FARLEY 2008 RO EXAM INITIAL SUBMITTAL

1.

Unit 1 is currently at 40% power and ramping up.

At 1000 am the following conditions exist:

- Rod control is in AUTO.
- The ramp rate is 2 MW/min.
- Tavg is 556°F and Tref is 557°F.
- CONT BANK D1 and D2 indicate 172 steps on the Group Step Counters.
- All Bank D DRPI red lights are at 168 steps.

At 1015 am the following occurs:

- CB D rods begin stepping out for Tavg control and stop at 174 and 173 steps as indicated on Demand Position Indication.
- CB D rods F6 and K10 continue **stepping out** as indicated by DRPI and RCS Tavg.
- The OATC places rods in MANUAL.
- Rods F6 and K10 stop at 192 steps as indicated by DRPI.

Which one of the following describes the Technical Specification that is required to be entered for this condition and the reason for the Tech Spec?

A. • Enter T.S. 3.1.4, Rod Group Alignment Limits, since more than one rod is untrippable.

• The Shutdown Margin may NOT be met after a reactor trip.

B. • Enter T.S. 3.1.4, Rod Group Alignment Limits, since two rods are not within the proper alignment limits.

• Excessive power peaking in the core could occur.

C. • Enter T.S. 3.1.7, Rod Position Indication, since more than one DRPI indication is INOPERABLE.

• The Shutdown Margin may NOT be met after a reactor trip.

D. • Enter T.S. 3.1.7, Rod Position Indication, since there is a mismatch between the Group Step Counters and DRPI.

• Excessive power peaking in the core could occur.

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference: Tech Specs 3.1.4 and 3.1.7 and bases. Also lesson plan for DRPI OPS-52201F

Learning Objective:
Identify and apply the following Technical Specifications or TRM requirements, including the bases and attendant equipment, associated with the Digital Rod Position Indication System (OPS52201F10).

- Technical Specification 3.1.7, Rod Position Indication
- TR 13.1.8, Position Indication System – Shutdown
- TR 13.1.9, Test Exception for Position Indication System – Shutdown

Identify and apply the following Technical Specifications or TRM requirements, including the bases and attendant equipment, associated with the Rod Control System (OPS-52201E01).

- 3.1.4, Rod Group Alignment Limits
- 3.1.5, Shutdown Bank Insertion Limits
- 3.1.6, Control Bank Insertion Limits
- 3.1.7, Rod Position Indication
- 3.1.8, PHYSICS TESTS Exceptions

Comments: This question meets the KA in that during this continuous rod withdrawal of 2 rods, they become misaligned and then Tech Specs have to be entered. The reason that the tech Spec is entered and the reason for the tech spec is part of the answer and distracters to meet the KA that says "knowledge of the reasons for..... TS limits on rod operability." at an RO level.

2.

While operating at 75% power a dilution is initiated. The control rods are adjusted to maintain Tavg on program.

If the dilution and control rod adjustments were to continue over a long period of time, which one of the following would describe the operational implications on the Rod Insertion Limit (RIL) and the Shutdown Margin (SDM)?

(Compare the initial steady state value with the final steady state value)

The RIL would _____(A)_____. The SDM would _____(B)_____.

	(A)	(B)
A.	decrease	be reduced
B.	decrease	**NOT** change
C✓	**NOT** change	be reduced
D.	**NOT** change	**NOT** change

Technical Reference: TS bases 3.1.6 and OPS-52201J

Learning Objective:
4. Predict and explain the following instrument/equipment response expected when performing TAVG, ?T, and PIMP System evolutions including the fail condition, alarms, trip setpoints (OPS52201J08):
Rod Insertion Limit Computer

Comments: This meets the KA since it tests what happens to the RIL for an operational event that involves rod movement and then has the candidate predict the implications if this event were allowed to continue.

I added the following statement to the stem to qualify what values are being looked at and compared. I do not want confusion with the candidates as to what values they are looking at when the stem is vague on the time this is taking place. If I put a time in, then I would have to put a dilution flow rate and then candidates may ask for rod values and the actual RIL from the COLR. This is not intended to look at the actual value, just what is the value of RIL and SDM doing, either reducing or remaining the same.
(Compare the initial steady state value with the final steady state value)

3.

Given the following:

- A Loss of Feedwater has occurred.
- The crew is performing actions of FRP-H.1, Response to Loss of Secondary Heat Sink.
- ALL RCPs have been secured.
- CETCs are 632°F and rising.
- RCS pressure is being controlled by the PORVs lifting.

Which ONE of the following indicates that a loss of secondary heat sink has occurred, and the required actions to be taken IAW FRP-H.1?

A. • A high loop Delta T.

• Establish an RCS Feed and Bleed.

B. ✔ • A low loop Delta T.

• Establish an RCS Feed and Bleed.

C. • A low loop Delta T .

• Using the steam dumps, dump steam at the maximum attainable rate.

D. • A high loop Delta T.

• Using the steam dumps, dump steam at the maximum attainable rate.

Technical Reference: FRP-H.1

Learning Objective:
State the basis for all cautions, notes, and actions associated with FRP-H.1/2/3/4/5. (OPS52533F03).
Describe the sequence of major actions and when and how continuous actions will be implemented associated with FRP H.1/2/3/4/5 (OPS52533F04).
Evaluate plant indications to determine the successful completion of any step in FRP-H.1/2/3/4/5 (OPS52533F07).

Comments: This meets the KA since it tests a loss of heat sink and the indications of a loss of heat sink and then the actions that will need to be taken based on the loss of heat sink indications at an RO level.

4.

Given the following conditions:

- Unit 1 is operating at 100% power.
- FF2, ROD CONT SYS NON-URGENT FAILURE, has come into alarm.
- Due to an over voltage protector actuation, the power supplies (PS1 and PS2) for Power Cabinet 1BD have shutdown.
- The ROVER and SSS-plant have tried to reset the power supplies and neither would reset.

Which one of the following is a result of taking **NO** other action for this condition?

A. Multiple rods will drop into the core.

B. Rods in the affected cabinet will not move in any mode.

C. ALL control bank D rods can be moved in individual bank select ONLY.

D. Rods in the unaffected cabinet can be moved in individual bank select ONLY.

Technical Reference: ARP-FF1 and 2 and lesson plan for rod control OPS-52201E

Learning Objective:
Identify the power supply for each major electrical component associated with the Rod Control System including (OPS40204I04):

- Logic Cabinets
- Power Cabinets
- DC Hold Cabinet
- Control Rod Drive Mechanisms

Comments: This meets the KA since the interrelation between rod control power supplies and dropped rods is tested at a memory level for an RO.

5.

If one Reactor Coolant Pump became degraded and RCS total flow fell below the minimum required flow rate for a significant period of time, which one of the following conditions would occur?

A. Quadrant Power Tilt Ratio limits would be exceeded.

B. Heat Flux Hot Channel Factor limits would be exceeded.

C✓ Departure from Nucleate Boiling (DNB) limits would be exceeded.

D. Nuclear Enthalpy Rise Hot Channel Factor limits would be exceeded.

Technical Reference: Tech Spec bases background information and TS 3.4.1 information
TSs 3.2.1, 3.2.2, 3.24 and SL 2.1

Learning Objective:
State the components, processes, or parameters of the Reactor Coolant System that are addressed in Technical Specifications and/or the Technical Requirement Manual (OPS40301A10).

- TS 3.4.4 RCS Loops — MODES 1 and 2
- TS 3.4.5 RCS Loops -- MODE 3

Identify and apply the following Technical Specifications or TRM requirements, including the bases and attendant equipment, associated with the Reactor Coolant Pumps (OPS52101D01).

- 3.4.4 RCS Loops - Modes 1 and 2
- 3.4.5 RCS Loops - Mode 3

Comments: This meets the KA since the RCS flow rate is reduced which affects the DNB parameters. The operational implications are the limits being exceeded. Since this is a knowledge KA, it is written to a memory level and knowledge of Tech Specs vs RCS flow would provide the RO with the knowledge required to answer the question.

6.

Unit 1 is operating at 100% power when the following indications are received:

- DE3, LTDN ORIF ISO VLV REL LINE TEMP HI, comes into alarm.
- PI-145, LTDN HX OUTLET PRESS, decreases to 0 psig.
- FI-150, LTDN HX OUTLET FLOW, decreases to 0 gpm.
- PK-145, LP LTDN PRESS controller, goes to 0% and the minimum RED light is LIT.

Which one of the following describes the the event in progress?

A. HV-8152, LTDN LINE CTMT ISO, has lost air.

B. Pressurizer level on LT-459 is less than 15%.

C. A Phase A isolation has occurred.

D. PCV-145, LTDN PCV, has lost air.

Technical Reference: OPS-52101F lesson plan, AOP-6.0 loss of air
D175039 P&ID

Learning Objective: (OPS40301F02)

Comments: This meets the KA in that the operator has to be able to evaluate the response of letdown to the indications given, and based on that evaluation determine how the automatic operation of letdown responded.

modified from CVCS-40301F08 #17

7.

Unit 1 has been operating at 100% power.

The following conditions exist:

- The cation bed demineralizer was last placed in service prior to the refueling outage during coastdown of the unit.
- The cation bed demineralizer was vented to the atmosphere for maintenance 20 days ago.
- Chemistry has asked Operations to place the cation bed demineralizer in service.

If the cation bed demineralizer was not flushed as required per procedure, which one of the following correctly lists two problems that could result from placing the cation bed demineralizer in service?

A. • The RCS filter may clog due to high particulate.
   • A **boration** of the RCS will occur.

B. ✔ • The RCS filter may clog due to high particulate.
   • A **dilution** of the RCS will occur.

C. • Charging pump suction voiding may occur.
   • A **boration** of the RCS will occur.

D. • Charging pump suction voiding may occur.
   • A **dilution** of the RCS will occur.

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference: SOP-2.1 appendix J-

Learning Objective:

1. Discuss the normal operation and alignment of each of the following component including precautions and limitations of operation, and applicable procedures (SOPs, ARPs, UOPs) associated with the CHEMICAL AND VOLUME CONTROL System (OPS-40301F11):
   - Filters and demineralizers
     - Mixed Bed Demineralizers
     - Cation Bed Demineralizers
     - RCS Filter
     - Seal Injection Filter
     - RCP Seal Return Filter

2. Identify the symptoms and predict the impact a loss or malfunction of CHEMICAL AND VOLUME CONTROL system components will have on the operation of the CHEMICAL AND VOLUME CONTROL system (OPS-52101F02)
3. Discuss the operation and alignment of components including precautions and limitations of operation, and applicable procedures (SOPs, ARPs, UOPs) associated with the CHEMICAL AND VOLUME CONTROL System (OPS-52101F04)

Comments: This meets the KA at an RO knowledge level since it tests the results of placing the mixed bed in service after not being aligned for several months and the effects of the high particulate and boron in relation to the RCS and CVCS components. This is past OE from FNP (OR 2-99-875)

8.

Given the following plant conditions on Unit 1:

- The RCS is solid.
- The letdown orifice isolation valves are closed.
- RHR is on service and supplying low pressure letdown.
- RCS pressure is 350 psig.
- RCS temperature is stable.
- FCV-122 is in Manual.
- HCV-142, RHR to LETDOWN Flow, controller setting is at 40% demand.
- PK-145, LP LTDN PRESS controller, is in AUTO.
- The Plant Operator adjusts HCV-142 controller to 100% demand.

Which one of the following describes the initial response of the systems after the operator action?

A. Letdown pressure **DECREASES**, PCV-145 automatically throttles **SHUT** to restore letdown pressure to its original value, and RCS pressure **DECREASES**.

B✔ Letdown pressure **INCREASES**, PCV-145 automatically throttles **OPEN** to restore letdown pressure to its original value, and RCS pressure **DECREASES**.

C. Letdown pressure **DECREASES**, PCV-145 automatically throttles **SHUT** to restore letdown pressure to its original value, and RCS pressure **INCREASES**.

D. Letdown pressure **INCREASES**, PCV-145 automatically throttles **OPEN** to restore letdown pressure to its original value, and RCS pressure **INCREASES**.

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference: Lesson plan OPS-52101F

Learning Objective:
also the following:
Identify any special considerations such as safety hazards and plant condition changes that apply to the Residual Heat Removal System (OPS52101K04).
- Decrease in low pressure letdown flow
- HCV-142 fails closed
- HCV-142 fails open

List the automatic actions associated with the Residual Heat Removal System components and equipment during normal and abnormal operations including (OPS40301K07):
- Normal control methods

Describe the operation of PCV-145 during normal operations and solid plant pressure control including the conditions of air and electrical power failures (OPS52101F05).

Comments: question tests the operational implications of the plant while solid and how the different valves and plant parameters will be affected.

FNP BANK: RHR-40301K02 15

9.

Given the following at 1015:

- Unit 1 is performing a plant cooldown using the "A" Train RHR system.
- HIK-603A, 1A RHR HX DISCH VLV, controller is at 50%.
- FK-605A, 1A RHR HX BYP FLOW, controller is at 50%.

At 1020 the following occurs:

- Instrument Air is lost to FCV-605A, 1A RHR HX BYP FLOW, due to a supply line leak.
- NO other equipment is affected.

Which ONE of the following describes the effect on total RHR flow on FI-605A, 1A RHR HDR FLOW, **and** RHR HX outlet temperature on TR-604A, 1A RHR PUMP DISCH TEMP, when the plant stabilizes from the transient?

Assume no operator action is taken

	Total RHR Flow	RHR HX outlet temperature
A.	INCREASES	INCREASES
B.	DECREASES	INCREASES
C.	INCREASES	DECREASES
D✓	DECREASES	DECREASES

Technical Reference: P&ID D-175041 and figure 2 of lesson plan

Learning Objective: 40301K08

Comments: This question tests the malfunction of a valve in the RHR discharge line that bypasses flow around or causes more flow to go thru the RHR Ht exchanger. This malfunction affects RHR flow thru the RHR ht exchanger and outlet temperature.

FNP BANK: RHR-40301K08 02

10.

Unit 1 has experienced a safety injection (SI) due to a Large Break LOCA.

If the RWST were allowed to drop to 4 feet 5 inches with **NO** operator action, which one of the following would describe the flow path of the ECCS system from suction source to the RCS?

A. Containment sump aligned to two RHR pumps which are providing flow to two HHSI pumps that are cross-connected with flow going to the RCS HOT **and** COLD legs A, B, and C.

B. RWST aligned to two HHSI pumps that are cross-connected with flow going to RCS HOT legs A, B, and C.
RWST aligned to two RHR pumps with flow going to RCS HOT legs A, B, and C.

C. Containment sump and the RWST aligned to two RHR pumps which are providing flow to two HHSI pumps that are cross-connected with flow going to the RCS HOT **and** COLD legs A, B, and C.

D. RWST aligned to two HHSI pumps that are cross-connected with flow going to the RCS COLD legs A, B, and C.
Containment sump and the RWST aligned to two RHR pumps with flow going to the RCS COLD legs A, B, and C.

