Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1489 **Rev:** 001 **Rev Date:** 1/9/2008 4:33:35 **QID #:** 1 **Author:** Coble

Lic Level: R **Difficulty:** 3 **Taxonomy:** K **Source:** NRC BANK 207 (2000 Exam)

Search 000007A108 **10CFR55:** 41.7 / 45.5 / 45.6 **Safety Function** 1

System Title: Reactor Trip - Stabilization **System Number** 007 **K/A** EA1.08

Tier: 1 **Group:** 1 **RO Imp:** 4.4 **SRO Imp:** 4.3 **L. Plan:** A2LP-RO-ESPTA **OBJ** 12

Description: Ability to operate and/or monitor the following as they apply to a reactor trip: - AFW System.

Question:

Which of the following conditions meet safety function criteria to ensure an adequate heat sink for RCS Heat Removal in the Standard Post Trip Actions (SPTA)?

A. SG levels at 5 % with "A" MFWP in Reactor Trip Override.

B. SG levels at 23% with EFW Pump 2P7A total flow of 615 gpm.

C. SG levels at 35% with EFW and MFW Pumps NOT available.

D. SG levels at 95% with both MFW pumps in High Level Override.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. SG levels at 23% with EFW Pump 2P7A total flow of 615 gpm.

Notes:

A is incorrect because level in one SG must be 10 - 90% AND MFWP available.
B is correct because the EFW pump with greater than 485 gpm flow and SG level is between 10-90%
C is incorrect because even though level is in 10 - 90% band, no makeup flow available.
D is incorrect because level is above 10 - 90% range and contingency actions call for MFW pump trip.

References:

Standard Post Trip Actions, 2202.001, Step 8.A Contingency A.1
SPTA Tech Guidelines, 2202.001, Step 8

Historical Comments:

2/24/00 - NRC Comments - D is subset of C. Procedures use % level indication vice inches used in question.
03/11/00 - Rev 001 - Revised all distracters to make level indications in % like procedure and provide more valid distracters.

This question was used on the Unit 2 2000 NRC Exam.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1490	**Rev:**	1	**Rev Date:**	10/24/2007 5:55:5	**QID #:**	2	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	4	**Taxonomy:**	An	**Source:**	NRC Bank 0660 (2003 Exam)				
Search	0000082128	**10CFR55:**	41.7			**Safety Function**	3				
System Title:	Pressurizer (PZR) Vapor Space Accident (Relief					**System Number**	008	**K/A**	2.1.28		
Tier:	1	**Group:**	1	**RO Imp:**	3.2	**SRO Imp:**	3.3	**L. Plan:**	A2LP-RO-ELOCA	**OBJ**	14

Description: Conduct of Operations - Knowledge of the purpose and function of major system components and controls.

Question:

The following plant conditions are given:

* Thirty (30) minutes post trip from full power due to a LOCA.
* Pressurizer Level has risen to 100%.
* Auxiliary Spray in service.
* Pressurizer Pressure is 1450 psia and slowly rising .
* RVLMS level 5 is wet and slowly dropping.
* "A" SG pressure is 880 psia and dropping.
* "B" SG pressure is 890 psia and dropping.
* CET temperature indicates 535°F and slowly dropping.

Which ONE (1) of the following actions should be performed for the given conditions?

A. Restart RCPs to allow use of normal Pressurizer Spray.

B. Override HPSI to restore Pressurizer Level.

C. Pressurize RCS to restore Margin to Saturation.

D. Cycle Reactor Vessel Hi Point vents to eliminate any head bubble.

QID use History

	RO	SRO
2003	☑	☑
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. Cycle Reactor Vessel Hi Point vents to eliminate any head bubble.

Notes:

A is incorrect because RCP restart criteria is not met because PZR level is not controlled.
B is not correct because HPSI Termination criteria is not met due to RVLMS level.
C is not correct because 30 degrees F Margin To Saturation is already met.
D is correct because the void in the head is growing and pressure is not dropping during the cooldown.

References:

OP 2202.003, Loss of Coolant Accident, Section 3, Step 11
OP 2202.010, Standard Attachments, Attachment 9, Void Elimination.

Historical Comments:

Previous version used on 2003 NRC Exam; 10/24/2007.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1491 **Rev:** 000 **Rev Date:** 6/29/1998 9:49:37 **QID #:** 3 **Author:** Hatman

Lic Level: R **Difficulty:** 2 **Taxonomy:** K **Source:** NRC Bank 0020 (1998 Exam)

Search 0000092406 **10CFR55:** 41.10 / 43.5 / 45.13 **Safety Function** 3

System Title: Small Break LOCA **System Number** 009 **K/A** 2.4.6

Tier: 1 **Group:** 1 **RO Imp:** 3.1 **SRO Imp:** 4.0 **L. Plan:** A2LP-RO-ELOCA **OBJ** 3

Description: Emergency Procedures/Plan - Knowledge symptom based EOP mitigation strategies.

Question:

Given the following plant conditions:

* A small break LOCA is in progress and SIAS has actuated.
* RCS pressure is 1500 psia and lowering.
* All systems and automatic actions are operating as expected.

Which one (1) of the following is the primary reason for maintaining a secondary heat sink during these conditions?

A. To ensure adequate RCS pressure control with at least One (1) RCP running in each loop.

B. To ensure adequate RCS heat removal due to cooling from HPSI flow alone may be inadequate.

C. To ensure reflux boiling is the primary means of heat removal prior to voiding in the hot legs.

D. To ensure natural circulation will be established in the RCS since all RCPs must be secured.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. To ensure adequate RCS heat removal due to cooling from HPSI flow alone may be inadequate

Notes:

Answer "A" is incorrect because RCP heat input will occur, but will initially be insignificant due to decay heat.
Answer "C" is incorrect because reflux boiling in not expected to occur on a small break LOCA.
Answer "D" is incorrect because a RCPs will not need to be secured at this pressure but the secondary heat sink is necessary for natural circulation but this is not the primary reason for the heat sink in a small break LOCA

References:

Loss of Coolant Accident, OP 2202.003, Section 1, Step 12
Loss of Coolant Accident, OP 2202.003, Technical Guide Section 1, Step 12
LOCA Major Recovery Strategy

Historical Comments:

Used on 1998 NRC Exam; 10/24/2007.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1492 **Rev:** 001 **Rev Date:** 1/8/2008 3:39:32 **QID #:** 4 **Author:** Coble

Lic Level: R **Difficulty:** 2 **Taxonomy:** K **Source:** NRC Bank 0029 (1998 Exam)

Search 000011K202 **10CFR55:** 41.7 / 45.7 **Safety Function** 3

System Title: Large Break LOCA **System Number** 011 **K/A** EK2.02

Tier: 1 **Group:** 1 **RO Imp:** 2.6 **SRO Imp:** 2.7 **L. Plan:** A2LP-RO-ESPTA **OBJ** 11

Description: Knowledge of the interrelations between the Large Break LOCA and the following: - Pumps.

Question:

Given the following:

* Following a reactor trip and Safety Injection Actuation Signal (SIAS) caused by a Primary Coolant System depressurization, it is required to trip two (2) Reactor Coolant Pumps and leave two (2) RCPs operating at a certain RCS pressure.

Which one (1) of the following is the reason for this action?

A. Allows forced circulation during plant cooldown if a large break Loss of Coolant Accident (LOCA) does not exist.

B. Allows adequate seal cooling flow to the remaining two RCPs during the loss of the seal injection driving head.

C. Prevents excessive current draw from the Startup #2 Transformer after the 2H1 and 2H2 electrical buses have transferred offsite.

D. Prevents rapid Reactor Coolant System cooldown during an Excess Steam Demand (ESD) event.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

A. Allows forced circulation during plant cooldown if a large break Loss of Coolant Accident (LOCA) does not exist.

Notes:

Answer "B" is not true because seal injection flow will drop but still be adequate at the RCS pressure required to trip 2 pumps.
Answer "C" is not true because the RCP power supply busses 2H1 and 2H2 transfer to SU #3 transformer which has more than adequate capacity to operate all 4 pumps.
Answer "D" is not true for a cooldown with 0, 2, or 4 pumps running but based on break size.

References:

Standard Post Trip Actions, OP 2202.001 Step 6
Technical Guide for 2202.001 Step 6
CEN-152 bases for Trip 2 Leave Two RCPs during LOCA

Historical Comments:

Used on 1998 NRC Exam; 10/24/2007.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1493	**Rev:**	1	**Rev Date:**	10/24/2007 5:55:4	**QID #:**	5	**Author:**	Coble
Lic Level:	R	**Difficulty:**	2	**Taxonomy:**	K	**Source:**	Modified NRC BANK 0011 (2005 Exam)		
Search	000015K301	**10CFR55:**	41.5 / 41.10 / 45.6 / 45	**Safety Function**	4				
System Title:	017 Reactor Coolant Pump (RCP) Malfunction	**System Number**	015	**K/A**	AK3.01				
Tier:	1	**Group:**	1	**RO Imp:**	2.5	**SRO Imp:**	3.1	**L. Plan:**	A2LP-RO-RCS	**OBJ**	28

Description: Knowledge of the reasons for the following responses as they apply to the Reactor Coolant Pump Malfunctions: - Potential damage from high winding and/or bearing temperatures.

Question:

Which one (1) of the following conditions requires the plant to be tripped and the affected Reactor Coolant Pump (RCP) to be stopped as soon as the condition is met?

A. Seal Bleedoff flow greater than 3.0 gpm.

B. Motor Winding Temperature is rising and alarm is in.

C. Vapor Seal Pressure reaches 750 psia.

D. Component Cooling Water Flow is lost for over 5 minutes.

QID use History

	RO	SRO
2003	☐	☐
2005	☑	☑
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. Motor Winding Temperature is rising and alarm is in.

Notes:

Answer "A" is incorrect because seal bleedoff greater than 3.0 gpm requires plant shutdown, not a trip.
Answer "C" is incorrect because vapor seal pressure must be 1500 psia to require a trip.
Answer "B" is incorrect because CCW must be lost for greater than 10 minutes to require a reactor trip.

References:

2203.025 Attachment D (RCP Emergencies)

Historical Comments:

Previous version used on 1998 and 2005 NRC Exam; 10/24/2007

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1494	**Rev:**	0	**Rev Date:**	10/25/2007 12:55:	**QID #:**	6	**Author:**	Coble
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	IH Bank ANO-OpsUnit2-09474		
Search	000022A203	**10CFR55:**	43.5 / 45.13	**Safety Function**	2				
System Title:	Loss of Reactor Coolant Makeup			**System Number**	022	**K/A**	AA2.03		
Tier:	1	**Group:**	1	**RO Imp:**	3.1	**SRO Imp:**	3.6	**L. Plan:**	A2LP-RO-CVCS	**OBJ**	4/5

Description: Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Pump Makeup: - Failures of flow control valve or controller.

Question:

With the plant at full power, which of the following indications would be expected if the in service Letdown Flow Control Valve failed closed?

A. Rising Hold Up Tank, 2T12, level

B. Lowering VCT level

C. Lowering Pressurizer level

D. Rising VCT pressure

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. Lowering VCT level

Notes:

A is incorrect because the 600 pound relief on the Letdown system that goes to the Holdup tanks is downstream of the Flow Control Valve.
B is correct because Letdown flow to the VCT has been isolated and Charging pumps are still running sucking from the VCT.
C is incorrect because the PZR Level would be rising with a Charging pump running and no Letdown flow.
D is incorrect because the Pressure would be lowering with a Charging pump running and no Letdown flow

References:

STM 2-4, Chemical and Volume Control System drawing

Historical Comments:

Has never been used on an NRC Exam 10/24/2007.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1495	**Rev:**	0	**Rev Date:**	11/7/2004	**QID #:**	7	**Author:**	COBLE
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	New NRC Bank 0518 (Never Used)		
Search	000025A112	**10CFR55:**	41.7 / 45.5 / 45.6	**Safety Function**	4				
System Title:	Loss of Residual Heat Removal System (RHRS)	**System Number**	025	**K/A**	AA1.12				
Tier:	1	**Group:**	1	**RO Imp:**	3.6	**SRO Imp:**	3.5	**L. Plan:**	A2LP-RO-SDCC	**OBJ**	4
Description:	Ability to operate and/or monitor the following as they apply to the Loss of Residual Heat Removal System: - RCS temperature indicators.								

Question:

Given the following conditions:

* The plant is shutdown to replace a failed RCP seal.
* OP 1015.008 Attachment B, Unit 2 SDC Control, has just been completed.
* SDC Pump 2P60A is in service through SDC HX 2E-35A with the same flows established during completion of OP 1015.008 Attachment B.
* The RCS is currently in reduced inventory
* RCS Temperature is 115°F and steady.
* Now a loss of 125 VDC power to the SDC Temperature Control Valve 2CV-5093 solenoid causes the temperature control valve to go to its failed position.
* All other components in the SDC system remain the same as before the failure.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Which of the following would be the effect on RCS Temperature?

A. RCS temperature would rise slowly due to approximately 25% loss of flow through 2E-35A.

B. RCS temperature would rise rapidly with a loss of cooling due to 2CV-5093 failing full closed.

C. RCS temperature would drop slowly due to approximately 25% additional flow through 2E-35A.

D. RCS temperature would drop rapidly with much more cooling due to 2CV-5093 failing full open.

Answer:

A. RCS temperature would rise slowly due to approximately 25% reduction of flow through 2E-35A.

Notes:

2CV-5093 will lose IA on a loss of power to its DC solenoid causing the valve to fail closed. However, OP 1015.008 Attachment B Step 6.2 throttles the SDC Temperature Control Valve 2CV-5093 Bypass Valve 2SI-5093-3 to ensue at least 75% of the flow from the SDC HX is available as a mitigation strategy should 2CV-5093 fail Closed. This makes answer A correct.

Distracter B is incorrect because there is still 75% of the flow going through the bypass so the temperature would not go up rapidly.

Distracter C is incorrect because cooling flow is lowered not raised.

Distracter D is incorrect because cooling flow is lowered not raised.

References:

STM 2-14, SDC System, Section 2.6 and 2.6.2.
OP 1015.008, SDC Control, Attachment B, Steps 6.1. and 6.2
AOP 2203.029, Loss of SDC, Step 9

Historical Comments:

This question has not been used on any previous NRC exams. BNC 11/09/2004. This QID was deleted from the 2005 NRC SRO exam due to not being SRO only Knowledge. BNC 01/04/2005.

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Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1496	**Rev:**	0	**Rev Date:**		**QID #:**	8	**Author:**	Coble
Lic Level:	R	**Difficulty:**	2	**Taxonomy:**	K	**Source:**	NEW		
Search	000026K301	**10CFR55:**	41.5 / 41.10 / 45.6 / 45	**Safety Function**	8				
System Title:	Loss of Component Cooling Water (CCW)	**System Number**	026	**K/A**	AK3.01				
Tier:	1	**Group:**	1	**RO Imp:**	3.2	**SRO Imp:**	3.5	**L. Plan:**	A2LP-RO-CCW	**OBJ**	12

Description: Knowledge of the reasons for the following responses as they apply to the Loss of Component Cooling Water: - The conditions that will initiate the automatic opening and closing of the SWS isolation valves to the CCW/nuclear service water coolers.

Question:

Given the following:

* The plant has tripped from full power.
* Steam Generator A pressure is 725 psia and dropping.
* Steam Generator B pressure is 750 psia and rising.
* Containment pressure is 14.7 psia and steady.
* RCS pressure is 1725 psia and dropping.
* No operator actions have been taken.
* All components actuate as designed.

Based on the above conditions, what is the current status of Service Water to CCW Heat Exchanger Inlet Valves 2CV1530-1 and 2CV-1531-2?

A. Both Isolation Valves are OPEN and can be overridden CLOSED as needed.

B. Both Isolation Valves are OPEN and cannot be overridden CLOSED unless ESFAS reset.

C. Both Isolation Valves are CLOSED and can be overridden OPEN as needed.

D. Both Isolation Valves are CLOSED and cannot be overridden OPEN unless ESFAS reset.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. Both Isolation Valves are CLOSED and can be overridden OPEN as needed.

Notes:

A is incorrect because the Low SG pressure will cause a MSIS which will close both valves. A SIAS signal will close both valves also but has not occurred yet.
B is incorrect because the Low SG Pressure signal will close both valves.
C is correct because the valves have override capability to continue to cool CCW loads if enough SW flow is available in accident conditions.
D is incorrect because both valves can be overridden OPEN with an ESFAS signal present.

References:

Service Water STM 2-42 Section 3.5.12 and SW System Drawing.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1497	**Rev:**	00	**Rev Date:**	1/10/2008 8:12:59	**QID #:**	9	**Author:**	Coble
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	NRC Bank 0312 (2002 NRC Exam)		
Search	000027K203	**10CFR55:**	41.7 / 45.7	**Safety Function**	3				
System Title:	Pressurizer Pressure Control (PZR PCS) Malfun	**System Number**	027	**K/A**	AK2.03				
Tier:	1	**Group:**	1	**RO Imp:**	2.6	**SRO Imp:**	2.8	**L. Plan:**	A2LP-RO-PZR	**OBJ**	5
Description:	Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: - Controllers and positioners.								

Question:

Given the following plant conditions:

* Plant Power is 100%.
* Pressurizer Pressure Control and Level Control is selected to the 'A' Channel.
* All other components are in their normal system lineup.
* All components and controllers operate as designed.

* Now 120 VAC Bus 2Y1 Power is lost and restored five minute later.

With no operator action, which of the following is correct status of the 'A' PZR Pressure Controller after 120 VAC Bus 2Y1 power is restored?

A. The controller will regain power and be in MANUAL with no output demand.

B. The controller will regain power and be in AUTO with no output demand.

C. The controller will regain power and be in MANUAL with a full output demand.

D. The controller will regain power and be in AUTO with a full output demand.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

A. The controller will regain power and be in MANUAL with no output demand.

Notes:

A is correct because the controller will regain power with a manual signal and no output demand on the controller.
B and D are wrong because the controller will not come back in AUTO.
C is incorrect because the controller will have no output demand when power is restored.

References:

STM 2-3-1, Pressurizer Pressure & Level Control Systems, Section 2.2.2, 2.2.4 and 2.2.5
2203.028, PZR System Malfunctions

Historical Comments:

Used on 2002 NRC Exam; 10/24/2007.

Modified based on validation comments 01/04/2008.

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Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1498	**Rev:**	1	**Rev Date:**	1/4/2008 6:12:17	**QID #:**	10	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	K	**Source:**	IH Bank ANO-OPS2-7078aa				
Search	000029K206	**10CFR55:**	41.7 / 45.7	**Safety Function**	1						
System Title:	Anticipated Transient Without Scram (ATWS)	**System Number**	029	**K/A**	EK2.06						
Tier:	1	**Group:**	1	**RO Imp:**	2.9	**SRO Imp:**	3.1	**L. Plan:**	A2LP-RO-DSS	**OBJ**	4
Description:	Knowledge of the interrelations between the ATWS and the following: - Breakers, relays, and disconnects.										

Question:

Consider the following:

* Unit 2 is at full power operation.
* Diverse Scram System (DSS) Pressurizer pressure transmitter (2PT-4600-1) fails high.
* Diverse Scram System (DSS) Pressurizer pressure transmitter(2PT-4600-3) fails high.
* Assume that all other plant components and their systems function as designed.

What would be the direct effect of these conditions on Unit 2?

A. These conditions would cause two reactor trip circuit breakers to open AND NO Reactor trip.

B. These conditions would cause four reactor trip circuit breakers to open AND a Reactor trip.

C. These conditions would cause only the 'A' CEA MG Set output contactor to open AND NO Reactor trip.

D. These conditions would cause the 'A' and 'B' CEA MG Set output contactors to open AND a Reactor Trip.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. These conditions would cause the 'A' and 'B' CEA MG Set output contactors to open AND a Reactor Trip.

Notes:

A and B are incorrect because these pressure transmitters are independent of the pressure transmitters that feed RPS and Reactor trip breakers would not open initially but all 8 circuit breakers eventually would trip open due to LPD and DNBR trips.

C is incorrect because 2 out of 4 ATWS pressure transmitters failing high will give a full output opening both disconnect contactors causing a Reactor trip which make D the correct answer.

References:

STM 2-63-1 Section 2.1

Historical Comments:

Never Used on a NRC Exam 10/24/2007.

Modified the question based on Validation Comments. 01/04/2008.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1499	**Rev:**	0	**Rev Date:**	10/29/2007 1:51:3	**QID #:**	11	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	IH Bank ANO-OPS2-10175				
Search	000038K103	**10CFR55:**	41.8 / 41.10 / 45.3	**Safety Function**	3						
System Title:	Steam Generator Tube Rupture (SGTR)	**System Number**	038	**K/A**	EK1.03						
Tier:	1	**Group:**	1	**RO Imp:**	3.9	**SRO Imp:**	4.2	**L. Plan:**	A2LP-RO-ESGTR	**OBJ**	11
Description:	Knowledge of the operational implications of the following concepts as they apply to the SGTR: - Natural circulation.										

Question:

Unit 2 has tripped from full power with a Steam Generator Tube Rupture in SG "A".

* All RCP's are secured
* T-hot = 510°F and steady
* T-cold = 490°F and lowering slowly
* Pressurizer pressure = 900 psia
* Pressurizer level = 25% and rising slowly
* Average CET temperature = 515°F
* SG "A" level = 30%
* SG "B" level = 25%

Which of the above conditions prohibits confirmation of natural circulation conditions?

A. Margin to saturation

B. Avg CET / T-hot delta-T

C. T-cold / T-hot delta-T

D. Pressurizer level

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

A. Margin to saturation

Notes:

A is the correct answer because MTS is less than required.
B is incorrect because the Thot and CET delta is less than 10 degrees F.
C is incorrect because the loop delta T is less than 50 degrees F.
D is incorrect because PZR level is not a procedurally required indication of natural circulation.

References:

OP 2202.004 Steam Generator Tube Rupture Step 41

Historical Comments:

Never Used on a NRC Exam; 10/24/2007

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1500	**Rev:**	000	**Rev Date:**	12/7/2001 2:28:18	**QID #:**	12	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	NRC Bank 0412 (2002 NRC Exam)				
Search	00CE05K102	**10CFR55:**	41.8 / 41.10 / 45.3	**Safety Function**	4						
System Title:	Excess Steam Demand			**System Number**	E05	**K/A**	EK1.2				
Tier:	1	**Group:**	1	**RO Imp:**	3.2	**SRO Imp:**	3.8	**L. Plan:**	A2LP-RO-EESD	**OBJ**	3

Description: Knowledge of the operational implications of the following concepts as they apply to the (Excess Steam Demand): - Normal, abnormal and emergency operating procedures associated with (Excess Steam Demand).

Question:

Given the following:

- The plant has tripped from 100% Power.
- RCS pressure is 1600 psia and lowering.
- RCS T-cold is 505°F and lowering.
- Pressurizer Level is 10% and lowering.
- Containment pressure is 14.5 psia and stable.
- Containment temperature is 110°F and stable.
- No radiation alarms are present inside Containment or on the Main Steam lines.
- A Steam Generator pressure is 610 psia and lowering.
- B Steam Generator pressure is 610 psia and lowering.
- A Steam Generator level is 20% NR and lowering.
- B Steam Generator level is 20% NR and lowering.
- No Main Steam Safeties have lifted.
- No other abnormal conditions exist and all components have actuated as designed.
- All systems function as designed.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Which ONE of the following actions should be taken to stabilize plant pressure and temperature?

A. Close both MSIV bypass valves and secure steaming to the Main Condenser.

B. Take manual control of the MFW system and minimize feed to Steam Generators.

C. Close both Main Steam isolation valves to the EFW Pump Terry Turbine, 2P7A.

D. Take manual control of the HPSI system and throttle the excess flow to the RCS.

Answer:

C. Close both Main Steam to the EFW Pump Terry Turbine, 2P7A, isolation valves.

Notes:

Answers A and B are both incorrect because a MSIS should have already occurred causing the MSIV bypass valves and Main Feed Isolations to close so an excessive steaming path downstream of the MSIVs or an excessive feeding to the SGs should not exist.
Answer C is correct because the steam isolations to the Terry Turbine are upstream of the MSIVs, outside containment and they cross connect both Steam Generators.
Answer D is incorrect because even though a SIAS has been initiated, the RCS pressure is still above the shutoff head of a HPSI pump so excessive cooling flow from the HPSI pumps should not exist.

References:

OP 2202.005, Excess Steam Demand EOP, Floating Step 16

Historical Comments:

Used on 2002 NRC Exam; 10/24/2007.

.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1501	**Rev:**	001	**Rev Date:**	1/4/2008 2:35:47	**QID #:**	13	**Author:**	Hatman
Lic Level:	R	**Difficulty:**	2	**Taxonomy:**	C	**Source:**	NRC Bank 0069 (1998 NRC Exam)		
Search	00CE06A102	**10CFR55:**	41.7 / 45.5 / 45.6	**Safety Function**	4				
System Title:	Loss of Feedwater	**System Number**	E06	**K/A**	EA1.2				
Tier:	1	**Group:**	1	**RO Imp:**	3.4	**SRO Imp:**	4.0	**L. Plan:**	A2LP-RO-ELOSF	**OBJ**	5
Description:	Ability to operate and/or monitor the following as they apply to the (Loss of Feedwater): - Operating behavior characteristics of the facility.								

