March 5, 1998

NOTE TO: NRC Document Control Desk
Mail Stop 0-5-D-24

FROM: Virgil Curley, Licensing Assistant
Operating Licensing Branch, R I

SUBJECT: OPERATOR LICENSING EXAMINATION ADMINISTERED ON December 15-18 1997. AT Beaver Valley I.
DOCKET #50-334

On December 15-18 1997 Operator Licensing Examinations were administered at the referenced facility. Attached, you will find the following information for processing through NUDOCS and distribution to the NRC staff, including the NRC PDR:

Item #1 - a) Facility submitted outline and initial exam submittal, designated for distribution under RIDS Code A070.

b) As given operating examination, designated for distribution under RIDS Code A070.

Item #2 - Examination Report with the as given written examination attached, designated for distribution under RIDS Code IE42.

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230018

RCS cooldown rate and total flow while on RHR is controlled by...

A. manually adjusting RHR flow through the heat exchanger and automatically controlling CCR flow through the heat exchanger.

B. automatically controlling RHR flow through the heat exchanger and manually adjusting CCR flow through the heat exchanger.

C. automatically controlling RHR flow through the heat exchanger and manually adjusting total RHR flow through the system.

D. manually adjusting RHR flow through the heat exchanger and automatically controlling total RHR flow through the system.

ANSWER: D	
K/A:005K4.10	Importance: 3.1/3.1
Cognitive Level: Knowledge	
Ref.: 1OM-10.4.A Iss 4 Rev. 10	
LP#:1LP-SQS-10.1	OBJ:5
History	
Source: New	
JTA: 0050080101	

D
1
A070

An operating manual precaution in OM 24 states that two (2) Condensate pumps must be running before starting the second feed pump. The reason for this is to...

A. ensure adequate flow capability to prevent a low suction pressure feed pump trip.

B. ensure adequate flow capability to prevent robbing the steam generators when the feed pump recirculation valves open.

C. ensure adequate flow capability to prevent run-out on the heater drains pumps.

D. ensure adequate flow to prevent water hammer in the first point heaters.

ANSWER: A	
K/A: 056K1.03	Importance: 2.6/2.6
Cognitive Level: Comprehension	
Ref.: 1OM-24.2.A P&L C.1 Iss 4 Rev 3	
LP#:1LP-SQS-24.1	OBJ: 7
History	
Source: New	
JTA: 0590030101	

Given the following:

- Reactor trip and SI due to a Small Break LOCA.
- All ESF equipment operated as designed.
- Various PAB and Safeguards Area Radiation Monitors are in alarm.

The procedure that should be entered to combat this accident is:

A. ECA-1.1, "Loss of Emergency Coolant Recirculation."

B. FR-Z.2, "Response to Containment Flooding."

C. ECA-1.2, "LOCA Outside Containment."

D. FR-Z.1, "Response to High Containment Pressure."

ANSWER: C	
K/A: E04-EA1.1	Importance: 4.0/4.0
Cognitive Level: Analysis	
Ref.: 1OM-53A.1.E-1 Iss 1B Rev 4 step 19	
LP#:1LP-SQS-53.3	OBJ: 2,6
History	
Source: New	
JTA: 3010020601	

Which of the following events would result in a containment area radiation monitor [RM-1RM-215A(B)] alarm?

A. RCP #1 Seal Failure.

B. PZR Safety Valve Seat Leakage.

C. Steam Generator Tube Rupture.

D. RCS Leak at the Incore Seal Table.

ANSWER: D	
K/A: 061AA1.01	Importance: 3.6/3.6
Cognitive Level: Analysis	
Ref.: 1OM-6.4.AM, Initial Conditions Iss 4 Rev 1	
LP#: 1LP-SQS-6.5	OBJ: 7
History	
Source: NRC Bank	
JTA: 0720030101	

Given the following plant conditions:

- Unit 1 is in Mode 2.
- Reactor power is at 10^{-10} amps in the I.R. (P-6 activated).
- Preparing to block the source range detectors per the start-up procedure.
- The detector for N31 source range fails low.

Which of the following actions should be taken?

A. Enter E-0, "Reactor Trip or Safety Injection," in response to the automatic reactor trip.

B. Hold power at 10^{-10} amps, until repairs are made.

C. Insert control rods until power is less than P-6.

D. Place the N31 level trip switch in the bypass position, and continue with the Reactor start-up.

ANSWER: D	
K/A: 032AK2.01	Importance: 2.7/3.1
Cognitive Level: Analysis	
Ref.: 1OM-53C.4.1.2.1A Iss 3 Rev 2 pg. 4 step 3	
LP#: 1LP-SQS-2.2	OBJ: 5
History	
Source: SQS Bank Q0472-Modified	
JTA: 0150040101	

Given the following conditions:

- A Reactor trip and Safety Injection have occurred due to a SGTR in the 'C' SG.
- E-3, "Steam Generator Tube Rupture," is in effect with a cooldown started at maximum rate.
- The highest S/G Pressure is 900 psig.
- RCS Pressure is 1000 psig and dropping.
- High Head Safety Injection flow is approximately 300 gpm.

Which of the following describes what should be done with the Reactor Coolant Pumps?

A. RCP's should be tripped because RCP trip criteria is currently met.

B. RCP's should be tripped because RCP trip criteria applies after an operator initiated RCS depressurization is commenced.

C. RCP's should not be tripped because RCP trip criteria does not apply once an operator initiated RCS cooldown is commenced.

D. RCP's should not be tripped because RCP trip criteria does not apply until the operator initiated cooldown is completed.

ANSWER: C	
K/A: 038EK3.08	Importance: 4.1/4.2
Cognitive Level: Comprehension/Analysis	
Ref.: 1OM-53A.1.E-3 Iss 1B Rev5 Note prior to Step 15	
LP#: 1LP-SQS-53.3	OBJ: 3
History	
Source: NRC Bank - Modified	
JTA: 3010040101	

The following conditions exist:

- A Reactor Trip from 100% power has occurred.
- The Turbine has failed to trip both automatically and manually.

Which of the following actions is/are required to be performed next?

A. Runback the Turbine using the "Turbine Manual" and "Fast Down" pushbuttons.

B. Close all Reheat Stop and Interceptor Valves.

C. Close the Main Steam Trip and Bypass Trip Valves.

D. Place the running EHC Pump in Pull-to-Lock.

ANSWER: C	
K/A: 007EA2.02	Importance: 4.3/4.6
Cognitive Level: Knowledge	
Ref.: 1OM-54A.1.E-0 Iss 1B Rev 5 Step 3 RNO	
LP#: 1LP-SQS-53.3	OBJ: 1
History	
Source: NRC Bank	
JTA: 3010010601	

Given the following:

- Reactor Power is 90%.
- Tavg is stable at 574°F on all three loops.
- PZR Level is 52% and stable.
- RCS Pressure is stable at 2235 psig.
- Containment pressure and humidity are rising.
- Net Charging flow is 0 gpm.
- Steam flow on all three loops is 3.78E6 lbm/hr.
- On the "C" SG:
  - Pressure is stable.
  - NR Level is dropping.
  - Feed flow is pegged high.

Which of the following events is in progress?

A. "C" S/G Main Feed Reg Valve is failed open.

B. "C" S/G controlling Feed Flow channel is failed high.

C. There is a feed line break inside containment.

D. There is a Small Break LOCA inside containment.

ANSWER: C	
K/A: 054AK1.01	Importance: 4.1/4.3
Cognitive Level: Analysis	
Ref.: 1OM-12.4.AAE Iss 4 Rev 1 pg. 1	
LP#: 1LP-SQS-53.3	OBJ: 6
History: Similar question used in 2LOT2 NRC exam (Q-2-97-60)	
Source: NRC Bank	
JTA: 3010020601	

Given the following conditions:

- The reactor has been shutdown for 50 hours.
- RCS temperature is 150 degrees F.
- RCS pressure is Atmospheric.
- PZR level is 22%.

Assume RHR cooling is lost. Using the attached curves, which of the following describes the time available until core boiling occurs?

A. Less than 10 minutes.

B. 11 to 20 minutes.

C. 21 to 30 minutes.

D. 31 to 40 minutes.

ANSWER: D (furnish AOP 1.10.1 attachments 1,2,3,4 with question)	
K/A: 025AK1.01	Importance: 3.9/4.3
Cognitive Level: Comprehension/Application	
Ref.: 1OM-53C.4.1.10.1 Iss 3A Rev 5 Attachment 1	
LP#. 1LP-SQS-10.1	OBJ: 9, 10
History	
Source: NRC Bank	
JTA: 0000180401	

The following conditions exist:

- PZR Spray valves [PCV-1RC-455A & B] are closed.
- PZR PORV [PCV-1RC-455C] is closed.
- PZR PORV [PCV-1RC-456] is cycling.
- RCS pressure is approximately 2000 psig.

Which of the following Pressurizer Pressure transmitter failures has occurred?

A. [PT-1RC-445] failed low.

B. [PT-1RC-445] failed high.

C. [PT-1RC-444] failed low.

D. [PT-1RC-444] failed high.

ANSWER: B	
K/A: 027AA2.18	Importance: 3.4/3.5
Cognitive Level: Analysis	
Ref.: 1OM-6.4.IF Iss 4 Rev 6 Attachment 2; 1OM-6.1.D Iss 4 Rev 1 pg. 7	
LP#: 1LP-SQS-6.4	OBJ: 15
History	
Source: NRC Bank	
JTA: 0000130401	

Given the following:

Unit 1 is operating at 100% power with all systems in their normal system arrangement.

- Annunciator A9-98, "125VDC Bus 1 Voltage Low," alarms.
- Number 1 DC Bus voltage is 0 VDC.
- A reactor trip occurs.
- The Main Feedwater pumps are secured per the Alarm Response Procedure.

Which of the following Auxiliary Feedwater pumps will start?

A. MDAFW pump 3A and the TDAFW pump.

B. MDAFW pump 3B and the TDAFW pump.

C. TDAFW pump only.

D. MDAFW pump 3B only.

ANSWER: B	
K/A: 058AA2.03	Importance: 3.5/3.9
Cognitive Level: Comprehension/Application	
Ref.: 1OM-39.4.AAI Iss 3 Rev 2	
LP#: 1LP-SQS-39.1	OBJ: 4b
History	
Source: NRC Bank - Modified	
JTA: 0000370401	

The following plant conditions exist:

- Unit 1 is operating at 100% power.
- Pressurizer spray valve [PCV-1RC-455B] is stuck OPEN.
- All efforts to close the spray valve have failed.
- RCS pressure is dropping rapidly.

Which of the following actions should be taken?

A. Trip the 'A' Reactor Coolant Pump, then trip the reactor.

B. Trip the 'C' Reactor Coolant Pump, then trip the reactor.

C. Trip the reactor, then trip the 'A' Reactor Coolant Pump.

D. Trip the reactor, then trip the 'C' Reactor Coolant Pump.

ANSWER: D	
K/A: 027AK3.03	Importance: 3.7/4.1
Cognitive Level: Comprehension	
Ref.: 1OM-53A.1.E-0 Iss 1B Rev 5 Step 22c RNO	
LP#: 1LP-SQS-6.4	OBJ: 8
History	
Source: NRC Bank	
JTA: 3010010601	

Which of the following would indicate that the PRT rupture disk had blown following a pressurizer PORV failing open?

1. Pressurizer level dropping.
2. PORV tailpipe temperatures dropping.
3. PRT temperature dropping.
4. PRT pressure dropping.

A. 1, 2, and 3.

B. 1, 2, and 4.

C. 1, 3, and 4.

D. 2, 3, and 4.

ANSWER: D	
K/A: 008AA1.08	Importance: 3.8/3.8
Cognitive Level: Analysis	
Ref.: Steam Tables	
LP#: 1LP-SQS-6.4	OBJ: 7
History	
Source: NRC Bank - Modified	
JTA: 0100040101	

Given the following:

- A Turbine generator trip has caused a Reactor trip.
- The operators are in ES-0.1, "Reactor Trip Response," at step 4, "Check RCS Temperature Stable at or Trending to 547F."
- RCS pressure is 1810 psig and slowly dropping.
- Pressurizer level is 22% and stable.
- Core exit T/Cs are 575°F and slowly rising.
- Containment pressure is 19 psia and slowly rising
- All S/G NR levels are 20% and slowly rising.

Which of the following actions should be taken?

A. Dump steam to the condenser and proceed to step 5 of ES-0.1.

B. Initiate SI and go to E-0, "Reactor Trip or Safety Injection," step 1.

C. Transition to FR-H.1, "Response to Loss of Secondary Heat Sink."

D. Transition to FR-Z.1, "Response to High Containment Pressure."

ANSWER: B	
K/A: 009EK3.28	Importance: 4.5/4.5
Cognitive Level: Knowledge	
Ref.: 1OM-53A.1.ES-0.1 Iss 1B Rev 4 Step 1	
LP#: 1LP-SQS-1.1	OBJ: 1
History	
Source: NRC Bank	
JTA: 3010010601	

Given the following:

- The unit is in Mode 1 at 50% power proceeding to full power following a refueling outage.
- All control systems are in automatic.
- All pressurizer heaters are turned on to allow for boron mixing as power is raised.
- A loss of Containment Instrument Air occurs.

Assuming no Operator actions are taken, which of the following will occur?

1. Reactor will trip on high pressurizer level.
2. Letdown will isolate.
3. Pressurizer pressure will rise.
4. Pressurizer pressure will drop.

A. 1, 2, and 3.

B. 1, 2, and 4.

C. 1. 3, and 4.

D. 2, 3, and 4.

ANSWER: A	
K/A: 065AA2.08	Importance: 2.9/3.3
Cognitive Level: Analysis	
Ref. 1OM-53C.4.1.34.2 Iss 3A Rev 3	
LP#: 1LP-SQS-53C.1	OBJ: 8
History	
Source: New	
JTA: 000KKK0401	

The plant is in Mode 1 with all systems in their normal system arrangement. Containment pressure transmitter [PT-LM-101C] failed low and actions were completed per 1OM-1.4.1F. "Instrument Failure." Subsequently, containment pressure transmitter [PT-LM-101B] fails high. Which of the following will occur?

1. SIS
2. MSLI
3. CIA
4. CIB

A. 1, 2, 3, and 4.

B. 1, 2, and 3.

C. 1 and 3.

D. 1 and 2.

ANSWER: B	
K/A: 013K6.01	Importance: 2.7/3.1
Cognitive Level: Comprehension	
Ref.: 1OM-1.4.1F Iss 4 Rev 1	
LP#: 1LP-SQS-12.1	OBJ: 5
History	
Source: New	
JTA: 103AAA0101	

The plant is preparing for a start-up. The shutdown bank rods are fully withdrawn, and all control banks are fully inserted. In preparation for the start-up the Control Room operators are performing an Operations Surveillance Test (OST) on Source Range detector N31. Which of the following is correct regarding the performance of this test?

A. The shutdown banks must be inserted and the Reactor trip breakers opened. The OST will generate a Reactor Trip signal.
B. The shutdown banks must be inserted and the Reactor trip breakers opened. This will provide a lower baseline source range count to allow all setpoints to be tested.
C. The shutdown banks can be left withdrawn. No Reactor trip signal is generated during the performance of the OST.
D. The shutdown banks can be left withdrawn. Placing the Level Trip switch to Bypass will prevent the OST from causing a Reactor trip.

ANSWER: D	
K/A: 015A3.03	Importance: 3.9/3.9
Cognitive Level: Comprehension/Application	
Ref: 1OST-2.3 Iss2 Rev 6	
LP#: 1LP-SQS-2.2	OBJ: 11
History	
Source: New	
JTA: 0150090201	

Given the following:

- A spurious Reactor trip and Safety Injection have occurred during a Reactor start-up.
- Tavg is stable at 547°F.
- PZR pressure is stable at 2235 psig.
- All steam generator water levels and pressures remained stable at 33% and 1005 psig respectively.

Before resetting SI, which of the following pumps can provide feedwater to the S/Gs?

1. Main Feedwater Pumps
2. Auxiliary Feedwater Pumps
3. Dedicated AFW Pump

A. 1 and 2.

B. 2.

C. 2 and 3.

D. 1, 2, and 3.

ANSWER: B	
K/A: 059A3.06	Importance: 3.2/3.3
Cognitive Level: Knowledge	
Ref.: 1OM-24.1.D Iss 4 Rev 2; OM Fig. 24-3	
LP#: 1LP-SQS-24.1	OBJ: 4
History	
Source: New	
JTA: 3010010601	

When determining subcooling requirements while progressing through the EOPs, the value for subcooling that is read on the Inadequate Core Cooling Monitor (ICCM) is the difference between the saturation temperature for the...

A. pressurizer pressure and the highest loop hot leg temperature.

B. wide range RCS pressure and the highest loop hot leg temperature.

C. pressurizer pressure and the average of the five hottest core exit thermocouples.

D. wide range RCS pressure and the average of the five hottest core exit thermocouples.

ANSWER: D	
K/A: 017A4.02	Importance: 3.8/4.1
Cognitive Level: Knowledge	
Ref.: 1OM-6.1.C Iss 4 Rev 1 pg. 34	
LP#: 1LP-SQS-6.7	OBJ: 4,5
History	
Source: New	
JTA: 0170020101	

The plant has entered Mode 5 for a refueling outage. Containment vacuum has been broken. Shortly after placing containment purge and exhaust into service, Containment Purge Exhaust monitor [RM-1VS-104A] fails high. This will result in...

1. Containment Purge and Exhaust Dampers closing.
2. Auxiliary Building Exhaust Fans tripping.
3. Main Filter Bank Inlet Dampers opening.
4. Containment Purge and Exhaust Fans tripping.

A. 1, 2, and 3

B. 1, 2, and 4.

C. 1, 3, and 4.

D. 2, 3, and 4.

ANSWER: C	
K/A: 072K3.01	Importance: 3.2/3.4
Cognitive Level: Knowledge	
Ref.: 1OM43.5.B.2 Iss. 4 Rev 2; 1OM-43.4.AEG Iss 3 Rev 3	
LP#: 1LP-SQS-43.1	OBJ: 6
History: Similar question used in 1LOT2 NRC exam (Q 80)	
Source: New	
JTA: 0720030101	

The plant has entered a mini-outage to repair condenser tube leaks. The reactor is stable in Mode 3. A decision is made to completely isolate the condenser circulating water system and repair all four condenser sections simultaneously. This evolution should NOT be allowed to occur because this will result in a loss of...

A. condenser steam dumps and there will be no way to get the plant to Mode 5 if needed.
B. feedwater and require auxiliary feedwater to maintain steam generator levels which is a violation of technical specifications.
C. the ultimate heat sink requirement for technical specifications.
D. safety grade flowpath for the Reactor Plant river water system for Appendix R requirements.

ANSWER: D	
K/A: 075K1.08	Importance: 3.2/3.2
Cognitive Level: Comprehension	
Ref.: 1OM-31.4.C Iss 4 Rev 2	
LP#: 1LP-SQS-31.1	OBJ: 4
History	
Source: New	
JTA: 0750150101	

To warn personnel in areas serviced by an automatic CO2 discharge, which of the following will occur before the actual discharge?

A. a wintergreen deodorizer is discharged prior to the CO2 discharge.

B. the station stand-by alarm is sounded prior to the CO2 discharge.

C. a pre-discharge horn will sound and a time delay will occur prior to the CO2 discharge.

D. a red light will flash in the area and a time delay will occur prior to the CO2 discharge.

ANSWER: C	
K/A: 086K4.04	Importance: 3.1/3.4
Cognitive Level: Knowledge	
Ref.: 1OM-33.4.AAL, Iss3 Rev 0	
LP#: 1LP-SQS-33.1	OBJ: 1
History: Similar question used in 2LOT1 NRC exam (Q-2-97-94)	
Source: New	
JTA: 0860050101	

Which of the following actions are directed in AOP-1.6.5, "Shutdown LOCA"?

1. Manually Initiate Safety Injection (both pushbuttons) to recover pressurizer level.
2. Align HHSI pumps through the hot leg injection flowpath.
3. Manually depressurize and cooldown the RCS to place RHR into service.
4. Manually start HHSI pumps to recover pressurizer level.

A. 1, 2, and 3.

B. 1, 2, and 4.

C. 1, 3, and 4.

D. 2, 3, and 4.

ANSWER: D	
K/A: 2.4.9	Importance: 3.3/3.9
Cognitive Level: Knowledge	
Ref.: 1OM-53C.4.1.6.5 Iss 3A Rev 5	
LP#: 1LP-SQS-53C.1	OBJ: 5
History	
Source: New	
JTA: 0000560401	

What is the expected procedure flow path for a small break LOCA that is too small for two HHSI pumps, but too large for one HHSI pump, i.e., a "smart break"?

1. E-0, "Reactor Trip or Safety Injection."
2. E-1, "Loss of Reactor or Secondary Coolant."
3. ES-1.1, "SI Termination."
4. ES-1.2, "Post LOCA Cooldown and Depressurization."
5. 1OM-11.4.M, "Recovery from Safety Injection."
6. 1OM-10.4.A, "Residual Heat Removal System Startup."

A. 1, 2, then 5.

B. 1, 2, 3, then 4.

C. 1, 2, 3, 2, then 4.

D. 1, 3, then 6.

ANSWER: B	
K/A: E03-EA2.1	Importance: 3.4/4.2
Cognitive Level: Comprehension	
Ref.: 1OM-53A.1.E-1 Iss 1B Rev 4 Steps 8 & 22; ES-1.1, step 15	
LP#: 1LP-SQS-53.3	OBJ: 3
History	
Source: LRT Bank Modified	
JTA: 3010020601	

Which of the following actions does ECA-1.1, "Loss of Emergency Coolant Recirculation" direct?

1. Provide guidance on aligning the HHSI pump suction directly to the containment sump.
2. Terminate cold leg recirculation and restore charging and letdown.
3. Cooldown and depressurize the RCS to allow RHR to be put into service.
4. Provide methods to make-up to the RWST.

A. 1, 2, and 3.

B. 1, 2, and 4.

C. 1, 3, and 4.

D. 2, 3, and 4.

ANSWER: D	
K/A: E11-EK2.1	Importance: 3.6/3.9
Cognitive Level: Knowledge	
Ref.: 1OM-53A.ECA-1.1 Iss 1B Rev 4	
LP#: 1LP-SQS-53.3	OBJ:2
History	
Source: New	
JTA: 3010020601	

Given the following:

- Unit 1 has experienced a Large Break LOCA.
- Containment pressure is 20 psig and dropping.

The Crew has reached the step in the procedure where CIB is to be reset. Which of the following apply in this situation?

A. CIB cannot be reset until containment pressure is below the actuation setpoint.

B. CIB cannot be reset until containment pressure is subatmopheric.

C. CIB can be reset, but will re-actuate as soon as the reset switches are released.

D. CIB can be reset regardless of containment pressure.

ANSWER: D (furnish UFSAR Logics, sheets 1 & 8)	
K/A: 103A4.04	Importance: 3.5/3.5
Cognitive Level: Analysis/Application	
Ref.: UFSAR Logics Fig. 7.2-1 sheets 1 & 8	
LP#: 1LP-SQS-13.1	OBJ: 5
History	
Source: New	
JTA: 0130010101	

Given the following conditions:

- The unit is at 100% power.
- The Red Light associated with the lockout jack on Vertical Board 'A'; for the 'A' accumulator isolation valve [MOV-1SI-865A], is illuminated.

[MOV-1SI-865A] has...

A. drifted from it's fully opened position.

B. tripped on Thermal Overload.

C. received a Safety Injection Signal.

D. continuity through its control circuit (circuit grounded).

ANSWER: D	
K/A: 013-2.4.48	Importance: 3.5/3.8
Cognitive Level: Analysis	
Ref.: 1OM-54.3.L5 Iss 4 Rev 16 L5-21	
LP#. 1LP-SQS-11.1	OBJ: 12
History	
Source: New	
JTA: 0060150101	

Technical Specifications restrict the quantity of radioactive liquids in [1LW-TK-7B] to less than 10 curies (excluding tritium and dissolved or entrained Noble gases). The basis for this limit is to...

A. prevent over-exposure to personnel who must work near or pass by the tank (Transient Pathway Radiation Levels).
B. prevent exceeding 10CFR20 Appendix B limits at the nearest surface water supply in the event of an accidental release.
C. maintain activity low enough so that the tank may be discharged with minimum design dilution flow.
D. prevent exceeding 10CFR100 limits for child thyroid dose at the site boundary in the event of an accidental release.

ANSWER: B	
K/A: 059AK1.02	Importance: 2.6/3.2
Cognitive Level: Knowledge	
Ref: TS 3.11.1.4 basis	
LP#: 1LP-SQS-17.1	OBJ: 5
History	
Source: NRC Bank Modified	
JTA: 1190150301	

Which of the following does the NSS sign for when discharging a Gaseous Waste Decay Tank?

1. Verification of the proper tank and approval for the discharge.
2. Only one batch discharge is being done at a time.
3. The appropriate Rad Monitor alarms have been adjusted.
4. The opposite units NSS has been informed of the discharge.

A. 1, 2, and 3.

B. 1, 2, and 4.

C. 1, 3, and 4.

D. 2, 3, and 4.

ANSWER: A	
K/A: 071-2.3.8	Importance: 2.3/3.2
Cognitive Level: Knowledge	
Ref.: 1OM-19.4.E, Decay Tank Discharge	
LP#: 1LP-SQS-19.1	OBJ: 9
History	
Source: New	
JTA: 3410120302	

Which of the following must be met in order to terminate safety injection following a Small Break LOCA?

1. Adequate subcooling.
2. At least one reactor coolant pump in operation.
3. Adequate secondary heat sink.
4. RCS pressure stable or rising.
5. RCS hot leg temperatures stable or rising.
6. Adequate pressurizer level.
7. Charging and letdown available.

A. 1, 2, 4, and 6.

B. 2, 3, 5, and 7.

C. 1, 3, 5, and 7.

D. 1, 3, 4, and 6.

ANSWER: D	
K/A: E02-EA2.1	Importance: 3.3/4.2
Cognitive Level: Comprehension	
Ref.: 1OM-53A.1.E-1 Iss 1B Rev 4	
LP#: 1LP-SQS-53.2	OBJ: 2
History	
Source: New	
JTA: 3010020601	

Given the following:

A reactor trip from 100% power has occurred.

The 'B' RTB has failed to open.

The condenser steam dump _____(1)_____ controller will maintain Tavg at _____(2)_____.

	(1)	(2)
A.	Load Rejection	549°F
B.	Load Rejection	552°F
C.	Reactor Trip	547°F
D.	Reactor Trip	549°F

ANSWER: A	
K/A: 039A2.04	Importance: 3.4/3.7
Cognitive Level: Analysis	
Ref.: 1OM-21.1.D Iss 4 Rev 1 pg. 6	
LP#: 1LP-SQS-21.1	OBJ: 5
History: Original version used 1LOT3 Exam 9 (5/1/97)	
Source: SQS Bank modified	
JTA: 0410030101	

The plant is in Mode 1 with Reactor Plant River Water Pumps [1WR-P-1A] and [1WR-P-1B] in service. In order to replace [1WR-P-1A] with [1WR-P-1C], which sequence of operations must be performed?

1. Rack on [1WR-P-1C].
2. Rack off [1WR-P-1A].
3. Start [1WR-P-1C].
4. Stop [1WR-P-1A].

A. 2, 3, 4, 1.

B. 2, 4, 3, 1.

C. 4, 1, 3, 2.

D. 4, 2, 1, 3.

ANSWER: D	
K/A: 2.1.32	Importance: 3.4/3.8
Cognitive Level: Comprehension	
Ref.: OM30 Precautions and limitations #3 & #4	
LP#: 1LP-SQS-30.2	OBJ: 4
History	
Source: New	
JTA: 0760050101	

Which of the following conditions will prevent the Emergency Diesel Generator output breaker from closing to re-energize the 1AE bus following a transient?

A. 1AE Emergency Bus feeder breaker, [ACB-1A10] trips on overcurrent.

B. 1AE Emergency Bus reverse phase PT has a blown fuse.

C. 1A Normal 4KV Bus feeder breaker, [ACB-41C] trips on overcurrent.

D. 1A Normal 4KV Bus feeder breaker, [ACB-41C] trips due to the Main Generator tripping on overcurrent.

ANSWER: A	
K/A: 062K4.01	Importance: 2.6/3.2
Cognitive Level: Knowledge	
Ref.: 1OM-36.4.ACZ	
LP#: 1LP-SQS-36.2	OBJ: 5
History	
Source: New	
JTA: 0640040101	

In ECA-0.0, "Loss of Emergency AC Power," prior to restoring power to an emergency bus, all major loads are placed into Pull-to-Lock with the exception of the Reactor Plant River Water Pump. This pump is left in automatic to...

A. provide a load for the diesel generator to prevent it from tripping on overspeed when started in the emergency mode.

B. provide cooling for the diesel generator to prevent overheating and possible failure of the diesel.

C. provide cooling for the charging pumps oil coolers so that make-up to the RCS can begin immediately to replace the RCS lost through the RCP seals.

D. provide cooling to the Control Room Emergency back-up cooling cools to maintain Control Room habitability.

ANSWER: B	
K/A: 2.4.18	Importance: 2.7/3.6
Cognitive Level: Knowledge	
Ref.: 1OM-53B.4.ECA-0.0 Iss 1B Rev 4; Basis for step 14	
LP#: 1LP-SQS-53.3	OBJ: 3
History	
Source: New	
JTA: 3010060601	

The unit is at 100% power when the following radiation monitors go into alarm:

- [RM-1MS-102A] N-16 SG Leak Monitor.
- [RM-1BD-100] SG Blowdown Effluent Monitor.
- [RM-1SV-100] Condenser Air Ejector Vent.

Within 15 minutes, analysis reveals a 0.12 gpm tube leak on the 'A' SG. Which of the following actions should be taken?

A. Enter TS 3.4.6.2 action for RCS leakage and restore the leak to within limits within 4 hours or be in Hot Standby within the following 6 hours.

B. Enter AOP-1.6.4, "SG Tube Leakage," and commence an emergency shutdown to be in Mode 3 as soon as possible.

C. Enter AOP-1.6.4, "SG Tube Leakage," and place the plant in Hot Shutdown within 6 hours.

D. Manually trip the reactor and initiate Safety Injection and enter E-0, "Reactor Trip or Safety Injection."

ANSWER: B (furnish table out of AOP 1.6.4 step 1)	
K/A: 037-2.4.4	Importance: 4.0/4.3
Cognitive Level: Comprehension/Application	
Ref.: AOP-1.6.4	
LP#: 1LP-SQS-53C.1	OBJ: 2
History	
Source: New	
JTA: 0000110401	

With the unit at 100% power, a HIGH-HIGH alarm is received on Condenser Air Ejector Vent radiation monitor [RM-1SV-100]. This HIGH-HIGH alarm will result in the condenser air ejector exhaust...

A. being isolated.

B. diverting through the Main Filter Banks

C. diverting to containment.

D. diverting to the Gaseous Waste Surge Tank.

ANSWER: C	
K/A: 055A3.03	Importance: 2.5/2.7
Cognitive Level: Knowledge	
Ref.: 1OM-43.4.ADZ Iss 3 Rev 3	
LP#: 1LP-SQS-43.1	OBJ: 6
History: Original version used 1/3/97 Q. #22	
Source: Modified SQS Bank Q. #0947	
JTA: 0730030101	

There has been a reactor trip caused by a loss of off-site power. E-0, "Reactor Trip or Safety Injection" has been entered. A transition to ECA-0.0, "Loss of Emergency 4KV AC Power" was done at step 6, because both emergency 4KV busses were de-energized. The crew has reached the step where they are to determine which bus should be selected as the cross-tie bus when the #2 Diesel Generator is started locally and the 1DF bus is automatically loaded. Which of the following is the appropriate response?

A. Continue on in ECA-0.0 until both emergency busses are restored.

B. Skip ahead to the step which determines the appropriate recovery procedure.

C. Transition to E-0, "Reactor Trip or Safety Injection."

D. Concurrently perform E-0 and ECA-0.0 until the cross-tie is completed for Bus 1AE.

ANSWER: B	
K/A: 055EK3.02	Importance: 4.3/4.6
Cognitive Level: Analysis	
Ref. 1OM-53A.1.ECA-0.0 Iss 1B Rev 4 step 11	
LP#: 1LP-SQS-53.3	OBJ: 3
History	
Source: NRC Bank	
JTA: 3010060601	

While responding to inadequate core cooling, the operators are unable to establish high head safety injection. Core exit T/C's are 1450°F and RCS pressure is 165 psig. Which of the following states the reason for starting the RCPs under these conditions?

A. Flush nitrogen from the SG tubes so natural circulation flow can be established in subsequent steps.

B. Provide 2-phase forced flow for temporary core cooling to reduce Core exit T/C temperatures.

C. Assure the core remains shutdown by adding borated water from the loops to the voided core.

D. Provide forced RCS flow for heat transfer during SG depressurization.

ANSWER: B	
K/A: 074EK3.07	Importance: 4.0/4.4
Cognitive Level: Knowledge	
Ref.: 1OM-53B.4.FR-C.1, iss. 1B Rev 4 step 23 (pg. 48)	
LP#: 1LP-SQS-53.3	OBJ: 3
History	
Source: NRC Bank	
JTA: 3110030601	

Which of the following is the termination criteria for an Emergency Boration initiated in accordance with FR-S.1, "Response to Nuclear Power Generation/ATWS"?

A. RCS Boron Concentration satisfies that required for adequate shutdown margin.

B. A green path on the Subcriticality status tree is obtained.

C. All control rods have been inserted to the bottom of the core.

D. Boration flow has been maintained at a maximum flowrate for 30 minutes.

ANSWER: A	
K/A: 024AA2.05	Importance: 3.3/3.9
Cognitive Level: Knowledge	
Ref.: FR-S.1 Iss. 1B, Rev. 4 pg. 13 caution	
LP#: 1LP-SQS-53.3	OBJ: 4
History	
Source: NRC Bank	
JTA: 3110010601	

Which of the following is an indication that natural circulation exists in the RCS?"

	RCS Pressure	RCS indicated Subcooling on ICCM	S/G Pressure	RCS Cold Leg Temp.	CNMT Pressure
A.	600 psig	40°F	400 psig	400°F	10 psia
B.	1100 psig	30°F	500 psig	470°F	7 psig
C.	1500 psig	35°F	600 psig	490°F	10 psia
D.	2000 psig	40°F	700 psig	550°F	7 psig

ANSWER: C (Provide Attachments 2-G & 6-A as reference)	
K/A: E09AA1.3	Importance: 3.5/3.8
Cognitive Level: Analysis	
Ref.: 1OM-53A.1.2-G & 6-A Iss. 1B Rev. 2	
LP#: 1LP-SQS-53.2	OBJ: 12
History	
Source: NRC Bank Modified	
JTA: 3010010601	

The RCP Thermal Barrier Component Cooling Outlet Trip Valve, [TV-1CC-107B],

fails _____(1)_____ on the loss of instrument air and will auto close on high CCR

_____(2)_____?

	(1)	(2)
A.	closed	flow
B.	closed	pressure
C.	open	flow
D.	open	pressure

ANSWER: A	
K/A: 015AK2.08	Importance: 2.6/2.6
Cognitive Level: Knowledge	
Ref. 1OM-53C.4.1.34.2; 1OM-6.4.AAH Iss4 Rev 0	
LP#: 1LP-SQS-6.3	OBJ: 12
History	
Source: NRC Bank Modified	
JTA: 0030020101	

The location of the 18 inch escape manway associated the the CNMT Personnel Airlock Doors is...

A. on the inner and outer doors with no associated interlocks.

B. only on the inner door with no associated interlocks.

C. on the inner and outer doors, interlocked to prevent any inner and outer door from being opened simultaneously.

D. on the inner door, interlocked to prevent any inner door and the outer door from being opened simultaneously.

ANSWER: A	
K/A: 069AK2.03	Importance: 2.8/2.9
Cognitive Level: Knowledge	
Ref.: 1OM-47.4.C Iss 4 Rev 1 pg. C1	
LP#: 1LP-SQS-47.1	OBJ: 3c
History: Similar question used in 1LOT2 NRC exam (Q 88)	
Source: NRC Bank Modified	
JTA: 0210010101 (now N.O. task	

Given the following conditions:

- Reactor power level is 97% and dropping.
- Control rods are in automatic and stepping in.
- Tavg is 574°F and dropping.
- Pressurizer pressure is 2225 psig and dropping.
- Pressurizer level is 53% and dropping.
- MW Recorder is 820 MW and stable.

Which of the following actions should be taken?

A. Check the In-Hold-Out lever is in the Hold position.

B. Enter AOP-1.51.1, "Emergency Shutdown."

C. Place the control rod selector switch in Manual.

D. Reduce turbine load to stabilize primary plant parameters.

ANSWER: C	
K/A: 001AA1.01	Importance: 3.5/3.2
Cognitive Level: Analysis/Application	
Ref.: 1OM-53C.4.1.1.3 Iss 3A Rev 2	
LP#: 1LP-SQS-53C.1	OBJ: 1
History	
Source: NRC Bank Modified	
JTA: 0000050401	

The unit is at 100% power with all systems in their NSA configurations for the current power level.

Which of the following will occur if Vital Bus 1V is de-energized?

A. An OTΔT turbine runback will occur.

B. All condenser steam dumps will open.

C. 'C' SG feed reg valve [FCV-1FW-498] shifts to manual.

D. The controlling PZR level channel fails low.

ANSWER: C	
K/A: 057AA2.20	Importance: 3.6/3.9
Cognitive Level: Comprehension	
Ref.: 1OM-38.4.AAG Iss 4 Rev 1 pg. 2	
LP#: 1LP-SQS-38.1 LOT-V-7	OBJ: 6 2-4
History	
Source: NRC Bank Modified	
JTA: 0000350401	

The following events have occurred:

- The unit is at 100% power with all systems in their NSA configurations for the current power level when a Reactor trip and Safety Injection occur.
- 1A SG pressure is dropping rapidly.
- 1A Steam line indicates 2.5E6 lbm/hr steam flow.
- Containment pressure is 8.5 psig and rising.
- All ESF actuations occur as designed.

Assuming no operator actions taken, a possible consequence of this accident is...

A. an acidic containment spray solution since the steam will dilute the spray ring water.

B. insufficient containment sump levels to support recirculation spray pump operation.

C. a postulated flaw in the reactor vessel wall propogating if RCS pressure rises.

D. a loss of the steam driven AFW pump due to all three steam lines depressurizing.

ANSWER: C	
K/A: 040EK1.01	Importance: 4.1/4.4
Cognitive Level: Comprehension	
Ref. 1OM-53B.4.F.0 Iss 1B Rev 1 pgs. 6 & 7	
LP#: 1LP-SQS-53.2	OBJ: 8
History: Similar question used in 2LOT1 NRC exam (Q-2-97-58)	
Source: NRC Bank Modified	
JTA: 3010030601	

Given the following:

- The unit is at 100% power with all systems in their NSA configurations for the current power level when a Reactor Trip and SI occur.
- The operators transition to FR-H.1, "Response to Loss of Secondary Heat Sink due to low S/G NR levels and low AFW flow.
- RCS pressure is less than S/G pressure and FR-H.1 directs a transition to E-1, "Loss of Reactor or Secondary Coolant.

Based on this information, select the statement that correctly summarizes plant conditions:

A. Large Break LOCA in progress; secondary heat sink required.

B. Large Break LOCA in progress; secondary heat sink not required.

C. Small Break LOCA in progress; secondary heat sink required.

D. Small Break LOCA in progress; secondary heat sink not required.

ANSWER: B	
K/A: 011EA2.01	Importance: 4.2/4.7
Cognitive Level: Analysis	
Ref. 1OM-53B.4-FR-H.1 Iss 1B Rev 3; Basis Step 1 pg. 49	
LP#: 1LP-SQS-53.3	OBJ: 6
History	
Source: NRC Bank	
JTA: 3010020601	

FR-S.1, "Response to Nuclear Power Generation/ATWS", requires that pressure be verified to be less than 2335 psig and if not to reduce pressure to less than 2135 psig. The basis for this action is to reduce RCS pressure to...

A. maximize boration flow.

B. limit cycling of the PZR PORVs.

C. avoid opening of the PZR safety valves.

D. maintain adequate RCP seal injection flow.

ANSWER: A	
K/A: 029EK3.12	Importance: 4.4/4.7
Cognitive Level: Knowledge	
Ref. 1OM-53B.4.FR-S.1 Iss 1B Rev 4 Basis for step 8, pg. 67	
LP#: 1LP-SQS-53.3	OBJ: 2
History	
Source: NRC Bank	
JTA: 3110010601	

Given the following conditions:

- The 'A' train of RHR is in service.
- All systems are in their NSA configurations for the current mode of operation.
- RCS temperature is 180°F.
- RCS Pressure is 200 psig.

Which of the following would indicate a tube leak in the "A" RHR heat exchanger?

A. CCR surge tank level rising.

B. VCT level rising.

C. RHR return flow to the RCS dropping.

D. RCS Boron concentration dropping.

ANSWER: A	
K/A: 026AA2.01	Importance: 2.9/3.5
Cognitive Level: Analysis	
Ref. 1OM-15.4.AAC Iss 4 Rev 3 pg. 2a	
LP#: 1LP-SQS-10.1	OBJ: 1a
History	
Source: NRC Bank	
JTA: 0080120101	

Which of the following is indicative of, or the result of, a dropped rod with an initial power level of 100%?

1. Rod insertion limit drops.
2. "NIS Power Range Comparator Deviation" alarm.
3. Tavg drops rapidly.
4. Axial flux difference becomes more negative.

A. 1, 2, and 3.

B. 1, 2, and 4.

C. 1, 3, and 4.

D. 2, 3, and 4.

ANSWER: A	
K/A: 003AK1.07	Importance: 3.1/3.9
Cognitive Level: Comprehension	
Ref. 1OM-53C.4.1.1.5 Iss 3A Rev 6	
LP#: 1LP-SQS-53C.1	OBJ: 2
History	
Source: NRC Bank Modified	
JTA: 0000070401	

Which of the following is the reason that no action is taken in ES-0.1, "Reactor Trip Response," for a single rod failing to insert?

A. FR-S.1, "Response to Nuclear Power Generation/ATWS" would have already initiated emergency boration flow for a single stuck rod.
B. The core is designed for adequate shutdown margin with a single rod stuck out of the core.
C. The loss of shutdown margin is not a concern for the first 24 hours following a reactor trip due to Xenon peaking.
D. The core is being adequately borated by safety injection flow from the RWST.

ANSWER: B	
K/A: 005AK3.06	Importance: 3.9/4.2
Cognitive Level: Knowledge	
Ref. 1OM-53B.4.ES-0.1 Iss 1B Rev 4	
LP#: 1LP-SQS-53.3	OBJ: 3
History	
Source: NRC Bank Modified	
JTA: 3010010601	

Given the following conditions:

- The unit was at 100% power with all systems in their NSA configurations for the current power level.
- A main steam line break has occurred inside containment.
- The crew is in FR-P.1, "Response to Imminent Pressurized Thermal Shock," which directs a "soak of the RCS."

Which of the following evolutions can be performed during this soak?

A. Warm up the RHR system and commence a cooldown of the RCS.

B. Raise the faulted SG water level to 50% and secure the TDAFW pump.

C. Place PZR auxiliary spray in service.

D. Energize the PZR heaters to raise the saturation temperature of the PZR.

ANSWER: C	
K/A: E08-EK1.3	Importance: 3.5/4.0
Cognitive Level: Analysis	
Ref.: 1OM-53A.1.FR-P.1 Iss 1B Rev 4 pg. 23	
LP#: 1LP-SQS-53.3	OBJ: 6
History	
Source: NRC Bank	
JTA: 3110140601	

Given the following conditions:

- The unit is at 92% power with all systems in their NSA configurations for the current power level.
- The reactor did not trip, and the crew is responding with FR-S.1, "Response to Nuclear Power Generation/ATWS."
- After completing the immediate manual actions, the reactor trip breakers are opened locally and the reactor is shutdown.
- No other malfunctions or actuations have occurred.

Based on the above information, the crew should...

A. perform the first 15 steps of E-0 while continuing in FR-S.1.

B. transition to E-0, perform the first 15 steps, and then return to FR-S.1.

C. return to procedure and step in effect, i.e., E-0.

D. continue with procedure and step in effect.

ANSWER: D	
K/A: 029-2.4.16	Importance: 3.0/4.0
Cognitive Level: Analysis	
Ref.: 1/2OM-53B.2 Iss 1B Rev 3 pg. 10; Rules of usage	
LP#: 1LP-LRT-53.1	OBJ: 1
History	
Source: NRC Bank Modified	
JTA: 3110010601	

The following conditions exist:

- Unit 1 is in Hot Standby following an unscheduled maintenance outage.
- The Plant Operator is performing valve stroke OST 1.47.3B.
- [TV-1SS-105A2], RCL Hot Leg Samples Outside Cnmt Isol valve's closing time is found to be 3.2 seconds.
- The acceptable range listed in the OST is ≤ 2.0 seconds, the ASME limiting stroke time is 2.0 seconds, and the Technical Specification limiting time is 21.0 seconds.

Based on this information, the OST should be marked:

A. UNSAT, and penetration declared inoperable.

B. UNSAT, and the valve declared inoperable.

C. SAT, because the average stroke time was less than Technical Specification limit, but frequency of testing must be doubled.

D. SAT, because the second stroke time was within 25% of the ASME limiting stroke time which is acceptable for valves with stroke times less than 1 minute.

ANSWER: B (furnish applicable pages from OST 1.47.3B)	
K/A: 069-2.1.33	Importance: 3.4/4.0
Cognitive Level: Analysis/Application	
Ref.: 1OST-47.3B Iss 4 Rev 16 pg. 4 Note	
LP#: 1LP-SQS-ES	OBJ: 8
History	
Source: NRC Bank Modified	
JTA: 103AAA0201	

The limit for RCS activity ensures that the 2 hour dose at the site boundary will not exceed a small fraction of the Part 100 limits in the event that a _____ occurs.

A. Steam line rupture with a 1 GPD tube leak.

B. Steam generator tube rupture.

C. Rod Ejection accident.

D. Locked RCP rotor accident.

ANSWER: B	
K/A: 076-2.2.25	Importance: 2.5/3.7
Cognitive Level: Knowledge	
Ref. TS 3.4.8 Basis pg. 3/4 4-4	
LP#: 1LP-SQS-6.1 1LP-SQS-TS	OBJ: 8 4
History	
Source: NRC Bank	
JTA: 1190150301	

Given the following:

- A Steam Generator Tube Rupture has occurred in the 1B S/G.
- The Crew is in E-3, "Steam Generator Tube Rupture," preparing to cooldown the RCS.
- 1B Narrow range level at 74% and rising.
- PZR pressure is 1900 psig.
- Tavg is 547°F.
- Main Condenser Vacuum is 13" Hg Absolute and stable.
- 1B and 1C Circ Water Pumps are running.

Which of the following actions is/are necessary to commence cooldown in accordance with E-3?

A. Take the Steam dumps to Steam Pressure mode and manually open the dumps to commence the cooldown.

B. Take the Steam dumps to Steam Pressure mode, take both Steam Dump Control Selector Switches momentarily to the Defeat Tavg Interlock position, and then manually open the dumps to commence the cooldown.

C. Commence the cooldown using Steam Generator Atmospheric Dumps [PCV-1MS-101A, B, & C].

D. Commence the cooldown using Steam Generator Atmospheric Dumps [PCV-1MS-101A & C].

ANSWER: D	
K/A: 051AK3.01	Importance: 2.8/3.1
Cognitive Level: Analysis	
Ref.: 1OM-21.2.B Iss 4 Rev 1 setpoints; 1OM-53A.1.E-3 Iss 1B Rev 5	
LP#: 1LP-SQS-21.1	OBJ: 4k
History: Similar question used in 2LOT1 NRC exam (Q-2-97-59)	
Source: NRC Bank	
JTA: 3010040601	

BVPS-1 Steam Generator Atmospheric Steam Dump valves [PVC-1MS-101A,B,C] Auto/Manual stations are normally set at 1035 psig. Assuming a malfunction of the Auto/Manual station, at what steam pressure will the Atmospheric Steam Dumps open with no operator action?

