

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	001-AA1.01	
	Importance Rating		3.2

Proposed Question:
See Attached

Proposed Answer: See attached

Explanation (Why the distractors are incorrect):

- Primary to secondary heat transfer was balanced prior to this event. Tripping SFRCS will unbalance primary to secondary heat transfer. Entry into T.S. 3.1.3.1 is not required which is for an asymmetric control rod.
- Entry into T.S. 3.1.3.1 is not required which is for an asymmetric control rod.
- Primary to secondary heat transfer was balanced prior to this event. Tripping SFRCS will unbalance primary to secondary heat transfer.

Technical Reference(s): DB-OP-02516.03, C-2, Section 3.3
RA-EP-01500.01, C-3, Pg. 25

Reference Attached: _____
(Attach if not
previously provided)

Proposed references to be provided to applicants during examination:
RA-EP-01500, Emergency Classification, Pg. 11-60

Learning Objective (As available): OPS-GOP-116-03K

Question Source:	Bank #	_____	(Note changes or attach parent)
	Modified Bank #	_____	
	New	<u> X </u>	

Question History	Previous NRC Exam	_____
	Previous Quiz / Test	_____

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

10 CFR Part 55 Content:	55.41	_____
	55.43	<u> X </u>

Comments (Why is it an upper level question):

The status of the reactor must be determined as being subcritical and rod conditions have the potential of taking the reactor critical.

The question is SRO level due to including the T.S. and EALs in the distractors and answer.

Question:

The following plant conditions exist:

- DB-OP-06912, Approach to Criticality, is in progress.
- Nuclear Instruments 1 and 2 read approximately 100 cps.
- Rod index is currently 50.

You have directed an RO to withdraw the regulating control rods to an index of 75.

The RO informs you that he withdrew the regulating control rods to an index of 75 and has released insert/withdraw switch, but the regulating control rods have continued to withdraw. The current rod index is 80 and rising.

Which one of the following is the correct response to this event?

- a. Trip the reactor and initiate AFW and isolation of both steam generators.

Enter T.S. 3.1.3.1 , Group Height – Safety and Regulating Rod Groups.

- b. Depress the “Rod Stop” pushbutton and hold until the affected group can be transferred to the auxiliary power supply.

Enter T.S. 3.1.3.1 , Group Height – Safety and Regulating Rod Groups.

- c. Trip the reactor and initiate AFW and isolation of both steam generators.

Declare an Unusual Event.

- d. Depress the “Rod Stop” pushbutton and hold until the affected group can be transferred to the auxiliary power supply.

Declare an Unusual Event.

Answer:

- d.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	003-AK3.08	
	Importance Rating		4.2
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): a. A sheared RCP shaft would not cause a tilt and would cause a larger differential cold leg temperature. c. A sheared RCP shaft would not cause a tilt and would cause a larger differential cold leg temperature. d. An uncontrolled boron would not cause one NI to decrease more than the others.			
Technical Reference(s): DB-OP-02516.03, C-2 Tech. Spec. 3.1.3.1 <div style="text-align: right;">Reference Attached: _____ (Attach if not previously provided)</div>			
Proposed references to be provided to applicants during examination:			
Learning Objective (As available): OPS-GOP-116-03K			
Question Source:	Bank # _____ Modified Bank # _____ New <u> X </u>	(Note changes or attach parent)	
Question History	Previous NRC Exam _____ Previous Quiz / Test _____		
Question Cognitive Level:	Memory or Fundamental Knowledge _____ Comprehension or Analysis <u> X </u>		
10 CFR Part 55 Content:	55.41 _____ 55.43 <u> X </u>		
Comments (Why is it an upper level question): The examinee must diagnose the NI condition is due to the dropped rod. The question is SRO level due to having to determine the appropriate T.S. actions for an asymmetric rod.			

Question:

The following plant conditions exist:

- Current reactor power is 85% with a power increase in progress.
- Rod index is 265.
- All four power range nuclear instruments read within $\pm 1\%$.

The crew observes the following conditions:

- A loss of Control Room annunciators.
- NI 5 drops to 81%.
- NIs 6, 7, 8 drop to 84%.
- A 1°F cold leg differential temperature develops.

Which one of the following is the cause of these symptoms and proper corrective actions?

- a. A sheared reactor coolant pump shaft.

Reduce power to less than 75% and reduce high flux trip setpoint.

- b. A dropped control rod.

Reduce power to less than 60% and verify shutdown margin.

- c. A sheared reactor coolant pump shaft.

Reduce power to less than 75% and manually re-ratio feedwater.

- d. A dropped control rod.

Reduce power to less than 60% and verify tilt limits.

Answer:

- b.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	005-GEN-2.1.07	
	Importance Rating		4.4
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): b. Rod 3-1 must be on the auxiliary power supply to move the rod. c. Not required to declare Rod 3-1 inoperable due to being within 6.5% of the group average. d. Not required to declare any rod of Group 3 inoperable.			
Technical Reference(s): DB-OP-02516.03, C-2		Reference Attached: _____ (Attach if not previously provided)	
Proposed references to be provided to applicants during examination:			
Learning Objective (As available): OPS-GOP-116-03K			
Question Source:	Bank # _____ Modified Bank # _____ New <u> X </u>	(Note changes or attach parent)	
Question History	Previous NRC Exam _____ Previous Quiz / Test _____		
Question Cognitive Level:	Memory or Fundamental Knowledge _____ Comprehension or Analysis <u> X </u>		
10 CFR Part 55 Content:	55.41 _____ 55.43 <u> X </u>		
Comments (Why is it an upper level question): The examinee must diagnose whether there is a control rod problem. This is an SRO level question due to T.S. operability determination.			