Question:

Given the following:

* The plant is at full power.
* A 200 gpm Main Feedwater line break downstream of Main Feedwater Check valve (2FW-5A) occurs.
* Containment temperature, pressure and humidity start rising.
* The plant is manually tripped.
* EFAS is manually actuated.

Based on these conditions the affected Steam Generator will depressurize and start an uncontrolled cooldown when:

A. Steam Generator 'A' level drops below 22.3% Narrow Range level.

B. The main feedwater isolation valve is closed to "A" Steam Generator.

C. Main and Emergency Feedwater to "A" Steam Generator is secured.

D. Steam Generator 'A' level drops below 300 inches Wide Range level.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. Main and Emergency Feedwater to "A" Steam Generator is secured.

Notes:

As long as a feed source exists to "A" Steam Generator, the feed source will be at a higher pressure than the Steam Generator, therefore the feed source (MFW/EFW) will be going out the leak. Once all feed is secured by MSIS & 90# delta P then steaming of the generator through the break will occur and cause an uncontrolled cooldown.

References:

STM2-19, Sections 1.0 and 8.2.

Historical Comments:

Used on 1998 NRC Exam; 10/24/2007.

Revised on 01/04/2008 based on validation comments. Had to assume EFW was in service on the previous revision.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1502 **Rev:** 1 **Rev Date:** 6/26/1998 12:33:1 **QID #:** 14 **Author:** Hatman

Lic Level: R **Difficulty:** 2 **Taxonomy:** K **Source:** Modified Bank 0067 (1998 NRC Exam)

Search 000055K101 **10CFR55:** 41.8 / 41.10 / 45.3 **Safety Function** 6

System Title: Loss of Offsite and Onsite Power (Station Black **System Number** 055 **K/A** EK1.01

Tier: 1 **Group:** 1 **RO Imp:** 3.3 **SRO Imp:** 3.7 **L. Plan:** A2LP-RO-ESBO **OBJ** 11

Description: Knowledge of the operational implications of the following concepts as they apply to the Station Blackout: - Effect of battery discharge rates on capacity.

Question:

A Loss of the Offsite Power Grid has occurred and both Emergency Diesel Generators and AAC Generator have failed to start automatically or manually.

If power interruption is expected to exceed _____ minutes, then Inverters 2Y13 and 2Y24 are to be secured to ensure the station battery capacity is not reduced by _____?

A. 30; large DC motor loads.

B. 60; the Plant Monitoring System (PMS).

C. 90; the Safety Parameter Display System (SPDS).

D. 120; extra instrumentation in the Control Room.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. 120; extra instrumentation in the Control Room.

Notes:

The distracter are all credible actions to take in the appropriate time frame to reduce battery loads but only vital instrumentation busses are supplied from 2Y13/24. The PMS is powered from 2Y25 and the SPDS computer is supplied from 2Y26.

References:

2202.008, Section 1, DG Operations, Step 15B, (Station Blackout)
2202.010, (Standard Attachments), Attachment 25, (Load Shedding of Vital Battery Loads) Step 3

Historical Comments:

Used on 1998 NRC Exam; 10/24/2007.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1503	**Rev:**	1	**Rev Date:**	10/29/2007 1:51:4	**QID #:**	15	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	Ap	**Source:**	Modified IH Bank ANO-OPS2-290				
Search	0000562128	**10CFR55:**	41.7	**Safety Function**	6						
System Title:	Loss of Offsite Power			**System Number**	056	**K/A**	2.1.28				
Tier:	1	**Group:**	1	**RO Imp:**	3.2	**SRO Imp:**	3.3	**L. Plan:**	A2LP-RO-ELOOP	**OBJ**	9
Description:	Conduct of Operations - Knowledge of the purpose and function of major system components and controls.										

Question:

Consider the following:

* While operating at 100% power, a tornado destroys the 500 KV and 161 KV lines to the site.
* An automatic reactor trip has occurred.
* Emergency Diesel 2DG1 auto started and is supplying 4160V ESF bus 2A3.
* Emergency Diesel 2DG2 auto started and is tripped on low lube oil pressure.
* 2C-27A is the ONLY available Instrument Air compressor on either unit.
* Unit-1 vital busses are being supplied by their EDG's.

Which one of the following would be the correct action, if any, to restore power to 2C-27A?

A. Back feed Electrical 2A1 from Bus 2A3 using Emergency Diesel 2DG1.

B. Energize Electrical Bus 2A1 from the Alternate AC Diesel Generator.

C. Energize Electrical Bus 2A1 from Bus 2A3 using the Cross Tie Breaker 2A-310.

D. Power cannot be restored to 2C-27A; use the Temporary Instrument Air Compressor.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. Energize Electrical Bus 2A1 from the Alternate AC Diesel Generator.

Notes:

2C-27A is powered from 2B1 which is powered from Non Vital 4160 VAC Bus 2A1.
A is incorrect because the LOOP EOP Step 28 does not allow back feed to a Non-Vital bus if Only One EDG is supplying the Vital busses (2A3/4)
B is correct IAW Step 7 of the LOOP EOP.
C is incorrect because the Bus 2A1 cannot be powered from 2A3 via a crosstie breaker.
D is incorrect because the Skid mounted Temporary IA compressor need AC power to operate which is not available.

References:

2202.007 LOOP EOP Steps 7 and 28
2104.037, Alternate AC DG Operation Attachment E, Step 10.

Historical Comments:

QID has never been used on a NRC exam; 10/25/2007

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1504	**Rev:**	0	**Rev Date:**	10/29/2007 1:51:3	**QID #:**	16	**Author:**	Coble
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	Ap	**Source:**	NEW		
Search	000057A220	**10CFR55:**	43.5 / 45.13	**Safety Function**	6				
System Title:	Loss of Vital AC Electrical Instrument Bus			**System Number**	057	**K/A**	AA2.20		
Tier:	1	**Group:**	1	**RO Imp:**	3.6	**SRO Imp:**	3.9	**L. Plan:**	A2LP-RO-ED120	**OBJ**	3

Description: Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: - Interlocks in effect on loss of ac vital electrical instrument bus that must be bypassed to restore normal equipment operation.

Question:

Given the following:

* The plant has been tripped due to indication of an Excess Steam Demand.
* A loss of offsite power occurs on the trip.
* Both EDGs start and load their respective safety buses.
* During the subsequent SIAS, Alarm "2A4 LO RELAY TRIP" comes in.
* #2 EDG is then secured due to lack of cooling.
* The CRS and Shift Manger determine that Instrument and Control Bus 2Y2 will be needed in this emergency to mitigate the Steam Line Rupture event.

Which of the following actions will need to be taken locally to allow crosstie of 2Y2 from 2Y1 to restore Control Room instrumentation and control and prevent re-energizing the buses from two sources?

A. The 2Y1 Main Feeder Breaker MANUAL TRIP button must be pushed in to remove the Kirk Key from the 2Y1 Feeder Breaker to allow obtaining the crosstie breaker Kirk Keys.

B. The 2Y2 Main Feeder Breaker MANUAL TRIP button must be pushed in to remove the Kirk Key from the 2Y2 Feeder Breaker to allow obtaining the crosstie breaker Kirk Keys.

C. The 2Y1 Main Feeder Breaker MANUAL CLOSE button must be pushed in to remove the Kirk Key from the 2Y1 Feeder Breaker to allow obtaining the crosstie breaker Kirk Keys.

D. The 2Y2 Main Feeder Breaker MANUAL CLOSE button must be pushed in to remove the Kirk Key from the 2Y2 Feeder Breaker to allow obtaining the crosstie breaker Kirk Keys.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. The 2Y2 Main Feeder Breaker MANUAL TRIP button must be pushed in to remove the Kirk Key from the 2Y2 Feeder Breaker to allow obtaining the crosstie breaker Kirk Keys.

Notes:

The Kirk Keys are normally captured in the feeder breakers when the breakers are closed. The feeder breaker Kirk keys are needed to obtain the crosstie breaker Kirk keys to allow closing the crosstie breakers to restore the control room instrumentation and control. To obtain the feeder breaker Kirk keys and ensure the supplying bus is not cross tied to the other safety bus, the feeder breaker Kirk key can only be removed when the feeder breaker trip pushbutton is depressed. Since the condition requires powering 2Y2 from 2Y1, the feeder breaker we need to open is the normal feeder breaker for 2Y2. This makes Answer B Correct. Distracter A would be used only if 2Y1 was to be supplied from 2Y2. Distracters C and D would not meet the interlock and thus are incorrect.

References:

STM 2-34-4, 120 VAC Distribution System, Section 2.1
OP 2107.003, 120 VAC Distribution Operations, Exhibit 13 Step 1.0

Historical Comments:

.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1505 **Rev:** 0 **Rev Date:** 10/29/2007 1:51:2 **QID #:** 17 **Author:** Coble

Lic Level: R **Difficulty:** 3 **Taxonomy:** C **Source:** I H Bank ANO-OPS2-7601

Search 000058A201 **10CFR55:** 43.5 / 45.13 **Safety Function** 6

System Title: Loss of DC Power **System Number** 058 **K/A** AA2.01

Tier: 1 **Group:** 1 **RO Imp:** 3.7 **SRO Imp:** 4.1 **L. Plan:** A2LP-RO-ED120 **OBJ** 4

Description: Ability to determine and interpret the following as they apply to the Loss of DC Power: - That a loss of dc power has occurred; verification that substitute power sources have come on line.

Question:

With the Unit at 100% power the following occurs:

* The Green Battery, 2D12, disconnect has been opened for maintenance.
* Now, the in-service Green Battery Charger AC Input Breaker trips.
* All other equipment operates as designed.

Given these conditions the reactor _____ automatically trip and 120 VAC Vital Bus 2RS-4 would be _____.

A. Would; energized from an alternate AC source

B. Would; deenergized

C. Would not; energized from an alternate AC source

D. Would not; deenergized

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. Would not; energized from an alternate AC source

Notes:

2Y24 supplies power to the 2RS-4 which supplies Channel D Reactor trip circuit breakers. With Loss of DC input to 2Y24, the inverter should swap to the Alternate AC source of Power and 2RS-4 should see no power interruption and thus the Reactor does not trip and 2RS-4 remains energized.

References:

STM 2-32-5, 125 VDC Distribution Drawing.
STM 2-32-4, 120 VAC Distribution, Section 2.2 and drawing of 120 VAC Vital Inverter.
AOP 2203.037, Loss of 125 VDC Power, Introduction

Historical Comments:

This QID has never been used on a NRC Exam; 10/26/2007

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1506 **Rev:** 0 **Rev Date:** 10/29/2007 1:51:1 **QID #:** 18 **Author:** Coble

Lic Level: R **Difficulty:** 2 **Taxonomy:** K **Source:** I H Bank ANO-OPS2-4905

Search 000062K301 **10CFR55:** 41.5 / 41.10 / 45.6 / 45 **Safety Function** 4

System Title: Loss of Nuclear Service Water **System Number** 062 **K/A** AK3.01

Tier: 1 **Group:** 1 **RO Imp:** 3.2 **SRO Imp:** 3.5 **L. Plan:** A2LP-RO-SWACW **OBJ** 10

Description: Knowledge of the reasons for the following responses as they apply to the Loss of Nuclear Service Water: - The conditions that will initiate the automatic opening and closing of the SWS isolation valves to the nuclear service water coolers.

Question:

An event has occurred from full power that results in SIAS, CCAS and CIAS actuations.

Which of the following describes the lineup of the Service Water Return Header?

A. Lake Returns are open, ECP returns are open

B. Lake Returns are closed, ECP returns are open

C. Lake Returns are open, ECP returns are closed

D. Lake Returns are closed, ECP returns are closed

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. Lake Returns are closed, ECP returns are open

Notes:

The ECP Valves will automatically open on the SIAS signal and the Lake Sluice Gates valves will automatically close when they see the ECP valves fully open. This makes distracter B correct and the rest incorrect.

References:

STM 2-42 Section 3.7 and SW System Drawing.

Historical Comments:

This question has never been used on a NRC Exam

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1507	**Rev:**	000	**Rev Date:**	10/10/2001 5:35:5	**QID #:**	19	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	NRC Bank 0341 (2002 NRC Exam)				
Search	000028K203	**10CFR55:**	41.7 / 45.7	**Safety Function**	2						
System Title:	Pressurizer (PZR) Level Control Malfunction			**System Number**	028	**K/A**	AK2.03				
Tier:	1	**Group:**	2	**RO Imp:**	2.6	**SRO Imp:**	2.9	**L. Plan:**	A2LP-RO-PZR	**OBJ**	9/10
Description:	Knowledge of the interrelations between the Pressurizer Level Control Malfunctions and the following: - Controllers and positioners.										

Question:

Given the following plant conditions:

* The plant is at full power.
* Pressurizer Level Control System master controller is in AUTO REMOTE.
* Pressurizer Level Control is selected to "CH 4627-A".
* Pressurizer Heater Low Level Cutout is selected to Both "A & B".
* Charging Pump Selector Switch, 2HS-4868, is in "A & B".
* Pressurizer Reference leg 2LT-4627-1 develops a leak.
* No operator action is taken.

WHICH ONE of the following describes the response of the Pressurizer Level Control System?

A. Charging Pumps A and B start, heaters energize, letdown flow rises.

B. Charging Pumps A and B start, heaters cutout, letdown flow lowers.

C. Charging Pumps A and B get a stop signal, heaters energize, letdown flow rises.

D. Charging Pumps A, B, and C get a stop signal, heaters cutout, letdown flow rises.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. Charging Pumps A and B get a stop signal, heaters energize, letdown flow rises.

Notes:

The reference leg leak will cause a high indicated level input to the Pressurizer Level controller and associated bistables to cause level to indicate above set point by > 4.5%. This will in turn send a stop signal to the backup charging pumps in this case pumps A and B (the lead pump will continue to run), a signal to energize all pressurizer heaters and force the Letdown Flow Controller to maximum output.

References:

STM 2-3-1, Pressurizer Pressure and Level Control, Sections 3.2
2103.005, Step 6.7 (Pressurizer Operations)

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1508	**Rev:**	0	**Rev Date:**	10/29/2007 1:51:1	**QID #:**	20	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	2	**Taxonomy:**	K	**Source:**	NEW				
Search	000036K103	**10CFR55:**	41.8 / 41.10 / 45.3	**Safety Function**	8						
System Title:	Fuel Handling Incidents			**System Number**	036	**K/A**	AK1.03				
Tier:	1	**Group:**	2	**RO Imp:**	4.0	**SRO Imp:**	4.3	**L. Plan:**	A2LP-RO-FH	**OBJ**	4.0

Description: Knowledge of the operational implications of the following concepts as they apply to Fuel Handling Incidents: - Indications of approaching criticality.

Question:

Given the following conditions:

* The plant is in Mode 6 with Reactor Core reload in progress.
* Reactor Engineering is performing a 1/M plot during the loading of each assembly based on current count rate and initial count rate.
* Reactor Engineering reports the 1/M plot reading to the ATC after each fuel assembly is ungrappled.
* Boron concentration in the Core is steady at 2578 ppm.

Which of the following 1/M readings would indicate the reloaded core is approaching and is the closest to criticality?

A. 0.1

B. 1.0

C. 100

D. 10000

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

A. 0.1

Notes:

Sub critical multiplication factor should be rising exponentially to an infinite number when the reactor is approaching criticality. Thus the 1/M reading should be approaching Zero which makes A correct. The student may incorrectly assume that 1/M approaches infinity and pick D. If the count rate does not change at all, then B would be a viable answer which the student may assume since boron concentration is not changing. Each distracter is a factor of 100 above the previous selection.

References:

OP-2502 001, Refueling Shuffle Step 8.9
GFES Reactor Theory Chapter 8 Reactor Operational Physics (1/M Plots)

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1509	**Rev:**	002	**Rev Date:**	10/29/2007 9:39:4	**QID #:**	21	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	Ap	**Source:**	Modified NRC 0028 (1998 NRC Exam)				
Search	000051A202	**10CFR55:**	43.5 / 45.13	**Safety Function**	4						
System Title:	Loss of Condenser Vacuum			**System Number**	051	**K/A**	AA2.02				
Tier:	1	**Group:**	2	**RO Imp:**	3.9	**SRO Imp:**	4.1	**L. Plan:**	A2LP-RO-EAOP	**OBJ**	14

Description: Ability to determine and interpret the following as they apply to the Loss of Condenser Vacuum: - Conditions requiring reactor and/or turbine trip.

Question:

Given the following:

* Reactor power is at 15% and steady.
* SDBCS is in its normal line up for this power.
* A main turbine roll to 1800 rpm is in progress.
* Condenser vacuum has begun degrading.
* Annunciators 2K03-A3/A4 "2E11A/B Pressure HIGH are actuated.
* Both condenser Vacuum pumps are running.

In accordance with OP 2203.019, Loss of Condenser Vacuum, which one (1) of the following actions should be taken by the Crew if vacuum continues to degrade?

A. Trip the turbine if vacuum exceeds 5.3 inches Hg absolute.

B. Trip the Reactor and Turbine if vacuum exceeds 5.3 inches HG absolute.

C. Trip the turbine if vacuum exceeds 7.0 inches Hg absolute.

D. Trip the Reactor and Turbine if vacuum exceeds 7.0 inches HG absolute.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. Trip the turbine before exceeding 7 inches Hg absolute.

Notes:

Answer "A" is incorrect because although this is in the unacceptable region, the actions of the procedure try to restore vacuum before tripping at 7.0 "HG absolute.
Answer "B" is incorrect because reactor power is within the capacity of SDBCS and the reactor should not be tripped at this time and the vacuum is less than 7.0 " HG absolute.
Answer "D" is incorrect because reactor power is within the capacity of SDBCS and the reactor should not be tripped.

References:

2203.019, Loss of Condenser Vacuum, Step 7.0, contingency action B and Attachment A

Historical Comments:

Rev 001 - 08/11/98 - Revised distracter "B" from "Trip the reactor and go to 2202.001, Standard Post Trip Actions" to "Raise Tave to reduce SDBCS load" due to NRC review comments that "B" was also a correct answer.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1510	**Rev:**	000	**Rev Date:**	11/29/2001 3:54:2	**QID #:**	22	**Author:**	Coble
Lic Level:	R	**Difficulty:**	2	**Taxonomy:**	K	**Source:**	NRC Bank 0338 (2002 NRC Exam)		
Search	000060A102	**10CFR55:**	41.7 / 45.5 / 45.6	**Safety Function**	9				
System Title:	Accidental Gaseous Radwaste Release			**System Number**	060	**K/A**	AA1.02		
Tier:	1	**Group:**	2	**RO Imp:**	2.9	**SRO Imp:**	3.1	**L. Plan:**	A2LP-RO-CVENT	**OBJ**	13

Description: Ability to operate and/or monitor the following as they apply to the Accidental Gaseous Radwaste Release: - Ventilation system.

Question:

Given the following plant conditions:

* Plant is in Mode 5 making preparations to refuel the reactor.
* RCS is in reduced inventory preparing to install SG nozzle dams.
* Containment Purge System is in service.
* When the 1st set of SG Manways are removed, the Control Room receives Annunciator 2K11 D-10 " Process Gas Radiation HI/LO".
* On 2C-25, the Gas Monitor for the Containment Purge System, 2RITS-8233, reading is above setpoint.
* Annunciator Corrective Action directs verification of Containment Purge secured.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

The automatic actions that should have secured Containment Purge would be:

Audit Exam History

2008	☐

A. All Containment Purge supply and exhaust Isolation valves go closed.

B. Only the Outside-Outside Containment Purge supply and exhaust Isolations go closed.

C. Only the Inside-Inside Containment Purge supply and exhaust isolations go closed.

D. All three (3) Containment Purge exhaust isolation valves go closed.

Answer:

B. Only the Outside-Outside Containment Purge supply and exhaust Isolations go closed.

Notes:

The only valves associated with the Containment Purge System that get a closure signal on a high process radiation alarm is the Outside-Outside supply and exhaust valves. These valves are considered containment isolations and verified closed from the ESF control panels 2C-16 and 17. The closing of these valves will trip the exhaust fan on low suction pressure and the supply fan is interlocked to trip if the exhaust fan is not running.

References:

OP 2203.012K, ACA for Process Gas Radiation High, Window 2K11 D-10
OP 2104.033, Containment Atmospheric Control, Supplement 1 Step 5.20
STM 2-9, Containment Cooling and Purge Systems, Sections 7.6 and Purge one line figure.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1511	**Rev:**	0	**Rev Date:**	10/29/2007 1:51:0	**QID #:**	23	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	2	**Taxonomy:**	K	**Source:**	NEW				
Search	000061K302	**10CFR55:**	41.5 / 41.10 / 45.6 / 45	**Safety Function**	7						
System Title:	Area Radiation Monitoring (ARM) System Alar	**System Number**	061	**K/A**	AK3.02						
Tier:	1	**Group:**	2	**RO Imp:**	3.4	**SRO Imp:**	3.6	**L. Plan:**	A2LP-RO-RMON	**OBJ**	17

Description: Knowledge of the reasons for the following responses as they apply to the Area Radiation Monitoring (ARM) System Alarms: - Guidance contained in alarm response for ARM system.

Question:

Given the following:

* The plant has tripped from full power due to loss of Turbine Load.
* During SPTAs, you report that Alarm 2K11 A-10 "SEC SYS RADIATION HI" is in.

Which of the following is the correct AREA radiation monitor to bring in this alarm and the correct reason for the alarm?

A. CCW Room Hallway Rad Monitor, 2RITS-8924, setpoint exceeded; Inter System LOCA from the RCPs to the CCW System.

B. Main Steam Line 'A' Rad Monitor , 2RITS-1007, setpoint exceeded; Primary to Secondary RCS Leakage.

C. Steam Generator 'B' Blowdown Rad Monitor, 2RITS-5864, setpoint exceeded; Primary to Secondary RCS Leakage.

D. VCT Area Radiation Monitor, 2RITS- 8903, setpoint exceeded; Excessive Letdown flow to the VCT due to the Loss of Load trip.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. Main Steam Line "A" Radiation Monitor , 2RITS-1007, setpoint exceeded; Primary to Secondary RCS Leakage.

Notes:

Both Main Steam Line Area Radiation monitors will cause this alarm to come in informing the control room of radiation in the steam lines which can only come from the steam generator tubes. Distracters A and D area radiation monitors will bring in alarm 2K11 B-10, Area Radiation HI/LO which informs the operator that RCS activity is high in the vicinity of the monitor. Distracter C will bring in the "SEC SYS RADIATION HI" Alarm but is a Process Sampling Radiation Monitor.

References:

OP 2202.001, SPTAs, Step 9 C and D along with the technical guidance.
OP 2203.012K, 2K11 A-10, ACA "SEC SYS RADIATION HI".
OP 2203.012K, 2K11 B-10, ACA "Area Radiation HI/LO.
STM 2-62, Radiation Monitoring System, Section 2.3

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1512	**Rev:**	1	**Rev Date:**	10/29/2007 3:07:0	**QID #:**	24	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	Ap	**Source:**	Modified Bank 0413 (2002 NRC Exam)				
Search	000074A202	**10CFR55:**	43.5 / 45.13	**Safety Function**	4						
System Title:	Inadequate Core Cooling			**System Number**	074	**K/A**	EA2.02				
Tier:	1	**Group:**	2	**RO Imp:**	4.3	**SRO Imp:**	4.6	**L. Plan:**	A2LP-RO-ELOSF	**OBJ**	5

Description: Ability to determine and interpret the following as they apply to an Inadequate Core Cooling: - Availability of main or auxiliary feedwater.

Question:

Given the following:

* The plant has tripped due to a Loss of Offsite Power 1 hour ago.
* A bus lockout occurs on Electrical Bus 2A3 and cannot be reset.
* EFW Pump 2P7A trips on overspeed and cannot be reset.
* The Alternate AC Diesel tripped on overspeed and will not reset.
* The Loss of Feed Water EOP, 2202.006 has been entered.
* RCS Tave is 545°F and being maintained with Atmospheric Dump Valves (ADVs).
* "A" Steam Generator level is 80 inches and dropping
* "B" Steam Generator level is 60 inches and dropping.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

The correct action to take based on these conditions would be to:

Audit Exam History

2008	☐

A. Establish Once Through Cooling with HPSI flow to remove RCS heat at this time.

B. Establish Once Through Cooling to remove RCS heat at < 70 inches in both SG.

C. Establish Once Through Cooling only after RCS temperature starts to rise.

D. Establish Once Through Cooling for RCS heat removal after SGs are < 22 inches.

Answer:

A. Establish Once Through Cooling with SI flow to remove RCS heat at this time.

Notes:

By the Guidance found in the Loss of Feedwater EOP 2202.006, Once Through Cooling should be established when either SG is < 70 inches or RCS T-cold is rising in an uncontrolled manner. Once Through Cooling should be established before transitioning to the FRP. 22% Narrow range SG level is the in the Optimum EOPs to establish an emergency feedwater source.

References:

OP 2202.006, Loss of Feedwater EOP, Step 19

Historical Comments:

This question was generated from a randomly selected K/A to be part of the 2002 SRO exam and not on the 2002 RO exam; however, this question is not one of the 25 10 CFR 55.43 category questions selected for this exam. Four additional questions were selected to be on the 2002 SRO exam that are not on the 2002 RO exam to in order to comply with the NUREG 1021 guidance to have a balance of K&A selections on the initial sample plan. One of these 4 happen to fall into the 10 CFR 43 category so there are actually 26 SRO only questions on the 2002 SRO exam that are in the 10 CFR 43 category.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1513	**Rev:**	0	**Rev Date:**	10/29/2007 3:26:2	**QID #:**	25	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	2	**Taxonomy:**	Ap	**Source:**	NEW				
Search	00CA13K202	**10CFR55:**	41.7 / 45.7	**Safety Function**	4						
System Title:	Natural Circulation Operations			**System Number**	A13	**K/A**	EK2.2				
Tier:	1	**Group:**	2	**RO Imp:**	3.4	**SRO Imp:**	3.6	**L. Plan:**	A2LP-RO-EAOP	**OBJ**	13

Description: Knowledge of the interrelations between the (Natural Circulation Operations) and the following: - 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.

