ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.:	50-313; 50-368
License Nos.:	DPR-51
Report No.:	50-313/98-303; 50-368/98-303
Licensee:	Entergy Operations, Inc.
Facility:	Arkansas Nuclear One, Units 1 and 2
Location:	Junction of Hwy. 64W and Hwy. 333 South Russellville, Arkansas
Dates:	December 18, 1998
Inspector:	John L. Pellet, Chief, Operations Branch
Approved By:	Arthur T. Howell III, Director Division of Reactor Safety

ATTACHMENTS:

Attachment 1:	Supplemental Information
Attachment 2:	Final Written Examination and Answer Key

EXECUTIVE SUMMARY

Arkansas Nuclear One, Unit 1
NRC Inspection Report 50-313/98-303

NRC examiners evaluated the competency of one reactor operator license applicant for issuance of operating license at the Arkansas Nuclear One, Unit 1. The licensee developed the retake written examination using NUREG-1021, Interim Revision 8, January 1997. NRC examiners reviewed, and approved the examination. The written examination was administered on December 18, 1998, by facility proctors in accordance with the guidance in NUREG-1021, Interim Revision 8.

Operations

- The reactor operator license applicant passed the examination. (Section 04.1).
- The test material was adequate for administration as submitted (Section 05.1).

Report Details

Summary of Plant Status

The plant operated at essentially 100 percent power on both units for the duration of this inspection.

I. Operations

04 Operator Knowledge and Performance

04.1 Initial Written Examination

a. Inspection Scope

On December 18, 1998, the facility licensee proctored the administration of the written examination approved by the NRC to the individual who had reapplied for a reactor operator license. The licensee proposed grades for the written examination and evaluated the results for question validity and generic weaknesses. The examiner reviewed the licensee's results.

b. Observations and Findings

The minimum passing score was 80 percent. The candidate's score for the written examination was 93 percent. The licensee's post-administration analysis identified that the administered examination was acceptable. There were no post-examination comments or changes to the written examination.

c. Conclusions

The applicant passed the written examination. No broad knowledge or training weaknesses were identified as a result of evaluation of the graded examination.

05 Operator Training and Qualification

05.1 Initial Licensing Examination Development

The facility licensee developed the initial licensing examination in accordance with guidance provided in NUREG-1021,"Operating Licensing Examination Standards," Interim Revision 8, dated January 1997.

05.1.1 Examination Outline

a. Inspection Scope

The facility licensee submitted the initial examination outlines on October 30, 1998. The chief examiner reviewed the submittal against the requirements of NUREG-1021, Interim Revision 8.

b. Observations and Findings

The chief examiner determined that the initial examination outlines satisfied NRC requirements.

c. Conclusions

The licensee submitted an adequate examination outline.

05.1.2 Examination Package

a. Inspection Scope

The draft examination was transmitted by the licensee to the NRC on December 3, 1998. The licensee submitted the completed final examination package on December 11, 1998. The chief examiner reviewed the examination against the requirements of NUREG-1021, Interim Revision 8.

b. Observations and Findings

The draft written examination contained 100 questions. The draft examination was technically valid, discriminated at the proper level, and responsive to the outline submitted by the licensee. The written examination was considered adequate for administration as submitted.

c. Conclusions

The test material was adequate for administration as submitted by the licensee. No significant changes to examination materials were required as a result of administration.

V. Management Meetings

X1 Exit Meeting Summary

The chief examiner telephonically presented the inspection results to members of the licensee management at the conclusion of the inspection on January 5, 1999. The licensee acknowledged the findings presented.

The licensee did not identify as proprietary any information or materials examined during this inspection.

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

G. Giles, Operations Training Supervisor

NRC

None

INSPECTION PROCEDURES USED

NUREG-1021, NUREG-1021, "Operating Licensing Examination Standards," Interim Revision 8, January 1997

ATTACHMENT 2

FINAL WRITTEN EXAMINATION AND ANSWER KEY

U.S. Nuclear Regulatory Commission
Site-Specific
Written Examination

Applicant Information	
Name:	Region: I / II / III (IV)
Date:	Facility/Unit: ANO Unit One
License Level: (RO) / SRO	Reactor Type: W / CE / (BW) / GE
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected four hours after the examination starts.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

_____
Applicant's Signature

Results	
Examination Value	100 Points
Applicant's Score	_____ Points
Applicant's Grade	_____ Percent

Question No. *1* **QID:** *0131* **Point Value:** *1*

If channel A of the RPS is currently in channel bypass, what would result if the channel bypass switch for channel B was then placed in the bypass position?

a. The RPS would be placed in a 2 out of 2 coincidence logic.

b. Interlock would cause both channels to drop out of bypass.

c. The B channel would be in bypass and the A channel would automatically be removed from bypass.

d. The channel B bypass is prevented by an interlock from the channel already in bypass.

Question No. *2* **QID:** *0132* **Point Value:** *1*

The makeup tank has decreased from 81 inches to 73 inches. Assuming that the level decrease was due to a loss of RCS inventory, how much has been lost?

a. 220 to 229 gallons

b. 230 to 239 gallons

c. 240 to 249 gallons

d. 250 to 259 gallons

Question No. *3* **QID:** *0133* **Point Value:** *1*

Which of the following are the two purposes for maintaining a one gpm continuous spray flow bypassing the pressurizer spray valve?

a. Assists in pressurizer level control and maintains pressurizer heaters at minimal firing rate.

b. Minimizes surge and spray line temperature differentials and maintains pressurizer boron concentration near that in the RCS.

c. Assists in maintaining pressurizer level and maintains pressurizer boron concentration near that in the RCS.

d. Minimizes surge and spray line temperature differentials and raises the differential pressure across the spray valve.

Question No. *4* **QID:** *0134* **Point Value:** *1*

The Gamma Metrics system uses discrimination circuitry to provide accurate indication of source range power levels. Why is discrimination necessary in source range nuclear instrumentation and what is the result of incorrect discrimination?

a. Discrimination separates out alpha and neutron pulses to provide a true gamma pulse. With the discrimination set too high power will indicate higher than actual power.

b. Discrimination separates out gamma and neutron pulses to provide a true alpha pulse. With the discrimination set too low, power will indicate higher than actual power.

c. Discrimination separates out gamma and alpha pulses to provide a true neutron pulse. With the discrimination set too high, power will indicate lower than actual power.

d. Discrimination separates out beta and gamma pulses to provide a true neutron pulse. With the discriminator set too low, power will indicate lower than actual power.

Question No. *5* **QID:** *0135* **Point Value:** *1*

A LOCA has occurred which has resulted in an ESAS actuation of channels 1 through 10. Which ESAS channels have actuated the RB cooling units and what is the correct RB cooling alignment?

a. ES channels 7 & 8, VSF-1A, 1B, 1C, & 1D running with service water aligned to the cooling coils.

b. ES channels 3 & 4, VSF-1A, 1B, 1C, 1D, & 1E running with chilled water aligned to the cooling coils.

c. ES channels 5 & 6, VSF-1A, 1B, 1C, & 1D running with service water aligned to the cooling coils.

d. ES channels 1 & 2, VSF-1A, 1B, 1C, 1D, & 1E running with chilled water aligned to the cooling coils.

Question No. *6* **QID:** *0136* **Point Value:** *1*

During a LOCA inside the Reactor Building, RE-3814, Service Water Loop I Radiation Monitor alarms. SW Loop II indications are normal.
Which of the conditions below when combined with the above condition would make it necessary to isolate the "A" & "B" RB Emergency coolers?

a. Loop II Service Water monitor is also in alarm.

b. Instrument Air is lost.

c. Discharge Flume monitor is also in alarm.

d. RB area monitors are also in alarm.