Question:

The following events have occurred:

- Control Rod Group 3 was being exercised in accordance with DB-SC-03272, Control Rod Exercising Test.
- At 1200, while the RO was inserting Group 3, Rod 3-1 dropped to 91% API with the other three rods in Group 3 at 98% API.
- At 1245, I&T has performed troubleshooting on Control Rod 3-1 and verified API is indicating properly.

Which one of the following is the appropriate action to take?

- a. Transfer Control Rods 3-2, 3-3, and 3-4 back to the normal power supply and withdraw Control Rod 3-1 back to the group average to determine if it is movable.
- b. Transfer Control Rod 3-1 to the normal power supply and align the other three control rods in Group 3 to Control Rod 3-1 to prevent an excessive core tilt problem.
- c. Declare Control Rod 3-1 inoperable from the time Control Rod 3-1 dropped to 91% due to asymmetry and reduce reactor power to 60%.
- d. Declare all the control rods in Group 3 inoperable from the time Control Rod 3-1 dropped to 91% due to safety rods not fully withdrawn and determine shutdown margin.

Answer:

- a.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	011-EA1.11	
	Importance Rating		4.2
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): a. Flow out of the leak will be limited to about 50 gpm, which will not cause pump runoff. c. Check valves will prevent backflow to the BWST. d. The backflow will not pass through LPI Pump 1, thus the pump will not turn backwards.			
Technical Reference(s): DB-OP-02527.02, C-1, Step 4.3.5 OS-004, Sheet 1		Reference Attached: <u> X </u> (Attach if not previously provided)	
Proposed references to be provided to applicants during examination:			
Learning Objective (As available): OPS-GOP-309-05A			
Question Source:	Bank # _____ Modified Bank # _____ New <u> X </u>	(Note changes or attach parent)	
Question History	Previous NRC Exam _____ Previous Quiz / Test _____		
Question Cognitive Level:	Memory or Fundamental Knowledge _____ Comprehension or Analysis <u> X </u>		
10 CFR Part 55 Content:	55.41 <u> X </u> 55.43 _____		
Comments (Why is it an upper level question): The examinee must diagnose that the RO actions will result in the lifting of the relief on the emergency sump suction line.			

Question:

The following plant conditions exist:

- An SFAS Level 3 actuation has occurred.
- LPI Pump 1 failed to start.
- The RO is performing the actions necessary to align LPI Pump 2 to both injection lines.

The RO reports that DH2733, DH PUMP 1 SUCTION FROM BWST OR EMER SUMP, has not received closed indication. He has tried replacing the bulb, but with no success.

The Assistant Shift Supervisor has directed the RO to continue with the lineup.

Which one of the following will be the result when the RO has completed the lineup?

- a. LPI Pump 2 will experience pump runout.
- b. RC drain tank will increase in level.
- c. Backflow into the BWST will rob cooling to the core.
- d. LPI Pump 1 will rotate backwards providing improper bearing lubrication.

Answer:

- b.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	015/17-AK2.10	
	Importance Rating		2.8
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): DB-OP-02515 requires the reactor to be tripped and all four RCPs be tripped.			
Technical Reference(s): DB-OP-02515.01, C-4, Step 4.3.1		Reference Attached: _____ (Attach if not previously provided)	
Proposed references to be provided to applicants during examination:			
Learning Objective (As available): OPS-GOP-115-01K			
Question Source:	Bank # _____ Modified Bank # _____ New <u> X </u>	(Note changes or attach parent)	
Question History	Previous NRC Exam _____ Previous Quiz / Test _____		
Question Cognitive Level:	Memory or Fundamental Knowledge _____ Comprehension or Analysis <u> X </u>		
10 CFR Part 55 Content:	55.41 <u> X </u> 55.43 _____		
Comments (Why is it an upper level question): The examinee must diagnose the problem with the RCPs prior to determining required corrective actions.			

Question:

The following plant conditions exist:

- Reactor power is 100%.
- CC1411B, CCW TO CTMT MOTOR OPERATED ISO, has failed closed and will not open.
- RCS pressure is 2160 psig and stable.
- The station computer displays the following information:

	Seal Cavity Pressure		Seal Return
	2 nd	3 rd	Temperature
RCP 1-1	1440	720	168°
RCP 1-2	1605	470	166°
RCP 2-1	1510	50	169°
RCP 2-2	1385	610	172°

Which one of the following is the appropriate response to this event?

- a. Maintain reactor power and continue efforts to open CC1411B.
- b. Commence a rapid shutdown to less than 75% and trip RCP 2-1.
- c. Trip the reactor and trip RCP 2-1.
- d. Trip the reactor and trip all RCPs.