Question:

Given the following: (Reference Provided)

* The Q-CST has been tagged out and drained for inspection of a lower leaking weld.
* The Plant has tripped from full power due to a Loss of Offsite Power.
* The Main Steam Isolation Valves are closed during SPTAs.
* Offsite will not be available in the near future according to the dispatcher.
* OP 2203.013, Natural Circulation Operations has been entered from the LOOP EOP.
* The plant is being cooled down to SDC conditions with Upstream ADVs.
* The only available Feed water source is EFW from the CSTs 2T41A and 2T41B.
* EFW is currently aligned to the "B" CST.
* The "A" CST was being filled at the trip and is currently 60%.
* The "B" CST was 84% at the time of the trip and is lowering.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Based on the amount of CST inventory available, from the time of the trip, what is the approximate time until SDC needs to be in service to remove RCS decay heat.

A. 7 hours

B. 11.5 hours

C. 21.5 hours

D. 27 hours

Answer:

D. 27 hours

Notes:

The CSTs are approximately 2000 gallons per percent. With only the CST available, then 84% x 2000 plus 60% x 2000 is equal to 288,000 gallons. Based on EOP Standard Attachment 15, SDC must be in service at approximately 27 hours after the trip.

Provide OP 2202.010, Standard Attachment 15, Condensate Usage as a reference.

References:

OP 2202.007, LOOP Contingency Step 40 C.
OP 2203.13, Natural Circulation Operations, Step 24.
OP 2202.010, Standard Attachment 15, Condensate Usage.
OP-2106.015 Section 5.0

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1514	**Rev:**	001	**Rev Date:**	8/11/1998 3:30:39	**QID #:**	26	**Author:**	Hatman
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	Ap	**Source:**	NRC Bank 0165 (1998 NRC Exam)		
Search	00CA162107	**10CFR55:**	43.5 / 45.12 / 45.13	**Safety Function**	2				
System Title:	Excess RCS Leakage			**System Number**	A16	**K/A**	2.1.7		
Tier:	1	**Group:**	2	**RO Imp:**	3.7	**SRO Imp:**	4.4	**L. Plan:**	A2LP-RO-TS	**OBJ**	4

Description: Conduct of Operations - Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.

Question:

Given the following conditions:

* Unit is operating at 100% power.
* Current reactor coolant system leakage is as follows:
* Pressure boundary leakage ---- 0.0 gpm
* Leakage into the Reactor Drain Tank ---- 4.6 gpm
* Leakage to "B" Steam Generator ---- 0.3 gpm
* Unidentified Leakage ---- 0.7 gpm

Which one of the following is true for LCO 3.4.6.2, Reactor Coolant System Operational leakage?

A. Met, based on total leakage.

B. Not met, based on unidentified leakage.

C. Met, based on total identified leakage.

D. Not met, based on primary-to-secondary leakage.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. Not met, based on primary-to-secondary leakage.

Notes:

Allowed Pressure boundary leakage is Zero so that is acceptable.
Unidentified leakage limited to 1 gpm and we only have 0.7 so that is acceptable.
Identified leakage limited to 10 gpm. We have a total of 4.9 so that is acceptable.
Primary to secondary leakage limited to 150 gallons/day to any one SG. We have 0.3 gpm which is 432 gallons per day.

References:

Tech Spec Definitions for Identified, Unidentified, and Pressure Boundary leakage.
Tech Spec 3.4.6.2., RCS Operational Leakage.

Historical Comments:

Rev 001 - 08/11/98 - Revised stem by replacing "states the condition of compliance with" with "is true for". Revised distracter "A" from "Met, leakage is within limits" to "Met, based on total leakage". Revised distracter "B" from "Not met due to unidentified leakage" to "Not met, based on total identified leakage". Revised distracter "C" from "Not met due to total identified leakage" to "Met, based on total identified leakage". Answer "C" revised from "Not met due to primary-to-secondary" to " Not met, based on primary-to-secondary leakage". Changes made due to NRC review comments.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1515	**Rev:**	0	**Rev Date:**	10/29/2007 4:53:1	**QID #:**	27	**Author:**	Coble
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	K	**Source:**	NEW		
Search	00CE09A103	**10CFR55:**	41.7 / 45.5 / 45.6	**Safety Function**	0				
System Title:	Functional Recovery			**System Number**	E09	**K/A**	EA1.3		
Tier:	1	**Group:**	2	**RO Imp:**	3.6	**SRO Imp:**	3.8	**L. Plan:**	A2LP-RO-ESPTA	**OBJ**	1
Description:	Ability to operate and/or monitor the following as they apply to the (Functional Recover): - Desired operating results during abnormal and emergency situations.								

Question:

Given the following:

* The plant has tripped from full power due to an excess steam demand event
* The plant now experiences a Steam Generator Tube Rupture
* The CRS has entered the Functional Recovery Procedure.
* The CRS has determined that the "Containment Isolation" , "RCS Inventory" and the "RCS Pressure Control Safety functions are Jeopardized.

In what order should the safety functions be addressed?

A. Containment Isolation then RCS Inventory then RCS Pressure Control.

B. RCS Inventory then Containment Isolation then RCS Pressure Control.

C. RCS Pressure Control then RCS Inventory then Containment Isolation.

D. RCS Inventory then RCS Pressure Control then Containment Isolation.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. RCS Inventory then RCS Pressure Control then Containment Isolation.

Notes:

The Safety Functions in the Functional Recovery procedure are addressed from the highest order safety function in jeopardy to the lowest order safety function in jeopardy then challenged and satisfied safety functions. The RCS Inventory safety function is higher than the RCS Pressure Control which is higher than the Containment Isolation safety function.

References:

OP 2202.009, Functional Recovery Procedure, Entry section Steps 12 and 14
EOP/EOP User Guide, Attachment A, Safety Function Hierarchy

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1516	**Rev:**	0	**Rev Date:**	10/29/2007 5:36:4	**QID #:**	28	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	2	**Taxonomy:**	K	**Source:**	NEW				
Search	003000K614	**10CFR55:**	41.7 / 45.7	**Safety Function**	4						
System Title:	Reactor Coolant Pump System (RCPS)	**System Number**	003	**K/A**	K6.14						
Tier:	2	**Group:**	1	**RO Imp:**	2.6	**SRO Imp:**	2.9	**L. Plan:**	A2LP-RO-RCS	**OBJ**	8
Description:	Knowledge of the effect of a loss or malfunction of the following will have on the RCPS: - Starting requirements.										

Question:

Given the following:

* The Plant is in Mode 5 ready to perform a plant heatup.
* The lift oil pumps for RCPs 2P32A and 2P32C are started manually.
* Lift Oil pressure for 2P32A is 369 psig as read locally.
* Lift Oil pressure for 2P32C is 413 psig as read locally.
* CCW flow for RCP 2P32A is 265 gpm as read locally.
* CCW flow for RCP 2P32C is 235 gpm as read locally.

Based on the above conditions, If the handswitches for RCPs 2P32A and 2P32C are taken to start, then 2P32A _____start and 2P32C _____ start.

A. will; will

B. will not; will

C. will; will not

D. will not; will not

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. will not; will not

Notes:

The starting interlock for a RCP is 400 psig lift oil pressure and 240 gpm CCW flow. Based on these interlocks and the above conditions, neither pump will start.

References:

OP 2103.006, RCP Operations, Step 6.1
STM 2-03-2, RCPs, Section 1.7.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1517	**Rev:**	1	**Rev Date:**	10/30/2007 8:35:3	**QID #:**	29	**Author:**	Coble
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	Modified IH Bank ANO-OPS2-12607		
Search	003000A202	**10CFR55:**	41.5 / 43.5 / 45.3 / 45.	**Safety Function**	4				
System Title:	Reactor Coolant Pump System (RCPS)	**System Number**	003	**K/A**	A2.02				
Tier:	2	**Group:**	1	**RO Imp:**	3.7	**SRO Imp:**	3.9	**L. Plan:**	A2LP-RO-EESD	**OBJ**	7

Description: 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: - Conditions which exist for an abnormal shutdown of an RCP in comparison to a normal shutdown.

Question:

Given the following:

* A plant trip from full power has occurred as a result of a large steam line rupture.
* Containment pressure reaches 24.2 psia and rising
* RCS pressure is 1475 psia and dropping
* RCS temperature is 520°F and lowering

According to 2202.005, Excess Steam Demand, what, if any, actions are required concerning the Reactor Coolant Pumps (RCPs)?

A. Stop all RCPs due to a loss of NPSH to the RCPs.

B. Stop 1 RCP in each loop when RCS pressure drops to 1400 psia.

C. Stop all RCPs due to the rise in Containment Pressure.

D. Leave all RCPs running to assist in recovering the plant after cooldown.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. Stop all RCPs due to the rise in Containment Pressure.

Notes:

The EOP requires RCPs to be secure if NPSH is lost (MTS less than 30 degrees F), one in each Loop if RCS Pressure in less than 1400 psia, and if a Containment Spray Actuation (CSAS) has occurred. The only criteria met in the condition above is Containment pressure above CSAS setpoint of 23.3 psia. Therefore, the procedure direct securing of all RCP to save the motor from boric acid contamination.

References:

OP 2202.005, Excess Steam Demand, Floating Steps 11 and 31.
OP 2205.005 Technical Guidance for Step 31.

Historical Comments:

Has never been used on an NRC Exam 10/30/2007.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1518	**Rev:**	0	**Rev Date:**	10/30/2007 8:57:3	**QID #:**	30	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	4	**Taxonomy:**	C	**Source:**	NEW				
Search	004000K308	**10CFR55:**	41.7 / 45.6	**Safety Function**	1						
System Title:	Chemical and Volume Control System (CVCS)	**System Number**	004	**K/A**	K3.08						
Tier:	2	**Group:**	1	**RO Imp:**	3.6	**SRO Imp:**	3.8	**L. Plan:**	A2LP-RO-RCS	**OBJ**	6
Description:	Knowledge of the effect that a loss or malfunction of the CVCS will have on the following: - RCP seal injection.										

Question:

Given the following:

* The plant is in Mode 5 performing a fill and vent of the RCS.
* RCP seal injection is aligned to the RCPs from the CVCS system
* Auxiliary Spray is not in service.

During the fill and vent evolution, the seal injection pressure to the inlet of the RCP lower seal should be approximately _____ psid and if RCS Loop Charging Isolation Valves, 2CV 4831-2 or 2CV-4827-2 are now OPENED, the RCP seal injection flow _____.

A. 200; would be lower

B. 200; would be higher

C. 15; would be lower

D. 15; would be higher

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

A. 200; would be lower

Notes:

The RCS loop charging isolations are normally closed during RCS seal injection. The bypass valve around 2CV-4827 is a spring loaded check valve set at 200 psid. This allow 200 psi of pressure to the seal injection line to provide the motive force for RCP seal injection during RCS fill and vent with the RCS open to atmospheric pressure. If RCS Loop Charging Isolation Valves, 2CV 4831-2 or 2CV-4827-2 are opened then the CVCS flow would take the path of least resistance and go into the RCS loops instead of the RCP seals.

References:

OP 2103, RCS Fill and Vent Section 3-1st Paragraph.
OP 2103, RCS Fill and Vent Step 7.26.
STM 2-04, CVCS, Section 2.2.7 and drawings of the CVCS and RCP seal injection.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1519 **Rev:** 0 **Rev Date:** 10/30/2007 10:00: **QID #:** 31 **Author:** Coble

Lic Level: R **Difficulty:** 2 **Taxonomy:** K **Source:** IH Bank ANO-OpsUnit2-09775

Search 005000K407 **10CFR55:** 41.7 **Safety Function** 4

System Title: Residual Heat Removal System (RHRS) **System Number** 005 **K/A** K4.07

Tier: 2 **Group:** 1 **RO Imp:** 3.2 **SRO Imp:** 3.5 **L. Plan:** A2LP-RO-SDC **OBJ** 2

Description: Knowledge of RHRS design feature(s) and/or interlock(s) which provide for the following: - System protection logics, including high-pressure interlock, reset controls, and valve interlocks.

Question:

The interlock for the Shutdown Cooling suction MOV's (2CV-5084-1 and 2CV-5086-2) will _____ if RCS pressure is approximately _____ psia.

A. prevent opening the valves; 350

B. prevent opening the valves; 300

C. automatically close the valves; 350

D. automatically close the valves; 300

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

A. prevent opening the valves; greater than 350 psia

Notes:

This is a recent change to the Automatic Closing Interlock (ACI) for the SDC Suction Isolation Valves. The valves used to automatically close at > 300 psig but this feature has been removed and now an alarm is received at 350 psig and the Annunciator Corrective Action (ACA) will direct closing of the suction isolations.

References:

STM 2-14, SDC System, Section 2.1
OP 2104.004, SDC System Operations.

Historical Comments:

Has never been used on an NRC Exam 10/30/2007.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1520	**Rev:**	0	**Rev Date:**	1/9/2008 3:59:04	**QID #:**	32	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	NEW				
Search	006000K508	**10CFR55:**	41.5 / 45.7	**Safety Function**	2						
System Title:	Emergency Core Cooling System (ECCS)	**System Number**	006	**K/A**	K5.08						
Tier:	2	**Group:**	1	**RO Imp:**	2.9	**SRO Imp:**	3.1	**L. Plan:**	A2LP-RO-ECCS	**OBJ**	13

Description: Knowledge of the operational implications of the following concepts as they apply to the ECCS: - Operation of pumps in parallel.

Question:

Given the following: (Reference Provided)

* The plant has tripped due to a LOCA.
* RCS pressure has dropped to 1200 psia and stabilized.
* The CRS has directed you to verify proper HPSI flow.

Based on these conditions, if ONE (1) HPSI pump was in operation, then the MINIMUM acceptable total HPSI flow should be approximately _____ gpm. Based on the same conditions, if TWO (2) HPSI pumps are placed in parallel operations, then the EXPECTED total HPSI flow should be _____.

A. 175 gpm; greater than 175 gpm.

B. 175 gpm; the same flow as ONE pump.

C. 225 gpm; greater than 225 gpm.

D. 225 gpm; the same flow as ONE pump.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. 225 gpm; greater than 225 gpm.

Notes:

The candidate should use the provided HPSI flow curve to determine the minimum acceptable flow of 225 gpm and should realize this curve is for one available HPSI pump. Through fundamental training, the candidate should realize that two pumps operating in parallel will provide additional flow than the minimum required for one pump.

Provide OP 2202.010, Standard Attachments, Exhibit 2, HPSI Flow Curve as a reference.

References:

OP 2202.010, Standard Attachments, Exhibit 2, HPSI Flow Curve.
GFES PWR Fundamentals, Components, Chapter 2, Pumps, Pumps in Parallel.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1521	**Rev:**	0	**Rev Date:**	10/30/2007 10:49:	**QID #:**	33	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	2	**Taxonomy:**	K	**Source:**	NEW				
Search	007000K401	**10CFR55:**	41.7	**Safety Function**	5						
System Title:	Pressurizer Relief Tank/Quench Tank System (	**System Number**	007	**K/A**	K4.01						
Tier:	2	**Group:**	1	**RO Imp:**	2.6	**SRO Imp:**	2.9	**L. Plan:**	A2LP-RO-RCS	**OBJ**	
Description:	Knowledge of PRTS design feature(s) and/or interlock(s) which provide for the following: - Quench tank cooling.										

Question:

Given the following:

* The plant is at full power with indications of a Pressurizer Safety Valve leaking.
* The Quench tank temperature has risen above its alarm limit.
* The CRS directs the crew to cool the Quench Tank using the normal feed and bleed method.

To ensure the sparger in the Quench Tank remains covered during this evolution, tank level should be maintained greater than _____ with makeup water aligned while draining the Quench Tank to the _____.

A. 75%; Reactor Drain Tank

B. 75%; Containment Sump

C. 55%; Reactor Drain Tank

D. 55%; Containment Sump

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

A. 75%; Reactor Drain Tank

Notes:

The quench tank can be aligned to drain to the RDT through 2CV-4692. It cannot be aligned to drain to the Containment sump unless a tank relief opens or rupture disc ruptures. The minimum allowed level in the Quench Tank is 75% to ensure the sparger remains covered to quench any hot fluid coming into the tank.

References:

OP 2103.007 Section 7.5
STM 2-03, RCS, Section 2.3 Quench Tank.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1522 **Rev:** 1 **Rev Date:** 11/5/2007 4:15:03 **QID #:** 34 **Author:** Simpson

Lic Level: R **Difficulty:** 3 **Taxonomy:** C **Source:** Modified Bank 0602 (2006 NRC Exam)

Search 008000A205 **10CFR55:** 41.5 / 43.5 / 45.3 / 45. **Safety Function** 8

System Title: Component Cooling Water System (CCWS) **System Number** 008 **K/A** A2.05

Tier: 2 **Group:** 1 **RO Imp:** 3.3 **SRO Imp:** 3.5 **L. Plan:** A2LP-RO-CCW **OBJ** 12

Description: Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Effect of loss of instrument and control air on the position of the CCW valves that are air operated.

Question:

Which of the following would be the affect of a loss of Instrument Air on Component Cooling Water (CCW) components and what action needs to be taken?

A. CCW Surge Tank vent would be shifted to a monitored release path; need to manually re-align the vent to the atmosphere.

B. CCW Containment isolation valves fail closed; reactor must be tripped if CCW not restored within ten minutes.

C. CCW Pump Crossover valves will shift to align 2P33B to supply Loop II CCW, need to manually start 2P33B.

D. Full CCW flow to the Letdown Heat Exchanger, need to ensure Letdown Flow Control valves are closed.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☑	☑
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. Full CCW flow to the Letdown Heat Exchanger, need to ensure Letdown Flow Control valves are closed.

Notes:

The CCW surge Tank vent fails to the atmospheric position and is normally aligned to the atmosphere
CCW containment isolations are MOVs and will remain open
Loop crossover valves fail as-is so the pumps will not need a status change.
LD HX temperature control valve fails open on loss of air and the Letdown Flow Control Valves fail closed..

References:

2203.021 Attachment A table for CCW and CVCS system
OP 2203.021, Loss of IA, Step 14
STM 2-43, CCW System, Sections, 2.2, 2.8.2, 3.2.17, and 3.2.18 and a drawing of the CCW System.

Historical Comments:

Modified from the 2006 Exam to different correct answer.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1523	**Rev:**	0	**Rev Date:**	10/30/2007 12:42:	**QID #:**	35	**Author:**	Coble
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	NEW		
Search	0080002404	**10CFR55:**	41.10 / 43.2 / 45.6	**Safety Function**	8				
System Title:	Component Cooling Water System (CCWS)			**System Number**	008	**K/A**	2.4.4		
Tier:	2	**Group:**	1	**RO Imp:**	4.0	**SRO Imp:**	4.3	**L. Plan:**	**OBJ**

Description: Emergency Procedures/Plan - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

Question:

Given the following:

* The plant is at 100% power
* CCW Pump 2P33C is running supplying the CCW System.
* CCW Pumps 2P33A and 2P33B are in Standby.
* Annunciators 2K11-A1/A3/A5/A7 "CCW DISC FLOW LO" come in.
* CCW Containment Supply Valve 2CV-5632-1 on 2C-17 has closed.

Which of the following actions should be taken first based on these alarms and indications?

A. Start CCW Pumps 2P33A and 2P33B to clear alarms then place 2P33C in Pull to Lock (PTL).

B. Trip the Reactor and commence EOP Standard Post Trip Actions (SPTAs).

C. Enter the RCP Emergencies AOP and attempt to restore CCW to the RCPs.

D. Trip the Reactor and isolate Controlled Bleedoff from the RCPs due to loss of CCW cooling.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. Enter the RCP Emergencies AOP and attempt to restore CCW to the RCPs.

Notes:

These alarms are entry conditions for the RCP Emergency AOP and monitor CCW flow to the Containment.
These are RED colored Annunciators (Highest Priority) and require prompt action because if CCW cannot be restored within 10 minutes, then the plant should be tripped and the RCPs secured.
Starting the CCW pumps would not mitigate the event since the Containment CCW supply valve has failed closed.
Isolating controlled bleedoff would be an action after the plant trip if CCW cannot be restored to prevent cooking the RCP seals.

References:

OP 2203.025 Entry Conditions and Step 2.
OP 2203.012K, ACAs for Annunciators 2K11-A1/A3/A5/A7 "CCW DISC FLOW LO"

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1524	**Rev:**	1	**Rev Date:**	10/30/2007 1:19:0	**QID #:**	36	**Author:**	Coble
Lic Level:	R	**Difficulty:**	4	**Taxonomy:**	C	**Source:**	Modified IH Bank ANO-OPS2-12475		
Search	010000K301	**10CFR55:**	41.7 / 45.6	**Safety Function**	3				
System Title:	Pressurizer Pressure Control System (PZR PCS)	**System Number**	010	**K/A**	K3.01				
Tier:	2	**Group:**	1	**RO Imp:**	3.8	**SRO Imp:**	3.9	**L. Plan:**	A2LP-RO-PZR	**OBJ**	4/5
Description:	Knowledge of the effect that a loss or malfunction of the PZR PCS will have on the following: - RCS.								

Question:

Consider the following:

* The plant is operating normally at full power.
* RCS Pressure is 2200 and steady.
* The 'A' Pressurizer Pressure Control Channel is in service and fails high.
* No Operator Action has been taken.

Given these conditions, which of the following would occur and what effect would it have on the RCS?

A. Both spray valves will go 40% open, then RCS pressure will lower, and All PZR heater breakers will close with proportional heaters going to maximum firing

B. Both spray valves will go 100% open, then RCS pressure will lower, and All PZR heaters breakers remain as before with proportional heaters going to minimum firing.

C. Both spray valves will remain closed, then RCS pressure will rise, and All PZR heater breakers would open.

D. The "A" Spray valve goes 100% open, the "B" Spray valve remains closed, RCS pressure will lower, and PZR heaters breakers remain as before the failure.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. Both spray valves will go 100% open, then RCS pressure will lower, and All PZR heaters breakers remain as before with proportional heaters going to minimum firing.

Notes:

A is incorrect because the proportional heater breakers will not open but fire at a lower rate. Also the Spray valves only go to a 40% position between 25 to 40 psi above controller setpoint.
C is incorrect because the spray valves will come open, the RCS pressure will lower and the heater breakers will not close on a high failure.
D is incorrect because the in-service PZR Pressure control channel failing high will affect both RCS spray valves and provide enough spray flow to reduce RCS pressure even with all the heaters energized.

References:

OP 2103.005, PZR Operations, Step 6.3 and 6.4.
OP 2203.028, PZR Systems Malfunction.
STM 2-03-01, Pressurizer Pressure and Level Control, Section 2.0.

Historical Comments:

This question has not been used on any previous NRC exam.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1525 **Rev:** 000 **Rev Date:** 10/30/2001 2:29:4 **QID #:** 37 **Author:** Coble

Lic Level: R **Difficulty:** 3 **Taxonomy:** Ap **Source:** NEW

Search 0100002120 **10CFR55:** 41.10 / 43.5 / 45.12 **Safety Function** 3

System Title: Pressurizer Pressure Control System (PZR PCS) **System Number** 010 **K/A** 2.1.20

Tier: 2 **Group:** 1 **RO Imp:** 4.3 **SRO Imp:** 4.2 **L. Plan:** A2LP-RO-PZR **OBJ** 4

Description: Conduct of Operations - Ability to execute procedure steps.

Question:

Given the following:

* The plant has tripped from 100% power due to an Excess Steam Demand.
* All RCPs have been secured.
* RCS pressure initially lowered then started rising and is currently 1600 psia.
* RCS temperature is 485°F and rising.
* RCS Pressure Control is being established with Auxiliary Spray.
* Regen HX to RCS Temperature, 2TI-4825, indicates 210°F.

In accordance with EOP Standard Attachment 27, which of the following actions should be taken and why?

A. Stop all Charging Pumps to prevent thermal shock to the RCS Spray nozzles.

B. Isolate Letdown to prevent exceeding design temperature limits of the spray header piping and nozzles.

C. Log the Open and Closing times of Aux Spray Valve 2CV-4824-2 to comply with spray nozzle usage limits.

D. Take the Letdown Flow Controller to manual and raise Letdown Flow to Maximum to limit the CVCS to RCS Delta Temperature.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. Log the Open and Closing times of Aux Spray Valve 2CV-4824-2 to comply with spray nozzle usage limits.

Notes:

Anytime Auxiliary Spray is initiated with a differential temperature between the Regenerative Heat Exchanger Outlet to the RCS and the pressurizer water phase exceeding 200 °F, then record the length of time of spraying operation and the difference in temperature. The pressurizer spray nozzle is designed to allow using the spray valves 100 times per year with the differential temperature between the spray fluid and the pressurizer in excess of 200 °F.
In addition to the above requirement, if the Regenerative Heat Exchanger Outlet to the RCS temperature exceeds 275 °F and Aux Spray is used, an engineering evaluation is required before normal operation of the Auxiliary Spray is allowed. The Auxiliary Spray line is qualified for only one use with temperature > 275 °F.

