Site-Specific SRO Written Examination

Applicant Information	
Name:	
Date: 3/17/11	Facility/Unit: St. Lucie Plant
Region: I ☐ II ☒ III ☐ IV ☐	Reactor Type: W ☐ CE ☒ BW ☐ GE ☐
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination you must achieve a final grade of at least 80.00 percent overall, with 70.00 percent or better on the SRO-only items if given in conjunction with the RO exam; SRO-only exams given alone require a final grade of 80.00 percent to pass. You have 8 hours to complete the combined examination, and 3 hours if you are only taking the SRO portion.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

_____
Applicant's Signature

Results		
RO/SRO-Only/Total Examination Values	____ / ____ / ____	Points
Applicant's Scores	____ / ____ / ____	Points
Applicant's Grade	____ / ____ / ____	Percent

RO 1

Unit 1 is performing a startup with the following:

- Reactor power is 17%
- Main Generator output is 60 Mwe

The running DEH pump trips and the standby pump started when DEH header pressure indicated 900 psia.

Which ONE of the following states the expected plant indication?

A. Reactor power indicates 17%, Main Generator indicates 60 Mwe.

B. Core mimic CEA display amber lights are ALL illuminated.

C. Reactor power indicates 17% with SBCS controlling temperature. Main Generator indicates '0' Mwe.

D. Trip Circuit Breaker (TCB) lights indicate 'WHITE'

RO 2

Given the following conditions:

- Unit 1 is at 45% power and stable.

- A 5 gpm break from the upper instrument tap of Pressurizer (Pzr) Level transmitter, LT-1110X, occurs.

Assuming no operator action, which ONE of the following describes the response of LI-1110X?

LI-1110X "Channel X Pzr Level" indication will begin to__(1)____ as a result of the ΔP cell element between the reference and variable leg sensing a ___(2)____.

A. 1) lower
   2) higher ΔP due to VARIABLE leg pressure lowering

B. 1) lower
   2) lower ΔP due to REFERENCE leg pressure lowering

C. 1) increase
   2) lower ΔP due to REFERENCE leg pressure lowering

D. 1) increase
   2) higher ΔP due to VARIABLE leg pressure lowering

RO 3

Unit 1 has the following post trip indications:

- A Differential Current Bus Lockout has occurred on the 1B3 4.16kv bus
- Pressurizer level is 12% lowering
- Pressurizer pressure is 1780 psia lowering
- CET is 520°F stable
- Containment Pressure is 0.2 psig stable
- SG 1A and 1B are 930 psia and slowly lowering
- Safety / PORV tailpipe temperatures are 140-150°F
- SJAE readings indicate 3.2 E-07 µCi/cc.

Upon the trip the following annunciator came in:

B SAFEGUARDS PUMP ROOM SUMP LEVEL HIGH-HIGH LA-2

(NO operator actions have been taken)

Based on the above conditions, enter:

A. 1-EOP-04, SGTR

B. 1-EOP-09, LOOP

C. 1-EOP-03, LOCA

D. 1-EOP-05, ESDE

RO 4

Unit 1 has tripped. On the trip, a loss of the 1A1 6.9 KV bus occurred. 1-EOP-02, 'Reactor Trip Recovery' was entered.

While in 1-EOP-02, 'Reactor Trip Recovery' the crew has lowered RCS pressure to between 1800 and 1850 psia.

Which ONE of the following states:

1. the basis for this RCS pressure LOWER limit.
2. the bases for the RCS pressure UPPER limit.

A. 1. The LOWER limit ensures Figure 1A, 'RCS pressure temperature curve' stays within acceptable range
   2. The UPPER limit is based on maintaining the lower RCP seal cavity below 300°F.

B. 1. The LOWER limit is based on providing a margin above SIAS actuation setpoint
   2. The UPPER limit is based on maintaining the lower RCP seal cavity below 300°F.

C. 1. The LOWER limit is based on providing a margin above SIAS actuation setpoint
   2. The UPPER limit ensures RCP controlled bleedoff flow meets minimum requirement.

D 1. The LOWER limit ensures Figure 1A, 'RCS pressure temperature curve' stays within acceptable range
   2. The UPPER limit ensures RCP controlled bleedoff flow meets minimum requirement.

RO 5

Unit 2 is in Mode 3. Due to Pressurizer level control problems, charging and letdown was secured at 2:15 pm. The following conditions are noted:

- RCS temperature is 532°F
- RCS pressure is 2250 psia
- RCP controlled bleedoff is 1.1 gpm per pump
- Pressurizer level is 33%
- Last RCS leak rate was 0.05 gpm.

Assuming no auto or Operator actions, which ONE of the following states the **APPROXIMATE** time that the Pressurizer will be at the minimum Tech. Spec. limit?

A. 3:01 pm

B. 3:31 pm

C. 3:37 pm

D. 3:46 pm

RO 6

Unit 1 is on SDC in reduced inventory condition. The SDC system is aligned and operating in accordance with 1-NOP-01.04, 'RCS Reduced Inventory And Mid-Loop Operation'.

IAW 1-NOP-01.04, 'RCS Reduced Inventory And Mid-Loop Operation', which ONE of the following states the LPSI pump that is in STANDBY and the reason for this standby lineup?

A. 1A LPSI pump. V3483, '1A LOOP SDC return to 1A LPSI pump relief" has the potential to lift at a higher pressure than 1B LPSI pump.

B. 1A LPSI pump. Due to suction piping arrangement, LPSI Pump 1B will experience adverse suction conditions before LPSI Pump 1A.

C. 1B LPSI pump. V3468, '1B LOOP SDC return to 1B LPSI pump relief' has the potential to lift at a higher pressure than 1A LPSI pump.

D. 1B LPSI pump. Due to suction piping arrangement, LPSI Pump 1A will experience adverse suction conditions before LPSI Pump 1B.

RO 7

Given the following conditions on Unit 2:

- The CCW system has developed a leak
- LA-10, "CCW SURGE TANK COMPARTMENT A LEVEL LOW," is locked in
- LB-10, "CCW SURGE TANK LEVEL HIGH/COMPARTMENT B LEVEL LOW," alarmed but subsequently clears.

1) What CCW system loads are affected?
2) What actions need to be performed to restore CCW to that load?

A. 1) Fuel Pool Heat Exchanger
   2) Place the "B" train "N" Header valve control switches to CLOSE then OPEN

B. 1) Fuel Pool Heat Exchanger
   2) Place the "A" train "N" Header valve control switches to CLOSE then OPEN

C. 1) Letdown Heat Exchanger
   2) Place the "A" train "N" Header valve control switches to CLOSE then OPEN

D. 1) Letdown Heat Exchanger
   2) Place the "B" train "N" Header valve control switches to CLOSE then OPEN

RO 8

Given the following conditions on Unit1:

- The unit is operating at 100% power.
- PIC-1110X, "Pressurizer (Pzr) pressure controller" is selected.
- Pzr pressure is being maintained at 2250 psia with Pzr Backup Heaters B1, B2, and B5 ON with a 10% output to the Pzr Proportional Heaters.

The Output on PIC-1110X begins to slowly drift HIGH due to a malfunction of PT-1110X.

Which ONE of the following describes the response of the OUTPUT on HIC1100, "Main Spray controller "AND the effect on actual Pzr pressure?

(Assume no Operator actions)

HIC-1100 output __(1)____.

Actual Pzr pressure __(2)_____.

A. 1) rises
   2) rises

B. 1) rises
   2) lowers

C. 1) lowers
   2) lowers

D. 1) lowers
   2) rises

RO 9

Unit 1 has a loss of feedwater event at 100% power. The unit DID NOT TRIP when trip conditions were met.

For the initial onset of the event, which ONE of the following will be the LARGEST contributor of negative reactivity insertion and why? (assuming no Operator actions)

The reactivity added by the increase in the:

A. fuel temperature. For the above event as the fuel temperature increases, this value becomes lower per °F.

B. fuel temperature. For the above event as the fuel temperature increases, this value becomes higher per °F.

C. moderator temperature. For the above event the core is 'under moderated' resulting in this value becoming higher per °F.

D. moderator temperature. For the above event the core is 'over moderated' resulting in this value becoming less per °F.

RO 10

Unit 1 was operating at 100% power when the Steam Jet Air Ejector radiation monitor was trending up but has not reached the alarm setpoint. The crew has entered 1-AOP-08.02, 'Steam Generator Tube Leak'. No other radiation monitors have an increasing trend.

One minute later, the Reactor tripped.

During performance of 1-EOP-01, 'Standard Post Trip Actions', the suspected SG tube leak escalated to a 400 gpm SG tube rupture.

While in 1-EOP-01, which **ALARM** would annunciate FIRST to indicate WHICH Steam Generator has a SG tube rupture?

A. Main Steam line radiation monitor.

B. Steam Jet Air Ejector radiation.

C. Steam Generator level high.

D. Steam Generator blowdown radiation.

RO 11

Unit 1 has experienced an Excess Steam Demand event on the 1B SG and has entered 1-EOP-05, 'Excess Steam Demand' with the following:

- 1A SG T_{cold} is 500°F
- 1B SG T_{cold} is 240°F
- 1B SG indicates '0' Wide Range
- 1A ADV is currently in automatic

The US has directed you to stabilize RCS temperature. IAW Operations Department Policy, OPS-539, 'RCS Cooldown Guidance' which ONE of the following states how RCS temperature is controlled and the basis for this manipulation?

A. Maintain 1A ADV in auto and adjust setpoint to 25 psia steam pressure. This will maximize Safety Injection flow to regain Pressurizer level to within the RCS Inventory control safety function criteria.

B. Maintain 1A ADV in auto and adjust setpoint to 25 psia steam pressure. This will limit the RCS heatup which could result in exceeding the RCS subcooling limit.

C. Place 1A ADV in manual, fully open, then adjust the auto setpoint to 25 psia steam pressure and place in automatic. This will maximize Safety Injection flow to regain Pressurizer level to within the RCS Inventory control safety function criteria.

D. Place 1A ADV in manual, fully open, then adjust the auto setpoint to 25 psia steam pressure and place in automatic. This will limit the RCS heatup which could result in exceeding the RCS subcooling limit.

RO 12

Unit 1 is at 45% power with the following conditions:

- 1B AFW Pump is out of service.
- 1A Main Feedwater pump is out of service.

The following alarm is received:

125V DC BUS 1AB UV A-60

Shortly after the alarm, the 1B Main Feedwater pump trips and cannot be restarted.

Which ONE of the following actions are taken in 1-EOP-01, 'Standard Post Trip Actions' as a direct result of the above conditions?

A. Align the 1AB DC bus to the 1C or 1D DC bus.

B. Align the 1AB Battery Charger to the 1AB DC bus.

C. Maintain current DC alignment with ALL RCP's running.

D. Secure ONE RCP in EACH loop.

RO 13

Given the following conditions:

- Unit 2 is in 2-EOP-10, 'Station Blackout' receiving power via the Station Blackout Crosstie, to the 2AB 4.16KV bus to the 2A3 4.16KV bus from the 1A Emergency Diesel Generator WHICH IS THE ONLY RUNNING UNIT 1 DIESEL.

Which ONE of the following states when / if the 2A Intake Cooling Water Pump can be started?

The 2A Intake Cooling Water pump can:

A. be started if Unit 1 has determined sufficient load (KW) capacity is available on the 1A Diesel Generator.

B. be started if Unit 1 has determined sufficient amperage capacity is available on the station blackout crosstie breaker.

C. NOT be started due to the potential for exceeding the station blackout crosstie breaker amperage limits.

D. NOT be started due to the potential for exceeding the 1A Diesel loading (KW) limits.

RO 14

Unit 2 has the following Intake Cooling Water (ICW) system alignment at 100% power:

- 2A and 2B ICW pumps are running.
- 2AB 4.16KV bus is aligned to the 2B3 4.16KV Bus.

The 2C ICW pump was just started on the 2B ICW header for surveillance testing and the 2B ICW pump has yet to be stopped. A loss of offsite power occurs and both Diesel Generators start and load on the bus.

Which ONE of the following states the response of the 2C and 2B ICW pumps?

2B ICW Pump will:

A. automatically restart as the Diesel loads sequence on the bus.
2C ICW pump will NOT automatically restart and CANNOT be manually restarted.

B. NOT automatically restart but CAN be manually started.
2C ICW pump will automatically restart as the Diesel loads sequence on the bus.

C. NOT automatically restart and CANNOT be manually restarted.
2C ICW pump will automatically restart as the Diesel loads sequence on the bus.

D. automatically restart as the Diesel loads sequence on the bus.
2C ICW pump will NOT automatically restart but CAN be manually started.

RO 15

The 120 VDC input breaker spuriously opened.

- 2C Instrument bus Inverter trouble alarm annunciates

Which ONE of the following would be expected as a result of this malfunction?

The 2C Instrument bus:

A. remains energized from the 480 VAC alternate source through the maintenance bypass bus.

B. remains energized from the 120 VAC alternate source directly to the Instrument bus.

C. becomes de-energized. The Instrument bus should be re-energized by placing the 120 VAC manual bypass switch to the 'Bypass Source to Load' position.

