

FERMI 2 REACTOR OPERATOR INITIAL LICENSE EXAM
SEPTEMBER 2010

1. Thermal stratification of a non-isolated idle Recirculation loop may occur during steady-state Single Loop Operation if the operating Recirculation pump speed is (1) to the transition point where the direction of flow in the idle Recirculation loop changes from (2).
- a. (1) raised
(2) reverse to forward
 - b. (1) lowered
(2) reverse to forward
 - c. (1) raised
(2) forward to reverse
 - d. (1) lowered
(2) forward to reverse

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Question No. 1			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295001 K3.05		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	b.		
EXPLANATION			
a.	Raising operating recirculation pump speed will increase the rate of reverse flow in the idle loop, thus minimizing the temperature difference between the idle loop and the core region.		
b.	Stratification can occur when the operating RR MG Set speed is reduced to the transition point where the direction of flow in the idle Recirculation loop changes from reverse to forward, cooling down the idle Recirculation loop.		
c.	Raising operating recirculation pump speed will increase the rate of reverse flow in the idle loop.		
d.	Lowering recirculation pump speed will eventually result in a transition from reverse flow to forward flow in the idle loop which will cooldown the idle loop and increase the differential temperature between the idle loop and the core region.		
REFERENCE	SOP 23.138.01, Reactor Recirculation System		
COGNITIVE LEVEL	HIGHER		

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2. Fermi 2 was operating at full power with no equipment out of service. Emergency Diesel Generator (EDG) 11 was operating in parallel with off-site power and loaded to 1800KW.
- A transient occurred causing the following EDG 11 response:
 - EDG 11 output breaker tripped
 - EDG 11 continued operating
 - Approximately 2 seconds later EDG 11 output breaker closed
 - EDG 11 loaded to approximately 500KW

Based on the above response select the answer below which best describes the initiating transient.

- a. Loss of SST 64
- b. Loss of SST 65
- c. Loss of Coolant Accident
- d. Complete Loss of Offsite Power coincident with a Loss of Coolant Accident

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Question No. 2			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295003 A1.01		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	SST 64 is the normal supply to ESF Bus 64B and EDG Bus EA 11EA. Upon loss of SST 64, EDG 11 Output Breaker will trip on under-frequency resulted in an under-voltage condition on Bus 64B. After a short time delay to allow load shedding to complete, EDG 11A Output Breaker will reclose to supply EDG Bus EA 11EA and ESF Bus 64B. A load of 500KW would be indicative of loading without ECCS pumps indicating that a LOCA had not occurred.		
b.	SST 65 supplies ESF Busses 65E and 65F but can be manually aligned to supply ESF Busses 64B and 64C. A loss of only SST 65 would not result in the observed response.		
c.	A LOCA by itself would cause the EDG Output Breaker to open, but the EDG would continue to run unloaded until shutdown by the operator.		
d.	A Loss of Offsite Power coincident with a LOCA would cause the same response in the EDG output breaker, but loading would be much higher (> 2000KW)		
REFERENCE	ST-OP-315-0058-001, 4160/480V ELECTRICAL DISTRIBUTION, (pgs 11, 12, 18) ST-OP-315-0065-001, EMERGENCY DIESEL GENERATOR, (pgs 17 & 25)		
COGNITIVE LEVEL	HIGHER		

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3. ~~The plant is operating at full power, with no equipment out of service, when the following group of annunciators actuated:~~

- ~~• 10D68, DIV II ESS 130V BATTERY 2PB TROUBLE~~
- ~~• 2D24, DIV II CSS LOGIC POWER FAILURE~~
- ~~• 2D30, RHR LOGIC B 125V DC BUS POWER FAILURE~~

~~Assuming that no other alarms were received, the above group of annunciators indicates that:~~

- ~~a. ONE Division 2 battery ONLY has been lost.~~
- ~~b. BOTH Division 2 batteries ONLY have been lost~~
- ~~c. ONE Division 2 battery and the associated Battery charger have been lost.~~
- ~~d. BOTH Division 2 batteries and associated battery chargers have been lost.~~

Question 3 was deleted following post exam review which determined that the level of difficulty was beyond that expected for a question on an initial Reactor Operator license examination.

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Question No. 3			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295004 AA2.02		
IMPORTANCE RATING	RO _____		
	SRO _____		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	The CSS and RHR Logic Power Failure alarms would not actuate if only the battery (batteries) were lost. The associated charger(s) would supply power.		
b.	The CSS and RHR Logic Power Failure alarms would not actuate if only the battery (batteries) were lost. The associated charger(s) would supply power.		
c.	The CSS and RHR Logic Power Failure alarms indicate the loss of power to the 2PB2-5 DC Distribution Cabinet.		
d.	A complete loss of Division 2 ESF DC would have caused additional alarms (e.g., 2D50, HPCI LOGIC BUS POWER FAILURE and 10D54, DIV II EDG SEQUENCER TROUBLE).		
REFERENCE	ST-OP-315-0064-001, DC ELECTRICAL DISTRIBUTION (Figure 2); AOP 200.300.260VESF, LOSS OF ESS 130/260V BATTERY BUSES; 10D68, DIV II ESS 130V BATTERY 2PB TROUBLE; 2D24, DIV II CSS LOGIC POWER FAILURE; 2D30, RHR LOGIC B 125V DC BUS POWER FAILURE; 2D50, HPCI LOGIC BUS POWER FAILURE; 10D54, DIV II EDG SEQUENCER TROUBLE; UFSAR Figure 8.3.9, Sheets 1 and 2		
COGNITIVE LEVEL	HIGHER		

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4. Synchronization and initial "block" loading of the Main Generator had just been completed when a transient occurred prompting the operator to initiate a manual Reactor SCRAM and Turbine Trip. The following plant conditions now exist without any additional operator actions having been taken:

- 4D121, 345KV BKR POS CF OPEN alarmed.
- 4D123, 345KV BKR POS CM OPEN alarmed.
- Generator Field Breaker 41CS is TRIPPED.
- Main Turbine Bypass Valves indicate approximately 50% OPEN.
- Reactor Pressure is approximately 945 psig.
- 3D157, POST SCRAM FW LOGIC ACTUATED alarmed
- RPV Water Level dropped to 180 inches is now trending toward the Normal Band.

Which ONE of the following describes the status of the unit?

- a. RPS (logic) has fully actuated, the Main Turbine tripped, and Reactor Power is < 3%.
- b. RPS (logic) actuation is incomplete, the Main Turbine tripped, and Reactor Power is < 3%.
- c. RPS (logic) has fully actuated, the Main Turbine tripped, and Reactor Power is > 3%.
- d. RPS (logic) actuation is incomplete, the Main Turbine did not trip, and Reactor Power is > 3%.

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Question No. 4			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295005 G2.4.4		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	MODIFIED	EQ-OP-802-3003-000-0003-015	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	Incorrect – Based on Bypass valve position, reactor power is > 3%. This would indicate that the RPS was incomplete. The Main Generator Output and Exciter Field Breaker status indicate that the turbine tripped.		
b.	Incorrect – Based on Bypass valve position, reactor power is > 3%. The Main Generator Output and Exciter Field Breaker status indicate that the turbine tripped.		
c.	Correct – Based on Bypass valve position, reactor power is > 3%. This would indicate that the RPS was incomplete. The Main Generator Output and Exciter Field Breaker status indicate that the turbine tripped.		
d.	Incorrect – Based on Bypass valve position, reactor power is > 3%. This would indicate that the RPS was incomplete. The Main Generator Output and Exciter Field Breaker status indicate that the turbine tripped.		
REFERENCE	20.000.21, REACTOR SCRAM; 29.100.01, Sheet 1, RPV CONTROL; 29.100.01 Sheet 1A, ATWS RPV CONTROL		
COGNITIVE LEVEL	HIGHER		

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5. When responding to an ATWS, why is RR pump speed (flow) runback to minimum prior to tripping the RR pumps?
- a. To minimize the tripping current of the RR Pump.
 - b. To prevent a trip of the Main Turbine, caused by RPV level swell.
 - c. To allow more time for completion of earlier ATWS mitigation actions.
 - d. To minimize the change in differential pressure across the pump shaft seals.

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Question No. 5			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295006 AK1.03		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	REESER	
PROPOSED ANSWER	b.		
EXPLANATION			
a.	The pump windings, power leads, and circuit breakers are all sized to carry the expected normal and abnormal operations with margins for unexpected faults.		
b.	If the pump trip is initiated from a high power level the resulting plant transient may cause a turbine trip on high RPV water level due to the swell caused by the rapid change in steam flow and RPV pressure.		
c.	Actions in the level, pressure, and power legs of the EOP are expected to be performed concurrently.		
d.	The change in differential pressure across the pump seals is insignificant.		
REFERENCE	ST-OP-802-3003-001, EMERGENCY OPERATING PROCEDURES – RPV CONTROL		
COGNITIVE LEVEL	FUNDAMENTAL		

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6. The Dedicated Shutdown System transfer switches are designed to:
- a. Bypass all interlocks and breaker protective functions for the equipment to be operated from the Dedicated Shutdown System panels.
 - b. Transfer all power supplies for Dedicated Shutdown System related equipment to sources powered from the Division II ESF busses.
 - c. Transfer Dedicated Shutdown System related equipment:
 - instrument and control power to sources powered from the Division II ESF busses; and
 - controls to locations external to the Main Control Room.
 - d. Transfer Dedicated Shutdown System related equipment:
 - instrumentation and control power to sources external to the Control Center Complex; and
 - controls to locations external to the Control Center Complex.

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Question No. 6			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295016 AK2.01		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	MODIFIED	EQ-OP-802-2017-000-0002-004	
PROPOSED ANSWER	d.		
EXPLANATION			
a.	Bypasses only those interlocks and functions that interface directly with the Main Control Room.		
b.	Only instrumentation and control power sources are transferred, and they are transferred to sources external to the Auxiliary Building and Control Center Complex.		
c.	Instrumentation and control power sources are transferred to sources external to the Control Center Complex.		
d.	Correct		
REFERENCE	ST-OP-315-0099-001, DEDICATED SHUTDOWN SYSTEM (DSS), page 11		
COGNITIVE LEVEL	FUNDAMENTAL		

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7. The plant is operating at full power with no equipment out of service. General Service Water (GSW) system temperature is 50°F. Due to tube fouling the East RBCCW heat exchanger is to be removed from service for cleaning.

Which one of the following summarizes the process for removing the heat exchanger from service?

- a. Place both RBCCW Supplemental Cooling loops in service, secure RBCCW flow through the shell side of the heat exchanger by shutting the heat exchanger outlet isolation valve, then isolate and drain the tube side of the heat exchanger.
- b. Place both RBCCW Supplemental Cooling loops in service, stop one of the RBCCW pumps, secure RBCCW flow through the shell side of the heat exchanger by shutting the heat exchanger outlet isolation valve, then isolate and drain the tube side of the heat exchanger.
- c. Place both divisions of EECW in service, secure RBCCW flow through the shell side of the heat exchanger by shutting the heat exchanger outlet isolation valve, then isolate and drain the tube side of the heat exchanger.
- d. Place both divisions of EECW in service, stop one of the RBCCW pumps, secure RBCCW flow through the shell side of the heat exchanger by shutting the heat exchanger outlet isolation valve, then isolate and drain the tube side of the heat exchanger.

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Question No. 7			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295018 AK3.07		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	d.		
EXPLANATION			
a.	RBCCW Supplemental Cooling is not placed in service until GSW temperature is expected to exceed 60°F, or if EECW is not available. Additionally two RBCCW pump operation is not permitted during single RBCCW heat exchanger operation.		
b.	RBCCW Supplemental Cooling is not placed in service until GSW temperature is expected to exceed 60°F, or if EECW is not available.		
c.	Two RBCCW pump operation is not permitted during single RBCCW heat exchanger operation.		
d.	Correct		
REFERENCE	23.127, REACTOR BUILDING CLOSED COOLING WATER/EMERGENCY EQUIPMENT COOLING WATER SYSTEM 23.127.01, RBCCW SUPPLEMENTAL COOLING SYSTEM		
COGNITIVE LEVEL	HIGHER		

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8. 09:00 - The plant is operating at 100% power. The Station and Control Air systems were aligned in a normal configuration when the following alarms and indications occur:
- 7D69, STATION AIR COMPRESSOR AUTO START, alarms.
 - 7D53, STATION AIR HEADER PRESSURE LOW, alarms.
 - 7D50, DIV I/DIV 2 CONTROL AIR COMPRESSOR AUTO START, alarms.
 - P50-R802, Station Air Header Pressure is stable at 65 psig.

Given the above indications and assuming no operator actions, what is the expected status of the plant air systems?

- a.
 - 1) Two Station Air Compressors are running, supplying the Station Air System and Interruptible Air System (IAS) headers.
 - 2) One NIAS Air Compressor is running supplying the NIAS loads.
- b.
 - 1) One Station Air Compressor is running, supplying Station Air loads only.
 - 2) Both NIAS Air Compressors are running supplying their respective NIAS loads.
 - 3) IAS loads are being supplied from the Division II NIAS sub-system.
- c.
 - 1) Two Station Air Compressors are running, supplying IAS loads only.
 - 2) Station Air distribution headers are isolated from the Station Air supply header
 - 3) Both NIAS Air Compressors are running supplying their respective NIAS loads.
- d.
 - 1) Two Station Air Compressors are running, supplying Station Air loads only.
 - 2) Both NIAS Air Compressors are running supplying their respective NIAS loads.
 - 3) IAS loads are being supplied from the Division II NIAS sub-system.

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Question No. 8			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295019 AA1.01		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	MODIFIED	EQ-OP-315-0171-000-B003-005	
PROPOSED ANSWER	c.		
EXPLANATION			
	The normal configuration has one Station Air Compressor in operation (RUN) and one Station Air Compressor in AUTO (standby). The both NIAS Air Compressors are aligned in standby. The Station Air system normally supplies both Station Air and Control Air (IAS and NIAS) loads. The NIAS divisional subsystems are not cross-tied.		
a.	At 85 psig on the common supply header, the Station Air distribution headers isolate from the common air supply header (F401 shut). Both NIAS compressors will start on low NIAS system pressure.		
b.	One Station Air compressor was running and the standby compressor started at 95 psig. At 85 psig on the common supply header, the Station Air distribution headers isolate from the common air supply header (F401 shut). IAS loads may be supply from Div II NIAS but must be manually aligned.		
c.	Correct – The standby Station Air Compressor auto started (7D69) at a Station Air Header pressure of 95 psig. Air pressure continued to decrease (7D53 at 90 psig) and at 85 psig on the common supply header, the Station Air distribution headers isolated from the common air supply header (F401 shut). When NIAS pressure decreased to 85 psig, the NIAS compressors auto started. At a Station Air header pressure of 75 psig, the NIAS system isolated from the Station Air System, the Divisional Isolation Valves shut, and the NIAS compressors supply their respective divisional loads.		
d.	At 85 psig on the common supply header, the Station Air distribution headers isolate from the common air supply header (F401 shut). IAS loads may be supply from Div II NIAS but must be manually aligned.		
REFERENCE	ST-OP-315-0071-001, COMPRESSED AIR SYSTEMS 23.129, STATION AND CONTROL AIR SYSTEM		
COGNITIVE LEVEL	HIGHER		

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9. Given that the plant is in Mode 4 and that neither loop of RHR is available for shutdown cooling, which ONE of the following Alternate Coolant Circulation and Decay Heat Removal lineups will provide the greatest heat removal capability?
- a.
 - 1) One RR pump in operation
 - 2) One division of Core Spray in operation
 - 3) RPV water level flooded to the Main Steam lines
 - 4) One or more Safety Relief Valves open
 - 5) RHR is operating in Suppression Pool Cooling
 - b.
 - 1) One RR pump in operation
 - 2) Both RWCU pumps in operation
 - 3) SBFW pump in operation
 - 4) RWCU Blowdown flow \approx SBFW pump flow \approx 270 gpm
 - 5) RPV water level \approx 225 inches
 - c.
 - 1) One RR pump in operation
 - 2) Both RWCU pumps in operation
 - 3) RWCU Regenerative Heat Exchanger bypassed
 - 4) RWCU Blowdown flow \approx CRD injection flow \approx 70 gpm
 - 5) RPV water level \approx 225 inches
 - d.
 - 1) FPCCU in operation with 2 pumps and 2 heat exchangers in service
 - 2) FPCCU return flow maximized to the Reactor Cavity pool
 - 3) Reactor Cavity is flooded
 - 4) Both RWCU pumps in operation
 - 5) RWCU Regenerative Heat Exchanger bypassed

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Question No. 9			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295021 AA2.01		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Core Spray pumps will provide a flow-rate of approx 6000 gpm into the core and discharging to the Torus. Each RHR heat exchanger is sized to remove approximately 41E6 BTU/hr.		
b.	RWCU flow is much less and heat removal capability is limited to approximately 14E6 BTU/hr		
c.	RWCU flow is much less and heat removal capability is limited to approximately 14E6 BTU/hr		
d.	Method is only available in Mode 5 with RPV head removed.		
REFERENCE	ST-OP-315-0040-001, CORE SPRAY SYSTEM ST-OP-315-0041-001, RESIDUAL HEAT REMOVAL 23.800.04, ALTERNATE COOLANT CIRCULATION AND DECAY HEAT REMOVAL 23.800.05, ALTERNATE REACTOR COOLANT CIRCULATION AND DECAY HEAT REMOVAL CORE SPRAY OR RHR		
COGNITIVE LEVEL	HIGHER		

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10. Core alterations are in progress. A once burned fuel bundle was just seated in the core and released. SRM counts on the SRM detector in the associated quadrant begins increasing with a steady positive period. As the Reactor Operator, you IMMEDIATELY:
- a. direct the fuel handling staff to terminate fuel movement.
 - b. direct the fuel handling staff to remove the assembly from the core.
 - c. announce the reactor is critical and initiate Standby Liquid Control injection.
 - d. announce the reactor is critical place the Reactor Mode Switch in shutdown to ensure all rods are inserted.

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Question No. 10			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295023 G2.4.11		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	BANK		distractors are a combination of distractors from several bank questions
PROPOSED ANSWER	a.		
EXPLANATION			
a.	MOP13, General Instruction to All Personnel 3.3.5 – If indications of criticality are observed on the SRM indicators during functional, subcritical, or shutdown margin checks or fuel movement, fuel handling shall be terminated until a complete evaluation of the cause of the criticality is determined.		
b.	See “a.” above.		
c.	No procedural guidance to support this action.		
d.	No procedural guidance to support this action. Additionally, all control rods are required to be fully inserted when loading fuel assemblies into the core.		
REFERENCE	MOP13, CONDUCT OF REFUELING AND CORE ALTERATIONS		
COGNITIVE LEVEL	FUNDAMENTAL		

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11. At Fermi 2, the Primary Containment Pressure Limit (PCPL) curve (see attached) is based on:
- a. the pressure capability of the containment.
 - b. the maximum containment pressure at which vent valves can be opened and closed to reject all decay heat from the containment.
 - c. the maximum containment pressure at which SRVs can be opened and will remain opened.
 - d. the maximum containment pressure at which vent valves can be opened and closed to vent the RPV.