References:

OP 2202.010, Standard Attachments, Attachment 27, PZR Spray Operation.
STM 2-03, RCS, Section 2.2.1.

Historical Comments:

.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1526	**Rev:**	0	**Rev Date:**	10/30/2007 3:19:2	**QID #:**	38	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	K	**Source:**	NEW				
Search	012000K502	**10CFR55:**	41.5 / 45.7	**Safety Function**	7						
System Title:	Reactor Protection System			**System Number**	012	**K/A**	K5.02				
Tier:	2	**Group:**	1	**RO Imp:**	3.1	**SRO Imp:**	3.3	**L. Plan:**	A2LP-RO-TS	**OBJ**	2

Description: Knowledge of the operational implications of the following concepts as they apply to the RPS: - Power density.

Question:

Given the following:

* The plant is at 100% power.
* Alarm 2K10 A-2 "COLSS POWER MARGIN EXCEEDED" comes in.
* It is determined that the LPD Power Operating Limit has been exceeded.

What is the concern of exceeding this limit and how long do you have to initiate corrective action to restore the limit?

A. Possible Fuel Pellet melting due to exceeding 2200°F; take action within 15 minutes.

B. Possible Fuel Cladding oxidation due to exceeding 2200°F; take action within 1 hour.

C. Possible Fuel Pellet melting due to exceeding 5080°F; take action within 15 minutes.

D. Possible Fuel Cladding oxidation due to exceeding 5080°F; take action within 1 hour.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. Possible Fuel Pellet melting due to exceeding 5080°F; take action within 15 minutes.

Notes:

The peak fuel centerline temperature shall be maintained < 5080°F. A steady state peak linear heat rate of 21 kw/ft has been established as the Limiting Safety System Setting to prevent fuel centerline melting during normal operation.
With COLSS in service and the linear heat rate limit not being maintained as indicated by COLSS calculated core power exceeding the COLSS calculated core power operating limit based on linear heat rate, within 15 minutes initiate corrective action to reduce the linear heat rate to within the limit.

References:

OP 2203.012J ACA for "COLSS POWER MARGIN EXCEEDED" Steps 1.3 and 2.3.
T.S 2.1.1.2 and Bases
T.S 3.2.1 Action a.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1527	**Rev:**	0	**Rev Date:**	10/30/2007 3:47:0	**QID #:**	39	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	Biennial Bank 1366 (B Bank 669)				
Search	013000K115	**10CFR55:**	41.2 to 41.9 / 45.7 to 4	**Safety Function**	2						
System Title:	Engineered Safety Features Actuation System (	**System Number**	013	**K/A**	K1.15						
Tier:	2	**Group:**	1	**RO Imp:**	3.4	**SRO Imp:**	3.8	**L. Plan:**	A2LP-RO-ESFAS	**OBJ**	3

Description: Knowledge of the physical connections and/or cause-effect relationships between the ESFAS and the following systems: - MFW System.

Question:

Given the following conditions:

* The plant has tripped from full power.
* Containment Building pressure is 25 psia and rising.
* Main Steam Header pressure is 780 psia and lowering.
* SG levels are 28% and lowering.

Which of the following best describes the condition of the MFW system?

A. Both MFWP's tripped, all 4 MFW block valves closed.

B. Both MFWP's tripped, no MFW block valves closed.

C. One MFWP running, no MFW block valves closed.

C. One MFWP running, all 4 MFW block valves closed.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

A. Both MFWP's tripped, all 4 MFW block valves closed.

Notes:

During Steam Generator Replacement Outage, 2R-14, a design change was installed to provide modifications to actuate equipment necessary to prevent exceeding the CB pressure limits. This was accomplished by using the Hi-Hi Containment Pressure (CSAS) signal at 23.3 psia to terminate forced MFW flow, isolate MFW, and terminate MS flow. This termination and isolation is accomplished through generation of a Main Feedwater Isolation Signal (MFWIS). CSAS and MSIS actuation relay contact combination were applied to actuate the components that isolate MFW and MS. This arrangement will terminate forced flow, such that the MFW isolation and/or backup valves can close, stop the Condensate Pumps, Heater Drain Pumps, and MFW pumps.

References:

STM 2-70, ESFAS, Section 2.4.4 and actuation tables for CSAS

Historical Comments:

This test question has not been used on an initial NRC exam and was pulled from the biennial test bank.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1528 **Rev:** 000 **Rev Date:** 2/8/2000 6:56:46 **QID #:** 40 **Author:** Hatman

Lic Level: R **Difficulty:** 2 **Taxonomy:** K **Source:** NRC Bank 0281 (2000 NRC Exam)

Search 022000K201 **10CFR55:** 41.7 **Safety Function** 5

System Title: Containment Cooling System (CCS) **System Number** 022 **K/A** K2.01

Tier: 2 **Group:** 1 **RO Imp:** 3.0 **SRO Imp:** 3.1 **L. Plan:** A2LP-RO-CVENT **OBJ** 3

Description: Knowledge of bus power supplies to the following: - Containment cooling fans.

Question:

Given the following plant conditions:

* The plant is at full power.
* Service Water Pump 2P4B is inoperable.
* Containment Cooler 2VSF-1A is inoperable.
* Now a loss of offsite power occurs.
* Loss of Coolant Accident (LOCA) has occurred.
* Both Emergency Diesel Generators have failed.

Which of the following will provide the greatest reduction in Containment pressure for the given conditions?

A. Place Alternate AC Diesel Generator on 2A1 Bus.

B. Place Alternate AC Diesel Generator on 2A2 Bus.

C. Place Alternate AC Diesel Generator on 2A3 Bus.

D. Place Alternate AC Diesel Generator on 2A4 Bus.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. Place Alternate AC Diesel Generator on 2A4 Bus.

Notes:

The examinee must know that chilled water to containment will isolate on CIAS making A & B wrong plus these Non-safety buses will not power up any Containment Fan Coolers.
2VSF-1A which is inoperable is powered from Vital 4160 VAC bus 2A3 through Vital 480 Volt Bus 2B53-L1 so powering 2A4 will allow two Containment Coolers, a Service Water pump and a Spray Pump available to operate which will allow the greatest cooling effect on Containment. These containment fan coolers are powered from Vital 4160 VAC Bus 2A4 though Vital 480 VAC Bus 2B63-L1 and L2

References:

STM 2-09, Containment Cooling and Purge System, Section 2.2.
2107.002, ESF Electrical System Operation, Attachment A, C & D.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1529	**Rev:**	000	**Rev Date:**	8/15/2001	**QID #:**	41	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	NRC Bank 0374 (2002 NRC Exam)				
Search	026000A106	**10CFR55:**	41.5 / 45.5	**Safety Function**	5						
System Title:	Containment Spray System (CSS)	**System Number**	026	**K/A**	A1.06						
Tier:	2	**Group:**	1	**RO Imp:**	2.7	**SRO Imp:**	3.0	**L. Plan:**	A2LP-RO-SPRAY	**OBJ**	3

Description: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CSS controls including: - Containment spray pump cooling.

Question:

Given the following plant conditions:

* A Large Break LOCA is in progress.
* Containment Pressure is 35 psia.
* Containment Temperature is 247°F.
* The RWT level is 5.4%.
* All ECCS components operate as designed.

At this point in the accident, the system that is providing long term cooling for the core is:

A. The Containment Spray Pumps through the SDC Heat Exchangers.

B. Low Pressure Safety Injection Pumps through the SDC Heat Exchangers.

C. The High Pressure Safety Injection Pumps using water from the RWT.

D. All available Charging Pumps and the Letdown Heat exchanger.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

A. The Containment Spray Pumps through the SDC Heat Exchangers.

Notes:

A is correct because the spray flow is being cooled by Service Water through the SDC Heat exchanger on a RAS (<6% RWT level) which is being sent to the spray header then the Containment sump which is providing the suction for the HPSI pumps to the core.
B is wrong because the LPSI Pump is not aligned to the SDC heat exchanger and it trips on a RAS at 6% in the RWT.
C is wrong because the HPSI will have a suction path from the containment sump which has no cooling source other than Spray flow.
D is wrong because the Charging pump capacity is not sufficient to remove long term decay heat buildup in the core.

References:

STM-2-08, Containment Spray System, Sections 3.5, 4.2 and 5.2.2

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1530	**Rev:**	0	**Rev Date:**	10/31/2007 4:07:5	**QID #:**	42	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	4	**Taxonomy:**	An	**Source:**	NEW				
Search	039000K305	**10CFR55:**	41.7 / 45.6	**Safety Function**	4						
System Title:	Main and Reheat Steam System (MRSS)	**System Number**	039	**K/A**	K3.05						
Tier:	2	**Group:**	1	**RO Imp:**	3.6	**SRO Imp:**	3.7	**L. Plan:**	A2LP-RO-STEAM	**OBJ**	2/3

Description: Knowledge of the effect that a loss or malfunction of the MRSS will have on the following: - RCS.

Question:

Given the following:

* The plant is at full power in the middle of an operating cycle.
* The Reheat Steam High Load Valve to MSR 2E12A, 2CV-404, fails closed.

What effect will this have on the RCS?

A. RCS pressure will lower, PZR level will lower, Reactor power will lower.

B. RCS pressure will rise, PZR level will rise, Reactor power will rise.

C. RCS pressure will lower, PZR level will lower, Reactor power will rise.

D. RCS pressure will rise, PZR level will rise, Reactor power will lower.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. RCS pressure will rise, PZR level will rise, Reactor power will lower.

Notes:

The loss of steam load will cause an increase in RCS temperature which will cause an insurge to the pressurizer causing a rise in pressure and level. The rise in temperature will induce negative reactivity in the core with a negative MTC thus causing Reactor power to lower - follows steam demand. This question is also tied to GFES Reactor Theory Chapter 8 Reactor Operational Physics, Objective 21.

References:

STM 2-16, Reheat Steam, Section 3.3.1.4 and drawing of Moisture Separator Reheater 2E12A.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1531 **Rev:** 0 **Rev Date:** 10/31/2007 4:36:5 **QID #:** 43 **Author:** Coble

Lic Level: R **Difficulty:** 3 **Taxonomy:** C **Source:** IH Bank ANO-OpsUnit2-10594a

Search 039000A403 **10CFR55:** 41.7 / 45.5 to 45.8 **Safety Function** 4

System Title: Main and Reheat Steam System (MRSS) **System Number** 039 **K/A** A4.03

Tier: 2 **Group:** 1 **RO Imp:** 2.8 **SRO Imp:** 2.8 **L. Plan:** A2LP-RO-MFPTC **OBJ** 24

Description: Ability to manually operate and/or monitor in the control room: - MFW pump turbines.

Question:

Consider the following:

* Unit 2 is at full power
* A plant transient produces the following Feedwater System pressures.
* High Pressure Heater, 2E1A, Outlet pressure is 1230 psig.
* High Pressure Heater, 2E1B, Outlet pressure is 1340 psig.
* "A" Main Feedwater Pump (2P1A) Discharge pressure is 1210 psig (3/3).
* "B" Main Feedwater Pump (2P1B) Discharge pressure is 1280 psig (3/3).

Given these conditions, 2P1A would _____ and 2P1B would _____.

A. remain running; remain running

B. remain running; trip

C. trip; remain running

D. trip; trip

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. remain running; trip

Notes:

B MFP will trip due to high discharge pressure of > 1250 psig and high outlet pressure out of High Pressure Heater 2E1A of > 1300 psig. The A MFP has not exceed its limits and will continue to run.

References:

STM 2-19-1 Sections 3.1 MFP Turbine Trips.

Historical Comments:

This question has not been used on any previous NRC exam.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1532	**Rev:**	0	**Rev Date:**	10/31/2007 5:17:3	**QID #:**	44	**Author:**	Coble
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	I H Bank ANO-OPS2-7111		
Search	059000K405	**10CFR55:**	41.7	**Safety Function**	4				
System Title:	Main Feedwater (MFW) System			**System Number**	059	**K/A**	K4.05		
Tier:	2	**Group:**	1	**RO Imp:**	2.5	**SRO Imp:**	2.8	**L. Plan:**	A2LP-RO-MFPTC	**OBJ**	11/15

Description: Knowledge of MFW System design feature(s) and/or interlock(s) which provide for the following: - Control of speed of MFW pump turbine.

Question:

Consider the following:

* Unit 2 is at full power.
* The Main Feedwater System is in a normal automatic configuration.
* The "Lower Fast" pushbutton on the EH control panel on 2C02 for the 'A' Main Feedwater Pump Turbine is inadvertently depressed.
* The LSS lamp on the 2C02 remote operating station for the 'A' Main Feedwater Pump Turbine is now illuminated.

Given these conditions the speed for the 'A' Main Feed pump would _____ and the speed for the 'B' Main Feed pump would _____.

A. raise; lower

B. raise; raise

C. lower; lower

D. lower; raise

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. lower; raise

Notes:

The automatic and manual speed setpoint signals enter a low value gate. This gate will only allow the lower of the two signals to pass through to be used in the speed control loop. The manual pushbutton on "A" MFP will override the auto signal generated in the FWCS. The FWCS will see the lower output on "A" MFP and raise the "B" MFP speed to compensate.

References:

STM 2-19-1 Section 2.1.2 and 2.11 and drawings of the Feed Pump Turbine Speed Control Circuit

Historical Comments:

This question has not been used on any previous NRC exam.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1533	**Rev:**	0	**Rev Date:**	10/31/2007 5:45:4	**QID #:**	45	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	2	**Taxonomy:**	K	**Source:**	NEW				
Search	061000K105	**10CFR55:**	41.2 to 41.9 / 45.7 to 4	**Safety Function**	4						
System Title:	Auxiliary / Emergency Feedwater (AFW) Syste	**System Number**	061	**K/A**	K1.05						
Tier:	2	**Group:**	1	**RO Imp:**	2.6	**SRO Imp:**	2.8	**L. Plan:**	A2LP-RO-EFW	**OBJ**	4

Description: Knowledge of the physical connections and/or cause-effect relationships between the AFW System and the following systems: - Condensate system.

Question:

If NO Condensate Storage Tanks (CSTs/QCST) are available, the EFW pumps can use the Condensate Hotwell as a suction source only when plant power is _____ due to _____.

A. less than 10%; vapor binding of the suction header during a loss of off-site power.

B less than 10%; inadequate condensate chemistry at low power operations.

C. greater than 5%; to prevent depletion of the Hotwell Condensate level at low power.

D. greater than 5%; over speeding 2P7A during an un-complicated Main Turbine trip.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

A. less than 10%; vapor binding of the suction header during a loss of off-site power.

Notes:

This is a limit and precaution in the procedure for EFW suction source that prevent alignment to the Hotwell above 10% power to prevent vapor binding of the suction header during a loss of off-site power which can cause the water in the condensate header to depressurize and vaporize from the hot water back flowing from the heaters.

References:

OP 2106.006, EFW Operations Sections 3.0 and Step 5.23.
STM 2-19-2, EFW System, Section 2.2

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1534	**Rev:**	1	**Rev Date:**	11/5/2007 4:14:35	**QID #:**	46	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	K	**Source:**	Modified Bank 0755 (B Bank 0032)				
Search	062000K104	**10CFR55:**	41.2 to 41.9 / 45.7 to 4	**Safety Function**	6						
System Title:	A.C. Electrical Distribution System	**System Number**	062	**K/A**	K1.04						
Tier:	2	**Group:**	1	**RO Imp:**	3.7	**SRO Imp:**	4.2	**L. Plan:**	A2LP-RO-EDHVD	**OBJ**	1
Description:	Knowledge of the physical connections and/or cause-effect relationships between the A.C. Distribution System and the following systems: - Off-site power sources.										

Question:

The following plant conditions exit:

* The plant is at full power and normal electrical power line up
* Now the plant is tripped due to a LOCA
* Pressurizer level is 24% and going down.
* RCS pressure is 1675 psia and going down.
* #3 SU Transformer is locked out.
* The Auto Transformer is energized from 161 KV and 500 KV.
* #2 SU Transformer primary voltage is 161 KV.
* All other plant equipment is operating as designed
* Unit 1 is operating at 100% power

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

What is the status of power to Non-Vital 4160V buses 2A1 and 2A2 at the end of SPTAs?

A. 2A1 de-energized; 2A2 energized from #2 SU Transformer.

B. 2A1 energized from #2 SU Transformer; 2A2 de-energized.

C. 2A1 de-energized; 2A2 energized from Alternate AC Diesel Generator (AACDG).

D. 2A1 energized from AACDG; 2A2 energized from #2 SU Transformer.

Answer:

B. 2A1 energized from #2 SU Transformer; 2A2 de-energized.

Notes:

A new analysis has the feeder breaker for #2 SU transformer to electrical bus 2A2 normally in Pull to Lock at power due to loading concerns on #2 SU Transformer. The Feeder breaker for #2 SU transformer to electrical bus 2A1 is in ready to close position and will close on a #3 SU transformer lockout supplying power to 2A1. During SPTAs the Alternate AC Diesel will only be place on a Vital 2A3 or 2A4 electrical bus if it is not being supplied from the emergency diesels. Later, when the LOCA procedure is entered, the 2A2 bus will be recovered.

References:

STM 2-32-2, High Voltage Electrical Distribution, Section 3.4
OP 2202.001, SPTAs, Step 4

Historical Comments:

This test question has not been used on an initial NRC exam and was pulled from the biennial test bank.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1535	**Rev:**	0	**Rev Date:**	11/1/2007 10:40:3	**QID #:**	47	**Author:**	Coble
Lic Level:	R	**Difficulty:**	4	**Taxonomy:**	Ap	**Source:**	NEW		
Search	063000A201	**10CFR55:**	41.5 / 43.5 / 45.3 / 45.	**Safety Function**	6				
System Title:	D.C. Electrical Distribution System			**System Number**	063	**K/A**	A2.01		
Tier:	2	**Group:**	1	**RO Imp:**	2.5	**SRO Imp:**	3.2	**L. Plan:**	A2LP-RO-ED125	**OBJ**	9

Description: Ability to (a) predict the impacts of the following malfunctions or operations on the D.C. Electrical System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Grounds.

Question:

Given the following: (Reference Provided)

* Alarm 2K01 H-10 "BATTERY 2D11 GROUND" has come in at full power.
* At the Fuse and Relay Panel for 2D11, 2D41, the following readings are reported.
* The V1 Positive Voltage is reading 43 VDC
* The V2 Negative Voltage is reading 82 VDC
* Electrical Maintenance has been contacted for troubleshooting.

Based on these indications which of the following is correct and what action should be taken in accordance with OP 2107.004?

A. There is a very low resistance positive ground on the Red DC bus; generate a condition report and enter the applicable Technical Specifications.

B. There is a very low resistance negative ground on the Red DC bus; contact system engineering and initiate a WR/WO.

C. There is a very high positive ground on the Red DC bus; generate a condition report and a WR/WO.

D. There is a very high negative ground on the Red DC bus; generate a condition report and enter the applicable Technical specifications.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. There is a very high positive ground on the Red DC bus; generate a condition report and a WR/WO.

Notes:

The positive and negative voltage indications can be used to determine if a ground exists on the respective DC bus. A ground is indicated by a voltage difference between the two ground referencing voltmeters (V1 and V2), with the grounding condition on the polarity with the least of the two voltages.

The 125V DC System is an ungrounded electrical system. This design prevents a single ground from rendering equipment inoperable or causing spurious operation of equipment.

The procedure 2107.004 directs the following:
Perform the following based upon local V1 and V2 readings:
IF voltage on either of the two meters (V1 or V2) is greater than 20 but less than 50, THEN a very high ground is indicated. Perform the following: Initiate a WR/WO and Initiate a Condition Report.

Provide OP 2107.004, DC System Operations, Section 7.0 as a reference.

References:

ACA 2203.012A, 2K01 H-10, "BATTERY 2D11 GROUND"
OP 2107.004, DC System Operations, Section 3.0 and 7.0.
STM 2-32-5, 125 VDC System, Section 2.4.2 and drawing of fuse and relay panel.

Historical Comments:

.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1536	**Rev:**	0	**Rev Date:**	11/1/2007 11:22:3	**QID #:**	48	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	4	**Taxonomy:**	An	**Source:**	Modified Bank ANO-OpsUnit2-05866a				
Search	0630002431	**10CFR55:**	41.10 / 45.3	**Safety Function**	6						
System Title:	D.C. Electrical Distribution System	**System Number**	063	**K/A**	2.4.31						
Tier:	2	**Group:**	1	**RO Imp:**	3.3	**SRO Imp:**	3.4	**L. Plan:**	A2LP-RO-ED125	**OBJ**	9

Description: Emergency Procedures/Plan - Knowledge of annunciators alarms and indications, and use of the response instructions.

Question:

Which of the following conditions would result in a "BATTERY 2D12 NOT AVAIL" alarm in the Control Room and what equipment would be affected?

A. Undervoltage on the Green Train battery bus; all remote operations of Green vital electrical feeder breakers and starting of Emergency Diesel 2DG2.

B. Undervoltage on the Red Train battery bus; all remote operations of Red vital electrical feeder breakers and starting of Emergency Diesel 2DG1.

C. Green Battery Disconnect open; power to Green train vital inverters and starting of Emergency Diesel 2DG2 during a Loss of Offsite Power (LOOP).

D. Red Battery Disconnect open; power to Red train vital inverters and starting of Emergency Diesel 2DG1 during a Loss of Offsite Power (LOOP).

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. Green Battery Disconnect open; power to Green train vital inverters and starting of Emergency Diesel 2DG2 during a Loss of Offsite Power (LOOP).

Notes:

2D11 is the Green train vital DC battery. Opening this disconnect will remove the uninterruptible power source to the green train vital inverters and the green train EDG. If a LOOP were to occur in this condition, the green EDG would not start because DC is needed to open the air start solenoids and the green train vital inverters would loose their alternate AC source of power.

References:

ACA for 2K01 D-11, Battery 2D12 not Available
STM 2-32-5, 125 VDC, Drawing of the 125 VDC electrical Buses.
CR-ANO-C-3003-0087

Historical Comments:

This question has not been used on any previous NRC exam.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1537	**Rev:**	0	**Rev Date:**	11/1/2007 2:27:21	**QID #:**	49	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	2	**Taxonomy:**	K	**Source:**	NEW				
Search	064000K607	**10CFR55:**	41.7 / 45.7	**Safety Function**	6						
System Title:	Emergency Diesel Generator (ED/G) System	**System Number**	064	**K/A**	K6.07						
Tier:	2	**Group:**	1	**RO Imp:**	2.7	**SRO Imp:**	2.9	**L. Plan:**	A2LP-RO-EDG	**OBJ**	2
Description:	Knowledge of the effect of a loss or malfunction of the following will have on the ED/G System: - Air receivers.										

Question:

Given the following:

* The plant is at full power
* Starting Air Compressor 2C4A and its associated Air Receiver 2T-31A for #1 Emergency Diesel 2K4A have been tagged out for maintenance.
* Now the Starting Air Compressor 2C4B for #1 Emergency Diesel 2K4A fails.
* Air pressure for Receiver Tank 2T31B is reading 240 psig.

Based on these conditions, the Emergency Diesel Generator has the capability to crank and start a total of _____ time(s).

A. 1

B. 3

C. 5

D. 10

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. 5

Notes:

The Starting Air System is designed to accelerate engine speed to 180 rpm in five seconds. The Starting Air Compressors maintain pressure in their respective Air Receivers between 220 and 245 psig. Each Air Receiver stores enough air to start the engine five times without the use of the compressors.

References:

OP 2104.036 Section 3.0
STM 2-31 Section 2.2.1

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1538	**Rev:**	1	**Rev Date:**	11/1/2007 2:59:09	**QID #:**	50	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	2	**Taxonomy:**	K	**Source:**	Modified NRC Bank 0382 (2002 Exam)				
Search	064000A312	**10CFR55:**	41.7 / 45.5	**Safety Function**	6						
System Title:	Emergency Diesel Generator (ED/G) System	**System Number**	064	**K/A**	A3.12						
Tier:	2	**Group:**	1	**RO Imp:**	3.3	**SRO Imp:**	3.5	**L. Plan:**	A2LP-RO-EDG	**OBJ**	2
Description:	Ability to monitor automatic operation of the ED/G System, including: - Purpose of automatic load sequencer.										

Question:

Given the following plant conditions:

* A Plant trip has occurred due to a loss of offsite power.
* Pressurizer Pressure is 1550 psia and dropping.
* Both EDGs start and their output breakers close as designed.

Which ONE (1) of the following list the major pump starts on the safety busses in the correct order beginning with the first pump start and the reason why they sequence onto the vital buses at various times?

A. Service Water Pumps, HPSI Pumps, LPSI Pumps, Charging Pumps; to ensure RCS inventory and cooling are provided in the correct order.

B. Service Water Pumps, HPSI Pumps, LPSI Pumps, Charging Pumps; to limit the amount of current drawn from the EDGs during pump starts.

C. HPSI Pumps, Service Water Pumps, Charging Pumps, LPSI Pumps; to ensure RCS inventory and cooling are provided in the correct order.

D. HPSI Pumps, Service Water Pumps, Charging Pumps, LPSI Pumps; to limit the amount of current drawn from the EDGs during pump starts.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. Service Water Pumps, HPSI Pumps, LPSI Pumps, Charging Pumps; to limit the amount of current drawn from the EDGs during pump starts.

