QUESTION NO. 1 For RO Exam

The plant was initially operating at 100% power. A transient occurred resulting in the following conditions:

- RPV level is 35 inches and stable after lowering to 25 inches.
- Reactor power lowered to 73% and is now stable
- Total core flow lowered to 51.5 Mlbm/hr and is now stable

The cause of this plant configuration was the receipt of a signal from the . . .

A. EOC-RPT logic.

B. ATWS/ARI logic.

C. Recirculation Pump Cavitation Interlock circuitry.

D. Recirculation Flow Control Valve Runback logic.

ANSWER: D

A - Flow and power would be significantly lower due to pump downshift
B - Flow would be much lower and power would be <1% due to rod insertion from ARI
C - Same as A due to pump downshift

K/A
Statement: Knowledge of the interrelations between Partial or Complete Loss of Forced Core Flow Circulation and the Recirculation System.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295001 AK2.01	**3.6**	**3.7**	**41.1** **41.5** **41.6** **43.6**	**ARP-P680-4A-A03** **AOP-0024, Att. 1**	**STM-053** **OBJ- 2c**

TIER/GROUP: **1/1**

LOK: **H** LOD: **3**

ORIGIN: **BANK**

HISTORY: **River Bend NRC Exam 10/2000**

BANK QID: **419**

QUESTION NO. 2 For RO Exam

The plant is operating at rated conditions with Turbine Building Component Cooling Water pumps CCS-P1A and P1C running and CCS-P1B in standby. A partial loss of AC power to the plant occurs. As a result of the power loss, the following conditions now exist:

- CCS-P1A and P1B are running.
- Div 3 Standby Diesel is running and supplying the Div 3 Bus E22-S004

A loss of power to which one of the following caused the above conditions?

A. NNS-SWG1A

B. NNS-SWG1B

C. NNS-SWG1C

D. Preferred Station Service Transformer RTX-XSR1C

ANSWER: C

A – Would result in loss of P1A and Div 3 DG would not be running
B – Would result in loss of P1B and Div 3 DG would not be running
D – Would result in loss of P1A & P1C and Div 1 DG would be running

K/A
Statement: Ability to determine/interpret the cause of partial or complete loss of A.C. power as it applies to partial or complete loss of A.C. power.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295003 AA2.01	**3.4**	**3.7**	**41.4**	**STM-300, Page 11** **SOP-0017, Page 59**	**STM-300 OBJ- H2**

TIER/GROUP: **1/1**

LOK: **H** LOD: **2**

ORIGIN: **NEW**

HISTORY:

BANK QID: **888**

QUESTION NO. 3 For RO Exam

The plant was operating at 100% power with the following conditions:

- Feed Water Level Control Level Channel A was selected with Channel B failed high.
- Offgas Post-Treat Rad Monitor RE-23B was in the High-High alarm condition.

A partial loss of DC power occurred and the reactor automatically scrammed. It has been determined that power was lost to BYS-PNL02A2.

AOP-0014, Attachment 1, is provided as EXAM HANDOUT MATERIAL.

Which one of the following was the reason for the automatic scram?

A. Turbine trip due to loss of vacuum caused by an Offgas isolation.

B. Turbine trip due to 2 out of 3 RPV High Water Level trip.

C. Turbine trip due to Generator output breaker trip.

D. ARI valves failed open on loss of power.

ANSWER: B AOP-0014, MUST BE INCLUDED IN EXAM HANDOUT MATERIALS.
Ch C High trip with Ch B failed high caused turbine trip which caused scram.

A - Offgas Rad Monitor isolates only if B in HI-HI-HI, Downscale or INOP, HI-HI is just alarm.
C - Loss of DC to aux relay circuit will not trip generator output breakers.
D - ARI valves energize to open. Remain closed on Loss of power.

K/A
Statement: Knowledge of the reasons for Reactor SCRAM as it applies to partial or complete loss of D. C. Power.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295004 AK3.03	**3.1**	**3.5**	**41.7** **41.6**	**AOP-0014, Attachment 1** **STM-107, Page 47**	**HLO-532** **OBJ- 8**

TIER/GROUP: **1/1**
ORIGIN: **NEW**
HISTORY:

LOK: **H** LOD: **3**

BANK QID: **889**

QUESTION NO. 4 For RO Exam

During a plant startup, after the generator has been placed on the grid, a turbine trip occurs. Following the trip, the Turbine Bypass Valves and steam line drains stabilize reactor pressure at 952 psig.

For the next 30 minutes, reactor power is held at 15% as the cause of the turbine trip is investigated. During this time, temperature of the feedwater entering the reactor vessel will . . .

A. remain constant due to feedwater flow and reactor power remaining constant.

B. lower due to the loss of extraction steam to the feedwater heaters.

C. lower due to the lower feedwater flow through the feedwater heaters.

D. rise due to the lower feedwater flow through the feedwater heaters.

ANSWER: B

A - Heating steam to the feedwater heaters will be lost causing it to drop.
C - Feedwater flow will not lower with reactor power remaining at 15%.
D - Temp will lower due to loss of heating steam with feedwater flow remaining constant.

K/A
Statement: Knowledge of the interrelations between Main Turbine Generator Trip and feedwater temperature.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295005 AK2.02	**2.9**	**3**	**41.4** **41.14**	**STM-108**	**STM-108 OBJ- H16**

TIER/GROUP: **1/1**
ORIGIN: **NEW**
HISTORY:

LOK: **H** LOD: **2**

BANK QID: **890**

QUESTION NO. 5 For RO Exam

The plant is operating at 100% power when an automatic reactor scram occurs due to a High Scram Discharge Volume Level.

Which one of the following describes the INITIAL response of reactor water level due to the reactor scram and the reason for that response?

Level will initially . . .

A. rise as control rod insertion lowers core void content.

B. rise as control rod insertion raises core void content.

C. lower as control rod insertion lowers core void content

D. lower as the recirc pumps downshift to slow speed.

ANSWER: C

A - Level lowers with lowing core void content
B - Level and core voids initially lower due to control rods lowering fission rate
D - Recirc pumps will not immediately downshift and a downshift causes level to rise not lower.

K/A
Statement: Knowledge of the reasons for reactor water level response as they apply to SCRAM.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295006 AK3.01	**3.8**	**3.9**	**41.5 41.14**	**Simulator response**	**HLO-315 OBJ- 2**

TIER/GROUP: **1/1**

ORIGIN: **NEW**

HISTORY:

LOK: **H** LOD: **3**

BANK QID: **887**

QUESTION NO. 6 For RO Exam

The Main Control Room was abandoned due to toxic gas and control has been transferred to the Remote Shutdown panel. The following has occurred:

- At 2000 reactor was shutdown and RPV pressure stabilized at 950 psig.
- At 2015 after RCIC operation to raise RPV level, RPV pressure dropped to 800 psig.
- At 2030, RPV pressure has remained stable at 800 psig and all MSIVs are closed.
- At 2035, the CRS directs the operator at the Remote Shutdown Panel to establish a cooldown rate between 90°F/hr and 100°F/hr, not to exceed 100°F/hr using SRVs.

At 2100, which one of the following RPV pressures will meet the cooldown rate directed by the CRS? AOP-0031, Attachment 2 is included as EXAM HANDOUT MATERIAL.

A. 500 psig

B. 400 psig

C. 350 psig

D. 300 psig

ANSWER: B

From shutdown pressure of 950 psig = 540°F to 400 psig = 448°F one hr later = 92°F/hr C/D rate
A - 500 psig = 70°F/hr C/D rate.
C - 350 psig = 105°F/hr CD rate.
D - 300 psig = 119°F/hr CD rate.

K/A
Statement: Ability to determine/interpret cooldown rate as it applies to Control Room Abandonment.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295016 AA2.06	**3.3**	**3.5**	**41.10** **41.14**	**AOP-0031, Att 2** **Steam Tables**	**HLO-537** **OBJ- 4**

TIER/GROUP: **1/1**

LOK: **H** LOD: **3**

ORIGIN: **NEW**

HISTORY:

BANK QID: **942**

QUESTION NO. 7 For RO Exam - DELETED FROM EXAM

A total loss of CCP has occurred and the reactor has been scrammed. All automatic actions for the total loss of CCP have occurred including automatic initiation of Standby Service Water.

The CRS has directed the UO to align SSW to the CRD pump bearing coolers and to start a CRD pump per AOP-0011, Step 5.2. AOP-0011 is included as exam handout materials.

The purpose of placing the RPCCW DIV 1 TEST switch in TEST is to . . .

A. prevent auto initiation of DIV 1 Standby Service Water Pumps, if they aren't running.

B. prevent auto closure of the SSW-MOV510B when aligning CCP Loop B to the CRD pump coolers.

C. allow CCP-MOV163 to be opened.

D. allow starting either CRD pump.

ANSWER: D
Requires Div 1 in test to bypass <56 psig in Div 1 CCP loop.
A - The TEST switch does not bypass SSW pump start signals only valve closures.
B - Division 2 valve with no isolation on 56 psig in CCP.
C - Division 2 valve with isolation bypassed by Div 2 TEST switch.

K/A
Statement: Knowledge of the purpose and function of major system components and controls applicable to Partial or Total Loss of CCW.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295018 2.1.28	**3.2**	**3.3**	**41.4 41.7 41.10**	**AOP-0011, Step 5.2 STM-115, Page 15**	**STM-115 OBJ-**

TIER/GROUP: **1/1**
ORIGIN: **NEW**
HISTORY:
LOK: **H** LOD: **3**
BANK QID: **891**

QUESTION NO. 8 For RO Exam

A crack in the Instrument Air System (IAS) air compressor common discharge header has lowered header pressure to 100 psig. At this pressure, what is the expected status of the two automatic air-operated Service Air System valves listed below?

- SAS-AOV133, Service Air Header Block Valve
- SAS-AOV134, Instrument Air Header Cross-Tie Valve

	AOV133	AOV134
A.	Open	Open
B.	Closed	Open
C.	Open	Closed
D.	Closed	Closed

ANSWER: B.

A - 133 will auto close when pressure lowers to 110 psig.
C - Both A & D apply
D - 134 will auto open when pressure lowers to 113 psig.

K/A
Statement: Ability to operate/monitor service air isolation valves as they apply to Partial or Complete Loss of Instrument Air.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295019 AA1.04	**3.3**	**3.2**	**41.4**	**ARP-P870-51A-B02** **STM-121, Pages 28 & 29**	**STM-121 OBJ- H3**

TIER/GROUP: **1/1**
ORIGIN: **NEW**
HISTORY:

LOK: **H** LOD: **2**

BANK QID: **54**

QUESTION NO. 9 For RO Exam

While operating RHR "A" in the Shutdown Cooling Mode, a spurious isolation signal actuates the INBOARD (Div. 2) Containment and Reactor Vessel Isolation Control System (CRVICS) isolation logic for RHR Shutdown Cooling. The Shutdown Protection Plan per SOP-0031 has NOT been implemented.

What is the final state of the following RHR System components after all automatic actions have occurred?

	SDC OUTBD ISOLATION VLV E12-F008	RHR PUMP A
A.	Closed	Running
B.	Closed	Tripped
C.	Open	Running
D.	Open	Tripped

ANSWER: D

A - F008 is not closed by INBD Isolation logic, but if closed pump would be tripped.
B - F008 is not closed by INBD Isolation logic.
C - Pump is automatically tripped by closure of INBD SDC Suction Isolation Valve E12-F009.

K/A
Statement: Ability to operate/monitor RHR/Shutdown Cooling as it applies to Loss of Shutdown Cooling.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295021 AA1.02	**3.5**	**3.5**	**41.7**	**STM-204, Fig. 10** **AOP-0003, Page 15**	**STM-204 OBJ- H**

TIER/GROUP: **1/1**
ORIGIN: **NEW**
HISTORY:

LOK: **F** LOD: **3**

BANK QID: **892**

QUESTION NO. 10 For RO Exam

Containment Purge is in operation for humidity control using HVR-FN14 during a refueling outage.

An irradiated fuel bundle is dropped in the Reactor Cavity where it strikes the tops of several other fuel bundles in the core. A large volume gas bubble was observed rising to the surface.

A short time later, the Containment Purge Radiation Monitors RMS-RE21A and B rapidly rise to above their High alarm on DRMS. How should the HVR-FN14, Containment Purge Filter Fan respond following this alarm?

A. It will stop when its suction damper HVR-AOD240 closes.

B. It will stop following the auto initiation of Standby Gas Treatment.

C. It will stop when the containment isolation damper HVR-AOV128 closes.

D. It will continue to run.

ANSWER: C

A - HVR-FN14 interlocked to close AOD240 when fan stops, NOT interlocked to stop fan
B - RE21 will not initiate Standby Gas treatment.
D - Interlocked to stop when AOV128 is closed by RE21.

K/A
Statement: Ability to operate/monitor Containment Building Ventilation as it applies to Refueling Accidents.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295023 AA1.08	**3.3**	**3.4**	**41.7** **41.9**	**STM-403, Page 19** **ARP-P863-71A-F02** **ARP-RMS-DSPL230, Page 12**	**STM-403 OBJ- H10**

TIER/GROUP: **1/1**

ORIGIN: **NEW**

HISTORY:

LOK: **H** LOD: **2**

BANK QID: **893**

QUESTION NO. 11 For RO Exam

Given the following plant conditions:

- Reactor Power 0% (all rods in)
- Reactor Level +33 inches
- Reactor Pressure 890 psig
- Drywell Pressure 1.8 psid
- Drywell Temperature 138°F
- Containment Temperature 88°F
- Containment Pressure 0.35 psig
- Annulus Differential Pressure -4.5 in.WC

Based on the above conditions, which one of the following describes the Emergency Operating Procedures that should be entered?

A. EOP-1 ONLY

B. EOP-1 and 2

C. EOP-2 ONLY

D. EOP-2 and 3

ANSWER: B

A - High Containment pressure entry condition for EOP-2 also exists
C - High Drywell DP entry condition for EOP-1 also exists
D - Cont. Press is entry for EOP-2 but Annulus DP has not exceeded Max. Normal Operating for EOP-3 entry

K/A
Statement: Ability to recognize abnormal indications which are entry-level conditions for EOPs and AOPs applicable to High Drywell Pressure.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295024 G2.4.4	**4**	**4.3**	**41.10 41.9 43.2**	**EOP-0001 EOP-0002**	**HLO-514 OBJ- 4**

TIER/GROUP: **1/1**

LOK: **F** LOD: **3**

ORIGIN: **MODIFIED**

HISTORY: **River Bend NRC Exam 2/2003**

BANK QID: **444**

QUESTION NO. 12 For RO Exam

The reactor scrammed and the MSIVs have closed do to a small break in the piping from the Main Steam Line Equalizing Header. SRVs are now being cycled to control reactor pressure. Suppression Pool level has risen to 21 feet 3 inches.

If Suppression Pool level CANNOT be lowered, Emergency Depressurization is required because . . .

A. continued SRV operation may cause tailpipe damage and directly pressurize containment.

B. continued SRV operation may cause tailpipe vacuum breaker damage and directly pressurize containment.

C. continued SRV operation will cause extensive flooding of the drywell due to overflowing the weir wall.

D. a large break LOCA will result in drywell pressure exceeding design due to the higher pressure required to uncover the horizontal vent holes.

ANSWER: A

B - Tailpipe vacuum breaker failure would pressurize the Drywell not containment.
C - may flood but not a reason for requiring ED
D - Would not raise DW pressure significantly.

K/A
Statement: Ability to determine/interpret suppression pool level as it applies to High Reactor Pressure.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295025 EA2.04	**3.9**	**3.9**	**41.9** **41.10**	**EPSTG-0002, B-8-26**	**HLO-514** **OBJ- 5**

TIER/GROUP: **1/1**
ORIGIN: **NEW**
HISTORY:

LOK: **F** LOD: **2**

BANK QID: **948**

QUESTION NO. 13 For RO Exam

A MSIV Closure - ATWS has occurred with the plant at 100% power.

Injecting boron when it has been determined that Suppression Pool temperature CANNOT be maintained below 110°F is done to . . .

A. avoid exceeding the Heat Capacity Temperature Limit (HCTL) with the reactor still critical.

B. eliminate any need for Emergency Depressurization during ATWS conditions.

C. ensure Hot Shutdown Boron Weight will be injected before suppression pool temperature reaches the value at which a scram is required by Technical Specifications.

D. ensure Cold Shutdown Boron Weight will be injected before suppression pool temperature reaches the value at which a scram is required by Technical Specifications.

ANSWER: A

B - ED may still be required due to inability to maintain RPV level or per EOP-3.
C - Boron Injection Initiation Temp is where TS requires scram. HSBW could not be injected if initiated at 109F.
D - Boron Injection Initiation Temp is where TS requires scram. CSBW could not be injected if initiated at 109F.

K/A Statement: Knowledge of the reasons for SBLC injection as it applies to Suppression Pool High Water Temperature.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295026 EK3.04	**3.7**	**4.1**	**41.9** **41.10**	**EOP-1A** **EPSTG-0002, B-7-68**	**HLO-513 OBJ- 4**

TIER/GROUP: **1/1**

LOK: **F** LOD: **2**

ORIGIN: **MODIFIED**

HISTORY: **River Bend NRC Exam 2/2003**

BANK QID: **816**

QUESTION NO. 14 For RO Exam

At what locations can the Operator confirm an EOP-0002, entry condition has been reached when a High Containment Temperature annunciator alarms.