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Question No. 11			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295024 EK1.01		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Correct – The pressure capability of the containment is the basis for the shape of Fermi 2's PCPL curve.		
b.	At Fermi 2, the pressure capability of the torus bottom is more limiting than containment vent valve operability.		
c.	At Fermi 2, the pressure capability of the torus bottom is more limiting than SRV operability.		
d.	Fermi 2 does not have pneumatically operated RPV vent valves (they utilize the MS line drains for this purpose).		
REFERENCE	ST-OP-802-3002-001, EMERGENCY OPERATING PROCEDURES CAUTIONS, CURVES AND CALCULATIONS (Section IV.K.)		
COGNITIVE LEVEL	FUNDAMENTAL		

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12. A plant transient has resulted in the following conditions:
- The HPCI system automatically actuated on low RPV level and is the only high pressure injection system in operation.
 - Reactor Pressure being maintained by automatic cycling of the Safety Relief Valves B2104-F013A and G

Given the above conditions, and that the HPCI system is aligned and operating per design, the HPCI system will:

- a. not inject.
- b. inject at a relatively stable flow rate that is much less than the flow controller setpoint.
- c. inject at a relatively stable flow rate approximately equal to the flow controller setpoint
- d. inject at a flow rate that varies widely about the flow controller setpoint.

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Question No. 12			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295025 EK2.06		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	The established pressure band is well below the shutoff head of the pump.		
b.	Automatic cycling of the Safety Relief Valves B2104-F013A and G will maintain RPV pressure within the range of 905-1047 psig (i.e., rated pressure). HPCI is designed to inject at rated flow at rated RPV pressure.		
c.	Automatic cycling of the Safety Relief Valves B2104-F013A and G will maintain RPV pressure within the range of 905-1047 psig (i.e., rated pressure). HPCI is designed to inject at rated flow at rated RPV pressure.		
d.	Flow controller will respond to pressure induced flow changes to maintain relatively stable pressure.		
REFERENCE	ST-OP-315-0039-001, HIGH PRESSURE COOLANT INJECTION (page 11, Pump Design; page 16, Turbine Control) 24.202.01, HPCI PUMP AND VALVE OPERABILITY TEST AT 1025 PSI		
COGNITIVE LEVEL	HIGHER		

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13. The plant is operating at 80% power. An SRV opens and does not respond to operator attempts to close it.
- 1) What action(s) is required when Torus water average temperature reaches 110°F, and
 - 2) What is the basis for those actions?
- a.
- 1) Maximize Torus cooling using all available RHR pumps and heat exchangers to return Torus water average temperature to less than 95°F within 24 hours.
 - 2) Ensures the time period that Torus water temperature is above the normal limit is short enough not to cause a significant increase in unit risk.
- b.
- 1) Initiate Emergency Depressurization of the RPV
 - 2) Prevent SRV system damage and/or containment failure due to increased loading on the SRV tailpipes.
- c.
- 1) If unable to close the valve within 2 minutes, place the mode switch in shutdown.
 - 2) The relief valve tailpipes are not designed for continuous blowdown with the reactor at power, and structural damage could result.
- d.
- 1) Immediately place mode switch in shutdown.
 - 2) This prevents challenging containment design by ensuring that the rate of energy transfer from the RPV to the containment is remains within the capabilities of the suppression pool and the Torus cooling system.

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Question No. 13			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295026 EK3.05		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	MODIFIED	EQ-OP-804-0003-000-0018-043	
PROPOSED ANSWER	d.		
EXPLANATION			
a.	The action to operate all available Torus cooling is required at 95°F, not 110°F, by the Primary Containment Control EOP. The basis statement is for the completion time to restore Torus water temperature below the LCO limit of 95°F.		
b.	Emergency Depressurization is not required until Torus water temperature and RPV pressure cannot be maintained below the Heat Capacity Limit. The basis statement is for the SRV Tailpipe Limit which is a function of Torus water level and not Torus water temperature.		
c.	Technical Specifications require Immediate reactor shutdown by placing the mode switch in shutdown. The basis statement was fabricated.		
d.	Correct.		
REFERENCE	ST-OP-802-3002-001, EMERGENCY OPERATING PROCEDURES CAUTIONS, CURVES AND CALCULATIONS (Section IV.D, and H) ST-OP-802-3004-001, EMERGENCY OPERATING PROCEDURES PRIMARY CONTAINMENT CONTROL Technical Specification Bases B3.6.2.1		
COGNITIVE LEVEL	FUNDAMENTAL		

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14. A small break LOCA has resulted into entry of EOP 29.100.01 Sheet 2, "Primary Containment Control". Drywell temperature has increased to 150°F despite efforts to maintain temperature less than 145°F by operating the Drywell Cooling System per the System Operating Procedure (SOP 23.415). You are now directed to operate ALL available Drywell Cooling per 29.ESP.08.

Select the response below that best summarizes how the Drywell Cooling system is operated per 29.ESP.08 to maximize cooling of the Drywell.

	TWO SPEED DW CLG FANS	SINGLE SPEED DW CLG FANS	RBCCW/EECW TO DW COOLERS
a.	4 fans in SLOW	10 fans in RUN	ISOLATED
b.	4 fans in FAST	10 fans in RUN	UNISOLATED/ RBCCW Supplying
c.	4 fans in FAST	10 fans in RUN	ISOLATED
d.	4 fans in FAST	10 fans in RUN	UNISOLATED/ EECW Supplying

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Question No. 14			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295028 EA1.03		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	b. or d.		
EXPLANATION			
a.	Two speed fans are shifted to Fast and cooling water flow is restored to the Drywell coolers using RBCCW.		
b.	Correct		
c.	Cooling water flow is restored to the Drywell coolers using RBCCW.		
d.	Correct EECW doesn't have the capacity to supply ECSS related load and Drywell coolers also.		
REFERENCE	23.415, DRYWELL COOLING SYSTEM 29.ESP.08, DRYWELL COOLING WATER RESTORATION		
COGNITIVE LEVEL	HIGHER		

Answer key was revised to accept two answers based on post exam review which determined that there was insufficient basis to state that one system (RBCCW or EECW) is more capable of removing heat from the Drywell over the other.

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15. Which ONE of the following is a true statement concerning the T50-R800A(B), Div 1(2) PC Air and Water Temperature, recorders on the H11-P601(602) panels?
- a. Provides indication of Suppression Pool Average Temperature only when Torus Water Level is at or above –11 inches.
 - b. The most accurate source of information concerning the Suppression Pool Average temperature with Torus Water Level above –11 inches.
 - c. Provides the only indication of Suppression Pool Average Temperature in the Main Control Room when Torus Water Level is below –11 inches.
 - d. May be used as a source of information for determining compliance with the Suppression Pool Average Temperature Technical Specification LCO.

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Question No. 15			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295030 EA2.02		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	Recorders are the only source of information on pool temperature when Torus Water Level is below -11 inches.		
b.	Recorder T23-TRE-R800 provides more accurate information due to having more input sensors.		
c.	Correct		
d.	Due to the limited number of temperature inputs, these recorders are not used for determining average temperature for ensuring compliance with the LCO.		
REFERENCE	ST-OP-315-0049-001, PRIMARY CONTAINMENT MONITORING SYSTEM (PCMS) 29.100.01, Sheet 6, Curves, Cautions, and Tables		
COGNITIVE LEVEL	MEMORY		

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16. The plant is operating at 100% power when the following occurs:

- 3D94, DISCH WATER VOL HI LEVEL TRIP, alarms.
- 3D157, POST SCRAM FW LOGIC ACTUATED, alarms.
- 3D153, RFP STARTUP VALVE OPEN, alarms.
- POST SCRAM Feedwater Logic light illuminates
- POST SCRAM Water Level Setdown light illuminates

Two minutes later, reactor water level is 180 inches (lowering). What is required by the CRNSO to maintain the level band of 173-214 inches?

- a. Raise N RFP and/or S RFP Turbine Speeds.
- b. Reset the Master Feedwater Level Controller setdown logic.
- c. Manually open the SULCV using the C32-R620, Startup LCV Controller.
- d. Open N2100-F607, N RFP Disch Line Iso Vlv AND N2100-F608, S RFP Disch Line Iso Vlv.

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Question No. 16			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295031 G2.4.49		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	BANK	EQ-OP-315-0007-000-A021-001	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Pump speed control is in manual at a set speed. Since level is decreasing with the SULCV > 80% open (3D153), speeds must be increased to raise the pump output to increase level and return the SULCV to its operating range (3D153)		
b.	Action will have no effect since speed control is in manual.		
c.	Valve is already open as indicated by annunciator 3D153.		
d.	Result in an overfeed condition.		
REFERENCE	ST-OP-315-0046-001, FEEDWATER CONTROL (Pg 17) 3D153, RFP STARTUP VALVE OPEN		
COGNITIVE LEVEL	HIGHER		

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17. Which one of the following Primary Containment parameters directly influences the actions taken, to mitigate an ATWS, in accordance with 29.100.01 Sheet 1a, RPV Control – ATWS?
- a. Drywell Pressure
 - b. Torus Pressure
 - c. Drywell Temperature
 - d. Primary Containment H₂ Concentration

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Question No. 17			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295037 EA2.07		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Utilized in the decision making process for determining whether to continue lowering RPV water level to control power.		
b.	An indirect effect in that Torus water level may affect which temperature indicators are used in determining BIIT		
c.	An indirect influence in that Drywell Temperature is used in determining availability of RPV level indication.		
d.	Mitigating action are not influenced by H ₂ Concentration		
REFERENCE	29.100.01 Sheet 1a, RPV Control – ATWS 29.100.01 Sheet 6, Curves, Cautions and Tables.		
COGNITIVE LEVEL	HIGHER		

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18. Which malfunction below, were it to occur during a Design Basis Loss of Coolant Accident (DBA-LOCA), would threaten Primary Containment Integrity?

Consider each malfunction, independently, as the ONLY malfunction.

Assume that NO operator action is taken in response to the malfunction.

- a. SST 65 TRIPS and Emergency Diesel Generator 13 FAILS TO START.
- b. Safety Relief Valve B2104-F013H has a break in its tailpipe located in the Drywell.
- c. ALL Drywell Spray Valves FAIL TO OPEN when attempting to initiate Drywell Spray.
- d. ALL Torus to Drywell Vacuum Breaker Check Valves FAIL TO OPEN when Drywell Spray is in operation.

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Question No. 18			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	295038 G2.1.27		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	BANK	EQ-OP-315-0016-000-A012-001	
PROPOSED ANSWER	d.		
EXPLANATION			
a.	DBA LOCA can be mitigated with a single ESF AC Electrical Power Division without exceeding Design Limits.		
b.	Safety Relief Valve operation is not expected during a DBA LOCA. Steam from Tailpipe breaks in the Drywell will be suppressed by downcomers.		
c.	Drywell Spray is NOT required to maintain Containment Integrity during a DBA LOCA.		
d.	Operation of Drywell Sprays accelerates the condensation of steam in the Drywell, rapidly reducing the pressure in the Drywell. Torus to Drywell Vacuum Breakers are designed to limit the negative pressure difference between the Drywell and Torus by returning the non-condensable swept into the suppression chamber back to the Drywell.		
REFERENCE	UFSAR 6.2.1.3.2 and 6.2.1.2.1.10 ST-OP-315-0016 (Pg 12)		
COGNITIVE LEVEL	HIGHER		

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19. Which one of the following, by itself, represents a confirmed fire?
- a. Actuation of 16D27, FIRE ALARM.
 - b. Actuation of 7D6, DIESEL FIRE PUMP AUTO START.
 - c. Actuation of both 16D27 and 7D6.
 - d. A Security Guard reports from the Auxiliary Building that he smells smoke.

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Question No. 19			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	600000 AK1.02		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	Alarm could be due to spurious actuation of a single detector.		
b.	Fire pump auto start could be due to loss of AC power simply low system pressure.		
c.	Fire pump start in conjunction with a fire alarm would likely indicate a fire.		
d.	The odor of smoke by itself is not a reliable indication of a fire.		
REFERENCE	20.000.22, Plant Fires (Pg 2) 16D27, FIRE ALARM		
COGNITIVE LEVEL	HIGHER		

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20. Select the response below which describes the effect that degraded (low) bus voltage has on operating 4160/480 pumps.
- a. Pump output increases as pump motor current increases.
 - b. Pump output decreases due to a reduction in motor power.
 - c. Pump output remains unchanged, but motor power increases.
 - d. Pump output remains unchanged, but motor current increases.

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Question No. 20			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	1		
K/A	700000 AK2.05		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	d.		
EXPLANATION			
a.	Pump output and therefore motor power is determined by system requirements which are not affected by bus voltage.		
b.	Pump output and therefore motor power is determined by system requirements which are not affected by bus voltage.		
c.	Pump output and therefore motor power is determined by system requirements which are not affected by bus voltage.		
d.	Pump output and therefore motor power remain constant, but as voltage decreases, motor current must increase to maintain the required power level.		
REFERENCE	ST-OP-315-0058-001, 4160/480V ELECTRICAL DISTRIBUTION		
COGNITIVE LEVEL	HIGHER		

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21. ~~Synchronization and initial "block" loading of the Main Generator has just been completed. N30-R824, Main Cond Vacuum Pressure Recorder, indicates 0.5 psia.~~

~~At time zero, condenser vacuum begins to degrade (rising at 0.2 psi per minute).~~

~~Assuming that condenser vacuum degrades at a constant rate and that no operator action is taken in response to the degrading vacuum, which one of the following will be the first to result in actuation of a reactor scram?~~

- ~~a. Closure of the MSIVs~~
- ~~b. Trip of the Main Turbine~~
- ~~c. Trip of the Reactor Feed Pump~~
- ~~d. Closure of the Turbine Bypass Valves~~

Question 21 was deleted following post exam review which determined that there was insufficient information provided to answer the question.

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Question No. 21			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	RO		
TIER	1		
GROUP	2		
K/A	295002-AA1.03		
IMPORTANCE RATING	RO ——— 3.4		
	SRO ——— 3.5		
SOURCE	MODIFIED	EQ-OP-202-0121-000-A024-006 EQ-OP-315-0032-000-0108-005	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	MSIV Closure will occur at 6.85 psia, approximately 31.75 minutes from initiation of event.		
b.	Main Turbine Trip will occur at 2.7 psia, approximately 11 Minutes into the event, but the TSV closure trip of RPS is bypassed below \approx 30% RTP. Initial conditions place power at 20-25% RTP		
c.	RFP Turbine(s) would trip at 12.2 psia, approximately 58.5 Minutes from T ₀ , well after the scram.		
d.	Main Turbine Bypass Valve Closure will occur at 6.8 psia, approximately 31.5 Minutes into the event, but because of the low power level, the resultant pressure transient will not result in a scram before the MSIV closure. Explanation supported by simulation.		
REFERENCE	20.125.01, Loss of Condenser Vacuum ST-OP-315-0032-001, Condenser and Auxiliaries (Table 7) ST-OP-315-0007-001, Reactor Feedwater (Table 7)		
COGNITIVE LEVEL	MEMORY		

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22. The plant is at 80% power when the 'A' RPS MG set trips.

During the recovery from this event, while attempting to reset MSIV Isolation Logic, the CRNSO mistakenly pushes the closed pushbuttons on the outboard MSIVs.

Per the accident analysis, the subsequent over pressurization transient is assumed to be limited by which of the following safety features?

- a. MSIV Closure Signal, along with the SRVs.
- b. APRM Neutron-Flux Upscale Signal, along with the SRVs.
- c. MSIV Closure Signal, along with the Main Turbine Bypass System.
- d. APRM Neutron-Flux Upscale Signal, along with the Main Turbine Bypass System.

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Question No. 22			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	2		
K/A	295007 AA2.02		
IMPORTANCE RATING	RO 4.1		
	SRO 4.1		
SOURCE	BANK	315-0105-000-A007-001	
PROPOSED ANSWER	b.		
EXPLANATION			
a.			
b.			
c.			
d.			
REFERENCE	Tech Spec Bases		
COGNITIVE LEVEL	MEMORY		

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23. HPCI and RCIC automatically started following a loss of feedwater. RPV level increased to 220 inches, and HPCI turbine speed indicates 0 RPM.

As RPV level begins to decrease below 160 inches, the CRS directs HPCI to be restarted.

What action must be taken in order to restart HPCI?

- a. Open E4150-F001 turbine steam supply isolation valve.
- b. Open E4150-F003 HPCI steam supply outboard isolation valve.
- c. Depress the HPCI initiation signal reset pushbutton and start the aux oil pump.
- d. Depress the reactor high water level signal reset pushbutton and open the E4150-F006 Valve.

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Question No. 23			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	2		
K/A	295008 AA1.01		
IMPORTANCE RATING	RO 3.7		
	SRO 3.7		
SOURCE	BANK	315-0139-000-C001-001	
PROPOSED ANSWER	d.		
EXPLANATION			
a.			
b.			
c.			
d.			
REFERENCE	23.203		
COGNITIVE LEVEL	HIGHER		

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24. Given the following list of RPV Water Level Indications select the indicator(s) that are classified, in Technical Specifications, as Post Accident Monitoring Instruments.
1. C32-R606A(B) Narrow Range Level Indicators
 2. C32-R614 (Narrow Range Level Recorder)
 3. B21-R604A(B) (Wide Range Level Indicators)
 4. B21-R623A(B) (Wide Range Level Recorders)
 5. B21-R610(R615) (Core Level Recorders)
 6. B21-R605 (Flood-Up Level Indicator)
- a. 3 and 6 ONLY
 - b. 4 and 5 ONLY
 - c. 1, 3, and 6
 - d. 2, 4, and 5

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Question No. 24			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	2		
K/A	295009 G2.4.3		
IMPORTANCE RATING	RO 3.7		
	SRO 3.9		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	b.		
EXPLANATION			
a.	3 and 6 are not classified as PAM		
b.	Correct		
c.	1, 3 and 6 are not classified as PAM.		
d.	2 is not classified as PAM		
REFERENCE	Technical Specification LCO 3.3.3.1 and Table 3.3.3.1-1 ST-OP-315-0021-001REACTOR PRESSURE VESSEL INSTRUMENTATION RPV INSTRUMENTATION (Table 1)		
COGNITIVE LEVEL	MEMORY		

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25. The plant was operating at 100% power when a spurious reactor scram occurred. The control rods are not completely inserted.

Reactor Power is 50%. The EOPs have been entered, the BIIT has been exceeded, and the CRS has ordered terminate and prevent.

Assuming that the terminate and prevent is ended at TAF, how will the containment parameters respond during this evolution?

- a. Drywell temperature will rise when drywell cooling fans trip.
- b. Drywell temperature will rise when cooling water is isolated.
- c. Drywell temperature will lower as RPV pressure and temperature lower.
- d. Drywell temperature will lower when dual speed fans shift to fast speed.

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Question No. 25			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	2		
K/A	295012 AK1.01		
IMPORTANCE RATING	RO 3.3		
	SRO 3.5		
SOURCE	BANK	802-3003-000-0001-020	
PROPOSED ANSWER	a.		
EXPLANATION			
a.			
b.			
c.			
d.			
REFERENCE	Generic Fundamentals		
COGNITIVE LEVEL	HIGHER		

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26. The plant was operating at 70% rated power when an INCREASE in Main Generator megawatts was observed. The positions of the control rods and recirculation flow rate have not changed.