Technical Reference: OPS-52102B ECCS figure 14 ESP-1.3 for distracter plausibility and FSD - CVCS/HHSI/ACCUMULATOR/RMWS A-181009

Learning Objective:
Discuss the operation and alignment of each major component including precautions and limitations of operation, and applicable procedures, associated with the Emergency Core Cooling System including (OPS40302C11):
- High-Head Injection Pumps (Charging Pumps)
- Low-Head Injection Pumps (RHR Pumps)
- Accumulators
- Refueling Water Storage Tank (RWST)
- Hydrostatic Test Pump
- RHR Heat Exchangers

Comments: This meets the KA since the physical connections and the cause and effect of the RWST lo-lo level on the alignment is tested and the operator would have to know what the normal alignment of the ECCS/chg system is for a LB LOCA and then what happens on a lo-lo level vs operator action at this level.

11.

Unit 1 was operating at 92% power when ALL AC power is lost.

Which one of the following lists indications that are available, and approximately what the indications would read, to determine the reactor is operating correctly and is shutdown, five (5) minutes after ALL AC power is lost on Unit 1?

A. ALL rod bottom lights are lit.
SR SUR = 0 DPM
SR counts = 2000 cps

B. ALL rod bottom lights are lit.
IR SUR = 0 DPM
IR amps = 2 x 10^{-8} Amps

C. ALL reactor trip and bypass breakers are LIT and open.
SR SUR = -0.3 DPM
SR counts = 2000 cps

D. ALL reactor trip and bypass breakers are LIT and open.
IR SUR = -0.3 DPM
IR amps = 2 x 10^{-8} Amps

Technical Reference: EEP-0 and ECP-0 IOAs, FNP load list for unit 1 A-506250 Pages D-97, G-82, F-54, G-50

Learning Objective:
2. Evaluate plant conditions to determine if entry into EEP-0/ESP-0.0 is required. (OPS52530A02)
Predict and explain the following instrument/equipment response expected when performing Excore Nuclear Instrumentation System evolutions including the fail condition, alarms, and trip set points (OPS52201D08).
- Power Range Channels
- Intermediate Range Channels

Source Range Channels

Comments: This meets the KA since this question asks the candidate to determine if the reactor is shutdown from the available indications. The candidate will have to determine from the available indications given with the available power supplies if the reactor is remaining subcritical and how IR or SR power would react.

12.

Unit 1 is in Mode 4 with the following conditions:

- The RCS is being cooled down to COLD SHUTDOWN using A Train RHR IAW UOP-2.2, Shutdown of Unit from Hot Standby to Cold Shutdown.
- RCS pressure and temperature is stable at 375 psig and 333°F.
- A transient has occurred that caused the RHR suction relief to lift and start leaking to the PRT.
- The RHR relief was isolated IAW SOP-7.0, Residual Heat Removal System.

The following Pressurizer Relief Tank (PRT) parameter changes have occurred:

- PRT pressure has increased from 2.0 psig to 4.0 psig.
- PRT temperature has increased from 115°F to 140°F.
- PRT level has increased from 70% to 73%.

Which one of the following describes the annunciator that will be in alarm and the preferred action to return the PRT parameters to nominal values?

A. • Annunciator HE3, PRT TEMP HI, will be in alarm.

• The PRT should be cooled down by spraying cool reactor makeup water into the PRT per SOP-1.2, Reactor Coolant Pressure Relief System.

B. • Annunciator HE3, PRT TEMP HI, will be in alarm.

• The PRT should be cooled down by recirculating the PRT water through the RCDT heat exchanger per SOP-1.2, Reactor Coolant Pressure Relief System.

C. • Annunciator HE4, PRT LVL HI-LO, will be in alarm.

• The PRT level should be reduced by draining to the Waste Holdup Tank (WHT) per SOP-1.2, Reactor Coolant Pressure Relief System.

D. • Annunciator HE5, PRT PRESS HI, will be in alarm.

• The PRT pressure should be reduced by venting the PRT to the Waste Gas Decay Tank (WGDT) per SOP-1.2, Reactor Coolant Pressure Relief System.

Technical Reference: SOP- 1.2, Reactor coolant relief system, ARP-HE3, 4 and 5, Ops-52101E, pressurizer lesson plan.

Learning Objective:

Discuss the operation and alignment of each major component including precautions and limitations of operation, and applicable procedures, associated with the Pressurizer System including (OPS40301E11):

- Pressurizer
- Pressurizer Relief Tank

Comments: This meets the KA since the RHR relief valve has lifted causing PRT parameters to be affected and then due to the PRT parameters that are affected, the candidate will have to evaluate and then make operational judgements at an RO level to determine what to do when this condition occurs.

13.

Given the following conditions:

- A reactor trip has occurred.
- Pressurizer pressure is lowering rapidly and pressurizer level is rising rapidly.

Which one of the following indications are consistent with the event in progress?

A. LK-459F, PRZR LVL Master Controller, indicates 100% and FK-122, CHG FLOW controller indicates 100%.

B. PK-464, STM HDR PRESS Controller, indicates 100% and the red lights for Steam Dump Valves V501C and E are LIT.

C. PK-444A, PRZR PRESS Master Controller, indicates 0% and the red light for PORV-444B, PRZR PORV, is LIT.

D. PK-444C, 1A LOOP SPRAY VLV Controller, indicates 100% and the 4 green lights for 1A LOOP PRZR SPRAY VLV are LIT.

Technical Reference: OPS-52201H

Learning Objective:

Evaluate abnormal plant or equipment conditions associated with the Pressurizer Pressure and Level Control System and determine the integrated plant actions needed to mitigate the consequence of the abnormality (OPS52201H12).

Given a set of plant conditions describe the actions/effects that will occur following a PZR Pressure Malfunction with no operator action (OPS52201H17).

Comments: This meets the KA since the question asks for the interrelations between the controllers/ positioners that affect the valves listed and a stuck open PORV (vapor space accident). They have to relate the indications with the event to determine what is happening.

14.

Unit 1 is operating at 100% power with the following conditions:

- "A" Train is the "On Service" train.
- 1B CCW pump is running and supplying loads in the on-service train.
- 1A CCW pump is running to support charging pump operations.
- 1C CCW pump is aligned and OPERABLE.

A Safety Injection occurs at this time.

Which one of the following combinations of CCW pumps will be running following the operation of the ESF sequencers?

(Assume no operator action is taken)

A. 1A and 1C CCW pumps

B. 1B and 1C CCW pumps

C. 1A and 1B CCW pumps

D. 1A and 1B and 1C CCW pumps

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference: FSD A-181000

Learning Objective: 40204A07
List the automatic actions associated with the Component Cooling Water System components and equipment during normal and abnormal operations including (OPS40204A07):

- Normal control methods
- Automatic actuation including setpoint (example SI, Phase A, Phase B, High Radiation, LOSP)
- Protective isolations such as high flow, low pressure, low level including setpoint
- Protective interlocks

also 52102G02

Comments: This meets the KA since it tests the standby feature of the standby pump for the train it is aligned to. This is the standby feature for the main pump (ie., 1C or 1A CCW pump).

Our SW pumps do not have a feature where the standby pump looks to see if the other pump is running before starting or not starting the other pump in that train for an SI signal. In that case there would be 5 SW pumps running. For CCW, if the swing pump is running, then the other pump in that train will not start on the SI signal.

All distracters are plausible since our trains are not set up in a logical way and C CCW pump is A train and A CCW pump is B Train. Most other components are configured correctly and differently.

Had to change the stem to take into account the new CCW and charging pump line up.

FNP BANK: CCW-52102G02 05

15. Given the following conditions on Unit 1:

- A manual Safety Injection has been initiated IAW AOP-1.0, RCS Leakage.
- The crew is at diagnostics of EEP-0, Reactor Trip or Safety Injection, to check the RCS intact.

The following conditions exist:

- Pressurizer level is off-scale low.
- Containment pressure is reading 3.2 psig on all four CNMT PRESS indicators.
- HHSI flow on FI-943, A TRN HHSI FLOW, indicates 300 gpm.
- Containment ECCS sump level is reading 0.1 feet on LI-3594A, CTMT SUMP LVL.
- RWST level is currently 39.5 feet and trending down slowly.

Which one of the following is the parameter and the basis for that parameter which requires the transition to EEP-1.0, Loss of Reactor or Secondary Coolant?

EEP-1.0 will entered due to _____.

A. containment sump level, based on the sump level rising and being above the minimum level that can be accurately read on the MCB indicators.

B. pressurizer level, based on expediting the transition to a procedure that will recover pressurizer level and stabilize the plant.

C. HHSI flow, based on expediting the transition to a procedure that will secure HHSI flow and prevent over-filling the pressurizer.

D. containment pressure, based on containment pressure rising above the Technical Specification LCO upper pressure limit.

Technical Reference:EEP-0, EEP-1 and ESP-1.1. FNP-0-EEB-0.0 Reactor trip or safety injection plant specific background information

Learning Objective:
Evaluate plant conditions and determine if transition to another section of EEP-0/ESP-0.0 or to another procedure is required. (OPS52530A08)
Evaluate plant conditions to determine if entry into EEP-1 is required. (OPS52530B02)

Comments: This meets the KA since the question asks about the reason that the value of containment pressure is used to make a determination while in EEP-0 for a small break LOCA.

ERP StepText: Check RCS intact.
ERG StepText: *Check If RCS Is Intact*
Purpose: To identify any failure in the RCS pressure boundary into the containment.
Basis: Abnormal containment radiation, pressure, or recirculation sump level is indicative of a high energy line break in containment. Since the SGs have been determined to be non-faulted in an earlier step, then the break must be in the reactor coolant system. For smaller size breaks containment pressure and recirculation sump level may not increase for a period of time; however, containment radiation would be apparent. Guideline E-1, LOSS OF REACTOR OR SECONDARY COOLANT, is used for breaks in the RCS.
Knowledge: "Normal" means the value of a process parameter experienced during routine plant operations.
References:
Justification of Differences:
1 Specific setpoints for normal containment pressure and ECCS sump level were added in accordance with the guidance in AP-74. 3 psig for containment pressure was chosen due to it being the Tech Spec maximum pressure and 0.4 ft for ECCS sump level due to it being the minimum discernable level on the MCB indicators.
2 Deleted reference to step 1 of EEP-1. The operator should always enter a procedure at the beginning unless otherwise directed.

16.

Unit 1 is at 100% power. PT-444, PRZR PRESS, transmitter has failed LOW and the following actions have been taken:

- PK-444A, PRZR PRESS REFERENCE, master controller is in manual and demand is set at 35%.
- ALL Backup Heaters have been placed in the ON position.
- PK-444C, 1A LOOP SPRAY VLV, is in MAN and 0% on the controller.
- PK-444D, 1B LOOP SPRAY VLV, is in AUTO and at 20% on the controller.
- RCS pressure is currently 2270 psig and stable.

Which one of the following actions will **LOWER** RCS pressure?

A. Place PK-444C, 1A LOOP SPRAY VLV, in AUTO.

B. Place PK-444A, PRZR PRESS REFERENCE, in AUTO.

C. Raise the demand on PK-444A, PRZR PRESS REFERENCE, to 57.5%.

D. Place PK-444D, 1B LOOP SPRAY VLV, in MAN and lower the demand on the controller to 0%.

Technical Reference: OPS lesson plan 52201H. Przr press and level control

Learning Objective:
Explain the purpose and operation including the design features and functions, capacities, and protective interlocks of the following major components associated with the Pressurizer Pressure and Level Control System (OPS52201H02):

- Pressurizer Spray Valves
- Pressurizer Heaters
- Pressurizer Pressure Detectors
- Master Pressure Controller

Comments: This meets the KA since it tests the ability to operate and monitor the affects of the spray valves and integrates knowledge of how the master pressure controller affects RCS pressure.

17.

Unit 1 is operating at 50% power. Given the following conditions:

- Pressurizer pressure is 2235 psig.
- Pressurized Relief Tank (PRT) pressure is 10.2 psig and rising.
- PRT temperature is 125°F and rising.
- PRT level is 81% and rising slowly.
- One pressurizer PORV is blowing by its seat.

Which one of the following describes the effect on the PRT of the PORV blowing by for a sustained period of time?

Assume no operator action

A. The PRT level will increase beyond the maximum Technical Specification level.

B. The PRT hydrogen concentration will increase until an explosive mixture is created inside the PRT.

C. The PRT pressure will increase and then rapidly decrease, then radiation levels will increase in containment.

D. The PRT temperature will increase and stabilize, then the containment sump level will rise, and the PRT temperature will continue to rise.

Technical Reference:Ops- 52101E, pressurizer lesson plan.

Learning Objective:
Explain the purpose and operation including the design features and functions, capacities, and protective interlocks of the following major component associated with the Pressurizer System (OPS40301E02):
- Pressurizer
- Pressurizer Relief Tank
- Code Safety Valves and PORVs

Comments: This question meets the KA since it tests the effects of a PZR PCS component that is malfunctioning and the effects on the PRT which is directly and physically connected to it.
I revised D distracter to make it more plausible and made B the correct answer due to length of distracters instead of C.

PZR-40301E02 10

18.

Given the following conditions on Unit 2:

- "A" Train is the "On Service" train.
- 2B CCW pump is running and supplying loads in the on-service train.
- 2A CCW pump is running to support charging pump operations.
- 2A Charging Pump breaker has been racked out for maintenance.

2G 4160 volt bus has just been lost due to a fault. There is no power on the 2G 4160 volt bus at this time.

Which one of the following states the ECCS pumps that will **NOT** have power due to the fault based on current conditions?

A. 2B Charging Pump, 2A RHR Pump.

B. 2B Charging Pump, 2B RHR Pump.

C. 2C Charging Pump, 2A RHR Pump.

D. 2C Charging Pump, 2B RHR Pump.

Technical Reference: Load list for unit 2 page F-1 and G-1 A-506250

Learning Objective:

Identify the power supply for each of the following component associated with the CHEMICAL AND VOLUME CONTROL System including (OPS-40301F04):

- Charging Pumps

Identify the power supply for each major electrical component associated with the Residual Heat Removal System including (OPS40301K04):

- RHR Pumps

Comments: This meets the KA since the question directly tests the power supply for a charging pump at an RO level.

LO/INT VOLT-40102B06 3

19.

Given the following plant conditions on Unit 2:

- The reactor was at 25% power.
- A reactor trip signal came in and the reactor trip breakers failed to open.
- The operators tripped the reactor by opening the CRDM MG set supply breakers.

Which one of the following will occur if no operator action is taken?

A. HI-HI SG water levels, resulting in an automatic trip of the main turbine.

B. The main turbine will overspeed, resulting in damage to the main generator windings.

C. The main generator output breakers will not trip, resulting in motoring the main generator.

D. The main turbine will not trip, resulting in an uncontrolled cooldown of the RCS and a safety injection.

Technical Reference: FSD - REACTOR PROTECTION SYSTEM A-181007 and OPS 52201i and 52105A (main turbine)
Plant Specific Background Information - RESPONSE TO NUCLEAR POWER GENERATION/ATWT

Learning Objective:
Describe the operation and function of the following reactor trip signals, permissives, control interlocks, and engineered safeguards actuation signals associated with the Reactor Protection System and Engineered Safeguards Features to include setpoint, coincidence, rate functions (if any), reset features, and the potential consequences improper conditions (OPS52201I07):

- All reactor trip signals
- All permissive signals (P-4, P-6, P-7, P-8, P-9, P-10, P-11, P-12, P-13, and P-14)

Comments: The question tests the KA since it has a Rx protection failure in that the RTBs do not open and then the effects on the main turbine and the plant.