A. Emergency Response Information System (ERIS) in Technical Support Center (TSC) and CMS recorders on P808.

B. Emergency Response Data System (ERDS) link to NRC and Local Temperature Indicators in Containment

C. CMS Recorders on P808 and the Leakage Computer

D. Emergency Response Information System (ERIS) in Main Control Room and the Leakage Computer

ANSWER: A

B. ERDS does not transmit Containment Temperature; system is only started during emergencies.
C. Leakage computer does not read Containment Temperature
D. Same as C.

K/A
Statement: Knowledge of the interrelations between High Containment Temperature and ERIS.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295027 EK2.04	**2.6**	**3.2**	**41.7** **41.9**	**STM-514, Pages 6 & 7**	**STM-514 OBJ- H4**

TIER/GROUP: **1/1**
LOK: **F** LOD: **2**
ORIGIN: **NEW**
HISTORY:
BANK QID: **894**

QUESTION NO. 15 For RO Exam

Which one of the following describes why EOP 1, "RPV Control," Caution number 2 directs the operator to open and leave open RHR Shutdown Cooling Inboard Isolation, lE12-F009, following a LOCA?

A. High temperature steam conditions in the drywell may cause thermal overloads in the motor to trip, rendering the valve inoperable, unless the valve is opened early in the transient.

B. High temperatures in the drywell could cause local boiling in the piping upstream of F009, resulting in water hammer if the valve is not open.

C. High temperature steam conditions in the drywell may cause accelerated corrosion of the motor rotor resulting in insufficient torque to operate the valve.

D. The motor on F009 is designed for only one cycle of operation at the maximum anticipated drywell temperatures.

ANSWER: C

K/A
Statement: Knowledge of the operational implications of equipment environmental qualification as they apply to High Drywell Temperature.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295028 EK1.02	**2.9**	**3.1**	**41.8** **41.10**	**EOP-0002** **EPSTG-0002, Page B-5-9**	**HLO-511** **OBJ- H6**

TIER/GROUP: **1/1**
LOK: **F** LOD: **2**
ORIGIN: **BANK**
HISTORY: **River Bend NRC Exam 1/1993**
BANK QID: **895**

QUESTION NO. 16 For RO Exam

The High Pressure Core Spray pump is injecting into the RPV with its suction aligned to the Suppression Pool following a low CST level. RPV flooding is in progress and HPCS injection is required to maintain RPV pressure above 42 psig for the next 25 minutes to establish the Minimum Core Flooding Interval.

Suppression pool level has been lowering and is now approaching 15 feet. The CST has been restored to 10 feet above the low level setpoint.

The CRS has directed that HPCS suction again be aligned to the CST, while maintaining maximum HPCS flow to the RPV. Which one of the following describes how this must be accomplished?

A. First open the CST suction valve and when full open, close the Suppression Pool suction valve.

B. First close the Suppression Pool suction valve and when duel position indication is obtained, open the CST suction valve.

C. First open the CST suction valve and when dual position indication is obtained, close the Suppression Pool suction valve.

D. First close the Suppression Pool suction valve and when full closed position indication is obtained, open the CST suction valve.

ANSWER: B

A - CST suction valve will not open with SP suction valve in full open position.
C - CST suction valve will not open with SP suction valve in full open position.
D - Flow to the RPV is interrupted.

K/A
Statement: Ability to operate/monitor HPCS as it applies to Low Suppression Pool Water Level.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF	
295030 EA1.03	**3.4**	**3.4**	**41.7**	**STM-203. Pages 13 & 14**	**STM-203**	**OBJ- H4**

TIER/GROUP: **1/1**
ORIGIN: **NEW**
HISTORY:

LOK: **H** LOD: **2**

BANK QID: **896**

QUESTION NO. 17 For RO Exam

The setpoint setdown feature of the Feed Water Level Control System is activated _____(1)_____ and initially causes the Feedwater Regulating Valves to ___(2)____ further .

	(1)	(2)
A.	on any reactor scram	open
B.	on any reactor scram	close
C.	at <9.7" RPV level	open
D.	at <9.7" RPV level	close

ANSWER: C

A - Only on scrams where level reaches Level 3
B - Only on scrams where level reaches Level 3 and FWRVs open
D - FWRVs open intially

K/A
Statement: Knowledge of the interrelations between Reactor Low Water Level and Reactor Water Level Control.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295031 EK2.16	**4.1**	**4.1**	**41.7**	**STM-107, Page 54**	**STM-107 OBJ- H4**

TIER/GROUP: **1/1**
ORIGIN: **NEW**
HISTORY:

LOK: **F** LOD: **2**

BANK QID: **897**

QUESTION NO. 18 For RO Exam - DELETED FROM EXAM

A manual Reactor Scram has been inserted and the Scram Pilot Solenoid Valve white status lights are off but Control Rod Movement has not occurred. The Emergency Response Information System (ERIS) - Safety Parameter Display System (SPDS), Critical Plant Variables Screen will display the SCRAM condition in the box below the Power box as follows:

A. The box will change from NO SCRAM to ATWS based on the Scram Relay position and indicated power above the APRM Downscale

B. The box will remain NO SCRAM and be highlighted in green based on the control rods not fully inserting.

C. The box will change from NO SCRAM to ????? in a magenta box to indicate bad data, based on the failure to scram.

D. The box will remain NO SCRAM and be highlighted in red based on indicated power above the APRM Downscale

ANSWER: B

A - The box does not display the word ATWS
C - The box would not display magenta (bad data) because signal is still present and in range.
D - Since the scram relays repositioned as indicated by the pilot lights, ERIS would receive a valid scram signal and change the box from NO SCRAM to SCRAM

K/A
Statement: Knowledge of the interrelations between Scram Condition Present and Reactor Power Above APRM Downscale or Unknown and ERIS.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295037 EK2.08	**2.7**	**3.1**	**41.1** **41.2** **41.7**	**STM-514**	**STM-514 OBJ- H3**

TIER/GROUP: **1/1**

ORIGIN: **NEW**

HISTORY:

LOK: **F** LOD: **2**

BANK QID: **898**

QUESTION NO. 19 For RO Exam

EOP-3, Radioactive Release Control has been entered and is being executed due to a release occurring in the Turbine Building. Off-site power was lost during the event but has just been restored.

In order to restart Turbine Building Ventilation, per EOP-3, Step RR-2, it will be necessary for an operator to start . . .

A. ONLY an exhaust fan at panel HVT-PNL162 located on the West side of the Turbine Building 123' elevation.

B. BOTH an exhaust and supply fan at panel HVT-PNL162 located on the West side of the Turbine Building 123' elevation.

C. ONLY an exhaust fan at panel HVT-PNL163 located in the Offgas area of the Turbine Building 123' elevation.

D. BOTH an exhaust and supply fan at panel HVT-PNL163 located in the Offgas area of the Turbine Building 123' elevation.

ANSWER: B

A - Must also start Supply Fan or Exhaust will trip in 15 seconds.
C - Wrong local HVT panel and must also start Supply Fan or Exhaust will trip in 15 seconds.
D - Wrong local HVT panel.

K/A
Statement: Ability to locate and operate components, including local controls applicable to High Off-Site Release Rate.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295038 2.1.30	**3.9**	**3.4**	**41.4 41.10 41.13**	**SOP-0064, Pages 4 & 6**	**STM-408 OBJ- 5**

TIER/GROUP: **1/1**

LOK: **F** LOD: **2**

ORIGIN: **NEW**

HISTORY:

BANK QID: **886**

QUESTION NO. 20 For RO Exam

Which one of the following describes the response of the Fire Protection System to a fire in the charcoal bed of one of the Standby Gas Treatment Trains.

The fire would be detected by a . . .

A. a smoke detector above the charcoal bed that causes an alarm in the Main Control Room AND auto opens a Fire Water valve to spray the bed.

B. a smoke detector above the charcoal bed that causes an alarm in the Main Control Room. A manual Fire Water valve must be locally opened to spray the bed.

C. a thermal detector inside the charcoal bed that causes an alarm in the Main Control Room AND auto initiates Fire Water flow to spray nozzles in the bed.

D. a thermal detector inside the charcoal bed that causes an alarm in the Main Control Room. A manual Fire Water valve must be locally opened to spray the bed.

ANSWER: D

A - Thermal detector is used with no automatic initiation feature.
B - Thermal detector is used.
C - No automatic initiation feature.

K/A
Statement: Knowledge of the interrelations between Plant Fire On Site and Fire Protection System sensors, detectors and valves.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
286000 A3.06	**3**	**3.1**	**41.4**	**ARP-863-73-D04** **STM-257, Page 6**	**STM-257 OBJ- H6**

TIER/GROUP: **1/1**
ORIGIN: **NEW**
HISTORY:

LOK: **F** LOD: **2**

BANK QID: **923**

QUESTION NO. 21 For RO Exam

The plant is operating at 10% power. The Feedwater Level Control (FWLC) System is operating with the Startup Feedwater Regulating valve in AUTO. The "A" Reactor Water Level Channel selected. A rupture occurs on the "A" reference leg causing a level change.

Assuming no other instruments are affected by the rupture, which one of the following describes the required operator action?

A. Select the "B" Reactor Water Level Channel.

B. Place the Startup Level Controller in MANUAL and depress CLOSE.

C. Transfer level control to the Master Level Controller in single element.

D. Allow the level dominant signal to take control and return level to normal.

ANSWER: A

B - The instrument failure is lowering level so going to OPEN would be correct.
C - Failed channel also inputs to Master Controller
D - Level instrument is failed so level dominance will cause low level scram

K/A
Statement: Ability to operate/monitor Reactor Water Level Control as it applies to Low Reactor Water Level.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295009 AA1.02	**4**	**4**	**41.7**	**AOP-0006**	**STM-107B OBJ- H8**

TIER/GROUP: **1/2**
ORIGIN: **MODIFIED**
HISTORY: **River Bend NRC Exam 2/2003**

LOK: **F** LOD: **2**
BANK QID: **954**

QUESTION NO. 22 For RO Exam

Following a Large Break LOCA inside the Drywell, Drywell temperature reached 265°F and Drywell-to-Containment ΔP peaked at 15 psid. Ten minutes later, Drywell temperature has lowered to 205°F and Drywell-to-Containment ΔP is –4 psid.

If NO OPERATOR ACTIONS have occurred since the LOCA, this value of Drywell-to-Containment ΔP indicates which one of the following conditions?

A. Excessive bypass leakage exists between the Drywell and Containment.

B. The air in the drywell is being cooled by operation of all Drywell coolers.

C. The steam in the drywell is being condensed by operation of all Drywell coolers.

D. The steam in the drywell is being condensed by ECCS flow from the break.

ANSWER: D

A - Could cause ΔP to lower to 0 psid, but not become negative.
B - Would be little if any air in Drywell and its coolers have no cooling water or power due to high drywell ΔP.
C - Drywell coolers have no cooling water or power due to high drywell ΔP.

K/A
Statement: Ability to determine/interpret drywell pressure as it applies to High Drywell Pressure.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295010 AA2.02	**3.8**	**3.9**	**41.9**	**HLO-322, Page 10 USAR Figure 6.2-4**	**HLO-322 OBJ- 3**

TIER/GROUP: **1/2**

ORIGIN: **NEW**

HISTORY:

LOK: **H** LOD: **2**

BANK QID: **899**

QUESTION NO. 23 For RO Exam

When Containment Temperature CANNOT be maintained below 90°F, EOP-0002 directs operating all available containment cooling to avoid . . .

A. Suppression Pool temperature rising due to Containment heating.

B. Emergency Depressurization being required.

C. reference leg flashing in RPV level instrumentation.

D. implementing Containment Flooding to lower containment temperatures.

ANSWER: B

A - No significant rise in SP temperature would result from containment temps rising above 90°F.
C - No mechanism for containment temps to reach >212°F
D - Would cool containment but not used for that purpose in the EOPs.

K/A
Statement: Knowledge of the reasons for increased containment cooling as they apply to High Containment Temperature.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295011 AK3.01	**3.6**	**3.9**	**41.8** **41.9** **41.10** **43.5**	**EOP-0002, Step CT-3** **EPSTG-0002, Page B-8-9 & 1(**	**HLO-514** **OBJ- 5**

TIER/GROUP: **1/2**

LOK: **F** LOD: **2**

ORIGIN: **NEW**

HISTORY:

BANK QID: **900**

QUESTION NO. 24 For RO Exam

Following a scram due to high Drywell pressure, EOP-2 was entered with Drywell temperature rising.

At a Drywell temperature of 145°F, Enclosure 20, Defeating Drywell Cooling Isolation Interlocks, was installed and all Drywell Unit Coolers placed in operation by 160°F. Drywell temperature reached a peak value of 230°F before beginning to lower. The following conditions now exist:

- RPV level reached a minimum of -35 inches and is now stable at 30 inches.
- Drywell pressure is 1.55 psid and lowering rapidly.
- Drywell temperature is 143°F and lowering rapidly.

With the above conditions, which one of the following is true?

A. Enclosure 20 must be removed with Drywell temperature below 145°F.

B. All Drywell Unit Coolers must remain ON per EOP-2, Step DWT-3, WHEN Drywell temperature cannot be maintained below 145°F.

C. All Drywell Unit Coolers must be secured. Drywell temperature was >200°F.

D. Individual Drywell Unit Coolers can be secured to avoid a negative Drywell pressure.

ANSWER: D

A - Unless directed by EOP step, enclosures, once installed, are NOT to be removed until EOPs are exited.
B - "Operate all available" does not preclude turning on and off as necessary EPSTG/ OSP-0009.
C - NA. Service water was never completely isolated.

K/A
Statement: Knowledge of operator responsibilities during all modes of plant operation applicable to High Drywell Temperature.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295012 2.1.2	**3**	**4**	**41.10 41.9 43.5**	**EOP-2, Steps DWT-2 & 3 EPSTG-0002, Page B-8-6**	**HLO-514 OBJ- 6**

TIER/GROUP: **1/2**

LOK: **H** LOD: **3**

ORIGIN: **BANK**

HISTORY: **River Bend NRC Exam 2/2003**

BANK QID: **901**

QUESTION NO. 25 For RO Exam

While operating RCIC pump flow surveillance testing, one of the RHR loops is placed in Suppression Pool Cooling Mode to ensure . . .

A. adequate mixing of the suppression pool water to avoid temperature stratification.

B. maximum RCIC turbine efficiency for the most conservative pump flow test data.

C. the RCIC suction strainer remains free of any debris that could affect test results.

D. minimum RCIC exhaust line check valve chatter during the test.

ANSWER: A

B - Will not significantly affect RCIC turbine efficiency and affect would be nonconservative.
C - Would want test results to show any suction strainer fouling.
D - RHR suppression pool cooling would not affect exhaust line check valve chatter.

K/A
Statement: Knowledge of the operational implications of pool stratification as they apply to High Suppression Pool Temperature.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295013 AK1.01	**2.5**	**2.6**	**41.8 41.10 41.14**	**SOP-0035, Page 4**	**STM-209 OBJ- H6**

TIER/GROUP: **1/2**

ORIGIN: **NEW**

HISTORY:

LOK: **F** LOD: **2**

BANK QID: **953**

QUESTION NO. 26 For RO Exam

A fuel bundle has been dropped and fuel pins have ruptured in the spent fuel pool. The Fuel Building Exhaust Rad Monitors are both in alarm condition and automatic realignment of Fuel Building Ventilation is in progress.

Under these conditions, the Alternate Air Supply Dampers HVF-AOD37A and B automatically open to . . .

A. provide air flow across the spent fuel pools.

B. provide a permissive for the Charcoal Filtration Fans to auto start.

C. prevent damage to the Exhaust Filter Charcoal Filtration Trains.

D. prevent damage to the Fuel Building due to excessive internal negative pressure.

ANSWER: A

B - Only the inlet isolation dampers for the Filter train fans are intlocked with the fans.
C - Filtration trains will operate without damage with no alternate air supply dampers open.
D - The filtration trains do not create a negative pressure high enough to damage the Fuel Building with HVF-AOD37A and B closed.

K/A
Statement: Knowledge of the reasons for the Fuel Building Ventilation responses as they apply to Secondary Containment Ventilation High Radiation.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF	
295034 EK3.04	**3.7**	**3.8**	**41.9**	**STM-406 Pages16 &17**	**STM-406**	**OBJ- H3**

TIER/GROUP: **1/2**
ORIGIN: **NEW**
HISTORY:

LOK: **F** LOD: **2**

BANK QID: **903**

QUESTION NO. 27 For RO Exam

A leak in the RCIC room has resulted in the RCIC room sump overflowing and a rise in the Auxiliary Building Ventilation Radiation Monitor RMS-RE110 indication on DRMS.

After RMS-RE110 exceeds the High Alarm, if NO OPERATOR ACTION is taken, what type of radioactive release will be in progress?

A. Monitored AND filtered

B. Monitored, BUT NOT filtered

C. Unmonitored, BUT filtered

D. Unmonitored AND NOT filtered

ANSWER: B

No automatic isolation of Aux Building Vent so it remains monitored, and no filter trains start on RE110 alarm.

A - Requires operator action to isolate the Aux Building Ventilation and/or start SGTS

C - Has rad monitior but no filter train on the Aux Building Ventilation

D - Only if operator action was taken to isolate Aux Building with no SGTS operation.

