

**Question 1**

Pressurizer safety valve 1-8010A inadvertently opened for a few seconds during a power excursion and did not completely reseal. The reactor tripped and SI automatically actuated. Ten minutes after the event started, the plant was stabilized with Tave at 564°F, ECCS maintaining RCS pressure at 1910 psig, and the Pressurizer vapor space temperature steady at 630°F.

The current status of the **Main** Feed Water components is:

- A. Feed pumps automatically tripped because of low PZR pressure and FWI occurred because of the Safety Injection.
- B. Feed pumps automatically tripped because of low PZR pressure and FWI occurred because of the reactor trip coincident with low Tave.
- C. Feed pumps automatically tripped because of the reactor trip coincident with low Tave and FWI occurred because of low PZR pressure.
- D. Feed pumps automatically tripped because of the reactor trip coincident with low Tave and FWI occurred because of the reactor trip coincident with low Tave.

**Answer**

“A” is the correct answer, Feed pumps automatically tripped because of low PZR pressure and FWI occurred because of the Safety Injection.

Feed pumps do not automatically trip on reactor trip coincident with low Tave (564°F), making “C” and “D” incorrect. “B” is incorrect because the FWI could not have occurred with a reactor trip coincident with Low Tave because Tave did not immediately reach the low Tave setpoint of 564°F (ten minutes after the event started) prior to the SI occurring.

**References**

REF: OP51.SYS.MF1.LN, page 40, 44

OBJ: OP51.SYS.MF1.OB09 and OB11

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	RO	SRO
K/A #	000008.AA1.04	
Importance Rating	2.8	
Tier #	1	
Group #	1	
CFR References	41.7/45.5/45.6	

**Question 2**

A small break LOCA occurred 40 minutes ago. The operators have terminated SI and re-established charging and letdown in accordance with EOS-1.1A, "SI Termination". Which of the following conditions would **NOT** require the reinitiation of safety injection (SI) if containment pressure and radiation are below Adverse Containment values?

	<u>RCS PRESSURE</u>	<u>SUBCOOLING °F</u>	<u>PZRZ LEVEL (%)</u>
A.	DECREASING	30	10
B.	INCREASING	40	3
C.	DECREASING	23	15
D.	STABLE	35	5

**Answer:**

"A" is correct, DECREASING, 30, 10.

**References:**

REF: EOS-1.1

OBJ: EO1.XG3.OB408

Pulled from Bank but never used on NRC exam

Question Source:	Bank #	<u>  X  </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	<u>  RO  </u>
K/A #	000009EA2.15
Importance Rating	3.3
Tier #	1
Group #	1
CFR References	43.5 / 45.13

**Question 3**

Unit 1 is currently in procedure EOS-0.2A, "Natural Circulation Cooldown", step 13. The US expresses a need to cooldown and depressurize at a faster rate than the rate being maintained. He announces a transition to a different procedure to increase the cooldown and depressurization rate. What major factor could require a more rapid cooldown and depressurization than EOS-0.2A allows?

- A. Letdown must be removed from service.
- B. Decreasing sub-cooling margin.
- C. RVLIS is unavailable.
- D. Limited condensate storage.

**Answer:**

"D" is correct, Limited condensate storage.

"A" is incorrect because PORV's can be used for depressurization at same (or greater) cooldown rate than that of aux spray. "B" is incorrect because decreasing sub-cooling margin does not warrant a higher cooldown and depressurization rate. "C" is incorrect because the availability of RVLIS only determines which procedure (EOS-0.3A or EOS-0.4A) is used for the increased cooldown. This question is direct from an EOP note.

**References:**

REF: EOS-0.2A, bases, page 29.

OBJ: OPD1.E00.XG2.OB405

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>RO</u>
K/A #	000015AK1.01
Importance Rating	4.4
Tier #	1
Group #	1
CFR References	41.8 / 41.10 / 45.3

**Question 4**

Unit 1 is at 100% power with all systems in their normal at-power lineup when the following annunciators and indications are received.

- \* PRZR LVL DEV LO
- \* REGEN HX LTDN OUT TEMP HI
- \* ANY CNTMT SMP PUMP RUN
  
- \* Pressurizer level is 56% and dropping slowly
- \* Letdown Demineralizer Bypass valve, TCV-129, is in the VCT position
- \* Charging Flow Control valve, FCV-121, is full open
- \* Charging flow meter, FI-121A, indicates 175 gpm and slowly increasing
- \* Letdown flow meter, FI-132, indicates 120 gpm
- \* All RCP seal injection flows indicate between 8.0 and 8.5 gpm
- \* All RCP seal return flows indicate between 2.8 and 3.2 gpm

The location of the leak is on the.....

- A. letdown line between letdown relief valve 1/1-8117 and the Regen HX.
- B. charging line between containment isolation valve 1/1-8105 and the Regen HX.
- C. letdown line between containment isolation valve 1/1-8152 and the Letdown HX.
- D. charging line between containment isolation valve 1/1-8106 and 1/1-HCV-182.

**Answer:**

“B” is correct, charging line between containment isolation valve 1/1-8105 and the Regen HX.

The alarms imply a charging leak since PZR level is dropping (hence “A” and “C” are incorrect) and because the containment sump pump has started it must be inside containment, making “D” incorrect.

**References:**

REF: ABN-103, ABN-105, M1-0255, sht 01, M1-0253, sht A  
 REV DATE: 10/5/00, Modified all distractors to be more plausible  
 OBJ: SYS.CS1.OB10

Question Source:	Bank #	<u>    X    </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	<u>    X    </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	RO <u>          </u>
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K/A #	000022AK1.03
Importance Rating	3.0
Tier #	1
Group #	1
CFR References	41.8 / 41.10 / 45.3

**Question 5**

Given the following:

- Unit 1 was tripped from 100% power due to a loss of coolant accident (LOCA) three hours ago.
- RHR cold leg recirculation was initiated.
- A loss of off-site power (LOOP) has also occurred.
- Containment pressure is 17 psig.
- Core Exit Thermocouples indicate 300 degrees F.
- RCS pressure is 150 psig.
- Emergency Diesel Generator #1 has failed to start.

While establishing hot leg recirculation, no RHR flow is indicated on FI-988 for hot leg injection to loops 2 and 3 because:

- A. Hot Leg Injection valve 8840 failed closed on loss of power from EDG #1.
- B. Hot Leg Injection valve 8840 power switch failed to energize the valve.
- C. Hot Leg injection valve 8802A failed open on loss of power from EDG#1.
- D. Hot Leg injection valve 8802A power switch failed to energize the valve.

**Answer:**

“B” is correct, Hot Leg injection valve 8840 power switch failed to energize the valve. Valve 8840 must be manually opened via two switches in order to transfer to Hot leg Injection and is powered from 1EB2-1 (EDG#2).

“A” is incorrect because 8840 is powered from EDG#2 while “C” and “D” are incorrect because valve 8802A is the SI Hot Leg discharge valve, not RHR discharge to hot legs.

**References:**

REF:OP51.SYS.RH1.LN, page 21.

OBJ: OP51.SYS.RH1.OB05

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 2	

Examination Outline Cross-reference:

Level	<u>RO</u>
K/A #	000025AK3.01
Importance Rating	3.1
Tier #	1
Group #	1
CFR References	41.5 / 41.10 / 45.6 / 45.13

**Question 6**

CCW into containment is isolated with a Phase B isolation signal because:

- A. CCW is at higher pressure than the Phase B set point, and any CCW system leakage prior to phase B isolation would be into containment.
- B. CCW is at a lower pressure than the Phase B set point, and any CCW system leakage prior to phase B isolation would be into containment.
- C. CCW is at higher pressure than the Phase B set point, and relief valves in the system are challenged less with the non-safeguards loop isolated.
- D. CCW is at a lower pressure than the Phase B set point, and relief valves in the system are challenged less with the non-safeguards loop isolated.

**Answer:**

“A” is correct, CCW is at higher pressure than the Phase B set point, and any CCW system leakage prior to phase B isolation would be into containment.

“B” and “D” are incorrect because each has CCW lower than Phase B set point. “C” is incorrect because relief valves in the system are challenged more with the non-safeguards loop isolated. Specifically, CCW pumps are alternated during Phase B isolation by establishing flow through the CS HX and RHR HX specifically to prevent component CCW relief valves from lifting due to high discharge pressure.

**References:**

REF: TS Bases, B3.3.2, page B 3.3-84.

OBJ: OP51.SYS.CC1.OB02/OB04

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	<u>RO</u>
K/A #	000026.AK3.02
Importance Rating	3.6
Tier #	1
Group #	1
CFR References	41.5 / 41.10 / 45.6 / 45.13

**Question 7**

Given the following conditions on Unit 1:

- 70% Reactor Power.
- Pressurizer Pressure is at 2235 psig.
- All systems and controls are in automatic.
- 1B Main Feed Pump trips but an Auto runback does not occur.
- **Simultaneously** with the feed pump trip the OUTPUT of the PZR Master Pressure Controller fails AS IS (50% output).
- The Unit 1 BOP operator manually initiates a turbine runback.

What is the INITIAL response of the Pressurizer Pressure Control System components during this event?

- A. BACKUP Heaters turn ON to heat incoming surge volume.
- B. BACKUP Heaters turn OFF due to the pressure increase.
- C. BOTH PZR Spray valves THROTTLE OPEN to reduce pressure to normal.
- D. BOTH PZR PORVs OPEN to maintain pressure below the High reactor trip setpoint.

**Answer:**

"A" is correct, BACKUP Heaters turn ON to heat incoming surge volume.

With 50% output from the Master Controller, no PORV's or spray valves will open (making "C" and "D" incorrect). Back-up heaters would not turn off based on the pressure increase because of controller failure, hence "B" is incorrect. However, the insurge of water coupled with a failure to runback initially will cause enough of a level transient for the insurge to reach the Pressurizer Level control system deviation of 5% above program level and consequently energize the Backup heaters.

**References:**

REF: OP51.SYS.PP1 page 13-14, ABN-705, IPO-003A/B

OBJ: OP51.SYS.PP1.OB14 and OB17

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	<u>  RO  </u>
K/A #	000027AK1.02
Importance Rating	2.8
Tier #	1
Group #	1
CFR References	41.8 / 41.10 / 45.3

**Question 8**

Unit 1 is at 100% power when a turbine trip occurs with no Reactor trip. The operators enter FRS-0.1, "Response to Nuclear Power Generation/ATWT." What is the reason for the initiation of emergency boration, and if the normal charging path cannot be established, what is the first alternative that should be initiated?

- A. Restore adequate shutdown margin, shift charging pump discharge to injection flow path using valves 1/1-8801A and 1/1-8801B.
- B. Ensure subcriticality; shift charging pump discharge to injection flow path using valves 1/1-8801A and 1/1-8801B.
- C. Restore adequate shutdown margin; manually initiate Safety Injection.
- D. Ensure subcriticality; manually initiate Safety Injection.

**Answer:**

"B" is correct, Ensure subcriticality; shift charging pump discharge to injection flow path using valves 1/1-8801A and 1/1-8801B.

"A" and "C" are incorrect because the CSF is subcriticality, the EOP bases document specifies the two conditions for subcriticality, and hence the exit conditions for this EOP are for subcriticality. Adequate Shutdown margin is desired, but is not the reason for the initiating emergency boration. "D" is incorrect because Safety Injection is a last effort to reach subcriticality that would cause feed isolation, which is something not desired unless all else had failed for boration.

**References:**

REF: FRS-0.1A, page 7, Bases-pages 17-18, page 23.

OBJ: OPD12.FRS.XH1.OB401

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000029EK3.11
Importance Rating	4.2
Tier #	1
Group #	1
CFR References	41.5 / 41.10 / 45.6 / 45.13

**Question 9**

Unit 2 has experienced a SGTR and has entered EOP-3.0B. In step 3 of the procedure, it has the operators isolate the SG that has the ruptured tube(s). Isolating the ruptured Steam Generator:

- A. Establishes a DP between the ruptured and non-ruptured steam generators in order to minimize the primary to secondary leak and cool the RCS.
- B. Prevents feeding the ruptured SG in all cases and therefore minimizes the radioactivity released to the general public.
- C. Establishes a DP between the RCS and ruptured steam generators in order to minimize the primary to secondary leak and cool the RCS.
- D. Conserves ruptured SG inventory for later use during cool down, which aids in U-tube condensation of steam and further minimize releases to the public.

**Answer:**

“A” is correct, Establishes a DP between the ruptured and non-ruptured steam generators in order to minimize the primary to secondary leak and cool the RCS.

“B” is incorrect because in some cases (ie dryout) feeding the ruptured SG may be required (ie if rupture is high on the tube) in order to keep the rupture submerged. “C” is incorrect because the DP between the RCS and the ruptured SG should be minimized to stop the leak. “D” is incorrect because conserving inventory does not aid in U-tube condensation, it hinders it, which does not minimize release to the public.

**References:**

EOP-3.0B, bases, page 40-42.

OBJ: SK3.XGJ.OB104

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 2	

**Examination Outline Cross-reference:**

Level	RO _____
K/A #	000038.EK1.02
Importance Rating	3.2
Tier #	1
Group #	1
CFR References	41.8 / 41.10 / 45.3

**Question 10**

A 10,000 lbm/hr steam leak has developed on the outlet of 1-04 SG.  
Current Containment conditions are:

Containment pressure = 4.5 psig  
Containment radiation = 987 R/hr  
Containment humidity = 50%  
Integrated Containment radiation dose = 0.5R  
Containment temperature = 130<sup>0</sup>F

For these conditions the indicated narrow range level S/G 1-03 would be \_\_\_\_\_  
and the corresponding value of comparison to the indicated level in the ERG's in order  
to determine procedure usage would be \_\_\_\_\_.

- A. Higher than actual due to reference leg heating; the normal value since adverse conditions do not exist.
- B. Lower than actual due to reference leg heating; the normal value since adverse conditions do not exist.
- C. Higher than actual due to reference leg heating; the adverse value in brackets in the ERG's because adverse conditions do exist.
- D. Lower than actual due to reference leg heating; the adverse value in the ERG's because adverse conditions do exist.

**Answer:**

"A" is correct, Higher than actual due to reference leg heating; the normal value since adverse conditions do not exist.

**References:**

REF: ODA-407, rev 10, page 27,OP51.SYS.SN1.LN, page 19-20  
OBJ: OP51.SYS.SN1.OB07

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000040.EK2.02
Importance Rating	2.6
Tier #	1
Group #	1
CFR References	41.7 / 45.7

**Question 11**

Unit 1 experienced a reactor trip due to loss of all Main feed water pumps and is currently in Mode 3. The MDAFW pumps are not available. The TDAFW pump tripped on overspeed and needs to be restarted in order to restore feedwater. A PEO is dispatched to the TDAFW pump. What actions are required to reopen the TDAFW pump trip and throttle valve, 1-HV-2452?

