U.S. Nuclear Regulatory Commission
Site-Specific
SRO Written Examination

Applicant Information

Name:	
Date:	Facility/Unit: Farley
Region: II	Reactor Type: Westinghouse
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 a 70.00 percent or better on the SRO-only items if given in conjunction with the RO exam; SRO-only exams given alone require an 80.00 percent to pass. You have eight hours to complete the combined examination, and three 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

1.

The plant is operating at 95% steady-state power. The crew has been requested to perform an RCS leakage test per STP-9.0, RCS Leakage Test, due to a suspected leak.

The following events occur:

Time 0800	- The OATC verifies reactor power, RCS temperature, pressurizer pressure and level stable.
Time 0840	- The OATC verifies the reactor makeup control system is in automatic. - Chemistry department is notified of the performance of STP-9.0.
Time 0845:	- The Shift Chemist secures from taking a primary sample. - The OATC verifies VCT level is at 40%.
Time 0900	- Operators commence taking data for STP-9.0.
Time 0930	- Shift Chemist performs a DF on the in service CVCS demineralizer.
Time 0940	- The OATC completes a 15 gal boration through the boric acid blender.
Time 0945	- The operators secure from taking STP-9.0 data.

After completion of the test, the shift supervisor states that the surveillance is inaccurate.

Which ONE of the following caused STP-9.0 to be inaccurate?

A. A primary sample was taken 15 minutes prior to the start of the surveillance.

B. Shift Chemist performance of the DF on the in service CVCS demineralizer.

C. A boration was performed during the surveillance.

D. Data was only taken for 45 minutes.

A - Incorrect; Primary samples taken prior to the performance of the STP will not affect the test. It must be verified that Reactor power and Reactor coolant temperature are constant 1 hour prior to the test.

B - Correct; No sampling of the RCS or CVCS shall be performed.

C - Incorrect; A boration of less than 10 gals will invalidate this test due to inaccuracies. This boration was in excess of 10 gals and flow was through the boric acid blender only five minutes before data taking was securred. Five minutes is of short enough duration that the subsequent power/temperature change will not invalidate the data.

D - Incorrect; It is preferred that data is taken for 1 hour but in any case at least 30 minutes.

2.

Given the following trends on the 1A RCP:

Parameter TIME	0200	0230	0300	0330
Motor winding temp (°F)	312	315	320	324
Pump shaft vibration (mils):	12	13	14	15
Pump frame vibration (mils):	3	4	5	5
#1 seal DP (psid):	212	223	223	235
#1 seal outlet temp (°F)	201	220	236	240
Lower seal water BRG temp (°F)	195	200	205	210
Motor lower radial BRG temp(°F)	167	188	195	198
Motor upper radial BRG temp(°F)	167	188	195	198

What is the earliest time that the operators are required to trip 1A RCP?

A. 0200

B. 0230

C. 0300

D. 0330

Source: Modified from Farley Bank Questions #RCP-40301D08 007 and #RCP-40301D11 016

A - Incorrect; Temps do not exceed setpoints (225°F for #1 seal outlet temp) and Vibs are still low enough to remain operating.

B - Inorrect; Vibs are still low enough to remain operating.

C - Correct; Vibs per above will call for a reactor trip and turn off the pump.

Annunciator HH4

7.1 IF FRAME VIBRATION HAS REACHED 5 MILS AND THE RATE OF INCREASE EXCEEDS 0.2 MIL PER HOUR, THEN PERFORM THE FOLLOWING:

7.1.1 TRIP THE REACTOR

7.1.2 STOP THE AFFECTED RCP

D - Incorrect; This is not the earliest time but is the time to trip due to shaft vibration.

3.

The reactor is at 85% power with all systems operating normally. Control bank D is at 225 steps. Control rod H6 rod bottom light energizes, and annunciator FE3, ROD AT BOTTOM, alarms; the reactor does not trip. Reactor power is currently at 78%.

Which ONE of the following describes the required actions that should be taken in response to this event?

A. Reduce turbine load as necessary to match T_{avg} with T_{ref}.

B. Attempt to match T_{avg} with T_{ref} using manual rod control.

C. Enter AOP-19, Malfunction of Rod Control System, and trip the reactor.

D. Increase boron concentration to match T_{avg} with T_{ref}.

Source: Modified from Farley Exam Bank Question #AOP-19.0-52520S02 002
Ref: AOP-19.0

A - Correct; IAW AOP-19.0 Steps 1-5

B - Incorrect; Manual rod control is not recognized as an option for returning Tavg to Tref.

C - Incorrect; This is the answer before the change to AOP-19. This is still the answer for multiple dropped rods.

D - Incorrect; Increasing boron concentration would increase the deviation between Tavg and Tref. The RCS should be diluted.

4.

Unit 1 is operating at power, '1A' BAT is "on-service" and '1B' BAT is on "RECIRC". VCT level has lowered over time as expected due to RCS inventory losses and has reached the auto makeup setpoint. An auto makeup to the VCT has started.

Which ONE of the following correctly lists the pump(s) which will be started in response to the auto makeup signal?

A. 1B reactor makeup water pump and 1A boric acid pump will start

B. 1B reactor makeup water pump only, 1B boric acid pump is already running

C. 1A reactor makeup pump and 1A boric acid pump will start

D. 1A reactor makeup water pump only, 1B boric acid pump is already running

Source: Farley Question Bank Question #RXM/U-40301G07

A - Correct; Per OPS-52101G the 1B makeup water pump starts on auto makeup signal and the 1A 'on-service' BAT pump will start.

B - Incorrect; 1A BAT pump start circuitry is independent of the other BAT pump run circuitry.

C - Incorrect, The 1A makeup water pump does not start on auto makeup to the VCT, it starts on the manual, dilute and alt dilute.

D - Incorrect; The 1A makeup water pump does not start on auto makeup to the VCT, it starts on the manual, dilute and alt dilute. 1A BAT pump start circuitry is independent of the other BAT pump run circuitry.

5.

Which ONE of the following explains the bases for controlling the volume control tank (VCT) pressure with hydrogen when the plant is at power?

A. To provide adequate suction pressure during multiple charging pump starts.

B. To provide adequate charging pump recirculation backpressure during normal operations.

C. To ensure proper coolant flow across RCP seal #2.

D. Ensures hydrogen concentration in the RCS is controlled for oxygen scavenging.

Source: Farley Exam Bank Question #CVCS-40301F02 021

A - Incorrect; The minimum volume in the VCT provides adequate suction pressure for the charging pumps the pressure requirement is for seal flow and Oxygen control.

B - Incorrect; The charging pump miniflow recirculation lines which return to the VCT contain orifices to provide back pressure.

C - Incorrect; This is the reason that the VCT is controlled at a minimum of 18 psig but not the reason for using Hydrogen.

D - Correct; During plant startup from a cold shutdown condition, hydrazine is added as an oxygen scavenging agent. Hydrazine is not used at any time other than startup from the cold shutdown condition. The hydrazine solution enters the RCS in the same manner as LiOH. In order to control and scavenge oxygen produced by radiolysis of water in the core region, hydrogen from the waste processing system is added to the VCT to maintain a hydrogen concentration of 25 to 50 cc/kg of reactor coolant. A pressure regulating valve maintains a minimum pressure of 18 to 20 psig in the vapor space of the VCT and can be adjusted to provide the correct hydrogen concentration.

6.

Given the following:

- Unit 1 is operating at 100% power.
- Unit 2 has experienced a loss of site power (LOSP) while in mode 5.

Which ONE of the following describes the power that the 2A and 2B RHR pumps will be supplied from?

(Assume all systems and components operate properly.)

A. RHR pump 2A: 1-2A Diesel Generator through the 2F 4160 Volt bus.
RHR pump 2B: 2B Diesel Generator through the 2G 4160 Volt bus.

B. RHR pump 2A: 1-2A Diesel Generator through the 2G 4160 Volt bus.
RHR pump 2B: 2B Diesel Generator through the 2F 4160 Volt bus.

C. RHR pump 2A: 2B Diesel Generator through the 2G 4160 Volt bus.
RHR pump 2B: 1-2 A Diesel Generator through the 2F 4160 Volt bus.

D. RHR pump 2A: 2B Diesel Generator through the 2F 4160 Volt bus.
RHR pump 2B: 1-2A Diesel Generator through the 2G 4160 Volt bus.

Source: Modified from Farley Test Bank Question #RHR-40301K06

OPS 40301K - A pump is the A train pump

Bus	Normal	Alternate	Emergency
4160V Bus F	S/U Xfmr 1(2)A	S/U Xfmr 1(2)B	1/2A Diesel Gen
4160V Bus G	S/U Xfmr 1(2)B	S/U Xfmr 1(2)A	1(2)B Diesel Gen

A. Correct - The 1-2A DG will start and align to the 2F 4160V bus and 2B DG will start and align to the 2G 4160V bus.

B. Incorrect - The 1-2A DG will start but does not align to the 2G 4160V bus and 2B DG will start but does not align to the 2F 4160V bus. (Correct DG, Wrong bus)

C. Incorrect - The 1-2A DG will start but does not align to the 2G 4160V bus and RHR pump 2A is not powered from the 2G 4160Vbus; and 2B DG will start but does not align to the 2G 4160V bus and RHR pump 2B is not powered from the 2F 4160V bus. (Wrong DG, Wrong bus)

D. Incorrect - The 1-2A DG will start but does not align to the 2G 4160V bus altough, RHR pump 2B is powered from the 2G 4160Vbus; and 2B DG will start but does not align to the 2F 4160V bus although, RHR pump 2A is powered from the 2F 4160V bus. (Wrong DG, Correct bus)

7.

Unit 1 has just completed a shutdown to Mode 5 with both trains of RHR in service. The operators are in the process of placing the 'B' train RHR in standby.

- 'A' train RHR flow has been increased from 1500 gpm to 2300 gpm on the discharge of 'A' train RHR pump.
- 'B' train RHR flow has been decreased from 1500 gpm to 900 gpm on the discharge of 'B' train RHR pump.
- The RHR miniflow valve controls are in the 'AUTO' position.

Which ONE of the following describes the position of the RHR miniflow control valves?

	FCV-602A	FCV-602B
A.	CLOSED	CLOSED
B.	OPEN	CLOSED
C.	CLOSED	OPEN
D.	OPEN	OPEN

A - Correct; For Unit 1 the RHR miniflow valves do not go OPEN until RHR pump discharge flow decreases below 750 gpm and are CLOSED when RHR pump discharge flow is above 1399 gpm. With both pumps initially being above 1399 gpm and not yet less than 750 gpm, both FCV-602A & B will be CLOSED.

B - Incorrect; For Unit 1 the RHR miniflow valves do not go OPEN until RHR pump discharge flow decreases below 750 gpm.

C - Incorrect; Correct for Unit 2, the RHR miniflow valves go OPEN when RHR pump discharge flow decreases below 1334 gpm and are CLOSED when RHR pump discharge flow is above 2199 gpm.

D- Incorrect; Correct if thought that valves were controlled off of total RHR flow.

8.

Unit 1 has experienced a large break LOCA inside containment. All the recirculation valve disconnects are closed per EEP-1, Loss of Reactor or Secondary Coolant, except for the 1B accumulator discharge isolation valve. The disconnect for it is damaged and cannot be closed.

Which ONE of the following actions should the operator take with respect to the accumulators and why?

A. When accumulator isolation is directed by procedure, isolate 1A and 1C accumulators and vent the 1B accumulator to prevent adding more cold water to the reactor vessel and increasing the possibility of thermal stress.

B. When accumulator isolation is directed by procedure, isolate 1A and 1C accumulators and vent the 1B accumulator to limit the amount of nitrogen injected into the loops that could accumulate at system high points, potentially resulting in a "hard" bubble in the pressurizer.

C. Immediately vent the 1B accumulator to limit the amount of nitrogen injected into the loops that could accumulate at system high points, potentially resulting in a "hard" bubble in the pressurizer.

D. Immediately vent the 1B accumulator to prevent the possibility of gas binding of Reactor Coolant Pumps when subsequently started.

Source: Modified from Farley Bank Question #EEp-1-52530B07 and #ESP-1.2-52531F03

A - Incorrect; Correct action for the wrong reason, the reason given is why not to inject accumulators during a PTS condition.

B - Correct; Per OPS-52530C Page 23

C - Incorrect; The accumulator would not be vented until directed by procedure ESP-1.2, Step 27.4 RNO.

D - Incorrect; Incorrect reason for venting the accumulator.

9.

Given the following:

- ECP-0.0, "Loss of All AC Power", has the operator verify the RCS is isolated by verifying HV-8149A, HV-8149B, and HV-8149C, letdown isolation valves, are closed.

- The RNO is to check HV-8175A and HV-8175B, letdown line penetration room isolation valves.

Which ONE of the following is the reason HV-8149A, B, and C are checked preferentially to HV-8175A and HV-8175B?

A. Keeps the loss of coolant accident inside containment.

B. Prevents flashing in the regenerative heat exchanger.

C. Prevents RCS flow to the PRT via the letdown relief line.

D. To prevent inadvertant closure of LCV-459 and 460.

Source: Farley Exam Bank Question #EC-0.0/.1.2-52532A08 008

Reference: ECP-0.0

A - Incorrect; a loss of coolant due to a loss of all AC power would be from the RCP seals and letdown isolation does not impact the seal failure.

B - Incorrect; both the 8149 or 8175 valves would stop flashing in the heat exchanger.

C - Correct; the reason for isolating letdown is to conserve inventory in the RCS.

D - Incorrect; closing either set of valves would not close LCV-459 and 460.

10.

A leak has developed in the 'A' RCP thermal barrier heat exchanger. CCW train 'A' is the in service train.

Which ONE of the following describes the correct sequence of events that would occur with no operator involvement?

A. AA4 (AB4), CCW SRG TK LVL A (B) TRN HI-LO, annunciator lit;
DD2, RCP THRM BARR CCW FLOW HI, annunciator lit;
CCW from RCP THRM BARR HX HI FLOW Isolation Valves, HV-3045 and HV-3184 go closed

B. AA4 (AB4), CCW SRG TK LVL A (B) TRN HI-LO, annunciator lit;
HV-3184, RCP THRM BARR HX HI FLOW Isolation Valve, goes closed;
DD2, RCP THRM BARR CCW FLOW HI, annunciator lit;
HV-3045, RCP THRM BARR HX HI FLOW Isolation Valve, goes closed

C. AA4 (AB4), CCW SRG TK LVL A (B) TRN HI-LO annunciator lit;
DD2, RCP THRM BARR CCW FLOW HI, annunciator lit;
HV-3045, RCP THRM BARR HX HI FLOW Isolation Valve, goes closed;
HV-3184, RCP THRM BARR HX HI FLOW Isolation Valve, goes closed;
DD3, CCW FLOW FROM RCP OIL CLRS LO, annunciator lit

D. HV-3184, RCP THRM BARR HX HI FLOW Isolation Valve, goes closed;
AA4 (AB4), CCW SRG TK LVL A (B) TRN HI-LO, annunciator lit

A - Correct; The CCW leak from the higher pressure RCS source into the CCW system causes CCW tank level to increase (AA4); high flow in the CCW line from the RCS fluid causes DD2 to alarm and HV-3045 to shut stopping flow; Pressure increases in CCW pipping and shuts HV-3185 in order to prevent overpressurization of the CCW system. Pressure and flow are sensed on the thermal barrier CCW discharge line. The pressure sensors (PI-3184A, B, and C) signal HV-3184 to shut when pressure increases to 75 psig. Flow element FE-3045 shuts HV-3045 if the flow increases to 160 gpm.