Question No. *7* **QID:** *0137* **Point Value:** *1*

Which one of the following is NOT a function of the Rapid Feedwater Reduction feature of ICS?

a. Low Load and Startup Control Valve demands are reduced to zero.

b. Main Feedwater Pump speed goes to minimum.

c. Both Main Feedwater Block Valves close in slow speed.

d. Both Loop Feedwater demands are reduced to zero.

Question No. *8* **QID:** *0138* **Point Value:** *1*

During the performance of Main Turbine Governor Valve testing, while governor valve #1 was closed in the test position governor valve #3 fails closed. What turbine problems does this impose?

a. Moisture impingement on the turbine blading.

b. Thermal shock to the turbine rotor.

c. Turbine will trip due to low load.

d. Turbine overspeed condition.

Question No. *9* **QID:** *0139* **Point Value:** *1*

Which of the following systems are isolated to the Reactor Building by ESAS?

a. RCP motor cooling, chill water, RB service water cooling.

b. Seal injection, CRD cooling, RB leak detectors.

c. Seal injection, RCP motor cooling, RB service water cooling.

d. CRD cooling, chill water, RB leak detector.

Question No. *10* **QID:** *0140* **Point Value:** *1*

Initial conditions:
-100% power with P-36C supplying normal makeup and seal injection. ICW pumps P-33A and P-33C in service.

What RCP support system would be most affected by a loss of bus A4?

a. Seal Injection

b. Motor Cooling

c. Seal Bleedoff

d. Oil Lift Pressure

Question No. *11* **QID:** *0141* **Point Value:** *1*

Running with 'A' & 'B' RCP's on and 'C' & 'D' RCP's off with RCS pressure below 260 psig should be minimized to prevent:

a. excessive seal wear and cavitation.

b. excessive motor winding temperatures and cavitation.

c. excessive seal wear and shaft cracking.

d. excessive thrust bearing wear and shaft cracking.

Question No. *12* **QID:** *0142* **Point Value:** *1*

Under what conditions can the Control Board Operator bypass or defeat a component automatically actuated by ESAS?

a. Bypassing or defeating a component automatically actuated by ESAS is not allowed.

b. The Control Board Operator, after careful consideration, determines that the component is no longer required.

c. ONLY when procedurally directed by the Emergency Operating or the Abnormal Operating procedures.

d. After it is determined that the component is no longer needed and approval is obtained from the CRS/SS.

Question No. *13* **QID:** *0143* **Point Value:** *1*

The plant is shut down for Refueling. A letdown system valve alignment is being done inside Controlled Access. Two of the valves are in a locked high radiation area and have no remote position indication. The first check was made, but the Shift Superintendent decided to waive the second check to reduce the exposure to high radiation.

Which one of the following statements most accurately describes why the Shift Superintendent's decison is acceptable or unacceptable?

a. Acceptable, independent verifications are always waived for valve alignments inside High Radiation Areas.

b. Unacceptable, independent verification cannot be waived if NO remote valve position indication is provided.

c. Acceptable, independent verification can be waived for valve alignments on a case-by-case basis with the Superintendent's approval.

d. Unacceptable, independent verifications cannot be waived for valve alignments without the approval of the Manager of Plant Operations.

Question No. *14* **QID:** *0144* **Point Value:** *1*

A qualified Category III advanced radworker is assigned to perform a valve lineup in an area with a posted general area dose rate of 150 mR/hr.

To enter this area without an HP escort, which of the following is NOT required?

a. Radworker must be logged in on the appropriate Radiation Work Permit.

b. Radworker must be in possession of a suitable survey meter.

c. Radworker must be knowledgeable of the area dose rates.

d. Radworker must have a pocket ion-chamber self reading dosimeter (SRD).

Question No. *15* **QID:** *0145* **Point Value:** *1*

The purpose of the IN-LIMIT (LATCH) BYPASS switch on the Diamond panel is to:

a. y power to the CRD motor which will engage the latching mechanism.

b ' set a fault condition provided the fault has cleared.

c. Reset the AC breakers, DC breakers, and programmer controls.

d. Allow driving in Groups 1 thru 7 to engage roller nuts with lead screws.

Question No. *16* **QID:** *0146* **Point Value:** *1*

The plant is operating at 100% power, when annunciator K07-C1, REACTOR FEEDWATER LIMITED, alarms. The following conditions exist:

- RCS pressure and temperature are increasing.
- OTSG levels = 60% and decreasing.
- Main feedwater flow is decreasing.

What procedure contains the required mitigating operator actions?

a. 1203.027, "Loss of Steam Generator Feed"

b. 1203.001, "ICS Abnormal Operating"

c. 1203.018, "Turbine Trip Below 43% Power"

d. 1202.001, "Emergency Operations Procedure"

Question No. *17* **QID:** *0147* **Point Value:** *1*

Given the following conditions:

- 100% power
- ICS in full automatic
- Low Load Limit set at 60%

Annunciators "CRD Withdrawal Inhibited" and "Control Rod Asymmetric" are received as a result of Group 2, Rod 3 dropping and fully inserting into the core. Which of the following best describes plant response?

a. ICS will run the plant back at 30%/min and power will stabilize at 40%.

b. ICS will run the plant back at 50%/min and power will stabilize at 40%.

c. ICS will run the plant back at 30%/min and power will stabilize at 60%.

d. ICS will run the plant back at 50%/min and power will stabilize at 60%.

Question No. *18* **QID:** *0152* **Point Value:** *1*

The plant is in hot shutdown with preparations for startup in progress.

Which of the following is an acceptable offsite power source alignment in accordance with Technical Specification 3.7?

a. Startup Transformer #1 and Unit Auxiliary Transformer backfed from 500 KV via main generator outout breakers

b. Startup Transformer #2 and Unit Auxiliary Transformer powered from 22 KV switchyard line

c. Startup Transformer #1 and Unit Auxiliary Transformer powered from 22 KV switchyard line

d. Startup Transformer #2 and Unit Auxiliary Transformer backfed from 500 KV via main generator outout breakers

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Question No. *19* **QID:** *0153* **Point Value:** *1*

Actuation of any Control Room isolation radiation monitor will cause:

a. Both emergency Recirc Fans to start, all isolation dampers close

b. Either emergency Recirc Fan will start, only the isolation dampers for that CR close

c. Neither emergency Recirc Fan will start, only isolation dampers close

d. One emergency Recirc Fan will start, all isolation dampers close

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Question No. *20* **QID:** *0154* **Point Value:** *1*

Given, only ONE failure caused the following.:

- Plant running back
- "A" main feedwater flow rapidly increasing
- "B" main feedwater flow rapidly decreasing
- Feedwater pumps discharge crosstie valve shut

Which one of the following equipment/component responses produced this plant condition?

a. RCP trip

b. "A" loop RCS flow transmitter failure

c. MFWP trip

d. "B" loop RCS flow transmitter failure

Question No. *21* **QID:** *0155* **Point Value:** *1*

The plant is steady at 100% power.
Loop 'A' RCS narrow range pressure instrument, PT-1021, fails high instantaneously.

What effect will this failure have on plant equipment?

a. The ERV will open.

b. RPS channel A will trip.

c. Pressurizer heaters will go off.

d. PZR spray valve will open.

Question No. *22* **QID:** *0156* **Point Value:** *1*

Given:
* A reactor trip has occurred.
* RCS pressure is 1800 psig,
* RCS T-cold is 532 degrees F,
* "A" OTSG pressure is 650 psig,
* "B" OTSG pressure is 970 psig,
* Reactor Building pressure is 6 psig.

Which emergency operating procedure contains the specific steps to mitigate the consequences of this event.

a. ESAS 1202.010

b. Overcooling 1202.003

c. HPI Cooldown 1202.011

d. Loss of Subcooling Margin 1202.002

Question No. *23* **QID:** *0157* **Point Value:** *1*

Given: The plant is at 500 MWe and you are the CBOT.

If condenser vacuum dropped from 27" to 25.5", you would see indications of:

a. Increasing main turbine load (MWe).

b. Condenser vacuum pump shifting to hogging mode.

c. Automatic main turbine trip.

d. Condenser vacuum pump auto starting.