Notes:

The Service Water pumps supplies cooling for the EDG, HPSI and LPSI pumps so it is the first motor to start. The HPSI then LPSI then Charging are next to address the RCS inventory concerns. The large amount of counter EMF exhibited during large motor starts will be seen as a large current draw on the EDG degrading voltage and frequencies so the motors are sequenced onto the diesel to limit the current generated if all the motors started at once.

References:

STM 2-31, EDG System, Section 3.2
STM 2-31, EDG System Description, Diesel Load Table

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1539	**Rev:**	1	**Rev Date:**	6/7/2006	**QID #:**	51	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	Modified NRC Bank 0673 (2003 Exam)				
Search	073000A101	**10CFR55:**	41.5 / 45.5	**Safety Function**	7						
System Title:	Process Radiation Monitoring (PRM) System			**System Number**	073	**K/A**	A1.01				
Tier:	2	**Group:**	1	**RO Imp:**	3.2	**SRO Imp:**	3.5	**L. Plan:**	A2LP-RO-RMON	**OBJ**	9

Description: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRM System controls including: - Radiation levels.

Question:

Which ONE (1) of the following actions confirms that a BMS 2T-69 Tank Process Liquid radiation monitoring instrument will close 2CV 2330A and 2CV-2330B ?

A. Placing the selector switch in HV (High Voltage) then checking the high alarm setpoint exceeded and valve isolation.

B. Placing the selector switch in PULSE CAL then checking the high alarm setpoint exceeded and valve isolation.

C. Placing the selector switch in CHECK SOURCE then observing a rising meter reading and valve isolation.

B. Placing the selector switch in LEVEL CAL then observing a rising meter reading and valve isolation.

QID use History

	RO	SRO
2003	☑	☑
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. Placing the selector switch in PULSE CAL then checking the high alarm setpoint exceeded and valve isolation.

Notes:

The LRW/BMS Process Radiation Monitor, 2RITS-2330, provides an automatic closure of 2CV-2330A and/or 2CV-2330B. This automatic feature occurs on a high alarm that is determined by the Unit 2 Liquid Radwaste Release Permit (2104.014 Supp 1). Going to PULSE Cal will raise the detector radiation output above the alarm setpoint causing the valve to go closed. Testing of this interlock will prevent discharging liquid waste above the design limits.

References:

2104.014, LRW and BMS Operations, Supplement 1, Steps 7.2, 7.3 and 7.4.
STM 2-62, Radiation Monitoring System, Section 2.2.6.1
STM 2-52, LRW/BMS Drawing.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1540 **Rev:** 0 **Rev Date:** 11/1/2007 4:06:16 **QID #:** 52 **Author:** Coble

Lic Level: R **Difficulty:** 3 **Taxonomy:** K **Source:** IH Bank ANO-OPS2-8751

Search 076000K201 **10CFR55:** 41.7 **Safety Function** 4

System Title: Service Water System (SWS) **System Number** 076 **K/A** K2.01

Tier: 2 **Group:** 1 **RO Imp:** 2.7 **SRO Imp:** 2.7 **L. Plan:** A2LP-RO-SWACW **OBJ** 6

Description: Knowledge of bus power supplies to the following: - Service water.

Question:

The plant is at normal full power operation and the following conditions exist.

* Service Water Pump 2P4A is in standby
* Service Water Pump 2P4C is in service
* Service Water Pump 2P4B is in service aligned to Loop I Service Water
* "B" Service Water Pump Red Disconnects (2A501) closed
* "B" Service Water Pump Green Disconnects (2A502) open

If the "B" Service Water Pump Red Disconnect (2A501) is inadvertently taken to open, the breaker for 2P4B will _____ and disconnect 2A501 will _____.

A. trip; remain closed

B. trip; open

C. not open; remain closed

D. not open; open

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. trip; open

Notes:

The interlocks between the disconnects and their respective breakers are as follows:
If the handswitch for a disconnect is taken to open the following occurs: The respective breaker receives a trip command. The disconnect will open.

References:

STM 2-42 Section 3.1.1, 3.1.2 and 3.1.2.2

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1541 **Rev:** 0 **Rev Date:** 10/28/2004 **QID #:** 53 **Author:** COBLE

Lic Level: R **Difficulty:** 2 **Taxonomy:** K **Source:** NRC Bank 0540 (Never Used)

Search 078000A301 **10CFR55:** 41.7 / 45.5 **Safety Function** 8

System Title: Instrument Air System (IAS) **System Number** 078 **K/A** A3.01

Tier: 2 **Group:** 1 **RO Imp:** 3.1 **SRO Imp:** 3.2 **L. Plan:** A2LP-RO-EAOP **OBJ** 16

Description: Ability to monitor automatic operation of the IAS, including: - Air pressure.

Question:

Given the following conditions:

* The plant is experiencing a loss of Instrument Air pressure.
* Air pressure is 65 psig and lowering.

If Instrument air pressure continues to lower to zero, what would be the final status of the Upstream Atmospheric Dump Valves (ADVs) and Downstream ADVs?

A. Upstream and Downstream ADVs would fail Closed.

B. Upstream ADVs fails Closed; Downstream ADVs fails Open.

C. Upstream and Downstream ADVs would fail Open.

D. Upstream ADVs fails Open; Downstream ADVs fails Closed.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. Upstream ADVs fails Open; Downstream ADVs fails Closed.

Notes:

Distracter A and B are incorrect because the Upstream ADVs fail Open.

Distracter C is incorrect because the Downstream ADV fails Closed.

References:

AOP 2203.021, Loss of Instrument Air, Step 14, Attachment A System Valve Positions, and Attachment D, Critical Component Information.

Historical Comments:

This question was written for the 2005 NRC exam but was not used due to over sampling of the Instrument Air System.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1542 **Rev:** 001 **Rev Date:** 8/19/1998 7:47:55 **QID #:** 54 **Author:** Hatman

Lic Level: R **Difficulty:** 3 **Taxonomy:** An **Source:** NRC Bank 0105 (1998 Exam)

Search 103000A101 **10CFR55:** 41.5 / 45.5 **Safety Function** 5

System Title: Containment System **System Number** 103 **K/A** A1.01

Tier: 2 **Group:** 1 **RO Imp:** 3.7 **SRO Imp:** 4.1 **L. Plan:** A2LP-RO-ELOSF **OBJ** 2

Description: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the Containment System controls including: - Containment pressure, temperature, and humidity.

Question:

Which of the following events is in progress for the given conditions?

- RCS pressure, temperature, power, and inventory stable.
- Steam Generator pressure and levels stable.
- Containment temperature, pressure and humidity rising rapidly.
- Containment Sump indicates a 150 gpm in leakage and rising.

A. RCS leak in Containment.

B. Main Steam Leak in Containment.

C. CCW leak in Containment.

D. Main Feedwater leak in Containment.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. Main Feedwater Leak in Containment.

Notes:

A RCS or Main Steam line leak would cause RCS and Steam Generator Pressure and temperature to drop. CCW fluid is around 100 degrees F and would not cause containment pressure and temperature to rise. Main Feedwater leak would not have an affect on the RCS or SG temperature as long as it is within the capacity of the MFW pumps.

References:

2203.012J, 2K10-A7, Step 2.6.2

Historical Comments:

Rev 001 - 08/19/98 - Complete re-write of question and stem due to NRC comments.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1543	**Rev:**	0	**Rev Date:**	11/2/2007 10:35:2	**QID #:**	55	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	NEW				
Search	103000A406	**10CFR55:**	41.7 / 45.5 to 45.8	**Safety Function**	5						
System Title:	Containment System			**System Number**	103	**K/A**	A4.06				
Tier:	2	**Group:**	1	**RO Imp:**	2.7	**SRO Imp:**	2.9	**L. Plan:**	A2LP-WCO-CBLDG	**OBJ**	16/19
Description:	Ability to manually operate and/or monitor in the control room: - Operation of the containment personnel airlock door.										

Question:

Given the following:

* The plant is at full power.
* The Unidentified RCS Leak rate has risen by .25 gpm
* A Containment entry is in progress to search for cause of the rise.

To monitor the proper entry into Containment through the personnel airlock doors, the "PESONNEL AIR LOCK HATCH OPEN" alarm should be observed on the annunciator panel above _____ and would be expected to come in Fast Flash _____ during the entry into the Containment.

A. 2C10; once

B. 2C10; twice

C. 2C14; once

D. 2C14; twice

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. 2C10; twice

Notes:

2C 10 is the panel in the control room and 2C14 is on the far right and has indications of the status of watertight doors but not the personnel doors. This alarm comes in whenever the inner or outer door is opened. The RO should expect the outer door to be opened and closed before the inner door is opened and then closed due to the door interlocks and the need to maintain Containment integrity during Mode 1. This should cause the alarm to come in and clear twice.

References:

OP 2203.012A ACA for 2K01 K-8 "PESONNEL AIR LOCK HATCH OPEN".
Plant Annunciator Handout Section 1.2. and 1.3 associated with Lesson Plan A2LP-RO-PANN Objectives 2, 3, and 4.
STM 2-13, Containment, Section 4.3.2.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1544	**Rev:**	1	**Rev Date:**	11/5/2007 4:14:21	**QID #:**	56	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	Modified IH Bank ANO-OPS2-12778				
Search	014000A203	**10CFR55:**	41.5 / 43.5 / 45.3 / 45.	**Safety Function**	1						
System Title:	Rod Position Indication System (RPIS)	**System Number**	014	**K/A**	A2.03						
Tier:	2	**Group:**	2	**RO Imp:**	3.6	**SRO Imp:**	4.1	**L. Plan:**	A2LP-RO-CEDM	**OBJ**	3/16

Description: Ability to (a) predict the impacts of the following malfunctions or operations on the RPIS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Dropped rod.

Question:

With the plant at 100% power and all CEAs at the UEL (Upper Electrical Limit), CEA 046 drops to 18 inches withdrawn.

Which of the following would be the correct PMS and CEAC positions for CEA 046 and what action, if any, would be taken using the CEA malfunction procedure to correct any of the position indications.

A. PMS 150" withdrawn - CEAC 150" withdrawn; reset CEAC and PMS position to 18" withdrawn.

B. PMS 18" withdrawn - CEAC 150" withdrawn; reset the CEAC position to 18" withdrawn.

C. PMS 150" withdrawn - CEAC 18" withdrawn; reset the PMS position to 18" withdrawn.

D. PMS 18" withdrawn - CEAC 18" withdrawn; no actions are required for the CEA position.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. PMS 150" withdrawn - CEAC 18" withdrawn; reset the PMS position to 18" withdrawn.

Notes:

The PMS position will only update based on electrical pulses from the CEA control system during withdrawal or insertion or when the CEA rod bottom contact is made up, the CEA position will automatically reset to zero. For this condition the RO will have to manually reset the PMS position to match the CEAC position which are driven by reed switches and are always accurate.

References:

STM 2-02, CEDM Control System, Sections 3.7 and 4.2.1.6.
OP 2203.003, CEA Malfunction, Step 24.

Historical Comments:

This question has not been used on any previous NRC exam.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1545 **Rev:** 000 **Rev Date:** 6/29/1998 2:46:13 **QID #:** 57 **Author:** Hatman

Lic Level: R **Difficulty:** 2 **Taxonomy:** K **Source:** NRC Bank 0127 (1998 NRC Exam)

Search 015000K604 **10CFR55:** 41.7 / 45.7 **Safety Function** 7

System Title: Nuclear Instrumentation System **System Number** 015 **K/A** K6.04

Tier: 2 **Group:** 2 **RO Imp:** 3.1 **SRO Imp:** 3.2 **L. Plan:** A2LP-RO-NI **OBJ** 6

Description: Knowledge of the effect of a loss or malfunction of the following will have on the NIS: - Bistables and logic circuits.

Question:

Given the following plant conditions:

* Unit operating at 100% power.
* Channel "D" upper detector of excore safety channel monitors fails HIGH.

Which one (1) of the following describes the expected response of Channel "D" Reactor Protection System to this failure? (No other failures are present)

A. High Linear Power, High Local Power Density and Low DNBR trips without pre-trips.

B. High Log Power, High Local Power Density and Low DNBR trips and pre-trips.

C. High Log Power, High Local Power Density and Low DNBR trips without pre-trips.

D. High Linear Power, High Local Power Density and Low DNBR trips and pretrips.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. High Linear Power, High Local Power Density and Low DNBR trips and pretrips.

Notes:

Answer "A" is incorrect because it is not an auxiliary trip so pretrips are actuated.
Answer "B" is incorrect because center detector feed log power signal.
Answer "C" is incorrect because it is not an auxiliary trip and center detector feeds log power circuit.

References:

STM 2-67-1, Excore Nuclear Instrumentation, Section 2.2
STM 2-65-1, Core Protection Calculator System, Sections 2.2 and 7.5 and figure of CPC LPD and DNBR inputs.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1546 **Rev:** 000 **Rev Date:** 8/15/2001 **QID #:** 58 **Author:** Coble

Lic Level: R **Difficulty:** 3 **Taxonomy:** K **Source:** NRC Bank 0389 (2002 NRC Exam)

Search 028000A401 **10CFR55:** 41.7 / 45.5 to 45.8 **Safety Function** 5

System Title: Hydrogen Recombiner and Purge Control Syste **System Number** 028 **K/A** A4.01

Tier: 2 **Group:** 2 **RO Imp:** 4.0 **SRO Imp:** 4.0 **L. Plan:** A2LP-RO-CONH2 **OBJ** 14/15

Description: Ability to manually operate and/or monitor in the control room: - HRPS controls.

Question:

Given the following plant conditions:

* A large break LOCA has occurred inside Containment.
* Containment Hydrogen concentration is 2.2%.
* The CRS has directed the CBOT to start both Hydrogen Recombiners.

To ensure proper Hydrogen Recombiner operation after the startup, do not exceed a maximum Recombiner output power of _____ KW and a Recombiner heater corrected outlet temperature of _____ °F.

A. 25; 1400

B. 75; 1000

C. 25; 1000

D. 75; 1400

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. 75; 1400

Notes:

75 KW and 1400°F are the maximum allowed limits imposed by the Hydrogen Recombiner vendor to prevent damage to the units during operation. 1000°F is below the procedural guided minimum limit to maintain on the heater output to ensure actual recombination.

References:

OP 2104.044, Containment Hydrogen Control Operations, Steps 5.3 and 5.4.
STM 2-6, Containment Combustible Gas Control, Revision 5, Sections 3.3 and 4.1.1.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1547	**Rev:**	0	**Rev Date:**	11/2/2007 3:06:02	**QID #:**	59	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	4	**Taxonomy:**	C	**Source:**	IH Bank ANO-OPS2-119				
Search	029000K403	**10CFR55:**	41.7	**Safety Function**	8						
System Title:	Containment Purge System (CPS)	**System Number**	029	**K/A**	K4.03						
Tier:	2	**Group:**	2	**RO Imp:**	3.2	**SRO Imp:**	3.5	**L. Plan:**	A2LP-RO-CVENT	**OBJ**	13

Description: Knowledge of Containment Purge System design feature(s) and/or interlock(s) which provide for the following: - Automatic purge isolation.

Question:

During refueling operations with Containment Building Purge System in service, a spurious signal actuates Containment Isolation Actuation Signal.

Which of the following will occur?

A. Only two purge isolation valves close. Both fans trip 10 seconds after the exhaust duct low pressure switch actuates.

B. All six purge isolation valves close. The exhaust fan trips on LOW pressure in the exhaust duct and the supply fan trips 10 seconds later.

C. Only two purge isolation valves close. The exhaust fan trips on LOW pressure in the exhaust duct and the supply fan trips 10 seconds later.

D. All six purge isolation valves close. The supply fan trips on HIGH pressure in the supply duct and the exhaust fan trips 10 seconds later.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. All six purge isolation valves close. The exhaust fan trips on LOW pressure in the exhaust duct and the supply fan trips 10 seconds later.

Notes:

If an SIAS or a CIAS is received, all six purge isolation valves automatically close compared to only 2 isolation valves on a high radiation signal. When this happens, the exhaust fan draws down the pressure in the exhaust duct to less than -5.0 inches water gauge tripping the exhaust fan. Ten seconds later the supply fan trips.

References:

STM 2-9, Section 7.8 with a drawing of the Purge System.

Historical Comments:

This question has not been used on any previous NRC exam.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1548	**Rev:**	001	**Rev Date:**	3/17/2000 5:40:40	**QID #:**	60	**Author:**	Hatman		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	K	**Source:**	NRC Bank 0253 (2000 NRC Exam)				
Search	034000A301	**10CFR55:**	41.7 / 45.5	**Safety Function**	8						
System Title:	Fuel Handling Equipment System (FHES)	**System Number**	034	**K/A**	A3.01						
Tier:	2	**Group:**	2	**RO Imp:**	2.5	**SRO Imp:**	3.1	**L. Plan:**	A2LP-RO-FH	**OBJ**	2.1
Description:	Ability to monitor automatic operation of the Fuel Handling System, including: - Travel limits.										

Question:

Given the following conditions:

* Mode 6 with refueling in progress.
* All interlocks satisfied to move bridge on Main Refueling Machine.
* Fuel Handler desires to move bridge forward but mistakenly takes hold of the Hoist control lever and moves it in the RAISE direction.
* Fuel Handler realizes mistake and attempts to move the bridge in the forward direction, but it will not move.

The reason the Refueling Machine would NOT move is because the Hoist Control Switch movement:

A. actuated the Bridge-Trolley Interlock and this button must be depressed before bridge movement will be allowed.

B. caused hoist to move above the Up Limit and must be reset with computer override key switch before bridge movement will be allowed.

C. actuated the Hoist Load Bypass Interlock and this button must be pulled before bridge movement will be allowed.

D. caused Hoist Overload Limit alarm and must be reset with computer override key switch before bridge movement will be allowed.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

A. actuated the Bridge-Trolley Interlock and this button must be depressed before bridge movement will be allowed.

Notes:

The computer software logic for the Bridge/Trolley Interlock (BTI) finds one of the following conditions:

-The Mast Bumper interlock is actuated (indicated by the Mast Bumper light being on).

− The Grapple is in the hoist low zone over the core.

− The Grapple is in the hoist low zone over the Upender.

− The hoist control switch is being or has been operated.

This will lock out manual bridge and trolley movement and must be depressed to reset.

References:

STM 2-51-1, Main Refueling Bridge and Rx Bldg Fuel Handling Equipment Section 2.2.2

Historical Comments:

02/24/00 - NRC Comment on original question - D appears excessive. C is less credible than D.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1549 **Rev:** 000 **Rev Date:** 6/29/1998 4:28:13 **QID #:** 61 **Author:** Hatman

Lic Level: R **Difficulty:** 3 **Taxonomy:** C **Source:** Modified NRC Bank 0170 (1998 Exam)

Search 045000A105 **10CFR55:** 41.5 / 45.5 **Safety Function** 4

System Title: Main Turbine Generator (MT/G) System **System Number** 045 **K/A** A1.05

Tier: 2 **Group:** 2 **RO Imp:** 3.8 **SRO Imp:** 4.1 **L. Plan:** A2LP-RO-EAOP **OBJ** 18

Description: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MT/G System controls including: - Expected response of primary plant parameters (temperature and pressure) following T/G trip.

Question:

Given the following:

* The plant is at full power during the middle of an operating cycle.
* The Main Turbine Trips.
* No operator action is taken.

Prior to any Reactor trip, what would be the primary plant temperature and pressure response for this condition and which of the following automatic actions would protect the RCS?

A. RCS temperature and pressure rising even with SDBCS valves and main spray valves opening; High Linear Power trip.

B. RCS temperature and pressure lowering due to SDBCS valves and main spray valves opening; Low RCS Pressure trip.

C. RCS temperature and pressure rising even with SDBCS valves and main spray valves opening; High RCS Pressure trip.

D. RCS temperature and pressure lowering due to SDBCS valves and main spray valves opening; Low DNBR trip.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. RCS temperature and pressure rising even with SDBCS valves and main spray valves opening; High RCS Pressure trip.

Notes:

The SDBCS capacity during normal ops is approximately 50% so they would not stabilize pressure and temperature alone initially. The spray valves response time would allow pressure to rise initially and spray valves have no affect on RCS temperature. So the initial response would be rising temperatures and pressure which would eventually decrease when decay heat levels drop after a Reactor Trip.
The rapid rise in RCS pressure would cause a High RCS pressure trip. Actual Linear Power should drop instead of rising so this would not trip the plant.

References:

STM 2-23, Steam Dump and Bypass Control System, Section 1.0.
2203.024, Loss of Turbine Load, Entry Condition 4.0.
2203.024, Loss of Turbine Load, Steps 2, 3 and 4.
2203.024, Rev 4, Step 2.0 Tech Guide Loss of Turbine Load
TS Bases for Pressurizer Pressure High Trip.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1550 **Rev:** 0 **Rev Date:** 11/3/2007 9:07:29 **QID #:** 62 **Author:** Coble

Lic Level: R **Difficulty:** 2 **Taxonomy:** K **Source:** IH Bank ANO-OPS2-2986

Search 0560002127 **10CFR55:** 41.7 **Safety Function** 4

System Title: Condensate System **System Number** 056 **K/A** 2.1.27

Tier: 2 **Group:** 2 **RO Imp:** 2.8 **SRO Imp:** 2.9 **L. Plan:** A2LP-RO-FWCD **OBJ** 1

Description: Conduct of Operations - Knowledge of system purpose and or function.

Question:

Which of the following are supplied by the Condensate System?

* I. Feedwater Pump seal water during normal operation.

* II. "Dogbone" seal water

* III. Condensate Pump seal water during first pump startup.

* IV. Heater Drain Pump seal water.

A. I, II & IV

B. II & IV Only

C. I, III & IV

D. I & III Only

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

A. I, II & IV

Notes:

As shown on the Condensate Seal Header, the Condensate pumps will supply every item in the list above but this seal header is not pressurized before the initial pump start so the head due to the height of the in-service Condensate storage tank supplies the seal water to the condensate pumps for initial pump start.

References:

STM 2-20, Condensate System Sections 1.2 and 2.6 and drawings of the Condensate Seal Header and the Condensate system.

Historical Comments:

This question has not been used on any previous NRC exam.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1551	**Rev:**	0	**Rev Date:**	11/3/2007 9:44:07	**QID #:**	63	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	2	**Taxonomy:**	K	**Source:**	NEW				
Search	068000K107	**10CFR55:**	41.2 to 41.9 / 45.7 to 4	**Safety Function**	9						
System Title:	Liquid Radwaste System (LRS)			**System Number**	068	**K/A**	K1.07				
Tier:	2	**Group:**	2	**RO Imp:**	2.7	**SRO Imp:**	2.9	**L. Plan:**	A2LP-RO-RWST	**OBJ**	4

Description: Knowledge of the physical connections and/or cause-effect relationships between the Liquid Radwaste System and the following systems: - Sources of liquid wastes for LRS.

Question:

Which of the following are sources of water can be aligned to go directly to the Boron Management System 2T12 Tanks?

* I. Reactor Drain Tank (RDT)

* II. Safety Injection Tank (SIT Drains)

* III. Letdown

* IV. Containment Sump

A. I & III Only

B. II, III & IV

C. I, II & III

D. I, II, III & IV

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. I, II & III

Notes:

Refer to the drawings of the LRW/BMS system, the RDT is pumped from Containment around the degassifier to the 12 tanks, the SITs can be drained to the 12 tanks, and Letdown will go to the 12 tanks when diverting the RCS away from the VCT. The containment sump is drained to the Aux Building sump which is pumped to the 2T20 Waste Tanks.

References:

STM 2-52, LRW/BMS, Section 21. and 3.3
STM 2-52 drawings of the BMS, LRW and combined system drawing.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1552 **Rev:** 1 **Rev Date:** 1/10/2002 4:15:09 **QID #:** 64 **Author:** Coble

Lic Level: R **Difficulty:** 2 **Taxonomy:** K **Source:** NRC Bank 0366 (2002 NRC Exam)

Search 072000K501 **10CFR55:** 41.5 / 45.7 **Safety Function** 7

System Title: Area Radiation Monitoring (ARM) System **System Number** 072 **K/A** K5.01

Tier: 2 **Group:** 2 **RO Imp:** 2.7 **SRO Imp:** 3.0 **L. Plan:** A2LP-RO-RMON **OBJ** 6/21

Description: Knowledge of the operational implications of the following concepts as they apply to the ARM system: - Radiation theory, including sources, types, units, and effects.

Question:

The N-16 Radiation Monitors 2RE-0200 and 2RE-0201 are gamma sensitive _____ type detectors and will provide valid Steam Generator tube leak rate calculations above _____ percent power.

A. Geiger-Mueller; 10

B. Scintillation; 10

C. Geiger-Mueller; 20

D. Scintillation; 20

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. Scintillation; 20

Notes:

The N-16 radiation monitors are scintillation type detectors so distracter A and C are wrong. Valid SG tube leak rates are only calculated above 20% power so distracter B is wrong.

References:

STM 2-62, Radiation Monitoring System, Section 2.3.4

Historical Comments:

1/10/2002. Question was rewritten based on NRC feedback due to the GFES nature of the original question. BNC

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1553 **Rev:** 1 **Rev Date:** 11/3/2007 11:04:5 **QID #:** 65 **Author:** Coble

Lic Level: R **Difficulty:** 3 **Taxonomy:** C **Source:** Modified IH Bank ANO-OPS2-9624

Search 075000K203 **10CFR55:** 41.7 **Safety Function** 8

System Title: Circulating Water System **System Number** 075 **K/A** K2.03

Tier: 2 **Group:** 2 **RO Imp:** 2.6 **SRO Imp:** 2.7 **L. Plan:** A2LP-RO-SWACW **OBJ** 11

Description: Knowledge of bus power supplies to the following: - Emergency/essential SWS pumps.