B - Incorrect; Once HV-3184 is closed flow will no longer be going past FE-3045 therefore, DD2 will not alarm if if had not done prior to the closing of HV-3184 and HV-3045 will not get a close signal.

C - Incorrect; The closing of the HV-3045 and HV-3184 does not affect the flow path through the RCP oil cooler.

D - Incorrect; Once HV-3184 goes closed no more fluid is added to the CCW surge tank therefore, if this alarm did not alarm prior to the closing of HV-3184 if will not alarm afterward (unless check valves in the CCW to thermal barrier leak and this would not be a reasonable argument). The thermal barrier check valves shall isolate the CCWS piping upstream of the RCPs from the RCS in the event of a rupture of the reactor coolant pump thermal barrier. On a thermal barrier failure, the check valves shall prevent a pressure transient from propagating to the low pressure piping.

11.

Given the following plant conditions:

- Unit 1 RCS has a stuck open pressurizer safety valve.
- Appropriate Operator response actions have been taken.
- Pressurizer pressure is stable at 1350 psig.
- Containment temperature is 155°F.
- Actual pressurizer level is 50%.

Select the combination below that fills in the following blanks concerning the effects of these conditions on the pressurizer level indicated on level channel 1 (459) indicator.

The affect of pressurizer pressure at 1350 psig will cause the indicated pressurizer level to read **(X)** actual level; the affect of containment temperature at 155°F tends to make the indicated pressurizer level read **(Y)** than actual level.

A. (X) Below; (Y) Higher

B. (X) Below; (Y) Lower

C. (X) Above; (Y) Higher

D. (X) Above; (Y) Lower

REF: Farley Exam Bank #1286, E-0/ESP-0.0-52530A06 011

12.

Unit 2 is in MODE 3 at 547°F and 2235 psig when a fault condition results in the loss of the 2A 4160V bus. In order to stabilize RCS pressure, the RO manually energizes the available backup heaters and attempts to control RCS pressure by manually operating the pressurizer spray valves.

Which ONE of the following statements best describes the required control board actions necessary to stabilize pressure?

A. Loop A spray valve, PK-444C, should be manually closed and loop B spray valve, PK-444D must be used to control pressure.

B. Loop B spray valve, PK-444C, should be manually closed and loop C spray valve, PK-444D, must be used to control pressure.

C. Loop C spray valve, PK-444C, should be manually closed and loop B spray valve, PK-444D, must be used to control pressure.

D. Loop B spray valve, PK-444D, should be manually closed and loop A spray valve, PK-444C, must be used to control pressure.

Source: Farley Test Bank Question #PZR PRS/LVL-52201H11 009

Ref: AOP-4.0

A. Correct
B. Incorrect, Wrong loops referenced for both PK-444C and 444D.
C. Incorrect, Wrong loop referenced for PK-444C.
D. Incorrect, PK-444D used to control pressure. PK-444C is isolated due to loss of 2A RCP.

13.

Which ONE of the following describes why the pressurizer spray valves have a continuous flow design feature?

Provides adequate flow to:

A. maintain variable heater output at a minimum value to prevent heater burnout.

B. maintain the surge line warm to prevent severe thermal shock associated with a pressurizer insurge.

C. prevent PRZR/RCS differential temperature limits from being exceeded.

D. prevent spray nozzle from experiencing severe thermal shock upon initiation of spray flow.

Source: Modified from Farley Exam Bank Question #PZR PRS/LVL-52201H02 003

A - Incorrect; the continuous spray flow of 0.5 gpm per spray valve does not provide adequate flow, procedures have been modified to ensure adequate spray flow is provided for this by the energizing of Pzr heaters.

B - Incorrect; the continuous spray flow of 0.5 gpm per spray valve does not provide adequate flow.

C -Incorrect; the continuous spray flow of 0.5 gpm per spray valve does not provide adequate flow.

D - Correct; the continuous spray flow of 0.5 gpm per spray valve will provide adequate flow to keep the spray valves warm.

14.

Unit 1 has experienced a reactor trip. The crew had transitioned to ESP-0.1, Reactor Trip Response, when a large break LOCA occurred.

- SI actuation did not occur and the operators are unable to start any HHSI pumps.
- RCPs are running.
- A loss of containment integrity caused containment pressure to peak at 10 psig.
- The crew is verifying each train of CCW started per step 6 of EEP-0.0, Reactor trip or Safety Injection when the STA reports that RCS subcooling has decreased to 0°F.

Which ONE of the following describes the correct operator response to this situation?

A. Trip all running RCPs and remain in EEP-0.

B. Do not trip the running RCPs and remain in EEP-0.

C. Transition to FRP-C.1, "Response to Inadequate Core Cooling".

D. Transition to FRP-C.2, "Response to Degraded Core Cooling".

Source: Farley Exam Bank Question #E-0/ESP-0.0-52530A06 002

Ref: EEP-0

A - Incorrect; EEP-0 fold out page RCP trip criteria has not been met due to failure of the HHSI pumps

B - Correct; RCP's are not tripped by fold out page criteria. Transition criteria to other procedures have not been met.

C - Incorrect; Transition to FRP-C.1 is made if CETC's are > 1200 °F, this can not be the case if subcooling has just decreased to 0 °F with a LOCA in progress.

D - Incorrect; Transition to FRP-C.2 is made if CETC's are > 700 °F, this can not be the case if subcooling has just decreased to 0 °F with a LOCA in progress.

15.

Given the following conditions on Unit 1:

- Reactor Power at 100%.
- Pressurizer level control system in automatic.
- The median T_{avg} signal to the level control system fails to 500°F.

Which ONE of the following describes the effect on the pressurizer level control system?

A. Charging will reduce to a minimum, HA2, "PRZR LVL DEV HI B/U HTRS ON" annunciator will actuate, pressurizer level will fall to 21.4% and stabilize.

B. Charging will reduce to minimum, HB2, "PRZR LVL DEV LO" annunciator will actuate, pressurizer level will fall to 21.4% and stabilize.

C. Charging will increase to 120 gpm, "HA2, "PRZR LVL DEV HI B/U HTRS ON" annunciator will actuate, pressurizer level will rise, eventually the reactor will trip on high pressurizer level at 92%.

D. Charging will increase to 120 gpm, HB2, "PRZR LVL DEV LO" annunciator will actuate, pressurizer level will rise to 54.9% and stabilize.

Source: Farley Exam Bank Question #PZR PRS/LVL-52201H12 005

A - Correct; Charging will reduce to a minimum and the alarm will come in. It actuates at +5% above normal program value and normal value is now 21.4%.

B - Incorrect; Charging will reduce to 547 value of 21.4 % and the Pzr dev lo annun. will not actuate at -5% below program value b/c level will be above program level.

C & D - Incorrect; Charging will not increase because actual level is now seen as greater than program level, charging flow will decrease.

16.

Which ONE of the following contains ONLY protective trips that are intended to protect the reactor from a DNB concern?

A. OTDT, Low pressurizer pressure, and OPDT.

B. Lo-Lo SGWL, Low pressurizer pressure, and OPDT.

C. OTDT, Low pressurizer pressure, and Reactor coolant low flow trips.

D. Reactor coolant low flow trips, Lo-Lo SGWL, and High pressurizer Level.

Source: Farley 2000 NRC Exam

A - Incorrect; OPDT (overpower concern) is not a DNB concern.

B - Incorrect; Lo-Lo SGWL (preserves heat sink) and OPDT are not DNB concerns.

C - Correct

D - Incorrect; Lo-Lo SGWL and high pressurizer level (Hi Pressurizer pressure concern) are are not DNB concerns.

17.

A large-break LOCA occurs combined with a malfunction of the ESF sequencers which results in delaying the energizing of ESF components. Which ONE of the following is correct concerning the effects on the fuel during this situation?

A. Cladding failure can occur as the core experiences an uncontrolled cooling due to vaporization of reactor coolant.

B. Structural integrity can be lost as delayed cooling can lead to fuel temperatures in excess of ECCS acceptance criteria, resulting in excessive clad oxidation and weakening.

C. Minimal effects will be seen as reflux cooling is sufficient to cool the core for up to ten minutes after the onset of a large break LOCA.

D. A natural circulation cooldown of the fuel can be adversely impacted due to excessive reactor coolant blowdown.

Source: Farley Exam Bank Question #DG SEQ-40102D02 011

B - Correct; Failure to provide ESF flow to the core will result in increasing fuel temperatures resulting in structural integrity loss.

18.

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

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

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

Which ONE of the following describes the correct sequence of actions required for the above situation?

A. Close the #1 seal return valve, ramp down power to less than 30% and remove the affected RCP from service within 30 minutes.

B. Close the #1 seal return valve, trip the reactor, then stop affected RCP.

C. Ramp down power to less than 30%, stop affected RCP, then close the #1 seal return valve after RCP coastdown.

D. Trip the reactor, stop affected RCP, then close the #1 seal return valve after RCP coastdown.

Source: Farley Test Bank Question #E-0/ESP-0.0-52530A02 022

A - Incorrect; Actions of ARP DC3 if #1 Seal Leakoff valve is not open.

B - Incorrect; Incorrect order of actions, the #1 Seal Leakoff valve should not be shut until after the reactor is tripped and the RCP securred.

C - Incorrect; These actions will get the affected RCP off line but a reactor trip is required per the applicable ARP.

D - Correct; These are the actions required by ARP DC2 (Step 4 RNO) for Seal Leakoff greater than 8 gpm.

19.

Given the following Unit 1 initial plant conditions:

- Steam generator level on program.
- Turbine load at 50%.

Which ONE of the following plant conditions demonstrates the **EARLIEST** time when AMSAC will actuate?

	2/3 Steam Generator NR Level	Steady State PT-2446	Turbine Load PT-2447
A. Time 0700	15%	45%	46%
B. Time 0705	11%	42%	43%
C. Time 0710	9%	40%	41%
D. Time 0715	5%	38%	39%

Source: Modified from Farley Exam Bank Question #SG PROT-52201K07 008

A - Incorrect; AMSAC will not be actuated because S/G levels are too high with turbine power above 40%.

B - Incorrect; AMSAC will not be actuate because SG levels are too high with turbine power above 40%.

C - Correct; AMSAC will actuated because SG levels are below 10% with turbine power above 40%.

D - Incorrect; AMSAC will not actuate even with SG levels below 10% since turbine power is below 40%.

20.

Given the following:

- Unit 1 is operating at 100% power.
- All controls are in the normal full power lineup.
- Pressurizer level is falling.
- VCT level is rising.
- RCP SEAL INJ FLOW LO alarm is lit.
- REGEN HX LTDN FLOW DISCH TEMP HI alarm is lit.
- CHG HDR FLOW HI-LO alarm is lit.

Which ONE of the following describes the event that has occurred?

A. Loss of charging.

B. Letdown isolation.

C. Small break LOCA.

D. Pressurizer PORV failed open.

Source: Farley Exam Bank Question #CVCS-40301F07 032

REFERENCE
1. 1-ARP EA2, DD1, DE1

A - Correct; all conditions given would be a result of loss of all charging flow.

B - Incorrect; During a loss of letdown, PRZR level would be rising and VCT level would be lowering.

C & D - Incorrect; If a SBLOCA or PORV OPEN had occurred, PRZR level could be falling (depending on break size) but VCT level would also be falling due to increased charging flow and constant LTDN flow. REGEN HX LTDN FLOW DISCH TEMP HI alarm would also not be in because there is max. cooling occuring due to the high CHG flow. CHG HDR FLOW HI-LO alarm and RCP SEAL INJ FLOW LO alarm could both be in alarm.

21. Plant conditions are as follows:

- Unit 1 was at 100% reactor power.
- Unit 2 was in Mode 5.
- A dual-unit Loss of Offsite Power has occurred.
- All EDGs have started and tied onto the vital buses.
- Vital load sequencing has been completed.
- FNP-1-EEP-O, "REACTOR TRIP OR SAFETY INJECTION" has been entered on Unit 1.
- While the immediate actions are being completed, a Safety Injection (SI) signal is received on Unit 1.

Which ONE of the following describes the response of the Unit 1 Containment Fan Coolers from the time the SI signal is received?

A. All fan coolers load shed on the SI signal and sequence back onto the vital buses in slow speed.

B. All fan coolers load shed on the SI signal, and selected fan coolers sequence back onto the vital buses in slow speed.

C. Selected fan coolers do NOT load shed on the SI signal, and the non-selected fan coolers remain de-energized.

D. Selected fan coolers do NOT load shed on the SI signal, and the non-selected fan coolers sequence back onto the vital buses in slow speed.

Source: Farley NRC Exam 2001
Original Source: Farley NRC Exam 1999

A - Incorrect, The selected fan coolers do not load shed for the given conditions.
B - Incorrect, The selected fan coolers do not load shed for the given conditions.
C- Correct
D - Incorrect, The nonselected fans do not start on an SI with LOSP.

22.

Unit 1 is in Mode 4 with 'A' Train RHR in service and the following conditions:

- 1B RHR Pump is out of service for maintenance
- The "B" Train of SFP cooling is in service
- CCW SRG TK LVL A(B) TRN HI/LO annunciators AA4(AB4) are received and it is confirmed that surge tank level is increasing.
- RE-017B, 'A' Train CCW radiation monitor, indicates increasing radiation levels in the CCW system.

Which ONE of the following most correctly describes the cause and operator response for the plant conditions above?

A. The 1A RHR pump seal cooler has developed a leak. CCW can be isolated to the seal cooler so long as RHR temperature does not exceed 150°F.

B. The 1A RHR heat exchanger has developed a tube leak. 'A' Train RHR must be shut down and AOP-12, " Residual Heat Removal System Malfunction," should be entered.

C. The 1A RHR heat exchanger has developed a tube leak. 'A' Train CCW must be shut down; however, operation of 'A' Train RHR may continue.

D. The 1A CCW heat exchanger has developed a tube leak. Operation of 'A' Train CCW may continue.

Source: Farley Exam Bank Question #AOP-12.0-52520L02

A - Incorrect; Seals are cooled by RCS fluid circulated through an external heat exchanger cooled by CCW.

B - Correct; An RHR heat exchanger leak will result in inleakage to the CCW system that will show up as increased surge tank level and increased radiation levels.

C - Incorrect; AOP-12 should be entered to establish an alternate means of DHR.

D - Incorrect; AOP-12 should be entered to establish an alternate means of DHR.

23.

Given the following conditions:

- Unit 1 has experienced a significant LOCA.
- The plant has tripped;
- SI has actuated and has not been reset;
- All components and systems have operated as designed.

- Per EEP-1, Loss of Reactor or Secondary Coolant, CCW flow has been established to both trains of RHR when Annunciator AA4(AB4), CCW SRG TK LVL A(B) TRN HI-LO, alarm came in, followed shortly by Annuciator AB5, CCW SRG TK LVL B TRN LO-LO, alarm

- The OATC reported the following:
  - the 1A CCW Pump has tripped on overload,
  - the 1B CCW Pump is in AUTO not running and is aligned to 'A' Train,
  - the 1C CCW Pump is running,
  - the 'B' train surge tank level is continuing to decrease.