Question No. *24* **QID:** *0158* **Point Value:** *1*

The outside door of the personnel lock was opened to replace a seal gasket 24 hours ago. How long does operations have to perform an LLRT on the personnel lock before a loss of containment integrity will exist?

a. 1 hour

b. 12 hours

c. 6 days

d. 13 days

Question No. *25* **QID:** *0159* **Point Value:** *1*

Given:
- A LOCA has occurred.
- All RCPs are running.
- SPDS ATOG display indicates "Loss of Subcooling Margin Elapsed Time 00:04:15"

Which of the following actions should be taken?

a. Stop all RCPs.

b. Stop one RCP in each loop.

c. Stop all RCPs except for one RCP in PZR loop.

d. Continue to keep all RCPs running.

Question No. *26* **QID:** *0160* **Point Value:** *1*

During a Rx trip transient, all nine of the + or - 24v DC NNI/ICS power supply status lights go out.

The most likely cause is:

a. Loss of Offsite Power

b. Loss of DC Bus D11

c. Loss of Y02

d. Loss of DC Bus D21

Question No. *27* **QID:** *0161* **Point Value:** *1*

Given:
- Power escalation is in progress following a shutdown.
- Reactor power is 30%.
- Rod 4 of Group 5 drops.

Which of the following actions should be taken?

a. Insert all regulating rods in sequential mode.

b. Trip the reactor and go to Reactor Trip, 1202.001.

c. Verify plant stabilizes at 320 MWe after ICS runback.

d. Refer to Tech Specs and recover the dropped rod.

Question No. *28* **QID:** *0162* **Point Value:** *1*

Reactor power is 90% and generated megawatts is 800. After a runback for loss of one main feedwater pump, the ICS should stabilize the plant at _____.

a. 360 MWe

b. 340 MWe

c. 45% Reactor Power

d. 40% Reactor Power

Question No. *29* **QID:** *0163* **Point Value:** *1*

After a reactor trip with all immediate actions performed, which of the following requires an entry into 1202.004 "OVERHEATING"?

a. T-hot is rising above 560 deg F with the "C" RCP running.

b. Both main feedwater pumps tripped, aux feed pump 00S.

c. T-hot rising above 580 deg F and subcooling margin is lost.

d. CETs rising above 610 deg F with all of the RCPs off.

Question No. *30* **QID:** *0164* **Point Value:** *1*

An outage is in progress. The RCS is drained to 371.5 feet as indicated by RCS hot leg level. Decay heat removal flow becomes erratic. Indicated flow is ~2500 gpm. Which ONE of the following actions is correct?

a. Reduce decay heat removal flow below 2000 gpm.

b. Stop the operating decay heat removal pump.

c. Raise RCS level.

d. Raise decay heat removal flow.

Question No. *31* **QID:** *0165* **Point Value:** *1*

Given:

- Reactor tripped
- OTSG pressures 830 psig and decreasing
- Tave 536 degrees F

Which plant condition below correlates to these parameters?

a. All rods not on bottom

b. Turbine did not trip

c. A1 did not transfer to SU1

d. RCS is saturated

Question No. *32* **QID:** *0166* **Point Value:** *1*

During an OTSG tube rupture with RCS temperature at 525° F, which of the following would require using the emergency cooldown rate?

a. Bad OTSG level 410" and rising

b. BWST level 28' and dropping

c. Projected activity at the site boundary is at NUE criteria.

d. Tube-to-shell differential temperature 60°F tubes hotter.

Question No. *33* **QID:** *0167* **Point Value:** *1*

What immediate action is required upon receipt of Liquid Radwaste Process Monitor (RI-4642) high alarm?

a. Start another circ water pump to increase dilution flow.

b. Verify no release in progress at Disch Flow to Flume (FI-4642) on C19.

c. Verify with Unit 2 no other release is in progress.

d. Have chemistry sample discharge flume for radionuclides.

Question No. *34* **QID:** *0168* **Point Value:** *1*

A high radiation condition has resulted in the Unit 1 and Unit 2 Control Room Radiation Detectors actuating the Control Room Emergency Ventilation System. Both VSF-9 and 2VSF-9 are operating.

Which of the following is correct concerning this alignment?

a. The control room will become overpressurized which will result in 2VSF-9 tripping.

b. The alignment can result in conditions that may cause excessive radiation exposure.

c. The alignment should be maintained as is since it is an allowable configuration.

d. The control room will become overpressurized which will result in VSF-9 tripping.

Question No. *35* **QID:** *0169* **Point Value:** *1*

Given:
- Plant is at 100% power.
- PZR level transmitter LT-1001 selected via HS-1002 on C04.
- PZR temperature element TE-1001A selected via HS-1000 on C04.

The PZR temperature indicator, TI-1000, on C04 drops suddenly to 50°F (bottom of scale).

Without operator action, what will be the effect on the PZR Level Control System?

a. PZR Level Control Valve, CV-1235, will open to establish a higher steady-state PZR level.

b. PZR Level Control Valve, CV-1235, will maintain the same steady-state PZR level.

c. PZR Level Control Valve, CV-1235, will close to establish a lower steady-state PZR level.

d. PZR Level Control Valve, CV-1235, will fail open to continuously raise PZR level.

Question No. *36* **QID:** *0170* **Point Value:** *1*

During a loss of offsite power with a SG tube leak, the A2 bus is re-energized from the A4 bus. The A4 bus is supplied by #2 EDG.

What is the key reason for this action?

a. To start P-7B EFW pump and secure P-7A.

b. To restart circ. water and re-establish condenser vacuum.

c. To allow operation of the Aux Feedwater pump (P-75).

d. To re-establish Instrument Air and ICW cooling.

Question No. *37* **QID:** *0171* **Point Value:** *1*

Given: Reactor power is stable at 85% with ICS in full automatic mode.
A group 6 control rod dropped into core.

What are the required Operator actions that should be taken as a result of this condition?

a. Recovery of the dropped rod must be accomplished within the next 24 hours.

b. Declare the rod inoperable and verify a 1.5% available shutdown margin exists.

c. Exercise remaining rods within 1 hour per CRD System Operating Procedure 1105.009.

d. Shutdown the reactor by inserting all regulating control rods in sequence.

Question No. *38* **QID:** *0172* **Point Value:** *1*

Which of the following conditions would require that a Natural Circulation Cooldown be performed?

a. A plant cooldown is required and normal offsite power is NOT available.

b. A steam generator tube leak exist post reactor trip and P-7B EFW pump is NOT available.

c. EFW CST (T-41B) level has dropped to less than 3' during a Blackout condition.

d. A loss of offsite power has occured and both DGs are tied to their respective busses with an adequate SCM and SU Transformer #1 becomes available.

Question No. *39* **QID:** *0173* **Point Value:** *1*

During an Emergency Boration condition, as directed by Repetitive Task 1202.012, the batch controller is set:

a. As required to maintain makeup tank level >55 inches.

b. For maximum batch size and adjusted based on calculation.

c. To a valve obtained from the Emergency Boration graph.

d. To batch in 100 gallons of acid at 15 minute intervals.

Question No. *40* **QID:** *0174* **Point Value:** *1*

When recovering from a Station Blackout condition with no offsite power available and only one EDG operable, which of the following is true?

a. The EDG output breaker will automatically close once the EDG has started and all other feeder breakers to it's respective bus are open.

b. The EDG output breaker handswitch must be momentarily held in the "close" position to override the ES bus undervoltage relay.

c. The A3-A4 crosstie breakers are closed prior to closing the EDG output breaker.

d. The EDG should be used to backfeed A2 to restore essential loads.

Question No. *41* **QID:** *0175* **Point Value:** *1*

Given:

- ICW system is in a normal alignment with P-33A & C in operation.
- Non-Nuclear Loop flow is 1950 gpm.
- Nuclear Loop flow is 1550 gpm.
- Annunciator K12-B4 (ICW Flow Lo) is in solid.
- No ESAS signal is present.