20.

Given the following:

- A small break LOCA has occurred on Unit 1.
- Containment pressure has reached 6 psig.
- All automatic functions operated per design.

The crew is in ESP-1.2, Post LOCA Cooldown and Depressurization.

- The operator has depressed the SI reset pushbuttons on the MCB.
- MLB 1, 1-1 and 11-1 are no longer lit.

Later in the procedure the operator discovers that the following valves will not respond to MCB switch manipulations:

- CHG PUMP DISCH HDR ISO, MOV-8108
- HHSI TO RCS CL ISO, MOV-8803B

Which one of the following describes the operation of the slave relays when the SI signal is received and the method, by procedure, to restore operation of MOVs 8108 and 8803B IAW ESP-1.2?

The slave relays will _____ when the SI signal is received.
The operator will reset Train B relays _____

A. • energize

- by turning the S821 reset handswitch inside SSPS Test Cabinet for Train B.

B. • energize

- by cycling the reactor trip breakers, then push the SI reset pushbutton for Train B again.

C. • de-energize

- by turning the S821 reset handswitch inside SSPS Test Cabinet for Train B.

D. • de-energize

- by cycling the reactor trip breakers, then push the SI reset pushbutton for Train B again.

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference: ESP-0.1

Learning Objective:
Describe the sequence of major actions and when and how continuous actions will be implemented associated with ESP- 1.3/1.4 (OPS52531G04).
Evaluate plant conditions to determine if any system components need to be operated while performing EEP-0/ESP-0.0. (OPS52530A06)
Evaluate plant conditions and determine if transition to another section of EEP-0/ESP-0.0 or to another procedure is required. (OPS52530A08)

Comments:
The questions asks for the impacts of a LOCA on the ESF system and then a subsequent failure of some ESF components.

21.

Unit 1 is at 100% power with the following condition:

- PI-953, CTMT Pressure, (Channel IV), pressure indication is oscillating and has been declared inoperable.

Which ONE of the following identifies the logic associated with the High-1 and High-3 Containment Pressure actuations **after** Channel IV is removed from service?

	High-1 SI Actuation	High-3 CS Actuation
A.	1/2	2/3
B.	1/2	1/3
C.	1/3	2/3
D.	1/3	1/3

Technical Reference: Lesson plan 52201I, STP-220.4

TS 3.3.2 condition D and E for Hi 1and 2 and Hi 3 respectively.
bases 3.3.2 page B3.3.2-34 thru 36

Learning Objective:

Describe the operation and function of the following reactor trip signals, permissives, control interlocks, and engineered safeguards actuation signals associated with the Reactor Protection System and Engineered Safeguards Features to include setpoint, coincidence, rate functions (if any), reset features, and the potential consequences improper conditions (OPS52201I07):

Comments:
This meets the KA by testing the operational implications of placing a CS actuation CTMT pressure indicator in BYPASS which takes it out of the logic circuitry. Most channels are placed in trip in this condition and it removes it from the logic in entirety. In bypass, the logic for CS actuation becomes 2/3 instead of 2 of 4 and the SI portion is placed in trip and becomes 1/2 vs 2 of 3. This still meets TS standards since bases says only 3 is required anyway and this is a fail safe position.

This question is not yet in the FNP Bank.

22.

Unit 1 is operating at 45% power when the following annunciators come into alarm:

- DC2, RCP #1 SEAL LKOF FLOW HI.
- DC3, RCP #1 SEAL LO DP.

The UO referred to the appropriate ARPs, then determined that the 1C RCP #1 seal leakoff flow was off-scale high and the 1C RCP #1 seal DP was indicating off-scale low.

Which ONE of the following describes the correct sequence of required actions for the above situation IAW AOP-4.1, Abnormal Reactor Coolant Pump Seal Leakage?

A. Close HV8141C, 1C RCP SEAL LEAKOFF valve, trip the reactor, then stop 1C RCP.

B. Trip the reactor, stop 1C RCP, then close HV8141C, 1C RCP SEAL LEAKOFF valve after the 1C RCP coasts down.

C. Ramp down power to less than 30%, stop 1C RCP, then close HV8141C, 1C RCP SEAL LEAKOFF valve after the 1C RCP coasts down.

D. Close HV8141C, 1C RCP SEAL LEAKOFF valve, ramp down power to less than 30% and remove the 1C RCP from service within 30 minutes.

Technical Reference: ARP 1.4 for DC2 and 3, AOP-4.1 Version 3

Learning Objective:
Given a set of plant conditions, determine what actions are required to be performed with a possible Reactor Coolant Pump (RCP) #1 seal failure. (OPS52522A05)

Comments: meets KA since alarms come in and they have to be analyzed as to what they mean and then operate the controls in reaction to what indications are telling them. This is a RCP malfunction and the ARP sends the operator to AOP-4.1. We no longer operate the MCB from an ARP for any RCP problem.

FNP BANK:

E-0/ESP-0.0-52530A02 22 currently in exam bank here.

Need to change this objective to AOP -4.1

23.

Given the following plant conditions:

- Unit 1 is at 25% power and ramping off line.
- The power range upper detector, N43A, fails HIGH.

Which one of the following identifies the method used to reinstate P-10, Nuclear At Power Permissive, when turbine load is reduced to < 10%, and the **minimum** coincidence required to reinstate P-10?

A. Manually reinstated when 3/4 operable power range channels < 10% power.

B. ✔ Automatically reinstated when 3/4 power range channels < 10% power.

C. Manually reinstated when 2/4 power range channels < 10% power.

D. Automatically reinstated when 2/4 power range channels < 10% power.

Technical Reference: OPS-52201D lesson plan, FSD A181007 Reactor protection system.

Learning Objective:
Predict and explain the following instrument/equipment response expected when performing Excore Nuclear Instrumentation System evolutions including the fail condition, alarms, and trip set points (OPS52201D08).
Power Range Channels
Intermediate Range Channels
Source Range Channels

Comments: meets KA since this a knowledge level KA and there is failure of the NIs and it affects the indicators/ status lights on the bypass and permissive panel as well as TSLB lights on the vertical panel of the MCB.

FNP BANK: EXCORE-52201D08 18
SQNP 2002

24.

At 1000 am, the following conditions exist on Unit 1:

- Unit 1 is operating at 55% power.
- 1B is selected on the CTMT CLR FAN SEL SWITCH.
- All containment cooler fans are running in FAST speed.

At 1015 am, the following events occur:

- A Large Break LOCA with containment pressure reaching 33 psig.
- A Dual Unit LOSP.
- The 1B DG tripped when it auto started.
- BA2, 1B CTMT CLR FAN FAULT, is in alarm.
- The AMBER light above 1B CTMT CLR FAN SLOW SPEED handswitch is illuminated.

Which one of the following is the expected plant line up of the containment coolers and the required action due to the above events?

A. • No containment cooler fans will be running.

• Start the 1B CTMT CLR FAN in fast speed.

B. ✓ • No containment cooler fans will be running.

• Start the 1A CTMT CLR FAN in slow speed.

C. • The 1A CTMT CLR FAN will be running in slow speed.

• Start the 1B CTMT CLR FAN in fast speed.

D. • The 1B CTMT CLR FAN will be running in fast speed.

• Start the 1A CTMT CLR FAN in slow speed.

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference: EEP-0 att. 2, OPS 52102C lesson plan
FSD-181013 CONTAINMENT VENTILATION SYSTEM
D-177222-1&2 ELEMENTARY DIAGRAM-CONTAINMENT COOLERS LOW SPEED
D-177221-1&2 ELEMENTARY DIAGRAM-CONTAINMENT COOLERS 1B, 1C & 1D HIGH SPEED

Learning Objective:

Explain the purpose and operation including the design features and functions, capacities, and protective interlocks of the following major components associated with the Containment Spray and Cooling System (OPS40302D02):

Containment Cooling Fans

Identify the power supply for each major electrical component associated with the Containment Spray and Cooling System including (OPS40302D04):

Discuss the operation and alignment of each major component including precautions and limitations of operation, and applicable procedures, associated with the Containment Spray and Cooling System including (OPS40302D11):

Evaluate abnormal plant or equipment conditions associated with the Containment Spray and Cooling System and determine the integrated plant actions needed to mitigate the consequence of the abnormality (OPS52102C02).

Comments:

This question meets the KA since the question asks about the impacts of the fan overload during a LB LOCA and LOSP and implies which fan, if any, is running. Then the question asks what needs to be done procedurally to correct the problem, which is found in an attachment in EEP-0. This is RO knowledge.

25.

FRP-Z.1, Response to High Containment Pressure, has a caution in the procedure which directs that if ECP-1.1, Loss of Emergency Coolant Recirculation, is in effect then containment spray should be operated as directed in ECP-1.1.

Which one of the following describes the basis for giving priority to ECP-1.1?

ECP-1.1 operates the containment spray pumps to _____

A. conserve RWST level.

B. raise level in the containment sump for the RHR pumps.

C. prevent automatic swapover of the containment spray pumps to the containment sump.

D. ensure the maximum available heat removal systems are running in order to reduce containment pressure as quickly as possible.

Technical Reference:
FRP-Z.1, ECP-1.1 and background document for FRP-Z.1, FNP-0-FRB-Z.1, Plant Specific Background Information, FNP-1/2-FRP-Z.1 RESPONSE TO HIGH CONTAINMENT PRESSURE

Learning Objective:
State the basis for all cautions, notes, and actions associated with FRP-Z.1/Z.2/Z.3. (OPS52533M03)

Comments:
This meets the KA since it tests the knowledge of a caution in a high level procedure (FRP) about the operation of the CS pumps and the affect on the plant. Since this is an RO question, it does not test which procedural transition to go to as an SRO question would or the criteria which is used when in ECP-1.1 as to what is looked at and the number of pumps vs fans vs rwst level is running. This is a very high level basis question about the caution in this procedure.
The operational implication is the loss of RWST level while in a loss of emergency recirc procedure with high ctmt pressure and why CS is operated the way it is for this event.

The question was modified slightly in that the distracters were rearranged based on length, the correct answer shortened and moved to A. and distracter B. changed to make it more plausible since it said, "ECP-1.1 operates the containment spray pumps to ensure sufficient power is available from the diesel generators for the RHR pumps" and since there is NO LOSP, power is not an issue.

26.

At 1000 am, Unit 1 is in Mode 6 with the refueling cavity at 153' 6".

- 1A RHR pump is in the cooldown line up and running.
- 1B RHR pump is in standby.

At 1015 am, the 1A RHR pump trips.

- In accordance with AOP-12.0, Residual Heat Removal System Malfunction, the operator starts the 1B RHR pump.

Which one of the following is the flow requirement for this condition and the reason for maintaining this flow?

A. Less than or equal to 1750 gpm; to prevent exceeding 110% of RHR design discharge pressure during an RCS overpressurization event.

B. Less than or equal to 2750 gpm; to reduce the thrust loading of the RHR pump thrust bearing.

C. Greater than or equal to 3000 gpm; to meet Technical Specification flow rates for this condition.

D. Greater than or equal to 3300 gpm; to reduce the potential for pipe thinning due to cavitation of the downstream orifices.

Technical Reference: TS 3.9.4 and SOP-7.0 precaution and limitations.
AOP-12 for procedural guidance

Learning Objective:
Discuss the operation and alignment of each major component including precautions and limitations of operation, and applicable procedures, associated with the Residual Heat Removal System including (OPS40301K11):

- RHR Pumps including capacity

1. Identify and apply the following Technical Specifications or TRM requirements, including the bases and attendant equipment, associated with the Residual Heat Removal System (OPS52101K01).
- 3.9.4, Residual Heat Removal (RHR) and Coolant Circulation - High Water Level
- 3.9.5, Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level

Comments: This question meets the KA since there is a loss of RHR and the operator is returning the RHR system to service and has to know what the flow requirements are for this situation. These are found in SOP-7.0, P&Ls and in NOTES within SOP-7.0 that describe how to adjust flow in the cooldown lineup. Modified this from an SRO question since the RO is not required to know the bases behind the limit, just what the limit is and that it is a TS requirement.

FNP Bank RHR-52101K01 9

27.

Unit 1 has experienced a Loss of ALL AC. The OATC has directed a systems operator to isolate RCP seals IAW Attachment 3 of ECP-0.0, Loss of All AC Power.

Which one of the following are the reasons RCP seal return and thermal barrier CCW return is isolated from the RCP seals?

1. Seal return is isolated to _____

2. Thermal Barrier CCW return is isolated to prevent steam binding in the _____

A. 1. prevent a potential radioactive release in the Auxiliary building.

   2. CCW system.

B. 1. maintain a back pressure on the number 2 seal to limit seal leakage.

   2. HHSI system.

C. 1. prevent a potential radioactive release in the Auxiliary building.

   2. HHSI system.

D. 1. maintain a back pressure on the number 2 seal to limit seal leakage.

   2. CCW system.

Technical Reference:
FNP-0-ECB-0.0 LOSS OF ALL AC POWER Plant Specific Background Information
ECP-0.0 attachment 3 and step 8 version 22

Learning Objective:
Evaluate abnormal plant or equipment conditions associated with the Component Cooling Water System and determine the integrated plant actions needed to mitigate the consequence of the abnormality (OPS52102G02).

52532A01

Comments:
This meets the KA since there is a loss of CCW due to the loss of all AC and this question asks for the reasons why the actions of the EOP (ECP-0) are completed, which entails isolating equipment that is affected by the loss of CCW.

28.

Given the following plant conditions on Unit 1:

- RWST level is 4.4 feet and dropping slowly.
- Both Trains of RHR have been aligned for recirculation IAW ESP-1.3, Transfer to Cold Leg Recirculation.
- Both Trains of Containment Spray (CS) are aligned for injection.
- The crew is currently aligning the CS system for recirculation.
- Phase B has been reset.

When the operator places the handswitch for MOV-8817A, RWST 1A CS PUMP, to the CLOSED position, the GREEN and RED lights go out (are NOT LIT).

When the 1B CS pump is aligned for recirculation, FI-958B, CS FLOW, drops to 600 gpm and starts to fluctuate.

Which one of the following describes the long term affects on CS recirculation based on the above indications?

A. • A Train CS system is available for recirculation.

• B Train CS system is available for recirculation.

B. • A Train CS system is **NOT** available for recirculation.

• B Train CS system is available for recirculation.

C. • A Train CS system is **NOT** available for recirculation.

• B Train CS system is **NOT** available for recirculation.

D. • A Train CS system is available for recirculation.

• B Train CS system is **NOT** available for recirculation.

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference: ESP-1.3, ECP-1.3 and OPS-52102C lesson plan drawing.

Learning Objective:
State the basis for all cautions, notes, and actions associated with ESP-1.3/1.4. (OPS52531G03).
Evaluate plant conditions to determine if any system components need to be operated while performing ESP-1.3/1.4 (OPS52531G06).
Evaluate plant indications to determine the successful completion of any step in ESP-1.3/1.4 (OPS52531G07).
Evaluate plant conditions and determine if transition to another section of ESP-1.3/1.4 or to another procedure is required (OPS52531G08).

Comments: This question meets the KA since it tests the ability to determine if a CS train is available for recirc flow with two different malfunctions in, one that makes one train unavailable and one that does not affect the availability. Procedural knowledge as well as system knowledge is required to properly evaluate this condition.