Answer:

- d.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	015/17-AA2.11	
	Importance Rating		3.8
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): DB-OP-02000 requires SAM Decision Maker's permission prior to bump starting the RCPs. RA-EP-01500 requires a General Emergency to be declared.			
Technical Reference(s): DB-OP-02000.05, C-1, Step 9.18 RA-EP-01500.01, C-3, Page 15 <div style="text-align: right;">Reference Attached: _____ (Attach if not previously provided)</div>			
Proposed references to be provided to applicants during examination: RA-EP-01500, Emergency Classification, Pg. 11-60 DB-OP-02000, Figure 2, Incore T/C Temperature vs. RCS Pressure			
Learning Objective (As available): OPS-GOP-308-03K			
Question Source:	Bank # _____ Modified Bank # _____ New <u> X </u>	(Note changes or attach parent)	
Question History	Previous NRC Exam _____ Previous Quiz / Test _____		
Question Cognitive Level:	Memory or Fundamental Knowledge _____ Comprehension or Analysis <u> X </u>		
10 CFR Part 55 Content:	55.41 _____ 55.43 <u> X </u>		
Comments (Why is it an upper level question): The examinee must determine that he is in Region 4. This is an SRO level due to the EAL usage.			

Question:

The following plant conditions exist:

- Large break LOCA has occurred.
- SFAS Levels 1 through 4 have actuated.

A sudden change in primary conditions results in a rise in RCS pressure to 410 psig and incore thermocouple temperature to rise to 891°F. Chemistry results indicate RCS I-131 level is 351 $\mu\text{Ci}/\text{gram}$.

Which one of the following is the appropriate action to be taken?

- a. With permission from the SAM Decision Maker, bump start each RCP and recommend a General Emergency be declared.
- b. With permission from the Emergency Director, bump start both RCPs in the loop with the highest SG level and recommend a General Emergency be declared.
- c. With permission from the Emergency Director, bump start each RCP and recommend a Site Area Emergency be declared.
- d. With permission from the SAM Decision Maker, bump start both RCPs in the loop with the highest SG level and recommend a Site Area Emergency be declared.

Answer:

- a.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	BW/E09-EA1.03	
	Importance Rating		3.7
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): a. SCM is less than 20°F. b. SCM is less than 20°F, thus RCPs are off, per specification. d. No superheated conditions.			
Technical Reference(s): DB-OP-06903.05, C-2, Step 7.3 DB-OP-02000.05 C-1, Step 11.11.3		Reference Attached: _____ (Attach if not previously provided)	
Proposed references to be provided to applicants during examination: Steam Tables			
Learning Objective (As available): OPS-GOP-304-03K			
Question Source: OLC-3647	Bank # Modified Bank # New	_____ <u> X </u> _____	(Note changes or attach parent)
Question History	Previous NRC Exam Previous Quiz / Test	_____ _____	
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	_____ <u> X </u>	
10 CFR Part 55 Content:	55.41 <u> X </u> 55.43 _____		
Comments (Why is it an upper level question): The examinee must diagnose that the plant is in the boiler-condenser mode.			

Question:

Given the following conditions:

- The reactor has tripped from 100% power
- Subcooling margin is 0°F
- No HPI is available
- RCS pressure is 785 psig
- Thot is 518°F
- Tcold is 516°F
- OTSG pressure is 770 psig

Select the mode of RCS cooling occurring for the present conditions.

- a. Single phase natural circulation
- b. Forced circulation
- c. Boiler-condenser cooling
- d. Free convection

Answer:

- c.

Question:

Given the following conditions:

- The reactor has tripped.
- Subcooling margin is 0°F
- No HPI is available
- RCS pressure is 962 psig
- Incore thermocouple temperature is 538°F
- Tcold is 516°F
- Thot is 543°F
- OTSG pressure is 799 psig

Which one of the following represents the present conditions?

- a. Single phase natural circulation
- b. Forced circulation
- c. Boiler-condenser cooling
- d. Inadequate core cooling

Answer:

- c.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	024-AK1.02	
	Importance Rating		3.9
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): a. DB-OP-02510 is used in loss of boron events, not failure of control rods to insert. b. DB-OP-02516 is used for dropped rod events. c. Step 3.2 of DB-OP-02000 is used if reactor is not subcritical post reactor trip.			
Technical Reference(s): DB-OP-02000.05, C-1, Step 4.1		Reference Attached: _____ (Attach if not previously provided)	
Proposed references to be provided to applicants during examination:			
Learning Objective (As available): OPS-GOP-302-02K			
Question Source: OLC-4416	Bank # Modified Bank # New	<u> X </u> _____ _____	(Note changes or attach parent)
Question History	Previous NRC Exam Previous Quiz / Test	_____ _____	
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	_____ <u> X </u>	
10 CFR Part 55 Content:	55.41 55.43	_____ <u> X </u>	
Comments (Why is it an upper level question): The examinee must diagnose that the reactor is subcritical. This question is SRO level due to addressing the selection of appropriate procedure for mitigation of the event.			

Question:

Immediately following a reactor trip, the following conditions exist:

- CRD trip breakers open
- NI power is 1×10^{-6}
- Control Rod 3-1 100% withdrawn
- Control Rod 3-3 100% withdrawn

Which one of the following identifies the procedure flowpath for this situation?