Which of the following would be the LEAST APPROPRIATE action for the Control Room Operator to take?

a. Verify ICW Pump (P-33C or P-33B) is operating.

b. Verify ICW for Letdown Coolers and RCP Seal Coolers Outlets (CV-2214 & CV-2215) are open.

c. Verify ICW for RCP Air and Lube Oil Coolers and Control Rod Drive Outlets (CV-2220 & CV-2221) are open.

d. Verify ICW for Letdown Coolers and RCP Seal Coolers Inlet (CV-2233) is open.

Question No. *42* **QID:** *0176* **Point Value:** *1*

Given:
- Annunciator "FIRE" (K12-A1) in alarm.
- Lower North Piping Area 335' red LED light ON on C463.
- HP technician calls the Control Room and reports smoke on the 335' elevation of the Aux Building.

What are the appropriate operator actions?

a. Notify the WCO to obtain a fire extinguisher and check Lower North Piping Area for indications of fire.

b. Actuate Lower North Piping Area deluge valve by the manual trip switch on C463.

c. Notify Health Physics Dept. and dispatch two operators with SCBAs to Lower North Piping Area.

d. Notify the WCO to obtain HP coverage and check Lower North Piping Area for indications of fire.

Question No. *43* **QID:** *0177* **Point Value:** *1*

During the performance of an Alternate Shutdown, RO #2 is directed to throttle EFW TURB K3 Trip/Throttle Valve (CV-6601A) as necessary to maintain P-7A discharge pressure at ~1400 psig. What would be the initial effect on RCS parameters if P-7A discharge pressure was maintained at ~700 psig?

a. RCS Tave would drop, RCS pressure would drop, Pressurizer level would go up.

b. RCS Tave would rise, RCS pressure would rise, Pressurizer level would drop.

c. RCS Tave would rise, RCS pressure would rise, Pressurizer level would rise.

d. RCS Tave would drop, RCS pressure would drop, Pressurizer level would drop.

Question No. *44* **QID:** *0178* **Point Value:** *1*

After entering Inadequate Core Cooling EOP (1202.005), RCS temperature and pressure indicate entry into Region 4 of Figure 4. (See attached Figure 4)

What RCP action is appropriate to restore core cooling?

a. Start all RCPs even if RCP services are not available.

b. Restore RCP services and start one RCP/loop.

c. Restore RCP services and bump RCPs until primary to secondary heat transfer is established.

d. Bump all RCPs even if RCP services are not available.

Question No. *45* **QID:** *0180* **Point Value:** *1*

A reactor trip has just occurred. Which of the following would NOT cause a transition to the overcooling procedure (1202.003)?

a. MSLI actuates automatically causing both MSIVs to go closed.

b. 'A' SG pressure 1000 psig, 'B' SG pressure 800 psig, Tcold 550 degrees.

c. 'A' SG pressure 1020 psig, 'B' SG pressure 980 psig, Tcold 535 degrees.

d. Tave 560 degrees, SCM 25 degrees, RCS pressure 2100 psig,

Question No. *46* **QID:** *0181* **Point Value:** *1*

During a small break LOCA, which of the following would require manual action to balance HPI flow?

a. Both trains of HPI operating and RCS pressure >600 psig.

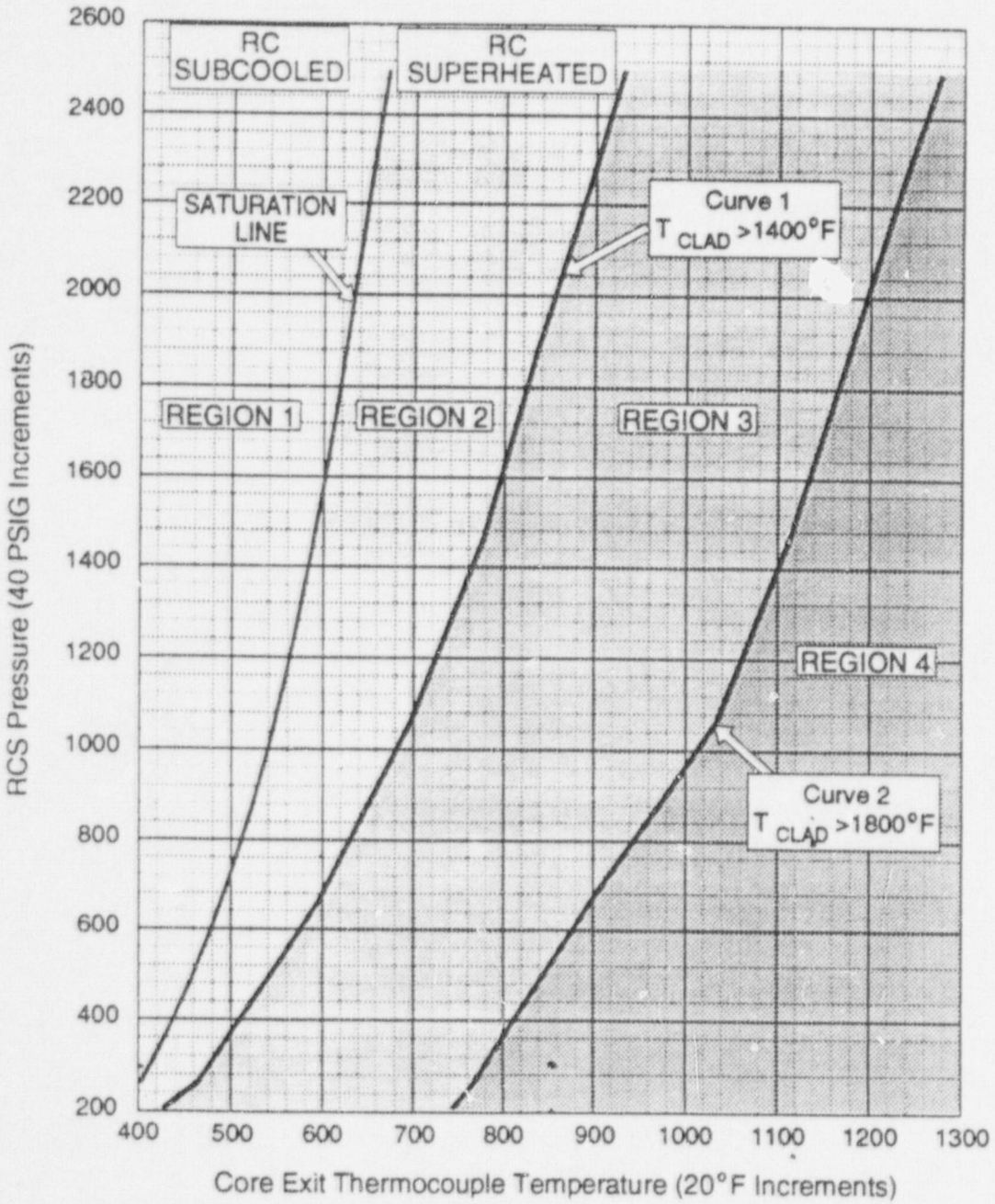
b. Both trains of HPI operating and RCS pressure <600 psig.

c. Only one train of HPI operating and RCS pressure >600 psig.

d. Only one train of HPI operating and RCS pressure <600 psig.

FIGURE 4

Core Exit Thermocouple Temperature for Inadequate Core Cooling



Question No. *47* **QID:** *0182* **Point Value:** *1*

A LOCA is in progress.
Which one of the following actions is required to be performed prior to the BWST level reaching 6 feet?

a. Secure running Reactor Coolant Pumps.

b. Align Pressurizer AUX Spray to LPI system.

c. Secure running High Pressure Injection Pumps.

d. Align one LPI train to gravity flow from RCS hot leg to RB sump.