Question:

With Unit 2 at normal full power, the following Service Water alignment exists.

* Service Water Pump 2P4A is in Normal-after-Stop.
* Service Water Pump 2P4B running.
* Service Water Pump 2P4C running.
* All Service Water valves are in their normal full power lineup.

The following conditions now occur.

* A fault causes the non-vital 4160V bus 2A1 to lockout.
* Both Main Feedwater Pumps trip and the plant is tripped.
* EFAS is automatically actuated.
* Assume no additional operator action is taken.
* All components and systems operate as designed.

What would be the status of the Service Water Pumps two (2) minutes after the plant trip and what would be the status of Circulating Water Cooling Tower Makeup Valve 2CV-1540?

A. 2P4A and 2P4C running; 2CV1540 Closed.

B. 2P4A and 2P4C running; 2CV-1540 Open.

C. 2P4B and 2P4C running; 2CV-1540 Closed.

C. 2P4B and 2P4C running; 2CV-1540 Open.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. 2P4A and 2P4C running; 2CV-1540 Open.

Notes:

All three Service Water pumps receive a start signal on an EFAS. However the B SW pump will trip on the 2A1 bus lockout and when the EDG re-energizes the 2A3 vital bus (power supply to the Red train SW Pumps), the A SW pump will start first because of the shorter time delay (4.5 seconds verses 6.0 Seconds for B SW Pump). The B SW pump breaker looks at the A SW pump and if it is running, it will not start to prevent excessive load on the diesel. Service Water is the makeup supply to the Circulating Water Cooling Tower. The Makeup isolation valve has no auto close features and is normally open so it should remain open.

References:

STM 2-42, SW/ACW Systems, Sections 3.1.1 and 3.6.15.3 along with a drawing of the SW System.

Historical Comments:

This question has not been used on any previous NRC exam.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1554 **Rev:** 1 **Rev Date:** 11/5/2007 4:13:51 **QID #:** 66 **Author:** Hatman

Lic Level: R **Difficulty:** 2 **Taxonomy:** K **Source:** IH Bank ANO-OPS2-10629

Search 1940012103 **10CFR55:** 41.10 / 45.13 **Safety Function**

System Title: Generic **System Number** GENERIC **K/A** 2.1.3

Tier: 3 **Group:** 1 **RO Imp:** 3.0 **SRO Imp:** 3.4 **L. Plan:** ASLP-RO-OPSPR **OBJ** 4

Description: Conduct of Operations - Knowledge of shift turnover practices.

Question:

Given the following:

* The plant is at full power:
* Your relief shows up at turnover to assume the ATC watch and seems very confused and has slurred speech.
* There are three Licensed ROs on the oncoming shift.
* There are two Non-Licensed Operators on the on-coming shift

Which one of the following actions must be taken?

A. Tell your relief to go back home.

B. Stay over to assure he/she can stand the watch.

C. Report his/her condition to the Shift Manager.

D. Turnover as normal and go home.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. Report his/her condition to the Shift Manager.

Notes:

It is a requirement of the procedure and fitness for duty policy that he be reported to the Shift Manager.

References:

COPD001, Ops Expectation and Standards, Step 5.16.C
EN-OP-115, Conduct of Operations, Step 5.16 [7] and [8]

Historical Comments:

This question has not been used on any previous NRC exam.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1555	**Rev:**	0	**Rev Date:**	11/3/2007 1:36:08	**QID #:**	67	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	4	**Taxonomy:**	C	**Source:**	Biennial Bank 0798 (B Bank 0098c)				
Search	1940012128	**10CFR55:**	41.7	**Safety Function**							
System Title:	Generic					**System Number**	GENERIC	**K/A**	2.1.28		
Tier:	3	**Group:**	1	**RO Imp:**	3.2	**SRO Imp:**	3.3	**L. Plan:**	ASLP-RO-REACT	**OBJ**	1/3
Description:	Conduct of Operations - Knowledge of the purpose and function of major system components and controls.										

Question:

Consider the following:

* Unit 2 is at 7% power during a plant startup during the middle of a cycle .
* Group P CEA's are at 128" withdrawn All other CEA's are fully withdrawn.
* Main Steam pressure is being controlled by two Turbine Bypass Valves in MANUAL.
* The Main Turbine roll is in progress.
* When the Main Turbine is being rolled to normal RPM, RCS Tave starts dropping.

Based on reactivity management expectations, which of the following would be the best method to raise RCS Tave?

A. Dilute the RCS as necessary until Tave returns to where it was prior to the turbine roll.

B. Withdraw CEA's as necessary until Tave returns to where it was prior to the turbine roll.

C. Withdraw CEA's and dilute RCS as necessary until Tave returns to where it was prior to the turbine roll.

D. Reduce steam flow through the Turbine Bypass Valves to return Tave to where it was prior to the turbine roll.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. Reduce steam flow through the Turbine Bypass Valves to return Tave to where it was prior to the turbine roll.

Notes:

Because of the temperature drop positive reactivity is being added to the reactor. The Reactivity Management expectation is to never compound a reactivity problem by adding positive reactivity to the core. Distracter A,B and C are adding positive reactivity to the core. The temperature drop is due to the Turbine bypass valve being too far open. Answer D will correct the problem in the conservative direction.

References:

EN-OP-115, Steps 5.4 [1], [6] and[7].
COPD001 Step 5.4.B and I

Historical Comments:

This question has not been used on any previous NRC exam and was incorporated from the biennial exam bank.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1556 **Rev:** 0 **Rev Date:** 11/3/2007 2:11:21 **QID #:** 68 **Author:** Coble

Lic Level: R **Difficulty:** 2 **Taxonomy:** K **Source:** IH Bank ANO-OpsUnit2-10273

Search 1940012201 **10CFR55:** 45.1 **Safety Function**

System Title: Generic **System Number** GENERIC **K/A** 2.2.1

Tier: 3 **Group:** 1 **RO Imp:** 3.7 **SRO Imp:** 3.6 **L. Plan:** ASLP-RO-REACT **OBJ** 1/3

Description: Equipment Control - Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.

Question:

Given the following:

* A reactor startup is in progress with reactor power at 1E-3% power.
* The operator performing the startup withdraws Group P CEAs for the approach to the point of adding heat.
* Power is rising steadily at a rate of 1.8 dpm.

What action is required?

A. Manually trip the reactor from 2C-03.

B. Insert Group P CEAs to obtain a startup rate < 1.0 dpm.

C. Allow power to continue to rise to the point of adding heat.

D. Initiate Emergency Boration using 2202.010 Exhibit 1.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

B. Insert Group P CEAs to obtain a startup rate < 1.0 dpm.

Notes:

A SUR of less than 1 dpm limit is required during reactor approach to criticality. The 1.8 dpm is not trip criteria and does not reduce shutdown margin below limits so no emergency boration is necessary.

References:

OP-2102.016, Reactor Startup, Step 5.13

Historical Comments:

This question has not been used on any previous NRC exam.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1557 **Rev:** 0 **Rev Date:** 11/3/2007 2:41:28 **QID #:** 69 **Author:** Coble

Lic Level: R **Difficulty:** 4 **Taxonomy:** Ap **Source:** IH Bank ANO-OPS2-4815

Search 1940012228 **10CFR55:** 43.7 / 45.13 **Safety Function**

System Title: Generic **System Number** GENERIC **K/A** 2.2.28

Tier: 3 **Group:** 1 **RO Imp:** 2.6 **SRO Imp:** 3.5 **L. Plan:** A2LP-RO-FH **OBJ** 4

Description: Equipment Control - Knowledge of new and spent fuel movement procedures.

Question:

In accordance with OP 2502.001, Refueling Shuffle, Attachment M, Refueling Accident, which one of the following actions should be performed FIRST for a dropped and damaged spent fuel assembly in Containment during refueling activities?

A. Close the personnel and escape hatches.

B. Install the equipment hatch with at least 4 bolts.

C. Conduct controlled purging of the RB atmosphere.

D. Secure the Containment Purge system.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. Secure the Containment Purge system.

Notes:

The highest priority during this event is to minimize any offsite dose; therefore, purge fans should be secured, then containment evacuated and containment closure set.

Once this is done, then a controlled purge can be performed to recover Containment.

References:

OP 2502.001, Refueling Shuffle, Attachment M, Refueling Accident. Step 4.2.5.
OP 1015.008, SDC Control, Attachment F, Containment Closure.

Historical Comments:

This question has not been used on any previous NRC exam.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1558	**Rev:**	0	**Rev Date:**	11/3/2007 3:14:12	**QID #:**	70	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	2	**Taxonomy:**	K	**Source:**	NEW				
Search	1940012234	**10CFR55:**	43.6	**Safety Function**							
System Title:	Generic			**System Number**	GENERIC	**K/A**	2.2.34				
Tier:	3	**Group:**	1	**RO Imp:**	2.8	**SRO Imp:**	3.2	**L. Plan:**	A2LP-RO-ICI	**OBJ**	4

Description: Equipment Control - Knowledge of the process for determining the internal and external effects on core reactivity.

Question:

Which of the following correctly describes the type of detector used to determine the neutron flux inside the core and outside the core during full power operations?

A. Inside - Rhodium; Outside - Fission Chamber

B. Inside - Rhodium; Outside - Ion Chamber

C. Inside - Ion Chamber; Outside - Fission Chamber

D. Inside - Fission Chamber; Outside Ion Chamber

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

A. Inside Rhodium; Outside - Fission Chamber

Notes:

Each incore assembly has five detectors; each is a rhodium 103 (Rh103) emitter, 40 cm long with their centers spaced at 15, 30, 50, 70 and 90% of core height of the reactor. Each Excore is now a Fission Chamber but used to be an Ion Chamber.

References:

STM 2-67-2, Incore Flux Monitoring, Sections 2.1 and 2.2
STM 2-67-1, Excore Nuclear Instrumentation, Sections 2.1 and 2.2.1.
This question is also tied to lesson plan A2LP-RO-NI Objective 6

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1559 **Rev:** 1 **Rev Date:** 11/5/2007 4:13:18 **QID #:** 71 **Author:** Coble

Lic Level: R **Difficulty:** 3 **Taxonomy:** An **Source:** Modified NRC Bank 0125 (2002 Exam)

Search 1940012301 **10CFR55:** 41.12 / 43.4 / 45.9 / 45 **Safety Function**

System Title: Generic **System Number** GENERIC **K/A** 2.3.1

Tier: 3 **Group:** 1 **RO Imp:** 2.6 **SRO Imp:** 3.0 **L. Plan:** ASLP-RO-RADP **OBJ** 14/15

Description: Radiological Controls - Knowledge of 10 CFR: 20 and related facility radiation control requirements.

Question:

Given the following:

* A Waste Control Operator is required to complete a valve lineup in an area where the radiation level is 200 mrem/hour.
* The operator's current Total Effective Dose Equivalent (TEDE) is 1000 mrem for the year.

What is the maximum time he can work in this area and not exceed his Routine Administrative TEDE Dose Control annual limit and with the proper approvals, how long could he stay and not exceed his Federal TEDE Dose annual Limit?

A. Administrative 3 hours; Federal 10 hours.

B. Administrative 3 hours; Federal 20 hours.

C. Administrative 5 hours; Federal 10 hours.

A. Administrative 5 hours; Federal 20 hours.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. Administrative 5 hours; Federal 20 hours.

Notes:

His Admin DCL is 2 Rem/Year so he can received 1000 mrem which would give him 5 hours to work before exceeding Admin DCL. His Federal DCL is 5000 with proper approvals which would allow him to work 20 hours in the radiation area.

References:

EN-RP-201, Steps 5.3 [1], [2], [3] and 5.4 (Exposure Limits and Controls)

Historical Comments:

Used in the 1998 RO&SRO exam. References checked 12/27/2001 and modified the allowed time due to a different starting dose. 1998 dose was 1750 mrem and correct answer was 5 hours. 1/10/2002 This QID was added to the exam to replace QID 363 due to too many questions of a similar nature on the exam based on NRC feedback. BNC

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1560	**Rev:**	0	**Rev Date:**	6/7/2006	**QID #:**	72	**Author:**	Simpson		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	K	**Source:**	NRC Bank 0682 (2003 NRC Exam)				
Search	1940012310	**10CFR55:**	43.4 / 45.10	**Safety Function**							
System Title:	Generic					**System Number**	GENERIC	**K/A**	2.3.10		
Tier:	3	**Group:**	1	**RO Imp:**	2.9	**SRO Imp:**	3.3	**L. Plan:**	A2LP-RO-EAOP	**OBJ**	28

Description: Radiological Controls - Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

Question:

Given the following;

* A Primary to Secondary leak has occurred on Unit 2 on the 'A' S/G.
* AOP 2203.038, Primary to Secondary Leakage, has been entered.
* The AO has been directed to complete Attachment 19, Control of Secondary Contamination.

Which ONE (1) of the following actions will NOT be performed by Standard Attachment 19 to prevent an inadvertent radiological release?

A. Isolating the Unit 1 Oily Water Separator discharge.

B. Securing the Turbine Building Sump pumps.

C. Bypass and isolate the Condensate Inlet Filter 2F-807.

D. Aligning the S/G sample panel drains to the Neutralizing Tank.

QID use History

	RO	SRO
2003	☑	☑
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

A. Isolating the Unit 1 Oily Water Separator discharge.

Notes:

Actions B, C, & D above are completed to reduce radiation exposure and control the spread of contamination after a Steam Generator Tube leak or rupture. Securing the sump pumps on the affected unit will prevent pumping any contaminated water to the Oily Water Separator. The Oily Water Separator serves both units so the unaffected unit will still need the Oily Water Separator to comply with environmental discharge limits.

References:

AOP 2203.038, Primary to Secondary Leakage, Step 5.0
EOP 2202.004, SGTR, Step 14
2202.010, Standard Attachments, Attachment 19

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1561 **Rev:** 000 **Rev Date:** 6/28/1998 12:04:0 **QID #:** 73 **Author:** Hatman

Lic Level: R **Difficulty:** 2 **Taxonomy:** K **Source:** NRC Bank 0045 (1998 NRC Exam)

Search 1940012413 **10CFR55:** 41.10 / 45.12 **Safety Function**

System Title: Generic **System Number** GENERIC **K/A** 2.4.13

Tier: 3 **Group:** 1 **RO Imp:** 3.3 **SRO Imp:** 3.9 **L. Plan:** A2LP-RO-ESPTA **OBJ** 13/14

Description: Emergency Procedures/Plan - Knowledge of crew roles and responsibilities during EOP flowchart use.

Question:

Which one (1) of the following is the required MAXIMUM interval between performing safety function status checks per 2202.004, Loss of Coolant Accident?

A. Perform every 5 minutes.

B. Perform every 10 minutes.

C. Perform every 15 minutes.

D. Perform every 30 minutes.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

C. Perform every 15 minutes.

Notes:

Safety Function Status Checks are required to be completed within 15 minutes of diagnosis of an event and a maximum of every 15 minutes after the firs check.

References:

2202.003, Loss of Coolant Accident EOP, Step 1.A.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1562 **Rev:** 000 **Rev Date:** 10/8/2001 5:40:47 **QID #:** 74 **Author:** Coble

Lic Level: R **Difficulty:** 2 **Taxonomy:** K **Source:** NRC Bank 0407 (2002 NRC Exam)

Search 1940012415 **10CFR55:** 41.10 / 45.13 **Safety Function**

System Title: Generic **System Number** GENERIC **K/A** 2.4.15

Tier: 3 **Group:** 1 **RO Imp:** 3.0 **SRO Imp:** 3.5 **L. Plan:** A2LP-RO-ESPTA **OBJ** 3

Description: Emergency Procedures/Plan - Knowledge of communications procedures associated with EOP implementation.

Question:

Which ONE of the following defines the EOP verb VERIFY in the EOP/AOP Users Guide?

A. Observe that an expected condition exists, but does not permit action to make the condition occur.

B. Evaluate the status of a parameter to establish whether or not an action should be performed immediately.

C. Check the status of a process parameter within a given band repeatedly, at an unspecified interval.

D. Observe that an expected condition exists and, if it does not then take action to establish the condition.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

D. Observe that an expected condition exists and, if it does not then take action to establish the condition.

Notes:

Per the definition section, Attachment B of the Unit 2 EOP/AOP Users Guide, direction to verify a component allows the operator to take an action to align a component with the given direction if it is not already aligned. This make D the only correct answer.

References:

OP 1015.021, EOP/AOP Users Guide, Attachment B, Definition of Verify.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1563	**Rev:**	0	**Rev Date:**	12/30/2004 5:13:3	**QID #:**	75	**Author:**	Coble		
Lic Level:	R	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	NRC Bank 0542 (2005 NRC Exam)				
Search	1940012449	**10CFR55:**	41.10 / 43.2 / 45.6	**Safety Function**							
System Title:	Generic			**System Number**	GENERIC	**K/A**	2.4.49				
Tier:	3	**Group:**	1	**RO Imp:**	4.0	**SRO Imp:**	4.0	**L. Plan:**	A2LP-RO-EBOR	**OBJ**	1

Description: Emergency Procedures/Plan - Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.

Question:

Given the following conditions: (Reference Provided)

* A down power in progress.
* During the initial few minutes of the down power, CEA Group 6 was used for ASI control and is currently 138" withdrawn.
* A decision was made to complete the down power using CEA Group P.
* Group P has been inserted to 132" and now will not respond to any move commands.
* The plant is currently at 85% power.

Which of the following actions would be required first based on the given conditions?

A. Immediately commence emergency boration due to loss of minimum SDM.

B. Continue the down power using CEA group 6 until less than 74% power.

C. Stop the down power and have I&C troubleshoot CEA group P control logic.

D. Commence logging time beyond the Long Term Steady State Insertion Limit.

QID use History

	RO	SRO
2003	☐	☐
2005	☑	☑
2006	☐	☐
2008	☑	☑

Audit Exam History

2008	☐

Answer:

A. Immediately commence emergency boration due to loss of minimum SDM.

Notes:

The minimum COLR limit for SDM in Mode 1 is all CEAs above the transient insertion limit. If this is not true the Emergency Boration AOP requires Emergency Boration to be commenced until SDM is restored. At 84% power, the transient insertion limit for CEA group P is 135 inches withdrawn.

Distracters B is incorrect because minimum SDM has been lost and restoration take priority.
Distracter C is incorrect because this action would be taken after Emergency Boration was commenced.
Distracter D is incorrect because the CEA groups have not entered the Long Term Steady State Insertion Limit area yet.

This question will require ANO-2 Technical Specifications, COLR Figure 3 to be given as a reference.

References:

AOP 2203.032, Emergency Boration, Entry Conditions.
ANO-2 Technical Specifications, COLR Figure 3, Tech. Spec. 3.1.1.1, 3.1.3.6

Historical Comments:

This question has not been used on any previous NRC exams. BNC 12/30/2004. This QID was generated to replace QID 0153 on the 2005 NRC Exam based on feedback from the NRC that QID 0153 did not match the

K&A statement. BNC 01/04/2005.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1564	**Rev:**	1	**Rev Date:**	11/5/2007 4:39:08	**QID #:**	76	**Author:**	Coble		
Lic Level:	S	**Difficulty:**	3	**Taxonomy:**	C	**Source:**	Modified B Bank 1159 (B Bank 462)				
Search	0000072448	**10CFR55:**	43.5 / 45.12	**Safety Function**	1						
System Title:	Reactor Trip - Stabilization			**System Number**	007	**K/A**	2.4.48				
Tier:	1	**Group:**	1	**RO Imp:**	3.5	**SRO Imp:**	3.8	**L. Plan:**	A2LP-RO-ESPTA	**OBJ**	11

Description: Emergency Procedures/Plan - Ability to interpret control room indications to verify the status and operation of system, and understand how operator actions and directives affect plant and system conditions.

Question:

The following plant conditions exist 5 minutes after a reactor trip:

* RCS pressure is 2160 psia (slowly going up)
* RCS Thot is 538°F (slowly going down)
* RCS Tcold is 537°F (slowly going down)
* PZR Level is 24% (slowly going up)
* S/G "A" pressure is 943 psia (slowly going down)
* S/G "B" pressure is 945 psia (slowly going down)
* EFW pumps 2P7A and 2P7B are running
* Containment parameters are normal
* Standard Post Trip Actions (SPTAs) are in progress

Base on these condition, what actions are required to be taken and what are the expected results?

A. Enter Excess Steam Demand EOP 2202.005, after SPTAs, Actuate Main Steam Isolation Signal (MSIS); Steam Generator Pressures rising to required band.

B. Close Main Steam Isolation Valves (MSIVs) while in the SPTA Procedure 2202.001; Steam Generator Pressures rising to required band.

C. Enter RCS Overcooling Procedure AOP 2203.011 after SPTAs, then Close MSIVs; Steam Generator Pressures lowering to required band.

D. Actuate Main Steam Isolation Signal (MSIS) while in the SPTA Procedure 2202.001; Steam Generator Pressures lowering to required band.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

B. Close Main Steam Isolation Valves (MSIVs) while in the SPTA Procedure 2202.001; Steam Generator Pressures rising to required band.

Notes:

The MSIVs are directed to be closed first manually in the SPTA procedure if pressure is less than 950 psia and lowering. If the SG pressure continues to lower, then RCS overcooling may be diagnosed and entered to look for additional systems and components that could be causing an RCS cooldown. The RCS Overcooling AOP is written assuming Reactor already shutdown and an overcooling event occurs. If SG pressure drops below 751 psia then there is indication of an Excess Steam Demand in progress and the correct action would be to actuate MSIS and diagnose Excess Steam Demand Recovery procedure.

References:

EOP 2202.001, SPTAs, Step 8 E.
EOP 2202.005, Excess Steam Demand EOP, Entry Conditions

EOP 2202.010, Standard Attachments, Exhibit 8
AOP 2203.011, RCS Overcooling AOP

Historical Comments:

This test question has not been used on an initial NRC exam and was pulled from the biennial test bank.

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Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1565	**Rev:**	002	**Rev Date:**	1/9/2008 3:15:34	**QID #:**	78	**Author:**	Coble		
Lic Level:	S	**Difficulty:**	4	**Taxonomy:**	K	**Source:**	NRC Bank 0422 (2002 NRC Exam)				
Search	0000292208	**10CFR55:**	43.3 / 45.13	**Safety Function**	1						
System Title:	Anticipated Transient Without Scram (ATWS)	**System Number**	029	**K/A**	2.2.8						
Tier:	1	**Group:**	1	**RO Imp:**	1.8	**SRO Imp:**	3.3	**L. Plan:**	ASLP-RO-PRCON	**OBJ**	5

Description: Equipment Control - Knowledge of the process for determining if the proposed change, test, or experiment involves an unreviewed safety question.

Question:

As the responsible supervisor, you are performing an INTERIM approval for a permanent procedure change (PC) required to continue a Diversified Scram System (DSS) surveillance conducted on the weekend. The 50.59 SCREENING for this PC indicates an intent change and a 50.59 EVALUATION must be completed.

Which of the following statements describes the correct action concerning the procedure change?

A. Approval can be granted as long as the OSRC, Onsite Safety Review Committee, reviews the 50.59 EVALUATION within fifteen (15) days.

B. Do not approve the change because a 50.59 EVALUATION is required prior to implementation.

C. Approval can be granted without completion of the 50.59 EVALUATION for intent changes.

D. Do not approve it because a special OSG, Onsite Safety Group, must be called for approval.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

B. Do not approve it because a 50.59 EVALUATION is required.

Notes:

A SRO cannot approve an interim procedure change if the 50.59 screening requires a 50.59 evaluation since the change could affect a license bases document and therefore requires more scrutiny, additional reviews, prior to implementation. A standard procedure change process must be implemented.

References:

OP 1000.006, Procedure Control, Section 7.10

Historical Comments:

1/10/2002. Reworded distracters A and C based on suggested feedback from the NRC. BNC
11/05/2007; Changed to a DSS surveillance.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1566	**Rev:**	0	**Rev Date:**	11/6/2007 8:10:33	**QID #:**	79	**Author:**	Coble		
Lic Level:	S	**Difficulty:**	3	**Taxonomy:**	Ap	**Source:**	NEW				
Search	000040A202	**10CFR55:**	43.5 / 45.13	**Safety Function**	4						
System Title:	Steam Line Rupture			**System Number**	040	**K/A**	AA2.02				
Tier:	1	**Group:**	1	**RO Imp:**	4.6	**SRO Imp:**	4.7	**L. Plan:**	A2LP-RO-COLSS	**OBJ**	17

Description: Ability to determine and interpret the following as they apply to the Steam Line Rupture: - Conditions requiring a reactor trip.

Question:

Consider the following at full power:

* Main Turbine load is 1044 MWth initially
* Annunciator 2K10 A2 "COLSS POWER MARGIN EXCEEDED" comes in.
* Plant power has risen to 101.7% power over the last three minutes and is rising
* Main Turbine load has lowered to 955 MWe over the last three minutes and is lowering.

Based on these conditions, which of the following is the correct action to take and procedure to implement?