- a. Immediately enter DB-OP-02510, Loss of Reactor Coolant System Boron, and initiate immediate boration per Step 4.1.2.
- b. Immediately enter DB-OP-02516, CRD Malfunctions, and attempt to insert Safety Group 3.
- c. Enter DB-OP-02000, RPS, SFAS, SFRCS, or SG Tube Rupture; and at Step 3.2, Reactivity Control, momentarily de-energize E2 and F2.
- d. Enter DB-OP-02000, RPS, SFAS, SFRCS, or SG Tube Rupture; and at Step 4.1, commence boration to achieve acceptable shutdown margin.

Answer:

- d.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	026-AK3.04	
	Importance Rating		3.7
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): DB-OP-02523 requires the reactor tripped and all RCPs tripped at a less than 35" in the CCW surge tank. a. CRD booster pump suction valves will be closed. b. No low CCW surge tank level trip on the CCW pumps. c. No automatic start for CCW Pump 2 on low CCW surge tank level.			
Technical Reference(s): DB-OP-02523.02, Step 4.16		Reference Attached: _____ (Attach if not previously provided)	
Proposed references to be provided to applicants during examination:			
Learning Objective (As available): OPS-GOP-123-02K			
Question Source: OLC-3908	Bank # Modified Bank # New	_____ <u> X </u> _____	(Note changes or attach parent)
Question History	Previous NRC Exam Previous Quiz / Test	_____ _____	
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	_____ <u> X </u>	
10 CFR Part 55 Content:	55.41 <u> X </u> 55.43 _____		
Comments (Why is it an upper level question): The examinee must determine the effects of a loss of CCW has on the plant.			

Question:

The CCW surge tank has experienced a loss of level due to a leak in the Aux. Building.

CCW surge tank levels are as follows:

- Side one is STEADY at 33 inches.
- Side two is at 30 inches and DROPPING

Which one of the following depicts the condition of the CCW System after this event has occurred as described? Assume supplemental actions have been taken as directed in the governing abnormal procedure.

- a.
 - The Aux. Building header is isolated at CC 1495.
 - The CTMT header is isolated at CC 1411A and 1411B.
 - BOTH CRD booster pump suction valves (CC 1328 and CC 1338) are OPEN.
- b.
 - CCW Pumps 1-1, 1-2, and 1-3 have TRIPPED due to LOW suction pressure.
- c.
 - CCW Pump 1-1 is RUNNING.
 - CCW Pump 1-2 has automatically STARTED on low surge tank level.
 - All non-essential CCW headers have isolate.
- d.
 - All non-essential CCW headers have isolated.
 - BOTH CRD booster pumps have automatically TRIPPED.
 - The plant is stable on natural circulation flow.

Answer:

- d.

Question:

The following plant conditions exist:

- The plant is in Mode 1
- Makeup Pump 1 in service
- The CCW surge tank has experienced a loss of level due to a leak in the Aux. Building.
- CCW surge tank levels are as follows:
 - Side one is steady at 33 inches.
 - Side two is at 30 inches and dropping

Which one of the following depicts the condition of the CCW System after this event has occurred as described?

Assume supplemental actions have been taken as directed in the governing abnormal procedure.

- a.
 - The Aux. Building header is isolated at CC 1495.
 - The CTMT header is isolated at CC 1411A and 1411B.
 - Both CRD booster pump suction valves (CC 1328 and CC 1338) are open.
- b.
 - CCW Pumps 1-1, 1-2, and 1-3 have tripped due to low level in the CCW surge.
- c.
 - CCW Pump 1-1 is stopped and CCW Pump 1-2 running..
 - The plant is stable on natural circulation.
- d.
 - All non-essential CCW headers have isolated.
 - BOTH CRD booster pumps have automatically tripped.
 - The plant is stable on natural circulation flow.

Answer:

d.

Question:

Which one of the following is the reason that quick operator response to an ATWS is critical?

- a. To prevent the loss of primary to secondary heat transfer.
- b. To prevent exceeding 17% fuel cladding oxidation.
- c. To prevent challenges to the pressurizer code safeties.
- d. To prevent exceeding a Tech. Spec. safety limit.

Answer:

- d.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	040-BW/E05-EK2.02	
	Importance Rating		4.4
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): As long as the cooldown rate on SG1 is < 100°F/hr., cooldown may continue using SG1.			
Technical Reference(s): DB-OP-02000.05, C-1, Step 7.32 <div style="text-align: right;">Reference Attached: _____ (Attach if not previously provided)</div>			
Proposed references to be provided to applicants during examination:			
Learning Objective (As available): OPS-GOP-306-06A			
Question Source: OPS-32	Bank # Modified Bank # New	<u> X </u> _____ _____	(Note changes or attach parent)
Question History	Previous NRC Exam Previous Quiz / Test	_____ _____	
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	_____ <u> X </u>	
10 CFR Part 55 Content:	55.41 55.43	_____ <u> X </u>	
Comments (Why is it an upper level question): The examinee is required to determine the basis on allowing the cooldown to continue on a leaking SG. This question is SRO level due requiring to know the basis of a step in DB-OP-02000.			