Question No. *48* **QID:** *0183* **Point Value:** *1*

During restoration of normal makeup and seal injection, which of the following is true?

a. If PZR level is <55", normal makeup is restored before seal injection.

b. If RCP seal bleedoff temperatures are >180 degrees, seal injection control valve (CV-1207) is quickly opened to establish previous flow rate.

c. If RCP seal bleedoff temperatures are >180 degrees, CV-1207 is slowly opened to minimize thermal shock to the RCP seals.

d. BWST outlet valve associated with the operating HPI pump must be closed prior to opening CV-1207.

Question No. *49* **QID:** *0184* **Point Value:** *1*

During a reactor startup with source range NI-2 and reactor power wide range recorder NR-502 inoperable, source range NI-1 fails to 10 E5.
Intermediate range NI-3 indicates 5 E-11 amps and intermediate range NI-4 is off scale low.

What is required of the CBOR?

a. Continue the startup utilizing NI-3 until NI-4 comes on scale.

b. Perform a plant shutdown in accordance with normal operating procedures due to lack of proper overlap.

c. Trip the reactor due to no on-scale indication of neutron flux available.

d. Hold power constant and perform an NI calibration.

Question No. *50* **QID:** *0186* **Point Value:** *1*

Given:

- Reactor tripped with Thot temperatures 590 degrees and rising.
- 'A' & 'B' SG levels 13".
- All 4 RCPs are operating with RCS pressure 2200 psig.
- Both DGs are in emergency standby.

Which of the following procedures provides appropriate guidance?

a. Loss of Subcooling Margin (1202.002)

b. Overheating (1202.004)

c. Inadequate Core Cooling (1202.005)

d. Degraded Power (1202.007)

Question No. *51* **QID:** *0187* **Point Value:** *1*

The reactor has just tripped from 100% power. The turbine trip solenoid light is on. Breaker position lights on the RIGHT side of C10 are off.

What are the actions required of the CBOT?

a. Trip the main generator output breakers.

b. Transfer D11 to emergency supply D02.

c. Trip all RCPs.

d. Transfer D21 to emergency supply D01.

Question No. *52* **QID:** *0188* **Point Value:** *1*

Given: Fuel handling is in progress in the Reactor Building.
A new fuel assembly is in the Main Bridge mast.
Reactor Building Fuel Handling Area (RI-8017) area radiation monitor has a Failure alarm in solid.

What actions should be taken by the refueling team?

a. Place the assembly in the nearest core location and then secure refueling activities until repairs are made to RI-8017.

b. Continue refueling activities and notify Health Physics to perform area surveys of the Main Bridge every 15 minutes.

c. Continue refueling activities as long as two subcritical core neutron flux monitors are available.

d. Secure fuel handling activities until RI-8017 is operable or a suitable portable survey instrument is obtained.

Question No. *53* **QID:** *0189* **Point Value:** *1*

The plant is operating at 100% power.
During pre-outage scaffolding construction in Lower North Piping Room (LNPR),
the instrument air line to the Pressurizer Level Control Valve (CV-1235) is inadvertently severed.

With no operator action, which of the following describes the expected system response?

a. CV-1235 fails open and Pressurizer level will rise.

b. CV-1235 fails closed and Pressurizer level will lower.

c. CV-1235 fails open and Pressurizer level will lower.

d. CV-1235 fails closed and Pressurizer level will rise.

Question No. *54* **QID:** *0190* **Point Value:** *1*

Given:
- Plant is at 100% power.
- On C13, the RCP Seal Leakage Collecting Tank (T-111) Fill Timer "A" reads 20.0 and "TIMER ON" light is ON.
- Fill Timer "B" reads 25.0 and "TIMER ON" light is OFF.

What is the current total RCP seal leakage?

a. 1.1 gpm

b. 1.6 gpm

c. 2.0 gpm

d. 2.5 gpm

Question No. *55* **QID:** *0191* **Point Value:** *1*

The level setpoint at which the Makeup Tank Vent Valve (CV-1257) automatically opens is:

a. 86 inches

b. 55 inches

c. 18 inches

d. 10 inches

Question No. *56* **QID:** *0192* **Point Value:** *1*

Reactor Building Pressure Transmitter (PT-2407) has failed high causing an ES CH3 Trip (analog 3) and the ESAS Partial Trip annunciator (K11-F6) to come into alarm.

With the above conditions, a power loss to which of the following would cause an ESAS actuation?

a. RS1

b. B11

c. RS3

d. B21

Question No. *57* **QID:** *0193* **Point Value:** *1*

Several plant parameters can be monitored to ensure accurate indications of reactor power are available. Which of the following sets of parameters would be indicative of 60% reactor power?

a. Tave 579 degrees, Thot 593 degrees, Tcold 564 degrees, total FW flow 6.5 million lbm/hr.

b. Tave 580 degrees, Thot 599 degrees, Tcold 560 degrees, total FW flow 8.4 million lbm/hr.

c. Tave 579 degrees, Thot 588 degrees, Tcold 570 degrees, total FW flow 6.5 million lbm/hr.

d. Tave 581 degrees, Thot 590 degrees, Tcold 565 degrees, total FW flow 9.8 million lbm/hr.

Question No. *58* **QID:** *0194* **Point Value:** *1*

During a natural circulation cooldown, which of the following indicate that head voids have formed in the reactor vessel due to an excessive cooldown rate?

a. Pressurizer level dropping while depressurizing.

b. Thot tracking CET temperatures.

c. Difficulty in reducing RCS pressure.

d. Tcold rising with associated SG Tsat dropping.

Question No. *59* **QID:** *0195* **Point Value:** *1*

Unit 1 is operating at 100% power with no abnormal conditions or alignments.
'B' MFP SUCT PRESS LO (K07-C8) annunciator is received.
Where can the Control Room Operators read the 'B' MFW pump suction pressure WITHOUT leaving the control room?

a. The 'B' MFP Lovejoy Operator Control Station (OCS).

b. 'B' MFP Suction Pressure (PI-2830) indicator.

c. 'B' MFP Suction Pressure computer point (P2830)

d. The Operator Information Touchscreen (OIT).

Question No. *60* **QID:** *0196* **Point Value:** *1*

While performing a reactor building purge evolution, the operator notes all four RB Purge Isolation Valves go closed. What is the most likely cause?

a. An ESAS actuation of channels 1 and 2 has closed the valves.

b. A loss of load center B-5 has occurred causing the valves to fail closed.

c. A high radiation setpoint has been exceeded on SPING 1.

d. RB Purge Exhaust Fan (VEF-15) has tripped causing the valves to close.

Question No. *61* **QID:** *0197* **Point Value:** *1*

The plant is operating at 100% power. The Core Flood system is properly aligned with the following CFT parameters:

T-2A level	- 12.9 feet	T-2B level	- 11.9 feet
T-2A pressure	- 605 psig	T-2B pressure	- 610 psig

The Core Flood system parameters are unacceptable because?

a. Levels may preclude having sufficient N2 pressure to fully inject the CFT contents into the vessel.

b. N2 pressure could cause RCS inventory to be lost out of the break in the event of a LOCA.

c. Levels may not be sufficient to reflood the vessel following a LOCA.

d. N2 pressure may not be sufficient to fully inject the CFT content into the vessel during a LOCA.

Question No. *62* **QID:** *0198* **Point Value:** *1*

Why must Reactor Building Spray flow be throttled to 1050-1200 gpm when on Reactor Building sump suction?

a. To prevent inadequate pump suction pressure on ECCS pumps.

b. To prevent pump runout on the spray pumps.

c. To lower load on the vital electrical buses.

d. To limit reactor building cooldown rate.

Question No. *63* **QID:** *0199* **Point Value:** *1*

Identify the correct response concerning the Reactor Building Purge Isolation Valves (CV-7401, 7402, 7403, & 7404).

a. The valves receive an ESAS actuation signal from ESAS channels 5 & 6.

b. The valves receive an ESAS actuation signal from ESAS channels 3 & 4.

c. The valves receive an ESAS actuation signal from ESAS channels 9 & 10.

d. The valves do not receive an ESAS actuation signal.

