IN / SEC)	Acceptance Criteria	
		OPERABILITY	ALERT
1. Motor Top North-South*	0.04	≤ 0.48	≤ 0.2
2. Motor Top East-West*	0.07	≤ 0.66	≤ 0.27
3. Motor Bottom North-South	0.03	NA	NA
4. Motor Bottom East-West	0.04	NA	NA
5. Motor Axial*	0.05	≤ 0.7	≤ 0.32
6. Base Axial	0.03	NA	NA

* Denotes IST data.

P.K.

Initials

NOTE

Alert values are NOT used to determine operability.

4.2.12 EVALUATE vibration readings recorded in Step 4.2.11:

ACCEPTANCE CRITERIA	ACTUAL	ACCEPTABLE	INITIALS
All Surveillance Operability Criteria satisfied	YES / NO / N/A	YES / NO / N/A	P.B
All Surveillance Alert Criteria satisfied	YES / NO / N/A	YES / NO / N/A	P.B

4.2.13 RECORD 33 SWP discharge pressure on PI-1191 **OR** installed discharge pressure gauge (step 4.2.1.2):

PI-1191: N/A psig **OR** 0 – 200 psig Test Gauge 84 psig P.B

NOTE

Zero or negligible leakage demonstrates EC for SWN-9-3, 33 Service Water Pump Vacuum Breaker.

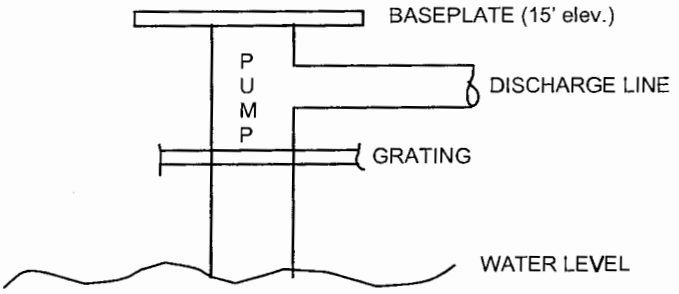
4.2.14 OBSERVE SWN-9-3 for leakage.

SWN-9-3 EC: (Circle one) Yes / No P.B.

Initials

4.2.15 MEASURE AND RECORD the distance from river water to top of lower grating in inches:

66 inches PLA



4.2.16 CALCULATE 32 SWP Suction Pressure Head (pump lift) in psig using distance from top of lower grating to river water level recorded in Step 4.2.15 (Distance Below Grating) and distance from top of lower grating to center line of 32 SWP discharge line (Distance Above Grating):

$SPH_{psig} = (DBG_{in} + DAG_{in})(0.083\ ft/in)(0.432\ psi/ft)$

SPH_{psig} = Suction Pressure Head (pump lift) in psig

DBG_{in} = Distance Below Grating in inches (Step 4.2.15) (This is a variable value.)

DAG_{in} = Distance Above Grating = 30 inches (This is a fixed value.)

$SPH_{psig} = (\underset{\text{(Step 4.2.15)}}{66}\ in + 30\ in)(0.083\ ft/in)(0.432\ psi/ft) = 3.44\ psig$

PLA

Initials

4.2.17 CALCULATE 33 SWP ΔP in psid using 33 SWP discharge pressure recorded in Step 4.2.13, Suction Pressure Head value recorded in Step 4.2.16:

$\Delta P_{psid} = DP_{psig} + SPH_{psig}$

ΔP_{psid} = Differential Pressure in psid

DP_{psig} = Discharge Pressure in psig (Step 4.2.13)

SPH_{psig} = Suction Pressure Head in psig (Step 4.2.16)

ΔP_{psid} = 84 (Step 4.2.13) psig + 3.44 (Step 4.2.16) psig = 80.56 psid

RB

4.2.18 RETURN valves identified on Attachment 8 to position required by CRS or SM.

RB

4.2.19 IF FI-1142 (33 SWP Flow Indicator) was used, THEN REMOVE Alternate Flow Indicator from service per Attachment 1.

GS

4.2.20 IF Alternate Flow Indicator was used for 33 SWP THEN REMOVE Alternate Flow Indicator from service per Attachment 2, Placing an Alternate SW Flow Indicator In-Service for 33 SWP.

N/A

4.2.21 IF FI-1144 was placed in service for 31 SWP in Step 4.2.6, THEN REMOVE from service per Attachment 3.

N A

4.2.22 IF an Alternate Flow Indicator was placed in service for 31 SWP in Step 4.2.7.1, THEN REMOVE Alternate Flow Indicator from service per Attachment 4.

4.2.23 IF FI-1142 was placed in service for 32 SWP in Step 4.2.8, THEN REMOVE from service per Attachment 5.

4.2.24 IF an Alternate Flow Indicator was placed in service for 32 SWP in Step 4.2.9.1, THEN REMOVE Alternate Flow Indicator from service per Attachment 6.

Initials

4.2.25 IF Step 4.2.3 was NOT performed, THEN:

N/A

NOTE

The following alarms may be received during performance of the following step:

- SERVICE WTR HDR (31, 32, 33) HIGH/LOW PRESS (Panel SJF)
- SERVICE WATER TO LUBE OIL COOLERS HIGH/LOW PRESSURE (Panel SJF)
- SERVICE WATER TO H2 COOLERS HIGH/LOW PRESSURE (Panel SJF)

4.2.25.1 COORDINATE with Control Room to ensure another SWP on 31, 32, 33 SW header is in operation. N/A

4.2.25.2 STOP 33 SWP. N/A

NOTE

Exercise Open (EO) of SWN-9-3, 33 Service Water Pump Vacuum Breaker, is verified by an in rush of air into the vacuum breaker discharge pipe when 33 SWP is stopped.

4.2.25.3 VERIFY SWN-9-3, 33 Service Water Pump Vacuum Breaker, opened by feeling an in rush air into the vacuum breaker discharge pipe.

SWN-9-3 EO: (Circle one) Yes / No

Initials

NOTE

To verify EC for SWN-1-3, 33 SWP must stop and exhibit NO counter rotation. Some counter rotation may be experienced as water drains from piping between pump and check valve.

4.2.25.4 OBSERVE 33 SWP for counter rotation.

N/A

Counter Rotation: (Circle one)	Yes / No
SWN-1-3 EC: (Circle one)	Yes / No

N/A

4.2.25.5 IF EO of SWN-9-3, 33 Service Water Pump Vacuum Breaker, was NOT verified in Step 4.2.25.3, THEN:

a) VERIFY proper oil level in sight glass on upper portion of motor.