Question:

The following plant conditions exist:

- The reactor has tripped.
- SG 2 was isolated by the SFRCS low pressure trip and indicates 0 psig.
- A main steam safety valve on SG 1 is leaking.
- RCS cooldown rate due to the leakage is 45°F per hour.

Which one of the following is the correct operator response?

- a. Initiate makeup/HPI cooling.
- b. Continue cooldown with AFW feeding SG 1.
- c. Continue cooldown with AFW feeding both SGs.
- d. Isolate AFW to both SGs.

Answer:

- b.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	W/E08 – EK1.02	
	Importance Rating		4.0
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): PTS is to protect the reactor vessel.			
Technical Reference(s): T.S. 3.4.9.1 Basis and Deviation Document for DB-OP-02000, Rev. 10, Page 284			
Reference Attached: _____ (Attach if not previously provided)			
Proposed references to be provided to applicants during examination:			
Learning Objective (As available): OPS-GOP-301-05S			
Question Source: OLC-4498	Bank # _____ Modified Bank # _____ New _____	X _____ _____	(Note changes or attach parent)
Question History	Previous NRC Exam Previous Quiz / Test	X _____ _____	
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	X _____	
10 CFR Part 55 Content:	55.41 _____ 55.43 X _____		
Comments (Why is it an upper level question): This question is SRO level due to asking the Tech. Spec. basis.			

Question:

Which one of the following is the reason for invoking PTS (Pressurized Thermal Shock) limits on the RCS? High thermal stress on the:

- a. OTSG tubes at the lower tube sheet.
- b. fuel pins in the RCS at the lower end of the fuel assembly.
- c. pressurizer surge line connection to the RCS.
- d. reactor vessel wall at the area of the HPI injection water.

Answer:

- d.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	051- GEN-2.1.20	
	Importance Rating		4.2
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): a. Reactor will not trip, thus going to DB-OP-02000 is not required. b. DB-OP-06910 is not used for a turbine trip. d. Turbine is required to be tripped when < 280 MWe and > 5.0" HgA.			
Technical Reference(s): DB-OP-02518.00, C-5, Step 4.1.1.6.2		Reference Attached: _____ (Attach if not previously provided)	
Proposed references to be provided to applicants during examination:			
Learning Objective (As available):			
Question Source:	Bank # _____ Modified Bank # _____ New <u> X </u>	(Note changes or attach parent)	
Question History	Previous NRC Exam _____ Previous Quiz / Test _____		
Question Cognitive Level:	Memory or Fundamental Knowledge _____ Comprehension or Analysis <u> X </u>		
10 CFR Part 55 Content:	55.41 _____ 55.43 <u> X </u>		
Comments (Why is it an upper level question): The examinee must determine that DB-OP-02518 must be used to mitigate this event. This question is SRO level due to requiring selection of an abnormal procedure.			

Question:

The plant has been operating at 44% RTP (390 MWe). The following conditions have been noted:

- CTRM annunciators actuate:
 - HP CNDSR PRESS HI (15-1-F)
 - LP CNDSR PRESS HI (15-2-F)
- The mechanical hogger has automatically started.
- PR 530, Condenser Pressure, indicates 5.4" HgA and rising.

Power is reduced to 28% RTP (240 MWe) and condenser pressure is still rising (5.6 in HgA).

Which one of the following statements is correct?

- a. Trip the turbine and go to DB-OP-02000, RPS, SFAS, SFRCS Trip or SG Tube Rupture.
- b. Trip the turbine and refer to DB-OP-02500, Turbine Trip.
- c. Trip the turbine and go to DB-OP-06910, Trip Recovery.
- d. Continue with the plant shutdown and refer to DB-OP-02504, Rapid Shutdown.

Answer:

- b.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	055-EA1.04	
	Importance Rating		3.9
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): a. Times are incorrect. b. Times are incorrect. d. Battery energy is not conserved for the HPI lube oil pumps.			
Technical Reference(s): DB-OP-02521.01, C-1		Reference Attached: _____ (Attach if not previously provided)	
Proposed references to be provided to applicants during examination:			
Learning Objective (As available): OPS-GOP-121-04K			
Question Source:	Bank # _____ Modified Bank # _____ New <u> X </u>	(Note changes or attach parent)	
Question History	Previous NRC Exam _____ Previous Quiz / Test _____		
Question Cognitive Level:	Memory or Fundamental Knowledge <u> X </u> Comprehension or Analysis _____		
10 CFR Part 55 Content:	55.41 <u> X </u> 55.43 _____		
Comments (Why is it an upper level question):			

Question:

During a loss of both 4160 VAC essential busses, selective battery load shedding must be initiated approximately _____ minutes from the start of the event and must be completed within _____ minutes.

Selective battery load shedding conserves battery energy for _____.