Question No. *64* **QID:** *0200* **Point Value:** *1*

A break has occurred on the discharge line downstream of the discharge valve of in service Spent Fuel Cooling Pump (P-40A). The pump is stopped and the discharge valve is closed.

Which of the following statements is correct concerning the Spent Fuel Pool inventory?

a. The SFP will drain to ~ 2 feet above the spent fuel assemblies.

b. Emergency makeup from service water will be needed to prevent the SFP level from reaching the spent fuel assemblies.

c. The SFP level will stay relatively constant due to siphon holes in the discharge piping.

d. The SFP level will drop ~3 feet to the bottom of the pipe.

Question No. *65* **QID:** *0201* **Point Value:** *1*

Startup Transformer #1 has locked out following a reactor trip from 100% power. Steam generator levels will be fed up to which of the following levels (assume no operator actions)?

a. 20-40 inches.

b. 100-150 inches.

c. 300-340 inches.

d. 370-410 inches.

Question No. *66* **QID:** *0202* **Point Value:** *1*

A plant startup is in progress with the reactor critical below the point of adding heat. 'B' SG Turbine Bypass Valve (CV-6688) fails full open and is unable to be closed with the handjack. Given the following plant conditions:

- Tave 526 degrees and dropping
- Pressurizer level 205 inches and dropping
- RCS pressure 2120 psig and dropping

What is the proper course of action?

a. Initiate MSLI for the 'B' SG and maintain the reactor critical using 'A' SG TBV to control RCS temperature and pressure.

b. Continue the reactor startup maintaining startup rate <1 DPM while continuing to monitor primary and secondary plant parameters.

c. Go directly to the Overcooling tab (1202.003) of the EOP for actions to mitgate the oversteaming of the 'B' SG.

d. Trip the reactor and go to Reactor Trip tab (1202.001) of the EOP.

Question No. *67* **QID:** *0203* **Point Value:** *1*

Red powered EFW Pump Turbine (K-3) Steam Admission Valve Bypass Valve (SV-2663) has failed to open during regularly scheduled surveillance testing. What are the required operator actions?

a. Deenergize SV-2663 closed and declare P-7A inoperable.

b. Declare SV-2663 inoperable and manually open the valve.

c. Declare SV-2663 inoperable and deenergize CV-2663 closed.

d. Deenergize SV-2617 open and declare P-7B inoperable.

Question No. *68* **QID:** *0204* **Point Value:** *1*

The #1 DG monthly surveillance is in progress with the DG on-line and fully loaded.
EDG-1 Non-critical Trouble (K01-D2) has been in solid for ~3 minutes.
EDG Critical Trouble (K01-C2) comes into alarm.
The Inside AO reports that the T-30A day tank level is ~150 gallons and going down slowly.
The outside AO reports that Emergency Storage Tank T-57A level is >165 inches.

Which of the following is correct with regard to #1 DG status?

a. #1 DG is operable because fuel oil can be supplied from #2 DG transfer pump P-16B.

b. #1 DG is inoperable due to the level in T-30A being <160 gallons.

c. #1 DG is operable because day tank level is not required to remain above alarm setpoint as long as the emergency storage tank (T-57A) is full.

d. #1 DG is inoperable due to Emergency storage tank level >160 inches.

Question No. *69* **QID:** *0205* **Point Value:** *1*

During 3 circulating water pump operation, the 'A' circ water pump trips. The standby circ pump was started and plant conditions have been stabilized. It is noticed that the condenser waterbox discharge temperature is 10 degrees higher and plant efficency has dropped. Which of the following is the most likely cause of this condition?

a. The stopping and starting of a circ pump caused fouling to be removed from the tube sheet promoting better heat transfer capabilities.

b. The discharge valve on the tripped pump did not go completely closed and circulating water is short cycling.

c. The debris on the bar grates of the circulating water bays was stirred up during the circ pump swap causing reduced flow.

d. These are normal conditions following rotation of circulating pumps and temperatures will return to normal within 30 minutes.

Question No. *70* **QID:** *0206* **Point Value:** *1*

The Main Control Room Ceiling Halon system has been properly placed in Inhibit by taking the switch on the right side of Module B3-2L to the down position in Fire Protection Panel (C463).

Select the best statement below concerning the actuation capability of the Main Control Room Ceiling Halon system.

a. It will automatically actuate if both detector strings have valid detection signals present.

b. It can ONLY be actuated locally from the Halon bottles in the Auxiliary Building.

c. It can NOT be actuated with the system in Inhibit.

d. It can be actuated locally or by placing the MAN TRIP switch on C463 to the OPERATED position.

Question No. *71* **QID:** *0207* **Point Value:** *1*

Given:
- Refueling outage is in progress with the Decay Heat Removal System in service.
- RCS pressure is 100 psig.
- I&C wants to de-energize ESAS Analog Channel 2.

What would be the effect on plant operations if I&C is allowed to continue?

a. Auto start of "A" Decay Heat pump.

b. Opening of ERV.

c. Loss of RCS level indication on ICCMDS.

d. Loss of decay heat removal.

Question No. *72* **QID:** *0208* **Point Value:** *1*

Given:

- All Pressurizer heaters ON.
- RCS pressure is 2000 psig and going down.
- Quench Tank (T-42) pressure rising
- Pressurizer Level Control Valve, CV-1235, full closed.

What actions should be performed by the control room operators?

a. Close the Spray Line Isolation Valve (CV-1009).

b. Close the ERV Isolation Valve (CV-1000).

c. Take manual control of CV-1235 and open.

d. Maximize letdown flow.

Question No. *73* **QID:** *0209* **Point Value:** *1*

During the performance of a plant shutdown, cooldown and depressurization of the RCS, the following valves are required to be closed at one point during these evolutions:
- NaOH to P-34A/P-35A Suction (CA-61)
- NaOH to P-34B/P-35B Suction (CA-62)
- NaOH Storage Tank (T-10) Outlet (CA-49)

What is the reason for this action?

a. Prevent contamination of the NaOH Tank from RCS back leakage during decay heat removal operations.

b. Prevent NaOH from leaking into the DH system and causing chemical contamination of the RCS.

c. To prevent NaOH from being sprayed into containment when access is open to RB.

d. Prevent overpressurizing the NaOH tank outlet piping from backleak during decay heat removal operations.

Question No. *74* **QID:** *0210* **Point Value:** *1*

Given:
- A LOCA has been in progress for eight hours.
- Hydrogen Recombiner M-55B is in standby and M-55A is in service.

When would it be necessary to place Hydrogen Recombiner M-55B in service?

a. When M-55A average thermocouple temperature reaches 1225°F.

b. When H2 concentration >2% with a ramp increase in M-55A temperature.

c. When M-55A power indication reaches 60 KW and is at steady state.

d. When Hydrogen concentration exceeds 3% with M-55A temperature at 1450°F.

Question No. *75* **QID:** *0211* **Point Value:** *1*

The unit is operating at 100% power.
Service water pumps P-4A and P-4B are in service.
A loss of P-4A occurs.

What is required of the operator to restore service water to the required Technical Specifications configuration?

a. Swap P-4B MOD (A6) to the A3 supply and start P-4C.

b. Start P-4C, stop P-4B, swap P-4B MOD (A6) to the A4 supply and start P-4B.

c. Stop P-4B, swap P-4B MOD (A6) to the A3 supply and start P-4B and P-4C.

d. Start P-4C, stop P-4B, swap P-4B MOD (A6) to the A3 supply and start P-4B.