Which of the following caused the INCREASE in Main Generator power?

- a. A Safety Relief Valve has **OPENED**.
- b. A Turbine Bypass Valve has **OPENED**.
- c. A Main Steam Line Drain Valve has **OPENED**.
- d. A Feedwater Heater String Bypass Valve has **OPENED**.

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Question No. 26			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	2		
K/A	295014 AK2.06		
IMPORTANCE RATING	RO 3.4		
	SRO 3.5		
SOURCE	BANK	315-0131-000-0005-011	
PROPOSED ANSWER	d.		
EXPLANATION			
a.	will LOWER Steam flow to the Turbine Generator, LOWERING Generator Power		
b.	will LOWER Steam flow to the Turbine Generator, LOWERING Generator Power		
c.	will LOWER Steam flow to the Turbine Generator, LOWERING Generator Power		
d.	A Feedwater Heater String Bypass Valve OPENING will lower Feedwater Temperature, adding positive reactivity. Increased Reactor Power will cause Steam Pressure to RISE, Governor Valves will OPEN, and Generator Power will RISE.		
REFERENCE	20.107.02		
COGNITIVE LEVEL	HIGHER		

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27. The plant is operating at 100% power when an unisolable steam leak on an instrument line results in high radiation levels in the Secondary Containment.

The CRS announces to the crew that ARM channel 2, RB 1st floor, is approaching its Max Safe Operating Rad Level and that the crew is entering 29.100.01 Sheet 1, RPV Control.

The reason that the crew will take this action is that entering 29.100.01 Sheet 1, RPV Control, will _____.

- a. direct the performance of a plant scram and RPV parameter control as a means of preventing any further increase in radiation levels.
- b. direct the performance of an emergency RPV depressurization to terminate any further increase in radiation levels.
- c. direct the performance of a normal reactor shutdown and RPV parameter control as a means of preventing any further increase in radiation levels.
- d. allow for the systematic control of RPV parameters before meeting the conditions to shutdown or depressurize as a means of preventing any further increase in radiation levels.

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Question No. 27			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	1		
GROUP	2		
K/A	295033 EK3.02		
IMPORTANCE RATING	RO 3.5		
	SRO		
SOURCE	BANK	802-3005-000-0001-026	
PROPOSED ANSWER	a.		
EXPLANATION			
a.			
b.			
c.			
d.			
REFERENCE	BWROG Emergency Procedure Guidelines		
COGNITIVE LEVEL	MEMORY		

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28. Which of the following components/interlocks ensure pump minimum flow protection during a small break LOCA?
- a. Testable check valves E11-F050A(B) AND LPCI Loop Select Logic
 - b. Testable check valves E11-F050A(B) AND E11-F007A(B), RHR Pumps A/C(B/D) Recirc Valves
 - c. E11-F007A(B), RHR Pumps A/C(B/D) Recirc Valves ONLY
 - d. LPCI Loop Select Logic AND E11-F007A(B), RHR Pumps A/C(B/D) Recirc Valves

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Question No. 28			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	203000 K4.03		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	ZOIA	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	Check valves prevent reverse flow in idle loop, not pump protection. Loop Select redirects RHR flow to intact loop for core cooling, not pump protection.		
b.	Check valves prevent reverse flow in idle loop, not pump protection.		
c.	Correct answer.		
d.	Loop Select redirects RHR flow to intact loop for core cooling, not pump protection.		
REFERENCE	Lesson Plan ST-OP-315-041-001, Residual Heat Removal, Rev. 14		
COGNITIVE LEVEL	MEMORY		

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29. The plant is in MODE 4, COLD SHUTDOWN. The following conditions exist:
- BOTH Recirc Pumps are secured.
 - Shutdown Cooling is being provided by RHR Loop A.
 - Reactor Coolant System Temperature is 170°F, with a cooldown in progress.
 - RPV Water Level is 200 inches on the Narrow Range Level indicators.

RPV Water Level is...

- a. too low for natural circulation operations.
- b. too low to ensure adequate NPSH for RHR pumps.
- c. high enough to flood the Main Steam lines.
- d. low enough to generate a Group 4 isolation signal.

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Question No. 29			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	205000 K5.03		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	MODIFIED	EQ-OP-202-0401-000-0205-008 EQ-OP-315-0141-000-A013-001	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Correct answer - due to thermal stratification.		
b.	NPSH is assured by the RHR pump's elevation.		
c.	The bottom of the MSL is 279"		
d.	Shutdown Cooling Isolation on Level 3 (173").		
REFERENCE	Lesson Plan ST-OP-315-041-001, Residual Heat Removal, Rev. 14		
COGNITIVE LEVEL	MEMORY		

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30. A calculation error resulted in all Division 1 Wide Range Reactor Water Level channels being calibrated to read higher than the Division 2 Wide Range Reactor Water Level Channels.

During a level transient the following RPV levels are observed:

- Division 1 Wide Range level instruments 115 inches
- Division 2 Wide Range level instruments 110 inches

Assuming NO operator action, which of the following conditions would the operator expect to see?

- a. The MSIVs would be isolated
- b. ALL Containment Isolation Valves would be closed
- c. HPCI and RCIC would be actuated
- d. HPCI and RCIC would NOT be actuated

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Question No. 30			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	206000 K6.11		
IMPORTANCE RATING	RO 3.5		
	SRO		
SOURCE	NEW	ZOIA/Reeser	
PROPOSED ANSWER	d c.		
EXPLANATION			
a.	Incorrect, since the MSIVs isolate at Level 1 (31.8 inches).		
b.	Incorrect, only certain containment isolation valves close on Level 2 (110.8 inches).		
c.	Incorrect Correct, actuation requires at least one instrument from each division to be below the setpoint (N692A or B AND N692C or D). Both Division 2 instruments (N692B and D) are below the actuation setpoint.		
d.	Correct Incorrect, since both Division 4-2 level instruments (N692A&B N692B&D) read above below the setpoint (110.8 inches), the 1 out of two logic (N692A or B AND N692C or D) is not satisfied.		
REFERENCE	ST-OP-315-0043-001, REACTOR CORE ISOLATION COOLING (RCIC), Figure 8 ST-OP-315-0039-001, HIGH PRESSURE COOLANT INJECTION (HPCI), Figure 4		
COGNITIVE LEVEL	Higher		

Answer key was revised to correct a miss-interpretation of the logic.

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31. A LOCA has occurred, and the following conditions exist:

- RPV Pressure is 350 psig and steady
- CSS Pumps have started automatically

Which of the following are the expected conditions of the CSS system?

1. E2150-F004A and B Isolation Valve Position
 2. E2150-F005A and B Isolation Valve Position
 3. RPV Injection Flow from CSS
- a. 1. Open 2. Open 3. Occurring
- b. 1. Open 2. Open 3. NOT Occurring
- c. 1. Open 2. Closed 3. NOT Occurring
- d. 1. Closed 2. Open 3. NOT Occurring

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Question No. 31			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	209001 A1.02		
IMPORTANCE RATING	RO 3.2		
	SRO		
SOURCE	NEW	ZOIA	
PROPOSED ANSWER	b.		
EXPLANATION			
a.	Incorrect, since the given pressure is above the 290 psig pump shutoff head. (ST-OP-315-0040-001, p. 16)		
b.	Correct answer, the isolation valves are open because the given RPV pressure is below the 461 psig permissive setpoint, however, no injection flow is occurring because the given pressure is above the 290 psig pump shutoff head. (ST-OP-315-0040-001, p. 12 &16)		
c.	Incorrect, since the given RPV pressure is below the 461 psig permissive setpoint, F005A(B) should be OPEN. (ST-OP-315-0040-001, p. 12 &16)		
d.	Incorrect, since the given RPV pressure is below the 461 psig permissive setpoint, F004A(B) should be OPEN. (ST-OP-315-0040-001, p. 12 &16)		
REFERENCE	Lesson Plan ST-OP-315-0040-001, Core Spray System		
COGNITIVE LEVEL	HIGHER		

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32. Annunciator 3D7, SLC TANK TEMPERATURE HIGH/LOW is lit. The tank temperature is observed to be 45°F.

Which one of the following is the most probable cause for the alarm?

- a. Chemical addition to the SLC tank.
- b. Excessive cooling from the local area cooler.
- c. Failure of the SLC tank heater to automatically energize on low temperature.
- d. Failure of the Reactor Building HVAC to shutdown on low outside air temperature.

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Question No. 32			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	211000 A2.05		
IMPORTANCE RATING	RO 3.4		
	SRO		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	d.		
EXPLANATION			
a.	Incorrect; SOP 23.139 requires the heater to be in operation during chemical addition.		
b.	Incorrect; there is no area cooler in the vicinity of the SLC tank.		
c.	Incorrect, the heater does not cycle automatically, it must be manually operated.		
d.	Correct answer; low ambient temperature caused by failure of the RB HVAC system to automatically shut down on low supply temperature.		
REFERENCE	Lesson Plan ST-OP-315-0014-001, SLC System ARP 3D7, SLC TANK TEMPERATURE HIGH/LOW ST-OP-315-0066-001, REACTOR BUILDING HVAC (RBHVAC)		
COGNITIVE LEVEL	HIGHER		

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33. The "B" RPS MG Set was taken out of service for maintenance, when the annunciator 9D70, DIV I 120V RPS BUS 1A POWER FAILURE alarmed.

What is the expected status of the following RPS system components?

	TRIP CHANNEL A	TRIP CHANNEL B	SCRAM AIR HEADER
a.	Tripped	Tripped	Vented
b.	NOT Tripped	Tripped	Vented
c.	Tripped	NOT Tripped	NOT Vented
d.	NOT Tripped	NOT Tripped	NOT Vented

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Question No. 33			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	212000 A3.07		
IMPORTANCE RATING	RO 3.6		
	SRO		
SOURCE	c.	ZOIA	
PROPOSED ANSWER	NEW		
EXPLANATION			
a.	Incorrect, since the "B" MG set would be on the Alternate Power Supply, so no scram would occur. (ST-OP-315-0027-001, p. 9 and 10, ARP 9D70)		
b.	Incorrect, the "A" channel would be tripped, the "B" would not be tripped and the Scram Air Header would NOT be vented. (ST-OP-315-0027-001, p. 9 and 10, ARP 9D70)		
c.	Correct answer, the "A" channel would be tripped, the "B" would not be tripped and the Scram Air Header would not be vented. (ST-OP-315-0027-001, p. 9 and 10, ARP 9D70)		
d.	Incorrect, since the "A" channel would be tripped. (ST-OP-315-0027-001, p. 9 and 10, ARP 9D70)		
REFERENCE	Lesson Plan ST-OP-315-0027-001, Reactor Protection ARP 9D70		
COGNITIVE LEVEL	HIGHER		

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34. What is the impact on Intermediate Range Neutron Monitoring indication at P603 if there is a loss of power to 120 VAC UPS Distribution Cabinet B?
- a. A loss of all IRM channel indications.
 - b. A loss of indication on IRM channels A, B, C, and D
 - c. A loss of indication on IRM channels E, F, G, and H
 - d. A loss of indication on IRM channels B, D, F, and H

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Question No. 34			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	215003 A4.01		
IMPORTANCE RATING	RO 3.3		
	SRO 3.3		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	All IRM recorders are powered from 120 VAC UPS Distribution Cabinet B		
b.	See a.		
c.	See a.		
d.	See a.		
REFERENCE	ST-OP-315-0023-001, INTERMEDIATE RANGE MONITORING (IRM); Table 2 – IRM Power Supplies		
COGNITIVE LEVEL	MEMORY		

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35. During a reactor startup in Mode 2, a low output failure of an Intermediate Range Monitor "Voltage Pre-amplifier" will result in the following alarms:
- a. IRM DOWNSCALE only
 - b. IRM DOWNSCALE and CONTROL ROD WITHDRAWAL BLOCK only
 - c. IRM DOWNSCALE and NEUTRON MONITORING SYSTEM CHANNEL TRIP only.
 - d. IRM DOWNSCALE, CONTROL ROD WITHDRAWAL BLOCK, and NEUTRON MONITORING SYSTEM CHANNEL TRIP

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Question No. 35			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	215003 G2.4.45		
IMPORTANCE RATING	RO 4.1		
	SRO 4.3		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	b.		
EXPLANATION			
a.	Failure would also result in a rod block.		
b.	Failure would result in a downscale reading and rod block		
c.	Failure would not result in high reading or input to the INOP trip.		
d.	Failure would not result in high reading or input to the INOP trip.		
REFERENCE	ST-OP-315-0023-001, INTERMEDIATE RANGE MONITORING (IRM); Table 5 – IRM Alarms		
COGNITIVE LEVEL	MEMORY		

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36. The optimum position of the SRM detectors, within the reactor core, for monitoring neutron flux changes caused by control rod motion during reactor startup is ...
- a. 15 inches above the bottom of the active fuel
 - b. 15 inches below the centerline of the active fuel
 - c. 15 inches above the centerline of the active fuel
 - d. 15 inches below the top of the active fuel

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Question No. 36			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	215004 K1.06		
IMPORTANCE RATING	RO 2.8		
	SRO 2.8		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	During startup, neutron flux tends to be peaked in the top of the core where fuel is first exposed.		
b.	During startup, neutron flux tends to be peaked in the top of the core where fuel is first exposed.		
c.	This position has been determined through operating experience to be the optimum position for monitoring response to control rod motion during startup.		
d.	15 inches above core centerline allows a broader range of coverage while ensuring that flux changes are detected.		
REFERENCE	ST-OP-315-0022-001, SOURCE RANGE MONITORING (SRM) (page 8)		
COGNITIVE LEVEL	MEMORY		

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37. A reactor startup is in progress, with the reactor critical on a 500 second period. SRMs and IRMs are reading as follows:

SRM A	4×10^4	IRM A	Range 3	15
		IRM B	Range 3	35
SRM B	6×10^4	IRM C	Range 2	75
		IRM D	Range 3	30
SRM C	5×10^4	IRM E	Range 3	20
		IRM F	Range 4	30
SRM D	7×10^4	IRM G	Range 3	25
		IRM H	Range 4	20

Given the above indications and assuming that the only operator action to be performed is to initiate withdrawal of the SRM detectors, which combination of SRMs below may be fully withdrawn simultaneously without causing a control rod block?

- a. A and C
- b. B and D
- c. A, B and D
- d. A, B, C, and D

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Question No. 37			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	215004 G2.2.44		
IMPORTANCE RATING	RO 4.2		
	SRO 4.4		
SOURCE	MODIFIED	EQ-OP-315-0022-000-A016-001	
PROPOSED ANSWER	b.		
EXPLANATION			
a.	IRMs A, C, E, and G must all be on Range 3 or higher to bypass the “downscale” and “retract not permitted” rod blocks.		
b.	IRMs B, D, F, and H are all on Range 3 or higher.		
c.	IRMs A, C, E, and G must all be on Range 3 or higher to bypass the “downscale” and “retract not permitted” rod blocks.		
d.	IRMs A, C, E, and G must all be on Range 3 or higher to bypass the “downscale” and “retract not permitted” rod blocks.		
REFERENCE	ST-OP-315-0022-001, SOURCE RANGE MONITORING (SRM) – System Interrelationships (page 16)		
COGNITIVE LEVEL	HIGHER		

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38. APRM 2 has the following number of LPRM inputs:

- A level - 5
- B level - 6
- C level - 4
- D level - 3

Based on the inputs described which one of the following sets of alarms would result?

- 3D99 APRM INOP
3D113 CONTROL ROD WITHDRAWAL BLOCKED
- 3D103 APRM TROUBLE
3D98 APRM FLUX DOWNSCALE
- 3D99 APRM INOP
3D98 APRM FLUX DOWNSCALE
- 3D103 APRM TROUBLE
3D113 CONTROL ROD WITHDRAWAL BLOCKED

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Question No. 38			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	215005 K1.10		
IMPORTANCE RATING	RO 3.3		
	SRO		
SOURCE	BANK	EQ-OP-315-0024-000-0104-018	
PROPOSED ANSWER	d.		
EXPLANATION			
a.	The response is a common misconception and sounds plausible; however, APRM INOP would not alarm for this condition.		
b.	The response is a common misconception and sounds plausible; however, APRM DOWNSCALE would not alarm for this condition.		
c.	The response is a common misconception and sounds plausible; however, APRM DOWNSCALE and APRM INOP would not alarm for this condition.		
d.	The two listed annunciators actually result from the stated conditions.		
REFERENCE	23.605		
COGNITIVE LEVEL	HIGHER		

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39. With the plant operating at full power, the following indications are received:
- Recirc Loop B flow indicator (B31-R613) indicates down scale.
 - Reactor Recirculation Pump speeds remained constant.
 - Recirc Loops A and B Flow Recorder (B31-R614) traces for both A and B loops remain steady with no change.
 - Reactor Power indications remain unchanged.

What is the plant response to the above conditions?

- a. Only alarms have occurred.
- b. Only alarms and a rod block have occurred.
- c. Alarms, a rod block, and a half scram on Div 1 RPS have occurred.
- d. Alarms, a rod block, and a half scram on Div 2 RPS have occurred.

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Question No. 39			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	215005 K5.05		
IMPORTANCE RATING	RO 3.6		
	SRO 3.6		
SOURCE	MODIFIED	315-0124 000-A014-003	
PROPOSED ANSWER	b.		
EXPLANATION			
a.	Incorrect – see explanation for “c”		
b.	Correct – The failed transmitter provides ½ of the flow input into APRM 4. The failure will cause a reduction of the simulated thermal power scram and rod block setpoints below the current power level. Since only one APRM is affected no scram signal is generated.		
c.	Incorrect – see explanation for “b”		
d.	Incorrect – see explanation for “b”		
REFERENCE	ST-OP-315-0024-001, POWER RANGE NEUTRON MONITORING (PRNM) ST-OP-315-0004-001, REACTOR RECIRCULATION SYSTEM (RRS) 3D113, CONTROL ROD WITHDRAWAL BLOCK 3D115, APRM FLOW UPSCALE 3D73, TRIP ACTUATORS A1/A2 TRIPPED 3D101, APRM SIMULATED THERMAL POWER UPSCALE TRIP 3D102, APRM SIMULATED THERMAL POWER UPSCALE		
COGNITIVE LEVEL	MEMORY		

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40. Given that the RCIC system is in a standby lineup, how does the loss of 480 VAC MCC 72F impact the RCIC system?
- a. One or more containment isolation valves is(are) inoperable.
 - b. Full operability of the system (including containment isolation valves) is maintained.
 - c. Automatic and manual initiation of the system is prevented.
 - d. System actuation capability is maintained but at reduced capacity.

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Question No. 40			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	217000 K2.01		
IMPORTANCE RATING	RO 2.8		
	SRO		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Correct – The safety related isolation function of E5150-F007 is prevented because of the loss of power.		
b.	Incorrect – The safety related isolation function of E5150-F007 is prevented because of the loss of power.		
c.	Incorrect – automatic and manual actuation of the system is unaffected.		
d.	Actuation capability and capacity are unaffected.		
REFERENCE	23.206		
COGNITIVE LEVEL	HIGHER		

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41. While operating at 100% CTP, a Station Blackout occurs. Div 1 ESF batteries experience a fault, and Div 1 DC distribution is lost. Alarm 1D56, RCIC LOGIC BUS POWER FAILURE, comes in.