1. turn hand wheel counter-clockwise until actuator is in full up position
2. turn hand wheel counter-clockwise until latch is engaged
3. engage the hand wheel then depress clutch lever
4. turn hand wheel clockwise until latch is engaged
5. depress clutch lever to engage the hand wheel
6. turn hand wheel clockwise until actuator is in full up position
7. manually reset the trip linkage
8. release clutch lever

A. 5, 2, 6, 8

B. 7, 5, 2, 6, 8

C. 5, 4, 1, 8

D. 7, 5, 4, 1, 8

**Answer:**

"D" is correct, 7, 5, 4, 1, 8

**References:**

REF: SOP-304A, Attachment 5, page81, OP51.SYS.AF1.LN page 33.

OBJ: SYS.AF1.OB20

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	

**Examination Outline Cross-reference:**

Level	RO _____
K/A #	000054. AA1.02
Importance Rating	4.4
Tier #	1
Group #	1
CFR References	41.7 / 45.5 / 45.6

**Question 12**

Which of the following signals will cause an auto start of Train B Safety Chilled Water Recirc Pump if Train A is in service?

- A. Blackout Signal
- B. Trip of Train A Recirc Pump
- C. Low Train A Recirc Pump discharge pressure
- D. High Train A Chiller outlet temperature

**Answer:**

"A" is correct, Blackout Signal.

**References:**

REF: MI-2311, Sh 1, OP51.SYS.CH1.LN page 20.

REV DATE: 2/13/97

OBJ: OP51.SYS.CH1.LN.OB07

**Reference Material Required: MI-2311, Sh 1**

Question Source:	Bank #	<u>  X  </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>  X  </u>
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000055.G 2.1.24
Importance Rating	2.8
Tier #	1
Group #	1
CFR References	45.12 / 45.13

**Question 13**

Given the following:

Unit 1 has tripped from Loss of off-site power  
 An SI has occurred on both trains  
 Containment pressure is 0.5 psig  
 Both EDG's started and are carrying their respective buses  
 Both MDAFW pumps failed to start

What is the condition of the TDAFW flow control valves in the control room?

- A. Both control and indications are lost, recovered by resetting the SI and depressing OPEN on HS-2452H, AFWPT T & T VLV control switch on CB-09.
- B. Full control and indications available in the control room, no recovery actions required.
- C. Only Indications are lost, recovered by resetting the SI and depressing RESET on AFW FLO CTRL hand switch at the RSP.
- D. Both control and indications are lost, recovered by resetting the SI.

**Answer:**

"B" is correct Full control and indications available in the control room, no recovery actions required.

The indications for turbine speed and T&TV status in the Control Room will be de-energized until the SI signal is reset and power is restored to the local TDAFW pump control panel. Power can be restored to the panel by depressing the OPEN pushbutton (HS-2452H) on the AFWPT T&T VLV control switch on CB-09.

"A" is incorrect because full control and indication remain for the flow control valves. "C" is incorrect because indications are not lost and reset is not done at the RSP but CB-09 while "D" is incorrect because neither is lost and resetting SI is not all that is required to regain control of other components.

**References:**

REF: OP51.SYS.AF1, page 36.

OBJ: OP51.SYS.AF1.OB07

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 2	

Examination Outline Cross-reference:

Level	<u>RO</u>
K/A #	000056.AA1.30
Importance Rating	3.5
Tier #	1
Group #	1
CFR References	41.7 / 45.5 / 45.6

**Question 14**

Unit 1 has experienced a loss of 118 V AC protection bus 1PC1. The reactor operator ensures the rod control system is in "MANUAL." What is the reason for placing the rod control system in manual?

- A. The 118V AC protection bus supplies power to N-41. The failed channel may result in outward rod movement in automatic rod control.
- B. The 118V AC protection bus supplies the Loop 1 Tav<sub>g</sub> instrument. The failed channel may result in C16 and outward rod movement in automatic rod control.
- C. The 118V AC protection bus supplies the Tref instrument loop. The failed Tref channel may result in inward rod movement in automatic rod control.
- D. The 118V AC protection bus supplies the logic cabinet of the rod control system. The loss of this bus may result in a "CONTROL ROD CTRL URGENT" alarm and loss of automatic rod control.

**Answer:**

"C" is correct; "The 118V AC protection bus supplies the Tref instrument loop. The failed Tref channel may result in inward rod movement in automatic rod control.

**References:**

REF: ABN-603A, page 3 and page 7

REV DATE: 3/8/04

OBJ: OP51.SYS.AC3.LN.OB13

Question Source:	Bank #	<u>    X    </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>    X    </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>    RO    </u>
K/A #	000057.AK3.01
Importance Rating	4.1
Tier #	1
Group #	1
CFR References	41.5, 41.10 / 45.6 / 45.13

**Question 15**

Unit 1 just completed a major outage on bus 1D1, its associated batteries, and battery chargers. The associated bus, batteries, and battery chargers are ready to be returned to service and support plant start-up. What could delay the batteries' return to full voltage?

- A. The input current limiters in the chargers are set conservatively low.
- B. Turbine seal oil pumps draw a large amount of current from 1D1
- C. The output current limiters in the chargers are set conservatively low.
- D. Battery room ambient temperature has reached 72<sup>0</sup>F.

**Answer:**

"C" is correct; The output current limiters in the chargers are set conservatively low.

Changed all four selections, including wording of correct answer.

**References:**

REF: OB51.SYS.DC1.LN

REV DATE: 10/22/1996

OBJ: OP51.SYS.DC1.OB04

Question Source:	Bank #	<u>  X  </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>  X  </u>
	LOD = 2	

## Examination Outline Cross-reference:

Level	<u>  RO  </u>
K/A #	000058.AK1.01
Importance Rating	2.8
Tier #	1
Group #	1
CFR References	41.8 / 41.10 / 45.3

**Question 16**

A recent work package on SSW has been completed and all tags have been cleared. The RO has directed you to reopen the SSW pump discharge valve eight turns from closed. What is the reason for a specific number of turns for the valve?

- A. Eight turns corresponds to 15% open, which is the point where the diesel generator loops will not require venting.
- B. Eight turns corresponds to 12% open, which is the point where the low deltaP alarm on the CCW HX clears.
- C. Eight turns corresponds to 10% open, which is the point where the control room has indication that the valve is opening due to limit switch adjustment on the valve motors.
- D. Eight turns corresponds to 8% open, which is the position required by TDM-901A/B, "Throttled Valves/Flow Rates" for minimum flow requirements.

**Answer:**

"C" is correct, Eight turns corresponds to 10% open, which is the point where the control room has indication that the valve is opening due to limit switch adjustment on the valve motors.

**References:**

REF: SOP-501A, page 6 and , OP51.SYS.SW1, page 10, 15,

OBJ: no objectives provided in SW training materials

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000062.G2.1.8
Importance Rating	3.8
Tier #	1
Group #	1
CFR References	45.5 / 45.12 / 45.13

**Question 17**

Unit 1 is in Mode 3 following a reactor trip from 50% power, due to low pressurizer pressure. SI has actuated. Monitoring of Critical Safety Function Status Trees has been initiated. Current plant conditions are:

- (1) Containment parameters are normal
- (2) SI termination criteria cannot be met at this time.
- (3) The STA reports RHR area monitor (RHR-122) is in alert at  $1.5 \times 10^2$  mr/hr

Select the procedure below whose entry conditions have been met from the selections below.

- A. EOP-1.0A, Loss of Reactor or Secondary Coolant.
- B. EOP-3.0A, Steam Generator Tube Rupture.
- C. ECA-1.2A, LOCA Outside Containment.
- D. EOS-0.1A, Reactor Trip Response.

**Answer:**

“C” is correct, ECA-1.2A, LOCA Outside Containment.

**References:**

REF: EOP-0.0A, Step 19 RNO

REV DATE: 6/16/98

OBJ: OPD1.ECA.XG3.OB405

Question Source:	Bank #	<u>    X    </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>    X    </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>    RO    </u>
K/A #	W/E04.EA2.1
Importance Rating	3.4
Tier #	1
Group #	1
CFR References	43.5 / 45.13

**Question 18**

During a loss of heat sink with PORV PCV-455A out of service, the wide range steam generator level in three steam generators decreases below 27% with RCS pressure starting to increase. The operators initiate bleed and feed with PORV PCV-456 open. Without any additional operator intervention, the effect of having one PORV open is that:

- A. Bleed and feed will take longer to stabilize the plant but will remain effective at preventing core uncover.
- B. Reactor vessel water level remains higher with the reduction in bleed.
- C. The RCS depressurizes slowly to a lower equilibrium pressure where bleed and feed removal equals RCS decay heat with some core damage.
- D. Core uncover occurs because RCS repressurization decreases Emergency Core Cooling Systems flow.

**Answer:**

"D" is correct, Core uncover occurs because RCS repressurization decreases Emergency Core Cooling Systems flow.

**References:**

REV DATE: 12/08/2000

REF: FRH-0.1A bases, page 45-46.

OBJ: no objective in bank or training materials

Question Source:	Bank #	<u>    X    </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	<u>    X    </u>
	LOD = 4	

Examination Outline Cross-reference:

Level	<u>    RO    </u>
K/A #	W/E05.EA1.3
Importance Rating	3.8
Tier #	1
Group #	1
CFR References	41.7 / 45.5 / 45.6

**Question 19**

Unit 1 was at 80% power and stable at EOL when a fault caused a continuous rod withdrawal until all rods were fully withdrawn. The reactor did not trip and the steam dumps did not operate.

What were the final effects of the fuel temperature coefficients (FTC) and moderator temperature coefficients (MTC) when the plant had stabilized?

- A. FTC added positive reactivity, MTC added positive reactivity.
- B. FTC added positive reactivity, MTC added negative reactivity.
- C. FTC added negative reactivity, MTC added positive reactivity.
- D. FTC added negative reactivity, MTC added negative reactivity.

**Answer:**

“D” is correct, FTC added negative reactivity, MTC added negative reactivity.

**References:**

INPO Bank, Cook 1, dated 5/21/2001

REF: OPD1.MCO.TAD

Question Source:	Bank #	<u>    X    </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>    X    </u>
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>    RO    </u>
K/A #	000001.AK1.18
Importance Rating	3.4
Tier #	1
Group #	2
CFR References	41.8 / 41.10 / 45.3

**Question 20**

A Manual emergency boration is being initiated in accordance with Attachment 3 of ABN-107 "Emergency Boration."

When the controller for the Blender Flow Control valve, 1/1-FCV-110A, was placed to OPEN, the switch failed (no response from the valve indications in the control room). Which one of the following describes how the position of 1-FCV-110A can then be maintained to allow boric acid flow?

- A. The operator locally repositions the nitrogen accumulator's vent in the air line to the valve so that it fails open.
- B. The operator locally engages the manual hand wheel for the valve and opens it.
- C. The operator locally isolates and vents the air line to the valve so that it fails open.
- D. The operator locally installs a temporary jumper that provides 120 V AC power to the open solenoid for the valve.

**Answer:**

"C" is correct, The operator locally isolates and vents the air line to the valve so that it fails open.

**References:**

REF:OP51.SYS.CS2

DATE: 3/6/98

OBJ: OP51.SYS.CS2.OB02

Question Source:	Bank #	<u>    X    </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>    X    </u>
	Comprehension or Analysis	<u>          </u>
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>    RO    </u>
K/A #	000024.AK2.03
Importance Rating	2.6
Tier #	1
Group #	2
CFR References	41.7 / 45.7

**Question 21**

Given the following for Unit 1:

- A reactor startup is in progress
- The operator just stopped moving rods
- Power slowly increases to 3E-10 amps on N-35 and N-36
- N-31 suddenly fails low
- The remaining power indications stabilize

Which one of the following is required and why?

- A. Trip the reactor per ABN-701 "Source Range Instrument Malfunction" because required power level indications/overlap do not exist.
- B. Block N-31 and N-32 because they are not required at this power level or plant conditions.
- C. Block N-31 and N-32 because they are above the P-10 set point and are therefore not required for continued startup.
- D. Suspend all positive reactivity changes per ABN-701 "Source Range Instrument Malfunction," because required power level indications/overlap do not exist.

**Answer:**

"B" is correct, Block NI-31 and NI-32 because they are not required at this power level or plant conditions.

**References:**

REF: IPO-002A, ABN-701, page 3.

OBJ: SYS.EC1.OB025

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	<u>RO</u>
K/A #	000032.AK3.01
Importance Rating	3.2
Tier #	1
Group #	2
CFR References	41.5, 41.10 / 45.6 / 45.13

**Question 22**

Unit 2 is currently in FRS-0.2B for “Response to Loss of Core Shutdown” with containment pressure 6 psig and stable. The two intermediate Range (IR) detectors, N-35 and N-36, have not moved in several minutes and you think that they may be stuck on their current values of 6E-10 amps and 5E-10 amps, respectively.

You should:

- A. Energize source range detectors for core power status in order to determine the status of the Sub-Criticality CSF.
- B. Energize source range detectors in order to determine if boration is required.
- C. Check that both Neutron Flux Wide Range instruments are decreasing in order to determine if boration is required.
- D. Check that both Neutron Flux Wide Range startup rate instruments are zero or negative in order to determine if boration is required.

**Answer:**

“C” is correct, Check that both Neutron Flux Wide Range instruments are decreasing in order to determine if boration is required.

With containment pressure above 5psig, none of the excore instruments are considered valid, thus “A” and “B” are incorrect. The reason for checking Neutron Flux Instruments decreasing is because if they are not decreasing then boration is required. The wide range or Neutron Flux Source range instruments (as named by procedure) do not have a startup rate indication; hence “D” is incorrect.

**References:**

REF: FRS-0.2A, page 3. OP51.SYS.EC1.LN page 19.

OBJ: OPD1.FRS.XH1.OB404

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	<u>  RO  </u>
K/A #	000033.AK3.02
Importance Rating	3.6
Tier #	1
Group #	2
CFR References	41.5, 41.10 / 45.6 / 45.13

**Question 23**

The crew is responding to an Inadequate Core Cooling condition and the steam generators are being rapidly depressurized to 170 psig using the SG ARVs. The reason for the SG depressurization is to \_\_\_\_\_.

- A. Lower the pressure in the RCS in order to lower the temperature of the RCS below 750°F to minimize core damage.
- B. Lower the steam generators' pressure in order to allow the condensate pumps to feed the steam generators and restore heat removal.
- C. Prevent damage to the RCP seals, which would further complicate the event with more water removed from the RCS that is needed for cooling.
- D. Lower the RCS pressure in order to allow the SI Accumulators and RHR pumps to inject water into the RCS.

**Answer:**

"D" is correct, lower the RCS pressure in order to allow the SI Accumulators and RHR pumps to inject water into the RCS.

**References:**

REF: FRC-0.1.

Rev Date: 10/10/02

OBJ: FRC.XH2.OB401

Question Source:	Bank #	<u>    X    </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>    X    </u>
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>    RO    </u>
K/A #	000074.AK1.03
Importance Rating	4.5
Tier #	1
Group #	2
CFR References	41.8 / 41.10 / 45.3

**Question 24**

The Containment Air Lock Technical Specification 3.6.2 LCO must be entered when:

- A. The electrical interlocks for the Emergency Air lock have failed.
- B. The hydraulic interlocks for the Emergency Air lock have failed.
- C. The electrical interlocks for the Personnel Air lock have failed.
- D. The mechanical interlocks for the Personnel Air lock have failed.

**Answer:**

“C” is correct, The electrical interlocks for the Personnel Air lock have failed.