A. 1050 psig.

B. 1060 psig.

C. 1070 psig.

D. 1080 psig.

ANSWER: B	
K/A: E13-EK2.1	Importance: 3.0/3.1
Cognitive Level:Knowledge	
Ref.: 1OM-21.1.D	
LP #: 1LP-SQS-21.1	Obj.: 3
History: New	
Source: LOT Bank	
JTA: 0390090101	

Given the following conditions:

- Reactor tripped due to a loss of off-site power.
- RCS pressure is 700 psig.
- Tcold is 370°F.
- Core exit T/Cs are 506°F.
- Pressurizer level is 68% and rising.
- Operators are performing ES-0.2, "Natural Circulation Cooldown."

Which of the following describes the cause of the abnormally high pressurizer level?

A. Pressurizer level instruments are inaccurate due to the loss of containment cooling.

B. Letdown has not been placed into service due to the loss of offsite power.

C. RCS pressure has reached the injection point for the accumulators.

D. RCS temperature and pressure are at the point where voiding is occuring in the reactor vessel head.

ANSWER: D	
K/A: 056AK1.04	Importance: 3.1/3.2
Cognitive Level: Comprehension	
Ref.: 1OM-53A.1.ES-0.2 Iss 1B Rev 4 step 20	
LP#: 1LP-SQS-53.3	OBJ: 3,4
History	
Source: NRC Bank	
JTA: 3110130601	

The following conditions exist:

- The unit is at 92% power with all systems in their NSA configurations for the current power level.
- Pressurizer level control channel selector is in the 461/460 position.
- Pressurizer level channels indicate as follows:

  Channel 459 is 54%.

  Channel 460 is 56%.

  Channel 461 is 0%.

  Channel 462 is 40%.

Which of the following describes the plant response with no operator intervention?

A. Backup heaters energize.

B. Charging flow rises to maximum.

C. Reactor trips on High PZR level.

D. Reactor trips on High PZR pressure.

ANSWER: C	
K/A: 028AA2.02	Importance: 3.4/3.8
Cognitive Level: Analysis	
Ref. 1OM-6.4.1F Iss 4 Rev 6 pg. 9	
LP#: 1LP-SQS-6.4	OBJ: 12
History	
Source: NRC Bank	
JTA: 0110030101	

Rods are being withdrawn in manual during a reactor start-up, with all systems operable. For the Control Banks, which of the following describes the status of the Rod Bottom Lights at the moment A4-126, "ROD BOTTOM ROD DROP" annunciator clears?

A. Banks A, B, C, & D - OFF.

B. Banks A, B, C, & D - ON.

C. Banks A, B, & C - OFF; Bank D - ON.

D. Bank A - OFF; Banks B, C, & D - ON.

ANSWER: D	
K/A: 014K4.03	Importance: 3.2/3.4
Cognitive Level: Comprehension	
Ref.: 1LP-SQS-1.4 & 1OM-1.2B Iss 4 Rev 4	
LP#: 1LP-SQS-1.4	OBJ: 2b,c
History: Original version used 1LOT3 exam	
Source: SQS Bank Modified	
JTA: 0140030101	

Administrative controls or interlocks provided with the Charging Pumps are designed to accomplish which of the following:

1. If only two pumps are operable, ensure that they are not powered from the same bus.
2. Prevent operation of a charging pump when the primary plant is water solid.
3. Prevent cross-tie of emergency busses through the swing pump breakers.
4. Prevent RCS over-pressurization in Modes 5 & 6 due to excessive flow.

A. 1, 2, and 3.

B. 1, 2, and 4.

C. 1, 3, and 4.

D. 2, 3, and 4.

ANSWER: C	
K/A: 004K2.02	Importance: 3.3/3.5
Cognitive Level: Comprehension	
Ref. 1OM-7.2.A Iss 4 Rev 11 pg. 3 P&Ls # 9 & 10; TS 3.5.3 basis	
LP#: 1LP-SQS-7.1	OBJ: 5
History	
Source: NRC Bank Modified	
JTA: 0040150101	

Which of the following variables affect the Containment Spray Systems capacity to depressurize the containment in the event of a Design Basis Accident (DBA)?

1. Containment temperature.
2. Containment pressure.
3. RWST temperature.
4. Component Cooling Water temperature.

A. 1, 2, and 3.

B. 1, 2, and 4.

C. 1, 3, and 4.

D. 2, 3, and 4.

ANSWER: A	
K/A: 026A1.01	Importance: 3.9/4.2
Cognitive Level:Comprehension	
Ref.: TS 3.6.1.4 & 3.6.1.5 Bases	
LP#: 1LP-SQS-13.1	OBJ: 1
History	
Source: NRC Bank Modified	
JTA: 1190150301	

Which of the following describes the sources of influent into the Primary Drains Transfer Tank [1DG-TK-1]?

A. RCP seal leak-off, sample system drains, and SI valve stem leak-off.

B. CVCS excess letdown divert line, RCP seals and VCT drains.

C. SI header drains, PRT, and sample system drains.

D. Valve stem leak-off, CVCS excess letdown divert line, and reactor vessel head O-ring leak-off.

ANSWER: D	
K/A: 068K1.07	Importance: 2.7/2.9
Cognitive Level: Knowledge	
Ref.: 1OM-9.1.C pg.1 Iss 4 Rev 0; 1OM-9.5 Fig. 9-1	
LP#: 1LP-SQS-9.1	OBJ: 2
History	
Source: NRC Bank	
JTA: 1540110101	

The following plant conditions exist:

- Unit 1 has tripped due to a loss of off-site power.
- #1 Diesel Generator has failed to start.
- All Steam Generator Narrow range levels have remained above 21%.

Which of the following describes the status of the AFW system 60 seconds after the reactor trip?

A. Both motor driven pumps are OFF; the steam driven pump is supplying AFW flow.

B. Both motor driven pumps are supplying AFW flow; the steam driven pump is OFF.

C. The 'A' motor driven and the steam driven pumps are OFF; the 'B' motor driven pump is supplying AFW flow.

D. The 'A' motor driven pump is OFF; the 'B' motor driven and the steam driven pumps are supplying AFW flow.

ANSWER: D	
K/A: 061K4.02	Importance: 4.5/4.6
Cognitive Level: Comprehension	
Ref.: 1OM-24.1.D Iss 4 Rev 2 pgs. 2 & 3; 1OM-24.5 Fig 24-09 Rev 18	
LP#: 1LP-SQS-24.1	OBJ: 6b
History	
Source: NRC Bank Modified	
JTA: 0610030101	

Which of the following is true with regard to Axial Flux Difference?

A. Boration will cause the Axial Flux Difference to become more negative.

B. When axial flux difference is negative, more power is being produced in the top of the core.

C. For power levels greater than 50%, axial flux is maintained within +7% of target band.

D. When power distribution is distributed equally through the core, AFD is 1.

ANSWER: C	
K/A: 001K5.53	Importance: 2.8/3.4
Cognitive Level: Analysis	
Ref.: TS 3.2.1	
LP#: 1LP-SQS-2.2	OBJ: 10
History	
Source: NRC Bank	
JTA: 0150050101	

Which of the following statements is correct if the power range channels have been adjusted based on a calculated calorimetric?

A. If the blowdown flow is ignored in calculating the calorimetric, then actual reactor power would be lower than indicated reactor power.

B. If the blowdown flow is ignored in calculating the calorimetric, then actual reactor power would be higher than indicated reactor power.

C. If the feedwater temperature used in calculating the calorimetric had been 10 degrees lower than actual feedwater temperature, then actual reactor power would be higher than indicated reactor power.

D. If the feedwater temperature used in calculating the calorimetric had been 10 degrees higher than actual feedwater temperature, then actual reactor power would be lower than indicated reactor power.

ANSWER: A (furnish calorimetric form)	
K/A: 015K5.04 015A1.01	Importance: 3.5/3.8 2.6/3.1
Cognitive Level: Analysis	
Ref.: 1OM-54.4.C1-3 Iss 4 Rev 3	
LP#: LP-TMO-6	OBJ: 14
History	
Source: NRC Bank	
JTA: 0150070201	

Given the following conditions:

- Make-up to the RCS has increased and ONLY the following alarms are received:
  - Reactor Coolant Pump Seal Leak-off Temp High.
  - Reactor Coolant Pump Seal Leak-off Flow High.
  - Reactor Coolant Pump 1A Seal Vent Pot Level High.
  - Reactor Coolant Pump No. 1 Seal Differential Pressure Low.

Which of the following has occurred to the 1A RCP?

A. #1 seal has failed.

B. #1 and #2 seals have failed.

C. All the seals have failed.

D. Seal injection has failed.

ANSWER: A	
K/A: 003A2.01	Importance: 3.5/3.9
Cognitive Level: Analysis	
Ref.: 1OM-6.4.ABC Iss 4 Rev 1; 1OM-7.4.ABD Iss 3 Rev 1; 1OM-7.4.ABE Iss 3 Rev 3; 1OM-7.4.ABF Iss 3 Rev 1	
LP#: 1LP-SQS-6.3	OBJ: 4e
History: Similar question used in 2LOT2 NRC exam (Q-2-97-53)	
Source: NRC Bank	
JTA: 0030020101	

Given the following:

- A large break LOCA has occcurred.
- SI, CIA, FWI, MSLI, and CIB are actuated.

In this condition, the Containment Air Recirculation Fans...

A. must continue to run to ensure Containment pressure returns to sub-atmospheric within 1 hour.

B. will continue to run until the Containment Sump level reaches the high level trip setpoint.

C. should be tripped due to the CIB.

D. should be tripped due to the SIS.

ANSWER: C	
K/A: 022K4.03	Importance: 3.6/4.0
Cognitive Level: Knowledge	
Ref.: 1OM-44C.1	
LP#: 1LP-SQS-44C.1	Obj.#: 5
History: New	
Source: LOT Bank	
JTA: 022—C0101	

Unit 1 Laundry and Contaminated Shower Drain Tank [1LW-TK-6A] is being discharged to the Unit 1 Cooling Tower Blowdown. A Hi-Hi alarm is received in the control room from the discharge radiation monitor. Identify the automatic actions that occur.

	[FCV-1LW-103] Contaminated Drains Disposal Flow Control	[TV-1LW-116] Contaminated Drains Discharge header Rad Trip Valve
A.	Closes	Closes.
B.	Closes	Opens.
C.	Opens	Closes.
D.	Opens	Opens.

ANSWER: A	
K/A: 068A4.04	Importance: 3.8/3.7
Cognitive Level: Knowledge	
Ref.: 1OM-17.1B	
LP#: 1LP-SQS-17.1	OBJ: 2
History	
Source: LOT Bank Modified	
JTA: 069AAA0101	

The unit is at 100% power with all systems in their NSA configurations for the current power level. The RO inadvertently changes the Pressurizer Pressure Master Controller setpoint to 2185 psig. Assume a step change in the setpoint and assume the controller remains in automatic.

Which of the following is the immediate automatic response of the system?

A. Spray valves open; Variable heaters go to minimum output.

B. PORV 455C opens; Spray valves open; Variable heater go to maximum output.

C. Spray valves open; Variable heaters go to maximum output.

D. Spray valves close; Variable heaters go to minimum.

ANSWER: A	
K/A: 010A3.02	Importance: 3.6/3.5
Cognitive Level: Comprehension	
Ref.: 1OM-6.5 Fig. 6-59 Iss 2 Rev 11	
LP#: 1LP-SQS-6.4	OBJ: 11
History	
Source: NRC Bank	
JTA: 0000130401	

In the event of a gross fuel element failure, which one of the following monitors would be the first to alarm?

A. CVCS letdown radiation monitor.

B. Containment area radiation monitor.

C. Vent stack radiation monitor.

D. SPING radiation monitor.

ANSWER: A	
K/A: 073A1.01	Importance: 3.2/3.5
Cognitive Level: Comprehension	
Ref.: 1OM-53A.1.ES-1.1 Iss 1B Rev 4 step 16	
LP#: 1LP-SQS-43.1	OBJ: 9
History	
Source: NRC Bank	
JTA: 0000420401	

A plant heat-up is in progress. The following RCS temperatures were recorded at the given times:

TIME	TEMP
1000	362F
1030	383F
1100	412F
1130	440F
1200	459F

Which of the following statements is correct?

A. No Administrative or Tech Spec limits were exceeded.

B. The Administrative limit was exceeded but the Tech Spec limit was not.

C. Both the Administrative and the Tech Spec limits were exceeded.

D. Not enough data has been gathered to determine if any limits were exceeded.

ANSWER: B	
K/A: 002K1.03	Importance: 3.7/3.8
Cognitive Level: Analysis	
Ref.: 1OM-50.2.A P&L #14, Iss 4 Rev 2	
LP#: 1LP-SQS-50.1	OBJ: 7
History	
Source: NRC Bank	
JTA: 002AAA0101	

The following conditions exist:

- Loops 1 and 3 Tavg indicates 576°F.
- Loop 2 Tavg indicates offscale high.
- Loops 1 and 3 Delta T indicates 100%.
- Loop 2 Delta T indicates 0%.

Which of the following is the cause of these indications?

A. Loop 2 Tcold failed low.

B. Loop 2 Tcold failed high.

C. Loop 2 Thot failed low.

D. Loop 2 Thot failed high.

ANSWER: B	
K/A: 016A2.01	Importance: 3.1/3.1
Cognitive Level: Analysis	
Ref. 1OM-1.4.AA1 Iss 3 Rev 5	
LP#: 1LP-SQS-6.5	OBJ: 5
History	
Source: NRC Bank	
JTA: 0020090101	

The following conditions exist:

- Unit 1 is operating at 100% power.
- Tavg is 576°F.
- Pressurizer pressure is 2235 psig.
- Delta 'I' is +8.
- Delta T is 60°F.

Which of the following plant parameter changes would cause the OTΔT setpoint to LOWER?

A. Delta 'I' lowers to -2.

B. Tavg rises to 578°F.

C. Delta T drops to 55°F with Tavg remaining constant.

D. Pressurizer pressure rises to 2260 psig.

ANSWER: B	
K/A: 012K6.11	Importance: 2.9/2.9
Cognitive Level: Analysis	
Ref.: TS 2.2.1	
LP#: 1LP-SQS-1.1	OBJ: 8
History	
Source: NRC Bank	
JTA: 0120050101	

Prior to an outage, the steam generator were producing steam at 780 psia with an RCS Tavg of 575°F. During the outage 12% of the steam generator tubes were plugged.

What will be the new full power steam pressure if the RCS Tavg is to remain constant at the same power level as before the tubes were plugged?

A. 700 psia ± 10 psia.

B. 725 psia ± 10 psia.

C. 780 psia ± 10 psia.

D. 825 psia ± 10 psia.

ANSWER: B Q=UA(DELTA T); Q is constant; 100(575-515) = 88(575-Tsteam2) Tsteam2 = 507F	
K/A: 035K3.01	Importance: 4.4/4.6
Cognitive Level: Analysis	
Ref.: Thermo/Steam Tables	
LP#: LP-TMO-3	OBJ: 7
History	
Source: NRC Bank	
JTA: 0350060101	

What condition would prevent the reactor cavity upender from being operated?

A. The transfer car is at the fuel pool end of its travel.

B. The transfer tube valve is closed.

C. The manipulator crane is over the upender with the mast in the full DOWN position.

D. The manipulator crane is over the upender with the mast in the full UP position.

ANSWER: C	
K/A: 034K4.02	Importance: 2.5/3.3
Cognitive Level: Knowledge	
Ref.: Refueling lesson plan/procedure	
LP#: 1LP-SQS-6.13	OBJ: 9
History: New	
Source: LOT Bank	
JTA: 0340050101	

Which of the following describes the condition associated with the Starting Air System for the Diesel Generator that would cause the Control Room Diesel Generator Not Available annunciator?

A. One of the two starting air header pressures less than 200 psig.

B. Both of the starting air header pressures less than 200 psig.

C. One of the two starting air header pressures less than 165 psig.

D. Both of the starting air header pressures less than 165 psig.

ANSWER: C	
K/A: 064K1.05	Importance: 3.4/3.9
Cognitive Level: Knowledge	
Ref.: 1OM-36.4.AEC & AEL Iss 3 Rev 1	
LP#: 1LP-SQS-36.2	OBJ: 1,2
History	
Source: NRC Bank Modified	
JTA: 0640040101	

Which of the following indications would lead you to suspect a leak in the fuel pool liner?

A. Increased auto-make-up from the Blender to the pool.

B. Fuel Building sump level high alarm.

C. Fuel pool tell-tale drains receiver level high.

D. Fuel pool cooling heat exchanger outlet temperature high.

ANSWER: C	
K/A: 033A2.03	Importance: 3.1/3.5
Cognitive Level: Analysis	
Ref.: 1OM-20.1, 1OM-20.4.AAC	
LP#: 1LP-SQS-20.1	Obj.: 4
History: New	
Source: LOT Bank	
JTA: 0330170101	

A problem in the instrument air system caused air pressure to momentarily (30 seconds) drop to 65 psig, then return to 105 psig. What should be the response of the Station Air Header Trip Valve [TV-1SA-105]?

A. It closes, then re-opens.

B. It closes and remains closed.

C. It opens, then re-closes.

D. It remains open.

ANSWER: B	
K/A: 079K1.01	Importance: 3.0/3.1
Cognitive Level: Knowledge	
Ref.: 1OM-34.1D Iss 4 Rev 0 pg. 5	
LP#: LP-SQS-34.1	OBJ: 5a
History: New	
Source: LOT Bank	
JTA: 0790030101	

Given the following:

- Unit 1 was operating at 75% power
- A small break LOCA has occurred
- RVLIS indicates that a void exists in the vessel head

Increasing RCS pressure will _____(1)_____ the size of the void, and _____(2)_____ Pressurizer level.

	(1)	(2)
A.	increase	increase
B.	decrease	increase
C.	increase	decrease
D.	decrease	decrease

ANSWER: D	
K/A: 011K5.15	Importance: 3.6/4.0
Cognitive Level: Comprehension	
Ref.: 1OM-53A.1.ES-0.2 Iss 1B Rev 4 Step 20	
LP#: 1LP-SQS-53.2	OBJ: 13
History	
Source: NRC Bank	
JTA: 3110130601	

A leak in which of the following components would result in a rising level in the Component Cooling Water Surge Tank?

A. Excess Letdown Heat Exchanger.

B. RCP Upper Bearing Cooling Water Cooler.

C. Regenerative Heat Exchanger.

D. Component Cooling Water Heat Exchanger.

ANSWER: A	
K/A: 008K1.04	Importance: 3.3/3.3
Cognitive Level: Comprehension	
Ref. 1OM-15.4.AAC Iss 4 Rev 3	
LP#: 1LP-SQS-15.1	OBJ: 2
History	
Source: NRC Bank	
JTA: 0080120101	

Which of the following represents the condition of the steam entering the PRT from a leaking PORV if pressurizer pressure is 1400 psig and the PRT is 15 psig. Assume an ideal thermodynamic process.

A. Superheated steam at 265°F.

B. Superheated steam at 280°F.

C. Saturated steam at 265°F.

D. Saturated steam at 280°F.

ANSWER: A	
K/A: 007A4.10	Importance: 3.6/3.8
Cognitive Level: Comprehension/Application	
Ref.: Steam tables	
LP#: LP-TMO-5	OBJ: 7
History	
Source: NRC Bank	
JTA: 0070030101	

Given the following:

- Unit 1 in Mode 3 preparing for a normal plant cooldown.
- Condenser Steam Dump System is in the steam pressure mode controlling Tavg at 547F in automatic.
- [PT-1MS-464] fails low.

What manual actions will be required by the operator?

A. Manually close steam dumps by switching to the Tavg mode. Cooldown manually in the Tavg mode.

B. Manually close steam dumps by placing the controller to manual and reducing demand. Cooldown manually in the steam pressure mode.

C. Manually open the steam dumps by placing the controller to manual and raising demand. Cooldown manually in the steam pressure mode.

D. Steam dump control is inoperable. Cooldown manually with the Atmospheric Steam Dump Valves or the Residual Heat Release Valve.

ANSWER: B	
K/A: 041K6.03	Importance: 2.7/2.9
Cognitive Level: Comprehension	
Ref.: 1OM-21.1.E, Iss 4 Rev 1; pgs. 4 & 5	
LP#: 1LP-SQS-21.1	OBJ: 3
History: Original version used 1/15/97	
Source: Modified SQS Bank Q. #0669	
JTA: 0410050101	

Given the following:

- Both units are operating at 100% power with all systems in normal system arrangement.
- Operations manning is at minimum shift compliment at each unit.
- An oil fire breaks out in the Unit 1 Turbine building basement.
- The NSS determines a plant shutdown is required.

Which of the following is correct?

A. Off-site fire fighting personnel must be called in to combat the fire. Not enough personnel are available on-site to fight the fire and shutdown simultaneously.

B. Off-site fire fighting personnel must be called in to combat the fire. Equipment to fight an oil fire is not available on-site.

C. The opposite units fire brigade will fight the fire and the affected unit will perform the required shutdown duties.

D. Minimum shift compliment provides enough personnel to safely shutdown the plant and perform the required fire fighting duties.

ANSWER: D	
K/A: 067AK1.02	Importance: 3.1/3.9
Cognitive Level: Comprehension	
Ref.: NPDAP 3.5 Rev 6 Pg. 6	
LP#: 1LP-SQS-AP	OBJ: None - TLO only
History:	
Source: New	
JTA: 3440320302	

Given the following:

- A Control Room fire caused evacuation to the Shutdown Panel (SDP).
- The reactor was tripped 10 minutes ago.
- Plant control established at the SDP with all equipment transferred.

With equipment controlled from the SDP, RCS temperature is controlled using _____(1)_____, and RCS pressure is controlled using _____(2)_____.

	(1)	(2)
A.	condenser steam dumps	PZR heater group C.
B.	atmospheric steam dump valves	PZR heater groups A and B.
C.	condenser steam dumps	auxiliary spray.
D.	atmospheric steam dump valves,	PZR heater group C.

ANSWER: B	
K/A: 068AK2.01	Importance: 3.9/4.0
Cognitive Level: Knowledge	
Ref.: AOP-1.33.1A Issue 3A, Rev.4	
LP#: 1LP-SQS-53C.1	OBJ: 3
History	
Source: New	
JTA: 0000570401	

Given the following:

- A reactor trip and safety injection have occurred, along with the loss of all feedwater.
- The steam driven AFW pump has just been returned to service.
- The crew goes to step 28 of FR-H.1, "Response to Loss of Secondary Heat Sink." (attached)
- The following conditions are noted:
  - RCS hot leg temperatures are all greater than 520F.
  - All SG wide range levels are less than 10%.
  - Core exit TCs are stable.

The action that should be taken is...

A. establish AFW flow of less than 100 gpm to one SG until narrow range level is greater than 6%.

B. establish AFW flow of less than 100 gpm to all SGs until narrow range level is greater than 6%.

C. establish maximum AFW flow to one intact SG.

D. establish maximum AFW flow to all intact SGs.

ANSWER: A	
K/A: 2.1.20	Importance: 4.3/4.2
Cognitive Level: Analysis	
Ref.: 1OM-53A.1.FR-H.1 Iss 1B Rev 3 step 28	
LP#: 1LP-SQS-53.3	OBJ: 6
History	
Source: New	
JTA: 3110060601	

Which of the following designates an Immediate Manual Action statement in Emergency Operating Procedures?

A. The high level action statement is underlined.

B. The step number has a triangle around it.

C. The step number has a circle around it.

D. The high level action statement is bold.

ANSWER: C	
K/A: 2.4.19	Importance: 2.7/3.7
Cognitive Level: Knowledge	
Ref. 1/2OM-53B.2 Iss 1B pg. 7	
LP#: 1LP-SQS-53.1	OBJ: 1
History	
Source: NRC Bank	
JTA: 0010601	

Which of the following correctly describes the monitoring of the Critical Safety Function Status Trees?

A. If an orange terminus is encountered, the STA is expected to monitor the remaining trees. If a red terminus is encountered on a lower tree, the crew will continue the orange terminus with the higher priority.

B. If a red terminus is encountered during the performance of the immediate action steps of E-0, "Reactor Trip or Safety Injection", the crew is expected to immediately perform the Functional Recovery Procedure required by the terminus.

C. A yellow terminus will require continuous monitoring until all conditions are satisified.

D. If only green or yellow terminus exist, monitoring frequency may be relaxed to once every 10 to 20 minutes, unless a significant change in plant status occurs.

ANSWER: D	
K/A: 2.4.21	Importance: 3.7/4.3
Cognitive Level: Knowledge	
Ref.: 1/2OM-53B.2 Iss 1B pg. 11	
LP#: 1LP-SQS-53.1	OBJ: 1,2
History	
Source: NRC Bank	
JTA: 3010070601	

Given the following conditions:

- Mode 3.
- RCS Tavg is 547°F.
- RCS Boron is 760 ppm.
- Burnup is 8000 MWD/MTU.
- Control Rods are inserted.
- Shutdown banks are withdrawn.

Using the attached plant curves, determine which of the following statements is correct:

A. Minimum Shutdown Boron requirement is satisfied for the existing conditions.

B. A cooldown to Cold Shutdown can be accomplished at the present boron concentration.

C. A cooldown to Cold Shutdown can be accomplished at the present boron concentration if the Shutdown Banks are inserted.

D. The current boron concentration is adequate to maintain Hot Standby requirements if the Shutdown Banks are inserted.

ANSWER: D (furnish CB-27A, B, C)	
K/A: 2.1.25	Importance: 2.8/3.1
Cognitive Level: Comprehension/Application	
Ref.: Curve Book - BVPS-1; CB-27A, 27B, 27C; Iss 12 Rev 1	
LP#: 1LP-SQS-50.1	OBJ: 9
History	
Source: NRC Bank	
JTA: 3410180302	

Which of the following methods should be used to Independently Verify the position of a CLOSED valve?

A. The person doing the Independent Verification may accompany the person closing the valve and observe him/her close it.

B. Attempt to move the valve in the closed direction.

C. A visual exam is all that is necessary, a "hands-on" verification is not required.

D. The Independent Verification for a procedure step can be substituted with the exact verification from the system valve line-up.

ANSWER: B	
K/A: 2.1.29	Importance: 3.4/3.3
Cognitive Level: Comprehension	
Ref.: 1/2OM-48.3.D Iss 3 Rev 18 pg. 5	
LP#: 1/2LP-SQS-48.1	OBJ: 10
History: Similar question used in 2LOT1 NRC exam (Q-2-97-12)	
Source: NRC Bank Modified	
JTA:	

Which of the following color combinations is used to identify drums for separation and disposal of clean and radioactive waste?

	Clean Waste	Contaminated Waste
A.	Green	Magenta
B.	Green	Yellow
C.	Yellow	Green
D.	Yellow	Magenta

ANSWER: B	
K/A: 2.3.2	Importance:
Cognitive Level: Knowledge	
Ref.: Rad Worker Training Handout - Section 8	
LP#: LP-RC-02	OBJ: 8-3
History	
Source: NRC Bank	
JTA:	

Per NPDAP 2.3, Attachment 5, (attached) which of the following represents a non-intent change to a procedure?

A. A change in initial conditions.

B. A modification to setpoints.

C. Deleting a QC hold point.

D. Addition of steps to return equipment to NSA.

ANSWER: D (furnish attachment 5)	
K/A: 2.2.6	Importance: 2.3/3.3
Cognitive Level: Comprehension/Application	
Ref.: NPDAP 2.3 Attachment 5 Rev 8	
LP#: 1/2LP-SQS-48.1	OBJ: 9
History	
Source: NRC Bank	
JTA: 3430200302	

Which of the following correctly specifies the maximum time period that a working copy of a procedure made from the Control Room Copy may be used for valve manipulations without checking it against the original?

A. Up to 24 hours after the date on the copy.

B. Up to 48 hours after the date on the copy.

C. Up to 72 hours after the date on the copy.

D. Must be checked each shift.

ANSWER: C	
K/A: 2.1.21	Importance: 3.1/3.2
Cognitive Level: Knowledge	
Ref.: 1/2OM-48.2.C lss 3 Rev 17 pg. 8	
LP#: 1/2LP-SQS-48.1	OBJ: 8
History	
Source: NRC Bank	
JTA: 3430260302	

Which of the following are considered "extremities" when considering radiation dose limits?

A. Hands and feet only.

B. Hands, elbows, forearms, ankles and feet.

C. Hands, arms, legs, and feet.

D. Hands, elbows,forearms, knees, leg below knees, and feet.

ANSWER: D	
K/A: 2.3.1	Importance: 2.6/3.0
Cognitive Level: Knowledge	
Ref.: Health Physics Manual Units 1&2, Appendix 14; 10CFR20.1003	
LP#: LP-RC-02	OBJ: 3-5
History	
Source: NRC Bank	
JTA:	

Operators have just stabilized the Unit from an unexplained 15% load rejection from full power when another, also unexplained, 15% load rejection occurs. Which of the following actions should be taken?

A. Re-stabilize the unit in accordance with the AOP.

B. Reduce load to <P-9 in accordance with the 1OM.53C.4.1.51.1, "Emergency Shutdown" AOP.

C. Place the Reactor in Hot Standby.

D. Start the second EHC pump, and place the EHC controller in Turbine Manual mode of operation.

ANSWER: C	
K/A: 2.1.1	Importance: 3.7/3.8
Cognitive Level: Knowledge	
Ref. 1OM-53C.4, AOP 1.35.2	
LP#: LP-SQS-53C.1	OBJ: 3
History:	
Source: SQS Bank Q. #0273	
JTA: 0000280401	

During the performance of a Clearance procedure, what job position is responsible for authorizing the ESF checklist if the equipment to be cleared is safety related and required in the current mode of operation?

A. NSS.

B. ANSS.

C. Clearance Coordinator.

D. Reactor Operator.

ANSWER: A	
K/A: 2.2.13	Importance: 3.6/3.8
Cognitive Level: Knowledge	
Ref.: NPDAP 3.4 Rev 7 Pg. 2, step III.F.3	
LP#: 1/2LP-SQS-48.1	OBJ: 28
History: Used 1/31/97	
Source: SQS Bank Q. # 0102	
JTA: 3420050302	

Which of the following Emergency Shutdown Panel indications are required by Technical Specifications?

1. Auxiliary Feedwater Flow.
2. RCS Hot Leg Temperature.
3. Source Range Flux.
4. Emergency 4kV Bus Voltage.

A. 1, 2, and 3.

B. 1, 2, and 4.

C. 1, 3, and 4.

D. 2, 3, and 4.

ANSWER: A	
K/A: 2.2.22	Importance: 3.4/4.1
Cognitive Level: Knowledge	
Ref.: TS3.3.3.5 Table 3.3-9	
LP#: LP-SQS-53C.1	OBJ: 6
History: Similar question used in 2LOT1 NRC exam (Q-2-97-88)	
Source: SQS Bank Q.#0493	
JTA: 1190150301	

What is the minimum positive threshold indication of personnel contamination when using a frisker?

A. 100 cpm.

B. 100 cpm above background.

C. 300 cpm.

D. 300 cpm above background.

ANSWER: B	
K/A: 2.3.4	Importance: 2.5/3.1
Cognitive Level: Knowledge	
Ref.: Health Physics Manual Issue 4 Rev. 11, Chapter 1 Part III	
LP#: LP-RC-02	OBJ: 6-5
History	
Source: SQS Bank Q. #0382	
JTA: 1190210304	

DC Bus #1 has been de-energized due to a fire in the switchboard cabinet. A reactor trip then occurs. Recovery from this transient is complicated because...

A. control of emergency loads on the 1AE bus are not possible from the Control Room.

B. the #1 Diesel Generator will start and load, but not be able to be stopped from the Control Room.

C. Charging and Letdown will not be available due to the loss of the Station Air Compressors.

D. temperature control will be on the Residual Heat Release valve because the Condenser and Atmoshperic Steam dumps will not be available.

ANSWER: A	
K/A: 063K2.01	Importance: 2.9/3.1
Cognitive Level: Comprehension	
Ref.: 1GM-39.4.AAI Iss 3 Rev 2	
LP#: 1LP-SQS-39.1	OBJ: 4
History	
Source: NRC Bank Modified	
JTA:	

Given the following:

- ES-0.1, "Reactor Trip Response," has been entered from E-0, "Reactor Trip or Safety Injection."
- Total AFW flow is 330 gpm.
- Turbine Driven AFW pump secured.
- 2 Motor Driven AFW pumps running.
- Tavg is 529°F and lowering slowly.
- All narrow range SG levels are 4%.

A partial feedwater isolation has occurred, and all condenser and atmospheric steam dump valves are shut. Assume all trends continue.

The correct operator response to these conditions is to...

A. reduce AFW flow and initiate Main Steamline Isolation.

B. reduce AFW flow and commence emergency boration.

C. initiate Main Steamline Isolation and commence emergency boration.

D. Establish SGFW bypass flow, secure AFW flow, and initiate Main Steamline Isolation.

ANSWER: C	
K/A: 2.4.6	Importance: 3.1/4.0
Cognitive Level: Analysis	
Ref.: ES-0.1 Step 4 Issue 1B Rev 2	
LP#: 1LP-SQS-53.3	OBJ: 3
History	
Source: SQS Bank	
JTA:	

With the plant operating at 100% power, Intermediate Range detector N35 fails high, followed immediately by N36 failing low. Which of the following is the correct operator response?

A. Initiate a Reactor Trip and enter E-0, "Reactor Trip or Safety Injection."

B. Restore at least one Intermediate Range Channel in the next hour or be in Hot Shutdown within the following six hours.

C. Since the number of channel operable is less than the number required by the Minimum Operability Channel requirement, Technical Specification 3.0.3 applies.

D. Power operation may continue since Technical Specification for Intermediate Range NI's does not apply during present plant conditions.

ANSWER: D	
K/A: 033-2.2.22	Importance: 3.4/4.1
Cognitive Level: Comprehension/Application	
Ref.: 1OM-53C.4.1.2.1B Iss 3A Rev 1	
LP#: 1LP-SQS-2.2	OBJ: 5
History	
Source: NRC Bank	
JTA: 0000100401	

Given the following:

- The plant was in Mode 1 when a loss of offsite power occurred.
- Both Emergency Diesel Generators and the ERF D/G have started and loaded their respective busses.

Control of air-operated valves outside of Containment, is...

A. not possible until offsite power is restored.

B. not possible until the Diesel air compressor is started.

C. possible; the station air compressors will auto load onto the Emergency Diesel Generators.

D. possible, the station air compressors will auto load onto the ERF Diesel Generator.

ANSWER: B	
K/A: 056 AA1.37	Importance: 3.4/3.5
Cognitive Level: Comprehension	
Ref. 1OM-37.5 Table 37-2 Iss 2 Rev 4; 1OM-37.5.B.7 Iss 4 Rev 12	
LP#: 1LP-SQS-53C.1	OBJ: 6
History	
Source: NRC Bank	
JTA:	

Given the following plant conditions:

- A reactor trip and safety injection have occurred from 100% power.
- E-0, "Reactor Trip or Safety Injection," has been completed through step 13 (Verify Feedwater Isolation).
- No feedwater flow to the Steam Generators is indicated.
- AFW pumps cannot be started.

Which of the following actions is required?

A. Immediately transition to FR-H.1, "Response to Loss of Secondary Heat Sink."

B. Transition to FR-H.1 as soon as a transition out of E-0 occurs.

C. Go to ES-0.0, "Rediagnosis," which will allow a transition to FR-H.1.

D. Transition to FR-H.1 when directed to by E-0.

ANSWER: D	
K/A: 2.4.1	Importance: 4.3/4.6
Cognitive Level: Comprehension	
Ref: 1OM-53A.1.E-0 Iss 1B Rev 5	
LP#: 1LP-SQS-53.1	OBJ: 1
History	
Source: NRC Bank	
JTA:	

Given the following:

- The unit is at 100%.
- The following parameters are recorded for the 'A' Accumulator:

  Accumulator Level is equivalent to 7600 gallons.

  Accumulator Pressure is 650 psig.

  Accumulator Boron is 1900 ppm.

  [1SI-MOV-865A] is open.

The accumulator should be declared INOPERABLE based on:

A. Level (volume).

B. Pressure.

C. Boron concentration.

D. Discharge valve position.

Answer: A	
K/A: 006-2.1.33	Importance: 3.4/4.0
Cognitive Level: Knowledge	
Ref.: TS 3.5.1	
LP#: 1LP-SQS-TS	OBJ: 1
History: Original used 1LOT 3 exam 4/1/97	
Source: SQS Bank Q0896 & 0046 - Modified	
JTA:	

Facility: BVPS - Unit 1 Scenario No.: 1 OP-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Objectives: To evaluate the applicants' ability to raise reactor power to the point of adding heat, control the reactor at lower power; to implement the AOPs and ARPs for a NI failure and a Pressurizer Level Instrument failure; and to respond to steam line break (EOP E-2) with concurrent component malfunctions and subsequent Safety Injection termination (EOP E-1 and ES-1.1.)

Initial Conditions: Rx S/U in progress, Rx power is at 1E-8 amps, Xenon free, MOL conditions.

Turnover: Bank D at 100 steps. Ready to continue startup at step C.1 of OM-50.4D. FW-150A&B are failed open and CN 101 is in Manual and closed. The inital conditions for Cold Turbine Startup have been verified in accordance with 52.4.A. Boron is 1190 ppm. Feed flow is being provided by the 1A MFP with the feedwater bypass valves operating in Auto. The "B" station instrument air compressor is out of service for maintenance but is expected to be returned to service this shift.

Event No.	Malf. No.	Event Type*	Event Description
1		R(RO)	Raise power to point of adding heat. Crew then raises power to > 10%.
2	MALF NIS7B	C(SRO)	N36 IR instrument power fuses blows. Action taken IAW T.S. 3.3.1.1
3		N(ALL)	Crew continues to raise power, and continues plant startup.
4	MALF PRS6A	I(RO/SRO) N(RO/SRO)	LT-459 fails low resulting in letdown isolation. Alternate channel selected and letdown restored to service
5	MALF MSS1A	C(ALL)	Steam leak inside of containment. Lowering RCS temperature and increasing power.
6	MALF MSS1A	M(ALL)	Steam line break inside of containment. Results in safety injection, CIA and CIB.
7	MALF SIS5A	C(RO/SRO)	CH-P-1A trips on SI actuation. CH-P-1B must be manually started.
8	INH51	C(ALL)	Failure of Main Steamline Isolation.

A070

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Initialize the simulator at IC-91 Included in IC: CND14,0 CN 101 closed FWM5A 1,0 FCV150A open FWM5B,1,0 FCV150B open Insert **FILE SIMIC** **FILE LDRL1** Contains; SA-C-1B white light off CH-P-1B fail to auto start Failure of Auto Main Steamline Isolation.	Reactor at 1E-8 amps, XE free, MOL, CB-D at 100 steps in Manual, Boron = 1190 ppm, FW Bypass valves are in Auto. Crew is to increase power towards 100% using OM 50.4.D- Step C.1.		

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Place Switch of SA-C-1B in PTL.	Places equipment out of service per the initial conditions setup page.		
Place Red Danger tag on: Switch of SA-C-1B Place Caution tags on: FCV-150A&B. FCV-CN-101.			
PLACE TAGS and CHECK SWITCH POSITIONS.			
On IPC insert RODUP and clear alarms. Check for required trends. **Use TRENDAN-OM52.4C**			
Assign shift positions: NSS _____ ANSS _____ RO _____ PO _____ STA _____	Simulator Frozen until after shift turnover unless it needs to be on momentarily for an alignment change.		
Conduct shift turnover with oncoming operators. Include items appropriate for IPTE briefing.			Oncoming operators should complete the required checklists and carry out a formal shift turnover.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
**********			
When the shift turnover is complete, place the simulator to **RUN** and commence the drill.	Simulator running.		Crew assumes control of the unit.
**********			
EVENT # 1 REACTOR POWER INCREASE	-		
			Crew commences power increase in accordance with reactivity plan.
Continue reactor startup to 2 to 5% power.	Reactor at 10^{-8} amps.		RO verifies NI overlap, as power increases into the power range.
	Reactor power between 2% and 5%.		RO pulls rods to raise reactor power to 2 to 5%.
	Reactor power between 2% and 5%.		RO/PO verifies steam dump maintains Tavg between 545° and 549°.
			PO maintains S/G NR between 28 and 38%.
			ANSS directs N-16 RAD Monitor to be placed in service.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			ANSS transitions to OM-52.4.A to continue power increase.
			RO verifies that lowest Tave > 541 F and makes appropriate log entries -marks recorders.
			PO verifies FW-P-4 is not in service.
			RO commences raising reactor power to between 10 and 20%.
			RO/PO logs MODE 1 entry.
	Status lights on Panel 176 actuate at 10%.		RO verifies P-10 bistables actuate as required as power increases to > 10%.
	Status light Int Range RX Trip blocked is ON		RO blocks the IR Trip and Rod Stop and verifies status lights ON.
	Status light Power range low setpoint blocked is ON		RO blocks Power Range low Overpower Trip and verifies status lights ON.
	NOT P-7 is OFF.		RO verifies that status light NOT P-7 is OFF.
			RO selects highest Power Ranges on N45.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
EVENT # 2 NI-36 FAILURE ********** After crew has raised reactor power to greater than 10%, insert MAL NIS7B,1,0- NI-36 Instrument power fuse fails. **********	Meters for NI-36 indicate zero Blown fuse indication exists on drawer NI 36 trip and rod block alarms actuated. Loss of Detector / compensating voltage - ANN A4-95,96.		RO acknowledges ANN's and performs a channel check to identify NI-36 as the failed channel. RO reports diagnosis to ANSS Crew could refer to ARPs for ANN A4-95,96. ANSS refers to AOP 1.2.1B, Intermediate Range Channel Malfunction. Verifies Unit is in Mode 1 and goes to Step 4. Crew verifies power still greater than 10% and intermediate range trip is still blocked. Crew places Caution Tag on Source Range which states "Manually unblock Source Range on Shutdown". ANSS references Technical Specification 3.3.1.1, Action 3.C.
EVENT # 3 Raise power to 15 - 18% in preparation for synchronizing main generator to the grid			

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE

EVENT # 3

Continued power increase

ANSS directs the crew to continue with unit startup IAW OM 52 procedure "A" .

RO withdraws rods to raise reactor power to 15 -18%

RO/PO maintain reactor power, Tavg, and SGWL in preparation for unit synchronization.

As power is raised toward 15 to 18%, continue to EVENT 4.

EVENT # 4

LT-459 FAILS LOW

****

Enter MAL PRS6A,0,0

****

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			RO recognizes problem with PZR level channel, informs ANSS and refers to ARP, and Instrument Failure Procedure 1.6.4.IF Attachment 1.
	PZR level transmitter LT-RC-459 fails low. PZR control level deviation low alarm A4-4. PZR control level low alarm, A4-3. LCV-CH-460A, TV-CH-200A,B,C close. PZR heaters off.		RO informs ANSS that LT-RC-459 failed low.
			ANSS directs operator to defeat level control input with PZR level channel and recorder selector switches per 1.6.4.IF Attachment 1.
	Level alarms clear, charging flow begins decreasing, high flow alarm clears.		RO informs ANSS that Channels 460 and 461 are selected.
			ANSS directs the operators to reestablish normal letdown, re-energize pressurizer heaters.
	LCV-CH-460A open. Appropriate TV-CH-200s open. Letdown flow established.		RO establishes letdown in accordance with OM 1.7.4.AF, or OM 1.6.4.IF Attachment 1.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			NSS refers to Tech. Specs. 3.3.1.1, 3.3.3.8 and 3.3.3.5, identifies T.S. 3.3.1.1 and .3.3.3.5 applicability and directs crew to place channel in tripped condition within six hours.
			RO informs the ANSS that letdown has been reestablished.
If bistable is requested to be tripped: Door OVR P07029W=1 LOA RCS35=1 OVR P07029W=0			ANSS directs I&C to trip appropriate bistable within six hours.
Continue with scenario and initiate the next event when letdown is reestablished.	Charging, letdown and PZR heater operation normal.		
EVENT # 5 Steam Leak in containment ********** **Insert MAL MSS1A 1E6, 300,0** **********	A1-35 Cnmt Hi Pressure Ch1 A1-43 Cnmt Hi Pressure Ch2 Containment Humidity increasing Cnmt Sump Level slowly increasing Steam dump demand decreasing Reactor power increasing Tave decreasing		Crew diagnosis increasing steam flow in relation to worsening CNMT parameters, and may elect to manually trip and SI..