Which ONE of the following best describes this situation?

A. The 1B CCW pump should **not** have started. Attempts to refill the surge tank should be made and the 1C Chg and 1B RHR pumps should be immediately secured.

B. The 1B CCW pump should have started. AOP-9.0, Loss of Component Cooling Water, should be entered.

C. The 1B CCW pump should **not** have started. AOP-9.0, Loss of Component Cooling Water, should be entered.

D. The 1B CCW pump should have started. However, the 1B CCW pump should **not be** started, and all A train CCW loads should be secured.

Ref: AOP-9.0

A - Correct; With the swing pump (1B CCW) aligned to the A train (1C CCW pump) the tripping of the 1A CCW pump on overcurrent would not cause the swing pump to start even with an SI signal. Attempts should be made to fill the surge tank and the swing pump started.

B - Incorrect; The swing pump will not automatically start unless aligned to that train.

C - Incorrect; If the swing pump failed to automatically start or manually start then AOP-9.0 would be entered.

D - Incorrect; The swing pump will not automatically start unless aligned to that train.

24.

What prevents clogging of the containment spray nozzles following a design loss of coolant accident while on recirculation?

A. Anti-vortex blades create a centrifugal force to keep large particles and debris from entering the sump suctions.

B. Duplex filters on the discharge of the pumps remove particles large enough to clog the spray nozzles.

C. The screens in the recirculation sump will block any particles big enough to clog the nozzles.

D. Accident analysis assumes that there will be no particles or debris loose in containment that will be larger than the spray nozzle openings.

Source: Farley Exam Bank Question #CS&COOL-40302D02 006

The spray nozzles, which are of the hollow cone design, are not subject to clogging by particles less than 1/4 inch in size and produce a small drop size that will maximize the total cooling and iodine removal surface area when operating at the design pressure differential of 40 psi. The stainless steel spray nozzles have a 3/8 inch diameter orifice, which is larger than the 0.120 inch (1/8 inch) screen grating covering the containment sumps. Therefore, all particles large enough to clog the nozzles will be screened out before entering the recirculation piping.

A - Incorrect; anti-vortex blades are present in the sump suction to improve flow conditions to the pumps, thus minimizing the potential for cavitation.

B - Incorrect; there are no filters on the discharge of the pumps.

C - Correct; screens on the recirc sumps have openings sized such that particles and debris large enough to clog the spray nozzles can not get past the screens.

D - Incorrect; accident analysis assumes that particles and debris will be blocked from entering the spray pump suctions by the sump screens.

25.

Unit 2 is at 100% power when the following occurs:

- Annunciator HC1, PRZR PRESS HI-LO, comes into alarm.

It has been determined that a failure of the controlling pressurizer pressure channel has occurred and actual pressure is 2315 psig. The Pressurizer Pressure Master Controller M/A station PK-444A has been taken to MANUAL.

Which ONE of the following describes the action required to return actual pressure to its normal value?

A. Increase the M/A station output (% demand).

B. Decrease the M/A station output (% demand).

C. Raise the pressure setpoint adjustment.

D. Lower the pressure setpoint adjustment.

Source: Farley Exam Bank Question #PZR PRS/LVL-52201H08 052

A - Incorrect; This will cause pressure to increase further by the energizing of heaters.

B - Correct; This will cause the spray valve(s) to open resulting in a decrease in pressure returning pressure to the normal value of 2235 psig.

C - Incorrect; This is the wrong direction to adjust the setpoint and with the controller in manual this will be ineffective.

D - Incorrect; With the controller in manual this will be ineffective.

26.

Plant conditions are as follows:

- Unit 1 has just completed a refueling outage and is in Mode 5.
- During the outage the trisodium phosphate (TSP) crystals were removed from 2 of the 3 baskets.
- Due to an oversight the 2 baskets were not refilled with TSP.

Which ONE of the following states the consequences these conditions would have if a design-basis LOCA were to occur after the plant is started up and operated at full power for several days?

A. The ability of the emergency core cooling system to maintain the core cool would be affected and could result in significant core damage.

B. Iodine levels in the containment atmosphere for the long term would NOT be affected since it would be removed by the containment spray system.

C. The ability of the sump water to maintain iodine in solution would be limited due to the reduced amount of TSP available in the containment sump.

D. There would be no effect since 1 TSP basket containing the minimum volume of crystals is adequate to perform ECCS recirculation fluid pH control.

Source: Farley exam bank Question #CS&COOL-40302D11

A. Incorrect - TSP provides pH range for keeping radioiodine in solution and mitigating the impact to stainless steel components due to the low pH of the RWST solution; has no impact on the ability to cool the core

B. Incorrect - Containment spray removes radioiodine and TSP required to maintain radioiodine in solution in the ECCS sump

C. Correct - A reduce volume of TSP would result in a reduced ability to maintain radioiodine in solution in the ECCS sump

D. Incorrect - Technical specifications requires 3 TSP baskets; each at minimum volume to mitigate the consequences related to fuel damage and fission product release, in particular - radioiodine, as a result of a design basis LOCA.

27.

Given the following plant conditions:

- A large break LOCA has occurred on Unit 2 thirty minutes ago.
- Hydrogen concentration inside containment is 4.5%.

Which ONE of the following actions should be taken to reduce hydrogen concentration?

A. Place only one electric hydrogen recombiner in service within the next 30 minutes by first verifying the PWR ADJ potentiometer is set to zero (0) prior to turning on the PWR OUT switch and then set at a power setting of 100 kilowatts.

B. Place the post accident containment venting system in service within the next 30 minutes and reset the vent flow integrator (FQI-3533) to zero prior to commencing the venting flow by depressing the reset push button located on the BOP.

C. Place the post accident containment venting system in service within the next 30 minutes and reset the vent flow integrator (FQI-3533) to zero prior to commencing the venting flow by de-energizing the flow intergator using the ON-OFF switch on the Hydrogen Recombiner Control Panel.

D. Place both electric hydrogen recombiners in service within the next 30 minutes by first verifying the PWR ADJ potentiometer is set to zero (0) prior to turning on the PWR OUT switches and then set each at a power setting of 50 kilowatts.

Source: Modified from Farley Bank Questions #POST LOCA-40302E09 & #POST LOCA-40302E11

A - Incorrect; Hydrogen recombiners are not used when hydrogen concentration is above 4%.

B - Correct; The post accident venting system is placed into service within one hour of the LOCA and is operated from the BOP

C - Incorrect; This is not how the flow integrator is set to zero.

D - Incorrect; Hydrogen recombiners are not used when hydrogen concentration is above 4%.

28.

Due to an anticipated transient without a trip, FRP-S.1, "RESPONSE TO NUCLEAR POWER GENERATION/ATWT", is entered.

The following conditions exist:

- Reactor trip breakers A & B indicating lights are RED.
- All four (4) turbine throttle valves are closed, and all available AFW pumps are running.

While performing step 6 of FRP-S.1, the Reactor trip breakers are opened locally. Which ONE of the following should the team perform?

A. Perform the first 15 steps of EEP-0 while continuing with FRP-S.1.

B. Transition to EEP-0, perform the first 15 steps of EEP-0, then return to FRP-S.1.

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

D. Continue with procedure and step in effect, i.e., FRP-S.1.

Source: Modified from Farley Bank Questions #FRP-S-52533A08 007 & #FRP-S-52533A08 004

REFERENCE: FRP-S.1

A - Incorrect; FRP-S.1 is entered, you can not leave the procedure until directed.

B - Incorrect; Returning to EEP-0 is not warranted since FRP-S.1 has not been completed.

C - Incorrect; FRP-S.1 would be completed to transition.

D - Correct; Would continue with FRP-S.1 until step 14 is complete regardless of Rx trip breaker status.

29.

Given the following plant conditions:

- A loss of all AC power has occurred on Unit 2.
- The actions required by ECP-0.0, LOSS OF ALL AC POWER, are in progress.
- SG atmospheric relief valves are being controlled locally to reduce SG pressure to less than 200 psig.
- A low steam line pressure SI signal has been received.
- Steam line pressure is 350 psig and RCS cold leg temperatures are at 325°F.

You notice both channels of Source Range startup rate go positive then fail low.

The STA monitoring the CSF status trees informs the shift supervisor that there is a yellow path on subcriticality.

Intermediate range startup rate is reading a sustained +0.2 dpm.

Which ONE of the following actions should be taken?

A. Begin an emergency boration.

B. Stop dumping steam and allow the plant heat up to add negative reactivity.

C. Continue to lower SG pressure to < 200 psig.

D. Proceed immediately to FRP-S.2.

Source: Farley Exam Bank Question #EC-0.0/.1.2-52532A06 002

Ref: ECP-0.0

JUSTIFICATION:

a. Emergency boration would be an action to mitigate the positive SUR, but cannot be done without AC power.

b. If SUR is above zero the ECP-0.0 RNO requires securing dumping steam to heat up the RCS and establish subcriticality. SR must be assumed to have reflected actual conditions in the core before it was lost since IR indications are not consistant with a subcritical core (IR SUR <-.3DPM)

c. If SUR is above zero the ECP-0.0 RNO requires local control of atmospheric relief valves to raise SG pressure.

d. While in ECP-0.0, CSFs are monitored for information only.

30.

EEP-3, "Steam Generator Tube Rupture", is in progress, and an RCS cooldown is desired. The ruptured SG pressure is 920 psig. Desired subcooling is 35-37°F. The RCPs are running, and the plant computer is inoperable. Normal at power CTMT parameters exist.

What temperature indicator should be used and at what temperature should the RCS cooldown be stopped?

REFERENCE PROVIDED

A. Core exit T/C monitor indicating 485°F.

B. Core exit T/C monitor indicating 499°F.

C. WR hot leg temperatures indicating 485°F.

D. WR hot leg temperatures indicating 499°F.

Source Farley Bank Question #EEP-3-52530D07 001

Ref: EEP-3

31.

The plant is operating at 100% power with all controls in automatic. Without warning, PRZR level and RCS pressure begin decreasing. Charging flow automatically increases, and the PRZR heaters energize. Normal letdown flow isolates, and PRZR heaters de-energize on low PRZR level. Simultaneously with low PRZR level indications, high radiation indications from the air ejector radiation monitor and blowdown line radiation monitors are received in the control room. The reactor trips, and safety injection occurs on low pressurizer pressure.

Which ONE of the following is the explains the cause of the plant response and the current indications?

A. Main steam line break

B. Main feed line break

C. SGTR

D. RCS cold leg break

Source: Farley Exam Bank Question #EEP-3-52530D02 002

Reference: EEP-3

A - Incorrect; This does not explain the presence of the high radiation.

B - Incorrect; this does not explain the presence of the high radiation alarms

C - Correct; These are indications of a SGTR.

D - Incorrect; Does not explain the high radiation at the locations given.

32.

Unit 1 is at 32% power and ramping up. All systems are in automatic and controlling properly. Control bank "D" is at 72 steps and controlling RCS temperature.

A DEH control system malfunction results in a turbine trip. The control rods drive into the core 12 steps prior to being taken to MANUAL. The control rods and the steam dumps are used to restore reactor power to 32%. Bank "D" control rods were raised to 65 steps. The generator trips 30 seconds after the turbine trip. The 4160V buses 1A, 1B and 1C transfer to the startup transformers.

Which ONE of the following describes the action(s) should be taken in accordance with AOP-3.0, Turbine Trip Below P-9 Setpoint?

A. Reduce reactor power to between 8% and 15%, slowly open the atmospheric relief valves to close the steam dump valves, then swap the steam dumps to the steam pressure mode of operation.

B. Initiate an emergency boration in order to bring the control rods above the lo-lo insertion limit.

C. Reduce reactor power to less than 8%, slowly open the atmospheric relief valves to close the steam dump valves, then swap the steam dumps to the steam pressure mode of operation.

D. Maintain reactor power and slowly open the atmospheric relief valves to close the steam dump valves, then swap the steam dumps to the steam pressure mode of operation.

Source: Farley Exam Bank Question #AOP-3.0-52520C04 002

A - Incorrect; Power level is incorrect, power level is for steam dumps already being in steam pressure mode.

B - Incorrect; This is performed if it is desirable to leave the rods in auto.

C - Correct; Per step 9 of AOP-3.0 and SOP-18.0, Steam Dump System

D - Incorrect; Power level is incorrect, power level is for steam dumps already being in steam pressure mode.

33.

Given the following:

> In EEP-2, "Faulted Steam Generator Isolation", the operator is cautioned that any faulted steam generator should remain isolated during subsequent recovery actions unless needed as a heat sink for RCS cooldown.

Which ONE of the following is the reason for the caution?

A. AFW pumps could reach run-out flow and cavitate, causing damage to the pumps and possibly rendering them inoperable.

B. Additional steaming from the SG will increase the likelihood of damaging other equipment, power supplies, or instrumentation in the vicinity of the break.

C. Un-isolating a faulted steam generator could cause an RCS cooldown and risk an inadvertent return to criticality.

D. Reestablishing feed flow to the faulted steam generator would cause SI to reactuate on high steam flow and interfere with the RCS cooldown to Mode 5.

Source: Farley Exam Bank Question #EEP-2-52530C03 001

Reference: EEP-2

C - Correct

34.

The plant is in UOP-3.1, "POWER OPERATION," at 33% power and ramping up. All systems are in automatic and controlling properly. Steam dumps are in the Tavg mode and the control rods are at 72 steps on control bank 'D'.

- A malfunction of the DEH control system results in a turbine trip.
- The rod control system is placed in manual and used with the steam dumps to stabilize reactor power at 33%.
- Steam dump control is then inadvertantly transferred from the Tavg mode to the steam pressure mode.

Which one of the following describes, for the conditions given, assuming **NO further operator action**, what will be the response of the plant?

A. RCS temperature will decrease and pressurizer level will decrease.

B. RCS temperature will increase and pressurizer level will increase.

C. Steam dumps will modulate to bring steam header pressure to the steam dump controller setpoint.

D. No effect in steam pressure mode. The steam dumps will continue to control RCS temperature.

Source: Farley 2001 NRC Exam
Original Source: Farley exam bank: Question # O52520C06003

A - Incorrect, this is the action if the steam dumps were to fly open.
B - Correct, the steam dumps immediately close when the switch is taken from Tavg mode to Steam pressure mode.
C - Incorrect, steam pressure control output shifts to steam pressure mode in manual with an output of zero.
D - Incorrect, this is the action if the steam dumps continued to operate in the Tavg mode.

35.

Unit 1 is at 60% power and slowly ramping up.

Which ONE of the following conditions will **first** result in the loss of condenser steam dumps?

A. One of the two running Circulating water pumps breaker trips open on overcurrent.

B. One of the Condenser vacuum switches indicates less than 8 inches of mercury.

C. Both of the Condenser vacuum switches indicate less than 8 inches of mercury.

D. Both of the Condenser vacuum switches indicate less than 10.8 inches of mercury.

Source: Modified from Surry 2002 NRC Exam

A - Incorrect; Must have both circ water pump breakers open.

B - Correct; Must have both of the Condenser vacuum switches greater than 8 inches of mercury for Condenser Available C-9. C-9 is disabled with

C - Incorrect; Does not satisfy the C-9 permissive.

D - Incorrect; This is not the vacuum setpoint in inches of mercury, this is the setpoint in psia.