D. becomes de-energized. The Instrument bus should be re-energized by closing the 480 VAC MCC input breaker to the maintenance bypass bus.

RO 16

Unit 1 is at 100% power with the 1C ICW pump out of service. The 1A ICW pump trips and cannot be restored.

As Turbine Cooling Water temperature rises, which ONE of the following would require entry into 1-AOP-22.01, 'Rapid Downpower'?

A. Main Generator COLD gas temperature indicates 49°C

B. Main Generator HOT gas temperature indicates 100°C

C. 1A Main Feedwater pump bearing temperature indicates 190°F

D. Turbine bearing oil temperature indicates 160°F

RO 17

Unit 1 is at 100% power when a large Instrument air leak occurs. The crew has implemented 1-AOP-18.01, 'Instrument Air Malfunction'. If Instrument air continues to degrade, which ONE of the following states the HIGHEST pressure that requires the Unit to be manually tripped AND which procedure will be implemented AFTER 1-EOP-01 'Standard Post Trip Actions'?

A. 74 psig, 1-EOP-02, 'Reactor Trip Recovery'

B. 59 psig, 1-EOP-02, 'Reactor Trip Recovery'

C. 74 psig, 1-EOP-09, 'Loss of Offsite Power/Loss of Forced Circulation'

D. 59 psig, 1-EOP-09, 'Loss of Offsite Power/Loss of Forced Circulation'

RO 18

Given the following conditions on Unit 1:

- Reactor power is 100%.
- Unit 2 is off-line due to a Short Notice Outage.
- Switchyard Voltage has lowered from 242kV to 237kV due to a high load demand on the grid.

Based on the above noted conditions, the DRCO would observe Main Generator __(1)__

If switchyard voltage continued to lower, the FIRST Main Generator OVER-EXCITATION protection action would be __(2)__.

A. 1) MEGAWATTS and VARS RISING
2) automatically swapping to the DC Voltage Regulator which will maintain the field current at a preset limiting position.

B. 1) VARS RISING ONLY
2) the AC Voltage Regulator limiting maximum field current

C. 1) MEGAWATTS and VARS RISING
2) the AC Voltage Regulator limiting maximum field current

D. 1) VARS RISING ONLY
2) automatically swapping to the DC Voltage Regulator which will maintain the field current at a preset limiting position.

RO 19

Given the following conditions on Unit 1:

- The reactor is at 3.0 E-4% power following a start up from a two week forced outage.
- Critical start up data is being recorded by the RO.
- CEA group 7 was at 108" withdrawn when they were withdrawn to 113"

(Assume no operator action)

Actual reactor power will rise _____

A. and RCS Temperature will remain stable until reaching the POAH

B. and RCS Temperature will continually rise upon reaching the Power Range

C. until the reactor trips due to High SUR

D. until the reactor trips due to VHPT

RO 20

Unit 2 is at 100% power. Pressurizer level Channel 'X' is selected.

- Pzr Channel X Level Low-Low level alarmed at 27% indicated level (actual level is 63%)

Assuming NO Operator actions which ONE of the following states the number of Charging pumps running and the expected high level alarm?

A. Three Charging pumps running. Pressurizer high level alarm at 73%.

B. Two Charging pumps running. Pressurizer level alarm at 67%.

C. Three Charging pumps running. Pressurizer level alarm at 67%.

D. Two Charging pumps running. Pressurizer high level alarm at 73%.

RO 21

Given the following conditions on Unit 1:

- Reactor power is 11% power
- The turbine is being rolled for a start up
- The condenser has developed a small vacuum leak
- Condenser back pressure is 2.7 inches of Hg. and slowly rising
- The crew has entered 1-AOP-12.01, 'Loss of Condenser Vacuum'

Which ONE of the following states:

The MINIMUM backpressure setpoint at which the SBCS becomes unavailable and the basis for this setpoint?

A. 8" of Hg. absolute, protect low pressure turbine blades from resonance cracking

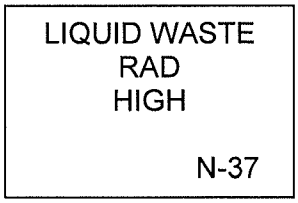
B. 12" of Hg. absolute, protect low pressure turbine blades from resonance cracking

C. 8" of Hg. absolute, protect main condenser from overpressure

D. 12" of Hg. absolute, protect main condenser from overpressure

RO 22

Unit 1 is performing a Liquid Release of the 1A Waste Monitor Tank when the following alarm is received:



Liquid release flow control valve, FCV-6627X indicates open and will not close from the RTGB.

IAW 1-AOP-06.02, 'Uncontrolled Release Of Radioactive Liquids' which ONE of the following is a required SUBSEQUENT Operator action?

A. At the 1A Waste Monitor Storage Tank, stop the 1A Waste Monitor pump AND at the CCW platform lock closed V21462, Waste Monitor Pumps Discharge to Discharge Canal Isolation valve.

B. At the 1A Waste Monitor Storage Tank, close FCV-6627X AND at the CCW platform lock closed V21462, Waste Monitor Pumps Discharge to Discharge Canal Isolation valve.

C. From the Liquid Waste Control panel, close FCV-6627X AND at the Waste Monitor Storage Tanks, stop the Waste Monitor pump associated with the liquid release.

D. From the Liquid Waste Control panel, stop the 1A Waste Monitor pump AND lock closed V21462, Waste Monitor Pumps Discharge to Discharge Canal Isolation valve.

RO 23

The following conditions exist on Unit 1:

- The unit is in a refueling outage with a core offload in progress.
- The Spent Fuel Handling Machine (SFH) is transporting a spent fuel assembly, which has been used for 3 refueling cycles, from the fuel transfer canal to the Spent Fuel Pool (SFP).
- The spent fuel assembly came into contact with transfer gate wall
- Gas bubbles are reported to be rising rapidly to the fuel transfer canal surface and bursting.

The FHB EFFLUENT Radiation monitor AND the Spent Fuel Pool Transfer Canal AREA RADIATION MONITOR indications are in ALARM due to the release of ___(1)____. The FHB ventilation system ___(2)___.

A. 1) beta and gamma radiation
   2) is in its NORMAL alignment

B. 1) gamma radiation ONLY
   2) is in its NORMAL alignment

C. 1) beta and gamma radiation.
   2) has re-aligned to the Shield Building Ventilation filter train

D. 1) gamma ONLY.
   2) has re-aligned to the Shield Building Ventilation filter train.

RO 24

Unit 1 is implementing 1-EOP-15, 'Functional Recovery' with the following:

- A Loss of Offsite Power (LOOP) has occurred.
- 1A Steam Generator (SG) has experienced a Steam Generator Tube Rupture (SGTR).
- 1B SG has an Excess Steam Demand outside the Containment upstream of the Main Steam Isolation valves.
- 1A SG pressure is 850 psia.
- 1B SG pressure is 454 psia.
- Neither SG has been isolated.

Which ONE of the following states:

1) When the Containment Isolation Safety Function will be met?
2) Bases for meeting the Safety Function

A. 1) When 1-EOP-99 Appendix R, 'Steam Generator Isolation' is complete on the 1B SG AND the 1A SG is capable of being steamed ONLY to the condenser.
2) Steaming to the condenser contains the radiological effluents.

B. 1) When 1-EOP-99 Appendix R, 'Steam Generator Isolation' is complete on the1B SG AND the 1A SG is capable of being steamed to the condenser OR the atmosphere.
2) The 1A SG is the least affected SG and has the capability to remove heat by steaming to atmosphere or condenser.

C. 1) When 1-EOP-99 Appendix R, 'Steam Generator Isolation' is complete on BOTH SG's AND Once Through Cooling is initiated.
2) Both SG's are considered faulted and should be isolated.

D. 1) When 1-EOP-99 Appendix R, 'Steam Generator Isolation' is complete on the 1A SG AND the 1B SG has blown dry.
2) Until 1B SG blows dry, RCS cooldown CANNOT be controlled.

RO 25

Given the following conditions on Unit 2:

- The Unit has experienced a LOCA with multiple ECCS failures.
- Safety injection flow does NOT meet Figure 2
- The crew is performing actions contained in 2-EOP-15, 'Functional Recovery'

Plant conditions are now:

- REP CET indicate 539°F and constant.
- RCS T_{Hot} temperatures are 519°F and constant.
- RCS T_{cold} temperatures are 512°F and constant.
- RCS pressure indication is 870 psia.

Which ONE of the following states the status of RCS subcooling and Natural Circulation?

A. RCS is 9°F subcooled, Single phase Natural Circulation is NOT met.

B. RCS is 11°F superheat, Two phase Natural Circulation IS met.

C. RCS is 9°F subcooled, Single phase Natural Circulation IS met.

D. RCS is 11°F superheat, Two phase Natural Circulation is NOT met.

RO 26

Unit 1 is performing a natural circulation cooldown in accordance with 1-EOP-03 using the ADV's with the following conditions:

- RCS pressure is 140 psia and lowering.
- Rep CET temperature is 335°F and constant.
- Hot leg temperature is 325°F and constant.
- Cold leg temperature is 320°F and lowering.
- Reactor Vessel Head temperature is 353°F and constant.
- Aux. spray valve SE-02-03 is open and Aux. spray valve SE-02-04 is closed.

Which ONE of the following states the required actions?

Throttle:

A. open the ADV's further and close SE-02-03.

B. open the ADV's further and open SE-02-04.

C. close the ADV's and close SE-02-03.

D. close the ADV's and open SE-02-04.

RO 27

Unit 2 was tripped from 100% power due to LOOP.

The following conditions exist during 2-EOP-01, 'Standard Post Trip Actions":

- ADV's are in service in AUTO/AUTO set to 900 psia
- RCS T_{ave} is 530°F and stable
- Auxiliary Feedwater was throttled after AFAS actuation
- SG Pressures are 880 psia and stable

Then a SIAS occurred due to lowering pressurizer pressure

Following SIAS actuation, which ONE of the following states the Operator actions that is performed to ensure RCS Heat Removal is maintained within limits?

A. Throttle closed AFW header valves to both SG's.

B. Place ADV's in AUTO / MANUAL.

C. Reduce ECCS flow by throttling HPSI valves.

D. Close the MSIV's.

RO 28

Given the following conditions on Unit 1:

- Reactor power is 100%.
- The Containment Instrument Air Compressors are out of service.
- MV-18-1, Instrument Air Containment isolation valve closes and cannot be re-opened.

Which ONE of the following Reactor Coolant Pump motor indications would be expected?

A. Increasing RCP Controlled Bleedoff Temp

B. Increasing motor stator temperatures.

C. Decreasing CCW flow to motor oil coolers.

D. Decreasing Upper / Lower oil reservoir levels.

RO 29

Unit 1 is in Mode 5. RCS level is 30 feet 6 inches with RCP seal injection in service. Two Charging pumps are in service with the 1A LPSI pump filling the RCS.

The Charging Loop isolation valves are as follows:

- SE-02-01, '1B1 Loop Charging Isol' is OPEN
- SE-02-02, '1A2 Loop Charging Isol' is CLOSED

A short circuit causes SE-02-01, '1B1 Loop Charging Isol' to fail closed.

Which ONE of the following states the effect of SE-02-01 closing on the RCP seals?

Seal injection flow has:

A. decreased which could cause contaminants to enter the seal cartridge as the RCS level is raised.

B. decreased which could result in the seal cavity not filling completely.

C. increased which could result in excessive vapor seal leakoff flow.

D. increased which could result in extreme seal damage.

RO 30

Unit 1 is on SDC. The Pressurizer is being cooled and has just gone solid. RCS pressure is 75 psia.

In accordance with 1-GOP-305, Reactor Plant Cooldown - Hot Standby To Cold Shutdown, which ONE of the following describes:

1. How the Letdown valve controller PIC-2201 will be configured for solid plant operations:

PIC-2201, Ltdn Pressure controller will be in: _____

AND

2. If HCV-3657, SDC Temp Control, were throttled closed, what response would need to occur to maintain pressure constant?

A. 1) AUTO.
   2) Letdown pressure control valves PCV-2201P and PCV-2201Q will OPEN.

B. 1) AUTO.
   2) Letdown pressure control valves PCV-2201P and PCV-2201Q will CLOSE.

C. 1) MANUAL.
   2) Manually OPEN Letdown pressure control valves PCV-2201P and PCV-2201Q.

D. 1) MANUAL.
   2) Manually CLOSE Letdown pressure control valves PCV-2201P and PCV-2201Q.

RO 31

Unit 1 has just placed 1A LPSI pump on SDC with the following:

- RCS temperature is 320°F
- RCS pressure is 262 psia
- HCV-3657 SDC TEMP CONTROL is open 100%
- FCV-3306 SDC RETURN FLOW is open 25%

Instrument air to the RAB is lost due to a ruptured air header line.

Which ONE of the following states the expected response?

LPSI amps will:

A. increase, RCS temperature will decrease.

B. decrease, RCS temperature will increase.

C. increase, RCS temperature will increase.

D. decrease, RCS temperature will decrease.

RO 32

Unit 1 is experiencing a Large Break LOCA and is implementing 1-EOP-15, 'Functional Recovery' with the following:

- RWT level is 8 feet.
- All ECCS pumps are available

Due to equipment problems, RAS preparation steps are unable to be performed.