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
When Tave drops to less than 547 F or crew Manually trips and SI, or SI automatically actuates, continue with EVENT # 6.	Containment pressure rising slowly 2.5 psig.		Crew responds to either Manual reactor trip and SI or auto SI initiation.
EVENT # 6 "A" MAIN STEAMLINE RUPTURE INSIDE CNMT.			
			RO informs ANSS of reactor trip.
**********	Main Steam line break inside containment, temperature and pressure rising.		
ENTER FILE **LDRL1A** contains: A S/G Fault in CN'MT MSS1A=.9 of max. CH-P-1A Failure SIS5A			
**********			
	Reactor trip, turbine trip, RCS pressure drops.		RO and PO commence immediate actions of E-0, ANSS references E-0 to verify immediate actions.
Crew performs immediate operator actions of E-0.	Reactor trip and bypass breakers open, neutron flux decreasing. Rod bottom lights lit. Rod position indication at 0.		RO verifies reactor tripped.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			RO sounds standby alarm and announces Unit 1 reactor trip.
	Throttle and governor valves closed, reheat stop and intercept valves closed.		PO verifies turbine tripped.
	Reheat flow control valves and MOVs closed.		PO ensures reheat steam isolation by depressing reheat controller reset push-button and checks MOV-MS- 100A & B shut.
	Main generator output breakers open. Exciter circuit breaker open.		PO verifies generator trip.
	AE and DF busses energized.		PO verifies AE and DF busses energized.
Immediate operator actions complete.	Any SI annunciator. SI actuation status lights. SI actuated by CNMT pressure.		RO checks if SI has actuated, reports SI actuated and manually actuates both trains.
	EDGs running.		PO verifies EDGs both running.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
EVENT # 7 CH-P-1A fails and CH-P-1B must be manually started. **CRITICAL TASK** Manually start Charging/HHSI to initiate SI flow.	**NO HHSI** pumps running After pump started, FI-SI-943 indicates flow. LHSI pumps running. All red marked SIS valve indicating lights lit. FW-P-3A & 3B running. FW-P-2 running. MOV-FW-151 A through F open. RPRW pumps running. CCR Ht Ex RW pressure > 20 psig., unless CIB has actuated, then flow is indicated to Recirc Spray Heat Exchangers All indicating lights with orange CIA marks lit. All indicating lights with green FWI marks lit.		RO/PO verify SI system status. RO checks HHSI pumps, manually starts CH-P-1B and reports CH-P-1A failure to ANSS. PO verifies AFW status. RO verifies River Water System in service. RO/PO verify CIA alignment. RO/PO verify FWI.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
EVENT # 8 Main steam line Isolation does not automatically actuate. **CRITICAL TASK** Manually align components for Steam line Isolation.	All indicating lights with yellow marks are not lit including **MSIV'S** unless previously manually closed.		RO/PO check if MSLI is required. PO checks if MSLI has occurred and determines that MSLI did not Auto actuate. PO reports status and MANUALLY Closes yellow mark valves.
NOTE: CIB may not have actuated at this time, however, it will actuate during the drill. Observe crew verification of automatic actions when actuated.	CNMT spray actuates when required. All indicating lights with blue marks lit.		RO/PO check CIB/SPRAY status.
CRITICAL TASK Manually trip RCPs following CIB.	RCPs stopped.		RO stops RCPs after CIB actuates.
	CCR pumps trip when CIB actuates.		RO reports CCR status to ANSS.
	SR detector high voltage selector switches - normal.		RO verifies SR detector high voltage selector switches in normal and transfers NR-45 to operable SR and IR.
	AFW flow >330 gpm.		PO verifies total AFW flow greater than 330 gpm.
	Instrument air pressure > 100 psig		PO verifies air pressure > 100 psig

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
CREW should have already isolated Main steam lines.	All Tcold legs < 547° F and dropping with A Tcold leading.		RO verifies RCS Tcold, stable at or trending to 547° F. RO reports RCS temperature < 547 F and dropping. PO checks STM Dumps and SG Atm Dumps closed. Crew recognizes continuing RCS cooldown and throttles AUXFW to not less 330 gpm. If not previously performed, ANSS directs RO and PO to close all valves with yellow SLI marks.
	MSIVs, bypass valves, NRVs, and pre-non return valves closed.		RO and PO verify MSLI. ANSS directs personnel to perform emergency safety function checklists when available.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	Safeties closed. PORVs closed. Spray valves closed. PRT temp, level, and pressure pre-event.		RO checks PZR PORVs and Spray valves.
	RCPs stopped after CIB.		RO verifies RCPs stopped after CIB actuation, reports status to ANSS.
	"A" SG pressure is decreasing due to steam line rupture in containment.		PO checks SG pressures and reports "A" SG as faulted to the ANSS.
Crew transitions to E-2.			ANSS exits E-0 and enters E-2, and informs the control room.
	CREBAPS actuated on CIB. Control room dampers shut. Timers running, control room pressurizing.		PO verifies CREBAPS actuated.
			ANSS directs STA to monitor status trees.
	Yellow marks lit.		PO verifies steamline isolation.
	"B" and "C" SG pressures are stable.		PO checks for intact SG.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	"A" SG pressure is dropping uncontrollably.		Crew identifies "A" SG as faulted.
	FCV-FW-478 closed. FCV-FW-479 closed.		PO closes/verifies "A" MFRV and BFRV closed.
**********			
When directed, as PAB Operator, align TDAFWP steam supply to "C" SG and isolate "A" SG:	MOV-FW-151E,F closed.		PO closes MOV-FW-151E and 151F.
LOA FWM36 = 1 (MS-17) LOA FWM34 = 0 (MS-15) Then report actions to the control room.	MS-17 open. MS-15 closed.		Crew directs operator to close MS-15 and open MS-17.
**********			
	PCV-MS-101A closed. HCV-MS-104 closed.		Crew verifies "A" SG atmospheric dump valve and RHR valve closed.
	No S/G levels are rising in an unexpected manner.		Crew checks if SG tubes are intact.
Crew transitions to E-1.			ANSS makes transition to E-1, informs crew.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
NOTE: Depending upon the timing of RCP tripping and AUXFW throttling, the STA may recommend a transition to FR-P-1 during the performance of E-1. **If crew transitions to FR-P-1**, follow scenario using actions outlined on Page 20 and terminate drill in FR-P-1.	CREBAPS actuated per E-2.		PO re-checks control room habitability.
	No RCPs running,.		RO checks if RCPs should be stopped.
**********			
As extra operator, acknowledge request to start up H_2 analyzers, then following an appropriate time delay, enter: **OVR AN02097 = 1** **OVR AN02105 = 1**	Annun A2-97 energizes. Annun A2-105 energizes. H_2 analyzers in service.		Crew directs operator to place wide range H_2 analyzers in service.
**********			
	"A" SG previously diagnosed as faulted and isolated (pending reports of local operator actions).		PO checks if any SG is faulted.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Use LOA AUX 21 to open IA-90, if requested.	NR level 6% to 50% or total feed flow > 330 gpm.		Crew checks intact SG level. PO maintains intact SG levels 6% to 50%.
	Instrument air pressure > 100 psig		PO verifies air pressure > 100 psig
	PORV shut in auto and block valve energized.		RO verifies PORVs and block valves status.
	Subcooling > 43 °. Secondary heat sink sufficient. RCS pressure stable or rising. PRZR level > 5 %.		RO/PO check if SI can be terminated.
Crew transitions to ES-1.1.			ANSS makes transition to ES-1.1, informs crew.
	DG-P-1A,B, PTL. DA-P-4A,B STOP. CV-P-1A,B, PTL.		RO isolates CNMT vents and drains system.
	Status lights PNL 62 C-4 not lit. Status light PNL 62 D-4 lit.		RO resets SI (both trains).
	CIA and CIB reset.		RO resets CIA and CIB (both trains).

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	CH-P-1B HHSI pump running		RO checks only one charging pump in service.
	Stub buses de-energized by CIB		PO checks stub busses energized. PO performs steps to reenergize 4KV Stub Buses. PO performs steps to reenergize 480 V Stub buses
	Auto Cold Leg Recirc reset.		RO resets Auto Cold Leg Recirc Changeover (both trains).
	CNMT instrument air pressure < 95 psig. with no CNMT air compressors running		PO verifies no containment instrument air are available, one Station air compressor is running Crew dispatches operator to open IA-90. After IA-90 is open, the PO places both CNMT air compressors in PTL.
	Pressure stable or rising.		RO checks RCS pressure stable or rising.
	FCV-CH-122 CLOSED. MOV-CH-289, 310 OPEN. FCV-CH-122 throttled.		RO establishes normal charging flow.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	MOV-SI-867A,B,C,D CLOSED.		RO isolates BIT.
	Pzr level controlled at 5-50% using FCV-CH-122.		RO controls Pzr level.
	LHSI pumps stopped and in auto.		RO stops LHSI pumps and places in auto.
	Quench or recirc spray pumps are running. Cnmt pressure < -3 psig CIB previously reset RWST level > 19 ft A S/G is identified as faulted and isolated. Cnmt NR pressure > 8.9 psia		RO checks if CNMT spray should be stopped. RO stops QS Chem injection pumps, closes MOV-QS-104A,B and stops QS pumps. Crew dispatches operator to throttle RW-200 and close Rw- 199.
	RCS subcooling > 23°F. Pzr level > 5%.		RO verifies SI flow not required.
	Pzr level > 18%.		RO checks Przr level greater than 18%.
	Pzr level > 18%. One CCR pump running. Letdown rad monitor RIS-CH-101A and B consistent with pre-event values.		RO checks if letdown can be established.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	Normal charging flow established: FI-CH-122 flow indicated. MOV-CH-289 and 310 open. BIT flow FI-SI-943 not indicated. TV-CH-204 open. PCV-CH-145 75% open in manual. LCV-CH-460A and B open. TV-CH-200A, B/C open. PCV-CH-145 set to 300 psig and in auto.		RO establishes letdown.
	Makeup control in auto and set to maximum.		RO checks VCT makeup control system.
	MOV-CH-115C and E open. MOV-CH-115B and D shut.		RO aligns HHSI pump suction to VCT.
Terminate drill after charging pump is aligned to the VCT per ES-1.1.			
IF CREW transitioned to FR-P-1, commence following scenario at this point.			
			Crew enters FR-P-1.
	RCS pressure is > 325 psig.		RO checks RCS pressure > 325 psig.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			RO checks RCS Cold Leg Temperatures - Stable or rising and verifies temperature are still dropping due the Faulted A S/G.
			Crew verifies that AFW and main feedwater are secured to the A S/G.
			Crew verifies that steam from the A S/G is secured.
			PO controls AFW to B & C S/G's to > 330 gpm until at least one is greater than 6% NR level.
	Station air Pressure is > 100 psig.		PO checks station air pressure > 100 psig.
	PORV shut in auto and block valve energized. OPPS is not in service. RCS pressure is < 2325 psig.		RO verifies PORVs and block valves status.
	HHSI flow indicated.		RO checks if SI is in service and determines that HHSI flow exists.
	Subcooling > Att. 6-E. RVLIS Full Range > 64%.		RO Determines that SI flow can be terminated by checking subcooling and RVLIS FULL Range.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	DG-P-1A,B, PTL. DA-P-4A,B STOP. CV-P-1A,B, PTL.		RO isolates CNMT vents and drains system.
	Status lights PNL 62 C-4 not lit. Status light PNL 62 D-4 lit.		RO resets SI (both trains).
	CIA and CIB reset.		RO resets CIA and CIB (both trains).
	Stub buses de-energized by CIB		PO checks stub busses energized. PO performs steps to reenergize 4KV Stub Buses. PO performs steps to reenergize 480 V Stub buses
			RO resets both trains of SIS AUTO Recric Changeover.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	CNMT instrument air pressure < 95 psig. with no CNMT air compressors running		PO verifies no containment instrument air are available, one Station air compressor is running Crew dispatches operator to open IA-90. After IA-90 is open, the PO places both CNMT air compressors in PTL.
	CH-P-1B HHSI pump running		RO checks only one charging pump in service.
	FCV-CH-122 CLOSED. MOV-CH-289, 310 OPEN. FCV-CH-122 throttled.		RO establishes normal charging flow.
Terminate drill when BIT isolated in FR-P-1.	MOV-SI-867A,B,C,D CLOSED.		RO isolates BIT.
Collect and review logs after allowing operators to complete them.			Operator logs should be clear, accurate and concise.
Erase any vond markings associated with this drill.			

Facility: BVPS - Unit 1 Scenario No.: 2 OP-Test No.: _____

Examiners: _____ Operators: _____

Objectives: To evaluate the applicant's ability to implement AOPs and ARPs in response to an instrument failure and RCP seal failure; to initiated a plant shutdown as required by T.S. 3.0.3; and to respond to a Pressurizer vapor space LOCA (EOP E-1 and ES-1.2.)
Initial Conditions: 75% power, Bank D at 206 steps, EOL, 161 ppm boron, Xenon increasing @ 200pcm/hr due to power decrease from 100% over the past 2 hours as requested by system operator.
Turnover: FW-P-3A, MDAFW pump is on clearance for motor replacement. Due to be returned next shift. Rod control is in manual while I&C troubleshoots a fault on power mismatch circuit, CBD @ 206 steps, boron = 161 ppm, burnup = 14,000 MWD/MTU. N42 Power Range channel inoperable and removed from service IAW AOP 1.2.1C. Crew is to maintain current power level pending request of System Operator.

Event No.	Malf. No.	Event Type*	Event Description
1	MALF NIS3B, PRS8A	C(RO/SRO)	PT-RC-455, RCS pressure protection channel I fails high. With N42 already inoperable TS 3.0.3 should be entered due to 2/3 OT/DT channels being inoperable.
2		R(RO) N(PO/SRO)	Power reduction of at least 5% due to TS 3.0.3.
3	MALF CHS20B	I(RO) I(SRO)	VCT level control channel failure.
4	MALF RCS5B	C(RO/SRO)	Excessive #1 seal leak off of 20 gpm on 1RC-P-1B, B loop RCP, requiring a Rx trip IAW ARP 7.4.ABE.
5	MALF CRF12 A&B	M(ALL)	ATWS that causes a PZR PORV to open. Local Rx trip to occur at t = 2 minutes after requested from crew.
6	MALF FWM11 B&C	C(PO/SRO)	Turbine driven AFP trips on start. FW-P-3B fails to auto start, must be started manually.
7	MALF PRS3A	M(ALL)	PCV-RC-455C, PZR PORV, leaks. MOV-RC-535 fails to close resulting in vapor space LOCA.

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INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Initialize the simulator at IC- 70	Reactor at 75% power, EOL, 161 ppm, XE increasing @ 200 pcm/hr due to power decrease from 100% over the past two hours as requested by the System Operator.		
Insert **FILE SIMIC** and **FILE LDRL2** File LDRL2 contains LOA RCS20,25 = 1 overtemperature delta T BSs for N-42 failure.			
Align Switches to remove NI-42 from service per AOP 1.2.1C. Place RED tag on switch of FW-P-3A. PLACE TAGS and CHECK SWITCH POSITIONS.	Places equipment out of service per the initial conditions setup page.		
On IPC inset RODUP and clear alarms.			

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE

Assign shift positions:

NSS _____
ANSS _____
RO _____
PO _____
STA _____

Simulator Frozen until after shift turnover unless it needs to be on momentarily for an alignment change.

Conduct shift turnover with oncoming operators.

Oncoming operators should complete the required checklists and carry out a formal shift turnover.

****

When the shift turnover is complete, place the simulator to RUN and commence the drill.

Simulator running.

Crew assumes control of the unit.

****

EVENT # 1

PT-RC-455 fails high

Three minutes after shift turnover:

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
**********			
ACTIVATE MALFUNCTION **PRS8A** SET TO **2500** PSIG.	PI-RC-455 indicates 2500 psig. Annunciators A4-19, 53 and 54 alarm.		RO acknowledges alarm, verifies alarm and informs ANSS.
**********			
			Crew refers to ARPs A4-19, 53, and 54 as necessary.
			RO informs ANSS that PT-RC-455 failed high.
			ANSS ensures plant is stable.
			ANSS refers to T.S. 3.3.1.1, 3.3.1.2, and 3.3.3.5 and refers to action statement 7.
			Crew refers to OM 1 Table 1-6 or procedure 1.6.4.IF Attachment 2 to obtain bistable numbers. ANSS determines that OT-DT cannot be tripped without causing a reactor trip and enters TS 3.0.3.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			ANSS may direct I&C to trip the bistables for SI, high & low pressure trips and P-11.
As I&C, use the following to trip bistables, then report. REPAIRS ARE EXPECTED TO TAKE 10 HOURS AS A MINIMUM. **********			
			ANSS directs I&C to investigate and repair PT-RC-455 IAW MWR.
OVR P07029W=1 LOA RCS40=1 LOA RCS39=1 LOA RCS41=1 LOA RCS42=1 OVR P07029W=0 **********	Channel 1 protection rack door 3 open. BS 455C TRIPPED. BS 455A TRIPPED. BS 455D TRIPPED. BS 455B TRIPPED. Channel 1 protection rack door 3 shut.		RO monitors bistable tripping
Initiate the following event and continue with the drill after the bistables have been tripped or ANSS directs Crew to commence shutdown.			
EVENT #2 POWER REDUCTION			Crew commences power reduction in accordance with OM-52.4B.

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INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Reactor engineering currently unavailable. Plant Management directs shutdown to commence ASAP. NSS recommends a 1%/min rate.			Crew develops a reactivity plan per P&L's 2 to shutdown the plant. PO prepares EHC for load reduction and depresses GO when ordered. PO maintains VPL 5% above turbine load RO checks axial flux within target band, rods above RIL and Tavg +/- 2 F of Tref. PO maintains a generator lagging power factor and Base Adjuster at Null.
After crew has reduced power at least 5% continue with EVENT 3 **********	A3-53 VCT LEVEL HIGH-LOW AUTO M/U in progress Vertical board meter reads zero.		RO determines that LT-115 has failed and reports that AUTO M/U is in progress to the ANSS.
INSERT MAL CHS20B, 0, 0 Fails LT-CH-115 to 0.			Crew determines actual VCT level by checking computers and local level indication. RO places M/U control switch in OFF when rising VCT level is confirmed.
	LT-CH-112 indicates rising level		RO may Divert if level exceeds 76%

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			Crew monitors Tave to determine if an inadvertent boron change has occurred. ANSS notifies I&C of LT-115 failure. Crew controls VCT level manually within normal limits.
EVENT # 4 Once crew has control of VCT level continue with Excessive Seal Leak Off on B RCP			
**********	A3-87 RCP SEAL LEAKOFF FLOW HIGH		RO reports A3-87 and verifies high flow condition exists on FR-CH-154 on the B RCP.
ENTER **FILE LDRL2B**	Recorder FR-CH-154 indicates high flow		
**********			ANSS responds with ARP 7.4.ABE.
LDRL2B contains OVR P07061C P07061D MAL CRF12A CRF12B RCS5B ACT,22,0,0 SET JINHFW3B=T			RO checks open MOV-CH-308B,370 and HCV-186.
	Seal Injection Flow to B RCP > than to A&C.		RO verifies that injection flow is not low.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	TI-CH-116 is reading normal (100 F) FR-CH-154 indicates on a rapid rise on B RCP.		RO verifies that VCT outlet temperature is normal. RO checks that B RCP has high rate of increase on seal leakoff flow and is >20 gpm. Makes report to ANSS ANSS verifies reactor power > 31% and within 5 min directs a Manual Reactor Trip and a B RCP trip. ANSS directs the RO to close MOV 303B within 3 to5 minutes following the trip of B RCP Crew attempts to manually trip.
EVENT # 5 Reactor trip failure in auto and manual - ATWS.			RO notes a reactor trip has not occurred and informs ANSS of ATWS condition.
ANSS transitions to FR-S.1.			Operators commence immediate actions of E-0 and FR-S.1, ANSS refers to FR-S.1.
ANSS must implement FR-S.1 at Step 1 of E-0 and restore the core to a subcritical state.			STA monitors status trees for information only in FR-S.1.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Crew performs immediate operator actions of FR-S.1.	Reactor trip breakers shut. Neutron flux steady. Rod bottom lights not lit. Rod position indication not zero.		RO verifies reactor trip, attempts to trip reactor.
********** During the imediate manual actions:	Turbine trips.		PO trips turbine, using both trip PBs.
INSERT FILE LDRL2C CONTAINS FWM11C AND PRS3A,50,0,0 **********			
	Tref drops to 547° F.		PO verifies Tref dropping.
CRITICAL TASK Manually insert rods following ATWS.	Rods inserting.		RO uses manual rod control to insert rods.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
**********			
Two minutes after the request to open the reactor trip breakers:			Crew dispatches an operator to open the reactor trip breakers.
ENTER **FILE LDRL2D** Contains CRF14A&B with 120,130 time delays.	Rx Trip Breakers open.		
then report reactor trip breakers open, after observing trip.			
**********			
			Crew sounds standby alarm and announces Unit 1 reactor trip without SCRAM.
			NSS evaluates EPP and declares a Site Area Emergency in accordance with TAB 2.3 Failure of Reactor Protection, within 15 minutes of first out annunciator, informs crew, provides AA with notification form.
	TVs, Gvs, RSVs, IVs shut.		PO verifies turbine trip.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	Steam dump control interlock selector switches in off.		PO isolates condenser steam dump.
Immediate operator actions complete.	MOV-1MS-100A and B shut. Reheat controller reset pushbutton depressed.		PO ensures reheat steam isolation.
EVENT # 6 FW-P-3B fails to start automatically. FW-P-2 fails.			
CRITICAL TASK Manually initiate AFW flow following ATWS.	NO AFW pumps running, until FW-P-3B started manually. MOV-FW-151A-F full open.		PO verifies AFW starts MDAFW "B" pump verifies MOV-FW-151A-F full open identifies FW-P-2 as not running.
	HHSI pump running. MOV-1CH-350 open. Boric acid transfer pump CH-P-2A in fast speed. FCV-CH-122 open > 75 gpm. Emergency boration flow indicated.		RO initiates emergency boration via MOV-CH-350.
	PZR pressure less than 2335 psig.		RO checks Pzr pressure < 2335 psig.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Crew may elect to manually actuate SI now; but must do so upon return to E-0. When manpower is available following manual SI, the ANSS will direct the PO to verify the first 15 steps of E-0.	SI may not have auto actuated. SI actuated status light not lit.		Crew checks SI actuation status. ANSS directs PO to verify the first 15 steps of E-0 when time permits.
	Intact S/G > 6% NR level Total feed flow < 630 gpm.		PO checks total feed flow to intact SGs > 630 gpm.
	Station Air >110 psig		PO checks Station air pressure > 100 psig.
	SR detector HV switches in normal position.		RO verifies SR Detector-High Voltage Switches in normal and transfers NR-45 to operable SR and IR.
Report breakers locally tripped after breakers open.	Reactor trip breakers opened. All control rods fully inserted.		RO informs ANSS that the reactor tripped.
	FCV-CH-113B closed. FCV-CH-114A closed. FCV-CH-114B closed.		RO verifies dilution paths isolated.
	Uncontrolled cooldown not in progress.		RO checks for reactivity insertion from RCS uncontrolled cooldown.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	No SG pressure dropping in an uncontrolled manner or completely depressurized.		RO checks pressure in all SGs to identify a faulted SG.
	PR NIs less than 5%. IR NIs neg SUR.		ANSS verifies that there is no controlled cooldown in progress and transitions to step 18 to verify reactor subcritical. RO verifies reactor subcritical.
ANSS transitions to E-0 upon completing FR-S.1 and ensures operators verify reactor trip and actuation of SIS.			ANSS transitions from FR-S.1 to E-0 and informs control room to commence E-0 immediate actions.
	RCS pressure drops, containment pressure and temperature increase.		RO and PO commence immediate actions of E-0, ANSS references E-0 to verify immediate actions.
	Reactor trip and bypass breakers open, neutron flux decreasing. Rod bottom lights lit. Rod position indication at 0.		RO verifies reactor tripped.
			RO sounds standby alarm.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	Throttle and governor valves closed, reheat stops and interceptors closed.		PO verifies turbine tripped.
	Depress reheat controller, reset pushbutton. Reheat flow control and block valves closed.		PO ensures reheat steam isolated.
	Main generator output breakers open. Exciter circuit breaker open.		PO verifies generator trip.
	1AE and 1DF busses energize.		PO verifies AE and DF busses energized.
EVENT # 7 Pressurizer Porv is open and associated block valve cannot be closed.	RCS Pressure dropping due to open PORV Any SI annunciator. SI actuation status light. Both trains of SI manually actuated.		RO checks if SI has actuated, identifies that SI required and manually initiates both Trains of SI.
	Both EDGs running.		PO verifies EDGs running.
	HHSI pumps running. FI-SI-943 indicates flow. LHSI pumps running. All red marked SIS valve indicating lights lit.		RO/PO verify SI system status.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	FW-P-3B running MOV-FW-151 A through F open.		PO verifies AFW status.
	RPRW pumps running. CCR Hx pressure > 20 psig.		RO verifies river water system in service.
	CIA actuated, all indicating lights with orange marks lit.		RO/PO verify CIA.
	All indicating lights with green marks lit.		RO/PO verify FWI.
	All indicating lights with yellow marks lit.		RO/PO check if MSLI required.
	Annunciator A1-72 not lit. CNMT pressure < 8 psig. CIB and containment spray not required.		RO/PO check CIB spray status.
	CCR pumps running.		RO/PO verifies CCR status.
	SR detector switches in normal.		RO verifies SR detector HV switches selected to normal and NR-45 selected to operable channels.
	AFW flow > 330 gpm.		PO verifies AFW flow greater than 330 gpm.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	Station Air >110 psig Tavg trending to 547°F.		PO checks Station air pressure > 100 psig. RO/PO verifies RCS Tavg stable at or trending to 547°.
			ANSS directs available personnel to perform emergency safety function checklist.
	PORV PCV -RC-455C indicates open Other PORVs are closed. Safeties closed. Spray valves closed. PRT pressure, temp and level all have increased..		RO checks PZR PORVs, safeties, spray valves, and PRT RO attempts to close PORV isolation valve MOV- RC -535, if not already done . RO reports that MOV-RC-535 will not close.
Crew transitions to E-1.			ANSS transitions from E-0 to E-1 and informs crew.
	CREBAPS not required.		ANSS verifies CREBAPS status.
CRITICAL TASK Manually trip RCPs when differential pressure falls to < 200 psid.	< 200 psid RCS to S/Gs.		RO checks if RCPs should be stopped. Crew determines RCPs should be tripped and trips RCPs.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
**********			ANSS directs an extra operator to start the H_2 analyzers.
If time permits align WR H_2 analyzers on VB "A", then insert:			
ANNUN AN02097 = 1 AN02105 = 1	Annun. A2-97 energizes. Annun. A2-105 energizes. H_2 analyzers in service.		
and report actions to the control room.			
**********			
	No faulted SGs.		PO checks if any SGs are faulted
	SGWL NR > 6%. Total feed flow > 330 gpm		PO checks intact SG level and controls feed flow to maintain SG level > 6% NR and limit RCS cooldown.
	Station Air >110 psig		PO checks Station air pressure > 100 psig.
	Power available to block valves. PORV 455C failed open.		RO checks PZR PORV and block valves.
	No subcooling.		ANSS checks if SI flow can be terminated, does not secure HHSI flow.
	No SG level rising in an uncontrolled manner. Secondary radiation consistent with pre-event values.		ANSS checks if SG tubes are intact.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	CIB not actuated. No QS or RS pumps running.		ANSS checks if CNMT spray should be stopped.
	DG-P-1A,B, PTL. DA-P-4A,B STOP. CV-P-1A,B, PTL.		RO isolates CNMT vents and drains system.
	Status lights PNL 62 C-4 not lit. Status light PNL 62 D-4 lit.		RO resets SI (both trains).
	CIA and CIB reset.		RO resets CIA and CIB (both trains).
	RCS pressure > 325 PSIG and decreasing.		RO checks if LHSI pumps should be stopped. Checks RCS pressure trend and does not stop LHSI pumps.
	All SG pressures stable.		PO checks SG pressures stable or rising.
NOTE: If RCS pressure is increasing , crew will return to Step 2. The drill could be be terminated at that point.	RCS pressure decreasing..		RO checks RCS pressure stable or decreasing.
	1AE and 1DF energized by offsite power.		PO checks if unloaded EDG should be stopped.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	#1 and #2 EDGs secured.		PO stops unloaded EDG.
	Power available to valves in Attachment 1-F (Train "A" available).		Crew verifies cold leg recirc capability using Attachment 1F.
	No expected increase.		Crew checks Aux. building and safeguards radiation. ANSS directs Chemistry to sample the containment sump and RCS,using the PASS system(OM-14C.4.A).
**********	AUX steam available from U-II.		Crew starts additional plant equipment to assist in recovery.
LOA AUX42 = 1 to line up aux steam from Unit 2. **********			
Crew transitions to ES-1.2.	RCS pressure greater than 325 psi.		ANSS determines method of cooldown for long term plant recovery and transitions to ES-1.2 "Post LOCA Cooldown and Depressurization" Step 1.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Terminate drill after crew transitions to ES-1.2 Post LOCA Cooldown and Depressurization Step 1.			
Collect and review logs after allowing crew time to complete.			Crew logs should be accurate clear and concise.

Facility: BVPS - Unit 1 Scenario No.: 3 OP-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Objectives: To evaluate the applicants' ability to implement AOPs and ARPs in response to a NI failure, dropped control rod, loss of main feedwater pump; to a initiate a controlled power reduction; and to respond to a reactor trip (EOP E-0, and ES-0.1) with subsequent malfunctions leading to a loss of secondary heat sink (EOP-FR-H.1).

Initial Conditions: Reactor plant at 80% returning to full power following a load swing to 75% as requested by the System operator. The power decrease was at 10%/hr. Power was held at 75% for 48 hours.

Crew is to return to 100% from 80% at 10%/hr, using OM-52.4.B-Part B.

Turnover: FW-P-3A, MDAFW pump is on clearance for motor replacement. Due to be returned next shift. CBD @ 182 steps, boron = 1078 ppm, burnup = 3,000 MWD/MTU. The "B" station instrument air compressor is out of service for bearing replacement.

Event No.	Malf. No.	Event Type*	Event Description
1	MALF NIS3D	I(PO/SRO)	N44 power range change fails low, auto rod control drives out control rods.
2	MALF CRF4	C(RO/SRO)	During rod withdrawal, rod H14 drops due to blown fuse.
3		R(RO) N(PO/SRO)	Power reduction initiated in response to dropped rod.
4	MALF FWM1B	C(PO/SRO)	One main feedwater pump trips.
5	MALF FWM1A	M(All)	Second main feedwater pump trips, resulting in a reactor trip on low SG level.
6	INH TURT	C(PO/SRO)	Turbine fails to trip, crew manually trips turbine
7	MALF MFM11C	C(PO/SRO)	Turbine Driven AFP fails to start.
8	MALF MFM11D	M(ALL)	FW-P-3B trips on motor fault, resulting in a loss of heat sink.

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

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INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Initialize the simulator at IC -72 BOL(3,000 mwd/mtu). ENSURE RODS IN AUTO	Reactor plant at 80% returning to full power following a load swing to 75% as requested by the System operator. The power decrease was at 10%/hr. Power was held at 75% for 48 hours. Crew is to return to 100% from 80% at 10%/hr, using OM-52.4.B-Part B. All necessary notifications have been made and permission to increase load has been received.		
Insert FILE SIMIC Insert **FILE LDRL3** TAG FW-P-3A and SA-C-1B	Places equipment out of service per the initial conditions setup page.		
IPC RODUP AND CLEAR ALARMS. Assign shift positions: NSS _____ ANSS _____ RO _____ PO _____ STA _____	Simulator Frozen until after shift turnover unless it needs to be on momentarily for an alignment change.		
Conduct shift turnover with oncoming operators.			Oncoming operators should complete the required checklists and carry out a formal shift turnover.

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INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
**********			
When the shift turnover is complete, place the simulator to **RUN** and commence the drill.	Simulator running.		Crew assumes control of the unit.
**********			
After crew assumes the shift and commences increasing load .			Crew raises , following reactivity plan , reactor power toward 100%.
EVENT # 1& # 2			
Power Range NI N-44 fails LOW. Rods drive out and rod H-14 drops.			
**********	PR Channel N44 fails low.		
After crew begins raising power, insert the following:	N44 power indications drop to 0% AFD out of target band alarm. NIS PR Upper Section Flux Deviation Or Auto Defeat alarm.		
FILE LDRL3A	NIS PR Comparator Deviation alarm.		
**********	NIS PR Flux Rate High alarm.		
Malfs **NIS3D,200,0** **CRF4,2,F6,3**	A4-52,-67,-68,-69. A4-126 ROD BOTTOM ROD DROP ROD H-14 rod bottom light is lit and IRPI is zero.		
	Pzr level and pressure, RCS Tavg drop with related alarms.		RO acknowledges alarms, reviews indications, diagnoses N44 failure and dropped rod and informs ANSS.

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INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			Crew prioritizes use of AOP 1.1.5 and AOP 1.2.1c. and responds to drop rod first
	Only rod H-14 indicates 0 steps, only rod bottom light lit.		RO verifies only one rod dropped.
	Rod control in manual.		RO places/verifies rod control selector switch in manual.
When asked to investigate dropped rod, inform control room after appropriate delay that the stationary gripper fuse is blown for H-14. Report primary voltage as 18 volts.	Rod H-14 stationary gripper fuse blown.		Crew directs I&C to investigate the cause of dropped rod.
Event # 3 Power Reduction Inform control room (as I&C) that cause for failure appears to be faulty fuse, and that it can be replaced and the rod recovered.	Turbine load reducing.		Crew continues actions of AOP 1.1.5, reduces turbine load to < 70%, using OM-52.4.B.

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INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	Conditions established and maintained for rod recovery.		ANSS refers to T.S. 3.1.3.1, informs plant management of status and ability to recover rod, contacts reactor engineering for assistance.
			Crew references to AOP 1.2.1.C POWER RANGE CHANNEL MALFUNCTION"
NOTE: Crew may conservatively place the Upper and Lower Comparator switches to Defeat until input to comparators is confirmed to be operable.	Bistable tripped.		Crew removes N44 control power fuses from Drawer A.
	Rod control in manual		Crew verifies rod control systems in manual.
	Rod Stop Bypass Switch - N44.		Operator defeats N44 at NIS rack.
	Comparator Channel Defeat Switch - N44		
			RO selects or ensures NR-45 is selected to an operable channel.
			NSS refers to Tech. Spec. 3.3.1.1 and 4.2.1.1.b.

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INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
EVENT # 4 After NI-44 has been removed from service and power has been reduced to 70% continue with next event. ********** **Insert MAL FWM1B.** Trips 1B Main Feedwater pump **********	A7-37 S/G FWP AUTO STOP A7-39 FWP DSCHG FLOW HIGH A7-45,53,61 S/G LEVEL DEVIATION		PO recognizes loss of FW-P-1B and reports to ANSS. Crew may refer to ARP for A7-37 ANSS refers to AOP 1.24.1 Loss of Main Feedwater.
	Reactor power >65%		RO verifies reactor power < 80% and reports to ANSS. ANSS directs crew to reduce Turbine load to 60% in accordance with AOP 1.51.1 at either 2 or 5%/min
If asked to investigate the loss of FW-P-1B MFWP, report that there is no lube oil pressure. Aux oil pump is not running and bearing damage should be suspected.	A7-6 , A7-79 are not lit		RO alerts Plant Personal NSS evaluates EPP RO verifies PORVs are available PO sets Load Setter to ordered rate RO determines required boron and borates or Emergency Borates depending on rate ordered.

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INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			RO maintains Tavg within +/- 5f of Tref, maintains rods above RIL and attempts to control Delta Flux within Target Band. .
			PO initiates load decrease by pressing GO and reduces VPL as necessary
			Crew notifies System Operator and Station Management
	Reactor Power < 60%		Crew stops load decrease when less than 60%.
	A6-79 not lit		PO checks proper operation of FWP recirc valves
	FW>STM		PO verifies steam flow less than available feed and that S/Gs are trending to program level
			PO verifies MFW pump performance amps <450 amps and A7-40 not lit.

When crew establishes stable conditions

EVENT # 5

Loss of second main feedwater pump -

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INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
ENTER **FILE LDRL3B**.	Reactor will auto trip on low S/G level following loss of second feed water pump		Crew recognizes feed pump trip and may manually trip reactor prior to auto trip.
Crew performs immediate operator actions of E-0.	Reactor trip and bypass breakers open, neutron flux decreasing. Rod bottom lights lit. Rod position indication at 0.		RO verifies reactor tripped.
			RO sounds standby alarm and announces Unit 1 reactor trip.
EVENT # 6 Main Turbine Fails To Automatically Trip.	Throttle and governor valves open. Reheat stop and intercept valves open.		PO checks turbine tripped. PO reports that **no** Throttles or Governor and Reheat stops or Intercept valves are closed.
CRITICAL TASK Manually trip the turbine.	Throttle and governor valves are closed. Reheat stop and intercept valves are closed.		PO **MANUALLY** trips turbine, verifies turbine trip valves close and reports actions to ANSS.
	Reheat flow control valves and MOV MS- 100 A & B are closed.		PO ensures reheat steam isolation by depressing reheat controller reset push-button and checks MOV-MS-100A & B closed.

DRILL 12-97-3B 8

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	Main generator output breakers open. Exciter circuit breaker open.		PO verifies generator trip.
	AE and DF busses energized.		PO verifies Emergency Busses energized.
SI may not have actuated yet, crew may opt to manually initiate SI (due to degrading conditions) prior to exceeding actuation criteria.			RO checks if SI is actuated or required.
Immediate Operator Actions Completed.			
Crew may perform several steps of ES-0.1 before STA makes notification of Heat Sink Red Path.			ANSS makes transition to ES-0.1 if SI is not initiated and informs crew.
EVENT # 7 & 8	FW-P-3B and FW-P-4 are tripped AUXFW on vertical board indicates 0 gpm to all S/Gs. Both main FW pumps are tripped.		STA begins monitoring status trees (if transition is made) and informs crew that the entry conditions of FR-H.1 are met..
Crew transitions to FR-H.1.			ANSS makes transition to FR-H.1 and informs crew.
	RCS pressure > any non-faulted SG pressure RCS hot leg temp > 320°F.		RO/PO check if heat sink is required.

DRILL 12-97-3B 9

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	3 SG WR levels > 10%. Pzr pressure less than 2325 psig.		RO/PO check if RCS bleed and feed is required.
	WT-TK-10 level > 27.5 ft		PO checks PDWST level > 27.5 ft
	FW-P-3B failed to start and 3A OOS. FW-P-2 valve alignment verified. MOV-FW-151A-F full open. TV-MS-105A&B open. MOV-MS-105 open		Crew attempts to establish AFW flow to any SG(s).
When requested to check to TDAFW, as the PAB Operator, report that the TDAFWT trip collar is broken and will not reset. FW-P- 3B has O.C. relays set. AFW suction pressure >8psig.	FW-P-2 trip throttle valve trip collar broken (MS-465). Suction pressure >10 psig		NSS/ANSS dispatches operator to locally investigate status of FW-P-2 if not previously performed, check suction pressure of AFW pumps.
As the operator requested to start up FW-P-4, after 5 minutes establish communications with Control room. When directed to start pump, report to the control room that the dedicated AFW pump will not start. (breaker keeps tripping)	AFW flow 0 to all S/G FW-P-4 aligned to WT-TK-11 Black diesel not running -bus voltage normal. Local panel energized. MOV-FW-160 is checked closed.		Crew dispatches operator to start FW-P-4 per Attachment 2K.

DRILL 12-97-3B 10

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
NOTE: Stopping RCPs will result in RCS pressure increase. This may prompt crew to initiate bleed and feed. While this action is not expected, it is conservative.	3 RCPs running SI not actuated		Crew minimizes heat input to RCS. PO checks STM DMPS in STM PRESSURE mode. RO stops all RCPs. RO places Heaters in PTL
	TV-1BD-100A,B,C SG Bldn Cnmt Iso Vlvs Closed. TV-SS-117A,B,C SG Bldn. Sample Cnmt Iso. Vlvs. Closed.		Crew checks SG Blowdown Isolation status.
Status of SI and FWI related equipment will be dependent on whether SI was prevented by quickly tripping turbine.	CN-P-1A&B, running. Hotwell level > 27 in. Valves with green FWI marks closed, if SI has been actuated..		PO checks condensate system in service.
	DG-P-1A,-1B in PTL. DA-P-4A,-4B in STOP. CV-P-1A,-1B in PTL.		RO isolates containment vents and drains and resets SI, if necessary.
	Both trains SI reset. Actuation status light dark. Block status lights lit.		RO resets FWI both Trains.

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INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	FW-156A,B,C indicate open		RO opens S/G Main FW CNMT Isol VLvs
If requested to check FW-P-1A locally, report that it tripped on OC.	FW-P-1A and FW-P-1B cannot be started.		Crew determines that no MFW pump is available for SG feed.
NOTE: If the pressurizer spray valves are open, Aux Spray will not be effective and crew may elect to use a PORV to depressurize, if required.	Letdown flow is indicated.		RO depressurizes RCS to 1950 psig using AUX Spray or a PORV, if necessary.
	RCS pressure < 1950 psig		RO blocks low pressure SI and Steamline SI.
	Low pressure SI blocked. Steamline SI blocked.		RO verifies PRZR SI and Steamline SI Blocked.
	Selected steam generator pressure decreasing to less than 490 psig.		PO begins depressurizing a steam generator to less than 490 psig.
			ANSS has operators line up to feed from the condensate system in accordance with Attachment 2-J.

DRILL 12-97-3B 12

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Crew establishes feedwater flow into at least one steam generator.	AFW pumps in PTL. MFW pumps in PTL. MFRVs shut. BFRVs shut. MFRV isolation valves shut. BFRV isolation valves open.		Operators performs steps of Attachment 2-J.
**********			
If desired to de-energize FWP discharge valve MOV-FW-150A open, wait until operator states valve full open then insert **FILE LDRL3C**	MOV-FW-150A or 150B.		Crew directs plant operator to open MFP discharge isolation valve.
File contains OVR P09066B =2, P09066A=2 turns red and grn lights off, LOA FWM31=1	CN-P-1A or B running.		Operator verifies at least one condensate pump running.
If requested to de-energize open 150B, insert **File LDRL3D**.			
File contains OVR P09067B=2, P09067A=2, and LOA FWM 32=1. **********	FCV-FW-479/489/499 open to feed selected S/G.		Operators open feedwater bypass valve to feed selected S/G.

DRILL 12-97-3B 13

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
CRITICAL TASK Restore feedwater flow or feed and bleed.	Feedwater flow > 330 gpm to selected S/G.		Crew establishes feedwater flow > 330 gpm to selected S/G.
Terminate drill after feedwater flow established.			
Collect and review logs after allowing operators to complete them.			Operator logs should be clear, accurate and concise.
Erase any vond markings associated with this drill.			

Facility: Beaver Valley, Unit One Date of Examination: _____

Exam Level (circle one): RO / SRO(I) / SRO(U) Operating Test No.: _____

System / JPM Title / Type Codes*	Safety Function	Planned Follow-up Questions: K/A/G // Importance // Description
1. CRDS - RCCA Misalignment D, S	I	a. 001 K4.05 / 3.9 Amount of rod withdrawal to compensate for boration.
		b. 001 K5.08 / 4.4 Rod Insertion Limit determination.
2. CVCS - Secure Excess Letdown N,S	II	a. 004 K1.25 / 3.2 Effect of SI actuation on excess letdown.
		b. 004 K6.10 / 3.1 Loss of CVCS heat tracing.
3. PZR PCS - Depressurize to Backfill from Ruptured SG N,A,S	III	a. EPE 038 EK1.03 / 4.2 RCS Dilution from Backfill operation.
		b. EPE 038 EK3.06 / 4.5 Bases for minimum level in ruptured SG.
4. RHR -Establish RHR System Flow D,L,S	IV	a. 005 A1.02 / 3.4 Flow control while adjusting cooldown rate.
		b. APE 025 AA1.02 / 3.9 Determination of boiloff rate following loss of RHR.
5. CSS - Verify Containment Spray N,A,S	V	a. 026 K1.01 /4.2 Flow path to HHSI with Recirculation spray.
		b. 026 K4.08 / 4.3 Effect of failure of MOV-1QS-103A to close.
6. EPD - Perform a Hot Bus Transfer D,S	VI	a. 062 K2.01 / 3.4 Causes of reactor trip on loss of Bus 1B.
		b. 062 A2.05 /3.3 UV Trip defeat when cross tying to BV-Unit 2.
7. NNI - Respond to Feed Flow Instrument Failure N,S	VII	a. 035 A2.04 /3.8 Plant response if action not taken.
		b. 016 A3.02 /2.9 Instrument response to changing temperature.
8. SAS - Place Diesel Air Compressor in Service N,P	VIII	a. APE 065 AA2.05 /4.1 When to shutdown or trip due to loss of air pressure.
		b. 078 K3.02 /3.6 Effect of loss of air on Makeup Control System.
9. HRPS - Startup the Hydrogen Recombiner. D,P,R	V	a. 028 A1.01 3.8 Correction for Hydrogen Analyzer reading.
		b. 028 K5.02 /3.9 Recombiner operation with Hydrogen > 4%.
10. EDG - Locally Start the Emer. Diesel Generator D,P	VI	a. 064 K6.08 /3.3 Application of Tech Specs for inoperable EDGs.
		b. 062 K3.02 / 4.4 Diesel auto start during engine cooldown cycle.

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)leternate path, (C)ontrol Room, (S)imulator, (L)ow power, (P)lant, (R)CA

A070

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

OJT CHECKLIST/JPM COVER PAGE

PROGRAM TITLE: Licensed Operator Training

SUBDIVISION: On-the-Job Training

OJT CHECKLIST/JPM TITLE: RCCA Misalignment (High, Situation A)

JPM NO.: 1CR-100

COMPUTER CODE: N/A

Revision No.	Date

Revision No.	Date

PREPARED BY: _____ DATE: _____

APPROVED FOR
IMPLEMENTATION: _____ DATE: _____
Director, Operations Training,
or Designee

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

LESSON PLAN AND OJT REVISION APPROVAL SHEET

DOCUMENT TITLE: 1CR-100, RCCA Misalignment (High, Situation A)

Revision No.	Brief Description	Revised by:	Approval Signature	Approval Date

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1CR-100 Rev: 4 System #: 001 Faulted: ☐
JPM Title: RCCA Misalignment (High, Situation A)

K/A Reference: 003 AA1.02 /3.4 Task ID #:0000080401

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☒ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT Time (minutes)

☐ UNSAT* Allotted: 20 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	7	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	RCCA Misalignment (High, Situation A)

INITIAL CONDITIONS:	58% power. Rod F-10 of Bank D has been determined to be at 197 steps. Bank D is at 179 steps. Rods are in manual. The reason for the rod misalignment has been corrected. Tavg is equal to Tref. Testing and Plant personnel have been notified. A flux map is not necessary. Rods can be moved in manual.

INIT. CUE:	Your supervisor directs you to respond to the misaligned rod per the appropriate procedure.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1CR-100
JPM TITLE:	RCCA Misalignment (High, Situation A)
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to perform the task respond to RCCA Misalignment.
INIT. CONDITIONS:	58% power. Rod F-10 of Bank D has been determined to be at 197 steps. Bank D is at 179 steps. Rods are in manual. The reason for the rod misalignment has been corrected. Tavg is equal to Tref. Testing and Plant personnel have been notified. A flux map is not necessary. Rods can be moved in manual.
TASK STAN.:	Rod alignment complete with all Bank D rods at 179 steps.
INIT. CUE:	Your supervisor directs you to respond to the misaligned rod per the appropriate procedure.
REFERENCES:	1OM-1.4.X, Issue 3, Rev 5
TOOLS:	NONE
HANDOUT:	1OM-1.4.X, RCCA or RCCA Group Misalignment

NUMBER	TITLE
1CR-700	RCCA Misalignment (High, Situation A)

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

		Evaluator Setup: -Initialize Simulator to IC 88. START TIME: _____ Candidate locates and reviews 1OM-1.4.X EVALUATOR CUE: Provide candidate with prepared copy of 1OM-1.4.X. EVALUATOR CUE: 1OM-1.4.X has been completed through step 9. The Unit Operations Manager and Reactor Engineer have been notified. The rate of control rod motion shall be limited to 5 step increments and startup rate shall be limited to 0.25 DPM. Situation A should be used for the re-alignment of the misaligned rod.	
1.C	Place the rod control selector switch in the Bank D position.	1.1	Candidate locates rod control selector switch.
		1.2.C	Candidate places rod control selector switch in the Bank D position. _____ COMMENTS:

NUMBER	TITLE
1CR-100	RCCA Misalignment (High, Situation A)

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
2.C	Place all disconnect switches for the affected group, except for affected rod, in the rod disconnect position.	2.1	Candidate locates the disconnect switches for Control Bank D.
		2.2.C	Candidate places all Control Bank D disconnect switches (except rod F-10) in the disconnect (UP) position. GR1 GR2 H2 F6 B8 K10 H14 K6 P8 COMMENTS:
3.	Record the Bank group positions and misaligned rod position.	3.1	Candidate records Control Bank D Group 1 and Group 2 position. Group 1: 179 steps Group 1: 179 steps
		3.2	Candidate records rod F-10 position. F10: 197 steps

NUMBER	TITLE
1CR-100	RCCA Misalignment (High, Situation A)

STEP		STANDARD	
("C" denotes critical step)		(Indicate "S" for Sat. or "U" for Unsat.)	
		EVALUATOR NOTE: The values for the rod positions are provided in the initial conditions.	
		COMMENTS:	
4.C	Step the step counter for the misaligned rod group to the position the rod is determined to be in.	4.1	Candidate locates the group step counter for the Bank D group 2 rods.
		4.2.C	Candidate sets the step counter to 197 steps.
		COMMENTS:	
		EVALUATOR CUE: The PO will adjust turbine load as necessary to maintain Tavg.	
		EVALUATOR NOTE: Tavg will drop, if necessary tell candidate to assume Tavg is being maintained equal to Tref.	

