Final Submittal

(Blue Paper)

CATAWBA 2008-301
Written EXAMINATION
12/10/2008

COMBINED RO/SRO WRITTEN EXAM

WITH KAS, ANSWERS, REFERENCES,

2008 SRO NRC Examination QUESTION 1

D

QuestionBank #	KA_system	KA_number
507	EPE007	EK2.03

KA_desc
Knowledge of the interrelations between a reactor trip and the following: (CFR 41.7 / 45.7)□Reactor trip status panel .....

Unit 1 is at 100% reactor power.

Four hours ago:

- PZR Level Select Switch was in the 3-2 position
- PZR level channel 1 failed HIGH
- All actions required by Technical Specifications were completed to allow continued unit operation.

Following the receipt of several annunciators, the following items are noted:

- 1EDC has lost power
- 1FO-1, B/6 (PZR Hi Level RX Trip) is LIT and RED
- DRPI indicates control bank position at 215 steps on Bank D
- Both RX TRIP BKR 1A and 1B red lights are LIT.

Which one of the following describes:

1. The current condition of the plant and
2. The correct operator action to take for the above evolution?

A.
1. Anticipated Transient Without Scram (ATWS)
2. Manually trip the reactor

B.
1. Anticipated Transient Without Scram (ATWS)
2. Perform a shutdown per OP/1/A/6100/003 (Controlling Procedure for Unit Operation)

C.
1. Reactor Protection System (RPS) failure
2. Manually trip the reactor

D.
1. Reactor Protection System (RPS) failure
2. Perform a shutdown per OP/1/A/6100/003 (Controlling Procedure for Unit Operation)

General Discussion

OMP 1-7 General Statements of Philosophy:

An ATWS (Anticipated Transient Without Scram) is defined in 10CFR50.62 as an anticipated operational occurrence followed by the failure of the reactor trip portion of the protective system. To have an ATWS there must be a transient followed by a failure of the reactor trip breakers. Instrument failures, by themselves, are not necessarily transients. For example, if one channel of Pressurizer Pressure was out of service for preventive maintenance (bistable in tripped condition) and another Pressurizer Pressure channel failed (not the controlling channel), a reactor trip signal would be generated. If the reactor failed to trip, this would be a failure of the reactor trip breakers and the automatic trip features of the reactor protection system and not an ATWS event. (PPRB OPS-9283)

Since this is a transient condition, this would be an ATWS

Answer A Discussion

CORRECT

Answer B Discussion

First part correct

Answer C Discussion

Second part correct

Answer D Discussion

Both parts incorrect psychometric balance

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	MODIFIED	2006 NRC Q1 (Bank 607)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
EPINTRO13 OMP 1-7 TS 3.3.1	

QuestionBank #	KA_system	KA_number
507	EPE007	EK2.03

KA_desc
Knowledge of the interrelations between a reactor trip and the following: (CFR 41.7 / 45.7)□Reactor trip status panel .....

401-9 Comments:

007 EK2.03 Borderline K/A match. Did not see where the reactor trip status panel was addressed. Distractors B and C are not plausible. If an ATWS had occurred the reactor would be tripped. If a failure of the Reactor Protection system occurred, and normal shutdown would be conducted.
Modified

401-9 Comments RESPONSE

D

QuestionBank #	KA_system	KA_number
508	EPE009	EA2.10

KA_desc
Ability to determine or interpret the following as they apply to a small break LOCA: (CFR 43.5 / 45.13)□Airborne activity .....

Initial Conditions

- Unit 1 was in Mode 3 cooling down for a refueling outage per OP/1/A/6100/002 (Controlling Procedure for Unit Shutdown)
- NC pressure is 1500 psig
- NC temperature is 500°F and slowly decreasing

Operators note the following:

- 1RAD-1, B/3 "1EMF41 AUX BLDG VENT HI RAD" - LIT
- 1AD-13, A/1 "ND & NS ROOMS SUMP LEVEL EMERG HI" - LIT
- "SAFETY INJECTION ACTUATED" status light - LIT

Which one of the following states the correct procedure flowpath that will address this event?

A. AP/1/A/5500/027 (Shutdown LOCA)
AP/1/A/5500/019 (Loss of Residual Heat Removal System)

B. AP/1/A/5500/027 (Shutdown LOCA)
AP/1/A/5500/010 (Reactor Coolant Leak)

C. EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)
EP/1/A/5000/E-1 (Loss of Reactor or Secondary Coolant)
EP/1/A/5000/ES-1.2 (Post LOCA Cooldown and Depressurization)

D. EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)
EP/1/A/5000/E-1 (Loss of Reactor or Secondary Coolant)
EP/1/A/5000/ECA-1.2 (LOCA Outside Containment)

General Discussion

The EMF in alarm is the key to a LOCA outside containment with the sump level providing confirmation. Choices B and C are for LOCAs IN containment. Choices A and B are for shutdown conditions as stated in AP/27 which do not apply to this situation based on the stem.

Answer A Discussion

He may interpret "shutdown" in the title as Mode 3. This is a common point of confusion. When AP/27 is used, it does transition for this situation to AP/19

Answer B Discussion

There is a transition to AP/10, however he should realize it's a LOCA outside containment based on EMF-41 and ND/NS sump room.

Answer C Discussion

This is a valid EP flowpath for a leak in the NCS. But not for a LOCA outside containment.

Answer D Discussion

CORRECT

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
OP/1/B/6100/010X AP/1/A/5500/027 EP/1/A/5000/E-1 EP/1/A/5000/ECA-1.2	

QuestionBank #	KA_system	KA_number
508	EPE009	EA2.10

KA_desc

Ability to determine or interpret the following as they apply to a small break LOCA: (CFR 43.5 / 45.13)□Airborne activity .....

401-9 Comments:

009EA2.1 Question appears to match K/A. Distractors A and B may not be plausible. Is there any time that Safety Injection Actuated light is lit that the operators would not go to E-0 besides a loss of all AC? NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 3

D

QuestionBank #	KA_system	KA_number
509	EPE011	2.4.30

KA_desc
EPE011 GENERIC□Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator. (CFR: 41.10 / 43.5 / 45.11)

Given the following events:

- A Large Break LOCA has occurred on Unit 2
- All equipment functioned as designed
- The OSM has declared an Alert
- A signed Emergency Notification Sheet has been handed to you for transmittal

Which of the following is a complete list of agencies required to be contacted within 15 minutes of the declaration of the Alert?

A. State and county warning points and the NRC Operations Center

B. County warning points and NRC Operations Center

C. State warning points and NRC Operations Center

D. State and county warning points

D

General Discussion

15 minute notifications do not include NRC, but are the state and county warning points.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	2005 NRC Q75 (Bank 479)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
RP/0/A/5000/006A rev30 RP/0/A/5000/001 rev 18	

QuestionBank #	KA_system	KA_number
509	EPE011	2.4.30

KA_desc
EPE011 GENERIC□Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator. (CFR: 41.10 / 43.5 / 45.11)

401-9 Comments:

011EG2.4.30 SAT BANK - 2005 NRC exam.

401-9 Comments RESPONSE

QuestionBank #	KA_system	KA_number
510	APE022	AK1.02

KA_desc
Knowledge of the operational implications of the following concepts as they apply to Loss of Reactor Coolant Makeup: (CFR 41.8 / 41.10 / 45.3)□Relationship of charging flow to pressure differential between charging and RCS . . . . .

Given the following initial conditions:

- 1NV-294 (NV Pmps A&B Disch Flow Ctrl) in MANUAL
- 1NV-309 (Seal Water Injection Flow) in MANUAL
- pressurizer pressure is 2235 psig
- total seal water flow is 32 gpm
- charging line flow is 89 gpm

If pressurizer pressure is increased to 2300 psig, which one of the following sets of system parameter changes is correct?

A. Charging line flow decreases and total seal water flow decreases

B. Charging line flow decreases and total seal water flow remains the same

C. Charging pump discharge header pressure increases and total seal water flow increases

D. Charging pump discharge header pressure increases and total seal water flow remains the same

General Discussion

Centrifugal pump laws require that the discharge header pressure increases and flow decreases as system pressure increases. Therefore charging line flow and total seal flow will decrease while charging line discharge pressure increases.

Answer A Discussion

CORRECT

Answer B Discussion

Incorrect: total seal flow decreases. May think higher discharge pressure = more seal flow.Incorrect: total seal flow decreases because 1NV-309 is in manual.

Answer C Discussion

Incorrect: total seal flow decreases. May think higher discharge pressure = more seal flow.

Answer D Discussion

Incorrect: total seal water flow decreases because 1NV-309 is in manual.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	2005 NRC Q6 (Bank 410)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
THFFF12 thru THFFF15	

QuestionBank #	KA_system	KA_number
510	APE022	AK1.02

KA_desc
Knowledge of the operational implications of the following concepts as they apply to Loss of Reactor Coolant Makeup: (CFR 41.8 / 41.10 / 45.3)□Relationship of charging flow to pressure differential between charging and RCS . . . . .

401-9 Comments:

022AK1.02 Question kind of matches K/A. SAT. This question could be easily modified. BANK - 2005 NRC exam.

401-9 Comments RESPONSE

~~QUESTION 5~~ Question Deleted

D

QuestionBank #	KA_system	KA_number
511	APE025	2.4.30

KA_desc
APE025 GENERIC□Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator. (CFR: 41.10 / 43.5 / 45.11)

Unit 1 was in Mode 5 preparing to enter Mode 6.

Given the following:

- Both trains of ND have been lost.
- The crew entered AP/1/A/5500/019 (Loss of Residual Heat Removal System) but actions to restore cooling have failed.
- The OSM has determined an immediate need to take an action per 10CFR50.54(X).

Per the requirements of OMP 1-7 (Emergency/Abnormal Procedure Implementation Guidelines):

1. Is notification to the NRC Operations Center required prior to taking the action?
2. How many additional SROs (if any) are required to agree with the OSM prior to the action being taken?

A. 1. Yes
   2. None

B. 1. Yes
   2. One additional SRO

C. 1. No
   2. None

D. 1. No
   2. One additional SRO

~~QUESTION 5~~ D

Question Deleted

General Discussion

50.72 "The licensee shall activate the Emergency Response Data System (ERDS)4 as soon as possible but not later than one hour after declaring an Emergency Class of alert, site area emergency, or general emergency".
OMP 1-7 3. The licensee shall notify the NRC Operations Center by ENS telephone of emergency circumstances requiring the licensee to take any protective action that departs from a license condition or technical specification as permitted by the preceding paragraphs. When time permits, the notification must be made before the protective action is taken; otherwise, the notification must be made as soon as possible thereafter. The Commission may require written statements from a licensee concerning its action. Also, the licensee should notify the Resident NRC Inspector as soon as practical.

Per 10cfr5054x, only one SRO is required to make the determination and take action per the CFR. OMP 1-7 says for situations not covered by procedure, 2 are required.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
OMP 1-7	

QuestionBank #	KA_system	KA_number
511	APE025	2.4.30

KA_desc
APE025 GENERIC□Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator. (CFR: 41.10 / 43.5 / 45.11)

401-9 Comments:

025AG2.4.30 Question appears to match K/A. I think this was also on the 2007 exam will check to ensure. OMP 1-7 states two are required without a procedure. This action will be outside the procedure, therefore someone could argue D is also correct (more conservative. NEW?

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 6

A

QuestionBank #	KA_system	KA_number
512	APE026	AA2.03

KA_desc
Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: (CFR: 43.5 / 45.13)□The valve lineups necessary to restart the CCWS while bypassing the portion of the system causing the abnormal condition .....

Unit 1 was operating at 100% with "A" Train KC in service. Given the following:

- An 86N relay actuated on 1ETB two minutes ago
- A major KC system piping leak has occurred in the Auxiliary Building non-essential header
- 1AD-10, A/1 "KC SURGE TANK A LO-LO LEVEL" - LIT
- 1AD-10, A/2 "KC SURGE TANK B LO-LO LEVEL" - LIT
- The crew has entered AP/1/A/5500/021 (Loss Of Component Cooling)

Assuming all automatic actions have occurred, which one of the following correctly lists the major KC headers that are currently being cooled?

A. KC Train A essential header only

B. KC Train A essential header and the Reactor Building non-essential header

C. KC Train A essential header and KC Train B essential header

D. KC Train A essential header, KC Train B essential header and the Reactor Building non-essential header

General Discussion

An 86N locks out the essential bus, therefore, B train KC pumps are off and the B train header isolation vlaves will not close. The Reactor building header shares common piping with the AB non-ess header. Both non-essential headers are isolated based on low KC surge tank levels due to the piping rupture.

Answer A Discussion

Answer B Discussion

If student thinks that the Rx Building header is not isolated since the leak is on the AB header. Although its diff valves for purposes of leak isoaltion they are identical.

Answer C Discussion

If student thinks the D/G re-energizes 1ETB

Answer D Discussion

Both B and C above for psychometric balance.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
AP/1/A/5500/021 PSSKC	

QuestionBank #	KA_system	KA_number
512	APE026	AA2.03

KA_desc
Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: (CFR: 43.5 / 45.13)□The valve lineups necessary to restart the CCWS while bypassing the portion of the system causing the abnormal condition .....

401-9 Comments:

026AA2.03 Question appears to match K/A. SAT
NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 7

B

QuestionBank #	KA_system	KA_number
513	APE027	AA1.04

KA_desc
Ability to operate and / or monitor the following as they apply to the Pressurizer Pressure Control Malfunctions: (CFR 41.7 / 45.5 / 45.6)□Pressure recovery, using emergency-only heaters .....

Given the following:

- The SSF has been manned due to a fire in the cable spreading room.
- During the course of SSF operations a head vent stuck in the open position for a short period of time and then reclosed.
- You have been directed to increase NC pressure using heaters.

1. Why is pressure recovery slower from the SSF than from the Control Room?
2. How are the heaters available from the SSF secured should Pzr level drop below 17%?

A. 1. Only a portion of the D heaters are available from the SSF
   2. Automatically

B. 1. Only a portion of the D heaters are available from the SSF
   2. Manually

C. 1. Only A and B heaters are available from the SSF
   2. Automatically

D. 1. Only A and B heaters are available from the SSF
   2. Manually

B

General Discussion

Only a portion of D heaters are available from the SSF. The OP for SSF operations has numerous cautions about having to manually sercure those heaters should leve drop below 17%. A&B heaters are available from the ASP.

Answer A Discussion

first part is correct.

Answer B Discussion

CORRECT

Answer C Discussion

The A and B heaters would automatically secure but are available from the ASP not the SSF

Answer D Discussion

second part is correct

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
OP/0/B/6100/013 PSILE	

QuestionBank #	KA_system	KA_number
513	APE027	AA1.04

KA_desc
Ability to operate and / or monitor the following as they apply to the Pressurizer Pressure Control Malfunctions: (CFR 41.7 / 45.5 / 45.6)□Pressure recovery, using emergency-only heaters .....

401-9 Comments:

027AA1.04 Question appears to match K/A. SAT NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 8

D

QuestionBank #	KA_system	KA_number
514	EPE029	2.4.34

KA_desc
EPE029 GENERIC□Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects. (CFR: 41.10 / 43.5 / 45.13)

Which one of the following is a complete list of breakers directed to be opened per EP/1/A/5000/FR-S.1 (Response to Nuclear Power Generation/ATWS) to trip the reactor locally?

1. Reactor Trip Breakers RTA and RTB
2. Reactor Trip Bypass Breakers BYA and BYB
3. CRD/MG "Motor" Breakers
4. CRD/MG "Generator" Breakers

A. 1 and 2 only

B. 1, 2, and 3 only

C. 1, 2, and 4 only

D. 1, 2, 3, and 4

General Discussion

Normally the OSM will directed the non affected Units BOP to go open these breakers to minimize the time the Reactor stays critical. RO's know it takes only opening one breaker to trip the reactor.

Answer A Discussion

Incorrect: EP/1/A/500/FR-S.1 requires opening all the breakers. Plausible: Students knows only one breaker needs to be open to trip the reactor.

Answer B Discussion

Incorrect: EP/1/A/500/FR-S.1 requires opening all the breakers. Plausible: Immediate actions of EP/1/A/5000/E-0 verify that Reactor Trip breakers and Reactor Trip Bypass Breakers are opened.

Answer C Discussion

Incorrect: EP/1/A/500/FR-S.1 requires opening all the breakers. Plausible: If opening the Reactor Trip and Bypass Breakers doesn't trip the Reactor then opening the MG set breakers will cause the rods to fall.

Answer D Discussion

Correct

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
FR-S.1	

QuestionBank #	KA_system	KA_number
514	EPE029	2.4.34

KA_desc
EPE029 GENERIC□Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects. (CFR: 41.10 / 43.5 / 45.13)

401-9 Comments:

029EG2.4.34 Question appears to match the K/A. Question needs some enhancements. The operator need only know that the motor generator out put breaker needs to be opened and D is the answer. Change the distractors to be 1 and 2 only, 1, 2, and 3 only 1, 2, and 4 only and 1, 2, 3, and 4.
NEW

401-9 Comments RESPONSE

C

QuestionBank #	KA_system	KA_number
515	EPE038	EK1.02

KA_desc
Knowledge of the operational implications of the following concepts as they apply to the SGTR: (CFR 41.8 / 41.10 / 45.3)□Leak rate vs. pressure drop .....

Given the following:

- Unit 1 and 2 are operating at 100%
- One single steam generator tube fully shears on each unit
- The crews are responding per EP/1(2)/A/5000/E-3 (Steam Generator Tube Rupture), preparing to perform the initial reactor coolant system cooldown to the required core exit thermocouple temperature using steam dumps.

Based on the differences between Unit 1 and Unit 2 steam generator design:

1. Which unit would have a lower primary system equilibrium pressure?
2. Which unit will have a faster cooldown rate?

(Assume identical cores and steam dump performance.)

A. Unit 1 would have a lower equilibrium pressure and Unit 1 would have a faster cooldown rate.

B. Unit 1 would have a lower equilibrium pressure and Unit 2 would have a faster cooldown rate.

C. Unit 2 would have a lower equilibrium pressure and Unit 1 would have a faster cooldown rate.

D. Unit 2 would have a lower equilibrium pressure and Unit 2 would have a faster cooldown rate.

C

General Discussion

Unit 1 has smaller tubes and larger surface area, therefore the leakage would be less on Unit 1 causing Unit 2 to have a larger pressure drop to equilibrium and assuming dumps are fully opened for the initial NC cooldown, Unit 1 would cooldown faster.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	2005 NRC Q69 (Bank 473)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
STMSG10	

QuestionBank #	KA_system	KA_number
515	EPE038	EK1.02

KA_desc
Knowledge of the operational implications of the following concepts as they apply to the SGTR: (CFR 41.8 / 41.10 / 45.3)□Leak rate vs. pressure drop .....

401-9 Comments:

038EK1.02 Question kind of matches K/A.
BANK - 2005 NRC exam

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
516	APE057	AA2.13

KA_desc
Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: (CFR: 43.5 / 45.13)□VCT level and pressure indicators and recorders .....

Unit 1 is operating at 100%. 1ERPA is lost. What effect does this have on VCT auto makeup capability and VCT level indication in the control room?

	Auto Makeup	Level Indication
A.	Available	Available
B.	Unavailable	Available
C.	Available	Unavailable
D.	Unavailable	Unavailable

B

General Discussion

Vital has no effect on level indication. Lost of ERPA will cause the Rx M/U pumps to not start in auto or manual. This makes auto makeup be lost.

Answer A Discussion

Incorrect for makeup but correct for indication

Answer B Discussion

CORRECT

Answer C Discussion

Incorrect for makeup and for indication.

Answer D Discussion

Correct for makeup but incorrect for indication.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
AP/1/A/5500/029	

QuestionBank #	KA_system	KA_number
516	APE057	AA2.13

KA_desc
Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: (CFR: 43.5 / 45.13)□VCT level and pressure indicators and recorders .....

401-9 Comments:

057AA2.13 Question appears to match K/A. SAT NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 11

C

QuestionBank #	KA_system	KA_number
517	APE058	AA1.02

KA_desc
Ability to operate and / or monitor the following as they apply to the Loss of DC Power: (CFR 41.7 / 45.5 / 45.6)□Static inverter dc input breaker, frequency meter, ac output breaker, and ground fault detector .....

Given the following:

- 1ERPD has been de-energized due to a blown fuse on inverter 1EID.
- The crew has implemented AP/1/A/5500/029 (Loss of Vital or Aux Control Power).
- The fuse has been replaced and the CRS wishes to re-energize 1ERPD from 1EID.

Per OP/1/A/6350/008 (125VDC/120VAC Vital Instrument and Control Power System), which one of the following correctly states the minimum acceptable wait time prior to inverter restart and the sequence for operation of inverter 1EID DC input breaker and AC output breaker?

A. 1. 5 seconds
   2. Close the DC input breaker and then close the AC output breaker

B. 1. 5 seconds
   2. Close the AC output breaker and then close the DC input breaker

C. 1. 60 seconds
   2. Close the DC input breaker and then close the AC output breaker

D. 1. 60 seconds
   2. Close the AC output breaker and then close the DC input breaker

C

General Discussion

Per OP L&P 60 sec wait must occur. 5 seconds is the requried precharge time.

Answer A Discussion

Time is incorrect.

Answer B Discussion

Both time and order are incorrect.

Answer C Discussion

correct

Answer D Discussion

The order of the AC and DC breakers are reversed

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
EPL AP/1/A/5500/029 OP/1/A/6350/008	

QuestionBank #	KA_system	KA_number
517	APE058	AA1.02

KA_desc
Ability to operate and / or monitor the following as they apply to the Loss of DC Power: (CFR 41.7 / 45.5 / 45.6)□Static inverter dc input breaker, frequency meter, ac output breaker, and ground fault detector .....

401-9 Comments:

058AA1.02 Question appears to match K/A. SAT
(Is the time limit in accordance with a procedure? If so, this should be stated).
NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 12

A

QuestionBank #	KA_system	KA_number
518	APE062	AK3.03

KA_desc
Knowledge of the reasons for the following responses as they apply to the Loss of Nuclear Service Water: (CFR 41.4, 41.8 / 45.7)□Guidance actions contained in EOP for Loss of nuclear service water ....

Both units were at 100% with 2A RN Pump in service when the following annunciators were received:

- 1AD-12, E/2 "RN PIT A SWAP TO SNSWP" - LIT
- 2AD-12, E/2 "RN PIT A SWAP TO SNSWP" - LIT
- 1AD-12, B/1 "RN PUMP INTAKE PIT A LEVEL - LO" - LIT
- 2AD-12, B/1 "RN PUMP INTAKE PIT A LEVEL - LO" - LIT

What is the minimum time the crew must wait following receipt of these annunciators prior to operating RN equipment per AP/0/A/5500/020 (Loss of Nuclear Service Water) and what is the reason for that time delay?

A. 2 minutes;
To allow sufficient time for all components to respond and allows the operator an opportunity to verify the signal is valid prior to any system realignments.

B. 2 minutes;
To prevent an automatic swap to the pond if RN pit level can be restored within 2 minutes.

C. 5 minutes;
To allow sufficient time for all components to respond and allows the operator an opportunity to verify the signal is valid prior to any system realignments.

D. 5 minutes;
To prevent an automatic swap to the pond if RN pit level can be restored within 5 minutes.

General Discussion

AP/20 states that valves and pumps cannot be manipualted for 2 minutes following the autostart on pit level. (5 minutes is the time for the YV swap.) The purpose of the 2 minute wait is to allow components to reposition and for the operator to determine if the signal was valid prior to restoring.

Answer A Discussion

CORRECT

Answer B Discussion

Correct time, wrong reason

Answer C Discussion

Wrong time, correct reason

Answer D Discussion

Both incorrect - for psychoimetric balance

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
AP/20 RN lesson	

QuestionBank #	KA_system	KA_number
518	APE062	AK3.03

KA_desc
Knowledge of the reasons for the following responses as they apply to the Loss of Nuclear Service Water: (CFR 41.4, 41.8 / 45.7)□Guidance actions contained in EOP for Loss of nuclear service water ....

401-9 Comments:

062AK3.03 Question does not meet K/A. The K/A asks for reasons for the following responses… The question as written does not address any reasons. Add reasons for actions to make question SAT.
NEW

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
519	APE065	AK3.03

KA_desc
Knowledge of the reasons for the following responses as they apply to the Loss of Instrument Air: (CFR 41.5,41.10 / 45.6 / 45.13)□Knowing effects on plant operation of isolating certain equipment from instrument air .....