Question No. *76* **QID:** *0212* **Point Value:** *1*

With regard to Technical Specification Limiting Conditions for Operations, which one of the following conditions would require that the condition be corrected within one hour to avoid performing the LCO contingencies?

a. The Boric Acid Addition Tank (BAAT) temperature drops to a temperature that is 5 degrees above crystallization temperature.

b. The Q CST (T-41B) level has dropped to a level of 8 feet.

c. A Pressurizer Code Safety valve becomes inoperable.

d. One circuit of the control room emergency air conditioning and isolation system becomes inoperable.

Question No. *77* **QID:** *0213* **Point Value:** *1*

Given:
- Refueling outage in progress.
- Fuel handlers are moving fuel from core to Spent Fuel Pool.
- You are assigned to perform Att. B, Refueling Boron, Temperature, Tritium, and Level Check from 1502.004, Control of Unit 1 Refueling.

While performing Att. B you discover the Spent Fuel Ventilation Exhaust Fan VEF-14A flow rate is less than the minimum requirement.

What should your first action be to ensure procedural and Tech Spec compliance?

a. Notify fuel handlers to stop fuel movement in the Spent Fuel Pool area.

b. Start Spent Fuel Ventilation Exhaust Fan VEF-14B.

c. Adjust ventilation dampers to restore flow rate above minimum.

d. Request I & C to verify validity of flow indication.

Question No. *78* **QID:** *0214* **Point Value:** *1*

Which of the following Control Room control panels does NOT have post accident components that are verified per Repetitive Task (RT-10) following an ESAS actuation?

a. Control Panel C26

b. Control Panel C16

c. Control Panel C10

d. Control Panel C13

Question No. *79* **QID:** *0215* **Point Value:** *1*

Process monitor Failed Fuel Gross (RI-1237) indication has changed from 1.8 E5 to 4.5 E6 due to a crud burst that was caused by the starting of an RCP. Assuming the change in RI-1237 indication is from gross activity alone, describe the failed fuel ratio change that should be seen on plant computer point R1237R?

a. A slight rise in the indicated ratio on R1237R will be observed.

b. A slight drop in the indicated ratio on R1237R will be observed.

c. A marked rise in the indicated ratio on R1237R will be observed.

d. A marked drop in the indicated ratio on R1237R will be observed.

Question No. *80* **QID:** *0216* **Point Value:** *1*

Given:
- A 15 gpm Steam Generator tube leak cooldown is in progress
- Normal cooldown limits are being used with the good OTSG.
- RCS pressure is 1000 psig, Tave is 405°F.
- The CBOR is maintaining the RCS at about 140°F subcooled.

What is the primary reason the CBOR's actions are incorrect for this accident?

a. Tube to shell Delta T limits are being exceeded.

b. A high primary to secondary Delta P is increasing primary coolant loss.

c. Excessive thermal stresses are being imposed on the Rx vessel.

d. Overfill could cause the ruptured SG main steam safeties to lift.

Question No. *81* **QID:** *0218* **Point Value:** *1*

Given the following plant conditions:

- 100% power
- Condensate Pumps P-2A and P-2C are in service
- Startup Xfmr #2 Feed to A1 (A-111) is inadvertently closed.

What is the expected condensate pump response and necessary operator response to this condition?

a. Condensate Pump P-2C will trip leaving only P-2A running; trip reactor and carry out immediate actions of 1202.001, Reactor Trip.

b. Condensate Pump Start/Stop responses are not affected by Startup Transformer operations; no operator action is required.

c. Condensate Pump P-2A will trip, P-2B will auto start; verify MFW pump suction pressure recovers to normal.

d. Heater Drain Pump P-8A will trip causing P-2B to auto start; verify plant runs back to 40% of 902 MWe.

Question No. *82* **QID:** *0219* **Point Value:** *1*

Given:
- LOCA in progress with Degraded Power conditions
- EDG #2 did NOT start
- RCS pressure stabilized at 140 psig
- SCM is 5 degrees

With these accident conditions, which of the following would pose the greatest challenge to core cooling?

a. Tube Leak in the 'A' Steam Generator

b. EDG #1 critical trouble alarm

c. BWST level at 15 feet

d. P-35A Reactor Building Spray Pump trip

Question No. *83* **QID:** *0220* **Point Value:** *1*

Given:
- Reactor power steady at 80%.
- PZR Level Control selected to LT-1001 on C04
- A break in LT-1001's reference leg causes it to drain completely.

How will Makeup Tank (T-4) level be affected by this failure?

a. Makeup flow drops, Makeup Tank level will rise.

b. No effect, SASS will auto select LT-1002.

c. Makeup flow rises, Makeup Tank level will drop.

d. Letdown flow drops, Makeup tank level also drops.

Question No. *84* **QID:** *0221* **Point Value:** *1*

Given:

- "A" RPS has been placed in Channel Bypass due to RCS pressure transmitter (PT-1021) failed low
- Plant is at 100% power and stable
- A lightning strike by the Reactor Building has resulted in the trip of 120V Vital AC distribution panel RS-3.

What is the status of the reactor and the RPS following the trip of RS-3?

a. Reactor has tripped due to 1 channel of RPS tripped.

b. Reactor is at 100% power with one channel of RPS tripped.

c. Reactor has tripped due to 2 channels of RPS tripped.

d. Reactor is at 100% power with no RPS channels tripped.

Question No. *85* **QID:** *0222* **Point Value:** *1*

Initial Conditions: Reactor power 75%
RCS pressure 2160 psig
RCS Tave is 580 degrees

What would be the immediate response of the Pressurizer Spray Valve (CV-1008) upon an 'A' MFW pump trip?

a. Initially remain closed and then responds to pressure changes.

b. Initially to 40% open and then responds to pressure changes.

c. Initially to 75% open and then responds to pressure changes.

d. Initially to 100% open and then responds to pressure changes.

Question No. *86* **QID:** *0223* **Point Value:** *1*

Given:
- Plant is in cold shutdown.
- All necessary components have been aligned per 1305.006, Integrated ES System Test.
- All ES EVEN Digital Channels actuated per procedure using RB pressure transmitters.

Which of the following is a properly actuated ES component for this test?

a. P-35A RB Spray pump flow ~1500 gpm.

b. Red Train BWST Outlet valve (CV-1407) open.

c. P-35B RB Spray Block valve (CV-2400) open.

d. P-35B NaOH Tank Outlet valve (CV-1617) open.

Question No. *87* **QID:** *0224* **Point Value:** *1*

Given: The plant is in cold shutdown.
24 hour endurance run on #1 DG in progress.
'B' Decay Heat Loop in service.
RCS is intact.
HPI pumps P-36A & P-36B are makeup flow sources.

Electricians have requested that D-11 be transferred to the emergency power supply to check out the transfer switch.

Should this evolution be allowed?

a. Yes, the swap to the emergency source does not disrupt any power.

b. No, the swap will result in a loss of decay heat.

c. Yes, the swap will result in a momentary loss of DC control power to a makeup source, however, the source is still available.

d. No, the swap will result in tripping the #1 DG.

Question No. *88* **QID:** *0225* **Point Value:** *1*

During the performance of the normal DG1 monthly surveillance test, while the CBOT is paralleling the diesel to the grid, he accidentally goes to closed on the output breaker with the synchroscope at the 15 minute past position. What would be the consequences of this action?

a. The output breaker will close in and immediately trip back open.

b. The output breaker will close in and the diesel will automatically trip.

c. A protective feature will prevent the output breaker from closing in.

d. Breaker will remain open due to a lockout relay trip.

Question No. *89* **QID:** *0226* **Point Value:** *1*

Given:
- Reactor has tripped.
- Soon after the trip a loss of DC bus D01 occurs which resulted in an actuation of all ES even digital channels.

This has caused a loss of ICW cooling to all RCPs, what RCP cooling has NOT been lost?

a. seal coolers

b. seal return coolers

c. lube oil coolers

d. motor coolers

Question No. *90* **QID:** *0227* **Point Value:** *1*

Instrument Air pressure has dropped to 75 psig.