29.

At 1010 am the following conditions exist:

- Unit 2 is at 8% power.
- The operators are raising reactor power to 13%.
- Main Turbine startup preparations are in progress.

At 1011 am the following occurs:

- HC1, PRZR PRESS HI-LO, comes into alarm.
- PI-444, PRZR PRESS, reads 2180 psig and is decreasing.
- PI-445, PRZR PRESS, reads 2180 psig and is decreasing.

The OATC determines that PCV-444D, 2B LOOP SPRAY VLV, is mechanically stuck open.

Which one of the following describes the actions required for this condition IAW AOP-100, Instrumentation Malfunction?

A. ✓ • Trip the reactor before reaching 2100 psig,
• then secure 2A and 2B RCPs to stop the pressure decrease.

B. • Trip the reactor before reaching 2100 psig,
• then secure 2B RCP ONLY to allow use of 2A RCP for pressure control.

C. • Secure 2A and 2B RCPs before reaching 2100 psig to stop the pressure decrease,
• then shutdown the reactor IAW UOP-2.1, Shutdown of Unit from Minimum Load to Hot Standby.

D. • Secure 2B RCP ONLY before reaching 2100 psig to allow use of 2A RCP for pressure control,
• then shutdown the reactor IAW UOP-2.1, Shutdown of Unit from Minimum Load to Hot Standby.

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference:
AOP-100, HC1 annunciator, OPS-52201H, SEN 230, DW02002v.doc

Learning Objective:

Describe the local actions needed to support plant operation during normal, abnormal and emergency conditions associated with the Pressurizer Pressure and Level Control System (OPS52201H09).

Discuss the operation and alignment of each major component including precautions and limitations of operation, and applicable procedures, associated with the Pressurizer Pressure and Level Control System including (OPS52201H11):

Pressurizer Spray Valves

Given a set of plant conditions describe the actions/effects that will occur following a PZR Pressure Malfunction with no operator action (OPS52201H17).

Given a set of plant conditions describe the actions/effects that will occur following a PZR Pressure Malfunction with no operator action (OPS52201H17).

Comments: This question meets the KA since it asks about the mitigation strategy of a failed open spray valve which is a pressure control system malfunction. The mitigation strategy is that a reactor trip is required when a RCP trip is required and BOTH RCPs are required to be secured to stop the pressure drop that is being caused by the spray stuck open.
This is an industry event captured back in 2003, SEN 230 that explored the actions and responses of different combinations of RCPs being secured with a stuck open spray valve and the affects on the RCS pressure.

30.

Which one of the following states the purpose of the trisodium phosphate (TSP) that is placed in the three (3) baskets on the 105 foot elevation in containment?

The TSP will cause sump pH to be a more _____

A. acidic solution so that most of the dissolved boron will remain in solution.

B. acidic solution in order to minimize chloride induced stress corrosion cracking of austenitic stainless steel.

C. alkaline solution so that most of the dissolved iodine will be converted to a volatile form and evolve out of solution.

D. alkaline solution in order to ensure that iodine is retained in solution.

Technical Reference: Bases page B3.5.6-1 and 2 OPS-52102C CS lesson plan

Learning Objective:
Explain the purpose and operation including the design features and functions, capacities, and protective interlocks of the following major components associated with the Containment Spray and Cooling System (OPS40302D02):

- Trisodium Phosphate Baskets

State the portions of the Containment Spray and Cooling System that are addressed in the Technical Specifications and/or the Technical Requirement Manual (OPS40302D10).

Comments:This meets the KA since it tests the purpose of the CS system iodine removal system which is the TSP at an RO level.

31.

Which one of the following is a required operator action of FRP-S.1, Response to Nuclear Power Generation/ATWT, that has a purpose of adding negative reactivity to the core?

A. Trip the Main Turbine to increase RCS temperature.

B. Manually actuate a safety injection to increase the boration flow rate.

C. Start ALL AFW pumps and provide full AFW flow to decrease RCS temperature.

D. Open BOTH PRZR PORVs to reduce RCS pressure to 200 psig to increase the emergency boration flow rate.

Technical Reference:FNP-0-FRB-S.1
RESPONSE TO NUCLEAR POWER GENERATION/ATWT
Plant Specific Background Information
FRP-S.1 procedure

Learning Objective:
Describe the sequence of major actions and when and how continuous actions will be implemented associated with FRPS.1/FRP-S.2. (OPS52533A04)

Comments: This meets the KA since the question asks about actions contained in FRP-S.1, ATWT event, that will cause an increase or decrease in RCS temperature or boron and the effect of that action (operational implications). The reason that the main turbine is tripped is two fold, one is to remove the heat removal source which is cooling down the plant and causing an increase in positive reactivity due to the moderator temp coefficient, and the other reason is to conserve SG inventory. All of the actions shown are actions that are taken or checked in FRP-S.1. Knowledge of the negative MTC is required to correctly answer this question.

32.

With Unit 2 in Mode 4, which one of the following equipment and methods are used IAW SOP-12.2, Containment Purge and Pre-access Filtration, to maintain containment pressure within the limits established by Technical Specifications?

A. ONLY the Main Purge exhaust fan aligned to containment and discharging to the main exhaust plenum.

B. Main Purge supply and exhaust fans aligned to containment and discharging directly to the plant vent stack.

C. Mini-purge supply and exhaust fans aligned to containment and discharging to the main exhaust plenum.

D. ONLY the Mini-purge exhaust fan aligned to containment and discharging directly to the plant vent stack.

Technical Reference: OPS-52107A lesson plan

SOP-12.2 rev 44 Containment purge and preaccess filtration

Learning Objective:
Explain the purpose and operation including the design features and functions, capacities, and protective interlocks of each major component associated with the Containment Ventilation and Purge System including (OPS40304A02):

- Containment Main Purge Fans
- Containment Minipurge Fans

Comments: This is a hard KA to make fit at FNP since we do not have a system or interlock that directly provides for negative pressure in ctmt.
The lead examiner suggested I use the 2 different systems such as main purge and mini purge which are used to maintain ctmt pressure below the TS values and each is used in a different mode, then play off how the system is used vs. could be used inappropriately or not by procedure.

33.

Given the following plant conditions:

- A Unit 1 shutdown is in progress.
- All rods in the control banks have been driven to 0 steps as indicated by the Group Step Counters.
- Intermediate range channel N-35 indicates 3×10^{-11} amps.
- Intermediate range channel N-36 indicates 8.5×10^{-10} amps.

Which ONE of the following describes the condition of the nuclear instruments and the expected response due to these indications?

A. • N-36 is undercompensated.

• The source range nuclear instruments are re-energized and trending down.

B. ✓ • N-36 is undercompensated.

• The source range nuclear instruments are **NOT** re-energized and actual neutron level will fall into the source range without indication.

C. • N-36 is overcompensated.

• The source range nuclear instruments are re-energized and trending down.

D. • N-36 is overcompensated.

• The source range nuclear instruments are **NOT** re-energized and actual neutron level will fall into the source range without indication.

Technical Reference: OPS-52201D lesson plan on excore instruments.

Learning Objective:

Evaluate abnormal plant or equipment conditions associated with the Excore Nuclear Instrumentation System and determine the integrated plant actions needed to mitigate the consequence of the abnormality (OPS52201D12).

Predict and explain the following instrument/equipment response expected when performing Excore Nuclear Instrumentation System evolutions including the fail condition, alarms, and trip set points (OPS52201D08).

- Power Range Channels
- Intermediate Range Channels
  Source Range Channels

Comments: This meets the KA since there are indications of unreliable IR instruments (not reading correctly) and the candidates have to determine the problem and then interpret what that means to them in response to the plant (SR instruments being energized automatically or manually)

34.

Unit 2 is at 85% reactor power and stable, holding for chemistry with the following conditions:

- Rod control is in AUTO.
- All other systems are in automatic.

A 200 MW load rejection occurs. Which one of the following describes the **overall** response and the final condition for the Feed Regulating Valves (FRV) position and SG water level?

Assume NO operator action.

The FRVs _____; SG water level _____.

A. ✓ • Open, then return to a position more closed than its original position.
• Decreases, then returns to original level.

B. • Close, then return to a position more open than its original position.
• Increases, then returns to original level.

C. • Close, then return to its original position.
• Increases, then stabilizes at a level lower than the original level.

D. • Open, then return to its original position.
• Decreases, then stabilizes at a level lower than the original level.

Technical Reference: ran on simulator: FRVs open 15 percent and then close down at least 20%, so the change is a lot and SGWL does return to the original value.
OPS-52201B SGWLC lesson plan

Learning Objective:
Explain the purpose and operation including the design features and functions, capacities, and protective interlocks of the following major components associated with the Steam Generator Water Level Control System (OPS52201B02):
• Program DP for Feedwater Regulating Valves
• FRVs
• SGFPs

Comments: This meets the KA since the need to monitor the SGWL control system due to the load rejection is required and then the knowledge of how that system will respond is required. This also does not use failure mechanisms that could be related to the simulator exam.

Failures on simulator portion of exam: PT508 fails low, FT-486 fails low and 1A SGFP trips at 12% power. There is no load rejection on the exam.

35.

Given the following on Unit 1:

- A Steam Generator Tube Rupture has occurred.
- EEP-3, Steam Generator Tube Rupture, has been entered.
- ALL RCPs have been tripped.

Which one of the following could be a result of the step, "Reduce RCS pressure using pressurizer PORV to minimize break flow and refill pressurizer", per EEP-3?

A. A slow rise in loop delta T as natural circulation flow is impeded.

B. A rapid rise in pressurizer level due to reactor vessel steam voiding.

C. A slow rise in the cold leg temperature due to the loop being stagnant during the pressure reduction.

D. A rapid rise in containment pressure due to overpressurization of the PRT and subsequent rupture disc failure.

Technical Reference: EEP-3.0, rev 24 and the background documents for EEP-3, FNP-0-EEB-3.0 SGTR

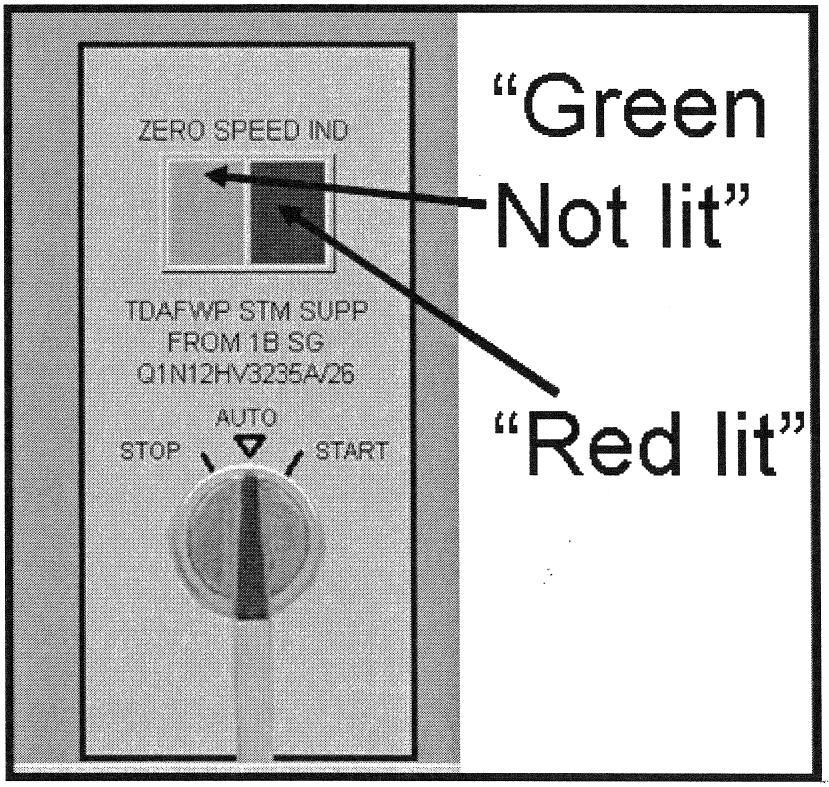
Learning Objective:
State the basis for all cautions, notes, and actions associated with EEP-3 (OPS52530D03)

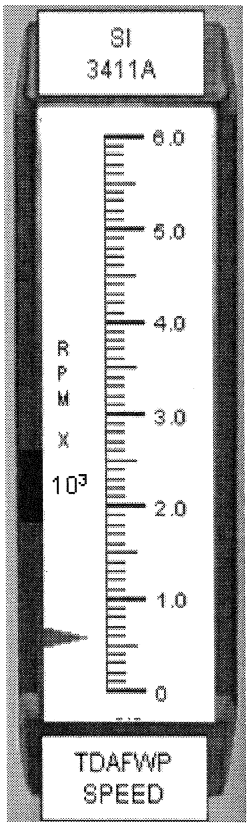
Comments:This meets the KA since in EEP-3 with NC flow the task is to shutdown and the steps lead to the shutdown. There are only 3 issues that deal with NC flow in EEP-3,
1. one is what Tcold will do and to ignore this parameter while cooling down and depressurizing due to FRP-P.1 may come in for the stagnant loop and this is expected. I believe this to be an SRO level topic.
2. This topic
3. Then the parameters for NC flow. Since the parameters for NC are a topic generic to other procedures that monitor NC flow, I chose to test this topic of what will happen while shutting down, which includes cooling down and depressurizing, and what the effects could be and what that means to the operator who is performing these actions.

36.

Unit 1 is operating at 100% power. The Rover reports that the Unit 1 TDAFW pump shaft has been turning for the past several hours. The TDAFW pump oil levels have been verified satisfactory.

MCB indications are shown below:





Which one of the following correctly describes: (1) the position of HV-3235A, STM LINE B TO TDAFW PUMP SHUTOFF, and/or HV-3235B, STM LINE C TO TDAFW PUMP SHUTOFF, **AND** HV-3226, MAIN STM TO TDAFW PUMP AUTO VALVE, and (2) the condition of the TDAFW pump lubrication based on these indications?

(1) HV-3235A and/or B and HV-3226 valves are _____.
(2) TDAFW pump lubrication is _____

A. (1) open
(2) NOT adequate and damage may occur.

B. (1) closed but HV-3226 is leaking by
(2) NOT adequate and damage may occur.

C. (1) open
(2) adequate.

D. (1) closed but HV-3226 is leaking by
(2) adequate.

Technical Reference: SOP-22.0, AFW

Learning Objective:

Predict and explain the following instrument/equipment response expected when performing auxiliary feedwater evolutions including the fail condition, alarms, trip setpoints (OPS-40201D08). This also includes:

- HV-3235A, B - TDAFW Steam Supply from Steam Generator B (C)
  HV-3226 - TDAFW Steam Supply Isolation Valve

Discuss the operation and alignment of each major component including precautions and limitations of operation, and applicable procedures, associated with the auxiliary feedwater system including (O40201D11).

Comments: meets KA since this is the ability to monitor the TDAFW pump speed and steam admission valves in the control room and then to know the P&Ls that the pump has proper lubrication at this speed.

37.

Given the following plant conditions:

- A Main Steam line has ruptured inside containment.
- A rapid plant depressurization has occurred.
- An SI is in progress and pressurizer pressure is currently 1350 psig.
- Containment temperature is 185°F.
- Actual Pressurizer level is 25%.