Given the following:

- One RL turnaround valve is manually pinned in place for mantenance
- The crew has entered AP/0/A/5500/022 (Loss of Instrument Air)
- Operators have determined that the leak can be isolated but doing so will result in all RL turnaround valves losing VI.
- The CRS has directed that the leak be isolated.

Which one of the following correctly states the effect that this will have on the RL turnaround valves and the equipment cooled by RL.

A. The unpinned RL turnaround valves will fail open resulting in more flow to the components supplied by RL.

B. The unpinned RL turnaround valves will fail closed resulting in more flow to the components supplied by RL.

C. The unpinned RL turnaround valves will fail open resulting in less flow to the components supplied by RL.

D. The unpinned RL turnaround valves will fail closed resulting in less flow to the components supplied by RL.

General Discussion

The RL turnaround valves basically act as a false load to maintain header pressure. The valves fail closed which cause header pressure to increase and forces more flow through the other components. This is counterintuitive.

Answer A Discussion

the valves fail closed. But logic would say that valves failing open woud result in > flow but not the case due to system design.

Answer B Discussion

CORRECT

Answer C Discussion

True if the valves DID fail open

Answer D Discussion

fail in right direction but the effect is reversed.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
RL	

QuestionBank #	KA_system	KA_number
519	APE065	AK3.03

KA_desc
Knowledge of the reasons for the following responses as they apply to the Loss of Instrument Air: (CFR 41.5,41.10 / 45.6 / 45.13)□Knowing effects on plant operation of isolating certain equipment from instrument air .....

401-9 Comments:

065AK3.03 Question appears to match K/A. I assume the crew entered AP/0/A/5500/022 due to an air leak? You might need to say this.
NEW

401-9 Comments RESPONSE

D

QuestionBank #	KA_system	KA_number
520	APE077	AA1.01

KA_desc
Ability to operate and/or monitor the following as they apply to Generator Voltage and Electric Grid Disturbances: (CFR: 41.5 and 41.10 / 45.5, 45.7, and 45.8)□Grid frequency and voltage.....

Given the following:

- Unit 1 is at 100% power with power factor at 0.99 lagging.
- Operators are controlling power factor in manual due to the auto voltage regulator not controlling properly.
- A major grid disturbance causes power factor to increase to slightly leading.

1. Which button on the voltage regulator is operated to bring power factor back to its original value?
2. What part of the generator is susceptible to overheating should power factor be erroneously adjusted to 0.8 lagging?

Reference provided

A. 1. The "LOWER" button
   2. The generator armature core end

B. 1. The "RAISE" button
   2. The generator armature core end

C. 1. The "LOWER" button
   2. The generator field

D. 1. The "RAISE" button
   2. The generator field

General Discussion

The RAISE button will cause power factor to decrease froma leading value to a lagging value. If the generator voltage is adjusted to severley lagging (.8) then it will be past the AB line on the Generator capability curve and field heating is a concern.

Answer A Discussion

.Both parts wrong , psychometric balance.

Answer B Discussion

Wwrong gneerator component. This would be if PF was severely LEADING.

Answer C Discussion

LOWER will cause PF to go more lagging but lower seems logical , Correct generator aea

Answer D Discussion

CORRECT

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
Generator Capability Curve (DataBook Curve 43) RL	Databook Figure 43 (Generator Capability Curve)

QuestionBank #	KA_system	KA_number
520	APE077	AA1.01

KA_desc
Ability to operate and/or monitor the following as they apply to Generator Voltage and Electric Grid Disturbances: (CFR: 41.5 and 41.10 / 45.5, 45.7, and 45.8)□Grid frequency and voltage.....

401-9 Comments:

077AA1.01 Question appears to match K/A. This may be considered a direct look up. I will have another examiner review and comment.
NEW

401-9 Comments RESPONSE

D

QuestionBank #	KA_system	KA_number
521	WE04	EK2.2

KA_desc
Knowledge of the interrelations between the (LOCA Outside Containment) and the following: (CFR: 41.7 / 45.7)□Facility*s heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.

Unit 1 was operating at 100%. Given the following events and conditions:

- 0200 – reactor tripped due to a LOCA outside containment
- 0210 – crew enters ECA-1.2, (LOCA Outside Containment)
- 0220 – crew enters ECA-1.1, (Loss of Emergency Coolant Recirc)
- 0240 – The crew is at the step in ECA-1.1 to determine NC subcooling
- Current conditions:
  - NCS pressure is 1100 psig
  - 1B NC pump running
  - 1A, 1C, and 1D NC pumps secured
  - Reactor Vessel D/P is 20%
  - 1 NI pump running, indicating 220 gpm
  - 1 NV pump running, indicating 385 gpm
  - Both ND pumps off
  - No NS pumps running
  - Subcooling is 35°F

Which one of the following statements correctly describes the minimum required flow and which pump can be secured?

Reference provided

A. 210 gpm, stop the running NV pump.

B. 210 gpm, stop the running NI pump.

C. 410 gpm, stop the running NI pump.

D. 410 gpm, neither pump may be secured at this time.

General Discussion

Bank Question: 912.1
Time after trip is 40 minutes, graph starts at 10 minutes, flow required is 408 gpm

Answer A Discussion

Incorrect: required flow is 408 gpm
Plausible: candidate misses the fact that the graph starts at 10 minutes; this is the 50 minute number

Answer B Discussion

Correct: required flow is 408 gpm, the NV pump is providing 410 gpm, and the NI pump may be stopped.

Answer C Discussion

Incorrect: required flow is 408 gpm
Plausible: candidate uses 30 minutes to determine required flow (time since diagnosis of LOCA outside containment)

Answer D Discussion

Incorrect: required flow is 408 gpm
Plausible: candidate uses 20 minutes to determine required flow (time since procedure entry)

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	MODIFIED	2004 NRC Q26 (Bank 326)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References
Lesson Plan Objective: EP-EP2 SEQ 29 References: 1. ECA-1.1 step 19 and Encl 5 - PROVIDED

Student References Provided
EP/1/A/5000/ECA-1.1 (Step 19) EP/1/A/5000/ECA-1.1 (Enclosure 5)

QuestionBank #	KA_system	KA_number
521	WE04	EK2.2

KA_desc
Knowledge of the interrelations between the (LOCA Outside Containment) and the following: (CFR: 41.7 / 45.7)□Facility*s heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.

401-9 Comments:

W/E04EK2.2 Question appears to match K/A. Modified from 2004 NRC exam. SAT
Modified.

401-9 Comments RESPONSE

D

QuestionBank #	KA_system	KA_number
522	WE05	EK3.1

KA_desc
Knowledge of the reasons for the following responses as they apply to the (Loss of Secondary Heat Sink) (CFR: 41.5 / 41.10, 45.6, 45.13)□Facility operating characteristics during transient conditions, including□coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and reasons for these operating characteristics.

A feedwater transient resulted in a reactor trip and the operating crew entered EP/1/A/5000/FR-H.1 (Response to Loss of Secondary Heat Sink) when all Auxiliary Feedwater flow was lost. Given the following:

- S/G 1A wide range level – 31%
- S/G 1B wide range level – 20%
- S/G 1C wide range level – 23%
- S/G 1D wide range level – 28%
- The BOP has just secured all the NC pumps
- The OATC notes NC system pressure is increasing

1. Why have NC pumps been secured?
2. Why is NCS pressure increasing?

A.
1. To begin NCS bleed and feed
2. Due to NC temperature increase

B.
1. To minimize heat input
2. Due to letdown being secured

C.
1. To begin NCS bleed and feed
2. Due to letdown being secured

D.
1. To minimize heat input
2. Due to NC temperature increase

General Discussion

There are 2 times NC pumps are secured in H1. First after CA cannot be reinitiated, and second is prior to commencing feed and bleed. S/G wide range levels are above the F/B critera (3<24% WR to establish) unless ACC conditoions (36%). NCPs are secured to minimize heat input causing the water in the S/G to last longer. Pressure inceeases due to the temperature increase prior to the establishment of natural circulation.

Answer A Discussion

F/B criteria are not met but would be for ACC numbers (correct part 2)

Answer B Discussion

Part 1 is correct, part 2 is not

Answer C Discussion

both part incorrect - psychometric baloance

Answer D Discussion

Correct

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
FR-h.1 and basis E-1 and basis	

QuestionBank #	KA_system	KA_number
522	WE05	EK3.1

KA_desc

Knowledge of the reasons for the following responses as they apply to the (Loss of Secondary Heat Sink)
(CFR: 41.5 / 41.10, 45.6, 45.13)□Facility operating characteristics during transient conditions, including□coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and reasons for these operating characteristics.

401-9 Comments:

W/E05EK3.1 Question matches K/A. SAT
NEW

401-9 Comments RESPONSE

C

QuestionBank #	KA_system	KA_number
523	WE11	EK2.1

KA_desc
Knowledge of the interrelations between the (Loss of Emergency Coolant Recirculation) and the following: (CFR: 41.7 / 45.7)□Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

The crew implemented EP/1/A/5000/ECA-1.2 (LOCA Outside Containment), determined the leak can not be isolated and transitioned to EP/1/A/5000/ECA-1.1 (Loss of Emergency Coolant Recirculation). Given the following:

- FWST level is 55%
- Subcooling is +7°F.

What actions, if any, are taken per EP/1/A/5000/ECA-1.1 to ensure the NV pumps maintain adequate suction until cold leg recirculation capability is restored?

A. Terminate safety injection and establish normal charging from the VCT.

B. Remove power from 1NI-184B (ND Pump 1B Cont Sump Suct) and 1NI-185A (ND Pump 1A Cont Sump Suct)

C. Use "DEFEAT" buttons for "C-LEG RECIR FWST TO CONT SUMP SWAP TRN A" and "C-LEG RECIR FWST TO CONT SUMP SWAP TRN B"

D. None, a swap to the containment sump is blocked when sump level is less than 3.3 feet

General Discussion

With FWST level at 55%, an attempt to swap hs not been made (37%).

Answer A Discussion

This can be done if Subcooling is > 50 degrees. Normal S/I termination criteria is subcooling >0 degrees. Swap to VCT is done in this procedure in that case.

Answer B Discussion

This is an action that could be done to prevent these valves from opening and is done when it is trying to open them manually.

Answer C Discussion

CORRECT

Answer D Discussion

The procedure mentions sump levels being both > 2.5 feet and > 3.3 feet in several locations. The basis is to check for adequate suction source, but there are no actual interlocks to prevent the swapover at 37%.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
ECA 1.1	

QuestionBank #	KA_system	KA_number
523	WE11	EK2.1

KA_desc
Knowledge of the interrelations between the (Loss of Emergency Coolant Recirculation) and the following: (CFR: 41.7 / 45.7)□Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

401-9 Comments:

W/E11EK2.1 Question appears to match K/A. Are the defeat buttons in distractor C labeled correctly?
Otherwise question appears to be SAT.
NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 18

C

QuestionBank #	KA_system	KA_number
524	WE12	EK1.3

KA_desc
Knowledge of the operational implications of the following concepts as they apply to the (Uncontrolled Depressurization of all Steam Generators) (CFR: 41.8 / 41.10 / 45.3)□Annunciators and conditions indicating signals, and remedial actions associated with the (Uncontrolled Depressurization of all Steam Generators).

The crew entered EP/1/A/5000/ECA-2.1 (Uncontrolled Depressurization of All Steam Generators) following a unit trip. Given the following:

- Attempts to close any MSIV using its individual valve control board pushbutton have failed.
- Safety Injection has not been reset.
- 1AD-03, C/5 "SM ISOL TRN A" - LIT
- 1AD-03, D/5 "SM ISOL TRN B" – LIT
- 1AD-03, E/5 "SM ISOL VLVS NOT FULLY OPEN" - DARK

1. What additional action is taken per this procedure to attempt to close any MSIV?
2. If an MSIV can be closed, what plant parameter is monitored to determine when this procedure can be exited?

A. 1. Maintenance is dispatched to isolate air to the MSIVs
   2. NC loop T-hots

B. 1. Both trains of Main Steam Isolation are manually initiated
   2. NC loop T-hots

C. 1. Maintenance is dispatched to isolate air to the MSIVs
   2. S/G pressure

D. 1. Both trains of Main Steam Isolation are manually initiated
   2. S/G pressure

C

General Discussion

To exit, one steam generator presure must be increasing and S/I termination must not be in progress per ECA 2-1. NC Thots are monitored for other reasons in this procedure and they will increase once the MSIV is closed, but Enclsoure one specifies S/G Pressure. SM ISOL pushbuttons are depressed due to failed auto actions most likely during E-0 in this scenario, but ECA-2.1 does not redo this action. It sends MAINT to isolate VI to the valves locally.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
EP/1/A/5000/ECA-2.1	

QuestionBank #	KA_system	KA_number
524	WE12	EK1.3

KA_desc
Knowledge of the operational implications of the following concepts as they apply to the (Uncontrolled Depressurization of all Steam Generators) (CFR: 41.8 / 41.10 / 45.3)□Annunciators and conditions indicating signals, and remedial actions associated with the (Uncontrolled Depressurization of all Steam Generators).

401-9 Comments:

W/E12EK1.3 Question Kind of matches K/A. Is an annunciator received when the MSIVs are closed or a MSLI is received? Using one of these indications would match the K/A better. NEW

401-9 Comments RESPONSE

D

QuestionBank #	KA_system	KA_number
525	APE001	AA1.06

KA_desc
Ability to operate and / or monitor the following as they apply to the Continuous Rod Withdrawal : (CFR 41.7 / 45.5 / 45.6)□Rod transfer switches .....

Given the following events and conditions on Unit 1:

- NC system is at full temperature and pressure.
- "A" Shutdown Bank control rods are fully withdrawn.
- CRD BANK SELECT switch is in the "SBB" position.
- The OATC is withdrawing "B" Shutdown Bank control rods with the current bank position at 64 steps withdrawn.
- The OATC releases the ROD MOTION switch but "B" Shutdown Bank control rods continue to withdraw.

1. What is the current plant Mode of Operation?
2. Which of the following describes the first required action(s) for this situation per AP/1/A/5500/015 (Rod Control Malfunction)?

A. 1. Mode 2
   2. Immediately trip the reactor.

B. 1. Mode 3
   2. Immediately trip the reactor.

C. 1. Mode 2
   2. Immediately place CRD BANK SELECT switch IN MANUAL; if rods continue to move then trip the reactor.

D. 1 Mode 3
   2. Immediately place CRD BANK SELECT switch IN MANUAL; if rods continue to move then trip the reactor.

General Discussion

Per IRE lesson: '3.□Allows individual banks to be moved in bank select positions. No prescribed sequencing exists and Bank Overlap is defeated.' Immed action for AP/15.

Mode 2 occurs when the first CONTROL BANK begins withdrawal. Plant is currently in Mode 3

Answer A Discussion

wrong mode, wrong action

Answer B Discussion

wrong action , right mode

Answer C Discussion

right action, wrong mode

Answer D Discussion

CORRECT

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
AP/15 IRE	

QuestionBank #	KA_system	KA_number
525	APE001	AA1.06

KA_desc
Ability to operate and / or monitor the following as they apply to the Continuous Rod Withdrawal : (CFR 41.7 / 45.5 / 45.6)□Rod transfer switches .....

401-9 Comments:

001AA1.06 Question does not really meet the K/A, however it is a good attempt, and the switch involved does transfer some control of the rods. The stem should state IAW whatever procedure is applicable for example IAW AP-15.
NEW

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
526	APE005	2.4.6

KA_desc
APE005 GENERIC□Knowledge of EOP mitigation strategies. (CFR: 41.10 / 43.5 / 45.13)

Unit 1 was operating at 100% power with Control Rod Bank D at 216 steps withdrawn on DRPI when an OTDT runback occurred for approximately 30 seconds and cleared.

When conditions stabilized, the following indications were noted:

- Control Rod Bank D demand counters are indicating 190 steps.
- Control Rod Bank D rod D4 indicates 216 steps withdrawn on DRPI.
- All other Control Rod Bank D rods indicate 188 steps withdrawn on DRPI.

1. What is the first immediate action of the Abnormal Procedure that will address this issue?
2. What are the modes of applicability for the corresponding Technical Specification?

A. 1. Verify only one rod – MISALIGNED.
   2. MODE 1, MODE 2 with $k_{eff} \geq 1.0$

B. 1. Verify only one rod – MISALIGNED.
   2. MODE 1, MODE 2

C. 1. Ensure "CRD BANK SELECT" switch – IN MANUAL.
   2. MODE 1, MODE 2 with $k_{eff} \geq 1.0$

D. 1. Ensure "CRD BANK SELECT" switch – IN MANUAL.
   2. MODE 1, MODE 2

General Discussion

One CR is misaligned by >24 asteps. And AP/14 would be appropriate for this situation. CRD bank select to manual is not an immedaite action but is the next action of this AP. It IS an immediate action of AP/15 for continuous rod movement. Tech spec 3.1.4 applied for Rod Group alignment Limits. 3.1.6 does not apply because the control rods are above insertion limits.

Answer A Discussion

wrong TS applicability

Answer B Discussion

CORRECT

Answer C Discussion

Both wrong (for psychometric balance.)

Answer D Discussion

Wrong action

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
TS 3.1.6 AP/14 AP/15 TS3.1.4	

QuestionBank #	KA_system	KA_number
526	APE005	2.4.6

KA_desc
APE005 GENERIC□Knowledge of EOP mitigation strategies. (CFR: 41.10 / 43.5 / 45.13)

401-9 Comments:

005AG2.4.6 Based on a previous discussion AP actions were determined to be acceptable to satisfy this K/A. Is there any occurrence of Mode 2 with Keff ≥ 1.0? If not this may not be acceptable. Will Discuss.
NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 21

C

QuestionBank #	KA_system	KA_number
527	APE024	AK1.04

KA_desc
Knowledge of the operational implications of the following concepts as they apply to Emergency Boration: (CFR 41.8 / 41.10 / 45.3)□Low temperature limits for born concentration . . . . .

Given the following:

- Unit 1 is in Mode 5
- BAT temperature is 60° F.
- FWST temperature is 70° F.

Assuming any required pumps are operable, which one of the following correctly states a combination of equipment which will satisfy the requirements of SLC 16.9-7 Boration System Flowpaths – Shutdown?

A. BAT to NV Pump

B. FWST to NI Pump via 2 cold leg lines

C. FWST to NV Pump

D. FWST to ND Pump via 2 cold leg lines

C

General Discussion

Bat is inoperable due to <65 deg F. FWST is operable.
NI Pump requires 4 flow paths not 2
ND can only be used in Mode 6.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
TS 3.9.4 SLC 16.9-7 SLC 16.9-11	

QuestionBank #	KA_system	KA_number
527	APE024	AK1.04

KA_desc
Knowledge of the operational implications of the following concepts as they apply to Emergency Boration: (CFR 41.8 / 41.10 / 45.3)□Low temperature limits for born concentration . . . . .

401-9 Comments:

O24AK1.04 Question appears to match K/A. SAT
NEW

401-9 Comments RESPONSE

A

QuestionBank #	KA_system	KA_number
528	APE033	AK1.01

KA_desc
Knowledge of the operational implications of the following concepts as they apply to Loss of Intermediate Range Nuclear Instrumentation: CFR 41.8 / 41.10 / 45.3)□Effects of voltage changes on performance .....

Given the following conditions and sequence of events:

- During the last calibration of N-35, an IAE technician improperly adjusted the compensating voltage to a value slightly lower than required by procedure.
- N-36 failed 3 hours ago, the crew entered AP/1/A/5500/016 (Malfunction of Nuclear Instrumentation), Case III (Intermediate Range Malfunction).
- All actions required by AP/1/A/5500/016 have been completed.
- A feedwater transient occurs resulting in a reactor trip.

How does this adjustment error affect the reading on N-35 and how will this condition affect when the source range instruments automatically energize?

A. N-35 will indicate higher than the actual value.
The source ranges instruments will energize at a lower actual neutron flux.

B. N-35 will indicate higher than the actual value.
The source ranges instruments will energize at the same actual neutron flux.

C. N-35 will indicate lower than the actual value.
The source ranges instruments will energize at the same actual neutron flux.

D. N-35 will indicate lower than the actual value.
The source ranges instruments will energize at a higher actual neutron flux.

General Discussion

2/2 IR instruments are required to clear P-6 and automatically energize the SR instruments. Compensating voltage set too low will cause IR indication to be higher than actual flux level, delaying automatic energizing of the SR. > P-10 removed SR voltage. If this is confuzed and student thinks that <p-10 will energize SR and with one IR already failed low, then "at the same time" is plausible.

Answer A Discussion

Answer B Discussion

N35 indication is correct

Answer C Discussion

Psychometric balance

Answer D Discussion

SR will energize at a lower value N35 will indicate higher. This would be corect if voltage was set higher

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
AP/1/A/5500/016 ENB	

QuestionBank #	KA_system	KA_number
528	APE033	AK1.01

KA_desc
Knowledge of the operational implications of the following concepts as they apply to Loss of Intermediate Range Nuclear Instrumentation: CFR 41.8 / 41.10 / 45.3)□Effects of voltage changes on performance .....

401-9 Comments:

033AK1.01 Question appears to match K/A. SAT
NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 23

D

QuestionBank #	KA_system	KA_number
529	APE037	AA2.03

KA_desc
Ability to determine and interpret the following as they apply to the Steam Generator Tube Leak: (CFR: 43.5 / 45.13)□That the expected indication on main steam lines from the S/Gs should show increasing radiation levels .....

Given the following:

- Unit 1 is operating with a known 0.6 GPD S/G tube leak
- 1A CF pump tripped and results in a plant runback.
- The crew has stabilized the plant at the runback target per AP/1/A/5500/003 (Load Rejection)
- The transient has caused the tube leak to increase to 12 GPD.

Which one of the following indications will provide the best indication (most sensitive and timely) that the S/G tube leak has increased?

A. Observing 1EMF-26, 27, 28 and 29 (Steamline 1A – 1D)

B. Comparing S/G feed flow to steam flow mismatch

C. Observing 1EMF-33 (Condenser Air Ejector Exhaust)

D. Observing 1EMF-71, 72, 73, 74 (S/G A-D leakage)

General Discussion

Bank Question: 605.1 normally, EMF-71-74 are the most sensitive monitors. But these monitors detect N16 □ radiation that has a high energy (7 MeV) □ that only is generated when the reactor is operating at power (requires a neutron flux).

Answer A Discussion

This would be true at low power level or in mode 3 where N16 is not present or at low concentrations

Answer B Discussion

Incorrect: Not a sensitive method of comparison – requires large gpm leak rates before this is noticeable.
Plausible: This method will show gross SGTRs

Answer C Discussion

This EMF is not as senstive as the Stm line EMFs, also the Steam line EMF see the radiation first.

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	MODIFIED	2003 NRC Q32 (Bank 232)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
SM lesson NSD513	

QuestionBank #	KA_system	KA_number
529	APE037	AA2.03

KA_desc
Ability to determine and interpret the following as they apply to the Steam Generator Tube Leak: (CFR: 43.5 / 45.13)□That the expected indication on main steam lines from the S/Gs should show increasing radiation levels .....

401-9 Comments:

037AA2.03 Question appears to match K/A. Need to add a specific power level for the Unit. 60% or so, some one could make the assumption that power had been reduced to a level where the N-16 monitors may not be the first indication. Otherwise SAT.
Modified from a 2003 NRC exam.

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 24

D

QuestionBank #	KA_system	KA_number
530	EPE074	EA1.01

KA_desc
Ability to operate and monitor the following as they apply to a Inadequate Core Cooling: (CFR 41.7 / 45.5 / 45.6)□RCS water inventory .....

S/G depressurization to atmospheric pressure has been performed in EP/1/A/5000/FR-C.1 (Response to Inadequate Core Cooling).

1. What are the NC temperature and RVLIS level limits that allow the crew to transition out of this procedure?
2. Why are these conditions more restrictive than earlier transition conditions?