The Emergency Air lock door is mechanical, making “A” and “B” incorrect, while the Personnel is electrical, making “D” incorrect.

**References:**

REF: TS 3.6.2, OP51.SYS.CY1

OBJ: OP51.SYS.CY1.OB07 and OB32

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	_____X_____

Question Cognitive Level:	Memory or Fundamental Knowledge	_____X_____
	Comprehension or Analysis	_____
	LOD = 2	

**Examination Outline Cross-reference:**

Level	RO
K/A #	000069.AK2.03
Importance Rating	2.8
Tier #	1
Group #	2
CFR References	41.7 / 45.7

**Question 25**

Investigation of an alarm on FFL160 with the plant at 100% RTP shows RCS specific activity > 50/E uci/gm with a rapid increase in the concentrations of Mn-56, and Zr-95. Which of the following conditions is indicated?

- A. Crud burst.
- B. Demineralizer resin depletion.
- C. Fuel damage.
- D. Demineralizer resin breakdown.

**Answer:**

"A" is correct, Crud burst.

**References:**

REF: ABN-102, page 5, rev. 7.

OBJ: OP51.SYS.CS1.020

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000076.A2.01
Importance Rating	2.7
Tier #	1
Group #	2
CFR References	43.5 / 45.13

**Question 26**

Select the appropriate entry condition for the “Containment Flooding” Procedure, FRZ-0.2A and its associated color on the CSF status tree.

Entry Conditions:

1. Containment Sump level  $\geq$  826 ft
2. Containment Sump level  $\geq$  816 ft

Color on CSF status tree:

3. Yellow level on Containment status Tree
4. Orange level on Containment status Tree

- A. 1 and 3
- B. 2 and 3
- C. 1 and 4
- D. 2 and 4

**Answer:**

“D” is correct, 2 and 4. Containment Sump level  $\geq$  816 ft and Orange level on Containment status Tree.

**References:**

REF: FRZ-0.2A, page 2 and 7.

OBJ: FRZ.XH5.OB01

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	

Examination Outline Cross-reference:

Level	<u>  RO  </u>
K/A #	W/E15.EA2.2
Importance Rating	2.9
Tier #	1
Group #	2
CFR References	43.5 / 45.13

**Question 27**

Unit 1 has tripped from 100% power with subcooling approaching 210°F. Procedure FRP-0.1A "Response to Imminent PTS Condition" has been entered. The reason for the caution statement for maintaining steam supply to the TDAFW pump in this event is:

- A. The cooldown rate contribution of the AFW pump steam supply piping would not be noticeable.
- B. If the MD AFW pumps are not available then this would potentially require a transfer to a higher priority ERG.
- C. Large subcooling in the primary could be made worse if the SG tubes become uncovered and/or break due to lack of feed.
- D. Components impacting cooldown are removed from service in order of their contribution to the cooldown with the TDAFW pump being last.

**Answer:**

"B" is correct, If the MD AFW pumps are not available then this would potentially require a transfer to a higher priority ERG.

**References:**

REF: FRP-0.1A, FRH-0.1A

OBJ: OPD1.FRP.XH1.OB402

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>RO</u>
K/A #	W/E08.G 2.1.32
Importance Rating	3.4
Tier #	1
Group #	2
CFR References	41.10 / 43.2 / 45.12

**Question 28**

During an RCS heatup in Mode 3 the Hydrogen pressure regulator for the VCT has failed shut. The control room alarm for "VCT PRESS HI/LO" comes in.

What is the impact on the # 2 seals for the RCP's during the heatup and what procedure should be used to mitigate the malfunction?

- A. The seal flow rates are dropping because the VCT pressure has dropped below 15psig, ALM-0061A for VCT PRESS HI/LO alarm.
- B. The seal flow rates are increasing because the VCT pressure has increased above 65psig, ALM-0061A for VCT PRESS HI/LO alarm.
- C. The seal flow rates are dropping because the VCT pressure has dropped below 15psig, SOP-108A for RCP Operations.
- D. The seal flow rates are increasing because the VCT pressure has increased above 65psig, SOP-108A for RCP Operations.

**Answer:**

"A" is correct, The seal flow rates are dropping because the VCT pressure has dropped below 15psig, ALM-0061A for VCT PRESS HI/LO alarm.

**References:**

REF: ALM-0061A, SOP-108A, ALM-0051A, OP51.SYS.CS1

OBJ: no specific objectives listed for entire CVCS system

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	<u>  RO  </u>
K/A #	000003.A2.05
Importance Rating	2.5
Tier #	2
Group #	1
CFR References	41.5 / 43.5 / 45.3 / 45.13

**Question 29**

The purpose of the CVCS mixed bed demineralizers is to \_\_\_\_\_, and during the process of alternating demineralizers, the operator should be alert for the possibility of \_\_\_\_\_.

- A. Remove corrosion products from the RCS; the insertion of positive reactivity from the removal of boron from the RCS.
- B. Remove boron from the RCS; the insertion of positive reactivity from the removal of boron from the demineralizer beds.
- C. Remove corrosion products from the RCS; the insertion of positive reactivity from the removal of boron from the demineralizer beds.
- D. Remove boron from the RCS; the insertion of positive reactivity from the removal of boron from the RCS.

**Answer:**

"A" is correct, Remove corrosion products from the RCS; the insertion of positive reactivity from the removal of boron from the RCS.

**References:**

REF: SOP-103A, OP51.SYS.CS2

OBJ: no specific objectives listed for entire CVCS system

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>RO</u>
K/A #	000004.K6.20
Importance Rating	2.5
Tier #	2
Group #	1
CFR References	41.7 / 45.7

**Question 30**

A security compromise has required evacuation of the control room and the plant is being controlled from the Remote Shutdown Panel (RSP). Prior to evacuation, the Emergency Boration Procedure ABN-107 was entered and the preferred path was lined up and minimum flow was established. When the RO gets to the RSP, valves 1-8104 and 1-FCV-110A have no position indication. In order to verify that emergency boration is still occurring, the RO would need to:

- A. Have a PEO reset the breaker at MCC 1EB4-1 and verify at least 30gpm.
- B. Have a PEO reset the breaker at MCC 1EB1-1 and verify at least 30gpm.
- C. Read the RSP flow indication for FI-183 and verify at least 30gpm.
- D. Read the RSP flow indication for FI-110 and verify at least 30gpm.

**Answer:**

"C" is correct, Read the RSP flow indication for FI-183 and verify at least 30gpm.

**References:**

REF: ABN-905A, Attachment 12, ABN-107, OP51.SYS.CS2

OBJ: no specific objectives listed for entire CVCS system

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>RO</u>
K/A #	000004.A3.16
Importance Rating	3.8
Tier #	2
Group #	1
CFR References	41.7 / 45.5

**Question 31**

Unit 2 is in Mode 5 with both trains of RHR operating in the shutdown cooling mode. In the event a fire causes a loss of Train "A" safeguards electrical power, which ONE of the following is the design power supply configuration that ensures RCS pressure boundary isolation capability?

- A. 8701B, RHRP 2 HL Recirc Isolation Valve normal power supply  
8702A, RHRP 1 HL Recirc Isolation Valve alternate power supply
- B. 8701B, RHRP 2 HL Recirc Isolation Valve alternate power supply  
8702A, RHRP 1 HL Recirc Isolation Valve normal power supply
- C. 8701A, RHRP 1 HL Recirc Isolation Valve normal power supply  
8702B, RHRP 2 HL Recirc Isolation Valve alternate power supply
- D. 8701A, RHRP 1 HL Recirc Isolation Valve alternate power supply  
8702B, RHRP 2 HL Recirc Isolation Valve normal power supply

**Answer:**

"B" is correct, 8701B, RHRP 2 HL Recirc Isolation Valve alternate power supply  
8702A, RHRP 1 HL Recirc Isolation Valve normal power supply

"B" is correct because 8702A is a Train A valve which has a Train B normal power supply (alternate is the opposite train). 8702B is a Train B valve which has a Train A normal power supply (alternate is the opposite train).

"A" is incorrect because 8702A is a Train A valve which has a Train B normal power supply (alternate is the opposite train). 8702B is a Train B valve which has a Train A normal power supply (alternate is the opposite train). "C" and "D" are incorrect because neither valve has an alternate power supply.

**References:**

REF: OP51.SYS.RH1.LN

OBJ: OP51.SYS.RH1.OB05

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 4	_____

Examination Outline Cross-reference:

Level	<u>  RO  </u>
K/A #	000005.K2.03
Importance Rating	2.7
Tier #	2
Group #	1
CFR References	41.7

**Question 32**

The RHR system has just been placed in service IAW IPO-005, "Plant Cooldown from Hot Standby to Cold Shutdown," in order to cool down the plant from 320 °F to 200 °F. The Reactor Operator discovers Pressurizer level is decreasing uncontrollably. The required actions are:

- A. Initiate a Manual SI actuation and enter EOP-0.0, "Reactor Trip or Safety Injection".
- B. Enter ABN-103, "Excessive Reactor Coolant System Leakage" and attempt to isolate the leak.
- C. Enter ABN-104, "Residual Heat Removal System Malfunction" and attempt to isolate the leak.
- D. Enter ABN-108, "Shutdown Loss of Coolant" and attempt to isolate the leak.

**Answer:**

"D" is correct, Enter ABN-108, "Shutdown Loss of Coolant" and attempt to isolate the leak.

**References:**

REF: ABN-108, IPO-005

OBJ: ERG.XD2.OB111 001

Bank: Last used 1997

Question Source:	Bank #	<u>          </u>
	Modified Bank #	<u>    X    </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>    X    </u>
	LOD = 3	

## Examination Outline Cross-reference:

Level	<u>    RO    </u>
K/A #	000006.A2.03
Importance Rating	3.3
Tier #	2
Group #	1
CFR References	41.5 / 45.5

**Question 33**

Given the following conditions at Unit 2:

Time:	1000 hrs	1100 hrs
PRT level	72%	78%
PRT temperature	96 °F	96 °F
Pressurizer level	45%	43%
Tavg	570 °F	569 °F
Containment temperature	102 °F	106 °F

Why did the PRT level increase during this time frame?

- A. Seal return relief valve (inside containment) leakage.
- B. Expansion due to containment heatup.
- C. Pressurizer PORV leakage.
- D. Letdown relief valve (inside containment) leakage.

**Answer:**

"A" is correct, Seal return relief valve (inside containment) leakage.

**References:**

REF: OP51.SYS.RC1, M1-0251, ALM-0052A

OBJ: SYS.RC1.OB11

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 4	

Examination Outline Cross-reference:

Level	<u>RO</u>
K/A #	000007.A3.01
Importance Rating	2.7
Tier #	2
Group #	1
CFR References	41.5 / 43.5 / 45.3 / 45.13

**Question 34**

Due to maintenance, the Unit 1 RHR pump 1-02 seal cooler CCW supply and return valves are clearance tagged closed. If the plant receives an SI signal, which of the following statements addresses this situation?

- A. Place RHR pump 1-02 in Pull-out as operation may not continue with no CCW flow to the seal cooler.
- B. Align fire protection water to the RHR pump 1-02 seal cooler per ABN-501.
- C. Align demin water to the RHR pump 1-02 seal cooler per ABN-501.
- D. No action required at this time. If suction is aligned to CNTMT Sump, then seal cooler CCW flow may be required.

**Answer:**

"D" is correct, No action required at this time. If suction is aligned to CNTMT Sump, then seal cooler CCW flow may be required.

**References:**

REF: ABN-502, Sect 3.3, step 8 NOTE

REV DATE: 10/17/97

OBJ: S01.NC1.OB102

Question Source:	Bank #	<u>    X    </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	<u>    X    </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>    RO    </u>
K/A #	000008.K1.02
Importance Rating	3.3
Tier #	2
Group #	1
CFR References	41.2 to 41.9 / 45.7 to 45.9

**Question 35**

In Mode 2, while conducting a reactor startup, pressurizer pressure channel PT-455 fails to 1700 psig. The pressurizer pressure controlling channel selector switch is in the 455/456 position. With all pressurizer controls in automatic, and assuming no operator actions, this will result in:

- A. A high pressure reactor trip.
- B. PCV-456 opening.
- C. PCV-455 opening.
- D. A low pressure SI.

**Answer:**

"B" is correct, PCV-456 opening.

**References:**

REF: OP51.SYS.PP1, ABN-705

REV DATE: 8/15/97

OBJ: OP51.SYS.PP1.OB14

Question Source:	Bank #	<u>  X  </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000010.A3.02
Importance Rating	3.6
Tier #	2
Group #	1
CFR References	41.7 / 45.5

**Question 36**

Operators have selected the 457/456 position on the PRZR pressure selector switch with the unit operating in Mode 1 at 7% power. If PRZR pressure channel PT-457 subsequently fails low, which of the below is expected to occur? (Assume no operator actions) Heaters will energize and .....

- A. PCV 456 and PCV 455A will not open; Reactor trip on high PRZR pressure.
- B. PCV-456 will cycle open and closed at the lift setpoint.
- C. PCV-456 will open and not reclose; Reactor will trip on 1820 psig SI actuation.
- D. PCV-456 will open and not reclose; Reactor trip on low PRZR pressure (1880 psig).

**Answer:**

"A" is correct, PCV 456 and PCV 455A will not open; Reactor trip on high PRZR pressure.

**References:**

REF: LO21.MCO.TA3.LP, (W) 7247D05, OP51.SYS.PP1.LN

REV DATE: 8/15/97

OBJ: OP51.SYS.PP1.OB14

Question Source:	Bank #	<u>    X    </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>    X    </u>
	LOD = 2	

## Examination Outline Cross-reference:

Level	<u>    RO    </u>
K/A #	000010.G 2.1.7
Importance Rating	3.7
Tier #	2
Group #	1
CFR References	43.5 / 45.12 / 45.13

**Question 37**

The exact power level at which an OTN16 reactor trip occurs is not a discrete value and is dependent on several plant parameters. Which of the following choices lists the conditions or parameters which would have the effect of decreasing the trip setpoint of this feature given the below plant conditions? Assume no operator response, and auto controls systems (except rod control which is in MANUAL) have stabilized the plant.

- 80% RTP
  - 895 MWe
1. Inadvertent 40 MWe turbine load rejection.
  2. Decreasing PRZR pressure.
  3. Step increase in turbine load to 920 MWe.
  4. Isolating a string of HP FW Heaters.
- A. 1, 2.
- B. 2, 3.
- C. 1, 2, 4.
- D. 2, 3, 4.

**Answer:**

"A" is correct, 1, 2.

**References:**

REF:OP51.SYS.RC1

REV DATE: 8/11/97

OBJ: OP51.SYS.RC1.OB413 (incorrect in bank, should be in OP51.SYS.ES1, no objectives listed in this material, however). Changed distractors B and C.

Question Source:	Bank #	<u>  X  </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>          </u>
K/A #	000012.A1.01
Importance Rating	2.9
Tier #	2
Group #	1
CFR References	41.5 / 45.5

**Question 38**

During COT testing the I & C Technician came to the Control Room to verify tripped bistable indications with the Reactor Operator. The TSLB for the bistable was flashing. This indicates \_\_\_\_\_ and the crew should \_\_\_\_\_.