Which one of the following combinations below completes the following statement to describe how **indicated** Pressurizer level compares to **actual** Pressurizer level?

The low Pressurizer pressure (1350 psig) tends to make the **indicated** Pressurizer level on LI-460 read ___(X)___ than the **actual** Pressurizer level.

The high containment temperature (185°F) tends to make the **indicated** level on LI-460 read ___(Y)___ than the **actual** level.

	(X)	(Y)
A.	Higher	Higher.
B.	Lower	Higher.
C.	Higher	Lower.
D.	Lower	Lower.

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference: Pzr level control lesson plan ops-52201H
General physics Sensors and detectors OPS-31701G

Learning Objective:
Predict and explain the following instrument/equipment response expected when performing Pressurizer Pressure and Level Control System evolutions including the fail condition, alarms, trip setpoints (OPS52201H08):

State the theory of operation of the following level measuring devices using a differential pressure cell: (OPS31701G08)
a. Open vessel
b. Dry reference leg
c. Wet reference leg

Comments: This question tests the theory of operation of the Pzr level indications for a steam line rupture for a rapid depressurization that can occur and the increased temperture in containment that can occur. All the distracters are plausible since different reference legs exist (wet vs dry) and different design considerations. Also different failure mechanisms can cause different indications.

FNP Bank: PZR PRS/LVL-52201H08 4

Source: INEL Question Bank

2001 nrc exam

38.

During a cooldown on Unit 2 the following conditions exist:

- RCS loop Tavg:
  Loop 1: 545°F and decreasing
  Loop 2: 544°F and decreasing
  Loop 3: 542°F and decreasing

- Steam header pressure: 1000 psig and decreasing
- Steam Dump Mode Selector switch is in STM PRESS MODE.
- Steam dump pressure controller PK-464 is in AUTO.
- Steam dump demand is 35%.

Which one of the following will occur if actions are not taken to stop the cooldown in progress?

When the P-12 interlock is met .....

A. • A and E steam dumps will remain open, all other steam dumps will close.
   • PK-464 will remain in automatic.

B. • A and E steam dumps will remain open, all other steam dumps will close.
   • PK-464 will shift to manual.

C. • ALL steam dumps will go closed.
   • PK-464 will remain in automatic.
   • The steam dumps will cycle to control Tavg between 545°F and 543°F.

D. • ALL steam dumps will go closed.
   • PK-464 will shift to manual and go to minimum demand.
   • The steam dumps will remain closed.

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference: SD LP OPS-52201G;

Learning Objective:

List the automatic actions associated with the Steam Dump System components and equipment during normal and abnormal operations including (OPS52201G07):

- Steam dump valves
- Steam dump system solenoid-operated three-way valves
- High-1 and High-2 trip bistables
- Plant trip controller
- Loss of load controller, C-7
- Condenser available, C-9

Low-Low T_{AVG} signal, P-12

Explain the purpose and operation including the design features and functions, capacities, and protective interlocks of the following major components associated with the Steam Dump System (OPS52201G02):

- Steam dump valves
- Steam dump valve positioners
- Steam dump system pneumatic control and solenoid-operated three-way valves
- Steam dump mode selector switch
- Interlock bypass switches
- Plant trip controller

Loss of load controller

Comments: This meets the KA since the operator is controlling the plant, and has to predict and monitor changes to the plant based on the current activity associated with the SDS controls and then know what will happen when P-12, 543°F is reached to the steam dump system to prevent cooling down below the lo/lo setpoint.

FNP BANK: STM DUMP-52201G08 15 and STM DUMP-52201G07 32

39.

ECP-0.0, Loss of All AC Power, directs the operator to:

- "Reduce intact SGs to 200 psig:"

Which ONE of the following correctly describes the reason for stopping the SG pressure reduction at 200 psig?

A. To prevent losing Pressurizer level.

B. To minimize RCS inventory loss out of the RCP seals.

C. To prevent steam voiding in the reactor vessel upper head.

D. To prevent injection of SI Accumulator nitrogen into the RCS.

Technical Reference: ECP-0 rev 22 and and the background documents for ECP-0, FNP-0-ECB-0.0 Loss of ALL AC

Learning Objective:
State the basis for all cautions, notes, and actions associated with EEP-3 (OPS52530A03)

Comments:
- This question matches the K/A in that it asks the applicant to describe the reason for a particular action contained in the EOP for this event.

40.

Unit 1 was operating at 80% power. The following conditions exist:

- Auxiliary Steam is supplying the SJAEs.
- V902, MAIN STM TO SJAE, valve is closed.
- V521, SJAE STEAM STOP, fails closed.

Which one of the following correctly describes the effect of the loss of auxiliary steam to the SJAES on condenser pressure and MW output if NO operator action is taken?

	Pressure	MW Output
A.	Rise (get worse)	Increase
B.	Lower (get better)	Increase
C.	Rise (get worse)	Decrease
D.	Lower (get better)	Decrease

Technical Reference: AOP-6.0 Loss of instrument air
OPS-lesson plan 52104C Condensate and feedwater,
OPS-31701C, Heat exchangers and condensers (GFES text)

Learning Objective:
Explain the relationship between condenser vacuum and backpressure (OPS31701C16).

Comments:This meets the KA since it tests the effects of a loss of the SJAEs and what will happen to condenser vacuum and MWs which correlates to the effects on the MAIN CONDENSER.

41.

Given the following conditions on Unit 1:

- 1B DG is tagged out.
- A reactor trip has occurred.
- ESP-0.1, Reactor Trip Response, has been entered.

A Unit 1 LOSP occurs at this time and the following conditions exist:

- 1-2A DG did NOT start.
- The white power available lights on the EPB are NOT illuminated for 4160V buses F, K, G, and L.
- The STA reports the status of the Critical Safety Functions has just changed to the following:
  - Containment has just turned ORANGE.
  - Heat Sink has just turned RED.

Which one of the following are the immediate operator actions the crew is required to take for these conditions?

A. Check the reactor tripped and check the main turbine tripped.

B. Attempt to start 1-2A DG and check adequate SW flow to the 1-2A DG.

C. Check containment pressure has risen to greater than 27 psig and check at least one CS pump running with flow.

D. Check RCS pressure is greater than any non-faulted SG and check RCS hot leg temperatures are greater than 350°F.

Technical Reference:ECP-0, FRP-H.1, FRP-Z.1, EEP0 and SOP-0.8.

Learning Objective:
Evaluate plant conditions to determine if entry into ECP-0.0 is required. (OPS52532A02)

Comments:
This question meets the KA in that it tests which procedure the candidate would enter by the IOAs the operator would do. This tests the entry conditions since the IOAs of a procedure are only done if the parameters meet the entry level conditions. This is written to the RO level since the RO is required to know the higher level EOPs entry conditions and IOAs.

42.

Which ONE of the following provides water to the shaft seal system for the 2B steam generator feed pump (SGFP)?

A. Service Water.

B. 2B SGFP discharge.

C. Demineralized water.

D. Condensate pump discharge.

Technical Reference: D-170117 sh 1 OPS-52104C cond and feed lesson plan

Learning Objective:
Explain the purpose and operation including the design features and functions, capacities, and protective interlocks of each major component associated with the Condensate and Feedwater System including (OPS40201B02): SGFPs

Comments: This question directly meets the KA since it asks the physical connection of the condensate pump to the MFW system of which this is the only interrelation with the except of the discharge of the cond pump to the suction of the SGFP.

FNP BANK: COND&FEED-40201B05 01

43.

Unit 1 is defueled with the following conditions:

- B Train is the "On Service" train.
- 1A and 1C CCW pumps are running to support plant conditions.
- A Train SFP cooling is in service per SOP-54.0, Spent Fuel Pit Cooling and Purification System.

A dual unit LOSP occurs at this time and ALL systems function per design.

Which one of the following describes the **minimum** action(s) required to regain SFP cooling IAW AOP-5.0, Loss of A or B Train Electrical Power, and the reason for those actions?

A. Close V-8762B, 1B SFP HX inlet iso valve, then open V-8762A, 1A SFP HX inlet iso valve and start the 1A SFP pump since the 1B SFP pump will not have power because the 1A Load Center load sheds and does not sequence back on.

B. Close V-8762A, 1A SFP HX inlet iso valve, then open V-8762B, 1B SFP HX inlet iso valve and start the 1B SFP pump since the 1A SFP pump will not have power because the 1C Load Center load sheds and does sequence back on.

C. Re-start the 1A SFP pump since the 1C Load Center load sheds and sequences back on by the LOSP sequencers and the 1A SFP pump will have power available.

D. Re-start the 1B SFP pump since the 1A Load Center load sheds and sequences back on by the LOSP sequencers and the 1B SFP pump will have power available.

Technical Reference: AOP-5.0, sop-54.0, OPS 52503E lesson plan, and OPS-52520E lesson plan. and 52103F

Learning Objective:
Evaluate plant conditions to determine if any system components need to be operated while performing AOP-5.0 (OPS52520E05).
Evaluate plant conditions and determine if transition to another section of AOP-5.0 or to another procedure is required (OPS52520E07).

Comments: This meets the KA since it asks about actions contained in an AOP (EOP) that addresses the reason why the action is taken at an RO level. This requires the knowledge of which train each pump is aligned to, how the load center works for a load shed and sequencer operation and then the recovery actions for this situation. Even though the actions taken are actually in a SOP vs the AOP, the AOP sends the operator to that procedure to take those actions. The precautions and limitations need to be known and understood as well as how the system works and the procedural alignments required for this situation.
NOTE:
We do not have Vital busses at FNP. We have vital panels which when these are lost there is annunciator response procedures to deal with them, not EOPs or even AOPs. In the past, for FNP, we have been allowed to go to emergency busses and their immediate load centers which are vital to plant operation. EOPs means AOP and EEPs, ECPs, FRPs, etc.
For this question I needed to stay away from ECP-0 due to other ECP-0 questions on the exam.

44.

A loss of Aux. Building DC power has occurred due to a Station Blackout that has lasted for 2 hours. Offsite power has finally been restored and the lineups are complete for restoring the battery charging lineup.

Which ONE of the following describes the operational implications of the Aux. Building 125 volt DC System?

A. The battery chargers will be unable to carry steady state normal or emergency loads until its associated battery has been fully charged.

B. The battery chargers will be unable to carry steady state normal or emergency loads until its associated battery is charged for at least 2 hours.

C. The battery chargers will be immediately able to carry steady state normal or emergency loads while its associated battery is being charged.

D. The battery chargers will be immediately able to carry steady state normal loads but unable to carry emergency loads until its associated battery has been fully charged.

Technical Reference: FSD- 181004 page E2-1
lesson plan OPS-52103C

Learning Objective:
Explain the purpose and operation including the design features and functions, capacities, and protective interlocks of the following major component associated with the DC Distribution System (OPS40204E02):
•Batteries
•Battery Chargers
•The auxiliary building 125V DC distribution system

Comments: This meets the KA since the question asks about the operational implications for a loss of DC power and that includes the battery chargers and battery.

The answer has been changed to C from B to align the unable to carry loads with the able to carry loads to make it easier for the candidate to read and assess.

FNP BANK: DC DIST-40204E02 19

45.

Given the following plant conditions:

- Unit 2 is at 80% power ramping to 100%.
- Both SGFPs are operating.
- All systems are aligned for automatic operation.
- Annunciator KB4, SGFP SUCT PRESS LO, has just come into alarm.
- Recorder PR-4039 indicates SGFP pressure is 302 psig.

Which one of the following correctly describes the operation of the standby condensate pump for the conditions given?

The standby condensate pump _____

A. is already running.

B. will start when SGFP suction pressure drops below 300 psig.

C. will start when SGFP suction pressure drops below 275 psig for 10 seconds.

D. will start when SGFP suction pressure drops below 275 psig for 30 seconds.

Technical Reference:FNP-1-ARP-1.10, Annunciators KC5 and KB4

Learning Objective:

3. List the automatic actions associated with the Condensate and Feedwater System components and equipment during normal and abnormal operations including (OPS40201B07):
   - Normal control methods
   - Automatic actuation including setpoint
     - SGFP Trips
     - Auto Start of third Condensate Pump

Comments: This meets the KA since the operator has to know what will happen as they monitor the SGFP suction pressure. I chose to modify a question that existed with another question to come up with a new question to meet the KA.

46.

A #2 Waste Monitor Tank release to the environment is in progress in accordance with a Liquid release permit and SOP-50.1, Appendix 2, Waste Monitor Tank #2 Release to the Environment.

- Annunciator FH2, RMS CH FAILURE, alarms.
- R-18, LIQ WASTE DISCH, is indicating normal on the Radiation Monitoring system console and on the recorder for R-18, RR0200.
- The HIGH Alarm and LOW Alarm red lights are illuminated.
- The control power fuse is found to be illuminated on R-18.

When called, the Radside SO reports that Waste Monitor Tank Pump #2 discharge flow transmitter, FT-1085A, indicates 35 gpm.

Which ONE of the following describes the actions **required** in accordance with SOP-50.1?

Direct the Radside SO to _____

A. secure #2 Waste Monitor Tank Pump, then inform the Shift Radio Chemist.

B. fail air to RCV-18, WMT Disch to Environment, then notify the Shift Radio Chemist.

C. close the manual discharge valve to the environment, then inform the Shift Support Supervisor.

D. using the manual handwheel, close RCV-18, WMT Disch to Environment, then inform the Shift Support Supervisor.

Technical Reference:SOP-50.1, AOP-6, LIQUID WASTE PERMIT, ARP-1.6, FH1 AND FH2

Learning Objective:
- List the automatic actions associated with the Radiation Monitoring System components and equipment during normal and abnormal operations including (OPS40305A07):
- Evaluate abnormal plant or equipment conditions associated with the Radiation Monitoring System and determine the local actions needed to mitigate the consequence of the abnormality (OPS40301F12).
- Identify any special considerations such as safety hazards and plant condition changes that apply to the Liquid and Solid Waste System (OPS52106A04).

Comments: This question tests the Immediate Actions of a procedure that is used by both the systems operator and CRO to perform a release. Since this deals with the INOPERABLE side of R-18 from the Control room and the required actions should this occur at an RO level for a liquid release, it meets the KA.

47.

Unit 1 started the core unload 142 hours after the reactor was shutdown.

The following conditions exist:

- All ventilation systems are in a normal line up for this condition.

A refueling accident has occurred in the spent fuel pool (SFP) room, resulting in a large release of contaminants from the damaged assembly.

- R-5, SFP Area Radiation Monitor, comes into alarm.
- R-25A and B, SFP Ventilation Radiation Monitors, come into alarm.

Which one of the following are additional radiation monitors that are expected to be in alarm and the correct ventilation lineup for this event?

A. ✓
- R-10, PRF DISCH, and R-14 and R-21,VENT STACK GAS.
- The fuel handling area supply and exhaust fans trip, the fuel handling area supply and exhaust dampers close.
- 1A and 1B PRF units start, take a suction on the SFP, and discharge to the plant vent stack.

B.
- R-10, PRF DISCH, and R-14 and R-21,VENT STACK GAS.
- The fuel handling area supply and exhaust fans discharging to the main exhaust plenum.
- 1A and 1B PRF units start, take a suction on the SFP, and discharge to the plant vent stack.