A. 1. Two NC Thots less than 328 deg F, RVLIS level greater than 41%
   2. To ensure a hard bubble does <u>not</u> block natural circulation flow

B. 1. Two NC Thots less than 328 deg F, RVLIS level greater than 41%
   2. Due to the NC system being depressurized

C. 1. Two NC Thots less than 350 deg F, RVLIS level greater than 61%
   2. To ensure a hard bubble does <u>not</u> block natural circulation flow

D. 1. Two NC Thots less than 350 deg F, RVLIS level greater than 61%
   2. Due to the NC system being depressurized

D

General Discussion

350 and 61 are correct and NC depressurized is correct. 328 and hard bubble are both from S/G depress for CLA to prevent N2 injection. 41% is the entry requirement and earlier kickout requirement.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
F-0 FR-C.1 and basis	

QuestionBank #	KA_system	KA_number
530	EPE074	EA1.01

KA_desc
Ability to operate and monitor the following as they apply to a Inadequate Core Cooling: (CFR 41.7 / 45.5 / 45.6)□RCS water inventory .....

401-9 Comments:

074EA1.01 Question kind of matches K/A. Change #2. to read: Why are these conditions more restrictive than earlier transition conditions
Otherwise SAT. (Is this RO knowledge?)
NEW

401-9 Comments RESPONSE

C

QuestionBank #	KA_system	KA_number
531	APE036	AK3.03

KA_desc
Knowledge of the reasons for the following responses as they apply to the Fuel Handling Incidents: (CFR 41.5,41.10 / 45.6 / 45.13)□Guidance contained in EOP for fuel handling incident .....

Unit 1 was conducting refueling operations in mode 6. Given the following events and conditions:

- The containment purge (VP) system is in operation in the REFUEL mode.
- Both trains of SSPS are in "TEST".
- The refueling crew dropped a fuel assembly into the refueling cavity.
- 1RAD-1 A/2 "1EMF-39 CONTAINMENT GAS HI RAD" - LIT
- 1RAD-3 D/2 "1EMF-17 REACTOR BLDG REFUEL BRIDGE" - LIT
- The crew has implemented AP/1/A/5500/025 (Damaged Spent Fuel).

1. Based on the above conditions, what was the status of the VP system when AP/1/A/5500/025 was entered?
2. What is the reason for establishing closure prior to VP being secured?

A. 1. The VP system was running
   2. To prevent an unmonitored release

B. 1. The VP system was running
   2. To prevent an excessive negative pressure in containment

C. 1. The VP system has tripped
   2. To prevent an unmonitored release

D. 1. The VP system has tripped
   2. To prevent an excessive negative pressure in containment

General Discussion

THIS WAS A REPLACEMENT KA

EMF39 secures VP using 2 separate signals one thru SSPS (Sh) and one directly from the EMF. With both trains of SSPS in test, the Sh will not work, however VP will be secured by EMF 39 directly. The status of VP is checked per AP25.

Answer A Discussion

correct reason, wrong status

Answer B Discussion

both parts wrong Psychometric balance

Answer C Discussion

CORRECT

Answer D Discussion

wrong reason , corret status

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	MODIFIED	2004 NRC Q86 (Bank 386)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
AP/25 VQ CNT VP	

QuestionBank #	KA_system	KA_number
531	APE036	AK3.03

KA_desc
Knowledge of the reasons for the following responses as they apply to the Fuel Handling Incidents: (CFR 41.5,41.10 / 45.6 / 45.13)□Guidance contained in EOP for fuel handling incident .....

401-9 Comments:

036AK3.03 Question does not match K/A. The K/A asks for reasons, none are included in the question.
Modified from 2004 NRC exam.

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 26

B

QuestionBank #	KA_system	KA_number
532	WE03	EK2.1

KA_desc
Knowledge of the interrelations between the (LOCA Cooldown and Depressurization) and the following: (CFR: 41.7 / 45.7)□Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Unit 1 was operating at 100% power when a small break LOCA occurred. Given the following events and conditions:

- Cooldown and depressurization is in progress in ES-1.2 (Post Cooldown and Depressurization)
- NC system pressure has stabilized at 410 psig
- NC temperature has stabilized at 325°F
- FWST level is 70% and slowly decreasing
- The operators attempt to place 1A ND train in the RHR mode
- 1ND-1B and 1ND-2A (ND Pump 1A Suct from Loop B) will <u>not</u> open

Which one of the following statements correctly describes why 1ND-1B and 1ND-2A will not open?

A. ECCS has not been reset

B. The NC system pressure is too high

C. 1NI-147B (NI Pumps Recirc to FWST Isol) is open

D. 1NI-185A (ND pump 1A Suct from CNMT Sump) is closed

B

General Discussion

Bank Question: 1167

Answer A Discussion

Incorrect: ECCS does not have to be reset for 1ND-1B and 1ND 2A to open
Plausible: Resetting ECCS is usually done as an operational matter before starting an ND train in RHR mode.

Answer B Discussion

Correct: If NC system pressure is > 385 psig, these valves will not open

Answer C Discussion

Incorrect: This is not a valve interlock with 1ND-1B and 1ND-2A
Plausible: 1NI-147B being open is a valve interlock for ND-28A and NI-136B – if the candidate confuses the valve interlocks.

Answer D Discussion

Incorrect: NI-185A being closed will not prevent 1ND-1B and 1ND-2A from opening – the closed position makes up the interlock.
Plausible: Reverse logic - If 1NI-185A were open, it would prevent 1ND-1B and 1ND-2A from opening

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	2004 NRC Q50 (Bank 350)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
PS-ND 9 NSD3.1.30 ND pages 8, 13	

QuestionBank #	KA_system	KA_number
532	WE03	EK2.1

KA_desc
Knowledge of the interrelations between the (LOCA Cooldown and Depressurization) and the following: (CFR: 41.7 / 45.7)□Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

401-9 Comments:

WE03EK2.1 Question appears to match K/A. Need to add RCS temperature. Used on the 2004 NRC exam under K/A 005K4.02 BANK

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
533	WE09	EK3.3

KA_desc
Knowledge of the reasons for the following responses as they apply to the (Natural Circulation Operations) (CFR: 41.5 / 41.10, 45.6, 45.13)□Manipulation of controls required to obtain desired operating results during abnormal, and emergency situations.

Given the following conditions and sequence of events:

- One hour ago, a fault in the Unit 1 main generator resulted in a complete loss of offsite power.
- The crew entered EP/1/A/5000/ES-0.2 (Natural Circulation Cooldown).
- The OSM determined that a transition to EP/1/A/5000/ES-0.3 (Natural Circulation Cooldown With Steam Void in Vessel) was required.
- The crew has transitioned to ES-0.3 and is preparing to depressurize the NC system.

1. What condition would require stopping the depressurization of the NC system during this cooldown?
2. What is the basis for stopping the depressurization?

A. 1. PZR Level greater than 70%
   2. To prevent loss of natural circulation

B. 1. RVLIS level less than 73%
   2. To prevent loss of natural circulation

C. 1. PZR Level greater than 70%
   2. To ensure normal pressurizer pressure control response

D. 1. RVLIS level less than 73%
   2. To ensure normal pressurizer pressure control response

B

General Discussion

70% is the PZR Hi Level Alarm. The actual value is 90%. Thee reason is to prevent a los of natural circulation.

Answer A Discussion

Wrong level right reason

Answer B Discussion

CORRECT

Answer C Discussion

Both Wrong

Answer D Discussion

wrong reason

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	MODIFIED	2006R NRC Q65 (Bank 142)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
ES-0.3 SM	

QuestionBank #	KA_system	KA_number
533	WE09	EK3.3

KA_desc
Knowledge of the reasons for the following responses as they apply to the (Natural Circulation Operations) (CFR: 41.5 / 41.10, 45.6, 45.13)□Manipulation of controls required to obtain desired operating results during abnormal, and emergency situations.

401-9 Comments:

WE09EK3.3 Question does not meet K/A. The K/A asks for reasons.
Why do they stop depressurization when RVLIS is less than 73%? From 2006 NRC exam. Modified

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 28

D

QuestionBank #	KA_system	KA_number
534	SYS003	A2.02

KA_desc
Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5/ 45.3 / 45/13)□Conditions which exist for an abnormal shutdown of an RCP in comparison to a normal shutdown of an RCP .....

Unit 1 is in the process of performing a reactor startup. Given the following conditions and sequence of events:

- Control Bank "A" is at 28 steps withdrawn
- 1AD-6, A/5 "NCP HI VIBRATION" - LIT
- 1AD-6, B/5 "NCP HI-HI VIBRATION" - LIT
- The BOP validates that the 1C NC Pump vibration level on the frame is at 6.5 mils using the NC Pump vibration monitor panel.

Which one of the following selections is the list of the correct actions based on this situation?

A. Trip 1C NC Pump.
Go to AP/1/A/5500/004 (Loss of Reactor Coolant Pump).

B. Reinsert Control Bank "A" rods.
Trip 1C NC Pump.
Go to AP/1/A/5500/004 (Loss of Reactor Coolant Pump).

C. Pump trip criteria is not yet met.
Go To AP/1/A/5500/008 (Reactor Coolant Pump Malfunction).

D. Trip the reactor.
Trip 1C NC Pump.
Go to EP/1/A/5000/E-0 (Reactor Trip or Safety Injection).

General Discussion

The correct action is to trip the reactor (based on being in Mode 2), trip the reactor coolant pump, and enter E-0 due to the reactor trip.

Answer A Discussion

Incorrect: With the plant in mode 2, E-0 is the correct procedure.

Answer B Discussion

Plausible: This would be correct response in Mode 3 with all control banks in.

Answer C Discussion

Incorrect: The pump trip criteria is > 5 mils on the frame.
Plausible: If trip criteria were not met, this would be the correct response.

Answer D Discussion

Correct:

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	2004 NRC Q64 (Bank 364) Bank Question: 1183

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
PS-NCP 12 OP/1/B/6100/01G 1AD-6 B/5	

QuestionBank #	KA_system	KA_number
534	SYS003	A2.02

KA_desc

Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5/ 45.3 / 45/13)□Conditions which exist for an abnormal shutdown of an RCP in comparison to a normal shutdown of an RCP .....

401-9 Comments:

003A2.02 Question appears to match K/A. Very similar to question # 86 (SRO). The only difference is the initiating event. What procedure directs these actions? It seems to me that there is not a correct answer. AP-4 does direct the actions listed in choice C, but you would have to go to the procedure to perform them. Question symmetry does not look right. One of these needs to be changed. 2004 NRC exam BANK

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 29

B

QuestionBank #	KA_system	KA_number
535	SYS004	A1.01

KA_desc
Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CVCS controls including: (CFR: 41.5 / 45.5)□Activity levels in primary system .....

Unit 1 is at 75% power and decreasing in preparation for entering a refueling outage. Given the following conditions and sequence of events:

- There is confirmed failed fuel on Unit 1.
- 1AD-07, F/3 "LETDN HX OUTLET HI TEMP" - LIT
- The BOP notes that letdown temperature has trended to 132°F and appears to have stabilized.

1. What minimum actions are required to reduce activity level per AP/1/A/5500/018 (High Activity in Reactor Coolant)?
2. What is the applicability of Tech Spec 3.4.16 (RCS Specific Activity)?

A. 1. Ensure at least one mixed bed demineralizer in service only.
   2. Modes 1, 2, and 3.

B. 1. Ensure at least one mixed bed demineralizer in service only.
   2. Modes 1 and 2, Mode 3 with Tavg ≥ 500°F.

C. 1. Reduce letdown temperature to clear the alarm and then place additional demineralizers in service.
   2. Modes 1, 2, and 3.

D. 1. Reduce letdown temperature to clear the alarm and then place additional demineralizers in service.
   2. Modes 1 and 2, Mode 3 with Tavg ≥ 500°F.

General Discussion

1NV153A diverts to VCT (bypasses Demins) at 136 degrees. The alarm comes in at 128 degrees.
Placing additional demins in service could provide additional cleanup. Letdown does not need to have temeprature reduced, demins are still in service (but will isolate as 136F or greater)

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
OP/1/B/6100/010H NV lesson TS 3.4.16	

QuestionBank #	KA_system	KA_number
535	SYS004	A1.01

KA_desc

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CVCS controls including: (CFR: 41.5 / 45.5)□Activity levels in primary system .....

401-9 Comments:

004A1.01 Question does not appear to match K/A, unless you are implying that the increase in letdown heat exchanger temperature is due to the increase activity in the RCS. (I do not believe that this would cause temperature to rise). The K/A is looking for the ability to predict and or monitor changes in parameters to prevent exceeding design limits associated with operating CVCS controls including activity levels in the primary system. It would be more in line with the K/A to state that

401-9 Comments RESPONSE

C

QuestionBank #	KA_system	KA_number
536	SYS004	K1.34

KA_desc
Knowledge of the physical connections and/or cause-effect relationships between the CVCS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)□Interface between CVCS and reactor coolant drain tank; and PZR PCS ....

Unit 1 is operating at 100%. Given the following initial conditions and sequence of events:

- Excess letdown is in service to the VCT to repair a leak on the letdown line.
- A PZR pressure channel failure causes 1NC-32B (PZR PORV) and 1NC-36B (PZR PORV) to open.
- 1NC-36B does not re-close and the BOP closed its isolation valve.
- Minimum NC pressure reached during the event was 1820 psig.
- Current NC pressure is 2145 psig and increasing.

Assuming no operator actions other than isolating 1NC-36B:

1. What tank other than the VCT can excess letdown be directed to by 1NV-125B (Excess Letdn Hx Otlt Ctrl)?
2. Is excess letdown currently flowing to the VCT?

A. PRT; no

B. PRT; yes

C. NCDT; no

D. NCDT; yes

General Discussion

The tanks that can receive input from 1NV-125B are the VCT and the NCDT. Excess letdown cannot be aligned to the PRT, however, the PORVs in the stem will discharge to the PRT and the seal return (downstream of excess L/D) goes to the PRT. The pressure drop stated in the stem results in a safety injection. Excess letdown (1NV-124B) does not isolate on an SI signal however normal letdown does. The seal return isolations close on an St signal but if they think that it is an Sp singla then it would be flowing to the VCT still.

Answer A Discussion

Wrong tank, correct status.

Answer B Discussion

Wrong tank, and status (balance)

Answer C Discussion

Correct

Answer D Discussion

Correct tank, wrong status

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
AP/10 NV	

QuestionBank #	KA_system	KA_number
536	SYS004	K1.34

KA_desc
Knowledge of the physical connections and/or cause-effect relationships between the CVCS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)□Interface between CVCS and reactor coolant drain tank; and PZR PCS ....

401-9 Comments:

004K1.34 Question appears to match K/A. Need to place in the stem Excess letdown is in service and aligned to the VCT, or someone could make the assumption that excess letdown was aligned to the NCDT to begin with. Otherwise okay.
NEW

401-9 Comments RESPONSE

D

QuestionBank #	KA_system	KA_number
537	SYS005	K4.11

KA_desc
Knowledge of RHRS design feature(s) and/or interlock(s) which provide or the following : (CFR: 41.7)□Lineup for low head recirculation mode (external and internal) .....

1ND-1B (ND Pump 1A Suct Frm Loop B) and 1ND-37A (ND Pump 1B Suct Frm Loop C) have been aligned to their alternate power supplies.

1. What impact (if any) will aligning the alternate power supply have on the interlocks associated with these valves?
2. How are these valves positioned electrically in the current alignment?

A.
1. Interlocks operate normally
2. From the main control boards

B.
1. Interlocks operate normally
2. From the face of alternate MCC breaker

C.
1. Interlocks are removed
2. From the main control boards

D.
1. Interlocks are removed
2. From the face of alternate MCC breaker

General Discussion

On alt power all interlocks are bypassed. The reason is to allow ND to be aligned on a loss of one train of power. SSF power swaps are completed for items just not ND. Interlocks are normal and would be desired but not available

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
ND lesson	

QuestionBank #	KA_system	KA_number
537	SYS005	K4.11

KA_desc
Knowledge of RHRS design feature(s) and/or interlock(s) which provide or the following : (CFR: 41.7)□Lineup for low head recirculation mode (external and internal) .....

401-9 Comments:

005K4.11 Question appears to match K/A. SAT this is a fundamental level question.
NEW

401-9 Comments RESPONSE

C

QuestionBank #	KA_system	KA_number
538	SYS006	A1.05

KA_desc
Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ECCS controls including: (CFR: 41.5 / 45.5)□CCW flow (establish flow to RHR heat exchanger prior to placing in service .....

At 1200, Unit 1 was addressing an NC system leak per AP/1/A/5500/010 (Reactor Coolant Leak) when the leak began to increase. Given the following:

Time	1200	1206	1212	1218	1224
NC system pressure (psig)	2130	1950	5	5	5
Containment pressure (psig)	0.5	1.3	2.8	4.2	2.5
FWST level (%)	98	97	80	60	35

What is the earliest time that KC flow is automatically aligned to the ND heat exchangers?

A. 1206

B. 1212

C. 1218

D. 1224

General Discussion

KC aligns to the ND Hx on an Sp signal (3 psig in cont) or on an Ss signal with lo lol fwst level (37%)

Answer A Discussion

An Ss signal is present but FWST level is too high to align KC

Answer B Discussion

An Ss signal occurs on NCS pressure. If student doesn not recognize Ss has already occurred on Cont pressure, this answer is plausible.

Answer C Discussion

Answer D Discussion

Ss with LoLo FWST is present, but KC was aligned on the SP at 1218.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
KC lesson	

QuestionBank #	KA_system	KA_number
538	SYS006	A1.05

KA_desc
Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ECCS controls including: (CFR: 41.5 / 45.5)□CCW flow (establish flow to RHR heat exchanger prior to placing in service .....

401-9 Comments:

006A1.05Question appears to match K/A. Please add automatically to the stem. "What is the earliest time that KC flow is automatically aligned to the ND heat exchanger?" NEW

401-9 Comments RESPONSE

D

QuestionBank #	KA_system	KA_number
539	SYS007	2.4.6

KA_desc
SYS007 GENERIC□Knowledge of EOP mitigation strategies. (CFR: 41.10 / 43.5 / 45.13)

The crew is performing actions of AP/1/A/5500/010 (Reactor Coolant Leak) due to an increase in charging flow required to maintain pressurizer level.

You have just completed an evaluation of PRT conditions and noted the following:

- PRT pressure is 12 psig and slowly increasing
- PRT temperature is 140°F and slowly increasing

The CRS directs you to monitor inputs to the PRT per Enclosure 13 (Possible NC System Leakage Paths to PRT).

Assuming a single valve is leaking by its seat, which valve could have caused the noted PRT indications?

A. 1NC-5 (Loop A Lo Point Drn)

B. 1NC-250A (Rx Head Vent Block)

C. 1NC-25A (Rx Head Gasket Leakoff Isol)

D. 1NV-87 (NC Pumps Seal Return Hdr Inside Relief)

D

General Discussion

Answer A Discussion

This goes to the NCDT and is monitored per Enclsoure 12

Answer B Discussion

This goes to the PRT, however, another valve would have to leak by to compelte a flowpath.

Answer C Discussion

This goes to the NCDT and is monitored per Enclsoure 12

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
AP/10	

QuestionBank #	KA_system	KA_number
539	SYS007	2.4.6

KA_desc
SYS007 GENERIC□Knowledge of EOP mitigation strategies. (CFR: 41.10 / 43.5 / 45.13)

401-9 Comments:

007G2.4.6 Question Does not match K/A. The K/A system is Pressurizer Relief Tank and how EOP mitigating strategies relate. This question is an H.1 question describing what constitutes a bleed and feed.
NEW

401-9 Comments RESPONSE

A

QuestionBank #	KA_system	KA_number
540	SYS008	K3.03

KA_desc
Knowledge of the effect that a loss or malfunction of the CCWS will have on the following:□RCP .....

Unit 1 is in Mode 3 with all shutdown banks withdrawn in preparation for startup when the following occur:

- 1AD-6 E/3 "NCP THERMAL BARRIER KC OUTLET HI/LO FLOW" - LIT
- OAC indicates KC flow to NCP 1C Thermal Barrier HX is 75 gpm.

What effects will this have on NCP 1C and what action should be taken to address the alarm?

A. NCP 1C seal cooling is being maintained. Verify 1KC-345A (NC Pump 1C Therm Bar Otlt) closes after a 30 second time delay.

B. NCP 1C seal cooling is being maintained. Verify 1KC-345A (NC Pump 1C Therm Bar Otlt) closes immediately.

C. All seal cooling to NCP 1C is lost. Open the #1 seal bypass valve to restore seal cooling.

D. All seal cooling to NCP 1C is lost. Secure NCP 1C to prevent further seal damage.

General Discussion

The normal flow to the KC thermal barrier is 40 gpm per NCP. The high flow alarm is set at 60 gpm per NCP.

Answer A Discussion

Correct: NCP seal cooling is being maintained by NV. 1KC-345A closes after a 30 second time delay.

Answer B Discussion

Incorrect: 1KC-345A does not close immediately.
Plausible: This would be correct except the valve closes after a 30 second delay

Answer C Discussion

Incorrect: All seal cooling is not lost. The seal bypass valve is on a common line from all 4 NCPs – not just the 1C NCP.
Plausible: If he thinks that seal cooling is lost, opening the seal bypass valve would enhance seal cooling to the NCP.

Answer D Discussion

Incorrect: This would be correct if all seal cooling is lost in this mode.
Plausible: If the candidate does not understand that seal cooling is supplied by the NV with this alarm.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	2004 NRC Q53 (Bank 353) Bank Question: 1170

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References

References:
1. OP-CN-PSS-KC page 12
2. OP-CN-PS-NCP pages 15-19

Student References Provided

QuestionBank #	KA_system	KA_number
540	SYS008	K3.03

KA_desc

Knowledge of the effect that a loss or malfunction of the CCWS will have on the following:□RCP .....

401-9 Comments:

008K3.03 Question appears to match the K/A. Change Distractor C to read … Open the #1 seal bypass valve to restore seal cooling. Change distractor D to read All seal cooling to NCP1C is lost. Secure NCP 1C to prevent further seal damage. SAT
2004 NRC exam.
BANK

401-9 Comments RESPONSE

A

QuestionBank #	KA_system	KA_number
541	SYS008	K4.09

KA_desc
Knowledge of CCWS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)□The "standby" feature for the CCW pumps .....

Unit 2 is in Mode 5 with alignment of the KC system for parallel operations per OP/1/A/6400/005 (Component Cooling System). Given the following conditions and events:

- 2A1, 2B1, and 2B2 KC Pumps are in service.
- Both 2ETA and 2ETB are aligned to Unit 1 offsite power
- An 86S relay actuates on 2ETB
- All systems respond appropriately in automatic.

Assuming no operator actions, which Unit 2 KC pumps are in service?

A. 2A1 KC pump only

B. 2A1 and 2A2 KC pumps only

C. 2A1, 2B1, and 2B2 KC pumps only

D. 2A1, 2A2, 2B1 and 2B2 KC pumps

General Discussion

REPLACEMENT K/A

An 86S relay causes 2ETB to lockout. The blackout signal will not be overridden by the blackout signal, however, a LOCA signal would override the 86S relay and attempt to load LOCA loads. Therefore neither B train pump will re-start. On a normal LOCA or LOOP, both trains of KC would actuate.

Answer A Discussion

CORRECT

Answer B Discussion

If the student thinks that either train B/O causes both trains to start (could be confused with RN which causes both units pumps to start on either unit LOCA or B/O) 2A2 will not start.

Answer C Discussion

If student thinks that the B/O signal will override the 86S relay. This would be correct if a B train only were to occur.

Answer D Discussion

If the student thinks that either train B/O causes both trains to start (could be confused with RN which causes both units pumps to start on either unit LOCA or B/O)

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	MODIFIED	2007 NRC Q36 (Bank 836)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided

QuestionBank #	KA_system	KA_number
541	SYS008	K4.09

KA_desc
Knowledge of CCWS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)□The "standby" feature for the CCW pumps .....

401-9 Comments:

008K4.09 Question appears to match the K/A. SAT
2007 NRC Exam Modified.

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
542	SYS010	2.1.25

KA_desc
SYS010 GENERIC□Ability to interpret reference materials, such as graphs, curves, tables, etc. (CFR: 41.10 / 43.5 / 45.12)

Given the following sequence of events and conditions:

- A pressurizer PORV opens spuriously and will not close
- 3 minutes after the PORV opens, the block valve is closed.
- NC pressure is 1500 psig
- NC temperature is 550 °F
- PRT pressure is 45 psig

What is the approximate pressurizer PORV tailpipe temperature?