- A. Normal testing configuration; do nothing since the NCT card was bypassed and this is normal system response for these conditions.
- B. Card power supply failure; restore channel and trip bistable again in order to verify the results for operability.
- C. Indicates only one train of SSPS processed the trip; enter the associated ABN AND TS.
- D. Indicates neither train of SSPS processed the trip; enter the associated ABN AND TS.

**Answer:**

“C” is correct, Indicates only one train of SSPS processed the trip; enter the associated ABN AND TS.

“A” is incorrect because this is not the normal testing configuration while “B” is incorrect because power supply failure will not cause the TSLB to flash. “D” is incorrect because if neither tripped then neither light would be on (solid or otherwise).

**References:**

REF: OP51.SYS.ES2.LN, page 112 and 117, OP51.SYS.IC3.LN page 41-44.

OBJ: OP51.SYS.EC2.OB16, OP51.SYS.IC3.OB02

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>RO</u>
K/A #	000012.A2.01
Importance Rating	3.1
Tier #	2
Group #	1
CFR References	41.5 / 43.5 / 45.3 / 45.5

**Question 39**

Main steam line isolation occurs with 2 of 3 pressure transmitters on \_\_\_\_\_ and \_\_\_\_\_.

- A. 1 of 4 main steam lines at 605psig and decreasing; is blockable below P-14.
- B. 2 of 4 main steam lines at 605psig and decreasing; is blockable below P-14.
- C. 1 of 4 main steam lines at 605psig and decreasing; is blockable below P-11.
- D. 2 of 4 main steam lines at 605psig and decreasing; is blockable below P-11.

**Answer:**

"C" is correct, 1 of 4 main steam lines at 605psig and decreasing, is blockable below P-11.

**References:**

REF: OP51.SYS.ES1, page 60.

OBJ: None provided in this training material

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000013.K5.02
Importance Rating	2.9
Tier #	2
Group #	1
CFR References	41.5 / 45.7

**Question 40**

During attempts to re-establish a feedwater flow path following an SI and FWI reset, which of the following will be required if the Reactor trip breakers are unable to be cycled?

- A. Place FIV hand switches to the closed position to allow a FWI reset.
- B. Remove control power from the Reactor trip breakers.
- C. Pull universal logic card A213 from both trains of SSPS, then replace both cards.
- D. Reset both trains of SI Sequencer, then reset the FWI signal.

**Answer:**

“C” is correct, Pull universal logic card A213 from both trains of SSPS, then replace both cards.

**References:**

REF: OP51.SYS.MF1

REV DATE: 12/5/96

OBJ: OP51.SYS.MF1.OB26 and OB27

Question Source:	Bank #	<u>    X    </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>    X    </u>
	LOD = 3	

## Examination Outline Cross-reference:

Level	<u>    RO    </u>
K/A #	000013.A4.02
Importance Rating	4.3
Tier #	2
Group #	1
CFR References	41.7 / 45.5 to 45.8

**Question 41**

During a particular accident scenario, the loss of containment cooling creates a high pressure condition such that the containment environment has degraded to adverse conditions. What is the impact on the RCS Pressure indications in this situation?

- A. RCS wide range pressure (PI-405) will indicate greater than actual pressure; RCS narrow range pressure indication (PI-403A) will indicate lower than actual pressure.
- B. Both RCS wide and narrow range indications (PI-405 and PI-403A) will read lower than actual.
- C. RCS wide range pressure (PI-405) will indicate lower than actual pressure; RCS narrow range pressure indication (PI-403A) will indicate higher than actual pressure.
- D. Both RCS wide and narrow range indications (PI-405 and PI-403A) will read higher than actual.

**Answer:**

"B" is correct, Both RCS wide and narrow range indications (PI-405 and PI-403A) will read lower than actual.

For small break LOCA, Phase A isolation will potentially create this scenario because of loss of cooling water to the CCS. Higher Pressures in containment could provide a 45psig difference on a 2000psig RCS pressure instrument if containment pressure goes from 15psig to 60psig during accident conditions. PI-403A is a narrow range indicator used for LTOP conditions (range 0-700psig) and uses the same type and range of pressure transmitter as PI-405, both of which go down as pressure in Containment goes up.

**References:**

REF: OP51.SYS.RC1.LN, page 27, LO21.MCO.MI7.LN, page 17-18.

OBJ: LO21.MCO.MI7.OB03

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000022.K3.02
Importance Rating	3.0
Tier #	2
Group #	1
CFR References	41.7 / 45.6

**Question 42**

Operators have entered FRZ-0.1A, "Response to High Containment Pressure" from the CSFT for containment pressure being greater than 50 psig (step 1). In step 2 and 3 of the procedure, operators are directed to verify isolated and/or isolate all non-essential containment and ventilation penetrations. If these items are correctly aligned, how are they verified to be isolated?

- A. Phase A isolations use green colored windows with all lit while ventilation isolations use red windows with all lit.
- B. Phase A isolations use red colored windows with all dark while ventilation isolations use green windows with all dark.
- C. Phase A isolations use red colored windows with some dark and some lit while ventilation isolations use green windows with all lit.
- D. Phase A isolations use green colored windows with some dark and some lit while ventilation isolations use red windows with all lit.

**Answer:**

"C" is correct, Phase A isolations use red colored windows with some dark and some lit while ventilation isolations use green windows with all lit.

**References:**

REF: FRZ-0.1A, page 18.

OBJ: LO21.SJ4.XHD.OB104

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	

## Examination Outline Cross-reference:

Level	<u>  RO  </u>
K/A #	000026.G 2.4.17
Importance Rating	3.1
Tier #	2
Group #	1
CFR References	41.10 / 45.13

**Question 43**

Unit 2 is operating in EOP-0.0B, "REACTOR TRIP OR SAFETY INJECTION." The Reactor is tripped and safety injection has actuated. The following plant indications and responses are observed;

- Containment pressure is 8 psig and rising.
- RCS subcooling is 57°F.
- Both CCPs and SIPs are running.
- Both CCWPs are running.
- Pressurizer level is 13%.
- Pressurizer pressure is 1815 psig.
- Two banks of steam dumps are open.
- Tave is 563 and rising.

Based on the above information, from the list below SELECT the required action.

- A. Take manual control of SG ARVs and throttle to control temperature.
- B. Take manual control of steam dumps and throttle to control temperature.
- C. Increase auxiliary feedwater flow to the steam generators.
- D. Allow SG ARVs to automatically control temperature.

**Answer:**

"A" is correct, Take manual control of SG ARVs and throttle to control temperature.

**References:**

REF: EOP-0.0B, Rev 0

REV DATE: 2/2/95

OBJ: OPD1.E00.XG2.OB402

Question Source:	Bank #	<u>  X  </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	<u>  X  </u>
	LOD = 4	

Examination Outline Cross-reference:

Level	<u>  RO  </u>
K/A #	000039.K1.04
Importance Rating	3.1
Tier #	2
Group #	1
CFR References	41.2 to 41.9 / 45.7 to 45.8

**Question 44**

Given the following conditions at Unit 1:

- 33% Reactor power.
- Main Feed Pump "B" is operating.
- Steam Generator Water Level Controls are in AUTOMATIC.

Which ONE of the following failures will cause RCS Tave to INITIALLY INCREASE?

- A. Selected Steam Pressure Channel PT-514 fails HIGH.
- B. Selected Level Channel LT-519 fails LOW
- C. Feed Reg Bypass Valve, LV-2162 fails OPEN.
- D. Feed Header Pressure Transmitter PT-508 fails HIGH

**Answer:**

"D" is correct, Feed Header Pressure Transmitter PT-508 fails HIGH. This failure causes a decrease in feed pump speed for both feed pumps and hence an increase in Tave.

"A" is incorrect because this causes feed pump speed to increase initially, which would decrease Tave. "B" is incorrect because selected level failing low causes the feed water control valve to open, which would decrease Tave initially; similar discussion for "C" being incorrect.

**References:**

REF: OP51.SYS.MF1, OP51.SYS.SN1, ABN-709, ABN-710

OBJ: OP51.SYS.MF1.OB17

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	<u>RO</u>
K/A #	000059.K3.04
Importance Rating	3.6
Tier #	2
Group #	1
CFR References	41.7 / 45.6



**Question 46**

Operators are in procedure FRH-0.1A "Response to Loss of Secondary Heat Sink" following a reactor trip and safety injection with AFW failing to initiate. In FRH-0.1A, the procedure directs the operator to stop all RCPs at Step 6 of the procedure. Which one of the following is the reason why the RCPs are stopped so early in the procedure?

- A. To minimize the potential for RCP damage due to thermal shock from cold high pressure SI flow.
- B. To allow the development of natural circulation.
- C. To minimize the potential for RCP damage due to loss of RCS pressure.
- D. To allow the operator more time to take corrective action before feed and bleed is required.

**Answer:**

"D" is correct, To allow the operator more time to take corrective action before feed and bleed is required. Operation of RCPs will shorten the time before the initiation of feed and bleed is required.

"C" is incorrect because RCP could be damaged if operated at reduced RCS pressure but in this procedure pressure remains at or above the PORV setpoint. "B" is incorrect because stopping RCPs would eventually result in establishing natural circulation if there were a heat sink. Which is not the case in this procedure. "A" is incorrect because when SI is initiated it shifts the source of water for seal injection from the VCT to the RWST. The actual temperature difference is minimal and should not affect the RCP's.

**References:**

REF: FRH-0.1A, page 39, ERG guidelines, page 18.

REV DATE: Farley bank question, 3/12/98

OBJ: OPD1.FR.H.XH1.OB401

Question Source:	Bank #	<u>    X    </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	<u>    X    </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>    RO    </u>
K/A #	000061.K3.01
Importance Rating	4.4
Tier #	2
Group #	1
CFR References	41.7 / 45.6

**Question 47**

Select the MINIMUM AFW pump and Steam Generator (SG) configuration designed to remove 100% of the reactor decay heat load following a reactor trip from 102% power:

- A. Two SG's fed by two motor driven AFW pumps or one turbine driven AFW pump.
- B. One SG fed by two motor driven AFW pumps or one turbine driven AFW pump.
- C. Two SG's fed by one motor driven AFW pump.
- D. One SG fed by one motor driven AFW pump.

**Answer:**

"C" is correct, Two SG's fed by one motor driven AFW pump.

**References:**

REF: DBD-ME-0206, TS Bases

REV DATE: 4/3/00

OBJ: SYS.AF1.OB21

Question Source:	Bank #	<u>  X  </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	<u>          </u>
	LOD = 4	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000061.K5.02
Importance Rating	3.2
Tier #	2
Group #	1
CFR References	41.5 / 45.7

**Question 48**

A requirement for a fast bus transfer to occur on a 6.9 KV bus is that the:

- A. time between the 1UT transformer breaker opening and the 1ST transformer breaker closing must be less than setpoint.
- B. time between the 1ST transformer breaker opening and the 1UT transformer breaker closing must be less than setpoint.
- C. 1UT transformer lockout time must be less than setpoint following the undervoltage condition.
- D. XST1 transformer voltage must be greater than setpoint.

**Answer:**

"A" is correct, time between the 1UT transformer breaker opening and the 1ST transformer breaker closing must be less than setpoint.

**References:**

REF: E1-0032 Sh 07, OP51.SYS.AC2.LN

REV DATE: 1/11/00

OBJ: OP51.SYS.AC2.OB09

Question Source:	Bank #	<u>    X    </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>    X    </u>
	Comprehension or Analysis	<u>          </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>    RO    </u>
K/A #	000062.K4.03
Importance Rating	2.8
Tier #	2
Group #	1
CFR References	41.7

**Question 49**

A system wide blackout has occurred and the Generation Controller has activated the "Black Start Plan". The Control room has initiated alignment of the Black Start Corridor per ABN-601. Breakers CB 7020 and CB 7030 are \_\_\_\_\_ from the Relay House in order to \_\_\_\_\_.

- A. Closed; expedite the recovery of 138KV switchyard in order to restore XST2 power first.
- B. Opened; prevent overloading the DECORDOVA combustion turbine generators in the first 30 minutes of grid restoration.
- C. Closed; expedite the recovery of 138KV switchyard with the DECORDOVA combustion turbines.
- D. Opened; ensure isolation prior to closing breaker CS-E1, DÉCOR 1 FDR 8060 from the control room in order to control re-energization.

**Answer:**

"C" is correct, Closed; expedite the recovery of 138KV switchyard with the DECORDOVA combustion turbines. Direct from procedure to close, with several notes as to why DECORDOVA is first to recover its combustion turbines (within 30 minutes) and hence CPSES utilizes this grid characteristic to establish its recovery emphasis (ie 138KV switchyard)

**References:**

REF: ABN-601, ATT 20.

OBJ: SL2.XFC.OB101 006, SYS.YD1.OB10

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 3	_____

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000062.A4.01
Importance Rating	3.3
Tier #	2
Group #	1
CFR References	41.7 / 45.5 / 45.8

**Question 50**

All of the breakers associated with the DC distribution panels have the following types of trips and/or protective isolation:

- A. Overcurrent, Ground fault, and Undervoltage .
- B. Ground fault only
- C. Overcurrent and Undervoltage only.
- D. Overcurrent only

**Answer:**

"D" is correct, Overcurrent only. The protective relays for grounds, under and over voltage provide indication ONLY with no trip features.

**References:**

REF: SYS.DC1.LN, page 32.

OBJ: SYS.DC1.OB06

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000063.K4.04
Importance Rating	2.6
Tier #	2
Group #	1
CFR References	41.7

**Question 51**

In SOP-609A for the “Diesel Generator System”, the precautions specifically warn against exceeding the continuous overload ratings (not a two hour rating or transient rating) for power and reactive loading. These two ratings are:

	Power	Reactive
A.	7000 KW	8750 KVAR
B.	6400 KW	5000 KVAR
C.	7000 KW	5000 KVAR
D.	6400 KW	8750 KVAR

**Answer:**

“C” is correct, 7000 KW and 5000 KVAR. The KVA overload is 8750 while the reactive overload rating is 5000 KVAR. The full power (KW) load specified for surveillance runs is 6400 KW but the overload power (KW) rating is 7000 KW.

**References:**

REF: SOP-609A- page 7.

OBJ: none listed in lesson plans for this item in OP51.SYS.ED1.LN

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	_____

Examination Outline Cross-reference:

Level	<u>  RO  </u>
K/A #	000064.K4.04
Importance Rating	3.1
Tier #	2
Group #	1
CFR References	41.7

**Question 52**

DG 1-01 starting air receiver 1-01 outlet isolation valve is closed to support an air compressor load test. The isolated air receiver pressure is 150 psig. Before the load test can be initiated, the DG starts in response to a Safety Injection actuation. If the remaining air receiver depressurizes to 0 psig after the DG started, which of the following describes the effect on the DG overspeed trip capability?

- A. Overspeed trip is not affected, air is vented when the overspeed trip occurs to reposition the shutdown cylinder.
- B. Overspeed trip is disabled, air is not available when the overspeed trip occurs to reposition the shutdown cylinder.
- C. Overspeed trip is not affected, the remaining air receiver will supply air to the shutdown cylinder.
- D. Overspeed trip is disabled, an Emergency Start prevents air from being supplied to the shutdown cylinder.