36.

While holding reactor power at 33% for chemistry, a loss of main feedwater occurred when the **ONLY** running SGFP tripped.

Which ONE of the following statements is correct?

A. The RX TRIP ACTUATION switch should be placed in the TRIP position.

B. The main turbine EMER TRIP switch should be placed in TRIP for at least 5 seconds.

C. Reactor power must be rapidly reduced to less than 2%, then manually trip the main turbine.

D. The main turbine should be tripped manually followed by a manual reactor trip.

Source: Modified from Farley Bank Question #AOP-13.0-52520M06 002

Ref: AOP-13.0

A - Incorrect; A reactor trip is not warranted at power level below 35%.

B - Correct; With power level below 35% this is an immediate action step of AOP-13.

C - Incorrect; This is done after the main turbine is tripped.

D - Incorrect; A reactor trip is not warrented at power level below 35%, the main turbine is tripped followed by a power reduction to less than 2%.

37.

Which ONE of the following describes the plant components that are used to provide remote capability to feed the steam generators with the turbine-driven AFW pump during a station blackout?

A. 120 vac instrument inverter, 48 vdc battery, air accumulator.

B. AC and DC uninterruptible power supply, 48 vdc battery, air accumulator.

C. AC and DC uninterruptible power supply, auxiliary building 125 vdc battery, emergency air compressor.

D. 120 vac instrument inverter, auxiliary building 125 vdc battery, emergency air compressor.

Source: Farley Exam Bank Question #AFW-40201D06 003

A - Incorrect; 120 vac instrument inverter does not provide a B/U to the TDAFW pump

B - Correct; Power is supplied from the 48V DC battery to an inverter which then supplies the HSDP which in turn supplies the TDAFW Speed Control and FCV's position controller. The inverter also directly supplies a DC rectifier that supplies power to open TDAFW Valves, FCV soleniods and TDAFW Control Panel.

C & D - Incorrect; AB 125 v dc battery does not provide a B/U to the TDAFW pump.

38.

Considering the ESS Load Sequencer operation during an accident with an LOSP, which ONE of the following describes the reason(s) behind the ESS Load Sequencer order and time to initiation of power to the various loads?

A. The considerations deal ONLY with maintaining the diesel generator frequency and voltage within tolerance.

B. The considerations deal ONLY with ensuring the starting of the various engineered safety features are within the required safety analysis response time values.

C. In order to ensure that the diesel generator's speed will not decrease below 95% of nominal value, the largest loads are started first when the diesel generator can best handle the starting currents.

D. The required response time values of the various emergency safety features are based on the accident analysis of the plant for the design based accident and the diesel generator capability.

A - Incorrect; This is only one of the reasons.

B - Incorrect; This is only one of the reasons.

C - Incorrect; Diesel generator's speed must be maintained and starting currents must be allowed to decay between subsequent equipment starts making this a potential reason.

D - Correct; This is both distractors A and C combined and is the reason for the sequencer loading. OPS-52103F-40102D

39.

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.
- The Recorder PR-4039 indicates SGFP pressure is 295 psig and slowly decreasing.

Which ONE of the following is the action required by the operator?

A. Ensure the standby condensate pump starts 10 seconds after pressure has decreased to 275 psig.

B. Start the standby condensate pump prior to pressure decreasing to 275 psig.

C. Begin a rapid load reduction to 60% in order to remove one SGFP from service.

D. If pressure continues to decrease, manually trip the reactor and enter EEP-0, Reactor Trip or Safety injection.

Source: Farley Exam Bank Question #AOP-13.0-52520M04 009

Reference: ARP-1.10, KB4

A - Incorrect; The operator is instructed by the ARP to start the Cond pump prior to 275 psig.

B - Correct; The standby condensate pump will auto start at 275 psig but the ARP requires it to be manually started prior to reaching 275 psig.

C - Incorrect; A rapid load reduction is required if the standby condensate pump is not available. There is no requirement to trip one of the SGFPs because there is an automatic trip on low suction pressure.

D - Incorrect; This action would be appropriate if suction pressure decreases below 275 psig for 30 seconds and the starting of the standby condensate pump has not corrected the pressure drop.

40.

Given the following plant conditions:

- Unit 1 is holding at 25% power due to problems with DEH during a plant startup.
- Rod control is in AUTO, with Bank D rods at 174 steps.
- VCT level transmitter, LT-112, failed low 30 minutes ago.
- I&C is troubleshooting Power Range Nuclear Instrument N-41 because of a blown fuse.

Which ONE of the following conditions will occur if power is lost to the 1A 120V AC Vital Bus?

A. A reactor trip will occur.

B. A boration of the RCS will begin since LCV-115D, RWST to CHG PUMP, will open and LCV-115E, VCT Outlet ISO, will close.

C. Control rods will begin stepping in.

D. A boration of the RCS will begin since LCV-115B, RWST to CHG PUMP, will open and LCV-115C, VCT Outlet ISO, will close.

Source: Modified from Farley Bank Question #120 VAC-40204F07

A - Incorrect; A reactor trip would occur if another PRNI channel, other than N-41, had already been placed in a tripped condition.

B - Incorrect; Valves LCVs 115D and E are powered from Aux Safeguards Cabinet B.

C - Incorrect; Rods will step out as a result of the boration.

D - Correct; A boration of the RCS will occur since power was lost to 1A 120V AC Vital Bus causing LCV-115B, RWST to CHG PUMP, to open and LCV-115C, VCT Outlet ISO, to close. (Aux Safeguards Cabinet A)

41.

A loss of Aux. Building DC power has occurred due to a Station Blackout event that has lasted for 3 hours. Offsite power has finally been restored and the lineups 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 is charged for at least 2 hours and will not be fully charged for 12 hours.

B. The battery chargers will be unable to carry steady state normal or emergency loads until its associated battery has been fully charged and will not be fully charged for 12 hours.

C. The battery chargers will be immediately able to carry steady state normal or emergency loads while its associated battery is being charged and will not be fully charged for 12 hours.

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 and will not be fully charged for 12 hours.

A - Incorrect; Each battery charger is designed to provide adequate capacity to restore its associated battery to full charge in 12 hours after the battery has been fully discharged, while carrying steady state normal or emergency loads.

B - Incorrect; Each battery charger is designed to provide adequate capacity to restore its associated battery to full charge in 12 hours after the battery has been fully discharged, while carrying steady state normal or emergency loads

C - Correct

D - Incorrect; Each battery charger is designed to provide adequate capacity to restore its associated battery to full charge in 12 hours after the battery has been fully discharged, while carrying steady state normal or emergency loads

42.

Unit 1 is at 70% power when the following indications are received:

- Annunciator KC3, 1A OR 1B SGFP TRIPPED
- RPM indicator for 1A SGFP rapidly falling

Which ONE of the following describes the required operator actions the operator should take?

A. Place MAIN TURB EMER TRIP switch to TRIP for at least 5 seconds.

B. Check reactor tripped due to the SGFP trip and go to EEP-0, Reactor Trip and Safety Injection.

C. Reduce turbine load to less than 540 MW and reduce reactor power to match turbine power.

D. Check that the AFW pumps auto started.

Source: Farley Exam Bank Question #AOP-13.0-52520M02

References: AOP-13.0

A - Incorrect; This will result in a main turbine trip which is not required since a total loss of feed has not occurred.

B - Incorrect; A reactor trip will not occur on a loss of a SGFP, unless that loss results in low SG levels.

C - Correct; Reducing turbine load and reducing reactor power maintains the RCS and secondary side parameters within the limits for continued plant operation with one SGFP still operating.

D - Incorrect; AFW pumps will start on a total loss of feed.

43.

A rapid load reduction on Unit 1 to decrease to minimum load from 100% power is in progress per AOP-17.0, RAPID LOAD REDUCTION. A loss of control oil causes the 1A SGFP to coast down. The operators stopped the load reduction and have entered AOP-13.0, Loss of Main Feedwater. S/G water levels decreased to approximately 35% and are now recovering with FRVs in AUTO. The Unit is currently at 50% power and Turbine load is at about 450 MW.

Which ONE of the following describes the REQUIRED operator actions?

A. Maintain SG levels greater than 35% and verify SG narrow range levels are maintained less than 75%

B. Maintain S/G level control in auto, verify proper operation of the feed regulating valves and verify S/G narrow range levels trending to 65%.

C. When S/G narrow range levels reach approximately 55%, take manual control of the feed regulating valves and reduce demand to 75% and return to auto, verify levels trending to 65%.

D. Trip the reactor and go to EEP-0, "Reactor Trip or Safety Injection," while continuing in AOP-13, "Loss of Main Feedwater".

A - Incorrect; These are the S/G level valus for the fast load reduction, AOP-17 step 7.

B - Incorrect; This is not the required actions of AOP-13.0.

C- Correct; AOP-13.0 immediated action Step 1 RNO Step 1.5. S/G level recovery actions when both SGFPs do not trip.

D - Incorrect; This is the action required if the S/G levels do not adequately recover.

44.

Due to a complete loss of instrument air, the control room operator tripped the reactor from 100% power. The turbine-driven auxiliary feedwater (TDAFW) pump auto started. The motor driven auxiliary feedwater (MDAFW) pumps failed to auto start.

Which ONE of the following describes the action(s), if any, that must be taken and why?

A. Use the handjack to close HV-3235A and HV-3235B in the main steam valve room (MSVR), to avoid causing an uncontrolled cooldown.

B. Start the emergency air compressors and align to supply the TDAFW pump steam admission valves to ensure the TDAFW pump will continue to run past 2 hours to provide an adequate heat sink.

C. No action is required since all valves associated with the TDAFW pump fail open.

D. Use the handjack to open HV-3235A and HV-3235B in the main steam valve room (MSVR) to ensure the TDAFW pump will continue to run past 2 hours to provide an adequate heat sink.

A - Incorrect, With only one AFW pump available over cooling should not be a concern.

B - Correct, Per AOP-6.0 Step 9

C - Incorrect, HV-3235A and HV-3235B, steam admission valves to the TDAFW pump in the main steam valve room (MSVR) do not fail open.

D - Incorrect, HV-3235A and HV-3235B in the main steam valve room (MSVR), can not be jacked open, only jacked closed.

45.

Unit 1 is operating at 100% steady-state reactor power all systems are in automatic and functioning properly.

- A reactor trip and SI has just occurred.
- A problem in the high voltage switchyard deenergizes the 1B S/U transformer.
- D/G 1B cannot be started.
- S/G narrow range levels are 'A' 26%, 'B' 45% and 'C' 45%.

Which Unit 1 AFW pump(s) are running?

A. 'A' MDAFW and TDAFW.

B. 'A' and 'B' MDAFW.

C. 'B' MDAFW only.

D. 'A' MDAFW only.

Source: Farley 2001 NRC Exam

A - Correct, The TDAFW pump will start on a blackout signal and the A MDAFW pump will start on SI sequencer. B MDAFW pump does not have power
B & C - Incorrect, The B MDAFW pump does not have a power source.
D - Incorrect, TDAFWP will also start.

46.

Unit 1 is at 100% power with 'B' Train on service.
DGO2, 1G 4160V bus tie to 1L 4160V bus trips.
AOP-10.0 "Loss of Service Water" has been entered.
'A' Train SW pressure is 90 psig, and stable.
'B' Train SW pressure is 50 psig, and stable.
An attempt to start 1C CCW pump was made, and it tripped on overload.
RCP motor bearing temperatures are reading 163°F and slowly rising.

Which ONE of the following describes the actions to be taken in accordance with AOP-10.0, Loss of Service Water?

A. Trip the reactor and enter EEP-0.0 "Reactor Trip or Safety Injection".

B. Start the 1A charging pump; then stop the 1C charging pump.

C. Align 1B CCW pump to 'A' train.

D. Shift the Spent Fuel Pool Cooling trains.

Source: Farley Exam Bank Question #AOP-10.0-52520J06 001

Reference: AOP-10.0

A - Incorrect; This is done when RCP motor bearing temps reach 195°F, reference note describing adequate support in AOP-9.0

B - Incorrect; Same as D. Also, 1C Chg pump has CCW flow even though the CW isn't being cooled. 1A Chg pump will have no CCW cooling at all

C - Correct; This is done to provide colling water to the Misc header.

D - Incorrect; Since the A train CCW pump tripped on overload, there is no cooling flow in that train of CCW, the operator cannot perform this step.

47.

Which ONE of the following describes the NORMAL, EMERGENCY, and ALTERNATE power supplies to Emergency 4160V AC Bus 1H?

	NORMAL	EMERGENCY	ALTERNATE
A.	S/U 1B	1-2A DG	S/U 1A
B.	S/U 1A	1C DG	S/U 1B
C.	S/U 1A	1B DG	S/U 1B
D.	S/U 1B	1B DG	S/U 1A

Source: Modified from Farley 2001 NRC Exam.

A - Incorrect, Correct for BUS 1F.
B - Correct
C - Incorrect, The Normal and Alternate are correct, but the Emergency is incorrect.
D - Incorrect, This is correct if it was thought that 1H was B Train.

48.

Plant conditions are as follows:

- Unit 1 is at 95% power.
- The Unit 1 "B" train battery supply breaker to 1B 125 VDC auxiliary building bus is open to jumper out a cell.
- The supply breaker to 4160 VAC bus 1G trips on fault.

Which ONE of the following describes the expected response to this event?

A. 1B Diesel Generator will start, but the output breaker will not close.

B. 1B Diesel Generator will start and reenergize the 1G 4160 VAC bus.

C. Unit 1 reactor trip only will occur.

D. Unit 1 reactor trip and safety injection will occur.

Source: Farley Exam Bank Question #DC DIST-52103C02 004

Ref: SOP-37.0

A -Incorrect; There is no DC power to allow starting of the 1B DG

B - Incorrect; There is no DC power to allow starting of the 1B DG

C - Incorrect; A reactor trip will occur due to loss of the Vital AC 1C and 1D busses giving a 2 of 3 trip signal on low S/G pressure.

D -Correct; A reactor trip will occur due to loss of the Vital AC 1C and 1D busses giving a 2 of 3 trip signal on low S/G pressure which also gives an SI.

49.

Which ONE of the following is a reason why battery charger 'C', the swing battery charger, for the auxiliary building 125V DC distribution system is key-interlocked?

A. Ensures voltages are matched before closing DC output breakers.

B. Prevent Battery Charger 'C' from carrying DC buses A and B at the same time.

C. Ensure battery charger 'C' output breaker is closed on a dead bus.

D. Provides administrative control when using 'A' train power to supply the 'B' train DC bus.

Source: Modified from Farley Exam Bank Question #DC DIST-40204E02 007

A - Incorrect; No voltage interlock associated with this key-interlock

B - Correct; per OPS-52103C

C - Incorrect; No sychronizing circuitry associated with this key-interlock

D -Incorrect; This is the result of using the 'C' battery charger.

50.

Which ONE of the following describes the action(s) required in accordance with SOP-38.0, Diesel Generators, if the 1C or 2C DG oil temperature decreases to less than 100°F AND the keep warm lube oil system is in service (i.e., the circulating oil pump is running)?

A. The DG is declared inoperable until the oil temperature increases above 100°F so the engine can be started immediately.