Which ONE of the following states the possible effects of not being able to perform the RAS preparation steps?

A. Containment cooling may be jeopardized.

B. Containment sump pH limit may be jeopardized.

C. HPSI Pumps NPSH may be jeopardized.

D. LPSI Pumps may not stop on RAS.

RO 33

Unit 2 has tripped from 100% power due to a Main Generator Lockout. Shortly after the trip, the RCO noticed:

- Quench Tank pressure is 58 psig and rising
- Pressurizer level is 41% and rising
- Pressurizer pressure is 1720 psia and lowering rapidly
- RCS temperature is 530°F
- V1201 has 5 "led" lights lit

Which ONE of the following contingency actions would the crew take while in EOP-01, "Standard Post Trip Actions"?

A. Trip one RCP in each loop.

B. Stop the running Charging pumps.

C. Close PORV block valves.

D. Reset AND energize Pressurizer heaters.

RO 34

Unit 1 is at 100% power. The 1A Component Cooling water (CCW) pump is to be removed from service. The 1C CCW is to be aligned to replace the 1A CCW pump.

Which ONE of the following states the **MINIMUM** electrical lineup required to meet the Technical Specification requirements for the 1C CCW pump?

A. ONLY the 1AB 4.16 KV bus aligned to the 1A3 4.16KV bus.

B. The 1AB 4.16 KV bus aligned to the 1A3 4.16KV bus and the 1AB 480V bus aligned to the 1A2 480V bus.

C. The 1AB 4.16 KV bus aligned to the 1A3 4.16KV bus, 1AB 480V bus aligned to the 1A2 480V bus and the 1AB DC bus aligned to the 1A DC bus.

D. 1AB 4.16 KV bus aligned to the 1A3 4.16KV bus, 1AB 480V bus aligned to the 1A2 480V bus, 1AB DC bus aligned to the 1A DC bus. 1A Emergency Diesel Generator operable.

RO 35

Unit 1 is operating at 50% power. The Pressurizer was placed on recirculation IAW 1-GOP-101, 'Reactor Operating Guidelines During Steady State and Scheduled Load Changes'.

PIC-1100X is selected for Pressure control. PT-1100X fails HIGH.

Assuming NO Operator action, which ONE of the following states the response of the Proportional and Backup heaters?

Proportional heaters are:

A. at MINIMUM output. Backup heaters are de-energized.

B. de-energized. Backup heaters are de-energized.

C. at MINIMUM output. Backup heaters stay at the position prior to the failure.

D. de-energized. Backup heaters stay at the position prior to the failure.

RO 36

Given the following indications on Unit 1 during an up power.

- Channel 'D' Variable High Power (VHP) reset pushbutton has just been depressed.
- Channel 'D' ΔT Power indicate 57%
- Channel 'D' Nuclear Power indicates 55%

Assuming no Operator actions, which ONE of the following states the power level at which Channel 'D' will trip?

A. 66.61%

B. 64.61%

C. 61%

D. 59%

RO 37

Unit 1 is performing a startup with the following:

- Reactor power is 10%
- Turbine is latched
- SBCS is in service
- RPS Channel 'A' Startup rate has failed high and is yet to be bypassed.
- Both SG pressures are 900 psia

Which ONE of the following will result in the crew entering 1-EOP-01, 'Standard Post Trip Actions'?

A. Startup rate spikes to 1.6 DPM on the 'B' channel.

B. DEH pump trips and the backup will not start.

C. HCV-08-1A, 'A' MISV fails closed. 'A' SG pressure increases to 950 psia.

D. MB Instrument bus becomes de-energized.

RO 38

Unit 1 is experiencing a Loss of Coolant Accident (LOCA) and has entered 1-EOP-03, 'LOCA' with the following conditions:

- Pressurizer pressure is 1580 psia and lowering
- Containment pressure is 5.5 psig and rising
- Containment radiation is 8 R/hr and rising
- ONLY SIAS has actuated

Which ONE of the following states response of the Engineered Safety Feature Actuation System (ESFAS) and the expected Operator actions IAW 1-EOP-03, 'LOCA'?

A. The ESFAS system is responding as expected. Verify proper operation of pumps and valves.

B. The ESFAS system is responding as expected. Manually actuate CIAS AND CSAS in anticipation of imminent automatic actuation.

C. CIAS should have actuated automatically. Manually actuate CIAS.

D. CIAS and CSAS should have actuated automatically. Manually actuate CIAS and CSAS.

RO 39

Unit 1 is in 1-EOP-03, 'LOCA', with the following:

- Pressurizer pressure is 980 psia
- 1A HPSI did not start and cannot be started
- 1A and 1B LPSI pumps are operating
- All Charging pumps are operating

Which ONE of the following states the expected Safety Injection flow?
References provided

A. 530 gpm

B. 400 gpm

C. 330 gpm

D. 220 gpm

RO 40

Unit 2 has experienced a LOCA. RCS pressure is 1580 psia and the crew has entered 2-EOP-03, 'LOCA'.

On the trip, feeder breakers to MCC 2B9 tripped.

Which ONE of the following states the **RUNNING** Containment Fan Coolers?

A. C and D Containment Fan Coolers.

B. A and C Containment Fan Coolers.

C. A and B Containment Fan Coolers.

D. B and D Containment Fan Coolers.

RO 41

Unit 2 has tripped from 100% power. Fifteen minutes post trip the following conditions are observed:

- Containment temperature is 130°F
- Containment Pressure is 3.8 psig

Which ONE of the following describes the status of the Containment Coolers

1) PRIOR to the event and
2) AFTER the above stated conditions

A. 1) Three Coolers running in FAST speed
   2) Three Coolers running in FAST speed

B. 1) Four Coolers running in FAST speed
   2) Four Coolers running in SLOW speed

C. 1) Three Coolers running in FAST speed
   2) Four Coolers running in SLOW speed

D. 1) Four Coolers running in FAST speed
   2) Four Coolers running in FAST speed

RO 42

Given the following conditions on Unit 1:

- The unit has experienced a Large Break Loss of Coolant Accident.
- Prior to the event RWT level was 36.5 feet.
- RAS occurred about 20 minutes ago.
- 1A Containment Spray (CS) pump AND the 1A and 1B High Pressure Safety Injection (HPSI) pumps have indications of oscillating amps, header pressure and flow.

Which ONE of the following states:

1) The expected current Containment sump level.
2) The FIRST REQUIRED Operator action in accordance with 1-EOP-03 for the conditions noted above.

(references provided)

A. 1) 23.75 feet
   2) Stop the HPSI pumps

B. 1) 23.75 feet
   2) Stop the CS pump

C. 1) 24.00 feet
   2) Stop the HPSI pumps

D. 1) 24.00 feet
   2) Stop the CS pump

RO 43

Unit 1 is experiencing a large break loss of coolant accident and is implementing 1-EOP-03, "LOCA" with the following:

- The 1A Containment Spray pump is out of service.
- The 1A HPSI pump is out of service.
- All Containment Coolers are running.
- RAS has occurred and the 1B Containment Spray pump tripped and cannot be restarted.

Which ONE of the following states the status of Core cooling AND Containment cooling.

A. 1) Core cooling CANNOT be maintained.
   2) Containment cooling CAN be maintained.

B. 1) Core cooling CAN be maintained.
   2) Containment cooling CAN be maintained.

C. 1) Core cooling CANNOT be maintained.
   2) Containment cooling CANNOT be maintained.

D. 1) Core cooling CAN be maintained.
   2) Containment cooling CANNOT be maintained.

RO 44

Given the following conditions

- Unit 1 is at 3% power following a Short Notice Outage.
- Prior to that, the unit had been on line for 200 days.
- RCS temperature is being controlled with Atmospheric Dump Valves (ADV's) in automatic.
- The Main Steam Isolation valves are closed.
- A manual Reactor trip is inserted due to loss of Instrument air.
- Following the trip, a Loss of Offsite Power (LOOP) occurs.

Which ONE of the following states how RCS Heat Removal will be controlled?

While implementing EOP-09 "LOOP', RCS Heat Removal will be controlled by:

A. the Main Steam Safeties cycling until local control is established using 1-EOP-99, Appendix U, 'Local Operation of Unit 1 Atmosphere Dump valves'.

B. the Main Steam Safeties cycling until Instrument air is restored using 1-AOP-18.01, 'Instrument Air Malfunction.'

C. placing the ADV controllers in manual / manual closed until local control is established using 1-EOP-99, Appendix U, 'Local Operation of Unit 1 Atmosphere Dump valves'.

D. placing the ADV controllers in manual / manual closed until Instrument air is restored using 1-AOP-18.01, 'Instrument Air Malfunction.'

RO 45

Given the following:

- Unit 1 is at 60% power
- The 1A MFW pump trips

Which ONE of the following describes the expected plant response before the Reactor and Turbine Trip on Low S/G Level?

Pressurizer Pressure will:

A. Increase, because the RCS delta T power increases.

B. Increase, because the RCS temperature increases due to elevated Steam Generator temperatures.

C. Decrease, because the increased boiling rate in the Steam Generator tube bundle region decreases Tavg.

D. Decrease, because the Steam Generator level initially increases, causing a contraction of the RCS inventory.

RO 46

Unit 1 has been at 100% power for 282 days. If the Unit lost all Main Feedwater and tripped on low SG level, which ONE of the following states the **MINIMUM** Auxiliary Feedwater capacity to remove decay heat, cool the primary and allow the SG level to recover?

One motor driven Auxiliary Feedwater Pump with a total of _____gpm flow and _____RCP's running 30 minutes after the event.

A. 350
4

B. 350
2

C. 150
2

D. 150
0

RO 47

Which ONE of the following will result in a:

1) Bus Lockout on the 1A2 4.16KV bus?
And
2) The result of the bus lockout?

A. 1) Degraded voltage condition.
2) 1A Diesel Generator starts and its output breaker CLOSES on the 1A3 4.16KV bus.

B. 1) Degraded voltage condition.
2) 1A Diesel Generator starts but its output breaker DOES NOT CLOSE on the 1A3 4.16KV bus.

C. 1) Differential current between phases.
2) 1A Diesel Generator starts and its output breaker CLOSES on the 1A3 4.16KV bus.

D. 1) Differential current between phases.
2) 1A Diesel Generator starts but its output breaker DOES NOT CLOSE on the 1A3 4.16KV bus.

RO 48

On the 6.9KV busses, the AUTOMATIC transfer from the **1** to the **2** is considered a **3** transfer.

A. 1. Auxiliary Transformers
   2. Startup Transformers
   3. Live Bus

B. 1. Startup Transformers
   2. Auxiliary Transformers
   3. Fast Dead Bus

C. 1. Auxiliary Transformers
   2. Startup Transformers
   3. Fast Dead Bus

D. 1. Startup Transformers
   2. Auxiliary Transformers
   3. Live Bus

RO 49

Unit 1 'A' Diesel Generator is running fully loaded during a surveillance. A loss of 125V DC power to the 1A Diesel Voltage and Governor control occurs.

Which ONE of the following states the effect of losing the above DC power?

The 1A Diesel will:

A. continue to run fully loaded but will not respond to Operator demands for load changes.

B. continue to run at minimum load due to the governor failing to its lowest setting.

C. trip on mechanical overspeed.

D. trip on loss of excitation.

RO 50

The Unit 2 SNPO has reported the following local Emergency Diesel Generator alarm on the 2A Diesel. All the air receivers indicate 138 psig.

While investigating the alarm the SNPO also noticed the air dryer desiccant system indicated 'RED'.

Which ONE of the following states the status of the 2A Diesel?

The air pressure is:

A. sufficient to start the Diesel. The Air Dryer indicating RED is considered NOT FUNCTIONAL.

B. sufficient to start the Diesel. The Air Dryer indicating RED is considered FUNCTIONAL.

C. NOT sufficient to start the Diesel. The Air Dryer indicating RED is considered NOT FUNCTIONAL.

D. NOT sufficient to start the Diesel. The Air Dryer indicating RED is considered FUNCTIONAL.

RO 51

Unit 1 Diesel Generator fuel oil storage tanks have been severely damaged due to tornados on site. BOTH Unit 1 fuel oil storage tanks have been breached and contain no oil.

Unit 2 Diesel Generator fuel oil storage tanks were unaffected.

Which ONE of the following states the MAXIMUM Diesel Generators that can be run and the MAXIMUM run time for the above condition?

A. All Diesel Generators fully loaded for a period of three (3) days.

B. All Diesel Generators fully loaded for a period of seven (7) days.

C. One (1) Diesel generator fully loaded on each Unit for a period of seven (7) days.

D. One (1) Diesel generator fully loaded on each Unit for a period of three (3) days.

RO 52

Given the following conditions:

- Both Units are in Mode 1.
- On Unit 1, I&C is performing a Response Time Test, in accordance with 1-SMI-26.57D, "Calibration of Control Room Outside Air Intake Radiation Monitor RIS-26-87 (SB train located in the South Outside Air Intake Duct)".