- a. 30; 60; instrumentation
- b. 30; 60; HPI lube oil pumps
- c. 20; 30; instrumentation
- d. 20; 30; HPI lube oil pumps

Answer:

- c.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	057-AK3.01	
	Importance Rating		4.4
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): a. Tripping both MFPs is not required per DB-OP-02532. b. Tripping both MFPs is not required per DB-OP-02532. d. Main and startup feedwater valves do not fail open.			
Technical Reference(s): DB-OP-02532.02, C-3, Step 3.5.2		Reference Attached: _____ (Attach if not previously provided)	
Proposed references to be provided to applicants during examination:			
Learning Objective (As available): OPS-GOP-132-01A			
Question Source:	Bank # _____ Modified Bank # _____ New <u> X </u>	(Note changes or attach parent)	
Question History	Previous NRC Exam _____ Previous Quiz / Test _____		
Question Cognitive Level:	Memory or Fundamental Knowledge _____ Comprehension or Analysis <u> X </u>		
10 CFR Part 55 Content:	55.41 <u> X </u> 55.43 _____		
Comments (Why is it an upper level question): The examinee is required to diagnose that a loss of ICS DC power has occurred.			

Question:

The following plant conditions exist:

- Reactor power is 100%.
- Station annunciators have lost power.

The RO reports that there are no indicating lights lit on any of the ICS stations.

Which one of the following is the required response and the reason for the response?

- a. Trip both main feedwater pumps.

Prevents overfeeding the steam generators due to main and startup feedwater valves failing full open.

- b. Trip both main feedwater pumps.

Prevents overfeeding the steam generators due to main and startup feedwater valves failing 50% open.

- c. Initiate AFW and isolate both steam generators.

Prevents overfeeding the steam generators due to main and startup feedwater valves failing 50% open.

- d. Initiate AFW and isolate both steam generators.

Prevents overfeeding the steam generators due to main and startup feedwater valves failing full open.

Answer:

- c.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	059-AA2.02	
	Importance Rating		3.9
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): a. RP reapproval is not required. c. Chemistry sample is not required. d. F201 must be declared inoperable.			
Technical Reference(s): Off-Site Dose Calculations Manual		Reference Attached: _____ (Attach if not previously provided)	
Proposed references to be provided to applicants during examination:			
Learning Objective (As available): OPS-GOP-521-04K			
Question Source: SRO-79	Bank # Modified Bank # New	_____ <u> X </u> _____	(Note changes or attach parent)
Question History	Previous NRC Exam Previous Quiz / Test	_____ _____	
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	_____ <u> X </u>	
10 CFR Part 55 Content:	55.41 55.43	_____ <u> X </u>	
Comments (Why is it an upper level question): The examinee must diagnose that the I&T test affects F201. This question is SRO level due to addressing liquid radwaste release approval.			

Question:

Using Table 2-1 of the Off-Site Dose Calculation Manual, answer the following:

The following plant conditions exist:

- The plant is at 80.5% RTP.
- A release of the MWMT to the collection box is in progress.
- I&C is performing DB-MI-03439, Functional Test of Dilution Pump Discharge Flow.
- I&C notifies the Shift Supervisor that DB-MI-03439 has failed its acceptance criteria.
- The Shift Supervisor declares computer point F201, dilution flow to collection box inoperable.

The Shift Supervisor shall _____.

- a. stop the release until F201 is declared operable
- b. continue the release and estimate flowrate once per four hours
- c. stop the release until Chemistry can perform grab samples at collection box
- d. continue the release since F201 is not required to be operable

Answer:

- b.

Question:

The following plant conditions exist:

- The plant is at 80.5% RTP.
- A release of the MWMT to the collection box is in progress.
- System Engineering notifies the Shift Supervisor that DB-MI-03439, Channel Functional Test of 10A-ISF3611, Dilution Pump Discharge Flow, had failed its acceptance criteria when I&T ran the test last week.

The Shift Supervisor shall _____.

- a. until Radiation Protection reapproves the release, stop the release and declare F201 inoperable
- b. declare F201 inoperable and continue the release and estimate flowrate once per four hours
- c. stop the release until Chemistry can perform grab samples at collection box
- d. write a Condition Report on F201, continue the release, and reduce the release rate by a factor of 10

Answer:

- b.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	062-AK3.02	
	Importance Rating		3.9
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): b. Backup cooling valve is air operated. c. CAC outlet valve is air operated. d. Motor-operated valves have been removed.			
Technical Reference(s): Dwg. E-001, Sheet 2		Reference Attached: _____ (Attach if not previously provided)	
Proposed references to be provided to applicants during examination:			
Learning Objective (As available):			
Question Source:	Bank # _____ Modified Bank # _____ New <u> X </u>	(Note changes or attach parent)	
Question History	Previous NRC Exam _____ Previous Quiz / Test _____		
Question Cognitive Level:	Memory or Fundamental Knowledge _____ Comprehension or Analysis <u> X </u>		
10 CFR Part 55 Content:	55.41 <u> X </u> 55.43 _____		
Comments (Why is it an upper level question): The examinee must diagnose that a loss of F12A will result in a loss of F12C and a loss of power to the valve that isolate SW secondary loads.			

Question:

The following plant conditions exist:

- Reactor power is 100%.
- CCW Pump 1 and Makeup Pump 2 are in service.
- SW Pumps 1 and 2 are in service.

The following events have occurred:

- A large break LOCA has occurred, concurrent with a loss of off-site power.
- EDG 1 has tripped on overspeed.
- The source breaker F12A tripped open when EDG 2 loaded on D1 bus.

Which one of the following is correct concerning the Service Water (SW) System?