C.
- R-14 and R-21,VENT STACK GAS.
- The fuel handling area supply and exhaust fans discharging to the main exhaust plenum.
- 1A and 1B PRF units start and take a suction on the SFP and penetration rooms in the recirculation mode.

D.
- R-10, PRF DISCH.
- The fuel handling area supply and exhaust fans trip, the fuel handling area supply and exhaust dampers close.
- 1A and 1B PRF units start and take a suction on the SFP and penetration rooms in the recirculation mode.

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference: FSAR chapter 15, section 15.4.5 Fuel handling accident Lesson plans OPS-52106D and 52521H, RCP-252, version 44, radiation monitor setpoints, and UOP-4.1, controlling procedure for refueling version 41

Learning Objective:
Evaluate plant conditions to determine if entry into AOP-30.0 is required (OPS52521H02).

List the automatic actions associated with the Radiation Monitoring System components and equipment during normal and abnormal operations including (OPS40305A07):

Evaluate abnormal plant or equipment conditions associated with the Radiation Monitoring System and determine the local actions needed to mitigate the consequence of the abnormality (OPS40305A12).

Comments: This KA examines the knowledge of interrelations between area monitors and detectors at each location. Per discussion with the Chief Examiner Under Instruction, this question was written so that the conditions cause one rad monitor to come into alarm and then for that condition, what other monitors associated with that area and system could be expected to come into alarm. This question does just that. For a fuel accident, The FSAR shows that for an accident 100 hours after shutdown, offsite whole body doses at the site boundary could exceed .4 rem. This makes this a credible event. This meets the intent of the KA. I also added to this question what the ventilation systems do with these rad monitors in alarm per our conversation. Three parts were added since it will make it more incorrect and to avoid the argument could be made that not all Fuel handling accidents may cause R-14 and 21 to come into alarm. The rad monitors are needed to meet the KA.

48.

Unit 1 is operating at 100% power. The solenoid to the positioner for HV-3226, MAIN STM TO TDAFW PUMP AUTO VALVE, has lost power and the valve has gone to its fail position.

Which one of the following describes the effects on the TDAFW pump if an auto start signal is received at this time?

Assume no operator action

The TDAFW pump _____

A. will **NOT** start.

B. will start and run at minimum speed.

C. will start, go to maximum speed and possibly trip.

D. will start, speed will fluctuate up and down and there will be no speed control.

Technical Reference:SOP-22.0 version 59.0, AFW , OPS 52102H AFW lesson plan, EEP-3, SGTR procedure. AOP-6, loss of air

Learning Objective:
Predict and explain the following instrument/equipment response expected when performing auxiliary feedwater evolutions including the fail condition, alarms, trip setpoints (OPS-40201D08). This also includes:

- HV-3226 - TDAFW Steam Supply Isolation Valve
- MOV-3406 - Trip Throttle Valve
- Effects of blown fuses on TDAFWP speed control circuitry
- Auxiliary feedwater (AFW) temperature monitoring system

Comments: This meets the KA since there is a loss of power to a positioner for a valve in the control circuitry of the TDAFW pump. Loss of power to this valve affects operability of the pump and loss of control of the valve. This is similar to the fuse blown issue for the TDAFW pump, only a little different in the effects.

49.

The following conditions exist on Unit 1:

- The plant is operating at 100% power.
- SGBD is on service.
- #1 WMT release is in progress.
- The service water pond level has dropped to 179 feet, 10 inches.

Which one of the following will the operator observe as a result of this condition?

A. Service water dilution flow on FR4107 will decrease and RCV-023B, SGBD Dilution Discharge Valve, will close due to low dilution line flow.

B. Service water dilution flow on FR4107 will decrease and RCV-018, Liquid Waste Discharge Valve, will close due to low dilution line flow.

C. Service water pressure on PI-3001A and B, SW TO CCW HX HDR PRESS, will increase and PCV-562 and 563, Dilution Bypass Valves, will fully open to maintain header pressure less than 110 psig.

D. Service water pressure on PI-3001A and B, SW TO CCW HX HDR PRESS, will increase and MOV-538 and 539, Master Recirculation Isolation Valves, will fully open to relieve pressure on the header.

Technical Reference: Ops- 52102F SW lesson plan, 52106A Liq and solid waste, 52106C SGBD and FSD-A-181001

Learning Objective:

Discuss the operation and alignment of each major component including precautions and limitations of operation, and applicable procedures, associated with the Service Water System including (OPS40101B11):

Predict and explain the following instrument/equipment response expected when performing Service Water System evolutions including the fail condition, alarms, and trip setpoints (OPS40101B08).

Comments: This question meets the KA since it asks what the operator is expecting to see (monitor) on the MCB (PI-3001 and FR4107) and what will occur due to the flow to other system components. The candidate will have to know what happens to the SW system on low pond level (loss of SW) and then the effects of the new valve line up on system pressure and flow to other system components (ie. rcv 18 and 23B and PCV-562 and MOV-538)

50.

Unit 2 has had an SI and LOSP. The following conditions exist:

- A Train is energized from the 1C DG.
- B Train is de-energized and the 2C DG will not start.
- The TDAFW pump will not start.
- JJ1, 2A MDAFWP OVERCURRENT TRIP, is in alarm.
- The AMBER light above the handswitch for the 2A MDAFW pump is LIT.

The cause of the overcurrent trip has been corrected on the 2A MDAFW and the Shift Manager has given permission to start the pump.

Which one of the following is the **minimum** action that will clear the AMBER light and allow the 2A MDAFW pump to start if the fault condition has cleared?

A. Turn the 2A MDAFW pump handswitch to START and release it.

B. ✔ Turn the 2A MDAFW pump handswitch to STOP and then to START and release it.

C. Send an operator to the 2A MDAFW pump breaker to reset the 86 lockout, then turn the 2A MDAFW pump handswitch to STOP and then to START and release it.

D. Send an operator to the Hot Shutdown Panel, take the LOCAL/REMOTE switch to the LOCAL position, then turn the 2A MDAFW pump handswitch to START and release it.

Technical Reference: SOP-0, General instructions to OPS personnel, OPS-52103B Intermediate and LV lesson plan and General Physics breakers and relays lesson plan, Lockout relay. OPS- 52102H, AFW.

Learning Objective:

Discuss the operation and alignment of each major component including precautions and limitations of operation, and applicable procedures, associated with the auxiliary feedwater system including (O40201D11).

MDAFW Pumps

Evaluate abnormal plant or equipment conditions associated with the auxiliary feedwater (AFW) system and determine the local actions needed to mitigate the consequence of the abnormality (OPS-40201D12).

Explain the purpose and operation including the design features and functions, capacities, and protective interlocks for the following major components associated with the Intermediate and Low Voltage AC Distribution System (OPS40102B02):

- 4160V AC Buses and breakers

Comments: This meets the KA since the questions applies the knowledge of what an 86 lockout does and what a load shed does. The candidate would have to know that the overcurrent trip will lock out the pump and will not allow it to be started without further evaluation and actions. They will also have to know the indications for both the lockout and load shed and what is procedurally allowed and required for this condition.

51.

Which one of the following correctly defines the interlock and the design feature for Load Center R?

The supply breakers are ___(A)___ so only one supply breaker may be shut at a time.

Load Center R will automatically shift to the unit ___(B)___

A. (A) electrically interlocked

   (B) that 2C DG is supplying.

B. (A) key-interlocked

   (B) that 2C DG is supplying.

C. (A) key-interlocked

   (B) with power available on a loss of voltage.

D. (A) electrically interlocked

   (B) with power available on a loss of voltage.

Technical Reference: OPS-52103B, Intermediate and low voltage lesson plan, A-181004B Elect dist system, D177677 and 177678

Learning Objective:
Explain the purpose and operation including the design features and functions, capacities, and protective interlocks for the following major components associated with the Intermediate and Low Voltage AC Distribution System (OPS40102B02):

- 600V Load Control Centers and breakers

Describe the effect on the Intermediate and Low Voltage AC Distribution of a loss of an AC or DC bus or instrument air (OPS40102B06).

Discuss the operation and alignment of each major component including precautions and limitations of operation, and applicable procedures, associated with the Intermediate and Low Voltage AC Distribution System including (OPS40102B11):

- 600V Load Control Centers and breakers

Comments: This question meets the KA since there is a design feature and interlock associated with these load centers, they are on the emergency bus to protect the emergency DGs and this makes them safety significant.

52.

Unit 1 is at 100% power.

LB-18, 125V DC BUS BATT BKR, on B Train is open for battery maintenance when a loss of electrical power is experienced on the 1G 4160V bus.

Which ONE of the following describes the potential effect on the 1B Diesel Generator?

The 1B Diesel Generator _____

A. can be started at the EPB, but load shedding and sequencing of LOSP loads will **NOT** occur.

B. can be started at the EPB, but field flash will **NOT** occur and the sequencers will **NOT** respond to an LOSP signal.

C. can **NOT** be started at the EPB, but can be started locally, but field flash will **NOT** occur and the sequencers will **NOT** respond to an LOSP signal.

D. can **NOT** be started at the EPB, but can be started locally, and the associated sequencer will respond if an LOSP were to occur and automatically start all required loads.

Technical Reference: SOP-37.1, 125 VDC AB dist system, version 44,
OPS-52103C, DC distribution.
A-506250 unit 1 electrical load list.

Learning Objective:
Predict and explain the following instrument/equipment response expected when performing DC Distribution System evolutions including the fail condition, alarms, and trip set points
DC DIST-40204E08

Comments: This meets the KA since the question asks about major loads and whether or not those loads have power on a loss of dc. To answer the question the candidate must know the DC power supplies to the 1B DG, and whether there is an auto transfer device, power to the field flash, output breaker and the sequencers.

DC DIST-40204E08 #6

53.

The 1C DG is running at full load with the 1C Fuel Oil Storage Tank (FOST) at 95%.

Which one of the following describes the **maximum** amount of time the 1C DG can run **without exceeding** the 1C FOST Tech Spec minimum level?

References Provided

A. 26 hours

B. 37 hours

C. 39 hours

D. 55 hours

Technical Reference: Tank curves 18B for the DG FOST pages 1-3, SOP-38.0, DG version 96.0

Learning Objective:
Discuss the operation and alignment of each major component including precautions and limitations of operation, and applicable procedures, associated with the Diesel Generator and Auxiliaries System including (OPS40102C11):
Describe the local actions needed to support plant operation during normal, abnormal and emergency conditions associated with the Diesel Generator and Auxiliaries System (OPS40102C09).

Comments: This question meets the KA since it tests the ability to calculate FO consumption rates at an RO level. Using the procedure and tank curves, the candidate is expected to be able to determine by properly reading tables and and calculating the remaining run time for a DG to prevent exceeding the TS limits.

This question is not possible to answer without references.

Provide the following references:
1. SOP-38.0 version 96 Attachment C, DG Fuel Oil Consumption, page 1 of 1
2. UNIT Volume II curve 18B DG Fuel oil storage tank capacity (level vs gallons) rev 4

54.

At 1005 am, Unit 1 is at 100% with the following conditions:

- An AUTO makeup is in progress.
- A large rupture in an air line occurs.

At 1007 am, the following annunciators come into alarm:

- KD1, IA TO PENE RM PRESS LO
- KD2, IA PRESS LO
- KD3, SA PRESS LO
- BK1, PENE RM TO ATMOS A TRN DP HI-LO
- BK2, PENE RM TO ATMOS B TRN DP HI-LO

At 1013 am:

- The UO reports that PI-4004A, SVC AIR PRESS, has dropped to 79 psig and is stable and PI-4004B, INST AIR PRESS, has dropped to 52 psig, has stabilized, and is now rising.
- The Turbine Building SO and ROVER report there is no service air in the Turbine Building or Auxiliary Building.
- The OATC reports the following:
  - FCV-113B, MAKEUP TO CHG PUMP HEADER, has closed and can not be re-opened.
  - FCV-114B, REAC MAKEUP WATER TO BLENDER, and FCV-113A, BORIC ACID TO BLENDER, have dual indication.

Based on the above conditions, which one of the following describes which valve isolated the leak and the provides the location of the leak?

A. • V-901, SERVICE AIR HDR AUTO ISO, has closed to isolate the leak.
   • The leak is in the Turbine Building.

B. ✓ • HV-3825, INST AIR TO PENE RM AUTO ISO, has closed to isolate the leak.
   • The leak is in the Penetration Room.

C. • V-903, ESSENTIAL IA HDR AUTO ISO, has closed to isolate the leak.
   • The leak is in the rad side of the Auxiliary Building.

D. • V-904, NON-ESS IA HDR AUTO ISO, has closed to isolate the leak.
   • The leak is in the non rad side of the Auxiliary Building.

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference: AOP-6.0, loss of instrument air, version 30, annunciators KD1, KD2, KD3, BK1, and OPS-52108a , compressed air lesson plan

Learning Objective:
Explain the purpose and operation including the design features and functions, capacities, and protective interlocks of the following major components associated with the Compressed Air System (OPS40204D02):
Discuss the operation and alignment of each major component including precautions and limitations of operation, and applicable procedures, associated with the Compressed Air System including (OPS40204D11):
Evaluate abnormal plant or equipment conditions associated with the Compressed Air System and determine the local actions needed to mitigate the consequence of the abnormality (OPS40204D12)

Comments: This question meets the KA since it asks for the valves that will go shut due to the indications given. The candidate will have to determine the correct valve that went shut and the correct location. HV3825 is not typically thought of as a leak isolation type valve even though this is what it does. Determination will have to be made where the valves are located as well as their trip setpoints and fail position. The fact that FCV-113B, MAKEUP TO CHG PUMP HEADER, has closed and can not be re-opened will tell the candidate where the leak is if they know the location of the valve, the fail position, realize the auto makeup is affecting the position and recognize the other two valves are still in the auto makeup position.

55.

Unit 1 is at 100% power with the following conditions:

- A Train CCW is the "On Service" train.
- B Train CCW is running to support charging pump operations.
- R-17B, CCW SUCTION TRN A, (RED) LOW Alarm light is LIT.

Which one of the following will result from this failure and what are the procedural actions the Operating Team is required to perform while R-17B is out of service?

A. ✓
- CCW Surge Tank Vent Valve, HV-3028, does **NOT** close.
- Close HV-3028 and then,
- cycle HV-3028 and document in AutoLog once every eight hours.

B.
- CCW Surge Tank Vent Valve, HV-3028, does **NOT** close.
- Close HV-3028 and then,
- place B Train CCW on service in order to have an OPERABLE radiation monitor in the on service Train.

C.
- CCW Surge Tank Vent Valve, HV-3028, closes.
- Fail air to HV-3028 and then,
- place a CAUTION tag on the MCB handswitch, and cycle HV-3028 and document in AutoLog once every eight hours.

D.
- CCW Surge Tank Vent Valve, HV-3028, closes.
- Fail air to HV-3028 and then,
- place a CAUTION tag on the MCB handswitch, and place B Train CCW on service in order to have an OPERABLE radiation monitor in the on service Train.

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference: OPS-52102C, CCW lesson plan ARP-FH1, RMS HI RAD

Learning Objective:
State the portions of the Component Cooling Water System that are addressed in the Technical Specifications and/or the Technical Requirement Manual (OPS40204A10).

Predict and explain the following instrument/equipment response expected when performing Component Cooling Water System evolutions including the fail condition, alarms, and trip setpoints as applicable (OPS40204A08).