B. The cylinders shall be blown down and the engine barred over prior to starting the engine.

C. The jacket water cooling system shall be secured to raise lube oil temperature above 100°F.

D. The keep warm lube oil system shall be secured to raise lube oil temperature above 100°F.

Source: Farley Bank Question #DG-52102I04

A - Incorrect; temperature should be raised above 100 °F, but this is not the correct answer per SOP-38.0.

B - Correct; SOP-38.0 precaution 3.13 and caution prior to Step 4.3.8 and OPS-52102I page 34

C - Incorrect; this is not addressed by procedures

D - Incorrect; this is not addressed by procedures

51.

The reactor is at 30% power. For an unknown reason, instrument air pressure is falling. All available air compressors have been started and pressure continues to fall. The main feed regulating valve operation has started to become erratic. Feed flow is decreasing to the Steam Generators, levels are at 60% and slowly decreasing.

Which ONE of the following describes the action(s) the operator should take?

A. Trip the reactor and go to EEP-0.

B. Trip the turbine and ramp the reactor to less than 2% power and establish AFW flow.

C. Ramp the turbine and reactor to below 5% and establish AFW flow.

D. Dispatch operators to manually jack open the main feed regulating valves to control SG level.

Source: Farley Exam Bank Question #AOP-6.0-52520F08

A - Correct; AOP-6.0 Step 1, WHEN reactor critical AND control of critical AOVs erratic, THEN trip the reactor and go to EEP-0 REACTOR TRIP OR SAFETY INJECTION. FRV's are "critical valves.

B - Incorrect; turbine trip is not a priority in AOP-6 these are the actions of AOP-13.0, loss of feedwater.

C - Incorrect; ramping down is not an option.

D - Incorrect; not proceduralized, non-conservative, defeats FW Isolation signal.

52.

The control room has just been evacuated due to a fire in the cable spreading room.

Which ONE of the following conditions will require the use of reactor head vents to assist in plant recovery when operating from the Hot Shutdown Panels?

(Assume no Safety Injection signal present)

A. Loss of Reactor Coolant Pumps.

B. Pressurizer level decreasing below 15% level.

C. Steam Generator levels decreasing below 25% level.

D. High Head Safety Injection flow of 225 gpm with RCS pressure at 2235 psig.

Source: Farley 2001 NRC Exam
Original Source: Farley NRC Exam 1998
LO: O52521C04

A - Incorrect, Natural circulation can be used following a loss of RCP's.
B - Correct, Pressurizer level decreasing below 15% will result in letdown isolation with the inability to reopen LCV-459 and LCV-460, requiring the use of the head vents for removing mass from the RCS.
C - Incorrect, Control of S/G levels is available at the HSP's therefore, control of RCS cooldown is unavailable.
D - Incorrect, PORV available at this time if desired to lower pressure.

53.

Concerning the Gaseous Waste Processing System, which ONE of the following is correct if Unit 1 is in Mode 2, with the monitors required in TR 13.12.1 inoperable?

REFERENCE PROVIDED

A. With oxygen concentration equal to 4% and hydrogen concentration equal to 5% in a waste gas decay tank, oxygen concentration must be reduced to less than or equal to 1% prior to Mode 1 entry.

B. With oxygen concentration equal to 3% and hydrogen concentration equal to 5%, oxygen concentration must be reduced to less than or equal to 1% within 4 hours. However, Mode 1 entry is permitted.

C. With oxygen concentration equal to 5% and hydrogen concentration equal to 2%, oxygen concentration must be reduced to less than 1% prior to Mode 1 entry.

D. With oxygen and hydrogen concentrations equal to 5%, actions must be taken within 1 hour to place Unit 1 in a Mode in which the Tech Spec does not apply.

Source: Farley Exam Bank Question #WAST GAS-52106B01 005

References: TRM 13.12.3

A - Incorrect; Does not preclude mode change.

B - Correct; Per TRM 13.12.3

C -Incorrect; Does not preclude mode change.

D - Incorrect; Applicable to all modes

54.

Which one of the following occurs after receiving a HIGH radiation signal from the control room ventilation monitor, R-35A?

A. Utility exhaust fan suction dampers (HV-3628 and HV-3629) close.

B. Exhaust fan inlet dampers (HV-3649A, B, C) close.

C. Filtration exhaust and recirculation fans start.

D. Pressurization system supply fans start.

Source: Farley Exam Bank Question #RMS-40305A07

A - Correct; Per OPS-52107C

B - Incorrect; Happens on a T - signal.

C - Incorrect; Happens on a T - signal.

D - Incorrect; Happens on a T - signal.

55.

A gaseous waste release is in progress to the vent stack in accordance with a gas waste permit and SOP-51.1, "WASTE GAS SYSTEM GAS DECAY TANK RELEASE."

During the planned waste gas release, the power supply to R-14 (Plant Vent Gas Monitor) fails.

Which ONE of the following describes the operator actions?

A. Immediately close RCV-14, Waste Gas Release Valve, to stop the unmonitored release and inform the Shift Supervisor.

B. Check that RCV-14, Waste Gas Release Valve, closed automatically to prevent any unmonitored release, notify Chemistry and Health Physics to implement sampling in accordance with the Offsite Dose Calculation Manual and inform the Shift Supervisor.

C. Check that RCV-14, Waste Gas Release Valve, closed automatically to prevent any unmonitored release, secure from the release using SOP-51.1 and notify I&C personnel to investigate the failure.

D. Verify RCV-14, Waste Gas Release Valve, is open, verify the last reading on R-14 was below the setpoint, notify Health Physics to implement sampling procedures and inform the Shift Supervisor.

The radiation monitors fail to a "High Radiation" conditions on loss of instrument and/or control power that will result in actuation of associated automatic functions.

A - Incorrect; The discharge in progress is automatically securred the auto shutting of RCV-14.

B - Correct; The discharge in progress is automatically securred the auto shutting of RCV-14. Immediate actions of Annunciator FH2, RME CH FAILURE, is to check indications and notify Chemistry and HP. Immediate actions of Annunciator FH1, RMS HI-RAD, are to verify that RCV-14 closed. Action from precaution in SOP-51.1 is to secure the discharge and notify Shift Supervisor.

C - Incorrect; Notifying Instrument Service personnel should occur but is not the immediate concern.

D - Incorrect; The discharge in progress is automatically securred the auto shutting of RCV-14.

56.

Unit 1 is in the process of starting up and is currently at 25% power.

Unit 1 Circulating water pit level has dropped to 150 feet.

Which ONE of the following describes the process by which water is made up to the Circulating Water Canal?

A. Service Water is automatically made up to the system via Circulating Water Makeup Valve (560).

B. Service Water must be manually made up to the system via Circulating Water Makeup Valve (560).

C. River Water is automatically made up to the system via Circulating Water Makeup Valve (560).

D. River Water must be manually made up to the system via Circulating Water Makeup Valve (560).

A - Incorrect; At this low power level the Circulating Water Makeup Valve (560) will be controlled in "Remote Manual" not automatic.

B - Correct; Per OPS-52104D

C & D - Incorrect; Service water is the makeup supply to the Circ water canal, river water is the makeup to the service water system.

57.

Given the following on Unit 1:

- 1B D/G is running and the Shift Supervisor has determined that it is required.
- Service Water has been lost to the 1B D/G and can not be restored.

Which ONE of the following describes when the affected D/G is required to be stopped IAW AOP-10.0, "LOSS OF SERVICE WATER", and what engineered safeguards feature (ESF) loads will be lost?

A. As soon as it is determined that SW cannot be restored to protect the D/G from damage due to overheating and 1A component cooling water (CCW) pump will be lost.

B. As soon as it is determined that SW cannot be restored to protect the D/G from damage due to overheating and 1A charging pump will be lost.

C. If the local Lube Oil temperature alarm cannot be maintained clear to protect the D/G from damage due to overheating and 1A charging pump will be lost.

D. If the local Lube Oil temperature alarm cannot be maintained clear to protect the D/G from damage due to overheating and 1A component cooling water (CCW) pump will be lost.

Source: Modified from Farley Bank Question #AOP-10.0-52520J06 002
Ref: AOP-10.0

A - Incorrect; AOP-10 has the operator isolate SW to the TB and other components as well as line-up SW flow from the other unit first. This is the correct ESF load that would be lost.

B - Incorrect; AOP-10 has the operator isolate SW to the TB and other components as well as line-up SW flow from the other unit first. This is also the incorrect ESF load that would be lost, 1A charging pump is powered from 4160V 1F bus.

C - Incorrect; Step 4.2.6 says that if the LO temp alarm cannot be cleared then Stop the D/G however, this is also the incorrect ESF load that would be lost, 1A charging pump is powered from 4160V 1F bus.

D - Correct; Step 4.2.6 says that if the LO temp alarm cannot be cleared then Stop the D/G. This is the correct ESF load that would be lost since the 1A CCW pump is powered from 4160V 1G bus.

58.

Unit 1 is experiencing a loss of instrument air. The crew has entered AOP-6, Loss of Instrument Air.

Which ONE of the following describes the pressure at which V-901, Service air header isolation valve, closes and when V-903, Instrument air to turbine building isolation valve, closes as instrument air pressure continues to decrease?

	V-901	V-903
A.	80 psig	45 psig
B.	70 psig	45 psig
C.	80 psig	55 psig
D.	45 psig	80 psig

Source: Modified from Farley Bank Questions #COMP AIR-40204D07 002 and COMP AIR-40204D07 003

A - Correct; Per OPS-52108A, V-901 is the first to automatically close at 80 psig and V-903 is the last to automatically close at 45 psig.

B - Incorrect; V-902, Instrument Air Dryer Bypass Valve, opens at 70 psig.

C - Incorrect; V-904, Instrument Air to Service Building, shuts at 55 psig.

D - Incorrect; V-901 and V-903 values are reversed.

59.

Unit 2 was operating at 100% power when an electrical fire started inside the Cable Spreading Room.

Which ONE of the following describes what type of fire suppression system is installed inside the Cable Spreading Room and what are the hazards to personnel if they enter this room?

A. A deluge manual sprinkler system is installed. An electrical shock hazard exists due to the use of water to combat an electrical fire.

B. An automatic high pressure CO_2 system is installed. An asphyxiation hazard exists due to the presence of CO_2 gas.

C. An automatic Halon system is installed. An asphyxiation hazard exists due to the presence of Halon gas.

D. A manual low pressure CO_2 system is installed. An asphyxiation hazard exists due to the presence of CO_2 gas.

Source: Modified from Farley Exam Bank Question #FIRE PROT-40103D02

A - Incorrect; Not a manual deluge system

B - Incorrect; An automatic high pressure CO_2 system not in room

C - Incorrect; No Halon in room

D - Correct; The Cable Spreading Room has a low pressure CO_2 system.

60.

While at 100% power, which ONE of the following conditions represents a loss of primary containment integrity IAW Technical Specifications?

A. An electrician opens the outer containment airlock door to perform maintenance activities without prior approval.

B. During an inspection of the equipment hatch, it is determined that the equipment hatch is not sealed properly.

C. While performing an operability test of two normally open redundant containment isolation valves, one of the valves fails to close.

D. An operator enters containment but leaves the inner airlock door OPEN.

Source: Farley Exam Bank Question #CTMT SRT&IS-52102A01 01 Modified Bank

A - Incorrect; One airlock door can be opened at a time, regardless of whether permission is granted or not.

B - Correct; Maintaining containment operable requires compliance with the visual inspections.

C - Incorrect; Need only one operable isolation valve in series to retain containment integrity.

D - Incorrect; One airlock door can be opened at a time and retain containment integrity.

61.

After a plant trip, the Unit 1 turbine-driven auxiliary feedwater (TDAFW) pump tripped on overspeed.

The control room operator has isolated steam supplies from the steam lines and placed the speed demand controller to 0%.

TDAFWP TRIP & THRTL VLV Q1N12MOV3406 must now be closed.

Which ONE of the following describes how this is accomplished?

A. Locally using local handswitch at hot shutdown panel .

B. Locally using the motor control pushbutton on the control panel.

C. Remotely from the BOP using the valve control pushbutton.

D. Locally using the manual handwheel on the valve.

Source: Farley Exam Bank Question #AFW-40201D09 006

Reference: SOP-22.0

4.10.1	Close the following valves: TDAFWP STM SUPP From 1B SG Q1N12HV3235A/26 TDAFWP STM SUPP From 1C SG Q1N12HV3235B
4.10.2	Set TDAFWP SPEED CONT SIC 3405 TO 0% DEMAND.
4.10.3	Close TDAFWP TRIP & THRTL VLV Q1N12MOV3406 locally using manual handwheel on valve.
4.10.4	Reset the overspeed linkage on the TDAFWP.
4.10.5	Open TDAFWP TRIP & THRTL VLV Q1N12MOV3406 locally or from BOP.
4.10.6	Verify TDAFWP TRIP AND TV CLOSED annunciator JG4 is cleared.

A, B, & C - Incorrect; Per the above exerpt from SOP-22, Version 49.0

D - Correct; See above

62.

In accordance with AOP-28.2 "Fire in the Control Room", communication with Unit 1 HSD panel A & B during the worst case fire, should be achieved by:

A. Gai-tronics Line 1

B. Pax phones

C. Sound powered phones on Unit 1

D. Gai-tronics Line 5

Source: Farley Exam Bank Question #AOP-28.1/.2-52521C03 003

Ref: AOP-28.2 Attachment 1, Communications.

A - Incorrect; Gaitronics not available at HSD panels on Unit 1

B - Correct; All PAX available at HSD panels on Unit 1

C - Incorrect; AOP-28.2 provides the guidance for making a plant wide announcement, but does not establish sound powered communications.

D - Incorrect; Gaitronics not available at HSD panels on Unit 1. Gaitronics line 5 is dedicated line for emergencies.

63. **Question Deleted due to Post Examination Comments and Review.**

Which ONE of the following Mode changes requires at least two (2) mode determination parameters to change?

(Mode determination parameters are Reactivity Condition (Keff), Rated Thermal Power, Average Coolant Temperature).

A. Going from Mode 1 to Mode 2.

B. Going from Mode 5 to Mode 4.

C. Going from Mode 3 to Mode 2.

D. Going from Mode 5 to Mode 6.

Reference Technical Specification Definitions Table 1.1-1.

Distractor Analysis:
A: Incorrect, Difference between Mode 1 and Mode 2 requires only % Rated Thermal Power to change.
B: Incorrect, Difference between Mode 5 and Mode 4 requires only Average Coolant Temperature to change change..
C: Incorrect, Difference between Mode 3 and Mode 2 requires only Reactivity Condition (Keff), to change.
D: Correct, Difference between Mode 5 and Mode 6 requires both Reactivity Condition (Keff), and Average Coolant Temperature to change.

64.

Which one of the following is considered a Temporary Plant Alteration that supports Maintenance per AP-13, "Control of Temporary Alterations?"

A. Placement of a plant labeling deficiency tag IAW AP-25, "Equipment Identification."

B. Lifting leads to defeat a MCB annunciator in preparation for repairs by the oncoming team.

C. Installation of tygon tubing on a pump drain line IAW AP-14, "Safety Tagging."

D. Gagging of a relief valve in preparation for a hydrostatic test of that system.

Source: Farley 2001 NRC Exam

A -Incorrect, per AP-13, not a listed item
B - Correct, When lifting leads for corrective/preventive maintenance or troubleshooting purposes, the leads shall be identified as shown on the electrical drawing. If the leads are to remain lifted while not attended by the journeyman or if the job is to be turned over to another crew, then a temporary identification tag shall be placed on each lead lifted. (AP-13)
C - Incorrect, per AP-13, not a listed item
D - Incorrect, This was a correct answer prior to the June 8 version 4 change.