N/A

NOTE

The following alarms may be received during performance of the following step:

- SERVICE WTR HDR (31, 32, 33) HIGH/LOW PRESS (Panel SJF)
- SERVICE WATER TO LUBE OIL COOLERS HIGH/LOW PRESSURE (Panel SJF)
- SERVICE WATER TO H2 COOLERS HIGH/LOW PRESSURE (Panel SJF)

Allow sufficient time prior to restarting 33 SWP for SWN-9-3, 33 Service Water Pump Vacuum Breaker, to open. This will ensure water issues in Step c).

b) START 33 SWP.

Initials

NOTE

Exercise Open (EO) of SWN-9-3, 33 Service Water Pump Vacuum Breaker, is verified by water issuing from the valve when 33 SWP is started.

(c) N/A VERIFY water issued from SWN-9-3, 33 Service Water Pump Vacuum Breaker, when 33 SWP was started.

SWN-9-3 EO: (Circle one) Yes / No

N/A

4.2.26 NOTIFY CRS: 33 SWP may be operated as required for plant operation.

[illegible]

Initials

4.3 **Test Of Zurn Strainer and SWN-PCV-1207, 33 SWP Zurn Strainer Blowdown Valve**

4.3.1 RECORD As-Found position of control switch:

Control Switch	As-Found Position	Initials
33 Zurn Strainer	HAND	PS

4.3.2 IF 33 Zurn Strainer control switch is in HAND,
THEN NOTIFY CRS: 33 Zurn Strainer control switch will be placed in AUTO or OFF while testing. PS

4.3.2.1 PLACE 33 Zurn Strainer control switch in AUTO OR OFF. PS

4.3.3 VERIFY following conditions:

- 33 Zurn Strainer is NOT backwashing. PS
- SWN-PCV-1207, SWP-33 Zurn Strainer Backwash Pressure Control Valve, is closed. PS
- SWN-2-3, 33 SWP Discharge Isolation, is open. PS
- At least 1 SWP is operating on the 31, 32, 33 SW Header. PS

Initials

CAUTION

Strainer backwash mechanisms are water lubricated. DO NOT operate strainer backwash motors/valves unless pressurized water is available to strainer.

NOTE

- SWN-PCV-1207 operation SHALL be observed locally in order to record timing.
- Opening and closing valve stroke times for SWN-PCV-1207 are taken from control switch actuation to cessation of valve stem movement.
- Zurn Strainer backwash valve position is verified by observing flat areas on valve shaft. Flats in line with piping indicate valve is open. Flats at 90 degrees to piping indicate valve is closed.

4.3.4 PLACE 33 Zurn Strainer Control Switch in HAND AND RECORD opening stroke time for SWN-PCV-1207.

VALVE STROKE TIME	ACCEPTABLE TIME LIMIT
SWN-PCV-1207 opens 1.45 sec	≤ 2 sec

PS

4.3.5 VERIFY 33 Zurn Strainer motor rotates.

33 Zurn Strainer rotates: (Circle one) (Yes) / No

PS

4.3.6 PLACE 33 Zurn Strainer Control Switch in OFF and RECORD closing stroke time for SWN-PCV-1207.

VALVE STROKE TIME	ACCEPTABLE TIME LIMIT
SWN-PCV-1207 closes 1.49 sec	≤ 2 sec

PS

4.3.7 VERIFY 33 Zurn Strainer motor stops.

PS

Initials

4.3.8 Visually INSPECT SWN-PCV-1207 and associated SOV and air lines for the following:

- Loose bolts
- Corrosion
- Leaks
- Damaged or kinked hoses

P.D.

NOTE

IF 33 Zurn Strainer can NOT be backwashed in AUTO or HAND via SWN-PCV-1207 or manually per 3-SOP-RW-005, Service Water System Operation, THEN 33 Zurn Strainer SHALL be declared inoperable.

4.3.9 IF SWN-PCV-1207 fails to open,
THEN PERFORM a manual backwash of 33 Zurn Strainer per 3-SOP-RW-005, Service Water System Operation.

N/A

4.4 Restoration

4.4.1 RESTORE 33 Zurn Strainer Control Switch to AUTO OR as required by SM/CRS:

CONTROL SWITCH	CONTROL SWITCH NORMAL POSITION	AS-LEFT	INITIALS	V
33 Zurn Strainer	AUTO	AUTO	P.D.	D.P.

4.4.2 IF discharge pressure Test Gauge was installed (in step 4.2.1.2), THEN CLOSE SWN-58-3, PI-1191 Isolation.

P.D

4.4.2.1 REMOVE test gauge. P.D

4.4.2.2 RECONNECT tubing at fitting used for test gauge. P.D

4.4.2.3 OPEN SWN-58-3. P.D

5.0 **COMMENTS:**

NONE - [illegible]

Test Performers:

Print Name:	Initials:	Signature/Date:
PLANT OPERATOR	PA	Plant Operator Today
OPERATOR JUNIOR PLANT	OJP	Operator Junior Plant Today

6.0 ACCEPTANCE CRITERIA

6.1 IST Requirements

6.1.1 33 SWP Operability Requirements

Parameter	Step	Surveillance Requirement	Acceptance Criteria	Actual	Acceptable	Initials
33 SWP Flow	4.2.10	IST Program	5292 ≤ gpm ≤ 5508	5400 gpm	(YES) / NO / NA	P.R.
Motor Top Horizontal N-S Vibration	4.2.11		≤ 0.48 in/sec	0.04 in/sec	(YES) / NO / NA	P.R.
Motor Top Horizontal E-W Vibration			≤ 0.66 in/sec	0.07 in/sec	(YES) / NO / NA	P.R.
Motor Axial Vibration			≤ 0.7 in/sec	0.05 in/sec	(YES) / NO / NA	P.R.
33 SWP ΔP	4.2.17		80.1 ≤ psid ≤ 87.6 * IST Surveillance	80.56 psid	(YES) / NO / NA	P.R.

* Acceptance Criteria is based on IST 2-Year Comprehensive testing requirements, which are more restrictive than quarterly testing requirements.

6.1.2 33 SWP Valves Operability Requirements

Component	Step	Surveillance Requirement	Acceptance Criteria	Actual Value	Acceptable	Initials
SWN-1-3	4.2.3.1 OR 4.2.25.4	IST Program	EC	(YES) / NO	(YES) / NO	P.R.
SWN-9-3	4.2.3.4 OR 4.2.25.3 OR 4.2.25.5c)		EO	(YES) / NO	(YES) / NO	P.R.
				(YES) / NO	(YES) / NO	P.R.
	4.2.14		EC	(YES) / NO	(YES) / NO	P.R.
SWN-PCV-1207	4.3.4		EO ≤ 2 seconds	1.45 sec	(YES) / NO	P.R.
	4.3.6		EC ≤ 2 seconds	1.49 sec	(YES) / NO	P.R.