Which ONE of the following describes the response of the Control Room Emergency Ventilation System (CREVS) when the check source value reaches the high-high alarm setpoint on RIS 26-87?

A. ONLY Unit 1 "B" train CREVS goes to the recirc mode with ONLY the South Outside Air Intake Duct isolated

B. ONLY Unit 1 "B" train CREVS goes to the recirc mode with the North AND South Outside Air Intake Ducts isolated

C. BOTH Unit 1 AND Unit 2 "B" train CREVS goes to the recirc mode with ONLY the South Outside Air Intake Ducts isolated

D. BOTH Unit 1 AND Unit 2 "B" train CREVS goes to the recirc mode with the North AND South Outside Air Intake Ducts isolated

RO 53

At 100% power, on Unit _____, if two Intake Cooling Water Pumps are electrically aligned AND operating on the same electrical bus in Mode 1, the associated _____, must be declared inoperable.

A. One (1), Diesel Generator

B. One (1), Off-Site Power Source

C. Two (2), Diesel Generator

D. Two (2), Off-Site Power Source

RO 54

Given the following conditions on Unit 2:

The 2C Instrument Air Compressor is out of service. The 2D Air Compressor trips. A manual Reactor trip was initiated due to low Instrument Air pressure.

- 2-EOP-01 has been completed with the diagnostic flow chart indicating that a Steam Generator Tube Rupture (SGTR) is in progress.
- Instrument Air pressure is now 20 psig and lowering.
- A cooldown has been performed with Reactor Coolant System (RCS) Hot Leg and Cold leg temperatures indicating 509°F and 505 °F respectively.

1) Which ONE of the following describes the current status of HCV-08-1A, 'Main Steam Isolation valve'

AND

2) What actions (if any) would be required to close HCV-08-1A while performing 2-EOP-99, Appendix R 'Isolation of the 2A Steam Generator (SG)'?

A. 1) CLOSED due to loss of instrument air to the valve.
   2) No further action is required.

B. 1) OPEN.
   2) Take the RTGB control switch to 'close'

C. 1) CLOSED due to automatic ESFAS actuation signal.
   2) No further action is required.

D. 1) OPEN.
   2) HCV-08-1A can only be closed LOCALLY using 2-EOP-99, Appdx I,'MSIV Local Closure'.

RO 55

Unit 1 is operating at 100% power. PT-07-2A, 'Containment Pressure' transmitter failed high and has yet to be bypassed. A loss of the MD instrument bus occurs.

Which ONE of the following defines **ALL** the ESFAS signals that will actuate?

A. CIAS, CSAS, MSIS and SIAS

B. CSAS, SIAS

C. CIAS, MSIS and SIAS

D. CIAS, SIAS

RO 56

Unit 1 is in 1-EOP-03, 'LOCA' with a LOOP and the 1A Emergency Diesel Generator out of service. Pressurizer pressure is 1350 psia. It is ten (10) minutes into the event.

Which ONE of the following states the suction source for the Charging Pumps?

A. Volume Control Tank

B. Refueling Water Tank

C. Boric Acid Makeup Tanks via the Gravity feeds V-2508 and V-2509.

D. Boric Acid Makeup Tanks via the Emergency Borate valve V-2514.

RO 57

Unit 1 is at 100% power with the following RPS indications:

- Two (2) K relays K1 and K2 are de-energized.
- Two (2) logic matrix relays open.
- Channel 'A' Wide Range Nuclear channel indicating '0'.
- Channel 'A' Linear Range Nuclear channel indicating '0'.

Which ONE or the following states the failure that has caused the above condition and the status of the RPS Trip Circuit Breakers (TCB's)?

A loss of :

A. 'A' Instrument bus. Four (4) TCB's are open.

B. 'A' Instrument bus. Two (2) TCB's are open.

C. 'A' CEA MG set. Four (4) TCB's are open.

D. 'A' 125V DC bus. Eight (8) TCB's are open.

RO 58

Unit 1 is at 100% power steady state.

Steam Generator (SG) level control transmitter LT-9005, "1A SG NR Level transmitter " failed low.

No Operator actions have been taken when transmitter LT-9013A, '1A SG Safety Channel level transmitter' failed low.

Main Feedwater Regulating Valve (MFRV) controller _____ and the SG low level RPS channel 'A' bistable _____.

A. goes to manual; goes to trip.

B. goes to manual; stays in its current state.

C. stays in its current operational mode; goes to trip.

D. stays in its current operational mode; stays in its current state.

RO 59

Unit 1 has tripped from 100% power and has entered 1-EOP-03, 'LOCA' with the following conditions:

- Prior to the trip the 'A' QSPDS was out of service
- When 1-EOP-03 was entered, an electrical malfunction resulted in the 'B' QSPDS becoming out of service.
- All RCP's are off

Which ONE of the following states **ALL** the Safety Functions that will **NOT** be able to be ASSESSED due to the status of the QSPDS system?

A. RCS Inventory Control and RCS Heat Removal

B. RCS Inventory Control and Core Heat Removal

C. RCS Heat Removal and Core Heat Removal

D. RCS Pressure Control, Core Heat Removal and RCS Heat removal.

RO 60

Unit 2 is in 2-EOP-03, 'LOCA'. Pressurizer pressure is 1580 psia.

Spent fuel pool temperature will continue to rise until:

A. CCW 'N' header isolation valves are taken to CLOSE and then OPEN. SIAS reset NOT required.

B. the CCW MOV's to / from the Fuel Pool heat exchangers are opened from the 'A' or 'B' essential headers by taking the switches to SIAS OVERRIDE OPEN.

C. SIAS is reset and the CCW MOV's to / from the Fuel Pool heat exchangers are opened from the 'A' OR 'B' essential headers by taking the switches to LOCKED CLOSED and return to OPEN.

D. SIAS is reset AND the CCW 'N' header isolation valves are taken to CLOSE and then OPEN.

RO 61

Unit 2 is in refueling operations performing a full core offload.

IAW 2-AOP-26.02, 'Area Radiation Monitors' and/or 2-AOP-26.01, 'Process Radiation Monitors', which ONE of the following radiation monitors, if it were to fail high, would immediately require fuel handling operations to stop after the fuel bundle has been placed in a safe condition?

A. CIAS area monitor RR-26-3

B. Containment Process Particulate and Gas monitor RC-26-25

C. Spent Fuel area monitor RIM-26-7

D. Spent Fuel process monitor RR-26-2

RO 62

Unit 1 has implemented 1-AOP-22.01, 'Rapid Downpower' due to a Main Feedwater control problem. The Unit was at 97% power when the Operator noticed the following light illuminated on the DEH panel:

Trans(fer) relay 24 V Monitor

IAW 1-AOP-22.03, 'DEH Turbine Control System', which ONE of the following states the status of DEH control and how the down power will be controlled.

DEH will:

A. be in Operator Auto. Place DEH in Manual. The Governor Valves will be in SINGLE VALVE CONTROL.

B. be in Operator Auto. Place DEH in Manual. The Governor Valves will be in SEQUENTIAL VALVE CONTROL.

C. have swapped to Turbine Manual, the Governor Valves will be in SINGLE VALVE CONTROL.

D. have swapped to Turbine Manual, the Governor Valves will be in SEQUENTIAL VALVE CONTROL.

RO 63

Unit 1 is at 52% power performing an up power to 100% with the following:

- 1A and 1B Main Feedwater pumps are running.
- 1A and 1C Condensate pumps are running.

The 1C Condensate pump trips. Steam Generator levels are 63% and slowly lowering.

Which of the following states:

1. the plant response
2. the procedure to be implemented

The 1B Main Feedwater Pump will trip:

A. 1) as a DIRECT result of the 1C Condensate pump tripping.
2) 1-AOP-09.04, 'Feedwater, Condensate, And Heater Drain Pump Abnormal Operations'.

B. 1) as a DIRECT result of the 1C Condensate pump tripping.
2) 1-AOP-09.01, 'Feedwater Control System Abnormal Operations'.

C. 1) on low suction pressure.
2) 1-AOP-09.04, 'Feedwater, Condensate, And Heater Drain Pump Abnormal Operations'.

D. 1) on low suction pressure
2) 1-AOP-09.01, 'Feedwater Control System Abnormal Operations'.

RO 64

Unit 1 is performing a Gas release of the 1A Gas Decay Tank.

Which ONE of the following will result in an AUTOMATIC termination of this release?

A. Waste Gas discharge radiation monitor, blue fail light is illuminated.

B. Plant Vent Exhaust monitor channel 01-05 goes into HIGH alarm.

C. The running RAB Supply fan, HVS-4A trips.

D. The running RAB exhaust fan, HVE-10A trips.

RO 65

Unit 1 is operating at 85% power with 1A1, 1B1 and1B2 Circulating Water Pumps (CWP) running. In preparation to increase power to 100%, the Operator starts the 1A2 CWP.

Three (3) minutes after starting the 1A2 CWP the 1B2 CWP trips.

Which ONE of the following states ALL the CWP's that will be running?

A. 1A1 and 1B1 CWP's

B. 1A1 and 1A2 CWP's

C. 1A2 and 1B1 CWP's

D. 1A1, 1A2, and 1B1, CWP's

RO 66

You are the RO 'at the controls' when the following unexpected alarm is received:

PZR CHANNEL X LEVEL HIGH/LOW H-19

In accordance with Operations Department Policy, OPS-522, 'Annunciator Response', which ONE of the following states the correct order to respond to this alarm?

A. Silence the alarm, acknowledge the alarm then announce what the alarm is to the Unit Supervisor.

B. Silence the alarm, announce what the alarm is to the Unit Supervisor then acknowledge the alarm after the Unit Supervisor responds.

C. Announce the alarm to the Unit Supervisor, silence the alarm after US responds then acknowledge the alarm.

D. Announce the alarm to the Unit Supervisor, acknowledge the alarm after the Unit Supervisor responds then silence the alarm.

RO 67

Given the following conditions:

- Unit 1 is in Mode 5 with Shutdown Cooling in service.
- Current RCS Boron concentration is 1635 ppm.
- An evolution is to be performed that will lower the RCS boron concentration to1595 ppm.

Which ONE of the following states the MINIMUM Shutdown Cooling flow necessary in accordance with procedural and Tech Spec requirements to perform the above evolution?

A. 4117 GPM

B. 3670 GPM

C. 3000 GPM

D. 1000 GPM

RO 68

Both Units are operating at 100% power with the following shift complement:

- One SM
- Two US's (one per Unit)
- Four RO's (two per Unit)
- Two SNPO's (one per Unit)
- Two NPO's (one per Unit)
- Two ANPO's (one per Unit)
- One STA

All individuals from above, normally assigned to the fire brigade are qualified as their position dictates.

One of the SNPO's suddenly becomes very ill and has left to go home.

IAW Operations Department Policies, OPS-201, 'Shift Compliment' and OPS-207, 'Fire Brigade', what actions, if any, must be taken to ensure minimum shift compliment and minimum fire brigade compliment?

A. The SNPO position MUST be filled within two (2) hours to meet the minimum shift complement. The minimum fire brigade complement IS still met.

B. The SNPO position MUST be filled within two (2) hours to meet the minimum shift complement and the minimum fire brigade complement.

C. No action is required. The minimum shift complement IS still met and the minimum fire brigade complement IS still met.

D. The minimum shift complement IS still met. The fire brigade complement must be filled within two (2) hours.

RO 69

Unit 1 is in Mode 1

1) Which ONE of the following parameters is considered an input to a Technical Specification SAFETY LIMIT and what system is **CREDITED** to prevent exceeding the SAFETY LIMIT associated with this parameter?

2) Which ONE of the following states the Technical Specification ACTION if the SAFETY LIMIT is exceeded?

A. 1) High RCS pressure, PORV's.
   2) Be in Hot Standby with RCS pressure within its limits within 1 hour.

B. 1) High T_{cold}, Main Steam Safety Valves.
   2) Be in Hot Standby within 1 hour.

C. 1) High RCS pressure, PORV's.
   2) Reduce RCS pressure to within its limit within 5 minutes

D. 1) High T_{cold}, Main Steam Safety Valves.
   2) Reduce T_{cold} to within its limit within 5 minutes

RO 70

Unit 1 is at 100% power. Which ONE of the following will result in entering a Technical Specification action statement?

A. Performing 1A Emergency Diesel Generator monthly surveillance with the Diesel synchronized to the bus.

B. Performing 1A Auxiliary Feedwater pump surveillance.

C. Removing the 1A OR the 1AA Battery Charger from service.

D. Isolating a PORV by closing its block valve.

RO 71

Which one of the following MANUAL operator actions, if not performed prior to the receipt of a Recirculation Actuation Signal (RAS), could result in an unmonitored radioactive release to the environment?

A. Unit 1 / Removing power inhibit from SI recirc valves.

B. Unit 2 / Aligning ECCS sumps to the reactor cavity sump.

C. Unit 1 / Isolating Low Pressure Safety Injection pump manual recircs.

D. Unit 2 / Isolating Containment Spray pump manual recircs.

RO 72

Unit 1 is at 100% power MOL. The 1A Charging pump is running and the RCO is preparing to start the 1B Charging pump.