65.

An individual has requested a Restricted Removal (RR) tag order to allow performance of a maintenance task that he has been assigned.

Which ONE of the following positions, at a minimum, must the individual hold in order to mark the RR block on the Tag Order Acceptance section of the cover sheet for a maintenance task?

A. A designated operator.

B. A tagging official.

C. An apprentice.

D. A journeyman.

Source: Farley 2001 NRC Exam
Original Source: Farley Exam Bank Question #O52303G02003

D - Correct, See FNP-0-AP-14, section 4.2

66.

Plant conditions are as follows:

- Unit 1 is in Mode 1.
- The 1B Charging Pump is aligned to 'A' Train and the 1C Charging Pump is operating.
- The 1A Charging Pump has been declared INOPERABLE and taken out of service for oil replacement.
- All other portions of the CVCS and related subsystems are OPERABLE.

Which one of the following statements describes the action of the Shift Support Supervisor - Plant in regard to the LCO Status Sheet for the 1A Charging Pump condition?

A. NO LCO Status Sheet is required to track the 1A Charging Pump condition.

B. An ADMINISTRATIVE LCO status sheet should be initiated to track the 1A Charging Pump condition.

C. A VOLUNTARY LCO status sheet should be initiated to track the 1A Charging Pump condition.

D. A MANDATORY LCO status sheet should be initiated to track the 1A Charging Pump condition.

Source: Farley Bank Question #INTRO TS-52302A08 002

B - Correct; OPS-52302A states that equipment removed from service that is not required in the present plant mode but is required in a higher plant mode or if it reduces the redundancy of the equipment, but not less than T.S. requirements, then an Administrative LCO may be written. The inoperability of one charging pump reduces the redundancy of the equipment, but not less than T.S. requirements therefore, an Administrative LCO should be written to track the 1A charging pump condition.

67.

In accordance with 10CFR20, which ONE of the following sets of conditions represent the LOWEST radiation conditions that would cause an area to be classified as a High Radiation Area?

Any area accessible to personnel that would result in an individual receiving a dose equivalent of ____ in 1 hour at 30 centimeters from the radiation source external to the body.

A. 0.02 rem

B. 0.05 rem

C. 0.2 rem

D. 0.5 rem

Source: Kewaunee Exam 12/18/97

REFERENCE: 10CFR20 1003

High Radiation area is any area accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent in excess of 0.1 rem in 1 hour at 30 centimeters from the radiation source.

Very High Radiation area is any area accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving an absorbed dose in excess of 500 rads in 1 hour at 1 meter from the radiation source.

Distracter A - Incorrect, question asks LOWEST radiation conditions that would cause an area to be classified as a High Radiation Area. 0.02 rem is below 0.1 rem.
Distracter B - Incorrect, question asks LOWEST radiation conditions that would cause an area to be classified as a High Radiation Area. 0.05 rem is below 0.1 rem.
Answer C - Correct, Although higher than the 0.1 rem, it is the lowest that would be posted as a High Radiation Area.
Distracter D - Incorrect, 0.2 rem is lower than 0.5 rem.

68.

Which ONE of the following describes the general practice prescribed by the Health Physics Manual, FNP-0-M-001, that should **FIRST** be used to minimize the intake of radioactive material by personnel entering Airborne Radioactivity Areas?

A. Reduction in working times.

B. Increased radiological surveillances.

C. Use of respiratory protective equipment.

D. Reduce airborne levels using engineering controls.

Source: Farley 2000 NRC Exam

A, B, C - Incorrect; When impractical to apply process or other engineering controls, other precautionary measures may be used, e.g. increased radiological suveillances, reduction in working times, or use of respiratory protective equipment.

D - Correct; As a general practice, the plant staff will use process or other engineering controls to limit the concentrations of radioactive materials in the air below the limits defined in 10CFR20.

69.

Which ONE of the following is required to be operable by Post Accident Monitoring Instrumentation Technical Specification in Mode 3?

A. Containment Temperature.

B. AFW flow rate.

C. Accumulator level.

D. Spent Fuel Pool Level.

Source: Modified from Farley Exam Bank Question #POST LOCA-52102D01 002

Reference: Tech Spec 3.3.3

B - Correct; per TS Table 3.3.3-1

70.

Plant conditions are as follows:

- Unit 1 is operating at 100% power.
- Containment air particulate radiation monitor R-11 detector is out of service for repairs; expected return to service in 4 days.
- Grab samples are being taken per the Technical Specification action statement.
- Containment Radioactive gas monitor R-12 has just started indicating an increasing trend in containment atmosphere gaseous radioactivity levels.

Which ONE of the following actions is required and the reason for taking the action?

A. Within an hour, initiate action to place the plant in Hot Standby within 6 additional hours, to meet Technical Specifications.

B. Enter AOP-1.0, RCS Leakage, to identify and isolate the source of leakage.

C. Immediately trip the reactor and enter EEP-0, Reactor Trip or Safety Injection, to mitigate the condition.

D. Immediately initiate a non-emergency notification per 10CFR50.72, One Hour Report, to inform the NRC.

Source: Farley Exam Bank Question #AOP-1.0-52520A02 010

A - Incorrect; The indications given do not support a Tech Spec shutdown.

B - Correct; R-12 is an early indication of a primary leak and should be investigated per AOP-1.

C - Incorrect; A reactor trip is not warrented at this point from the indications given.

D - Incorrect; Indications given do not indicate that any deviation from the plant's Technical Specifications exist.

71.

A failed open spray valve that could not be shut resulted in a safety injection. The reactor coolant pump in the affected loop was tripped and, with pressurizer pressure now under control, safety injection termination was permitted. With only one charging pump running, pressurizer pressure remained stable.

At the procedural step when normal charging was established, PRZR level started trending down from 15% level and could not be controlled.

Which ONE of the following describes the actions the operator should take at this point?

A. Manually SI and recommend transitioning to EEP-0, Reactor Trip or Safety Injection.

B. Realign HHSI flow; start additional charging pumps, and recommend transitioning to EEP-0, Reactor Trip or Safety Injection.

C. Realign HHSI flow, start additional charging pumps, and recommend transitioning to EEP-1, Loss of Reactor or Secondary Coolant.

D. Realign HHSI flow; start additional charging pumps, and recommend transitioning to ESP-1.2, Post LOCA Cooldown and Depressurization.

Source: Farley Exam Bank Question #ESP-1.1-52531E06 005
References: ESP-1.1

A - Incorrect; If PZR level can not be maintained, the flow path must be reestablished and a transition to ESP-1.2 is warrented. There is no need to manually SI and transition to EEP-0.

B - Incorrect; The transition to EEP-0 is incorrect.

C - Incorrect; The transition to EEP-1 is incorrect.

D - Correct; From ESP-1.1, SI Termination, if PZR level can not be maintained, the flow path must be reestablished and a transition to ESP-1.2 is warrented.

72.

Given the following:

- A Main Steam line Break has occured inside containment on Unit 1.
- Containment pressure is at 5.5 psig.
- The Crew has entered FRP-P.1, Response to Pressurized Thermal Shock Conditions.
- An RCS pressure reduction is in progress.
- The RO observes RCS Subcooling at 40°F.

Which ONE of the following describes the correct action to be taken by the crew?

A. Start an additional charging pump to raise RCS subcooling.

B. Close the PORV to stop RCS depressurization until subcooling is recovered.

C. Continue with the depressurization of the RCS.

D. Dump steam from an intact S/G to raise subcooling.

Source: Modified from Farley Exam Bank Question #2305. Modified to have the steam leak inside containment, and adverse numbers applicable.

A - Incorrect; starting an additional charging pump will raise RCS pressure, and increase subcooling, however a pressure increase is not desired.

B - Correct; with adverse containment numbers, and this value of subcooling, the procedure directs closing the PORV and allowing subcooling to rise.

C - Incorrect; with adverse containment numbers and subcooling < 45 °F, the procedure directs closing of the PORV.

D - Incorrect; a large cooldown has already occurred, and no further cooldown is allowed until after a soak has taken place.

73.

During a small break Loss Of Coolant Accident (LOCA) on a cold leg, when there is not a large amount of injection flow from the ECCS through the core and out the break, a phase is reached where the vessel level continues to decrease below the hot leg penetrations and boiling in the core is the means of transporting the core heat to the bubble. A fixed differential pressure exists between the core and the break and is maintained by the loop seal.

Which ONE of the following describes the primary mechanism for heat removal during this phase?

A. Condensation of vapor from the bubble at the hot leg side of the S/G U-tubes, which is cooled by S/G water, and then drains back down to the core via the hot legs.

B. Condensation of vapor in the head, which is cooled by fans in containment, and then drains back down to the core.

C. Slug flow via the cold legs through the loop seal and flashing across the cold leg break.

D. Condensation of vapor from the bubble at the cold leg side of the S/G U-tubes, which is cooled by S/G water, and then drains back down to the core via the cold legs.

Source: Farley 2001 NRC Exam
Original Source: Byron 2000-301

A - Correct, This describes REFLUX cooling which is almost as efficient as two phase natural circulation.
B - Incorrect, The cooling provided hear is basically losses to ambient and is not very effective.
C - Incorrect, Not likely to occur on a small break LOCA.
D - Incorrect, Natural circulation can not occur when level in the core has decreased below the hot leg penetrations.

74.

Given the following:

- Unit 1 has tripped from 100% power due to a Loss of Coolant Accident (LOCA) with a loss of Offsite Power.
- 1-2A Diesel Generator is tagged out.
- 1C Diesel Generator has failed to start.

The Operators are performing EEP-1 "Loss of Reactor or Secondary Coolant" and are at the step to "Verify cold leg recirculation capability - Available".

- RCS pressure is 700 psig.
- All S/G pressures are stable at 900 psig.
- RWST level is 12.8 ft. and decreasing slowly.
- 1B RHR Pump has tripped on overcurrent.
- Containment pressure peaked at 10 psig and is decreasing.
- Waste Gas Processing Room Sump Pumps are running.
- All other equipment is operating normally.

The operators should transition to which ONE of the following procedures?

A. ESP-1.2, "Post LOCA Cooldown and Depressurization"

B. ESP-1.3, "Cold Leg Recirculation"

C. ECP-1.1, "Loss of Emergency Coolant Recirculation"

D. ECP-1.2, "LOCA Outside Containment"

Source: New
Reference ECP-1.1,

A - Incorrect; transition to ECP-1.1is required per step 14 of EEP-1 based on inability to verify cold leg recirc capability

B - Incorrect; Transition to ESP1.3 is based on RWST levle of 12.5 ft.

C - Correct; based on inability to verify cold leg recirc capability

D - Incorrect; Transition to ECP-1.2 based on Aux Bldg sump pumps running occurs after the transition to ECP-1.1.

75.

Given the following conditions:

- A LOCA has occurred on Unit 1. EEP-1.0 "Loss of Reactor or Secondary Coolant", is in progress.
- EE2, CTMT PRESS HI-2 ALERT annunciator alarms
- Containment Pressure is 17 psig.
- Containment High Range Radiation Level Monitors indicate: R27A is 4 R/HR; and R27B is 5 R/HR.

Which ONE of the following FRPs is now applicable?

A. FRP-Z.1, "Response to High Containment Pressure" due to an RED path based on containment pressure.

B. FRP-Z.3, Response to High Containment Radiation Level, due to an ORANGE path based on containment pressure.

C. FRP-Z.1, Response to High Containment Pressure, due to an ORANGE path based on containment pressure.

D. FRP-Z.3, Response to High Containment Radiation Level, due to a YELLOW path based on high containment radiation.

Source: Farley Exam Bank Question 52530B08 016 Modified.

A - Incorrect; a red path occurs at 54 psig.

B - Incorrect; an orange path does not exist for containment radiation.

C - Incorrect; an orange path for containment pressure is 27 psig.

D - Correct; FRP-Z.3 would be entered on a yellow path based on containment radiation.

76.

A reactor trip following a grid disturbance has occurred on Unit 1. 'A' Train was the on service train at the time of the trip. A safety injection has NOT occurred.

The following plant conditions are observed:

- RCS Tavg = 547 °F
- RCS pressure = 2198 psig and slowly increasing
- TDAFW pump is in service
- 1A CHARGING PUMP is OOS with suction and discharge valves tagged shut
- 1A Boric acid tank pump is OOS with suction and discharge valves tagged shut
- 4160V 'B' Train (G & L) power available lights are NOT illuminated
- Control Rods are fully inserted except Rods H-8 and D-4 are at 24 and 6 steps respectfully.

Which one of the following describes the appropriate action you should direct the RO to take?

A. Open Q1E21LCV115B and Q1E21LCV115D, close QIE21LCV115C and Q1E21LCV115E, and verify at least 40 gpm charging flow through the normal charging flowpath.

B. Verify 1B BAT pump is running, open Q1E21MOV8104, verify at least 30 gpm boric acid flow and 40 gpm charging flow.

C. Open Q1E21LCV115B and Q1E21LCV115D, close QIE21LCV115C and Q1E21LCV115E, and verify at least 30 gpm charging flow through the normal charging flowpath.

D. Open Q1E21LCV115B and Q1E21LCV115D, close QIE21LCV115C and Q1E21LCV115E, and verify at least 92 gpm charging flow through the normal charging flowpath.

Source: Farley Test Bank Question #E-0/ESP-0.0-52530A04

A - Incorrect; With no boric acid tank pump available (1A OOS and 1B without power) AOP-27 Step 1 can not be performed. This is correct actions per AOP-27 Step 1 RNO if power was available however, LCV-115 D and E has no power and will not stroke. The charging flow rate is too low for not having any flow from the boric acid tanks.

B - Incorrect; This is correct actions of AOP-27 if power available to all components however, the Boric acid tank pumps are not available and LCV-115 D and E has no power and will not stroke.

C - Incorrect; The charging flow rate is too low for not having any flow from the boric acid tanks. This flow value is the flow that is required from the boric acid tanks.

D - Correct; LCV-115 D and E has no power and will not stroke. However, in trying and following AOP-27 for emergency boration. With LCV-115 C and B in their proper positions, flow will be from the RWST and objective accomplished.

77.

Unit 1 is in Mode 4 performing a startup after a refueling outage. The crew is performing the Steps of section 5.32 of UOP-1.1, Startup Of Unit From Cold Shutdown To Hot Standby, preparing to enter Mode 3.

The following conditions exist:
- 'B' train CCW is the in service train.
- RCS temperature is 340°F with a slow heatup in progress, about 5°F/hr.
- An RCS dilution is in progress per Step 5.32.5 of UOP-1.1, per management direction.
- '1B' RCP is in service. 1A RCP's tag has been cleared. '1C' RCP is tagged out.
- SG WR Levels: 1A - 80%; 1B - 65%; 1C - 75%
- '1A' & '1B' RHR have been placed in the standby ECCS alignment.

You are the SRO and have been informed that the '1B' and '1C' CCW pumps have just been declared inoperable due to the vender having supplied the incorrect oil that was used in only these two pumps. '1B' and '1C' CCW pumps are tagged for maintenance.
- 'A' CCW pump tripped.