6.1.3 33 SWP Alert Status Determination

Parameter	Step	Actual Value	Alert Range	Is actual value within the Alert Range?	Initials
Motor Top Horizontal N-S	4.2.11	0.04 in/sec	0.2 < in/sec ≤ 0.48	YES (NO) NA	
Motor Top Horizontal E-W		0.07 in/sec	0.27 < in/sec ≤ 0.66	YES (NO) NA	
Motor Axial		0.05 in/sec	0.32 < in/sec ≤ 0.7	YES (NO) NA	
33 SWP ΔP	4.2.17	80.56 psid	80.1 ≤ psid ≤ 80.8 IST Surveillance	(YES) NO NA	

6.2 **Other Requirements**

Zurn Strainer					
Component	**Step**	**Surveillance Requirement**	**Acceptance Criteria**	**Acceptable**	**Initials**
33 Zurn Strainer	4.3.5	Necessary Support Equipment	Rotates	(YES) NO	

7.0 TEST ACCEPTANCE

7.1 IST Acceptance Criteria

7.1.1 Based on the recorded data, are all IST Operability Acceptance Criteria of Section 6.1.1 and 6.1.2 satisfied?

YES NO N/A

7.1.2 Actions for SWN-PCV-1207:

7.1.2.1 IF the valve(s) failed to exhibit the required change of position, THEN:

- NOTIFY CRS/SM to declare the valve(s) inoperable.
- INITIATE a WR and CR.
- TAKE applicable action in accordance with LCO 3.7.9.

7.1.2.2 IF the valve(s) stroke time is outside the IST Acceptance Criteria Limits, THEN:

- NOTIFY CRS/SM to declare the valve(s) inoperable.
- INITIATE a CR.
- PERFORM additional stoke tests in accordance with Attachment 9, ASME OM Code Stroke Evaluation Sheet.

7.1.2.3 Based on stroke test data on Attachment 9, are stroke times within Acceptance Criteria of Section 6.1?

YES NO N/A

a) IF the stoke test IST Acceptance Criteria are NOT satisfied, THEN INITIATE a WR.

b) IF the stoke test IST Acceptance Criteria are satisfied, THEN NOTIFY CRS/SM to declare the valve(s) operable.

7.1.3 Actions for SWN-1-3 and SWN-9-3:

7.1.3.1 IF the valve failed to exhibit the required change of position, THEN:

- NOTIFY CRS/SM to declare the valve inoperable.
- INITIATE a WR and a CR.
- TAKE applicable action in accordance with LCO 3.7.9.

7.1.4 Actions for 33 SWP:

7.1.4.1 IF the pump test results are outside the IST Acceptance Criteria Limits, THEN:

- NOTIFY CRS/SM to declare the pump inoperable.
- INITIATE a WR and a CR.
- TAKE applicable action in accordance with LCO 3.7.9.

7.2 33 SWP Alert Status Determination

7.2.1 IF any parameter is within the Alert Range in Section 6.1.3, THEN:

- NOTIFY CRS/SM
- INITIATE a CR

7.3 Other Requirements Acceptance Criteria

7.3.1 Based on the recorded data, are all Support Acceptance Criteria of Section 0 satisfied?

YES NO N/A

7.3.2 IF the 33 Zurn Strainer test results are outside the Support Acceptance Criteria of Section 0, THEN:

- NOTIFY CRS/SM to declare the 33 Zurn Strainer inoperable.
- INITIATE a WR and a CR.
- TAKE applicable action in accordance with LCO 3.7.9.

7.4 IF NO is circled in Step 7.1.1, 7.1.2.3, OR 7.3.1,
THEN LIST corrective action(s) taken and comments:

Comments: _____

_____

_____

_____

_____

Reviewed By: _____

SM or Des. Alt: **Print Name / Sign / Date**

8.0 EVALUATION

8.1 IST EVALUATION

Comments: _____

_____

_____

_____

Reviewed By: _____

IST Engineer: **Print Name / Sign / Date**

8.2 SURVEILLANCE COORDINATOR REVIEW

Comments: _____

_____

_____

_____

Reviewed By: _____

Surveillance Coordinator : **Print Name / Sign / Date**

9.0 REFERENCES

9.1 Commitment Documents

9.1.1 Design Basis Licensing Database COM-83-02582 (Old No. 83-003-C), IER 82-23, dated 01/14/83

9.2 Development Documents

9.2.1 9321-F-20333, Sheets 1 and 2, Flow Diagram Service Water System

9.2.2 9321-F-27223, Flow Diagram Service Water System Nuclear Steam Supply Plant

9.2.3 Modification Drawings: 9321-F-10063 and 871150-FS-201, Intake Structure Platform Framing Plan and Details

9.2.4 SEP-IST-IP3-001, Inservice Testing Program Plan (IP-RPT-09-00070)

9.2.5 3-PT-V059C, 33 SWP Reference Test

9.2.6 Memo to 3PT-M35 file, dated January 8, 1993 (Location of Pump Suction for Determining Suction Pressure for 31-36 SW Pumps)

9.2.7 Memo NOS-93-140 (April 9, 1993)

9.2.8 Memo IP-PRF-93-257 (Timing Requirements for SWN-PCV-1205 thru 1210)

9.2.9 MMP 96-3-507 SWS, Main SW Pump Zurn Strainer Piping Replacement

9.2.10 3PT-Q82, Zurn Strainer Backwash Valve Test PCV-1205 Through PCV-1210.

9.2.11 Technical Manual IP3V-209-100000314 (Service Water Pumps)

9.2.12 Technical Manual IP3V-1158-100000844 (Service Water Strainers)

9.2.13 Technical Manual IP3V-1301-100001015 (Service Water Annubars)

9.2.14 ASME OM 2001 through 2003 Addenda

9.2.15 Calculation No. IP-CALC-13-00063

9.3 Interface Documents

9.3.1 Technical Specification LCO 3.7.9

9.3.2 3-SOP-RW-005, Service Water System Operation

10.0 RECORDS AND DOCUMENTATION

10.1 Records

The following required records are generated by this procedure and SHALL be maintained in accordance with IPEC Records Retention Schedule:

10.1.1 This Surveillance Test becomes a Quality Record when completed.

Initials

ATTACHMENT 1
Placing SW Flow Indicator FI-1142 In-Service for 33 SWP
(Page 1 of 2)

NOTE

An annubar assembly drawing is provided on Page 2 of 2.