Reference provided

A. 270 °F

B. 290 °F

C. 310 °F

D. 320 °F

General Discussion

Tailpipe temperature will be saturation temperature for PRT pressure which is 45psig or 60 psia (psia used for steam tables) On the Mollier diagram, go to the ~1500-psia point on the saturation line. Cross the constant enthalpy line (throttling is a constant enthalpy process) to the 60 psia line 45 psig + 15 psi atmospheric = 60 psia). Follow that line up to the saturation curve. The constant temperature line that ends at that point on the curve establishes the temperature of the fluid. The temperature is approximately 290□F. (292 is temp for 60psia)

Answer A Discussion

This temperature would be based on correct graph usage but with 45 instead of the correct 60 psia

Answer B Discussion

Answer C Discussion

this is the temperaure iif the student uses correct pressure but goes straight up the graph (constant entropy)

Answer D Discussion

his is the temperaure iif the student uses incorrect pressure and goes straight up the graph (constant entropy)

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References

Student References Provided
ASME Steam Tables

QuestionBank #	KA_system	KA_number
542	SYS010	2.1.25

KA_desc
SYS010 GENERIC□Ability to interpret reference materials, such as graphs, curves, tables, etc. (CFR: 41.10 / 43.5 / 45.12)

401-9 Comments:

010G2.1.25 Question appears to match the K/A. SAT NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 37

D

QuestionBank #	KA_system	KA_number
543	SYS012	A2.02

KA_desc
Ability to (a) predict the impacts of the following malfunctions or operations on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.5)□Loss of instrument power .....

Given the following conditions and sequence of events:

- Unit 1 was operating at 100% power.
- The crew has entered AP/1/A/5500/016 (Malfunction of Nuclear Instrumentation System) due to N-42 lower detector failing LOW
- IAE has not yet placed the required bistables in the trip condition per AP/1/A/5500/016.
- A complete loss of 1ERPD occurs

What procedure takes priority for these conditions?

A. Continue in AP/1/A/5500/016

B. Enter AP/1/A/5500/029 (Loss of Vital or Aux Control Power)

C. Enter AP/1/A/5500/003 (Load Rejection)

D. Enter EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)

General Discussion

With N-42 failed, OTDT picks up. Loss of a vital bus will cause that channels bistables to pick up (in general) including OTDT. This causes a 2/4 situation on the OTDT runback and reactor trip. Ran on simulator at BOL and EOL and confirmed that lower detector only failing low would cause OTDT bistable to switch state.

Answer A Discussion

This procedure will address the N42 failure but does not take priority.

Answer B Discussion

This procdure will address ERPD failure but does not take priority.

Answer C Discussion

There are 2/4 OTDT and if a reactor trip did not occur, a runback would.

Answer D Discussion

CORRECT.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
ENB lesson EPL lesson	

QuestionBank #	KA_system	KA_number
543	SYS012	A2.02

KA_desc

Ability to (a) predict the impacts of the following malfunctions or operations on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.5)□Loss of instrument power .....

401-9 Comments:

012A2.02 Question appears to match K/A. NEW
Will the OTDT bistables be in if just the lower detector on N-42 failed low? If not, and the bistables have not been placed in a tripped condition, the reactor may not trip, and C would be correct. Please explain.
NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 38

C

QuestionBank #	KA_system	KA_number
544	SYS012	K5.01

KA_desc
Knowledge of the operational implications of the following concepts as the apply to the RPS: (CFR: 41.5 / 45.7)□DNB .....

Which one of the following selections correctly matches the reactor trip signals to their limiting accident/protection?

	Reactor Trip Signal	Limiting Accident/Protection
A.	OPDT	DNB
	OTDT	Excessive fuel centerline temperature
	Pzr High Level	NC system integrity
	Pzr Low Pressure	DNB
B.	OPDT	Excessive fuel centerline temperature
	OTDT	DNB
	Pzr High Level	DNB
	Pzr Low Pressure	NC system integrity
C.	OPDT	Excessive fuel centerline temperature
	OTDT	DNB
	Pzr High Level	NC system integrity
	Pzr Low Pressure	DNB
D.	OPDT	NC System integrity
	OTDT	Excessive fuel centerline temperature
	Pzr High Level	DNB
	Pzr Low Pressure	DNB

C

General Discussion

Answer A Discussion

OPDT and OTDT are reversed

Answer B Discussion

pzr high and low pressure are reversed

Answer C Discussion

correct

Answer D Discussion

psychometric balance

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	2007 Audit Exam #2 Q39 (Bank 39)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
TS 3.3.1 and bases IPX	

QuestionBank #	KA_system	KA_number
544	SYS012	K5.01

KA_desc
Knowledge of the operational implications of the following concepts as the apply to the RPS: (CFR: 41.5 / 45.7)□DNB .....

401-9 Comments:

012K5.01 Question appears to match K/A. SAT BANK 2007 Audit Exam #2.

401-9 Comments RESPONSE

A

QuestionBank #	KA_system	KA_number
545	SYS013	K6.01

KA_desc
Knowledge of the effect of a loss or malfunction on the following will have on the ESFAS: (CFR: 41.7 / 45.5 to 45.8)□Sensors and detectors .....

Initial Conditions:

- Unit 1 was performing a heatup following a refueling outage
- NC Temperature was 400 °F
- NC pressure was 1600 psig
- "A" and "B" shutdown banks were withdrawn
- Containment Pressure Channel II failed high

Current Conditions:

- 1ERPD has lost power
- Containment pressure channels read:
  - Channel I: 0 psig
  - Channel II: +5 psig
  - Channel III: 0 psig
  - Channel IV: -5 psig

Which of the following statements explains the impact on the Engineered Safeguards Features (ESF) system and expected operator actions?

A. Only Train "A" safety injection actuates.
Implement AP/1/A/5500/005, Reactor Trip or Inadvertent S/I Below P-11.

B. Only Train "A" safety injection actuates.
Implement EP/1/A/5000/E-0, Reactor Trip or Safety Injection.

C. Train "A" and "B" safety injection actuates.
Implement AP/1/A/5500/005, Reactor Trip or Inadvertent S/I Below P-11.

D. Train "A" and "B" safety injection actuates.
Implement EP/1/A/5000/E-0, Reactor Trip or Safety Injection.

General Discussion

ESFAS information due to power failure: AP-29 Enclosure 17

Answer A Discussion

Correct

Answer B Discussion

Incorrect: Bistables for channels 2&4 are actuated and SSPS receives the input. Only A train actuates due to ERPD failure.

Answer C Discussion

Bistables for channels 2&4 are actuated and SSPS receives the input but only A train actuates.. Because the actuations were made in Mode 4, AP-05 is the correct mitigation procedure path.

Answer D Discussion

Since both trains of input bay receive any signal from the process cabinets, he may assume that 2 press ch would satisfy both SSPS output bays. E-0 is not used in M4, AP-05 transfers to E-0 only on valid indication of high cont press >200 F in the NCS.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	2005 NRC Q36 (Bank 440) SIMILAR

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
Lesson□OP-CN-ECCS-ISE Objectives□2 & 3 REFERENCES□AP/1/A/5500/029 Enclosure 17 (1ERPD load list) rev 013	

QuestionBank #	KA_system	KA_number
545	SYS013	K6.01

KA_desc
Knowledge of the effect of a loss or malfunction on the following will have on the ESFAS: (CFR: 41.7 / 45.5 to 45.8)□Sensors and detectors .....

401-9 Comments:

013K6.01 Question appears to match K/A. SAT. 2005 NRC Exam.
BANK

401-9 Comments RESPONSE

D

QuestionBank #	KA_system	KA_number
546	SYS022	K2.02

KA_desc
Knowledge of power supplies to the following: (CFR: 41.7)□Chillers .....

Which one of the following is the type of power supplied to the YV Chillers?

A. 600V unit power

B. 4160 V essential power

C. 4160 V blackout power

D. 6900 V unit power

General Discussion

Answer A Discussion

YV pumps

Answer B Discussion

YC chillers get 4160 power (essential)

Answer C Discussion

YC chillers get 4160 power (essential)

Answer D Discussion

Correct

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
RN lesson	

QuestionBank #	KA_system	KA_number
546	SYS022	K2.02

KA_desc
Knowledge of power supplies to the following: (CFR: 41.7)□Chillers .....

401-9 Comments:

022K2.02 Question does not meet K/A. All of the power supplies listed appears to be correct, and the answer is that there is not a swap. So what power supply to the chillers are we testing?
NEW

401-9 Comments RESPONSE

A

QuestionBank #	KA_system	KA_number
547	SYS025	A4.01

KA_desc
Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)□Ice condenser isolation valves .....

Given the following:

- 1AD-13, D/8 "GLYCOL EXPANSION TNK LO-LO LVL" - LIT
- BOP notes that the Unit 1 NF containment isolation valves have closed

Where does the bypass valve for pressure relief between the isolation valves relieve to and from what location may the Glycol Expansion Tank Lo-Lo Level interlock be bypassed?

A. Glycol Expansion Tank / local NF control panel

B. Glycol Expansion Tank / main control room

C. Glycol Mixing and Storage Tank / local NF control panel

D. Glycol Mixing and Storage Tank / main control room

General Discussion

Bypass will allow excess pressure from within the pentration to excape INTO containment but not anything out of containment. Interlock Bypass is a key switch on the local panel.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
NF lesson	

QuestionBank #	KA_system	KA_number
547	SYS025	A4.01

KA_desc
Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)□Ice condenser isolation valves .....

401-9 Comments:

025A4.01 Question appears to match K/A. Appears to be SAT.
NEW

401-9 Comments RESPONSE

C

QuestionBank #	KA_system	KA_number
548	SYS026	A1.03

KA_desc
Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CSS controls including: (CFR: 41.5 / 45.5)□Containment sump level .....

Given the following:

- A large break LOCA has occurred.
- Containment pressure is 3.2 psig and slowly decreasing.
- The crew has just transitioned to EP/1/A/5000/ES-1.3 (Transfer to Cold Leg Recirculation)

What is the minimum containment sump level that will support operation of all ECCS pumps and the NS pumps?

A. 0.5 ft

B. 2.5 ft

C. 3.3 ft

D. 5.0 ft

General Discussion

Per the anuciator response for Containemt sump levels on 1AD20 & 21, 2.5 ft will support eccs operation , 3.3 ft will support eccs and NS operations. All levels in distractors are levels mentioned in ES-1.3 which can be assumed entered for large break locas.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
ES 1.3 OP/1/A/6100/007	

QuestionBank #	KA_system	KA_number
548	SYS026	A1.03

KA_desc
Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CSS controls including: (CFR: 41.5 / 45.5)□Containment sump level .....

401-9 Comments:

026A1.03 Question appears to match K/A. SAT
NEW

401-9 Comments RESPONSE

A

QuestionBank #	KA_system	KA_number
549	SYS026	K1.01

KA_desc
Knowledge of the physical connections and/or cause-effect relationships between the CSS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)□ECCS .....

Given the following sequence of events:

1200 Unit 1 reactor tripped from 100% power due to a large break LOCA

1236 FWST level is 36%
Containment pressure is 3.8 psig

1240 1NI-185A (ND Pump 1A Cont Sump Suct) is not open and efforts to open it from the control room have failed.

1241 1A ND pump is secured.

1245 NLOs have been dispatched to manually open 1NI-185A.

1300 NLOs report 1NI-185A is fully open.

1301 1A ND pump is started.

1305 FWST level is 16%
Containment pressure is 3.1 psig

Which one of the following describes the status of the 1A NS pump at 1245 and what is the earliest time that ND Aux Spray can be placed in service?

A. 1A NS pump was running; 1250

B. 1A NS pump was running; 1301

C. 1A NS pump was off; 1250

D. 1A NS pump was off; 1301

General Discussion

for ND Aux spray must have 50 min since trip and 1 train of ND in CLR mode.
ND is secured if the cont sump valve does not open, but NS remains on till 11 % if NS is required.
As long as NV S/I and NI pump can be supplied from 1 train of ND alone, then after 50 minutes, can use ND aux spray from B train.

Answer A Discussion

Answer B Discussion

NS status is correct, time is not

Answer C Discussion

Time is corect status is now

Answer D Discussion

both incorrect - psychomentric balance. Plausible because maybe think that NS is secured along with ND,and that both trains of CLR are needed to allow ND aux spay.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
NS lesson ES 1.3 ES 1.3 background	

QuestionBank #	KA_system	KA_number
549	SYS026	K1.01

KA_desc
Knowledge of the physical connections and/or cause-effect relationships between the CSS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)□ECCS .....

401-9 Comments:

026K1.01 Question appears to match K/A. Very wordy. Attempt to get rid of most of the BOP reports.
Actual stem needs some modification Which one of the following describes the status of the 1A NS pump at 1245, and the earliest time that ND Aux spray can be placed in service?
NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 44

D

QuestionBank #	KA_system	KA_number
550	SYS039	K5.01

KA_desc
Knowledge of the operational implications of the following concepts as the apply to the MRSS: (CFR: 441.5 / 45.7)□Definition and causes of steam/water hammer .....

Given the following conditions and sequence of events:

- Unit 1 is manually tripped due to a loss of normal feedwater.
- NLOs have manually isolated CA flow to 1B S/G and level is noted to be 96% on NR level gauges.

Which of the following consequences have increased risk for 1B S/G based on the current water level in that S/G?

1. Failure of S/G PORV to actuate
2. Failure of SM safety valves to reseat following an actuation
3. Water hammer upon initiation of steam flow
4. Mechanical failure of the main steam lines

A. 1 and 2 only

B. 3 and 4 only

C. 1, 2 and 3

D. 2, 3 and 4

D

General Discussion

2, 3 and 4 are all potential consequences of a SG overfill.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
SM lesson FR-H.3 Background	

QuestionBank #	KA_system	KA_number
550	SYS039	K5.01

KA_desc

Knowledge of the operational implications of the following concepts as the apply to the MRSS: (CFR: 441.5 / 45.7)□Definition and causes of steam/water hammer .....

401-9 Comments:

039K5.01 borderline K/A match. Definition of steam/water hammer is not really tested. Very wordy question. This question actually test the consequences of a steam generator overfill event. Very little discriminating value.
NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 45

C

QuestionBank #	KA_system	KA_number
551	SYS059	A4.11

KA_desc
Ability to manually operate and monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)□Recovery from automatic feedwater isolation .....

Unit 1 is at 75% power when a plant trip occurs due to P-14 actuation. Given the following events and conditions:

- The plant is currently stable.
- The steam dumps have just closed at no-load Tave.
- Steam generator NR levels are 35% in unaffected steam generators and 80% in the affected steam generator.

What action must the operator take to reset CF isolation?

A. Lower the affected steam generator level, cycle the reactor trip breakers and depress the CF isolation reset pushbuttons.

B. Lower the affected steam generator level and cycle the reactor trip breakers.

C. Cycle the reactor trip breakers and depress the CF isolation reset pushbuttons.

D. Cycle the reactor trip breakers only.

General Discussion

Answer A Discussion

Incorrect: no need to reduce S/G level
Plausible: would be true on unit 2.

Answer B Discussion

Incorrect: not need to reduce S/G level on Unit 1 – must reset FWI
Plausible: partially correct - would be true on Unit 2 and Low Tave/P-4 FWI had not occurred.

Answer C Discussion

Correct: to clear the P-14, the trip breakers must be cycled. To clear the low tave/p-4 FWI, it must be reset.

Answer D Discussion

Incorrect: must also depress FWI pushbuttons
Plausible: would be true if P-4/Low Tave FWI had not occurred. Cycling Rx trip breakers does clear auto S/I block following an S/I.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	2003 NRC Q55 (Bank 255) Old Bank Question: 970BH

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References

Lesson Plan Objective: ISE Obj: 5
References:
1. OP-CN-ECCS-ISE page 21, 22, 23

Student References Provided

QuestionBank #	KA_system	KA_number
551	SYS059	A4.11

KA_desc

Ability to manually operate and monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)□Recovery from automatic feedwater isolation
.....

401-9 Comments:

059A4.11 Question appears to meets K/A. SAT.
2003 NRC exam question.
BANK

401-9 Comments RESPONSE

D

QuestionBank #	KA_system	KA_number
552	SYS061	A3.03

KA_desc
Ability to monitor automatic operation of the AFW, including: (CFR: 41.7 / 45.5)□AFW S/G level control on automatic start .....

Given the following:

- Unit 2 was operating at 100% power.
- 2A steamline ruptured inside containment resulting in containment pressure rapidly increasing to 3.7 psig.
- Current containment pressure is 2.4 psig and slowly decreasing.
- The crew has just verified that total CA flow is greater than 450 gpm per step 18.a of EP/2/A/5000/E-0 (reactor Trip or Safety Injection).

Within what operating band should the BOP be attempting to control S/G N/R levels?

A. Between 11% and 50%

B. Between 29% and 50%

C. Between 9% and 62%

D. Between 21% and 62%

D

General Discussion

ACC values should be used since containment pressure exceeded 3 psig even though it has been redced below 3 psig.

Answer A Discussion

Unit 1 non-ACC number

Answer B Discussion

Unit 1 ACC numbers

Answer C Discussion

Unit 2 non-ACC numbers

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
E-0	

QuestionBank #	KA_system	KA_number
552	SYS061	A3.03

KA_desc
Ability to monitor automatic operation of the AFW, including: (CFR: 41.7 / 45.5)□AFW S/G level control on automatic start .....

401-9 Comments:

061A3.03 Question appears to meets K/A. SAT.
NEW

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
553	SYS062	A3.01

KA_desc
Ability to monitor automatic operation of the ac distribution system, including: (CFR: 41.7 / 45.5)□Vital ac bus amperage .....

Given the following:

- 2B D/G automatically started due to the incoming breaker to 2ETB spuriously opening.
- While checking D/G operating parameters, the crew notes that D/G 2B "VOLTS" is 4300 V.
- At the direction of the CRS, the BOP adjusts voltage to normal.

How will D/G 2B output "AMPS" and "P/F" indications respond to this adjustment?

	AMPS	P/F
A.	increase	less lagging
B.	increase	stay the same
C.	decrease	less lagging
D.	decrease	stay the same

General Discussion

Students must understand that the D/G is not in parallel and that voltage must be adjusted DOWN. When vlotage is reduced, D/G /ETA amps increases. This has no effect on Power Factor. This is OE from an NLO who was attempting to control P/F while operating isynchcronus.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
DG3 lesson	

QuestionBank #	KA_system	KA_number
553	SYS062	A3.01

KA_desc
Ability to monitor automatic operation of the ac distribution system, including: (CFR: 41.7 / 45.5)□Vital ac bus amperage .....

401-9 Comments:

062A3.01 Question appears to meet K/A. Change 2B Amps to 2B output amps. (field amps will decrease as voltage is lowered.
NEW

401-9 Comments RESPONSE

C

QuestionBank #	KA_system	KA_number
554	SYS063	K2.01

KA_desc
Knowledge of bus power supplies to the following: (CFR: 41.7)□Major DC loads .....

Which of the following receives power from 250VDC Auxiliary Power System?

A. D/G Fuel Oil Booster Pump

B. Reactor Trip Switchgear Control

C. Unit 1 Turbine Emergency Bearing Oil Pump

D. Power Operated Relief Valves Solenoids (both NC and SV systems)

General Discussion

All loads are DC loads, D/G booster pump comes from 1DGDA. And rx trip switchgear and PORVs come from 125VDC vital

Answer A Discussion

Answer B Discussion

Answer C Discussion

CORRECT

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
EPL	

QuestionBank #	KA_system	KA_number
554	SYS063	K2.01

KA_desc
Knowledge of bus power supplies to the following: (CFR: 41.7)□Major DC loads .....

401-9 Comments:

063K2.01 Question appears to meets K/A. There are no plausible distractors. Only one power supply is DC @125 volts, and the correct answer (250V). Almost all emergency lube oil pumps in the industry are DC. Need to have more plausible distractors. As written very little discriminatory value.
NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 49

D

QuestionBank #	KA_system	KA_number
555	SYS063	K3.01

KA_desc
Knowledge of the effect that a loss or malfunction of the DC electrical system will have on the following: (CFR: 41.7 / 45.6)□ED/G .....

Unit 1 was operating at 10% power preparing to roll the turbine. Given the following sequence of events:

0200 – 1A D/G Battery Charger 1DGCA fails.
0700 – D/G 1A Panel, E/5 "LOSS OF DC CONTROL POWER" - LIT
0900 - A tornado results in a complete loss of the switchyard.

Assuming no actions have been taken to address the failed charger, which one of the following statements correctly describes the operating status of the 1A D/G and the reason for this status?

A. The 1A D/G starts because the auto-start function is not dependent on DC control power.

B. The 1A D/G starts because the control power is supplied from vital power through auctioneering diode 1VADA.

C. The 1A D/G started but did not tie to the bus because the sequencer has lost all control power.

D. The 1A D/G did not start because it has lost all control power.

D

General Discussion

Answer A Discussion

Incorrect: D/G will not start. DC control power is required for the D/G to start.
Plausible: If the candidate thinks that the battery will carry DC control power loads for > 2 hours.

Answer B Discussion

Incorrect: D/G will not start.
Plausible: if student thinks that control power to the D/G is available thru VADA. This is reversed, the DGCA supplies power thru VADA to the sequencer.

Answer C Discussion

:Incorrect: D/G will not start.
Plausible: The sequencer has normal power available thru 1EDA (from vital power)

Answer D Discussion

Correct

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	2004 NRC Q74 (Bank 374) OLD Bank Question: 1212

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References

Lesson Plan Objective: DG-DG1-14, 19
References:
1. OP-CN-DG-DG1 pages 17-19, 26

Student References Provided

QuestionBank #	KA_system	KA_number
555	SYS063	K3.01

KA_desc

Knowledge of the effect that a loss or malfunction of the DC electrical system will have on the following: (CFR: 41.7 / 45.6)□ED/G
.....

401-9 Comments:

063K3.01 Question appears to match K/A. Distractor B does not appear to be plausible.

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
556	SYS064	A3.07

KA_desc
Ability to monitor automatic operation of the ED/G system, including: (CFR: 41.7 / 45.5)□Load sequencing .....

Given the following conditions and sequence of events:

- Unit 2 was operating at 100% power when a LOCA occurred
- Containment pressure peaked at 2.6 psig and is slowly decreasing
- 1A CA Pump failed to start
- "A" train ECCS and D/G load sequencer was reset
- 1A CA Pump was manually started
- A complete loss of switchyard occurs

Assuming no operator actions since the loss of the switchyard, which of the following is a complete list of the ECCS pumps currently in service?

A. 2A NV, 2A NI, 2A ND, 2B NV, 2B NI, 2B ND

B. 2A NV, 2B NV, 2B NI, 2B ND

C. 2B NV, 2B NI, 2B ND

D. 2A NV, 2B NV

B

General Discussion

With sequencer reset, load groups 4 and 5 (NI, ND) will NOT start on a blackout. This is the situation on "A" train. All will restart on B train since the LOCA signal is still present and it overrides the BO

Answer A Discussion

this would be if neither train of ECCS/SEQ were reset

Answer B Discussion

Answer C Discussion

This is plausibe if student thinks that all A train ECCS equipment does not restart on a blackout. NV does...

Answer D Discussion

This would occur if BOTH trains were reset

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
E-0 and backgrnd doc EQB	

QuestionBank #	KA_system	KA_number
556	SYS064	A3.07

KA_desc
Ability to monitor automatic operation of the ED/G system, including: (CFR: 41.7 / 45.5)□Load sequencing .....

401-9 Comments:

064A3.07 Question appears to match K/A.SAT
NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 51

A

QuestionBank #	KA_system	KA_number
557	SYS064	K6.07

KA_desc
Knowledge of the effect of a loss or malfunction of the following will have on the ED/G system: (CFR: 41.7 / 45.7)□Air receivers .....

Unit 1 is operating at 100% power. A plant operator reports the following:

- D/G 1A Panel, B/8 "LOW VG AIR TANK PRESS" - LIT
- VG receivers starting air pressure is stable at 149 psig

Which one of the following statements correctly describes the state of readiness of the 1A D/G?