A. Lower plant power below 100% Immediately; Enter Excess Steam Demand EOP

B. Lower plant power below 100% within 10 minutes; Enter RCS Overcooling AOP.

C. Initiate a Main Steam Isolation Signal; Enter Loss of Turbine Load AOP.

D. Direct Tripping the Reactor now ; Enter Standard Post Trip Actions EOP.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

D. Trip the Reactor; Enter Standard Post Trip Actions EOP.

Notes:

The correct action to take based on a steam leak at power is to reduce turbine load below 100%. If it is > 100% but less than 101%, then a ten minute time frame applies. If grater than 101%, the action must be taken immediately. If the steam leak is large enough to cause a loss of > 50 MWt load to be removed from the main turbine, then this is trip criteria in the annunciator corrective action and SPTAs will be the guiding document. Excess Steam Demand would not be entered until after SPTAs are complete. A Loss of Turbine Load AOP may be entered initially but it will not direct MSIS actuation.

References:

Annunciator Corrective Action (ACA) for alarm 2K10 A2, Step 2.2

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1568	**Rev:**	1	**Rev Date:**	11/6/2007 2:34:30	**QID #:**	80	**Author:**	Coble
Lic Level:	S	**Difficulty:**	2	**Taxonomy:**	Ap	**Source:**	Modified NRC Bank 0617 (2006 Exam)		
Search	000065A205	**10CFR55:**	43.5 / 45.13	**Safety Function**	8				
System Title:	Loss of Instrument Air			**System Number**	065	**K/A**	AA2.05		
Tier:	1	**Group:**	1	**RO Imp:**	3.4	**SRO Imp:**	4.1	**L. Plan:**	A2LP-RO-EAOP	**OBJ**	16

Description: Ability to determine and interpret the following as they apply to the Loss of Instrument Air: - When to commence plant shutdown if instrument air pressure is decreasing.

Question:

Given the following:

* The plant is at full power.
* Annunciator 2K12-A8, INSTR AIR PRESS HI/LO comes in.
* Instrument Air Header pressure has lowered to 55 psig and dropping.
* The Loss of Instrument Air AOP 2203.021 has been entered.
* CNTMT Chill Water Isolation Valves 2CV-3851-1 and 2CV-3852-1 have failed CLOSED.
* I&C has commenced monitoring CEA CEDM Coil Temperatures.
* Restoration of Instrument Air is not imminent and System Engineering is not available.

If CEA CEDM coil temperatures approach _____°F, then a plant shutdown should be commenced and if coil temperatures exceed _____°F, the reactor should be tripped.

A. 400; 450

B. 425; 450

C. 450; 500

D. 500; 550

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☑
2008	☐	☑

Audit Exam History

2008	☐

Answer:

C. 450; 500

Notes:

If coil temperatures are projected to exceed 450°F, then a plant shutdown should be commenced IAW the Loss of IA AOP and a Reactor trip is required if coil temperatures exceed 500°F.

References:

2203.021 Step 13 Contingency Step B.6 and Attachment A, Chilled Water System Valve failure positions

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1569	**Rev:**	0	**Rev Date:**	11/6/2007 2:49:08	**QID #:**	81	**Author:**	Coble		
Lic Level:	S	**Difficulty:**	3	**Taxonomy:**	K	**Source:**	Biennial Bank 0737 (B Bank 0015)				
Search	00CE02A202	**10CFR55:**	43.5 / 45.13	**Safety Function**	1						
System Title:	Reactor Trip Recovery			**System Number**	E02	**K/A**	EA2.2				
Tier:	1	**Group:**	1	**RO Imp:**	3.0	**SRO Imp:**	4.0	**L. Plan:**	A2LP-RO-ERTR	**OBJ**	6

Description: Ability to determine and interpret the following as they apply to the (Reactor Trip Recovery): - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Question:

The following plant conditions exist:

* The reactor tripped 45 minutes ago due to an RCP breaker trip caused by personnel error.
* Reactor Trip Recovery procedure is in use.
* AFW Pump 2P75 is tagged out to replace a bearing.
* EFW Pump 2P7A tripped on overspeed at the beginning of the event and can not be reset.
* MFW pumps are secured and on the turning gear.
* Condensate is running on Short Path Cleanup.
* EFW Pump 2P7B has just tripped due to a breaker fault.
* "A" S/G level is 43% and going down.
* "B" S/G level is 40% and going down.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

What actions are required to be taken for the above stated conditions?

A. Go to OP 2202.010 Exhibit 8, Diagnostic Actions and rediagnose the event.

B. Go to OP 2202.006, Loss of Main Feedwater Emergency Operating Procedure.

C. Restart at least one MFW pump and feed the S/Gs using Feed Pump and FWCS Procedure OP 2106.0007.

D. Depressurize the S/Gs and feed them with a Condensate Pump using Emergency Feedwater Procedure OP 2106.006.

Answer:

A. Go to OP 2202.010 Exhibit 8, Diagnostic Actions and rediagnose the event.

Notes:

The Safety Function Status Check (SFSC) provides a correction process. If the procedure in use is adequately treating the symptoms, then the procedure is continued. If the guidance is inadequate, either because new information appears that is not covered in the procedure, or because of improper plant response, then the operators exit the Optimum Recovery Procedure (ORP) , re-diagnose the event, and enter the correct ORP or the Functional Recovery Procedure.

References:

OP 2202.002, Reactor Trip Recovery, Exit Conditions, Step 1 and the SFSC for RCS Heat Removal.
OP 2202.010, Standard Attachments, Exhibit 8, Diagnostic Actions.
OP 1015.021, EOP/AOP Users Guide, Step 5.9.6.

Historical Comments:

This test question has not been used on an initial NRC exam and was pulled from the biennial test bank.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1570 **Rev:** 0 **Rev Date:** 11/6/2007 4:17:04 **QID #:** 82 **Author:** Coble

Lic Level: S **Difficulty:** 4 **Taxonomy:** Ap **Source:** Modified Bank 1311 (B Bank 614)

Search 0000242406 **10CFR55:** 41.10 / 43.5 / 45.13 **Safety Function** 1

System Title: Emergency Boration **System Number** 024 **K/A** 2.4.6

Tier: 1 **Group:** 2 **RO Imp:** 3.1 **SRO Imp:** 4.0 **L. Plan:** A2LP-RO-EFRP **OBJ** 3

Description: Emergency Procedures/Plan - Knowledge of symptom based EOP mitigation strategies.

Question:

Consider the following at full power:

* The plant has experienced a rupture on the Charging Pump suction header downstream of RWT to CCP Suction Header Isolation, 2CV-4950-2, and its check valve 2CVC-70.
* The plant was tripped as directed by the Loss of Charging AOP.
* 4 CEAs did not fully insert after all attempts to insert them.
* Reactor power is 0.2%.
* Standard Post Trip Actions are complete.

Which procedure should be diagnosed and what is the required RCS pressure to satisfy any jeopardized safety functions?

A. Functional Recovery Procedure EOP OP 2202.009; <1265 psia.

B. Functional Recovery Procedure EOP OP 2202.009; <1800 psia.

C. Emergency Boration AOP 2203.032; <1265 psia.

D. Emergency Boration AOP 2203.032; <1800 psia.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

A. Functional Recovery Procedure EOP OP 2202.009; <1265 psia.

Notes:

The diagnostic actions of Exhibit 8 will direct use of the function recovery procedure based on the given conditions. Since there is no charging flow and the given reactor power, the reactivity safety function is in jeopardy, and HPSI flow must be used to emergency borate the RCS. The procedure directs lowering pressure to < 1265 psia to get > 40 gpm of HPSI flow to satisfy these conditions. The Emergency Boration AOP has a specific set of entry conditions:
ONE or MORE of the following conditions exist:
1. Reactor critical AND CEAs inserted below the Transient Insertion Limit (TS 3.1.3.6).
2. "REG GROUP CEA PDIL" annunciator (2K10-F1) in alarm.
3. Shutdown margin in Modes 3, 4, or 5 less than required per TS 3.1.1.1 or 3.1.1.2.
4. Boron concentration in Mode 6 less than 2500 PPM.

Thus this procedure would not be used to satisfy a safety function after SPTAs are completed.

References:

AOP 2203.036, Loss of Charging AOP, Step 17.E.5/6
EOP 2202.010, Standard Attachments, Exhibit 8.
EOP 2202.009, Functional Recovery, Entry Section Step 12.A.
EOP 2202.009, Functional Recovery, Reactivity Control Decision Tree.

EOP 2202.009, Functional Recovery, RC-3 Step 4
AOP 2203.032, Emergency Boration AOP, Entry Criteria and Step 8.

Historical Comments:

This test question has not been used on an initial NRC exam and was pulled from the biennial test bank.

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Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1571	**Rev:**	0	**Rev Date:**	10/7/2004	**QID #:**	83	**Author:**	COBLE		
Lic Level:	S	**Difficulty:**	3	**Taxonomy:**	Ap	**Source:**	NEW				
Search	000037A209	**10CFR55:**	43.5 / 45.13	**Safety Function**	3						
System Title:	Steam Generator (S/G) Tube Leak			**System Number**	037	**K/A**	AA2.09				
Tier:	1	**Group:**	2	**RO Imp:**	2.8	**SRO Imp:**	3.4	**L. Plan:**	A2LP-RO-EAOP	**OBJ**	28

Description: Ability to determine and interpret the following as they apply to the Steam Generator Tube Leak: - System status, using independent readings from redundant Condensate air ejector exhaust monitor.

Question:

Given the following at full power:

* A Steam Generator Tube leak is in progress.
* AOP 2203.038, Primary to Secondary Leakage has been implemented.
* The RCS leak rate has risen from 5 gpm to 47 gpm over the last hour.
* Two coolant Charging pumps are running.
* Pressurizer level is stable at 59.6%

Which ONE of the following radiation monitors could be checked to determine the specific Steam Generator that is leaking and what would be the correct action to take?

A. Main Steam Line Radiation Monitors; Enter Action level 2 of 2203.008 Attachment A and reduce plant power and be in Mode 3 within six hours..

B. Vacuum Pump Exhaust Radiation Monitors; Enter Action level 3 of 2203.008 Attachment A and reduce plant power to < 50% in the next hour and be in Mode 3 within six hours..

C. Main Steam Line Radiation Monitors; Trip the Reactor and GO TO OP 2202.001, Standard Post Trip Actions EOP.

D. Vacuum Pump Exhaust Radiation Monitors; Trip the Reactor and GO TO OP 2202.001, Standard Post Trip Actions EOP.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

C. Main Steam Line Radiation Monitors; Trip the Reactor and GO TO OP 2202.001, Standard Post Trip Actions EOP.

Notes:

There are redundant radiation monitors on each SG for the Steam Line, Blow down and N-16 Radiation Monitors but only one Vacuum Pump exhaust Radiation Monitor thus the Vacuum Pump exhaust Radiation Monitor cannot be used to determine the affected Steam Generator. Also the procedure direct a Reactor trip if leakage exceeds 44gpm to allow for adequate charging flow during subsequent cooldown.

References:

AOP 2203.038, Primary to Secondary Leakage, Steps 10, 12, 18, 19 and Attachment A.
STM 2-62, Radiation Monitoring System, Section 2.3.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1572	**Rev:**	0	**Rev Date:**	11/7/2007 2:36:34	**QID #:**	84	**Author:**	Coble		
Lic Level:	S	**Difficulty:**	3	**Taxonomy:**	Ap	**Source:**	NEW				
Search	0000682404	**10CFR55:**	41.10 / 43.2 / 45.6	**Safety Function**	8						
System Title:	Control Room Evacuation			**System Number**	068	**K/A**	2.4.4				
Tier:	1	**Group:**	2	**RO Imp:**	4.0	**SRO Imp:**	4.3	**L. Plan:**	A2LP-RO-EAOP	**OBJ**	10

Description: Emergency Procedures/Plan - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

Question:

Given the following:

* A confirmed severe fire has developed in the Control Room Printer Room.
* Heavy black smoke is entering the Unit 2 Control Room area.

Which procedure should be entered and what actions should be taken?

A. Enter 2203.049, Fires in Areas Affecting Safe Shutdown; don SCBAs, dispatch the fire brigade, and perform a controlled plant shutdown.

B. Enter 2203.030, Remote Shutdown; trip the Reactor, evacuate the control room and perform a remote cooldown of the plant at the Remote Shutdown Panel 2C-80.

C. Enter 2203.014, Alternate Shutdown; trip the Reactor, evacuate the control room and perform an alternate shutdown of the plant at the various areas designated in the procedure.

D. Enter 2203.034, Fire or Explosion; don SCBAs, dispatch the fire brigade, and perform a rapid plant shutdown to 20% power then trip the reactor.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

C. Enter 2203.014, Alternate Shutdown; trip the Reactor, evacuate the control room and perform an alternate shutdown of the plant at the various areas designated in the procedure.

Notes:

The alternate shutdown procedure is written to address a fire in a set of specific areas as addressed in its entry conditions. The remote shutdown is a procedure to address the remote shutdown of the plant if the control room has to be evacuated for some reason other than a fire. The fire and explosion procedure addresses fires in the plant that are reported to the control room but do not affect control room habitability. The fires in areas affecting safe shutdown procedure is used when the areas listed in its entry section have a severe fire.

References:

OP 2204.014, Alternate Shutdown, Entry Conditions and Step 1 & 8.
OP 2203.049, Fires In Areas Affecting Safe Shutdown, Entry Conditions.
OP 2203.030, Remote Shutdown, Entry Conditions.
OP 2203.034, Fire and Explosion, Entry Conditions.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1573	**Rev:**	1	**Rev Date:**	11/7/2007 5:39:31	**QID #:**	85	**Author:**	Coble		
Lic Level:	S	**Difficulty:**	3	**Taxonomy:**	Ap	**Source:**	Modified Bank 0754 (B Bank 0031)				
Search	000069A201	**10CFR55:**	43.5 / 45.13	**Safety Function**	5						
System Title:	Loss of Containment Integrity			**System Number**	069	**K/A**	AA2.01				
Tier:	1	**Group:**	2	**RO Imp:**	3.7	**SRO Imp:**	4.3	**L. Plan:**	A2LP-SRO-TS	**OBJ**	4

Description: Ability to determine and interpret the following as they apply to the Loss of Containment Integrity: - Loss of containment integrity.

Question:

The following conditions exist at 100% power:

* ANO2 decided to run a leak rate on the Personnel Air Lock due to a recent Industry Event
* The leak rate was found to be in excess of the allowed value stated in the Containment Leakage Rate Testing Program.
* Investigation has revealed a crack at the airlock shell to Containment wall interface.
* The determination has been made that Containment integrity cannot be maintained.

Which of the following actions would be correct for these conditions?

A. Immediately trip the Reactor and commence a cooldown to mode 5 after SPTAs.

B. Commence a normal plant shutdown to Hot Standby if not repaired within 1hour.

C. Ensure at least one Personnel Air Lock doors is operable and remain at 100% power.

D. Ensure both Personnel Air Lock doors are operable and remain at 100% power.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

B. Commence a normal plant shutdown to Hot Standby if not repaired within 1hour.

Notes:

If Containment structural Integrity cannot be maintained, then T.S 3.6.1.1 applies. The applicant may try to apply the Containment Air Lock TS 3.6.1.3 but should realize that closing the air lock doors will still not allow two operable air lock doors which is the requirement to stay at full power.

References:

Technical Specification 3.6.1.1
Technical Specification 3.6.1.3

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1574	**Rev:**	0	**Rev Date:**	11/19/2007 5:33:4	**QID #:**	86	**Author:**	Coble
Lic Level:	S	**Difficulty:**	3	**Taxonomy:**	Ap	**Source:**	NEW		
Search	005000A203	**10CFR55:**	41.5 / 43.5 / 45.3 / 45.	**Safety Function**	4				
System Title:	Residual Heat Removal System (RHRS)			**System Number**	005	**K/A**	A2.03		
Tier:	2	**Group:**	1	**RO Imp:**	2.9	**SRO Imp:**	3.1	**L. Plan:**	A2LP-RO-SDC	**OBJ**	

Description: Ability to (a) predict the impacts of the following malfunctions or operations on the RHRS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - RHR pump/motor malfunction.

Question:

The following plant conditions exist.

* Mode 6 with refueling shuffle complete.
* The RCS has been drained to reduced inventory to remove SG nozzle dams.
* Personnel are currently in the A SG removing nozzle dams.
* RCS level is 19 inches and starts lowering.
* The running SDC Pump starts cavitating and becomes air bound.
* All attempts to restore SDC flow have failed.
* The running SDC pump has been secured.

What should be the controlling procedure for this event and what action should be taken?

A. Lower Mode Functional; Start a BAM pump to make up to the RCS.

B. Lower Mode Functional; Commence a Containment evacuation.

C. Loss of Shutdown Cooling; Start the standby SDC pump.

D. Loss of Shutdown Cooling; Close the Charging RCS injection MOVs.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

B. Lower Mode Functional; Commence a Containment evacuation.

Notes:

No makeup should be added to the RCS with the SG manways open and people inside the SGs.
The SDC pump has become air bound due to vortexing in the pump suction. The Loss of SDC procedure would not restore flow to within 500 gpm of setpoint because the other pump would become air bound if started. The action to start the standby pumps calls for closing the LPSI injection MOVs first but this would not be the correct action to take since the pump cannot be started.
The Loss of SDC procedure may be entered first but will direct the SRO to exit to the Lower Mode Functional Recovery procedure.

References:

AOP 2203.029, Loss of SDC, Entry Section and Steps 8 & 16.
EOP 2202.011, Lower Mode Functional Recovery, Entry Section and Step 3

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1575	**Rev:**	0	**Rev Date:**	11/19/2007 11:19:	**QID #:**	87	**Author:**	Coble
Lic Level:	S	**Difficulty:**	3	**Taxonomy:**	Ap	**Source:**	NEW		
Search	022000A204	**10CFR55:**	41.5 / 43.5 / 45.3 / 45.	**Safety Function**	5				
System Title:	Containment Cooling System (CCS)			**System Number**	022	**K/A**	A2.04		
Tier:	2	**Group:**	1	**RO Imp:**	2.9	**SRO Imp:**	3.2	**L. Plan:**	A2LP-RO-SWACW	**OBJ**	12

Description: Ability to (a) predict the impacts of the following malfunctions or operations on the CCS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Loss of service water.

Question:

Given the following at full power: (Reference Provided)

* Service Water Pump 2P4A is running
* Service Water Pump 2P4B is running
* Service Water Pump 2P4C is in standby
* A large rupture occurs on the Loop 2 Service Water header on the 335 foot elevation of the Aux Building.
* Actions have been taken to isolate Loop 2 Service Water in accordance with the Loss of Service Water AOP 2203.022.
* The plant is still at full power

Based on this Loss of Loop 2 Service Water, what would be the operability determination of the Containment Cooling Heat Removal Systems and how long can the plant operate in this mode prior to shutting the plant down to Hot Standby based only on the Containment Heat Removal System?

A. One Containment Cooling Group inoperable, 'B" Train Containment Spray system operable; Restore the cooling group to operable status within 7 days.

B. Both Containment Cooling Groups inoperable, 'B' Train Containment Spray system operable; Restore the cooling groups to operable status within 72 hours.

C. Both Containment Cooling Groups operable, 'B' Train Containment Spray system inoperable; Restore B' Train Containment Spray system to operable status within 72 hours.

D. One Containment Cooling Group inoperable, 'B' Train Containment Spray system inoperable; Restore B' Train Containment Spray system to operable status within 72 hours and the cooling group within 7 days.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

D. One Containment Cooling Group inoperable, 'B' Train Containment Spray system inoperable; Restore B' Train Containment Spray system to operable status within 72 hours and the cooling group within 7 days.

Notes:

This loss of Service Water loop will not allow one group of Containment cooling fans to receive Service Water cooling during accident conditions. Also the Service Water cooling for seal cooling for 2P-35B will be lost which will make the 'B' Train Spray pump inoperable. The SRO will have to interpret the Technical Specifications for these components in accordance with the Loss of Service Water AOP Step 16. Based on his knowledge of cooling of the spray pumps and Containment cooling fans, he should apply TS 3.6.2.3 Action c.

Provide Technical Specifications 3.6.2.1 and 3.6.2.3 as a reference

References:

AOP 2203.022 Step 6.C and Step 16.
Technical Specifications 3.6.2.1 and 3.6.2.3 (provided as a reference)
STM 2.08, Containment Spray System, Section 1.0
OP 2104.005, Containment Spray Operations, Section 3.0 (2E-47B)
STM 2-42, Service Water and ACW System Drawing.
STM 2-09, Containment Cooling and Purge Systems, Sections 2.1, 2.7 and drawing of Containment Ventilation.

Historical Comments:

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Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1576 **Rev:** 1 **Rev Date:** 1/4/2008 5:23:35 **QID #:** 88 **Author:** COBLE

Lic Level: S **Difficulty:** 4 **Taxonomy:** Ap **Source:** Modified NRC Exam Bank 0545

Search 0590002429 **10CFR55:** 43.5 / 45.11 **Safety Function** 4

System Title: Main Feedwater (MFW) System **System Number** 059 **K/A** 2.4.29

Tier: 2 **Group:** 1 **RO Imp:** 2.6 **SRO Imp:** 4.0 **L. Plan:** ASLP-RO-EPLAN **OBJ** 6

Description: Emergency Procedures/Plan - Knowledge of the emergency plan.

Question:

Given the following conditions:

* A loss of offsite power occurs from full power.
* A Main Steam line break occurs inside Containment.
* SIAS, CCAS, CIAS, CSAS, MSIS, and EFAS are all actuated.
* Feedwater cannot be established to either steam generator.
* Both Steam Generator levels are 60 inches wide range indication and dropping.

Given these conditions, which of the following EOP recovery procedures should be diagnosed after SPTAs.

A. Excess Steam Demand

B. Loss of Feedwater

C. Functional

D. Loss of Offsite Power

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☑
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

C. Functional

Notes:

There are multiple event in progress there the SRO should diagnose the Functional Recovery Procedure and based on the criteria in the SG levels, he should use the ECCS vent and establish once through cooling as a means of RCS heat removal. Also based on EAL 6.9, the SRO should declare a Site Area Emergency (SAE).

Deleted E-plan Call due to similarities with an Admin JPM in the Operating Exam and other E-plan call in written Exam - 01/04/2008

References:

EOP 2202.009, Functional Recovery, HR-2 Step 45 Contingency and HR-3 Step 1.
OP 1903.010, EAL 6.9, Loss of both SGs as a Heat Removal Method.
OP 2202.010, Standard Attachments, Exhibit 8, Diagnostics.

Historical Comments:

This question has not been used on any previous NRC exams. BNC 12/31/2004. This question was generated to replace QID 0518 based on NRC feedback that 0518 was not an SRO only knowledge question. BNC 01/04/2005

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1577	**Rev:**	0	**Rev Date:**	11/19/2007 5:33:2	**QID #:**	89	**Author:**	Coble		
Lic Level:	S	**Difficulty:**	2	**Taxonomy:**	K	**Source:**	NEW				
Search	0610002430	**10CFR55:**	43.5 / 45.11	**Safety Function**	4						
System Title:	Auxiliary / Emergency Feedwater (AFW) Syste	**System Number**	061	**K/A**	2.4.30						
Tier:	2	**Group:**	1	**RO Imp:**	2.2	**SRO Imp:**	3.6	**L. Plan:**	ASLP-RO-EPLAN	**OBJ**	13

Description: Emergency Procedures/Plan - Knowledge of which events related to system operations/status should be reported to outside agencies.

Question:

Given the following at full power: (Reference Provided)

* An operability surveillance of EFW Pump 2P7B is being conducted.
* A fire occurs in 2P7B motor causing a ground fault over current trip.
* The fire brigade responds and the fire is put out within eight (8) minutes.

Based on event classification of these conditions, if any, the State and Local authorities _____ and the NRC _____.

A. do not need to be notified; needs to be notified within 60 minutes.

B. need to be notified within 15 minutes; does not need to be notified.

C. do not need to be notified; does not need to be notified.

D. need to be notified within 15 minutes; needs to be notified within 60 minutes.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

D. need to be notified within 15 minutes; needs to be notified within 60 minutes.

Notes:

The SRO candidate should realize that although the fire lasted for less than 10 minutes, the fire will render a train of ESF equipment inoperable which should be classified as an ALERT Eplan classification which requires notification of state and local authorities within 15 minute and the NRC within one hour.

This question will require OP 1903.010 procedure as a reference.

References:

OP-1903.010, EAL Classification, Step 6.1.2.C and EALs 7.5/7.6.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1578	**Rev:**	000	**Rev Date:**	1/10/2002 4:07:04	**QID #:**	90	**Author:**	Coble
Lic Level:	S	**Difficulty:**	3	**Taxonomy:**	Ap	**Source:**	NRC Bank 0337 (2002 NRC Exam)		
Search	073000A202	**10CFR55:**	41.5 / 43.5 / 45.3 / 45.	**Safety Function**	7				
System Title:	Process Radiation Monitoring (PRM) System	**System Number**	073	**K/A**	A2.02				
Tier:	2	**Group:**	1	**RO Imp:**	2.7	**SRO Imp:**	3.2	**L. Plan:**	A2LP-SRO-TS	**OBJ**	13

Description: 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 correct, control, or mitigate the consequences of those malfunctions or operations: - Detector failure

Question:

Given the following:

* A Liquid Release Permit has been requested for Boric Acid Condensate Tank, 2T-69A.
* Chemistry has returned the permit to operations after sampling and analyzing the tank.
* While conducting the source check on the BMS Liquid Discharge Radiation Monitor, 2RE-2230 it is determined that the radiation monitor is not responding.
* 2RE-2230 has been declared inoperable.