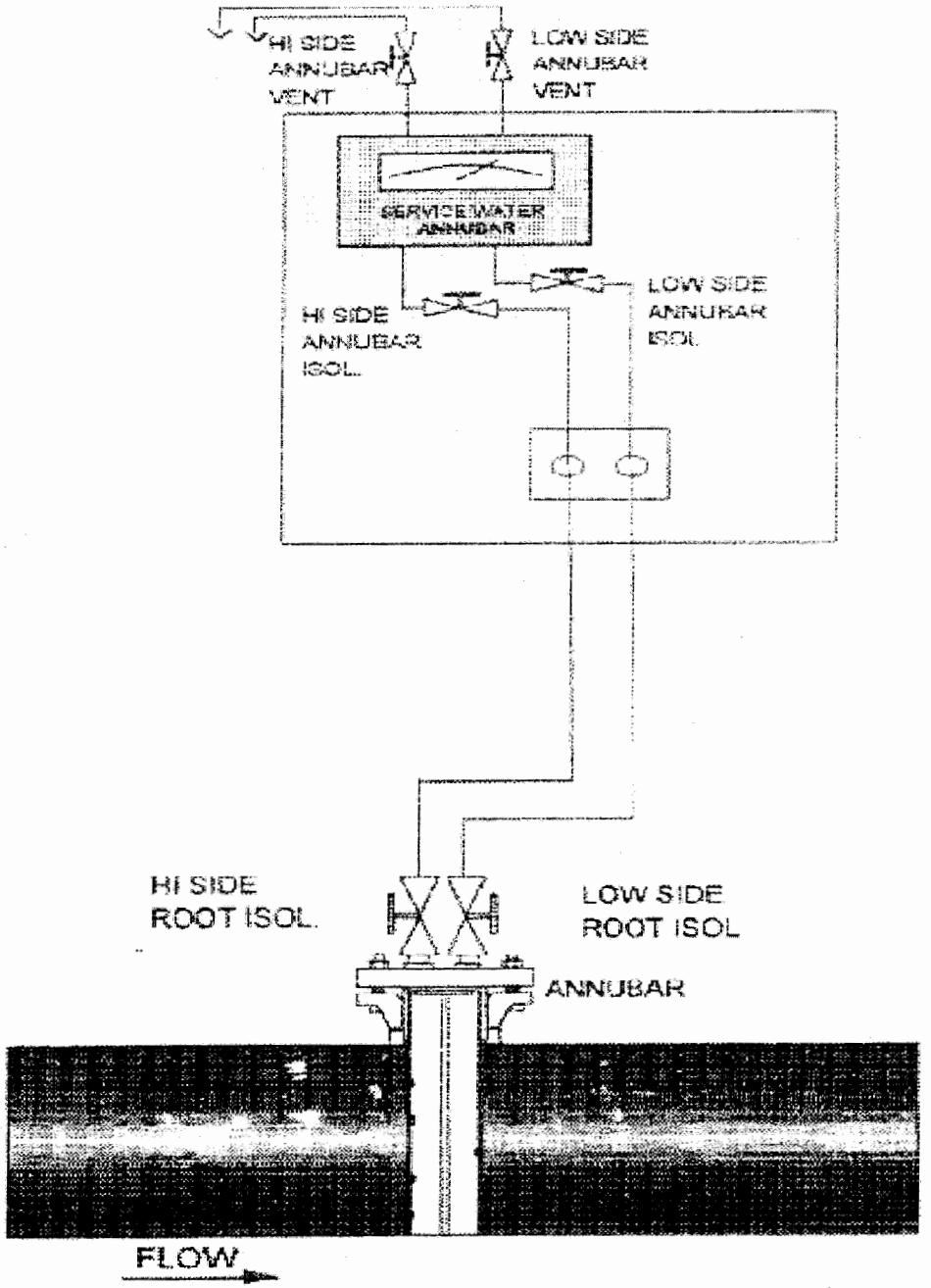
1.0 PLACE the Normal Flow Indicator in service as follows:

1.1	VERIFY FI-1142 Hi and Lo side isolation valves are Closed.	P.A
1.2	OPEN SWN-143, FI-1142 Hi Side Root Isolation.	P.A
1.3	OPEN SWN-133, FI-1142 Lo Side Root Isolation.	P.A
1.4	VERIFY FI-1142 Hi Side Vent valve is OPEN.	P.A
1.5	VERIFY FI-1142 Lo Side Vent valve is OPEN.	P.A
1.6	Simultaneously OPEN Hi Side and Lo Side isolation valves for FI-1142.	P.A
1.7	CLOSE FI-1142 Hi Side Vent valve.	P.A
1.8	CLOSE FI-1142 Lo Side Vent valve.	P.A

2.0 WHEN use of Normal Flow Indicator is complete,
THEN REMOVE from service as follows:

2.1	OPEN FI-1142 Hi Side Vent.	P.A
2.2	OPEN FI-1142 Lo Side Vent.	P.A
2.3	Simultaneously CLOSE both Hi side and Lo side isolation valves for FI-1142.	P.A
2.4	CLOSE SWN-143, FI-1142 Hi Side Root Isolation.	P.A
2.5	CLOSE SWN-133, FI-1142 Lo Side Root Isolation.	P.A

ATTACHMENT 1
Instructions for Placing Service Water Flow Indicator In-Service
(Page 2 of 2)
Annubar Assembly (Typical)



Initials

ATTACHMENT 2
Placing an Alternate SW Flow Indicator In-Service for 33 SWP
(Page 1 of 2)

3.0 CONNECT the Alternate Flow Indicator as follows:

3.1 RECORD Alternate Flow Indicator to be used: _____ _____

3.2 VERIFY FI-1142 Hi Side and Lo Side Isolations are Closed. _____

3.3 VERIFY Alternate Flow Indicator Hi side and Lo side isolations are Closed. _____

3.4 DISCONNECT the Hi and Lo side fittings of FI-1142 AND the Alternate Flow Indicator. _____

3.5 INSTALL tubing between the Hi side of FI-1142 AND the Alternate Flow Indicator. _____

3.6 INSTALL tubing between the Lo side of FI-1142 AND the Alternate Flow Indicator. _____

4.0 PLACE the Alternate Flow Indicator in service as follows:

4.1 VERIFY both Hi and Lo side Flow Indicator isolation valves are closed. _____

4.2 VERIFY SWN-143 and SWN-133, FI-1142 Hi and Lo Side Root Isolation Valves, are OPEN. _____

4.3 VERIFY Alternate Flow Indicator Hi side vent valve is OPEN. _____

4.4 VERIFY Alternate Flow Indicator Lo side vent valve is OPEN. _____

4.5 Simultaneously OPEN Hi side and Lo side isolation valves for FI-1142. _____

4.6 CLOSE Alternate Flow Indicator Lo side vent. _____

4.7 CLOSE Alternate Flow Indicator Hi side vent. _____

Initials

ATTACHMENT 2
Procedure for Using an Alternate Flow Indicator
(Page 2 of 2)

5.0 WHEN use of Alternate Flow Indicator is complete,
THEN REMOVE from service as follows:

5.1 OPEN Alternate Flow Indicator Hi side vent. _____

5.2 OPEN Alternate Flow Indicator Lo side vent. _____

5.3 Simultaneously CLOSE Hi side and Lo side isolation valves for FI-1142. _____

5.4 CLOSE SWN-143, FI-1142 Hi Side Root Isolation Valve. _____

5.5 CLOSE SWN-133, FI-1142 Lo Side Root Isolation Valve. _____

5.6 DISCONNECT and REMOVE the tubing from the Hi and Lo side of FI-1142 and the Alternate Flow Indicator. _____

5.7 CONNECT the HI and Lo side fittings of FI-1142
AND the Alternate Flow Indicator as required. _____

Initials

ATTACHMENT 3
Placing SW Flow Indicator FI-1144 In-Service for 31 SWP
(Page 1 of 1)

NOTE

An annubar assembly drawing is provided on Attachment 1, page 2 of 2.