K/A
Statement: Knowledge of the operational implications of radiation releases as they apply to Secondary Containment High Sump/Area Water Level.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
295036 EK1.01	**2.9**	**3.1**	**41.11** **41.12** **41.13**	**ARP-RMS-DSPL230/GP110** **STM-409, Page 15**	**STM-409 OBJ- H6**

TIER/GROUP: **1/2**

LOK: **F** LOD: **2**

ORIGIN: **NEW**

HISTORY:

BANK QID: **904**

QUESTION NO. 28 For RO Exam

To ensure that the RHR Low Pressure Coolant Injection can provide core cooling such that the ECCS Acceptance Criteria are met, the plant must be operating within the limits specified in which one of the following Technical Specification LCOs prior to the DBA LOCA?

A. Average Planar Linear Heat Generation Rate (APLHGR).

B. Fraction of Core Boiling Boundary (FCBB).

C. Minimum Critical Power Ratio (MCPR).

D. Linear Heat Generation Rate (LHGR).

ANSWER: A

B - Applies to normal operation in Restricted Region of P/F map to prevent instability.
C - Applies to normal power operation and transients, not accident conditions.
D - Applies to normal power operations and transients, not accident conditions.

K/A
Statement: Knowledge of the operational implications of core cooling methods as applied to RHR/LPCI.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
203000 K5.02	**3.5**	**3.7**	**41.8** **41.14** **43.2**	**TS Bases, Page 3.2-1**	**HLO-321** **OBJ- 1**

TIER/GROUP: **2/1**

LOK: **F** LOD: **2**

ORIGIN: **NEW**

HISTORY:

BANK QID: **905**

QUESTION NO. 29 For RO Exam

Given the following initial plant conditions:

RHR loop "B" is in Shutdown Cooling (SDC) mode.
Coolant temperature is 300°F.
RPV pressure is 125 psig and rising.

SELECT the statement that describes the effect on the Shutdown Cooling (SDC) Suction Isolation Inboard and Outboard Valves (E12-MOVF009 and E12-MOVF008) if the 4.16 KV bus ENS-SWG1B trips and locks out.

A. F008 and F009 will both auto close on loss of power to the SDC isolation logic.

B. F008 and F009 will remain open until RPV pressure reaches 135 psig then both will close.

C. F009 will close when RPV pressure reaches 135 psig, F008 will not due to loss of power.

D. F008 will close when RPV pressure reaches 135 psig, F009 will not due to loss of power.

ANSWER: D

Isolation logic will initiate closure of both valves at 135 psig but MOVF009 has no power to close with ENS-SWG1B lost.
A - Isolation logic is powered from RPS and an inverter which remain energized.
B - loss of power to MOVF009 will prevent it from closing.
C - Outboard valve MOVF008 is powered from ENS-SWG1A and will not lose power.

K/A
Statement: Knowledge of the electrical power supplies to Shutdown Cooling motor operated valves.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
205000 K2.02	**2.5**	**2.7**	**41.4** **41.7**	**SOP-0031, Pages 114 & 115** **AOP-0003, Page 15**	**STM-204** **OBJ- H10**

TIER/GROUP: **2/1**

LOK: **F** LOD: **3**

ORIGIN: **MODIFIED**

HISTORY: **Perry NRC Exam 1994**

BANK QID: **906**

QUESTION NO. 30 For RO Exam

The Division 1 Standby Diesel Generator has been operating in parallel with off-site power for a one-hour load test surveillance. It's load is at 1000 KW and being lowered to remove it from the bus when a spurious LPCS/RHR A LOCA initiation signal is received.

Which one of the following describes the response of the Standby Diesel and ENS Bus to the LOCA signal and LPCS pump breaker closing?

A. The normal feeder breaker to ENS-SWGR1A will trip due to the LOCA signal and the LPCS pump will start with the Diesel Generator supplying the bus.

B. The Standby Diesel Output Breaker will trip due to overcurrent from the LPCS pump starting current and the LPCS pump will start with Off-site power supplying the bus.

C. The Standby Diesel Output Breaker will trip due to the LOCA signal and the LPCS pump will start on Off-site power.

D. The load from the LPCS pump start will be shared between Off-site power and the Diesel Generator operating in Droop Mode. NO breakers will trip.

ANSWER: C

A - No undervoltage on bus. LOCA signal does not trip normal breaker.
B - EDG output breaker will open then LPCS pump will start on Off-site power as designed for a non-LOP LOCA.
D - See B.

K/A
Statement: Knowledge of the effect a loss or malfunction of the LPCS will have on emergency generators.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
209001 K3.03	**2.9**	**3**	**41.7** **41.8**	**SOP-0053, Page 5**	**STM-309** **OBJ- H8**

TIER/GROUP: **2/1**

LOK: **H** LOD: **3**

ORIGIN: **MODIFIED**

HISTORY: **River Bend NRC Exam 2/2003**

BANK QID: **819**

QUESTION NO. 31 For RO Exam

An inadvertent initiation of High Pressure Core Spray occurred at rated power. Conditions stabilized as follows:

- Reactor power is 97%
- RPV water level is 44 inches
- Reactor pressure is 1005 psig

The CRS has directed the Unit Operator to secure HPCS injection by closing the injection valve. As the injection valve is closed, reactor pressure will . . .

A. Remain constant.

B. Rise and stabilize at 1020 psig.

C. Lower and stabilize at 1000 psig.

D. Rise, then lower and stabilize at 1000 psig.

ANSWER: B

A - Power will return to rated and EHC will respond raising pressure.
C - Pressure will rise as HPCS spray is removed from core exit.
D - Power will return to rated and EHC will respond with higher flow raising RPV pressure

K/A
Statement: Ability to predict/monitor changes in reactor pressure with operating HPCS controls.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
209002 A1.04	**3.3**	**3.3**	**41.5** **41.8**	**USAR Fig. 15.5-1**	**HLO-318** **OBJ- H2**

TIER/GROUP: **2/1**

LOK: **H** LOD: **2**

ORIGIN: **NEW**

HISTORY:

BANK QID: **907**

QUESTION NO. 32 For RO Exam

The Standby Liquid Control injection sparger senses ____(1)____ core plate pressure to provide the ____(2)____ pressure side of core plate differential pressure.

	(1)	(2)
A.	below	high
B.	below	low
C.	above	high
D.	above	low

ANSWER: A

B - High not low pressure side
C - Below core plate pressure
D - B and C apply

K/A
Statement: Knowledge of the physical connections/cause-effect relationships between SLC and core plate ΔP indication.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF	
211000 K1.02	**2.7**	**2.7**	**41.2**	**STM-201, Page 5**	**STM-201**	**OBJ- H6**

TIER/GROUP: **2/1**
ORIGIN: **NEW**
HISTORY:

LOK: **F** LOD: **2**

BANK QID: **1078**

QUESTION NO. 33 For RO Exam

After resetting RPS for a reactor startup, all four CRD SCRAM DISCH VOL HI WTR LVL BYPASS keylocked switches were inadvertently left in the BYPASS position. The Mode switch was placed in START/HOT STBY.

After withdrawing 10 control rods for the approach to critical, one of the RPS Scram Discharge Volume level transmitters fails high.

Which one of the following is the expected plant response?

A. BOTH a control rod withdrawal block and a RPS half scram will occur.

B. ONLY a control rod withdrawal block will occur.

C. ONLY a RPS half scram will occur.

D. NEITHER a control rod withdrawal block NOR a RPS half scram will occur.

ANSWER: C

A and B - The control rod block transmitters are separate from RPS, no rod block
D - Placing the mode switch in START / HOT STBY position disables the keylock switch CRD SDV Bypass.

K/A
Statement: Knowledge of the effect that a loss or malfunction of the sensor inputs will have on the RPS.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF	
212000 K6.05	**3.5**	**3.8**	**41.7**	**STM-508, Page 19**	**STM-508**	**OBJ- H5**

TIER/GROUP: **2/1**
ORIGIN: **NEW**
HISTORY:

LOK: **H** LOD: **4**

BANK QID: **885**

QUESTION NO. 34 For RO Exam

Given the following plant conditions:

IRM "G" is bypassed
Reactor Mode switch is in START/HOT STANDBY
All operable IRMs are reading 65/125 on Range 9

During the troubleshooting of IRM "G," I&C requests that the ATC operator withdraw IRM "G." In error, the ATC withdraws IRM "C" instead.

How does the plant respond?

A. An IRM Detector Wrong Position rod block is generated in RC&IS.

B. An IRM Downscale rod block is generated when the detector gets full-out.

C. Nothing, at this time all IRM rod blocks and scrams are bypassed.

D. An IRM INOP rod block and 1/2 scram signal are generated when the detector leaves the "full-in" position.

ANSWER: A

K/A
Statement: Ability to manually operate/monitor IRMs in the CR to verify proper functioning/operability.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
215003 A4.07	**3.6**	**3.6**	**41.2** **41.7**	**SOP-0074, ATT4**	**STM-503** **OBJ- H4**

TIER/GROUP: **2/1**
LOK: **H** LOD: **2**
ORIGIN: **BANK**
HISTORY: **River Bend NRC Exam 7/1997**
BANK QID: **29**

QUESTION NO. 35 For RO Exam

A plant startup is in progress and the reactor is nearing critical when RPS MG Set A generator output breaker trips.

What will be the status of the SRM A trip unit indicating lights on P680?

A. The UPSC TRIP, ALARM OR INOP, and DNSC lights will ALL be lit.

B. ONLY the ALARM OR INOP, and DNSC lights will be lit.

C. ONLY the ALARM OR INOP light will be lit.

D. NONE of the trip unit lights will be lit.

ANSWER: A

B and C - All trip units on SRM output fail to trip condition on loss of power.
D - Trip unit status indication on P680 will still have power and indicate their status.

K/A
Statement: Knowledge of the effect a loss or malfunction of RPS will have on the SRMs.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
215004 K6.01	**3.2**	**3.3**	**41.7** **41.2**	**AOP-0010, Page 3**	**STM-503 OBJ- H7**

TIER/GROUP: **2/1**
ORIGIN: **NEW**
HISTORY:

LOK: **H** LOD: **2**

BANK QID: **908**

QUESTION NO. 36 For RO Exam

A plant startup is in progress and the following conditions exist:

- The reactor is critical with a positive 60 second period.
- Overlap between the IRMs and SRMs has been verified.
- The ATC operator has selected all SRM detectors for withdrawal.

Drawing of SRM Period response included in EXAM HANDOUT MATERIAL.

With no change in core reactivity, as the detectors are withdrawn from the core, their indicated reactor period will . . .

A. remain at positive 60 seconds or become slightly shorter initially, then lengthen to infinity becoming negative as the detectors move away from the core midplane.

B. remain at positive 60 seconds, continuing to accurately indicate actual reactor period as the detectors are withdrawn from the core.

C. immediately lengthen to infinity, then gradually become negative as the detectors pass the bottom of the core.

D. immediately drop through infinity to the shortest indicated negative value of period and will remain there throughout detector withdrawal.

ANSWER: A REQUIRES DRAWING FOR QUESTION INCLUDED IN EXAM HANDOUT MATERIAL

B - changes throughout because flux levels the detector sees are changing throughout.
C & D - initially remains positive or shortens as it moves through the high flux region toward core midplane and becomes negative before reaching bottom.

K/A
Statement: Ability to predict/monitor changes in reactor power indication with operating the SRM controls.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
215004 A1.02	**3.6**	**3.7**	**41.2**	**STM-503, Page 12**	**STM-503 OBJ- 6**

TIER/GROUP: **2/1**
ORIGIN: **NEW**
HISTORY:

LOK: **H** LOD: **3**

BANK QID: **799**

QUESTION NO. 37 For RO Exam

With the reactor operating at 60% power and 70% of rated flow, the Recirculation System Flow Converter for APRM Channel C fails to its full scale value.

Which one of the following describes the expected status of theAPRM C rod block and scram trip units?

A. Neither the APRM C Flow Biased Upscale Rod Block nor the Flow Biased Thermal Scram trip unit will be tripped.

B. ONLY the APRM C Flow Biased Upscale Rod Block trip unit will be tripped.

C. ONLY the APRM C Flow Biased Thermal Scram trip unit will be tripped.

D. BOTH the APRM C Flow Biased Upscale Rod Block and the Flow Biased Thermal Scram trip units will be tripped.

ANSWER: A

B - Flow converter upscale will raise APRM flow biased rod block setpoint. However, a Flow Converter Upscale rod block will occur.
C - Flow converter upscale will raise APRM flow biased scram setpoint.
D - See B and C

K/A
Statement: Knowledge of the effect a loss or malfunction of flow converter/comparator network will have on APRM/LPRM.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
215005 K6.07	**3.2**	**3.3**	**41.2**	**STM-503, Page 63** **ARP-P680-6A-B02**	**STM-503 OBJ- 28**

TIER/GROUP: **2/1**

ORIGIN: **NEW**

HISTORY:

LOK: **H** LOD: **3**

BANK QID: **884**

QUESTION NO. 38 For RO Exam

The following conditions exist,

- Reactor core thermal power is 100% of rated
- APRM Channel B is reading 100%
- The lowest reading LPRM input to APRM B is LPRM 06-31D and it is reading 50%

LPRM 06-31D then failed to its full scale value of 125% and subsequently was bypassed.

Which one of the following describes how the indicated value of APRM B was affected by (1) the LPRM failing upscale and (2) after the failed LPRM was bypassed?

	(1) with failed LPRM	(2) after failed LPRM was bypassed
A.	It indicated power greater than 100%	It indicated power less than 100%
B.	It indicated power greater than 100%	It indicated power greater than 100%
C.	It indicated power equal to 100%	It indicated power greater than 100%
D.	It indicated power equal to 100%	It indicated power less than 100%

ANSWER: B

(1) Raises the flux sum of LPRM inputs, raising average flux calculated by averaging amplifier
(2) When bypassed lowers count by one and removes what was a low flux reading input so new APRM average of remaining LPRMs will be higher for the same core power.
A - See (2)
C - See (1)
D - See (1) & (2)

K/A Statement: Knowledge of the effect a loss or malfunction of the APRM/LPRM will have on reactor power indication.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
215005 K3.05	**3.8**	**3.8**	**41.2**	**STM-503, Pages 60 & 61**	**STM-503 OBJ- H31**

TIER/GROUP: **2/1**

ORIGIN: **NEW**

HISTORY:

LOK: **H** LOD: **3**

BANK QID: **952**

QUESTION NO. 39 For RO Exam

Following a plant transient, RCIC is being operated with its flow controller in AUTO set at 600 gpm. RCIC is aligned with flow to both the RPV and the CST to maintain RPV water level AND remove decay heat from the RPV.

As RPV water level begins rising and approaches the high end of the level control band provided by the CRS, which one of the following control manipulations at P601 will lower RCIC flow to the RPV while maintaining maximum decay heat removal by RCIC?

A. Throttle E51-F013, RCIC INJECT ISOL VALVE closed.

B. Adjust RCIC Flow Controller tape setting to a lower value.

C. Throttle E51-F022, RCIC TEST BYPASS VLV TO CST open.

D. Throttle E51-F022, RCIC TEST BYPASS VLV TO CST closed.

ANSWER: C

Lowers injection flow while maintaining total flow and max decay heat removal.
A - Will go fully closed reducing decay heat removal.
B - Total system flow is lowered by lowering steam flow to RCIC turbine reducing decay heat removal.
D - Will raise, not lower flow to RPV.

K/A
Statement: Ability to manually operate (RCIC)/monitor in the control room reactor water level.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
217000 A4.05	**4.1**	**4.1**	**41.7** **41.8** **41.10**	**SOP-0035, Page 11**	**STM-209** **OBJ- H12**

TIER/GROUP: **2/1**

ORIGIN: **NEW**

HISTORY:

LOK: **H** LOD: **3**

BANK QID: **943**

QUESTION NO. 40 For RO Exam

Shortly after an automatic initiation, the RCIC turbine tripped. On Main Control Room Panel P601, the DIV 1 RCIC ISOL TURB EXH PRESS HIGH annunciator is alarming.

Under these conditions, the RCIC turbine Trip & Throttle valve may be reset . . .

A. using the Trip & Throttle Valve hand switch in the control room after the trip condition is cleared.

B. locally at the turbine after the trip condition is cleared.

C. locally at the turbine at any time even if the condition is not cleared.

D. using the trip reset push button on panel P601, in the control room after the condition is clear.

ANSWER: A

K/A
Statement: Knowledge of annunciators alarms and indications, and use of the response instructions.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
217000 2.4.31	**3.3**	**3.4**	**41.10** **41.7** **41.8**	**ARP-P601-21-C03**	**STM-209** **OBJ- H10**

TIER/GROUP: **2/1**

LOK: **F** LOD: **2**

ORIGIN: **BANK**

HISTORY: **River Bend NRC Exam 7/1997**

BANK QID: **820**

QUESTION NO. 41 For RO Exam

An earthquake has resulted in a Loss of Offsite Power and the following conditions exist:

- The reactor is shutdown, all rods inserted.
- Drywell pressure is ~~2.2 psig~~ (changed to 2.2 psid during exam administration).
- RHR A is the only ECCS pump running and aligned to the RPV.
- RPV pressure is 500 psig and slowly lowering.
- RPV level is -163" and slowly lowering.

EOP-0004, Alternate Level Control has just been entered after determining that RPV level cannot be restored and maintained above -162 inches. The CRS has directed the Unit Operator (UO) to inhibit ADS per Step ALC-2.