IAW 1-NOP-02.02, 'Charging And Letdown', which ONE of the following states the proper coordination with Health Physics (HP) and the reason for this coordination?

Notify HP:

A. when the 1B Charging pump has been started so they can monitor for increasing radiation levels in the Charging pump cubicle.

B. when the 1B Charging pump has been started so they can monitor for increasing radiation levels in the letdown area.

C. of the pending start. Allow approximately 15 minutes to verify no personnel in the area of letdown piping, as this area could exceed 1000 mr/hr.

D. of the pending start. Allow approximately 15 minutes to verify no personnel in the Charging pump cubicle as this area could exceed 100 mr/hr.

RO 73

While performing Standard Post Trip actions on Unit 2 you notice the following on the PC-11:

- Main Steam Line Monitor indicates MAGENTA
- SJAE Monitor indicates YELLOW

Which ONE of the following states the status of the above monitors?

A. Main Steam Line Monitor has experienced a communications failure.
SJAE Monitor is in the ALERT range for activity.

B. Main Steam Line Monitor has experienced an equipment failure.
SJAE Monitor is in the ALERT range for activity.

C. Main Steam Line Monitor has experienced an equipment failure.
SJAE Monitor is in the HIGH range for activity.

D. Main Steam Line Monitor has experienced a communication failure.
SJAE Monitor is in the HIGH range for activity.

RO 74

Which ONE of the following Security events REQUIRE a manual trip of BOTH Units and entry into the Emergency Plan IAW 0-AOP-72.01, 'Response To Security Events'

A. Vehicle bomb detonation in Owner Controlled Area

B. Breach of Protected Area by unauthorized personnel

C. A Credible Insider Threat

D. Armed intruders are within the Protected Area fence

RO 75

The Unit 1 control room has been evacuated due to a fire. All RCO, US and SNPO actions have been performed IAW 1-ONP-100.02, 'Control Room Inaccessibility' Appendix A through D. A cooldown to SDC is to be initiated from the Hot Shutdown Panel.

IAW 1-ONP-100.02, 'Control Room Inaccessibility', which ONE of the following states how Shutdown margin and RCS shrinkage makeup will be maintained during the cooldown?

Charging pump suction is:

1. aligned to the_____for Shutdown Margin control, THEN
2. the_____for shrink makeup

A. 1. BAMT's
   2. RWT

B. 1. BAMT's
   2. VCT with the SIT(s) aligned to the VCT.

C. 1. VCT
   2. VCT with the SIT(s) aligned to the VCT.

D. 1. VCT
   2. RWT

SRO 76

Unit 1 is in Mode 3, 1450 psia, cooling down for refueling IAW 1-GOP-305, 'Reactor Plant Cool down-Hot Standby To Cold Shutdown' with the following:

- Annunciator H-28, PZR RELIEF LINE TEMP HIGH goes into alarm and RCS pressure indicates 1260 psia and slowly lowering.
- TIA-1106, RELIEF VALVE, indicates 285°F and rising.
- Pressurizer level is 29% and slowly lowering.

1-AOP-01.08, 'RCS Leakage Abnormal Operations' has been entered. The safety function status checks are being assessed for 1-ONP-01.01, 'Plant Condition 1, Steam Generator Heat Removal LTOP Not In Effect'.

18 minutes have now elapsed since the above actions were commenced.

The DRCO reports that Pressurizer (Pzr) Level is 25% and still lowering.
RCS minimum subcooling is not being maintained.

Which ONE of the following states which procedure to implement and the required actions?

A. Remain in 1-AOP-01.08 and implement Attachment 7, 'Adding Emergency Makeup to RCS' section 2.0 'Makeup using HPSI'.

B. Remain in 1-AOP-01.08 and implement Attachment 7, 'Adding Emergency Makeup to RCS' section 1.0 'Makeup using Charging Pumps.

C. Exit 1-AOP-01.08 and enter 1-ONP-01.01. Implement RCS Inventory Control success path 2 'SI' and initiate SI flow to restore Pzr level.

D. Exit 1-AOP-01.08 and enter 1-ONP-01.01. Implement RCS Inventory Control success path 1 'CVCS' and manually control Charging and Letdown to restore Pzr level.

SRO 77

Unit 2 is at 100% power with the following:

- At time 00:05, 2A and 2B SG levels are 50% and lowering. The RCO depressed the RTGB Reactor Trip pushbuttons and the Reactor did not trip.

- At time 00:09 SG levels are now 20% and Reactor power indicates 98%

The SNPO trips the plant by locally opening the Reactor Trip Circuit breakers.

In accordance with EPIP-01 (excluding EC Judgment) , which ONE of the following is the correct classification, and the **latest** time the classification should be declared:

(References Provided)

A. Alert is declared by 00:20.

B. Alert is declared by 00:24.

C. Site Area Emergency is declared by 00:20.

D. Site Area Emergency is declared by 00:24.

SRO 78

Unit 1 has tripped from 100% power. The crew has entered 1-EOP-05, "Excess Steam Demand" with the following conditions:

- Pressurizer level is 31% and rising
- Rep CET is 420°F
- T_{hot} is 415°F
- Pressurizer pressure is 920 psia and rising
- 1A SG is isolated IAW with Appendix R
- 1B SG level is 22% narrow range rising with 200 gpm AFW flow.
- Rx Vessel level indicates 4-8 covered
- Containment pressure is 3.2 psig lowering
- Containment temperature is 122°F lowering
- ECCS total flow is 600 gpm
- Containment Spray total flow is 5800 gpm

Based on the above conditions, IAW 1-EOP-05, 'Excess Steam Demand', which ONE of the following states the required actions for Containment Spray (CS) and HPSI?

A. HPSI should be throttled and CS should be stopped.

B. HPSI should be throttled and CS should continue to operate as stated.

C. HPSI should be stopped and CS should continue to operate as stated.

D. HPSI and CS should continue to operate as stated.

SRO 79

Which ONE of the following would require notification to the State (SWO) **AND** the NRC? Consider each event independently

(References Provided)

A. One Steam Generator (SG) on Unit 2 has developed a CONSTANT 15 gpm SG Tube Leak with reactor power at 100%.

B. Plant trip from 100% power with Main Steam Safety valve stuck open and fails to close.

C. Plant trip from 30% power with a total loss of ALL feed water resulting in RCS Tcold rising 6° F uncontrollably.

D. The "A" train 6.9 AND 4.16kV Start Up Transformer breakers fail to close on a plant trip from 80% power with the "A" Emergency Diesel Generator out of service.

SRO 80

Unit 2 is operating at 100% power when a malfunction occurs resulting in numerous alarms and instrument failures, some of which are:

- Selected Pressurizer level LI-1110Y indicates failed LOW.
- PZR Proportional HTR Low Level Trip/Interlock.
- PZR Backup HTR Low Level Trip/SS ISOL/INTLK.
- PIA-2212, Charging Hdr. Pressure indication on RTGB-205 indicates failed LOW.
- Excore source range on RTGB-204 indicates power lost.
- Wide range NI on RPS and RTGB-204 indicates power lost.
- TI-1125 2B1 Cold Leg temperature indicates power lost.
- PI-1107-1 Pressurizer Pressure wide range indicates failed LOW.

Ten minutes later, with no Operator action, the following is observed:

- The Unit is at 100% power.
- Pressurizer level is 69%.

Which ONE of the following states:

1) the power supply that was lost.
2) Design bases that could be affected as a result of Pressurizer level.

A. 1) 120V Vital AC bus 2B
   2) Loss of all Pressurizer heaters in the event of a Reactor trip.

B 1) 120V Vital AC bus 2B
   2) Containment pressure in the event of a large break LOCA

C. 1) 120V AC Instrument bus 2-MB-1
   2) Loss of all Pressurizer heaters in the event of a Reactor trip.

D 1) 120V AC Instrument bus 2-MB-1
   2) Containment pressure in the event of a large break LOCA.

SRO 81

Unit 2 is at 100% power

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

- Main Generator is 60 MVARS in the Lag.
- Main Generator Gross MWs are 895.
- The Unit is only able to maintain 45 psig Hydrogen pressure.
- Outside air temperature is 85°F

A loss of ONE of THREE Midway circuits resulted in a system disturbance adding 290 Leading MVARs.

0-AOP-53.04, 'Reduced Offsite Transmission Capacity' was entered.

Which ONE of the following directs:

1) what equipment concern is there related to the added MVARS?
2) what action level is applicable based on the loss of ONE Midway circuit?

References provided

A. 1) Rotor overheating
   2) ACTION level 3.

B. 1) Rotor overheating
   2) ACTION level 2.

C. 1) Stator overheating
   2) ACTION level 3.

D. 1) Stator overheating
   2) ACTION level 2.

SRO 82

Unit 1 is at 100% power with the 1A Boric Acid Makeup pump out of service for shaft seal replacement. The 1A and 1B BAMT's are combined to meet the Technical Specification.

Which ONE of the following states the:

1) number of Technical Specification emergency boration flowpaths available and
2) basis for the specification

A. 1) 3 flowpaths available
2) ensure sufficient shutdown margin to cooldown to 200°F PRIOR to xenon decay based on End Of Life conditions.

B. 1) 2 flowpaths available
2) ensure sufficient shutdown margin to cooldown to 200°F PRIOR to xenon decay based on End Of Life conditions.

C. 1) 3 flowpaths available
2) ensure sufficient shutdown margin to cooldown to 200°F AFTER xenon decay based on End Of Life conditions.

D 1) 2 flowpaths available
2) ensure sufficient shutdown margin to cooldown to 200°F AFTER xenon decay based on End Of Life conditions.

SRO 83

Given the following:

Unit 2 is at 100% power.

At 0100:

The Steam Jet Air Ejector and Blowdown monitors are in alarm.
Two Charging Pumps are running and letdown is 58 gpm with Pressurizer level constant.

At 0120:

The unit is manually tripped
RCS pressure stabilizes at 1690 psia

Which ONE of the following states the:

1) 0100, Emergency Action Level (EAL)
2) 0120, EAL escalation criteria is:

(References Provided)

A. 1) Notification of Unusual Event (NOUE)
   2) met

B. 1) Notification of Unusual Event (NOUE)
   2) NOT met

C. 1) ALERT
   2) met

D. 1) ALERT
   2) NOT met

SRO 84

Given the following conditions on Unit 1:

- OP 1-0010125A, 'Surveillance Data Sheets 8A, Valve Cycle Test - Non Check Valve' is being performed
- V5200 and V5203, "RCS Hot Leg Sample Isolation valves" have just been exercised
- V5200 closed stroke time was satisfactory.
- V5203 EXCEEDED the max allowable closed stroke time.
- Post test, V5200 and V5203 were verified to be CLOSED in the control room and locally.

1) With NO further operator action, is Containment Integrity being met?

2) Which ONE of the following can be performed to satisfy Tech Specs if Chemistry requests to obtain an RCS sample?

A. 1) YES.
   2) With V5203 open, initiate 1-0010125A 'Surveillance Data Sheet 30, Unscheduled Surveillances' to track the valve status.

B. 1) YES.
   2) With V5203 open, station an Operator in the Control Room whose sole function is to close and de-energize V5203 in an accident situation.

C. 1) NO.
   2) With V5203 open, initiate 1-0010125A 'Surveillance Data Sheet 30, Unscheduled Surveillances' to track the valve status.

D. 1) NO.
   2) With V5203 open, station an Operator in the Control Room whose sole function is to close and de-energize V5203 in an accident situation.

SRO 85

Unit 1 has tripped with a Loss of Offsite power. The Crew is about to exit 1-EOP-01, 'Standard Post Trip Actions' with the following indications.

- Pressurizer pressure is 900 psia and rising
- ECCS flow is 650 gpm and lowering
- Pressurizer level is 15% and rising
- CET is 338°F and T_{hot} is 330°F slowly lowering
- 1A SG is 30 psia and stable
- 1B SG is 750 psia and stable
- 1A SG level is 5% Wide range with '0' AFW flow
- 1B SG level is 10% Narrow range and rising with 220 gpm AFW flow
- Containment pressure is '0' psig
- Reactor vessel level indicates 4-8 covered
- SJAE radiation monitor was trending up prior to the trip

Which procedure should be implemented and which action should be taken?

A. 1-EOP-15, 'Functional Recovery'. Depressurize using Aux. Spray to lower subcooling.

B. 1-EOP-15, 'Functional Recovery'. Depressurize using Aux. Spray to increase SI flow.

C. 1-EOP-05, 'Excess Steam Demand'. Depressurize using Aux. Spray to lower subcooling.

D. 1-EOP-05, 'Excess Steam Demand'. Depressurize using Aux. Spray to increase SI flow.

SRO 86

Unit 2 is in Mode 4 making preparations to enter Mode 3.

Which ONE of the following will meet the MINIMUM Technical Specification requirements for 'RCS loops operable' for Mode 3 and what are the bases for this requirement?

A. Reactor Coolant Pumps 2A1 and 2A2 and the 2A SG must be operable.

   Based on one RCP and associated SG capable of removing decay heat. Single failure criteria require two pumps to be operable.