Which statement below describes the effect, if any, that the loss of Div 1 ESF DC distribution has on adequate core cooling?

- a. HPCI must be used to maintain adequate core cooling.
- b. RHRSW to RHR X-connect must be used to maintain adequate core cooling.
- c. Adequate core cooling cannot be maintained since all injection sources are lost.
- d. RCIC can be used for injection but must be controlled in manual from the Control Room.

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Question No. 41			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	217000 K3.04		
IMPORTANCE RATING	RO 3.6		
	SRO		
SOURCE	BANK	315-0043-000-A014-002	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	correct because all AC power is lost and only steam driven sources are available to maintain adequate core cooling. HPCI is the remaining steam driven injection source.		
b.	plausible because candidate must know that RHRSW is not available during a SBO.		
c.	plausible as SBO has limited injection sources		
d.	plausible because under certain logic failures RCIC will still function.		
REFERENCE	1D56		
COGNITIVE LEVEL	MEMORY		

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42. A transient occurs, resulting in the following conditions:

- ALL MSIVs are closed.
- HPCI is operating and injecting into the vessel.
- RPV Water Level is 35 inches, lowering one inch per minute.
- Reactor pressure is 900 psig and slowly lowering 5 psig per minute.
- Drywell pressure is 1.0 psig and trending up at 0.05 psig per minute.
- 1D57, ADS/SRV/EECW TCV POWER SUPPLY FAILURE, alarms.
- 2PA2-5 Circuit 1 is de-energized and cannot be restored.

Assuming no operator actions and with the above trends continuing at the same rate, what is the status of ADS after fifteen minutes?

- a. All 5 ADS SRVs have opened.
- b. Only 3 ADS SRVs have opened due to the logic power failure.
- c. All ADS SRVs remain closed, and cannot be opened, due to loss of power to the pilot valves' solenoids.
- d. All ADS SRVs remain closed, due to loss of logic power, but can be manually opened from the control room.

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Question No. 42			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	218000 K3.02		
IMPORTANCE RATING	RO 4.5		
	SRO 4.6		
SOURCE	MODIFIED	315-0042-000-B003-001	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Correct – ADS valves are actuated from either of two logic strings. ADS Logic String A has lost power. ADS Logic String B still has power from an alternate source (switches automatically between 2PA2-5 Circuit 1 and 2PA2-6, Circuit 1) The power source supplying the logic string also powers the pilot valves' solenoids.		
b.	Incorrect, Plausible misconception that the two ADS logic power supplies go to different valves.		
c.	Plausible since 2PA2-5 Circuit 1 is the normal supply to the pilot valves, solenoids.		
d.	Plausible since 2PA2-5 Circuit 1 is the normal supply to ADS Logic String A.		
REFERENCE	ST-OP-315-0042-001, AUTOMATIC DEPRESSURIZATION SYSTEM (ADS) – Table 3 UFSAR Chapter 7, Sections 7.3.1.2.2.2 and 7.3.1.2.2.6 1D31, ADS DRYWELL PRESS BYPASS TIMER INITIATE A/B LOGIC 1D36, ADS ECCS PUMP CH B PERMISSIVE 1D44, ADS TIMERS INITIATED 1D57, ADS/SRV/EECW TCV POWER SUPPLY FAILURE		
COGNITIVE LEVEL	HIGHER		

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43. Following a LOCA, the action required to inhibit ADS was missed with subsequent automatic initiation of the system.

Which of the following methods describes the actions required to completely terminate the ADS initiation and all subsequent initiations?

- a. Place either "ADS INHIBIT SW LOGIC A," or "ADS INHIBIT SW LOGIC B" in INHIBIT.
- b. Place both "ADS INHIBIT SW LOGIC A," and "ADS INHIBIT SW LOGIC B," in INHIBIT.
- c. Depress both ADS Div. 1 and 2 Timer Logic Reset pushbuttons, AND Place either "ADS INHIBIT SW LOGIC A," or "ADS INHIBIT SW LOGIC B" in INHIBIT.
- d. Depress both ADS Div. 1 and 2 Timer Logic Reset pushbuttons AND Place both "ADS INHIBIT SW LOGIC A," and "ADS INHIBIT SW LOGIC B," in INHIBIT.

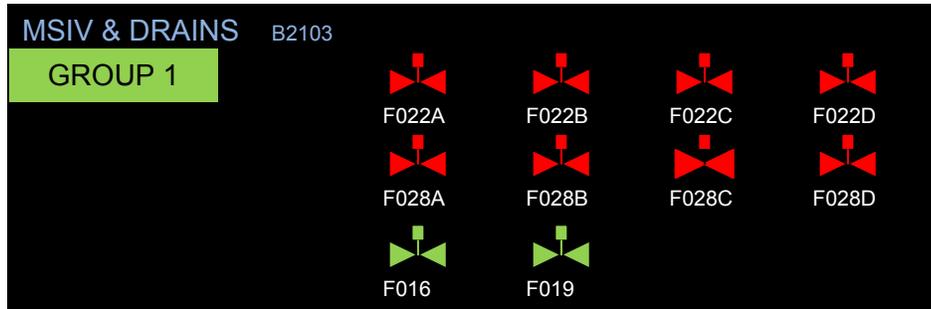
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Question No. 43			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	218000 K4.03		
IMPORTANCE RATING	RO 3.8		
	SRO 4.0		
SOURCE	BANK	315-0142-000-0001-002	
PROPOSED ANSWER	d.		
EXPLANATION			
a.	Will only inhibit the logic train selected.		
b.	Timer reset pushbuttons must also be depressed to reset the logic.		
c.	Will reset both logic trains, but will not prevent re-actuation.		
d.	Correct, both timer reset pushbuttons must be depressed and both Inhibit switches positioned to inhibit.		
REFERENCE	ST-OP-315-0042-001, AUTOMATIC DEPRESSURIZATION SYSTEM (ADS), page 11 23.201, SAFETY RELIEF VALVES AND AUTOMATIC DEPRESSURIZATION SYSTEM, Section 6.3		
COGNITIVE LEVEL	MEMORY		

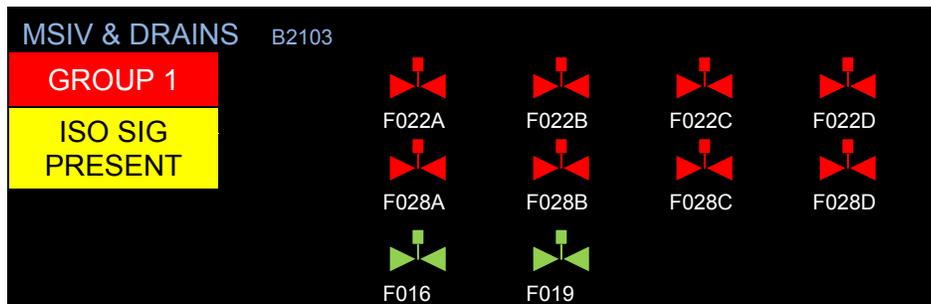
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44. The plant is operating normally with the Reactor Mode switch in RUN when NSSS Main Steam Line Pressure instruments B21-N076B and B21-N076D fail downscale. The MSIV & DRAINS box on the PRIMARY CONTAINMENT ISOLATION GROUP STATUS display will indicate...

a.



b.



c.



d.



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Question No. 44			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	223002 A1.03		
IMPORTANCE RATING	RO 2.5		
	SRO 2.8		
SOURCE	MODIFIED	315-0105-000-B003-002	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Correct – Both instruments are in the same division therefore an isolation signal is not generated.		
b.	Incorrect – Display shown represents an isolation signal generated but no valve motion		
c.	Incorrect – Display shows a half isolation which will not occur at Fermi		
d.	Incorrect – Display shows full isolation which does not occur since both detectors are in same division		
REFERENCE	ST-OP-315-0084-001INTEGRATED PLANT COMPUTER SYSTEM (IPCS) (Figures)		
COGNITIVE LEVEL	MEMORY		

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45. The Control Room was evacuated, AOP 20.000.19, "Shutdown from Outside the Control Room" was entered, the plant was shut down, and control has been transferred to the Remote Shutdown Panel. The following conditions now exist:

- The MSIVs are closed
- RPV Level is 198 inches and stable
- RPV Pressure is 975 psig and rising slowly
- RCIC has been shutdown.
- RHR Pump C is in Torus Cooling.
- T4901-F465, Div. 1 DW Pneumatics Sply Otbd Isol Vlv has failed closed.

What is the effect of this failure on operation from the Remote Shutdown Panel?

- a. Both SRVs A and B would operate because they are not impacted by the failure.
- b. SRV A would operate, limited by its accumulator volume, and SRV B operation would be lost.
- c. SRV A operation would be lost, and SRV B would operate, limited by its accumulator volume.
- d. Neither SRV A nor B would operate from the Remote Shutdown Panel due to this failure.

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Question No. 45			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	239002 K6.02		
IMPORTANCE RATING	RO 3.4		
	SRO		
SOURCE	BANK	315-0144-000-0003-003	
PROPOSED ANSWER	b.		
EXPLANATION			
a.	Incorrect – The normal pneumatic supply for both valves is Div 1 DW pneumatics		
b.	Correct – SRV A has an accumulator		
c.	Incorrect – SRV B does not have an accumulator		
d.	Incorrect – SRV A has an accumulator		
REFERENCE	AOP 20.000.19, "Shutdown from Outside the Control Room" ST-OP-315-0005-001, Nuclear Boiler System		
COGNITIVE LEVEL	MEMORY		

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46. The reactor is operating at 100% power when ONE Feedwater Flow Input to the Feedwater Control System fails LOW.

Which ONE of the following describes the affect of this failure on ACTUAL Feedwater Flow?

The Feedwater Control System will:

- a. **RAISE** actual Feedwater Flow; RPV Water Level will stabilize at a **HIGHER** than normal RPV Water Level.
- b. **LOWER** actual Feedwater Flow; RPV Water Level will stabilize at a **LOWER** than normal RPV Water Level.
- c. **NOT CHANGE** actual Feedwater Flow; because the Feedwater Level Control System will **AUTOMATICALLY** shift to SINGLE ELEMENT control.
- d. **NOT CHANGE** actual Feedwater Flow; because the Feedwater Level Control System will **SUBSTITUTE** the remaining Feedwater Flow Input for the failed input.

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Question No. 46			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	259002 A1.02		
IMPORTANCE RATING	RO 3.6		
	SRO 3.5		
SOURCE	BANK	315-0046-000-B001-002	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	plausible; would be true without automatic shift feature.		
b.	plausible; would be true for a HIGH failure without automatic shift feature.		
c.	With a failure of ONE Feedwater Flow Input, ACTUAL Feedwater Flow will NOT CHANGE because the Feedwater Level Control System will automatically shift to SINGLE ELEMENT control.		
d.	plausible; would be true for a Steam Flow Input failure, substitutes median of remaining Steam Flows		
REFERENCE	23.107		
COGNITIVE LEVEL	HIGHER		

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47. The plant is operating at normal rated conditions when annunciator 3D35, DIV I/II FP VENT EXH RADN MONITOR UPSCALE TRIP, is received as a result of an upscale trip of Fuel Pool Ventilation Exhaust Radiation Trip Unit D11-K609A. Bus 72C Pos 4D Div I Standby Gas Treatment Sys breaker trips shortly after 3D35 alarms.

What is the status of SGTS, and what operator actions with respect to SGTS are expected?

- a. Neither division of SGTS is operating. Start Division 2 SGTS.
- b. Only Division 2 SGTS is operating. No further actions are required.
- c. Only Division 1 SGTS is operating. No further actions are required.
- d. Division 1 and 2 SGTS are running. Shut down one division of SGTS.

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Question No. 47			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	261000 A2.07		
IMPORTANCE RATING	RO 2.7		
	SRO		
SOURCE	NEW		
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Only Div 1 SGTS receives a start signal but has no power, so Div 2 needs to be started		
b.	Division 2 did not receive a start signal.		
c.	Due to loss of power, Div 1 is not running.		
d.	With one upscale trip unit on Div 1 only Div 1 SGTS receives a start signal.		
REFERENCE	23.404, 23.601		
COGNITIVE LEVEL	HIGHER		

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48. The plant was operating at 100% Rated Thermal Power when the following events occurred:

- 4160VAC breaker 65F Pos F6 TRIPPED OPEN, de-energizing the bus.
- EDG 14 auto started, loaded and is supplying the bus.
- MPUs 2 and 3 shifted to Alternate.

Based on these conditions, which of the following actions is required by current plant procedures?

- a. Open the Alternate Supply Breaker to MPU 3.
- b. Open the Alternate Supply Breaker to MPU 2.
- c. Open Normal Supply Breaker to MPU 3.
- d. Open Normal Supply Breaker to MPU 2

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Question No. 48			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	262001 A3.02		
IMPORTANCE RATING	RO 3.2		
	SRO		
SOURCE	MODIFIED	315-0161-000-0009-005	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	plausible; incorrect because not correct position per Procedure		
b.	plausible; incorrect because not correct position per Procedure		
c.	MPU 3 is a normal power seeking MPU. Opening the Normal Supply Breaker (Dist Cab 72F-4B Ckt. 4) prevents an out of phase transfer from automatically occurring in the event that the EDG eventually powers Bus 72F. The normal power supply will be returned to service at a later time when the offsite power source is supplying Bus 72F.		
d.	plausible; incorrect because not correct position per Procedure		
REFERENCE	20.300.72F, 23.308		
COGNITIVE LEVEL	HIGHER		

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49. The plant is in MODE 3. UPS B is being manually transferred from the ALTERNATE power supply to the NORMAL power supply in accordance with SOP 23.308.01, Uninterruptible Power Supply System.

Which ONE of the following identifies the Main Control Room plant parameter indications impacted if improper operation results in the LOSS of UPS B?

- a. C32-R603B & D MSL Flow
C11-J601, Rod Worth Minimizer
C32-R605B, Div II RPV Pressure
- b. C32-R605A, Div I RPV Pressure
C32-R607, Reactor Flow Recorder
RPIS indications on Full Core Display
- c. B31-N028D, Recirc Pump B Discharge Pressure
B31-N601B, Recirc Pump B Suction Temperature
B31-N006B, Recirc Pump B Seal Cavity #1 Pressure
- d. B21-R610, RPV Core Level Recorder
B21-R623A, Post Accident Monitoring Recorder
B21-R604A, Wide Range Reactor Water Level Indicator

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Question No. 49			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	262002 A4.01		
IMPORTANCE RATING	RO 3.1		
	SRO		
SOURCE	BANK	315-0062-000-A021-001	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	C32-R603B & D MSL Flow, C11-J601, Rod Worth Minimizer, C32-R605B, Div II RPV Pressure are affected by Loss of UPS B		
b.	plausible; unaffected instrumentation		
c.	plausible; unaffected instrumentation		
d.	plausible; unaffected instrumentation		
REFERENCE	ST-OP-315-0062-001		
COGNITIVE LEVEL	HIGHER		

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50. With a loss of Division 1 ESF 260/130 VDC Batteries and Chargers, which **ONE** of the following will result?
- a. Breakers on 4160V Busses 65E and 13EC will lose control power.
 - b. C11-F110A, Scram Pilot Air Header Backup Scram Valve, will actuate.
 - c. MCC 72CF Feed will auto throw-over from 72C Pos 3C to 72F Pos 5C.
 - d. Breakers CM and CF will not open on generator relaying or with the manual control switches on COP H11-P804.

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Question No. 50			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	263000 G2.1.27		
IMPORTANCE RATING	RO 3.9		
	SRO		
SOURCE	BANK	315-0064-000-A016-001	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	associated with Division 2 ESF 260 / 130 VDC Batteries and Chargers.		
b.	correct source, but loss of power prevents Backup Scram Valve actuation		
c.	Div 1 ESF Batteries provide control power to Div 1 ESF buses, breakers, and MCC 72CF Breaker auto throw-over function. (This is the LPCI Swing MCC.) There are no Control Room operated DC Power Breakers. Loss of Div 1 control power will cause MCC 72CF to shift from being supplied from Div 1 to Div 2 power.		
d.	a failure mode associated with loss of BOP Batteries and Chargers		
REFERENCE	20.300.260VESF		
COGNITIVE LEVEL	HIGHER		

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51. Emergency Diesel Generator (EDG) 14 is operating in parallel with off-site power and is loaded to 1800kW. A lightning strike causes a loss of off-site power.

Which of the following describes the EDG System response?

- a. EDG 14 output breaker will trip, and then EDG 14 will shut down.
- b. EDG 14 output breaker will trip, Load Shed will occur, and then EDG 14 output breaker will reclose.
- c. EDG 14 output breaker will remain closed, EDG 14 will shut down, and then restart in isochronous mode.
- d. EDG 14 output breaker will remain closed, EDG 14 will continue running, and the governor will shift to isochronous mode.

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Question No. 51			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	264000 K1.01		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	BANK	202-0701-000-A010-014	
PROPOSED ANSWER	b.		
EXPLANATION			
a.	incorrect response per Student Text		
b.	correct response as described by Student Text		
c.	incorrect response per Student Text		
d.	incorrect response per Student Text		
REFERENCE	23.307, ST-OP-315-0065		
COGNITIVE LEVEL	HIGHER		

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52. The plant is operating at 10% power with the following auxiliary equipment lineup:

- Center Station Air Compressor running; West in AUTO.
- North Main Turbine Lube Oil Pump running; South in AUTO.
- South and Center TBCCW pumps running.
- Main Turbine rolling at 1800 RPM.
- CM and CF Breakers are OPEN.

Bus 72A is lost due to an internal electrical fault.

What is the required response to this event?

- a. Trip the Main Turbine.
- b. Place the Mode Switch in SHUTDOWN.
- c. Verify the North TBCCW pump has started automatically.
- d. Verify the West Station Air Compressor has automatically started.

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Question No. 52			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	300000 K2.01		
IMPORTANCE RATING	RO 2.8		
	SRO		
SOURCE	BANK	315-0171-000-A014-002	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	response required by AOP 20.300.72A		
b.	only required if MT on-line and W B/P cannot maintain RPV Pressure < 1045 psig.		
c.	TBCCW Pumps do not auto start		
d.	W SAC powered by 72A		
REFERENCE	20.300.72A, ST-OP-0071-001		
COGNITIVE LEVEL	HIGHER		

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53. The plant is operating at 100% power on a critical load day when a seismic event occurs. The following indications are observed:

- 5D5, TBCCW PUMPS DIFFERENTIAL HIGH / LOW, alarms.
- CMC Switches for ALL TBCCW Pumps indicate TRIPPED.
- 7D14, GEN SERV H2O HEADER PRESS HIGH/LOW, alarms.
- GSW Pumps #2 and 3 indicate TRIPPED.
- P41-R809, GSW Header Pressure Indicator, reads 70 psig (steady).

Assuming NO operator action, which of the following predicts plant response?