The UO places the DIV 2 ADS INHIBIT switch in INHIBIT, but the DIV 1 ADS INHIBIT switch will NOT rotate to the INHIBIT position.

What action(s), if any, are appropriate to Inhibit ADS?

A. No action required, Div 1 ADS logic will not actuate without the LPCS pump running.

B. RHR A pump must be tripped to prevent ADS from initiating.

C. The DIV 1 ADS TIMER/LEVEL 3 SEAL-IN RESET Pushbutton must be depressed at least every 105 seconds to prevent ADS from initiating.

D. The DIV 1 ADS TIMER/LEVEL 3 SEAL-IN RESET Pushbutton must be depressed at least every 5 minutes to prevent ADS from initiating.

ANSWER: C

A - Div 1 ADS logic will initiate with RHR A running
B - RHR A is currently the only injection source available and should not be shutdown before adequate core cooling is assured.
D - With high drywell pressure, the 5 minute timer for Level 1 is not affecting the ADS logic.

K/A Statement: Ability to predict impacts of initiation signals present on the ADS; and use procedures to correct, control, or mitigate.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
218000 A2.06	**4.2**	**4.3**	**41.10 41.7**	**SOP-0011, Page 19**	**STM-202 OBJ- H7**

TIER/GROUP: **2/1**

LOK: **H** LOD: **3**

ORIGIN: **NEW**

HISTORY:

BANK QID: **910**

QUESTION NO. 42 For RO Exam

A Loss of RPS Bus A has occurred. After the RPS bus is transferred to alternate power, AOP-0010 directs the operator to depress the INBD and OUTBD SEAL-IN RESET pushbuttons to reset the CRVICS logic.

The INBD SEAL-IN RESET pushbutton must be depressed to reset the trip in which CRVICS logic channel that was sealed in on the loss of RPS Bus A?

A. B Channel of the BOP Isolation Logic

B. B Channel of the MSIV Isolation Logic

C. C Channel of the BOP Isolation Logic

D. C Channel of the MSIV Isolation Logic

ANSWER: D

A - INBD pushbutton resets but did not lose power on loss of RPS Bus A.
B - INBD pushbutton resets but logic is powered by RPS Bus B.
C - INBD pushbutton resets and lost power, but single logic channel trip does not seal-in. Resets when re-enrgized.

K/A
Statement: Knowledge of the electrical power supplies to the PCIS/NSSSS logic power supplies.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
223002 K2.01	**2.4**	**2.7**	**41.7**	**STM-058, Pages 8 & 10** **AOP-0010, Page 8**	**STM-058 OBJ- H3**

TIER/GROUP: **2/1**

ORIGIN: **NEW**

HISTORY:

LOK: **F** LOD: **3**

BANK QID: **911**

QUESTION NO. 43 For RO Exam

A faulty MSIV pilot solenoid valve results in a FAST CLOSURE of one MSIV at 100% power during a surveillance test of the CRVICS MSIV isolation logic. Which one of the following describes the result of this condition?

RPV pressure will . . .

A. rise rapidly, then lower due to a MSIV closure scram.

B. rise slightly as the EHC stabilizes turbine throttle pressure.

C. rise rapidly until a High RPV Pressure reactor scram occurs.

D. remain constant due to the EHC control actions and steam flow rising in the three other main steam lines.

ANSWER: C

A - MSIV closure scram requires at least two MSIVs closing to actuate.
B - EHC will not be able to stabilize pressure before high press. scram is reached.
D - Pressure will rise, EHC will not be able to stabilize pressure before high press. scram is reached.

K/A
Statement: Knowledge of the effect a loss or malfunction of the PCIS/NSSSS will have on reactor pressure.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
223002 K3.07	**3.7**	**3.8**	**41.5**	**USAR Page 15.2-20**	**HLO-316 OBJ- 2**

TIER/GROUP: **2/1**
ORIGIN: **NEW**
HISTORY:

LOK: **H** LOD: **2**

BANK QID: **912**

QUESTION NO. 44 For RO Exam

A plant scram has occurred as a result of an MSIV Closure. The ATC Operator is controlling level between 10" and 51" with MANUAL operation of the Startup Feedwater Regulating Valve. The Unit Operator is controlling pressure between 800 and 1000 psig by cycling an SRV as necessary. Currently, the following conditions exist:

- RPV level is stable at 30" with the Startup FWRV closed.
- RPV pressure is approaching 1000 psig.

Which one of the following describes the expected RPV level response as the Unit Operator cycles one SRV open, then closed to lower pressure to 800 psig?

Assuming NO OTHER OPERATOR ACTION(S), when the SRV is opened, RPV water level will . . .

A. rise while the SRV is open, then drop and stabilize at a level slightly below 30" when the SRV is closed.

B. rise while the SRV is open, then drop and stabilize at 30" when the SRV is closed.

C. gradually lower, then rise and stabilizes at nearly 30" when the SRV is closed.

D. gradually lower, then stabilize at the level reached at the time the SRV is closed.

ANSWER: A
Rises due to core voiding then drops to below original level due to inventory removed.
B - Loss of inventory through SRV results in final level less than original (30").
C - rises due to core voiding while SRV is open
D - rises due to core voiding while SRV is open

K/A
Statement: Ability to predict/monitor changes in reactor water level associated with operating SRV controls.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
239002 A1.05	**3.7**	**3.8**	**41.5**	**USAR Figure 15.2-8**	**HLO-315 OBJ- 2**

TIER/GROUP: **2/1**
ORIGIN: **NEW**
HISTORY:

LOK: **H** LOD: **3**

BANK QID: **913**

QUESTION NO. 45 For RO Exam

Which one of the following describes the plant response to the loss of ONE steam flow signal input to the Feedwater Level Control System while operating in three element control at 50% power?

A. Reactor level will rise high enough to cause a High Reactor Water Level scram.

B. Reactor level will rise but stabilize at a higher level below the High Reactor Water Level scram setpoint.

C. Reactor level will drop low enough to cause the Low Reactor Water Level scram.

D. Reactor level will lower, but stabilize at a lower level above the Low Reactor Water Level scram setpoint.

ANSWER: D

A - Will lower total SF causing SF/FF error closing FWRVs and lowering level.
B - Will lower total SF causing SF/FF error closing FWRVs and lowering level.
C - At 50% power the SF/FF error will be nulled by level error before reaching Level 3 9.7"

K/A
Statement: Knowledge of the physical connections/cause-effect relationships between Reactor Water Level Control and main steam flow.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
259002 K1.02	**3.2**	**3.3**	**41.5** **41.14**	**STM-107, Page 50**	**STM-107** **OBJ- H7**

TIER/GROUP: **2/1**

LOK: **H** LOD: **3**

ORIGIN: **NEW**

HISTORY:

BANK QID: **941**

QUESTION NO. 46 For RO Exam

With containment pressures above 2 psig, the EOP's direct the use of Enclosure 21, Emergency Containment Venting rather than normal containment venting when it becomes necessary to vent containment.

Above 2 psig, Emergency Containment Venting is used to . . .

A. bypass Standby Gas Treatment which may fail at pressures above 2 psig.

B. bypass the Containment Ventilation ductwork which may fail at pressures above 2 psig.

C. bypass the Annulus Mixing System which may fail at pressures above 2 psig.

D. align the Standby Gas Treatment suction to the Annulus Pressure Control System for a more rapid containment pressure reduction.

ANSWER: B

A - SGTS is used in Emergency Containment Venting.
C and D - SGTS is aligned to Annulus Mixing, not APC.

K/A
Statement: Knowledge symptom based EOP mitigation strategies.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
261000 2.4.6	**3.1**	**4**	**41.8** **41.9** **41.10** **43.5**	**EOP-0005, Encl 21** **EPSTG-0002, B-8-12**	**HLO-514** **OBJ- 5**

TIER/GROUP: **2/1**
ORIGIN: **NEW**
HISTORY:

LOK: **F** LOD: **3**

BANK QID: **812**

QUESTION NO. 47 For RO Exam

The plant is operating at rated conditions when a fault in the primary windings of transformer RCS-X1A results in NPS-SWG1A voltage lowering to 50% of rated.

Which one of the following describes the (1) final state of Reactor Recirculation Pump A and (2) any actions required for this condition (NO automatic scram occurred)?

A. (1) Recirc Pump A is operating at slow speed
(2) Lower flow in Recirc Loop B to < 33 kgpm

B. (1) Recirc Pump A is operating at slow speed
(2) Downshift Recirc Pump B to slow speed

C. (1) Recirc Pump A is tripped
(2) Lower flow in Recirc Loop B to < 33 kgpm

D. (1) Recirc Pump A is tripped
(2) Initiate a Manual Scram

ANSWER: C

A - Recirc Pump A will not start on slow speed, LFMG also lost power from NPS-SWG1A and if A in slow no requirement to lower flow in B.
B - Recirc Pump A will not start on slow speed LFMG also lost power from NPS-SWG1A and would deliberately enter Power-to-flow exclusion zone on B downshift
D - Scram not required by procedure

K/A Statement: Ability to predict the impacts of exceeding voltage limitations on AC Distribution; and use procedures to correct, control, or mitigate.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
262001 A2.09	**3.1**	**3.4**	**41.4** **41.7**	**GOP-0004, Page 7** **ARP-P680-4A-A01**	**HLO-503** **OBJ- 2**

TIER/GROUP: **2/1**

LOK: **F** LOD: **3**

ORIGIN: **NEW**

HISTORY:

BANK QID: **914**

QUESTION NO. 48 For RO Exam

The UO is preparing to parallel the Division I Standby Diesel Generator with ENS-SWG1A through ENS-ACB07, STBY D/G A OUTPUT BRKR. At P877, the UO has the following indications:

- V1IN-1SYDA01 (Incoming Voltage): 120 VAC
- V1RUN-1SYDA01 (Running Voltage): 120 VAC
- SY-1-1SYDA01 (Stby Bus A Synchroscope): Rotating slowly in the SLOW direction

Which one of the following describes the action that must be taken by the UO to ensure that the EDG will pickup some KW load when it's output breaker is closed connecting it to the ENS-SWG1A bus?

A. Raise Incoming Voltage to be slightly higher than Running Voltage.

B. Raise Running Voltage to be slightly higher than Incoming Voltage.

C. Raise EDG speed until the synchroscope is rotating slowly in the FAST direction.

D. Lower EDG speed until the synchroscope is rotating slowly in the FAST direction..

ANSWER: C

K/A
Statement: Knowledge of the operational implications of the principle involved with paralleling two AC source as applied to AC Distribution.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF	
262001 K5.01	**3.1**	**3.4**	**41.7**	**SOP-0053**	**STM-309**	**OBJ- H3**

TIER/GROUP: **2/1**
LOK: **H** LOD: **2**
ORIGIN: **MODIFIED**
HISTORY: **River Bend NRC Exam 10/2000**
BANK QID: **818**

QUESTION NO. 49 For RO Exam

The plant is operating at 100% power. An inverter malfunction results in the loss of Instrument Bus VBN-PNL01B1 supplying power to the Feedwater Level Control System.

Which one of the following describes the effect this loss of power will have on the Feedwater Regulating Valves'

A. No effect.

B. Fail shut.

C. Fail open.

D. Lock up.

ANSWER: D

A - Will have control air and signal to close but will not move due to lock up
B - Will have control air and signal to close but will not move due to lock up
C - Would be closing if not locked up

K/A
Statement: Knowledge of the physical connections/cause-effect relationships between UPS (AC/DC) and Feedwater Level Control.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
262002 K1.01	**2.8**	**3**	**41.7**	**AOP-0042, Att. 8, Page 3**	**HLO-540 OBJ- 4**

TIER/GROUP: **2/1**
ORIGIN: **NEW**
HISTORY:

LOK: **F** LOD: **2**

BANK QID: **951**

QUESTION NO. 50 For RO Exam

The plant was operating at 100% power when a turbine trip occurred concurrent with a loss of 125 VDC bus ENB-PNL-02B.

The following conditions exist:
- The reactor is shutdown (all rods in)
- RPV pressure is 1050 psig
- RPV level is +4 inches on narrow range indication
- All MSIVs are closed

Which one of the following statements correctly describes the pressure control for the plant?

A. Due to a loss of ENB-PNL02B, the SRVs are unable to actuate on high pressure RELIEF mode or MANUAL mode and will only control pressure in the SAFETY mode.

B. Due to a loss of ENB-PNL02B, the SRVs will actuate on high pressure RELIEF mode or MANUAL mode utilizing the "A" SRV solenoid ONLY.

C. Due to a loss of ENB-PNL02B, the SRVs are unable to actuate on high pressure RELIEF mode but may be manually operated using the "A" SRV solenoid.

D. Due to a loss of ENB-PNL02B, the SRVs will not operate in the Low-Low Set mode of operation however, the high pressure RELIEF mode and MANUAL mode is available using either the "A" or "B" SRV solenoids.

ANSWER: B

K/A
Statement: Knowledge of the effect a loss or malfunction of the DC Distribution will have on systems with DC components.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
263000 K3.03	**3.4**	**3.8**	**41.7** **41.4**	**AOP-0014, Att. 2** **ARP-P601-19A-C10**	**STM-109** **OBJ- H4**

TIER/GROUP: **2/1**

LOK: **H** LOD: **3**

ORIGIN: **BANK**

HISTORY: **River Bend NRC Exam 10/2000**

BANK QID: **679**

QUESTION NO. 51 For RO Exam

The Division 1 Emergency Diesel Generator (EDG) operability surveillance test STP-309-0201 is in progress with the following conditions:

- Div. 1 EDG is running and parallel to offsite via ENS-SWG1A.
- The STP is completed and the UO is unloading the Div 1 EDG.
- The EDG load has been lowered to 150 KW when a governor problem causes the diesel to reverse power.

Based on the above conditions, complete the statement that correctly predicts the response of the Div. 1 EDG and its output breaker, ENS-ACB07.

The reverse power condition will cause a . . .

A. trip of the output breaker and the EDG continues to run unloaded.

B. trip of the output breaker and the EDG will subsequently trip on overspeed.

C. generator lockout (86GB) resulting in a diesel shutdown and trip of the output breaker.

D. DIESEL GENERATOR EGS-EG1A SYSTEM TROUBLE alarm indicating the EDG is running with a reverse power condition.

ANSWER: C

A. Logic for reverse Power and Diesel in Normal Start mode trips both ENS-ACB07 and energizes EGS-SOV24A Diesel Stop Solenoid.
B. following a reverse power condition the fuel setting for the EDG will be at minimum NO overspeed.
D. Same as A.

K/A Statement: Ability to predict/monitor maintaining minimum load associated with operating EDG controls.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
264000 A1.09	**3**	**3.1**	**41.7 41.8**	**ARP-P877-31A-H02**	**STM-309S OBJ- H5**

TIER/GROUP: **2/1**

LOK: **H** LOD: **2**

ORIGIN: **BANK**

HISTORY: **Peach Bottom 2 NRC Exam 9/2002 (INPO 24743)**

BANK QID: **916**

QUESTION NO. 52 For RO Exam

The instrument air compressors are all available and operating with the local SEQUENCE CONTROL switch in Postion 3 (C-A-B). Only the IAS-C2C compressor has been operating to maintain system pressure.

A relay failure in the control circuit for compressor IAS-C2C causes it to shutdown.

With no change in Instrument Air System usage, which one of the following describes the effect of the compressor shutdown on the Instrument Air System?

A. Compressor IAS-C2A operates alone to maintain a lower header pressure.

B. Compressor IAS-C2B operates alone to maintain a lower header pressure.

C. Both Compressors IAS-C2Aand C2B operate to maintain the same header pressure.

D. Both Compressors IAS-C2Aand C2B operate to maintain a lower header pressure.

ANSWER: A

B - Sequencer setting cycles C2A at a higher pressure than C2B, so C2B will not start.
C - With no air load change the C2A can maintain pressure but lower than C2C, sequencer does not alternate the operating compressor.
D - With no air load change the C2A can maintain pressure and C2B start pressure is below C2A. Sequencer does not alternate the operating compressor.

K/A Statement: Knowledge of the effect a loss or malfunction of breakers, relays and disconnects will have on the Instrument Air System.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF	
300000 K6.12	**2.9**	**2.9**	**41.4**	**STM-121, Pages 13 & 15**	**STM-121**	**OBJ- H3**

TIER/GROUP: **2/1**

ORIGIN: **NEW**

HISTORY:

LOK: **F** LOD: **2**

BANK QID: **917**

QUESTION NO. 53 For RO Exam

The plant is operating at rated conditions with no equipment out of service. The Reactor Plant Component Cooling Water (CCP) System is in normal operation with CCP-P1A and P1B running. CCP-P1C is in standby.

RPCCW SYSTEM LOW HEADER PRESSURE alarmed on P870-55. An investigation revealed that the CCP header pressure transmitter, PT-127 has failed low. No other alarms or automatic actions occurred.

What automatic feature failed to function as designed?

A. Trip of the running CRD pump.

B. Start of standby pump CCP-P1C.

C. Initiation of both Standby Service Water Divisions.

D. Isolation of cooling water to the CCP heat exchangers.

ANSWER: B

A - Either CCP vital loop at <56 psig.
C - Both CCP vital loops at <56 psig.
D - Div II CCP vital loop at <56 psig.