A. The D/G can be manually started and is capable of one or two starts.

B. The D/G can be automatically started and is capable of one or two starts.

C. The D/G can be manually or automatically started and is capable of five starts.

D. The D/G cannot be manually or automatically started until the VG receiver is repressurized.

General Discussion

Bank Question: 986
If VG Pressure decreases to less than 150 psig, all automatic start signals are blocked. This conserves enough air for one or two manual start attempts after the cause of the start failure is corrected.

Answer A Discussion

Correct: Can be started manually one or two times

Answer B Discussion

Incorrect: With starting air receiver pressure < 150 psig, auto starts are blocked.
Plausible: partially correct – capable of one or two manual starts.

Answer C Discussion

Incorrect: Auto starts are blocked below 150 psig – can't make 5 starts at 150 psig.
Plausible: This is the FSAR requirement for the number of starts on a D/G

Answer D Discussion

Incorrect: Can be started manually started
Plausible: psychometric balance

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	2003 NRC Q64 (Bank 264)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
1. DG1 lesson 2. Tech Spec Bases 3.8.3 E1	

QuestionBank #	KA_system	KA_number
557	SYS064	K6.07

KA_desc
Knowledge of the effect of a loss or malfunction of the following will have on the ED/G system: (CFR: 41.7 / 45.7)□Air receivers .....

401-9 Comments:

064K6.07 Question appears to match K/A. SAT
2003 NRC exam question. Add automatically and manually started to D.
BANK

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
558	SYS073	A2.02

KA_desc
Ability to (a) predict the impacts of the following malfunctions or operations on the PRM system; and (b) based on those predictions, use procedures to cor- rect, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)□Detector failure .....

Given the following:

- Unit 1 is operating at 8% power preparing to place the turbine online
- A VQ release is in progress
  1EMF-39L (CONTAINMENT GAS (LO RANGE)) detector fails causing a Trip 2 alarm
- 1RAD-1, A/2 "1EMF-39 CONTAINMENT GAS HI RAD" is LIT
- 1RAD-1, F/5 "CABINET 1-2 TROUBLE" is LIT

1. What is the status of the Unit 1 Containment Evacuation alarm?
2. What is/are the minimum action(s) required to reinitiate the air release from containment?

A. 1. The Containment Evacuation alarm has actuated.
   2. Bypass the failed EMF detector per OP/0/A/6500/080 (EMF RP86A Output Modules) and then RESET the safety signal per OP/1/B/6100/010X (Annunciator Response for Radiation Monitoring Panel 1RAD-1)

B. 1. The Containment Evacuation alarm has NOT actuated.
   2. Bypass the failed EMF detector per OP/0/A/6500/080 (EMF RP86A Output Modules) and then RESET the safety signal per OP/1/B/6100/010X (Annunciator Response for Radiation Monitoring Panel 1RAD-1)

C. 1. The Containment Evacuation alarm has actuated.
   2. RESET the safety signal only per OP/1/B/6100/010X per (Annunciator Response for Radiation Monitoring Panel 1RAD-1)

D. 1. The Containment Evacuation alarm has NOT actuated.
   2. RESET the safety signal only per OP/1/B/6100/010X per (Annunciator Response for Radiation Monitoring Panel 1RAD-1)

B

General Discussion

EMF 39 Trip2 will give an SH signal. This will isolate containment ventilation (VP/VQ).
To reset the SH the initiating signal must be cleared and the reset depressed unlike SP and ST which can be reset with the initiating signal present.
The containment evacuation alarm sounds on this EMF in trip 2 below P-6 (Low in source range) the reactor is currently below P-10 (10% power but well above P6)

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
OP/1/B/6100/010 X	

QuestionBank #	KA_system	KA_number
558	SYS073	A2.02

KA_desc

Ability to (a) predict the impacts of the following malfunctions or operations on the PRM system; and (b) based on those predictions, use procedures to cor- rect, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)□Detector failure .....

401-9 Comments:

073A2.02 Question kind of matches K/A. What procedure is used to mitigate the failure? The actions should be IAW a procedure. It appears that Ctmt. ventilation is isolated and must be restored.
NEW

401-9 Comments RESPONSE

A

QuestionBank #	KA_system	KA_number
559	SYS076	K2.01

KA_desc
Knowledge of bus power supplies to the following: (CFR: 41.7)□Service water .....

1A RN pump is normally powered from:

A. 4160V bus 1ETA

B. 4160V bus 1FTA

C. 6900V bus 1TA long side

D. 6900V bus 1TC long side

General Discussion

These are all A train power supplies for large motors.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
RN lesson EPC lesson	

QuestionBank #	KA_system	KA_number
559	SYS076	K2.01

KA_desc
Knowledge of bus power supplies to the following: (CFR: 41.7)□Service water .....

401-9 Comments:

076K2.01 Question appears to match K/A. Do any of these busses supply 1ETA? If so it is also a correct answer.
NEW

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
560	SYS078	K3.02

KA_desc
Knowledge of the effect that a loss or malfunction of the IAS will have on the following: (CFR: 41.7 / 45.6)□Systems having pneumatic valves and controls .....

Unit 2 is in Mode 3 with charging and letdown in normal alignment.

What affect does a total loss of VI have on the NV system?

A. Charging flow increases; letdown flow increases

B. Charging flow increases; letdown flow decreases

C. Charging flow decreases; letdown flow increases

D. Charging flow decreases; letdown flow decreases

General Discussion

1NV294 and 1NV309 fail open, letdown orifice vlaves fail closed on loss of air. Letdown isolation valves 1NV-1A and 1NV-2A fail close on Loss of VI

Answer A Discussion

partially correct.

Answer B Discussion

Answer C Discussion

reversed - psychometric balance

Answer D Discussion

partially correct.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
NV lesson	

QuestionBank #	KA_system	KA_number
560	SYS078	K3.02

KA_desc
Knowledge of the effect that a loss or malfunction of the IAS will have on the following: (CFR: 41.7 / 45.6)□Systems having pneumatic valves and controls .....

401-9 Comments:

078K3.02 Question appears to match K/A. Some of the information in the stem is window dressing. SAT
NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination

~~QUESTION 55~~

Question Deleted

C

QuestionBank #	KA_system	KA_number
561	SYS103	K1.07

KA_desc
Knowledge of the physical connections and/or cause-effect relationships between the containment system and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)□Containment vacuum system .....

Unit 1 is operating at 100% power with a routine containment air release in progress through 1VQ-10 (VQ Fans Disch To Unit Vent).

1. At what containment pressure will 1VQ-10 first receive a "CLOSE" signal?
2. What is the basis for closing 1VQ-10 at that pressure?

A. 1. -0.08 psig
   2. Non-compliance with technical specification on containment pressure

B. 1. -0.08 psig
   2. Unexpected opening of ice condenser inlet doors

C. 1. 0 psig
   2. Non-compliance with technical specification on containment pressure

D. 1. 0 psig
   2. Unexpected opening of ice condenser inlet doors

~~QUESTION 55~~ C

QUESTION DELETED

General Discussion

IF VQ 10 fails to close based on pressure of 0 psig, it can conceivably draw pressure to negative 2.8 psig which violated TS limits, however, that's not enough to open lower ice cond doors. (0.5 lb/sqft)
-0.08 is the admin limit for containment pressure.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
VQ lesson	

QuestionBank #	KA_system	KA_number
561	SYS103	K1.07

KA_desc
Knowledge of the physical connections and/or cause-effect relationships between the containment system and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)□Containment vacuum system .....

401-9 Comments:

103K1.07 Question kind of matches K/A. What is the significance of the second part of the question?
Do you have a containment vacuum system?

Which one of the following describes a condition that would automatically close 1VQ-10, and what would the consequence be if the valve failed to close?

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 56

D

QuestionBank #	KA_system	KA_number
562	SYS001	K2.02

KA_desc
Knowledge of bus power supplies to the following: (CFR: 41.7)□One-line diagram of power supply to trip breakers .....

Unit 1 was in Mode 3 with shutdown banks withdrawn in preparation for startup.
Given the following:

- 1TD short side incoming breaker trips
- 1TD tie breaker does not automatically close

Which MG set(s) has/have a power supply available and what is the current status of the shutdown banks?

A. Only 1A MG set; shutdown banks are inserted

B. Only 1A MG set; shutdown banks are withdrawn

C. 1A and 1B MG sets; shutdown banks are inserted

D. 1A and 1B MG sets; shutdown banks are withdrawn

General Discussion

If 1TD lshort side loses power, then 1LXD and NCP D lose power. There is no reactor trip rewauierd either manually or auotmatically due to NCP loss in this condition. Therefor the shutdown banks would still be out. 1LXC feeds MG set 1 and 1LXD feeds MG set 2. 1LXD gets backup power from 1TXS assuming LXC is still powered (which it is). Therefore both MG sets still have power.

Answer A Discussion

plausible if they think that 1LXD loses power. And NCP trip causes Rx trip

Answer B Discussion

plausible if they think that 1LXD loses power.

Answer C Discussion

plausible if they think that 1d NCP trip causes Rx trip

Answer D Discussion

CORRECT

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
IPX EPB	

QuestionBank #	KA_system	KA_number
562	SYS001	K2.02

KA_desc
Knowledge of bus power supplies to the following: (CFR: 41.7)□One-line diagram of power supply to trip breakers .....

401-9 Comments:

001K2.02 Does not match the K/A. This question really asks what happens if both bypass breaker are closed, not power supplies.

401-9 Comments RESPONSE

D

QuestionBank #	KA_system	KA_number
563	SYS011	A1.02

KA_desc
Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PZR LCS controls including: (CFR: 41.5 / 45.5)□Charging and letdown flows .....

Initial conditions at 1300:

- Unit 2 was at 50% power
- Pressurizer level was at program level
- 2NV-312A (Chrg Line Cont Isol) spuriously closed and could not be reopened
- Operators have taken the following actions per AP/2/A/5500/012 (Loss of Charging or Letdown), Case I (Loss of Charging):
  - Secured letdown
  - Total charging flow has been reduced to 32 gpm
- Excess letdown can not be established

At approximately what time will the pressurizer become inoperable per Tech Spec 3.4.9 (Pressurizer)?

Reference provided

A. 1434

B. 1608

C. 1651

D. 1825

General Discussion

With charging flow at 32 gpm and no letdown, a net of 20 gpm is being added to the NC system. (Stating level is 40% based on 50% rx power) Based on this and a conversion of ~125gallons/% level in the PZR, level will reach the hi level setpoint of 70% at 1434 hrs (T+188 minutes). This is plausible since it is an alarm setpoint associated with abnormally high pressurizer level. The actual inoperability level is 92% which will occur at ~1825 hrs (T+325 minutes).

The other valveus are based on level starting at 55% which is the normal PZR level at 100%.

Answer A Discussion

if assume 100% power level and 70% inoperable

Answer B Discussion

if assume 50 power and 70% level

Answer C Discussion

if assume 100power and 92 inoperable

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	MODIFIED	2005 SRO Q77 (Bank 481)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References

Lesson□OP-CN-PS-ILE rev 23
REFERENCES□TS 3.4.9
PZR level to gallons graph (REF PROVIDED)

Student References Provided

Pressurizer volume (gal) to level (%) graph

QuestionBank #	KA_system	KA_number
563	SYS011	A1.02

KA_desc

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PZR LCS controls including: (CFR: 41.5 / 45.5)□Charging and letdown flows .....

401-9 Comments:

011A1.02 Question kind of matches K/A. The question should be at approximately what time does charging/letdown have to be returned to service to prevent exceeding a T/S limit. 2005 NRC exam Modified.

401-9 Comments RESPONSE

C

QuestionBank #	KA_system	KA_number
564	SYS016	K1.12

KA_desc
Knowledge of the physical connections and/or cause-effect relationships between the NNIS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)□S/G .....

Unit 1 was operating at 70% when 1C S/G MEDIAN SELECTED Wide Range (WR) Level output to the Digital Feedwater Control System (DFCS) fails low.

How will the DFCS respond to this event?

A. DFCS will switch 1C S/G CF reg valve and CF bypass reg valve to MANUAL.

B. DFCS will substitute another S/G's WR level input into "C" loop.

C. DFCS will generate a "DFCS TROUBLE" alarm only.

D. DFCS will reduce S/G 1C WR level to 50%.

C

General Discussion

WR level is only used at lower power (<25%) when it is used it it is median selected

Answer A Discussion

Would need additional failures to cause it to go to manual but since this is the output of a median selected signal it is plausible.

Answer B Discussion

This would be true for CF temperature which substitutes another S/Gs value.

Answer C Discussion

CORRECT

Answer D Discussion

this occurs on unit 2 when a CF pump is lost at >65%

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	TASKMASTER IFE-002-A

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
IFE lesson ARP	

QuestionBank #	KA_system	KA_number
564	SYS016	K1.12

KA_desc
Knowledge of the physical connections and/or cause-effect relationships between the NNIS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)□S/G .....

401-9 Comments:

016K1.12 Question appears to match K/A. Not sure if all of these are plausible. Will discuss.
BANK

401-9 Comments RESPONSE

A

QuestionBank #	KA_system	KA_number
565	SYS017	K3.01

KA_desc
Knowledge of the effect that a loss or malfunction of the ITM system will have on the following: (CFR: 41.7 / 45.6)□Natural circulation indications .....

Unit 1 was operating at 100% power when a loss of offsite power caused a reactor trip. The crew has verified natural circulation in ES-0.1 (Reactor Trip Response). Ten minutes later, the operator notes that the thermocouple input to both plasma displays is malfunctioning.

Which one of the following correctly describes a valid indication that natural circulation is continuing?

A. S/G pressures are decreasing and T_{cold} is at S/G saturation temperature.

B. S/G saturation temperatures are decreasing and REACTOR VESSEL UR LEVEL indication is greater than 100%.

C. S/G pressures are decreasing and REACTOR VESSEL D/P indication is greater than 100%.

D. S/G pressure is at saturation pressure for T_{cold} and REACTOR VESSEL D/P indication is greater than 100%.

A

General Discussion

Bank Question: 911.1

Answer A Discussion

Correct

Answer B Discussion

:Incorrect: There is no indication of coupling between primary and secondary. Plausible: These are important indications during natural circulation.

Answer C Discussion

Incorrect: Reactor Vessel D/P is unavailable during natural circulation.
Plausible: S/G pressure decreases during natural circulation and RVLIS is one of the other plasma display indications.

Answer D Discussion

Incorrect:Reactor Vessel D/P is unavailable during natural circulation.
Plausible: S/G pressure will remain close to saturation for Tcold during natural circulation and RVLIS is one of the other plasma display indications.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	2003 RO Q48 (Bank 248)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
HT 1. ES-0.1 page 15 2. ES-0.1 Enclosure 3 page 1	

QuestionBank #	KA_system	KA_number
565	SYS017	K3.01

KA_desc
Knowledge of the effect that a loss or malfunction of the ITM system will have on the following: (CFR: 41.7 / 45.6)□Natural circulation indications .....

401-9 Comments:

017K3.01 Question appears to match K/A. SAT. 2003 NRC exam.
BANK

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 60

C

QuestionBank #	KA_system	KA_number
566	SYS027	K5.01

KA_desc
Knowledge of the operational implications of the following concepts as they apply to the CIRS: (CFR: 41.7 / 45.7)□Purpose of charcoal filters .....

Unit 1 was operating at 100% when a design basis LOCA occurred. Radiation monitoring teams at the site boundary report that Iodine 131 dose is 5 Rem.

Which one of the following statements correctly describes the condition of the VE filters that would result in the dose readings noted at the site boundary?

A. 1A VE train failed to start on the safety injection

B. The prefilter/demisters are saturated

C. The charcoal filters are saturated

D. The HEPA filters are saturated

C

General Discussion

Bank Question: 834

Answer A Discussion

Incorrect: Heaters are supposed to be energized.
Plausible: If the candidate does not know the heater function.

Answer B Discussion

Incorrect: Prefilter/demister do not remove Iodine.
Plausible: If the candidate does not know the prefilter function.

Answer C Discussion

Correct:

Answer D Discussion

Incorrect: HEPA filters do not remove radioactive Iodine
Plausible: HEPA filter remove small particulates

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	2003 NRC Q41 (Bank 241)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
1. OP-CN-CNT-VE pages 5-6	

QuestionBank #	KA_system	KA_number
566	SYS027	K5.01

KA_desc
Knowledge of the operational implications of the following concepts as they apply to the CIRS: (CFR: 41.7 / 45.7)□Purpose of charcoal filters .....

401-9 Comments:

027K5.01 Question appears to match K/A. Stem Focus – Radiation monitoring teams would measure actual dose not projected dose. Could we change distractor D to read heaters are de-energized?
2003 NRC exam. BANK

401-9 Comments RESPONSE

C

QuestionBank #	KA_system	KA_number
567	SYS035	2.2.40

KA_desc
SYS035 GENERIC□Ability to apply Technical Specifications for a system. (CFR: 41.10 / 43.2 / 43.5 / 45.3)

Unit 1 is in Mode 5 following refueling. All S/Gs were drained and have just been refilled with condensate water per Chemistry request.

The following conditions existed during the filling operation and have been verified to be the current conditions:

Primary conditions:

- 1A ND Hx inlet temperature 185 °F
- 1B ND Hx inlet temperature 185 °F
- NC pressure 218 psig

Secondary conditions:

- S/G 1A CF inlet temperature 71 °F
- S/G 1B CF inlet temperature 72 °F
- S/G 1C CF inlet temperature 68 °F
- S/G 1D CF inlet temperature 71 °F
- All S/Gs pressures are 0 psig.

Based on the reported conditions, what is the action required by Selected License Commitments?

A. Increase 1C S/G secondary temperature to greater than 70 °F within 30 minutes.

B. Increase 1C S/G secondary temperature to greater than 70 °F within 1 hour.

C. Reduce NC pressure to less than or equal to 200 psig within 30 minutes.

D. Reduce NC pressure to less than or equal to 200 psig within 1 hour.

General Discussion

The correct action is to reduce NC pressure within 30 minutes to <200 psig.

All ACTIONS MUST BE COMPLETE if the CONDITION is entered. Therefore, cannot increase temperature to get out of the action.

THIS ONE NEEDS WORK

Answer A Discussion

Cannot increase temperature to revent having to do the actions. Correct time

Answer B Discussion

Cannot increase temperature to revent having to do the actions.

Answer C Discussion

Answer D Discussion

Incorrect: 1 hour will not meet the action.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	2005 NRC Q86 (Bank 490)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
Lesson□OP-CN-CF-SG Objectives□25 REFERENCES□SLC 16.5-7	

QuestionBank #	KA_system	KA_number
567	SYS035	2.2.40

KA_desc
SYS035 GENERIC□Ability to apply Technical Specifications for a system. (CFR: 41.10 / 43.2 / 43.5 / 45.3)

401-9 Comments:

035G2.2.40 Questions appears to match K/A. 2005 NRC exam. SAT BANK

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
568	SYS045	A3.05

KA_desc
Ability to monitor automatic operation of the MT/G system, including: (CFR: 41/7 / 45.5)□Electrohydraulic control .....

Unit 1 is operating at 100% power.

1. How is EHC Emergency Manual Mode selected?
2. How do the control valves respond to a manual runback under the above conditions?

A. 1. automatically
   2. the control valves will operate per the valve curves

B. 1. automatically
   2. the control valves will NOT operate per the valve curves

C. 1. manually
   2. the control valves will operate per the valve curves

D. 1. manually
   2. the control valves will NOT operate per the valve curves

General Discussion

Emerg manual mode cannot be manually selected. When the valves are operated (in manual using CV lower), all valves will stroke simultaneously without regard for the programmed valves curves

Answer A Discussion

first part true second part false.

Answer B Discussion

Answer C Discussion

both parts false - psychometric balance

Answer D Discussion

first part is wrong, second part is true

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
OP/1/B/6100/010B EHC lesson	

QuestionBank #	KA_system	KA_number
568	SYS045	A3.05

KA_desc
Ability to monitor automatic operation of the MT/G system, including: (CFR: 41/7 / 45.5)□Electrohydraulic control .....

401-9 Comments:

045A3.05 Question appears to match K/A. Distractors C and D are not plausible. Is there such a thing as a manual runback? Are you talking about manually ramping load off of the turbine?
This question needs some work.
NEW

401-9 Comments RESPONSE

A

QuestionBank #	KA_system	KA_number
569	SYS071	K4.01

KA_desc
Knowledge of design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)□Pressure capability of the waste gas decay tank .....

Which one of the following Shutdown Waste Gas Decay Tanks (SWGDTs) is maintained at a low pressure per the limits and precautions of OP/0/A/6500/003A (Gaseous Waste System (Normal Operations)) and what maximum pressure does it specify?

A. SWGDT A; less than 5 psig

B. SWGDT A; less than 30 psig

C. SWGDT B; less than 5 psig

D. SWGDT B; less than 30 psig

General Discussion

A WGDT pressure is normally limited to 5 psig per the OP to allow it to receive relief from other tanks. B tank has a different function- it is used to store nitrogen for shutdown. The hydrogen recombiner operation limit and precaution requires 30 pisg minimum for proper operation.

Answer A Discussion

CORRECT

Answer B Discussion

Right tank , wrong pressure

Answer C Discussion

Wrong tank, correct pressure

Answer D Discussion

Both wrong, psychometric balance.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References

WG lesson plan page 6
OP/0/A/6500/003 B L/P
OP/0/A/6500/003 A L/P

Student References Provided

QuestionBank #	KA_system	KA_number
569	SYS071	K4.01

KA_desc

Knowledge of design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)□Pressure capability of the waste gas decay tank .....

401-9 Comments:

071K4.01 Question does not really meet the K/A. At what pressure do the relief valves lift? I did not see this in your lesson plan. Add a statement to the end of each choice "to allow room for pressure relief when the tank pressure reaches ....
NEW

401-9 Comments RESPONSE

C

QuestionBank #	KA_system	KA_number
570	SYS079	A4.01

KA_desc
Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)□Cross-tie valves with IAS .....

VI system pressure is 98 psig.

Which one of the following statements correctly describes the sequence and position of VI system valves in response to a loss of VI header pressure as pressure continues to decrease?

A. VS-78 (VS supply to VI) opens at 80 psig
VI-500 (VI supply to VS) opens at 76 psig

B. VS-78 (VS supply to VI) closes at 80 psig
VI-500 (VI supply to VS) opens at 76 psig

C. VI-500 (VI supply to VS) closes at 80 psig
VS-78 (VS supply to VI) opens at 76 psig

D. VI-500 (VI supply to VS) closes at 80 psig
VS-78 (VS supply to VI) closes at 76 psig

C

General Discussion

Bank Question: 282.2

Answer A Discussion

Incorrect: VI-500 closes – not opens
Plausible: partially correct – VS-78 opens

Answer B Discussion

Incorrect: valve operations are reversed
Plausible: psychometric balance

Answer C Discussion

Answer D Discussion

Incorrect: VS-78 opens – does not close
Plausible: partially correct – VI-500 closes.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	MODIFIED	2003 NRC Q7 (Bank 207)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References

OP-CN-SS-VI page 21
Lesson Plan Objective: VI Obj: 5, 8, 28, 30
AP-22

Student References Provided

QuestionBank #	KA_system	KA_number
570	SYS079	A4.01

KA_desc

Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)□Cross-tie valves with IAS
.....

401-9 Comments:

079A4.01 Question kind of matches K/A. There is no sequence in the distractors, they are all in the same order. At what pressure do the valves perform the swap? How can an operator monitor them with out knowing the pressure that should operate? Not very discriminating. 2003 NRC exam question.
BANK

401-9 Comments RESPONSE

QuestionBank #	KA_system	KA_number
571	SYS086	K6.04

KA_desc
Knowledge of the effect of a loss or malfunction on the Fire Protection System following will have on the : (CFR: 41.7 / 45.7)□Fire, smoke, and heat detectors .....

Given the following conditions and sequence of events:

- 2A D/G auto-started due to a blackout on 2ETA
- The control room crew notes all loads were sequenced on as required
- A fuel oil line leak occurs resulting in a major fire in the 2A D/G room

Assuming no operator actions since the D/G auto-started:

1. How long will it take for the Cardox system to discharge once the fire is detected?
2. What is the status of the 2A D/G emergency ventilation after the Cardox system discharges?