1.0 PLACE the Normal Flow Indicator in service as follows:

1.1 VERIFY FI-1144 Hi and Lo side isolation valves are Closed. _____

1.2 OPEN SWN-141, FI-1144 Hi Side Root Isolation. _____

1.3 OPEN SWN-131, FI-1144 Lo Side Root Isolation. _____

1.4 VERIFY FI-1144 Hi Side Vent valve is OPEN. _____

1.5 VERIFY FI-1144 Lo Side Vent valve is OPEN. _____

1.6 Simultaneously OPEN Hi Side and Lo Side isolation valves for FI-1144. _____

1.7 CLOSE FI-1144 Lo Side Vent valve. _____

1.8 CLOSE FI-1144 Hi Side Vent valve. _____

2.0 WHEN use of Normal Flow Indicator is complete,
THEN REMOVE from service as follows:

2.1 OPEN FI-1144 Hi Side Vent. _____

2.2 OPEN FI-1144 Lo Side Vent. _____

2.3 Simultaneously CLOSE both Hi side and Lo side isolation valves for FI-1144. _____

2.4 CLOSE SWN-141, FI-1144 Hi Side Root Isolation. _____

2.5 CLOSE SWN-131, FI-1144 Lo Side Root Isolation. _____

Initials

ATTACHMENT 4
Placing an Alternate SW Flow Indicator In-Service For 31 SWP
(Page 1 of 2)

1.0 CONNECT the Alternate Flow Indicator as follows:

1.1 RECORD Alternate Flow Indicator to be used: _____ _____

1.2 VERFIY FI-1144 Hi Side and Lo Side Isolations are Closed. _____

1.3 VERIFY Alternate Flow Indicator Hi side and Lo side isolations are closed. _____

1.4 DISCONNECT the Hi and Lo side fittings of FI-1144 AND the Alternate Flow Indicator. _____

1.5 INSTALL tubing between the Hi side of FI-1144 AND the Alternate Flow Indicator. _____

1.6 INSTALL tubing between the Lo side of FI-1144 AND the Alternate Flow Indicator. _____

2.0 PLACE the Alternate Flow Indicator in service as follows:

2.1 VERIFY both Hi and Lo side Flow Indicator isolation valves are Closed. _____

2.2 VERIFY SWN-141 and SWN-131, FI-1144 Hi and Lo Side Root Isolation Valves, are OPEN. _____

2.3 VERIFY Alternate Flow Indicator Hi side vent valve is OPEN. _____

2.4 VERIFY Alternate Flow Indicator Lo side vent valve is OPEN. _____

2.5 Simultaneously OPEN Hi side and Lo side isolation valves for FI-1144. _____

2.6 CLOSE Alternate Flow Indicator Lo side vent. _____

2.7 CLOSE Alternate Flow Indicator Hi side vent. _____

Initials

ATTACHMENT 4
Placing an Alternate SW Flow Indicator In-Service For 31 SWP
(Page 2 of 2)

3.0 WHEN use of Alternate Flow Indicator is complete,
THEN REMOVE from service as follows:

3.1 OPEN Alternate Flow Indicator Hi side vent. _____

3.2 OPEN Alternate Flow Indicator Lo side vent. _____

3.3 Simultaneously CLOSE Hi side and Lo side isolation valves for FI-1144. _____

3.4 CLOSE SWN-141, FI-1144 Hi Side Root Isolation Valve. _____

3.5 CLOSE SWN-131, FI-1144 Lo Side Root Isolation Valve. _____

3.6 DISCONNECT and REMOVE the tubing from the Hi and Lo side of FI-1144 and the Alternate Flow Indicator. _____

3.7 CONNECT the HI and Lo side fittings of FI-1144 AND the Alternate Flow Indicator as required. _____

ATTACHMENT 5
Placing SW Flow Indicator FI-1143 In-Service for 32 SWP
(Page 1 of 1)

NOTE

An annubar assembly drawing is provided on Attachment 7.

1.0 PLACE the Normal Flow Indicator in service as follows:

1.1 VERIFY FI-1143 Hi and Lo side isolation valves are Closed. _____

1.2 OPEN SWN-142, FI-1143 Hi Side Root Isolation. _____

1.3 OPEN SWN-132, FI-1143 Lo Side Root Isolation. _____

1.4 VERIFY FI-1143 Hi Side Vent valve is OPEN. _____

1.5 VERIFY FI-1143 Lo Side Vent valve is OPEN. _____

1.6 Simultaneously OPEN Hi Side and Lo Side isolation valves for FI-1143. _____

1.7 CLOSE FI-1143 Lo Side Vent valve. _____

1.8 CLOSE FI-1143 Hi Side Vent valve. _____

2.0 WHEN use of Normal Flow Indicator is complete,
THEN REMOVE from service as follows:

2.1 OPEN FI-1143 Hi Side Vent. _____

2.2 OPEN FI-1143 Lo Side Vent. _____

2.3 Simultaneously CLOSE both Hi side and Lo side isolation valves for FI-1143. _____

2.4 CLOSE SWN-142, FI-1143 Hi Side Root Isolation. _____

2.5 CLOSE SWN-132, FI-1143 Lo Side Root Isolation. _____

ATTACHMENT 6,
Placing an Alternate SW Flow Indicator In-Service for 32 SWP
(Page 1 of 2)

1.0 CONNECT the Alternate Flow Indicator as follows:

1.1 RECORD Alternate Flow Indicator to be used: _____ _____

1.2 VERIFY FI-1143 Hi Side and Lo Side Isolations are Closed. _____

1.3 VERIFY Alternate Flow Indicator Hi side and Lo side isolations are Closed. _____

1.4 DISCONNECT the Hi and Lo side fittings of FI-1143 AND the Alternate Flow Indicator. _____

1.5 INSTALL tubing between the Hi side of FI-1143 AND the Alternate Flow Indicator. _____

1.6 INSTALL tubing between the Lo side of FI-1143 AND the Alternate Flow Indicator. _____

2.0 PLACE the Alternate Flow Indicator in service as follows:

2.1 VERIFY both Hi and Lo side Flow Indicator isolation valves are Closed. _____

2.2 VERIFY SWN-142 and SWN-132, FI-1143 Hi and Lo Side Root Isolation Valves, are OPEN. _____

2.3 VERIFY Alternate Flow Indicator Hi side vent valve is OPEN. _____

2.4 VERIFY Alternate Flow Indicator Lo side vent valve is OPEN. _____

2.5 Simultaneously OPEN Hi side and Lo side isolation valves for FI-1143. _____

2.6 CLOSE Alternate Flow Indicator Lo side vent. _____

2.7 CLOSE Alternate Flow Indicator Hi side vent. _____

ATTACHMENT 6,
Placing an Alternate SW Flow Indicator In-Service for 32 SWP
(Page 2 of 2)