**Answer:**

"B" is correct, Overspeed trip is disabled, air is not available when the overspeed trip occurs to reposition the shutdown cylinder.

**References:**

REF: OP51.SYS.DG1

REV DATE: 8/15/97

OBJ: SYS.ED1.OB900 (objectives removed on current versions of this document).

Question Source:	Bank #	<u>    X    </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	<u>    X    </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>    RO    </u>
K/A #	000064.K6.07
Importance Rating	2.7
Tier #	2
Group #	1
CFR References	41.7 /45.7

**Question 53**

Which of the following conditions would cause the Wide Range Gas Monitor (WRGM) mid/high range sample pump to start?

- A. High filter DP on low range sample line
- B. Safety Injection Actuation
- C. Increasing radiation signal
- D. Containment Spray Actuation

**Answer:**

"C" is correct, Increasing radiation signal.

**References:**

REF: REF: ALM-3200, page 30.

REV DATE: 9/11/97

OBJ: OP51.SYS.RM1.OB09

Question Source:	Bank #	<u>  X  </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	<u>          </u>
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000073.A1.01
Importance Rating	3.2
Tier #	2
Group #	1
CFR References	41.5 / 45.7

**Question 54**

Unit 1 receives several alarms in the control room, but the RO focuses on the alarm “DG 1/2 SSW RET FLO LO” because DG 1-01 is two hours into a surveillance test run. The RO requests a PEO to check \_\_\_\_\_ for the train “A” SSW pump and to check \_\_\_\_\_ for DG 1-01 JKT WTR CLR SSW OUT THROT VLV, 1SW-350 in order to restore SSW flow to DG 1-01.

- A. breaker on 1EA1; breaker on 1EB3.
- B. breaker on 1EB1; local manual control and indications.
- C. breaker on 1EA1; local manual control and indications.
- D. breaker on 1EB1; breaker on 1EB3.

**Answer:**

“C” is correct, breaker on 1EA1; local manual control and indications.

SSW pump “A” is off of 1EA1 and 1SW350 is locally controlled. 1-HV-4393 is powered from 1EB1 and is the SSW outlet valve that auto opens on DG start.

**References:**

REF: OP51.SYS.SW1, page 9., M1-0234.

OBJ: No objectives labeled in training documents

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	_____

## Examination Outline Cross-reference:

Level	<u>  RO  </u>
K/A #	000076.K2.01
Importance Rating	2.7
Tier #	2
Group #	1
CFR References	41.7

**Question 55**

A Valve Lineup on 1-8145-AS1 is to be done. It is located in the Letdown Orifice Valve Room inside of Containment. Radiation Protection has done surveys. The Shift Manager may waive requirements for Independent Verification under which of the following conditions:

- A. In containment during Modes 5 and 6.
- B. If significant radiation exposures (>5 rem) are likely
- C. In areas of high radiation dose rates (>100 mrem/hr)
- D. In areas of high airborne contamination (>5 ALI or 60 DAC-hrs)

**Answer:**

"C" is correct, In areas of high radiation dose rates (>100 mrem/hr).

From section 6.3.1: The Shift Manager may waive requirements for Independent Verification under any of the following conditions:

- 1) If significant radiation exposures (>10 mrem) are likely
- 2) In areas of high radiation dose rates (>100 mrem/hr)
- 3) In areas where other personnel hazards exist
- 4) In Containment during MODES 1, 2, 3 or 4

**References:**

REF: STA-694 Sect 6.3.1

REV DATE: 3/17/97

OBJ: OPD1.ADM.XAD.OB106

Question Source:	Bank #	<u>  X  </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	<u>          </u>
	LOD = 4	

## Examination Outline Cross-reference:

Level	<u>  RO  </u>
K/A #	000103.G 2.3.10
Importance Rating	2.9
Tier #	2
Group #	1
CFR References	43.4 / 45.10

**Question 56**

One method to trip the reactor during an ATWT is to remove power from the Control Rod Drive Mechanisms (CRDMs). The power path to the CRDMs is:

- A. 1B3/1B4 – Motor Breaker – Generator Breaker-RTB-Power Cabinet - CRDM
- B. 1B3/1B4 – Motor Breaker – Generator Breaker- RTB-Logic Cabinet - CRDM
- C. 1B1/1B2 – Motor Breaker – Generator Breaker- RTB-Power Cabinet - CRDM
- D. 1B1/1B2 – Motor Breaker – Generator Breaker- RTB-Logic Cabinet - CRDM

**Answer:**

“A” is correct, 1B3/1B4 – Motor Breaker – Generator Breaker-RTB-Power Cabinet – CRDM.

“B” and “D” are incorrect because generator output is to the power cabinet not the logic cabinet. “C” and “D” are incorrect because the power supply to each motor is 1B3-MG #1 and 1B4-MG # 2.

**References:**

REF: E1-0034, sheet 39-42, OP51.SYS.CR1.LN

OBJ: OP51.SYS.CR1.OB03

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000001.K2.02
Importance Rating	3.6
Tier #	2
Group #	2
CFR References	41.7

**Question 57**

CPSES Unit 1 is in Mode 1 at 30% power when you take the watch as RO. You notice that the alarms “CNTMT SMP 1 LVL HI HI” and “CNTMT SMP 1 FILL RATE INCREASE” are lit. You notice that neither sump pump is running. The white lights above both hand switches for the pumps are out while the green lights are on. The status of the Containment sump system is:

- A. a motor overload condition has occurred on the pumps, preventing an auto-start on high level.
- B. there is no power available to either pump, preventing an auto-start on HI or HI-HI level.
- C. the drain isolation valves (1-5157/5158) are closed, preventing operation of either pump.
- D. the sump pump timer value is set too low, preventing operation of either pump.

**Answer:**

“C” is correct, the drain isolation valves (1-5157/5158) are closed, preventing operation of either pump.

“A” is incorrect because a motor overload would be indicated with the white lights above the pump hand switches being lit. “B” is incorrect because loss of power to both pumps would indicate a loss of both safety buses and the plant could not be in Mode 1 in this situation. “D” is incorrect because if the timer were set too low the pump would start sooner vice never starting with too large a value.

**References:**

REF: OP51.SYS.CY1, page 30, ALM-0021-A, page 21.

OBJ: OP51.SYS.CY1.OB17

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	_____

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000002.A3.01
Importance Rating	3.7
Tier #	2
Group #	2
CFR References	41.7 / 45.5

**Question 58**

The plant is operating under steady-state conditions at 100% power with all control systems in their normal/automatic lineup. PRZR level transmitter LT-459 fails low, then PRZR level transmitter LT-461 is immediately selected for control.

Which statement describes the expected plant conditions 3 to 5 minutes after LT-461 is selected for control, assuming no other operator action?

- A. Charging flow increasing, letdown flow constant, and Group C heaters energized
- B. Charging flow increasing, letdown flow constant, and Group C heaters de-energized
- C. Charging flow decreasing, letdown flow isolated, and Group C heaters energized
- D. Charging flow decreasing, letdown flow isolated, and Group C heaters de-energized

**Answer:**

"D" is correct, Charging flow decreasing, letdown flow isolated, and Group C heaters de-energized.

**References:**

REF: ABN-706A

REV DATE: bank, but never used

OBJ: OP51.SYS.PP1.OB14

Question Source:	Bank #	<u>    X    </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>    X    </u>
	LOD = 3	

## Examination Outline Cross-reference:

Level	<u>    RO    </u>
K/A #	000011.A1.02
Importance Rating	3.3
Tier #	2
Group #	2
CFR References	41.5 / 45.5

**Question 59**

During a normal plant shutdown of Unit 1, an operator observed the following:

- N35 indicates 2.1 E -11 amps
- N36 indicates 1.2 E -10 amps
- N31 indicates 5.1 E+4 cps
- N32 indicates 6.1 E+4 cps

How was compensation affecting the Nuclear Instruments during the shutdown?

- A. N35 is over-compensated and P-6 de-energized much sooner than normal
- B. N35 is under-compensated and P-6 de-energized much later than normal
- C. N36 is over-compensated and P-6 de-energized much later than normal
- D. N36 is under-compensated and P-6 de-energized much sooner than normal

**Answer:**

“A” is correct, N35 is over-compensated and P-6 de-energized much sooner than normal.

For these values, N35 is the deviant detector because it is much lower than the rest, and so it is over-compensated. Because the unit is shutting down, P-6 was reached sooner than normal.

**References:**

REF: OP51.SYS.EC1

OBJ: OP51.SYS.EC1.OB006, 7, 8

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	<u>RO</u>
K/A #	000015.K6.02
Importance Rating	2.6
Tier #	2
Group #	2
CFR References	41.5 / 45.7

**Question 60**

In Mode 3, it is desired to maintain RCS Tave at 535°F. What setting should be on steam dump pressure controller 1-PK-507?

- A. 4.44
- B. 4.56
- C. 5.44
- D. 5.56

**Answer:**

“C” is correct, 5.44.

Solution: 535°F is Tsat for P= 922.2 psia = 907.5 psig.  
 Setting =  $10[(907.5-200)/1300] = 10(707.5/1300) = 5.44$

**References:**

REF: TDM-501A; Steam Tables

REV DATE: 8/24/00

OBJ: SYS.SD1.OB900

**Reference Material Required :TDM and STEAM TABLES**

Question Source:	Bank #	<u>  X  </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>  X  </u>
	LOD = 2	

Examination Outline Cross-reference:

Level	<u>  RO  </u>
K/A #	000041.K1.05
Importance Rating	2.5
Tier #	2
Group #	2
CFR References	41.2 to 41.9 / 45.7 to 45.8

**Question 61**

Unit 1 is at full power, control rods are in Auto, and the Main Turbine Generator load starts to vary in an unexpected manner. Several Turbine Digital Control Alarms (OM 690 -ASD) are received. Using procedure \_\_\_\_\_, the operator should **initially** place the EHC to \_\_\_\_\_ to regain control of load and attempt to stop the oscillations.

- A. ABN-401, Main Turbine Malfunction; MHC
- B. ABN-401, Main Turbine Malfunction; Speed Control
- C. ABN-402, Main Generator Malfunction; MHC
- D. ABN-402, Main Generator Malfunction; Speed Control

**Answer:**

“A” is correct, ABN-401, Main Turbine Malfunction; MHC

“C” and “D” are incorrect because the ABN-402 “Main Generator Malfunction” is incorrect for this transient, and “B” is incorrect because procedure directs MHC control first.

**References:**

REF: ABN-401, section 7, note at step 3

OBJ: OP51.SYS.MT1.OB56

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>RO</u>
K/A #	000045.A2.17
Importance Rating	2.7
Tier #	2
Group #	2
CFR References	41.5 / 43.5 / 45.3 / 45.5

**Question 62**

How are the waste gas decay tanks protected from overpressure?

- A. Tanks 1-8 relieve to tank 10 while tanks 9-10 relieve to the ventilation system.
- B. Tanks 1-8 relieve to tank 9 while tanks 9-10 relieve to the ventilation system.
- C. Tanks 1-8 relieve to the ventilation system while tanks 9-10 relieve to tank 8.
- D. Tanks 1-8 relieve to the ventilation system while tanks 9-10 relieve to tank 1.

**Answer:**

"A" is correct, Tanks 1-8 relieve to tank 10 while tanks 9-10 relieve to the ventilation system.

**References:**

REF: OP51.SYS.GH1.LN page 31.

OBJ: OP51.SYS.GH1.OB02

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 4	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000071.K4.05
Importance Rating	2.7
Tier #	2
Group #	2
CFR References	41.7

**Question 63**

Unit 2 is in refuel and fuel handling is being conducted over Spent Fuel Pool # 2 in order to offload spent fuel to the pool. The Control room has received a verbal report of a damaged fuel assembly by fuel handling personnel. A few moments later, an alarm sounded on the PC-11 (DRMS) for the following:

- SFP-002 LRAM SFP 2 N. WALL (X-RE-6273)
- SFP-001 LRAM SFP 2 E. WALL (X-RE-6272)

ABN-908, "Fuel Handling Accident" has been entered and all automatic and operator actions have been completed. What ventilation alignment is in place in the fuel building?

- A. All ventilation is automatically stopped.
- B. All ventilation is manually stopped by operators.
- C. One supply fan in SFP area #2 is running.
- D. One exhaust fan in SFP area #2 is running.

**Answer:**

"D" is correct, One exhaust fan in SFP area #2 is running.

"A" is incorrect because there are no automatic signals to isolate ventilation for high radiation in the fuel building. No instruction is given for operators to manually stop all ventilation in the ABN, hence "B" is incorrect. "C" is incorrect because the ABN instructs the exhaust fan to be kept running.

**References:**

REF: ABN-908, section 3, step 3.

OBJ: Not found in source materials

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 3	_____

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000072.K3.01
Importance Rating	3.1
Tier #	2
Group #	2
CFR References	41.2 to 41.9 / 45.7 to 45.8

**Question 64**

The Unit 1 control room believes that circ water pump 1-04 has tripped due to loss of excitation. In order to reset the pump for this trip:

- A. The PEO would ask the control room to take the pump switch to STOP, then back to CENTER.
- B. The PEO would take the exciter variac to 0 pF, then back to normal starting values for pF.
- C. The PEO must reset the Field Monitor II at the 6.9kv circ water pump breakers.
- D. The PEO must reset the Field Monitor II at the circ water local panel, 1-LV-03.

**Answer:**

“C” is correct, The PEO must reset the Field Monitor II at the 6.9kv circ water pump breakers.

On a loss of excitation, the Field Monitor II relays are energized and must be reset in order to successfully restart the cir water pump. They are located in the 6.9kv breaker enclosures for CW pumps 3 and 4. Note error in CW training notes (doesn't state that 1 and 2 are in switchgear, not the breaker enclosures).

**References:**

REF: OP51.SYS.CW1 page 18-19.

OBJ: no objectives listed in CW lesson notes

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000075.G 2.1.30
Importance Rating	3.9
Tier #	2
Group #	2
CFR References	41.7 / 45.7

**Question 65**

You are on watch in the control room at CPSES and an alarm annunciates on the Fire Detection Main Control Panel Alarm (CPX-ECPRCV-06). You go over to the Containment Building section of this panel and you observe an alarming window with the text "CP1-28A" on the left side and a solid rectangle on the right side. These items indicate what?

- A. The alarm is in detection zone CP1-28A and is from a strip thermal detector.
- B. The alarm is from a local panel CP1-28A and is from a strip thermal detector.
- C. The alarm is in detection zone CP1-28A and is from a thermal detector.
- D. The alarm is from a local panel CP1-28A and is from a thermal detector.

**Answer:**

"B" is correct, The alarm is from a local panel CP1-28A and is from a strip thermal detector.

The square rectangle indicates a strip thermal detector, making "C" and "D" incorrect. The CP1-28A is a local panel nomenclature, so "A" is incorrect.

**References:**

REF: ABN-901, page 11, 12, and 34.

OBJ: OP51.SYS.FP1.OB03

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	000086.A4.02
Importance Rating	3.5
Tier #	2
Group #	2
CFR References	41.7 / 45.5 to 45.8

**Question 66**

The System Engineer is completing his walk down of all accessible active Temporary Modifications in accordance with STA-602. While in the control room, he notices a tag on the main control board that has faded so much that the information is not legible on the tag. He returns with a replacement tag. Who should replace the tag and how often is this walk down performed and documented (form STA-602-22)?