To prevent an accidental release of a non-permitted tank, the release of 2T-69A CANNOT continue unless:

A. The Plant Manager has approved the release with an inoperable radiation monitor in accordance with Offsite Dose Calculation Manual (ODCM) Specification L.2.1.1.

B. Independent verification of tank samples, release rate data, and lineup completed in accordance with Offsite Dose Calculation Manual (ODCM) Specification L.2.1.1.

C. The inoperable radiation monitor, 2RE-2230, is returned to an operable status in accordance with Technical Specification 3.11.1, Liquid Holdup Tanks.

D. Contingencies for analyzing grab samples every two (2) hours are established n accordance with Technical Specification 3.11.1, Liquid Holdup Tanks..

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

B. Independent verification of tank samples, release rate data, and lineup completed in accordance with Offsite Dose Calculation Manual (ODCM) Specification L.2.1.1.

Notes:

In accordance with the requirements in the Offsite Dose Calculation Manual (ODCM) Specification L2.1.1, a liquid release of an onsite tank can continue with an inoperable radiation monitor as long as an independent sample is taken and analyzed to ensure release limits will not be exceeded. Also an inoperable radiation monitor requires an independent check of the proper valve lineup to ensure the sampled tank is the one released. Plant Manager approval is not required specifically for this case. His approval of plant procedures in general allows this exception. Grab samples during the release are not specified in the OCDM requirement nor the procedure.

References:

ODCM , Unit 2 Specification L2.1.1

Historical Comments:

1/10/2002, Reworded Stem to make question more like K&A statement. Deleted QID 363 due to its similarities to this question. These changes were based on NRC feedback. BNC

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1579	**Rev:**	0	**Rev Date:**	11/19/2007 3:29:3	**QID #:**	91	**Author:**	Coble
Lic Level:	S	**Difficulty:**	3	**Taxonomy:**	Ap	**Source:**	Modified IH Bank ANO-OPS2-12903		
Search	0010002438	**10CFR55:**	43.5 / 45.11	**Safety Function**	1				
System Title:	Control Rod Drive System			**System Number**	001	**K/A**	2.4.38		
Tier:	2	**Group:**	2	**RO Imp:**	2.2	**SRO Imp:**	4.0	**L. Plan:**	ASLP-RO-EPLAN	**OBJ**	12

Description: Emergency Procedures/Plan - Ability to take actions called for in the facility emergency plan, including (if required) supporting or acting as emergency coordinator.

Question:

Given the following at full power: (Reference Provided)

* A dropped control rod has been recovered 4 hours after it dropped .
* The Letdown Radiation Monitors is indicating a rapid rise in RCS activity.
* Now a Steam Generator Tube Rupture causes a plant trip.
* A Main Steam safety sticks open on the trip and cannot be isolated.
* Dose assessment has commenced.
* Over the past hour the dose and dose rates have gone up as follows:
* TEDE dose rate at the Site Boundary is 180 mrem/hr.
* Child Thyroid dose rate at the Site Boundary is 1250 mrem/hr.
* RDACS projects 500 mrem TEDE.
* RDACS projects 6700 mrem Child Thyroid.
* RDACS projects no dose beyond the 10 mile Emergency Planning Zone.
* There are NO impediments to evacuation.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

What should the Protective Action Recommendation (PAR) be?

A. PAR 1 and PAR 2

B. PAR 2 and PAR 3

C. PAR 1, PAR 2, and PAR 4

D. PAR 2 and PAR 4

Answer:

A. PAR 1 and PAR 2

Notes:

This is not a FAST BREAKER GE (GE would not be the first classification) because dose has gone up over time and the E-Plan classifications should be progressive. This is not a short duration release due to the safety valve cannot be isolated. The dose projection exceed the requirements to evacuate thus by the flow chart on page 1 of 5 in Attachment 6 of OP 1903.011, PAR 1 and PAR 2 should be combined and sent out as a recommendation from the emergency coordinator.

This question will require OP 1903.011 procedure as a reference.

References:

OP 1903.010, EAL Classification, EAL 5.4
OP 1903.011, Emergency Response Notifications, Attachment 6.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1580	**Rev:**	0	**Rev Date:**	11/21/2007 10:39:	**QID #:**	92	**Author:**	Coble		
Lic Level:	S	**Difficulty:**	4	**Taxonomy:**	Ap	**Source:**	NEW				
Search	017000A202	**10CFR55:**	41.5 / 43.5 / 45.3 / 45.	**Safety Function**	7						
System Title:	In-Core Temperature Monitor (ITM) System			**System Number**	017	**K/A**	A2.02				
Tier:	2	**Group:**	2	**RO Imp:**	3.6	**SRO Imp:**	4.1	**L. Plan:**	ASLP-RO-EPLAN	**OBJ**	6

Description: Ability to (a) predict the impacts of the following malfunctions or operations on the ITM System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Core damage.

Question:

Given the following: (Reference Provided)

* The plant has tripped due to a large break LOCA.
* The LOCA Recovery procedure has been implemented.
* RCS pressure is 1250 psia and slowly dropping
* Average CET temperature is 587°F and rising.
* RVLMS level 8 and above indicate DRY.
* RCS Chemistry sample indicates 390 microcuries/gram specific Iodine-131
* Containment pressure is 27 psia and lowering.
* No release has been detected outside Containment.
* Hydrogen concentration in Containment is < 1%.
* All safety systems actuated as designed.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Which one of the following would be the correct action to take and the correct E-plan classification?

A. Remain in the LOCA Recovery procedure; Alert.

B. Remain in the LOCA Recovery procedure; Site Area Emergency

C. Go to the Functional Recovery procedure; Site Area Emergency.

D. Go to the Functional Recovery procedure; General Emergency.

Answer:

C. Go to the Functional Recovery procedure; Site Area Emergency.

Notes:

The conditions do not meet the safety function status check for Core Heat Removal in the LOCA EOP; therefore the SRO should transition to the functional recovery procedure. There is indication of > 1% failed fuel/core damage along with > 10 degrees F superheat so EAL 1.3 or 2.3 apply. There is no indication of a challenged or failed Containment so EAL 1.7 (General Emergency would not apply).

This question will require OP 1903.010 procedure as a reference.

References:

OP 2203.003, LOCA EOP, Core Heat Removal Safety Function Status Check.
OP 1015.021, EOP/AOP Users Guide, Step 5.7.1.
OP 1903.010, EAL Classification, EALs 1.3, 1.7, and 2.3.
OP 1903.010, EAL Classification, definitions, 4.11.1. B, 4.11.3, and 4.12..3

Historical Comments:

.

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1581	**Rev:**	0	**Rev Date:**	11/21/2007 11:52:	**QID #:**	93	**Author:**	Coble
Lic Level:	S	**Difficulty:**	3	**Taxonomy:**	An	**Source:**	Modified IH Bank ANO-OPS2-11948		
Search	071000A204	**10CFR55:**	41.5 / 43.5 / 45.3 / 45.	**Safety Function**	9				
System Title:	Waste Gas Disposal System (WGDS)	**System Number**	071	**K/A**	A2.04				
Tier:	2	**Group:**	2	**RO Imp:**	2.3	**SRO Imp:**	2.7	**L. Plan:**	A2LP-RO-RWST	**OBJ**	7

Description: Ability to (a) predict the impacts of the following malfunctions or operations on the Waste Gas Disposal System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Loss of Cover Gas.

Question:

Consider the following:

* Plant is in Mode 5 following a refueling outage.
* Preparation for plant heatup to mode 4 is in progress.
* A Chemistry VCT sample indicates 40% hydrogen, 2.1% oxygen and 57.9% Nitrogen.

Which of the following actions should be performed for the given conditions?

A. Enter OP 2203.010, H2/O2 Concentration High, and Purge the VCT with nitrogen using the Gaseous Radwaste System.

B. Enter OP 2203.010, H2/O2 Concentration High, and Purge the VCT with hydrogen using the Gaseous Radwaste System.

C. Purge the VCT with Nitrogen using the CVCS Procedure 2104.002, Attachment I, VCT Nitrogen Purge to the Vent Plenum.

D. Purge the VCT with Hydrogen using the CVCS Procedure 2104.002, Attachment J, VCT Hydrogen Purge to the Vent Plenum.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

D. Purge the VCT with Hydrogen using the CVCS Procedure 2104.002, Attachment J, VCT Hydrogen Purge to the Vent Plenum.

Notes:

The candidate must realize that the entry conditions for the H2/O2 Concentration High AOP are not met and based on plant conditions, the SRO will need to get the VCT Hydrogen concentration up above the required operating concentration (95%) for future plant startup. Thus he should use the normal procedure attachment to purge the VCT with Hydrogen.

References:

AOP 2203.010, H2/O2 Concentration High AOP, Entry Conditions, Steps 7 and 12, along with Attachment A.
CVCS Procedure 2104.002, Attachment I, VCT Nitrogen Purge to the Vent Plenum Page 1.
CVCS Procedure 2104.002, Attachment J, VCT Hydrogen Purge to the Vent Plenum Page 1.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1582 **Rev:** 0 **Rev Date:** 1/4/2008 5:37:31 **QID #:** 94 **Author:** Coble

Lic Level: S **Difficulty:** 2 **Taxonomy:** K **Source:** Modified IH Bank ANO-OPS2-4541

Search 1940012104 **10CFR55:** 41.10 / 43.2 **Safety Function**

System Title: Generic **System Number** GENERIC **K/A** 2.1.4

Tier: 3 **Group:** 1 **RO Imp:** 2.3 **SRO Imp:** 3.4 **L. Plan:** ASLP-RO-OPSPR **OBJ** 4.c.1

Description: Conduct of Operations - Knowledge of shift staffing requirements.

Question:

Given the following:

* The plant is at full power.
* The Shift Manager is determining adequate shift staffing and proficiency requirements for his crew for the current shift.

Which one of the following set of watch standers would MEET the required shift manning requirements AND also MEET the MINIMUM required number of watches needed in order to maintain an "Active" license per 10 CFR 55.53, "Conditions of Licenses"?

A. 1 SRO, 3 ROs, 2 WCOs, 1 AO and 1 STA; Seven 12 hour shifts per calendar month.

B. 2 SROs, 2 ROs, 1 WCO, 2 AOs and 1 STA; Five 12 hour shifts per calendar month.

C. 1 SRO, 2 ROs, 1 WCO, 2 AOs and 1 STA; Seven 12 hour shifts per calendar quarter.

D. 2 SROs, 3 ROs, 2 WCOs, 1 AO and 1 STA; Five 12 hour shifts per calendar quarter.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

D. 2 SROs, 3 ROs, 2 WCOs, 1 AO and 1 STA; Five 12 hour shifts per calendar quarter.

Notes:

Each shift requires 2 SROs (1 as a shift manager and the other as CRS) along with 2 ROs, three non-licensed operators with at least one qualified WCO and 2 others qualified AO (WCO is qualified AO also), and 1 STA. Each Licensed Operator must stand at least 5-12 hour or 7-8 hour watches to maintain his active proficiency.

References:

T.S. 6.2.2, Unit Staff
EN-OP-115, Conduct of Operations, Addendum 10.1.
COPD019, Operations Watch standing Proficiency, Step 2.4/2.5.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1583 **Rev:** 0 **Rev Date:** 11/21/2007 1:23:0 **QID #:** 95 **Author:** Coble

Lic Level: S **Difficulty:** 3 **Taxonomy:** K **Source:** Modified IH Bank ANO-OPS2-11387

Search 1940012132 **10CFR55:** 41.10 / 43.2 / 45.12 **Safety Function**

System Title: Generic **System Number** GENERIC **K/A** 2.1.32

Tier: 3 **Group:** 1 **RO Imp:** 3.4 **SRO Imp:** 3.8 **L. Plan:** A2LP-RO-SDC **OBJ** 1

Description: Conduct of Operations - Ability to explain and apply all system limits and precautions.

Question:

Consider the following:

* Unit 2 is being cooled down in preparation for a refueling outage.
* Shutdown cooling is in service.
* 'A' and 'D' reactor coolant pumps are running.
* The upper limit for RCS pressure is 300 psia.
* The lower limit for RCS pressure is 260 psia.

The upper RCS pressure limit is based on _____ and the lower RCS pressure limit is based on _____.

A. SDC system pressure boundary limits; reactor coolant pump NPSH

B. SDC system pressure boundary limits; limiting the downward thrust on the RCPs

C. tripping of the running SDC pump; reactor coolant pump NPSH

D. tripping of the running SDC pump; limiting the downward thrust on the RCPs

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

A. SDC system pressure boundary limits; reactor coolant pump NPSH

Notes:

The operational limits of the shutdown cooling system are 300 psia and 300°F per OP 1015.016 page 3 of 4. RCP operating limits are based on minimum pressure requirements for the seals, hydrostatic bearings and NPSH, whichever is most limiting for the given RCS temperature per OP 1015.016 page 3 of 4.

References:

STM 2-14, Shutdown Cooling System, Section 1.2
STM 2-03-2, RCP System, Section 1.8.1.2
OP 1015.016 H, RCS Pressure Vs. Temperature, Pages 2, 3, and 4.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1584	**Rev:**	0	**Rev Date:**	11/21/2007 2:51:0	**QID #:**	96	**Author:**	Coble		
Lic Level:	S	**Difficulty:**	2	**Taxonomy:**	K	**Source:**	IH Bank ANO-OpsUnit2-09444				
Search	1940012215	**10CFR55:**	43.3 / 45.13	**Safety Function**							
System Title:	Generic			**System Number**	GENERIC	**K/A**	2.2.15				
Tier:	3	**Group:**	1	**RO Imp:**	2.2	**SRO Imp:**	2.9	**L. Plan:**	ASLP-RO-OPSPR	**OBJ**	4.i.3.a

Description: Equipment Control - Ability to identify and utilize as-built design and configuration change documentation to ascertain expected current plant configuration and operate the plant.

Question:

Which of the following describes the method of maintaining component configuration control when responding to a SG tube leak event?

A. The CRS keeps a handwritten list of components placed out of position and enters them in the COOP Log as time allows during the event.

B. Complete valve lineups for the affected systems are required to be performed after the event.

C. The Primary to Secondary Leakage AOP, 2203.038, is reviewed after the event to ensure any equipment operated is returned to normal or documented in the proper log.

D. The Primary to Secondary Leakage AOP, 2203.038, has proper restoration steps in it to return all manipulated components to a normal configuration.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

C. The Primary to Secondary Leakage AOP, 2203.038, is reviewed after the event to ensure any equipment operated is returned to normal or documented in the proper log.

Notes:

Due to the importance of timely EOP/AOP execution, it is not OPS management's expectation that every component manipulation directed by EOP/AOP be documented in COOP log, Station log, etc. However, to ensure that configuration control is regained at conclusion of an event, the EOP/AOP is reviewed step by step to ensure that any equipment that was operated by procedure is returned to its required position or documented in its' out of normal position.

References:

OP 1015.021, ANO-2 EOP/AOP Users Guide, Step 9.1.6

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1585 **Rev:** 0 **Rev Date:** 11/21/2007 2:53:5 **QID #:** 97 **Author:** Coble

Lic Level: S **Difficulty:** 3 **Taxonomy:** K **Source:** NEW

Search 1940012221 **10CFR55:** 43.2 **Safety Function**

System Title: Generic **System Number** GENERIC **K/A** 2.2.21

Tier: 3 **Group:** 1 **RO Imp:** 2.3 **SRO Imp:** 3.5 **L. Plan:** ASLP-SRO-MNTC **OBJ** 21

Description: Equipment Control - Knowledge of pre- and post-maintenance operability requirements.

Question:

Given the following:

* The plant is at full power.
* Preparations are underway to commence a 14 day maintenance outage on #2 Emergency Diesel Generator (EDG).

To allow for a complete 14 day maintenance window, which one of the following components shall be operable and be protected prior to the #2 EDG inoperability and remain operable all the way through the maintenance and successful completion of the post maintenance operability run?

A. Emergency Feedwater Pump 2P7A.

B. Containment Spray Pump 2P35B.

C. Auxiliary Feedwater Pump 2P75.

D. High Pressure Safety Injection Pump 2P89B.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

A. Emergency Feedwater Pump 2P7A.

Notes:

During maintenance on either EDG, the steam driven emergency feedwater pump will not be taken out of service for planned maintenance activities and will be treated as protected equipment. This is 2P-7A. This is in the TS basis for the 14 day extended EDG maintenance window. The SRO may think that the B train components need to be protected but 2P-7B is actually powered from the #1 EDG.

References:

Basis for TS 3.8.1.1 Action b, Item 7.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1586 **Rev:** 1 **Rev Date:** 11/26/2007 10:33: **QID #:** 98 **Author:** Coble

Lic Level: S **Difficulty:** 3 **Taxonomy:** K **Source:** NRC bank 0440 (2002 NRC Exam)

Search 1940012302 **10CFR55:** 41.12 / 43.4 / 45.9 / 45 **Safety Function**

System Title: Generic **System Number** GENERIC **K/A** 2.3.2

Tier: 3 **Group:** 1 **RO Imp:** 2.5 **SRO Imp:** 2.9 **L. Plan:** ASLP-RO-RADP **OBJ** 7

Description: Radiological Controls - Knowledge of facility ALARA program.

Question:

An Operations Department individual is tasked with performing an emergency entry into the Reactor Building to assess remote indications of a FIRE at full power.

Entry into this locked high radiation area requires:

A. Approval of a RWP by the Manager of the Radiation Protection department prior to entry.

B. Completed current surveys by the Radiation Protection department and an specific RWP.

C. The individuals access to the Controlled Access Area (CAA) be removed after the entry.

D. A Condition Report and RWP must be generated after the entry to document the condition.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

D. A Condition Report and RWP must be generated after the entry to document the condition.

Notes:

If an emergency entry is required, then the entry can occur without generation of an RWP if a RWP is generated after the fact and tracked with a Condition Report. This entry must be approved by the Plant Manager or Designee which makes distracter A wrong. Time is not available to get current surveys if a fire is occurring which makes distracter B wrong. The individuals access to the CAA would not be pulled based on the entry only on the amount of total dose he has for the reporting period which makes distracter C wrong.

References:

OP 1601.300, Job Coverage, Attachment 3, Job Coverage for Reactor Building Power Entries, Steps 5.1.2, and 5.4.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1587	**Rev:**	0	**Rev Date:**	11/21/2007 4:23:2	**QID #:**	99	**Author:**	Coble		
Lic Level:	S	**Difficulty:**	3	**Taxonomy:**	K	**Source:**	NEW				
Search	1940012308	**10CFR55:**	43.4 / 45.10	**Safety Function**							
System Title:	Generic			**System Number**	GENERIC	**K/A**	2.3.8				
Tier:	3	**Group:**	1	**RO Imp:**	2.3	**SRO Imp:**	3.2	**L. Plan:**	A2LP-RO-RWST	**OBJ**	6.c.1

Description: Radiological Controls - Knowledge of the process for performing a planned gaseous radioactive release.

Question:

Given the following:

* The plant is shutdown for a refueling outage.
* Refueling shuffle is in progress.
* A release of Gas Decay Tank 2T-18A is in progress.
* The local Gas Release Flow Indicating Transmitter 2FIT-2430 fails low.

Which one of the following actions, if any, are required to be taken?

A. Continue with the release, release flow indication is not required in this mode.

B. Terminate the release and secure the release lineup in accordance with OP 2104.022, Gaseous Radwaste System, Supplement 1 due to no flow indication.

C. Estimate the flow rate once every 4 hours based on the change in pressure in accordance with the Offsite Dose Calculation Manual LCO L2.2.1.

D. Use the alternate release flow indication on 2C-14 and continue the release.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

C. Estimate the flow rate once every 4 hours based on the change in pressure in accordance with the Offsite Dose Calculation Manual LCO L2.2.1.

Notes:

Flow indication is required during any Gas Decay Tank release. The Offsite Dose Calculation Manual allows a continued release of the tank without flow indication if flow is estimated once every 4 hours; however, this is difficult to do and most releases do not last 4 hours so the Release permit procedure requires termination of the release if the flow indicating transmitter is lost. There is an indication of release flow on 2C-14 but is driven from the local transmitter so it would also be failed low.

References:

OP 2104.022, Gaseous Radwaste System, Supplement 1, Unit 2 Gaseous Release Permit, Step 4.17.5.
ODCM L2.2.1 Action 2 Table 2.2-1 Item 1.b Action 2.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank:	1588	**Rev:**	0	**Rev Date:**	11/26/2007 10:11:	**QID #:**	100	**Author:**	COBLE		
Lic Level:	S	**Difficulty:**	3	**Taxonomy:**	Ap	**Source:**	NEW				
Search	1940012434	**10CFR55:**	43.5 / 45.13	**Safety Function**							
System Title:	Generic			**System Number**	GENERIC	**K/A**	2.4.34				
Tier:	3	**Group:**	1	**RO Imp:**	3.8	**SRO Imp:**	3.6	**L. Plan:**	A2LP-RO-EAOP	**OBJ**	10

Description: Emergency Procedures/Plan - Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications.

Question:

Given the following:

* The Alternate Shutdown AOP 2203.014 is being implemented.
* The Control Room has been evacuated.
* Follow up actions are in progress.
* Pressurizer level is 25% and lowering.
* RCS pressure is 1790 psia and lowering.

Based on these conditions, what direction should be given and what affect will this have on the applicable system?

A. Direct Reactor Operator Two (RO-2) to locally start Charging Pump 2P36A at 2B52; defeats the low suction trip for 2P36A.

B. Direct the Emergency Operator (EOP) to locally start Charging Pump 2P36B at 2B62; defeats the low oil pressure trip for 2P36B.

C. Direct Reactor Operator One (RO-1) to locally energize proportional heaters in the Lower South Electrical Penetration Room (LSEPR); defeats the low level cutout of the PZR heaters.

D. Direct Emergency Operator (EOP) to locally energize proportional heaters in the Upper South Electrical Penetration Room (USEPR); defeats the high pressure cutout of the PZR heaters.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☐
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

A. Direct Reactor Operator Two (RO-2) to locally start Charging Pump 2P36A at 2B52; defeats the low suction trip for 2P36A.

Notes:

The Reactor Operators (RO-1 and RO-2) are dispatched to the inside of the Aux Building (Controlled Access Part) during an Alternate Shutdown (Location of 2B52 and 2B62). All of the EOP action are completed outside Controlled Access which is where the LSEPR is located. The RO-2 is the actual RO that will start and stop charging pumps as needed to restore RCS inventory. Distracter B is incorrect because the RO-2 performs this function and the charging pumps only have an alarm on low lube oil pressure - no trip. Distracters C and D are incorrect because the proportional heaters will not energize due to the low level in the PZR to prevent heater burnout.

References:

AOP 2203.014, Alternate Shutdown, Section 2 Step 15 A&B.
AOP 2203.014, Alternate Shutdown, Section 6 Step 14.
STM 2-04, CVCS, Section 2.2.3.

Historical Comments:

Data for 2008 NRC SRO Exam

10-Jan-08

Bank: 1589 **Rev:** 1 **Rev Date:** 12/5/2007 10:52:1 **QID #:** 77 **Author:** COBLE

Lic Level: S **Difficulty:** 3 **Taxonomy:** K **Source:** Modified Bank 0533 (2005 NRC Exam)

Search 0000152222 **10CFR55:** 43.2 / 45.2 **Safety Function** 4

System Title: 017 Reactor Coolant Pump (RCP) Malfunction **System Number** 017 **K/A** 2.2.22

Tier: 1 **Group:** 1 **RO Imp:** 3.4 **SRO Imp:** 4.1 **L. Plan:** A2LP-SRO-TS **OBJ** 8

Description: Equipment Control - Knowledge of limiting conditions for operations and safety limits.

Question:

Given the following:

* The plant is at 100% power
* A RCP shaft shears but the plant does not trip.
* The plant is manually tripped after the shaft shear is identified.
* Reactor Engineering reports that DNBR dropped to 1.22 during this event.

Which of the following notifications should be completed?

A. Notify the ANO Vice President and Onsite Safety Review Committee Chairperson immediately.

B. Notify the Arkansas Department of Emergency Management within 1 hour of this condition.

C. Notify the Arkansas Public Service Commission within 1 hour of this condition.

D. Notify ALL ANO personnel by using the Emergency Response Notification System.

QID use History

	RO	SRO
2003	☐	☐
2005	☐	☑
2006	☐	☐
2008	☐	☑

Audit Exam History

2008	☐

Answer:

A. Notify the Vice President of ANO and Safety Review Committee Chairperson immediately.

Notes:

Exceeding a Safety limit requires notification of the Vice President at ANO and the Onsite SRC Chairperson immediately per EN-LI-108, Event Notification and Reporting, Step 5.0 [3] (e) (4) Safety Limit Violation.

Distracter B is incorrect because ADEM will be notified within 15 minutes based on E-PLAN Action Level 6.2, RPS Failure to Complete an Automatic Trip.
Distracter C is incorrect because the Public Service Commission does not need to be notified.
Distracter D is incorrect because all plant personnel are not required to be notified in this case, only the emergency response personnel.

References:

T.S 2.1.1.1
EN-LI-108, Event Notification and Reporting, Step 5.0 [3] (e) (4) Safety Limit Violation.
1903.010, Emergency Action Level Classification, EAL 6.2.

Historical Comments:

This question was revised and placed on the 2008 NRC Exam to replace QID 1567 due to the similarities between QID 1567 and one of the 2008 Operating Exam Scenarios.