- a. The Main Generator will trip due to loss of cooling to the Exciter Air Coolers.
- b. The Main Generator will trip due to loss of cooling to the Stator Water Coolers.
- c. The Main Turbine will trip due to loss of cooling to the Main Turbine Oil Coolers.
- d. The Main Generator will trip due to loss of cooling to the Generator Hydrogen Coolers.

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Question No. 53			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	1		
K/A	400000 K3.01		
IMPORTANCE RATING	RO 2.9		
	SRO		
SOURCE	BANK	315-0137-000-B007-001	
PROPOSED ANSWER	b.		
EXPLANATION			
a.	smaller load than Stator Cooling		
b.	Largest load on TBCCW		
c.	smaller load than Stator Cooling		
d.	not TBCCW load, cooled by GSW, smaller load		
REFERENCE	20.128.01, 20.131.01		
COGNITIVE LEVEL	HIGHER		

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54. During an ATWS, the P603 Operator is performing 29.ESP.03 - Alternate Control Rod Insertion Methods, Section 2.0, Increase CRD Cooling Water Differential Pressure.

Which of the following describes (1) the operation of the C11-F003 Pressure Control Valve AND (2) the reason for performing this section of the procedure.

- a. (1) Open the valve
(2) Attempt to drift control rods
- b. (1) Close the valve
(2) Attempt to drift control rods
- c. (1) Open the valve
(2) Maintain cooling water flow to CRDMs while aligning flow paths.
- d. (1) Close the valve
(2) Maintain cooling water flow to CRDMs while aligning flow paths.

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Question No. 54			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	2		
K/A	201001 A1.02		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	BANK	ZOIA	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Correct answer		
b.	(1) Valve OPENS		
c.	(2) Attempting to Drift rods		
d.	(1) Valve OPENS and (2) Attempting to Drift rods		
REFERENCE	<ol style="list-style-type: none"> 1. Systems Lesson Plan ST-OP-315-0010-001, Control Rod Drive Hydraulics (p. 29) 2. 29.ESP.03 - Alternate Control Rod Insertion Methods, Section 2.0, Increase CRD Cooling Water Differential Pressure 		
COGNITIVE LEVEL	MEMORY		

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55. During normal power operations, ONE control rod was determined to be drifting out of the core. Procedure 20.106.07, CONTROL ROD DRIFT was performed to disarm the control rod, but the control rod continued drifting out. What action(s) is/are required NEXT?
- a. Close C11-F103, Drive Water Isolation Valve and C11-F105, Exhaust Water Isolation Valve.
 - b. Fully insert Control Rod by holding Rod Out Notch Override Switch in EMERG ROD IN.
 - c. Place the Reactor Mode Switch in Shutdown.
 - d. Open C11-F103, Drive Water Isolation Valve and C11-F105, Exhaust Water Isolation Valve.

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Question No. 55			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	2		
K/A	201003 A2.03		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	MODIFIED	ZOIA	
PROPOSED ANSWER	d.		
EXPLANATION			
a.	The valves are closed - the rod is disarmed (given)		
b.	Performed after the valves are reopened		
c.	Only required if two or more rods are drifting.		
d.	Correct answer		
REFERENCE	1. Systems Lesson Plan ST-OP-315-0009-001, Control Rod Drive Mechanism 2. Procedure 20.106.07, CONTROL ROD DRIFT		
COGNITIVE LEVEL	HIGHER		

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56. The plant was increasing power from 73% at the '100% Rod Line', when the "B" RRMG set speed began rising with no demand signal from the operator. The power rise was stopped when the "B" RRMG set scoop tube was locked by the P603 operator. "A" RRMG set speed was 75% and "B" RRMG set speed was 77%.

Later, the problem has been repaired and the crew was preparing to unlock the B RRMG set scoop tube.

A transient occurs and the following indications are observed.

- Annunciation 3D156, REACTOR WATER LEVEL LOW.....activated
- Annunciation 5D44, RFP LOW FLOW/N RFPT TRIPPED.....activated
- Reactor power.....78%
- RPV water level.....190 inches (lowering very slowly)
- Steam Flow/Feed Flow Recorder.....small mismatch
- RRMG set "A" speed.....40%
- RRMG set "B" speed.....77%

Given the above conditions, Which one of the following actions is the NSO expected to take to minimize the effects of the transient?

- a. Reset the B RRMG set scoop tube lock and verify the RRMG set B runs back to the No. 1 Speed Limiter.
- b. Reset the B RRMG set scoop tube lock and verify the RRMG set B runs back to the No. 2 Speed Limiter.
- c. Lower RRMG set B speed using local manual control until RRMG set A and B speeds are matched.
- d. Trip the B RRMG set.

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Question No. 56			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	2		
K/A	202002 K4.02		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	MODIFIED	ZOIA/REESER	
PROPOSED ANSWER	b.		
EXPLANATION			
a.	No. 2 speed limiter will be in effect. No. 1 speed limiter will not be in effect unless total feed flow is less than 20% or RR Pump discharge valve is closed.		
b.	Correct answer. With the repairs completed, resetting the brake will allowed the No. 2 speed limiter to take affect.		
c.	Resetting the brake to allow automatic control is expected (much quicker response) than attempting manual control which requires local operation.		
d.	Action would only be expected if auto or manual control were ineffective. Transient would be more severe.		
REFERENCE	<ol style="list-style-type: none"> 1. Systems Lesson Plan ST-OP-315-0004-001, REACTOR RECIRCULATION 2. Procedure 20.107.01, LOSS OF FEEDWATER OR FEEDWATER CONTROL 		
COGNITIVE LEVEL	HIGHER		

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57. The Control Rod Drive Hydraulic System (CRD) suction was shifted to the Condensate Storage Tank two weeks ago to support repair of a leak on the Condensate System supply line to CRD. (1) What additional action should have been performed to ensure reliability of RPV water level indications, and (2) why?
- a. (1) Removed the Division 1 and 2 Reactor Reference Leg Back Fill Systems from service.
(2) Minimize the introduction of non-aerated water into the RPV instrumentation reference legs.
 - b. (1) Shift the Division 1 and 2 Reactor Reference Leg Back Fill Systems from Trains A and B, to Trains C and D respectively.
(2) Minimize the introduction of unfiltered water into the RPV instrumentation reference legs.
 - c. (1) Isolated the Seal Purge Water Supply for the RR Pump Seals
(2) Minimize the introduction of non-aerated water into the RR Pump Seals
 - d. (1) Transfer the Seal Purge Water Supply for the RR Pump Seals to the backup supply.
(2) Minimize the introduction of unfiltered water into the RR Pump Seals

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Question No. 57			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	2		
K/A	216000 A2.10		
IMPORTANCE RATING	RO 3.3		
	SRO 3.5		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Correct – Isolation is required by 23.106 to prevent the air saturated water from the CST from being injected to reference legs which could result in inaccurate readings following rapid depressurization.		
b.	Incorrect – There is no limitation on dissolved gases for the seal purge.		
c.	Incorrect – there is only one water source that supplies both divisions, therefore switching trains would have no impact. The CST contains reactor grade water therefore the lack of additional filtration is not a concern.		
d.	Incorrect – There is no backup source of water for RR Pump Seal Purge. The CST contains reactor grade water therefore the lack of additional filtration is not a concern.		
REFERENCE	<ol style="list-style-type: none"> 1. 23.106, Control Rod Drive Hydraulic System (P&L) 2. ST-OP-315-0021-001, Reactor Pressure Vessel Instrumentation RPV Instrumentation 		
COGNITIVE LEVEL	HIGHER		

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58. An ATWS has occurred and the Main Condenser is not available as a heat sink. The appropriate EOPs were entered. You have been directed to maximize Torus Cooling based on torus water temperature.

With 2 RHR pumps running in each loop, the RHR Hx Bypass Valves (E1150-F048A and B):

- a. Should remain fully open to avoid exceeding the maximum flow to the RHR heat exchanger.
- b. Should be closed to maximize the cooldown rate.
- c. Should NOT be throttled to less than 50% open to avoid exceeding the maximum flow through the RHR heat exchanger.
- d. Should NOT be throttled more than 50% closed to avoid excessive vibrations in the RHR heat exchanger bypass line.

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Question No. 58			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	2		
K/A	219000 G2.4.20		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	ZOIA	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Correct answer per CAUTION (p. 205 of Reference 2)		
b.	No such caution stated in Reference 2		
c.	No such caution stated in Reference 2		
d.	No such caution stated in Reference 2		
REFERENCE	Systems Lesson Plan ST-OP-315-0041-001, RESIDUAL HEAT REMOVAL Procedure 23.205, RESIDUAL HEAT REMOVAL, Section 9.5		
COGNITIVE LEVEL	MEMORY		

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59. The plant is at 100% power with all Drywell Cooling fans in AUTO and the 2 speed fans are in fast speed. A Loss of Off-Site power subsequently occurs. Which of the following describes the response of the Drywell Cooling System to this plant event?
- a. Drywell Cooling Fans will be shut down since they do not receive ESF power.
 - b. Following the Load Sequence all the Drywell fans will have power available and will auto restart.
 - c. Following the Load Sequence only the 2-Speed Fans will have power available but must be manually re-started.
 - d. Following the Load Sequence all the Drywell fans will have power available but only the 2-Speed Fans will auto re-start.

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Question No. 59			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	2		
K/A	223001 K2.09		
IMPORTANCE RATING	RO 2.7		
	SRO 2.9		
SOURCE	BANK	EQ-OP-315-0117-000-A013-001	
PROPOSED ANSWER	b.		
EXPLANATION			
a.			
b.	Correct		
c.			
d.			
REFERENCE	ST-OP-315-0017-001		
COGNITIVE LEVEL	MEMORY		

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60. Which one of the following is **NOT** a concern with lowering Torus water level?
- a. Air entrainment in the ECCS pumps
 - b. Ability to monitor Torus Water Temperature
 - c. Damage to SRV Tail Pipes and supporting structures
 - d. The ability to adequately suppress/condense steam discharged from the RPV

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Question No. 60			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	2		
K/A	230000 K6.05		
IMPORTANCE RATING	RO 3.3		
	SRO 3.4		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	b. or c.		
EXPLANATION			
a.	Concern because of Vortex and NPSH limits.		
b.	Not a concern since temperature can be monitored over the entire range of pool level although uncovering of thermocouples which measure water temperature requires transition to an alternate indicator from that which is normally used.		
c.	A concern with high Torus water level NOT low level.		
d.	Heat capacity limit and uncovering of lines that discharge steam.		
REFERENCE	ST-OP-802-3002-001, EMERGENCY OPERATING PROCEDURES CAUTIONS, CURVES AND CALCULATIONS		
COGNITIVE LEVEL	HIGHER		

Answer key was revised, following post exam review, to accept two answers (see Explanation of distractors).

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61. A pipe break at the juncture of the FPCCU supply to the Spent Fuel Pool and RHR FPCCU Cooling Assist return line will result in Spent Fuel Pool Level stabilizing at a level equal to the elevation _____.
- a. of the line break.
 - b. of the lowest weir setting.
 - c. where the vacuum relief line openings are uncovered.
 - d. of the bottom edge of the supply lines at their highest point.

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Question No. 61			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	2		
K/A	233000 K3.02		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	Zoia	
PROPOSED ANSWER	d.		
EXPLANATION			
a.	line break is lower and vacuum relief lines provide a siphon break.		
b.	elevation of lowest weir setting is above the elevation of the vacuum relief openings		
c.	level will continue to drop as discussed below.		
d.	Fuel Pool water will continue to seek its own level and gravity drain out through the diffuser line break until Fuel Pool level has equalized with the water level inside the diffuser line at the elevation of the bottom edge of the pipe at its highest point.		
REFERENCE	System Lesson Plan ST-OP-315-0015-001, Fuel Pool Cooling and Cleanup		
COGNITIVE LEVEL	HIGHER		

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62. Condenser Hotwell water temperature should not be allowed to go below ___(1)___ when level is in the normal band, and when flooded to the top of the tubes, the low temperature limit is raised to ___(2)___.
- a. (1) 40°F (2) 65°F
 - b. (1) 45°F (2) 65°F
 - c. (1) 40°F (2) 75°F
 - d. (1) 45°F (2) 75°F

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Question No. 62			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	2		
K/A	256000 K5.03		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	ZOIA	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	BOTH are CORRECT Responses		
b.	(1) is incorrect; (2) is correct		
c.	(1) is correct; (2) is incorrect		
d.	BOTH are Incorrect Responses		
REFERENCE	1. System Lesson Plan ST-OP-315-0006-001, Condensate 2. Procedure 23.107, Reactor Feedwater and Condensate Systems		
COGNITIVE LEVEL	MEMORY		

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63. With the plant initially at full power, the North RFP tripped. If no operator action is taken, what would be the expected plant response?
- a. RPV level – Initially decreases, then recovers
 Recirculation Pump Speed – Stable
 Reactor Power - Decreases
 - b. RPV level – Initially decreases, then recovers
 Recirculation Pump Speed – Decreases
 Reactor Power – Decreases
 - c. RPV level – Decreases
 Recirculation Pump Speed – Decreases
 Reactor Power – 0% (SCRAM)
 - d. RPV level – Decreases
 Recirculation Pump Speed – Stable
 Reactor Power – Stable

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Question No. 63			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	2		
K/A	259001 A3.10		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	MODIFIED	ZOIA	
PROPOSED ANSWER	b		
EXPLANATION			
a.	Recirculation Pump Speed decreases		
b.	CORRECT Responses		
c.	RPV level recovers, Rx should not SCRAM		
d.	Recirculation Pump Speed & Rx Power decreases, RPV level recovers		
REFERENCE	System Lesson Plan ST-OP-315-0007-001, Reactor Feedwater Procedure 20.107.01, Loss of Feedwater or Feedwater Control		
COGNITIVE LEVEL	HIGHER		

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64. With the plant at 50% power, annunciator alarm 6D16, OFF GAS SYS MN CONDENSER PRESSURE HIGH is received. Condenser pressure is verified to be 2 psia and increasing at a rate of 0.5 psi/hour. What is the expected plant operator response based on these conditions?
- a. Place Reactor Mode Switch in SHUTDOWN.
 - b. Place additional SJAE(s) in service per procedure 23.125, Condenser Vacuum System.
 - c. Start MVPs per procedure 23.125, Condenser Vacuum System.
 - d. Perform Rapid Power Reduction, per procedure 23.623, Reactor Manual Control System, to stabilize condenser vacuum.

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Question No. 64			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	2		
K/A	271000 A4.04		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	ZOIA	
PROPOSED ANSWER	b.		
EXPLANATION			
a.	Incorrect – Not required until Condenser vacuum is at 2.5 psia		
b.	CORRECT Response		
c.	Incorrect – Not permitted until Rx Power < 5%		
d.	Incorrect – Required if unable to stabilize condenser vacuum 0.7 – 2.5 psia by performing previous actions		
REFERENCE	<ol style="list-style-type: none"> 1. System Lesson Plan ST-OP-315-0035-001, OFF GAS 2. Procedure 20.125.01, Loss of Condenser Vacuum 3. 6D16, OFF GAS SYS MN CONDENSER PRESSURE HIGH 		
COGNITIVE LEVEL	HIGHER		

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65. With the plant operating at full power, the following alarms are received:

- 7D22, GEN SERV H2O SCREEN A H2O LEVEL HIGH/LOW
- 7D23, GEN SERV H2O SCREEN B H2O LEVEL HIGH/LOW

GSW Pump Pit level is 8.9 feet (568' 11") as indicated on P41-R802, GSW Pump Pit Level Recorder and is decreasing at a rate of 1 inch/hour. Which of the following actions is appropriate for these conditions?

- a. Shutdown CW Makeup and Decant Pumps.
- b. Operate Circ Water Makeup pumps to raise Circ Pond level to the high end of the band.
- c. Place the Electric and Diesel Fire Pumps to OFF/RESET and the Diesel Fire Pump Controller to OFF.
- d. Transfer GSW suction from the lake to the CW Reservoir.

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Question No. 65			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	2		
GROUP	2		
K/A	286000 K1.08		
IMPORTANCE RATING	RO		
	SRO		
SOURCE	NEW	ZOIA/Reeser	
PROPOSED ANSWER	b		
EXPLANATION			
a.	Not required until GSW Pump Pit Level is < 6.5 feet.		
b.	CORRECT per ARPs 7D22 and 7D23		
c.	Required per Ref. 2 when GSW Pump Pit level < 2 feet		
d.	Required per Ref. 2 when required due to lowering lake level or an obstruction. No indication is provided to support this determination.		
REFERENCE	<ol style="list-style-type: none"> 1. System Lesson Plan ST-OP-315-0038-001, General Service Water 2. Procedure 20.131.01, Loss of General Service Water System 3. ARPs 16D27, 7D22 and 7D23 		
COGNITIVE LEVEL	HIGHER		

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66. The plant was operating at steady state power of 95%, with no evolutions in progress, when the following indications were observed:

- Generator megawatt output is 1095MWe and rising slowly.
- Reactor power is 97% and rising slowly.
- RPV level is 197 inches and steady.
- RPV pressure is 1015 psig and rising slowly.
- Total core flow is 95 Mlbm/hr and rising slowly.
- A Recirc System:
 - Recirc Loop Flow is 48000 gpm
 - Jet Pump Loop Flow is 45 Mlbm/hr
- B Recirc System:
 - Recirc Loop Flow is 51000 gpm
 - Jet Pump Loop Flow is 50 Mlbm/hr

Based on these conditions, which one of the following operator actions is required to be taken?

- a. Enter 20.138.02, Jet Pump Failure.
- b. Lower 'B' MG Set speed to match recirc flows.
- c. Enter 20.138.03, Uncontrolled Recirc Flow Change.
- d. Place the Mode Switch in Shutdown, and enter 20.000.21, Reactor Scram.

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Question No. 66			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	3		
GROUP			
K/A	Generic 2.1.7		
IMPORTANCE RATING	RO 4.4		
	SRO 4.7		
SOURCE	BANK	315-0104-000-C011-006	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	Jet pump failure would cause power to decrease (core flow reduction)		
b.	Incorrect – without additional information, Scoop Tube Lockout would be appropriate (first action of 20.183.03)		
c.	Correct – power is changing without an immediate explanation.		
d.	None of the parameters given are threatening to exceed a SCRAM setpoint, therefore distractor “d” is not correct.		
REFERENCE	20.138.01		
COGNITIVE LEVEL	HIGHER		

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67. Fermi 2 conduct manuals and expectations specify when plant-wide announcements are appropriate.

Which of the following would NOT require a plant-wide announcement?

- a. The direction of important plant action with no acknowledgement required.
- b. The communication of important information site wide.
- c. The starting or stopping of major pieces of equipment.
- d. The entry into an Emergency or Abnormal condition.