- A. System Engineer, monthly
- B. Operations, monthly
- C. System Engineer, quarterly
- D. Operations, quarterly

**Answer:**

"D" is correct, Operations, quarterly.

IAW STA-602, page 23 and page 34, done quarterly and tags to be placed on control boards/panels and switches should be replaced by Operations personnel.

**References:**

REF: STA-602, page 23, 31, rev16.

OBJ: could not verify with material provided

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	G 2.1.2
Importance Rating	3.0
Tier #	G
Group #	G
CFR References	41.10 / 45.13

**Question 67**

The shift turnover briefing for the \_\_\_\_\_ is held \_\_\_\_\_ the individual watch station turnover.

- A. On-coming shift crew; before.
- B. Off-going shift crew; after.
- C. On-coming shift crew; after.
- D. Off-going shift crew; before.

**Answer:**

"C" is correct, On-coming shift crew; after.

**References:**

REF: OWI-107, page 5.

OBJ: no objectives found for admin topics

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	G 2.1.3
Importance Rating	3.0
Tier #	G
Group #	G
CFR References	41.10 / 45.13

**Question 68**

Unit 1 is being cooled down to COLD SHUTDOWN, Reactor Coolant Pumps 1-01, 1-02 & 1-03 have been stopped, and the Unit Reactor Operator is preparing to stop Reactor Coolant Pump 1-04. Which of the below precautions applies to the last running Reactor Coolant Pump (RCP)?

- A. Do not stop the RCP unless boron dilution paths are isolated.
- B. Stop the RCP when RHR flow is established.
- C. Stop the RCP when RCS temperature is < 200°F.
- D. Do not stop the RCP until after MODE 4 is entered.

**Answer:**

"A" is correct, Do not stop the RCP unless boron dilution paths are isolated.

**References:**

REF: IPO-00, 4.16

REV DATE: 11/11/97

OBJ: IPO.XO4.OB900

Question Source:	Bank #	<u>  X  </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	G 2.1.32
Importance Rating	3.4
Tier #	G
Group #	G
CFR References	41.10 / 43.2 / 45.12

**Question 69**

The Unit 2 feed pump speed control program has a \_\_\_\_\_ delta pressure program than Unit 1 because it provides \_\_\_\_\_.

- A. Higher ; better range control for feed regulating valve FCV-0520.
- B. Lower ; better range control for feed regulating valve FCV-0520.
- C. Higher ; better range control for feed regulating valve FCV-0519.
- D. Lower ; better range control for feed regulating valve FCV-0519.

**Answer:**

"A" is correct, Higher ; better range control for feed regulating valve FCV-0520.

The Unit 2 feed pump speed control program has a delta pressure program of 182 psid. The Unit 1 feed pump speed control program has a delta pressure program of 170 psid. This change was made to better control range for feed regulating valve FCV-0520.

**References:**

REF: Unit differences document, entry 6, 2002-00004, FW system by D. Mills.

OBJ: SYS.MF1.OB31

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	G 2.2.3
Importance Rating	3.1
Tier #	G
Group #	G
CFR References	41 / 43 / 45

**Question 70**

Which of the following are **valid** safety limits as defined in the Technical Specifications:

1. DNBR in Modes 1 and 2
  2. FNΔH in Modes 1 and 2
  3. RCS Pressure in Modes 1, 2, 3, 4, and 5
  4. Peak Centerline Temperature <4700°F in modes 1 and 2
- A. 1, 2, and 4.
- B. 1, 2, and 3.
- C. 1, 3, and 4
- D. 2, 3, and 4

**Answer:**

“C” is correct, 1, 3, and 4.

Item 2 is not a safety limit, making only “C” correct.

**References:**

REF: TS 2.1

OBJ: no objectives identified with TS.

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	

Examination Outline Cross-reference:

Level	<u>  RO  </u>
K/A #	G 2.2.22
Importance Rating	3.4
Tier #	2
Group #	2
CFR References	43.2 / 45.2

**Question 71**

Regarding the clearance process, the difference between a partial release and a temporary lift is that:

- A. A partial release allows removal of tags for testing, while a temporary lift does not.
- B. A temporary lift must be restored within one shift period, while a partial release does not.
- C. A temporary lift allows removal of tags for testing, while a partial release does not.
- D. A partial release must be restored within one shift period, while a temporary lift does not.

**Answer:**

"B" is correct, A temporary lift must be restored within one shift period, while a partial release does not.

**References:**

REF: STA-605, Sect 6.12.D

REV DATE: 12/31/97

OBJ: OPD1.ADM.XAA.OB101/301/601/702

Question Source:	Bank #	<u>  X  </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	<u>          </u>
	LOD = 4	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	G 2.2.13
Importance Rating	3.6
Tier #	G
Group #	G
CFR References	41.10 / 45.13

**Question 72**

What would be the required posting for an area that has an airborne concentration of 1 DAC (stochastic limited airborne contamination with Cesium or Cobalt) and a general area dose rate of 96mrem/hr?

- A. Radiation Area.
- B. High Radiation Area.
- C. Very High Radiation Area.
- D. Locked High Radiation Area.

**Answer:**

"A" is correct, Radiation Area.

1 DAC is 2.5mrem/hr dose equivalent for any stochastic limited nuclide. Add this to the general area dose rate of 96mrem/hr to get answer of 98.5mrem/hr. Therefore, the posting requirement would be a Radiation Area.

**References:**

REF: 10 CFR Part 20

OBJ: no admin topic objectives provided

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	RO _____
K/A #	G 2.3.1
Importance Rating	2.6
Tier #	G
Group #	G
CFR References	41.12 / 43.4 45.9 / 45.10

**Question 73**

Emergency Response Guideline (ERG) procedures that have immediate action steps are:

- A. EOP-0.0, EOP-1.0, ECA-0.0
- B. EOP-0.0, ECA-0.0, FRC-0.1
- C. EOP-0.0, ECA-0.0, FRS-0.1
- D. EOP-1.0, EOS-0.1, FRP-0.1

**Answer:**

"C" is correct, EOP-0.0, ECA-0.0, FRS-0.1.

**References:**

REF: LO21.ERG.XD2, ODA-407, attach. 8A

REV DATE: 3/9/04, bank never used

OBJ: ERG.XD2.OB29

Question Source:	Bank #	<u>  X  </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	<u>          </u>
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	G 2.4.1
Importance Rating	4.3
Tier #	G
Group #	G
CFR References	41.10 / 43.5 / 45.13

**Question 74**

Control Room instrumentation qualified for Post Accident Monitoring IAW RG 1.97 is identified by:

- A. Red labels with white lettering
- B. White labels with orange lettering
- C. Black labels with white lettering
- D. White labels with black lettering

**Answer:**

"C" is correct, black labels with white lettering

All RG 1.97 instruments have black labels with white lettering.

**References:**

REF OP51.SYS.PA1.LN, page 9.

OBJ:ERG.XDB.OB102

Question Source:	Bank #	_____
	Modified Bank #	<u>  X  </u>
	New	_____

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	G 2.4.3
Importance Rating	3.5
Tier #	G
Group #	G
CFR References	41.6 / 45.4

**Question 75**

A reactor trip has occurred on Unit 1 with no SI actuation. You have entered EOP-0.0A and completed the first three immediate actions. The fourth immediate action step is to "Check SI Status", so you enter the RNO column. Given the following conditions:

Containment Pressure = 2.6 psig  
 Pressurizer Level = 6%  
 Pressurizer Pressure = 1830 psig  
 Steam line Pressure = 605psig

Select the reason why SI is required (parameter that necessitates an SI), and based on your answer, what Procedure's entry condition(s) have been met once you complete this step?

- A. Low Pressurizer Level, FRI-0.2A, "Response to Low Pressurizer Level."
- B. High Containment Pressure, FRZ-0.1A, "Response to High Containment Pressure."
- C. Low Steam line Pressure, EOP-0.0A, "Reactor Trip or Safety Injection."
- D. Low Pressurizer Level, EOP-0.0A, "Reactor Trip or Safety Injection."

**Answer:**

"C" is correct, Low Steam line Pressure, EOP-0.0A, "Reactor Trip or Safety Injection."

"A" and "D" are incorrect because Low PZR level does not directly require SI from EOP0.0A. "B" is incorrect because Containment pressure has to reach 3.2psig for the SI actuation setpoint (ie required).

**References:**

REF: EOP-0.0A, page 5, rev 7.

OBJ: ADM.XAF.OB100

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 4	

**Examination Outline Cross-reference:**

Level	<u>  RO  </u>
K/A #	G 2.4.2
Importance Rating	3.9
Tier #	G
Group #	G
CFR References	41.7 / 45.7 / 45.8

**Question 76**

During a Large break LOCA event, you are using the Critical Safety Function Status Trees in order to verify the STA's evaluation of "degraded" core cooling for the core cooling safety function. Plant data that you have collected is below:

- Containment Pressure is 15 psig and stable
- RCS subcooling is 40 °F and stable
- RVLIS - all lights are out
- CET's are 785 °F and stable

Select the procedure you would use to mitigate the core cooling safety function:

- A. Enter procedure FRC-0.1.
- B. Enter procedure FRC-0.2.
- C. Enter procedure FRC-0.3.
- D. Continue with procedure in affect.

**Answer:**

"B" is correct, Enter procedure FRC-0.2.

"A" is incorrect because CET's are not greater than 1200 °F. "C" is incorrect because neither RVLIS nor CET's meet the requirements to have a Yellow path and hence the FRC-0.3 procedure application. "D" is incorrect because a 55 °F subcooling margin would be required to have a Green path with the adverse containment conditions (containment pressure >5 psig).

**References:**

REF: CSFST, core cooling, FRC-0.2.

OBJ: LO21.SM3.XH4.OB102

Question Source:	Bank #	<u>          </u>
	Modified Bank #	<u>          </u>
	New	<u>    X    </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>    X    </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	<u>SRO</u>
K/A #	000011.EA2.10
Importance Rating	4.7
Tier #	1
Group #	1
CFR References	43.5 / 45.13

**Question 77**

During operation at 100% power, the controlling Pressurizer Pressure channel (PT-455A) fails low. What are the **initial** operator actions and what sections of the Technical Specifications applicable to **only** this instrument would require actions by the Unit Supervisor?

## Initial actions

1. Verify PORV closed
2. Transfer to alternate controlling channel
3. Place PZR Pressure master CTRL in MANUAL
4. Adjust PK-455A for current RCS pressure
5. Verify PZR Pressure stable on alternate instrument

## TS action tables

6. Rx Trip Instrument Table 3.3.1
7. ESF Instrument Table 3.3.2
8. Accident Monitoring Instrument Table 3.3.3
9. Remote S/D Instrument Table 3.3.4

- A. 1, 2, and 5 ; 6, 7, and 8.
- B. 1, 2, and 5 ; 6, 7, 8, and 9.
- C. 1, 3, and 4 ; 6, 7, and 8.
- D. 1, 3, and 4 ; 6, 7, 8, and 9.

**Answer:**

"C" is correct, 1, 3, and 4 ; 6, 7, and 8.

Initial Actions are special in that they are performed quickly and are indicated with a diamond. They include 1) Verify PORV closed, 2) Place PZR Pressure master CTRL in MANUAL, and 3) Adjust PK-455A for current RCS pressure. "A" and "B" are incorrect because these are not only not initial actions, but shifting to alternate while in auto is not desired because the PORV might open. "D" is incorrect because the Remote Shutdown panel does not have a requirement for this instrument.

**References:**

REF: ABN-705, pages 5, 26.

OBJ: OP51.SYS.PP1.OB14

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 4	

Examination Outline Cross-reference:

Level	<u>SRO</u>
K/A #	000027.AA2.16
Importance Rating	3.9
Tier #	1
Group #	1
CFR References	43.5 / 45.13

**Question 78**

Unit 1 had received an automatic reactor trip signal and an SI actuation occurred from 100% power but the reactor trip breakers did not open. Containment Pressure was 7 psig when EOP-0.0A, "Reactor Trip or Safety Injection," was entered. Nuclear Instrument indications are as shown below. What Procedure(s) should the crew be utilizing at this point?

NI-41 power is 8%	NI-35 power is 4E-5 cps
NI-42 power is 7%	NI-35 SUR is -0.1
NI-43 power is 10%	NI-36 power is 4E-5 cps
NI-44 power is 9%	NI-36 SUR is -0.1
50A (wide range) power is 7%	
50A (wide range) SUR is -0.01	
50B (wide range) power is 6%	
50B (wide range) SUR is -0.03	

- A. Using FRS-0.1A, "Response to Nuclear Power Generation / ATWT" while concurrently finishing the first 8 steps of EOP-0.0A, "Reactor Trip or Safety Injection."
- B. Using FRS-0.1A, "Response to Nuclear Power Generation / ATWT" while concurrently finishing the first 4 steps of EOP-0.0A, "Reactor Trip or Safety Injection."
- C. Exiting FRS-0.1A, "Response to Nuclear Power Generation / ATWT" and transitioning back to EOP-0.0A, "Reactor Trip or Safety Injection."
- D. Exiting FRS-0.1A, "Response to Nuclear Power Generation / ATWT" and transitioning to EOP-1.0A, "Loss of Reactor or Secondary Coolant."

**Answer:**

"A" is correct, Using FRS-0.1A, "Response to Nuclear Power Generation / ATWT" while concurrently finishing the first 8 steps of EOP-0.0A, "Reactor Trip or Safety Injection."

Because the containment pressure has reached 7psig, the excore NI's are no longer valid and the wide range should be used. Since the wide range power is above 5%, the ATWT is still in progress and so "C" and "D" are incorrect. "B" is incorrect because when an SI has occurred, the first 8 steps are required to be completed in parallel with the FRS-0.1A IAW notes, bases, and ODA-407.

**References:**

REF: FRS-0.1A page 9 and 19, ODA-407 page 19, and EOP-0.0A page 3 and 78.

OBJ: OPD1.FRS.XH1.OB500

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	_____X_____

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis  
LOD = 3

X

Examination Outline Cross-reference:

Level	<u>SRO</u>
K/A #	000029.EA2.01
Importance Rating	4.7
Tier #	1
Group #	1
CFR References	43.5 / 45.13

**Question 79**

Unit 2 is in a refueling outage and the reactor vessel head is removed when the following annunciators alarm in the control room:

“118V INV IV2EC2 TRBL”

“118V INV IV2EC2/4 TRBL”

with additional annunciators alarming from 2EC2 via IV2EC2.

The Unit Supervisor should:

- A. Suspend the boron addition currently in progress and enter procedure ABN-909 for “Spent Fuel Pool/Refueling Cavity Malfunction.”
- B. Suspend fuel movement in the reactor building and enter procedure ABN-909 for “Spent Fuel Pool/Refueling Cavity Malfunction.”
- C. Enter TS 3.8.2 for loss of EDG #1 start sequencer and enter procedure ABN-603 for “Loss of Protection or Instrument Bus.”
- D. Suspend all Core Alterations and fuel movements and enter procedure ABN-603 for “Loss of Protection or Instrument Bus.”