3.0 WHEN use of Alternate Flow Indicator is complete,
THEN REMOVE from service as follows:

3.1 OPEN Alternate Flow Indicator Hi side vent. _____

3.2 OPEN Alternate Flow Indicator Lo side vent. _____

3.3 Simultaneously CLOSE Hi side and Lo side isolation valves for FI-1143. _____

3.4 CLOSE SWN-142, FI-1143 Hi Side Root Isolation Valve. _____

3.5 CLOSE SWN-132, FI-1143 Lo Side Root Isolation Valve. _____

3.6 DISCONNECT and REMOVE the tubing from the Hi and Lo side of FI-1143 and the Alternate Flow Indicator. _____

3.7 CONNECT the HI and Lo side fittings of FI-1143
AND the Alternate Flow Indicator as required. _____

ATTACHMENT 7
LIST OF VARIOUS SERVICE WATER LOADS / VALVES
(Page 1 of 1)

NOTE

Below is a list of Service Water Loads, valves, and approximate flow rates expected, which may be used to throttle service water flow rates. This list is NOT all inclusive.

SERVICE WATER LOAD	VALVE(S)	EXPECTED FLOW RATES (gpm)
Containment FCUs	TCV-1103, 1104, 1105	570-1400 (ea)
31-33 EDG Coolers	FCV-1176, 1176A	357 (ea)
31 & 32 $CCWHX_3$	SWN-34-1, 34-2	3500 (ea)
SWPs Strainer Back wash	PCV-1205 - 1210	300 (ea)
SWP Discharge Valves	SWN-2-1 thru SWN-2-6	N/A

ATTACHMENT 8
AS-FOUND AND AS-LEFT TABLE
(Page 1 of 1)

1.0 IDENTIFY below any valves manipulated during this test.

2.0 RETURN these valves to the position required by the SM/Designee.

VALVE MANIPULATED	AS FOUND POSITION	TEST POSITION	AS LEFT	INITIALS	V

ATTACHMENT 9
ASME OM Code Stroke Evaluation Sheet
(Page 1 of 1)

IF a stroke time is outside the limits required by section 6.0, THEN the following corrective action guidance may be initiated. Additional copies of this attachment may be made as required.

IF a valve fails to exhibit the required change of valve position or exceeds the stroke time acceptance criteria, THEN the valve SHALL be declared INOPERABLE.

IF valve stroke time exceeds its criteria, THEN PERFORM stroke time in accordance with the instructions below.

NOTE

During this second test the valve should be locally observed, if possible, in accordance with applicable attachment.

1.0 RECORD Valve Number:_____

2.0 STROKE/TIME the valve three times and RECORD the data below:

Timing Test	OPEN Stroke Time	Section 6.0 Criteria	CLOSED Stroke Time	Section 6.0 Criteria	Acceptable (Yes/No)
1					
2					
3					

3.0 IF the above data meets the Section 6.0 Acceptance Criteria, THEN the results SHALL be recorded below and the valve returned to an OPERABLE status.

4.0 IF the above data does NOT meet the Section 6.0 Acceptance Criteria, THEN the valve SHALL remain INOPERABLE and the following options initiated:

- Valve SHALL be repaired or replaced.
- Forward stroke time data to Performance IST Engineer to be analyzed within 96 hours. The data obtained can be analyzed to determine if it represents acceptable valve operation. IST Engineer SHALL determine if new reference values and acceptance criteria can be established.

5.0 COMMENTS: _____

_____

Reviewed by: _____

S.M. or C.R.S. / Date

6.0 IST Review: : _____

_____

Reviewed by: _____

IST ENGINEER / Date

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 3 Task No: _____

Task Title: Review / Authorize a Liquid Waste Release

K/A Reference: 1940002.3.6 SRO – 3.8 Job Performance Measure No: SRO Admin 4

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Unit is in MODE 5 for a forced outage.
- Circulating Water Pumps Status:
  - 31, 33, and 35 in service at 215 RPM each.
  - No other dilution flow sources are available or authorized.
- A Liquid Radioactive Waste Release Permit Form has been completed manually IAW Section 4.1 of 3-SOP-WDS-014; Liquid Waste Releases for the release of 32 Monitor Tank.
- R-18 is operable and has been appropriately source checked.
  - R-18 average value on recirculation = 1.2E-5 µCi/ml
- 32 Monitor Tank has been properly recirculated and sampled by Chemistry.
- Chemistry sample results have been obtained as follows:
  - Total Gamma Activity = 1.74E-5 µCi/ml
  - Allowable Diluted Concentration = 1.74E-7 µCi/ml
  - Boron Concentration = 1700 ppm
  - Boron pounds = 145 lbs
- Release valve alignment has been reviewed SAT.

Required Materials: 3-SOP-WDS-014; Liquid Waste Releases
Completed Liquid Radioactive Waste Release Permit Form for 32 Monitor Tank

General References: 3-SOP-WDS-014; Liquid Waste Releases
Completed Liquid Radioactive Waste Release Permit Form for 32 Monitor Tank

Initiating Cue: Review the provided manually calculated Liquid Radioactive Waste Release Permit Form for the release of 32 Monitor Tank and authorize the release as the CRS.

Time Critical Task: NO

Validation Time:

Task Standard: Student reviews the manually calculated Liquid radioactive Waste Release Permit Form and determines that the calculations for most restrictive discharge rate are incorrect based on an incorrect available dilution flow used in the calculations.

Performance Information

(Denote critical steps with a check mark √)

√**1. Performance Step:** **DETERMINE Available Dilution Flow (B) per Attachment 7 and RECORD result on permit:**

Standard: Student determines that the recorded available dilution flow for release (B) is incorrect. Permit has recorded 399,000 gpm, **however with only three circulating water pumps operating at 215 RPM the flow should be only 199,500 gpm +/-500 gpm.** This is determined by using Attachment 7. (66.5 kgpm x 3 = 199.5 kgpm)

Comment: If student reports this discrepancy to you as the evaluator, **cue him to continue to review the calculations on the permit and update the results if necessary using the correct dilution flow rate.**

2. Performance Step: Determine that Chemistry sample results have been properly transcribed on the permit:
   - o Total Gamma Activity = 1.74E-5 µCi/ml
   - o Allowable Diluted Concentration = 1.74E-7 µCi/ml
   - o Boron Concentration = 1700 ppm
   - o Boron pounds = 145 lbs

Standard: Student recognizes that the Chemistry sample results have been properly transcribed on the permit

Comment: All chemistry sample results have been properly recorded on the permit.