B. Reactor Coolant Pumps 2A1 and 2B2 and the 2A and 2B SG's must be operable.

   Based on one RCP and associated SG capable of removing decay heat. Single failure criteria require two pumps to be operable.

C. Reactor Coolant Pumps 2A1 and 2A2 and the 2A SG must be operable.

   Based on one RCP and reactivity change associated with boron concentration reduction will be within the capability of operator recognition. Single failure criteria require two pumps to be operable.

D. Reactor Coolant Pumps 2A1 and 2B2 and the 2A and 2B SG's must be operable.

   Based on one RCP and reactivity change associated with boron concentration reduction will be within the capability of operator recognition. Single failure criteria require two pumps to be operable.

SRO 87

Given the following conditions on Unit 2:

- The plant is in Mode 6 performing a core offload.
- The Refueling Cavity level is 60 feet.
- The reactor has been subcritical for 240 hours.
- The 2A Component Cooling Water (CCW) Hx outlet temperature rose from 82°F to 85°F.
- Reactor Coolant System (RCS) temperature is 111° F and stable.
- The 2A train of Shutdown Cooling System (SDC) is in service with a flow rate of 2200 gpm.

1) Which ONE of the following is the specific cause of the 2A CCW Hx outlet temperature rise

AND

2) Is the MINIMUM SDC surveillance flow requirement met for Tech Spec 3.9.8.1 "Shutdown Cooling and Coolant Circulation" for the current plant conditions?

A. 1) TCV-14-4A, '2A CCW HX Outlet valve' instrument air line has ruptured
2) Yes

B. 1) SS-21-1A, '2A CCW HX Strainer' has a HIGH differential pressure
2) Yes

C. 1) TCV-14-4A, '2A CCW HX Outlet valve' instrument air line has ruptured
2) No

D. 1) SS-21-1A, '2A CCW HX Strainer' has a HIGH differential pressure
2) No

SRO 88

Unit 2 is at 100% power with the following:

AFAS-1 Feedwater Header Pressure PI-09-9C on the 2A SG failed low 72 hours ago.

Required Tech Spec actions have been completed for PI-09-9C.

2A SG PI-09-9B Feedwater Header Pressure has drifted to 500 psia.

1) Prior to bypassing PI-09-9B, PI-09-9C will be in the:

2) When the operator bypasses PI-09-9B, how many other channels must trip to actuate AFAS-1 :

   A. tripped condition.
      1 (One)

   B. tripped condition.
      2 (Two)

   C. bypassed condition.
      1 (One)

   D. bypassed condition.
      2 (Two)

SRO 89

Unit 2 confirmed a Steam Generator Tube Leak (SGTL) of 0.15 gallons per minute.

Assuming the leak remains constant as the down power progresses, which ONE of the following radiation monitors:

1) will trend lower in relationship to the initial reading as the unit is down powered.

AND

2) Which ONE of the following is the basis for the shutdown in accordance with 2-AOP-08.02, "Steam Generator Tube Leak".

A. 1) Condenser Air Ejector
   2) If the plant is not shutdown, a tube leak of this magnitude will result in 1 hour dose at the site boundary exceeding 10 CFR 50.67 limits

B. 1) Condenser Air Ejector
   2) A plant shutdown is performed to reduce the likelihood of a SGTL propagating to a SGTR due to high differential pressure across the tube in the event of a main steam line break.

C. 1) Main Steam Line
   2) A plant shutdown is performed to reduce the likelihood of a SGTL propagating to a SGTR due to high differential pressure across the tube in the event of a main steam line break.

D. 1) Main Steam Line
   2) If the plant is not shutdown, a tube leak of this magnitude will result in 1 hour dose at the site boundary exceeding 10 CFR 50.67 limits

SRO 90

Unit 1 entered Mode 3 at 0200 on 2/1/11 from a 40 day refueling outage. 1-OSP-09.01C, '1C AFW Pump Code Run' is being performed. At 0400 on 2/1/11 the 1C AFW pump was started and the following annunciator comes in and stays locked in:

1C AFW Pump Turbine Failure/Trip/ SS Isol G-46

Control board indication for MV-08-3, 1C AFW Pump Throttle/Trip indicates dual position.

Which ONE of the following states:

1. The cause of the above alarm.
2. The time to complete the surveillance on the1C AFW pump IAW the AFW Tech. Specs.

A. 1. Mechanical overspeed trip
   2. The 1C AFW pump surveillance must be satisfactorily completed by 0200 on 2/2/11.

B. 1. Mechanical overspeed trip
   2. The 1C AFW pump surveillance must be satisfactorily completed by 0400 on 2/2/11.

C. 1. Electrical overspeed trip
   2. The 1C AFW pump surveillance must be satisfactorily completed by 0200 on 2/2/11.

D. 1. Electrical overspeed trip
   2. The 1C AFW pump surveillance must be satisfactorily completed by 0400 on 2/2/11.

SRO 91

Unit 1 is at 100% power.

The power supply to Channel 'A' ESFAS cabinet has de-energized.

How many ADDITIONAL channels to ACTUATE **RAS** and what is the Technical Specifications associated with RWT level Channel 'A'?

A. 1 (One) If operability can not be restored within 48 hours, be in at least HOT STANDBY within 6 hours.

B. 2 (Two) If operability can not be restored within 48 hours, be in at least HOT STANDBY within 6 hours.

C. 1 (One) If operability can not be restored within 48 hours, then place the inoperable channel in the tripped condition.

D. 2 (Two) If operability can not be restored within 48 hours, then place the inoperable channel in the tripped condition.

SRO 92

Unit 1 is at 100% power. The crew has entered 1-AOP-08.02, "Steam Generator Tube Leak". and has been logging the following secondary radiation monitor readings every 15 minutes.

	0105	0120	0135
Blowdown	A S/G 490 cpm B S/G 120 cpm	A S/G 980 cpm B S/G 125 cpm	A S/G 1420 cpm B S/G 125 cpm
Air Ejector	60 cpm	410 cpm	720 cpm

IAW 1-AOP-08.02, 'Steam Generator Tube Leak', based on the above readings, which ONE of the following states when the initial entry conditions are met for:

1) 1-AOP-22.01, 'Rapid Downpower'

AND

2) The time to be in Mode 3 IAW Tech Specs

(references provided)

A. 1) 0135
   2) 0735

B. 1) 0120
   2) 0735

C 1) 0120
   2) 0420

D 1) 0135
   2) 0435

SRO 93

Both Units are at 100% power. The Discharge canal level is 14.9 feet and rising. **ALL** Circulating water pump discharge valves are throttled to 30% open. Discharge canal level has continued to rise to 15.5 feet.

IAW 1-AOP-21.01, 'Circulating Water System' which ONE of the following states the required actions and reportability requirements, if any?

A. Continue to throttle Circulating Water pump discharge valves to maintain discharge canal level less than 15.5 feet. Not reportable.

B. Continue to throttle Circulating Water pump discharge valves to maintain discharge canal level less than 15.5 feet. Reportable.

C. Stop Circulating Water pumps as necessary to maintain discharge canal level less than 15.5 feet. Reportable.

D. Stop Circulating Water pumps as necessary to maintain discharge canal level less than 15.5 feet. Not reportable.

SRO 94

In accordance with 3200090, "Refueling Operations", during Fuel movement, which ONE of the following states the SRO responsibilities and required locations, including the location of the designated Refueling Supervisor.

A. One SRO designated as the **Refueling Supervisor** shall be in the area designated as the Refueling Center, controlling all refueling operations.

   A separate SRO shall be in the Spent Fuel Pool to supervise fuel movement.

B. One SRO designated as the **Refueling Supervisor** shall be on the refueling machine controlling all refueling operations.

   A separate SRO shall be in the Spent Fuel Pool to supervise fuel movement.

C. One SRO designated as the **Refueling Supervisor** shall be in the area designated as the Refueling Center, controlling all refueling operations.

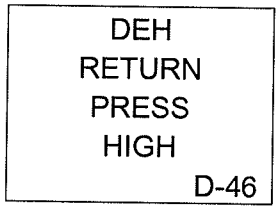
   A separate SRO shall be on the refueling machine.

D. One SRO designated as the **Refueling Supervisor** controlling all refueling operations, shall be on the refueling machine.

   A separate SRO shall be in the area designated as the Refueling Center.

SRO 95

Unit 1 is operating at 100% power. The following annunciator has alarmed 10 times in the past eight hours.



Investigation has determined pressure switch PS-22-118 is defective.

The annunciator has been declared "Out-of-Service" and annotated with a "X" yellow mylar at 0100 on 1/14/11. It is now 0200, 1/21/11.

Which ONE of the following states:

1. The procedure used to track the configuration of the "Out-of-Service" annunciator on 1/14/11

2. The procedure used to track the configuration of the "Out-of-Service" annunciator on 1/21/11

A. 1) ADM-09.03, 'Administrative Control of Defeated Annunciators'
2) ADM-17.18, 'Temporary System Alteration'.

B. 1) ADM-17.18, 'Temporary System Alteration'.
2) ADM-09.03, 'Administrative Control of Defeated Annunciators'

C. 1) ADM-17.18, 'Temporary System Alteration'.
2) ADM-17.18, 'Temporary System Alteration'.

D. 1) ADM-09.03, 'Administrative Control of Defeated Annunciators'
2) ADM-09.03, 'Administrative Control of Defeated Annunciators'

SRO 96

Unit 1 is at 100% power

The 1A Emergency Diesel Generator (EDG) is to be taken out of service for pre-planned maintenance (lube oil filter change) and to repair a minor oil leak on the lube oil filter.

1) In accordance with 1-OSP-59.01A, "1A Emergency Diesel Generator Monthly Surveillance" which ONE of the following states the equipment required to be verified operable prior to removing the 1A Diesel from service?

2) In accordance with ADM-78.01, "Post Maintenance Testing" which ONE of the following states the Post Maintenance Testing required to return the Diesel to service?

   A. 1) The 1B and 1C AFW pumps. Off site power source. Gravity feeds and the RWT to the Charging pumps.
      2) Local Idle start, synchronization and load test and external leakage check.

   B. 1) The 1B and 1C AFW pumps. Off site power source. Gravity feeds and the RWT to the Charging pumps.
      2) Local Idle start ONLY.

   C. 1) The 1B EDG and 1C AFW pump. BAM pumps and Emergency borate valve.
      2) Local Idle start, synchronization and load test and external leakage check.

   D. 1) The 1B EDG and 1C AFW pump. BAM pumps and Emergency borate valve.
      2) Local Idle start ONLY.

SRO 97

In accordance with 1-GOP-365 "Refueling Operations", to begin core alterations on Unit 1, Reactor Vessel and Spent Fuel Storage Pool minimum water level must be:

1) 23 feet above the _____.

2) The basis for this minimum water level is to ensure_____.

A. 1) top of the reactor vessel flange
   2) that sufficient water depth is available to remove 99% of the assumed 10% iodine gap activity released from the rupture of an irradiated fuel assembly

B. 1) top of the reactor vessel flange
   2) a large heat sink for core cooling exists in the event of a failure of a Shutdown Cooling Loop

C. 1) top of irradiated fuel assemblies seated in the reactor pressure vessel
   2) a large heat sink for core cooling exists in the event of a failure of a Shutdown Cooling Loop

D. 1) top of irradiated fuel assemblies seated in the reactor pressure vessel
   2) that sufficient water depth is available to remove 99% of the assumed 10% iodine gap activity released from the rupture of an irradiated fuel assembly

SRO 98

Unit 1 has experienced a Large Break LOCA with fuel failure. RAS has just actuated.

The TSC and EOF are fully operational.

In an attempt to exit the safeguards room an Operator has been injured. His injuries are not life threatening but he cannot exit this area without assistance. The general dose in this area is 20 R/Hr

IAW EPIP-02, 'Duties And Responsibilities Of The Emergency Coordinator', what is the MAXIMUM time the Emergency Response individual has to rescue the injured Operator without exceeding the exposure limits (Total Dose) and who is required to authorize this rescue?

A. 15 minutes, Emergency Coordinator

B. 30 minutes, Emergency Coordinator

C. 15 minutes, Recovery Manager

D. 30 minutes, Recovery Manager

SRO 99

Unit 1 is in 1-EOP-15, "Functional Recovery".

Based on the below Safety Function Status Check Sheet, which ONE of the following states the continued procedure implementation?