- Radiation Monitors R-17A and B

Discuss the operation and alignment of each major component including precautions and limitations of operation, and applicable procedures, associated with the Component Cooling Water System including (OPS40204A11):

- Component Cooling Water Radiation Monitor

Comments: This meets the KA since there is a failed rad monitor, the question asks what will happen and the procedural requirements. Due to having R-18 and R-14 questions on this test, I tried to stay away from these two areas due to concern for overlap.

56.

Unit 1 is operating at 100% power.

The following conditions exist:

- 1-2A Diesel Generator (DG) is running at full load for STP-80.1, DG 1-2A Operability Test.
- FCV-3009B, SW FROM 1B CCW HX, is at 10% open and is on service.

While shifting CCW heat exchangers from 1B CCW HX to 1C CCW HX, the Unit Operator fully opens FCV-3009C, SW FROM 1C CCW HX.

Which one of the following describes the affect this action could have on the plant and components below?

A. A **dilution** could occur and RCP oil level annunciators could come into alarm.

B. A **boration** could occur and RCP oil level annunciators could come into alarm.

C. A **dilution** could occur and 1-2A DG could trip on high oil temperature.

D. A **boration** could occur and 1-2A DG could trip on high oil temperature.

Technical Reference: SOP-23, version 68, and SW FSD A181001

Learning Objective:
Explain the purpose and operation including the design features and functions, capacities, and protective interlocks of the following major components associated with the Service Water System (OPS40101B02):

- FCV-3009A, B, and C, CCW HX Service Water Discharge Flow Control Valves

Identify any special considerations such as safety hazards and plant condition changes that apply to the Service Water System (OPS52102F04)

Comments: This question meets the KA since it asks what will happen when operating a controller that supplies flow through the CCW Hx and the effects on or changes in parameters that will affect plant reactivity and equipment in the Reactor building, auxiliary building and Diesel Building.

57.

Plant conditions are as follows:

- Unit 1 has been operating at 95% power for several days.
- FG5, GFFD SYS TRBL, has just come into alarm.
- Investigation reveals that the GFFD was steady near 2000 cpm for the first 4 hours of the shift and has suddenly increased.
- Ten (10) minutes later a reactor trip and safety injection occurs.

Which ONE of the following is the **MINIMUM** GFFD reading that would cause FG5 to come into alarm and what the status of the GFFD will be after the safety injection ?

	High Alarm	Status
A.	2 X 10^4 cpm	Flow through the GFFD
B.	2 X 10^4 cpm	Isolated
C.	2 X 10^5 cpm	Isolated
D.	2 X 10^5 cpm	Flow through the GFFD

Technical Reference: ARP FG5 and OPS 52106E

Learning Objective:
Discuss the operation and alignment of each major component including precautions and limitations of operation, and applicable procedures, associated with the Gross Failed Fuel Detector including (OPS52106E11).
Explain the purpose and operation including the design features and functions, capacities, and protective interlocks following major component associated with the Gross Failed Fuel Detector (OPS52106E02).

Comments: This question meets the KA since the operator would have to know when the alarm comes in vs when the AOP-32 restrictions apply and then would have to know what occurs on an SI for this system which is part of monitoring.

58.

The following conditions exist on Unit 1:

- The plant is stable in Mode 3 following a reactor trip.
- Power has been lost to 4160V AC buses G, J, and L.
- A rupture has developed in the Turbine Building on the service water header.

Which one of the following lists the valves that the OATC can close from the MCB to isolate the rupture?

Q1P16V514, SW TO TURB BLDG ISO B TRN
Q1P16V515, SW TO TURB BLDG ISO A TRN
Q1P16V516, SW TO TURB BLDG ISO A TRN
Q1P16V517, SW TO TURB BLDG ISO B TRN

A. MOVs 514 and 517

B. MOVs 514 and 516

C. MOVs 515 and 517

D. MOVs 515 and 516

Technical Reference: OPS-52102F SW lesson plan and A-506250 unit 1 electrical load list.

Learning Objective:
Identify the power supply for each major electrical component associated with the Service Water System including (OPS40101B04):

- MOV-514, 515, 516 and 517, Service Water Supply to Turbine Building

Comments: This question meets the KA since it asks for the power supply to service water MOVs that are safety related.

59.

Unit 1 is operating at 100% power with the following conditions:

- AOP-5.2, Degraded Grid, has just been entered.
- Voltage on all emergency busses for both units is reading 3965 volts.
- MEGAVARS are reading (+) 480 on the MCB.

Due to the high VARS on the main generator, the operator takes the AUTO VOLTAGE ADJ SWITCH to the **lower** position.

Which one of the following will occur and what will be the operational implications to the plant?

Voltage on the emergency busses will ___(A)___ and current to electrical equipment in the plant will ___(B)___ .

A. (A) rise

(B) lower

B. (A) rise

(B) rise

C. (A) lower

(B) lower

D. (A) lower

(B) rise

Technical Reference: OPS-52521N, AOP-5.1 and 5.2 lesson plan
OPS-52105C Main generator lesson plan and OPS-30501C, AC circuits lesson plan

Learning Objective:

Define the term power factor and describe the factors that affect it (OPS30501C08)
9. Define the terms apparent power, true power, and reactive power and describe the factors that affect them (OPS30501C09).
10. Using the appropriate formulas, solve problems for inductive reactance, capacitive reactance, total impedance, power factor, true power, apparent power, and reactive power (OPS30501C10).

Comments: This meets the KA since the questions asks about a degraded grid condition which is the result of electric grid disturbances and asks the operational implications of reducing VARS on the main generator to the grid voltage and then knowing the effects on voltage and current, and their relationships to power (P = IE 3pf). The operational implications are the effects on Bus voltage and current to components.

60.

Unit 1 is operating at 8% power and ramping up to 12% to roll the main turbine. At 1010 am, the following conditions exist:

- Pressurizer pressure control is in automatic maintaining 2235 psig.
- All PRZR Backup Heaters are in the ON position.

At 1015 am, HV-3611, IA to CTMT, has closed due to an airline break.

Which one of the following describes the **FIRST** effect this failure will have on the plant?

Assume no operator action is taken

RCS pressure will rise until _____

A. the reactor trips on pressurizer low pressure.

B. the reactor trips on pressurizer high pressure.

C. one or both of the PORVs open and will maintain RCS pressure near the lift setpoint.

D. the pressurizer code safety valves lift and will maintain RCS pressure near the lift setpoint.

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference: OPS-52108A, compressed air, OPS-52207H, Pzr pressure and level control, OPS-52101E, Pzr
EEP-0, rx trip or safety injection.

Learning Objective:
PZR PRS/LVL-52201H07
Discuss the operation and alignment of each major component including precautions and limitations of operation, and applicable procedures, associated with the Pressurizer Pressure and Level Control System including (OPS52201H11):

List the automatic actions associated with the Pressurizer Pressure and Level Control System components and equipment during normal and abnormal operations including (OPS52201H07):

- Normal control methods

Describe the physical in plant location of the following major components associated with the Compressed Air System (OPS40204D03):
Describe, when applicable, the Compressed Air System flow paths to include all major components (OPS40204D05).

Instrument air valves to containment, HV-3611 and HV-2228

Evaluate abnormal plant or equipment conditions associated with the Compressed Air System and determine the local actions needed to mitigate the consequence of the abnormality (OPS40204D12

Comments: This KA requires a question about cause/effect relationships between IA and containment air. Containment air supplies several components in containment, and losing air to these components affects RCS pressure. This question requires knowledge of the cause-effect relationships between IA and containment air.

I changed one distracter from the original bank question and then moved the correct answer from C to A. I also reformatted the question and slightly changed the stem and reworded each distracter to remove lift and trip setpoints.

61.

Unit 1 is ramping up in power at 2 MW/min and the following conditions exist:

- Reactor power is slowly rising and is currently 74% on all NIs.
- Turbine power is currently at 692 MW.
- There are 2 letdown orifices on service.
- Tavg is 565°F and Tref is 562.6°F.
- Pressurizer pressure is 2225 psig and stable.
- Pressurizer level is 45% and slowly lowering.
- Charging flow is 108 gpm and slowly rising.
- Containment pressure is 2.2 psig and slowly rising.
- Containment cooler supply and exhaust moisture is indicating 90°F and is slowly rising.

For the event in progress, which one of the following sets of conditions by themselves represent entry conditions in to AOP-14.0, Secondary System Leakage?

A. Tavg reading higher than Tref.

B. Reactor power and turbine power mismatch.

C. Containment pressure and containment cooler supply and exhaust moisture rising.

D. Pressurizer level slowly lowering with charging flow slowly rising and pressurizer pressure indicating lower than normal.

Technical Reference: AOP-14, secondary system leakage, EEP-0 Rx trip or SI and AOP-1.0, RCS leakage.

Learning Objective:
Evaluate plant conditions to determine if entry into AOP-14.0 is required.
(OPS52521O02)

Comments: part of containment system for Safety Function 5, Containment Integrity number 103 Containment system, under A1.01 as shown in NUREG 1122 is containment pressure, temp and humidity. In order to meet the KA of abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures I had to use these parameters since valves going closed or not stroking that relate to this subject do not cause entry conditions to EOPs or AOPs. This meets the KA since the question asks for entry level conditions and abnormal indications for containment systems as described above and these would be close to normal parameters for a ramp in progress.

62.

Unit 2 has had a Pressurizer Code Safety valve stick open. A Reactor Trip and Safety Injection has occurred. The Pressurizer is solid with subcooling at 100°F and one charging pump is running.

Which one of the following is correct concerning the actions that ESP-1.2, Post LOCA Cooldown and Depressurization, will direct?

A. Normal Charging will be established to control subcooling. Letdown will **NOT** be placed in service.

B. Normal Charging and Letdown will be placed in service to establish a bubble and level in the pressurizer.

C. Safety Injection flow will be maintained to control subcooling. Letdown will **NOT** be placed in service.

D. Safety Injection flow will be reduced by securing HHSI pumps and Letdown will be placed in service to establish a bubble and level in the pressurizer.

Technical Reference: ESP-1.2 rev 23

Learning Objective:
State the basis for all cautions, notes, and actions associated with ESP-1.2 (OPS52531F03).

Comments: k/a match: This question asks what the operational implications are in the event the Przr is solid in ESP-1.2 and how the plant control for subcooling would be maintained during Post LOCA Cooldown and Depressurization..

FNP BANK: ESP-1.2-52531F03 15

63.

A large steam rupture inside containment has occurred on Unit 2.

RCS cold leg temperature is 250°F and RCS pressure is 1500 psig.
FRP-P.1, Response to Imminent Pressurized Thermal Shock Conditions, has been entered on a RED path.

Which ONE of the following describes the operational implications of entering FRP-P.1?

A. • A soak will be required for one hour while maintaining RCS pressure and temperature stable at the current value.
   • No other procedural actions can be performed for one hour.

B. • A soak will be required for one hour while maintaining RCS pressure and temperature stable at the current value.
   • Procedural actions that do not affect the soak can be performed.

C. • A soak will be required for one hour after reducing RCS pressure to approximately 200 psig and maintaining RCS temperature stable at the current values.
   • No other procedural actions can be performed for one hour.

D. • A soak will be required for one hour after reducing RCS pressure to approximately 200 psig and maintaining RCS temperature stable at the current values.
   • Procedural actions that do not affect the soak can be performed.

Technical Reference: FRP-P.1, Response to Imminent Pressurized Thermal Shock Conditions, rev 19, OPS-.52533K lesson plan and CSF-0.4 rev 17 for unit 1.

Learning Objective:
State the basis for all cautions, notes, and actions associated with FRP-P.1/2 (OPS52533K03).
Analyze plant indications to determine the successful completion of any step in FRP-P.1/2 (OPS52533K07).

Comments: This meets the KA since the question tests the operational implications of FRP-P.1. The operational implications are having to decrease RCS pressure, stabilize temperature and pressure and soak. Other procedures are allowed during soak as long as these parameters are not changed.

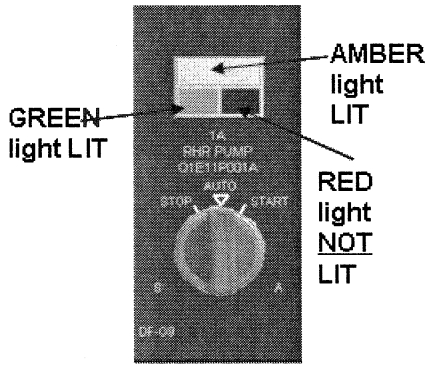
The bases behind this step is to prevent a propagation of an existing flaw that could cause a through wall crack of the vessel at the beltline region of the reactor. The KA does not ask for the reason or bases, but the operational implication which is how would we operate the plant, operate the plant differently or be able to do other actions due to this condition.

64.

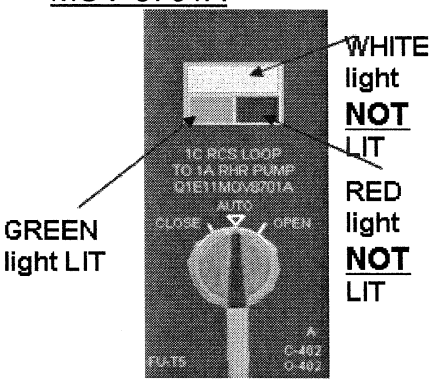
Unit 1 has had a Large Break LOCA. EEP-1.0, Loss of Reactor or Secondary Coolant, is in effect and the crew is evaluating cold leg recirculation capability.

Using the possible indications below, which one of the following sets of component malfunctions would **prevent** cold leg recirculation capability IAW EEP-1.0?

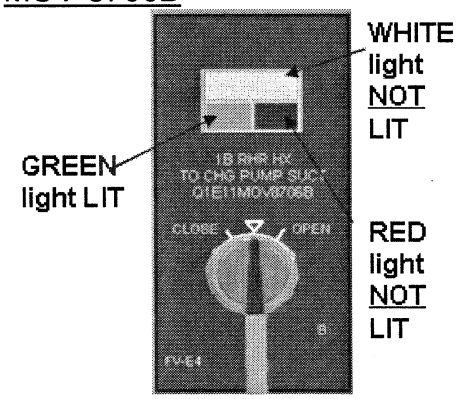
1A RHR PUMP



MOV-8701A



MOV-8706B



Evaluate each case separately and assume all other equipment is available.

A. Loss of power to 1G 4160V emergency bus
and
MOV8706B, 1B RHR HX TO CHG PUMP SUCT, as indicated above

B. Loss of power to 1G 4160V emergency bus
and
MOV8701A, 1C RCS LOOP TO 1A RHR PUMP, as indicated above

C. 1A RHR pump as indicated above
and
MOV8701A, 1C RCS LOOP TO 1A RHR PUMP, as indicated above

D✓ 1A RHR pump as indicated above
and
MOV8706B, 1B RHR HX TO CHG PUMP SUCT, as indicated above

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference: EEP-1.0 rev 29

Learning Objective:
Evaluate plant conditions to determine if any system components need to be operated while performing EEP-1. (OPS52530B06)
Evaluate plant conditions and determine if transition to another section of EEP-1 or to another procedure is required. (OPS52530B08)

Comments: This meets the KA since the operator has to be able to monitor the components for emergency coolant recirculation availability and know whether they are available or not as described in step 14.1 of EEP-1. The operating behavior characteristics is the MCB indications for normal operation and emergency operations and what the different lights mean for each handswitch indication.