K/A
Statement: Knowledge of design feature(s)/interlocks which provide for automatic start of standby pump.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
400000 AK4.01	**3.4**	**3.9**	**41.4**	**ARP-P870-55-F04** **STM-115, Page 9**	**STM-115 OBJ- H4**

TIER/GROUP: **2/1**
ORIGIN: **NEW**
HISTORY:

LOK: **F** LOD: **2**

BANK QID: **405**

QUESTION NO. 54 For RO Exam

The Control Rod Drive Hydraulic System is being placed in service in preparation for a cold reactor startup. The next step in SOP-0002, Control Rod Drive Hydraulics, for placing the CRD System in Operation is as follows:

"Using C11-R600, CRD HYDRAULICS FLOW FLOW CONTROLLER C11-F002A/B in MANUAL mode, and C11-F003, CRD DRIVE WATER PRESSURE CONTROL VAVLE, establish a Drive Water Differential Pressure of 250 psid at a flow rate of 41 to 49 gpm."

Based on the conditions below,
(1) What action(s) is/are necessary to accomplish the step and
(2) why must CRD Drive Header ΔP be raised to 250 psid?

- CRD Drive Header ΔP is 200 psid
- CRDH System Flow is 41 gpm

A. (1) Throttle C11-F003 further closed and adjust C11-R600 further closed
(2) to establish normal rod movement speed.

B. (1) Throttle C11-F003 further closed and adjust C11-R600 further open
(2) to establish normal rod movement speed.

C. (1) Throttle C11-F003 further open and adjust C11-R600 further closed
(2) to meet Tech Spec control rod scram time limits.

D. (1) Throttle C11-F003 further open and adjust C11-R600 further open
(2) to meet Tech Spec control rod scram time limits.

ANSWER: B

A - Closing both will lower system flow out of the flow band required by the step.
C - Actions would lower ΔP and adjustment not required to meet tech spec scram times.
D - Not required to meet tech spec scram times.

K/A
Statement: Ability to predict the impacts of low drive header pressure on CRDH; and use procedures to correct, control, or mitigate.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
201001 A2.14	**2.8**	**2.8**	**41.6** **43.6**	**SOP-0002, Page 8** **STM-052, Page 19**	**STM-052 OBJ- 1**

TIER/GROUP: **2/2**
LOK: **H** LOD: **3**
ORIGIN: **NEW**
HISTORY:
BANK QID: **918**

QUESTION NO. 55 For RO Exam

During withdrawal of a control rod, a stabilizing valve ____(1)_____ to maintain _____(2)_____ constant.

	(1)	(2)
A.	opens	drive water pressure
B.	opens	cooling water flow
C.	closes	drive water pressure
D.	closes	cooling water flow

ANSWER: C

A - Stab valve closes
B - Stab valve closes and cooling water flow lowers
D - Cooling water flow lowers

K/A
Statement: Ability to predict/monitor changes in CRD drive pressure with operating the CRDM controls.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
201003 A1.02	**2.8**	**2.8**	**41.2** **41.14**	**STM-052, Page 18**	**STM-052 OBJ- 2**

TIER/GROUP: **2/2**
ORIGIN: **NEW**
HISTORY:

LOK: **F** LOD: **2**

BANK QID: **813**

QUESTION NO. 56 For RO Exam

RCI&S indicates power below the High Power Set Point. APRMs indicate a steady state reactor power of 71%.

Which one of the following can cause the discrepancy above?

A. A failed open Turbine Bypass Valve

B. A Recirc flow control valve runback

C. A loss of feedwater heating

D. A xenon transient

ANSWER: A
With BPV open, pressure regulator will reduce steam flow through turbine reducing 1st stage press.
B - First stage shell pressure will follow power
C - First stage shell pressure will follow power
D - First stage shell pressure will follow power, APRMs will have representative sample of core

K/A
Statement: Knowledge of the physical connections/cause-effect relationships between RCIS and the reactor pressure control system.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
201005 K1.02	**3.3**	**3.5**	**41.5** **41.6**	**STM-500, Page 34** **TS Bases Page B 3.3-47**	**STM-500 OBJ- H5**

TIER/GROUP: **2/2**
ORIGIN: **NEW**
HISTORY:

LOK: **H** LOD: **3**

BANK QID: **811**

QUESTION NO. 57 For RO Exam

Which one of the following design features or interlocks prevents Reactor Recirc Pump damage from overheating at minimum flow conditions?

A. The pump start interlock requiring FCV position to be at 0% INDICATED position.

B. The design of the FCVs being physically 22% open at the 0% INDICATED position.

C. The capability of the Recirc Pump seal cooler to remove no-flow pump heat.

D. The pump downshift on low steam dome to loop suction ΔT.

ANSWER: B

A - Places FCV at minimum position to minimize pump starting current.
C - Does NOT have the capacity to remove enough heat from pump casing.
D - Protects the pump from inadequate NPSH.

K/A
Statement: Knowledge of the Recirculation System design feature(s)/interlocks which provide for pump minimum flow limit.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
202001 K4.09	**2.7**	**2.9**	**41.3**	**STM-053, Page 16**	**STM-053 OBJ- H2**

TIER/GROUP: **2/2**
ORIGIN: **NEW**
HISTORY:

LOK: **F** LOD: **2**

BANK QID: **919**

QUESTION NO. 58 For RO Exam

The plant is operating at rated conditions with all systems in their normal full power lineup. A bus fault on 480V NHS-MCC10B in the Control Building causes a trip of its power supply breaker from NJS-SWG1D.

Following this bus loss, what is the status of the RWCU System?

A. The Inboard Containment isolation valves closed and both RWCU pumps tripped.

B. The Inboard Containment isolation valves closed and the 'B' RWCU pump tripped.

C. The Outboard Containment isolation valves closed and both RWCU pumps tripped.

D. The RWCU System continues to operate normally.

ANSWER: A

Loss of RPS power to Div 2 Isolation Logic causes Inboard isolation resulting in pump trips due to Inboard isolation valve F001 closure.
B - Both pumps trip on loss of suction lineup due to F001 closure.
C - Outboard Isolation Logic remains energized.
D - Loss of power to Div 2 Isolation Logic causes Inboard isolation causes pump trips.

K/A
Statement: Knowledge of the effect a loss or malfunction of AC power will have on RWCU.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
204000 K6.05	**2.6**	**2.6**	**41.7**	**STM-601, Page 13** **STM-508, Page 36** **AOP-0003, Page 18**	**STM-601 OBJ- H7**

TIER/GROUP: **2/2**

ORIGIN: **NEW**

HISTORY:

LOK: **F** LOD: **3**

BANK QID: **920**

QUESTION NO. 59 For RO Exam

While making local adjustments to the MSR-1 heating steam valves at 60% power, the following changes in Main Steam Line Flow are observed on P680:

- MSL A flow rises from 2 Mlbm/hr to 2.9 Mblm/hr
- MSL B flow falls from 1.9 Mlbm/hr to 1.6 Mblm/hr
- MSL C flow falls from 2.1 Mlbm/hr to 1.8 Mblm/hr
- MSL D flow falls from 2 Mlbm/hr to 1.7 Mblm/hr

The above changes in MSL flows indicate which one of the following is full open?

A. SRV F047A

B. Turbine Control Valve, CV-1

C. Turbine Steam Bypass Valve, BPV-1

D. MSR-1 heating steam supply High Load valve

ANSWER: A

F047A is downstream of MSL A flow elbow. EHC causes flow in other MSLs to lower.
B - TCV-1 is downstream of the Equalizing header and would cause all steam line flows to rise.
C - The BPV manifold is connected to Equalizing header and would cause all steam line flows to rise.
D - High Load valve is connected to equalizing header and would cause all steam line flows to rise.

K/A
Statement: Ability to manually operate/monitor Main and Reheat Steam system flow in the control room.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
239001 A4.03	**3.5**	**3.5**	**41.5**	**AOP-0035, Page 3** **STM-109, Pages 8 & 27**	**STM-109 OBJ- H13**

TIER/GROUP: **2/2**
ORIGIN: **NEW**
HISTORY:

LOK: **H** LOD: **2**

BANK QID: **921**

QUESTION NO. 60 For RO Exam - DELETED FROM EXAM

A LOCA has occurred inside the Drywell. Twenty minutes later the following annunciators were alarming:

- PERMISSIVE TO OPERATE INBOARD MSIV PLCS
- PERMISSIVE TO OPERATE OUTBOARD MSIV PLCS

Both Divisions of the Main Steam Line Positive Leakage Control System were then initiated. Six minutes later the following annunciator is received:

- INBOARD MSIV PLCS HIGH AIR FLOW

What should be the indicated position of the following valves on the Inboard MSIV PLCS control section of backpanel P655?

	Injection Valve F005	Drain Valve F006	Isolation Valve F007
A.	Open	Closed	Closed
B.	Closed	Open	Closed
C.	Closed	Closed	Open
D.	Closed	Closed	Closed

ANSWER: D

A - F005 should be closed to stop excessive air loss.
B - Normal configuration before initiation or if RPV pressure >25 psig. F006 should be closed.
C - F007 should be closed to isolate any possible rad release path if a break exists upstream.

K/A
Statement: Ability to manually operate/monitor MSIV Leakage Control status lights and alarms in the control room.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
239003 A4.07	**2.8**	**2.7**	**41.9**	**ARP-601-17A-C05**	**STM-208 OBJ- H4**

TIER/GROUP: **2/2**
ORIGIN: **NEW**
HISTORY:

LOK: **F** LOD: **3**

BANK QID: **922**

QUESTION NO. 61 For RO Exam

The following conditions exist on the Main Generator:

- MVARs = negative 125 (leading power factor)
- MW = 500
- VOLTAGE REGULATOR MODE SELECT is in AUTO

If the LOWER pushbutton on the VOLTAGE REGULATOR AUTO ADJUST is depressed, which one of the following describes the expected change in Main Generator output parameters?

A. MW will remain the same, MVARs will become more negative.

B. MW will remain the same, MVARs will become less negative.

C. MW will lower, MVARs will become more negative.

D. MW will lower, MVARs will remain the same.

ANSWER: A

B - Must raise Auto voltage setting to reduce negative MVARs.
C - MW will not change, and must raise Auto voltage setting to reduce negative MVARs.
D - MW will not change, but MVARs will change with voltage adjust.

K/A
Statement: Ability to monitor auto operations of the Main Turbine Generator output voltage/reactive load.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
245000 A3.10	**2.5**	**2.6**	**41.7**	**HLO-154a, Page 59** **STM-310, Pages 34 & Fig. 9**	**STM-310 OBJ-**

TIER/GROUP: **2/2**
ORIGIN: **NEW**
HISTORY:

LOK: **H** LOD: **3**

BANK QID: **404**

QUESTION NO. 62 For RO Exam

The plant is operating at 100 % power with Offgas Post Treatment Radiation Monitor Channel 'B' in a downscale trip condition when the Offgas Post Treatment Radiation Monitor 'A' channel fails high (to full scale).

Which one of the following describes the effects on the Offgas System and the Main Condenser?

A. Offgas will shift into a bypass mode to maintain Main Condenser vacuum constant.

B. Offgas will isolate only the charcoal adsorbers inlet and outlet valves causing Main Condenser vacuum to be lost.

C. Offgas will continue to operate normally to maintain Main Condenser vacuum constant.

D. Offgas will isolate causing Main Condenser vacuum to be lost.

ANSWER: D

K/A
Statement: Knowledge of the effect a loss or malfunction of the Offgas will have on condenser vacuum.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
271000 K3.01	**3.5**	**3.5**	**41.4**	**ARP-P601-22A-E03** **ARP-P601-22A-A03**	**STM-606 OBJ- H4**

TIER/GROUP: **2/2**

LOK: **H** LOD: **3**

ORIGIN: **MODIFIED**

HISTORY: **River Bend NRC Exam 2/1999**

BANK QID: **881**

QUESTION NO. 63 For RO Exam

Given the following conditions:

- Reactor water level is -90 inches and lowering.
- Drywell pressure is ~~2.2 psig~~ (changed to 2.2 psid during exam) and rising.
- Smoke from an outside fire is entering the Control Room.

An operator is attempting to manually place the Control Room ventilation in the smoke removal mode.

Under these conditions the Control Room Smoke Removal Dampers (AOD 107/108) will:

A. open and the Smoke Removal Fan will start.

B. open but the Smoke Removal Fan will be interlocked off.

C. remain closed and the Smoke Removal Fan will run on recirc.

D. remain closed and the Smoke Removal Fan will be interlocked off.

ANSWER: D

K/A
Statement: Ability to monitor automatic operations of the Fire Protection System fire dampers.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
600000 AK2.01	**2.6**	**2.7**	**41.4**	**AOP-0003, Pages 10 & 19** **STM-402, Page 11 & 23**	**STM-402 OBJ- 7**

TIER/GROUP: **2/2**
LOK: **H** LOD: **3**
ORIGIN: **BANK**
HISTORY: **River Bend NRC Exam 7/1997**
BANK QID: **167**

QUESTION NO. 64 For RO Exam

A pipe rupture has resulted in a complete loss of Normal Service Water. All automatic actions for the loss of Normal Service Water have occurred.

Which one of the following describes how this event ultimately affects the Containment Unit Coolers?

A. The cooling capability of HVR-UC1A will be lost and cannot be restored.

B. The cooling capability of HVR-UC1B will be lost and cannot be restored.

C. The cooling capability of HVR-UC1C will be lost and cannot be restored.

D. Loss of Normal Service Water will have no affect on the Containment Unit Coolers.

ANSWER: C

Loss of NSW will result in loss of TB Chill Water the only cooling to UC1C.
A - Loss of NSW will result in loss of TB Chill Water to UC1A, but SSW can be aligned to restore.
B - Loss of NSW will result in loss of TB Chill Water to UC1B, but SSW can be aligned to restore.
C - Loss of NSW will result in loss of TB Chill Water to all three UCs.

K/A
Statement: Knowledge of the effect a loss or malfunction of the applicable component cooling water system will have on the Plant Ventilation.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
288000 K6.02	**2.5**	**2.5**	**41.4** **41.9**	**STM-403, Fig 3** **AOP-0009, Page 3** **SOP-0059, Page 41**	**STM-403 OBJ- H11**

TIER/GROUP: **2/2**

ORIGIN: **NEW**

HISTORY:

LOK: **F** LOD: **2**

BANK QID: **924**

QUESTION NO. 65 For RO Exam

Following a LOCA, Drywell pressure is 1.80 psid. The B Charcoal Filter Train of the Control Room HVAC is tagged out for CR Filter Unit Fan HVC-FN1B replacement. The following indication exists for A Charcoal Filter Train in the Control Room on P863:

- Filter Inlet Damper HVC-AOD43A - BOTH red and green lights lit
- CR Filter Unit Fan HVC-FN1A - green light lit
- Filter Fan Discharge Damper HVC-AOD3A - red light lit

All other Control Room Ventilation automatic actions have occurred. Which one of the following describes the actions required for the above conditions and the expected results?

A. Locally open HVC-AOD43A fully in order to start HVC-FN1A and establish POSITIVE pressure in the control room.

B. Locally open HVC-AOD43A fully in order to start HVC-FN1A to establish NEGATIVE pressure in the control room.

C. Place the P863 control switch for HVC-FN1A to START and establish POSITIVE pressure in the control room.

D. Place the P863 control switch for HVC-FN1A to START to establish NEGATIVE pressure in the control room.

ANSWER: A

B - Will establish a positive pressure in the control room.
C - Fan can't be started until inlet damper is full open.
D - See B and C.

K/A
Statement: Ability to predict impact of Control Room HVAC reconfiguration failure and correct,control, or mitigate.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
290003 A2.03	**3.4**	**3.6**	**41.7**	**SOP-0058, Page 11** **STM-402, Page 13**	**STM-402 OBJ- H7**

TIER/GROUP: **2/2** LOK: **H** LOD: **3**

ORIGIN: **BANK**

HISTORY: **River Bend NRC Exam 2/2003** BANK QID: **864**

QUESTION NO. 66 For RO Exam

The following conditions exist:

- Reactor coolant temperature is 135°F.
- All ECCS systems are in standby.
- The Reactor Mode Switch is in SHUTDOWN.
- All reactor vessel head closure bolts are fully tensioned.
- Primary and Secondary Containment are SET (OPERABLE).

Which one of the following is the Plant Operational Mode?

A. Mode 2

B. Mode 3

C. Mode 4

D. Mode 5

ANSWER: C

K/A
Statement: Ability to determine Mode of Operation.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
2.1.22	**2.8**	**3.3**	**41.5** **43.2**	**TS 1.1-1**	**HLO-419** **OBJ- 4**

TIER/GROUP: **3**

LOK: **H** LOD: **2**

ORIGIN: **MODIFIED**

HISTORY: **River Bend NRC Exam 2/2003**

BANK QID: **870**

QUESTION NO. 67 For RO Exam

Which one of the following describes the conventions used to depict:

(1) the state of electrical relays in a S & W Electrical Schematic Drawing (ESK) and
(2) the state of manually-operated gate or globe valves in a EOI Piping and Instrumention Diagram (PID)?

A. (1) ESK relays are shown in their energized state.
(2) PID valve positions are shown for the plant in normal operating mode.

B. (1) ESK relays are shown in their de-energized state.
(2) PID valve positions are shown for the plant in normal operating mode.

C. (1) ESK relays are shown in their energized state.
(2) PID valve positions are shown for the plant in shutdown mode.

D. (1) ESK relays are shown in their de-energized state.
(2) PID valve positions are shown for the plant in shutdown mode.