NUMBER	TITLE
1CR-100	RCCA Misalignment (High, Situation A)

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
5.C	Insert the affected rod.	5.1	Candidate locates the rod motion lever.
		5.2.C	Candidate inserts rod in five step increments by placing the rod motion level to the "IN" position.
		5.3	Candidate verifies rod moving in proper direction by observing step and individual rod position indication.
		5.4	Candidate acknowledges rod control system annunciators.
			_____
			COMMENTS:
6.C	Continue rod insertion until its associated step counter indicates a position corresponding to the bank position.	6.1.C	Candidate stops rod insertion when the group step counter indicates 179 steps.
			_____
			COMMENTS:

NUMBER	TITLE
1CR-100	RCCA Misalignment (High, Situation A)

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
7.	Verify misaligned rod is now at the same position as the other rods in the bank by reading individual RPI.	7.1	Candidate locates the Control Bank D IRPI indication.
		7.2	Candidate verifies that rod F-10 position matches the other Control Bank D rod positions.
		EVALUATOR CUE: All Control Bank D Rods indicate 179 steps.	
		COMMENTS:	
8.C	Replace all disconnect switches to the connect position.	8.1	Candidate locates the disconnect switches for the Control Bank D position.
		8.2.C	Candidate places all Control Bank D disconnect switches (except rod F-10) in the connect (DOWN) position.
		COMMENTS:	

NUMBER	TITLE
1CR-100	RCCA Misalignment (High, Situation A)

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
9.C	Clear the Urgent Failure alarm.	9.1	Candidate locates the Urgent Alarm Reset Pushbutton.
		9.2.C	Candidate depresses the pushbutton.
		9.3	Candidate verifies the Rod Control System Urgent Alarm clears.
			_____
		COMMENTS:	
10.	Reset the P/A converter if the misaligned rod was in a control bank.	10.1	Candidate determines that a control bank was affected.
		10.2	Candidate asks supervisor to have the P/A converter reset.
		EVALUATOR CUE: The P/A converter has been reset by another operator.	
			_____
		COMMENTS:	

NUMBER	TITLE
1CR-100	RCCA Misalignment (High, Situation A)

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		EVALUATOR CUE: Your supervisor directs you to restore rod control to manual.	
11.	Return the bank selector switch to manual.	11.1	Candidate locates the bank selector switch.
		11.2.C	Candidate places the bank selector switch in the manual position.
		EVALUATOR CUE: The crew will monitor the required parameters.	
			_____
		COMMENTS:	
12.	Inform supervisor that the rod has been re-aligned.	12.1	Candidate informs supervisor that the rod has been re-aligned.
			_____
		COMMENTS:	
		STOP TIME	_____

JPM QUESTION #1

Assume the plant is operating at 5% power following a reactor startup at beginning of life (150 MWD/MTU and Boron = 900 ppm). How much boron would be needed to compensate for withdrawing bank D from 125 steps to 130 steps? (Assume xenon free operation.)

OPEN REFERENCE

ANSWER:

Change in integral rod worth (CB-24A) is approximately 40 pcm.

Differential boron worth (CB-20) is approximately -8.25 pcm/ppm.

Amount of boration is 4.5 - 5.0 ppm

Time Allotted: 7 minutes

KA #: 001 K4.05 / 3.9

Objective: 1/2LP-NOMCD-1.1
Reference: Unit 1 Curve Book

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

Assume the plant is operating at 5% power following a reactor startup at beginning of life (150 MWD/MTU and Boron = 900 ppm). How much boron would be needed to compensate for withdrawing bank D from 125 steps to 130 steps? (Assume xenon free operation.)

JPM QUESTION #2

Assume the plant is operating at 63% power. What are the minimum control and shutdown rod positions that ensure SHUTDOWN MARGIN is maintained?

OPEN REFERENCE

ANSWER:

Control rods: Bank D at 113 - 120 steps.

Shutdown rods: 225 steps.

Time Allotted: 5 minutes

KA #: 001 K5.08 /4.4

Objective: LP-SQS-1.3 OBJ-15
Reference: T.S. 4.1.1.1.1, 3.1.3.5, 3.1.3.6, and COLR Figure 1.

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

Assume the plant is operating at 63% power. What are the minimum control and shutdown rod positions that ensure SHUTDOWN MARGIN is maintained?

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

OJT CHECKLIST/JPM COVER PAGE

PROGRAM TITLE: Licensed Operator Training

SUBDIVISION: On-the-Job Training

OJT CHECKLIST/JPM TITLE: Secure Excess Letdown

JPM NO.: 1CR-N01

COMPUTER CODE: N/A

Revision No.	Date

Revision No.	Date

PREPARED BY: _____ DATE: _____

APPROVED FOR IMPLEMENTATION: _____ DATE: _____
Director, Operations Training, or Designee

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

LESSON PLAN AND OJT REVISION APPROVAL SHEET

DOCUMENT TITLE: 1CR-N01,Secure Excess Letdown

Revision No.	Brief Description	Revised by:	Approval Signature	Approval Date

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1CR-N01 Rev: 0 System #: 004 Faulted: ☐
JPM Title: Secure Excess Letdown

K/A Reference: 004 A4.06 /3.1 Task ID #:0040160101

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☒ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT Time (minutes)
☐ UNSAT* Allotted: 10 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	5	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Secure Excess Letdown

INITIAL CONDITIONS:	A failure of TV-1CH-204 resulted in a loss of normal letdown. Excess letdown was placed in service. TV-1CH-204 has been repaired and normal letdown has been returned to service.

INIT. CUE:	Your supervisor directs you to secure excess letdown in accordance with 1OM-7.4.AF.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1CR-N01
JPM TITLE:	Secure Excess Letdown
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to simulate (perform) the task Secure Excess Letdown.
INIT. CONDITIONS:	A failure of TV-1CH-204 resulted in a loss of normal letdown. Excess letdown was placed in service. TV-1CH-204 has been repaired and normal letdown has been returned to service.
TASK STAN.:	Excess letdown secured in accordance with 1OM-7.4.AF.
INIT. CUE:	Your supervisor directs you to secure excess letdown in accordance with 1OM-7.4.AF.
REFERENCES:	1OM-7.4.AF Issue 4, Revision 2.
TOOLS:	NONE
HANDOUT:	1OM-7.4.AF, Restoring Charging and Letdown

NUMBER	TITLE
1CR-N01	SECURE EXCESS LETDOWN

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		Evaluator Setup: -Initialize Simulator to IC 75.	
		START TIME: _____ Candidate locates and reviews 1OM-7.4.AF, Restoring Charging and Letdown.	
		EVALUATOR CUE: Provide candidate with prepared copy of 1OM-7.4.AF.	
1.	Monitor No. 1 Seal Leakoff Wide Range.	1.1	Candidate monitors [FR-1CH-154A]. _____ COMMENTS:
2.C	Slowly set Excess Letdown HX Flow Control Valve controller to 0.	2.1	Candidate locates controller for [FCV-1CH-137].
		2.2.C	Candidate slowly reduces controller setpoint to 0 while maintaining [FR-1CH-154A] within alarm limits (0.9 gpm ± .02 and 4.7 gpm ± .12) _____ COMMENTS:

NUMBER	TITLE
1CR-N01	SECURE EXCESS LETDOWN

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
3.	Close 1A RCL Drain valve.	3.1	Candidate locates the control switch for [MOV-1RC-557A].
		3.2	Candidate takes control switch for [MOV-1RC-557A] to the CLOSE position.
		3.3	Candidate verifies [MOV-1RC-557A] closed by verifying the red indicating light is off and the green indicating light is on.
		EVALUATOR NOTE: MOV-1RC-557B and C are closed and de-energized.	
		COMMENTS:	
4.C	Depressurize the excess letdown line.	4.1	Candidate observes [PI-1CH-138].
		4.2.C	Candidate slowly increases setting of controller for [FCV-1CH-137] until [PI-1CH-138] stabilizes and then returns control to 0%.
		COMMENTS:	

NUMBER	TITLE
1CR-N01	SECURE EXCESS LETDOWN

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
5.	Close Excess Letdown HX Inlet Isolation Valve.	5.1	Candidate locates the control switch for [MOV-1CH-201].
		5.2	Candidate takes control switch for [MOV-1CH-201] to the CLOSE position.
		5.3	Candidate verifies [MOV-1CH-201] closed by verifying the red indicating light is off and the green indicating light is on.
			_____
			COMMENTS:
6.	Align excess letdown to the VCT.	6.1	Candidate locates the control switch for [HCV-1CH-389].
		6.2	Candidate verifies control switch for [HCV-1CH-389] in the VCT position.
			_____
			COMMENTS:

NUMBER	TITLE
1CR-N01	SECURE EXCESS LETDOWN

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
7.	Remove power for Loop Drain Line Stop Valves.	7.1	Candidate requests local operator to place 480 VAC power supply switches for [MOV-1RC-557A, 557B, AND 557C] in the OFF position.
			EVALUATOR CUE: Local control switches have been placed in the OFF position.
			_____ _____
			COMMENTS:
8.	Adjust RCP seal flow.	8.1	Candidate locates and observes [FI-1CH-130, 127, and 124].

NUMBER	TITLE
1CR-N01	SECURE EXCESS LETDOWN

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	8.2 Candidate locates and adjusts controller for [HCV-1CH-186] as necessary until 6 - 9 gpm is indicated on [FI-1CH-130, 127, and 124]. _____ COMMENTS:
9. Inform supervisor that excess letdown has been secured.	9. Candidate informs supervisor that excess letdown has been secured. _____ COMMENTS: STOP TIME _____

JPM QUESTION #1

Explain the effect that a Safety Injection Actuation would have on excess letdown operation. (Assume excess letdown is aligned to the VCT and all systems are NSA except normal letdown, which is isolated.)

OPEN REFERENCE

ANSWER:

[SI would cause a CIA which causes] the RCP seal water return containment isolation valves, MOV-1CH-378 and 381 to close, isolating excess letdown. [which would be directed to the PRT via the seal return line relief valve, RV-1CH-382A.]

Time Allotted: 5 minutes

KA #: 004 K1.25 /3.2

Objective: LP-SQS-7.1 OBJ-5

Reference: OM Figure 7.4
OM-1, Table 1.4

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

Explain the effect that a Safety Injection Actuation would have on excess letdown operation. (Assume excess letdown is aligned to the VCT and all systems are NSA except normal letdown, which is isolated.)

JPM QUESTION #2

What action would be required if, during MODE 4 operation, heat tracing was lost on the piping on the outlets of the boric acid tanks resulting in piping temperature reading of 62°F? (Assume both boric acid tanks are affected and auxiliary building ambient air temperature is 59°F.)

OPEN REFERENCE

ANSWER:

Restore to operable status within 72 hours or be borated to a shutdown margin equivalent to at least 1% ΔK/K within the next 6 hours; restore the flowpath to operable status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

Time Allotted: 5 minutes

KA #: 004 K6.10 /3.1

Objective: LP-SQS-7.1 OBJ-12
Reference: T.S. 3.1.2.2

Comments: _____
_____
_____
_____
_____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

What action would be required if, during MODE 4 operation, heat tracing was lost on the piping on the outlets of the boric acid tanks resulting in piping temperature reading of 62°F? (Assume both boric acid tanks are affected and auxiliary building ambient air temperature is 59°F.)

RTL #A5.640E

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

OJT CHECKLIST/JPM COVER PAGE

PROGRAM TITLE: Licensed Operator Training

SUBDIVISION: On-the-Job Training

OJT CHECKLIST/JPM TITLE: Depressurize RCS to Backfill

JPM NO.: 1CR-N02

COMPUTER CODE: N/A

Revision No.	Date

Revision No.	Date

PREPARED BY: _____ DATE: _____

APPROVED FOR IMPLEMENTATION: _____ DATE: _____
Director, Operations Training,
or Designee

RTL #A5.640E

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

LESSON PLAN AND OJT REVISION APPROVAL SHEET

DOCUMENT TITLE:1CR-N02, Depressurize RCS to Backfill

Revision No.	Brief Description	Revised by:	Approval Signature	Approval Date

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1CR-N02 Rev: 0 System #: 010 Faulted: ☒
JPM Title: Depressurize RCS to Backfill

K/A Reference: 010 A4.03 / 3.8 Task ID #:3010040601

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☒ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT Time (minutes)
☐ UNSAT* Allotted: 10 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	5	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Depressurize RCS to Backfill

INITIAL CONDITIONS:	A steam generator tube rupture has occurred on the 1C SG, resulting in a reactor trip and safety injection, E-3, Steam Generator Tube Rupture, has been completed and ES-3.1, Post SGTR Cooldown Using Backfill, is in progress.

INIT. CUE:	Your supervisor directs you to depressurize the RCS to backfill from the ruptured SG by performing ES-3.1, step 9.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1CR-N02
JPM TITLE:	Depressurize RCS to Backfill
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to simulate (perform) the task Depressurize RCS to Backfill.
INIT. CONDITIONS:	A steam generator tube rupture has occurred on the 1C SG, resulting in a reactor trip and safety injection, E-3, Steam Generator Tube Rupture, has been completed and ES-3.1, Post SGTR Cooldown Using Backfill, is in progress.
TASK STAN.:	Backfill initiated in accordance with ES-3.1, step 9.
INIT. CUE:	Your supervisor directs you to depressurize the RCS to backfill from the ruptured SG by performing ES-3.1, step 9.
REFERENCES:	1OM-53A.1.ES-3.1, Issue 1B, Rev. 4
TOOLS:	NONE
HANDOUT:	1OM-53A.1.ES-3.1, Post SGTR Cooldown Using Backfill.

NUMBER	TITLE
1CR-N02	Depressurize RCS to Backfill

STEP		STANDARD	
("C" denotes critical step)		(Indicate "S" for Sat. or "U" for Unsat.)	
		Evaluator Setup: -Initialize Simulator to IC #73. Run File JPM2 [OVR PO6049D=1] [OVR PO6049C=2]	
		START TIME: _____	
1.	Use Pressurizer Spray Valves.	1.1	Candidate determines that RCPs are not running (normal spray valves are not available.).
		COMMENTS:	
2.C	Use auxiliary spray.	2.1	Candidate locates control switch for MOV-1CH-311.
		2.2	Candidate places control switch for MOV-1CH-311 in the OPEN position.

NUMBER	TITLE
1CR-N02	Depressurize RCS to Backfill

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		2.3.C	Candidate determines that MOV-1CH-311 failed to open.
			_____
		COMMENTS:	
3.C	Use Pressurizer PORV.	3.1	Candidate locates the control switch for [PCV-1RC-455C, 455D, or 456].
		3.2.C	Candidate takes control switch for [PCV-1RC-455C, 455D, or 456] to the OPEN position.
		3.3	Candidate verifies [PCV-1RC-455C, 455D, or 456] open by verifying the red indicating light is on and the green indicating light is off and RCS pressure decreasing.
			_____
		COMMENTS:	
4.	Turn on Pressurizer Heaters.	4.1	Candidate locates the control switches for Pressurizer Heaters.

NUMBER	TITLE
1CR-N02	Depressurize RCS to Backfill

STEP		STANDARD	
("C" denotes critical step)		(Indicate "S" for Sat. or "U" for Unsat.)	
		4.2	Candidate takes control switches for Pressurizer Heaters to the ON position.
		4.3	Candidate verifies heaters energized by verifying the red indicating lights are on.
		COMMENTS:	
5.C	Maintain RCS subcooling.	5.1	Candidate determines the RCS subcooling requirement of Attachment 6A.
		EVALUATOR NOTE: Candidate should have performed action prior to opening PORV.	
		5.2	Candidate monitors ICCM to determine RCS subcooling.

NUMBER	TITLE
1CR-N02	Depressurize RCS to Backfill

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)
	5.3.C Candidate closes [PCV-1RC-455C, 455D, or 456] such that subcooling is maintained greater than requirement of attachment 6A. _____ COMMENTS:
	EVALUATOR NOTE: Closing the PORV the first time completes the JPM.
	STOP TIME _____

JPM QUESTION #1

What additional precaution is required during backfill operation when no RCPs are running?

OPEN REFERENCE

ANSWER:

It is necessary to start a RCP in an unaffected loop prior to starting the RCP in the affected loop.

Time Allotted: 5 minutes

KA #: EPE 038 EK1.03 /4.2

Objective: LP-SQS-53.3 OBJ-4
Reference: OM 53B.4.ES-3.1

Comments: _____

BVPS JOB PERFORMANCE MEASURE

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

What additional precaution is required during backfill operation when no RCPs are running?

JPM QUESTION #2

Explain the adverse affects that could occur if, during backfill operations, the ruptured steam generator level were to be lowered below the minimum allowed value.

OPEN REFERENCE

ANSWER:

If level is lowered to below the tops of the tubes, the cooler RCS water could rapidly collapse the stagnant steam bubble in the ruptured SG. This would cause SG pressure to drop and break flow to increase.

Time Allotted: 5 minutes

KA #: EPE 038 EK3.06 / 4.5

Objective: LP-SQS-53.3 OBJ - 3
Reference: OM 53B.4.ES-3.1

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

Explain the adverse affects that could occur if, during backfill operations, the ruptured steam generator level were to be lowered below the minimum allowed value.

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

OJT CHECKLIST/JPM COVER PAGE

PROGRAM TITLE: Licensed Operator Training

SUBDIVISION: On-the-Job Training

OJT CHECKLIST/JPM TITLE: Establish RHR System Flow

JPM NO.: 1CR-062

COMPUTER CODE: N/A

Revision No.	Date

Revision No.	Date

PREPARED BY: _____ DATE: _____

APPROVED FOR IMPLEMENTATION: _____ DATE: _____
Director, Operations Training, or Designee

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

LESSON PLAN AND OJT REVISION APPROVAL SHEET

DOCUMENT TITLE: 1CR-062, Establish RHR System Flow

Revision No.	Brief Description	Revised by:	Approval Signature	Approval Date

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1CR-062 Rev: 9 System #: 005 Faulted: ☐
JPM Title: Establish RHR System Flow

K/A Reference: 005 A4.01 /3.4 Task ID #:0050030101

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☒ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT ☐ UNSAT*

Time (minutes) Allotted: 20 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	5	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____
Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Establish RHR System Flow

INITIAL CONDITIONS:	Plant pressure is approximately 350 psig; plant temperature is approximately 325°F; RHR system startup checks have been completed through step D. of 1OM-4.A,Residual Heat Removal System Startup (Plant Cooldown)and operation.

INIT. CUE:	Your supervisor directs that you establish an RCS cooldown using both RHR pumps by completing steps E.1 through E.8 of 1OM-4.A.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1CR-062
JPM TITLE:	Establish RHR System Flow
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to perform the task Establish RHR System Flow.
INIT. CONDITIONS:	Plant pressure is approximately 350 psig; plant temperature is approximately 325°F; RHR system startup checks have been completed through step D. of 1OM-4.A,Residual Heat Removal System Startup (Plant Cooldown)and operation.
TASK STAN.:	Both RHR pumps in operation with flow established through the RHR heat exchangers and RCS cooldown established.
INIT. CUE:	Your supervisor directs that you establish an RCS cooldown using both RHR pumps by completing steps E.1 through E.8 of 1OM-4.A.
REFERENCES:	1OM-10.4.A, Issue 4, Revision 10
TOOLS:	NONE
HANDOUT:	1OM-4.A,Residual Heat Removal System Startup (Plant Cooldown)and operation

NUMBER	TITLE
1CR-062	Establish RHR Flow

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		Evaluator Setup: -Initialize Simulator to IC 76. Remove yellow tags from BB-A and ensure RHR recorder is energized.	
		START TIME: _____	
		Candidate locates and reviews 1OM-10.4.A.	
		EVALUATOR CUE: Provide candidate with prepared copy of 1OM-10.4.A.	
1.C	Open RHS Loop Stop Valves.	1.	Candidate locates control switch for MOV-1RH-720A.
		1.2.C	Candidate places control switch for MOV-1RH-720A in the OPEN position.
		1.3	Candidate verifies MOV-1RH-720A in the open position by verifying the red light is lit and the green light is dark.
		1.4	Candidate locates control switch for MOV-1RH-720B.
		1.5.C	Candidate places control switch for MOV-1RH-720B in the OPEN position.

NUMBER	TITLE
1CR-062	Establish RHR Flow

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	1.6 Candidate verifies MOV-1RH-720B in the open position by verifying the red light is lit and the green light is dark. COMMENTS:
	EVALUATOR CUE: It is not necessary to perform 1OST-10.1 at this time.
2.C Start the 1A RHR pump.	2.1 Candidate locates the control switch for 1RH-P-1A. 2.2.C Candidate places the control switch for 1RH-P-1A in the START position. 2.3 Candidate verifies 1RH-1P-1A started by observing pump amps and breaker indicating lights. COMMENTS:

NUMBER	TITLE
1CR-062	Establish RHR Flow

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)

		1.6	Candidate verifies MOV-1RH-720B in the open position by verifying the red light is lit and the green light is dark. _____ COMMENTS:
			EVALUATOR CUE: It is not necessary to perform 1OST-10.1 at this time.
2.C	Start the 1A RHR pump.	2.1	Candidate locates the control switch for 1RH-P-1A.
		2.2.C	Candidate places the control switch for 1RH-P-1A in the START position.
		2.3	Candidate verifies 1RH-P-1A started by observing pump amps and breaker indicating lights. _____ COMMENTS:

NUMBER	TITLE
1CR-062	Establish RHR Flow

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
5.C	Slowly adjust RHR HX Bypass Flow Control Valve.	5.1	Candidate locates controller for MOV-1RH-605.
		5.2.C	Candidate slowly adjusts output until 7300-8000 gpm is indicated on FI-1RH-605.
		EVALUATOR NOTE: Candidate may adjust flow controller in MANUAL or AUTO at this time.	
		COMMENTS:	
6.C	Open RHR HX Flow Control Valve to initiate cooldown.	6.1.	Candidate locates controller for MOV-1RH-758.
		6.1.C	Candidate slowly opens MOV-1RH-758 while observing temperature change on TR-1RH-604.
		EVALUATOR NOTE: After flow has been initiated, inform candidate that a 40°F/hr cooldown rate has been established.	

NUMBER	TITLE
1CR-062	Establish RHR Flow

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
7. Inform supervisor that RHR flow has been established.	7.1 Candidate informs supervisor that RHR flow has been established. _____ COMMENTS: STOP TIME _____

JPM QUESTION #1

Assume the "Heat Exchanger Bypass Valve", MOV-1RH-605 is operating in manual. Explain how MOV-1RH-605 would have to be adjusted if the cooldown rate of the RCS was increased using RHR flow.

CLOSED REFERENCE

ANSWER:

As the operator increase cooldown rate by opening the heat exchanger outlet valve, MOV-1RH-758, MOV-1RH-605 will need to throttled to maintain total system flow constant.

Time Allotted: 5 minutes

KA #: 005 A1.02 / 3.4

Objective: LP-SQS-10.1 OBJ-5
Reference: OM-10.1.C

Comments: _____

BVPS JOB PERFORMANCE MEASURE

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

Assume the "Heat Exchanger Bypass Valve", MOV-1RH-605 is operating in manual. Explain how MOV-1RH-605 would have to be adjusted if the cooldown rate of the RCS was increased using RHR flow.

JPM QUESTION #2

A loss of all RHR flow has occurred 12 days following plant shutdown. What is the expected boiloff rate of the RCS due to decay heat?

OPEN REFERENCE

ANSWER:

43 - 47 gpm

Time Allotted: 5 minutes

KA #: APE 025 AA1.02 3.9

Objective: LP-SQS-10.1 OBJ-9
Reference: AOP 1.10.1 Attachment 3

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

A loss of all RHR flow has occurred 12 days following plant shutdown. What is the expected boiloff rate of the RCS due to decay heat?

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

OJT CHECKLIST/JPM COVER PAGE

PROGRAM TITLE: Licensed Operator Training

SUBDIVISION: On-the-Job Training

OJT CHECKLIST/JPM TITLE: Verify Containment Spray

JPM NO.: 1CR-N03

COMPUTER CODE: N/A

Revision No.	Date

Revision No.	Date

PREPARED BY: _____ DATE: _____

APPROVED FOR IMPLEMENTATION: _____ DATE: _____
Director, Operations Training,
or Designee

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

LESSON PLAN AND OJT REVISION APPROVAL SHEET

DOCUMENT TITLE:1CR-N03, Verify Containment Spray

Revision No.	Brief Description	Revised by:	Approval Signature	Approval Date

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1CR-N03 Rev: 0 System #: 026 Faulted: ☒
JPM Title: Verify Containment Spray

K/A Reference: 026 A4.01 / 4.3 Task ID #:3010010601

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
☐ Perform
☐ Simulate

LOCATION
☐ Plant Site
☒ Simulator
☐ Classroom

TYPE
☐ Training
☐ Annual Requal. Exam
☐ OJT
☒ Initial Operator Exam
☐ Other: _____

Administered By:
☐ BV-T
☐ NRC
☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT Time (minutes)
☐ UNSAT* Allotted: 15 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	5	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Verify Containment Spray

INITIAL CONDITIONS:	A major transient has occurred resulting in a reactor trip and safety injection. EOP E-0, Reactor Trip or Safety Injection, is in progress at this time. Prior to the transient, the plant was operating at 100% power with all systems in NSA.

INIT. CUE:	Your supervisor directs you to perform step 15 of E-0, Reactor Trip or Safety Injection.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1CR-N03
JPM TITLE:	Verify Containment Spray
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to simulate (perform) the task Verify Containment Spray.
INIT. CONDITIONS:	A major transient has occurred resulting in a reactor trip and safety injection. EOP E-0, Reactor Trip or Safety Injection, is in progress at this time. Prior to the transient, the plant was operating at 100% power with all systems in NSA.
TASK STAN.:	Containment Isolation Phase B and Containment Spray manually aligned in accordance with E-0.
INIT. CUE:	Your supervisor directs you to perform step 15 of E-0, Reactor Trip or Safety Injection.
REFERENCES:	1OM-53A.1.E-0, Issue 1B, Rev. 5 1OM-53A.1.1-E, Issue 1B, Rev. 3
TOOLS:	NONE
HANDOUT:	1OM-53A.1.E-0, Reactor Trip or Safety Injection.

NUMBER	TITLE
1CR-N03	VERIFY CONTAINMENT SPRAY

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	Evaluator Setup: -Initialize Simulator to IC 82. Do NOT run SIMIC File NOCIB [OVR] [P01008A=2] [P01009A=2] [P01011A=2] [P01013A=2]
	START TIME: _____ Candidate locates and reviews E-0, Reactor Trip or Safety Injection.
	EVALUATOR CUE: Provide candidate with prepared copy of E-0.
1. Check CIB and Containment Spray Status.	1.1 Candidate locates annunciator A1-72 "CONTAINMENT ISOLATION PHASE B" and verifies that it is not lit.. 1.2 Candidate locates [PR-1LM-100A] and determines that it is indicating > 8 psig. _____ COMMENTS:

NUMBER	TITLE
1CR-N03	VERIFY CONTAINMENT SPRAY

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

2.	Verify CIB initiated.	2.1	Candidate locates and evaluates indicating lights with BLUE CIB mark and determines that they are not lit.
			_____
			COMMENTS:
3.	Manually initiate CIB.	3.1	Candidate locates CIB pushbuttons.
		3.2.C	Candidate depresses both CIB pushbuttons for each train.
		3.3	Candidate locates and evaluates indicating lights with BLUE CIB mark and determines that they are not lit.
			_____
			COMMENTS:
			EVALUATOR CUE: When candidate begins to re-align equipment inform him: "Your supervisor directs you to use EOP Attachment 1-E when performing manual alignment. Provide candidate with copy of 1OM-53A.1.1-E.

NUMBER	TITLE
1CR-N03	VERIFY CONTAINMENT SPRAY

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

4.	Manually Align Equipment.	4.1.C	Candidate locates control switch for TV-1CC-103A and takes it to the close position.
		4.2	Candidate verifies TV-1CC-103A is closed by verifying the red indicating light is out and the green indicating light is lit.
		4.3.C	Candidate locates control switch for TV-1CC-105E2 and takes it to the close position.
		4.4	Candidate verifies TV-1CC-105E2 is closed by verifying the red indicating light is out and the green indicating light is lit.
		4.5.C	Candidate locates control switch for TV-1CC-107E2 and takes it to the close position.
		4.6	Candidate verifies TV-1CC-107E2 is closed by verifying the red indicating light is out and the green indicating light is lit.
		4.7.C	Candidate locates control switch for TV-1CC-110E2 and takes it to the close position.
		4.8	Candidate verifies TV-1CC-110E2 is closed by verifying the red indicating light is out and the green indicating light is lit.
		4.9.C	Candidate locates control switch for TV-1CC-110F2 and takes it to the close position.

NUMBER	TITLE
1CR-N03	VERIFY CONTAINMENT SPRAY

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
	4.10	Candidate verifies TV-1CC-110F2 is closed by verifying the red indicating light is out and the green indicating light is lit.
	4.11.C	Candidate locates control switch for TV-1CC-103B and takes it to the close position.
	4.12	Candidate verifies TV-1CC-103B is closed by verifying the red indicating light is out and the green indicating light is lit.
	4.13.C	Candidate locates control switch for TV-1CC-105D2 and takes it to the close position.
	4.14	Candidate verifies TV-1CC-105D2 is closed by verifying the red indicating light is out and the green indicating light is lit.
	4.15.C	Candidate locates control switch for TV-1CC-107D2 and takes it to the close position.
	4.16	Candidate verifies TV-1CC-107D2 is closed by verifying the red indicating light is out and the green indicating light is lit.
	4.17.C	Candidate locates control switch for TV-1CC-110F1 and takes it to the close position.
	4.18	Candidate verifies TV-1CC-110F1 is closed by verifying the red indicating light is out and the green indicating light is lit.

NUMBER	TITLE
1CR-N03	VERIFY CONTAINMENT SPRAY

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
	4.19.C	Candidate locates control switch for TV-1CC-103C and takes it to the close position.
	4.20	Candidate verifies TV-1CC-103C is closed by verifying the red indicating light is out and the green indicating light is lit.
	4.21.C	Candidate locates control switch for TV-1CC-111A1 and takes it to the close position.
	4.22	Candidate verifies TV-1CC-111A1 is closed by verifying the red indicating light is out and the green indicating light is lit.
	4.23.C	Candidate locates control switch for TV-1CC-111D2 and takes it to the close position.
	4.24	Candidate verifies TV-1CC-111D2 is closed by verifying the red indicating light is out and the green indicating light is lit.
	4.25.C	Candidate locates control switch for TV-1CC-100A and takes it to the close position.
	4.26	Candidate verifies TV-1CC-100A is closed by verifying the red indicating light is out and the green indicating light is lit.
	4.27.C	Candidate locates control switch for TV-1CC-103A1 and takes it to the close position.

NUMBER	TITLE
1CR-N03	VERIFY CONTAINMENT SPRAY

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

	4.28	Candidate verifies TV-1CC-103A1 is closed by verifying the red indicating light is out and the green indicating light is lit.
	4.29.C	Candidate locates control switch for TV-1CC-105E1 and takes it to the close position.
	4.30	Candidate verifies TV-1CC-105E1 is closed by verifying the red indicating light is out and the green indicating light is lit.
	EVALUATOR CUE: Inform candidate that another operator will be performing the rest of the alignment. This completes the JPM.	
	COMMENTS:	
	STOP TIME _____	

JPM QUESTION #1

Describe the flow path that would be used to supply the suction of the HHSI pumps if the LHSI were to fail during the Recirculation phase following a Loss of Coolant Accident

OPEN REFERENCE

ANSWER:

The outside recirc spray pumps would be aligned through RS-157, 158, 159 & 160 to SI-MOV563A and SI MOV563B to supply the HHSI pump suctions. [Valve numbers are not required. Candidate may trace flow path on drawing or simply explain]

Time Allotted: 5 minutes

KA #: 026 K1.01 /4.2

Objective: LP-SQS-53.3 OBJ-6
Reference: OM Figure 48-100 or 1OM-53A.1.1-J, Issue B, Rev 3.

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

Describe the flow path that would be used to supply the suction of the HHSI pumps if the LHSI were to fail during the Recirculation phase following a Loss of Coolant Accident

JPM QUESTION #2

Assume that a large break LOCA has occurred resulting in a reactor trip, SI, CIA and CIB. Explain which automatic actions would not occur if upon receipt of the RWST Low-Low level signal, the Cut Back Control Valve MOV-1QS-103A failed to close?

OPEN REFERENCE

ANSWER:

Chemical Injection Pump 1QS-P-4C would not stop as intended on Low-Low RWST level.

[Note, the purpose of the question is to force candidate to reference logic diagram or OM.]

Time Allotted: 5 minutes

KA #: 026 K4.08 4.3

Objective: LP-SQS-13.1 OBJ-5
Reference: Dwg No. 8700-LSK-29-4D or 1OM-13.1.D, ISS 4, Rev. 1

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

Assume that a large break LOCA has occurred resulting in a reactor trip, SI, CIA and CIB. Explain how the automatic operation of the quench and recirc spray systems would be affected if, upon receipt of the RWST Low-Low level signal, Cut Back Control Valve MOV-1QS-103A failed to close?

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

OJT CHECKLIST/JPM COVER PAGE

PROGRAM TITLE: Licensed Operator Training

SUBDIVISION: On-the-Job Trainirg

OJT CHECKLIST/JPM TITLE: Perform a Hot Bus Transfer

JPM NO.: 1CR-023

COMPUTER CODE: N/A

Revision No.	Date

Revision No.	Date

PREPARED BY: _____ DATE: _____

APPROVED FOR IMPLEMENTATION: _____ DATE: _____
Director, Operations Training, or Designee

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

LESSON PLAN AND OJT REVISION APPROVAL SHEET

DOCUMENT TITLE: 1CR-023, Perform a Hot Bus Transfer

Revision No.	Brief Description	Revised by:	Approval Signature	Approval Date

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1CR-023 Rev: 7 System #: 062 Faulted: ☐
JPM Title: Perform a Hot Bus Transfer

K/A Reference: 006 A4.01 /3.1 Task ID #:062AAA0101

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☒ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT ☐ UNSAT*

Time (minutes) Allotted: 20 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	5	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Perform a Hot Bus Transfer

INITIAL CONDITIONS:	The 4KV Busses are being transferred to the System Station Service Transformers in preparation for plant shutdown.

INIT. CUE:	Your supervisor directs you to transfer 4KV Bus 1D to the System Station Service Transformer using 1OM-36.4.B, 4KV Station Service System Shutdown.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

KIL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1CR-023
JPM TITLE:	Perform a Hot Bus Transfer
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to perform the task Perform a Hot Bus Transfer.
INIT. CONDITIONS:	The 4KV Busses are being transferred to the System Station Service Transformers in preparation for plant shutdown.
TASK STAN.:	4KV Bus 1D transferred to the System Station Service Transformer in accordance with 1OM-36.4.B, 4KV Station Service System Shutdown.
INIT. CUE:	Your supervisor directs you to transfer 4KV Bus 1D to the System Station Service Transformer using 1OM-36.4.B, 4KV Station Service System Shutdown.
REFERENCES:	1OM-36.4.B, Issue 4, Rev. 2
TOOLS:	NONE
HANDOUT:	1OM-36.4.B, 4KV Station Service System Shutdown

NUMBER	TITLE
1CR-023	Perform a Hot Bus Transfer

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	Evaluator Setup: -Initialize Simulator to IC #79.
	START TIME: _____
1. Candidate locates procedure and step.	Evaluator Cue: Provide candidate with copy 1OM-36.4.B.
	1.1 Candidate locates 1OM-36.4.B step A.4
	_____
	COMMENTS:
2. Monitor USST 1D voltages.	2.1 Candidate locates 4KV Bus 1D voltmeter.
	2.2 Candidate locates 4KV Bus D Selector Switch.

NUMBER	TITLE
1CR-023	Perform a Hot Bus Transfer

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	2.3 Candidate turns bus 4KV Bus 1D Selector Switch as necessary while monitoring USST voltages. COMMENTS:
3. Monitor SSST 1B voltages.	3.1 Candidate locates 4KV common voltmeter. 3.2 Candidate locates SSST 1B Selector Switch. 3.3 Candidate turns bus 4KV Bus 1D Selector Switch as necessary while monitoring SSST voltages. COMMENTS: Evaluator Note: Candidate may opt to adjust voltage using Lower Raise & Auto switch on VB-C. This not required, but may be performed.

NUMBER	TITLE
1CR-023	Perform a Hot Bus Transfer

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
4.	Check Live Bus Transfer Switch in ON position.	4.1	Candidate locates Live Bus Transfer Switch.
		4.2	Candidate verifies Live Bus Transfer Switch in ON position.
			_____
		COMMENTS:	
5.C	Close 4KV ACB 341B.	5.1	Candidate locates control switch for ACB 341B.
		5.2.C	Candidate places control switch for ACB 341 in the CLOSE position.
			_____
		COMMENTS:	
6.C	Open ACB 341D.	6.1	Candidate locates 4KV Bus 1D Transformer 1B ammeter.
		6.2	Candidate verifies ammeter deflects to indicate load is being transferred.

NUMBER	TITLE
1CR-023	Perform a Hot Bus Transfer

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)

		6.3	Candidate locates control swith for ACB 341D.
		6.4.C	Candidate places control switch for ACB 341D in the TRIP position.
			_____
			COMMENTS:
			Evaluator Cue: No other busses are being transferred.
7.C	Place Live Bus Transfer Switch in the OFF position.	7.1	Candidate locates Live Bus Transfer Switch.
		7.2.C	Candidate places the Live Bus Transfer Switch in the OFF position.
			_____
			COMMENTS:
8.C	Verify Bus 1D 4160V Lower Raise and Auto Switch in Auto Position.	8.1	Candidate locates Bus 1D 4160V Lower Raise and Auto Switch.

NUMBER	TITLE
1CR-023	Perform a Hot Bus Transfer

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		8.2.C	Candidate checks or places the Bus 1D 4160V Lower Raise and Auto Switch in Auto (pull out) Position. _____ COMMENTS:
		EVALUATOR NOTE: The canidate may check voltages prior to reporting completion of the JPM.	
9.	Report that bus transfer is complete.	9.1	Candidate reports to supervisor that Bus 1D transfer is complete. _____ COMMENTS: STOP TIME _____

JPM QUESTION #1

Explain why the loss of each of the 4 KV loads supplied by 4KV Bus 1B would or would not lead to a reactor trip, with the plant operating at 100% full power. Assume all systems are in the Normal System Alignment (NSA) prior to the loss of each load and that no operators actions are taken.

OPEN REFERENCE

ANSWER:

Loss of FW-P-1A would cause reactor trip due to loss of feed.

Loss of CN-P-1A would cause reactor trip due to loss of feed.

Loss of RC-P-1B would cause reactor trip on low flow.

Loss of CT-P-1B could cause turbine trip on low vacuum. This could cause the reactor to trip.

Time Allotted: 5 minutes

KA #: 062 K2.01 / 3.4

Objective: LP-SQS-36.1
Reference: OM Figure 36.6

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

Explain why the loss of each of the 4 KV loads supplied by 4KV Bus 1B would or would not lead to a reactor trip, with the plant operating at 100% full power. Assume all systems are in the Normal System Alignment (NSA) prior to the loss of each load and that no operators actions are taken.

JPM QUESTION #2

Explain how to defeat the Bus 1AE undervoltage (UV) trip when performing actions to establish power to Bus 1AE from the BV-2 cross-tie during a station blackout.

OPEN REFERENCE

ANSWER:

The undervoltage trip is defeated by removing 125 VDC control power. [Opening breaker in cubicle E8A].

Time Allotted: 5 minutes

KA #: 062 A2.05 / 3.3

Objective: LP-SQS-36.1 OBJ-3.c
Reference: 1OM-53A.1.2-M-A3, ISS 1B, REV 2

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

Explain how to defeat the Bus 1AE undervoltage (UV) trip when performing actions to establish power to Bus 1AE from the BV-2 cross-tie during a station blackout.

RTL #A5.640E

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

OJT CHECKLIST/JPM COVER PAGE

PROGRAM TITLE: Licensed Operator Training

SUBDIVISION: On-the-Job Training

OJT CHECKLIST/JPM TITLE: Respond to Feed Control Failure

JPM NO.: 1CR-N04

COMPUTER CODE: N/A

Revision No.	Date

Revision No.	Date

PREPARED BY: _____ DATE: _____

APPROVED FOR
IMPLEMENTATION: _____ DATE: _____
Director, Operations Training,
or Designee

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

LESSON PLAN AND OJT REVISION APPROVAL SHEET

DOCUMENT TITLE:1CR-N04, Respond to Feed Control Failure

Revision No.	Brief Description	Revised by:	Approval Signature	Approval Date

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1CR-N04 Rev: 0 System #: 016 Faulted: ☐
JPM Title: Respond to Feed Control Failure

K/A Reference: 016 A2.01 / 3.1 Task ID #:0590070101

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☒ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT ☐ UNSAT*

Time (minutes) Allotted: 15 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	Results UNSAT*
Question #1	_____	5	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Respond to Feed Control Failure

INITIAL CONDITIONS:	An event has occurred which has resulted in multiple annunciators associated with the feed water control system. Prior to the event, the plant was operating at 100% power with all systems in NSA.

INIT. CUE:	Your supervisor directs you to evaluate the annunciators and existing plant condition in order to determine and implement the appropriate corrective actions.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1CR-N04
JPM TITLE:	Respond to Feed Control Failure
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to simulate (perform) the task Respond to Feed Control Failure.
INIT. CONDITIONS:	An event has occurred which has resulted in multiple annunciators associated with the feed water control system. Prior to the event, the plant was operating at 100% power with all systems in NSA.
TASK STAN.:	Actions taken for instrument failure in accordance with 1OM-24.4.IF.
INIT. CUE:	Your supervisor directs you to evaluate the annunciators and existing plant condition in order to determine and implement the appropriate corrective actions.
REFERENCES:	1OM-24.4.IF, Issue 4, Revision 2
TOOLS:	NONE
HANDOUT:	1OM-24.4.IF, Instrument Failure Procedure, Attachment 2.

NUMBER	TITLE
1CR-N04	RESPOND TO FEED CONTROL FAILURE

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	Evaluator Setup: -Initialize Simulator to IC 74. Immediately place the simulator in Freeze.
	START TIME: _____
	EVALUATOR CUE: Your supervisor directs you to evaluate annunciators and control board indications and to take the appropriate actions. "Inform me when your are ready to begin taking action.
1. Evaluate plant conditions.	1.1 Candidate observes annunciators, SG level, feed flow, and steam flow indications.
	1.2 Candidate diagnoses feedwater flow transmitter failure.
	EVALUATOR NOTE: Candidate may review various annunciator response procedures or proceed directly to the Instrument Failure procedure.
	EVALUATOR NOTE: When candidate indicates that he/she is ready to begin, place the simulator in Run.
	_____
	COMMENTS:

NUMBER	TITLE
1CR-N04	RESPOND TO FEED CONTROL FAILURE

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
2.	Identify failed channel.	2.1	Candidate identifies FT-1FW-486 as the failed low (and controlling) channel. COMMENTS:
3.C	Take manual control of feed regulating valve and stabilize generator level.	3.1	Candidate locates controller for FCV-1FW-488.
		3.2.C	Candidate transfers controller for FCV-1FW-488 to manual.
		3.3.C	Candidate adjusts controller for FCV-1FW-488 as necessary to stabilize steam generator. COMMENTS:
			EVALUATOR CUE: Your supervisor directs you to perform the appropriate section of 1OM-24.4.IF, Instrument Failure. Provide candidate with 1OM-24.4.IF.

NUMBER	TITLE
1CR-N04	RESPOND TO FEED CONTROL FAILURE

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
4. Select redundant flow transmitter.	4.1 Candidate locates the 1B Feed Flow Signal Sel. Switch. 4.2.C Candidate selects the FM-486 position on the 1B Feed Flow Signal Sel. Switch. _____ COMMENTS:
5.C Restore SG level to normal.	5.1.C Candidate adjusts controller for FCV-1FW-488 as necessary to restore level to normal range. _____ COMMENTS:
6. Return feed control to automatic.	6.1 Candidate verifies level restored to normal and transfers FCV-1FW-488 to automatic. _____ COMMENTS:

NUMBER	TITLE
1CR-N04	RESPOND TO FEED CONTROL FAILURE

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
7. Trip appropriate bistables.	7.1 Candidate requests that BS-488A and 488D be tripped. EVALUATOR CUE: Inform candidate that bistables have been tripped as requested. _____ COMMENTS:
8. Report that corrective actions are complete.	8.1 Candidate reports that corrective actions are complete. _____ COMMENTS: STOP TIME _____

JPM QUESTION #1

List the automatic actions which would have occurred if operator actions not been initiated in response to the failure which just occurred.

CLOSED REFERENCE

ANSWER:

[At 75% level]
- o Main turbine trip.
- o Feedwater Isolation
  - [o Main feed pumps trip.]
  - [o Feed Valves close]
- o [Reactor Trip [due to turbine trip above P-9]]

Time Allotted: 5 minutes

KA #: 035 A2.04 / 3.8

Objective: LP-SQS-24.1 OBJ-5
Reference: 1OM-24.4.AAX

Comments: _____
_____
_____
_____
_____

BVPS JOB PERFORMANCE MEASURE

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

List the automatic actions which would have occurred if operator actions not been initiated in response to the failure which just occurred.

JPM QUESTION #2

Assume the 1A steam generator narrow range levels are indicating 50%. What is the expected wide range level:

A. At no load Tavg?

B. At 150°F?

OPEN REFERENCE

ANSWER:

A. 64% - 68%

B. 84% - 88%

Time Allotted: 5 minutes

KA #: 016 A3.02 / 2.9

Objective: 1/2 LP-ATA-5 OBJ-2i
Reference: OM Figure 24-18

Comments: _____
_____
_____
_____
_____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

Assume the 1A steam generator narrow range levels are indicating 50%. What is the expected wide range level:

A. At no load Tavg?

B. At 150°F?

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

OJT CHECKLIST/JPM COVER PAGE

PROGRAM TITLE: Licensed Operator Training

SUBDIVISION: On-the-Job Training

OJT CHECKLIST/JPM TITLE: Place Diesel Air Compressor in Service

JPM NO.: 1PL-N01

COMPUTER CODE: N/A

Revision No.	Date

Revision No.	Date

PREPARED BY: _____ DATE: _____

APPROVED FOR IMPLEMENTATION: _____ DATE: _____
Director, Operations Training, or Designee

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

LESSON PLAN AND OJT REVISION APPROVAL SHEET

DOCUMENT TITLE:1PL-N01, Place Diesel Air Compressor in Service

Revision No.	Brief Description	Revised by:	Approval Signature	Approval Date

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1PL-N01 Rev: 0 System #: 079 Faulted: ☐
JPM Title: Place Diesel Air Compressor in Service

K/A Reference: 2.1.20 / 4.2 Task ID #:790020101

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☒ Plant Site
- ☐ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT Time (minutes)
☐ UNSAT* Allotted: 20 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	5	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Place Diesel Air Compressor in Service

INITIAL CONDITIONS:	A loss of electrical power has occurred, resulting in loss of the motor driven air compressors.

INIT. CUE:	Your supervisor directs you to place the diesel driven air compressor in service and align its discharge to the station air receiver by performing 1OM-34.4.L through step F3.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1PL-N01
JPM TITLE:	Place Diesel Air Compressor in Service
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to simulate (perform) the task Place Diesel Air Compressor in Service.
INIT. CONDITIONS:	A loss of electrical power has occurred, resulting in loss of the motor driven air compressors.
TASK STAN.:	Diesel driven air compressor placed in service in accordance with 1OM-34.4.L.
INIT. CUE:	Your supervisor directs you to place the diesel driven air compressor in service and align its discharge to the station air receiver by performing 1OM-34.4.L through step F3.
REFERENCES:	1OM-34.4-L Issue 4, Revision 1
TOOLS:	NONE
HANDOUT:	1OM-34.4-L, Placing Diesel Air Compressor in Service.