A.
1. 6.5 minutes
2. Running due to sequencer actuation

B.
1. 6.5 minutes
2. Secured due to Cardox actuation

C.
1. 1.5 minutes
2. Running due to sequencer actuation

D.
1. 1.5 minutes
2. Secured due to Cardox actuation

A

General Discussion

The D/G ventilation will start following the autostart after the B/O signal, since the sequencer has not been reset, they will continue to run. The cardox actuation would normally shutdown the ventialtion system. There is a 5.0 electronic time followed by a 1.5 min pneumatic timer. Were there a loss of power to the cardox system , the 5 min electronic timeer would not work and the cardox would dump at 1.5 minutes.

Answer A Discussion

Answer B Discussion

correct time, but fans run

Answer C Discussion

incorrect time, fan status is correct

Answer D Discussion

Both incorrect pyschometric balance

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
RFY lesson DG1 lesson VD	

QuestionBank #	KA_system	KA_number
571	SYS086	K6.04

KA_desc
Knowledge of the effect of a loss or malfunction on the Fire Protection System following will have on the : (CFR: 41.7 / 45.7)□Fire, smoke, and heat detectors .....

401-9 Comments:

086K6.04 Question appears to match K/A. SAT.
NEW

401-9 Comments RESPONSE

D

QuestionBank #	KA_system	KA_number
572	GEN2.1	2.1.45

KA_desc
Conduct of Operations□Ability to identify and interpret diverse indications to validate the response of another indication. (CFR: 41.7 / 43.5 / 45.4)

During a control board walkdown, the crew notes that over the last 10 minutes turbine load has decreased from 1209 MW to 1207 MW while reactor power has increased from 99.87% to 100.05%. They suspect a steam leak.

Which set of the following indications could be used to confirm their suspicions?

1. % Steam flow
2. Steam pressure
3. Containment pressure
4. Containment humidity

A. 1, 2, 3

B. 1, 2, 4

C. 1, 3, 4

D. 2, 3, 4

General Discussion

Based on simulator modelling, a steam leak of 1E4 #/hr would cause MW and Rx power indications as shown. Containment pressure would increase as well as humidity. This is less than 1/100th of 1 % steam flow to any given S/G (3.73E6 #/hr) and would not be useful in diagnosing a steam leak.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
AP/28	

QuestionBank #	KA_system	KA_number
572	GEN2.1	2.1.45

KA_desc
Conduct of Operations□Ability to identify and interpret diverse indications to validate the response of another indication. (CFR: 41.7 / 43.5 / 45.4)

401-9 Comments:

G2.1.45 Question appears to match K/A. Do you have a % steam flow indicator? I don't think so? Need another name for #1. Otherwise it is not plausible.
NEW

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
573	GEN2.1	2.1.8

KA_desc
Conduct of Operations□Ability to coordinate personnel activities outside the control room. (CFR: 41.10 / 45.5 / 45.12 / 45.13)

Terrorists have broken through the security fence and set both Unit 1 main transformers on fire. Security has notified the operating crew that several terrorists are enroute to the control room.

What instructions are provided to the NLO dispatched to the 1ETA switchgear room and which procedure provides that guidance?

A. Perform a partial transfer to the SSF per AP/1/A/5500/017 (Loss of Control Room)

B. Transfer control to the SSF per AP/1/A/5500/017 (Loss of Control Room)

C. Perform a partial transfer to the SSF per AP/0/A/5500/045 (Plant Fire)

D. Transfer control to the SSF per AP/0/A/5500/045 (Plant Fire)

B

General Discussion

AP/17 is used due to being a security event. A full transfer is done for a security event.

Answer A Discussion

Partial transfer is done in AP/45 for plant fires but not per AP/17

Answer B Discussion

Answer C Discussion

Partial transfers are done per AP/45 when fires exist in certain vital area (this is not) and there is a fire, however the security event takes priority.

Answer D Discussion

Full control is not transferred to the SSF in AP/45.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
AP/17 ENCL 11 AP/45 AP/17 Symptoms AP/17 step 8c	

QuestionBank #	KA_system	KA_number
573	GEN2.1	2.1.8

KA_desc
Conduct of Operations□Ability to coordinate personnel activities outside the control room. (CFR: 41.10 / 45.5 / 45.12 / 45.13)

401-9 Comments:

G2.1.8 Question appears to match K/A. SAT
NEW

401-9 Comments RESPONSE

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D

QuestionBank #	KA_system	KA_number
574	GEN2.2	2.2.2

KA_desc
Equipment Control□Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels. (CFR: 41.6 / 41.7 / 45.2)

During a power increase to 100% power per OP/1/A/6100/003 (Controlling Procedure for Unit Operation), the "C" Heater Drain Pumps are placed in service at a minimum power level of _____. The purpose of this is to prevent the potential for _____.

A. 50% / excessive main feedwater pump discharge pressure

B. 70% / excessive main feedwater pump discharge pressure

C. 50% / deadheading of hotwell and booster pumps

D. 70% / deadheading of hotwell and booster pumps

D

General Discussion

C Heater drain pumps are placed in service at >70% to prevent the possibility of deadheading the hotwell and CBPs under certain transient conditions. Since the C heater drain pumps pump to the suction of the CFPs, the student may think that the increases suction pressure might increase discharge pressure too high. The second CFP is placed in serivice at 50%

Answer A Discussion

both parts false, psychometric balance

Answer B Discussion

first part is true

Answer C Discussion

second part is true

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
CM Lesson plan OP/1/A/6100/003	

QuestionBank #	KA_system	KA_number
574	GEN2.2	2.2.2

KA_desc
Equipment Control□Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels. (CFR: 41.6 / 41.7 / 45.2)

401-9 Comments:

G2.2.2 Question appears to match K/A. SAT
NEW

401-9 Comments RESPONSE

A

QuestionBank #	KA_system	KA_number
575	GEN2.2	2.2.39

KA_desc
Equipment Control□Knowledge of less than or equal to one hour Technical Specification action statements for systems. (CFR: 41.7 / 41.10 / 43.2 / 45.13)

Unit 1 is at 4% power, conducting a plant startup. Given the following events and conditions:

- One control bank "A" rod drops fully into the core
- NCS temperature decreases to 550°F

Which one of the following statements correctly describes an action that is required within 30 minutes by Technical Specifications?

A. Be in mode 2 with K_{eff} less than 1.0.

B. Restore rod group within alignment limits.

C. Verify shutdown margins within the limits specified in the COLR.

D. Adjust power range N/Is to increase reactor power so that reactor power and thermal power best estimate are equal.

A

General Discussion

Answer A Discussion

CORRECT

Answer B Discussion

Required per 3.1.4 but not within 30 minutes

Answer C Discussion

Required per 3.1.6 but not within 30 minutes

Answer D Discussion

Thermal power would indicate lower not higher due to increased thermalization of the neutrons. While NI adjustment is a problem, this action does not comply with action 3.4.2.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	MODIFIED	2003 NRC Q30 (Bank 230) Bank Question: 600

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
Lesson Plan Objective: NC SEQ 10 References: 1. OP-CN-PS-NC page 33 2. Tech Spec 3.4.2 page 1 TS 3.1.4, 3.1.6	

QuestionBank #	KA_system	KA_number
575	GEN2.2	2.2.39

KA_desc
Equipment Control□Knowledge of less than or equal to one hour Technical Specification action statements for systems. (CFR: 41.7 / 41.10 / 43.2 / 45.13)

401-9 Comments:

G2.2.39 Question appears to match K/A. SAT
2003 NRC Exam.
Modified

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
576	GEN2.3	2.3.11

KA_desc
Radiation Control□Ability to control radiation releases. (CFR: 41.11 / 43.4 / 45.10)

A Unit 1 containment purge is in progress using OP/1/A/6450/015. Given the following events and conditions:

- 1EMF-39(L) (CONTAINMENT GAS (LO RANGE)) spiked to a Trip 2 condition then cleared

Which one of the following statements correctly describes the action required?

A. The VP release may not be reinitiated until RP draws a new containment air activity sample.

B. The VP release may be reinitiated after the spike clears. If 1EMF-39 spikes a second time, the release may also be reinitiated.

C. The VP release may be reinitiated after the spike clears. If 1EMF-39 spikes a second time, the release cannot be reinitiated without RP sampling containment air for activity.

D. The VP release may be reinitiated if grab samples are taken of Unit Vent activity during subsequent reinitiation.

General Discussion

Answer A Discussion

Incorrect: the OP allows the VP release to be reset twice if due to EMF spike.
Plausible: This is a conservative answer.

Answer B Discussion

Correct: the OP allows the VP release to be reset twice if due to EMF spike.

Answer C Discussion

Incorrect: the OP allows the VP release to be reset twice if due to EMF spike.
Plausible: a new sample may be required if the EMF actuates prior to initiating the release.

Answer D Discussion

Incorrect: the OP allows the VP release to be reset twice if due to EMF spike.
Plausible: grab samples are required if EMF-39 is inoperable when the release occurs.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	2003 NRC Q54 (Bank 254) Bank Question: 968.3

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References

Lesson Plan Objective: VP Obj: 8, 9
References:
1. OP/1/A/6450/015, limits and precautions page 2 rev44
2. OP-CN-CNT-VP page 15

Student References Provided

QuestionBank #	KA_system	KA_number
576	GEN2.3	2.3.11

KA_desc
Radiation Control□Ability to control radiation releases. (CFR: 41.11 / 43.4 / 45.10)

401-9 Comments:

G2.3.11 Question appears to match K/A. SAT 2003 NRC Exam
BANK

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
577	GEN2.3	2.3.4

KA_desc
Radiation Control□Knowledge of radiation exposure limits under normal or emergency conditions. (CFR: 41.12 / 43.4 / 45.10)

While performing a valve lineup in the boric acid mixing room, an air line failure caused a severe airborne beta contamination problem. A worker received both internal and external contamination that was detected upon attempting to exit the RCA.

Which one of the exposures would exceed the 10CFR20 limit for the worker's annual shallow dose equivalent (SDE) exposure?

A. 55 Rem external dose to the lens of the eye.

B. 55 Rem external dose to the leg below the knee.

C. 17 Rem internal dose equivalent to the lens of the eye.

D. 17 Rem internal dose to the right forearm.

B

General Discussion

Answer A Discussion

Incorrect: skin dose equivalent
Plausible: 50 Rem is correct limit for SDE – may confuse with LDE eye dose

Answer B Discussion

Correct: 50 Rem SDE limit to the extremities (below forearm and below knee) or skin.

Answer C Discussion

Incorrect: SDE is an external skin or extremity dose not an internal dose
Plausible: this is the correct LDE limit (lens of the eye).

Answer D Discussion

Incorrect: SDE is an external dose not an internal dose
Plausible: the right forearm is the correct part of the anatomy for an SDE - based on confusion of external/internal

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	2004 NRC Q16 (Bank 316)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
HP lesson	

QuestionBank #	KA_system	KA_number
577	GEN2.3	2.3.4

KA_desc
Radiation Control□Knowledge of radiation exposure limits under normal or emergency conditions. (CFR: 41.12 / 43.4 / 45.10)

401-9 Comments:

G2.3.4 Question appears to match K/A. SAT 2004 NRC exam.
BANK

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
578	GEN2.3	2.3.7

KA_desc
Radiation Control□Ability to comply with radiation work permit requirements during normal orabnormal conditions. (CFR: 41.12 / 45.10)

A radiation worker is repairing a valve in a contaminated area, which has the following radiological characteristics:

- The worker's present exposure is 1938 mrem for the year
- The RWP states:
  - General area dose rate = 30 mrem/hr
  - Airborne contamination concentration = 10.0 DAC

The job will take 2 hours if the worker wears a full-face respirator. It will only take 1 hour if the worker does not wear the respirator.

If the RP Manager grants all applicable dose extensions, which one of the following choices for completing this job would maintain the worker's exposure within the station administrative requirements?

A. The worker should not wear the respirator.
The dose received wearing a respirator will exceed site annual personnel dose limits.

B. The worker should not wear the respirator.
The calculated TEDE dose received will be less than if he does wear one.

C. The worker should wear the respirator.
The calculated TEDE dose received will be less than if he does not wear one.

D. The worker should wear the respirator.
He could exceed DAC limits.

B

General Discussion

Radiation exposure comparison:
Without respirator DDE = 30 mrem/hr x 1 hr = 30 mrem
From airborne contamination: CEDE = 10 DAC 1 hr x 2.5 mrem/DAC-hr = 25 mrem TEDE = 30 + 25 = 55 mrem from job Total exposure for year = 1938 + 55 = 1993 mrem
With respirator
DDE = 30 mrem/hr x 2 hr = 60 mrem CEDE = 0 TEDE = 60 mrem
Total exposure for year = 1938 + 60 = 1998 mrem
(With respirator) (Without respirator)
TEDE = 60 mrem > 55 mrem = do not use a respirator

Answer A Discussion

Incorrect: the dose will not exceed the 2000 mrem limit based on calculation.
Plausible: If the candidate miscalculates the dose

Answer B Discussion

Correct answer

Answer C Discussion

Incorrect: The calculated exposure will be greater if you wear the respirator. Plausible: If the candidate incorrectly computes the exposure - this was the correct answer on a previous exam

Answer D Discussion

Incorrect: DAC limits are not direct ALARA controls.
Plausible: If the candidate does not understand the concept of derived airborne concentrations.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	2003 NRC Q11 (Bank 211) Bank Question: 353.3

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
Lesson Plan Objective: HP Obj: 2, 4 1. OP-CN-RAD-HP pages 14-15	

QuestionBank #	KA_system	KA_number
578	GEN2.3	2.3.7

KA_desc
Radiation Control□Ability to comply with radiation work permit requirements during normal orabnormal conditions. (CFR: 41.12 / 45.10)

401-9 Comments:

G2.3.7 Question appears to match K/A. 2003 NRC exam. BANK This question can be easily modified to be some what different than the bank question.
BANK

401-9 Comments RESPONSE

C

QuestionBank #	KA_system	KA_number
579	GEN2.4	2.4.13

KA_desc
Emergency Procedures / Plan□Knowledge of crew roles and responsibilities during EOP usage. (CFR: 41.10 / 45.12)

The crew is responding to a spurious safety injection. Given the following validated CSF status tree indications:

- Subcriticality – GREEN
- Core Cooling – GREEN
- Heat Sink – GREEN
- NC Integrity – GREEN
- Containment – GREEN
- NC Inventory - YELLOW

Per OMP 1-7 (Emergency/Abnormal Procedure Implementation Guidelines):

1. Which control room crew position, by title, has primary responsibility for monitoring Critical Safety Function (CSF) status trees during EOP usage?
2. Based on current conditions how frequent should CSF status trees be monitored?

A. 1. OSM
   2. monitor every 10-20 minutes

B. 1. OSM
   2. monitor continuously

C. 1. STA
   2. monitor every 10-20 minutes

D. 1. STA
   2. monitor continuously

General Discussion

Per OMP 1-7, C is correct green or yellow only is every 10-20 minutes, any red or orange is continuously.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
OMP 1-7 OMP 1-8	

QuestionBank #	KA_system	KA_number
579	GEN2.4	2.4.13

KA_desc
Emergency Procedures / Plan□Knowledge of crew roles and responsibilities during EOP usage. (CFR: 41.10 / 45.12)

401-9 Comments:

G2.4.13 Question appears to match K/A. Distractors B and D are not plausible. Everyone with a license is responsible for CSFs. So why would a procedure not allow someone else with a license to be given the task of monitoring CSFs. Need better distractors.
NEW

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
580	GEN2.4	2.4.22

KA_desc
Emergency Procedures / Plan□Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations. (CFR: 41.7 / 41.10 / 43.5 / 45.12)

Which one of the following sets of critical safety functions (CSFs):

- is listed in the correct order per the CSF status trees from highest to lowest priority

  AND

- forms the bases for protection of the fuel and fuel cladding?

A. 1. Heat Sink 2. Core Cooling 3. Integrity

B. 1. Core Cooling 2. Heat Sink 3. NC Inventory

C. 1. Heat Sink 2. Subcriticality 3. NC Inventory

D. 1. Subcriticality 2. Heat Sink 3. Integrity

B

General Discussion

Answer A Discussion

Incorrect: Wrong order , wrong functions.

Answer B Discussion

CORRECT

Answer C Discussion

right functions wrong order

Answer D Discussion

wrong functions, right order

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References
Lesson□OP-CN-EP-CSF Objectives□2 REFERENCES□Lesson plan information page 10

Student References Provided

QuestionBank #	KA_system	KA_number
580	GEN2.4	2.4.22

KA_desc
Emergency Procedures / Plan□Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations. (CFR: 41.7 / 41.10 / 43.5 / 45.12)

401-9 Comments:

G2.4.22 Question appears to match K/A. SAT
NEW

401-9 Comments RESPONSE

A

QuestionBank #	KA_system	KA_number
581	GEN2.4	2.4.42

KA_desc
Emergency Procedures / Plan□Knowledge of emergency response facilities. (CFR: 41.10 / 45.11)

An offsite release is occurring due to a stuck open S/G PORV on 2C S/G which has a significant tube leak.

Which one of the following states:

1. The emergency facility that assumes responsibility for communications with offsite agencies including the NRC once it is activated?
2. What is the lowest classification level that requires this facility's activation?

A. 1. Technical Support Center (TSC)
   2. Alert

B. 1. Technical Support Center (TSC)
   2. Unusual Event

C. 1. Operations Support Center (OSC)
   2. Alert

D. 1. Operations Support Center (OSC)
   2. Unusual Event

General Discussion

Answer A Discussion

Answer B Discussion

Correct location, wrong classification. The TSC can be activated at this level, but it is not REQUIRED.

Answer C Discussion

Right level , wrong location. This is the center in Charlotte. The NRC and offsiote agency communications go thru the TSC

Answer D Discussion

Both wrong - psychometric balance.

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
SEP lesson	

QuestionBank #	KA_system	KA_number
581	GEN2.4	2.4.42

KA_desc
Emergency Procedures / Plan□Knowledge of emergency response facilities. (CFR: 41.10 / 45.11)

401-9 Comments:

G2.4.42 Question appears to match K/A. SAT
NEW

401-9 Comments RESPONSE

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D

QuestionBank #	KA_system	KA_number
582	EPE009	2.2.25

KA_desc
EPE009 GENERIC□Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits. (CFR: 41.5 / 41.7 / 43.2)

Given the following Unit 1 conditions and sequence of events:

- NC system temperature is 208 °F
- NC system pressure is 350 psig
- 1A NV pump is red tagged to replace its 1ETA breaker
- 1B NI pump is white tagged
- 1A ND and 1B ND loops operating in residual heat removal mode
- An ND pump suction relief has spuriously lifted and has not reseated
- Both ND pumps have been secured per AP/1/A/5500/027 (Shutdown LOCA)

1. What is the correct procedure flowpath for this situation?
2. What is the limiting component that the current ECCS pump configuration is designed to protect from over-pressurization?

A. 1. Remain in AP/1/A/5500/027 (Shutdown LOCA)
   2. NC loop crossover pipe

B. 1. Transition to AP/1/A/5500/019 (Loss of Residual Heat Removal System)
   2. NC loop crossover pipe

C. 1. Remain in AP/1/A/5500/027 (Shutdown LOCA)
   2. Reactor vessel

D. 1. Transition to AP/1/A/5500/019 (Loss of Residual Heat Removal System)
   2. Reactor vessel

General Discussion

this is Mode 4 LTOP condition. AP/27 secured ND pumps and thenn transition is made to AP/19 for additiional actions. Or AP/19 can be entered directly. Second part isd the basis for LTOP to make SRO.

Answer A Discussion

both parts incorrect - psychometric balance

Answer B Discussion

CORRECT

Answer C Discussion

first part correct

Answer D Discussion

second part correct

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
TS 3.5.2 Bases AM lesson	

QuestionBank #	KA_system	KA_number
582	EPE009	2.2.25

KA_desc
EPE009 GENERIC□Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits. (CFR: 41.5 / 41.7 / 43.2)

401-9 Comments:

009EG2.2.25 Question appears to match the K/A. Does not appear to be SRO only. While the question does address some items from the T/S basis, the ECCS acceptance criteria and what pumps are required during an event are RO knowledge. Stem Focus is also somewhat confusing. (Large small break LOCA) (Which ECCS pumps are credited for this event) The question appears to be asking "what are the ECCS acceptance criteria for fuel clad temperature?" 4700 degrees F is not a plausible

401-9 Comments RESPONSE

C D

QuestionBank #	KA_system	KA_number
583	EPE011	2.2.36

KA_desc
EPE011 GENERIC□Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations. (CFR: 41.10 / 43.2 / 45.13)

Unit 2 is at 3% power. Given the following sequence of events:

12/01/08 1100 2A NI pump tagged to replace the motor cooler.
12/03/08 0500 2B D/G tripped on high vibration during performance of PT/2/A/4350/002B (Diesel Generator 2B Operability Test).
12/03/08 0700 You complete turnover and take the position of CRS.

1. What is the latest time that entry into Mode 3 is required per Technical Specifications assuming both components remain inoperable?
2. When you take shift duty at 0700, can the ECCS design criteria for a large break LOCA be assumed to be met?

Reference provided

A. 1. 12/03/08 1200
2. Yes

B. 1. 12/03/08 1200
2. No

C. 1. 12/03/08 1600
2. Yes

D. 1. 12/03/08 1600
2. No

C & D

General Discussion

This tests knowledge of the 4 hour additional time before redundant equipment is declared inoperable after the D/G is declared inoperable. Until that time 3.0.3 does not apply to this situation after that, 3.0.3 is entered.

Answer A Discussion

this is the time for 3.0.3 without the 4 hours; second part correct

Answer B Discussion

this is the time for 3.0.3 without the 4 hours; still within the 4 hour window, therefore 2B NI is assumed to be operable.

Answer C Discussion

correct

Answer D Discussion

correct time, still within the 4 hour window, therefore 2B NI is assumed to be operable. Correct ECCS design Criteria not met &.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
T.S. 3.5.2 and basis T.S. 3.8.1 and basis	Technical Specification 3.5.2 Technical Specification 3.8.1

QuestionBank #	KA_system	KA_number
583	EPE011	2.2.36

KA_desc
EPE011 GENERIC□Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations. (CFR: 41.10 / 43.2 / 45.13)

401-9 Comments:

011EG2.2.36 Question appears to match the K/A.
Reference for question 77 could help answer question 76. Appears to be SRO only. Stem Focus is also confusing. Try "assuming that components remain inoperable." Second question discussing ECCS Criteria.
Enhancements needed. NEW

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
584	APE026	AA2.05

KA_desc
Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: (CFR: 43.5 / 45.13)□The normal values for CCW-header flow rate and the flow rates to the components cooled by the CCWS .....

Unit 2 is at 100% power when an NLO reports the breaker for 2KC-56A (KC To ND Hx 2A Sup Isol) looks damaged. Upon investigation, the SPOC crew determines that 2KC-56A (KC To ND Hx 2A Sup Isol) will not open.

What is the minimum flow required through this valve when aligned for cold leg recirculation and for the situation above, what system is required to be declared inoperable?

A. 5000 gpm / 2A Train of KC

B. 5000 gpm / 2A Train of ND

C. 5700 gpm / 2A Train of ND

D. 5700 gpm / 2A Train of KC

B

General Discussion

KC SR is modified by a Note indicating that the isolation of the CCW flow to individual components may render those components inoperable but does not affect the OPERABILITY of the CCW System. Per EP/ES-1.3, 5000 per train is required. 5700 gpm is the miniflow given in ARP.

Answer A Discussion

Correct flow with incorrect TS.

Answer B Discussion

Answer C Discussion

Incorrect flow but correct TS

Answer D Discussion

Incorrect flow and TS

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
TSB 3.7.7 ES 1.3 OP/1/A/6100/010J KC56A DBD	

QuestionBank #	KA_system	KA_number
584	APE026	AA2.05

KA_desc

Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: (CFR: 43.5 / 45.13)□The normal values for CCW-header flow rate and the flow rates to the components cooled by the CCWS .....