ANSWER: B

A - Relays shown de-energized.
C - Relays shown de-energized. Valves in normal operating mode.
D - Valves in normal operating mode.

K/A
Statement: Ability to obtain and interpret station electrical and mechanical drawings.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF	
2.1.24	**2.8**	**3.1**	**41.7**	**Print Reading Handout, Page PID Notes**	**HLO-542**	**OBJ- 3**

TIER/GROUP: **3** LOK: **F** LOD: **2**

ORIGIN: **MODIFIED**

HISTORY: **Browns Ferry NRC Exam 6/1995** BANK QID: **925**

QUESTION NO. 68 For RO Exam

Which of the following describes how an independent verification is performed on a valve that is already "locked open" per a valve lineup?

The independent verifier shall . . .

A. verify the locking device is in place as required.

B. remove the locking device, verify the valve is fully open and reinstall the locking device.

C. attempt to move the valve in the "closed" direction to verify the locking device holds the valve open.

D. have another individual verify the position and then verify the locking device installed.

ANSWER: A

K/A
Statement: Knowledge of how to conduct and verify valve lineups.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
2.1.29	**3.4**	**3.3**	**41.10**	**ADM-0076, Page 12**	**HLO-258 OBJ- 3**

TIER/GROUP: **3**
ORIGIN: **BANK**
HISTORY: **River Bend NRC Exam 1/1997**

LOK: **F** LOD: **2**
BANK QID: **949**

QUESTION NO. 69 For RO Exam

An in plant surveillance test is being performed. When the test was stopped for a lunch break, a test pressure guage was removed with OSM permission and individuals conducting the surveillance left the job site for 45 minutes.

Upon returning to the job site following lunch, the test pressure gage was reinstalled and the OSM notified.

What, as a MINIMUM, is required to proceed with the surveillance?

A. Verify prerequisites and re-perform all steps of the surveillance test.

B. Only verify that previously performed steps are in the same state, then continue.

C. Only verify that the prerequisites are met before continuing.

D. Verify prerequisites and previously performed steps are in the same state, then continue.

ANSWER: D

A - Not required to reperform steps.
B - Must also verify prerequisites.
C - Must also verify previously performed steps.

K/A
Statement: Knowledge of surveillance procedures.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF	
2.2.12	**3**	**3.4**	**41.10**	**ADM-0015, Page 33**	**HLO-221**	**OBJ- 6**

TIER/GROUP:

LOK: **F** LOD: **2**

ORIGIN: **BANK**

HISTORY: **River Bend NRC Exam 2/2003**

BANK QID: **164**

QUESTION NO. 70 For RO Exam

During a refueling outage, fuel assemblies designated to be moved from the core to the spent fuel pool are being transferred from the core to the upper fuel storage racks. Which one of the following would require that the transfer of fuel be suspended?

A. Realigning SFC to place the B Cleanup pump on the Fuel Building Spent Fuel Pool.

B. Transferring fuel from the refuel floor to the Fuel Building with the Inclined Fuel Transfer System.

C. Moving fuel assemblies in the Fuel Building spent fuel pool.

D. Aligning SFC to lower water level several inches in the Fuel Building spent fuel pool.

ANSWER: A

Potential to inadvertently lower level in refuel cavity due to many hidden pathways in SFC.
B - Both are allowed to be performed simultaneously.
C - Can do both simultaneously.
D - Exception made for this to make minor adjustments in level required during IFTS ops.

K/A
Statement: Knowledge of refueling administrative requirements.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
2.2.26	**2.5**	**3.7**	**41.10 43.6**	**SOP-0091, Page 5**	**STM-602 OBJ- H6**

TIER/GROUP: **3**
ORIGIN: **NEW**
HISTORY:

LOK: **F** LOD: **2**

BANK QID: **927**

QUESTION NO. 71 For RO Exam

A 28 year old nuclear worker has been contracted to work during the upcoming refuel outage. His NRC Form 4 is current and his annual whole-body (TEDE) dose to date is 1.25 rem.

What is the MAXIMUM additional radiation dose he can be authorized to receive during the remainder of this year in accordance with NRC limits?

A. 1.75 rem

B. 2.75 rem

C. 3.75 rem

D. 5.00 rem

ANSWER: C

K/A
Statement: Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF	
2.3.4	**2.5**	**3.1**	**41.12**	**RWT Page 22**	**RWT-013**	**OBJ- 30**

TIER/GROUP: **3** LOK: **H** LOD: **2**

ORIGIN: **BANK**

HISTORY: **River Bend NRC Exam 7/1997** BANK QID: **434**

QUESTION NO. 72 For RO Exam

The plant was operating at 100% power with the 'A' train of Steam Jet Air Ejectors in service. The Offgas Vent Discharge Isolation Valve, N64-F060, automatically closed due to high Offgas Post-treatment radiation levels. The following are indicated on the Control Room Offgas Control Panel P845:

- Recombiner 'B' Purge Flow Valve, N64-SOV3B, is OPEN
- Prefilter Inlet Drain Valve, N64-F054, is OPEN
- Cooler Condenser Drain Valves, N64-F34A/B, are both CLOSED
- Holdup Line Drain Valve, N64-F023, is CLOSED

With the above conditions, what operator action, if any, is required at P845?

A. Open the Holdup Line Drain Valve, N64-F023.

B. Close the Prefilter Inlet Drain Valve, N64-F054.

C. Close Recombiner 'B' Purge Flow Valve, N64-SOV3B.

D. No action required.

ANSWER: B

Isolates loop seal drain to Chemical Drain Sump to prevent radioactive release to Turbine Bldg. (failed to auto close on F060 closure)

A - Required Auto Isolation on closure of F060.

C - Required to be open with SJAE A in service.

D - Auto isolation action failed to occur (N64-F054 still open) requiring operator action to complete

K/A Statement: Ability to control radiation releases.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
2.3.11	**2.7**	**3.2**	**41.10** **41.13** **43.4**	**ARP-P601-22A-A03**	**STM-606** **OBJ- H7**

TIER/GROUP:

LOK: **H** LOD: **2**

ORIGIN: **NEW**

HISTORY:

BANK QID: **955**

QUESTION NO. 73 For RO Exam

A containment isolation has resulted in entry into AOP-0003, Automatic Isolations. Shortly after an annunciator alerts the crew that EOP entry is required.

At this point, a step yet to be completed in AOP-0003 can only be executed . . .

A. before the EOPs are entered.

B. after the EOPs have been exited.

C. concurrently with EOP execution if it does NOT degrade EOP-required equipment.

D. concurrently with EOP execution provided it is specifically directed in an EOP step.

ANSWER: C

A - Can be executed concurrently.
B - Can be executed concurrently.
D - Not required and typically not in EOP steps.

K/A
Statement: Knowledge of how the event-based emergency/abnormal operating procedures are used in conjunction with the symptom-based EOPs.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
2.4.8	**3**	**3.7**	**41.10 43.5**	**EPSTG-0002, Page B-4-7**	**HLO-511 OBJ- 1**

TIER/GROUP: **3**
LOK: **F** LOD: **2**
ORIGIN: **NEW**
HISTORY:
BANK QID: **928**

QUESTION NO. 74 For RO Exam

Should it become necessary to lower reactor level during an ATWS per EOP-0001A Step RLA-15, the following systems are specified for use to maintain level when injection is reinitiated in Step RLA-20:

Condensate/feedwater
CRD
RCIC
RHR through SDC injection valves

The reason only these systems are to be used is because . . .

A. these systems provide the cleanest source of water for injection into the reactor.

B. their point of injection ensures mixing of the cold injection water with warmer water prior to core entry.

C. these systems can operate automatically so the operator need only verify lineups when this step is reached.

D. at this point in the ATWS, reactor pressure precludes use of other systems.

ANSWER: B

K/A
Statement: Knowledge of the specific bases for EOPs.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
2.4.18	**2.7**	**3.6**	**41.1** **41.2** **41.5** **41.10** **43.6**	**EPSTG-0002, B-7-30**	**HLO-513** **OBJ- 4**

TIER/GROUP: **3**

LOK: **F** LOD: **2**

ORIGIN: **BANK**

HISTORY: **River Bend NRC Exam 1/1995**

BANK QID: **210**

QUESTION NO. 75 For RO Exam

A plant startup is in progress at 45% power following the upshift of both Reactor Recirc Pumps to fast speed. Recirc flow is being raised when the RECIRC LOOP A LOW ΔT annunciator alarms. The following conditions exist:

- PMS displays are out of service.
- Reactor Dome Pressure on P680 meter C33-R605 is 985 psig.
- A Recirc loop suction temperature on recorder B33-R604 is 538°F.

The CRS directs you to consult the ARP and validate the low ΔT condition. 16 minutes later the alarm is still in and no automatic actions have occurred.

Which one of the following is the correct assessment of the alarm condition and required action? ARP for RECIRC LOOP A LOW ΔT included in exam handout materials.

A. Alarm condition is NOT VALID and key operated switch B33-S125A should be placed in BYPASS.

B. Alarm condition IS VALID and the A Recirc Pump XFER TO LFMG pushbutton should be depressed.

C. Alarm condition IS VALID and both Recirc Pump XFER TO LFMG pushbuttons should be depressed.

D. Alarm condition IS VALID and the A Recirc Pump STOP pushbutton should be depressed.

ANSWER: D ARP-P680-4A-A05 MUST BE INCLUDED IN EXAM HANDOUT MATERIALS
Alarm condition is valid per A below and auto action (which failed to occur) per ARP with both pumps in fast speed.
A - Based on dome pressure of 1000 psia, dome temp = 544.6°F. ΔT=6.6°F which is <8.6.
B - With both pumps on fast speed downshift is not automatic action for this condition.
C - Normal action for downshift of both pumps.

K/A
Statement: Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.

K/A	RO	SRO	10 CFR 55	TECHNICAL REFs	OBJECTIVE REF
2.4.50	**3.3**	**3.3**	**41.10** **41.14**	**ARP-P680-4A-A05**	**STM-053 OBJ- H12**

TIER/GROUP: **3**
ORIGIN: **NEW**
HISTORY:

LOK: **H** LOD: **4**

BANK QID: **852**

HANDOUT MATERIALS

for the September 17, 2004 River Bend NRC RO Written Exam

For
RO

Question 3

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)
BYS-PNL01	BYS-CHGR1C BYS-BAT1C	NNS-SWG2A/2B	DC control power to: SWP-P7A(B)(C) CWS-P1A(B)(C)(D) NNS-SWG2A/2B Tie
		CES-CAB2 Supv Panel	Power to Circ Water Harris Panel Supervisory Cabinet.
BYS-SWG01A	BYS-CHGR1A BKR 500 BYS-BAT01A1 BKR 501 BYS-BAT01A2 BKR 502	BYS-PNL02A1	See BYS-PNL02A1
		BYS-PNL02A2	See BYS-PNL02A2
		BYS-PNL03A	See BYS-PNL03A
		BYS-INV01A	DC power supply to inverter
		BYS-INV02, Plant Process Computer UPS	DC power supply to inverter
		TML-EBOP	Turbine Emergency Bearing Oil Pump Possible controlled turbine shutdown at discretion of Operations Superintendent

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)

BYS-PNL02A1	BYS-SWG01A Bkr 508	NPS-SWG1A	Remote operation and electrical trip protection to 13.8 KV supply bkrs to:
			• CNM-P1A(C)
			• FWS-P1A
			• Rx Recirc P1A CB5A
			• A Side Xfrms for:
			  • 4160V Circ Water and River M/U Swgs
			  • 480V LDC 1A, 1C, 1E, 1G, 1J, 1L, 1N, 1Q, 1S, 1U, 2A, 2C, 2E, 2G, (Cooling Towers) 3A, (Clarifier) 3C, (WTH) and MCC12A (River M/U)

		NPS-SWG1C via TRS1 if aligned. NPS-SWG1D via TRS1 if aligned.	Remote operation and electrical trip protection on NPS-ACB43. Remote operation and electrical trip protection on NPS-ACB44.
		NNS-SWG1A	Remote operation and electrical trip protection for 4160V supply Bkrs to: • CCS-P1A • CRD-P1A • HDL-P1A(C) • HVN-CHL1A • HVN-P1A • NNS-SWG1C • NNS-SWG4A • ENS-SWG1B

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)
BYS-PNL02A1 Continued	BYS-SWG01A Continued	NNS-SWG1C via TRS2 if aligned.	Remote operation and electrical trip protection to 4160V supply bkrs to: • CCS-P1C • HVN-CHL1C • HPCS 4160V E22-S004
		NJS-SWG 1A, 1C, 1E, 1G, 1S, 1U	Remote operation and electrical trip protection to 480V distribution bkrs on noted LDC.
		G36-PNLP002, RWCU F/D Panel	125 VDC control power to RWCU F/D Panel.
		EGS-PNL3A, Annunciator Power	125 VDC power to Div I DG local panel annunciators.
		EGF-P2A	Power to Div I DG Fuel Oil Booster Pump.
		BYS-SWG01A	DC control power to swgr load bkrs.
		IHS-SWG01D, Security Computer	DC control power to swgr load bkrs
BYS-PNL02A2	BYS-SWG01A Bkr 508	H13-P612, C Rx High Level Trip	Signal from C Narrow Range Transmitter, Rx High Water Level on Channel C.
		H13-P604, Inverter D17-K699A PRM	Power to A Offgas Post-Treat Rad Monitor with resultant INOP.
		H13-P855, 230 KV Generator Output Bkrs	Power to aux relay circuit for generator bkrs YWC-20635 and YWC-20640.
		H13-P612, Rx Recirc Bkrs 3A & 4A control power	Remote operation, electrical trip protection, and indication for Recirc P1A Bkrs 3A & 4A.

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)
BYS-PNL02A2 Continued	BYS-SWG01A Bkr 508 Continued	H13-P632, ARI Outboard Logic & Valve Power	ARI Outboard Scram capability with loss of power to ARI valves C11-SOVF162B, C11-SOVF162D, and C11-SOVF164A and Outbd Relay logic
		H13-P632, ARI Inboard Logic and valve power	ARI Inboard Scram capability with loss of power to ARI valves C11-SOVF162A, C11-SOVF162C, C11-SOVF160, and C11-SOVF164B and Inbd Relay logic.
BYS-PNL03A	BYS-SWG01A Bkr 507	NNS-SWG4A/4B	Remote operation and electrical trip protection for HVN-CHL2A, B, C, and NNS-SWG4A/B Tie.
		NNS-SWG5A	Remote operation and electrical trip protection for Rx Recirc P1A Bkr 2A.
		NJS-SWG 1J, 1L, 1N, 1Q	Remote operation and electrical trip protection to 480V Distribution bkrs on noted LDCs.
		B33-PNLP001A, LFMG A Relay Logic	Power to LFMG A 1RCSA16 Protective Relaying Circuit.
		EXS-PNL1, Main Gen. Exciter Cabinet	Power to Ckt EXSN10 for Alterrex Excitation System.
		FWL-P3A	Power to FWS-P1A Aux Oil Pump.
		CES-PNL1B & 1C, Generator Primary Trip	Power to Generator Primary Trip Relay Ckt. Loss of Elec. Fault Protection.
		CES-PNL1C, Sta. Service Sudden Press Trip	Power for Main and Norm. Sta. Serv Xfmr Sudden Pressure Trip Relay Ckt.
		CES-PNL1F & 1H Preferred Xfmrs E&C Primary Trip Protection	Power to E&C Preferred Xfmrs Primary Trip Protection

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)
BYS-PNL03A Continued	BYS-SWG01A Continued	2CES-PNL1F&1G Preferred Xfmrs F&D Primary Trip Protection	Power for F&D Pref Xfmrs Primary Trip Protection.
		CES-PNL1G & 1H, Preferred Xfmrs E&C Protection Ckt	Power to protection ckt. SPRA11 for E&C Preferred Xfmrs.
		CES-PNL1H, Bkr. 15	Power to Dual Channel Xfmr Trip, Ckt SPRN02 for RSS NO. 1 Tone System.
		CES-PNL1H, Bkr. 20	Power to Dual Channel Xfmr Trip, Ckt SPGN09 for unit generator Tone System.
BYS-SWG01B	BYS-CHGR1B Bkr 520 BYS-BAT01B1 Bkr 521 BYS-BAT01B2 Bkr 522	BYS-PNL02B1	See BYS-PNL02B1
		BYS-PNL02B2	See BYS-PNL02B2
		BYS-PNL03B	See BYS-PNL03B
		BYS-INV01B	DC Supply to inverter
		BYS-INV04	DC Supply to inverter
		RCIC Gland Seal Compressor common breaker with BYS-INV01B	Power to RCIC Gland Seal Compressor
		TML-ESOP	Turbine Emerg Seal Oil Pump

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)

BYS-PNL02B1	BYS-SWG01B Bkr 528	NPS-SWG1B	Remote operation and electrical trip protection to 13.8 KV supply bkrs to:
			• CNM-P1B
			• FWS-P1B(C)
			• Rx Recirc Pump P1B Bkr 5B
			• B Side Xfmrs for:
			  • 4160V Circ Water and River M/U Swg
			  • 480V LDCs 1B, 1D, 1F, 1H, 1K, 1M, 1P, 1R, 1T, 1V, 2B, 2D, 2F, 2H (Cooling Towers), 3B (Clarifier), 3D (WTH) and MCC12B (River M/U).