NUMBER	TITLE
1PL-N01	Place Diesel Air Compressor in Service

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		START TIME: _____	
		EVALUATOR CUE: Provide candidate with 1OM-34.4.L.	
1.	Review procedure and precautions and limitations.	1.1	Candidate reviews procedure and precautions and limitations.
		EVALUATOR CUE: The air dryer has already been removed from service.	
		_____ COMMENTS:	
2.	De-energize Diesel Air Compressor's Battery Trickle Charger.	2.1	Candidate locates trickle charger control switch.
		2.2	Candidate simulates placing control switch in OFF.
		EVALUATOR CUE: The control switch is in the OFF position.	
		_____ COMMENTS:	

NUMBER	TITLE
1PL-N01	Place Diesel Air Compressor in Service

STEP		STANDARD	
("C" denotes critical step)		(Indicate "S" for Sat. or "U" for Unsat.)	
3.C	Place and hold Diesel Air Compressor's Selector Switch in the Hold Position.	3.1	Candidate locates Selector Switch.
		3.2.C	Candidate simulates placing and holding Selector switch in the HOLD position.
		EVALUATOR CUE: The selector switch is in the HOLD position.	
		_____	
		COMMENTS:	
4.C	Depress the Diesel Air Compressor's Start Pushbutton.	4.1	Candidate locates the Start Pushbutton.
		4.2.C	Candidate simulates depressing the Start Pushbutton.
		EVALUATOR CUE: The Start Pushbutton has been depressed. The diesel is starting, the diesel is running.	
		_____	
		COMMENTS:	

NUMBER	TITLE
1PL-N01	Place Diesel Air Compressor in Service

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
5.C	Release the Start Pushbutton and Selector switch.	5.1	Candidate releases the Start Pushbutton.
		EVALUATOR CUE: The Start Pushbutton has been released.	
		5.2	Candidate observes diesel oil pressure.
		EVALUATOR CUE: Diesel oil pressure is rising. Diesel oil pressure is > 15 psig.	
		5.3.C	Candidate simulates releasing Selector switch after the oil pressure is greater than 15 psig.
		EVALUATOR CUE: The Selector Switch has been released.	
			_____
		COMMENTS:	
6.C	Open the Diesel Air Compressor's inlet shutter valve.	6.1	Candidate locates inlet shutter valve.

NUMBER	TITLE
1PL-N01	Place Diesel Air Compressor in Service

STEP		STANDARD	
("C" denotes critical step)		(Indicate "S" for Sat. or "U" for Unsat.)	
		6.2.C	Candidate simulates opening inlet shutter valve.
		EVALUATOR CUE: The inlet shutter valve is open.	
		COMMENTS:	
7.C	Align Diesel Air Compressor to Station Air Receiver.	7.1	Candidate locates [1SA-90].
		7.2.C	Candidate simulates opening [1SA-90].
		EVALUATOR CUE: [1SA-90] is open.	
		7.3	Candidate locates [1SA-86].
		7.4.C	Candidate simulates opening [1SA-86].
		EVALUATOR CUE: [1SA-86] is open.	
		7.5	Candidate locates Diesel Air Compressor's discharge valve.

NUMBER	TITLE
1PL-N01	Place Diesel Air Compressor in Service

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	7.6.C Candidate simulates opening Diesel Air Compressor's discharge valve.
	EVALUATOR CUE: The Diesel Air Compressor's discharge valve is open.
	_____
	COMMENTS:
	EVALUATOR CUE: The remaining procedure steps have been completed by another operator.
8. Inform supervisor that the Diesel Air Compressor is in service.	8.1 Candidate informs supervisor that the Diesel Air compressor is in service.
	_____
	COMMENTS:
	STOP TIME _____

JPM QUESTION #1

Assume that a loss of station instrument air has occurred and that the diesel driven air compressor could not be started.

A. At what point should a emergency shutdown be initiated?

B. At what point should the reactor be tripped?

OPEN REFERENCE

ANSWER:

A. [Station Air less than 100 psig] and unable to start air compressor.

B. Actuation of annunciation A1-56, "STEAMLINE STOP VALVE NOT FULLY OPEN'

Time Allotted: 5 minutes

KA #: APE 065 AA2.05 /4.1

Objective: LP-SQS-53C.1 OBJ-8
Reference: AOP 34.1, Issue 3A, Revision 3

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

Assume that a loss of station instrument air has occurred and that the diesel driven air compressor could not be started.

A. At what point should a emergency shutdown be initiated?

B. At what point should the reactor be tripped?

JPM QUESTION #2

What affect would a loss of station instrument air have on the CVCS makeup control valves [FCV-1CH-113A, 113B, 114A, and 114B]?

OPEN REFERENCE

ANSWER:

FCV-1CH-113A, Boric Acid to Blender FCV, would fail open. FCV-1CH-113B, 114A, and 114B would fail closed.

Time Allotted: 5 minutes

KA #: 078 K3.02 /3.6

Objective: LP-SQS-53C.1 OBJ-8
Reference: AOP 1.34.1, Attachment 1, Issue 3A, Revision 3

Comments: _____
_____
_____
_____
_____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

What affect would a loss of station instrument air have on the CVCS makeup control system?

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

OJT CHECKLIST/JPM COVER PAGE

PROGRAM TITLE: Licensed Operator Training

SUBDIVISION: On-the-Job Training

OJT CHECKLIST/JPM TITLE: Startup the Hydrogen Recombiners

JPM NO.: 1PL-017

COMPUTER CODE: N/A

Revision No.	Date

Revision No.	Date

PREPARED BY: _____ DATE: _____

APPROVED FOR IMPLEMENTATION: _____ DATE: _____
Director, Operations Training, or Designee

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

LESSON PLAN AND OJT REVISION APPROVAL SHEET

DOCUMENT TITLE:1PL-017, Startup the Hydrogen Recombiners

Revision No.	Brief Description	Revised by:	Approval Signature	Approval Date

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1PL-017 Rev: 1 System #: 028 Faulted: ☐
JPM Title: Startup the Hydrogen Recombiners

K/A Reference: 028 A4.01 /4.0 Task ID #:028BBB0104

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☒ Plant Site
- ☐ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT ☐ UNSAT*

Time (minutes) Allotted: 30 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	7	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Startup the Hydrogen Recombiners

INITIAL CONDITIONS:	A reactor trip and safety injection have occurred due to a Loss of Coolant Accident. 1OM-53.A.ES-1.3, Transfer to Cold Leg Recirculation, has been implemented. Hydrogen concentration in containment was obtained and is the equivalent to 2.4% in dry air, requiring the recombiners to be placed in service. All AC distribution systems are operable.

INIT. CUE:	Your supervisor directs you to startup the Hydrogen Recombiners by performing 1OM-46.4.A, Hydrogen Recombiner Startup.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

KIL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1PL-017
JPM TITLE:	Startup the Hydrogen Recombiners
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to simulate the task Startup the Hydrogen Recombiners.
INIT. CONDITIONS:	A reactor trip and safety injection have occurred due to a Loss of Coolant Accident. 1OM-53.A.ES-1.3, Transfer to Cold Leg Recirculation, has been implemented. Hydrogen concentration in containment was obtained and is the equivalent to 2.4% in dry air, requiring the recombiners to be placed in service. All AC distribution systems are operable.
TASK STAN.:	Hydrogen recombiner placed in service in accordance with 1OM-46.4.A.
INIT. CUE:	Your supervisor directs you to startup the Hydrogen Recombiners by performing 1OM-46.4.A, Hydrogen Recombiner Startup.
REFERENCES:	1OM-46.4.A, Issue 4, Revision 2
TOOLS:	NONE
HANDOUT:	1OM-46.4.A, Hydrogen Recombiner Startup.

NUMBER	TITLE
1PL-017	Startup the Hydrogen Recombiner

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		START TIME: _____	
		EVALUATOR CUE: Provide candidate with copy of 1OM-46.4.A.	
1.	Contact Radcon.	1.1	Candidate contacts Radcon.
		EVALUATOR NOTE: Candidate should be briefed by Radcon prior to entering controlled area.	
		_____	
		COMMENTS:	
2.	Obtains Keys.	2.1	Candidate obtains keys SR/O.C. and SR/O.D.
		EVALUATOR CUE: You have obtained SR/O.C. and SR/O.D. keys.	
		_____	
		COMMENTS:	

NUMBER	TITLE
1PL-017	Startup the Hydrogen Recombiner

STEP		STANDARD	
("C" denotes critical step)		(Indicate "S" for Sat. or "U" for Unsat.)	
3.	Unlock and open the hydrogen recombiner isolation valves.	3.1	Candidate locates reach rod for 1HY-101.
		3.2.C	Candidate simulates unlocking and opening 1HY-101.
		EVALUATOR CUE: 1HY-101 is open.	
		3.3	Candidate locates reach rod for 1HY-103.
		3.4.C	Candidate simulates unlocking and opening 1HY-103.
		EVALUATOR CUE: 1HY-103 is open.	
		3.5	Candidate locates reach rod for 1HY-102.
		3.6.C	Candidate simulates unlocking and opening 1HY-102.
		EVALUATOR CUE: 1HY-102 is open.	
		3.7	Candidate locates reach rod for 1HY-104.

NUMBER	TITLE
1PL-017	Startup the Hydrogen Recombiner

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		3.8.C	Candidate simulates unlocking and opening 1HY-104.
		EVALUATOR CUE: 1HY-104 is open.	
		COMMENTS:	
4.	Verify the Containment Vacuum Pump trip valves are closed.	4.1	Candidate request status of the Containment Vacuum Pump trip valves from the Control Room.
		EVALUATOR CUE: The Control Room reports that TV-1CV-150A, B, C, and D are closed.	
		COMMENTS:	
5.C	Unlock and open the Recombiner *Return* and Outlet isolation valves.	5.1	Candidate locates 1HY-110.
		5.2.C	Candidate simulates unlocking and opening 1HY-110.
		EVALUATOR CUE: 1HY-110 is open.	

NUMBER	TITLE
1PL-017	Startup the Hydrogen Recombiner

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

	5.3	Candidate locates 1HY-196.
	5.4.C	Candidate simulates unlocking and opening 1HY-196.
	EVALUATOR CUE: 1HY-196 is open.	
	5.5	Candidate locates 1HY-111.
	5.6.C	Candidate simulates unlocking and opening 1HY-111.
	EVALUATOR CUE: 1HY-111 is open.	
	5.7	Candidate locates 1HY-197.
	5.8.C	Candidate simulates unlocking and opening 1HY-197.
	EVALUATOR CUE: 1HY-197 is open.	
	COMMENTS:	
	EVALUATOR CUE: The wide range analyzers have been placed in service.	

NUMBER	TITLE
1PL-017	Startup the Hydrogen Recombiner

STEP		STANDARD	
("C" denotes critical step)		(Indicate "S" for Sat. or "U" for Unsat.)	
		EVALUATOR CUE: Hydrogen levels require that the recombiners be started.	
		EVALUATOR CUE: Your supervisor directs you to start only the 1A hydrogen recombiner.	
6.C	Start the hydrogen recombiner.	6.1	Candidate locates MCC1-E5 Cub BN.
		6.2.C	Candidate simulates turning on MCC1-E5 Cub BN.
		EVALUATOR CUE: MCC1-E5, Cub BN is on.	
		6.3	Candidate locates MCC1-E5 Cub AQ.
		6.4.C	Candidate simulates closing MCC1-E5 Cub AQ.
		EVALUATOR CUE: MCC1-E5, Cub AQ is closed.	
		6.5	Candidate locates indication for MOV-1HY-101A.
		6.6	Candidate verifies MOV-1HY-101A is closed.
		EVALUATOR CUE: MOV-1HY-101A indicates closed.	

NUMBER	TITLE
1PL-017	Startup the Hydrogen Recombiner

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

	6.7	Candidate locates indication for MOV-1HY-103A.
	6.8	Candidate verifies MOV-1HY-103A is closed.
	EVALUATOR CUE: MOV-1HY-103A indicates closed.	
	6.9	Candidate locates MCC1-E5 Cub AQ.
	6.10.C	Candidate simulates opening MCC1-E5 Cub AQ.
	EVALUATOR CUE: MCC1-E5, Cub AQ is open.	
	6.11	Candidate locates MCC1-E5 Cub AU.
	6.12.C	Candidate simulates opening MCC1-E5 Cub AU.
	EVALUATOR CUE: MCC1-E5, Cub AU is open.	
	6.13	Candidate locates controls for MOV-1HY-102A.
	6.14.C	Candidate simulates opening MOV-1HY-102A.
	EVALUATOR CUE: MOV-1HY-102A is open.	

NUMBER	TITLE
1PL-017	Startup the Hydrogen Recombiner

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

		6.15	Candidate locates START pushbutton.
		6.16 C	Candidate simulates pressing the START pushbutton and holding for ten seconds.
		EVALUATOR CUE: The START pushbutton has been held for 10 seconds.	
			_____
		COMMENTS:	
		EVALUATOR CUE: The remainder of this procedure has been completed by another operator.	
7.	Inform supervisor that the hydrogen recombiner has been started..	7.1	Candidate informs supervisor that the Hydrogen Recombiner has been started.
			_____
		COMMENTS:	
		STOP TIME	_____

JPM QUESTION #1

Given the following conditions, determine the Containment Hydrogen Concentration:

- o H2A-1HY-101A Reading: 7%
- o Cable Vault Temperature: 90°F
- o Containment Pressure: 20 PSIA

OPEN REFERENCE

ANSWER:

[Correction factor from Figure 1 is approximately 0.35]

[Actual = Indicated Reading - Correction factor]

H2 concentration is 6.6 - 6.7 %

Time Allotted: 7 minutes

KA #: 028 A1.01 / 3.8

Objective: LP-SQS-46.1 OBJ-10
Reference: 1OM-46.4.G, Figure 1, Issue 4, Revision 1

Comments: _____
_____
_____
_____
_____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

Given the following conditions, determine the Containment Hydrogen Concentration:

- H2A-1HY-101A Reading: 7%
- Cable Vault Temperature: 90°F
- Containment Pressure: 20 PSIA

JPM QUESTION #2

The hydrogen concentration in containment increases to 5 1/2%. What effect could starting the recombiner at this point have on the plant?

OPEN REFERENCE

ANSWER:

Hydrogen concentration in excess of 4% is combustible and the recombiners can become an ignition source.

Time Allotted: 5 minutes

KA #: 028 K5.02 /3.9

Objective: LP-SQS-46.1 OBJ-10
Reference: 1OM-53E.4.E-1, Issue 1B, Rev. 4

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

The hydrogen concentration in containment increases to 5 1/2%. What effect could starting the recombiner at this point have on the plant?

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

OJT CHECKLIST/JPM COVER PAGE

PROGRAM TITLE: Licensed Operator Training

SUBDIVISION: On-the-Job Training

OJT CHECKLIST/JPM TITLE: Locally Start the Diesel Generator

JPM NO.: 1PL-006

COMPUTER CODE: N/A

Revision No.	Date

Revision No.	Date

PREPARED BY: _____ DATE: _____

APPROVED FOR IMPLEMENTATION: _____ DATE: _____
Director, Operations Training, or Designee

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

LESSON PLAN AND OJT REVISION APPROVAL SHEET

DOCUMENT TITLE:1PL-006, Locally Start the Diesel Generator

Revision No.	Brief Description	Revised by:	Approval Signature	Approval Date

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1PL-006 Rev: 0 System #: 064 Faulted: ☐
JPM Title: Locally Start the Diesel Generator

K/A Reference: 064 A4.06 /3.9 Task ID #:30100060601

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☒ Plant Site
- ☐ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT Time (minutes)
☐ UNSAT* Allotted: 20 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	8	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Locally start the Diesel Generator

INITIAL CONDITIONS:	A station blackout has occurred. OM 53A, Procedure ECA-0.0, Loss of All Emergency 4KV Power, is being implemented at this time.

INIT. CUE:	Your supervisor directs you to start the number one diesel generator by performing Attachment 2-E of 10M-53A.1.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1PL-006
JPM TITLE:	Locally Start the Diesel Generator
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to simulate the task Locally Start the Diesel Generator.
INIT. CONDITIONS:	A station blackout has occurred. OM 53A, Procedure ECA-0.0, Loss of All Emergency 4KV Power, is being implemented at this time.
TASK STAN.:	Diesel generator started in accordance with 1OM-53A.1.2-E.
INIT. CUE:	Your supervisor directs you to start the number one diesel generator by performing Attachment 2-E of 1OM-53A.1.
REFERENCES:	1OM-53A.1.2-E, Issue 1B, Revision 2
TOOLS:	NONE
HANDOUT:	1OM-53A.1.2-E, Local Action to Restore AC Power.

NUMBER	TITLE
1PL-006	Locally Start the Diesel Generator

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	START TIME: _____
	EVALUATOR CUE: Provide candidate with copy of 1OM-53A.1.2-E.
1. Obtain key for EDG Engine Control Panel.	1.1 Candidate obtains key 48.
	EVALUATOR CUE: You have key 48.
	_____
	COMMENTS:
2. Establish communications with Control Room.	2.1 Candidate simulates establishing communications with Control Room.
	EVALUATOR CUE: You have established communications with the Control Room.
	_____
	COMMENTS:

NUMBER	TITLE
1PL-006	Locally Start the Diesel Generator

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

3.	Clear all Start Failure alarms.	3.1	Candidate observes Start Failure alarms.
		EVALUATOR CUE: All Start Failure Alarms are clear.	
			_____
		COMMENTS:	
4.C	Place Selector Switch to LOCAL START.	4.1	Candidate locates selector switch.
		4.2.C	Candidate simulates inserting key in selector switch.
		EVALUATOR CUE: The key has been inserted.	
		4.3.C	Candidate simulates turning selector switch to the LOCAL START position.
		EVALUATOR CUE: The switch is in the LOCAL START position.	
			_____
		COMMENTS:	

NUMBER	TITLE
1PL-006	Locally Start the Diesel Generator

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
5.C	Prime the Diesel Fuel System.	5.1	Candidate locates the FUEL PRIME pushbutton.
		5.1.C	Candidate simulates depressing the FUEL PRIME pushbutton.
		EVALUATOR CUE: The FUEL PRIME pushbutton has been depressed.	
			_____
		COMMENTS:	
6.C	Start the Diesel Engine.	6.1	Candidate locates the ENGINE START pushbutton.
		6.2.C	Candidate simulates depressing the ENGINE START pushbutton.
		EVALUATOR CUE: The ENGINE START pushbutton has been depressed. The diesel engine is turning. The diesel engine is running.	
		6.3.C	Candidate simulates releasing the ENGINE START pushbutton.
			_____
		COMMENTS:	

NUMBER	TITLE
1PL-006	Locally Start the Diesel Generator

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
7.C	Adjust Diesel Generator Speed.	7.1	Candidate observes Diesel Generator speed indication.
		EVALUATOR CUE: Engine speed is 810 RPM.	
		7.2	Candidate locates governor RAISE-LOWER control switch.
		7.3.C	Candidate simulates taking the governor control switch to the RAISE position.
			_____
		COMMENTS:	
		EVALUATOR CUE: The Engine speed is increasing. Engine speed is 900 RPM.	
8.	Verify DG output voltage.	8.1	Candidate observes DG output voltage.
		EVALUATOR CUE: Diesel Generator output voltage is normal.	
		EVALUATOR NOTE: Candidate must simulate use of voltmeter selector switch to read voltage.	

NUMBER	TITLE
1PL-006	Locally Start the Diesel Generator

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	EVALUATOR CUE: The Control Room reports that Emergency Bus 1AE has been energized. _____ COMMENTS:
9. Inform supervisor that the Diesel Generator has been started.	9.1 Candidate informs supervisor that the Diesel Generator has been started. _____ COMMENTS: STOP TIME _____

JPM QUESTION #1

A review of operating logs reveals that at 0100, with plant operating in MODE ONE, the fuel oil storage tank for the A diesel generator contains 17,300 gallons and the fuel oil storage tank for the B diesel generator contains 17,450 gallons. Based on the these conditions, and assuming that no fuel oil could be added to the storage tanks, at what time would the plant have to placed in MODE THREE?

OPEN REFERENCE

ANSWER:

0900

[Both diesels are inoperable, T.S. 3.8.1.1 Action e requires that one diesel be restored within 2 hours, or the plant be placed in Mode 3 within the next 6 hours, (8 hours following the time of discovery.)]

Time Allotted: 8 minutes

KA #: 064 K6.08 / 3.3

Objective: LP-SQS-36.2 OBJ-10
Reference: T.S. 3.8.1.1

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

A review of operating logs reveals that at 0100, with plant operating in MODE ONE, the fuel oil storage tank for the A diesel generator contains 17,300 gallons and the fuel oil storage tank for the B diesel generator contains 17,450 gallons. Based on the these conditions, and assuming that no fuel oil could be added to the storage tanks, at what time would the plant have to placed in MODE THREE?

JPM QUESTION #2

Assume that following surveillance testing, the #1 diesel generator's stop pushbuttons have been depressed and the diesel is in the middle of the 11 1/2 minutes cooldown cycle at idle speed. What would be the response of the diesel generator if an auto start signal, due to safety injection, is received under these operating conditions.

OPEN REFERENCE

ANSWER:

The diesel generator would start. [The speed would increase to 900 RPM and the field would be flashed.]

Time Allotted: 5 minutes

KA #: 062 K3.02 /4.4

Objective: LP-SQS-53.3 OBJ-3
Reference: 1OM-53B.4.E-1, page 69

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

Assume that following surveillance testing, the #1 diesel generator's stop pushbuttons have been depressed and the diesel is in the middle of the 11 1/2 minutes cooldown cycle at idle speed. What would be the response of the diesel generator if an auto start signal, due to safety injection, is received under these operating conditions.

Facility: Beaver Valley Unit 1 Date of Examination: December 15, 1997

Examination Level (circle one): RO / SRO Operating Test Number: _____

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Plant Parameter Verification	JPM: Perform ECP Calculation
	Control of Operating Procedures	Q-1 Use of Temporary Operating Procedures
		Q-2 Approval of On the Spot Changes (OMCNs)
A.2	Tagging and Clearances	Q-1 PRA assessment for clearing equipment
		Q-2 Requirement to clear Diesel Generator
A.3	Radiation Work Permits	JPM: Enter High Radiation Area
A.4	Emergency Event Classification	JPM: PAR Determination

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

OJT CHECKLIST/JPM COVER PAGE

PROGRAM TITLE: Licensed Operator Training

SUBDIVISION: On-the-Job Training

OJT CHECKLIST/JPM TITLE: Perform an ECP Calculation

JPM NO.: 1AD-A.1

COMPUTER CODE: N/A

Revision No.	Date

Revision No.	Date

PREPARED BY: _____ DATE: _____

APPROVED FOR IMPLEMENTATION: _____ DATE: _____
Director, Operations Training,
or Designee

RTL #A5.640E

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

OJT CHECKLIST/JPM COVER PAGE

PROGRAM TITLE: Licensed Operator Training

SUBDIVISION: On-the-Job Training

OJT CHECKLIST/JPM TITLE: Perform an ECP Calculation

JPM NO.: 1AD-A.1

COMPUTER CODE: N/A

Revision No.	Date

Revision No.	Date

PREPARED BY: _____ DATE: _____

APPROVED FOR IMPLEMENTATION: _____ DATE: _____
Director, Operations Training,
or Designee

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

LESSON PLAN AND OJT REVISION APPROVAL SHEET

DOCUMENT TITLE:1AD.A1, Perform an ECP Calculation

Revision No.	Brief Description	Revised by:	Approval Signature	Approval Date

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1AD-A.1 Rev: 0 System #: 001 Faulted: ☐
JPM Title: Perform an ECP Calculation

K/A Reference: 001 A4.10 /3.9 Task ID #:0010020101

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
☒ Perform
☐ Simulate

LOCATION
☐ Plant Site
☐ Simulator
☒ Classroom

TYPE
☐ Training
☐ Annual Requal. Exam
☐ OJT
☒ Initial Operator Exam
☐ Other: _____

Administered By:
☐ BV-T
☐ NRC
☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT Time (minutes)
☐ UNSAT* Allotted: 30 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	_____	_____	☐	☐
Employee No:	_____				
Question #1	_____	_____	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Perform an ECP Calculation

INITIAL CONDITIONS:	Preparing for a plant startup after a reactor trip which occurred 30 hours ago. Prior to the trip, the plant operated for 100% power for 37 days. Prior to the trip Bank D was at 227 steps, RCS boron was 719 PPM and core burnup was 7,993 MWD/MTU. The plant computer is unavailable for the calculation. Starting up in accordance with 1OM-50.4.D. Criticality is estimated to be attained within the next 4 hours.

INIT. CUE:	Your supervisor directs you to perform an ECP calculation.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1AD-A.1
JPM TITLE:	Perform an ECP Calculation
RECOMMENDED STARTING LOCATION:	CLASS ROOM
DIRECTIONS:	You are to simulate (perform) the task perform an ECP Calculation.
INIT. CONDITIONS:	Preparing for a plant startup after a reactor trip which occurred 30 hours ago. Prior to the trip, the plant operated for 100% power for 37 days. Prior to the trip Bank D was at 227 steps, RCS boron was 719 PPM and core burnup was 7,993 MWD/MTU. The plant computer is unavailable for the calculation. Starting up in accordance with 1OM-50.4.D. Criticality is estimated to be attained within the next 4 hours.
TASK STAN.:	ECP performed in accordance with 1OM-50.4.F.
INIT. CUE:	Your supervisor directs you to perform an ECP calculation for a startup with Bank D rods at 100 steps at the time of criticality.
REFERENCES:	Unit 1 Curve Book. 1OM-50.4.F, Issue 3, Revision 13
TOOLS:	Calculator
HANDOUT:	1OM-50.4.F, Data Sheet 1

NUMBER	TITLE
1AD-A.1	Perform ECP Calculation

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	START TIME: _____
1. Obtain ECP procedure and Unit 1 Curve Book.	1. Candidate locates 1OM-50.4.F and Unit 1Curve Book.
	EVALUATOR CUE: Provide candidate with copy of 1OM-50.4.F and the Unit 1 Curve Book.
	EVALUATOR NOTE: The examiner may have to wait until the candidate has competed the data sheet before evaluating the JPM. The order in which the steps are performed is not critical.
	_____
	COMMENTS:

NUMBER	TITLE
1AD-A.1	Perform ECP Calculation

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

2.	Record Critical Data prior to shutdown.	2.1	Candidate records provided data on Data Sheet 1, Section A, Coulmn (I): Date / Time Boron - 719 ppm Power - 100% Xenon - 100% Samarium - 100% Rods - 227 steps _____ COMMENTS:
			EVALUATOR NOTE: The data recorded and calculated in the following steps must be determined using the curve book. A range is given for each value. Data falling outside the given range should be evaluated on a case by case basis.

NUMBER	TITLE
1AD-A.1	Perform ECP Calculation

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
3.	Record Expected Critical Data.	3.1	Candidate determines and records data on Data Sheet 1, Section A, Column (II). Data/Time Xenon - 52% - 54% Samarium - 119% -121% Bank D at 100 steps. _____ COMMENTS:
4.C	Perform reactivity balance.	4.1	Candidate records Power Defect prior to Shutdown - 2000 - 2050 pcm.
		4.2	Candidate records control rod worth prior to shutdown - 0.
		4.3	Candidate records control rod worth expected at criticality - 840 - 860 pcm.
		4.4	Candidate records xenon worth prior to shutdown - 2751 pcm.
		4.5	Candidate records xenon worth expected at criticality - 1430 - 1485 pcm.
		4.6	Candidate records samarium worth prior to shutdown - 615 pcm.

NUMBER	TITLE
1AD-A.1	Perform ECP Calculation

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)

		4.7	Candidate records samarium worth expected at criticality - 732 - 744 pcm.
		4.8 C	Candidate determines difference for each reactivity value: Power Defect = - 2000 - 2050 pcm Rod Worth = 840 - 860 pcm Xenon = -1266 - -1321 pcm Samarium = 117 - 119 pcm
		4.9.C	Candidate determines reactivity change: - 2250 - 2450 pcm.
			COMMENTS:
5.C	Determine critical boron concentration.	5.1	Candidate records reactivity change: - 2250 - -2450 pcm.
		5.2	Candidate records line 1 boron worth: - 8.8 - - 8.9 pcm.
		5.3	Candidate determines line 1 boron change: 250 - 280 ppm.
		5.4	Candidate records boron at shutdown: 719 ppm.
		5.5	Candidate determines boron for startup: 969 - 999 ppm.
		5.6	Candidate determines line 2 boron worth: -8.5 - -8.6 pcm.

NUMBER	TITLE
1AD-A.1	Perform ECP Calculation

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		5.7	Candidate determine line 2 boron change: 260 - 290 ppm.
		5.8	Candidate records boron at shutdown: 719 ppm.
		5.9.C	Candidate determines boron concentration for startup: 979 - 1,009 ppm.
			_____
		COMMENTS:	
6.	Mark Section D as N/A.	6.1	Candidate marks N/A on blocks in Section D.
			_____
		COMMENTS:	
7.C	Determine Rod Limits.	7.1	Candidate record critical rod defect: -840 - -860 pcm.
		7.2	Candidate determines + 500 pcm value: - 340 - -360 pcm.
		7.3	Candidate determine - 500 pcm value: - 1340 - -1360 pcm.
		7.4.C	Candidate determines maximum rod postion: 170 - 178 steps.

NUMBER	TITLE
1AD-A.1	Perform ECP Calculation

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	7.5.C Candiate determines minimum rod position: 37 - 48 steps. _____ COMMENTS:
8. Report ECP completion.	8.1 Candidate reports that the ECP is complete. _____ COMMENTS: STOP TIME _____

A.1.2 Question 1

What are three conditions when a Temporary Operating Procedure (TOP) should be used instead of a making an on the sp t change?

ANSWER:

Any three:

- When the changes are temporary.
- When the changes are extensive.
- When the changes are known in advance.
- When the changes could be in use for greater than 90 days.

KA: 2.2.6 / 3.2

Reference: 1/2 OM-48.2.B

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

A.1.2 Question 1

What are three conditions when a Temporary Operating Procedure (TOP) should be used instead of a making an on the spot change?

A.1.2 Question 2

What conditions must be met to make an on the spot change to the operating procedures?

ANSWER:

The intent of the original procedure is not altered.

The change is required in less than 30 days or the change will prevent a plant trip, reduction in power or other Productivity or Safety concern.

[The change is documented, reviewed by the OSC and approved by General Manager, Nuclear Operations within 14 days of implementation.]

[NOTE: Candidate may also discuss OMCN involving intent changes, but this is not required for full credit.]

KA: 2.2.6 / 3.2

Reference: 1/2OM-48.2.B

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

A.1.2 Question 2

What conditions must be met to make an on the spot change to the operating procedures?

A2.1 Based on the Risk Assessment Guidelines as described in NPDAP 7.12, Non-Outage Planning, Scheduling and Risk Assessment, whose approval would be required prior to removal of a motor driven, Auxiliary Feedwater Pump from service when the HHSI/charging pump has also been removed from service?

ANSWER:

General Manager of Maintenance Programs and General Manager of Nuclear Operations.

[CDP increase (from Attachment 7) = 4.12 E-06.]

[Therefore, the system combination is designated with a YELLOW color (> 1E-6, but < 1 E-5), and requires approval of General Manager of Maintenance Programs and General Manager or Nuclear Operations.]

REFERENCE: NPDAP 7.12, Attachment 12

KA: 2.2.17 /3.5

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

A2.1 Based on the Risk Assessment Guidelines as described in NPDAP 7.12, Non-Outage Planning, Scheduling and Risk Assessment, whose approval would be required prior to removal of a motor driven, Auxiliary Feedwater Pump from service when the HHSI/charging pump has also been removed from service?

A2.2 What are four conditions that must be verified prior to placing a diesel generator on clearance for routine maintenance? Assume the plant is operating in MODE 1 with all systems in NSA.

ANSWER:

1. Actions required by T.S. 3.8.1.1 are done prior to removal from service.

2. Turbine driven AFP must be verified operable.

3. Weather forecast does not indicate thunderstorms or tornadoes

4. Both diesel generators are verified operable.

Reference: NPDAP 3.4, Attachment 7

KA: 2.2.13 /3.8

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

A2.2 What are four conditions that must be verified prior to placing a diesel generator on clearance for routine maintenance? Assume the plant is operating in MODE 1 with all systems in NSA.

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

OJT CHECKLIST/JPM COVER PAGE

PROGRAM TITLE: Licensed Operator Training

SUBDIVISION: On-the-Job Training

OJT CHECKLIST/JPM TITLE: Enter High Radiation Area

JPM NO.: 1AD-A.3

COMPUTER CODE: N/A

Revision No.	Date

Revision No.	Date

PREPARED BY: _____ DATE: _____

APPROVED FOR
IMPLEMENTATION: _____ DATE: _____
Director, Operations Training,
or Designee

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

LESSON PLAN AND OJT REVISION APPROVAL SHEET

DOCUMENT TITLE:1AD.A3, Enter High Radiation Area

Revision No.	Brief Description	Revised by:	Approval Signature	Approval Date

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1AD-A.3 Rev: 0 System #: 194 Faulted: ☐
JPM Title: Enter High Radiation Area

K/A Reference: 2.3.1 / 3.0 Task ID #:119 GGG 034

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☒ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☐ Simulator
- ☒ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT ☐ UNSAT*

Time (minutes) Allotted: 20 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	_____	_____	☐	☐
Employee No:	_____				
Question #2	_____	_____	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Enter High Radiation Area

INITIAL CONDITIONS:	2HDH-627 which is located in a High Radiation Area needs to be opened.

INIT. CUE:	Your supervisor directs you to enter the High Radiation Area in order to open 2HDH-627.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1AD-A.1
JPM TITLE:	Enter High Radiation Area
RECOMMENDED STARTING LOCATION:	CLASS ROOM
DIRECTIONS:	You are to simulate (perform) the task Enter High Radiation Area.
INIT. CONDITIONS:	2HDH-627 which is located in a High Radiation Area needs to be opened.
TASK STAN.:	Entry performed in accordance with plant Radiation Control Standards.
INIT. CUE:	Your supervisor directs you to enter the High Radiation Area in order to open 2HDH-627.
REFERENCES:	Health Physics Manual LP-RC-02, Revision 17
TOOLS:	NONE
HANDOUT:	NONE

NUMBER	TITLE
1AD-A.3	Enter High Radiation Area

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		START TIME: _____	
		Evaluator Cue: Provide candidate with TLD, hard hat and safety glasses.	
1.C	Locate and review Radiation Work Permit.	1.	Candidate locates Radiation Work Permit.
		1.2.C	Candidate reviews Radiation Work Permit.
			_____
		COMMENTS:	
2.	Insert Rados ARD into ARD 1000 reader.	2.1	Candidate locates Rados ARD.
		2.2	Candidate inserts Rados into ARD 1000 reader.
			_____
		COMMENTS:	
3.C	Enter Data in ARD 1000 reader.	3.1.C	Candidate enters ID number into ARD 1000 reader.

NUMBER	TITLE
1AD-A.3	Enter High Radiation Area

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

		3.2.	Candidate verifies name on ARD 1000 reader.
			EVALUATOR CUE: Assume your name is displayed as it would be in the plant.
		3.C	Candidate enters RWP number in ARD 1000 reader.
			_____
			COMMENTS:
4.	Observe ARD dose and dose rate setpoint and take ticket.	4.1	Candidate observes ARD 1000 reader display and notes ARD dose setpoint.
		4.2	Candidate observes ARD 1000 reader display and notes ARD dose rate setpoint.
		4.3	Candidate takes and reads ticket.
			EVALUATOR CUE: Assume your name is displayed as it would be in the plant.
			_____
			COMMENTS:

NUMBER	TITLE
1AD-A.3	Enter High Radiation Area

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)

5.C	Remove Rados ARD reader.	5.1.C	Candidate removes Rados ARD from ARD 1000 reader.
		5.2.C	Candidate places Rados ARD on upper body near TLD.
			_____
			COMMENTS:
			EVALUATOR CUE: You are to simulate donning protective clothing.
			EVALUATOR CUE: As Health Physics Tech, provide candidate with copy of survey map and conduct briefing. (Attachment 1)
6.	Enter contaminated area.	6.1	Candidate reads posted signs.
			EVALUATOR CUE: Assume all dates on signs and survey maps are today's date.
		6.2	Candidate enters contaminated area.
			_____
			COMMENTS:
7.	Enter High Radiation Area.	7.1	Candidate proceeds to High Radiation Barrier.

NUMBER	TITLE
1AD-A.3	Enter High Radiation Area

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

	7.2 Candidate reads posted signs.
	7.3 Candidate enters High Radiation Area and proceeds to work area.
	_____
	COMMENTS:
8.C Respond to high dose alarm.	
	EVALUATOR CUE: After candidate reaches work area, turn on tape player to sound high dose rate alarm.
	8.1.C Candidate hears alarm and checks ARD.
	EVALUATOR CUE: The ARD is displaying a dose rate of 107 mrem/hr.
	8.2 C Candidate exits High Radiation Area.
	EVALUATOR CUE: After candidate exits work area, turn off tape player to silence high dose alarm.

NUMBER	TITLE
1AD-A.3	Enter High Radiation Area

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

	8.3 Candidate proceeds to telephone and notifies Health Physics.
	EVALUATOR CUE: Simulate talking on phone as Rad Tech, acknowledge condition and instruct candidate to return control point.
	EVALUATOR CUE: Inform candidate that this completes the JPM.
	COMMENTS:
	STOP TIME _____

1AD-A.3 ATTACHMENT ONE

HRA BRIEFING:

1. Review Local Dose Rates on Survey Map.

2. Review Transient Path Dose Rate on Survey Map.

3. Review Areas to avoid/minimize time: hot spots and high rad on Survey Map.

4. Check that ARD is operating properly.

5. Ask candidate what ARD alarm setpoints are.
   (Dose Alarm - 50 mrem & Dose Rate Alarm - 99 mrem/hr)

6. Instruct candidate to:

   - o Read ARD frequently
   - o Notify HP of any changes in conditions
   - o Stay in transient pathway

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

OJT CHECKLIST/JPM COVER PAGE

PROGRAM TITLE: Licensed Operator Training

SUBDIVISION: On-the-Job Training

OJT CHECKLIST/JPM TITLE: Determine PAR

JPM NO.: 1AD-A.4

COMPUTER CODE: N/A

Revision No.	Date

Revision No.	Date

PREPARED BY: _____ DATE: _____

APPROVED FOR
IMPLEMENTATION: _____ DATE: _____
Director, Operations Training,
or Designee

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

LESSON PLAN AND OJT REVISION APPROVAL SHEET

DOCUMENT TITLE:1AD.A4 Determine PAR

Revision No.	Brief Description	Revised by:	Approval Signature	Approval Date

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1AD-A.4 Rev: 0 System #: 344 Faulted: ☐
JPM Title: Determine PAR

K/A Reference: 2.4.44 / 4.4 Task ID #:3440240302

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☒ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☐ Simulator
- ☒ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT ☐ UNSAT*

Time (minutes) Allotted: 15 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	_____	_____	☐	☐
Employee No:	_____				
Question #1	_____	_____	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Determine PAR

INITIAL CONDITIONS:	Five minutes ago, a plant event occurred resulting in the following conditions: o Core Exit TCs indicate 748°F. o Subcooling is -147°F. o RVLIS indicates 35%.(No RCPs running) o Containment pressure is 47 psig. o 150' wind direction is from 337°. o 500' wind direction is from 324°. o CIA and CIB have been successfully actuated.

INIT. CUE:	You are to evaluate the above conditions and determine which, if any, Offsite Protective Action Recommendations are necessary.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1AD-A.4
JPM TITLE:	Determine PAR
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to simulate (perform) the task Determine PAR.
INIT. CONDITIONS:	Five minutes ago, a plant event occurred resulting in the following conditions: o Core Exit TCs indicate 748°F. o Subcooling is -147°F. o RVLIS indicates 35%. (No RCPs running) o Containment pressure is 47 psig. o 150' wind direction is from 337°. o 500' wind direction is from 324°. o CIA and CIB have been successfully actuated.
TASK STAN.:	Protective Action Recommendations determined in accordance with EPP/IP 4.1
INIT. CUE:	You are to evaluate the above conditions and determine which, if any, Offsite Protective Action Recommendations are necessary.
REFERENCES:	EPP/IP 4.1 Rev. 8
TOOLS:	NONE
HANDOUT:	NONE (EPP and EPP/IPs are to be made available to candidate.)

NUMBER	TITLE
1AD-A.4	Determine PAR

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)

		START TIME: _____	
		EVALUATOR NOTE: The candidate may begin by determining Critical Safety Function status or by evaluating event classification prior to referencing EPP/IP 4.1	
1.	Review EPP/IP 4.1.	1.1	Candidate locates EPP/IP 4.1.
		1.2	Candidate determines that Protective Action Recommendations required within 15 minutes if General Emergency is declared.
			_____
		COMMENTS:	
2.	Determine if General Emergency should be declared.	2.1	Candidate locates EPP/I-1A, Attachment 1

NUMBER	TITLE
1AD-A.4	Determine PAR

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	2.2 Candidate determines that two barriers have been lost and there is a potential loss of third barrier, resulting in a General Emergency condition.
	EVALUATOR NOTE: Core Cooling CSF Red Path results in Loss of Fuel Clad Barrier (1.1.1), RVLIS < 39% results in loss of RCS Barrier (1.2.2) and Containment CSF Red Path results in potential loss of CNMT Barrier (1.3.1).
	EVALUATOR NOTE: Candidate may reference EOPs to determine the CSF Red Path conditions exist.
	_____ COMMENTS:
3. Candidate refers to Offsite Protection Action Recommendation Flow Chart.	3.1 Candidate enters Offsite Protective Action Recommendation Flowchart on General Emergency EAL other than 7.1.
	_____ COMMENTS:

NUMBER	TITLE
1AD-A.4	Determine PAR

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
6. Report JPM completion.	6.1 Candidate reports that the JPM is complete. _____ COMMENTS: STOP TIME _____

NUMBER	TITLE
1AD-A.4	Determine PAR

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
4.	Reference Attachment 2 and Determine Downwind Wedge.	4.1	Candidate references Table 1 to determine that the 150' elevation Downwind Sectors are FGHJK.
		4.2	Candidate references Table 1 to determine that the 500' elevation Downwind Sectors are EFGHJ.
			_____
		COMMENTS:	
5.C	Determine Offsite Protective Action Recommendation.	5.1.C	Candidate determines the following Protective Action Recommendation: Evacuate 360°for two miles. Evacuate Sectors EFGHJK for five miles. Shelter remainder of 10 mile EPZ.
			_____
		COMMENTS.	

As Given
Operating Exam

Facility: BVPS - Unit 1 Scenario No.: 1 OP-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Objectives: To evaluate the applicants' ability to raise reactor power to the point of adding heat, control the reactor at lower power; to implement the AOPs and ARPs for a NI failure and a Pressurizer Level Instrument failure; and to respond to steam line break (EOP E-2) with concurrent component malfunctions and subsequent Safety Injection termination (EOP E-1 and ES-1.1.)

Initial Conditions: Rx S/U in progress, Rx power is at 1E-8 amps, Xenon free, MOL conditions.

Turnover: Bank D at 100 steps. Ready to continue startup at step C.1 of OM-50.4D. FW-150A&B are failed open and CN 101 is in Manual and closed. The inital conditions for Cold Turbine Startup have been verified in accordance with 52.4.A. Boron is 1190 ppm. Feed flow is being provided by the 1A MFP with the feedwater bypass valves operating in Auto. The "B" station instrument air compressor is out of service for maintenance but is expected to be returned to service this shift.

Event No.	Malf. No.	Event Type*	Event Description
1		R(RO)	Raise power to point of adding heat. Crew then raises power to > 10%.
2	MALF NIS7B	C(SRO)	N36 IR instrument power fuses blows. Action taken IAW T.S. 3.3.1.1
3		N(ALL)	Crew continues to raise power, and continues plant startup.
4	MALF PRS6A	I(RO/SRO) N(RO/SRO)	LT-459 fails low resulting in letdown isolation. Alternate channel selected and letdown restored to service
5	MALF MSS1A	C(ALL)	Steam leak inside of containment. Lowering RCS temperature and increasing power.
6	MALF MSS1A	M(ALL)	Steam line break inside of containment. Results in safety injection, CIA and CIB.
7	MALF SIS5A	C(RO/SRO)	CH-P-1A trips on SI actuation. CH-P-1B must be manually started.
8	INH51	C(ALL)	Failure of Main Steamline Isolation.

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Training Administrative Manual

LDRL1 (iii)REV0

INITIAL CONDITIONS IC _91__
RCS boron - 1190 PPM, CBD = 100 steps.
Reactor power @ 10-8 amps
ADDITIONAL LINEUP CHANGES
SA-C-1B in PTL

STICKERS
DANGER SA-C-1B

CAUTION CN-101
CAUTION FW-150A
CAUTION FW-150B

VOND MARKINGS

EQUIPMENT STATUS MARK	DATE/TIME	T/S# AND TIME LIMIT
IPC Delta Flux Alarm	Two Days ago	4.2.1.1.b Log Delta I every 30 min->15% power
IPC Rod Deviation Alarm	Two Days ago	3.1.3.2..d Log rod position once/4 hrs
SA-C-1B	1 week ago	NA

SHIFT TURNOVER INFORMATION
1. IPC Delta Flux Alarm - Log Delta I every 30 min. when > 15% power.
2. IPC Rod Deviation Alarm - Log rod position once / 4 hrs.
3. SA-C-1B undergoing a compressor overhaul. Estimated time to complete job is 5 hours.
4. The initial conditions for Cold Turbine Startup have been verified in accordance with 52.4.A.
5. Feed flow is being provided by the 1A MFP with the feedwater bypass valves operating in Auto.
6. FC-FW-150A&B are failed open and CN 101 is in Manual and closed.
7. Crew is to continue startup at step C.1 of OM-50.4D.
8. Reactor Engineering has provided a Reactivity Plan for the power escalation.

SCENARIO SUPPORT MATERIAL
OM 1/2.48.1 Figure C-2 (ANSS Turnover Checklist)

OM 1.54.2 S1-2 (Shift Operating Report)
OM 1.54.2 S1-5 (NCO Report)
OM 1.54.2 S1-17 (ANSS Report)

INSTRUCTIONAL METHODS NOTES

There shall be no direct intervention or assistance by the simulator instructor. Terminate the drill when directed by the exam team.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Initialize the simulator at IC-91 Included in IC: CND14,0 CN 101 closed FWM5A 1,0 FCV150A open FWM5B,1,0 FCV150B open Insert **FILE SIMIC** **FILE LDRL1** Contains; SA-C-1B white light off CH-P-1B fail to auto start Failure of Auto Main Steamline Isolation.	Reactor at 1E-8 amps, XE free, MOL, CB-D at 100 steps in Manual, Boron = 1190 ppm, FW Bypass valves are in Auto. Crew is to increase power towards 100% using OM 50.4.D- Step C.1.		

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Place Switch of SA-C-1B in PTL.	Places equipment out of service per the initial conditions setup page.		
Place Red Danger tag on: Switch of SA-C-1B Place Caution tags on: FCV-FW-150A&B. FCV-CN-101.			
PLACE TAGS and CHECK SWITCH POSITIONS.			
On IPC insert RODUP and clear alarms. Check for required trends. **Use TRENDAN-OM52.4C**			
Assign shift positions: NSS _____ ANSS _____ RO _____ PO _____ STA _____	Simulator Frozen until after shift turnover unless it needs to be on momentarily for an alignment change.		
Conduct shift turnover with oncoming operators. Include items appropriate for IPTE briefing.			Oncoming operators should complete the required checklists and carry out a formal shift turnover.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
**********			
When the shift turnover is complete, place the simulator to **RUN** and commence the drill.	Simulator running.		Crew assumes control of the unit.
**********			
EVENT # 1 REACTOR POWER INCREASE	-		
			Crew commences power increase in accordance with reactivity plan.
Continue reactor startup to 2 to 5% power.	Reactor at 10^{-8} amps.		RO verifies NI overlap, as power increases into the power range.
	Reactor power between 2% and 5%.		RO pulls rods to raise reactor power to 2 to 5%.
	Reactor power between 2% and 5%.		RO/PO verifies steam dump maintains Tavg between 545° and 549°.
			PO maintains S/G NR between 28 and 38%.
			ANSS directs N-16 RAD Monitor to be placed in service.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			ANSS transitions to OM-52.4.A to continue power increase.
			RO verifies that lowest Tave > 541 F and makes appropriate log entries -marks recorders.
			PO verifies FW-P-4 is not in service.
			RO commences raising reactor power to between 10 and 20%.
			RO/PO logs MODE 1 entry.
	Status lights on Panel 176 actuate at 10%.		RO verifies P-10 bistables actuate as required as power increases to > 10%.
	Status light Int Range RX Trip blocked is ON		RO blocks the IR Trip and Rod Stop and verifies status lights ON.
	Status light Power range low setpoint blocked is ON		RO blocks Power Range low Overpower Trip and verifies status lights ON.
	NOT P-7 is OFF.		RO verifies that status light NOT P-7 is OFF.
			RO selects highest Power Ranges on N45.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
EVENT # 2 NI-36 FAILURE ********** After crew has raised reactor power to greater than 10%, insert MAL NIS7B,1,0- NI-36 Instrument power fuse fails. **********	Meters for NI-36 indicate zero Blown fuse indication exists on drawer NI 36 trip and rod block alarms actuated. Loss of Detector / compensating voltage - ANN A4-95,96.		RO acknowledges ANN's and performs a channel check to identify NI-36 as the failed channel. RO reports diagnosis to ANSS Crew could refer to ARPs for ANN A4-95,96. ANSS refers to AOP 1.2.1B, Intermediate Range Channel Malfunction. Verifies Unit is in Mode 1 and goes to Step 4. Crew verifies power still greater than 10% and intermediate range trip is still blocked. Crew places Caution Tag on Source Range which states "Manually unblock Source Range on Shutdown". ANSS references Technical Specification 3.3.1.1, Action 3.C. ANSS may reference T.S. 3.3.3.5 Remote Shutdown Panel indications.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE

EVENT # 3

Raise power to 15 - 18% in preparation for synchronizing main generator to the grid

EVENT # 3

Continued power increase

ANSS directs the crew to continue with unit startup IAW OM 52 procedure "A".