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Question No. 67			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	3		
GROUP			
K/A	Generic 2.1.14		
IMPORTANCE RATING	RO 3.1		
	SRO 3.1		
SOURCE	NEW		
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Correct per MOP-03		
b.			
c.			
d.			
REFERENCE	MOP-03		
COGNITIVE LEVEL	MEMORY		

FERMI 2 REACTOR OPERATOR INITIAL LICENSE EXAM
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68. During 20.000.18, Control of the Plant from the Dedicated Shutdown Panel, SBFW injection to the RPV must take place within 29 minutes of the reactor scram based on the amount of time ...
- a. it will take to bleed down the SRV accumulator(s) assuming a loss of drywell pneumatics.
 - b. it will take to uncover the reactor core assuming an isolated reactor with no makeup water
 - c. it would take to startup CTG 11-1, align electrical power to SBFW, and align SBFW for injection assuming a loss of 120 kV mat power.
 - d. that the BOP battery would be available to provide control power for SBFW system startup assuming a loss of power to the BOP battery chargers.

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Question No. 68			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	3		
GROUP			
K/A	Generic 2.1.32		
IMPORTANCE RATING	RO 3.8		
	SRO 4.0		
SOURCE	BANK	EQ-OP-802-2001-000-R006-006	
PROPOSED ANSWER	b.		
EXPLANATION			
a.			
b.			
c.			
d.			
REFERENCE	20.000.18 & 20.000.18 Bases		
COGNITIVE LEVEL	MEMORY		

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69. Which one of the following situations is **NOT** appropriate for the use of a Temporary Change Notice per MGA 04?
- a. To correct an incorrect Use Reference when the Procedures, Orders, and Manuals Index (POMI) provides a clear path to the correct reference.
 - b. When the plant is in a temporary condition other than that assumed when the procedure was written such as an abnormal valve lineup.
 - c. When a step cannot be performed exactly as stated, but the intent is clear, and a delay in performing the procedure affects operation of the plant.
 - d. When the plant is in a temporary condition other than that assumed when the procedure was written such as a temporary modification.

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Question No. 69			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	3		
GROUP			
K/A	Generic 2.2.6		
IMPORTANCE RATING	RO 3.0		
	SRO 3.6		
SOURCE	MODIFIED	802-4101-0013-0008	
PROPOSED ANSWER	a.		
EXPLANATION			
a.			
b.			
c.			
d.			
REFERENCE	MGA-04		
COGNITIVE LEVEL	MEMORY		

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70. After a Refueling Outage, the following conditions exist:

- ALL RPV Head Closure Bolts are FULLY TENSIONED.
- Reactor Coolant System Temperature is 185°F.
- The Reactor Mode Switch is in REFUEL
- Control Rod exercising is in progress in accordance with 23.623, Reactor Manual Control System and the applicable Technical Specification Special Operations LCO for Single Control Rod Withdrawal.

Based on the above, the plant is operating in which one of the following MODEs?

- a. MODE 2, STARTUP
- b. MODE 3, HOT SHUTDOWN
- c. MODE 4, COLD SHUTDOWN
- d. MODE 5, REFUEL

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Question No. 70			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	3		
GROUP			
K/A	Generic 2.2.35		
IMPORTANCE RATING	RO 3.6		
	SRO 4.5		
SOURCE	MODIFIED	804-0001-000-0004-008	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	Incorrect – while permitted by Tech Specs, not permitted by plant procedures (ODE-12)		
b.	Incorrect – would be true if RCS Temperature exceeded 200°F with the Reactor Mode Switch in SHUTDOWN		
c.	Per TS 3.10.4. Special Test Exception.		
d.	Incorrect – would be true with one or more RPV Head Closure Bolt Less Than Fully Tensioned.		
REFERENCE	Tech Spec Table 1.1-1, 23.623, REACTOR MANUAL CONTROL SYSTEM (section 9.8) ODE-12, OPERATIONS DEPARTMENT EXPECTATIONS – LCOs (Tech Specs 3.10 “Special Operations”)		
COGNITIVE LEVEL	MEMORY		

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71. The plant is operating at 50% power. What is the MAXIMUM amount of TOTAL Reactor Coolant System Leakage allowed for continued plant operation?
- a. 2 gpm
 - b. 5 gpm
 - c. 25 gpm
 - d. 50 gpm

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Question No. 71			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	3		
GROUP			
K/A	Generic 2.2.38		
IMPORTANCE RATING	RO 3.6		
	SRO 4.5		
SOURCE	BANK	804-0012-000-A000-001	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	Maximum CHANGE in UNIDENTIFIED Leakage in 24 hours.		
b.	Maximum UNIDENTIFIED Leakage.		
c.	LCO 3.4.4.c limits TOTAL RCS Leakage to 25 gpm.		
d.	ALERT EAL for Total Leakage.		
REFERENCE	LCO 3.4.4		
COGNITIVE LEVEL	MEMORY		

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72. Why should the RHRSW Radiation Monitor Sample Pump be stopped prior to shutting down the RHRSW pump(s)?
- a. To prevent draining the RHRSW piping.
 - b. To prevent over pressurizing the RHRSW piping.
 - c. To prevent water overflow out of the sample lines.
 - d. To prevent damage to the sample pump due to a loss of suction.

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Question No. 72			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	3		
GROUP			
K/A	Generic 2.3.5		
IMPORTANCE RATING	RO 2.9		
	SRO 2.9		
SOURCE	BANK	EQ-OP=315-0150-000-0009-002	
PROPOSED ANSWER	d.		
EXPLANATION			
a.	RHRSW piping will drain independently of Rad Monitor sample pump operation.		
b.	Sample pump incapable of supply enough pressure to over-pressurize RHRSW system		
c.	Closed loop system		
d.	Drain down of RHRSW piping causes loss of suction to sample pump.		
REFERENCE	SOP 23.626		
COGNITIVE LEVEL	MEMORY		

FERMI 2 REACTOR OPERATOR INITIAL LICENSE EXAM
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73. Which one of the following is the reason that the preferred Emergency Primary Containment Vent Path is from the Torus?
- a. To cool the vented gases.
 - b. To reduce the hydrogen released.
 - c. To minimize release of Nitrogen.
 - d. To reduce the radiation released.

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Question No. 73			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	3		
GROUP			
K/A	Generic 2.3.11		
IMPORTANCE RATING	RO 3.8		
	SRO 4.3		
SOURCE	BANK	EQ-OP-802-3004-000-0109-007	
PROPOSED ANSWER	d.		
EXPLANATION			
a.			
b.			
c.			
d.	Gases from the Drywell will vent through the Suppression Pool and be scrubbed before being released to the Secondary Containment (and potentially to the environment).		
REFERENCE	ST-OP-802-3004-001, EMERGENCY OPERATING PROCEDURES – PRIMARY CONTAINMENT CONTROL		
COGNITIVE LEVEL	MEMORY		

FERMI 2 REACTOR OPERATOR INITIAL LICENSE EXAM
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74. The unit is in MODE 5 with Division 2 RHR operating in the Shutdown Cooling Mode. The RPV head has just been removed and fill of the Reactor cavity is ready to begin.

A rupture in the common suction line to RHR loops occurs resulting in a Group 4 Containment Isolation. RPV water level dropped to 95 inches (wide range level) before the associated Containment Isolation Valves fully closed.

Select the answer that (1) describes how RPV water level will be restored; and (2) the appropriate RPV level necessary to establish adequate decay heat removal.

- a. (1) Available ECCS will automatically start and align to inject
(2) Raise RPV water level to just below the Main Steam Lines (260" to 275" indicated on Flood-Up Level Instrument)
- b. (1) An injection system (e.g., CS, LPCI, SBFW, Cond/FW) must be manually started and aligned for injection
(2) Raise RPV water level to just below the Main Steam Lines (260" to 275" indicated on Flood-Up Level Instrument)
- c. (1) Available ECCS will automatically start and align to inject
(2) Raise water level until level in the Reactor Cavity is just below top of the Reactor Cavity Weirs (635" to 645" indicated on Flood-Up Level Instrument)
- d. (1) An injection system (e.g., CS, LPCI, SBFW, Cond/FW) must be manually started and aligned for injection
(2) Raise water level until level in the Reactor Cavity is just below top of the Reactor Cavity Weirs (635" to 645" indicated on Flood-Up Level Instrument)

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Question No. 74			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	3		
GROUP			
K/A	Generic 2.4.9		
IMPORTANCE RATING	RO 3.8		
	SRO 4.2		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	b. or d.		
EXPLANATION			
a.	Level has not dropped low enough for automatic actuation of the available ECCS systems.		
b.	Correct – Level is high enough to promote natural circulation, but the only heat sink will be the atmosphere. The core will heat to boiling, but as long as the core remains covered heat will be removed.		
c.	Level has not dropped low enough for automatic actuation of the available ECCS systems.		
d.	Correct – Level is high enough to place FPCC in service to remove heat.		
REFERENCE	22.000.04, 20.205.01, 23.800.07		
COGNITIVE LEVEL	HIGHER		

Answer key was revised, following post exam review, to accept two answers (See Explanation of distractors).

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75. During the ATWS, who has the primary responsibility for determining the appropriate section of 29.ESP.03, Alternate Control Rod Insertion Methods, to implement?
- a. STA (Shift Technical Advisor)
 - b. CRS (Control Room Supervisor)
 - c. P603 NSO (Nuclear Supervising Operator)
 - d. CRNSO (Control Room Nuclear Supervising Operator)

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Question No. 75			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	BOTH		
TIER	3		
GROUP			
K/A	Generic 2.4.12		
IMPORTANCE RATING	RO 4.0		
	SRO 4.3		
SOURCE	BANK	EQ-OP-202-0101-000-0203-009	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	The STA has the responsibility to back up the P603 NSO		
b.	Directs performance of 29.ESP.03, but has the responsibility to manage the overall mitigating strategies.		
c.	Correct		
d.	Responsible for performing other mitigation activities as directed by CRS.		
REFERENCE	ODE-10, Emergency Operating Procedure Expectations (Attachment 3)		
COGNITIVE LEVEL	MEMORY		

FERMI 2 REACTOR OPERATOR INITIAL LICENSE EXAM
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ANSWER KEY

- | | | | |
|-----|---------|-----|--------|
| 1. | b | 43. | d |
| 2. | a | 44. | a |
| 3. | DELETED | 45. | b |
| 4. | c | 46. | c |
| 5. | b | 47. | a |
| 6. | d | 48. | c |
| 7. | d | 49. | a |
| 8. | c | 50. | c |
| 9. | a | 51. | b |
| 10. | a | 52. | a |
| 11. | a | 53. | b |
| 12. | c | 54. | a |
| 13. | d | 55. | d |
| 14. | b or d | 56. | b |
| 15. | c | 57. | a |
| 16. | a | 58. | a |
| 17. | a | 59. | b |
| 18. | d | 60. | b or c |
| 19. | c | 61. | d |
| 20. | d | 62. | a |
| 21. | DELETED | 63. | b |
| 22. | b | 64. | b |
| 23. | d | 65. | b |
| 24. | b | 66. | c |
| 25. | a | 67. | a |
| 26. | d | 68. | b |
| 27. | a | 69. | a |
| 28. | c | 70. | c |
| 29. | a | 71. | c |
| 30. | c | 72. | d |
| 31. | b | 73. | d |
| 32. | d | 74. | b or d |
| 33. | c | 75. | c |
| 34. | a | | |
| 35. | b | | |
| 36. | c | | |
| 37. | b | | |
| 38. | d | | |
| 39. | b | | |
| 40. | a | | |
| 41. | a | | |
| 42. | a | | |

FERMI 2 SENIOR REACTOR OPERATOR INITIAL LICENSE EXAM
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1. The plant was initially operating at 100% power when a transient occurred with the following indications reported by the operators:

- Unexplained increase in Recirculation Loop A Flow as indicated by B31-R617
- Unexplained decrease in Loop A Flow as indicated on B21-611A
- Unexplained decrease in total Core Flow as indicated on B21-R613

Given only the above indications, which of the following actions should be performed to mitigate the failure/malfunction?

- a. Trip the "A" RR MG Set
- b. Lock the scoop tube for the "A" RR MG Set
- c. Perform 24.138.06, Jet Pump Operability Test
- d. Place the Reactor Mode Switch in SHUTDOWN

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Question No. 1			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	1		
GROUP	1		
K/A	295001 AA2.03		
IMPORTANCE RATING	RO		
	SRO 3.3		
SOURCE	NEW	Zoia/Reeser	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	Required action for a greater than 10% increase in MG set speed. A change in MG set speed would provide an explanation for the change in RR Loop Flow indication		
b.	Required action if MG set speed is changing. No information is provided to indicate that MG set speed is changing.		
c.	Directed by 20.138.02 if JP Failure is indicated which is supported by the symptoms provided		
d.	Action is not warranted by the symptoms provided. A normal plant shutdown would be expected for a Jet Pump failure.		
REFERENCE	20.138.02, JET PUMP FAILURE 20.138.03, UNCONTROLLED RECIRC FLOW CHANGE		
COGNITIVE LEVEL	HIGHER		

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2. The plant is in Mode 4 with a temporary battery in service for 48/24VDC battery 21A. What is the operability status of the SRMs?
- a. All SRM channels are fully operable.
 - b. All SRM channels are available, but only two of the four channels are fully operable; the LCO is satisfied.
 - c. All SRM channels are available, but only two of the four channels are fully operable; the LCO is not satisfied.
 - d. All SRM channels are inoperable, but available; the LCO is not satisfied.

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Question No. 2			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	1		
GROUP	1		
K/A	295004 G2.2.37		
IMPORTANCE RATING	RO		
	SRO 4.6		
SOURCE	NEW	Zoia	
PROPOSED ANSWER	B.		
EXPLANATION			
a.	Per the SOP the affected SRM channels are considered inoperable.		
b.	Correct – All SRM channels are available but the two channels being supplied by the temporary battery are considered inoperable. Only two SRM channels are required to be operable in Mode 4, therefore the LCO is satisfied.		
c.	See explanation for distracter b.		
d.	Only the channels being supplied by the temporary battery are inoperable.		
REFERENCE	System Operating Procedure (SOP) 23.310, 48/24V DC ELECTRICAL SYSTEM (Section 8.0, Placing Temporary Batteries In Service) Fermi 2 Technical Specifications and Bases (LCO 3.3.1.2, SRM Instrumentation)		
COGNITIVE LEVEL	HIGHER		

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3. Numerous fire detection alarms for the Control Center complex have been received. The Control Room has been evacuated as a result of heavy smoke quickly filling the control room. Control Room personnel were unable to shutdown the unit prior to the evacuation and heavy smoke has prevented access to the Relay Room. The fire brigade has been dispatched.

Given the above conditions, the actions for shutting down the reactor are contained in _____(1)_____; and verification that the reactor is shutdown may be determined by _____(2)_____.

- a. 1) 20.000.18, Control Of The Plant From The Dedicated Shutdown Panel
 2) verifying that the APRMs indicate power decreasing to less than 3%.
- b. 1) 20.000.19, Shutdown From Outside The Control Room
 2) verifying that the APRMs indicate power decreasing to less than 3%.
- c. 1) 20.000.18, Control Of The Plant From The Dedicated Shutdown Panel
 2) verifying that RPV injection rates and reactor pressure trends are consistent with decay heat levels.
- d. 1) 20.000.19, Shutdown From Outside The Control Room
 2) verifying that RPV injection rates and reactor pressure trends are consistent with decay heat levels.

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Question No. 3			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	1		
GROUP	1		
K/A	295016 AA2.01		
IMPORTANCE RATING	RO		
	SRO 4.1		
SOURCE	NEW	Zoia	
PROPOSED ANSWER	c.		
EXPLANATION			
	Main Control Room was evacuated due to a fire in a 3L zone making AOP 20.000.18 the primary response procedure.		
a.	Correct procedure but APRM verification requires access to the Relay Room which is within the fire zone.		
b.	AOP 20.000.19 has direction to enter AOP 20.000.18 (i.e., exit 20.000.19); APRM verification requires access to the Relay Room which is within the fire zone.		
c.	Correct – AOP 20.000.18 Action B1; power must be determined using alternate methods.		
d.	AOP 20.000.19 has direction enter AOP 20.000.18 if there is a fire in a 3L zone.		
REFERENCE	AOP 20.000.18, CONTROL OF THE PLANT FROM THE DEDICATED SHUTDOWN PANEL AOP 20.000.19, SHUTDOWN FROM OUTSIDE THE CONTROL ROOM, Rev. 37 AOP 20.000.22, PLANT FIRES		
COGNITIVE LEVEL	HIGHER		

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4. With the plant operating at full power, a complete loss of off-site power occurs. Restoration of an off-site power source is not expected for at least 24 hours.

Which one of the following summarizes the actions to be directed with respect to the plant air systems?

- a.
 - 1) Ensure that one of the NIAS Air Compressors is running supplying the NIAS loads.
 - 2) Refer to 20.129.01, Loss of Station and/or Control Air, enclosures for supported system responses to loss of Station Air and IAS.
 - 3) Restore West SAC to service, after power is restored to Bus 64A from the CTG 11-1, restore air to Station Air loads and then IAS loads.
- b.
 - 1) Ensure that both NIAS Air Compressors are running supplying their respective NIAS loads.
 - 2) Align Division II NIAS to supply the IAS headers.
 - 3) Refer to 20.129.01, Loss of Station and/or Control Air, enclosures for supported system responses to loss of Station Air.
- c.
 - 1) Ensure one Station Air Compressor is running, supplying IAS loads.
 - 2) Ensure that both NIAS Air Compressors are running, supplying their respective NIAS loads.
 - 3) Refer to 20.129.01, Loss of Station and/or Control Air, enclosures for supported system responses to loss of Station Air.
- d.
 - 1) Ensure that both NIAS Air Compressors are running supplying their respective NIAS loads.
 - 2) Refer to 20.129.01, Loss of Station and/or Control Air, enclosures for supported system responses to loss of Station Air and IAS.
 - 3) Restore West SAC to service, after power is restored to Bus 64A from the CTG 11-1, restore air to IAS loads and then Station Air loads.

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Question No. 4			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	1		
GROUP	1		
K/A	295019 AA2.01		
IMPORTANCE RATING	RO		
	SRO 3.4		
SOURCE	NEW	Zoia/Reeser	
PROPOSED ANSWER	d.		
EXPLANATION			
a.	Both NIAS compressors will start to supply their respective loads. IAS loads have priority over Station Air loads.		
b.	NIAS would not be cross-tied to IAS under these conditions.		
c.	Station air compressors will not be available until power is restored to either Bus 64 or 65		
d.	Correct Sequence		
REFERENCE	ST-OP-315-0071-001, COMPRESSED AIR SYSTEMS (Table 4) 20.300.OFFSITE, LOSS OF OFFSITE POWER (Step AI) 20.129.01, LOSS OF STATION AND/OR CONTROL AIR (Steps H and I) 23.129, STATION AND CONTROL AIR SYSTEM ARP 7D50, DIV I/II CONTROL AIR COMPRESSOR AUTO START		
COGNITIVE LEVEL	HIGHER		

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5. Due to an error in the calibration procedure for the RPS Drywell Pressure instruments, the high pressure trip setpoint for all four channels were adjusted such that the channels would not trip until Drywell Pressure reaches 2.2 psig. Which one of the following would satisfy the required Technical Specification?

Readjust the trip setpoint for channels:

- a. A and C to 2.0 psig within 6 hours.
- b. B and D to 1.8 psig within 1 hour.
- c. A and D to 1.8 psig within 1 hour.
- d. B and C to 2.0 psig within 6 hours.