		NPS-SWG1C via TRS1 if aligned	Remote operation and electrical trip protection for NPS-ACB43
		NPS-SWG1D via TRS1 if aligned	Remote operation and electrical trip protection for NPS-ACB44
		NNS-SWG1B	Remote operation and electrical trip protection for 4160 VAC supply bkrs to: • CCS-P1B • C11-C001B • HDL-P1B(D) • HVN-CHL1B • HVN-P1B • NNS-SWG1C • NNS-SWG4B • ENS-SWG1A
		NNS-SWG1C via TRS2 if aligned.	See BYS-PNL02A1

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)
BYS-PNL02B1 Continued	BYS-SWG01B Bkr 528	NJS-SWG 1B, 1D, 1F, 1H, 1T, 1V	Remote operation and electrical trip protection to 480 VAC distribution bkrs on noted LDC.
		EGF-P2B	Power to Div II DG Fuel Oil Booster Pump.
		EGS-PNL3B Annunciator Power	Power to Div II DG local panel annunciators
		CES-PNL2A Gen Anti-Motoring Protection	Power for Main Generator Anti-Motoring Protection Ckt.
BYS-PNL02B2	BYS-SWG01B Bkr 528	BYS-SWG01B	DC control power to swg load bkrs
		H13-P613, B Rx High Level Trip	Signal from: • B FWS flow • B Narrow Range Lvl Xmtr Upset Range Lvl Xmtr, Rx High Water Level signal on Channel B.
		H13-P855, Turb. Gen. Condenser Neck Heater	Power to TMBN05 Runback ckt.
		H13-P613, Rx Recirc CB 3B & 4B bkr control	Remote operation, electrical trip protection, and indication for Recirc P1B Bkrs 3B and 4B.
		H13-P604, Inverter. D17-K699B PRM	Power to B Offgas Post-Treat Rad Monitor with resultant INOP.
		H13-P850, BOP Annunciator Electronics	BOP annunciators for the following panels: P870 - All P680 - 02, 03, 08, 09 P808 - All P863 - All P877 - All

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)
BYS-PNL02B2 Continued	BYS-SWG01B Bkr 528 continued	H13-P630, NSSS Annunciator Electronics	NSSS annunciators for the following panels: P845 - All P601 - 16, 17, 18, 19, 20, 21, 22 P680 - 01, 03, 04, 05, 06, 07
		H13-P846, 500 KV SWYD Supv. Cab.	Power to Fancy Point Supervisory Cabinet
BYS-PNL03B	BYS-SWG01B Bkr 527	NNS-SWG5B	Remote control and elect trip protection for Rx Recirc Pump B Bkr 2B.
		NJS-SWG 1K, 1M, 1P, 1R	Remote operation and electrical trip protection to 480V distribution bkrs on noted LDC.
		B33-PNLP001B, LFMG B relay logic	Power to LFMG B 1RCSB16, Protective Relaying Ckt.
		GMC-PNL101, H2-Stator Cooling	Test Mode Auto Start Of Stator Cooling P1A/P1B and Emergency Seal Oil Pump
		FWL-P3B	Power to FWS-P1B Aux Oil Pump.
		FWL-P3C	Power to FWS-P1C Aux Oil Pump.
		CES-PNLA, Generator B/U Trip Protection	B/U Protective Trip circuit for Main Generator.
		CES-PNL1D & 1E, Unit Trip Relays	Power to unit trip relay ckt. SPUN02
		CES-PNL1G & 1H, PFD XFMR B/U Protection	Power for Pfd Xfmrs E and C B/U Protective Trip Relay Ckt.
		CES-PNL1H	Power to dual channel xfmr trip Ckt SPRN03 for RSS No. 2 Tone System.

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)
BYS-PNL03B Continued	BYS-SWG01B Bkr 527	CES-RAK1	Power for the panel CES-RAK1
		2CES-PNL1E & 1G, Bkr 13	Power for SPRB06 Pfd Xfmrs F and D B/U Trip Protection Ckt.
		2CES-PNL1E & 1G, Bkr 14	Power for SPRB11 Pfd Xfmrs F and D Protection Ckt.
BYS-PNL04	BYS-CHGR04 or BYS-BAT04	NNS-SWG6A/B	Control power
		NJS-LDC4A/B	Control power
		SWC-PNL100 Local SWC Control Panel	Control and indication for the following: • SWC-P1A(B)(C), SVC WTR COOL PUMP • SWC-FN1A(B)(C)(D)(E) SVC WTR COOL TWR FAN • SWC Cooling Twr MOVs:
ENB-SWG01A	ENB-CHGR1A Bkr 560 or ENB-BAT01A Bkr 561	ENB-PNL02A	See ENB-PNL02A
		ENB-PNL03A	See ENB-PNL03A
		ENB-PNL04A	See ENB-PNL04A
		ENB-MCC1	See ENB-MCC1
		EGE-CAB01A	DC power to A DG Exciter Cabinet
		ENB-INV01A	DC supply to inverter
		ENB-INV01A1	DC Supply to inverter

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)
ENB-PNL02A	ENB-SWG01A Bkr 567	H13-P601 Meter Ckt	Position indication meters for: • E12-F073A • E12-F074A • E12-F003A • E12-F048A
		H13-P601 Valve Ckt	RCIC Supv Lights for Gov & Trip Throttle Valves. RCIC Steam Drain Trap AOV fail close.
		H13-P621 Relay Logic	125 VDC to RCIC Turbine Manual Trip. 125 VDC to Div I RCIC initiation, isolation and trip relay logic.
		H13-P691 Channel A B/U Scram Ckt.	B/U Scram valve C11-SOVF110A. EOC-RPT Trip Signals to Rx Recirc Bkr 3A & 3B.
		H13-P632 Power Supply E51-K603	RCIC Turbine Supervisory Lights Power to drain valves Remote Turbine Trip Electronic Governor Mechanism (EGM) control.
		H13-P851 CCP Aux. Control	CCP Div I Low Low Pressure, MOV Isolation. Loss Of Div I Manual Initiate capability.
		H13-P628 B21-1060	Div I 125 VDC for operation, permissives, interlocks and indication of ADS Valves.
		H13-P629 Relay Logic	RHR A Relay Logic RCIC Div I Isolation Signal to Turbine Trip Circuit. RHR A Pump suction trip signal from MOV position. Div I RPV LVL 2/LVL 8 Signals to RCIC Logic.

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)
ENB-PNL02A Continued	ENB-SWG01A Continued	H13-P629 Relay Logic and Power Supply E21A-PS1	LPCS Relay Logic. 24 VDC Power Supply to LPCS trip units. LPCS and RCIC alarm and annunciator E51-F045 position signal. RHR Pump A suction trip signal from MOV position. Refer to Attachment 3, Load List For Power Supply E21A-PS1 .
		H13-P623, Nuclear Steam Supply Shutoff (NSSSS)	Isolation of Div I NSSSS, RHR, RWCU, and MSL Drains. Initiation signal for BOP LOCA Isolation.
		H13-P851, SWP Aux Control	Manual Initiate function for SSW Div I Pump & MOV. Auto functions of pump and MOV on a Low Low SWP Pressure.
		H13-P851, DG Aux	Div I DG status light functions.
		H13-P851, Rx Plant Vent. Aux Ckt.	Auto function of HVR-AOV166, SWP-MOV502A and SWP-MOV503A on Low Containment to Annulus Differential pressure condition.
		H13-P951A, Digital Alarm Isolator Ckts	Trip signal to both CRD Pumps.
		H13-P851, Digital Alarm Isolator Ckts	Multiple annunciators, computer points & relays
		H13-P951, Digital Alarm Isolator Ckts	Alarms and computer points

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)
ENB-PNL03A	ENB-SWG01A Bkr 568	EGS-PNL2A, DG Relay Panel	125 VDC power to Div I DG B/U Fault Protection Ckt.
		EGE-CAB01A, Div I DG Excitation Cabinet	125 VDC Excitation Control Circuit for Div I DG
		C61-PNLP001, Remote Shutdown Panel	Alternate power supply that allows operation of RCIC, RHR Pump A, and SRVs from Remote S/D Panel in Emerg Mode.
		ENS-SWG2A, DG Neutral Bkr Switchgear	Remote operation and electrical trip protection for ENS-ACB11, STBY DG A NEUTRAL BKR
		EGS-PNL2A, Relay Pnl Differential Protection	Differential Protection Trip Circuit for Div I DG.
		EGS-PNL3A, DG Rear Air Start SOV	Rear start capability of Div I DG.
		EGS-PNL3A, DG Fwd Air Start and Stop SOV	Fwd start capability and stop capability of Div I DG.
		C61-PNLP001, Remote Shutdown RCIC Gland Seal Compressor.	DC control to RCIC Gland Seal Compressor.
		ENS-SWG3A	Remote operation and electrical trip protection to Rx Recirc Pump Bkr 3A.
		ENS-SWG3B	Remote operation and electrical trip protection to Rx Recirc Pump Bkr 3B.

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)
ENB-PNL04A	ENB-SWG01A Bkr 569	ENS-SWG1A	Remote operation and electrical trip protection to: • Div I DG Output Bkr • RHR Pump A • LPCS Pump • SWP-P2A 4160 VAC Supply Bkrs to: • EJS LDC Xfmrs 1A(2A) • Div I Stby Cooling Tower Xfmr 3A
		EJS-SWG1A	Remote operation and electrical trip protection to: • HVK-CHL1A(C) • HVC-ACU1A(2A) • BYS-CHGR1A • ENB-CHGR1A • Div I DG Exhaust Fan • SFC-P1A • HVF-FLT A heater • EHS-MCC8A • EHS-MCC14A
		EJS-SWG2A	Remote operation and electrical trip protection to: • Div I H2 Recombiner • GTS-FN1A • HVR-FN11A, ANNULUS MIXING FAN • HVR-UC1A, CNTMT UC • GTS-FLT1A Heater • HVR-UC11A • Polar Crane • NHS-MCC102A • EHS-MCC 2A, 2C, 2E, 2G, 2J, 2L, 15A

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)
ENB-PNL04A	ENB-SWG01A Bkr 569 Continued	ENB-SWG1A	Electrical trip protection to all load distribution breakers.
ENB-MCC1	ENB-SWG01A Bkr 565	E51-F010 E51-F013 E51-F019 E51-F022 E51-F031 E51-F045 E51-F059 E51-F068 E51-C002	DC power to electrically operate all RCIC DC MOVs and the . RCIC Turbine Trip and Throttle Valve
ENB- SWG01B	ENB-CHGR1B Bkr 580	ENB-PNL02B	See ENB-PNL02B
	ENB-BAT01B Bkr 581	ENB-PNL03B	See ENB-PNL03B
		EGE-CAB01B	DC power to B DG Exciter Cabinet.
		ENB-INV01B	DC supply to inverter
		ENB-INV01B1	DC supply to inverter
ENB-PNL02B	ENB-SWG01B Bkr 586	ENS-SWG1B	Remote operation and electrical trip protection to: • Div II DG Output Bkr. • RHR Pump B(C) • SWP-P2B(D) 4160V Supply Bkrs to: • EJS LDC Xfmrs 1B(2B) • Div II Stby Cooling Tower Xfmr 3B

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)
ENB-PNL02B Continued	ENB-SWG01B Continued	EJS-SWG1B	Remote operation and electrical trip protection to: • HVK-CHL1B(D) • HVC-ACU1B(2B) • BYS-CHGR1B • ENB-CHGR1B • Div II DG Exhaust Fan • SFC-P1B • HVF-FLT B Heater • EHS-MCC8B • EHS-MCC14B • NHS-MCC101
		EJS-SWG2B	Remote operation and electrical trip protection to: • Div II H2 Recombiner • GTS FN1B • HVR-FN11B, ANNULUS MIXING FAN • HVR-UC1B(1C), CNTMNT UCs • GTS-FLT B Heater • HVR-UC11B • EHS-MCC 2B, 2D, 2F, 2H, 2K, 15B • NHS-MCC102B • IHS-CHGR1D
		H13-P601 meter ckt.	Position indication meter for: E12-F003B E12-F048B E12-F073B E12-F074B
		H13-P601 valve control	RCIC Steam Drain Trap AOVs fail close and lose indication.

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)
ENB-PNL02B Continued	ENB-SWG01B Continued	H13-P852 CCP Aux Control	CCP Div II Low-Low Pressure isolation Div II Manual Initiate capability.
		H13-P692 Channel B B/U Scram Ckt.	Ability to energize B/U Scram C11-SOVF110B. EOC-RPT trip signals to Rx Recirc Bkr 4A & 4B.
		H13-P852 Rx Plant Vent. Aux. Ckt.	Low Containment to Annulus Differential Pressure auto function for the following valves: • HVR-AOV128 • HVN-MOV102 • SWP-MOV502B • SWP-MOV503B • HVN-MOV129 • HVN-MOV130
		H13-P618, Control Panel RHR	RHR B relay logic. RCIC Div II Isolation Signal to Turbine Trip Circuit. RHR Pump B trip signal from MOV position.
		H13-P618, Relay Logic	125 VDC to Div II RCIC Initiation, Isolation and Trip relay logic.
		H13-P631, B21-1060	Div II SOV 125 VDC for operation, permissive, interlocks and indication for ADS valves.
		H13-P852, SSW Aux Control	Manual Initiate function for Div II SSW Pumps & MOVs. Auto functions of pumps & MOV on Low Low SWP Pressure.
		H13-P952A, Digital Alarm Isolator Ckt.	Trip signal to both CRD Pumps.
		H13-P852 DG Aux.	Div II DG Status Light functions
		H13-P852 digital computer isolator ckts.	Annunciators, Computer Points and Relays.

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)
ENB-PNL02B Continued	ENB-SWG01B Continued	H13-P622 NSSSS	Isolation of Div II NSSSS, RHR, RWCU, and MSL Drains Initiation signal for BOP LOCA Isolation.
		H13-P618 AT7 output	E51-F045 Position signal to Steam Drain Trap AOVs. Trip signal to RHR Pump B from suction MOV Interlock.
		ENB-SWG01B	125 VDC to distribution bkrs.
		Power Supply E12A-PS1	Refer to Attachment 2, Load List For Power Supply E12A-PS1
ENB-PNL03B	ENB-SWG01B Bkr 587	EGS-PNL2B, Relay Pnl.	125 VDC power to Div II DG B/U Fault Protection Generator Circuit
		EGE-CAB01B Div II DG Excitation Cabinet	125 VDC Excitation control circuit for Div II DG.
		RSS-PNL102 Remote S/D Panel	Control power and indication for B21-RVF051C, B21-RVF051D, and B21-RVF051G in Emergency Mode.
		ENS-SWG2B DG Neutral Swg	Remote control and elect trip protection for ENS-ACB31, STBY DG B NEUTRAL BKR.
		EGS-PNL2B Relay Pnl. Differential Protection	Differential Protection Trip Circuit for Div II DG.
		EGS-PNL3B DG Rear Air Start SOV	Rear Start capability of Div II DG.
		EGS-PNL3B DG Fwd Air Start & Stop SOV	Fwd Start capability and Stop capability of Div II DG.
		ENS-SWG4A	Remote operation and electrical trip protection to Rx Recirc Pump BKR 4A.
		ENS-SWG4B	Remote operation and electrical trip protection to RX Recirc Pump BKR 4B.

SYSTEM DEVICE TABLES

BUS	POWER FROM	PROVIDES POWER TO	EFFECTS OF POWER LOSS (LOSS OF)
IHS-SWG01D	IHS-CHGR1D Bkr 540	IHS-INV01, Security Computer UPS	Loss of DC power to Inverter
	IHS-BAT01D Bkr 541	BYS-INV03, Backup Swing Inverter	Loss of DC power to Inverter
E22-S001PNL	E22-CHGR Bkr 620	E22-S004 Swgr Bkr Control	Remote operation and electrical trip protection to E22-S004
	E22-BATT Bkr 621	4160V Metal Clad Bkr Control Relaying	Loss of DC control power for Swgr Relay circuits
		Div III DG Fuel Prime & Lube Oil Pumps	Loss of power to both pumps.
		Div III DG Turbo Oil Pump	Loss of power to pump.
		Div III DG Field Flash	Loss of power to Field Flash circuit
		Div III DG Control Cab	Loss of Div III DG Engine control power.
		Div III DG Generator Control Cab	Loss of Div III DG Generator control power.
		H13-P625	Loss of power to Computer Input Cab.
E22-S001PNL	E22-CHGR	H13-P808	Loss of power to Div III circuits.
	E22-BATT	H13-P601 HPCS control	Loss of power to P601 circuits.
		power Supply E22A-PS1	Refer to Attachment 4, Load List For Power Supply E22A-PS1.