- a. Full SW flow will not be available to ECCS equipment due to secondary loads failing to isolate.
- b. Backup cooling will not be available to secondary loads due to CT 2955, TPCW HX SUPPLY FROM CIRC WTR, failing to open.
- c. Full SW flow will not be available to CAC 2 due to the spare CAC outlet valve failing to isolate.
- d. Cooling water will not be available to ECCS room coolers due to the outlet valve failing to open.

Answer:

- a.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	067-AK1.02	
	Importance Rating		3.9
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): DB-OP-02519 stabilizes the plant with natural circulation, one AFW pump running and on AVV being controlled locally.			
Technical Reference(s): DB-OP-02519.04, C-3		Reference Attached: _____ (Attach if not previously provided)	
Proposed references to be provided to applicants during examination:			
Learning Objective (As available): OPS-GOP-119-04A			
Question Source: OLC-3650	Bank # Modified Bank # New	_____ <u> X </u> _____	(Note changes or attach parent)
Question History	Previous NRC Exam Previous Quiz / Test	_____ _____	
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	_____ <u> X </u>	
10 CFR Part 55 Content:	55.41 <u> X </u> 55.43 _____		
Comments (Why is it an upper level question): The examinee must determine that the serious CTRM fire abnormal procedure is required to mitigate the event.			

Question:

Assuming all plant equipment operates as designed, when the supplementary actions of DB-OP-02519, Serious CTRM Fire, are carried out to completion, reactor core heat removal is accomplished by _____.

- a. - Forced RCS flow
- AFW feeding both OTSGs
- Both AVVs controlled by local operators
- b. - Natural circulation RCS flow
- AFW feeding both OTSGs
- Both AVVs controlled by local operators
- c. - Forced RCS flow
- AFW feeding one OTSG
- One AVV controlled by local operator
- d. - Natural circulation RCS flow
- AFW feeding one OTSG
- One AVV controlled by local operator

Answer:

d.

Question:

A fire in the cabinet area of the Control Room has forced evacuation of the Control Room.

In which one of the following set of conditions will the plant be stabilized after the operators have implemented the appropriate procedure?

- a. - Forced RCS flow
- AFW feeding both OTSGs
- Both AVVs controlled automatically

- b. - Natural circulation RCS flow
- AFW feeding one OTSG
- One AVV being controlled automatically

- c. - Forced RCS flow
- MFW feeding both OTSGs
- One AVV being controlled locally

- d. - Natural circulation RCS flow
- AFW feeding one OTSG
- One AVV controlled locally

Answer:

d.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	068-AK2.03	
	Importance Rating		3.1
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): DB-OP-02508 requires the local tripping of both MFPTs to activate SFRCS.			
Technical Reference(s): DB-OP-02508.01, Page 14		Reference Attached: _____ (Attach if not previously provided)	
Proposed references to be provided to applicants during examination:			
Learning Objective (As available):			
Question Source: OLC-3614	Bank # Modified Bank # New	<u> X </u> _____ _____	(Note changes or attach parent)
Question History	Previous NRC Exam Previous Quiz / Test	_____ _____	
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	<u> X </u> _____	
10 CFR Part 55 Content:	55.41 55.43	<u> X </u> _____	
Comments (Why is it an upper level question):			

Question:

The CTRM crew was forced to evacuate the CTRM due to a highly toxic environment. The Immediate Actions of DB-OP-02508, CTRM Evacuation, have NOT been carried out.

Local SFRCS isolation trip shall be accomplished by _____.

- a. tripping all four RCPs at the switchgear breakers
- b. manually starting both AFPs by isolating air to their steam admission valves
- c. tripping both MFPTs at the MFPT local control panel
- d. deenergizing the AFP discharge valve solenoids

Answer:

- c.

Question:

The following plant conditions exist:

- Mode 3.
- Steam Generator 1 has a ~450 gpm tube rupture.
- Main Steam Safety Valve, SP17A2, is failed open.
- RCS pressure is 980 psig.
- RCS hot leg temperature is 518°F.

Which one of the following is the required response?

- a. Continue the RCS cooldown using Steam Generator 1.
- b. Initiate MU/HPI cooling and isolate Steam Generator 1.
- c. Continue RCS cooldown by trickle feeding Steam Generator 2 and isolate Steam Generator 1.
- d. Initiate MU/HPI cooling and trickle feed Steam Generator 2.

Answer:

- b.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	074-GEN-2.4.07	
	Importance Rating		3.8
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): DB-OP-02000 states that the high point vents opened to release non-condensable gases.			
Technical Reference(s): DB-OP-02000, C-1, Step 9.13 <div style="float: right; text-align: right;"> Reference Attached: _____ (Attach if not previously provided) </div>			
Proposed references to be provided to applicants during examination:			
Learning Objective (As available): OPS-GOP-308-04K			
Question Source: OLC-4562	Bank # _____ Modified Bank # _____ New _____	<u> X </u> _____ _____	(Note changes or attach parent)
Question History	Previous NRC Exam _____ Previous Quiz / Test _____	_____ <u> X </u>	
Question Cognitive Level:	Memory or Fundamental Knowledge _____ Comprehension or Analysis _____	<u> X </u> _____	
10 CFR Part 55 Content:	55.41 _____ 55.43 <u> X </u>		
Comments (Why is it an upper level question): This question is SRO level due to addressing the basis of the procedure required to mitigate the event.			

