

2007 Seabrook Station Written NRC Examination Question Worksheet

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
Question # 21	Group #	2	
	K/A #	051AA2.02	
	Importance Rating	3.9	4.1

Proposed Question:

The plant was at 100% power. The following plant conditions currently exist:

- Condenser Vacuum is 22.5 in. hg and slowly decreasing.
- Turbine load reduction is in progress.
- Turbine load is 360 MWE.

Which of the following actions should be taken by the crew?

- Immediately trip the turbine and verify all stop valves close and the generator breaker opens.
- Continue the load reduction to increase condenser vacuum to > 25 in. hg.
- Immediately trip the reactor and go to E-0, REACTOR TRIP OR SAFETY INJECTION.
- Continue the load reduction and if vacuum remains > 22.4 in. hg. remove the turbine generator from service per OS1000.06, POWER DECREASE.

Proposed Answer:

C

A is incorrect. The Loss of Condenser Vacuum abnormal procedure calls for a manual reactor trip, not a manual turbine trip. Answer is plausible as the megawatt load in the stem is just above the P-9 setpoint, when the turbine could be tripped without a reactor trip.

B is incorrect. The conditions in the question stem call for a reactor trip.

C is correct. Load is 360 MWE which is the maximum load reduction allowed by ON1233.01. Procedure directs manual RX trip if vacuum continues to degrade when load had been decreased to this point.

D is incorrect. A load decrease below 360 MWE should not be conducted. A reactor trip is required

Technical Reference(s): ON1233.01 Loss of Condenser Vacuum

Proposed references to be provided to applicants during examination:

None

K/A 051AA2.02, Ability to determine and interpret the following as they apply to the Loss of Condenser

Topic: Vacuum:

Conditions requiring reactor and/or turbine trip.

Question Source: Direct from bank. Last used
Seabrook 1996

Question Cognitive Level: Application

10 CFR Part 55 Content: 43.5/45.13

Learning Objective: Lesson L1188I, Objective L1188I08

→ Revised & Clarified

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Examination Outline Cross-reference:	Level	<u>RO</u>	<u>SRO</u>
	Tier #	<u>2</u>	
Question # 36	Group #	<u>1</u>	
	K/A #	<u>008A1.04</u>	
	Importance Rating	<u>3.1</u>	<u>3.2</u>

Proposed Question:
Given the following:

- The plant is at 80% power.
- The level in the "A" Primary Component Cooling Water Head Tank is increasing.

Which of the following is the potential source of leakage?

- A. Letdown Heat Exchanger.
- B. "A" PCCW Heat Exchanger.
- C. Spent Fuel heat exchanger.
- D. Excess Letdown Heat Exchanger.

Proposed Answer: A

REVISED →

A is correct. CVCS pressure at the letdown heat exchanger is approx. 350 psig which is higher than Train "A" PCCW pressure which is approx. 105 psig. The letdown heat exchanger is cooled by Train "A" PCCW.

B is incorrect but plausible. SW pressure through the Train "A" PCCW heat exchanger is approx. 49.5 psig. Train "A" PCCW system pressure is approx 105 psig.

C is incorrect but plausible. Train "A" PCCW does supply cooling to the "A" Spent Fuel Cooling heat exchanger, however, SF Cooling pressure is approx. 20 psig. Train "A" PCCW pressure is approx 105 psig.

D is incorrect but plausible. The excess letdown heat exchanger, when in service, would be at approx. 125 psig. This pressure is slightly higher than PCCW system pressure and could lead to in leakage, however, the heat exchanger is cooled from train 'B' PCCW.

Technical Reference(s): OS1212.01, PCCW SYSTEM
MALFUNCTION

Proposed references to be provided to applicants during examination: None

K/A A1.04, Ability to predict and/or monitor changes in parameters associated with operating the CCWS

Topic: controls including:
Surge Tank Level

Question Source: Direct from bank.

Question Cognitive Level: Knowledge

10 CFR Part 55 Content: CFR 41.5/45.5

Learning Objective: Lesson L8036I, Objective L8036I12

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Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
Question # 89	Group #		1
	K/A #	G 2.1.28 Knowledge of the purpose and function of major system components and controls.	
	Importance Rating		3.3

Proposed Question:

Per Technical Specification 3.8.1.1, Electrical Power Sources, AC Systems, which of the following describes the functional basis of the Supplemental Emergency Power System (SEPS)?

- A. Supply 4.16kv power to either emergency Bus E5 or E6 in the event of a loss of offsite power with both Emergency Diesel Generators failing to start and/or load, provided there is no concurrent seismic event or an event that requires safeguards actuation.
- B. Provide backup power to either emergency bus E5 or E6 when both Emergency Diesel Generators are out of service in MODES 1 through 4.
- C. Supply 4.16kv power to either emergency Bus E5 or E6 in the event of a loss of offsite power concurrent with a seismic event or an event that requires safeguards actuation.
- D. Provide backup power to both emergency busses E5 and E6 when both Emergency Diesel Generators are out of service in MODES 1-4, provided there is no concurrent seismic event or an event that requires safeguards actuation.

Proposed Answer:

A

This question addresses a specific Seabrook Station priority. 03DCR002, SEPS System. This priority is specifically described in the Tech. Spec. bases and is SRO only knowledge as required by 10CFR55.43 (2).

A is correct. The SEPS is designed to Supply 4.16kv power to Emergency Busses 5 or 6 in the event of a loss of offsite power with both Emergency Diesel Generators failing to start and/or load. Provided there is no concurrent seismic event or an event that requires safeguards actuation.

B is incorrect. Per Tech Spec. 3.8.1.1, Electrical Power Systems, AC Sources, with a single Emergency Diesel Generator out of service in Modes 1 through 4, SEPS allows the Tech. Spec. requirement to restore at least two Emergency Diesel Generators to operable status to be extended from 72 hours to 14 days. The basis states "The SEPS is designed to provide backup power to either emergency bus whenever one of the emergency diesel generators is out of service.

C is incorrect. SEPS is designed to provide loss-of-power to bus 5 or 6 in the event of a loss-of-offsite-power alone, not with a concurrent seismic event or an event that requires safeguards actuation.

D is incorrect. SEPS is not designed to provide power to both emergency busses. Additionally, it only applies to one emergency diesel generator being out of service in Modes 1-4.

Technical Reference(s): DCR 03-002, SEPS System

License Amendment Request 03-01, Inclusion of the Supplemental Emergency Power System.

Tech Spec. 3.8.1.1, Electrical Power Systems, AC Sources

Technical Specification, Bases, B3/4, page 8-2.

Proposed references to be provided to applicants during examination:

None

K/A Topic: 2.1.28 Knowledge of the purpose and function of major system components and controls.

Question Source: New

Question Cognitive Level: Knowledge

10 CFR Part 55 Content: CFR: 41.7

Typos
fixed