**Answer:**

“D” is correct, Suspend all Core Alterations and fuel movements and enter procedure ABN-603 for “Loss of Protection or Instrument Bus.”

Must recognize this is as loss of Instrument bus 2EC2, making “D” the correct answer. “A” and “B” are incorrect because the actions for loss of 2EC2 are not in ABN-909. “C” is incorrect because suspend all core alterations and fuel movements is required (also, EDG # 2 sequencer is off of 2EC2, not EDG #1)

**References:**

REF: ABN-603

OBJ: LO41.RSY.AC1.OB106

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	SRO
K/A #	000057.G2.2.29
Importance Rating	3.8
Tier #	1

Group #	1
CFR References	43.6 / 45.12

**Question 80**

During a loss of all AC power, the BOP operator reports Safeguards DC voltage is at 105 VDC. Determine the next appropriate step:

- A. Conduct actions per ABN-601, "Response to a 138/345KV System Malfunction" because DC power is not required to support AC power restoration.
- B. Conduct actions per ABN-602, "Response to a 6900/480V System Malfunction" because the 480vac battery charger is an immediate need with voltage at minimum levels on the batteries.
- C. Conduct actions per ECA-0.0, "Loss of All AC Power" in order to determine the necessity for load shedding of additional DC loads.
- D. Conduct actions per ECA-0.0, "Loss of All AC Power" because safeguards DC bus voltage is sufficient for the current plant conditions.

**Answer:**

"C" is correct, Conduct actions per ECA-0.0, "Loss of All AC Power" in order to determine the necessity for load shedding of additional DC loads.

"A" is incorrect because DC power is required for control power to vital AC breakers for restoration activities. "B" is incorrect because although chargers are a need, the immediate need is to reduce load on the battery IAW ECA-0.0A. "D" is incorrect because 105vdc is the threshold below which many components fail to work, such as breaker control power.

**References**

REF: ECA-0.0A page 14, 23-24, and 33, ABN-603 page 4, all attachments

OBJ: OPD1.ECA.XG6.OB403

Question Source:	Bank #	<u>    X    </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>    X    </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	<u>    SRO    </u>
K/A #	000058.AA2.03
Importance Rating	3.9
Tier #	1
Group #	1
CFR references	43.5 / 45.13

**Question 81**

Unit 1 is responding to a small break LOCA with multiple RHR System malfunctions complicating the event. The crew is unable to establish any ECCS Cold Leg recirculation flow path from the Containment Sump. RWST level is 35% and ECCS flows have been reduced to ONE train. During the crew's response, the break worsens and containment pressure reaches 20 psig and then begins decreasing. What should you direct the crew to perform and under what conditions?

- A. Enter FRZ-0.1, "Response to High Containment Pressure" and direct them to run 4 containment spray pumps until Containment Pressure is < 18psig, then stop two of the pumps.
- B. Enter FRZ-0.1, "Response to High Containment Pressure" and direct them to run 2 containment spray pumps until Containment Pressure is < 18psig, then stop both pumps.
- C. Enter ECA-1.1, "Loss of Emergency Coolant Recirculation" and direct them to control AFW flow to all intact Steam Generators between 5-50% narrow range.
- D. Enter ECA-1.1, "Loss of Emergency Coolant Recirculation" and direct them to refill the RWST above the level where containment spray pumps can be used.

**Answer:**

"B" is correct, Enter FRZ-0.1, "Response to High Containment Pressure" and direct them to run 2 containment spray pumps until Containment Pressure is < 18psig, then stop both pumps.

"A" is incorrect because 4 pumps are not used when RWST level is >12% and containment pressure is <50psig (also want to conserve RWST level in this situation). "C" is incorrect because with adverse containment, SG level would be controlled between 26-50%. "D" is incorrect because RWST level would have to be below 12% before any containment spray pumps could be used.

**References:**

REF: ECA-1.1A, page 7, FRZ-0.1A.

OBJ: FRZ.XH5.OB04

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 4	

Examination Outline Cross-reference:

Level	<u>  SRO  </u>
K/A #	W/E11.EA2.1
Importance Rating	4.2

Tier #	1
Group #	1
CFR References	43.5 / 45.13

**Question 82**

Unit 2 is operating at 85% power and responding to a pressurizer level instrument failure. Level transmitter 2-LT-0460 has failed low. From the list below SELECT the Technical Specifications that apply to the failed level transmitter.

- A. Reactor Trip System Instrumentation 3.3.1, Engineered Safety Features Actuation System Instrumentation 3.3.2, and Accident Monitoring Instrumentation 3.3.3.
- B. Engineered Safety Features Actuation System Instrumentation 3.3.2, Remote Shutdown Monitoring Instrumentation 3.3.4, and Accident Monitoring Instrumentation 3.3.3.
- C. Reactor Trip System Instrumentation 3.3.1, Remote Shutdown Monitoring Instrumentation 3.3.4, and Accident Monitoring Instrumentation 3.3.3.
- D. Reactor Trip System Instrumentation 3.3.1, Engineered Safety Features Actuation System Instrumentation 3.3.2, and Remote Shutdown Monitoring Instrumentation 3.3.4.

**Answer:**

"C" is correct, Reactor Trip System Instrumentation 3.3.1, Remote Shutdown Monitoring Instrumentation 3.3.4, and Accident Monitoring Instrumentation 3.3.3.

**References**

REF: ABN-706, TS 3.3

REV DATE: 2/2/95

OBJ: OP51.SYS.PP1.OB15

Question Source:	Bank #	<u>  X  </u>
	Modified Bank #	<u>      </u>
	New	<u>      </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>      </u>
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>SRO</u>
K/A #	000028.G2.1.12
Importance Rating	4.0
Tier #	1
Group #	2
CFR references	43.2 / 43.5 / 45.3

**Question 83**

Given the following for Unit 2:

Reactor startup is in progress

Reactor power is 1E-9 amps

NIS channel NI-36 has failed low

Which one of the following actions is required per Technical Specification 3.3.1, "Reactor Trip Instrumentation?"

- A. Restore inoperable channel prior to exceeding 10E-9 amps or reduce power below P-6 within 24 hours.
- B. Decrease Power below P-6 within 24 hrs or increase Power above P-10 within 24 hrs.
- C. Decrease Power below P-6 within 6 hrs or increase Power above P-10 within 6 hrs.
- D. Restore inoperable channel prior to exceeding 10E-9 amps or reduce power below P-6 within 6 hours.

**Answer:**

"B" is correct, Decrease Power below P-6 within 24 hrs or increase Power above P-10 within 24 hrs.

**References**

REF: TS 3.3.1, PAGE 3.3.4

OBJ: No TS objectives provided in training material.

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	<u>SRO</u>
K/A #	000033.A2.08
Importance Rating	3.4
Tier #	1
Group #	2
CFR references	43.5 / 45.13

**Question 84**

Given the following:

- Unit 1 and Unit 2 are at 100% power.
- An alarm has occurred on the FIRE DETECTION MAIN CONTROL PANEL UNIT 1 SAFEGUARDS BUILDING ARRAY for 5.6, (SG Atmos Accum Rm).
- A PEO reported the fire, located in the SG Atmos Accum Room.
- The automatic wet-pipe sprinkler system has actuated for this room.
- Instrument air pressure is at 87 psig and stable
- The Shift manager has told you (US) to start a shutdown of Unit 1 based on the fire conditions.

What procedure would be used to control Steam Generator Pressures for Unit 1 and who is responsible for notifying the central alarm station (CAS) of the fire?

- A. ABN-301, "Instrument Air System Malfunction," PEO who reported the fire.
- B. ABN-301, "Instrument Air System Malfunction," Operations Shift Manager.
- C. ABN-804A, "Response to Fire in the Safeguards Building," PEO who reported the fire.
- D. ABN-804A, "Response to Fire in the Safeguards Building," Operations Shift Manager.

**Answer:**

"D" is correct, ABN-804A, "Response to Fire in the Safeguards Building," Operations Shift Manager.

"A" and "B" are incorrect because this is for instrument air malfunctions (which affect AFW control, letdown control, but not the ARV's). "C" is incorrect because the person responsible for reporting the fire is the OPS shift manager per STA-727.

**References**

REF: ABN-804A, page 38-40, STA-727.

OBJ: SYS.FP1.OB004, no admin topic objectives for STA component of question.

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 3	_____

Examination Outline Cross-reference:

Level	<u>  SRO  </u>
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K/A #	000067.AA2.16
Importance Rating	4.0
Tier #	1
Group #	2
CFR references	43.5 / 45.13

**Question 85**

Given the following:

The operators are in FRH-0.1B for Loss of Secondary Heat Sink. Feed and Bleed methods of core cooling have been established. A heat sink has been restored to SG#1 (step 26 of the procedure). RCS Temperatures have been decreasing (step 27 of procedure). Containment Pressure is 6 psig. RVLIS is 12" above core plate. RCS Subcooling is 110°F

A decision to secure Safety Injection (step 29) and eventually transition to EOS-1.1B, SI Termination, can be done when what MINIMUM condition below is met?

- A. SG1 narrow range level is 5%
- B. SG1 narrow range level is 10%
- C. SG1 narrow range level is 18%
- D. SG1 narrow range level is 26%

**Answer:**

"C" is correct, SG1 narrow range level is 18%. The adverse containment value for 5% SG narrow range level for U2 is 18%.

"A" is incorrect because when adverse conditions exist, 5% level cannot be used. "B" is incorrect because this is the value in previous steps to establish feed flow based on CET's. "C" is incorrect because this is the Unit 1 SG level for this event-Operator should recognize from "B-labeled" procedures that this is a unit 2 question.

**References**

REF: FRH-0.1B, page

OBJ: OPD1.FR.H.XH1.OB403

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 2	

Examination Outline Cross-reference:

Level	<u>SRO</u>
K/A #	W/E02.EA2.1
Importance Rating	4.2
Tier #	1
Group #	2
CFR references	43.5 / 45.13

**Question 86**

CPSES Unit 1's RCP #1 has an increasing trend for its Motor upper radial bearing temperature. During the startup it started increasing from its normal value up to 190F, when the computer point alarm (T0413A) reached its high alarm set point when power was leveled at 50%. What procedure would be used to mitigate this malfunction and what would be the impact on the plant if the temperature point (T0413A) exceeded the RCP operating limit value of 195F?

- A. Enter ABN-101 for "RCP Trip/Malfunction," for a violation of RCP operating limits; this would require a trip of the RCP and the reactor, with Mode 3 required within 6 hours.
- B. Enter ALM-0051A for "RCP HI BRNG TEMP", for a violation of RCP operating limits; this would require a trip of the RCP and the reactor, with Mode 3 required within 6 hours.
- C. Enter ABN-101 for "RCP Trip/Malfunction," and use IPO-003A "Power Operations" to reduce power while increasing CCW flow to heat exchanger, then if temperature did not go down a trip of the RCP and the reactor would be required, with Mode 3 required within 6 hours.
- D. ALM-0051A for "RCP HI BRNG TEMP and use IPO-003A "Power Operations" to reduce power while increasing CCW flow to heat exchanger, then if temperature did not go down a trip of the RCP and the reactor would be required, with Mode 3 required within 6 hours.

**Answer:**

"A" is correct, Enter ABN-101 for "RCP Trip/Malfunction," for a violation of RCP operating limits; this would require a trip of the RCP and the reactor, with Mode 3 required within 6 hours.

At 195F, this is the maximum temperature for the RCP bearing temperature IAW ABN-101. "B" and "D" would be incorrect because the wrong procedure is used. "C" is incorrect because reducing power is not an option at this point: both RCP and reactor must be tripped.

**References**

REF: ABN-101 page 38 & 49.

OBJ: No admin objectives provided in material

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	<u>SRO</u>
K/A #	000003.A2.02
Importance Rating	3.9
Tier #	2
Group #	1
CFR references	41.5 / 43.5 / 45.3 / 45.13

**Question 87**

A Reactor trip and a Safety Injection has occurred on Unit 1. The crew is ready to transition from EOP-0.0 with attachment 2 of EOP-0.0 complete. The following conditions are observed.

- \* NI-41 through NI-44 are all less than 1% (Wide Range Neutron Flux, NI-50A-1 and NI-50B-1, are tracking the same as NI-41 through NI-44)
- \* Intermediate range startup rate is equal to +0.2 DPM.
- \* Core exit TCs read 715°F.
- \* RCS subcooling is 0°F.
- \* RVLIS - No lights lit.
- \* All steam generator narrow-range levels are < 1%
- \* Main feedwater pumps are tripped.
- \* Auxiliary feedwater flows: (maximum available)
  - S/G #1: 118 GPM
  - S/G #2: 124 GPM
  - S/G #3: 90 GPM
  - S/G #4: 60 GPM
- \* Pressure in all S/Gs indicates less than 1185 psig.
- \* All AC buses are powered from offsite.
- \* Containment Pressure is 18.5 psig

Which of the following actions should be taken?

- A. Immediately go to FRZ-0.1.
- B. Immediately go to FRS-0.1.
- C. Immediately go to FRC-0.2.
- D. Immediately go to FRH-0.1.

**Answer:**

“D” is correct, immediately go to FRH-0.1.

**References**

REF: FRH-0.1, FRS-0.1, FRZ-0.1, FRC-0.1

REV DATE: 7/26/01

OBJ:

Question Source:	Bank #	<u>    X    </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>    X    </u>
	LOD = 4	

## Examination Outline Cross-reference:

Level	<u>SRO</u>
K/A #	000006.G2.4.16
Importance Rating	4.0
Tier #	2
Group #	1
CFR references	41.10 / 43.5 / 45.13

**Question 88**

Unit one is at 86% power due to one Main steam safety valve (MSSV) failing its IST program. The Control Room Supervisor reviews the Technical Specification section 3.7.1 for the MSSV's and notes that there are two required action steps that **both** must be performed for the MSSV issue under current plant conditions:

- 1) reduce thermal power and
- 2) reduce power range neutron flux-high reactor trip setpoint.

The basis for both actions is:

- A. When MTC is positive, there is insufficient remaining steam flow capacity to prevent overpressurizing the steam system during an uncontrolled bank RCCA withdrawal.
- B. When MTC is negative, there is insufficient remaining steam flow capacity to prevent overpressurizing the steam system during a turbine trip.
- C. When MTC is positive, there is insufficient heat removal capacity to protect the RCS pressure boundary from an RCS heating event.
- D. When MTC is negative, there is insufficient heat removal capacity to cool the core during a Small Break LOCA.

**Answer:**

"A" is correct, When MTC is positive, there is insufficient remaining steam flow capacity to prevent overpressurizing the steam system during an uncontrolled bank RCCA withdrawal.

"B" is incorrect because when MTC is negative, there is sufficient capacity to prevent overpressurizing the steam system and hence why you would be in LCOAR A1, not this one, which is B1. "C" is incorrect because it is not the heat removal capacity that is the concern when MTC is positive, but the rod withdrawal accident. "D" is incorrect because, again, when MTC is negative, then condition A1 would apply and both criteria would not be needed.