Question:

Section 9.0, Inadequate Core Cooling, of DB-OP-02000 directs the operator to, “Open the RCS and PZR high point vents” when incore temperatures have reached Region 3.

Which one of the following is the bases for performing this step?

Opening the RCS and PZR high point vents:

- a. provides a vent path for any non-condensable gases that may be restricting RCS – steam generator heat transfer.
- b. allows better control of reactor coolant pressure while maintaining it 40 to 60 psig above steam generator pressure.
- c. provides an additional flowpath to assist MU/HPI cooling in controlling/reducing core temperatures.
- d. reduces Reactor Coolant System pressure allowing increased flowrates from all running injection systems.

Answer:

- a.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	BW/E03-EA2.01	
	Importance Rating		4.0
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): DB-OP-02000 requires both AVVs to be fully open if no makeup or HPI flow is available.			
Technical Reference(s): DB-OP-02000.05, C-1, Step 4.5.5 and 5.10 <div style="text-align: right;">Reference Attached: _____ (Attach if not previously provided)</div>			
Proposed references to be provided to applicants during examination:			
Learning Objective (As available): OPS-GOP-304-05K			
Question Source:	Bank # _____ Modified Bank # _____ New <u> X </u>	(Note changes or attach parent)	
Question History	Previous NRC Exam _____ Previous Quiz / Test _____		
Question Cognitive Level:	Memory or Fundamental Knowledge _____ Comprehension or Analysis <u> X </u>		
10 CFR Part 55 Content:	55.41 _____ 55.43 <u> X </u>		
Comments (Why is it an upper level question): The examinee must diagnose that makeup and HPI has been lost. This question is SRO level due to having to determine the appropriate portion of DB-OP-02000 to use to mitigate this event.			

Question:

The following plant conditions exist:

- Reactor is tripped
- Subcooling margin meters indicate 0°F
- EDG1 has tripped on overspeed and cannot be reset.
- D1 bus has experienced a lockout
- SBODG has failed to start

Which one of the following is the correct response to this event?

- a. Maintain plant conditions and continue effort to restore C1 bus.
- b. Begin a cooldown at < 100°F/hr. to Mode 5.
- c. Fully open both Atmospheric Vent Valves.
- d. Open the PORV until the Core Flood Tanks start to discharge.

Answer:

- c.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	076-AA2.02	
	Importance Rating		3.4
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): Basis for T.S. 3.4.8 states that the limit can be exceeded for iodine spiking.			
Technical Reference(s): T.S. 3.4.8		Reference Attached: _____ (Attach if not previously provided)	
Proposed references to be provided to applicants during examination: Figure 3.4-1 of Tech. Specs.			
Learning Objective (As available): OPS-MCD-005-03K			
Question Source: OPS-223	Bank # Modified Bank # New	<u> X </u> _____ _____	(Note changes or attach parent)
Question History	Previous NRC Exam Previous Quiz / Test	_____ _____	
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	<u> X </u> _____	
10 CFR Part 55 Content:	55.41 55.43	_____ <u> X </u>	
Comments (Why is it an upper level question): This question is SRO level due to asking about T.S. basis.			

Question:

Tech. Spec. 3.4.8, Specific Activity, allows the plant to operate at greater than $1.0 \mu\text{c}/\text{gram DEI}$ but within the acceptable operation region of Figure 3.4-1 up to 48 hours because of _____.

- a. still being within the limits on site boundary dose rate with an assumed SGTL rate of 150 gpd
- b. the two-hour dose rate at the site boundary not exceeding 10 times the 10 CFR 100 limits
- c. the recognized effects of iodine spiking following a power change
- d. the very low probability of any radioactive release in the event of a SGTL of 150 gpd

Answer:

- c.

EXAMINATION OUTLINE CROSS-REFERENCE:	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	BW/A02-AA1.01	
	Importance Rating		3.8
Proposed Question: See Attached			
Proposed Answer: See attached			
Explanation (Why the distractors are incorrect): a. MU32 fails to 50% open. c. There is no local operator for MU32. d. Local operation of MU64219 is not required.			
Technical Reference(s): DB-OP-02532.02, C-3, Step 4.2.6		Reference Attached: _____ (Attach if not previously provided)	
Proposed references to be provided to applicants during examination:			
Learning Objective (As available): OPS-GOP-132-09K			
Question Source: OLC-4123	Bank # Modified Bank # New	<u> X </u> _____ _____	(Note changes or attach parent)
Question History	Previous NRC Exam Previous Quiz / Test	_____ _____	
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	<u> X </u> _____	
10 CFR Part 55 Content:	55.41 <u> X </u> 55.43 _____		
Comments (Why is it an upper level question):			

Question:

Which one of the following describes how pressurizer level is controlled following a loss of NNI-X DC power?

- a. Manual operation of makeup flow control valve (MU32) from the Control Room.
- b. Manual operation of alternate makeup injection line valve (MU6419) from the Control Room.
- c. Local manual operation of makeup flow control valve (MU32).
- d. Local manual operation of alternate makeup injection line valve (MU6419).

Answer:

- b.