RO withdraws rods to raise reactor power to 15 -18%

RO/PO maintain reactor power, Tavg, and SGWL in preparation for unit synchronization.

As power is raised toward 15 to 18%, continue to EVENT 4.

EVENT # 4
LT-459 FAILS LOW
****
Enter MAL PRS6A,0,0

****

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			RO recognizes problem with PZR level channel, informs ANSS and refers to ARP, and Instrument Failure Procedure 1.6.4.IF Attachment 1.
	PZR level transmitter LT-RC-459 fails low. PZR control level deviation low alarm A4-4. PZR control level low alarm, A4-3. LCV-CH-460A, TV-CH-200A,B,C close. PZR heaters off.		RO informs ANSS that LT-RC-459 failed low.
			ANSS directs operator to defeat level control input with PZR level channel and recorder selector switches per 1.6.4.IF Attachment 1.
	Level alarms clear, charging flow begins decreasing, high flow alarm clears.		RO informs ANSS that Channels 460 and 461 are selected.
			ANSS directs the operators to reestablish normal letdown, re-energize pressurizer heaters.
	LCV-CH-460A open. Appropriate TV-CH-200s open. Letdown flow established.		RO establishes letdown in accordance with OM 1.7.4.AF, or OM 1.6.4.IF Attachment 1.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			NSS refers to Tech. Specs. 3.3.1.1, 3.3.3.8 and 3.3.3.5, identifies T.S. 3.3.1.1 and .3.3.3.5 applicability and directs crew to place channel in tripped condition within six hours.
			RO informs the ANSS that letdown has been reestablished.
If bistable is requested to be tripped: Door OVR P07029W=1 LOA RCS35=1 OVR P07029W=0			ANSS directs I&C to trip appropriate bistable within six hours.
Continue with scenario and initiate the next event when letdown is reestablished.	Charging, letdown and PZR heater operation normal.		
EVENT # 5 Steam Leak in containment ********** **Insert MAL MSS1A 1E6, 600,0** **********	A1-35 Cnmt Hi Pressure Ch1 A1-43 Cnmt Hi Pressure Ch2 Containment Humidity increasing Cnmt Sump Level slowly increasing Steam dump demand decreasing Reactor power increasing Tave decreasing		Crew diagnosis increasing steam flow in relation to worsening CNMT parameters, and may elect to manually trip and SI..

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
When Tave drops to less than 547 F or crew Manually trips and SI, or SI automatically actuates, continue with EVENT # 6.	Containment pressure rising toward 2.5 psig.		Crew responds to either Manual reactor trip and SI or auto SI initiation.
EVENT # 6 "A" MAIN STEAMLINE RUPTURE INSIDE CNMT.			
			RO informs ANSS of reactor trip.
**********	Main Steam line break inside containment, temperature and pressure rising.		
ENTER FILE **LDRL1A** contains: A S/G Fault in CN'MT MSS1A=.9 of max. CH-P-1A Failure SIS5A			
**********			
	Reactor trip, turbine trip, RCS pressure drops.		RO and PO commence immediate actions of E-0, ANSS references E-0 to verify immediate actions.
Crew performs immediate operator actions of E-0.	Reactor trip and bypass breakers open, neutron flux decreasing. Rod bottom lights lit. Rod position indication at 0.		RO verifies reactor tripped.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			RO sounds standby alarm and announces Unit 1 reactor trip.
	Throttle and governor valves closed, reheat stop and intercept valves closed.		PO verifies turbine tripped.
	Reheat flow control valves and MOVs closed.		PO ensures reheat steam isolation by depressing reheat controller reset push-button and checks MOV-MS- 100A & B shut.
	Main generator output breakers open. Exciter circuit breaker open.		PO verifies generator trip.
	AE and DF busses energized.		PO verifies AE and DF busses energized.
Immediate operator actions complete.	Any SI annunciator. SI actuation status lights. SI actuated by CNMT pressure.		RO checks if SI has actuated, reports SI actuated and manually actuates both trains.
	EDGs running.		PO verifies EDGs both running.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
EVENT # 7 CH-P-1A fails and CH-P-1B must be manually started. **CRITICAL TASK** Manually start Charging/HHSI to initiate SI flow.	**NO HHSI** pumps running After pump started, FI-SI-943 indicates flow. LHSI pumps running. All red marked SIS valve indicating lights lit. FW-P-3A & 3B running. FW-P-2 running. MOV-FW-151 A through F open. RPRW pumps running. CCR Ht Ex RW pressure > 20 psig., unless CIB has actuated, then flow is indicated to Recirc Spray Heat Exchangers All indicating lights with orange CIA marks lit. All indicating lights with green FWI marks lit.		RO/PO verify SI system status. RO checks HHSI pumps, manually starts CH-P-1B and reports CH-P-1A failure to ANSS. PO verifies AFW status. RO verifies River Water System in service. RO/PO verify CIA alignment. RO/PO verify FWI.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
EVENT # 8 Main steam line Isolation does not automatically actuate. **CRITICAL TASK** Manually align components for Steam line Isolation.	All indicating lights with yellow marks are not lit including **MSIV'S** unless previously manually closed.		RO/PO check if MSLI is required. PO checks if MSLI has occurred and determines that MSLI did not Auto actuate. PO reports status and MANUALLY Closes yellow mark valves.
NOTE: CIB may not have actuated at this time, however, it will actuate during the drill. Observe crew verification of automatic actions when actuated.	CNMT spray actuates when required. All indicating lights with blue marks lit.		RO/PO check CIB/SPRAY status.
CRITICAL TASK Manually trip RCPs following CIB.	RCPs stopped.		RO stops RCPs after CIB actuates.
	CCR pumps trip when CIB actuates.		RO reports CCR status to ANSS.
	SR detector high voltage selector switches - normal.		RO verifies SR detector high voltage selector switches in normal and transfers NR-45 to operable SR and IR.
	AFW flow >330 gpm.		PO verifies total AFW flow greater than 330 gpm.
	Instrument air pressure > 100 psig		PO verifies air pressure > 100 psig

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
CREW should have already isolated Main steam lines.	All Tcold legs < 547° F and dropping with A Tcold leading.		RO verifies RCS Tcold, stable at or trending to 547° F. RO reports RCS temperature < 547 F and dropping. PO checks STM Dumps and SG Atm Dumps closed. Crew recognizes continuing RCS cooldown and throttles AUXFW to not less 330 gpm. If not previously performed, ANSS directs RO and PO to close all valves with yellow SLI marks.
	MSIVs, bypass valves, NRVs, and pre-non return valves closed.		RO and PO verify MSLI. ANSS directs personnel to perform emergency safety function checklists when available.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	Safeties closed. PORVs closed. Spray valves closed. PRT temp, level, and pressure pre-event.		RO checks PZR PORVs and Spray valves.
	RCPs stopped after CIB.		RO verifies RCPs stopped after CIB actuation, reports status to ANSS.
	"A" SG pressure is decreasing due to steam line rupture in containment.		PO checks SG pressures and reports "A" SG as faulted to the ANSS.
Crew transitions to E-2.			ANSS exits E-0 and enters E-2, and informs the control room.
	CREBAPS actuated on CIB. Control room dampers shut. Timers running, control room pressurizing.		PO verifies CREBAPS actuated.
			ANSS directs STA to monitor status trees.
	Yellow marks lit.		PO verifies steamline isolation.
	"B" and "C" SG pressures are stable.		PO checks for intact SG.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	"A" SG pressure is dropping uncontrollably.		Crew identifies "A" SG as faulted.
	FCV-FW-478 closed. FCV-FW-479 closed.		PO closes/verifies "A" MFRV and BFRV closed.
**********			
When directed, as PAB Operator, align TDAFWP steam supply to "C" SG and isolate "A" SG.	MOV-FW-151E,F closed.		PO closes MOV-FW-151E and 151F.
LOA FWM36 = 1 (MS-17) LOA FWM34 = 0 (MS-15) Then report actions to the control room.	MS-17 open. MS-15 closed.		Crew directs operator to close MS-15 and open MS-17.
**********			
	PCV-MS-101A closed. HCV-MS-104 closed.		Crew verifies "A" SG atmospheric dump valve and RHR valve closed.
	No S/G levels are rising in an unexpected manner.		Crew checks if SG tubes are intact.
Crew transitions to E-1.			ANSS makes transition to E-1, informs crew.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
NOTE: Depending upon the timing of RCP tripping and AUXFW throttling, the STA may recommend a transition to FR-P-1 during the performance of E-1. **If crew transitions to FR-P-1**, follow scenario using actions outlined on Page 20 and terminate drill in FR-P-1.	CREBAPS actuated per E-2.		PO re-checks control room habitability.
	No RCPs running.		RO checks if RCPs should be stopped.
**********			
As extra operator, acknowledge request to start up H_2 analyzers, then following an appropriate time delay, enter: **OVR AN02097 = 1** **OVR AN02105 = 1**	Annun A2-97 energizes. Annun A2-105 energizes. H_2 analyzers in service.		Crew directs operator to place wide range H_2 analyzers in service.
**********			
	"A" SG previously diagnosed as faulted and isolated (pending reports of local operator actions).		PO checks if any SG is faulted.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Use LOA AUX 21 to open IA-90, if requested.	NR level 6% to 50% or total feed flow > 330 gpm.		Crew checks intact SG level. PO maintains intact SG levels 6% to 50%.
	Instrument air pressure > 100 psig		PO verifies air pressure > 100 psig
	PORV shut in auto and block valve energized.		RO verifies PORVs and block valves status.
	Subcooling > 43 °. Secondary heat sink sufficient. RCS pressure stable or rising. PRZR level > 5 %.		RO/PO check if SI can be terminated.
Crew transitions to ES-1.1.			ANSS makes transition to ES-1.1, informs crew.
	DG-P-1A,B, PTL. DA-P-4A,B STOP. CV-P-1A,B, PTL.		RO isolates CNMT vents and drains system.
	Status lights PNL 62 C-4 not lit. Status light PNL 62 D-4 lit.		RO resets SI (both trains).
	CIA and CIB reset.		RO resets CIA and CIB (both trains).

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	CH-P-1B HHSI pump running		RO checks only one charging pump in service.
	Stub buses de-energized by CIB		PO checks stub busses energized. PO performs steps to reenergize 4KV Stub Buses. PO performs steps to reenergize 480 V Stub buses
	Auto Cold Leg Recirc reset.		RO resets Auto Cold Leg Recirc Changeover (both trains).
	CNMT instrument air pressure < 95 psig. with no CNMT air compressors running		PO verifies no containment instrument air are available, one Station air compressor is running Crew dispatches operator to open IA-90. After IA-90 is open, the PO places both CNMT air compressors in PTL.
	Pressure stable or rising.		RO checks RCS pressure stable or rising.
	FCV-CH-122 CLOSED. MOV-CH-289, 310 OPEN. FCV-CH-122 throttled.		RO establishes normal charging flow.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	MOV-SI-867A,B,C,D CLOSED.		RO isolates BIT.
	Pzr level controlled at 5-50% using FCV-CH-122.		RO controls Pzr level.
	LHSI pumps stopped and in auto.		RO stops LHSI pumps and places in auto.
	Quench or recirc spray pumps are running. Cnmt pressure < -3 psig CIB previously reset RWST level > 19 ft A S/G is identified as faulted and isolated. Cnmt NR pressure > 8.9 psia		RO checks if CNMT spray should be stopped. RO stops QS Chem injection pumps, closes MOV-QS-104A,B and stops QS pumps. Crew dispatches operator to throttle RW-200 and close Rw- 199.
	RCS subcooling > 23°F. Pzr level > 5%.		RO verifies SI flow not required.
	Pzr level > 18%.		RO checks Przr level greater than 18%.
	Pzr level > 18%. One CCR pump running. Letdown rad monitor RIS-CH-101A and B consistent with pre-event values.		RO checks if letdown can be established.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	Normal charging flow established: FI-CH-122 flow indicated. MOV-CH-289 and 310 open. BIT flow FI-SI-943 not indicated. TV-CH-204 open. PCV-CH-145 75% open in manual. LCV-CH-460A and B open. TV-CH-200A, B/C open. PCV-CH-145 set to 300 psig and in auto.		RO establishes letdown.
	Makeup control in auto and set to maximum.		RO checks VCT makeup control system.
	MOV-CH-115C and E open. MOV-CH-115B and D shut.		RO aligns HHSI pump suction to VCT.
Terminate drill after charging pump is aligned to the VCT per ES-1.1.			
IF CREW transitioned to FR-P-1, commence following scenario at this point.			
			Crew enters FR-P-1.
	RCS pressure is > 325 psig.		RO checks RCS pressure > 325 psig.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			RO checks RCS Cold Leg Temperatures - Stable or rising and verifies temperature are still dropping due the Faulted A S/G.
			Crew verifies that AFW and main feedwater are secured to the A S/G.
			Crew verifies that steam from the A S/G is secured.
			PO controls AFW to B & C S/G's to > 330 gpm until at least one is greater than 6% NR level.
	Station air Pressure is > 100 psig.		PO checks station air pressure > 100 psig.
	PORV shut in auto and block valve energized. OPPS is not in service. RCS pressure is < 2325 psig.		RO verifies PORVs and block valves status.
	HHSI flow indicated.		RO checks if SI is in service and determines that HHSI flow exists.
	Subcooling > Att. 6-E. RVLIS Full Range > 64%.		RO Determines that SI flow can be terminated by checking subcooling and RVLIS FULL Range.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	DG-P-1A,B, PTL. DA-P-4A,B STOP. CV-P-1A,B, PTL.		RO isolates CNMT vents and drains system.
	Status lights PNL 62 C-4 not lit. Status light PNL 62 D-4 lit.		RO resets SI (both trains).
	CIA and CIB reset.		RO resets CIA and CIB (both trains).
	Stub buses de-energized by CIB		PO checks stub busses energized. PO performs steps to reenergize 4KV Stub Buses. PO performs steps to reenergize 480 V Stub buses RO resets both trains of SIS AUTO Recric Changeover.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	CNMT instrument air pressure < 95 psig. with no CNMT air compressors running		PO verifies no containment instrument air are available, one Station air compressor is running Crew dispatches operator to open IA-90. After IA-90 is open, the PO places both CNMT air compressors in PTL.
	CH-P-1B HHSI pump running		RO checks only one charging pump in service.
	FCV-CH-122 CLOSED. MOV-CH-289, 310 OPEN. FCV-CH-122 throttled.		RO establishes normal charging flow.
Terminate drill when BIT isolated in FR-P-1. Collect and review logs after allowing operators to complete them. Erase any vond markings associated with this drill.	MOV-SI-867A,B,C,D CLOSED.		RO isolates BIT. Operator logs should be clear, accurate and concise.

NOTE: The expected EPP declaration is an UNUSUAL EVENT- TAB 2.10. If FR-P-1 is entered then an ALERT declaration using TAB 1.2.1 would be requierd.

Facility: BVPS - Unit 1 Scenario No.: 2 OP-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Objectives: To evaluate the applicant's ability to implement AOPs and ARPs in response to an instrument failure and RCP seal failure; to initiated a plant shutdown as required by T.S. 3.0.3; and to respond to a Pressurizer vapor space LOCA (EOP E-1 and ES-1.2.)
Initial Conditions: 75% power, Bank D at 206 steps, EOL, 161 ppm boron,Xenon increasing @ 200pcm/hr due to power decrease from 100% over the past 2 hours as requested by system operator.
Turnover: FW-P-3A, MDAFW pump is on clearance for motor replacement. Due to be returned next shift. Rod control is in manual while I&C troubleshoots a fault on power mismatch circuit, CBD @ 206 steps, boron = 161 ppm, burnup = 14,000 MWD/MTU. N42 Power Range channel inoperable and removed from service IAW AOP 1.2.1C. Crew is to maintain current power level pending request of System Operator.

Event No.	Malf. No.	Event Type*	Event Description
1	MALF NIS3B, PRS8A	C(RO/SRO)	PT-RC-455, RCS pressure protection channel I fails high. With N42 already inoperable TS 3.0.3 should be entered due to 2/3 OT/DT channels being inoperable.
2		R(RO) N(PO/SRO)	Power reduction of at least 5% due to TS 3.0.3.
3	MALF CHS20B	I(RO) I(SRO)	VCT level control channel failure.
4	MALF RCS5B	C(RO/SRO)	Excessive #1 seal leak off of 20 gpm on 1RC-P-1B, B loop RCP, requiring a Rx trip IAW ARP 7.4.ABE.
5	MALF CRF12 A&B	M(ALL)	ATWS that causes a PZR PORV to open. Local Rx trip to occur at t = 2 minutes after requested from crew.
6	MALF FWM11 B&C	C(PO/SRO)	Turbine driven AFP trips on start. FW-P-3B fails to auto start, must be started manually.
7	MALF PRS3A	M(ALL)	PCV-RC-455C, PZR PORV, leaks. MOV-RC-535 fails to close resulting in vapor space LOCA.

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INITIAL CONDITIONS IC 70___
RCS boron - 161 PPM, CBD = 206 steps in MANUAL, Reactor power 75%, EOL, Burnup 14000 Mwd/Mtu.
XE increasing @ 200 pcm/hr.

ADDITIONAL LINEUP CHANGES	STICKERS	VOND MARKINGS
NI-42 Remove **control power** fuses, Rod Stop Bypass Switch to Bypass,Channel Comparator Defeat Switch to 42. NR-45 **not** selected to NI-42.	OOS- NI-42 Meters(2) OOS Channel 2 OTDT Meter CAUTION Ann OTDT Trip and Rod Stop	
FW-P-3A in PTL	DANGER- FW-P-3A switch	FIG. 24-2 FW-37 shut WT-226 shut
Status Panel AFW System TR "A " lit		
Rod Mode Selector in Manual	CAUTION- Rod Mode switch-Auto	

EQUIPMENT STATUS MARK	DATE/TIME	T/S# AND TIME LIMIT
IPC Delta Flux Alarm	Two Days ago	4.2.1.1.b Log Delta I every 30 min
IPC Rod Deviation Alarm	Two Days ago	3.1.3.2..d Log rod position once/4 hrs
NI-42	Two Hours ago	3.3.1.1 Actions 2,7
FW-P-3A	Three Hours ago	3.7.1.2a, 72 hours and 10 days/6 hrs to HSTBY / 6 hrs to HSD
Power mismatch circuit	1 week ago	NA

SHIFT TURNOVER INFORMATION
1. IPC Delta Flux Alarm - Log Delta I every 30 min.
2. IPC Rod Deviation Alarm - Log rod position once/4 hrs.
3. NI-42 removed from service per AOP 1.2.1C, OST-2.4A determined that QPTR inputs are operable and SR 4.2.4 requires QPTR to be calculated once every 12 hours, OTDT Rod Stop and Trip Channel II bistables are tripped. Repairs estimated to take at least 24 hours.
4. FW-P-3A motor failure repairs estimated to take 8 hours.
5. Auto rod control power mismatch circuit unstable. Maintain Rods in Manual.
6. Maintain current power level.

SCENARIO SUPPORT MATERIAL

OM 1/2.48.1 Figure C-2 (ANSS Turnover Checklist)
OM 1.54.2 S1-2 (Shift Operating Report)
OM 1.54.2 S1-5 (NCO Report)
OM 1.54.2 S1-17 (ANSS Report)

INSTRUCTIONAL METHODS NOTES

There shall be no direct intervention or assistance by the simulator instructor. Terminate the drill when directed by the exam team.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Initialize the simulator at IC- 70	Reactor at 75% power, EOL, 161 ppm, XE increasing @ 200 pcm/hr due to power decrease from 100% over the past two hours as requested by the System Operator.		
Insert **FILE SIMIC** and **FILE LDRL2** File LDRL2 contains LOA RCS20,25 = 1 overtemperature delta T BSs for N-42 failure.			
Align Switches to remove NI-42 from service per AOP 1.2.1C. Place RED tag on switch of FW-P-3A. PLACE TAGS and CHECK SWITCH POSITIONS.	Places equipment out of service per the initial conditions setup page.		
On IPC inset RODUP and clear alarms.			

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Initialize the simulator at IC- 70	Reactor at 75% power, EOL, 161 ppm, XE increasing @ 200 pcm/hr due to power decrease from 100% over the past two hours as requested by the System Operator.		
Insert **FILE SIMIC** and **FILE LDRL2** File LDRL2 contains LOA RCS20,25 = 1 overtemperature delta T BSs for N-42 failure.			
Align Switches to remove NI-42 from service per AOP 1.2.1C. Place RED tag on switch of FW-P-3A. PLACE TAGS and CHECK SWITCH POSITIONS.	Places equipment out of service per the initial conditions setup page.		
On IPC inset RODUP and clear alarms.			

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE

Assign shift positions:

NSS _____
ANSS _____
RO _____
PO _____
STA _____

Simulator Frozen until after shift turnover unless it needs to be on momentarily for an alignment change.

Conduct shift turnover with oncoming operators.

Oncoming operators should complete the required checklists and carry out a formal shift turnover.

****

When the shift turnover is complete, place the simulator to **RUN** and commence the drill.

Simulator running.

Crew assumes control of the unit.

****

EVENT # 1

PT-RC-455 fails high

Three minutes after shift turnover:

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
**********			
ACTIVATE MALFUNCTION **PRS8A** SET TO **2500** PSIG.	PI-RC-455 indicates 2500 psig. Annunciators A4-19, 53 and 54 alarm.		RO acknowledges alarm, verifies alarm and informs ANSS.
**********			
			Crew refers to ARPs A4-19, 53, and 54 as necessary.
			RO informs ANSS that PT-RC-455 failed high.
			ANSS ensures plant is stable.
			ANSS refers to T.S. 3.3.1.1, 3.3.1.2, and 3.3.3.5 and refers to action statement 7.
			Crew refers to OM 1 Table 1-6 or procedure 1.6.4.IF Attachment 2 to obtain bistable numbers. ANSS determines that OT-DT cannot be tripped without causing a reactor trip and enters TS 3.0.3.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			ANSS may direct I&C to trip the bistables for SI, high & low pressure trips and P-11.
As I&C, use the following to trip bistables, then report. REPAIRS ARE EXPECTED TO TAKE 10 HOURS AS A MINIMUM. **********			
			ANSS directs I&C to investigate and repair PT-RC-455 IAW MWR.
OVR P07029W=1 LOA RCS40=1 LOA RCS39=1 LOA RCS41=1 LOA RCS42=1 OVR P07029W=0 **********	Channel 1 protection rack door 3 open. BS 455C TRIPPED. BS 455A TRIPPED. BS 455D TRIPPED. BS 455B TRIPPED. Channel 1 protection rack door 3 shut.		RO monitors bistable tripping
Initiate the following event and continue with the drill after the bistables have been tripped or ANSS directs Crew to commence shutdown.			
EVENT #2 POWER REDUCTION			Crew commences power reduction in accordance with OM-52.4B.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Reactor engineering currently unavailable. Plant Management directs shutdown to commence ASAP. NSS recommends a 1%/min rate.			Crew develops a reactivity plan per P&L's 2 to shutdown the plant. PO prepares EHC for load reduction and depresses GO when ordered. PO maintains VPL 5% above turbine load RO checks axial flux within target band, rods above RIL and Tavg +/- 2 F of Tref. PO maintains a generator lagging power factor and Base Adjuster at Null.
After crew has reduced power at least 5% continue with EVENT 3 ********** **INSERT MAL CHS20B, 0, 0** Fails LT-CH-115 tc 0.	A3-53 VCT LEVEL HIGH-LOW AUTO M/U in progress Vertical board meter reads zero.		RO determines that LT-115 has failed and reports that AUTO M/U is in progress to the ANSS. Crew determines actual VCT level by checking computers and local level indication (LT 112). RO places M/U control switch in OFF when rising VCT level is confirmed.
	LT-CH-112 indicates rising level		RO may Divert if level exceeds 76%

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			Crew monitors Tave to determine if an inadvertent boron change has occurred. ANSS notifies I&C of LT-115 failure. Crew controls VCT level manually within normal limits.
EVENT # 4 Once crew has control of VCT level continue with Excessive Seal Leak Off on B RCP **********	A3-87 RCP SEAL LEAKOFF FLOW HIGH Recorder FR-CH-154 indicates high flow		RO reports A3-87 and verifies high flow condition exists on FR-CH-154 on the B RCP. ANSS responds with ARP 7.4.ABE.
ENTER **FILE LDRL2B** ********** LDRL2B contains OVR P07061C P07061D MAL CRF12A CRF12B RCS5B ACT,22,0,0 SET JINHFW3B=T			RO checks open MOV-CH-308B,370 and HCV-186.
	Seal Injection Flow to B RCP > than to A&C.		RO verifies that injection flow is not low.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	TI-CH-116 is reading normal (100 F) FR-CH-154 indicates on a rapid rise on B RCP.		RO verifies that VCT outlet temperature is normal. RO checks that B RCP has high rate of increase or seal leakoff flow and is >20 gpm. Makes report to ANSS ANSS verifies reactor power > 31% and within 5 min directs a Manual Reactor Trip and a B RCP trip. ANSS directs the RO to close MOV 303B within 3 to5 minutes following the trip of B RCP Crew attempts to manually trip.
EVENT # 5 Reactor trip failure in auto and manual - ATWS. ANSS transitions to FR-S.1. ANSS must implement FR-S.1 at Step 1 of E-0 and restore the core to a subcritical state.			RO notes a reactor trip has not occurred and informs ANSS of ATWS condition. Operators commence immediate actions of E-0 and FR-S.1, ANSS refers to FR-S.1. STA monitors status trees for information only in FR-S.1.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Crew performs immediate operator actions of FR-S.1.	Reactor trip breakers shut. Neutron flux steady. Rod bottom lights not lit. Rod position indication not zero.		RO verifies reactor trip, attempts to trip reactor.
********** During the imediate manual actions:	Turbine trips.		PO trips turbine, using both trip PBs.
INSERT FILE LDRL2C CONTAINS FWM11C AND PRS3A,50,0,0 **********			
	Tref drops to 547° F.		PO verifies Tref dropping.
CRITICAL TASK Manually insert rods following ATWS.	Rods inserting.		RO uses manual rod control to insert rods.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
**********			
Following the crew's request to open the reactor trip breakers:			Crew dispatches an operator to open the reactor trip breakers.
ENTER **FILE LDRL2D** Contains CRF14A&B with 120,130 time delays.	Rx Trip Breakers open.		
After observing trip, report reactor trip breakers open.			
**********			
			Crew sounds standby alarm and announces Unit 1 reactor trip without SCRAM.
	TVs, Gvs, RSVs, IVs shut.		PO verifies turbine trip.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	Steam dump control interlock selector switches in off.		PO isolates condenser steam dump.
Immediate operator actions complete.	MOV-1MS-100A and B shut. Reheat controller reset pushbutton depressed.		PO ensures reheat steam isolation.
EVENT # 6 FW-P-3B fails to start automatically. FW-P-2 fails.			
CRITICAL TASK Manually initiate AFW flow following ATWS.	NO AFW pumps running, until FW-P-3B started manually. MOV-FW-151A-F full open.		PO verifies AFW starts MDAFW "B" pump verifies MOV-FW-151A-F full open identifies FW-P-2 as not running.
	HHSI pump running. MOV-1CH-350 open. Boric acid transfer pump CH-P-2A in fast speed. FCV-CH-122 open > 75 gpm. Emergency boration flow indicated.		RO initiates emergency boration via MOV-CH-350.
	PZR pressure less than 2335 psig.		RO checks Pzr pressure < 2335 psig.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Crew may elect to manually actuate SI now; but must do so upon return to E-0. When manpower is available following manual SI, the ANSS will direct the PO to verify the first 15 steps of E-0.	SI may not have auto actuated. SI actuated status light not lit.		Crew checks SI actuation status. ANSS directs PO to verify the first 15 steps of E-0 when time permits.
	Intact S/G > 6% NR level Total feed flow < 630 gpm.		PO checks total feed flow to intact SGs > 630 gpm.
	Station Air >110 psig		PO checks Station air pressure > 100 psig.
	SR detector HV switches in normal position.		RO verifies SR Detector-High Voltage Switches in normal and transfers NR-45 to operable SR and IR.
Report breakers locally tripped after breakers open.	Reactor trip breakers opened. All control rods fully inserted.		RO informs ANSS that the reactor tripped.
	FCV-CH-113B closed. FCV-CH-114A closed. FCV-CH-114B closed.		RO verifies dilution paths isolated.
	Uncontrolled cooldown not in progress.		RO checks for reactivity insertion from RCS uncontrolled cooldown.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	No SG pressure dropping in an uncontrolled manner or completely depressurized.		RO checks pressure in all SGs to identify a faulted SG.
			ANSS verifies that there is no controlled cooldown in progress and transitions to step 18 to verify reactor subcritical.
	PR NIs less than 5%. IR NIs neg SUR.		RO verifies reactor subcritical.
ANSS transitions to E-0 upon completing FR-S.1 and ensures operators verify reactor trip and actuation of SIS.			ANSS transitions from FR-S.1 to E-0 and informs control room to commence E-0 immediate actions.
	RCS pressure drops, containment pressure and temperature increase.		RO and PO commence immediate actions of E-0, ANSS references E-0 to verify immediate actions.
	Reactor trip and bypass breakers open, neutron flux decreasing. Rod bottom lights lit. Rod position indication at 0.		RO verifies reactor tripped.
			RO sounds standby alarm.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	Throttle and governor valves closed, reheat stops and interceptors closed.		PO verifies turbine tripped.
	Depress reheat controller, reset pushbutton. Reheat flow control and block valves closed.		PO ensures reheat steam isolated.
	Main generator output breakers open. Exciter circuit breaker open.		PO verifies generator trip.
	1AE and 1DF busses energize.		PO verifies AE and DF busses energized.
EVENT # 7 Pressurizer Porv is open and associated block valve cannot be closed.	RCS Pressure dropping due to open PORV Any SI annunciator. SI actuation status light. Both trains of SI manually actuated.		RO checks if SI has actuated, identifies that SI required and manually initiates both Trains of SI.
	Both EDGs running.		PO verifies EDGs running.
	HHSI pumps running. FI-SI-943 indicates flow. LHSI pumps running. All red marked SIS valve indicating lights lit.		RO/PO verify SI system status.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	FW-P-3B running MOV-FW-151 A through F open.		PO verifies AFW status.
	RPRW pumps running. CCR Hx pressure > 20 psig.		RO verifies river water system in service.
	CIA actuated, all indicating lights with orange marks lit.		RO/PO verify CIA.
	All indicating lights with green marks lit.		RO/PO verify FWI.
	All indicating lights with yellow marks lit.		RO/PO check if MSLI required.
	Annunciator A1-72 not lit. CNMT pressure < 8 psig. CIB and containment spray not required.		RO/PO check CIB spray status.
	CCR pumps running.		RO/PO verifies CCR status.
	SR detector switches in normal.		RO verifies SR detector HV switches selected to normal and NR-45 selected to operable channels.
	AFW flow > 330 gpm.		PO verifies AFW flow greater than 330 gpm.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	Station Air >110 psig Tavg trending to 547°F.		PO checks Station air pressure > 100 psig. RO/PO verifies RCS Tavg stable at or trending to 547°.
			ANSS directs available personnel to perform emergency safety function checklist.
	PORV PCV -RC-455C indicates open Other PORVs are closed. Safeties closed. Spray valves closed. PRT pressure, temp and level all have increased..		RO checks PZR PORVs, safeties, spray valves, and PRT RO attempts to close PORV isolation valve MOV- RC -535, if not already done . RO reports that MOV-RC-535 will not close.
Crew transitions to E-1.			ANSS transitions from E-0 to E-1 and informs crew.
	CREBAPS not required.		ANSS verifies CREBAPS status.
CRITICAL TASK Manually trip RCPs when differential pressure falls to < 200 psid.	< 200 psid RCS to S/Gs.		RO checks if RCPs should be stopped. Crew determines RCPs should be tripped and trips RCPs.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
**********			ANSS directs an extra operator to start the H_2 analyzers.
If time permits align WR H_2 analyzers on VB "A", then insert:			
ANNUN AN02097 = 1 AN02105 = 1	Annun. A2-97 energizes. Annun. A2-105 energizes. H_2 analyzers in service.		
and report actions to the control room.			
**********			
	No faulted SGs.		PO checks if any SGs are faulted
	SGWL NR > 6%. Total feed flow > 330 gpm		PO checks intact SG level and controls feed flow to maintain SG level > 6% NR and limit RCS cooldown.
	Station Air >110 psig		PO checks Station air pressure > 100 psig.
	Power available to block valves. PORV 455C failed open.		RO checks PZR PORV and block valves.
	No subcooling.		ANSS checks if SI flow can be terminated, does not secure HHSI flow.
	No SG level rising in an uncontrolled manner. Secondary radiation consistent with pre-event values.		ANSS checks if SG tubes are intact.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	CIB not actuated. No QS or RS pumps running.		ANSS checks if CNMT spray should be stopped.
	DG-P-1A,B, PTL. DA-P-4A,B STOP. CV-P-1A,B, PTL.		RO isolates CNMT vents and drains system.
	Status lights PNL 62 C-4 not lit. Status light PNL 62 D-4 lit.		RO resets SI (both trains).
	CIA and CIB reset.		RO resets CIA and CIB (both trains).
	RCS pressure > 325 PSIG and decreasing.		RO checks if LHSI pumps should be stopped. Checks RCS pressure trend and does not stop LHSI pumps.
	All SG pressures stable.		PO checks SG pressures stable or rising.
NOTE: If RCS pressure is increasing , crew will return to Step 2. The drill could be be terminated at that point.	RCS pressure decreasing..		RO checks RCS pressure stable or decreasing.
	1AE and 1DF energized by offsite power.		PO checks if unloaded EDG should be stopped.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	#1 and #2 EDGs secured.		PO stops unloaded EDG.
	Power available to valves in Attachment 1-F (Train "A" available).		Crew verifies cold leg recirc capability using Attachment 1F.
	No expected increase.		Crew checks Aux. building and safeguards radiation. ANSS directs Chemistry to sample the containment sump and RCS,using the PASS system(OM-14C.4.A).
**********	AUX steam available from U-II.		Crew starts additional plant equipment to assist in recovery.
LOA AUX42 = 1 to line up aux steam from Unit 2. **********			
Crew transitions to ES-1.2.	RCS pressure greater than 325 psi.		ANSS determines method of cooldown for long term plant recovery and transitions to ES-1.2 "Post LOCA Cooldown and Depressurization" Step 1.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Terminate drill after crew transitions to ES-1.2 Post LOCA Cooldown and Depressurization Step 1.			
Collect and review logs after allowing crew time to complete.			Crew logs should be accurate clear and concise.

NOTE: The expected EPP declaration is a SITE AREA EMERGENCY TAB 2.3 FAILURE OF REACTOR PROTECTION.

Facility: BVPS - Unit 1 Scenario No.: 3 OP-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Objectives: To evaluate the applicants' ability to implement AOPs and ARPs in response to a NI failure, dropped control rod, loss of main feedwater pump; to a initiate a controlled power reduction; and to respond to a reactor trip (EOP E-0, and ES-0.1) with subsequent malfunctions leading to a loss of secondary heat sink (EOP-FR-H.1).

Initial Conditions: 80% power, BOL, 1077 ppm boron, returning to full power following power at 10% per hour reduction to 75% as requested by system operator. Power was held at 75% power for 48 hours.

Turnover: FW-P-3A, MDAFW pump is on clearance for motor replacement. Due to be returned next shift. CBD @ 182 steps, boron = 1077 ppm, burnup = 3,000 MWD/MTU. The "B" station instrument air compressor is out of service for bearing replacement.

Event No.	Malf. No.	Event Type*	Event Description
1	MALF NIS3D	I(RO/SRO)	N44 power range channel fails low, auto rod control drives out control rods.
2	MALF CRF4	C(RO/SRO)	During rod withdrawal, rod H14 drops due to blown fuse.
3		R(RO) N(PO/SRO)	Power reduction initiated in response to dropped rod.
4	MALF FWM1B	C(PO/SRO)	One main feedwater pump trips.
5	MALF FWM1A	M(All)	Second main feedwater pump trips, resulting in a reactor trip on low SG level.
6	INH TUR	C(PO/SRO)	Turbine fails to trip, crew manually trips turbine
7	MALF FWM11C	C(PO/SRO)	Turbine Driven AFP fails to start.
8	MALF FWM11D	M(ALL)	FW-P-3B trips on motor fault, resulting in a loss of heat sink.

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

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INITIAL CONDITIONS IC _72___
RCS boron - 1078 PPM, CBD 182 steps Reactor power 80% BOL(3,000 mwd/mtu)

ADDITIONAL LINEUP CHANGES	STICKERS	VOND MARKINGS
SA-C-1B PTL	DANGER SA-C-1B	
FW-P-3A PTL	DANGER FW-P-3A	FIG. 24-2 FW37 shut
		WT 226 shut

Status Panel AFW SYS TR A lit

EQUIPMENT STATUS MARK	DATE/TIME	T/S# AND TIME LIMIT
IPC Delta Flux Alarm	Two Days ago	4.2.1.1.b Lcg Delta I every 30 min
IPC Rod Deviation Alarm	Two Days ago	3.1.3.2..d Log rod position once/4 hrs
FW-P-3A	4 hours ago	3.7.1.2.d 72 hrs& 10 days 6hstby6hsd
SA-C-1B	1 week ago	NA

SHIFT TURNOVER INFORMATION
1. IPC Delta Flux Alarm - Log Delta I every 30 min.
2. IPC Rod Deviation Alarm - Log rod position once/4 hrs.
3. SA-C-1B Motor bearing replacement. Due back in seven days.
4. FW-P-3A Motor replacement-shorted winding, due back next shift.
5. Return to 100% power at 10%/hr using OM-52.4.B-Part B. **START with STEP 4.**
6. Reactor plant at 80% returning to full power following a load swing to 75% as requested by the System operator. The power decrease was at 10%/hr.Power has been held at 75% for 48 hours. BOL(3,000 mwd/mtu).
7. All necessary notifications have been made and permission has been received to continue the power increase.
8. Provide Reactor Engineering's reactivity plan.

SCENARIO SUPPORT MATERIAL
OM 1/2.48.1 Figure C-2 (ANSS Turnover Checklist)

OM 1.54.2 S1-2 (Shift Operating Report)
OM 1.54.2 S1-5 (NCO Report)
OM 1.54.2 S1-17 (ANSS Report)

INSTRUCTIONAL METHODS NOTES

There shall be no direct intervention or assistance by the simulator instructor. Terminate the drill when directed by the exam team.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Initialize the simulator at IC -72 BOL(3,000 mwd/mtu).	Reactor plant at 80% returning to full power following a load swing to 75% as requested by the System operator. The power decrease was at 10%/hr. Power was held at 75% for 48 hours. Crew is to return to 100% from 80% at 10%/hr, using OM-52.4.B-Part B.		
ENSURE RODS IN AUTO	All necessary notifications have been made and permission to increase load has been received.		
Insert FILE SIMIC			
Insert **FILE LDRL3** TAG FW-P-3A and SA-C-1B	Places equipment out of service per the initial conditions setup page.		
IPC RODUP AND CLEAR ALARMS. Assign shift positions:			
NSS _____ ANSS _____ RO _____ PO _____ STA _____	Simulator Frozen until after shift turnover unless it needs to be on momentarily for an alignment change.		
Conduct shift turnover with oncoming operators.			Oncoming operators should complete the required checklists and carry out a formal shift turnover.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
**********			
When the shift turnover is complete, place the simulator to **RUN** and commence the drill.	Simulator running.		Crew assumes control of the unit.
**********			
After crew assumes the shift **insert Event #1 prior to crew placing Rods in MANUAL.**			Following the Reactivity Plan, Crew attempts to raise reactor power toward 100%.
EVENT # 1& # 2			
Power Range NI N-44 fails LOW. Rods drive out and rod H-14 drops.			
**********	PR Channel N44 fails low.		
	N44 power indications drop to 0%		
After crew begins raising power, insert the following:	AFD out of target band alarm.		
	NIS PR Upper Section Flux Deviation Or Auto Defeat alarm.		
FILE LDRL3A	NIS PR Comparator Deviation alarm.		
**********	NIS PR Flux Rate High alarm.		
Malfs	A4-52,-67,-68,-69.		
NIS3D,200,0	A4-126 ROD BOTTOM ROD DROP		
CRF4,2,F6,3	ROD H-14 rod bottom light is lit and IRPI is zero.		

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	Pzr level and pressure, RCS Tavg drop with related alarms.		RO acknowledges alarms, reviews indications, diagnoses N44 failure and dropped rod and informs ANSS.
			Crew prioritizes use of AOP 1.1.5 and AOP 1.2.1c. and responds to drop rod first
	Only rod H-14 indicates 0 steps, only rod bottom light lit.		RO verifies only one rod dropped.
	Rod control in manual.		RO places/verifies rod control selector switch in manual.
When asked to investigate dropped rod, inform control room after appropriate delay that the stationary gripper fuse is blown for H-14. Report primary voltage as 18 volts.	Rod H-14 stationary gripper fuse blown.		Crew directs I&C to investigate the cause of dropped rod.
Event # 3 Power Reduction Inform control room (as I&C) that cause for failure appears to be faulty fuse, and that it can be replaced and the rod recovered.	Turbine load reducing.		Crew continues actions of AOP 1.1.5, reduces turbine load to < 70%, using OM-52.4.B.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	Conditions established and maintained for rod recovery.		ANSS refers to T.S. 3.1.3.1, informs plant management of status and ability to recover rod, contacts reactor engineering for assistance.
			Crew references to AOP 1.2.1.C POWER RANGE CHANNEL MALFUNCTION"
NOTE: Crew may conservatively place the Upper and Lower Comparator switches to Defeat until input to comparators is confirmed to be operable.	Bistable tripped.		Crew removes N44 control power fuses from Drawer A.
	Rod control in manual		Crew verifies rod control systems in manual.
	Rod Stop Bypass Switch - N44.		Operator defeats N44 at NIS rack.
	Comparator Channel Defeat Switch - N44		
			RO selects or ensures NR-45 is selected to an operable channel.
			NSS refers to Tech. Spec. 3.3.1.1 and 4.2.1.1.b.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
EVENT # 4 After NI-44 has been removed from service and power has been reduced to 70% continue with next event. ********** **Insert MAL FWM1B.** Trips 1B Main Feedwater pump **********	A7-37 S/G FWP AUTO STOP A7-39 FWP DSCHG FLOW HIGH A7-45,53,61 S/G LEVEL DEVIATION		PO recognizes loss of FW-P-1B and reports to ANSS. Crew may refer to ARP for A7-37 ANSS refers to AOP 1.24.1 Loss of Main Feedwater.
	Reactor power >65%		RO verifies reactor power < 80% and reports to ANSS. ANSS directs crew to reduce Turbine load to 60% in accordance with AOP 1.51.1 at either 2 or 5%/min
If asked to investigate the loss of FW-P-1B MFWP, report that there is no lube oil pressure. Aux oil pump is not running and bearing damage should be suspected.	A7-6 , A7-79 are not lit		RO alerts Plant Personal
			RO verifies PORVs are available PO sets Load Setter to ordered rate RO determines required boron and borates or Emergency Borates depending on rate ordered.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
			RO maintains Tavg within +/- 5f of Tref, maintains rods above RIL and attempts to control Delta Flux within Target Band.
			PO initiates load decrease by pressing GO and reduces VPL as necessary
			Crew notifies System Operator and Station Management
	Reactor Power < 60%		Crew stops load decrease when less than 60%.
	A6-79 not lit		PO checks proper operation of FWP recirc valves
	FW>STM		PO verifies steam flow less than available feed and that S/Gs are trending to program level
			PO verifies MFW pump performance amps <450 amps and A7-40 not lit.