For
RO

Question 6

REACTOR COOLDOWN DATA

START TIME PLUS		ACTUAL TIME	RPV PRESSURE	RPV TEMPERATURE FROM STEAM TABLES	RPV TEMPERATURE FROM PYROMETER (RPV COOLANT LESS THAN 212°F)
HRS	MIN				
0	15				
	30				
	45				
	60				
1	15				
	30				
	45				
	60				
2	15				
	30				
	45				
	60				
3	15				
	30				
	45				
	60				
4	15				
	30				
	45				
	60				
5	15				
	30				
	45				
	60				

REACTOR COOLDOWN DATA

START TIME PLUS		ACTUAL TIME	RPV PRESSURE	RPV TEMPERATURE FROM STEAM TABLES	RPV TEMPERATURE FROM PYROMETER (RPV COOLANT LESS THAN 212°F)
HRS	MIN				
6	15				
	30				
	45				
	60				
7	15				
	30				
	45				
	60				
8	15				
	30				
	45				
	60				
9	15				
	30				
	45				
	60				
10	15				
	30				
	45				
	60				
11	15				
	30				
	45				
	60				

REACTOR COOLDOWN DATA

START TIME PLUS		ACTUAL TIME	RPV PRESSURE	RPV TEMPERATURE FROM STEAM TABLES	RPV TEMPERATURE FROM PYROMETER (RPV COOLANT LESS THAN 212°F)
HRS	MIN				
12	15				
	30				
	45				
	60				
13	15				
	30				
	45				
	60				
14	15				
	30				
	45				
	60				
15	15				
	30				
	45				
	60				
16	15				
	30				
	45				
	60				
17	15				
	30				
	45				
	60				

REACTOR COOLDOWN DATA

START TIME PLUS		ACTUAL TIME	RPV PRESSURE	RPV TEMPERATURE FROM STEAM TABLES	RPV TEMPERATURE FROM PYROMETER (RPV COOLANT LESS THAN 212°F)
HRS	MIN				
18	15				
	30				
	45				
	60				
19	15				
	30				
	45				
	60				
20	15				
	30				
	45				
	60				
21	15				
	30				
	45				
	60				
22	15				
	30				
	45				
	60				
23	15				
	30				
	45				
	60				

REACTOR COOLDOWN DATA

STEAM TABLE	
RPV Pressure (psig)	Sat. Steam Temperature (°F)
1100	557
1050	552
1000	546
950	540
900	533
850	527
800	520
750	513
700	505
650	497
600	489
550	479
500	470
450	459
400	448
350	435
300	421
250	406
200	388
150	366
100	338
50	298

REACTOR COOLDOWN DATA

Remarks: _____

_____

_____

_____

_____

Performed By: _____ _____ _____ _____/_____
Signature KCN Initials Date/Time

_____ _____ _____ _____/_____
Signature KCN Initials Date/Time

_____ _____ _____ _____/_____
Signature KCN Initials Date/Time

Reviewed By: _____ _____ _____
OSM/CRS KCN Date/Time

For
RO

Question 7

*G12.1.7

ENTERGY

RIVER BEND STATION
STATION OPERATING MANUAL
*ABNORMAL OPERATING PROCEDURE

*LOSS OF REACTOR PLANT COMPONENT COOLING WATER

PROCEDURE NUMBER:	***AOP-0011**
REVISION NUMBER:	***13**
Effective Date:	* OCT 0 4 2001

NOTE : SIGNATURES ARE ON FILE.

*INDEXING INFORMATION

CONTINUOUS USE

TABLE OF CHANGES

LETTER DESIGNATION TRACKING NUMBER	DETAILED DESCRIPTION OF CHANGES

TABLE OF CONTENTS

1 PURPOSE/DISCUSSION

1.1 The purpose of this procedure is to provide the operator with the instructions necessary to mitigate a loss of Reactor Plant Component Cooling Water.

1.2 Failure of CCP interrupts cooling water supply to the following components:

- Reactor Recirc Pump Seal, Bearing, and Motor Winding Coolers.
- RWCU Pump Seal, Pedestal, and Bearing Coolers.
- Fuel Pool Cooling Heat Exchangers.
- RHR Pump A and B Seal Coolers.
- RWCU Non-regenerative Heat Exchangers.
- Reactor Plant Sample Panel Coolers.
- Drywell Equipment Drain Heat Exchanger.
- CRD Pump Lube Oil Coolers.

2 SYMPTOMS

2.1 CCP Pump trip

2.2 Lowering CCP System pressure

2.3 Lowering CCP Surge Tank level

2.4 RWCU isolation

2.5 Raising Reactor Recirc Pump Temperatures

3 AUTOMATIC ACTIONS

3.1 Standby CCP Pump starts on low pressure or trip of a running pump.

3.2 G33-F004, RWCU PUMPS OUTBD SUCTION VALVE isolates on RWCU Demin Inlet high temperature.

3.3 The following actions occur on CCP extreme low pressure of 56 psig:

- CCP-MOV16A, RPCCW LOOP A SUPPLY closes.
- CCP-MOV335, LOOP A UP STREAM RETURN closes.
- CCP-MOV130, LOOP A DN STREAM RETURN closes.
- CCP-MOV16B, RPCCW LOOP B SUPPLY closes.
- CCP-MOV336, LOOP B UP STREAM RETURN closes.
- CCP-MOV129, LOOP B DN STREAM RETURN closes.
- CCP-MOV169, CRD PUMP CLG UP STREAM closes.
- CCP-MOV163, CRD PUMP CLG DN STREAM closes.
- C11-C001A (B), CRD PUMP A (B) trips.
- SWP-P2A (B) (D), STBY SVCE WTR PUMPs start.
- SWP-MOV40A (B) (D), STBY PUMP 2A (2B) (2D) DISCH opens.
- SWP-MOV57A (B), NORM SVCE WTR SUPPLY closes.
- SWP-MOV96A (B), NORM SVCE WTR RETURN closes.
- SWP-MOV55A (B), STBY CLG TOWER 1 INLET opens.
- SWP-MOV501A(B), RPCCW HX A(B) SUPPLY closes.
- SWP-MOV511A(B), RPCCW HX A(B) RETURN closes.
- SWP-FR60A (B), STBY SVCE WTR SUPPLY & RETURN FLOW RECORDERS start.

- SWP-PR50A (B), STBY CLG TOWER LVL & PUMP DISCH PRESS RECORDERS start.

4 IMMEDIATE OPERATOR ACTIONS

4.1 IF a total loss of CCP occurs, THEN perform the following:

4.1.1. Manually scram the Reactor.

4.1.2. Trip and isolate both Recirc Pumps.

NOTE

Steps in the following section may be performed concurrently as appropriate.

5 SUBSEQUENT OPERATOR ACTIONS

5.1 Perform the following:

- IF the Reactor Recirc Pumps are tripped and seal purge flow is lost, THEN close the Recirc Pump Seal Staging Line Shutoff Valves as follows:

  PLACE the control switch for B33-FVF075A SEAL STAGING LINE SHUTOFF VALVE to AUTO.

  PLACE the control switch for B33-FVF075B SEAL STAGING LINE SHUTOFF VALVE to AUTO.

- IF the following conditions exist, THEN place the Mode Switch in SHUTDOWN:

  Reactor Steam Dome pressure less than 600 psig

  AND

  No CRD Pump is running

  AND

  CRD Accumulator associated with a withdrawn control rod is inoperable.

- IF the following conditions exist, THEN place the Mode Switch in SHUTDOWN:

  Reactor Steam Dome pressure greater than or equal to 600 psig

  AND

  CRD Charging Water Header pressure less than 1540 psig

  AND

  More than one CRD Accumulator is inoperable

  AND

  CRD Charging Water Header pressure can not be restored and maintained within 20 minutes

- At H13-P870, monitor the following:

  CCP-PI127, RPCCW HDR PRESSURE

  CCP-H/A128, RX PLT CMPNT CLG WTR SUPPLY HEADER TEMP

  CCP-LI120, RPCCW SURGE TK LEVEL

- IF RPCCW Surge Tank level is lowering, THEN verify MWS-AOV134, RPCCW SURGE TANK MAKE-UP is open.

- IF a leak is suspected, THEN walkdown the system to locate and isolate the leak.

NOTE

Steps 5.2 and 5.3 may be performed at the discretion of the OSS/CRS.

5.2 Align SSW to the CRD Pump Bearing Cooler as follows:

5.2.1. Open SWP-MOV510B, RPCCW LOOP B SUPPLY.

5.2.2. Open SWP-MOV504B, RPCCW LOOP B RETURN.

5.2.3. Place RPCCW DIV I TEST Switch in TEST.

5.2.4. Place RPCCW DIV 2 TEST Switch in TEST.

5.2.5. Open CCP-MOV169, CRD PUMP CLG UP STREAM.

5.2.6. Open CCP-MOV163, CRD PUMP CLG DN STREAM.

5.2.7. Start the CRD System per SOP-0002, Control Rod Drive Hydraulic.

5.3 Cross-tie SSW to the in-service Fuel Pool Cooling Heat Exchanger as follows:

5.3.1. Open SWP-MOV510A(B), RPCCW LOOP A(B) SUPPLY.

5.3.2. Open SWP-MOV504A(B), RPCCW LOOP A(B) RETURN.

CAUTION

Failure to gradually restore cooling to Recirc Pump Seals can result in thermal shock and subsequent seal failure. Do not rapidly restore cooling to Recirc Pump Seals.

5.4 Determine the cause and restore CCP per SOP-0016, Reactor Plant Component Cooling Water System and SOP-0003, Reactor Recirculation.

6 REFERENCES

6.1 Technical Specifications 3.1.5

6.2 ESK-6CCP01

6.3 ESK-6CCP02

6.4 ESK-11CCP01

6.5 ESK-11CCP02

6.6 USAR Section 9.2.2

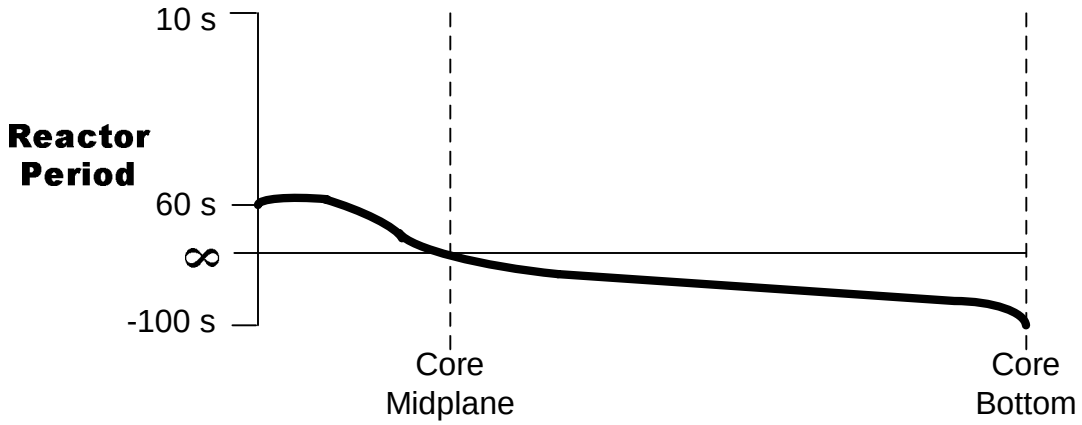
6.7 SDC-115, Reactor Plant Component Cooling Water System Design Criteria

For
RO

Question 36

DRAWING FOR QUESTION 36

A



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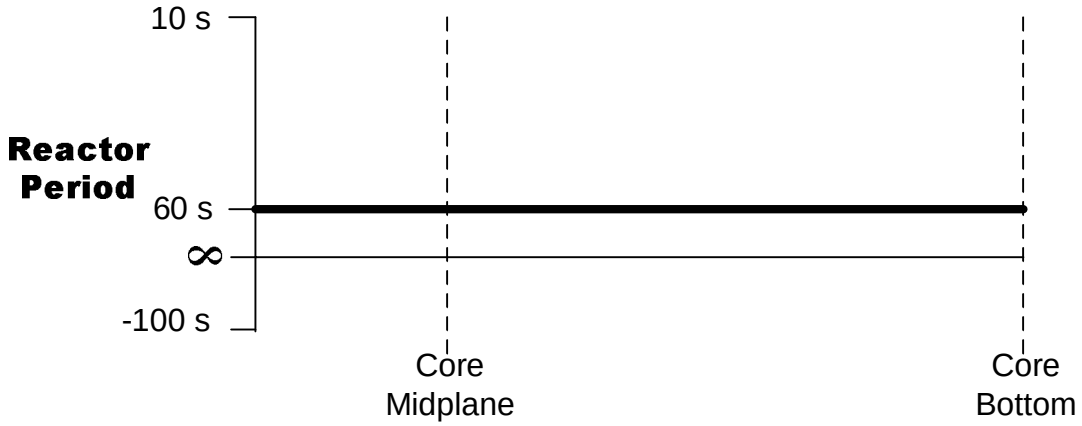

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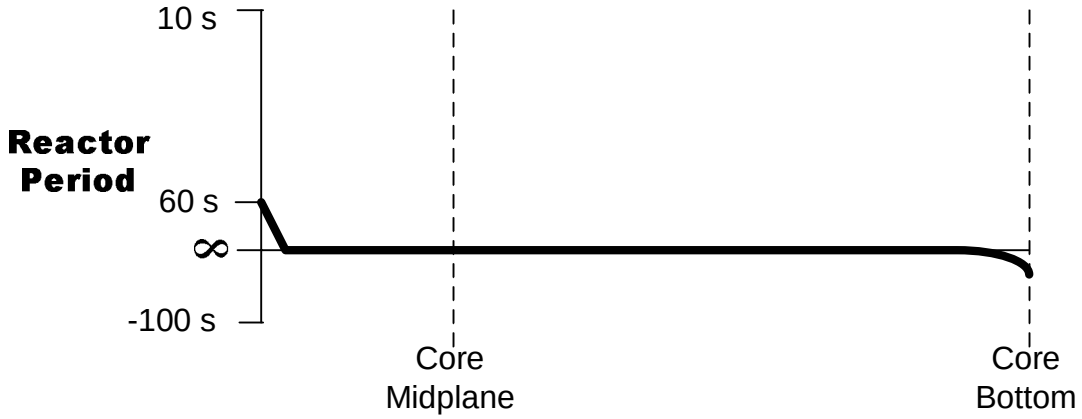

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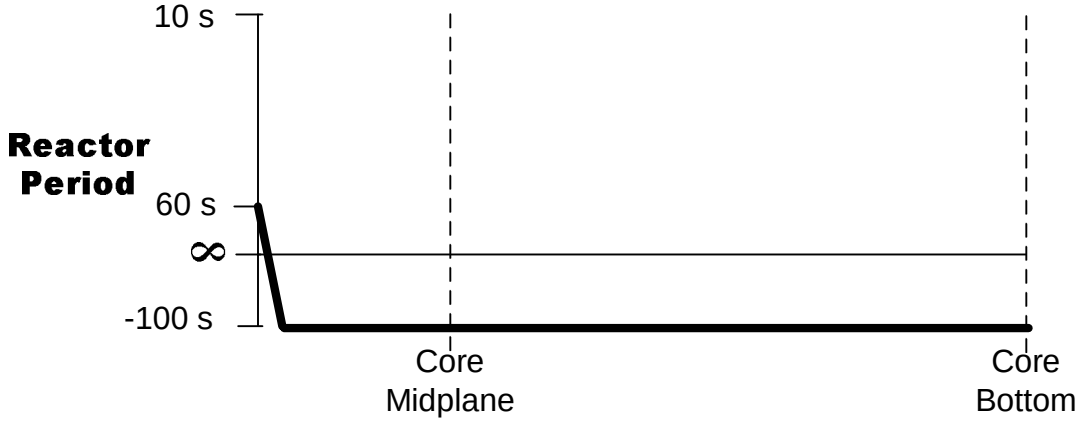

For
RO

Question 75

ALARM NO. 2158	**RECIRC LOOP A LOW ΔT**	H13-P680/04A/A05

INITIATING DEVICES

1. K702A Relay

SETPOINTS

1. Less than 8.6°F difference between Reactor Steam Dome temperature and Recirc Pump A suction temperature.

AUTOMATIC ACTIONS

1. IF Recirc Pump "B" AND Recirc Pump "A" are ≥95% speed, THEN Recirc Pump "A" trips to OFF after a 15 minute time delay.
2. IF Recirc Pump "B" is <95% speed AND Recirc Pump "A" is ≥95% speed, THEN Recirc Pump "A" downshifts to 25% speed (Slow Speed) after a 15 minute time delay.

OPERATOR ACTIONS

1. Verify Automatic Actions.
2. Perform the following:
   - Monitor Recirc Pump vibration levels.
   - IF Recirc Pump vibration levels are excessive, THEN downshift the Recirc Pump to 25% speed AND Go To AOP-0024, Thermal Hydraulic Stability Controls.

NOTE

Video Service Screen 46 can be used to validate the low ΔT condition.

   - Validate the low ΔT condition.
3. IF the Recirc Pump trips, THEN Refer To GOP-0004, Single Loop Operation.
4. IF Recirc Pump downshifts to 25% speed, THEN Go To AOP-0024, Thermal Hydraulic Stability Controls.
5. IF the low ΔT condition is not valid, THEN place key operated switch B33-S125A, STEAM DOME/PUMP SUCTION ΔT INTERLOCK BYPASS, in BYPASS.

LONG TERM ACTIONS

1. IF B33-S125A was placed in BYPASS, THEN continuously monitor the following which may indicate possible Jet Pump or Recirc Pump cavitation:
   a. Power to Flow Map,
   b. Recirc Pump vibration, and
   c. Jet Pump Performance.
2. IF the low ΔT condition is valid, THEN initiate a Condition Report to track the cumulative time for pump cavitation (maximum = 3 hours).

	RECIRC LOOP A LOW ΔT	
ALARM NO. 2158		H13-P680/04A/A05

POSSIBLE CAUSES

1. Reactor pressure decrease.
2. Instrument malfunction (steam dome pressure temperature conversion, recirc pump suction temperature).

REFERENCES

1. GE-NE-B3300280-01 (CR95-1216)
2. MR 96-0004