Performance Information

(Denote critical steps with a check mark √)

√ **3. Performance Step:** DETERMINE Most Restrictive Discharge Rate (**D**) as follows:

1. CALCULATE the permissible Radioactive Discharge Rate (Dr) per Attachment 8.
2. CALCULATE Permissible (Maximum Boron) Chemistry Discharge Rate (Dc) per Attachment 8.
3. SELECT a Most Restrictive Discharge rate (D) per Attachment 8.

Standard: Student determines that the Most Restrictive Discharge Rate of 150 gpm is too high based on only having 199,500 gpm dilution flow. Correct numbers are as follows:

1. **Permissible Radioactive Discharge Rate (Dr) = 1950+/-50 gpm** instead of previous calculated value of 3990 gpm.
2. **Permissible Chemistry Discharge Rate (Dc) = 117 +/- 2 gpm** instead of the previously calculated 235 gpm.
3. **Most Restrictive Discharge Rate (D) = 117 +/- 2 gpm** instead of the previously selected value of 150 gpm.

Comment: Attachment 8 calculations and directions.

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4. Performance Step: IF R-18 is in service, THEN CALCULATE Alert setpoint for R-18 Channel 1 using Attachment 9
AND RECORD result on permit.

Standard: Student calculates new alarm and alert setpoints for R-18 IAW Attachment 9. New calculated alarm setpoint is higher, so previous incorrect alarm setpoint is conservative and may be left at the previously calculated setpoint. Previous setpoint should have been 4.5E-4 µCi/ml instead of 4.5E-5 µCi/ml as recorded. **New Alarm setpoint is 2.9E-4 µCi/ml.** Alert value is based on recirculation value of 1.2E-5 µCi/ml from the initial conditions and remains the same.

Comment: Attachment 9 calculations and directions.

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

N/A
SRO Admin JPM in classroom

Initial Conditions:

- Unit is in MODE 5 for a forced outage.
- Circulating Water Pumps Status:
  - 31, 33, and 35 in service at 215 RPM each.
  - No other dilution flow sources are available or authorized.
- A Liquid Radioactive Waste Release Permit Form has been completed manually IAW Section 4.1 of 3-SOP-WDS-014; Liquid Waste Releases for the release of 32 Monitor Tank.
- R-18 is operable and has been appropriately source checked.
  - R-18 average value on recirculation = 1.2E-5 µCi/ml
- 32 Monitor Tank has been properly recirculated and sampled by Chemistry.
- Chemistry sample results have been obtained as follows:
  - Total Gamma Activity = 1.74E-5 µCi/ml
  - Allowable Diluted Concentration = 1.74E-7 µCi/ml
  - Boron Concentration = 1700 ppm
  - Boron pounds = 145 lbs
- Release valve alignment has been reviewed SAT.

Initiating Cue:

Review the provided manually calculated Liquid Radioactive Waste Release Permit Form for the release of 32 Monitor Tank and authorize the release as the CRS.

LIQUID RADIOACTIVE WASTE RELEASE PERMIT FORM

Release ID: 32 Mon Tank		Volume: 10228 gal. Or Flow rate	Permit #: Next Number
Recirc. Started - Date: Today Time: 0200		Min. Recirc. Time (**T**): 4 hr.	Earliest Sample: Date: Today Time: 0600
Radiation Monitor #: R-18	In Service **YES**	Rad Monitor Source Check: **SAT**	Available dilution flow for release (**B**): 399,000 gpm
Chemistry analysis Sample #: Date: Today Time: 0615 Boron ppm: 1700 Boron pounds: 145			Total Gamma Activity (**C**): 1.74 E-5 µCi/ml
Allowable Diluted Concentration (**ADC**) in discharge canal: 1.74 E-7 µCi/ml		Permissible Chemistry Discharge Rate (**Dc**): 235 gpm	
Permissible Radioactive Discharge Rate (**Dr**): 3990 gpm		Most Restrictive Discharge Rate (**D**): 150 gpm	From: ■ Waste Chemistry (Check one) □ Radioactivity
Radiation Monitor:	Alert Setpoint: 1.5 E-5 µCi/ml	Calculated Alarm Setpoint (**R**): 4.63 E-5 µCi/ml	Actual Alarm Setpoint: 4.63 E-5
IF Rad Monitor is Out Of Service	Monitor taken out of service on: (Max. 30 days) Date: Time:		2nd sample obtained and analyzed by:
	Release calculations performed by:		Release calculations verified by:
Release Authorization	(1) Release valve alignment reviewed (if applicable) SAT today checked by another operator (2) Release calculations reviewed (3) Release authorized by:		
	Release initiated: Date: Time:		Rad Monitor reading during release:
Discharge flow meter operable: (Circle one) **YES** **NO***	*IF flow meter is OOS, THEN RECORD estimate approx 1hr into release and then every 4 hours (required by IP-SMM-CY-001, **Radioactive Effluents Control Program**): **1 hr** **4 hr** **8 hr**		
Post-Release Section	Release terminated: Date: Time:		Actual volume released:
Alert and Alarm setpoints reset per 3-SOP-RM-010: **YES**			Performed By: Another operator
COMMENTS:			

Key

LIQUID RADIOACTIVE WASTE RELEASE PERMIT FORM

Release ID: 32 Mon Tank		Volume: 10228 gal. Or Flow rate		Permit #: Next Number
Recirc. Started - Date: Today Time: 0200		Min. Recirc. Time (**T**): 4 hr.	Earliest Sample: Date: Today Time: 0600	
Radiation Monitor #: R-18	In Service **YES**	Rad Monitor Source Check: **SAT**	Available dilution flow for release (**B**): 199500 gpm	
Chemistry analysis Sample #: Date: Today Time: 0615 Boron ppm: 1700 Boron pounds: 145			Total Gamma Activity (**C**): 1.74 E-5 µC	
Allowable Diluted Concentration (**ADC**) in discharge canal: 1.74 E-7 µCi/ml		Permissible Chemistry Discharge Rate (**Dc**): 117 gpm		
Permissible Radioactive Discharge Rate (**Dr**): 1950 gpm		Most Restrictive Discharge Rate (**D**): 117 gpm	From: ■ Waste Chemistry (Check one) ☐ Radioactivity	
Radiation Monitor:	Alert Setpoint: 1.5 E-5 µCi/ml	Calculated Alarm Setpoint (**R**): 2.97 E-4 µCi/ml	Actual Alarm Setpoint: Can be left or 2.97 E-4 µCi/ml	
IF Rad Monitor is Out Of Service	Monitor taken out of service on: (Max. 30 days) Date: Time:		2nd sample obtained and analyzed by:	
	Release calculations performed by:		Release calculations verified by:	
Release Authorization	(1) Release valve alignment reviewed (if applicable) SAT today checked by another operator (2) Release calculations reviewed (3) Release authorized by: (SM/			
	Release initiated: Date: Time:		Rad Monitor reading during release:	
Discharge flow meter operable: (Circle one) **YES** **NO***	*IF flow meter is OOS, THEN RECORD estimate approx 1hr into release and then every 4 hours (required by IP-SMM-CY-001, **Radioactive Effluents Control Program**): **1 hr** **4 hr** **8 hr**			
Post-Release Section	Release terminated: Date: Time:		Actual volume released:	
Alert and Alarm setpoints reset per 3-SOP-RM-010: **YES**			Performed By: Another operator	
COMMENTS:				