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Question No. 5			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	1		
GROUP	1		
K/A	295024 G2.2.39		
IMPORTANCE RATING	RO		
	SRO 4.5		
SOURCE	NEW	Zoia/Reeser	
PROPOSED ANSWER	c.		
EXPLANATION	To restore trip capability for Drywell Pressure, at least one channel in each of the trip systems must be restored (trip setpoint less than 1.88 psig) within 1 hour. To restore trip capability, one of the two channels in each trip system [(A or C) and (B or D)] must be restored.		
a.	Wrong combination and setpoint, incorrect time		
b.	Wrong combination, incorrect time		
c.	Correct combination and time		
d.	Correct combination, Wrong time and pressure		
REFERENCE	Technical Specification 3.3.1.1, Action C1, Table 3.3.1.1-1, and associated bases		
COGNITIVE LEVEL	MEMORY		

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~~6. The plant was operating at 100% power. A failure of the governor / pressure regulator occurred, causing the turbine control valves to slowly close without a corresponding opening of the bypass valves.~~

~~The RPS actuated (first hit) on "High Neutron Flux". The "P603" operator stated that the RPS system failed to operate properly. Which one of the following correctly describes the operability of the RPS system?~~

- ~~a. The RPS system functioned as expected and is therefore operable.~~
- ~~b. The RPS system should have first tripped on "High Reactor Pressure" with the "High Neutron Flux (APRM)" trip as a backup.~~
- ~~c. The "Turbine Control Valve Closure" should have resulted in a Recirculation Pump Runback and the RPS system should NOT have tripped.~~
- ~~d. The "Turbine Control Valve Closure" should been the first RPS trip signal in anticipation of "High Neutron Flux" and/or "High Reactor Pressure".~~

Question 6 was deleted, following post exam review, since no answer choice could be substantiated to be true for the transient in question.

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Question No. 6			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	4		
GROUP	4		
K/A	295025 EA2.02		
IMPORTANCE RATING	RO _____		
	SRO _____ 4.2		
SOURCE	MODIFIED	from Question EQ-OP-315-0127-000-0009-005	
PROPOSED ANSWER	b.		
EXPLANATION			
a.	While the "High Reactor Pressure" trip is not credited in the analysis for protecting the fuel or RPV and is meant to backup the "High Neutron Flux" trip, it is expected to occur before the "High Neutron Flux" trip, especially on a slow moving transient.		
b.	The "High Reactor Pressure" trip is expected to occur first, especially on a slow moving transient, even though the analysis credits the "High Neutron Flux" trip for protecting the fuel and RPV.		
c.	No such runback exists.		
d.	TCV Closure trip is triggered by low hydraulic oil supply pressure when dump valves open, and not on valve position.		
REFERENCE	Tech Spec Bases (B-3.3.1.1) Reactor Protection Lesson Plan, ST-OP-315-0027		
COGNITIVE LEVEL	HIGHER		

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7. Which one of the following is the basis for the Technical Specifications, Minimum Suppression Chamber Water Volume in Operating MODES 1, 2 and 3?
- a. Ensure that a sufficient supply of water is available in the event of a LOCA to quench all the steam discharged from the reactor vessel and provide an emergency makeup water source to permit recirculation cooling flow to the core.
 - b. Ensure that a sufficient supply of water is available to prevent exceeding Containment Design temperature limits when performing a reactor shutdown with boron injection only.
 - c. Ensure adequate heat capacity to bring the plant to Cold Shutdown with one Safety Relief Valve stuck open.
 - d. When combined with the Minimum CST Volume, provides a sufficient supply of water such that Long Term cooling is available for the design basis accident.

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Question No. 7			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	1		
GROUP	1		
K/A	295030 G2.2.22		
IMPORTANCE RATING	RO		
	SRO 4.7		
SOURCE	BANK	EQ-OP-315-0116-000-0001-004	
PROPOSED ANSWER	a.		
EXPLANATION			
a.			
b.			
c.			
d.			
REFERENCE	TS Bases for TS 3.6.2.2, Suppression Pool Water Level		
COGNITIVE LEVEL	MEMORY		

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8. The isolation of the HPCI and RCIC turbine exhaust vacuum breaker lines on High Drywell Pressure is delayed until _____(1)_____ because _____(2)_____.
- a. (1) Low Steam Line Pressure is reached
(2) The HPCI and RCIC system are unavailable
 - b. (1) HPCI and RCIC Steam Line Flow High is reached
(2) A break in the HPCI or RCIC steam lines has occurred
 - c. (1) Area Differential Temperature High is reached
(2) Temperature is too high to continue operation of the turbine
 - d. (1) High turbine exhaust diaphragm pressure is reached
(2) Pressure is too high to continue operation of the turbine

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Question No. 8			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	1		
GROUP	2		
K/A	295010 G2.2.25		
IMPORTANCE RATING	RO		
	SRO 4.2		
SOURCE	NEW	Zoia	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Correct (Ref: TS Bases, page B 3.3.6.1-17)		
b.	Explains MSIV closure, not exhaust isolation		
c.	Explains RWCU isolation, not exhaust isolation		
d.	Explains containment isolation, not exhaust isolation		
REFERENCE	TS Bases for TS 3.3.6.1 UFSAR Table 6.2-2		
COGNITIVE LEVEL	MEMORY		

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9. The plant is operating at full power. During venting of the instrument line (variable leg) associated with the below listed level instruments the associated excess flow check valve closed and the associated instrument line depressurized.

- B21-N080A Reactor Vessel Low Water Level - Level 3
- B21-N080B Reactor Vessel Low Water Level - Level 3
- B21-N095A Reactor Vessel Low/High Water Level - Level 3/Level 8
- B21-N095C Reactor Vessel Low/High Water Level - Level 3/Level 8

Which one of the following correctly describes the impact on the PCIS trip functions affected by the above incident?

- a. Automatic isolation capability is fully maintained.
- b. Automatic isolation capability is maintained only for the outboard containment isolation valves.
- c. No automatic isolation capability is maintained, but isolation valves can still be remotely operated from the MCR.
- d. Automatic isolation capability is maintained only for the inboard containment isolation valves.

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Question No. 9			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	1		
GROUP	2		
K/A	295020 AA2.05		
IMPORTANCE RATING	RO		
	SRO 3.6		
SOURCE	MODIFIED	(from Question EQ-OP-315-0148-000-A016-001)	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Correct – The associated level channels fails low shutting the Inboard isolation valves (if open). Outboard Isolation logic is still fully functional.		
b.	see a.		
c.	see a.		
d.	see a.		
REFERENCE	Systems Lesson Plan ST-OP-315-0048-001, PCIS Systems Operating Procedure (SOP) 23.601, Instrument Trip Sheets SOP 23.427, Primary Containment Isolation System Technical Specifications		
COGNITIVE LEVEL	HIGHER		

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10. The plant is operating at full power with no equipment out of service when the following alarms are received:

- 2D82, REAC BLDG TORUS SUMP LEVEL HI-HI / LO-LO
- 7D72, MOTOR TRIPPED

Given that the above alarms have been validated to be the result of a high Reactor Building Torus Sump level, which one of the following correctly identifies the procedure(s) to be utilized and the next expected action to be directed?

- a. Primary Containment Control; Terminate all discharges into the Torus except for those needed for EOP Response.
- b. Secondary Containment and Rad Release; isolate all systems discharging into the area except those needed for EOP response or damage control.
- c. Primary Containment Control; Operate available Torus Water Management System Pumps to restore and maintain Torus Water level between – 2” and + 2”.
- d. Secondary Containment Control and Rad Release; Operate available Reactor Building Torus Sump Pumps to restore and maintain sump level below the Maximum Normal Operating level.

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Question No. 10			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	1		
GROUP	2		
K/A	295036 G2.4.6		
IMPORTANCE RATING	RO N/A		
	SRO 4.7		
SOURCE	NEW		
PROPOSED ANSWER	d.		
EXPLANATION			
a.	No entry conditions for Primary Containment Control are indicated. Plausible if applicant assumes alarms are due to Torus leakage.		
b.	Procedure is correct but initial response is to operate sump pumps followed by system isolations if operating pumps is unsuccessful.		
c.	No entry conditions for Primary Containment Control are indicated. Plausible if applicant assumes alarms are due to Torus leakage.		
d.	Correct – Alarms are indicative of a condition (high sump/area water level) requiring entry into Secondary Containment Control and the first directed action is to operate available sumps to restore and maintain level.		
REFERENCE	29.100.01 Sheet 5, Secondary Containment Control and Rad Release ST-OP-802-3005-001, Emergency Operating Procedures – Secondary Containment Control And Radioactive Release (pages 8-11) ST-OP-315-0069-001, Torus Water Management System (TWMS) (pages 20 and 22) ST-OP-315-0085-001, Floor And Equipment Drains (Tables 4 and 6)		
COGNITIVE LEVEL	HIGHER		

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11. Fermi 2 was operating at full power with no equipment out of service when a large break LOCA and a loss of offsite power occurred. The break location was indeterminate by the LPCI Loop Select logic. Five minutes after the break occurred the following conditions exist:

- All Control Rods are fully inserted
- 4160 VAC Bus 65F is deenergized
- RPV Water Level 0" and stable
(Core Level Recorders)
- RPV Pressure 60 psig
- Drywell Pressure 23 psig
- Drywell Temperature 260°F
- Torus Pressure 21 psig
- Torus Water Level -1"
- Torus Water Temperature 160°F
- Total Core Spray Injection Flow 6400 gpm
- Total RHR Injection Flow 22,000 gpm

Given the above conditions, select the answer below that correctly describes: 1) the injection flow path; and 2) expected Containment Control action.

- a. RHR Pumps are injecting into the RPV via RR Loop A.
RHR flow should be diverted to spray the drywell.
- b. RHR Pumps are injecting into the RPV via RR Loop A.
RHR flow should not be diverted to spray the drywell.
- c. RHR Pumps are injecting into the RPV via RR Loop B.
RHR flow should be diverted to spray the drywell.
- d. RHR Pumps are injecting into the RPV via RR Loop B.
RHR flow should not be diverted to spray the drywell.

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Question No. 11			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	2		
GROUP	1		
K/A	203000 G2.4.2		
IMPORTANCE RATING	RO 4.5		
	SRO 4.6		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	d		
EXPLANATION			
a.	Wrong loop		
b.	Wrong loop		
c.	Diversion of flow will jeopardize adequate core cooling		
d.	Diversion of flow would jeopardize adequate core cooling		
REFERENCE	ST-OP-315-0041-01, Residual Heat Removal System USAR Sections 6.2 and 6.3 (pages 23 & 24) 29.100.01, Sheet 2, Primary Containment Control ST-OP-802-3004-001, Emergency Operating Procedures – Primary Containment Control (page 18)		
COGNITIVE LEVEL	HIGHER		

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12. In an emergency where Core Spray is the only “preferred” injection system available, the following plant conditions exist:

- Reactor power All rods fully inserted
- SRVs 5 open
- RPV water level indication..... unavailable
- Torus water level - 80 inches
- Core Spray Div I flow..... 7,000 gpm
- Core Spray Div II flow..... 6,800 gpm
- Torus pressure 13 psig (steady)
- RPV pressure 80 psig (steady)
- CST level..... 10 ft.

Given the above conditions, the SRO should order which one of the following actions:

- a. Minimize Core Spray flow while maintaining at least one (1) SRV open.
- b. Shift Core Spray suction to the CST.
- c. Bypass the HPCI low pressure isolation interlocks, place HPCI in service and shutdown one Core Spray Pump in each loop.
- d. Minimize Core Spray flow while maintaining at least four (4) SRVs open.

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Question No. 12			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	2		
GROUP	1		
K/A	2009001 G2.2.44		
IMPORTANCE RATING	RO 4.2		
	SRO 4.4		
SOURCE	MODIFIED	EQ-OP-202-0801-000-A014-003	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Correct answer – RPV injection must be maintained high enough to maintain RPV pressure greater than 64 psi above Drywell pressure to ensure that at least one SRV will remain open until level indication is restored or until there is reasonable assurance that the Main Steam Lines are flooded.		
b.	CST level must be greater than 10.5 ft. to provide adequate NPSH and prevent vortexing.		
c.	At this point alternate depressurization sources are not necessary. Additionally HPCI would be used only as a depressurization source and not as a replacement for injection.		
d.	The greater the number of SRVs that remain open, the greater the required flow-rate required to maintain RPV pressure high enough to keep the SRVs open.		
REFERENCE	Systems Lesson Plan ST-OP-315-0040-001, Core Spray System EOP Flowchart 29.100.01 Sheet 3 (needed to answer question) CS Vortex Limit Curve EOP 29.100.01 Sheet 6 (needed to answer question) Core Spray System, 23.203 (sections 7.1 and 7.2) ST-OP-802-3003-001, EMERGENCY OPERATING PROCEDURES – RPV CONTROL (page 77, Decay Heat Removal Pressure)		
COGNITIVE LEVEL	HIGHER		

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13. ~~A reactor startup is in progress with Intermediate Range Monitor (IRM) Channel A INOPERABLE (circuit board removed for repair) and BYPASSED, when the following occurs:~~

- ~~• IRM Channel C indicates upscale at 125/125, irrespective of Range Switch position.~~
- ~~• IRM Channels B, D, E, F, G, and H indicate 15 32/40 on Range 7.~~
- ~~• ALL Average Power Range Monitors (APRMs) are DOWNSCALE.~~

~~Which ONE of the following addresses the Technical Specification REQUIRED ACTION?~~

- ~~a. Within 12 hours, ensure IRM Channel C in a TRIPPED condition; the Reactor Startup may continue, including entry into MODE 1.~~
- ~~b. SHUTDOWN, to MODE 3 within 12 hours, per GOP 22.000.04, Plant Shutdown from 25% power; less than the REQUIRED Intermediate Range Monitors are OPERABLE.~~
- ~~c. BYPASS the IRM Channel C ROD BLOCK using the joystick per 23.603, Intermediate Range Monitors; RESET the Half Scram, and continue the Reactor Startup.~~
- ~~d. BYPASS IRM Channel C ROD BLOCK by placing the Reactor Mode Switch in RUN per GOP 22.000.02, Plant Startup from 25% power; RESET the Half Scram, and continue the Reactor Startup.~~

Question 13 was deleted, following post exam review, since startup could not be continued with a rod block locked in, and therefore there was no correct answer.

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Question No. 13			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	2		
GROUP	4		
K/A	215003 G2.2.40		
IMPORTANCE RATING	RO 3.4		
	SRO 4.7		
SOURCE	MODIFIED	EQ-OP-315-0023-000-C013-004	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Continued operation is permitted as long as the un-bypassed channel is placed in a tripped condition within 12 hours. Entry into MODE 1 would be permitted since IRMs are not required to be operable in MODE 1.		
b.	Continued operation is permitted as long as the un-bypassed channel is placed in a tripped condition within 12 hours.		
c.	Only one channel per trip system can be bypassed at a time and with both failed channels in a tripped condition, the half-scrum cannot be reset.		
d.	Only one channel per trip system can be bypassed at a time and with both failed channels in a tripped condition, the half-scrum cannot be reset.		
REFERENCE	Technical Specification LCO 3.3.1.1 ST-OP-315-0023-001, Intermediate Range Monitoring		
COGNITIVE LEVEL	HIGHER		

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14. Fermi 2 was operating at full power with no equipment out of service when circuit breaker CB3A on RPS Power Distribution Panel C71-P001A (feed to H11-P608 Power Range Neutron Monitoring System Bus "A") opens.

Select the response below that correctly identifies: (1) the impact on the Power Range Neutron Monitoring System; and (2) appropriate procedure for response.

- a. (1) APRM Channels A and C will remain energized
(2) 3D73, TRIP ACTUATORS A1/A2 TRIPPED
- b. (1) APRM Channels A and C will remain energized
(2) 3D99, APRM INOP
3D93, NEUTRON MONITORING SYSTEM CHANNEL TRIP
3D73, TRIP ACTUATORS A1/A2 TRIPPED
- c. (1) APRM Channels A and C will de-energize
(2) 3D99, APRM INOP
3D93, NEUTRON MONITORING SYSTEM CHANNEL TRIP
3D73, TRIP ACTUATORS A1/A2 TRIPPED
- d. (1) APRM Channels A and C will de-energize
(2) 3D99, APRM INOP
3D93, NEUTRON MONITORING SYSTEM CHANNEL TRIP
3D73, TRIP ACTUATORS A1/A2 TRIPPED
3D74, TRIP ACTUATORS B1/B2 TRIPPED
20.000.21, REACTOR SCRAM

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Question No. 14			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	2		
GROUP	1		
K/A	215005 A2.01		
IMPORTANCE RATING	RO	2.7	
	SRO	3.1	
SOURCE	NEW	Walton/Reeser	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Power from RPS Buses A and B are auctioneered within the Quad Low Voltage Power Supplies and all APRM, LPRM and RBM channels remain energized and functional (no ARPM INOP or NEUTRON MONITOR TRIP alarms). Power will be lost to two of the 2/4 logic modules and will result in a half-scam (TRIP ACTUATORS A1/A2 TRIPPED).		
b.	APRM channels remain energized and functional (no ARPM INOP or NEUTRON MONITOR TRIP alarms).		
c.	APRM channels remain energized.		
d.	APRM channels remain energized.		
REFERENCE	ST-OP-315-0024-001, Power Range Neutron Monitoring (PRNM); page 21 ST-OP-315-0027-001, Reactor Protection System (RPS) 23.316, RPS 120VAC and RPS MG Sets (Attachment 3A)		
COGNITIVE LEVEL	HIGHER		

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15. With the unit operating in Mode 1, the CRNSO reports the following conditions exist:

- Drywell Pressure 3.3 psig, rising slowly
- Reactor water level..... 100 inches, lowering slowly
- 9D52, EDG SERV H2O PUMP C WATER FLOW LOW is alarming

An equipment operator dispatched to investigate the low flow alarm, reports that EDG 12 DGSWP failed to start. An attempt to start it locally has failed. All other equipment is operating normally.

As the Unit Supervisor, you should direct the:

- a. CRNSO to secure EDG 12 as soon as possible.
- b. CRNSO to monitor operation of EDG 12 and verify EDG 12 trips if Jacket Coolant High Temperature or Lube High Oil Temperature alarms are received.
- c. NO to cross tie EDG 12 Service Water loop with EDG 11 Service Water Loop.
- d. NO to cross tie EDG 12 Service Water loop with Division 1 RHR Service Water

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Question No. 15			
EXAM DATE	08/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	2		
GROUP	1		
K/A	262001 A2.02		
IMPORTANCE RATING	RO		
	SRO	3.9	
SOURCE	NEW	Reference Licensee question: EQ-OP-315-0165-000-A021-003 Walton	
PROPOSED ANSWER	a.		
EXPLANATION			
a.	Correct since no loss of offsite power is indicated and EDG should be shutdown to prevent damage from overheating.		
b.	EDG will not trip on High Lube Oil or Engine Coolant Temperature since during an emergency, the non-essential EDG trips are bypassed.		
c.	Incorrect since DGSWPs are not sized for supplying cooling water to >1 EDG.		
d.	There is no cross-tie to RHR Service Water.		
REFERENCE	Lesson Plan 65001, EDG, pgs. 19, 30 ARP 9D28, 9D52, EDG CWP Flow Low.		
COGNITIVE LEVEL	Higher		
LEVEL OF DIFFICULTY	2		
SRO-only because	SRO must direct EDG operation during an emergency, (LOCA).		