When crew establishes stable conditions

EVENT # 5

Loss of second main feedwater pump -

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
ENTER **FILE LDRL3B**.	Reactor will auto trip on low S/G level following loss of second feed water pump		Crew recognizes feed pump trip and may manually trip reactor prior to auto trip.
Crew performs immediate operator actions of E-0.	Reactor trip and bypass breakers open, neutron flux decreasing. Rod bottom lights lit. Rod position indication at 0.		RO verifies reactor tripped.
			RO sounds standby alarm and announces Unit 1 reactor trip.
EVENT # 6 Main Turbine Fails To Automatically Trip.	Throttle and governor valves open. Reheat stop and intercept valves open.		PO checks turbine tripped. PO reports that **no** Throttles or Governor and Reheat stops or Intercept valves are closed.
CRITICAL TASK Manually trip the turbine.			
	Throttle and governor valves are closed. Reheat stop and intercept valves are closed.		PO **MANUALLY** trips turbine, verifies turbine trip valves close and reports actions to ANSS.
	Reheat flow control valves and MOV MS- 100 A & B are closed.		PO ensures reheat steam isolation by depressing reheat controller reset push-button and checks MOV-MS-100A & B closed.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	Main generator output breakers open. Exciter circuit breaker open.		PO verifies generator trip.
	AE and DF busses energized.		PO verifies Emergency Busses energized.
SI may not have actuated yet, crew may opt to manually initiate SI (due to degrading conditions) prior to exceeding actuation criteria.			RO checks if SI is actuated or required.
Immediate Operator Actions Completed.			
Crew may perform several steps of ES-0.1 before STA makes notification of Heat Sink Red Path.			ANSS makes transition to ES-0.1 if SI is not initiated and informs crew.
EVENT # 7 & 8	FW-P-3B and FW-P-4 are tripped AUXFW on vertical board indicates 0 gpm to all S/Gs. Both main FW pumps are tripped.		STA begins monitoring status trees (if transition is made) and informs crew that the entry conditions of FR-H.1 are met..
Crew transitions to FR-H.1.			ANSS makes transition to FR-H.1 and informs crew.
	RCS pressure > any non-faulted SG pressure RCS hot leg temp > 320°F.		RO/PO check if heat sink is required.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	3 SG WR levels > 10%. Pzr pressure less than 2325 psig.		RO/PO check if RCS bleed and feed is required.
	WT-TK-10 level > 27.5 ft		PO checks PDWST level > 27.5 ft
	FW-P-3B failed to start and 3A OOS. FW-P-2 valve alignment verified. MOV-FW-151A-F full open. TV-MS-105A&B open. MOV-MS-105 open		Crew attempts to establish AFW flow to any SG(s).
When requested to check the TDAFW, as the PAB Operator, report that the TDAFWT trip collar is broken and will not reset. FW-P- 3B has O.C. relays set. AFW suction pressure >8psig.	FW-P-2 trip throttle valve trip collar broken (MS-465). Suction pressure >10 psig		NSS/ANSS dispatches operator to locally investigate status of FW-P-2 if not previously performed, check suction pressure of AFW pumps.
As the operator requested to start up FW-P-4, after 5 minutes establish communications with Control room. When directed to start pump, report to the control room that the dedicated AFW pump will not start. (breaker keeps tripping)	AFW flow 0 to all S/G FW-P-4 aligned to WT-TK-11 Black diesel not running -bus voltage normal. Local panel energized. MOV-FW-160 is checked closed.		Crew dispatches operator to start FW-P-4 per Attachment 2K.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
NOTE: Stopping RCPs will result in RCS pressure increase. This may prompt crew to initiate bleed and feed. While this action is not expected, it is conservative.	3 RCPs running SI not actuated		Crew minimizes heat input to RCS. PO checks STM DMPS in STM PRESSURE mode. RO stops all RCPs. RO places Heaters in PTL
	TV-1BD-100A,B,C SG Bldn Cnmt Iso Vlvs Closed. TV-SS-117A,B,C SG Bldn. Sample Cnmt Iso. Vlvs. Closed.		Crew checks SG Blowdown Isolation status.
Status of SI and FWI related equipment will be dependent on whether SI was prevented by quickly tripping turbine.	CN-P-1A&B, running. Hotwell level > 27 in. Valves with green FWI marks closed, if SI has been actuated..		PO checks condensate system in service.
	DG-P-1A,-1B in PTL. DA-P-4A,-4B in STOP. CV-P-1A,-1B in PTL.		RO isolates containment vents and drains and resets SI, if necessary.
	Both trains SI reset. Actuation status light dark. Block status lights lit.		
			RO resets FWI both Trains.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
	FW-156A,B,C indicate open		RO opens S/G Main FW CNMT Isol VLvs
If requested to check FW-P-1A locally, report that it tripped on OC.	FW-P-1A and FW-P-1B cannot be started.		Crew determines that no MFW pump is available for SG feed.
NOTE: If the pressurizer spray valves are open, Aux Spray will not be effective and crew may elect to use a PORV to depressurize, if required.	Letdown flow is indicated.		RO depressurizes RCS to 1950 psig using AUX Spray or a PORV, if necessary.
	RCS pressure < 1950 psig		RO blocks low pressure SI and Steamline SI.
	Low pressure SI blocked. Steamline SI blocked.		RO verifies PRZR SI and Steamline SI Blocked.
	Selected steam generator pressure decreasing to less than 490 psig.		PO begins depressurizing a steam generator to less than 490 psig.
			ANSS has operators line up to feed from the condensate system in accordance with Attachment 2-J.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
Crew establishes feedwater flow into at least one steam generator.	AFW pumps in PTL. MFW pumps in PTL. MFRVs shut. BFRVs shut. MFRV isolation valves shut. BFRV isolation valves open.		Operators performs steps of Attachment 2-J.
**********			
If desired to de-energize FWP discharge valve MOV-FW-150A open, wait until operator states valve full open then insert **FILE LDRL3C**	MOV-FW-150A or 150B.		Crew directs plant operator to open MFP discharge isolation valve.
File contains OVR P09066B =2, P09066A=2 turns red and grn lights off, LOA FWM31=1			
	CN-P-1A or B running.		Operator verifies at least one condensate pump running.
If requested to de-energize open 150B, insert **File LDRL3D**.			
File contains OVR P09067B=2, P09067A=2, and LOA FWM 32=1. **********			
	FCV-FW-479/489/499 open to feed selected S/G.		Operators open feedwater bypass valve to feed selected S/G.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	OBJECTIVE	EXPECTED STUDENT RESPONSE
CRITICAL TASK Restore feedwater flow or feed and bleed.	Feedwater flow > 330 gpm to selected S/G.		Crew establishes feedwater flow > 330 gpm to selected S/G.
Terminate drill after feedwater flow established.			
Collect and review logs after allowing operators to complete them.			Operator logs should be clear, accurate and concise.
Erase any vond markings associated with this drill.			

NOTE: The expected EPP declaration is a SITE AREA EMERGENCY - TAB 1.1.1 and 1.2.1.

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1CR-N02 Rev: 0 System #: 010 Faulted: ☒
JPM Title: Depressurize RCS to Backfill

K/A Reference: 010 A4.03 / 3.8 Task ID #:3010040601

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☒ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT Time (minutes)

☐ UNSAT* Allotted: 10 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	5	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Depressurize RCS to Backfill

INITIAL CONDITIONS:	A steam generator tube rupture has occurred on the 1C SG, resulting in a reactor trip and safety injection, E-3, Steam Generator Tube Rupture, has been completed and ES-3.1, Post SGTR Cooldown Using Backfill, is in progress.

INIT. CUE:	Your supervisor directs you to depressurize the RCS to backfill from the ruptured SG by performing ES-3.1, step 9.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1CR-N02
JPM TITLE:	Depressurize RCS to Backfill
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to simulate (perform) the task Depressurize RCS to Backfill.
INIT. CONDITIONS:	A steam generator tube rupture has occurred on the 1C SG, resulting in a reactor trip and safety injection, E-3, Steam Generator Tube Rupture, has been completed and ES-3.1, Post SGTR Cooldown Using Backfill, is in progress.
TASK STAN.:	Backfill initiated in accordance with ES-3.1, step 9.
INIT. CUE:	Your supervisor directs you to depressurize the RCS to backfill from the ruptured SG by performing ES-3.1, step 9.
REFERENCES:	10M-53A.1.ES-3.1, Issue 1B, Rev. 4
TOOLS:	NONE
HANDOUT:	10M-53A.1.ES-3.1, Post SGTR Cooldown Using Backfill.

NUMBER	TITLE
1CR-N02	Depressurize RCS to Backfill

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		Evaluator Setup: -Initialize Simulator to IC #73. Run File JPM2 {OVR PO6049D=1} {OVR PO6049C=2}	
		START TIME: _____	
1.	Use Pressurizer Spray Valves.	1.1	Candidate determines that RCPs are not running (normal spray valves are not available.).
		COMMENTS:	
2.C	Use auxiliary spray.	2.1	Candidate locates control switch for MOV-1CH-311.
		2.2	Candidate places control switch for MOV-1CH-311 in the OPEN position.

NUMBER	TITLE
1CR-N02	Depressurize RCS to Backfill

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		2.3.C	Candidate determines that MOV-1CH-311 failed to open. _____ COMMENTS:
3.C	Use Pressurizer PORV.	3.1	Candidate locates the control switch for [PCV-1RC-455C, 455D, or 456].
		3.2.C	Candidate takes control switch for [PCV-1RC-455C, 455D, or 456] to the OPEN position.
		3.3	Candidate verifies [PCV-1RC-455C, 455D, or 456] open by verifying the red indicating light is on and the green indicating light is off and RCS pressure decreasing. _____ COMMENTS:
4.	Turn on Pressurizer Heaters.	4.1	Candidate locates the control switches for Pressurizer Heaters.

NUMBER	TITLE
ICR-N02	Depressurize RCS to Backfill

STEP		STANDARD	
("C" denotes critical step)		(Indicate "S" for Sat. or "U" for Unsat.)	
		4.2	Candidate takes control switches for Pressurizer Heaters to the ON position.
		4.3	Candidate verifies heaters energized by verifying the red indicating lights are on.
			_____
		COMMENTS:	
5.C	Maintain RCS subcooling.	5.1	Candidate determines the RCS subcooling requirement of Attachment 6A.
		EVALUATOR NOTE: Candidate should have performed action prior to opening PORV.	
		5.2	Candidate monitors ICCM to determine RCS subcooling.

NUMBER	TITLE
1CR-N02	Depressurize RCS to Backfill

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

	5.3.C	Candidate closes [PCV-1RC-455C, 455D, or 456] such that subcooling is maintained greater than requirement of attachment 6A. _____ COMMENTS:
		EVALUATOR NOTE: Closing the PORV the first time completes the JPM.
		STOP TIME _____

JPM QUESTION #1

A. With no RCPs operating, what additional precaution is necessary prior to starting the first RCP during the performance of ES-3.1, Post SGTR Cooldown Using Backfill, that is not required during the performance of ES-3.2, Post SGTR Cooldown Using Blowdown?

B. Why is this precaution necessary?

OPEN REFERENCE

ANSWER:

A. It is necessary to start a RCP in an unaffected loop prior to starting the RCP in the affected loop.

B. Dilution of the affected loop could cause inadvertent criticality if the RCP is started in that loop with no other RCPs running.

Time Allotted: 5 minutes

KA #: EPE 038 EK1.03 /4.2

Objective: LP-SQS-53.3 OBJ-4
Reference: OM 53B.4.ES-3.1

Comments: _____

JPM QUESTION #2

Assume the temperature in upper reactor vessel head is 525°F. How far could RCS pressure be reduced before voids begin to form in the upper reactor vessel head ?

OPEN REFERENCE

ANSWER:

850 PSIA

Time Allotted: 5 minutes

KA #: 010 K1.03 /3.7

Objective: 1/2LP NOMCD-1.1, OBJ 8
Reference: Steam Tables

Comments: _____
_____
_____
_____
_____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

A. With no RCPs operating, what additional precaution is necessary prior to starting the first RCP during the performance of ES-3.1, Post SGTR Cooldown Using Backfill, that is not required during the performance of ES-3.2, Post SGTR Cooldown Using Blowdown?

B. Why is this precaution necessary?

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

Assume the temperature in upper reactor vessel head is 525°F. How far could RCS pressure be reduced before voids begin to form in the upper reactor vessel head ?

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1CR-N03 Rev: 1 System #: 026 Faulted: ☒
JPM Title: Verify Containment Spray

K/A Reference: 026 A4.01 / 4.3 Task ID #:3010010601

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☒ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results
- ☐ SAT
- ☐ UNSAT*

Time (minutes) Allotted: 15 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	Results UNSAT*
Question #1	_____	5	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Verify Containment Spray

INITIAL CONDITIONS:	A major transient has occurred resulting in a reactor trip and safety injection. EOP E-0, Reactor Trip or Safety Injection, is in progress at this time. Prior to the transient, the plant was operating at 100% power with all systems in NSA.

INIT. CUE:	Your supervisor directs you to perform step 15 of E-0, Reactor Trip or Safety Injection.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1CR-N03
JPM TITLE:	Verify Containment Spray
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to simulate (perform) the task Verify Containment Spray.
INIT. CONDITIONS:	A major transient has occurred resulting in a reactor trip and safety injection. EOP E-0, Reactor Trip or Safety Injection, is in progress at this time. Prior to the transient, the plant was operating at 100% power with all systems in NSA.
TASK STAN.:	Containment Isolation Phase B and Containment Spray manually initiated in accordance with E-0.
INIT. CUE:	Your supervisor directs you to perform step 15 of E-0, Reactor Trip or Safety Injection.
REFERENCES:	1OM-53A.1.E-0, Issue 1B, Rev. 5 1OM-53A.1.1-E, Issue 1B, Rev. 3
TOOLS:	NONE
HANDOUT:	1OM-53A.1.E-0, Reactor Trip or Safety Injection.

NUMBER	TITLE
1CR-N03	VERIFY CONTAINMENT SPRAY

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	Evaluator Setup: -Initialize Simulator to IC 82. Do NOT run SIMIC INH43-T
	START TIME: _____
	Candidate locates and reviews E-0, Reactor Trip or Safety Injection.
	EVALUATOR CUE: Provide candidate with prepared copy of E-0.
1. Check CIB and Containment Spray Status.	1.1 Candidate locates annunciator A1-72 "CONTAINMENT ISOLATION PHASE B" and verifies that it is not lit..
	1.2 Candidate locates [PR-1LM-100A] and determines that it is indicating > 8 psig.
	_____
	COMMENTS:

NUMBER	TITLE
1CR-N03	VERIFY CONTAINMENT SPRAY

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
2.	Verify CIB initiated.	2.1	Candidate locates and evaluates indicating lights with BLUE CIB mark and determines that they are not lit. _____ COMMENTS:
3.	Manually initiate CIB.	3.1	Candidate locates CIB pushbuttons.
		3.2.C	Candidate depresses both CIB pushbuttons for each train. _____ COMMENTS:
4.1	Check that CIB has actuated.	4.1	Candidate locates and evaluates indicating lights with BLUE CIB mark.
		4.2	Candidate determines that the 1B Quench Spray Pump and the 4B and 4D Quench Spray Chemical Injection Pumps have failed to start.

NUMBER	TITLE
1CR-N03	VERIFY CONTAINMENT SPRAY

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

EVALUATOR NOTE: Candidate may attempt to start the Chemical Injection Pumps. While this not an unexpected action, the pumps will fail to start until the 1B Quench Spray Pump is running.

4.3	Candidate locates the control switch for the 1B Quench Spray Pump [1QS-P-1B].
4.4.C	Candidate takes the [1QS-P-1B] control switch to the start position.
4.5	Candidate verifies [1QS-P-1B] has started by observing the red indicating lit.
4.6	Candidate verifies [1QS-P-4B] has started by observing the red indicating lit and the green indicating light off.
4.7	Candidate verifies [1QS-P-4D] has started by observing the red indicating lit and the green indicating light off.

COMMENTS:

NUMBER	TITLE
1CR-N03	VERIFY CONTAINMENT SPRAY

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
5. Continue CIB verification.	5.1 Candidate locates and evaluates remaining indicating lights with BLUE CIB mark.
	EVALUATOR NOTE: The Recirc Spray Pumps will not start until the time delay indicated on the control board is complete.
	_____
6. Report CIB actuated.	6. Candidate reports CIB actuated after all indicating lights with BLUE CIB mark have been verified.
	_____
	COMMENTS:
	STOP TIME _____

JPM QUESTION #1

Describe the flow path that would be used to supply the suction of the HHSI pumps if the LHSI were to fail during the Recirculation phase following a Loss of Coolant Accident.

OPEN REFERENCE

ANSWER:

The outside recirc spray pumps would be aligned through RS-157, 158, 159 & 160 to SI-MOV563A and SI MOV563B to supply the HHSI pump suctions. [Valve numbers are not required. Candidate may trace flow path on drawing or simply explain]

Time Allotted: 5 minutes

KA #: 026 K1.01 /4.2

Objective: LP-SQS-53.3 OBJ-6
Reference: OM Figure 48-100 or 1OM-53A.1.1-J, Issue B, Rev 3.

Comments: _____
_____
_____
_____
_____

JPM QUESTION #2

Assume that a large break LOCA has occurred resulting in a reactor trip, SI, CIA and CIB. Explain which automatic actions would not occur if upon receipt of the RWST Low-Low level signal, the Cut Back Control Valve MOV-1QS-103A failed to close?

OPEN REFERENCE

ANSWER:

Chemical Injection Pump 1QS-P-4C would not stop as intended on Low-Low RWST level.

[Note, the purpose of the question is to force candidate to reference logic diagram or OM.]

Time Allotted: 5 minutes

KA #: 026 K4.08 4.3

Objective: LP-SQS-13.1 OBJ-5
Reference: Dwg No. 8700-LSK-29-4D or 1OM-13.1.D, ISS 4, Rev. 1

Comments: _____
_____
_____
_____
_____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

Describe the flow path that would be used to supply the suction of the HHSI pumps if the LHSI were to fail during the Recirculation phase following a Loss of Coolant Accident.

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

Assume that a large break LOCA has occurred resulting in a reactor trip, SI, CIA and CIB. Explain which automatic actions would not occur if upon receipt of the RWST Low-Low level signal, the Cut Back Control Valve MOV-1QS-103A failed to close?

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1CR-N04 Rev: 0 System #: 016 Faulted: ☐
JPM Title: Respond to Feed Control Failure

K/A Reference: 016 A2.01 / 3.1 Task ID #:0590070101

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☒ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT ☐ UNSAT*

Time (minutes) Allotted: 15 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	5	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Respond to Feed Control Failure

INITIAL CONDITIONS:	An event has occurred which has resulted in multiple annunciators associated with the feed water control system. Prior to the event, the plant was operating at 100% power with all systems in NSA.

INIT. CUE:	Your supervisor directs you to evaluate the annunciators and existing plant condition in order to determine and implement the appropriate corrective actions.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1CR-N04
JPM TITLE:	Respond to Feed Control Failure
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to simulate (perform) the task Respond to Feed Control Failure.
INIT. CONDITIONS:	An event has occurred which has resulted in multiple annunciators associated with the feed water control system. Prior to the event, the plant was operating at 100% power with all systems in NSA.
TASK STAN.:	Actions taken for instrument failure in accordance with 1OM-24.4.IF.
INIT. CUE:	Your supervisor directs you to evaluate the annunciators and existing plant condition in order to determine and implement the appropriate corrective actions.
REFERENCES:	1OM-24.4.IF, Issue 4, Revision 2
TOOLS:	NONE
HANDOUT:	1OM-24.4.IF, Instrument Failure Procedure, Attachment 2.

NUMBER	TITLE
1CR-N04	RESPOND TO FEED CONTROL FAILURE

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	Evaluator Setup: -Initialize Simulator to IC 74. Immediately place the simulator in Freeze.
	START TIME: _____
	EVALUATOR CUE: Your supervisor directs you to evaluate annunciators and control board indications and to take the appropriate actions. "Inform me when your are ready to begin taking action.
1. Evaluate plant conditions.	1.1 Candidate observes annunciators, SG level, feed flow, and steam flow indications.
	1.2 Candidate diagnoses feedwater flow transmitter failure.
	EVALUATOR NOTE: Candidate may review various annunciator response procedures or proceed directly to the Instrument Failure procedure.
	EVALUATOR NOTE: When candidate indicates that he/she is ready to begin, place the simulator in Run.
	_____ COMMENTS:

NUMBER	TITLE
1CR-N04	RESPOND TO FEED CONTROL FAILURE

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
2.	Identify failed channel.	2.1	Candidate identifies FT-1FW-486 as the failed low (and controlling) channel. _____ COMMENTS:
3.C	Take manual control of feed regulating valve and stabilize generator level.	3.1	Candidate locates controller for FCV-1FW-488.
		3.2.C	Candidate transfers controller for FCV-1FW-488 to manual.
		3.3.C	Candidate adjusts controller for FCV-1FW-488 as necessary to stabilize steam generator. _____ COMMENTS:
			EVALUATOR CUE: Your supervisor directs you to perform the appropriate section of 1OM-24.4.IF, Instrument Failure. Provide candidate with 1OM-24.4.IF.

NUMBER	TITLE
1CR-N04	RESPOND TO FEED CONTROL FAILURE

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
4.	Select redundant flow transmitter.	4.1	Candidate locates the 1B Feed Flow Signal Sel. Switch [FC-1FW-488].
		4.2.C	Candidate selects the FM-487 (Channel 3) position on the 1B Feed Flow Signal Sel. Switch.
			_____
		COMMENTS:	
5.C	Restore SG level to normal.	5.1.C	Candidate adjusts controller for FCV-1FW-488 as necessary to restore level to normal range.
			_____
		COMMENTS:	
6.	Return feed control to automatic.	6.1	Candidate verifies level restored to normal and transfers FCV-1FW-488 to automatic.
			_____
		COMMENTS:	

NUMBER	TITLE
1CR-N04	RESPOND TO FEED CONTROL FAILURE

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
7. Trip appropriate bistables.	7.1 Candidate requests that BS-488A and 488D be tripped. EVALUATOR CUE: Inform candidate that bistables have been tripped as requested. _____ COMMENTS:
8. Report that corrective actions are complete.	8.1 Candidate reports that corrective actions are complete. _____ COMMENTS: STOP TIME _____

JPM QUESTION #1

List the automatic actions which would have occurred if operator actions had not been initiated in response to the failure which just occurred.

CLOSED REFERENCE

ANSWER:

[At 75% level]
- o Main turbine trip.
- o Feedwater Isolation
  - [o Main feed pumps trip.]
  - [o Feed Valves close]
- o [Reactor Trip [due to turbine trip above P-9]]

Time Allotted: 5 minutes

KA #: 035 A2.04 / 3.8

Objective: LP-SQS-24.1 OBJ-5
Reference: 1OM-24.4.AAX

Comments: _____
_____
_____
_____
_____

JPM QUESTION #2

Assume the 1A steam generator narrow range levels are indicating 50%. What is the expected wide range level:

A. At no load Tavg?

B. At 150°F?

OPEN REFERENCE

ANSWER:

A. 64% - 68%

B. 84% - 88%

Time Allotted: 5 minutes

KA #: 016 A3.02 / 2.9

Objective: 1/2 LP-ATA-5 OBJ-21
Reference: OM Figure 24-18

Comments: _____
_____
_____
_____
_____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

List the automatic actions which would have occurred if operator actions had not been initiated in response to the failure which just occurred.

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

Assume the 1A steam generator narrow range levels are indicating 50%. What is the expected wide range level:

A. At no load Tavg?

B. At 150°F?

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1CR-023 Rev: 7 System #: 062 Faulted: ☐
JPM Title: Perform a Hot Bus Transfer

K/A Reference: 006 A4.01 /3.1 Task ID #:062AAA0101

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☒ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT

☐ UNSAT*

Time (minutes)
Allotted: 20 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	5	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Perform a Hot Bus Transfer

INITIAL CONDITIONS:	The 4KV Busses are being transferred to the System Station Service Transformers in preparation for plant shutdown.

INIT. CUE:	Your supervisor directs you to transfer 4KV Bus 1D to the System Station Service Transformer using 1OM-36.4.B, 4KV Station Service System Shutdown.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1CR-023
JPM TITLE:	Perform a Hot Bus Transfer
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to perform the task Perform a Hot Bus Transfer.
INIT. CONDITIONS:	The 4KV Busses are being transferred to the System Station Service Transformers in preparation for plant shutdown.
TASK STAN.:	4KV Bus 1D transferred to the System Station Service Transformer in accordance with 1OM-36.4.B, 4KV Station Service System Shutdown.
INIT. CUE:	Your supervisor directs you to transfer 4KV Bus 1D to the System Station Service Transformer using 1OM-36.4.B, 4KV Station Service System Shutdown.
REFERENCES:	1OM-36.4.B, Issue 4, Rev. 2
TOOLS:	NONE
HANDOUT:	1OM-36.4.B, 4KV Station Service System Shutdown

NUMBER	TITLE
1CR-023	Perform a Hot Bus Transfer

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		Evaluator Setup: -Initialize Simulator to IC #79.	
		START TIME: _____	
1.	Candidate locates procedure and step.	Evaluator Cue: Provide candidate with copy 1OM-36.4.B.	
		1.1	Candidate locates 1OM-36.4.B step A.4
		COMMENTS:	
2.	Monitor USST 1D voltages.	2.1	Candidate locates 4KV Bus 1D voltmeter.
		2.2	Candidate locates 4KV Bus D Selector Switch.

NUMBER	TITLE
1CR-023	Perform a Hot Bus Transfer

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	2.3 Candidate turns bus 4KV Bus 1D Selector Switch as necessary while monitoring USST voltages. COMMENTS:
3. Monitor SSST 1B voltages.	3.1 Candidate locates 4KV common voltmeter. 3.2 Candidate locates SSST 1B Selector Switch. 3.3 Candidate turns bus 4KV Bus 1D Selector Switch as necessary while monitoring SSST voltages. COMMENTS:
	Evaluator Note: Candidate may opt to adjust voltage using Lower Raise & Auto switch on VB-C. This not required, but may be performed.

NUMBER	TITLE
1CR-023	Perform a Hot Bus Transfer

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
4.	Check Live Bus Transfer Switch in ON position.	4.1	Candidate locates Live Bus Transfer Switch.
		4.2	Candidate verifies Live Bus Transfer Switch in ON position.
			_____
		COMMENTS:	
5.C	Close 4KV ACB 341B.	5.1	Candidate locates control switch for ACB 341B.
		5.2.C	Candidate places control switch for ACB 341 in the CLOSE position.
			_____
		COMMENTS:	
6.C	Open ACB 341D.	6.1	Candidate locates 4KV Bus 1D Transformer 1B ammeter.
		6.2	Candidate verifies ammeter deflects to indicate load is being transferred.

NUMBER	TITLE
1CR-023	Perform a Hot Bus Transfer

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		6.3	Candidate locates control swith for ACB 341D.
		6.4.C	Candidate places control switch for ACB 341D in the TRIP position.
			_____
		COMMENTS:	
		Evaluator Cue: No other busses are being transferred.	
7.C	Place Live Bus Transfer Switch in the OFF position.	7.1	Candidate locates Live Bus Transfer Switch.
		7.2.C	Candidate places the Live Bus Transfer Switch in the OFF position.
			_____
		COMMENTS:	
8.C	Verify Bus 1D 4160V Lower Raise and Auto Switch in Auto Position.	8.1	Candidate locates Bus 1D 4160V Lower Raise and Auto Switch.

NUMBER	TITLE
1CR-023	Perform a Hot Bus Transfer

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	8.2.C Candidate checks or places the Bus 1D 4160V Lower Raise and Auto Switch in Auto (pull out) Position. _____ COMMENTS:
	EVALUATOR NOTE: The canidate may check voltages prior to reporting completion of the JPM.
9. Report that bus transfer is complete.	9.1 Candidate reports to supervisor that Bus 1D transfer is complete. _____ COMMENTS: STOP TIME _____

JPM QUESTION #1

Explain why the loss of each of the 4 KV loads supplied by 4KV Bus 1B would or would not lead to a reactor trip, with the plant operating at 100% full power. Assume all systems are in the Normal System Alignment (NSA) prior to the loss of each load and that no operators actions are taken.

OPEN REFERENCE

ANSWER:

Loss of FW-P-1A would cause reactor trip due to loss of feed.

Loss of CN-P-1A would cause reactor trip due to loss of feed.

Loss of RC-P-1B would cause reactor trip on low flow.

Loss of CT-P-1B could cause turbine trip on low vacuum. This could cause the reactor to trip.

Time Allotted: 5 minutes

KA #: 062 K2.01 / 3.4

Objective: LP-SQS-36.1
Reference: OM Figure 36.6

Comments: _____

JPM QUESTION #2

Explain how to defeat the Bus 1AE undervoltage (UV) trip when performing actions to establish power to Bus 1AE from the BV-2 cross-tie during a station blackout.

OPEN REFERENCE

ANSWER:

The undervoltage trip is defeated by removing 125 VDC control power. [Opening breaker in cubicle E8A].

Time Allotted: 5 minutes

KA #: 062 A2.05 / 3.3

Objective: LP-SQS-36.1 OBJ-3.c
Reference: 1OM-53A.1.2-M-AE, ISS 1B, REV 2

Comments: _____
_____
_____
_____
_____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

Explain why the loss of each of the 4 KV loads supplied by 4KV Bus 1B would or would not lead to a reactor trip, with the plant operating at 100% full power. Assume all systems are in the Normal System Alignment (NSA) prior to the loss of each load and that no operators actions are taken.

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

Explain how to defeat the Bus 1AE undervoltage (UV) trip when performing actions to establish power to Bus 1AE from the BV-2 cross-tie during a station blackout.

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1CR-062 Rev: 9 System #: 005 Faulted: ☐
JPM Title: Establish RHR System Flow

K/A Reference: 005 A4.01 /3.4 Task ID #:0050030101

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☒ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT ☐ UNSAT*

Time (minutes) Allotted: 20 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	5	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____
Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Establish RHR System Flow

INITIAL CONDITIONS:	Plant pressure is approximately 350 psig; plant temperature is approximately 325°F; RHR system startup checks have been completed through step D. of 1OM-4.A,Residual Heat Removal System Startup (Plant Cooldown)and operation.

INIT. CUE:	Your supervisor directs that you establish an RCS cooldown using both RHR pumps by completing steps E.1 through E.9 of 1OM-4.A.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1CR-062
JPM TITLE:	Establish RHR System Flow
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to perform the task Establish RHR System Flow.
INIT. CONDITIONS:	Plant pressure is approximately 350 psig; plant temperature is approximately 325°F; RHR system startup checks have been completed through step D. of 1OM-4.A,Residual Heat Removal System Startup (Plant Cooldown)and operation.
TASK STAN.:	Both RHR pumps in operation with flow established through the RHR heat exchangers and RCS cooldown established.
INIT. CUE:	Your supervisor directs that you establish an RCS cooldown using both RHR pumps by completing steps E.1 through E.9 of 1OM-4.A.
REFERENCES:	1OM-10.4.A, Issue 4, Revision 10
TOOLS:	NONE
HANDOUT:	1OM-4.A,Residual Heat Removal System Startup (Plant Cooldown)and operation

NUMBER	TITLE
1CR-062	Establish RHR Flow

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		Evaluator Setup: -Initialize Simulator to IC 76. Remove yellow tags from BB-A, ensure RHR recorder is energized and MOV-1RH-605 is in manual.	
		START TIME: _____	
		Candidate locates and reviews 1OM-10.4.A.	
		EVALUATOR CUE: Provide candidate with prepared copy of 1OM-10.4.A.	
1.C	Open RHS Loop Stop Valves.	1.	Candidate locates control switch for MOV-1RH-720A.
		1.2.C	Candidate places control switch for MOV-1RH-720A in the OPEN position.
		1.3	Candidate verifies MOV-1RH-720A in the open position by verifying the red light is lit and the green light is dark.
		1.4	Candidate locates control switch for MOV-1RH-720B.
		1.5.C	Candidate places control switch for MOV-1RH-720B in the OPEN position.

NUMBER	TITLE
1CR-062	Establish RHR Flow

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	1.6 Candidate verifies MOV-1RH-720B in the open position by verifying the red light is lit and the green light is dark. _____ COMMENTS:
	EVALUATOR CUE: It is not necessary to perform 1OST-10.1 at this time.
2.C Start the 1A RHR pump.	2.1 Candidate locates the control switch for 1RH-P-1A. 2.2.C Candidate places the control switch for 1RH-P-1A in the START position. 2.3 Candidate verifies 1RH-P-1A started by observing pump amps and breaker indicating lights. _____ COMMENTS:

NUMBER	TITLE
1CR-062	Establish RHR Flow

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

3.C	Slowly open RHR HX Bypass Flow Control Valve.	3.1	Candidate locates controller for MOV-1RH-605.
		3.2.C	Candidate ensures controller is manual and slowly raises output until 3200-4000 gpm is indicated on FI-1RH-605.
			_____
			COMMENTS:
			EVALUATOR NOTE: Candidate may transfer flow controller to AUTO at this time.
4.C	Start the 1B RHR pump.	4.1	Candidate locates the control switch for 1RH-P-1B.
		4.2.C	Candidate places the control switch for 1RH-P-1B in the START position.
		4.3	Candidate verifies 1RH-1P-1B started by observing pump amps and breaker indicating lights.
			_____
			COMMENTS:

NUMBER	TITLE
1CR-062	Establish RHR Flow

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
5.C	Slowly adjust RHR HX Bypass Flow Control Valve.	5.1	Candidate locates controller for MOV-1RH-605.
		5.2.C	Candidate slowly adjusts output until 7300-8000 gpm is indicated on FI-1RH-605.
		EVALUATOR NOTE: Candidate may adjust flow controller in MANUAL or AUTO at this time.	
		COMMENTS: _____	
6.C	Open RHR HX Flow Control Valve to initiate cooldown.	6.1.	Candidate locates controller for MOV-1RH-758.
		6.1.C	Candidate slowly opens MOV-1RH-758 while observing temperature change on TR-1RH-604.
		EVALUATOR NOTE: After flow has been initiated, inform candidate that a 40°F/hr cooldown rate has been established.	

NUMBER	TITLE
1CR-062	Establish RHR Flow

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
7.	Inform supervisor that RHR flow has been established.	7.1	Candidate informs supervisor that RHR flow has been established. _____ COMMENTS: STOP TIME _____

JPM QUESTION #1

Assume the "Heat Exchanger Bypass Valve", MOV-1RH-605 is operating in manual. Explain how MOV-1RH-605 would have to be adjusted if the cooldown rate of the RCS was increased using RHR flow.

CLOSED REFERENCE

ANSWER:

As the operator increases cooldown rate by opening the heat exchanger outlet valve, MOV-1RH-758, MOV-1RH-605 will need to be throttled closed to maintain total system flow constant.

Time Allotted: 5 minutes

KA #: 005 A1.02 / 3.4

Objective: LP-SQS-10.1 OBJ-5
Reference: OM-10.1.C

Comments: _____

JPM QUESTION #2

A loss of all RHR flow has occurred 12 days following plant shutdown. What is the expected boiloff rate of the RCS due to decay heat?

OPEN REFERENCE

ANSWER:

43 - 47 gpm

Time Allotted: 5 minutes

KA #: APE 025 AA1.02 3.9

Objective: LP-SQS-10.1 OBJ-9
Reference: AOP 1.10.1 Attachment 3

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

Assume the "Heat Exchanger Bypass Valve", MOV-1RH-605 is operating in manual. Explain how MOV-1RH-605 would have to be adjusted if the cooldown rate of the RCS was increased using RHR flow.

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

A loss of all RHR flow has occurred 12 days following plant shutdown. What is the expected boiloff rate of the RCS due to decay heat?

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1CR-100 Rev: 4 System #: 001 Faulted: ☐
JPM Title: RCCA Misalignment (High, Situation A)

K/A Reference: 003 AA1.02 /3.4 Task ID #:0000080401

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☒ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT Time (minutes)

☐ UNSAT* Allotted: 20 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	7	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	RCCA Misalignment (High, Situation A)

INITIAL CONDITIONS:	58% power. Rod F-10 of Bank D has been determined to be at 197 steps. Bank D is at 179 steps. Rods are in manual. The reason for the rod misalignment has been corrected. Tavg is equal to Tref. Testing and Plant personnel have been notified. A flux map is not necessary. Rods can be moved in manual.

INIT. CUE:	Your supervisor directs you to respond to the misaligned rod per the appropriate procedure.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1CR-100
JPM TITLE:	RCCA Misalignment (High, Situation A)
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to perform the task respond to RCCA Misalignment.
INIT. CONDITIONS:	58% power. Rod F-10 of Bank D has been determined to be at 197 steps. Bank D is at 179 steps. Rods are in manual. The reason for the rod misalignment has been corrected. Tavg is equal to Tref. Testing and Plant personnel have been notified. A flux map is not necessary. Rods can be moved in manual.
TASK STAN.:	Rod alignment complete with all Bank D rods at 179 steps.
INIT. CUE:	Your supervisor directs you to respond to the misaligned rod per the appropriate procedure.
REFERENCES:	1OM-1.4.X, Issue 3, Rev 5
TOOLS:	NONE
HANDOUT:	1OM-1.4.X, RCCA or RCCA Group Misalignment

NUMBER	TITLE
1CR-100	RCCA Misalignment (High, Situation A)

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		Evaluator Setup: -Initialize Simulator to IC 88. Place OOS sticker on plant computer	
		START TIME: _____	
		Candidate locates and reviews 1OM-1.4.X	
		EVALUATOR CUE: Provide candidate with prepared copy of 1OM-1.4.X.	
		EVALUATOR CUE: 1OM-1.4.X has been completed through step 9. The Unit Operations Manager and Reactor Engineer have been notified. The rate of control rod motion shall be limited to 5 step increments and startup rate shall be limited to 0.25 DPM. Situation A should be used for the re-alignment of the misaligned rod.	
1.C	Place the rod control selector switch in the Bank D position.	1.1	Candidate locates rod control selector switch.
		1.2.C	Candidate places rod control selector switch in the Bank D position.
		_____	
		COMMENTS:	

NUMBER	TITLE
1CR-100	RCCA Misalignment (High, Situation A)

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
2.C	Place all disconnect switches for the affected group, except for affected rod, in the rod disconnect position.	2.1	Candidate locates the disconnect switches for Control Bank D.
		2.2.C	Candidate places all Control Bank D disconnect switches (except rod F-10) in the disconnect (UP) position. GR1 GR2 H2 F6 B8 K10 H14 K6 P8 _____ COMMENTS:
3.	Record the Bank group positions and misaligned rod position.	3.1	Candidate records Control Bank D Group 1 and Group 2 position. Group 1: 179 steps Group 2: 179 steps
		3.2	Candidate records rod F-10 position. F10: 197 steps

NUMBER	TITLE
1CR-100	RCCA Misalignment (High, Situation A)

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		EVALUATOR NOTE: The values for the rod positions are provided in the initial conditions.	
		COMMENTS:	
4.C	Step the step counter for the misaligned rod group to the position the rod is determined to be in.	4.1	Candidate locates the group step counter for the Bank D group 2 rods.
		4.2.C	Candidate sets the step counter to 197 steps.
		COMMENTS:	
		EVALUATOR CUE: The PO will adjust turbine load as necessary to maintain Tavg.	
		EVALUATOR NOTE: Tavg will drop, if necessary tell candidate to assume Tavg is being maintained equal to Tref.	

NUMBER	TITLE
1CR-100	RCCA Misalignment (High, Situation A)

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
5.C	Insert the affected rod.	5.1	Candidate locates the rod motion lever.
		5.2.C	Candidate inserts rod in five step increments by placing the rod motion level to the "IN" position.
		5.3	Candidate verifies rod moving in proper direction by observing step and individual rod position indication.
		5.4	Candidate acknowledges rod control system annunciators.
			_____
			COMMENTS:
6.C	Continue rod insertion until its associated step counter indicates a position corresponding to the bank position.	6.1.C	Candidate stops rod insertion when the group step counter indicates 179 steps.
			_____
			COMMENTS:

NUMBER	TITLE
1CR-100	RCCA Misalignment (High, Situation A)

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
7.	Verify misaligned rod is now at the same position as the other rods in the bank by reading individual RPI.	7.1	Candidate locates the Control Bank D IRPI indication.
		7.2	Candidate verifies that rod F-10 position matches the other Control Bank D rod positions.
		EVALUATOR CUE: All Control Bank D Rods indicate 179 steps.	
			_____
		COMMENTS:	
8.C	Replace all disconnect switches to the connect position.	8.1	Candidate locates the disconnect switches for the Control Bank D position.
		8.2.C	Candidate places all Control Bank D disconnect switches (except rod F-10) in the connect (DOWN) position.
			_____
		COMMENTS:	

NUMBER	TITLE
1CR-100	RCCA Misalignment (High, Situation A)

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

9 C	Clear the Urgent Failure alarm.	9.1	Candidate locates the Urgent Alarm Reset Pushbutton.
		9.2 C	Candidate depresses the pushbutton.
		9.3	Candidate verifies the Rod Control System Urgent Alarm clears.
			_____
			COMMENTS:
10.	Reset the P/A converter if the misaligned rod was in a control bank.	10.1	Candidate determines that a control bank was affected.
		10.2	Candidate asks supervisor to have the P/A converter reset.
			EVALUATOR CUE: The P/A converter has been reset by another operator.
			_____
			COMMENTS:

NUMBER	TITLE
1CR-100	RCCA Misalignment (High, Situation A)

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		EVALUATOR CUE: Your supervisor directs you to restore rod control to manual.	
11.	Return the bank selector switch to manual.	11.1	Candidate locates the bank selector switch.
		11.2.C	Candidate places the bank selector switch in the manual position.
		EVALUATOR CUE: The crew will monitor the required parameters.	
			_____
		COMMENTS:	
12.	Inform supervisor that the rod has been re-aligned.	12.1	Candidate informs supervisor that the rod has been re-aligned.
			_____
		COMMENTS:	
		STOP TIME	_____

JPM QUESTION #1

Assume the plant is operating at 5% power following a reactor startup at beginning of life (150 MWD/MTU and Boron = 900 ppm). How much boron would be needed to compensate for withdrawing bank D from 125 steps to 130 steps? (Assume xenon free operation.)

OPEN REFERENCE

ANSWER:

Change in integral rod worth (CB-24A) is approximately 40 pcm.

Differential boron worth (CB-20) is approximately -8.25 pcm/ppm.

Amount of boration is 4.5 - 5.0 ppm

Time Allotted: 7 minutes

KA #: 001 K4.05 / 3.9

Objective: 1/2LP-NOMCD-1.1
Reference: Unit 1 Curve Book

Comments: _____

JPM QUESTION #2

Assume the plant is operating at 63% power. What are the minimum control and shutdown rod positions that ensure SHUTDOWN MARGIN is maintained?

OPEN REFERENCE

ANSWER:

Control rods: Bank D at 110 - 120 steps.

Shutdown rods: 225 steps.

Time Allotted: 5 minutes

KA #: 001 K5.08 /4.4

Objective: LP-SQS-1.3 OBJ-15
Reference: T.S. 4.1.1.1.1, 3.1.3.5, 3.1.3.6, and COLR Figure 1 (License Requirements Manual)

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

Assume the plant is operating at 5% power following a reactor startup at beginning of life (150 MWD/MTU and Boron = 900 ppm). How much boron would be needed to compensate for withdrawing bank D from 125 steps to 130 steps? (Assume xenon free operation.)

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

Assume the plant is operating at 63% power. What are the minimum control and shutdown rod positions that ensure SHUTDOWN MARGIN is maintained?

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1CR-N01 Rev: 0 System #: 004 Faulted: ☐
JPM Title: Secure Excess Letdown

K/A Reference: 004 A4.06 /3.1 Task ID #:0040160101

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☒ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT Time (minutes)

☐ UNSAT* Allotted: 10 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	5	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Secure Excess Letdown

INITIAL CONDITIONS:	A failure of TV-1CH-204 resulted in a loss of normal letdown. Excess letdown was placed in service. TV-1CH-204 has been repaired and normal letdown has been returned to service.

INIT. CUE:	Your supervisor directs you to secure excess letdown in accordance with 1OM-7.4.AF.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

FIL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1CR-N01
JPM TITLE:	Secure Excess Letdown
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to simulate (perform) the task Secure Excess Letdown.
INIT. CONDITIONS:	A failure of TV-1CH-204 resulted in a loss of normal letdown. Excess letdown was placed in service. TV-1CH-204 has been repaired and normal letdown has been returned to service.
TASK STAN.:	Excess letdown secured in accordance with 1OM-7.4.AF.
INIT. CUE:	Your supervisor directs you to secure excess letdown in accordance with 1OM-7.4.AF.
REFERENCES:	1OM-7.4.AF Issue 4, Revision 2.
TOOLS:	NONE
HANDOUT:	1OM-7.4.AF, Restoring Charging and Letdown

NUMBER	TITLE
1CR-N01	SECURE EXCESS LETDOWN

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	Evaluator Setup: -Initialize Simulator to IC 75.
	START TIME: _____ Candidate locates and reviews 1OM-7.4.AF, Restoring Charging and Letdown.
	EVALUATOR CUE: Provide candidate with prepared copy of 1OM-7.4.AF.
1. Monitor No. 1 Seal Leakoff Wide Range.	1.1 Candidate monitors [FR-1CH-154A]. _____ COMMENTS:
2.C Slowly set Excess Letdown HX Flow Control Valve controller to 0.	2.1 Candidate locates controller for [FCV-1CH-137]. 2.2.C Candidate slowly reduces controller setpoint to 0 while maintaining [FR-1CH-154A] within alarm limits (0.9 gpm ± .02 and 4.7 gpm ± .12) _____ COMMENTS:

NUMBER	TITLE
1CR-N01	SECURE EXCESS LETDOWN

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
3.	Close 1A RCL Drain valve.	3.1	Candidate locates the control switch for [MOV-1RC-557A].
		3.2	Candidate takes control switch for [MOV-1RC-557A] to the CLOSE position.
		3.3	Candidate verifies [MOV-1RC-557A] closed by verifying the red indicating light is off and the green indicating light is on.
		EVALUATOR NOTE: MOV-1RC-557B and C are closed and de-energized.	
			_____
		COMMENTS:	
4.C	Depressurize the excess letdown line.	4.1	Candidate observes [PI-1CH-138].
		4.2.C	Candidate slowly increases setting of controller for [FCV-1CH-137] until [PI-1CH-138] stabilizes and then returns control to 0%.
			_____
		COMMENTS:	

NUMBER	TITLE
1CR-N01	SECURE EXCESS LETDOWN

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
5.	Close Excess Letdown HX Inlet Isolation Valve.	5.1	Candidate locates the control switch for [MOV-1CH-201].
		5.2	Candidate takes control switch for [MOV-1CH-201] to the CLOSE position.
		5.3	Candidate verifies [MOV-1CH-201] closed by verifying the red indicating light is off and the green indicating light is on.
			_____
			COMMENTS:
6.	Align excess letdown to the VCT.	6.1	Candidate locates the control switch for [HCV-1CH-389].
		6.2	Candidate verifies control switch for [HCV-1CH-389] in the VCT position.
			_____
			COMMENTS:

NUMBER	TITLE
1CR-N01	SECURE EXCESS LETDOWN

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
7.	Remove power for Loop Drain Line Stop Valves.	7.1	Candidate requests local operator to place 480 VAC power supply switches for [MOV-1RC-557A, 557B, AND 557C] in the OFF position.
		EVALUATOR CUE: Local control switches have been placed in the OFF position.	
		COMMENTS:	
8.	Adjust RCP seal flow.	8.1	Candidate locates and observes [FI-1CH-130, 127, and 124].

NUMBER	TITLE
1CR-N01	SECURE EXCESS LETDOWN

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	8.2 Candidate locates and adjusts controller for [HCV-1CH-186] as necessary until 6 - 9 gpm is indicated on [FI-1CH-130, 127, and 124]. _____ COMMENTS:
9. Inform supervisor that excess letdown has been secured.	9. Candidate informs supervisor that excess letdown has been secured. _____ COMMENTS: STOP TIME _____

JPM QUESTION #1

Explain the effect that a Safety Injection Actuation would have on excess letdown operation. (Assume excess letdown is aligned to the VCT and all systems are NSA except normal letdown, which is isolated.)

OPEN REFERENCE

ANSWER:

[SI would cause a CIA which causes] the RCP seal water return containment isolation valves, MOV-1CH-378 and 381 to close, isolating excess letdown. [which would be directed to the PRT via the seal return line relief valve, RV-1CH-382A.]

Time Allotted: 5 minutes

KA #: 004 K1.25 /3.2

Objective: LP-SQS-7.1 OBJ-5

Reference: OM Figure 7.4
OM-1, Table 1.4

Comments: _____

JPM QUESTION #2

What action would be required if, during MODE 4 operation, heat tracing was lost on the piping on the outlets of the boric acid tanks resulting in piping temperature reading of 62°F? (Assume both boric acid tanks are affected and auxiliary building ambient air temperature is 59°F.)

OPEN REFERENCE

ANSWER:

Restore to operable status within 72 hours or be borated to a shutdown margin equivalent to at least 1% ΔK/K within the next 6 hours; restore the flowpath to operable status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

Time Allotted: 5 minutes

KA #: 004 K6.10 /3.1

Objective: LP-SQS-7.1 OBJ-12
Reference: T.S. 3.1.2.2 & 3.1.2.8

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

Explain the effect that a Safety Injection Actuation would have on excess letdown operation. (Assume excess letdown is aligned to the VCT and all systems are NSA except normal letdown, which is isolated.)

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

What action would be required if, during MODE 4 operation, heat tracing was lost on the piping on the outlets of the boric acid tanks resulting in piping temperature reading of 62°F? (Assume both boric acid tanks are affected and auxiliary building ambient air temperature is 59°F.)

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1PL-006 Rev: 7 System #: 064 Faulted: ☐
JPM Title: Locally Start the Diesel Generator

K/A Reference: 064 A4.06 /3.9 Task ID #:30100060601

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☒ Plant Site
- ☐ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT
☐ UNSAT*

Time (minutes)
Allotted: 20 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	8	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Locally start the Diesel Generator

INITIAL CONDITIONS:	A station blackout has occurred. OM 53A, Procedure ECA-0.0, Loss of All Emergency 4KV Power, is being implemented at this time.