401-9 Comments:

026AA2.05 Question Kind of matches K/A. There is not really a loss of the CCW system, but it is a loss of a control function of the system that effects CCW flow to the ND system. Stem Focus, second part of stem should read and what system is required to be declared inoperable? NEW

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
585	APE057	2.4.21

KA_desc
APE057 GENERIC□Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc. (CFR: 41.7 / 43.5 / 45.12)

Unit 1 is at 12% power following a refueling outage. Given the following conditions and sequence of events:

1200 1NCP5880 (NC Loop 1B Cold Leg Temp) failed low

1205 Unit 1 separated from the grid; the main turbine is carrying all in-house loads

1210 The crew has tripped the reactor, safety injected and entered EP/1/A/5000/E-0 (Reactor Trip or Safety Injection) based on the following indications:
- Charging flow is 125 gpm with letdown isolated
- PZR level is decreasing as a rate of 0.5% /minute

1213 1EDA loses all power due to a fault

1220 The crew is preparing to kick out of EP/1/A/5000/E-0 and notes the following indications:
- Containment pressure is stable at 0.08 psig
- All S/G pressures are stable at 1100 psig
- 1EMF-33 (Condenser Air Ejector Exhaust) Trip 2 is LIT
- Off-normal Critical Safety Function status as follows:
  - Containment is MAGENTA
  - Core Cooling is ORANGE
  - Heat Sink is YELLOW
  - NC Integrity is RED
  - NC Inventory is YELLOW

What is the next procedure to be entered?

A. Enter EP/1/A/5000/E-1 (Loss of Reactor or Secondary Coolant)

B. Enter EP/1/A/5000/E-3 (Steam Generator Tube Rupture)

C. Enter EP/1/A/5000/FR-C.2 (Response to Degraded Core Cooling)

D. Enter EP/1/A/5000/FR-P.1 (Response to Imminent Pressurized Thermal Shock)

B

General Discussion

Based on plant conditions the student should be able to determine that a tube rupture is the most likely accident. P.1 and C.2 are invalid due to the Tcold failure and loss of power to EDA respectively. A is correct. E3 is correct because there are indications of some type of NC inventory loss, however, since containment conditions are noraml, it should be deduced that it is a S/G tube leak along with the indications that EMF 33 is in alarm.

Answer A Discussion

some indications of LOCA outside containment, but containment conditions are nominal.

Answer B Discussion

CORRECT

Answer C Discussion

If red path is invalid and orange path is valid, then this would be the correct answer.

Answer D Discussion

if red path wer valid this would be correct.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
TS 3.3.2 basis AP 29	

QuestionBank #	KA_system	KA_number
585	APE057	2.4.21

KA_desc
APE057 GENERIC□Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc. (CFR: 41.7 / 43.5 / 45.12)

401-9 Comments:

057AG2.4.21 Question Kind of matches K/A. Not SRO knowledge. This questions tests whether the containment spray bistables are energize to actuate, or de-energize to actuate and why. Both of these are systems knowledge. Distractors A and C are not plausible. Why would a Bistable lit prevent actuation of a safety system? NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 80

D

QuestionBank #	KA_system	KA_number
586	APE058	AA2.03

KA_desc
Ability to determine and interpret the following as they apply to the Loss of DC Power: (CFR: 43.5 / 45.13)□DC loads lost; impact on ability to operate and monitor plant systems ....

Given the following:

- Unit 2 was operating at 100%.
- At 1000, charger 2ECA output breaker opened due to an overvoltage condition.
- The 2EDA tie breaker to 2EDC can not be closed.
- At 1130, battery 2EBA voltage dropped below the voltage required per Technical Specifications.

Which one of the following describes the latest time that bus 2EDA can be restored to prevent entering a shutdown action and which procedure will be entered initially to respond to this failure?

A. 1200; EP/2/A/5500/E-0 (Reactor Trip or Safety Injection)

B. 1200; AP/2/A/5500/029 (Loss of Vital or Aux Control Power)

C. 1330; EP/2/A/5500/E-0 (Reactor Trip or Safety Injection)

D. 1330; AP/2/A/5500/029 (Loss of Vital or Aux Control Power)

General Discussion

Loss of EPA causes Reactor Trip but this does not occur until batteries are used up. EP/E-0 would take precedence over AP/29 once a trip occurs and AP/29 would be used after crew exits E-0 and enters ES-01. However in this case, the reactor does not trip sinc abttery will carry load for some time period. Correct action is 2 hours for DC. EDA does not become inoperable until the battery voltage drops below TS limits per the basis of TS 3.8.9

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
TS 3.8.9 EPL lesson	

QuestionBank #	KA_system	KA_number
586	APE058	AA2.03

KA_desc
Ability to determine and interpret the following as they apply to the Loss of DC Power: (CFR: 43.5 / 45.13)□DC loads lost; impact on ability to operate and monitor plant systems ....

401-9 Comments:

058AA2.03 Question does not really meet the K/A. What DC loads were lost? I am sure that if the unit trips that some loads were lost. I also realize that the entering of E-0 implies that the loss of dc (impact) caused the reactor to trip. Question was also marked as a memory level question. A reference is also provided. If this is a memory level question then a reference should not be required. NEW

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
587	APE077	AA2.09

KA_desc
Ability to determine and interpret the following as they apply to Generator Voltage and Electric Grid Disturbances: (CFR: 41.5 and 43.5 / 45.5, 45.7, and 45.8)□Operational status of emergency diesel generators.....

Unit 1 is operating at 100% power.
Unit 2 is in a refueling outage with 2EMXH aligned to Unit 1 power.

Given the following conditions and sequence of events:

0530 1AD-11, G/6 "SWGR 1ETA DEGRADED BUS VOLTAGE" is LIT
1AD-11, H/6 "SWGR 1ETB DEGRADED BUS VOLTAGE" is LIT
1AD-11, K/6 "230KV SWITCHYARD VOLTAGE LO" is LIT

0535 The STA notes by OAC trends that 1ETA and 1ETB minimum voltages were 3620V and 3637V respectively and are now increasing.

1. At 0530, what is the earliest time required for Unit 1 to enter Mode 3 per Technical Specifications?
2. At 0535, assuming no operator actions, what is the status of D/G 1A and D/G 1B?

A. 7 hours due to TS 3.0.3; both running

B. 7 hours due to TS 3.0.3; both secured

C. 6 hours due to TS 3.7.5 (Auxiliary Feedwater (AFW) System); both running

D. 6 hours due to TS 3.7.5 (Auxiliary Feedwater (AFW) System); both secured

General Discussion

At 90% voltage a 10 min timer starts to intiate a BO of the essential busses. This time is 5 seconds if a LOCA has occurred (in this case the D/Gs would start and load). Also, if voltage decreases to approximately 84% the D/G would start and load. Neither of these situations occurred so the D/Gs are not started. The annunciators imply a grid disturbance. With degraded bus voltage shared systems VA, RN and VCYC are in 3.0.3. The RN procedure refers to RN, VCYC and CA when various protions of RN are inoperable thereby making CA a valid distractor.

Answer A Discussion

Wrong D/G status

Answer B Discussion

CORRECT

Answer C Discussion

Both parts wrong - psychometric balance

Answer D Discussion

Wrong TS acton

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
EQB lesson EPA lesson OP/1/B/6100/010L 1AD-11 Annun resp	

QuestionBank #	KA_system	KA_number
587	APE077	AA2.09

KA_desc
Ability to determine and interpret the following as they apply to Generator Voltage and Electric Grid Disturbances: (CFR: 41.5 and 43.5 / 45.5, 45.7, and 45.8)□Operational status of emergency diesel generators.....

401-9 Comments:

077AA2.09 Question appears to match K/A. May not be SRO only. Determining if the D/Gs will be running based on voltage is RO knowledge. T/S entry conditions are also RO knowledge. This question is somewhat convoluted. Need to understand why this is SRO knowledge at CNS. NEW

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
588	APE024	2.2.39

KA_desc
APE024 GENERIC□Knowledge of less than or equal to one hour Technical Specification action statements for systems. (CFR: 41.7 / 41.10 / 43.2 / 45.13)

Unit 1 is in Mode 1.

1. With a Boric Acid Tank (BAT) temperature of 63°F, what is the most limiting required Technical Specification/Selected License Commitment action time?
2. What plant event requires emergency boration using 1NV-236B (Boric Acid to NV Pumps Suct)?

A. 1. 1 hour
   2. In response to an ATWS

B. 1. 72 hours
   2. In response to an ATWS

C. 1. 1 hour
   2. When control rods are below the Lo-Lo insertion limits

D. 1. 72 hours
   2. When control rods are below the Lo-Lo insertion limits

B

General Discussion

Both procedures direct use of emergency boration but must be in Mode 3 to use it in AP10.

FWST level is a one hour action, BAT is 72 hours BAT is the suction source for emerg boration.

Answer A Discussion

right procedure, wrong time

Answer B Discussion

CORRECT

Answer C Discussion

both wrong, psychometric balanc

Answer D Discussion

wrong procedure, right time

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
TS 3.5.4 and basis	

QuestionBank #	KA_system	KA_number
588	APE024	2.2.39

KA_desc
APE024 GENERIC□Knowledge of less than or equal to one hour Technical Specification action statements for systems. (CFR: 41.7 / 41.10 / 43.2 / 45.13)

401-9 Comments:

024AG2.2.39 Does not really meet K/A. Not SRO only, this is system knowledge for ROs. There does not appear to be a need for an emergency boration, this meets the generic application, but the not the emergency boration abnormal? Question as written is Unsat. NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 83

D

QuestionBank #	KA_system	KA_number
589	APE068	2.4.21

KA_desc
APE068 GENERIC□Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc. (CFR: 41.7 / 43.5 / 45.12)

Unit 1 is operating at 100% power. Unit 2 is in No Mode. The control room has become uninhabitable due to chlorine gas intrusion and control has been shifted to the Auxiliary Shutdown Complex per AP/1/A/5500/017 (Loss of Control Room).

1. How is adequate primary side inventory assured?
2. For the situation above, which one of the following sets of valves would require a temporary modification to prevent them from automatically aligning should a safety injection occur?

A.
1. Automatic swap of NV pump suctions to the FWST
2. 1NI-9A (NV Pmp C/L Inj Isol) and 1NI-10B (NV Pmp C/L Inj Isol)

B.
1. Automatic swap of NV pump suctions to the FWST
2. 1ND-26 (ND Hx 1A Outlet Ctrl) and 1ND-60 (ND Hx 1B Outlet Ctrl)

C.
1. Manual swap of NV pump suctions to the FWST
2. 1NI-9A (NV Pmp C/L Inj Isol) and 1NI-10B (NV Pmp C/L Inj Isol)

D.
1. Manual swap of NV pump suctions to the FWST
2. 1ND-26 (ND Hx 1A Outlet Ctrl) and 1ND-60 (ND Hx 1B Outlet Ctrl)

General Discussion

The design basis for the ASP does not allow for a DBA concurrent with its operation. When swapped to the ASP the interlock for automatic swap of NV pump suctions is defeated and manually is perfromed by procedure at 23% VCT level. 4% is the correct swap setpoint for autoswap. The ASP Complex consists of a variety of panels and is capable of attaining and maintaining mode 5 conditions. The ND HX BYPASS valves are controlled via manual loader outside the ND/NS pump room
Ni9 and 10 do not need to be jumpered. . Valve NI9A will close when control is transferred to Auxiliary Shutdown Panel (ASP) A. Interlocks are installed in the valve control circuit so that the valve can not be opened, either from the Control Room or by the Solid State Protection System, when control is transferred to the ASP A.
Valve NI10B will close when control is transferred to Auxiliary Shutdown Panel (ASP) B. Interlocks are installed in the valve control circuit so that the valve can not be opened, either from the Control Room or by the Solid State Protection System, when control is transferred to the ASP B.
ND valves fail open on a SI when at the ASP.

Answer A Discussion

Both wrong

Answer B Discussion

first part wrong, second part right

Answer C Discussion

second part wrong, first part right

Answer D Discussion

CORRECT

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
AP/17 and basis	

QuestionBank #	KA_system	KA_number
589	APE068	2.4.21

KA_desc
APE068 GENERIC□Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc. (CFR: 41.7 / 43.5 / 45.12)

401-9 Comments:

068AG2.4.21 Question appears to meet the K/A. Not SRO only. The question has two parts, how is primary side inventory assured from the ASP, and will the ASP combat a Design Basis Accident. Both of these items are basic system functions (what is the ASP designed to do) and are RO knowledge.
NEW

401-9 Comments RESPONSE

A

QuestionBank #	KA_system	KA_number
590	APE069	AA2.01

KA_desc
Ability to determine and interpret the following as they apply to the Loss of Containment Integrity: (CFR: 43.5 / 45.13)□Loss of containment integrity .....

Assuming no additional actions, which one of the following situations will result in a required Technical Specification shutdown within the next 30 days?

A. 1VI-77B (VI Cont Isol) fails in an intermediate position

B. Both lower personnel airlock doors closed and locked with both seals deflated on the outer door only

C. Both upper personnel airlock doors closed and locked with the airlock door interlock mechanism inoperable

D. 1VQ-15B (Cont Air Add Cont Isol) fails in an intermediate position and 1VQ-16A (Cont Air Add Cont Isol) is closed and de-activated

General Discussion

Answer A Discussion

CORRECT (not in compliance with 3.6.3 (4 hours to take action and 6 hours to shutdown.

Answer B Discussion

TS 3.6.2 is being complied with, no shutdown required.

Answer C Discussion

TS 3.6.2 is being complied with , no shutdown required.

Answer D Discussion

TS 3.6.3 is being complied with, no shutdown required.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided

QuestionBank #	KA_system	KA_number
590	APE069	AA2.01

KA_desc
Ability to determine and interpret the following as they apply to the Loss of Containment Integrity: (CFR: 43.5 / 45.13)□Loss of containment integrity .....

401-9 Comments:

069AA2.01 Question does not meet K/A. This question is written for WE14 High Containment Pressure EA2.1. The APE for containment integrity in concerned with integrity as is applies to normal at power operation. What would be considered a loss of containment integrity at 100% power etc. The question as written is also not SRO only. CSF entry conditions and major notes and cautions in procedure are RO knowledge. NEW

401-9 Comments RESPONSE

A

QuestionBank #	KA_system	KA_number
591	WE16	EA2.1

KA_desc
Ability to determine and interpret the following as they apply to the (High Containment Radiation) (CFR: 43.5 / 45.13)□Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Regarding the use of EP/1/A/5000/FR-Z.3 (Response To High Containment Radiation):

1. At what minimum reading on 1EMF 53A (Containment High Range) is the YELLOW path for Containment High Radiation valid?
2. What mitigative strategy does this procedure direct to reduce activity in the containment atmosphere?

A. 1. 35 R/hr
   2. Start Containment Auxiliary Charcoal Filter Units.

B. 1. 15 R/hr
   2. Start Containment Auxiliary Charcoal Filter Units.

C. 1. 35 R/hr
   2. Ensure the VE system is in service and vent containment to the annulus using the VY system.

D. 1. 15 R/hr
   2. Ensure the VE system is in service and vent containment to the annulus using the VY system.

General Discussion

H2 removal is plausible because the VE filters will get saturated with H2 if H2 Purge is used. 15 R is eye lens dose equivalent. No other dose RATEs were available.

Answer A Discussion

CORRECT

Answer B Discussion

wrong dose rate

Answer C Discussion

wrong system

Answer D Discussion

both wrong

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
VV lesson F-0 RP-0.1	

QuestionBank #	KA_system	KA_number
591	WE16	EA2.1

KA_desc
Ability to determine and interpret the following as they apply to the (High Containment Radiation) (CFR: 43.5 / 45.13)□Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

401-9 Comments:

WE16EA2.1 Question does not totally meet the K/A. There is no procedure selection. The applicant is given what procedure is to be implemented in the Stem. However, there is some value in the setpoint that requires entry into the procedure, this is RO knowledge. The basis statements are really the function of a charcoal filter. This is also RO (radiation worker knowledge). Therefore the question is not SRO only. NEW

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
592	SYS003	A2.01

KA_desc
Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5/ 45.3 / 45/13)□Problems with RCP seals, especially rates of seal leak-off .....

Unit 2 is in preparations for startup with the shutdown banks withdrawn and the control banks inserted. Given the following:

- 2AD-7 C/1 NCP #1 "SEAL LEAKOFF HI FLOW" is LIT
- 2B NCP seal leakoff is 6.5 gpm
- 2B NCP Seal Outlet temperature is slowly increasing
- The crew enters AP/2/A/5500/008 (Malfunction of Reactor Coolant Pump)

What is the maximum time 2B NCP can remain in service and what procedure does AP/2/A/5500/008 direct the crew to enter once the pump is tripped?

A. 5 minutes; EP/2/A/5000/E-0 (Reactor Trip or Safety Injection)

B. 5 minutes; AP/2/A/5500/004 (Loss of Reactor Coolant Pump)

C. 8 hours; OP/2/A/6100/002 (Controlling Procedure For Unit Shutdown)

D. 8 hours; AP/2/A/5500/004 (Loss of Reactor Coolant Pump)

General Discussion

A "normal" value requiring a 5 minute S/D is greater than or equal to 7.5. The 6.5 would normally cause an 8 hour S/D however, in this case the temperature is slowly increasing. Since the plant is in MODE 3 tripping the reactor is not required and AP/04 will be entered not E-0. The 10 minute time is the time for loss of seal cooling from KC and NV (SSF) causing seal failure.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [ ] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
OP/1/B/6100/010H 1AD07 AP/1/A/5500/004 AP/1/A/5500/008	

QuestionBank #	KA_system	KA_number
592	SYS003	A2.01

KA_desc

Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5/ 45.3 / 45/13)□Problems with RCP seals, especially rates of seal leak-off .....

401-9 Comments:

003A2.01 Question appears to match K/A. Appears to be SRO only.
What makes the procedure selection in C plausible? NEW

401-9 Comments RESPONSE

~~QUESTION 87~~ Question C DELETED

QuestionBank #	KA_system	KA_number
593	SYS026	2.4.47

KA_desc
SYS026 GENERIC□Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material. (CFR: 41.10 / 43.5 / 45.12)

The night shift surveillance readings for Lake Wylie temperature over the past several days are as follows:

- 8/01/08 – 87.50° F.
- 8/02/08 – 88.25° F.
- 8/03/08 – 89.00° F.
- 8/04/08 – 89.75° F.
- 8/05/08 – 90.50° F.

1. Assuming lake temperature continues to increase at a constant rate, on what date will Lake Wylie temperature first exceed the requirements of SLC 16.9-14 (Lake Wylie Water Temperature)?
2. What affect, if any, will this higher lake temperature have on the ability of the NS system to affect containment pressure following a large break LOCA?

A.
1. 8/09/08
2. Minimal impact prior to ice melt, but significant impact later in the accident sequence when the ice has been depleted.

B.
1. 8/09/08
2. Minimal impact during the entire accident sequence since lake temperature is still below the design basis accident assumptions.

C.
1. 8/12/08
2. Minimal affect prior to ice melt, but significant affect later in the accident sequence when the ice has been depleted.

D.
1. 8/12/08
2. Minimal impact during the entire accident sequence since lake temperature is still below the design basis accident assumptions.

FOR REVIEW ONLY - DO NOT DISTRIBUTE

2008 SRO NRC Examination

~~QUESTION 87~~

QUESTION DELETED

C

General Discussion

SLC requirement is 95.5 degrees which would be exceeded on 8/12/08. 08/09/08 is the time which would require one train of RN to be aligned to the pond during ES 1.3. and is the same action as the slc.

Answer A Discussion

Wrong date; 2 is incorrect

Answer B Discussion

Wrong date

Answer C Discussion

CORRECT

Answer D Discussion

2 is incorrect

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
SLC 16.9-14 ES1.3 TSB3.7.9	

QuestionBank #	KA_system	KA_number
593	SYS026	2.4.47

KA_desc
SYS026 GENERIC□Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material. (CFR: 41.10 / 43.5 / 45.12)

401-9 Comments:

026G2.4.47 Question appears to match K/A. Appears to SRO only.
SAT NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 88

D

QuestionBank #	KA_system	KA_number
594	SYS039	A2.02

KA_desc
Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)□Decrease in turbine load as it relates to steam escaping from relief valves .

Given the following:

- Rod control is in MANUAL.
- Turbine power has decreased from 1227 MW to 1214 MW and stabilized.
- The crew has just entered AP/1/A/5500/028 (Secondary Steam Leak).

What single steam relief valve passing 20% of its full flow would produce the conditions noted and what actions will be directed per AP/1/A/5500/028 based on the above conditions?

A. A steam line safety; trip the reactor and go to EP/1/A/5000/E-0 (Reactor Trip or Safety Injection.

B. A S/G PORV; trip the reactor and go to EP/1/A/5000/E-0 (Reactor Trip or Safety Injection.

C. A S/G PORV; initiate a unit shutdown per AP/1/A/5500/009 (Rapid Downpower)

D. A steam line safety; initiate a unit shutdown per AP/1/A/5500/009 (Rapid Downpower)

General Discussion

A PORV is about 2.5% steam flow and a safety is about 5%. This turbine MW represents a a safety valve 20% open (~12-13 MW) Therefore it is a PORV. AP/28 directs tripping the reactor and entering E-0 if steam leak is >5%. Otherwise a load reduction is performed per AP/09 (or the OP which is not an answer choice) Rx. Trip is required per Enc 1 if cant make up sufficent to losses of condensate water. Full open porv is ~900 gpm. Max makeup is ~400 gpm if RO units are bypassed. Therefore, if the leak greater than 50% open, would meet criteria of Encl 1 to trip Rx.

Answer A Discussion

right valve, wrong action

Answer B Discussion

wrong valve wrong action

Answer C Discussion

wrong vavle right action

Answer D Discussion

CORRECT

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
AP/28 SM	

QuestionBank #	KA_system	KA_number
594	SYS039	A2.02

KA_desc
Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)□Decrease in turbine load as it relates to steam escaping from relief valves .

401-9 Comments:

039A2.02 Question appears to match K/A. Stem Focus-stem is confusing. Not sure that this is SRO only knowledge. This may be procedure entry requirements. Will Discuss. Not sure that distractor A or B is plausible. Trip the reactor for an 8 MW. Change? NEW

401-9 Comments RESPONSE

~~QUESTION 89~~

Question DELETED

B

QuestionBank #	KA_system	KA_number
595	SYS062	2.1.20

KA_desc
SYS062 GENERIC□Ability to interpret and execute procedure steps. (CFR: 41.10 / 43.5 / 45.12)

Unit 1 is operating at 100% power. Given the following:

- 1A D/G was manually started by NLOs for monthly surveillance testing
- A grid instability and relay failures caused all Unit 1 Switchyard PCBs to open
- 1B D/G failed to start
- Annunciator D/G 1A Panel, A/4 "TRIP LOW PRESS LUBE OIL" – LIT
- The ensuing transient resulted in a 1B S/G tube rupture

Which procedure will be used to isolate the ruptured S/G in this situation, and what procedural guidance is given regarding isolation of the ruptured steam generator?

A. EP/1/A/5000/E-3 (Steam Generator Tube Rupture) is used to isolate the ruptured S/G as soon as it is identified.

B. EP/1/A/5000/E-3 (Steam Generator Tube Rupture) is used to isolate the ruptured S/G only if S/G NR level is greater than 11%.

C. EP/1/A/5000/ECA-0.0 (Loss of All AC Power) is used to isolate the ruptured S/G as soon as it is identified.

D. EP/1/A/5000/ECA-0.0 (Loss of All AC Power) is used to isolate the ruptured S/G only if S/G NR level is greater than 11%.

~~QUESTION 89~~ B

QUESTION DELETED

General Discussion

Setup is that the only source of power may (or may not) be 1A D/G. The lo lube oil setpoint will trip the D/G for manual starts, however, the loca seq will cause the non-emergency trips to be blocked, hence 1A D/G will be available so entry into ECA 0.0 is not required. E3 guidance is to maintian > 11% NR level

Answer A Discussion

This is the correct guidnace per ECA0.0 for isolation of a ruptured S/G. But E3 is the proper procedure.

Answer B Discussion

CORRECT

Answer C Discussion

This would be correct if this was a loss of all AC (A D/G not available)

Answer D Discussion

This is the proper guidance (per E-3) but not the correct procedure.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
D/G 1A Annun RESP ECA 0.0 E-3 DG3	

QuestionBank #	KA_system	KA_number
595	SYS062	2.1.20

KA_desc
SYS062 GENERIC□Ability to interpret and execute procedure steps. (CFR: 41.10 / 43.5 / 45.12)

401-9 Comments:

062G2.1.20 Question appears to match K/A. As written all answers are correct, all of these procedures will isolate the S/G. Stem is not focused properly. A is also not totally correct. If level is greater than 11%, the S/G will be isolated. This question needs some rewording. NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 90

D

QuestionBank #	KA_system	KA_number
596	SYS076	A2.02

KA_desc
Ability to (a) predict the impacts of the following malfunctions or operations on the SWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45/3 / 45/13)□Service water header pressure .....