Which ONE of the following describes the actions that must be taken in accordance with Technical Specification?

REFERENCE PROVIDED

A. Restore at least one of the CCW pumps to operable status within 72 hours.

B. Immediately stop the dilution in progress, secure the heatup in progress and maintain current plant conditions.

C. Immediately secure the heatup in progress and be in Mode 5 within 24 hours.

D. Immediately secure the heatup in progress and maintain current plant conditions.

This question meets 10CFR55.43(b)(2)

A - Incorrect; This is the correct action for the CCW system alone per TS 3.7.7 Action 'A'.

B - Correct; TS 3.7.7 Action 'A' also refers to TS 3.4.6. TS 3.4.6 Action 'C' has the dilution immediately secured. The heatup must be securred to prevent crossing into Mode 3.

C - Incorrect; The plant would not have to be placed into Mode 5 per TS 3.4.6 Action 'B' since RCS loops are unaffected since 'A' CCW is the inservice train and all RCPs are still available.

D - Incorrect; Per TS 3.4.6 Action 'C' the dilution must be immediately suspended.

78.

Given the following plant conditions on Unit 1:

- Reactor trip and safety injection have occurred.
- The crew has entered EEP-1.0, Loss Of Reactor Or Secondary Coolant.
- MSIV's have just isolated due to Containment pressure at 16.5 psig.
- RCS pressure is 1700 psig and stable.
- Core Exit Thermocouples indicate 570°F and subcooling is 52°F.
- All S/G Narrow Range levels are 40% and total AFW flow is 450 gpm.
- Pressurizer level is 52%.

Based upon the above indications, which ONE of the following should you, as SRO, direct the operators to perform?

A. Verify all Reactor Coolant Pumps stopped.

B. Transition to ESP-1.1, "SI TERMINATION."

C. Establish HHSI flow, and start additional charging pumps as required.

D. Transition to FRP-Z.1, "RESPONSE TO HIGH CONTAINMENT PRESSURE,"due to increasing containment pressure.

This question meets 10CFR55.43(b)(5)
Original Source: Byron 2000-301 used on Farley 2001 NRC Exam.

A - Incorrect, This is the action if the subcooling was below 45 degrees F.
B - Correct, This is the required action per step 7 of EEP-1, LOSS OF REACTOR OR SECONDARY COOLANT.
C - Incorrect, >45 deg F SCMM and > 50%pzr level
D - Incorrect, This action is required when ctmt press >27# and directed to monitor CSF's in EEP-0 step 31

79.

You are the Unit 2 SRO. Unit 2 is at 100% steady-state power. All systems are in automatic and functioning properly.

The following annunciators are received:

- DC1, "RCP #1 SEAL LKOF FLOW LO"
- DA5, "2A RCP #2 SEAL LKOF FLOW HI"

The plant operator reports the following parameters:

RCP	2A	2B	2C
#1 seal injection flow (gpm)	7.4 stable	7.3 stable	7.4 stable
#1 seal leakoff flow (gpm)	0.0 stable	4.0 stable	4.0 stable
#1 seal D/P (psid)	>400 stable	>400 stable	>400 stable
RCP lower seal water brg. temp (°F)	190 increasing	124 stable	123 stable

Which ONE of the following is the most probable cause of these indications and the required actions?

A. 2A RCP #1 seal failure, trip the reactor, and secure the RCP.

B. 2A RCP #1 seal failure, perform a controlled shut down to Mode 3 in 6 hours.

C. 2A RCP #2 seal failure, trip the reactor, and secure the RCP.

D. 2A RCP #2 seal failure, monitor 2A RCP parameters for further degredation, contact Westinghouse for further guidance.

Source: Modified from Farley Exam Bank Question #RCP SEAL-52522A03
This question satisfy the criteria in 10CFR55.43(b)(5).

A - Incorrect, Flow into the #1 seal is satisfactory. D/P across the #1 seal is satisfactory. Correct action for a failed #1 seal.

B - Incorrect, Flow into the #1 seal is satisfactory. D/P across the #1 seal is satisfactory. Action is the required TS action for one RCS loop becoming inoperable.

C - Correct, Evidenced mostly be the #1 seal leakoff flow at 0.0 which shows that all the flow is going through the #2 seal indicating its failure. Annunciator DA5, 1A RCP #2 SEAL LKOF FLOW HI, confirms this failure, along with the slighty elevated RCP radial brg temp. RCP radial bearing not being stable is annunciator DC1 criteria for tripping the reactor and securing the RCP.

D - Incorrect, #2 seal failure is indicated. Action is for stable nondegrading parameters.

80.

Given the following plant conditions:

- Unit 2 Reactor is shutdown and the reactor trip breakers are open.
- RCS pressure is 2200 psig.
- RCS Temperature is 540°F. and slowly decreasing.
- Source Range channel N-31 is out of service for repairs.
- Source Range channel N-32 fails low.

Which ONE of the following describes the action that is required to be taken?

A. Borate to cold shutdown conditions.

B. Place channel N-32 in the tripped condition within six hours.

C. Stop the cooldown and commence an RCS heatup.

D. Verify shutdown margin within one hour.

Source: Bank from Farley Exam Bank Question Excore-52201D10 025.
This question meets the requirements of 10CFR55.43(b)(5)

TS 3.3.1

A. Incorrect, If shutdown margin is determined to be less than required by T/S then emergency boration would be required.

B. Incorrect, Some NI channels are required to be placed in the tripped condition withing six hours; the SR channels are not.

C. Incorrect, although this would be prudent, there is not a requirement to heatup.

D. Correct, This is the T/S requirement for the number of operable channels less than the minimum required.

81. **Question deleted due to post examination comments and review.**

Unit 1 was at 100% power when a Large Break LOCA occurred inside containment. The crew has responded per the ERGs and has transitioned to ESP-1.3, Transfer to Cold Leg Recirculation, from EEP-1, Loss of Reactor or Secondary Coolant, Step 16. While aligning 1B RHR pump for cold leg recirculation, Containment pressure reached 27 psig. Both trains of containment spray have actuated.

The crew is currently performing Step 8 of ESP-1.3 checking containment spray in operation. RWST level is 4.4 ft and slowly decreasing.

Which ONE of the following discribes the correct actions and procedure transition, if any, required to mitigate this condition?

A. Secure the CS pumps, then transition to FRP-Z.1, Response to High Containment Pressure.

B. Align the CS pumps for cold leg recirculation, then transition to FRP-Z.1, Response to High Containment Pressure.

C. Transition to ECP-1.1, Loss of Emergency Recirculation.

D. Continue in ESP-1.3 and subsequently return to the procedure and step in effect (i.e. EEP-1, step 16)

NEED Licensee to verify that answer 'A' is the expected response. The information provided to the NRC for exam developement did not address this situation.

LICENSEE VALIDATION IS REQUIRED.

A - Correct; An ORANGE path exist for containment pressure.

B - Incorrect; NEED Licensee to verify that this is not an expected response for this condition otherwise a new distractor needs to be developed.

C - Incorrect; This is a logical procedure to transition to although not supported in step 9 of ESP-1.3. ESP-1.3 has no RNO actions for this situation. Lesson plan OPS-52531G page 10, states that if at least one path from the sump to the RCS cannot be established a transition to ECP-1.1 is made. The lesson plan does not address if a path from the sump to the containment spray can not be established.

D - Incorrect; to continue in ESP-1.3 would result in securing all supply to the running containment spray pumps without instructions to secure the pumps.

This question addresses the second part of K/A 026A2.07 (i.e. part (b) of the A2 statement allowed by NUREG-1021, Rev.9, Section ES-401, Step D.2.a).

This question meets the requirements of 10CFR55.43(b)(5) for an SRO only question.

82.

Unit 1 is operating at full power with Pressurizer Pressure Instrument PT-455 failed low. All required actions have been completed with PT-455 channel in trip. Pressurizer Pressure instrument, PT-456 fails to 2300 psig.

Which ONE of the following describes the action(s) that must be performed to satisfy Technical Specifications?

REFERENCE PROVIDED

A. Place PT-456 channel in trip within the next 6 hours.

B. Shutdown the plant to Mode 3 within 12 hours.

C. Reduce THERMAL POWER to < P-7 within 12 hours.

D. Shutdown the plant to Mode 3 within 7 hours; Mode 4 within 13 hours; and Mode 5 within 37 hours.

Reference: TECH SPEC 3.3.1/3.3.2

A - Incorrect; This is the Action 'E.1' of TS 3.3.1, for one channel inoperable, and is the correct action if this were the only pressurizer pressure channel failed however, with two channels failed placing this channel in trip will cause a reactor trip.

B - Incorrect; This is the alternative Action for 'E.1', Action 'E.2' of TS 3.3.1, and is an action for one channel inoperable.

C - Incorrect; This is the alternative Action for 'M.1' , Action 'M.2' of TS 3.3.1, Tripping the bistable action of 'M.1' was already performed for the PT-455 failure. This is an action for one channel being inoperable.

D - Correct; There is no condition stated in LCO 3.3.1 for these concurrent failures, therefore LCO 3.0.3 must be entered and the plant shutdown.

This question meets the requirements of 10CFR55.43(b)(2) for an SRO only question.

83.

Spent Fuel Pool (SFP) cooling has been lost due to the total loss of CCW. SFP temperature is 170°F and slowly increasing. AOP-36.0, Loss of Spent Fuel Pool Cooling, has been implemented.

Which ONE of the following will provide the cooling method for the spent fuel pool on a sustained loss of CCW to both trains of SFP cooling in accordance with AOP-36.0 for the above conditions?

A. Feed and bleed using Refueling Water Storage Tank (RWST).

B. Evaporative loss while maintaining SFP level using the RWST.

C. Feed and Bleed using Recycle Holdup Tanks (RHT).

D. Evaporative loss while maintaining SFP level using the Demineralized water system.

A - Incorrect; This method is used initially during the performance of AOP-36.0, Loss of Spent Fuel Pool Cooling, however, there is no procedure provisions to continue this method once SPF temperature is above 150 °F.

B - Incorrect; Do not use RWST to maintain level.

C - Incorrect; Not recognized by AOP-36.0 as an approved cooling method.

D - Correct; If level in the SFP cannot be maintained then the perferred source will be demin water per step 14.

This question meets the requirements of 10CFR55.43(b)(5) for SRO only question.

84.

Given the following:

- You are the Shift Supervisor (SS).
- Unit 1 is in Mode 6, Refueling.
- Core reload is occurring in containment and fuel movement is in progress.

- The SRO in charge of fuel handling reports to you that the fuel assembly has impacted the seal ring at the hold down clamp.
- Annunciator EH2, "SFP LVL HI-LO," has just alarmed.
- The Refueling Cavity watch reports that the refueling cavity level is lowering rapidly.

Which ONE of the following describes the initial action?

Implement AOP-30.0, Refueling Accident, and:

A. Ensure the SRO in charge of fuel handling evacuates all personnel from Containment and the Spent Fuel Pool room.

B. Ensure the SRO in charge of fuel handling places any fuel assembly in transit in a safe location.

C. Initiate action to place the Control Room Emergency Filtration/Pressurization System (CREFS) in service.

D. Restore the Reactor Internals to the reactor vessel.

Source: Farley Test Bank Question #AOP-30.0-52521H04

A - Incorrect, Only non-essential personnel need to be evacuated the refueling crew is needed to safely store the fuel assembly in transit.

B - Correct, Initial response is to secure the fuel assembly in transit, worst case the SRO has 164 minutes to safely store the fuel assembly. Makeup flow capacity from one train of RHR is sufficient to maintain refueling level above the level where uncovery of the fuel assembly would occur.

C - Incorrect, This is the ATTACHMENT 1 actions of AOP-30 which is done in parallel with the remainder of AOP-30 after the fuel assembly is directed to be secured.

D - Incorrect, This can not be done due to the fuel assembly being in transit.

85.

Which ONE of the following describes the most restrictive conditions assumed to ensure that the minimum shutdown reactivity of accident analysis is met during a guillotine break of a main steam line inside containment?

A. At the begining of core life, with T_{avg} at full load operating temperature.

B. At the end of core life, with T_{avg} at full load operating temperature.

C. At the begining of core life, with T_{avg} at no load operating temperature.

D. At the end of core life, with T_{avg} at no load operating temperature.

Source: Slightly modified from a Farley Bank Question #O52302E01 005.

A. Incorrect, the conditions listed in Basis of T/S are EOL, No load Tavg.

B. Incorrect, the conditions listed in Basis of T/S are EOL, No load Tavg.

C. Incorrect, the conditions listed in Basis of T/S are EOL, No load Tavg.

D. Correct. These are the conditions listed in the basis of T/S.

86.

Plant conditions are as follows:

- Unit 1 was operating at 78% power when a loss of Steam Generator Feed Pump (SGFP) "A" occurred.
- Normal makeup to the VCT has just been completed.
- The shift crew is taking the required immediate actions in accordance with AOP 13.0 "Loss Of Main Feedwater".
- The OATC is driving rods to decrease Tavg.
- The current plant electrical load has stablized at 450 MW.
- $T_{avg} - T_{ref}$ mismatch is 3°F and T_{avg} has just begun to rise.
- Annunciator FE1, CONTROL ROD BANK POSITION LO, has just alarmed.

Which ONE of the following actions caused the FE1 alarm, and what is the appropriate corrective action?

A. The operator has decreased the boron concentration too much and should withdraw rods to clear the alarm.

B. The operator has driven rods in too far for the existing boron concentration and should borate from the Boric Acid Tanks.

C. The turbine load has decreased too far and should be raised.

D. The operator has caused the steam dumps to open and should decrease the rod insertion rate.

Source: Farley Exam Bank Question #AOP-13.0-52520M07 001

Reference: AOP-13.0

CAUTION : WHEN TURBINE MANUAL AND FAST ACTION + GV CLOSE is used, THEN releasing the FAST ACTION + GV CLOSE pushbuttons at ~ 700 MWe as indicated on the analog meter should allow turbine load to coast and stabilize at ~ the desired 540 MW. This phenomenon is due to the inherent windup of the controller. Reducing load in this manner should prevent undesirable overshoot of the targeted 540 MW.
****
****
1.2 IF the Main Turbine is in MANUAL, THEN reduce turbine load to less than 540 MW using TURBINE MANUAL AND FAST ACTION + GV CLOSE.

A. Incorrect; Tave is rising which would indicate more boration is required.

B. Correct; Tave is rising which would indicate more boration is required, but the boration should be from the RMCS system or from Emergency Boration flowpath per AOP-17.

C. Incorrect; Per AOP-13, turbine load should only be reduced to around 540 MW. In this case turbine load should be stabilized and Tave stabilized.

D. Incorrect; The opening of the steam dumps is an expected occurance and will not cause Turbine MW to lower or Tave to rise.

87.

If an event involving a loss of a 4160V emergency bus were to occur while the plant was in Mode 3 with reactor trip breakers open, AOP-5.0, Loss of A or B Train Electrical Power, directs the operator to verify Service Water (SW) supply to the diesel generators. However, if the event occurred with the plant at 2% power, the procedure directs the operator to trip the reactor, trip the turbine, and go to EEP-0, Reactor Trip or Safety Injection.