INIT. CUE:	Your supervisor directs you to start the number one diesel generator by performing Attachment 2-E of 1OM-53A.1.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1PL-006
JPM TITLE:	Locally Start the Diesel Generator
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to simulate the task Locally Start the Diesel Generator.
INIT. CONDITIONS:	A station blackout has occurred. OM 53A, Procedure ECA-0.0, Loss of All Emergency 4KV Power, is being implemented at this time.
TASK STAN.:	Diesel generator started in accordance with 1OM-53A.1.2-E.
INIT. CUE:	Your supervisor directs you to start the number one diesel generator by performing Attachment 2-E of 1OM-53A.1.
REFERENCES:	1OM-53A.1.2-E, Issue 1B, Revision 2
TOOLS:	NONE
HANDOUT:	1OM-53A.1.2-E, Local Action to Restore AC Power.

NUMBER	TITLE
1PL-006	Locally Start the Diesel Generator

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		START TIME: _____	
		EVALUATOR CUE: Provide candidate with copy of 1OM-53A.1.2-E.	
1.	Obtain key for EDG Engine Control Panel.	1.1	Candidate obtains key 48.
		EVALUATOR CUE: You have key 48.	
		_____	
		COMMENTS:	
2.	Establish communications with Control Room.	2.1	Candidate simulates establishing communications with Control Room.
		EVALUATOR CUE: You have established communications with the Control Room.	
		_____	
		COMMENTS:	

NUMBER	TITLE
1PL-006	Locally Start the Diesel Generator

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
3.	Clear all Start Failure alarms.	3.1	Candidate observes Start Failure alarms.
			EVALUATOR CUE: All Start Failure Alarms are clear.
			_____
			COMMENTS:
4.C	Place Selector Switch to LOCAL START.	4.1	Candidate locates selector switch.
		4.2.C	Candidate simulates inserting key in selector switch.
			EVALUATOR CUE: The key has been inserted.
		4.3.C	Candidate simulates turning selector switch to the LOCAL START position.
			EVALUATOR CUE: The switch is in the LOCAL START position.
			_____
			COMMENTS:

NUMBER	TITLE
1PL-006	Locally Start the Diesel Generator

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

5.C	Prime the Diesel Fuel System.	5.1	Candidate locates the FUEL PRIME pushbutton.
		5.1.C	Candidate simulates depressing the FUEL PRIME pushbutton.
		EVALUATOR CUE: The FUEL PRIME pushbutton has been depressed.	
		_____	
		COMMENTS:	
6.C	Start the Diesel Engine.	6.1	Candidate locates the ENGINE START pushbutton.
		6.2.C	Candidate simulates depressing the ENGINE START pushbutton.
		EVALUATOR CUE: The ENGINE START pushbutton has been depressed. The diesel engine is turning. The diesel engine is running.	
		6.3.C	Candidate simulates releasing the ENGINE START pushbutton.
		_____	
		COMMENTS:	

NUMBER	TITLE
1PL-006	Locally Start the Diesel Generator

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
7.C	Adjust Diesel Generator Speed.	7.1	Candidate observes Diesel Generator speed indication.
		EVALUATOR CUE: Engine speed is 810 RPM.	
		7.2	Candidate locates governor RAISE-LOWER control switch.
		7.3.C	Candidate simulates taking the governor control switch to the RAISE position.
		COMMENTS:	
		EVALUATOR CUE: The Engine speed is increasing. Engine speed is 900 RPM.	
8.	Verify DG output voltage.	8.1	Candidate observes DG output voltage.
		EVALUATOR CUE: Diesel Generator output voltage is normal.	
		EVALUATOR NOTE: Candidate must simulate use of voltmeter selector switch to read voltage.	

NUMBER	TITLE
1PL-006	Locally Start the Diesel Generator

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	EVALUATOR CUE: The Control Room reports that Emergency Bus 1AE has been energized. _____ COMMENTS:
9. Inform supervisor that the Diesel Generator has been started.	9.1 Candidate informs supervisor that the Diesel Generator has been started. _____ COMMENTS: STOP TIME _____

JPM QUESTION #1

A review of operating logs reveals that, with plant operating in MODE ONE, the fuel oil storage tank for the A diesel generator contains 17,300 gallons and the fuel oil storage tank for the B diesel generator contains 17,450 gallons. Based on the these conditions, and assuming that no fuel oil could be added to the storage tanks, what actions would be required?

OPEN REFERENCE

ANSWER:

Both diesels are inoperable, T.S. 3.8.1.1 Action e requires that one diesel be restored within 2 hours, or the plant be placed in Mode 3 within the next 6 hours.

Time Allotted: 8 minutes

KA #: 064 K6.08 / 3.3

Objective: LP-SQS-36.2 OBJ-10
Reference: T.S. 3.8.1.1

Comments: _____
_____
_____
_____
_____

JPM QUESTION #2

Assume that following surveillance testing, the #1 diesel generator's stop pushbuttons have been depressed and the diesel is in the middle of the 11 1/2 minutes cooldown cycle at idle speed. What would be the status of the diesel generator 60 seconds following a loss of normal power to the 4160 volt Emergency Bus AE?

OPEN REFERENCE

ANSWER:

The diesel would be running at normal speed and would be carrying the loads on 4160 volt Emergency Bus AE.

Time Allotted: 5 minutes

KA #: 062 K3.02 /4.4

Objective: LP-SQS-53.3 OBJ-3
Reference: 1OM-53B.4.E-1, page 69

Comments: _____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

A review of operating logs reveals that, with plant operating in MODE ONE, the fuel oil storage tank for the A diesel generator contains 17,300 gallons and the fuel oil storage tank for the B diesel generator contains 17,450 gallons. Based on the these conditions, and assuming that no fuel oil could be added to the storage tanks, what actions would be required?

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

Assume that following surveillance testing, the #1 diesel generator's stop pushbuttons have been depressed and the diesel is in the middle of the 11 1/2 minutes cooldown cycle at idle speed. What would be the status of the diesel generator 60 seconds following a loss of normal power to the 4160 volt Emergency Bus AE?

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1PL-017 Rev: 1 System #: 028 Faulted: ☐
JPM Title: Startup the Hydrogen Recombiners

K/A Reference: 028 A4.01 /4.0 Task ID #:028BBB0104

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☒ Plant Site
- ☐ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT ☐ UNSAT*

Time (minutes) Allotted: 30 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	7	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Startup the Hydrogen Recombiners

INITIAL CONDITIONS:	A reactor trip and safety injection have occurred due to a Loss of Coolant Accident. 1OM-53.A.ES-1.3, Transfer to Cold Leg Recirculation, has been implemented. Hydrogen concentration in containment was obtained and is the equivalent to 2.4% in dry air, requiring the recombiners to be placed in service. All AC distribution systems are operable.

INIT. CUE:	Your supervisor directs you to startup the Hydrogen Recombiners by performing 1OM-46.4.A, Hydrogen Recombiner Startup.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

RIL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1PL-017
JPM TITLE:	Startup the Hydrogen Recombiners
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to simulate the task Startup the Hydrogen Recombiners.
INIT. CONDITIONS:	A reactor trip and safety injection have occurred due to a Loss of Coolant Accident. 1OM-53.A.ES-1.3, Transfer to Cold Leg Recirculation, has been implemented. Hydrogen concentration in containment was obtained and is the equivalent to 2.4% in dry air, requiring the recombiners to be placed in service. All AC distribution systems are operable.
TASK STAN.:	Hydrogen recombiner placed in service in accordance with 1OM-46.4.A.
INIT. CUE:	Your supervisor directs you to startup the Hydrogen Recombiners by performing 1OM-46.4.A, Hydrogen Recombiner Startup.
REFERENCES:	1OM-46.4.A, Issue 4, Revision 2
TOOLS:	NONE
HANDOUT:	1OM-46.4.A, Hydrogen Recombiner Startup.

NUMBER	TITLE
1PL-017	Startup the Hydrogen Recombiner

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	START TIME: _____
	EVALUATOR CUE: Provide candidate with copy of 1OM-46.4.A.
1. Contact Radcon.	1.1 Candidate contacts Radcon.
	EVALUATOR NOTE: Candidate should be briefed by Radcon prior to entering controlled area.
	_____
	COMMENTS:
2. Obtains Keys.	2.1 Candidate obtains keys SR/O.C. and SR/O.D.
	EVALUATOR CUE: You have obtained SR/O.C. and SR/O.D. keys.
	_____
	COMMENTS:

NUMBER	TITLE
1PL-017	Startup the Hydrogen Recombiner

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

3.	Unlock and open the hydrogen recombiner isolation valves.	3.1	Candidate locates reach rod for 1HY-101.
		3.2.C	Candidate simulates unlocking and opening 1HY-101.
		EVALUATOR CUE: 1HY-101 is open.	
		3.3	Candidate locates reach rod for 1HY-103.
		3.4.C	Candidate simulates unlocking and opening 1HY-103.
		EVALUATOR CUE: 1HY-103 is open.	
		3.5	Candidate locates reach rod for 1HY-102.
		3.6.C	Candidate simulates unlocking and opening 1HY-102.
		EVALUATOR CUE: 1HY-102 is open.	
		3.7	Candidate locates reach rod for 1HY-104.

NUMBER	TITLE
1PL-017	Startup the Hydrogen Recombiner

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		3.8.C	Candidate simulates unlocking and opening 1HY-104.
		EVALUATOR CUE: 1HY-104 is open.	
		COMMENTS:	
4.	Verify the Containment Vacuum Pump trip valves are closed.	4.1	Candidate request status of the Containment Vacuum Pump trip valves from the Control Room.
		EVALUATOR CUE: The Control Room reports that TV-1CV-150A, B, C, and D are closed.	
		COMMENTS:	
5.C	Unlock and open the Recombiner Return and Outlet isolation valves.	5.1	Candidate locates 1HY-110.
		5.2.C	Candidate simulates unlocking and opening 1HY-110.
		EVALUATOR CUE: 1HY-110 is open.	

NUMBER	TITLE
1PL-017	Startup the Hydrogen Recombiner

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)
	5.3 Candidate locates 1HY-196.
	5.4.C Candidate simulates unlocking and opening 1HY-196.
	EVALUATOR CUE: 1HY-196 is open.
	5.5 Candidate locates 1HY-111.
	5.6.C Candidate simulates unlocking and opening 1HY-111.
	EVALUATOR CUE: 1HY-111 is open.
	5.7 Candidate locates 1HY-197.
	5.8.C Candidate simulates unlocking and opening 1HY-197.
	EVALUATOR CUE: 1HY-197 is open.
	COMMENTS:
	EVALUATOR CUE: The wide range analyzers have been placed in service.

NUMBER	TITLE
1PL-017	Startup the Hydrogen Recombiner

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		EVALUATOR CUE: Hydrogen levels require that the recombiners be started.	
		EVALUATOR CUE: Your supervisor directs you to start only the 1A hydrogen recombiner.	
6.C	Start the hydrogen recombiner.	6.1	Candidate locates MCC1-E5 Cub BN.
		6.2.C	Candidate simulates turning on MCC1-E5 Cub BN.
		EVALUATOR CUE: MCC1-E5, Cub BN is on.	
		6.3	Candidate locates MCC1-E5 Cub AQ.
		6.4.C	Candidate simulates closing MCC1-E5 Cub AQ.
		EVALUATOR CUE: MCC1-E5, Cub AQ is closed.	
		6.5	Candidate locates indication for MOV-1HY-101A.
		6.6	Candidate verifies MOV-1HY-101A is closed.
		EVALUATOR CUE: MOV-1HY-101A indicates closed.	

NUMBER	TITLE
1PL-017	Startup the Hydrogen Recombiner

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)
	6.7 Candidate locates indication for MOV-1HY-103A.
	6.8 Candidate verifies MOV-1HY-103A is closed.
	EVALUATOR CUE: MOV-1HY-103A indicates closed.
	6.9 Candidate locates MCC1-E5 Cub AQ.
	6.10.C Candidate simulates opening MCC1-E5 Cub AQ.
	EVALUATOR CUE: MCC1-E5, Cub AQ is open.
	6.11 Candidate locates MCC1-E5 Cub AU.
	6.12.C Candidate simulates opening MCC1-E5 Cub AU.
	EVALUATOR CUE: MCC1-E5, Cub AU is open.
	6.13 Candidate locates controls for MOV-1HY-102A.
	6.14.C Candidate simulates opening MOV-1HY-102A.
	EVALUATOR CUE: MOV-1HY-102A is open.

NUMBER	TITLE
1PL-017	Startup the Hydrogen Recombiner

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	6.15 Candidate locates START pushbutton. 6.16.C Candidate simulates pressing the START pushbutton and holding for ten seconds. EVALUATOR CUE: The START pushbutton has been held for 10 seconds. _____ COMMENTS: EVALUATOR CUE: The remainder of this procedure has been completed by another operator.
7. Inform supervisor that the hydrogen recombiner has been started..	7.1 Candidate informs supervisor that the Hydrogen Recombiner has been started. _____ COMMENTS: STOP TIME _____

JPM QUESTION #1

Given the following conditions, determine the Containment Hydrogen Concentration:

- o H2A-1HY-101A Reading: 7%
- o Cable Vault Temperature: 90°F
- o Containment Pressure: 20 PSIA

OPEN REFERENCE

ANSWER:

[Correction factor from Figure 1 is approximately 0.35]

[Actual = Indicated Reading - Correction factor]

H2 concentration is 6.6 - 6.7 %

Time Allotted: 7 minutes

KA #: 028 A1.01 / 3.8

Objective: LP-SQS-46.1 OBJ-10
Reference: 1OM-46.4.G, Figure 1, Issue 4, Revision 1

Comments: _____
_____
_____
_____
_____

JPM QUESTION #2

The hydrogen concentration in containment increases to 5 1/2%. What effect could starting the recombiner at this point have on the plant?

OPEN REFERENCE

ANSWER:

Hydrogen concentration in excess of 4% is combustible and the recombiners can become an ignition source.

Time Allotted: 5 minutes

KA #: 028 K5.02 /3.9

Objective: LP-SQS-46.1 OBJ-10
Reference: 1OM-53B.4 E-1, Issue 1B, Rev. 4

Comments: _____
_____
_____
_____
_____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

Given the following conditions, determine the Containment Hydrogen Concentration:

- H2A-1HY-101A Reading: 7%
- Cable Vault Temperature: 90°F
- Containment Pressure: 20 PSIA

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

The hydrogen concentration in containment increases to 5 1/2%. What effect could starting the recombiner at this point have on the plant?

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1PL-N01 Rev: 0 System #: 079 Faulted: ☐
JPM Title: Place Diesel Air Compressor in Service

K/A Reference: 2.1.20 / 4.2 Task ID #:790020101

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☐ Perform
- ☐ Simulate

LOCATION
- ☒ Plant Site
- ☐ Simulator
- ☐ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT

☐ UNSAT*

Time (minutes) Allotted: 20 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	5	_____	☐	☐
Employee No:	_____				
Question #1	_____	5	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Place Diesel Air Compressor in Service

INITIAL CONDITIONS:	A loss of electrical power has occurred, resulting in loss of the motor driven air compressors.

INIT. CUE:	Your supervisor directs you to place the diesel driven air compressor in service and align its discharge to the station air receiver by performing 1OM-34.4.L through step F3.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1PL-N01
JPM TITLE:	Place Diesel Air Compressor in Service
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to simulate (perform) the task Place Diesel Air Compressor in Service.
INIT. CONDITIONS:	A loss of electrical power has occurred, resulting in loss of the motor driven air compressors.
TASK STAN.:	Diesel driven air compressor placed in service in accordance with 1OM-34.4.L.
INIT. CUE:	Your supervisor directs you to place the diesel driven air compressor in service and align its discharge to the station air receiver by performing 1OM-34.4.L through step F3.
REFERENCES:	1OM-34.4-L Issue 4, Revision 1
TOOLS:	NONE
HANDOUT:	1OM-34.4-L, Placing Diesel Air Compressor in Service.

NUMBER	TITLE
1PL-N01	Place Diesel Air Compressor in Service

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		START TIME: _____	
		EVALUATOR CUE: Provide candidate with 1OM-34.4.L.	
1.	Review procedure and precautions and limitations.	1.1	Candidate reviews procedure and precautions and limitations.
		EVALUATOR CUE: The air dryer has already been removed from service.	
			_____
		COMMENTS:	
2.	De-energize Diesel Air Compressor's Battery Trickle Charger.	2.1	Candidate locates trickle charger control switch.
		2.2	Candidate simulates placing control switch in OFF.
		EVALUATOR CUE: The control switch is in the OFF position.	
			_____
		COMMENTS:	

NUMBER	TITLE
1PL-N01	Place Diesel Air Compressor in Service

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
3.C	Place and hold Diesel Air Compressor's Selector Switch in the Hold Position.	3.1	Candidate locates Selector Switch.
		3.2.C	Candidate simulates placing and holding Selector switch in the HOLD position.
		EVALUATOR CUE: The selector switch is in the HOLD position.	
		COMMENTS:	
4.C	Depress the Diesel Air Compressor's Start Pushbutton.	4.1	Candidate locates the Start Pushbutton.
		4.2.C	Candidate simulates depressing the Start Pushbutton.
		EVALUATOR CUE: The Start Pushbutton has been depressed. The diesel is starting, the diesel is running.	
		COMMENTS:	

NUMBER	TITLE
1PL-N01	Place Diesel Air Compressor in Service

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
5.C	Release the Start Pushbutton and Selector switch.	5.1	Candidate releases the Start Pushbutton.
		EVALUATOR CUE: The Start Pushbutton has been released.	
		5.2	Candidate observes diesel oil pressure.
		EVALUATOR CUE: Diesel oil pressure is rising. Diesel oil pressure is > 15 psig.	
		5.3.C	Candidate simulates releasing Selector switch after the oil pressure is greater than 15 psig.
		EVALUATOR CUE: The Selector Switch has been released.	
			_____
		COMMENTS:	
6.C	Open the Diesel Air Compressor's inlet shutter valve.	6.1	Candidate locates inlet shutter valve.

NUMBER	TITLE
1PL-N01	Place Diesel Air Compressor in Service

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

		6.2.C	Candidate simulates opening inlet shutter valve.
		EVALUATOR CUE: The inlet shutter valve is open.	
			_____
		COMMENTS:	
7.C	Align Diesel Air Compressor to Station Air Receiver.	7.1	Candidate locates [1SA-90].
		7.2.C	Candidate simulates opening [1SA-90].
		EVALUATOR CUE: [1SA-90] is open.	
		7.3	Candidate locates [1SA-86].
		7.4.C	Candidate simulates opening [1SA-86].
		EVALUATOR CUE: [1SA-86] is open.	
		7.5	Candidate locates Diesel Air Compressor's discharge valve.

NUMBER	TITLE
1PL-N01	Place Diesel Air Compressor in Service

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	7.6.C Candidate simulates opening Diesel Air Compressor's discharge valve. EVALUATOR CUE: The Diesel Air Compressor's discharge valve is open. _____ COMMENTS:
	EVALUATOR CUE: The remaining procedure steps have been completed by another operator.
8. Inform supervisor that the Diesel Air Compressor is in service.	8.1 Candidate informs supervisor that the Diesel Air compressor is in service. _____ COMMENTS: STOP TIME _____

JPM QUESTION #1

Assume that a loss of station instrument air has occurred and that the diesel driven air compressor could not be started.

A. At what point should a emergency shutdown be initiated?

B. At what point should the reactor be tripped?

OPEN REFERENCE

ANSWER:

A. Station Air less than 100 psig and unable to start air compressor.

B. Actuation of annunciation A1-56, "STEAMLINE STOP VALVE NOT FULLY OPEN'

Time Allotted: 5 minutes

KA #: APE 065 AA2.05 /4.1

Objective: LP-SQS-53C.1 OBJ-8
Reference: AOP 34.1, Issue 3A, Revision 3

Comments: _____
_____
_____
_____
_____

JPM QUESTION #2

What affect would a loss of station instrument air have on the CVCS makeup control valves [FCV-1CH-113A, 113B, 114A, and 114B]?

OPEN REFERENCE

ANSWER:

FCV-1CH-113A, Boric Acid to Blender FCV, would fail open. FCV-1CH-113B, 114A, and 114B would fail closed.

Time Allotted: 5 minutes

KA #: 078 K3.02 /3.6

Objective: LP-SQS-53C.1 OBJ-8
Reference: AOP 1.34.1, Attachment 1, Issue 3A, Revision 3

Comments: _____
_____
_____
_____
_____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #1

Assume that a loss of station instrument air has occurred and that the diesel driven air compressor could not be started.

A. At what point should a emergency shutdown be initiated?

B. At what point should the reactor be tripped?

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

JPM QUESTION #2

What affect would a loss of station instrument air have on the CVCS makeup control system?

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1AD-A.1 Rev: 0 System #: 001 Faulted: ☐
JPM Title: Perform an ECP Calculation

K/A Reference: 001 A4.10 /3.9 Task ID #:0010020101

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☒ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☐ Simulator
- ☒ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT ☐ UNSAT*

Time (minutes) Allotted: 30 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	_____	_____	☐	☐
Employee No:	_____				
Question #1	_____	_____	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Perform an ECP Calculation

INITIAL CONDITIONS:	Preparing for a plant startup after a reactor trip which occurred 30 hours ago. Prior to the trip, the plant operated for 100% power for 37 days. Prior to the trip Bank D was at 227 steps, RCS boron was 719 PPM and core burnup was 7,993 MWD/MTU. The plant computer is unavailable for the calculation. Starting up in accordance with 1OM-50.4.D. Criticality is estimated to be attained within the next 4 hours.

INIT. CUE:	Your supervisor directs you to perform an ECP calculation for a startup with Bank D rods at 100 steps at the time of criticality.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

RIL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1AD-A.1
JPM TITLE:	Perform an ECP Calculation
RECOMMENDED STARTING LOCATION:	CLASS ROOM
DIRECTIONS:	You are to simulate (perform) the task perform an ECP Calculation.
INIT. CONDITIONS:	Preparing for a plant startup after a reactor trip which occurred 30 hours ago. Prior to the trip, the plant operated for 100% power for 37 days. Prior to the trip Bank D was at 227 steps, RCS boron was 719 PPM and core burnup was 7,993 MWD/MTU. The plant computer is unavailable for the calculation. Starting up in accordance with 1OM-50.4.D. Criticality is estimated to be attained within the next 4 hours.
TASK STAN.:	ECP performed in accordance with 1OM-50.4.F.
INIT. CUE:	Your supervisor directs you to perform an ECP calculation for a startup with Bank D rods at 100 steps at the time of criticality.
REFERENCES:	Unit 1 Curve Book. 1OM-50.4.F, Issue 3, Revision 14
TOOLS:	Calculator
HANDOUT:	1OM-50.4.F, Data Sheet 1

NUMBER	TITLE
1AD-A.1	Perform ECP Calculation

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	START TIME: _____
1. Obtain ECP procedure and Unit 1 Curve Book.	1. Candidate locates 1OM-50.4.F and Unit 1Curve Book.
	EVALUATOR CUE: Provide candidate with copy of 1OM-50.4.F and the Unit 1 Curve Book.
	EVALUATOR NOTE: The examiner may have to wait until the candidate has competed the data sheet before evaluating the JPM. The order in which the steps are performed is not critical.
	_____
	COMMENTS:

NUMBER	TITLE
1AD-A.1	Perform ECP Calculation

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

2.	Record Critical Data prior to shutdown.	2.1	Candidate records provided data on Data Sheet 1, Section A, Column (I): Date / Time Boron - 719 ppm Power - 100% Xenon - 100% Samarium - 100% Rods - 227 steps _____ COMMENTS:
			EVALUATOR NOTE: The data recorded and calculated in the following steps must be determined using the curve book. A range is given for each value. Data falling outside the given range should be evaluated on a case by case basis.

NUMBER	TITLE
1AD-A.1	Perform ECP Calculation

STEP		STANDARD	
("C" denotes critical step)		(Indicate "S" for Sat. or "U" for Unsat.)	
3.	Record Expected Critical Data.	3.1	Candidate determines and records data on Data Sheet 1, Section A, Column (II). Data/Time Xenon - 51% - 55% Samarium - 118% -121% Bank D at 100 steps. _____ COMMENTS:
4.C	Perform reactivity balance.	4.1	Candidate records Power Defect prior to Shutdown: 1950 to 2050 pcm.
		4.2	Candidate records control rod worth prior to shutdown: 0.
		4.3	Candidate records control rod worth expected at criticality: 840 to 860 pcm.
		4.4	Candidate records xenon worth prior to shutdown: 2751 pcm.
		4.5	Candidate records xenon worth expected at criticality: 1400 to 1510 pcm.
		4.6	Candidate records samarium worth prior to shutdown: 615 pcm.

NUMBER	TITLE
1AD-A.1	Perform ECP Calculation

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

		4.7	Candidate records samarium worth expected at criticality: 725 to 750 pcm.
		4.8.C	Candidate determines difference for each reactivity value: Power Defect = -1950 to -2050 pcm Rod Worth = 840 to 860 pcm Xenon = -1240 to -1350 pcm Samarium = 110 to 135 pcm
		4.9.C	Candidate determines reactivity change: -2100 to - 2500 pcm.

			COMMENTS:
5.C	Determine critical boron concentration.	5.1	Candidate records reactivity change: -2100 to -2500 pcm.
		5.2	Candidate records line 1 boron worth: -8.8 to -8.9 pcm.
		5.3	Candidate determines line 1 boron change: 235 to 285 ppm.
		5.4	Candidate records boron at shutdown: 719 ppm.
		5.5	Candidate determines boron for startup: 954 to 1004 ppm.
		5.6	Candidate determines line 2 boron worth: -8.4 to -8.7 pcm.

NUMBER	TITLE
1AD-A.1	Perform ECP Calculation

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

		5.7	Candidate determine line 2 boron change: 240 to 295 ppm.
		5.8	Candidate records boron at shutdown: 719 ppm.
		5.9.C	Candidate determines boron concentration for startup: 960 to 1,010 ppm.
			_____
			COMMENTS:
6.	Mark Section D as N/A.	6.1	Candidate marks N/A on blocks in Section D.
			_____
			COMMENTS:
7.C	Determine Rod Limits.	7.1	Candidate record critical rod defect: -840 to -860 pcm.
		7.2	Candidate determines + 500 pcm value: - 340 to -360 pcm.
		7.3	Candidate determine - 500 pcm value: - 1340 to -1360 pcm.
		7.4.C	Candidate determines maximum rod position: 170 to 178 steps.

NUMBER	TITLE
1AD-A.1	Perform ECP Calculation

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		7.5.C	Candidate determines minimum rod position: 37 to 48 steps. _____ COMMENTS:
8.	Report ECP completion.	8.1	Candidate reports that the ECP is complete. _____ COMMENTS: STOP TIME _____

A.1.2 Question 1

What are three conditions when a Temporary Operating Procedure (TOP) should be used instead of a making an on the spot change (OMCN)?

ANSWER:

Any three:

- When the changes are temporary.
- When the changes are extensive.
- When the changes are known in advance.
- When the changes could be in use for greater than 90 days.

Time Allotted: 7 minutes

KA: 2.2.6 / 3.2

Reference: 1/2 OM-48.2.B

Comments: _____

A.1.2 Question 2

What conditions must be met to make an on the spot change to the operating procedures?

ANSWER:

The intent of the original procedure is not altered.

The change is required in less than 30 days or the change will prevent a plant trip, reduction in power or other Productivity or Safety concern.

[The change is documented, reviewed by the OSC and approved by General Manager, Nuclear Operations within 14 days of implementation.]

[NOTE: Candidate may also discuss OMCN involving intent changes, but this is not required for full credit.]

Time Allotted: 7minutes

KA: 2.2.6 / 3.2

Reference: 1/2OM-48.2.B

Comments: _____
_____
_____
_____
_____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

A.1.2 Question 1

What are three conditions when a Temporary Operating Procedure (TOP) should be used instead of a making an on the spot change (OMCN)?

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

A.1.2 Question 2

What conditions must be met to make an on the spot change to the operating procedures?

A2.1 The plant is operating at 100% power with all systems in NSA except the 1A HHSI/charging pump, which is out of service. Based on the Risk Assessment Guidelines as described in NPDAP 7.12, Non-Outage Planning, Scheduling and Risk Assessment, whose approval would be required prior to removal of a motor driven, Auxiliary Feedwater Pump from service?

ANSWER:

General Manager of Maintenance Programs and General Manager of Nuclear Operations.

[CDP increase (from Attachment 7) = 4.12 E-06.]

[Therefore, the system combination is designated with a YELLOW color (> 1E-6, but < 1 E-5), and requires approval of General Manager of Maintenance Programs and General Manager of Nuclear Operations.]

Time Allotted: 20 minutes

REFERENCE: NPDAP 7.12, Attachment 12

KA: 2.2.17 /3.5

Comments: _____
_____
_____
_____
_____

A2.2 What four conditions must be verified prior to placing a diesel generator on clearance for routine maintenance? Assume the plant is operating in MODE 1 with all systems in NSA.

ANSWER:

1. Actions required by T.S. 3.8.1.1 are done prior to removal from service.

2. Turbine driven AFP must be verified operable.

3. Weather forecast does not indicate thunderstorms or tornadoes

4. Both diesel generators are verified operable.

Time Allotted: 15 minutes

Reference: NPDAP 3.4, Attachment 7

KA: 2.2.13 /3.8

Comments: _____
_____
_____
_____
_____

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

A2.1 The plant is operating at 100% power with all systems in NSA except the 1A HHSI/charging pump, which is out of service. Based on the Risk Assessment Guidelines as described in NPDAP 7.12, Non-Outage Planning, Scheduling and Risk Assessment, whose approval would be required prior to removal of a motor driven, Auxiliary Feedwater Pump from service?

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

A2.2 What four conditions must be verified prior to placing a diesel generator on clearance for routine maintenance? Assume the plant is operating in MODE 1 with all systems in NSA.

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1AD-A.3 Rev: 0 System #: 194 Faulted: ☐
JPM Title: Enter High Radiation Area

K/A Reference: 2.3.1 / 3.0 Task ID #:119 GGG 034

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
☒ Perform
☐ Simulate

LOCATION
☐ Plant Site
☐ Simulator
☒ Classroom

TYPE
☐ Training
☐ Annual Requal. Exam
☐ OJT
☒ Initial Operator Exam
☐ Other: _____

Administered By:
☐ BV-T
☐ NRC
☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT Time (minutes)
☐ UNSAT* Allotted: 20 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	_____	_____	☐	☐
Employee No:	_____				
Question #2	_____	_____	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Enter High Radiation Area

INITIAL CONDITIONS:	2HDH-627 which is located in a High Radiation Area needs to be opened.

INIT. CUE:	Your supervisor directs you to enter the High Radiation Area in order to open 2HDH-627.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1AD-A.1
JPM TITLE:	Enter High Radiation Area
RECOMMENDED STARTING LOCATION:	CLASS ROOM
DIRECTIONS:	You are to simulate (perform) the task Enter High Radiation Area.
INIT. CONDITIONS:	2HDH-627 which is located in a High Radiation Area needs to be opened.
TASK STAN.:	Entry performed in accordance with plant Radiation Control Standards.
INIT. CUE:	Your supervisor directs you to enter the High Radiation Area in order to open 2HDH-627.
REFERENCES:	Health Physics Manual LP-RC-02, Revision 17
TOOLS:	NONE
HANDOUT:	NONE

NUMBER	TITLE
1AD-A.3	Enter High Radiation Area

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		START TIME: _____	
		Evaluator Cue: Provide candidate with TLD, hard hat and safety glasses.	
1.C	Locate and review Radiation Work Permit.	1.	Candidate locates Radiation Work Permit.
		1.2.C	Candidate reviews Radiation Work Permit.
			_____
		COMMENTS:	
2.	Insert Rados ARD into ARD 1000 reader.	2.1	Candidate locates Rados ARD.
		2.2	Candidate inserts Rados into ARD 1000 reader.
			_____
		COMMENTS:	
3.C	Enter Data in ARD 1000 reader.	3.1.C	Candidate enters ID number into ARD 1000 reader.

NUMBER	TITLE
!AD-A.3	Enter High Radiation Area

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
		3.2.	Candidate verifies name on ARD 1000 reader.
		EVALUATOR CUE: Assume your name is displayed as it would be in the plant.	
		3.C	Candidate enters RWP number in ARD 1000 reader.
			_____
		COMMENTS:	
4.	Observe ARD dose and dose rate setpoint and take ticket.	4.1	Candidate observes ARD 1000 reader display and notes ARD dose setpoint.
		4.2	Candidate observes ARD 1000 reader display and notes ARD dose rate setpoint.
		4.3	Candidate takes and reads ticket.
		EVALUATOR NOTE: Operators do not normally receive tickets. Candidate may ignore ticket.	
		EVALUATOR CUE: Assume your name is displayed as it would be in the plant.	
			_____
		COMMENTS:	

NUMBER	TITLE
1AD-A.3	Enter High Radiation Area

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

5.C	Remove Rados ARD reader.	5.1.C	Candidate removes Rados ARD from ARD 1000 reader.
		5.2.C	Candidate places Rados ARD on upper body near TLD.
			_____
			COMMENTS:
			EVALUATOR CUE: You are to simulate donning protective clothing.
			EVALUATOR CUE: As Health Physics Tech, provide candidate with copy of survey map and conduct briefing. (Attachment 1)
6.	Enter contaminated area.	6.1	Candidate reads posted signs.
			EVALUATOR CUE: Assume all dates on signs and survey maps are today's date.
		6.2	Candidate enters contaminated area.
			_____
			COMMENTS:
7.	Enter High Radiation Area.	7.1	Candidate proceeds to High Radiation Barrier.

NUMBER	TITLE
1AD-A.3	Enter High Radiation Area

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

	7.2	Candidate reads posted signs.
	7.3	Candidate enters High Radiation Area and proceeds to work area.
		_____
		COMMENTS:
8.C Respond to high dose alarm		
		EVALUATOR CUE: After candidate reaches work area, turn on tape player to sound high dose rate alarm.
	8.1.C	Candidate hears alarm and checks ARD.
		EVALUATOR CUE: The ARD is displaying a dose rate of 107 mrem/hr.
	8.2.C	Candidate exits High Radiation Area.
		EVALUATOR CUE: After candidate exits work area, turn off tape player to silence high dose alarm.

NUMBER	TITLE
IAD-A.3	Enter High Radiation Area

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)
	8.3 Candidate proceeds to telephone and notifies Health Physics.
	EVALUATOR CUE: Simulate talking on phone as Rad Tech, acknowledge condition and instruct candidate to return control point.
	EVALUATOR CUE: Inform candidate that this completes the JPM.
	COMMENTS:
	STOP TIME _____

1AD-A.3 ATTACHMENT ONE

HRA BRIEFING:

1. Review Local Dose Rates on Survey Map.

2. Review Transient Path Dose Rate on Survey Map.

3. Review Areas to avoid/minimize time: hot spots and high rad on Survey Map.

4. Check that ARD is operating properly.

5. Ask candidate what ARD alarm setpoints are.
   (Dose Alarm - 50 mrem & Dose Rate Alarm - 99 mrem/hr)

6. Instruct candidate to:

   - o Read ARD frequently
   - o Notify HP of any changes in conditions
   - o Stay in transient pathway

BEAVER VALLEY JOB PERFORMANCE MEASURE
EVALUATOR COVER SHEET

JPM Number: 1AD-A.4 Rev: 0 System #: 344 Faulted: ☐
JPM Title: Determine PAR

K/A Reference: 2.4.44 / 4.4 Task ID #:3440240302

JPM Designation: ☐ NO ☐ RO ☒ SRO
JPM Application: ☒ NRC ☒ Initial Exam ☐ Training

Evaluation Method
- ☒ Perform
- ☐ Simulate

LOCATION
- ☐ Plant Site
- ☐ Simulator
- ☒ Classroom

TYPE
- ☐ Training
- ☐ Annual Requal. Exam
- ☐ OJT
- ☒ Initial Operator Exam
- ☐ Other: _____

Administered By:
- ☐ BV-T
- ☐ NRC
- ☐ Other: _____

Evaluation Results

Performer: Name: _____ Employee No: _____

Results ☐ SAT Time (minutes)

☐ UNSAT* Allotted: 15 Actual: _____

Time Critical: ☐ Yes ☒ No

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluation Results ☐ Check here if same as above

Observer 1: Name: _____ Employee No: _____
Observer 2: Name _____ Employee No: _____
Observer 3: Name _____ Employee No: _____
Observer 4: Name _____ Employee No: _____

	Question ID	Time (minutes) Allotted	Actual	Results SAT	UNSAT*
Question #1	_____	_____	_____	☐	☐
Employee No:	_____				
Question #1	_____	_____	_____	☐	☐
Employee No:	_____				

*Comments (Required for UNSAT Evaluation): _____

_____

Evaluator (Print): _____ Organization: _____

Evaluator Signature _____ Date: _____

RTL #A5.635.J BEAVER VALLEY JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

Task:	Determine PAR

INITIAL CONDITIONS:	Five minutes ago, a plant event occurred resulting in the following conditions: o Core Exit TCs indicate 748°F. o Subcooling is -147°F. o RVLIS indicates 35%.(No RCPs running) o Containment pressure is 47 psig. o 150' wind direction is from 337°. o 500' wind direction is from 324°. o CIA and CIB have been successfully actuated.

INIT. CUE:	You are to evaluate the above conditions and determine which, if any, Offsite Protective Action Recommendations are necessary.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task. Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met, announce "I have completed the JPM". Then hand back this sheet to the evaluator.

EVALUATOR DIRECTION SHEET

JPM NUMBER:	1AD-A.4
JPM TITLE:	Determine PAR
RECOMMENDED STARTING LOCATION:	CONTROL ROOM
DIRECTIONS:	You are to simulate (perform) the task Determine PAR.
INIT. CONDITIONS:	Five minutes ago, a plant event occurred resulting in the following conditions: o Core Exit TCs indicate 748°F. o Subcooling is -147°F. o RVLIS indicates 35%. (No RCPs running) o Containment pressure is 47 psig. o 150' wind direction is from 337°. o 500' wind direction is from 324°. o CIA and CIB have been successfully actuated.
TASK STAN.:	Protective Action Recommendations determined in accordance with EPP/IP 4.1
INIT. CUE:	You are to evaluate the above conditions and determine which, if any, Offsite Protective Action Recommendations are necessary.
REFERENCES:	EPP/IP 4.1 Rev. 8
TOOLS:	NONE
HANDOUT:	NONE (EPP and EPP/IPs are to be made available to candidate.)

NUMBER	TITLE
1AD-A.4	Determine PAR

STEP ("C" denotes critical step)	STANDARD (Indicate "S" for Sat. or "U" for Unsat.)
	START TIME: _____
	EVALUATOR NOTE: The candidate may begin by determining Critical Safety Function status or by evaluating event classification prior to referencing EPP/IP 4.1
1. Review EPP/IP 4.1.	1.1 Candidate locates EPP/IP 4.1. 1.2 Candidate determines that Protective Action Recommendations required within 15 minutes if General Emergency is declared. _____ COMMENTS:
2. Determine if General Emergency should be declared.	2.1 Candidate locates EPP/I-1A, Attachment 1

NUMBER	TITLE
1AD-A.4	Determine PAR

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)

		2.2	Candidate determines that two barriers have been lost and there is a potential loss of third barrier, resulting in a General Emergency condition.
			EVALUATOR NOTE: Core Cooling CSF Red Path results in Loss of Fuel Clad Barrier (1.1.1), RVLIS < 39% results in loss of RCS Barrier (1.2.2) and Containment CSF Red Path results in potential loss of CNMT Barrier (1.3.1).
			EVALUATOR NOTE: Candidate may reference EOPs to determine the CSF Red Path conditions exist.
			_____
			COMMENTS:
3.	Candidate refers to Offsite Protection Action Recommendation Flow Chart.	3.1	Candidate enters Offsite Protective Action Recommendation Flowchart on General Emergency EAL other than 7.1.
			_____
			COMMENTS:

NUMBER	TITLE
1AD-A.4	Determine PAR

STEP ("C" denotes critical step)		STANDARD (Indicate "S" for Sat. or "U" for Unsat.)	
4.	Reference Attachment 2 and Determine Downwind Wedge.	4.1	Candidate references Table 1 to determine that the 150' elevation Downwind Sectors are FGHJK.
		4.2	Candidate references Table 1 to determine that the 500' elevation Downwind Sectors are EFGHJ.
			_____
		COMMENTS:	
5.C	Determine Offsite Protective Action Recommendation.	5.1.C	Candidate determines the following Protective Action Recommendation: Evacuate 360°for two miles. Evacuate Sectors EFGHJK for five miles. Shelter remainder of 10 mile EPZ.
			_____
		COMMENTS:	

NUMBER	TITLE
1AD-A.4	Determine PAR

STEP	STANDARD
("C" denotes critical step)	(Indicate "S" for Sat. or "U" for Unsat.)
6. Report JPM completion.	6.1 Candidate reports that the JPM is complete. _____ COMMENTS: STOP TIME _____

D R A F T

July XX, 1996

MEMORANDUM FOR: Virgil Curley, Licensing Assistant, RI
Beverly Michael, Licensing Assistant, RII
Mary Ann Bies, Licensing Assistant, RIII
Laura Hurley, Licensing Assistant, RIV

FROM: Debbie McCain, Licensing Assistant, HQ

SUBJECT: PLACEMENT OF EXAMINATION ITEMS INTO THE PUBLIC DOCUMENT ROOM (PDR)

I am providing you additional information on the above. On June 5, 1996, ROI-96-11 and a memo to you from me regarding the placement of examination items into the PDR was distributed. I received 5 additional items from Mary Ann Bies, Licensing Assistant, RIII, requesting verification/guidance on the following:

1. "We send to the PDR the facility's **initial** submission of their **outline and all parts of the exam they write.**"

   This is correct. As stated in the June 5, 1996, note, "What is required by law and what needs to be placed in the PDR is correspondence to the NRC that leads to the issuance of an operators license, i.e., the outline the facility submits and the facility's initial exam submittal that is sent to the NRC for review."

2. "Any changes before reaching the final product approved by the NRC is **not** to go to the PDR."

   This is correct. As stated in the June 5, 1996, note, "All reiterations that happen between the time the facility submits their exam to the NRC for review, and the time the NRC actually puts a seal of approval on the final product, is not what is required to be sent to the PDR."

3. "The final written goes to the PDR as an enclosure to the exam report (as usual). However what about the **operating exam?** The masters are not sent out with the exam report. Are we required to send to the PDR these **final** NRC-approved operating exam masters as written by the facility?"

   This is correct. You are required to send to the PDR those **final** NRC-approved operating exam masters as written by the facility. See the attached for guidance.

F:\PDRGuide

4. "Also, regarding record retention of the operating exam masters, we keep the scenarios in the exam package, but we only keep in the exam package the JPMs if they result in a failure of the JPM portion of the exam by a candidate. Rev. 8 makes no mention of keeping the final JPMs in the package. However, if we are required to keep the initial submission of the exam the facility licensee submits to the NRC for review and approval, it seems we should also keep the final product as approved by the NRC. Is this correct?"

   The as given written and operating exam in it's entirety is sent to the PDR. See the attached for guidance. As stated in the June 5, 1996, note, the as given written exam (as always) is attached to the exam report and placed in the PDR. As always, only keep in the exam package the JPMs if they result in a failure of the JPM portion of the exam by a candidate. As stated above, the entire operating exam will be sent to the PDR. Nothing new is being required to be kept. I believe the issue here is you will be sending all parts of the operating to the PDR and only retaining a copy of a portion. It is up to you if you chose to keep copies of all portions of the operating test. It is not going to be required in NUREG-1021. If you choose to keep copies, I suggest, at a maximum, keep copies of the complete exam for the first few. You can always call the PDR (202-634-3273) and see if your material made it until you gain some trust in the system and develop a level of comfort. The chances of something not arriving in the PDR are not very great. I don't believe it is worth your time and effort to make copies of the voluminous amount of material <u>just in case</u> this happens. It is your choice.

5. "We talk of the Pilot items going to the PDR, but am I correct in understanding that once the pilot-style exams become Rev. 8 exams that are written by the facility licensee, we will routinely continue sending these items to the PDR?"

   This is correct. Starting **NOW** any exam that is the "pilot-style" exam and once the pilot-style exams become Rev. 8 exams that are written by the facility licensee, you will routinely continue sending these items to the PDR using the guidance attached.

When we first starting talking about this whole issue of what, how, when, and where to send pilot-style exam material to the PDR, I had suggest, and actually gave you, a sample cover note to send with the material being sent to the PDR. This cover note is not necessary, and the Document Control Desk chooses not to get it. The attached guidance specifically states how to mark the boxes being sent. If the boxes are marked correctly, the cover note serves no purpose. Most importantly, is one less thing for you to do.

I suggest that as quickly as possible, you take the time to box these exams up and get them out of your office. In the middle of August, exams being given the "pilot style" are starting up again. This will avoid some confusion and lessen the room for error. Not to mention getting alot of paper out of your office.

I have had several meetings with the Document Control staff and many conversations with the PDR. During these meeting and conversations I informed them that in the near future there will be twenty-two examination packages being sent to them, and then things should level off to a steady flow.

Attachment:
As stated

cc w/attachment:
S. Richards, HOLB
G. Meyer, RI
T. Peebles, RII
M. Leach, RIII
J. Pellet, RIV

DRAFT G U I D A N C E DRAFT

WHAT/HOW/WHEN/WHERE TO SEND "PILOT-STYLE" EXAMINATION MATERIAL TO THE PDR

o **WHAT TO SEND**:

1. Facility outline
2. Facility initial exam submittal (written and operating portion)
3. As given final exam (written and operating in its entirety)

o **HOW TO SEND**:

What if there is a failure and some grades are 80 or 81%?

The **facility outline and the facility initial exam submittal** (written and operating portion) are bond together and be one package. The bottom right hand corner of the first page will have **distribution code A070.**

The as given final written exam (as usual) will be attached to the **examination report** and distributed as you did before. The bottom right hand corner of the first page will have **distribution code IE42.**

The as given **final operating exam in its entirety** will be one package. The bottom right hand corner of the first page will have **distribution code A070.**

NOTE: YOU WILL HAVE THREE SEPARATE PACKAGES.

Place the entire exam material for each facility in one xerox box marked as follows:

> Name of Facility, Region, Document Control Desk, Mail Stop O-5-D-24, Box 1 of 1. If all three packages do not fit into one xerox box, please include the same information on additional box(s) and number the boxes appropriately, (i.e., Box 1 of 2, Box 2 of 2).

Distribution code IE42 should **NOT** appear anywhere but on the Examination Report. This code has a distribution list attached to it with the following:

Distribution:

PD	NRR/DRCH/HHFB
PM	RGN...File 01
ACRS	NOAC
File Center	NRC PDR
NRR/DRCH/HOLB	

If distribution code IE42 were placed on all 3 packages going to the Document Control Desk/PDR it would receive the above distribution. **IT IS TOO VOLUMINOUS AND NOT NECESSARY TO HAVE ANYTHING OTHER THEN THE EXAMINATION REPORT RECEIVE THIS DISTRIBUTION.**

Distribution Code A070 has a distribution list attached to it with the following:

Distribution:
File Center
PDR

G U I D A N C E

- **WHEN TO SEND**:
  The above 3 packages are sent **AT THE SAME TIME** to ensure it remains and is filed in the PDR together. Since it has to be sent to the Document Control Desk at the same time, it obviously gets sent after the exam is given.

- **WHERE TO SEND**:
  Any material going to the Document Control Desk is sent to headquarters at Mail Stop O-5-D-24.

ADDITIONAL INFORMATION:

When the exam material reaches the Document Control Desk, it is given to the contractor, and is placed on microfiche. All the exam material in the PDR is available on microfiche and paper. Microfiche can be purchased for $7.00 per fiche. Each microfiche contains approximately 300 hundred pages of material and be carried away in your shirt pocket. A paper copy can be purchased for $.09 per page, and most likely would be unable to carry it away.

The paper copy that you sent to the Document Control Desk is sent to the PDR with the appropriate microfiche and kept for the public to look at in the PDR.