SAFETY FUNCTION	SUCCESS PATH			
	time	0015	0030	0045
Reactivity control	RC-1 CEA Insertion	X	X	X
	RC-2 Boration via CVCS			
	RC-3 Boration via SIAS			
Maint. Of Vital Aux – DC	MVA – DC – 1 Batteries/Charger	X	X	X
Maint. Of Vital Aux – AC	MVA – AC – 1 Startup Transformers			
	MVA – AC – 2 EDG's	X	X	X
	MVA – AC – 3 Unit Crosstie			
RCS Inventory Control	IC – 1 CVCS			
	IC – 2 Safety Injection	X	O	O
RCS Pressure Control	PC - 1 Subcooled Controlled			
	PC – 2 PORV's / Pzr Vent			
	PC – 3 Saturated Control	X	O	O
RCS & Core Heat	HR – 1 S/G Without SIAS			
	HR – 2 S/G With SIAS	X	O	O
	HR – 3 Once Through Cooling			
Containment Isol	CI – 1 Automatic / Manual Isol	O	X	O
Cntmt Press & Temp	CTPC – 1 Normal Cntmt Fans			
	CTPC – 2 Cntmt Coolers			
	CTPC – 3 Cntmt Spray	X	X	X
Cntmt Comb Gas	CCGC – 1 Hydrogen <3.5%	X	X	X
	CCGC – 2 Hydrogen >3.5%			

O Not Met X Met

A. At time 0030 implement Severe Accident Management Guidelines and continue implementing 1-EOP-15.

B. At time 0030 exit 1-EOP-15 and implement Severe Accident Management Guidelines.

C. At time 0045 exit 1-EOP-15 and implement Severe Accident Management Guidelines.

D. At time 0045 implement Severe Accident Management Guidelines and continue implementing 1-EOP-15.

SRO 100

Unit 1 has declared a General Emergency. In addition, a LOOP is occurring. Off-Site Dose Calculations are being performed. The following meteorological data has been collected:

- 10 Meter wind direction is 170
- 57.9 Meter wind direction is 168

The following 1A Main Steam Line monitor readings were taken:

- Reading prior to event: $5x10^{-2}$ mr/hr
- Current reading $3x10^{1}$ mr/hr

1) Which ONE of the following sectors will be included in the protective action recommendations?
2) Determine if a release is occurring

Wind From	Sectors Affected	Wind From	Sectors Affected	Wind From	Sectors Affected
348-11	HLK	123-146	PQR	236-258	CDE
11-33	JKL	146-168	QRA	258-281	DEF
33-56	KLM	168-191	RAB	281-303	EFG
56-78	LMN	191-213	ABC	303-326	FGH
78-101	MNP	213-236	BCD	326-348	GHU
101-123	NPQ	There is no "0" sector		There is no "I" sector	

A. 1) QRAB
   2) A release IS occurring

B. 1) RAB
   2) A release IS occurring

C 1) QRAB
   2) A release IS NOT occurring

D. 1) RAB
   2) A release IS NOT occurring

DAILY CHEMISTRY REPORT

ST. LUCIE UNIT # 1

PRIMARY CHEMISTRY

DATE: 3/3/2011

	REACTOR COOLANT SYSTEM								
Parameter	Boron	Lithium	Chloride	Fluoride	Oxygen	Gross Act.	DEQ	Hydrogen	Surge Boron
Units	ppm	ppm	ppb	ppb	ppb	uci/ml	uci/ml	cc/kg	ppm
Limits	See COP-05.04 for limits								
Result	431	1.69	0.67	< 0.50	< 5	1.43E-01	1.88E-04	43.32	433
Date	3/3/2011	3/3/2011	3/2/2011	3/2/2011	3/2/2011	3/2/2011	3/2/2011	3/2/2011	3/2/2011

RCS Boron Sample Time: 0:00 I-131 = 8.82E-05 I-134 = 2.17E-03 Iodine Sample Date: 3/2/2011
Chg. Pmp. 1

	RWST		SFP		BAMT'S		SIT'S			
Parameter	Boron	Silica	Boron	Silica	A Boron	B Boron	1A1	1A2	1B1	1B2
Units	ppm	ppb	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm
Limits	See COP-05.04 for limits									
Result	2079	17431	2359	29012	5750	5628	2091	2042	2004	1953
Date	2/27/2011	2/6/2011	3/1/2011	2/4/2011	2/28/2011	2/28/2011	2/17/2011	2/17/2011	2/17/2011	2/17/2011
Time	8:50 PM						7:42 AM	7:42 AM	7:42 AM	7:42 AM

SECONDARY CHEMISTRY

	STEAM GENERATORS						
Parameter	Chloride	Fluoride	Sulfate	Cation Conductivity	Sodium	Gross Act	B/D Rate
Units	ppb	ppb	ppb	umhos/cm	ppb	uci/ml	GPM
Limits	See COP-05.04 for limits						
1A Result	1.26	0.14	0.26	0.21	0.50	< 2.190E-06	120
Date	3/3/2011	3/3/2011	3/3/2011	3/3/2011	3/3/2011	3/3/2011	3/3/2011
1B Result	1.15	0.17	0.24	0.22	0.44	< 2.19E-06	120
Date	3/3/2011	3/3/2011	3/3/2011	3/3/2011	3/3/2011	3/3/2011	3/3/2011

	CONDENSATE		FEED			
Parameter	Cation Conductivity	Diss. O2	pH	Ammonia	Iron	Copper
Units	umhos/cm	ppb		ppm	ppb	ppb
Limits	See COP-05.04 for limits					
Result	0.21	7.40	9.86	6.10	1.21	0.020
Date	3/3/2011	3/3/2011	3/3/2011	3/3/2011	3/1/2011	3/1/2011

Unit 1 Projected Steam Generator Leak Rate Calculations

Using the Air Ejector Monitor

Leakrate	Projected Reading	
5 gpd =	47	cpm
30 gpd =	156	cpm
75 gpd =	353	cpm
150 gpd =	682	cpm
1 GPM =	6331	cpm
Current =	<1	gpd

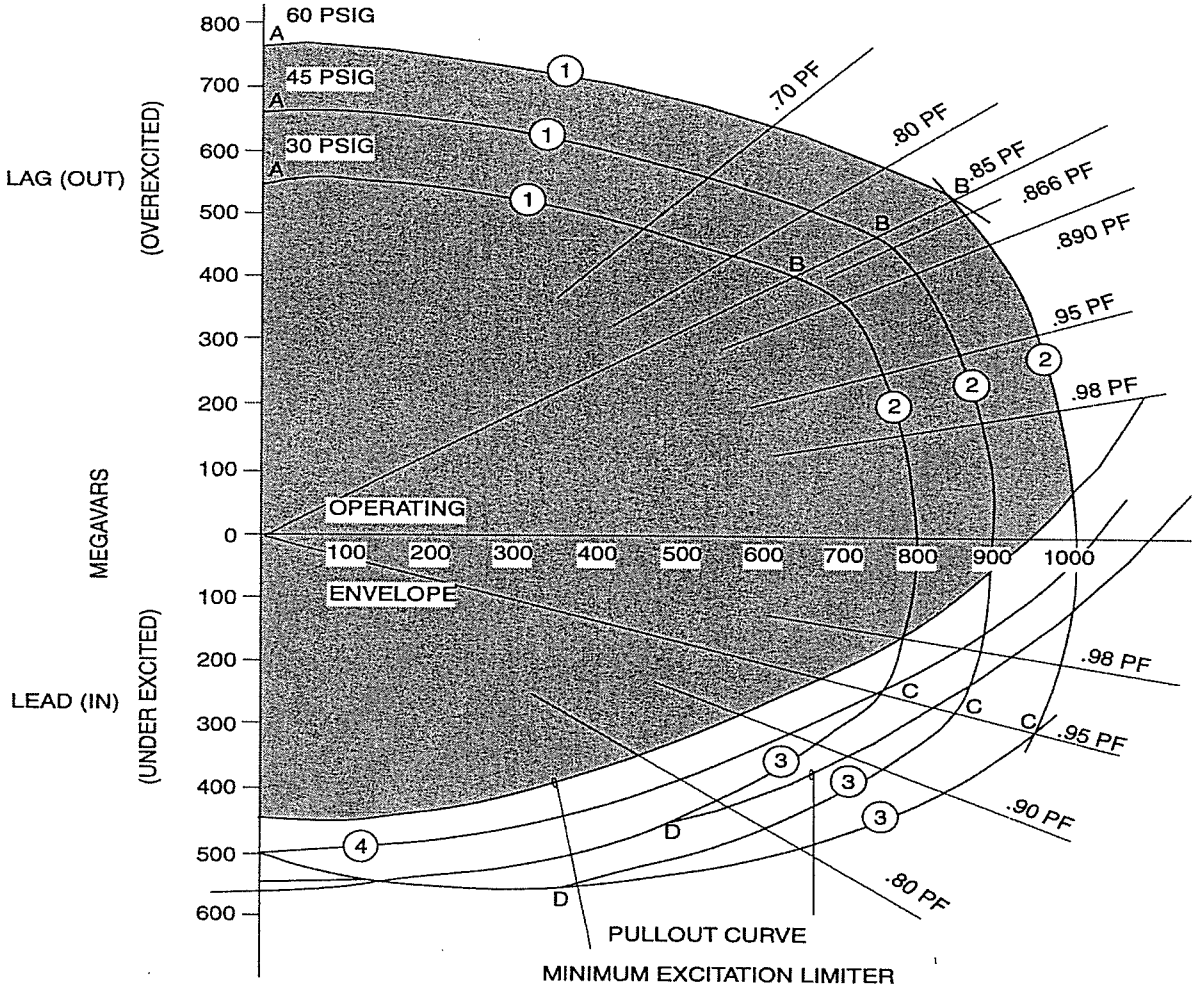
Air Ejector Set Point Basis:
Alert: 2X Average Background
High: 3X Average Background

Using the Blow Down Monitors

Leakrate	Projected Reading		
	A S/G	B S/G	
5 gpd =	482	520	cpm
30 gpd =	639	871	cpm
75 gpd =	923	1502	cpm
150 gpd =	1397	2554	cpm
1 GPM =	9541	20651	cpm
Current =	<1	<1	gpd

Blow Down Set Point Basis:
Alert: 2X Average Background

GENERATOR CAPABILITY CURVE



HYDROGEN INNER-COOLED TURBINE GENERATOR
CALCULATED CAPABILITY CURVE
1000 MVA .85 PF 60 PSIG H_2

(CURVE ①) ROTOR HEATING (158 EXCITER FIELD AMPS)

(CURVE ②) STATOR HEATING (2 6 2 4 3 GENERATOR AMPS)

(CURVE ③) STATOR CORE HEATING (END PLATES)

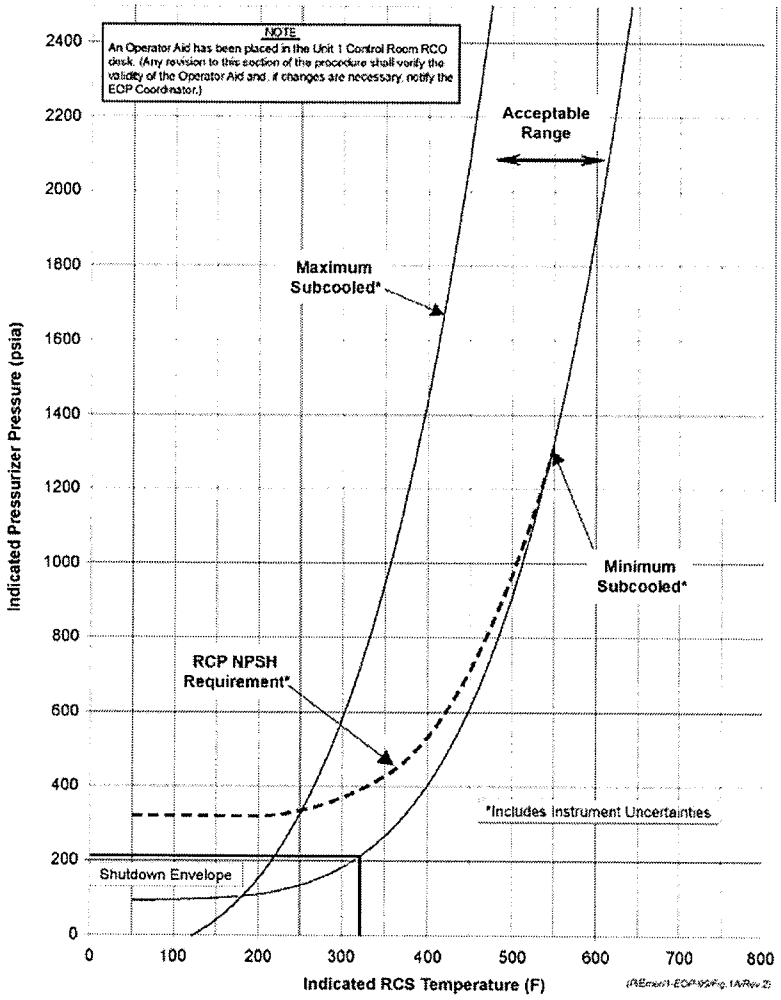
(CURVE ④) LOSS OF FIELD RELAY

FIGURE 1A
RCS PRESSURE TEMPERATURE
(Page 1 of 1)

(Containment Temperature Less Than or Equal to 200°F)

CAUTION

The RCP NPSH curve assumes one pump is operating in each loop. RCP instrumentation should be monitored for seal and pump performance in accordance with 1-EOP-99, Table 13.



RCS Pressure Range	Required QSPDS Subcooled Margin Reading (Rep CET)
2250 psia to 1000 psia	40 to 180°F
1000 psia to 500 psia	50 to 170°F
Less than 500 psia	80 to 160°F

FIGURE 1B
RCS PRESSURE TEMPERATURE
(Page 1 of 1)

(Containment Temperature Greater Than 200°F)

CAUTION

The RCP NPSH curve assumes one pump is operating in each loop. RCP instrumentation should be monitored for seal and pump performance in accordance with 1-EOP-99, Table 13.