**References**

REF: TS Bases, 3.7.1

OBJ:

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 4	

Examination Outline Cross-reference:

Level	<u>SRO</u>
K/A #	000039.G2.1.12
Importance Rating	4.0
Tier #	2
Group #	1
CFR references	43.2 / 43.5 / 45.3

**Question 89**

A large break LOCA has occurred on Unit 1. The crew is currently performing steps in EOP-1.0A, "Loss of Reactor or Secondary Coolant". The following conditions existed when the STA made his initial scan of the Status Trees:

- Pressurizer level was 0%
- Containment floor water level indicated 816 feet.
- Containment spray had automatically actuated and was verified in EOP-0.0A.
- Containment pressure was 12 psig and decreasing.
- Several Containment radiation monitors were in ALARM at 25R/HR.
- RVLIS is 50 inches above flange
- CET's are 500F

Which of the following procedures must be entered to address the above conditions?

- A. FRZ-0.2A      Response to Containment Flooding
- B. FRZ-0.1A      Response to High Containment Pressure
- C. FRI-0.2A      Response to Low Pressurizer Level
- D. FRZ-0.3A      Response to High Containment Radiation Level

**Answer:**

"A" is correct, FRZ-0.2A      Response to Containment Flooding.

**References:**

REF: CSFSTS, FRZ-0.2A

OBJ: (waiting on lesson notes on ERG's to get objective list)

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>    RO    </u>
K/A #	000103.G2.4.21
Importance Rating	4.3
Tier #	2
Group #	2
CFR References	43.5 / 45.12

**Question 90**

Unit 1 is at full power and all systems in AUTO when the PEO calls the control room to inform the SRO that the instrument air dryer switching procedure has failed. She was informing the SRO of the switch failure light on the dryer when a loud bang occurred near the air dryer assemblies. The annunciators "INST AIR HDR PRESS LO" and "COMM INSTR AIR DRYR PNL TRBL" alarm in the control room. While the operators are responding to these alarms the following annunciators alarm in rapid succession:

SG1           STM & FW FLOW MISMATCH  
 SG2           STM & FW FLOW MISMATCH  
 SG3           STM & FW FLOW MISMATCH  
 SG4           STM & FW FLOW MISMATCH

SG1           LVL DEV  
 SG2           LVL DEV  
 SG3           LVL DEV  
 SG4           LVL DEV

The RO places the feedwater FCV's in MANUAL and attempts to increase feedwater flow. The attempt is unsuccessful and all SG levels continue to drop with MFWP DP at program level for full power. What procedure should the U1 SRO enter next?

- A. ABN-301, "Instrument Air System Malfunction"
- B. EOP-0.0A, "Reactor Trip or Safety Injection"
- C. FRH-0.5A, "Response to Steam Generator Low Level"
- D. ECA2.2A, "Loss of Level Control for All Steam Generators"

**Answer:**

"B" is correct, EOP-0.0A, "Reactor Trip or Safety Injection".

**References**

ABN-301, OP51.SYS.IA1, SOP-509A, EOP-0.0A.

OBJ: OP51.SYS.IA1.OB14, (ERG objectives not provided in material)

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>SRO</u>
K/A #	000078.A2.01
Importance Rating	2.9
Tier #	2
Group #	1

CFR references

41.5 / 43.5 / 45.3 / 45.13

**Question 91**

Unit 1 is at 50% power with a startup in progress with operators preparing for a second main feed pump for operation. Control Bank D is at 170 steps when you notice RCCA H-8 indicates 8 steps. Select from the list below the items you expect to see change and the actions you would take to mitigate the event:

Items expect to see changes on

1. DRPI ROD DEV (6D-3.5) and ANY CONTROL ROD AT BOT (6D-3.7) alarms lit
2. DRPI ROD DEV (6D-3.5) alarm lit

actions to mitigate the event

3. Restore the rod position within 1 hr IAW TS 3.1.4, "Rod Group Alignment Limits" and enter TS 3.2.4 for QPTR to take actions to restore within 2 hrs.
  4. Restore the rod position within 1 hr IAW TS 3.1.4, "Rod Group Alignment Limits."
- A. 1 and 3
- B. 1 and 4
- C. 2 and 3
- D. 2 and 4

**Answer:**

"D" is correct, 2 and 4.

Because the rod is not low enough to light the rod bottom light 1 would not be true, making "A" and "B" incorrect. "C" is incorrect because QPTR is unaffected because it is the center rod.

**References**

REF: TS 3.1.4, TS 3.2.4, ABN-712, OP51.SYS.RI1.

OBJ: none provided in reference materials for OP51.SYS.RI1.

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	<u>SRO</u>
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K/A #	000014.A2.04
Importance Rating	3.9
Tier #	2
Group #	2
CFR references	41.5 / 43.5 / 45.3 / 45.13

**Question 92**

During refueling operations, a fuel assembly is dropped in Containment several feet from the core opening. Containment ventilation was automatically isolated and Containment was evacuated properly. Containment activity is greater than the allowed levels as stated in ABN-908, "Fuel Handling Accident." Which ONE of the following will reduce radiation levels in containment without releasing contaminants to the environment?

- A. Containment Pre-Access Ventilation System per SOP-801A.
- B. Containment Purge System per SOP-205.
- C. Containment Hydrogen Purge System per SOP-801A.
- D. Containment Air Recirculation System per SOP-801A.

**Answer:**

"A" is correct, Containment Pre-Access Ventilation System per SOP-801A.

**References**

Ref: ABN-908, page 6, and SOP-801A.

OBJ: (not provided in material)

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>SRO</u>
K/A #	000034.A2.01
Importance Rating	4.4
Tier #	2
Group #	2
CFR references	41.5 / 43.5 / 43.7 / 45.3 / 45.13

**Question 93**

Unit 2 has been at 100% power for 2 hours when a Chemistry Technician reports to the control room that her most recent RCS sample results included 15 ppm Fluoride. What **immediate** actions should the US take IAW the Technical Requirements Manual and why?

- A. Be in Mode 3 within 6 hours and be in Mode 5 within 36 hours because the fluoride concentration has exceeded the transient limits.
- B. Be in Mode 3 within 6 hours and be in Mode 5 within 36 hours because the fluoride concentration has exceeded the steady state limits.
- C. Restore the fluoride concentration to within the steady state limits within 24 hours, or be in Mode 3 within 6 hours.
- D. Restore the fluoride concentration to within the steady state limits within 6 hours, or be in Mode 3 within 6 hours.

**Answer:**

“A” is correct, Be in Mode 3 within 6 hours and be in Mode 5 within 36 hours because the fluoride concentration has exceeded the transient limits.

“B” is incorrect because exceeding the steady state limit is not an **immediate** threat to the RCS but “A” is an immediate threat. “C” and “D” are incorrect because there is no time to restore these values.

**References**

REF: TR 13.4.33, page 13.4-5 thru 13.4-8.

OBJ: None provided in lecture notes.

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 2	

Examination Outline Cross-reference:

Level	<u>SRO</u>
K/A #	000035.G2.1.34
Importance Rating	2.9
Tier #	2
Group #	2
CFR references	41.10/ 43.5 / 45.12

**Question 94**

With regards to Technical Specification 3.3.3 for PAM instrumentation, the Core Exit Thermocouples (CET) have 3 LCO requirements. Of these three requirements, one is that the minimum number of TC's that are operable cannot include the \_\_\_\_\_ row(s) because \_\_\_\_\_.

- A. Outer three, they are cooled from SG drainage due to refluxing.
- B. Outer two, they are cooled from SG drainage due to refluxing.
- C. Outer three, they are cooled from radiation heat transfer to the vessel wall.
- D. Outer two, they are cooled from radiation heat transfer to the vessel wall.

**Answer:**

"B" is correct, Outer two, they are cooled from SG drainage due to refluxing.

Answers "A" and "C" are incorrect because it is only the outer two rows that are excluded. TSB states that the reason the outer two rows are not used is because of cooling from SG drainage due to refluxing.

**References**

REF: TSB 3.3.3, page B3.3-134.

OBJ:

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	_____

Examination Outline Cross-reference:

Level	<u>SRO</u>
K/A #	G2.1.32
Importance Rating	3.8
Tier #	G
Group #	G
CFR references	41.10/ 43.2 / 45.12

**Question 95**

You are the US for Unit 1. Containment Spray initiates while you are performing step 6 of EOP-0.0A. Containment Pressure has reached 18 psig. What Procedure should you been in?

- A. EOP-0.0A and FRZ-0.1A in parallel.
- B. EOP-0.0A until step 16 for CSF status evaluation.
- C. FRZ-0.1A since a Critical parameter (Containment Pressure) has reached a Red condition on CSF status trees.
- D. FRZ-0.2A since a Critical parameter (Containment Pressure) has reached an Orange condition on CSF status trees.

**Answer:**

"B" is correct, EOP-0.0A until step 16 for CSF status evaluation.

**References**

REF: ODA-407, page 18.

OBJ: (not provided in material)

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

**Examination Outline Cross-reference:**

Level	<u>SRO</u>
K/A #	G2.1.7
Importance Rating	4.4
Tier #	G
Group #	G
CFR references	43.5 / 45.12 / 45.13

**Question 96**

Unit 2 is at 100% power and the plant calorimetric is due in accordance with TRM 13.3.34 and SR 3.3.1.2 of Technical Specifications. I and C has reported that the leading edge flow meter (LEFM) is out of service because it failed the self-diagnostics test required prior to the calorimetric surveillance and won't be functional for 48 hours. The required actions for this are:

- A. Perform calorimetric using feedwater venturis with RTP <98.6%, then restore power to 100% RTP after calorimetric surveillance is completed.
- B. Restore LEFM to service within 24 hrs or reduce power in accordance with TS 3.3.1.2.
- C. Perform calorimetric using feedwater venturis with RTP <98.6%, then maintain power at 98.6% RTP after calorimetric surveillance is completed.
- D. Perform calorimetric using feedwater venturis with RTP at 100%, and adjust Power as required after the calorimetric is completed.

**Answer:**

"C" is correct, Perform calorimetric using feedwater venturis with RTP <98.6%, then maintain power at 98.6% RTP after calorimetric surveillance is completed.

Only unit 2 has the LEFM, and only it is required to link the TRM SR 13.3.34 with the TS SR 3.3.1.2 in order to complete the calorimetric.

**References**

REF: TRM 13.3.34, page 61, TS 3.3.1.2

OBJ:

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

Examination Outline Cross-reference:

Level	<u>SRO</u>
K/A #	G2.2.3
Importance Rating	3.3
Tier #	G
Group #	G
CFR references	41 / 43 / 45

**Question 97**

If the RCS Pressure Safety Limit is violated while the reactor is in Mode 3, the requirement is \_\_\_\_\_ .

- A. Restore pressure within 1 hour and be in Mode 4 within 1 hour.
- B. Restore pressure within 1 hour and stay in Mode 3.
- C. Restore pressure within 5 minutes and be in Mode 4 within 1 hour.
- D. Restore pressure within 5 minutes and stay in Mode 3.

**Answer:**

“D” is correct, Restore pressure within 5 minutes and stay in Mode 3.

“A” and “C” are incorrect because no mode change is allowed during this occurrence because lower mode implies lower temperature, which exacerbates the problem of high pressure and low temperature ductility effects on the vessel. “B” is incorrect because of the time requirement.

**References**

REF: TS 2.1.2 and bases

OBJ:

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 2	

Examination Outline Cross-reference:

Level	<u>SRO</u>
K/A #	G2.2.22
Importance Rating	4.1
Tier #	G
Group #	G
CFR references	43.2 / 45.2

**Question 98**

The basis for maintaining Containment Control (Integrity) during power operations is to limit post-accident releases to the 10CFR100 limits. Exclusion Areas (EA) and Low Population Zones (LPZ) define these limits. Select the reference limits for whole body dose rates specified in 10CFR100 for these two areas below.

- A. EA is 25 rem in first 2 hours, LPZ is 30 rem for event duration.
- B. EA is 25 rem for event duration, LPZ is 30 rem for event duration.
- C. EA is 25 rem for event duration, LPZ is 25 rem for event duration.
- D. EA is 25 rem in first 2 hours, LPZ is 25 rem for event duration.

**Answer:**

“D” is correct, EA is 25 rem in first 2 hours, LPZ is 25 rem for event duration.

Answers “A” and “B” are incorrect because the value for the LPZ is 25 rem (same as the maximum emergency allowed dose of 25 rem). Answer “C” is incorrect because the limit for a person in the EA during the first two hours of the event is 25 rem, not the duration of the event.

**References**

REF: 10CFR part 100, TS definitions, LCOAR-26.

OBJ: (not provided in material)

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>  X  </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	_____
	LOD = 4	

Examination Outline Cross-reference:

Level	<u>SRO</u>
K/A #	G2.3.4
Importance Rating	3.1
Tier #	G
Group #	G
CFR references	43.4 / 45.10

**Question 99**

EOP-0.0A, "Reactor Trip or Safety Injection", Step 14, "Check if RCS is intact", is being performed when the operator observes the following indications:

- RCS Pressure 1850 psig
- SG Narrow range levels
  - 1 <5% (INCREASING)
  - 2 OFF SCALE LOW
  - 3 30%
  - 4 OFF SCALE LOW
- PCV-455A/456 CLOSING
- PRZR Safety Valves CLOSING
- BOTH PRZR Spray Valves CLOSING
- CNTMT Pressure 2.0 psig
- AFW Flows
  - 1 130 gpm
  - 2 150 gpm
  - 3 50 gpm
  - 4 100 gpm
- All SG Pressures INCREASING

Which of the below actions is correct in this situation?

- A. Proceed to FRH-0.1A, "Response to Loss of Secondary Heat Sink".
- B. Proceed to EOP-1.0A "Loss of Reactor or Secondary Coolant".
- C. Proceed to EOP-0.0A, Step 15, "Check if ECCS Flow Should Be Reduced".
- D. Proceed to EOP-2.0A, "Faulted Steam Generator Isolation".

**Answer:**

"B" is correct, Proceed to EOP-1.0A "Loss of Reactor or Secondary Coolant".

**References**

REF: EOP-0.0A(B)

USED: LO29.L13.E15

OBJ: SJ1.XG1.OB107 (not verified)

Question Source:	Bank #	<u>  X  </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>  X  </u>
	LOD = 3	

## Examination Outline Cross-reference:

Level	<u>SRO</u>
K/A #	G2.4.6
Importance Rating	4.0
Tier #	G
Group #	G
CFR references	41.10/ 43.5 / 45.13

**Question 100**

At 0200, a Notification of Unusual Event was declared. Initial notifications to offsite agencies were made at 0212. At 0345, the event classification was escalated to an ALERT. When must the notification be completed after escalation to the ALERT?

- A. Within 1 hour of initial notification.
- B. Within 1 hour of reclassification.
- C. Within 15 minutes of reclassification.
- D. Within 30 minutes of reclassification.

**Answer:**

"C" is correct, Within 15 minutes of reclassification.

**References**

REF: EPP-203; Sect 4.1.6

Used: 12/19/94

OBJ: EP21.AC1.AG1.OB202

Question Source:	Bank #	<u>  X  </u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>
	Comprehension or Analysis	<u>          </u>
	LOD = 2	

**Examination Outline Cross-reference:**

Level	<u>SRO</u>
K/A #	G2.4.40
Importance Rating	4.0
Tier #	G
Group #	G
CFR references	45.11