65.

Given the following:

- A large break LOCA has occurred on Unit 1.
- All automatic functions operated per design.
- Containment pressure peaked at 33 psig and is now 18 psig.
- RWST level indicates 12 feet 5 inches.

The control room team has entered ESP-1.3, Transfer to Cold Leg Recirculation, and are at step 7, Align ECCS for Cold Leg Recirculation, and are checking containment sump level. The indications for containment sump level are as follows:

- LI-3594A, CTMT SUMP LVL, is reading 8.2 feet.
- LR-3594B, POST ACCIDENT CTMT WTR LVL, is reading 8.2 feet.

Which one of the following is the correct procedural flow path for the event in progress and the source of the extra water in containment?

A. • Stop ESP-1.3 actions, implement FRP-Z.2, Response to CTMT Flooding, and then continue in ESP-1.3.
   • Reactor Makeup water system.

B. • Continue in ESP-1.3 until step 7 is complete, then implement FRP-Z.2, Response to Containment Flooding.
   • Reactor Makeup water system.

C. • Continue in ESP-1.3 until step 7 is complete, then implement FRP-Z.2, Response to Containment Flooding.
   • Service Water system.

D. • Stop ESP-1.3 actions, implement FRP-Z.2, Response to CTMT Flooding, and then continue in ESP-1.3.
   • Service Water system.

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference: FRP-Z.2, Response to Containment Flooding, rev 6, ESP-1.3, Transfer to Cold Leg Recirculation, rev 19 and EEP-0 rev 36 and OPS-52108, RMW lesson plan

Learning Objective:
Evaluate plant conditions to determine if entry into FRPZ. 1/Z.2/Z.3 is required. (OPS52533M02)
State the basis for all cautions, notes, and actions associated with ESP-1.3/1.4. (OPS52531G03).
Evaluate plant conditions and determine if transition to another section of ESP-1.3/1.4 or to another procedure is required (OPS52531G08)

Comments: This question meets the KA since there are entry conditions to the containment flooding FRP and another procedure is involved. This makes the candidate select the appropriate procedure during the emergency conditions. To make plausible distracters and a level of difficulty >1, I had to add the location or system involved in the leak. Otherwise the selection of the procedure with four different choices would not be plausible or discriminatory.

Th selection of the procedure is normally an SRO task, but in this instance, ESP-1.3 is a procedure that our ROs use without interruption from the SS. They are required to line up the RHR and HHSI system for recirc using this procedure and need to know what to do when different conditions present themselves.

66.

Which one of the following situations **requires** three way communications IAW ACP-1.0, Plant Communications, and NMP-GM-005-GL03, Human Performance Tools?

A. The OATC tells the Radside SO by telephone to place the 1A seal injection filter on service.

B. The Shift Manager calls for an update to inform the crew of a General Emergency classification.

C. The UO tells the Outside SO on the radio that his wife needs him to call her at the local hospital immediately.

D. The Shift Supervisor calls for a transient brief after immediate operator actions have been taken for a failure of PT-444, PRZR PRESS.

Technical Reference: ACP-1.0, rev 5.0, NMP-GM-005-GL03, Human Performance Tools and OPs policy expectations

Learning Objective:
Outline management's expectations for communications (OPS40502C02).
Explain the purpose of and the method for conducting three-way communications (OPS40502C03).

Comments: This meets the KA since the question addresses the circumstances that three way communications apply to. This idea is an off shoot of a question written for the 2006 wolf creek exam except that exam used a NOT type question and asked for exact procedural guideline such as informational or technical vs giving examples and making the candidate decide which situation 3 way is required for.

67.

A work activity requires multiple personnel to do the job. Personnel will be located in the main control room and in the RHR pump room area and will require data to be taken as well as sign-offs of steps.
Which one of the following describes the requirement that governs the use of the working copy that will be used to accomplish the task IAW AP-6, Procedure Adherence?

A. The working copy is required to be retained with the master copy for historical records.

B. The working copy version is required to be verified correct to include all minor versions prior to starting the job.

C. All steps of the master copy do not have to be signed off as long as the working copy is signed and then attached to the master copy for historical records.

D. Two complete procedures of the Official Test Copy is required to be obtained, the master copy is required to be kept in the control room and the working copy is required to be kept at the RHR pump room area during the job.

Technical Reference: AP-6 version 16.0

Learning Objective:
Explain management's expectations associated with procedural usage and adherence (OPS40502E01).

Comments:This meets the KA since the question asks for the requirements of using a working copy. The answer includes verification of the controlled copy with all minor versions which requires the candidate to know the requirements of verifying the correct version.

68.

Which ONE of the following would require suspension of CORE ALTERATIONS?

A. 'A' Train PRF unit is operable and aligned to the SFP and in operation; but the 'B' Train PRF is inoperable.

B. Direct communication is lost between the Control Room and Fuel Handling Personnel in Containment.

C. Reactor Cavity water level is 24 feet above the vessel flange with only one RHR loop operable and in operation.

D. Opening the unborated water source flowpath in order to add chemicals to the RCS, if the boron reduction will **not** be below that required in the COLR.

Technical Reference: T.R.M. 13.9.6 and 13.9.2, and T.S. 3.7.12, 3.9.1, 3.9.2, and 3.9.4

Learning Objective:
Identify conditions during performance of UOP-4.1 that might result in equipment damage or degradation and discuss the appropriate precautions and limitations (OPS40503B01).
State the basis for a specific caution or note given in UOP-4.1 (OPS40503B02).
Determine if the conditions given during performance of UOP-4.1 warrant the declaration of an LCO and identify the correct action statement to allow continued operation as allowed by Technical Specifications (OPS52511B02).

Comments: This meets the KA since the question asks about limitations and procedures that apply to core alterations. The immediate action of a TRM is required knowledge for ROs.

UOP4.1-52511B02 #1

69.

Which one of the following describes the meaning of an OPERATING PERMIT TAG hanging on a component as described in NMP-AD-003, Equipment Clearance and Tagging?

A. The component position can NOT be changed – The equipment is in operation.

B. The component position can NOT be changed – The equipment is isolated for maintenance.

C. The component position can be changed - The equipment is under the control of a Tagout Holder for the purposes of position alignment, testing, or maintenance.

D. The component position can be changed – The equipment has been designated as an isolation boundary for personnel safety and will be isolated in the tagout process.

Technical Reference:
Equipment Clearance and tagging lesson plan S-GE-LP-400
NMP-AD-003, Equipment Clearance and Tagging

Learning Objective:
Given NMP-AD-003, "Equipment Clearance and Tagging", DEFINE the following terms:
(S-GE-400.030.A.02)
- Alternate Boundary
- Alternate Release
- Clearance
- Caution Tag
- Danger Tag
- Operating Permit Tag

Comments: This meets the KA since the question asks for specific guidance from NMP-AD-003, Equipment Clearance and Tagging. It also asks about the use of a very different type of tag used in the plant for specific uses other than isolation or caution requirements.

TAG-SGELP400-T03-L01 03

70.

Which one of the following correctly lists **ONLY** NRC Performance Indicator (PI) Equipment **and** the associated PI status that **requires** the Plant Managers approval prior to being removed from service for any reason other than surveillance tests IAW ACP-52.1, Guidelines for Scheduling of On-line Maintenance?

A. 1B Diesel Generator
   1B Charging pump

   WHITE status

B. 1A Containment Spray pump
   1C Service Water pump

   RED status

C. MDAFW pump
   1A RHR pump

   GREEN status

D. 1A Hydrogen Recombiner
   1A CCW pump

   YELLOW status

Technical Reference:
FNP-0-ACP-52.1, GUIDELINES FOR SCHEDULING OF ON-LINE MAINTENANCE version 45

Learning Objective:
Using plant procedures as a guide, evaluate a maintenance item for release and determine if it can be released and what actions are required. (OPS52303N01)

Comments: This meets the KA since the question tests the release of work while at power of a piece of equipment that is clearly identified as PI equipment and since a white PI exists, the approval authority is necessary information to know. This procedure has significantly changed several times over the last few years.

71.

On a tour of the rad side, the Unit Operator discovers R-30A, Radwaste Area Vents, on the 100 foot elevation of the Rad side is in alarm. The UO does not know the reason for R-30A being in alarm.

The Health Physics Manual requires which one of the following actions?

The UO is required to _____

A. leave the affected area and notify the control room.

B. try to RESET R-30A and then call the Health Physics office.

C. make an announcement on Line 5 of the gaitronics to clear the area, then remain in the area to ensure other personnel do not enter this area until an HP Technician arrives.

D. call the Health Physics office from a phone in the vicinity of R-30A, then wait at the radiation monitor to ensure other personnel do not enter this area until an HP Technician arrives.

Technical Reference:
FNP-0-M-001 Health Physics manual Page 2 and Lesson Plan OPS-52106D Radiation monitoring

Learning Objective:
Describe how the rad monitoring system helps to protect the health and safety of plant workers and the public. (ESP52106D08)

Comments: This meets the KA since this asks for actions to be done by an individual that finds an area radiation monitor alarming. This Rad monitor type is addressed in FH1 ARP as a reference, but there are no inputs to this alarm from the area rad monitors. FH1 would apply indirectly if there is an action that will take care of the situation. For example, in this question, the individual that discovers the condition will notify the CR who will take the actions of FH1, which is to make announcements and call HP and check other radiation monitors in the area to see if the alarm is valid. It is the expectation of the HP manual that the person that finds the alarming monitor to call the CR and leave the area immediately.

I rearranged the answers and rewrote one distracter completely to make it more plausible.

72.

Which one of the following identifies the 10 CFR 20 annual limit for TEDE and also identifies the EIP-14.0, Personnel movement, Relocation, Re-entry and Site Evacuation, emergency exposure limit for protecting valuable equipment?

A. • 2 rem
   • 10 rem

B. • 2 rem
   • 25 rem

C✓ • 5 rem
   • 10 rem

D. • 5 rem
   • 25 rem

Technical Reference: FNP-0-M-001, Health Physics Manual, version 18.0
EIP-14 rev 23

Learning Objective:
List FNP Admin Limits for various categories of dose (OPS30401A20).
Given a set of conditions perform a TEDE dose calculation and determine if exposure limits have been exceeded (OPS30401A18).

Comments: This meets the KA since this question tests radiation exposure limits for normal and abnormal situations and knowledge of the HP manual and 10 CFR 20 is needed and the emergency dose limits of EIP-14 are required knowledge for an RO since they may be called in to do a job during an emergency.

73.

The Outside Systems Operator has reported a fire in a field just west of the River Water Intake Structure.

In accordance with AP-37, Fire Brigade Organization, which one of the following describes who is required to respond, their duties, and which organization is required to provide support to operate the fire tanker truck?

A. ✓
- 1 Shift Support Supervisor to direct the fire brigade and 4 Systems Operators to provide fire hose and SCBA support.
- A Qualified Maintenance Journeyman will operate the fire tanker.

B.
- 1 Fire Marshall to direct the fire brigade and 4 Systems Operators to provide fire hose and SCBA support.
- A Qualified Maintenance Journeyman will operate the fire tanker.

C.
- 1 Shift Support Supervisor to direct the fire brigade, 2 Systems Operators to provide fire hose and 2 Security Force members to provide SCBA support.
- One Security Force member will operate the fire tanker.

D.
- 1 Fire Marshall to direct the fire brigade, 2 Systems Operators to provide fire hose and 2 Security Force members to provide SCBA support.
- One Security Force member will operate the fire tanker.

Technical Reference: AP-37, Fire Brigade Organization version 16.0

Learning Objective:

List the fire brigade staffing responsibilities (OPS 40502L06).

Comments: This meets the KA at an RO level since the question asks about responsibilities and the organization of the fire brigade.

74.

Both units are operating at 100% power.

The following conditions exist:

- Security personnel report that a bomb has just detonated at the Service Water Intake Structure (SWIS).
- **ALL** service water cooling to both units has been disabled.
- Security personnel have surrounded the SWIS.
- Several Men are inside the SWIS and have bolted the doors from the inside.
- An Loss of power has occurred on the Unit 1 "B" Train emergency bus.

Which one of the following delineates the required actions for this condition?

Enter AOP-49.0, Security Threat, and _____

A. • trip the Unit 1 reactor ONLY, enter EEP-0, Reactor Trip or Safety Injection, while continuing with this procedure. Commence ramping Unit 2 off line.

• Then secure 1B DG and place ALL Diesel Generators in the Mode 3 position when time permits IAW AOP-49.2, Complete Loss of Service Water.

B. • trip the Unit 1 reactor ONLY, enter EEP-0, Reactor Trip or Safety Injection, while continuing with this procedure. Commence ramping Unit 2 off line.

• Then use AOP-10, Loss of Service Water, on Unit 1 to protect the 1B Diesel Generator due to the loss of service water.

C. • trip BOTH reactors, enter EEP-0, Reactor Trip or Safety Injection, while continuing with this procedure.

• Then use AOP-10, Loss of Service Water, on Unit 1 to protect the 1B Diesel Generator due to the loss of service water.

D. • trip BOTH reactors, enter EEP-0, Reactor Trip or Safety Injection, while continuing with this procedure.

• Then secure 1B DG and place ALL Diesel Generators in the Mode 3 position when time permits IAW AOP-49.2, Complete Loss of Service Water.

FARLEY 2008 RO EXAM INITIAL SUBMITTAL

Technical Reference:AOP-49, 49.2, and AOP-10,
also lesson plan OPS-52521P

Learning Objective:
Describe the sequence of major actions associated with AOP-49.0, Security threat (OPS52521P04).

Evaluate plant conditions to determine if any system components need to be operated while performing AOP-49.0, Security Threat (OPS52521P05).

Evaluate plant conditions and determine if transition to another section of AOP-49.0, Security Threat or to another procedure is required (OPS52521P07).

Comments: This question tests the knowledge of the security procedures for a credible event at an RO level. The actions are high level actions of the AOP-49 and AOP-49.2. then an understanding of what to do with a complete loss of SW and what to do to protect the DGs in this event, as well as the safety of the plant.

AOP-49.0-52521P02 #1

75.

Given the following conditions on Unit 1 while at 100% power:

- A reactor trip and safety injection has occurred due to a steam line rupture.
- The crew was performing EEP-2, Faulted Steam Generator Isolation, when an ORANGE path was noted on the Critical Safety Function Status tree (CSFST) for Integrity.
- All other CSFSTs currently indicate GREEN.
- The crew is now working through FRP-P.1, Response to Imminent Pressurized Thermal Shock Conditions.

Which one of the following is a condition that would require or allow the control room team to transition out of FRP-P.1 before it is complete?

A. IF the Subcriticality CSFST indicates YELLOW.

B. IF the Integrity CSFST indicates GREEN.

C. IF the Containment CSFST indicates ORANGE.

D. IF the Core Cooling CSFST indicates ORANGE.

Technical Reference: SOP-0.8 and CSF-0

Learning Objective:
Apply the rules of usage for the ERP's and (FRPs) (OPS52301B09).

Comments: I had to modify this to make the distracters plausible. This meets the intent of the KA in that it tests the operating network/heirarchy for emergency procedures.

FNP BANK: INTRO ERP-52301B09 7