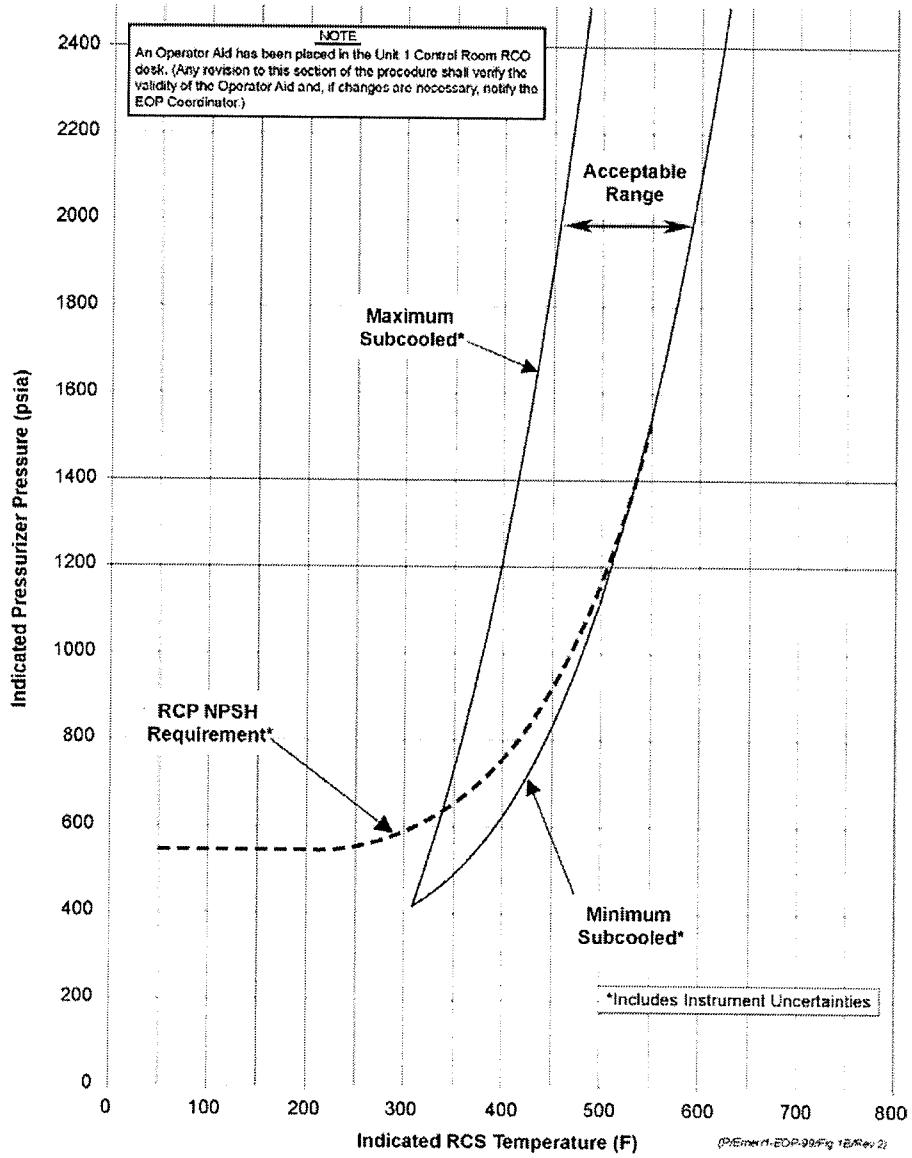
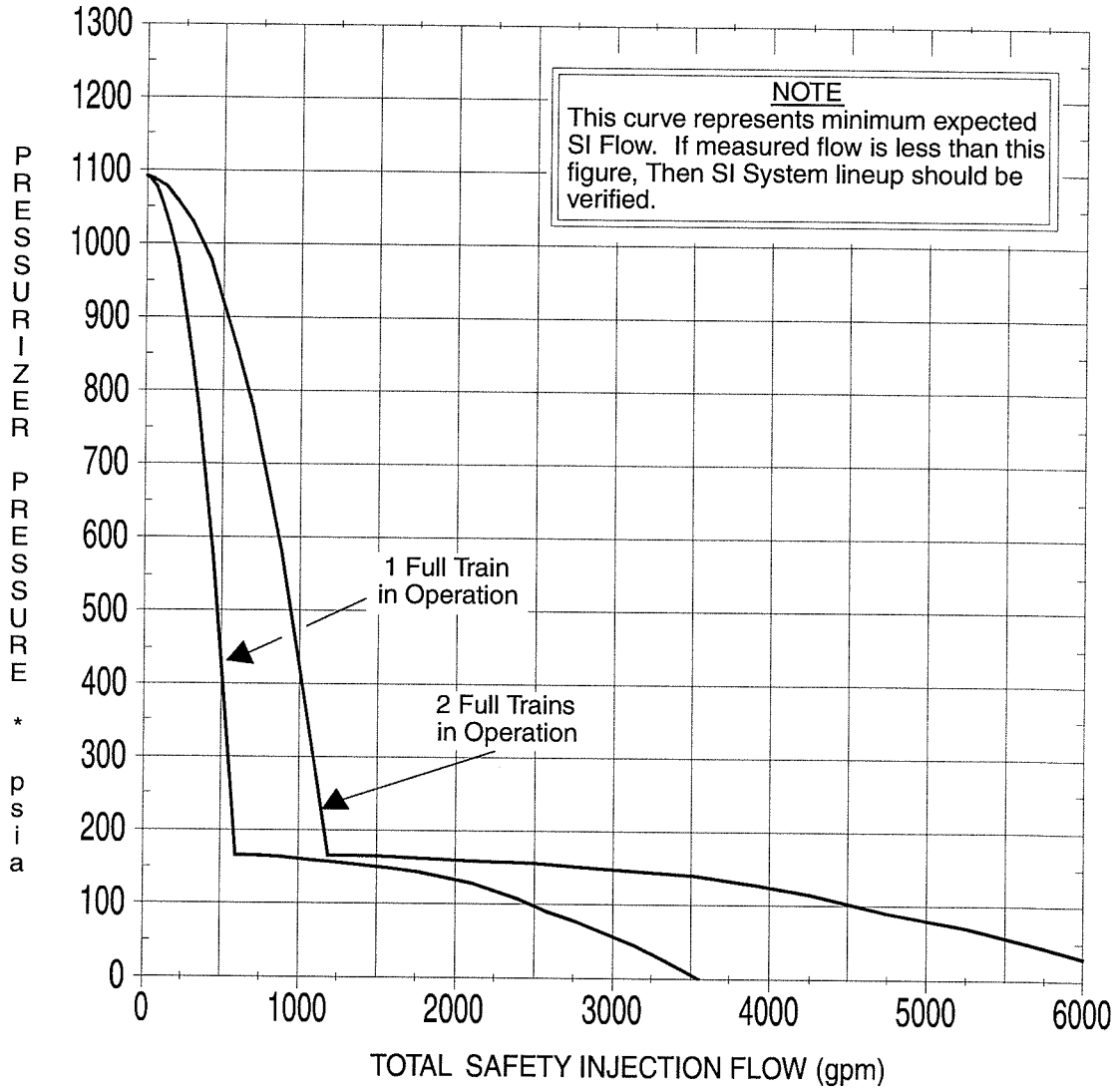
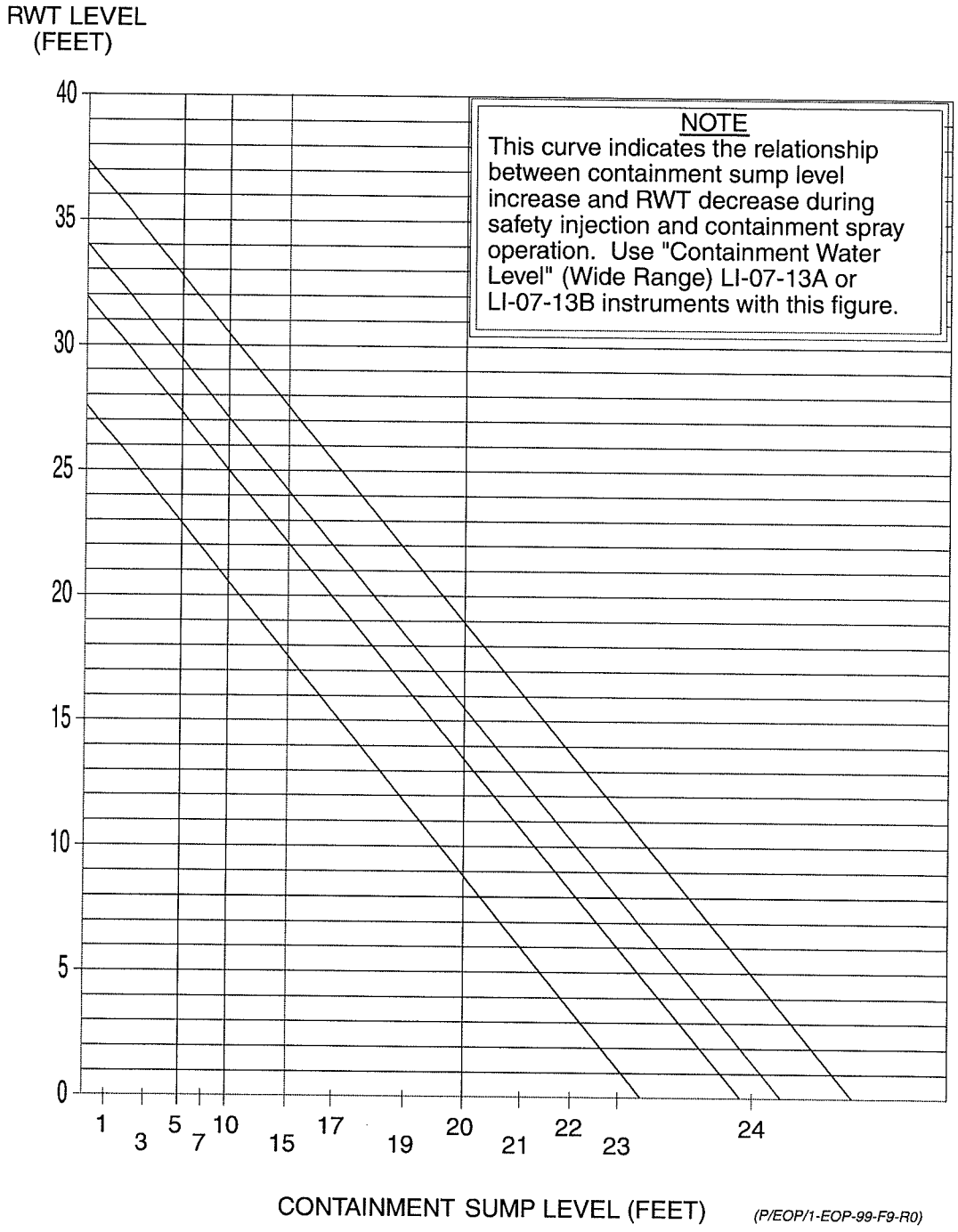


FIGURE 2
SAFETY INJECTION FLOW VS. RCS PRESSURE
(Page 1 of 1)



(P/EOP/1-EOP-99-F2-R0)

FIGURE 9
RWT LEVEL VS. CONTAINMENT SUMP LEVEL
(Page 1 of 1)



(P/EOP/1-EOP-99-F9-R0)

St. Lucie 2011-301 SRO additional references:

EPIP-01 F01 St. Lucie Plant Classification Tool Hot Conditions
Steam Tables

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Question	Answer
1.	B
2.	C
3.	C
4.	B
5.	D
6.	D
7.	D
8.	B
9.	C
10.	D
11.	D
12.	D
13.	D
14.	D
15.	C
16.	A
17.	D
18.	B
19.	A
20.	B
21.	D
22.	A
23.	A
24.	B
25.	D
26.	A
27.	A
28.	D
29.	D
30.	A
31.	B
32.	C
33.	A
34.	C
35.	C
36.	A
37.	D
38.	C
39.	D
40.	C
41.	C
42.	D
43.	B

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44.	A							
45.	B							
46.	B							
47.	C							
48.	C							
49.	A							
50.	A							
51.	C							
52.	B							
53.	B							
54.	B							
55.	D							
56.	C							
57.	A							
58.	C							
59.	B							
60.	C							
61.	A							
62.	C							
63.	A							
64.	D							
65.	A							
66.	B							
67.	C							
68.	A							
69.	B							
70.	A							
71.	A							
72.	C							
73.	A							
74.	D							
75.	A							
Final RO score								

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SRO Exam

76.	C							
77.	D							
78.	A							
79.	C							
80.	D							
81.	D							
82.	D							
83.	A							
84.	D							
85.	A							
86.	B							
87.	B							
88.	C							
89.	C							
90.	A							
91.	B							
92.	B							
93.	C							
94.	B							
95	A							
96.	A							
97.	D							
98.	B							
99.	D							
100.	B							
Final Score SRO								
Final Score Total								