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16. Following an event, the following conditions exist:

- RHR Loop A is operating in Suppression Pool Cooling Mode.
- Placing RHR Loop B in operation for Containment Pressure control.
- Torus Temperature 110°F.
- Torus Level is +5 inches.
- Torus Pressure is 7 psig.
- Drywell Temperature 230°F.
- Reactor water level is 100 inches and lowering.

The NSO reports that E1150- F027B, Torus Spray Inboard Isolation valve, will not open.

(1) What is the expected plant response; and (2) What actions should the CRS take?

- a. (1) Drywell and Torus temperatures will continue to rise.
(2) Spray the Drywell at 7 psig torus pressure
- b. (1) Drywell and Torus pressures will continue to rise.
(2) If Torus pressure can't be kept < 9 psig, emergency depressurize the RPV.
- c. (1) Drywell and Torus pressures will continue to rise.
(2) Attempt to spray the torus with Loop A RHR.
- d. (1) Torus water temperatures will continue to rise.
(2) Spray the Drywell at > 9 psig drywell pressure

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Question No. 16			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	2		
GROUP	2		
K/A	226001 A2.11		
IMPORTANCE RATING	RO		
	SRO 3.0		
SOURCE	New	Walton	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	Incorrect – Not allowed to spray drywell before 9 psig.		
b.	Incorrect – ED not required unless unable to maintain Torus pressure < PSP		
c.	Correct – There is no restriction to placing A loop RHR in Torus spray in addition to suppression pool cooling mode.		
d.	Incorrect – Although meet DWSIL to allow spraying the drywell, torus water temperatures would be expected to lower with suppression pool cooling in operation. Also, spray the drywell based on Torus pressure, NOT DW pressure!		
REFERENCE	Need to provide examinees Primary Ctmt Control EOP and Curves/Cautions/Tables Sheet 9 to answer this question.		
COGNITIVE LEVEL	HIGHER		
LEVEL OF DIFFICULTY	3		
SRO-only because	SRO must choose which steps to take in PC pressure control leg to mitigate event.		

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17. With the plant operating at 100% power, the panel operators inform the CRS of the following conditions:

- Main Steam Line Radiation Monitors A, B, C, and D all indicate 20,000 mr/hr
- Off Gas Radiation Monitor indicates 800 mr/hr increasing
- RBHVAC Radiation Monitor indicates 10,000 cpm

(1) What is the expected plant response; and (2) What actions should the CRS take?

- a. (1) 1/2 Scram and 1/2 Group 1 Isolation
(2) Enter 20.000.07, Fuel Clad Failure
- b. (1) Reactor Scram and a Group 1 Isolation
(2) Enter 20.000.07 Fuel Clad Failure, 20.000.21 Reactor Scram, and RPV Control EOP
- c. (1) RBHVAC System Isolation and SGTS Initiation
(2) Enter 20.000.02, Abnormal Release of Radioactive Material and Secondary Containment Control EOP
- d. (1) MSIV Isolation, Reactor Scram, Off Gas Isolation, RBHVAC System Isolation and SGTS Initiation
(2) Enter 20.000.07, Fuel Clad Failure, 20.000.02, Abnormal Release of Radioactive Material, RPV Control & Secondary Containment Control EOPs

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Question No. 17			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	2		
GROUP	2		
K/A	272000 A2.01		
IMPORTANCE RATING	RO		
	SRO 4.1		
SOURCE	BANK		Re-picked A2.01 from A2.05 since there is no 'dilution steam' at Fermi! Ref. Fermi Question: EQ-OP-315-0150-000-B007-001
PROPOSED ANSWER	b		
EXPLANATION			
a.	Incorrect – All Main Steam Line rad levels are below scram setpoint and other monitors do not input into RPS.		
b.	Correct.		
c.			
d.			
REFERENCE			
COGNITIVE LEVEL	HIGHER		
LEVEL OF DIFFICULTY	3		
SRO-only because	SRO must choose which procedure to mitigate event.		

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18. A security supervisor calls the control room to inform the operators that a large ammonia spill has occurred in the protected area. As the control room supervisor, you direct operators to ____ (1) _____. The Control Center HVAC ____ (2) _____.
- a. (1) verify that the control center ventilation system automatically shifts into chlorine mode.
(2) charcoal filter will become degraded, contact engineering for an operability evaluation.
 - b. (1) manually place the control center ventilation system in recirculation mode.
(2) will maintain positive pressurization of the control center.
 - c. (1) manually shift the control center ventilation system into chlorine mode.
(2) will NOT maintain positive pressurization of the control center.
 - d. (1) monitor the control center ventilation system in normal mode.
(2) will maintain the control center pressurization positive.

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Question No. 18			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	2		
GROUP	2		
K/A	290003 G 2.4.35		
IMPORTANCE RATING	RO		
	SRO 3.8		
SOURCE	NEW	Walton	
PROPOSED ANSWER	C		
EXPLANATION			
a.	Incorrect, CCHVAC will not auto transfer – this is a manual action.		
b.	Incorrect, recirculation mode will transfer outside air through the charcoal filter resulting in degrading the charcoal filter.		
c.	Correct, must manually start CCHVAC in chlorine mode. Since this mode does not use outside air, the control center will not remain pressurized greater than surrounding area.		
d.	Incorrect, in normal mode, uses outside air and bypasses emergency MU filter. Will result in ammonia fumes in control center.		
REFERENCE	20.000.30		
COGNITIVE LEVEL	HIGHER		
LEVEL OF DIFFICULTY	3		
SRO-only because	SRO decision on how to operate CRHVAC.		

FERMI 2 SENIOR REACTOR OPERATOR INITIAL LICENSE EXAM
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19. With the reactor operating at rated power, the P603 operator reports that a reactor scram has just occurred. Several minutes later, the panel operators report the following information:

- Several control rods are still withdrawn
- APRMs readings are within a range of 5-10%
- Reactor water level is +100 inches on wide range indicator and slowly lowering
- Reactor pressure is cycling on the SRVs
- Drywell temperature is 220°F and slowly rising
- Drywell pressure is 4 psig and slowly rising
- Torus water temperature is 115°F and slowly rising

Given the above conditions, what instructions should the SRO give to the two panel operators?

- a. Have both P603 and CRNSO perform terminate and prevent injection steps.
- b. Have P603 attempt to manually insert control rods.
Have CRNSO manually open SRVs to reduce RPV pressure to <960 psig.
- c. Have P603 attempt to manually insert control rods.
Have CRNSO spray the drywell.
- d. Have P603 restore and maintain RPV water level within a band of 180-200 inches.
Have CRNSO manually open SRVs to reduce RPV pressure to <960 psig.

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Question No. 19			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	3		
GROUP			
K/A	G 2.1.6		
IMPORTANCE RATING	RO		
	SRO 4.8		
SOURCE	NEW	Walton	
PROPOSED ANSWER	B		
EXPLANATION			
a.	Incorrect, ATWS steps FSL 7 & 8 (BIIT exceeded) bypass Terminate and Prevent Criteria in RPV Level leg.		
b.	Correct answer since conditions require ATWS FSQ steps to be implemented.		
c.	Incorrect, DW temp. and press are such that DW Spray is not yet needed and DWSIL has been exceeded. Can't spray the DW.		
d.	Given the plant conditions RPV water level must be maintained less than 114 inches.		
REFERENCE	29.100.01 sh 1, RPV Control (Provided with entry conditions blanked out) 29.100.01 sh 1a, RPV Control – ATWS(Provided with entry conditions blanked out) 29.100.01 sh 2, Primary Ctmt Control(Provided with entry conditions blanked out) 29.100.01 sh 6, Curves, Cautions and Tables(Provided with entry conditions blanked out)		
COGNITIVE LEVEL	HIGHER		
LEVEL OF DIFFICULTY	3		
SRO-only because	Requires knowledge of EOPs and directing panel operator actions.		

FERMI 2 SENIOR REACTOR OPERATOR INITIAL LICENSE EXAM
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20. During a refuel outage with fuel movement in progress in the vessel, annunciator 2D1, FUEL POOL WATER LEVEL LOW is received. All fuel movement was terminated. Investigation revealed a leaking seal in a main steam line plug.

Which one of the following: 1) is an acceptable Fuel Pool water level, for resumption of fuel movement; and 2) correctly states the basis for the minimum Fuel Pool water level.

- a. (1) 21 feet above top of irradiated fuel assemblies seated in SFP storage racks
(2) Sufficient water depth to provide adequate absorption of iodine that might be released in a fuel handling accident.
- b. (1) 20 feet above the reactor vessel flange
(2) Ensures a minimum of 8 feet of shielding over the irradiated fuel being moved to minimize exposure to workers on the refuel bridge.
- c. (1) 20 feet above top of irradiated fuel assemblies seated in SFP storage racks
(2) Ensures a minimum of 8 feet of shielding over the irradiated fuel being moved to minimize exposure to workers on the refuel bridge.
- d. (1) 21 feet above the reactor vessel flange
(2) Sufficient water depth to provide adequate absorption of iodine that might be released in a fuel handling accident.

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Question No. 20			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	3		
GROUP			
K/A	G 2.1.41		
IMPORTANCE RATING	RO		
	SRO 3.7		
SOURCE	Modified – Added 2-part question and answer. Changed A & C distractors		Reference licensee question: EQ-OP-202-0401-000-0119-009 Walton
PROPOSED ANSWER	D		
EXPLANATION			
a.	Incorrect depth for water level above fuel seated in the spent fuel racks (required is ≥ 22 feet). Basis is correct.		
b.	Incorrect depth (required is ≥ 20 feet 6 inches);basis is also incorrect.		
c.	See explanation for a. and b.		
d.	Correct answer IAW TS 3.9.6 and Basis.		
REFERENCE	TS 3.7.7 & 3.9.6 and Basis Document ST-OP-315-0015-001, FPCCU Lesson Plan, pg 11 & 25.		
COGNITIVE LEVEL	Memory		
LEVEL OF DIFFICULTY	2		
SRO-only because...	Requires knowledge of TS Basis Document		

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21. You have been assigned to review an upcoming refueling outage schedule to determine if the criteria for Infrequently Performed Tests or Evolutions (IPTE) are met. Which one of the following qualifies as an Infrequently Performed Tests or Evolution?
- a. Performance of a passive surveillance activity (e.g., a visual inspection), that only affects one train of a multi-train safety related system, and that is only performed every other refueling outage.
 - b. An operational pressure test performed on a valve that was replaced in a safety related system.
 - c. Performance of a surveillance test that integrates several surveillance test activities, involving multiple systems, which were previously performed independently.
 - d. Core refueling activities, supervised by an experienced SRO (three consecutive refueling outages), and conducted by contractor crews of experienced fuel handlers.

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Question No. 21			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	3		
GROUP			
K/A	G 2.2.7		
IMPORTANCE RATING	RO		
	SRO 3.6		
SOURCE	NEW	Reeser	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	Incorrect – while the periodicity is infrequent, the activity is passive and only affects one train of a single system.		
b.	Incorrect – The test would involve normal operation of the system.		
c.	Correct --		
d.	Incorrect since the personnel involve are experienced.		
REFERENCE	MOP-3, Policy & Practices, Sect 3.6.1		
COGNITIVE LEVEL	Memory		
LEVEL OF DIFFICULTY	3		
SRO-only because	Activity required to be performed by a SRO per facility procedure.		

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22. The unit is operating at 50% RTP. The 120 kV offsite circuit is declared inoperable for maintenance activities at 1000 on 9/20/10; all other systems are operable. Subsequently, the 345 kV offsite circuit is declared inoperable 4 hours later. Which one of the following describes the required TS ACTIONS?
- a. The unit must be in Mode 3 by 0200, 9/21/2010.
 - b. The unit must be in Mode 3 by 2200, 9/20/2010.
 - c. Verify correct breaker alignment and indicated power availability for each offsite circuit within 1 hour and once per 8 hours thereafter.
 - d. Restore one offsite circuit to Operable status by 1400 on 9/21/2010.

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Question No. 22			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	3		
GROUP			
K/A	G 2.2.36		
IMPORTANCE RATING	RO		
	SRO 4.2		
SOURCE	MODIFIED		Reference licensee question: EQ-OP-202-071-000-A012-001 Walton
PROPOSED ANSWER	d.		
EXPLANATION			
a.	Incorrect, Condition E is applicable. Shutdown required only if required actions and completion times of Condition D or E cannot be met.		
b.	Incorrect, Condition E is applicable. Shutdown required only if required actions and completion times Condition D or E cannot be met.		
c.	Incorrect, since action is only required for operable offsite sources.		
d.	Correct response. Condition E with 2 offsite circuits inop. Action E.1 is not required all other systems are operable (given in stem).		
REFERENCE	TS 3.8.1 must be provided to applicants to answer this question. Fig. 3150057, 120/345 Kv Switchyard		
COGNITIVE LEVEL	HIGHER		
LEVEL OF DIFFICULTY	2		
SRO-Only because ...	Requires use of TS 3.8.1		

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23. The SRO directs an auxiliary operator and an RP technician to perform the initial drywell entry after reactor shutdown and containment purge have been completed.

In accordance with 23.425.01, Primary Containment Procedures, the SRO must ensure that TIP detectors are ____ (1) _____. The drywell personnel access hatch must be unlocked using the key ____ (2) _____.

- a. (1) fully withdrawn ONLY.
(2) from the operations key locker.
- b. (1) fully withdrawn ONLY.
(2) maintained by the RP supervisor.
- c. (1) fully withdrawn AND drive motors deenergized.
(2) from the operations key locker.
- d. (1) fully withdrawn AND drive motors red tagged.
(2) maintained by the RP supervisor.

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Question No. 23			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	3		
GROUP			
K/A	2.3.13		
IMPORTANCE RATING	RO		
	SRO 3.8		
SOURCE	NEW	Walton	
PROPOSED ANSWER	D		
EXPLANATION			
a.	Incorrect, TIPS must be fully withdrawn AND red tagged/deenergized. Key NOT maintained by Operations.		
b.	Incorrect, TIPS must be fully withdrawn AND red tagged/deenergized. Key is maintained by RP!		
c.	Incorrect, procedure requires TIP detectors be deenergized AND red tagged but key possessed by RP not OPS!		
d.	Correct answer IAW 23.425.01, Primary Containment Procedures, Att 1, Step 1.3. and step 1.6 that requires TIP detectors be deenergized AND red tagged.		
REFERENCE	23.425.01, Primary Containment Procedures		
COGNITIVE LEVEL	MEMORY		
LEVEL OF DIFFICULTY	2		
SRO only because ...	RP actions that need to be verified by SRO prior to cmt entry?		

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24. With the plant initially operating at power, a transient results in actuation of both divisions of RPS. Following completion of immediate actions, the following conditions exist:
- Reactor power is lowering in the intermediate range on a -80 second period.
 - Post Scram Feedwater Logic has actuated and RPV level is trending to setpoint.
 - Reactor Pressure is approximately 945 psig, controlled by the turbine bypass valves.
 - Four control rods remain withdrawn with positions ranging from 04 to 32 notches. The control rods are separated by at least five cells in any direction.

Under these conditions, the applicable procedure(s) for controlling the above parameters is(are):

- a. 20.000.21, Reactor Scram AND
29.100.01 Sh 1, RPV Control
- b. 29.100.01 Sh 1, RPV Control ONLY
- c. 20.000.21, Reactor Scram AND
29.100.01 Sh 1A, RPV Control – ATWS ONLY
- d. 29.100.01, Sh 1, RPV Control AND
29.100.01 Sh 1A, RPV Control – ATWS

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Question No. 24			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	3		
GROUP			
K/A	G2.4.5		
IMPORTANCE RATING	RO		
	SRO 4.3		
SOURCE	NEW	Walton	
PROPOSED ANSWER	c.		
EXPLANATION			
a.	Incorrect – Since RPV water level dropped below 173 inches and multiple control rods remain withdrawn 29.100.01 Sheet 1 is entered but then <u>exited</u> to Sheet 1A. Plausible if it is assumed that Reactor will remain shutdown under all conditions.		
b.	Incorrect – If it is assumed that Reactor will remain shutdown under all conditions 29.100.01 Sheet 1 directs concurrent entry to 20.000.21.		
c.	Correct – Although 29.100.01 Sheet 1 is entered, it is then <u>exited</u> to Sheet 1A which becomes the controlling procedure. EOPs take precedent over AOP unless specified otherwise.		
d.	Incorrect – Since RPV water level dropped below 173 inches and multiple control rods remain withdrawn 29.100.01 Sheet 1 is entered, but then <u>exited</u> to Sheet 1A. Plausible if believed that both are performed concurrently.		
REFERENCE	20.000.21, Reactor Scram 29.100.01, RPV Control 29.100.01, Sh 1A, RPV Control – ATWS		
COGNITIVE LEVEL	HIGHER		
LEVEL OF DIFFICULTY	2		
SRO-only because	Actions/Procedure decision to be taken by SRO post-trip.		

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25. For any event considered to be a credible imminent threat or hostile action against the facility, the NRC must be notified within one hour by using which normal communication method?
- a. In-Plant phone system to the NRC Resident Inspector Office
 - b. Secure Telecommunications Unit (STU) phone
 - c. Emergency Notification System
 - d. Commercial Telephone System

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Question No. 25			
EXAM DATE	8/30/2010		
FACILITY/ REACTOR TYPE	Fermi 2/341	GE-BWR4	
EXAM OUTLINE CROSS-REFERENCE			
LEVEL	SRO		
TIER	3		
GROUP			
K/A	G2.4.43		
IMPORTANCE RATING	RO		
	SRO 3.8		
SOURCE	NEW	Walton	
PROPOSED ANSWER	C		
EXPLANATION			
a.	Incorrect, since NRC headquarters must be also notified.		
b.	Incorrect, the Security Bridge is for communication among NRC Headquarters Safeguards Team personnel, NRC regional responders, and licensee security personnel. The NRC will staff this bridge whenever there is an incident reported. (4.7.7.3)		
c.	Correct answer IAW EP290 procedure, sect. 4.7.2.1.a & 4.7.4. Contact the NRC using the emergency notification system (ENS) line as soon as possible after being informed by the station security staff of any security-related event(s) considered to be a credible imminent threat or Hostile Action. Notifications to the NRC are <u>normally</u> accomplished using the FTS-2001, Emergency Notification System (ENS). (4.7.4)		
d.	Incorrect, not the 'normal' method for communicating with the NRC, but an alternative!		
REFERENCE	EP290 procedure, sect. 4.7.2.1.a		
COGNITIVE LEVEL	Memory		
LEVEL OF DIFFICULTY	2		
SRO-Only because	SRO's are responsible for making offsite notifications		

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ANSWER KEY

1. c
2. b
3. c
4. d
5. c
6. DELETED
7. a
8. a
9. a
10. d
11. d
12. a
13. DELETED
14. a
15. a
16. c
17. b
18. c
19. b
20. d
21. c
22. d
23. d
24. c
25. c