Both units were operating at 100% power with 1A RN pump in service.

1A D/G was operating in parallel for surveillance testing when the following conditions and sequence of events occurred:

- 1AD-12, A/2 "RN ESSENTIAL HDR A PRESSURE – LO" - LIT
- 2AD-12, A/2 "RN ESSENTIAL HDR A PRESSURE – LO" - LIT
- 1AD-12, A/5 "RN ESSENTIAL HDR B PRESSURE – LO" - LIT
- 2AD-12, A/5 "RN ESSENTIAL HDR B PRESSURE – LO" - LIT
- NLO reported that he evacuated the 1A D/G room due to flooding.
- 1A D/G was immediately secured by the control room crew.
- All annunciators listed above continue to remain LIT.
- The crew entered and took all actions per AP/0/A/5500/030 (Plant Flooding) necessary to stop the flooding.

1. At what RN header pressure do the annuciators <u>first</u> come into alarm?
2. What is the current overall status related to Tech Spec 3.7.8 (Nuclear Service Water System (NSWS))?

A. 1. 40 psig decreasing
   2. Unit 1 in a 72 hour action, Unit 2 operable

B. 1. 40 psig decreasing
   2. Both units in a 72 hour action

C. 1. 46 psig decreasing
   2. Unit 1 in a 72 hour action, Unit 2 operable

D. 1. 46 psig decreasing
   2. Both units in a 72 hour action

D

General Discussion

Rn low header pressure comes in at 46 pisg decreaing. With the 1A D/G secured, RN232A would close. Since the conditions persist following shutdown, the leak must be between the D/G building wall and RN232A. The only way that this leak can be secured is to separate RN trains and secure all of A train RN which is what AP30 does. This makes both units enter a 72 action for RN. The 40 psig value is the RN/YV opearble light pressure setpoint.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
AP30 RN lesson TS 3.7.8	

QuestionBank #	KA_system	KA_number
596	SYS076	A2.02

KA_desc
Ability to (a) predict the impacts of the following malfunctions or operations on the SWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45/3 / 45/13)□Service water header pressure .....

401-9 Comments:

076A2.02 Question appears to match K/A. Appears to be SRO knowledge. SAT. NEW

401-9 Comments RESPONSE

QuestionBank #	KA_system	KA_number
597	SYS033	2.2.22

KA_desc
SYS033 GENERIC□Knowledge of limiting conditions for operations and safety limits. (CFR: 41.5 / 43.2 / 45.2)

Unit 2 is in Mode 6 performing core unloading when Spent Fuel Pool level is noted at 22 feet above the fuel assemblies.

1. Which one of the following is a required action for the above condition per Technical Specifications?
2. What is the basis for maintaining a minimum acceptable water level?

A.
1. Immediately suspend movement of irradiated fuel assemblies
2. Ensures shielding during fuel movement and to meet the assumptions for iodine decontamination factors following a fuel handling accident

B.
1. Immediately suspend movement of irradiated fuel assemblies
2. Ensures that there is a sufficient volume of water above the fuel assemblies to provide backup decay heat removal

C.
1. Within 1 hour, initiate action to restore spent fuel pool level to within limits.
2. Ensures shielding during fuel movement and to meet the assumptions for iodine decontamination factors following a fuel handling accident

D.
1. Within 1 hour, initiate action to restore spent fuel pool level to within limits.
2. Ensures that there is a sufficient volume of water above the fuel assemblies to provide backup decay heat removal

General Discussion

SFP Boron should be >2700 and level should be >23 feet. Both specs are not met.
Action for boron out is to stop moving all fuel assemblies in the spent fuel pool and initiate action to get it back. Action for level out is to stop moving irradiated fuel. Correct answer states stop moving fuel assemblies. This encompasses both irradiated and none irradiated. The 72 hour basis is from the SSF and the SFP level requirements.
Basis for boron: Calculations show that the soluble boron concentrations needed to maintain the spent fuel pool keff below 0.95 for the postulated accidents related to fuel assembly movement are far less than the minimum amount available in the spent fuel pools (per the LCO for TS 3..7.15).
Level basis is: The specified water level shields and minimizes the general area dose when the storage racks are filled to their maximum capacity.

Answer A Discussion

Answer B Discussion

Correct action with correct basis

Answer C Discussion

Incorrect action with correct basis

Answer D Discussion

Incorrect action with incorrect basis

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References
COLR TS3.7.14 and basis TS3.7.15 and basis SLC16.7-9

Student References Provided

QuestionBank #	KA_system	KA_number
597	SYS033	2.2.22

KA_desc
SYS033 GENERIC□Knowledge of limiting conditions for operations and safety limits. (CFR: 41.5 / 43.2 / 45.2)

401-9 Comments:

033G2.2.22 Question appears to match K/A. General discussion does not make sense. It talks about boron, and the basis for boron, however boron is not mentioned in the question. Distractors B and D do not appear to be credible. NEW

401-9 Comments RESPONSE

C

QuestionBank #	KA_system	KA_number
598	SYS072	A2.02

KA_desc
Ability to (a) predict the impacts of the following malfunctions or operations on the ARM system- and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 43.3 / 45.13)□Detector failure .....

Given the following:

- Unit 2 has experienced a Safety Injection.
- All S/G pressures are 1000 psig and stable.
- The crew has entered EP/2/A/5000/E-3 (Steam Generator Tube Rupture) due to 2EMF-10 (Steamline A) Trip 1 light being LIT.
- The BOP informs the OSM that 2RAD-3, F/3 (CABINET TROUBLE) is LIT
- The OSM believes the EMF detector may have failed.

1. What method can the crew use to determine the validity of the EMF indication?
2. Once the indication is determined to be false, which of the following describes the correct procedure transition?

A.
1. Verify Trip 1 alarm on adjacent steamline EMF (2EMF-13 (Steamline D)) is DARK
2. Transition to EP/2/A/5000/ES-0.0 (Rediagnosis)

B.
1. Verify Trip 1 alarm on adjacent steamline EMF (2EMF-13 (Steamline D)) is DARK
2. Evaluate tape flags in EP/2/A/5000/E-3 and then transition to EP/2/A/5000/E-1 (Loss of Reactor or Secondary Coolant)

C.
1. Request that RP frisk cation columns
2. Transition to EP/2/A/5000/ES-0.0 (Rediagnosis)

D.
1. Request that RP frisk cation columns
2. Evaluate tape flags in EP/2/A/5000/E-3 and then transition to EP/2/A/5000/E-1 (Loss of Reactor or Secondary Coolant)

General Discussion

Entry into ES-0.0 may be made at anytime. Adjacent steamline EMFs can be used to diagnose a SGTR if the actual S/G EMF is broken. However those are the N16 monitors and these are not (plausible).

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
E-1 E-3	

QuestionBank #	KA_system	KA_number
598	SYS072	A2.02

KA_desc

Ability to (a) predict the impacts of the following malfunctions or operations on the ARM system- and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 43.3 / 45.13)□Detector failure .....

401-9 Comments:

072A2.02 Not sure the question meets the K/A. The K/A refers to a failed detector, and there is nothing in the question that tests this. The question does state that the OSM believes the EMF indication to be false. I am not sure that this means the same thing. What procedure directs the operator to have RP frisk the cation columns? Not sure it is SRO only (procedure entry requirements) NEW

401-9 Comments RESPONSE

D

QuestionBank #	KA_system	KA_number
599	SYS086	A2.01

KA_desc
Ability to (a) predict the impacts of the following malfunctions or operations on the Fire Protection System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)□Manual shutdown of the FPS .....

Given the following:

- Unit 1 is at 100% power.
- Unit 2 is in No Mode.
- NLOs were running the SSF D/G per PT/0/A/4200/017 (Standby Shutdown Facility Diesel Test) when a fuel oil leak resulted in a fire.
- The SSF sprinkler system failed to actuate which resulted in damage to the SSF D/G.
- The Plant Fire Brigade extinguished the fire 20 minutes later.

What is the current emergency classification and what procedure will be used to address this situation?

Reference provided

A. Unusual Event; AP/1/A/5500/017 (Loss of Control Room) Case 2, "Loss of Plant Control Due to Fire or Security Event"

B. Unusual Event; AP/0/A/5500/045 (Plant Fire)

C. Alert; AP/1/A/5500/017 (Loss of Control Room) Case 2, "Loss of Plant Control Due to Fire or Security Event"

D. Alert; AP/0/A/5500/045 (Plant Fire)

D

General Discussion

Unusual event is fire extinguished after 15 min or greater. Alert is visible damage to certain equipment (of which the SSF is one) regardless of length of fire. AP/17 is used if there is a fire in the ASP affecting both trains of control. If the ASP is confused with the SSF this is plausible.

Answer A Discussion

Wrong classification, wrong procedure

Answer B Discussion

worng classification,. Right procedure

Answer C Discussion

right classification, wrong procedure

Answer D Discussion

CORRECT

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References
RP/01 RFY

Student References Provided
RP/0/A/5000/001 Classification of Emergency

QuestionBank #	KA_system	KA_number
599	SYS086	A2.01

KA_desc
Ability to (a) predict the impacts of the following malfunctions or operations on the Fire Protection System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)□Manual shutdown of the FPS .....

401-9 Comments:

086A2.01 Kind of matches K/A. What procedure was used to correct control or mitigate the consequences of manual operation? I realize that the classification is an attempt to make it SRO only. Distractor analysis not correct. NEW

401-9 Comments RESPONSE

QuestionBank #	KA_system	KA_number
600	GEN2.1	2.1.14

KA_desc
Conduct of Operations□Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trips, mode changes, etc. (CFR: 41.10 / 43.5 / 45.12)

Unit 1 is at 100% with 1A CA pump tagged for preventative maintenance. Given the following conditions and sequence of events:

- The main turbine trips due to faulty MSR high level signal
- NLOs were dispatched and opened the reactor trip breakers locally
- CAPT tripped on overspeed
- 1B CA Pump is found to have no indicating lights and no discharge pressure or flow indicated
- NLO reports 1B CA Pump control power is unavailable
- CAPT was successfully reset and restarted

- Current S/G parameters are:

	1A	1B	1C	1D
N/R level	10%	7%	9%	10%
CA flow	105 gpm	105 gpm	115 gpm	110 gpm

Which one of the following is the correct Emergency Action Level and the first required notification to plant personnel for this current conditions?

Reference provided

A. Enter a General Emergency and notify all plant personnel to perform a site assembly

B. Enter a General Emergency and notify non-essential plant personnel to perform a site evacuation

C. Enter a Site Area Emergency and notify all plant personnel to perform a site assembly

D. Enter a Site Area Emergency and notify non-essential plant personnel to perform a site evacuation

General Discussion

Turbine trip should have resulted in a reactor trip but didn't and rx had to be tripped locally. Based on S/G conditions, Heat Sink is in RED due to S/G levels <11% with total feed flow <450gpm. This loss of heat sink will cause entry into the fission product barrier matrix of RP/01 as Site Area Emergency, however it is a general emergency based on ATWS requiring local trip AND HEAT SINK in red. A site evacuation is always precluded by a site assembly, and never done directly.

Answer A Discussion

Answer B Discussion

Correct classification wrong action

Answer C Discussion

Wrong classification and action (but a correct action if the classification was true).

Answer D Discussion

Incorrect classification and action

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	MODIFIED	2006 NRC Q90 (Bank 696)

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [ ] NRC Approved

Development References

References:
1. RP/01
2. TS 3.7.5
OP-CN-EP-SEP14

Student References Provided

RP/0/A/5000/001 Classification of Emergency

QuestionBank #	KA_system	KA_number
600	GEN2.1	2.1.14

KA_desc

Conduct of Operations□Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trips, mode changes, etc. (CFR: 41.10 / 43.5 / 45.12)

401-9 Comments:

G2.1.14 Question appears to match K/A. Do not see how this is a general emergency. If a site evacuation is always precluded by a site assembly, why would anyone choose B or D. There is not a release etc. Question needs some work. Modified

401-9 Comments RESPONSE

D

QuestionBank #	KA_system	KA_number
601	GEN2.1	2.1.36

KA_desc
Conduct of Operations□Knowledge of procedures and limitations involved in core alterations. (CFR: 41.10 / 43.6 / 45.7)

Given the following:

- Core reload is in progress with 1A ND train in service.
- 1B ND train is inoperable.
- The fuel handling SRO requests 1A ND train be secured to allow a fuel assembly to be placed near the cold leg nozzle.

1. What is the maximum time 1A ND train can remain shutdown per Technical Specification 3.9.4 (Residual Heat Removal (RHR) and Coolant Circulation—High Water Level)
2. Why is boron concentration of any NC System make-up strictly limited with all ND loops shutdown?

A. 1. 30 minutes
   2. Lack of adequate NC System temperature monitoring

B. 1. 30 minutes
   2. Lack of adequate mixing of NC System water

C. 1. 1 hour
   2. Lack of adequate NC System temperature monitoring

D. 1. 1 hour
   2. Lack of adequate mixing of NC System water

D

General Discussion

TS says 'The required RHR loop may be removed from operation for < 1 hour per 8 hour period, provided no operations are permitted that would cause introduction of coolant into the Reactor Coolant System with boron concentration less than required to meet the minimum required boron concentration of LCO 3.9.1." The 30 minutes is the completion time for AFD and several other TS and Safety limits. It ensures the correct answer of 1 hour is not telegraphed by having a greater than 1 hour action and not giving the TS as a reference. Additions must be >COLR limit since there is no mixing with no ND in service. An ND loop in service provides heat removal, mixing, and temperature indication. Lack of temperature monitoring is a reason for only having 1 hour , but is not the reason boron concentration is limited.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
TS 3.9.4 and basis TS 3.2.3	

QuestionBank #	KA_system	KA_number
601	GEN2.1	2.1.36

KA_desc
Conduct of Operations□Knowledge of procedures and limitations involved in core alterations. (CFR: 41.10 / 43.6 / 45.7)

401-9 Comments:

G2.1.36 If these are precautions and limitations, then the question appears to match the K/A. This appears to be just T/S requirements while refueling. Does not appear to be SRO only. All of these items are RO knowledge. NEW

401-9 Comments RESPONSE

B

QuestionBank #	KA_system	KA_number
602	GEN2.2	2.2.15

KA_desc
Equipment Control□Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc. (CFR: 41.10 / 43.3 / 45.13)

Unit 1 is operating in Mode 3 preparing for a reactor startup following a refueling outage. Given the following events and conditions:

- NC Pump 1C is running.
- Reactor trip breakers are tagged open.
- Maintenance determines that the MOV test data from the outage indicates that the torque switches for 1ND-65B (ND TRAIN 1B HOT LEG INJ ISOL) have been set too low.
- The SWM requests OSM approval to tag closed 1ND-65B for repairs.

Which one of the following statements correctly describes the operating restrictions and implications of tagging closed 1ND-65B?

A. 1ND-65B may be tagged closed for 72 hours if the steam generator in the running NC loop is operable.

B. 1ND-65B may <u>not</u> be tagged closed because this would make both trains of ND inoperable.

C. 1ND-65B may <u>not</u> be tagged closed unless two NCPs are running with operable steam generators.

D. 1ND-65B may be tagged closed if 1ND-65B is restored to operation prior to transitioning to mode 2.

B

General Discussion

Bank Question: 096.1

Answer A Discussion

Incorrect: Both trains of ND will be inoperable.
Plausible: If the candidate assumes 1 S/G and the A ND loop.

Answer B Discussion

Correct: ND-65 prevents ND flow to all 4 loops.

Answer C Discussion

Incorrect: Both trains of ND will be inoperable.
Plausible: If the candidate focuses only on decay heat removal.

Answer D Discussion

Incorrect: Both trains of ND will be inoperable.
Plausible: If the candidate assumes that one ND train is sufficient in mode 3.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	BANK	2003 NRC Q76 (Bank 276)

- ☑ Developed
- ☑ OPT Approved
- ☑ OPS Approved
- ☑ NRC Approved

Development References

Lesson Plan Objective: PS-ND SEQ 11
References:
1. OP-CN-PS-ND pages 12. 18
2. Tech Spec & Bases 3.4.5 -
3. Tech Spec & Bases 3.4.6 -
4. Tech Spec & Bases 3.5.2 -

Student References Provided

QuestionBank #	KA_system	KA_number
602	GEN2.2	2.2.15

KA_desc

Equipment Control□Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc. (CFR: 41.10 / 43.3 / 45.13)

401-9 Comments:

G2.2.15 Question appears to match K/A. Is there a block for the WCCSRO to sign the BCNF? Is the WCCSRO a required Technical Specification position? Is all this done without the Control Room Supervisors knowledge/permission? Not sure this is SRO only. Any individual responsible for hanging Red Tags would require this knowledge to ensure the boundary change was approved. NEW

401-9 Comments RESPONSE

QUESTION 97

B

QuestionBank #	KA_system	KA_number
603	GEN2.2	2.2.3

KA_desc
Equipment Control□(multi-unit license) Knowledge of the design, procedural, and operational differences between units. (CFR: 41.5 / 41.6 / 41.7 / 41.10 / 45.12)

Which unit has a lower setpoint for P-14, and what is the basis for limiting maximum water level in the S/Gs?

A. Unit 1 / Limit energy release into containment following a steam line break

B. Unit 2 / Limit energy release into containment following a steam line break

C. Unit 1 / Maintain offsite dose within assumed limits following a SGTR

D. Unit 2 / Maintain offsite dose within assumed limits following a SGTR

General Discussion

Unit 1 P-14 ~ 84%, Unit 2 ~77%. Basis for P-14 is"to prevent damage to the turbine due to water in the steam lines, stop the excessive flow of feedwater into the SGs, and to limit the energy released into containment" Reason that SA1 and 4 are closed on S/G TR with loss of VI (which invovles hi S/G level as well) incorrect basis of "This signal provides protection against excessive cooldown, which could subsequently introduce a positive reactivity excursion after a plant trip" CF ISOL- GLD]

Answer A Discussion

Wrong unit

Answer B Discussion

Answer C Discussion

Both wrong - psychometric balance.

Answer D Discussion

Wrong reason

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
TS3.3.2 and basis EPINTRO	

QuestionBank #	KA_system	KA_number
603	GEN2.2	2.2.3

KA_desc
Equipment Control□(multi-unit license) Knowledge of the design, procedural, and operational differences between units. (CFR: 41.5 / 41.6 / 41.7 / 41.10 / 45.12)

401-9 Comments:

G2.2.3 Question appears to match K/A. Not sure it is SRO only. An RO is required to know the S/G high level trips, and what they are based on. I did not find it in any of your lesson plans. C and D are not credible with the reason as stated. NEW

401-9 Comments RESPONSE

2008 SRO NRC Examination QUESTION 98

C

QuestionBank #	KA_system	KA_number
604	GEN2.3	2.3.13

KA_desc
Radiation Control□Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc. (CFR: 41.12 / 43.4 / 45.9 / 45.10)

Unit 2 is operating at 100% power. Maintenance has requested entry into the lower airlock. The work will require propping open the airlock vestibule door (CAD door) and the outer airlock door. The inner airlock door will remain closed.

For this situation, per Site Directive 3.1.2 (Access to Reactor Building And Areas Having High Pressure Steam Relief Devices) whose permission is required to issue the access keys to this area and what is inoperable based on Technical Specifications?

A. WCC SRO and Radiation Protection; the Annulus Ventilation System

B. WCC SRO only; the Annulus Ventilation System

C. WCC SRO and Radiation Protection; the Reactor Building

D. WCC SRO only; the Reactor Building

General Discussion

Per SD 3.1.2 sect 4.2 if inner airlock door is not opened then not a containment entry and RB/Annulus entry requirements are needed.Sect 5.1.4 says approval from RP and WCC. RP mananger and station manager are need if enter lower containment at >5% RTP Sect 5.1.4.2 tells that if door open for reasons other than normal transit - RB inop. Not VE. See CNT lesson for that info too.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
TS 3.6.10 TS3.6.16 SD3.1.2 TS 5.7 RP Manual	

QuestionBank #	KA_system	KA_number
604	GEN2.3	2.3.13

KA_desc
Radiation Control□Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc. (CFR: 41.12 / 43.4 / 45.9 / 45.10)

401-9 Comments:

G2.3.13 Borderline K/A match. May not be SRO only. This question is more of a containment integrity question. ROs should know whose permission to get, and this is a T/S entry knowledge.
Distractors B and D do not appear to be credible (Station Manager)?
Memory level question. NEW

401-9 Comments RESPONSE

C

QuestionBank #	KA_system	KA_number
605	GEN2.3	2.3.14

KA_desc
Radiation Control□Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities. (CFR: 41.12 / 43.4 / 45.10)

A contract worker is performing a task in an area with 5000 dpm/100 cm^2 (beta, gamma) contamination. His coworkers have reported he is acting erratically and believe he is "on" something. While waiting for supervision and security to arrive the individual falls and is injured. The individual is contaminated and must be transported offsite for medical treatment.

What is the correct posting for the work area and what is the first required NRC notification time for this event?

A. Contaminated Area; 24 hours

B. Highly Contaminated Area; 24 hours

C. Contaminated Area; 8 hours

D. Highly Contaminated Area; 8 hours

General Discussion

FFD issue is a 24 hour notification. >50,000 is Highly.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
RP/13 NSD507	

QuestionBank #	KA_system	KA_number
605	GEN2.3	2.3.14

KA_desc
Radiation Control□Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities. (CFR: 41.12 / 43.4 / 45.10)

401-9 Comments:

G2.3.14 Question appears to match K/A. Appears to be SRO only. Both of the Notifications are required. Need to change to soonest required notification, or something similar. NEW

401-9 Comments RESPONSE

A

QuestionBank #	KA_system	KA_number
606	GEN2.4	2.4.3

KA_desc
Emergency Procedures / Plan□Ability to identify post-accident instrumentation. (CFR: 41.6 / 45.4)

Given the following conditions:

- Unit 2 has experienced a small break LOCA
- The crew has transitioned to EP/2/A/5000/ES-1.2 (Post LOCA Cooldown and Depressurization)
- Containment pressure is 4.5 psig and decreasing slowly
- Present pressure indications are:
  - PZR PRESS Channel 1 - 1815 psig
  - PZR PRESS Channel 2 - 1795 psig
  - PZR PRESS Channel 3 - Failed High
  - PZR PRESS Channel 4 - Failed High
  - LOOP B HOT LEG W/R PRESS - 1920 psig
  - LOOP C HOT LEG W/R PRESS - Failed Low

1. Which instrument(s) above will provide the most reliable indication of current primary system pressure?
2. Based on the indications provided, is the LCO for Technical Specification 3.3.3 (PAM Instrumentation) met?

A. 1. LOOP B HOT LEG W/R PRESS
   2. No

B. 1. PZR PRESS Channels 1 and 2
   2. No

C. 1. LOOP B HOT LEG W/R PRESS
   2. Yes

D. 1. PZR PRESS Channels 1 and 2
   2. Yes

General Discussion

Per OMP 1-7, PAM isntruments provide the most relianble indication In ACC conditions. The basis of PAM instruments is for operator diagnosis of primary system parameters. W/R pressure does not initiate auto actions associated with accidents, but does provide input to LTOP circuitry. PZR pressure channels input ESFAS but are not PAM instruments.

Answer A Discussion

Answer B Discussion

Answer C Discussion

Answer D Discussion

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

- [x] Developed
- [ ] OPT Approved
- [ ] OPS Approved
- [x] NRC Approved

Development References	Student References Provided
TS3.3.3 and basis OMP1-7	

QuestionBank #	KA_system	KA_number
606	GEN2.4	2.4.3

KA_desc
Emergency Procedures / Plan□Ability to identify post-accident instrumentation. (CFR: 41.6 / 45.4)

401-9 Comments:

G2.4.3 Question appears to match K/A. Not SRO only knowledge. All operators are required to know PAM indicators and the why is obvious.

401-9 Comments RESPONSE