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 3 Task No: _____

Task Title: Classify Event and Complete Form EP-1, Part 1

K/A Reference: 1940002.4.40 SRO – 4.5 Job Performance Measure No: SRO Admin 5

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

This is a TIME CRITICAL Job Performance Measure from the time you are told to begin until the time you classify the event. Also, from the time you classify the event until you complete the Radiological Emergency Data Form (EP-1, Part 1).

You will be allowed sufficient time to read the initial conditions and cue. You will then be allowed to ask questions about the conditions. However, once you review the E-Plan EALs, your clock starts.

Required Materials: IP-EP-120, Emergency Classification
IPEC Emergency Action Level Charts / EAL Book
Appropriate E-Plan Forms (EP-1, Part 1)

General References: IP-EP-120, Emergency Classification
IPEC Emergency Action Level Charts / EAL Book
Appropriate E-Plan Forms (EP-1, Part 1)

Initial Conditions:

A Reactor Trip occurred approximately 15 minutes ago after 135 days @ 100% reactor power due to a major steam break on 31 SG in the Turbine Building. The MSIVs had to be closed manually from the Control Room, however, 31 MSIV did not close and cannot be closed remotely. 32 AFW Pump is tagged out.

The CRS has just informed you that he is transitioning from E-0 to FR-H.1 due to a RED condition on Heat Sink. The following conditions also exist:

- 31 SG is approaching dryout
- 31 RCP has been tripped due to high vibrations
- 33 ABFP is operating but has no flow indicated
- RCS pressure is 1550 psig and increasing
- RCS cold legs are 450°F and stable
- High Head Safety Injection Pumps are operating
- 32 RHR pump is operating
- All EDGs are operating
- 480V Bus 3A normal feeder has tripped and the 2AT3A bus-tie breaker will not close.
- All Containment conditions are normal.
- The Turbine Building north end is not accessible but conditions are improving according to the Conventional NPO
- I&C is investigating the cause of the 3A Bus problem and lack of 33 ABFP flow. A cutback controller problem is not suspected for the lack of 33 ABFP flow.
- All SG WR levels are decreasing and below 20%.
- There is **no** radiological release in progress.

Unit 2 remains stable at 100% power.

METEOROLOGICAL CONDITIONS:

Wind Speed: 0.9 meters/second
Wind Direction: 285 degrees @ 10 meters
Stability Class: C

Initiating Cue:

The Shift Manager has become ill. You are the CRS and you must perform the duties of the Emergency Director until a replacement Shift Manager can arrive on site. You must Classify the event and Complete the NYS Radiological Emergency Data Form, Part 1.

- **This is a TIME CRITICAL JPM**
- **Inform the examiner when you have classified the event.**
- **Inform the examiner when you have completed the EP-1, Part 1 Form.**

Time Critical Task: **YES**

Validation Time:

Task Standard: Event properly classified and EP-1, Part 1 Form completed within the required times.

Performance Information

(Denote critical steps with a check mark √)

1. Performance Step: Candidates review initial conditions and the initiating cue. They ask questions if necessary and then obtain the correct procedures.

Standard: Obtains IP-EP-120, Emergency Classification

Comment: Allow up to 15 minutes for students to fully understand the initial conditions and requested time critical task. Allow questions as a group and/or individual. Once the student understands the task and has been given the appropriate procedures, the JPM is started. Provide the student with the JPM start time.

Record JPM Start Time here: _____

CUE: Provide the student with the JPM start time.

√2. Performance Step: Evaluate Plant Status to determine if GE, SAE, Alert, or NUE applies. Determines the highest classification and makes declaration.

Standard: Determines Event is a SAE per EAL FS-1.1, Loss or potential loss of any two barriers (Table F-1). Fuel Clad – Heat Sink – RED entry conditions met and heat sink is required and RCS - RED entry conditions met and heat sink is required. Must be determined within 15 minutes.

TIME CRITICAL – Must complete this step within 15 minutes of start of JPM.

Comment: **Record the Time Declaration Made: _____**

√ 3. Performance Step: Completes and approves "New York State Radiological Emergency Data Form, Part 1" (IP-EP-115-EP-1).

Standard: Completes all necessary information on the form and signs the form.

TIME CRITICAL – Must complete this step within 15 minutes of Time of Declaration (JPM Step 2)

Comment: **Record the Time Form is completed: _____**

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

N/A
SRO Admin JPM in classroom

Initial Conditions:

A Reactor Trip occurred approximately 15 minutes ago after 135 days @ 100% reactor power due to a major steam break on 31 SG in the Turbine Building. The MSIVs had to be closed manually from the Control Room, however, 31 MSIV did not close and cannot be closed remotely. 32 AFW Pump is tagged out.

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- All Containment conditions are normal.
- The Turbine Building north end is not accessible but conditions are improving according to the Conventional NPO
- I&C is investigating the cause of the 3A Bus problem and lack of 33 ABFP flow. A cutback controller problem is not suspected for the lack of 33 ABFP flow.
- All SG WR levels are decreasing and below 20%.
- There is **no** radiological release in progress.

Unit 2 remains stable at 100% power.

METEOROLOGICAL CONDITIONS:

Wind Speed: 0.9 meters/second
Wind Direction: 285 degrees @ 10 meters
Stability Class: C

Initiating Cue:

The Shift Manager has become ill. You are the CRS and you must perform the duties of the Emergency Director until a replacement Shift Manager can arrive on site. You must Classify the event and Complete the NYS Radiological Emergency Data Form, Part 1.

- **This is a TIME CRITICAL JPM**
- **Inform the examiner when you have classified the event.**
- **Inform the examiner when you have completed the EP-1, Part 1 Form.**

You will be allowed sufficient time to read the initial conditions and cue. You will then be allowed to ask questions about the conditions. However, once you review the E-Plan EALs, your clock starts.