Why does the operator NOT verify SW supply to the diesel generators when a loss of electrical Train A and/or B occurs when the reactor is critical?

A. The Emergency Responce Procedures will ensure specific SW loads are isolated at the appropriate time.

B. Minimize the time the plant is under an LCO due to loss of one train of SW.

C. Tech Specs prohibit operation in Modes 1 or 2 with SW isolated to the loads affected by the loss of electrical train A and/or B.

D. The specific SW loads do not need to be isolated if the Emergency Responce Procedures are entered.

Source: Farley Exam Bank Question #AOP-5.0-52520E03 003

Reference: AOP-5.0

A - Correct; per OPS-52520E page 9, this action ensures that isolating SW is performed at the appropriate times.

88.

The Unit 1 control room was evacuated and AOP 28.0, *Control Room Inaccessability*, has been entered.

Control has been shifted to the Hot Shutdown Panel.

Which ONE of the following sets of parameters are all within the band that the operator must maintain in accordance with AOP-28.0?

A. Pressurizer Level 40%, RCS Pressure 2260 psig, and S/G level 70%.

B. Pressurizer Level 35%, RCS Pressure 2215 psig, and S/G level 55%.

C. Pressurizer Level 18%, RCS Pressure 2235 psig, and S/G level 60%.

D. Pressurizer Level 25%, RCS Pressure 2240 psig, and S/G level 65%.

Source: Modified from Farley Bank Question #52521B04 003

Reference: AOP-28.0

A - Incorrect; all parameters are out of the control band.

B - Incorrect; all parameters are out of the control band.

C - Incorrect; Steam Generator level is out of the control band.

D - Correct; All are within procedure control band limits. pressurizer level 20-30%, RCS pressure 2220-2250 psig, and S/G level 64-66%.

89.

The following conditions exist on Unit 1:

- Operators are responding to a reactor accident.
- The SI headers have been damaged resulting in a complete loss of injection to the core.
- Upon transitioning out of EEP-0.0 "Reactor Trip or Safety Injection", the STA reports that temperatures seen by all core exit thermocouples (CETC's) are increasing rapidly.
- The five hottest CETCs read between 1250°F and 1275°F.
- Intermediate range SUR is oscillating from zero to + .5 dpm.
- Containment Pressure is 55 psig.

Which ONE of the following describes the correct operator response for these conditions?

A. Operators should transition to FRP-Z.1, "Response to High Containment Pressure".

B. Operators should transition to FRP-S.1, "Response to Nuclear Power Generation/ATWT".

C. Operators should transition to FRP-C.1, "Response to Inadequate Core Cooling".

D. Operators should continue to monitor CETC temperatures. If the five hottest CETCs exceed 1500°F, then transition to FRP-C.1 "Response to Inadequate Core Cooling".

Source: Farley Exam Bank Question #FRP-C52533C09 001
SRO Procedure transition
This Question meets 10CFR55.43(b)(5)

References: CSF-0.0 and FRP-C.1

A. Incorrect, A red path does exist for High Containment pressure, however core cooling is a higher priortiy.

B. Incorrect, Intermediate range detectors above zero would be an orange path on FRP-S.1, the red path on core cooling is of higher priority.

C. Correct, this is the correct transition.

D. Incorrect, the correct transition to FRP-C.1 is the fifth hottest CETC > 1200°F.

90.

During Surveillance Testing, the 'A' Train Solid-State Protection System (SSPS) was found to be inoperable. While troubleshooting is in progress, I&C has tagged the Output Relay Mode Selector Switch in the 'TEST' position.

Which ONE of the following is the correct mitigation strategy in accordance with EEP-0, "REACTOR TRIP OR SAFETY INJECTION," if the unit had a reactor trip and safety injection at this time?

A. Both Trains of Phase 'A' components would actuate, no other action are required.

B. Only 'B' Train Phase 'A' components would actuate, the operator would have to initiate 'A' Train components with the Phase 'A' handswitch.

C. Neither Train Phase 'A' components would actuate, the operator would have to initiate both Train components with the Phase 'A' handswitch.

D. Only 'B' Train Phase 'A' components would actuate, the operator would have to align 'A' Train components manually.

Source: Farley 2001 NRC Exam
Original Source: Farley NRC Exam 2000-301
LO: O52201I32

A - Incorrect, B Train will actuate.
B - Incorrect, The handswitch will not work.
C - Incorrect, B Train will actuate and the handswitch will not work.
D - Correct, B train will actuate, the handswitch will not work and the operator will have to manually align components.

91.

Maintenance activities require workers to access the main RCA through door 2484, on Unit 2, instead of through the routine access hallway adjacent to the Heath Physics Office.

Which ONE of the following describes who must authorize this access route?

A. Technical Manager and Health Physics Supervisor.

B. Only the Heath Physics Supervisor.

C. Only the Shift Supervisor.

D. Technical Manager and Shift Supervisor.

Source: Farley 2000 NRC Exam

A - Incorrect; Health Physics Supervisor authorization is not required.

B - Incorrect; Health Physics Supervisor authorization is not required.

C - Incorrect; Shift Supervisor must authorize access to the main RCA from any other point.

D - Correct; IAW FNP-0-AP-42, Step 9.3, to access the main RCA from door 2484 requires both the Technical Manager and Shift Supervisor approval.

92.

During Solid Plant Pressure Control operations with letdown from RHR, FNP-1-SOP-7.0, RHR System, requires that Q1E21HCV142, RHR TO LTDN HX be open as far as possible.

Which ONE of the following describes the basis for this precaution?

A. To ensure maximum letdown flow rate for purification.

B. To ensure VCT level can be maintained under all charging flow conditions.

C. To ensure Q1E21PCV145, Letdown Pressure Control can control pressure transients.

D. To ensure RCS to RHR Suction Relief Valves aren't challenged.

Watts Bar 2002 NRC exam

REF: 1-FNP-SOP-7.0, Section 3, page 3 (P&L's)
Distractor analysis:
Answer A is incorrect because charging flow ultimately controls letdown flow.
Answer B is incorrect because balancing charging and letdown controls VCT level.
Answer C is correct because with HCV-142 less than full open, it can in effect limit flow and prevent pressure reduction when PCV-145 fully opens in response to a high pressure transient.
Answer D is incorrect because the suction relief can be challenged by other factors (eg. pump starts) even with HCV-142 full open.

93. During the performance of a nuclear safety evaluation of a proposed design change it is concluded that the activity requires a Technical Specification Change.

Which ONE of the following describes the correct action to be taken to implement the design change?

A. The design change can be implemented with approval of the General Plant Manager or his designee.

B. The design change can be implemented if it is determined that a change to the FSAR is not required.

C. The design change cannot be implemented until it is proven not to reduce the margin to safety below 50%.

D. The design change cannot be implemented until a change to Technical Specification is completed.

Slightly Modified from Farley Exam bank question # 2744.
Reference AP-88.

A. Incorrect, the design change can not be implemented unitl the T/S change is made.

B. Incorrect, the design change can not be implemented unitl the T/S change is made.

C. Incorrect, the design change can not be implemented unitl the T/S change is made.

D. Correct, IAW AP-88.

94.

Unit 1 is at 100% steady-state reactor power with the following plant conditions:

- 1A Steam Generator has a confirmed tube leak of 20 gpd.
- 1B Steam Generator has a confirmed tube leak of 5 gpd .
- The Turbine Building water sump is full and needs to be discharged.

Which ONE of the following, if any, describes the release permit(s) you would expect to review (be in affect) to authorize the release?

A. A batch release permit.

B. A continuous release permit.

C. Both a batch and continuous release permit.

D. No permit is required.

Source: Farley 2001 NRC Exam

A - Correct, Batch release permit is required if there is evidence of a SGTL creating the possibility that the sump contents may be contaminated.
B - Incorrect, Continuous release permit is required if there is no evidence of a SGTL.
C - Incorrect, Both types of release permits would not be in effect with the evidence of a SGTL it is inappropriate to have a continuous release permit.
D - Incorrect, A release permit is required.

95.

You are the Shift Supervisor and have been informed that the #1 Waste Gas Decay Tank (WGDT) requires release.

Which ONE of the following describes the sequence required to perform a gaseous release?

A. Chemistry obtains and analyzes a gas sample, Chemistry generates a gaseous effluent permit, you must review the release permit information and give chemistry permission to commence the release.

B. Chemistry obtains and analyzes a gas sample, you verify the sample is within existing batch release permit, and direct the crew to commence the release.

C. Chemistry obtains and analyzes a gas sample, Chemistry generates a gaseous effluent permit, you review the release permit after the permit is received in the control room and direct the crew to commence the release.

D. Chemistry generates a gaseous effluent permit, Chemistry obtains and analyzes a gas sample, you sign the release permit authorizing the release and direct the crew to commence the release.

Source: Modified from Farley Exam Bank Question #WAST GAS-40303B11 002

A - Incorrect; Chemistry does not perform the release.

B - Incorrect; Release is not performed under the existing batch release permit.

C - Correct;

D - Incorrect; SS does not sign the release permit.

96.

Unit 1 was operating at 100% power when a Small Break Loss Of Coolant Accident (SBLOCA) caused a plant trip and SI actuation.

- SI and Phase A Containment Isolation have actuated per design.
- The crew has implemented EEP-0 and EEP-1, Loss of Reactor or Secondary Coolant.
- A LOCA outside containment is indicated so the crew has transitioned to and is performing steps in ECP-1.2, LOCA Outside Containment.
- The crew isolated RCP seal injection and observed NO change in the deterioration of plant conditions caused by the SBLOCA.

The crew has just restored RCP seal injection in accordance with ECP-1.2.

Which ONE of the following describes the required actions in accordance with ECP-1.2 that must be taken at this point?

A. Go to EEP-1, Loss Of Reactor Coolant Or Secondary Coolant.

B. Direct HP to perform radiation surveys in the auxiliary buildings.

C. Immediately transition to ECP-1.1, Loss Of Emergency Coolant Recirculation.

D. Go to AOP-1.0, RCS Leakage, Attachment 3 & 4 to determine location of leak.

This question meets 10CFR55.43(b)(5)

A - Incorrect; EEP-1 is entered if the leak has been isolated. The leak here has not been isolated otherwise the RCP seal injection would not have been restored, which is the last system checked/isolated in ECP-1.2.

B - Correct; Before transitioning to ECP-1.1, HP is sent to the aux building to perform surveys to posibly identify the leak location (ECP-1.2 Step 3.14).

C - Incorrect; Only after all possible leak locations are checked does the crew transition to ECP-1.1, this is performed after HP performs surveys in the aux building (ECP-1.2 step 3.15).

D - Incorrect; No procedural guidance to do this and AOP-1.0 is only applicable if PZR level can be maintained by charging pumps.

97.

Unit 2 is holding at 33% Power for Chemistry.
Condenser Vacuum is slowly degrading.

Which ONE of the following alarms/indicators will be the first to occur?

A. KC3 "1A or 1B SGFP TRIPPED" will alarm.

B. GJ2 "LO VAC TURB TRIP" will alarm.

C. "COND AVAIL C-9 " will go out.

D. KK2 "TURB COND VAC LO-LO" will alarm.

Source: Farley Exam Bank Question #AOP-8.0-5250H02 007
This question meets 10CFR55.43(b)(5)

Ref: AOP-8.0 and ARP-1.7 GJ2

A. Incorrect; This alarm will actuate as a result of decresing vacuum at 5.9 PSIA.

B. Incorrect; This alarm causes a turbine trip on decreasing vacuum at 4.41 PSIA.

C. Incorrect; This indicator will go out at approximately 10.8 PSIA.

D. Correct; This alarm actuates on decreasing vacuum at 2.7 PSIA, when greater than or equal to 30% power.

98.

A Safety Injection and LOSP has occured on Unit 1. The crew has transitioned to ESP-1.1, SI Termination.

1C Air compressor is out of service for maintenance.

Which ONE of the following describes the action to be directed to plant personnel to allow the 1G load center to be energized and Instrument air to be restored?

A. Direct plant personnel to depress the ESS STOP RESET push button locally for the B1G sequencer.

B. Direct plant personnel to depress the ESS STOP RESET push button locally for the B1F sequencer.

C. Direct plant personnel to depress the ESF lamp test push button locally for the B1G sequencer.

D. Direct plant personnel to depress the ESF lamp test push button locally for the B1F sequencer.

Source: Modified from Farley Bank Question #40102D09 001

A. Incorrect, the B1F sequencer must be reset, but this is the correct button to depress.

B. Correct, the B1F sequencer must be reset, and this is the correct button to depress.

C. Incorrect, the B1F sequencer must be reset, but this is not the correct button to depress.

D. Incorrect, the B1F sequencer must be reset, and this is not the correct button to depress.

99.

All AFW flow has been lost on Unit 1. The Control Room team is performing the actions of FRP-H.1, Loss of Secondary Heat Sink. The team could not establish AFW flow to the Steam Generators. The team begins to establish bleed and feed.

Which ONE of the following describes the actions the operators should take if one of the Pressurizer PORVs fail to open?

A. Terminate attempts to establish an S/G heat sink because one Pressurizer PORV will provide sufficient flow to maintain the core cool in all situations.

B. Terminate RCS feed and bleed because with only one PORV open, RCS pressure will increase and both SI flow and RCS inventory will decrease.

C. Reduce SI flow as necessary to prevent rapid overpressurization of the RCS, while continuing attempts to open the Pressurizer PORV.

D. Establish alternate bleed paths and cooling methods because one Pressurizer PORV may not depressurize the RCS sufficiently to permit adequate SI flow.

Source: Farley Exam Bank Question # 52533F03 003.

A - Incorrect; attempts to establish an S/G heat sink should continue, because one PORV may not provide sufficient flow to maintain the core cool in all situations.

B - Incorrect; FRP-H.1 does not have the team terminate feed and bleed, it should continue while attempts to restore a source of feed water to the S/G continue. Alternate bleed paths should also be established.

C - Incorrect; the procedure does not direct the team to reduce SI flow.

D- Correct; the team should establish alternate feed and bleed paths and cooling methods.

100.

Unit 1 was at 100% when a LOCA occurred.
Actions in EEP-1.0, Loss of Primary or Secondary Coolant, were performed. The crew has transitioned to ECP-1.1, Loss of Emergency Coolant Recirculation.
RWST Level is 12.3 feet.
1A and 1C containment coolers are operating, all other coolers have tripped.
A Phase "B" has just automatically actuated.

Which ONE of the following describes the actions required regarding the containment spray pumps?

A. Remain in ECP-1.1; Reduce containment spray pumps to only one pump operating to conserve RWST level.

B. Transition to FRP-Z.1; Ensure Both containment spray pumps are operating and spraying down containment.

C. Remain in ECP-1.1; Ensure Both containment spray pumps are operating and spraying down containment.

D. Transition to FRP-Z.1; Reduce containment spray pumps to only one pump operating to conserve RWST level.

Source: Modified from Farley Exam Bank Question #1497.

A - Incorrect; An Orange Path is required to be addressed, transition should be made to FRP-Z.1, but a caution in Z.1 informs the user to follow guidance in ECP-1.1 for operation of the containment spray pumps.

B - Incorrect; this is the correct transition, but only one containment spray pump should be running.

C - Incorrect; Transition should be made to FRP-Z.1, and only one pump should be running.

D - Correct; Transition to FRP-Z.1 should be made and only one pump should be running.