Which of the following is the appropriate response for the given plant conditions to restore or conserve Instrument Air pressure?

a. Verify Service Air to Instrument Air cross-connect automatically opens.

b. Open Unit 1 to Unit 2 Instrument Air cross-connect.

c. Trip Reactor, actuate EFW and MSLI on both SGs.

d. If ICW available, isolate Seal Injection by closing CV-1206.

Question No. *91* **QID:** *0228* **Point Value:** *1*

Given:

- Unit at 100% power
- Due to a failure, "A" Low SG level initiate bistable is tripped in the "A" EFIC cabinet
- I&C has the 'B' EFIC channel in bypass for monthly testing with an EFW trip signal present on the initiate module.
- I&C inadvertantly places the 'C' RPS channel in manual bypass.

What will the EFIC response be?

a. Half trip on both EFIC EFW trains

b. Train "A" EFIC EFW actuation

c. Train "B" EFIC EFW actuation

d. Both EFIC trains will actuate EFW

Question No. *92* **QID:** *0229* **Point Value:** *1*

Given:

Plant startup in progress with reactor power at 10%.

Condenser E-11A Vacuum Pressure Switch (PS-2850) fails to 0 "Hg.

What effect will this have on Turbine Bypass Valve (TBV) and Atmospheric Dump Valve (ADV) operations?

a. All TBVs will remain open, both ADV isolations will open and both ADV control valves will remain closed.

b. Only TBVs for E-11A will close, both ADV isolations open and 'A' SG ADV will begin controlling 'A' SG pressure.

c. All TBVs will close, both ADV control valves will open and both ADV isolations will remain closed.

d. Only TBVs for E-11A will close, both ADV control valves and both ADV isolations will open.

Question No. *93* **QID:** *0230* **Point Value:** *1*

While responding to the " RCS PRESSURE HI-LO" alarm, the CBOR observes RCS pressure at 1650 psig and falling rapidly.

Which of the following actions would be appropriate for the CBOR?

a. Obtain concurrence from CBOT, then manually actuate ESAS and make announcement.

b. Announce parameter and imminent ESAS actuation, then verify proper automatic actuation.

c. Obtain concurrence from CRS and then bypass ESAS prior to automatic actuation.

d. Simultaneously announce action while manually actuating ESAS.

Question No. *94* **QID:** *0231* **Point Value:** *1*

Which of the following conditions is correct with regard to preparation and installation authorization of a common unit tagout?

a. Installation may be authorized by either the Unit 1 CRS or the Unit 2 CRS.

b. Preparers and reviewers from both units must be licensed operators.

c. Installation shall be authorized by both the Unit 1 and the Unit 2 CRS.

d. Preparer and Verifier may be non-licensed if the opposite unit verifier is licensed.

Question No. *95* **QID:** *0232* **Point Value:** *1*

During a Reactor Startup, the licensed Control Room Operators performing/supervising the startup shall not conduct shift relief until the reactor is critical and power is above a specific level OR the reactor is shutdown by a specific margin.
This does not apply during physics testing.

Choose the answer with the correct power and shutdown margin.

	POWER	SDM
a.	>= 1.0%	1.5% delta k/k
b.	>= 5.0%	5.0% delta k/k
c.	>= 1.0%	5.0% delta k/k
d.	>= 5.0%	1.5% delta k/k

Question No. *96* **QID:** *0233* **Point Value:** *1*

An NI calibration was performed yesterday. Due to a problem with a Condenser Vacuum pump, reactor power had to be lowered to 89% and has subsequently been returned to 100%. When is the next NI calibration required to be performed?

a. Within the next 7 days.

b. Within the next 3 days.

c. Within the next 24 hours.

d. Within the next 12 hours.

Question No. *97* **QID:** *0234* **Point Value:** *1*

During a SGTR, which of the following actions is performed specifically to reduce plant personnel exposure?

a. Maintaining RCS pressure low within limits of Fig. 3.

b. Steaming bad SG to maintain tube-to-shell DT <150°F.

c. Aligning HPI to provide PZR Aux Spray.

d. Removing all but C & D condensate polishers from service.

Question No. *98* **QID:** *0235* **Point Value:** *1*

A reactor building entry is required at power to investigate a potential leak on the RCP Seal Cooling Pump (P-114).
You have been assigned to perform this task.
The dose rate in area of P-114 is 1.8 rem/hr.
Your yearly exposure to date is 1.6 rem.

Which one of the following is the LONGEST stay time allowable WITHOUT exceeding Administrative Dose Control Limits?

a. 5 minutes

b. 10 minutes

c. 15 minutes

d. 20 minutes

Question No. *99* **QID:** *0236* **Point Value:** *1*

Given:
- Alternate Shutdown in progress due to fire in the Cable Spreading Room.
- An immediate control room evacuation was required.

Which of following is performed by the Control Board Operator (RO#1 or RO#2)?

a. Manually trip both Main FW pumps locally.

b. Start and stop HPI pump to maintain PZR level.

c. Manually trip the Main Turbine at the front standard.

d. Align steam to EFW pump P-7A.

Question No. *100* **QID:** *0237* **Point Value:** *1*

It is known that elevated containment temperatures and radiation levels can affect instrument readings.

How are allowances for these effects made when parameter values are required in EOP steps?

a. Transmitters inside containment are environmentally qualified for these effects.

b. The SE uses a set of instrument tables during accident conditions.

c. SPDS displays alternate values when these conditions are reached.

d. EOP parameter values for these conditions are inside brackets.

Question No. *1* **QID:** 0131 **Point Value:** 1

Answer:

d. The channel B bypass prevented by an interlock from the channel already in bypass.

Question No. *2* **QID:** 0132 **Point Value:** 1

Answer:

c. 240 to 249 gallons

Question No. *3* **QID:** 0133 **Point Value:** 1

Answer:

b. Minimizes surge and spray line temperature differentials and maintains pressurizer boron concentration near that in the RCS.

Question No. *4* **QID:** 0134 **Point Value:** 1

Answer:

c. Discrimination separates out gamma and alpha pulses to provide a true neutron pulse. With the discrimination set too high, power will indicate lower than actual power.

Question No. *5* **QID:** 0135 **Point Value:** 1

Answer:

c. ES channels 5 & 6, VSF-1A, 1B, 1C, & 1D running with service water aligned to the cooling coils.

Question No. *6* **QID:** 0136 **Point Value:** 1

Answer:

c. Discharge Flume monitor is also in alarm.

Question No. *7* **QID:** 0137 **Point Value:** 1

Answer:

c. Both Main Feedwater Block Valves close in slow speed.

Question No. *8* **QID:** 0138 **Point Value:** 1

Answer:

b. Thermal shock to the turbine rotor.

Question No. *9* **QID:** 0139 **Point Value:** 1

Answer:

d. CRD cooling, chill water, RB leak detector.

Question No. *10* **QID:** 0140 **Point Value:** 1

Answer:

a. Seal Injection

Question No. *11* **QID:** 0141 **Point Value:** 1

Answer:

a. excessive seal wear and cavitation.

Question No. *12* **QID:** 0142 **Point Value:** 1

Answer:

d. After it is determined that the component is no longer needed and approval is obtained from the CRS/SS.

Question No. *13* **QID:** 0143 **Point Value:** 1

Answer:

c. Acceptable, independent verification can be waived for valve alignments on a case-by-case basis with the Superintendent's approval.

Question No. *14* **QID:** 0144 **Point Value:** 1

Answer:

d. Radworker must have a pocket ion-chamber self reading dosimeter (SRD).

Question No. *15* **QID:** 0145 **Point Value:** 1

Answer:

d. Allow driving in Groups 1 thru 7 to engage roller nuts with lead screws.

Question No. *16* **QID:** 0146 **Point Value:** 1

Answer:

a. 1203.027, "Loss of Steam Generator Feed"

Question No. *17* **QID:** 0147 **Point Value:** 1

Answer:

a. ICS will run the plant back at 30%/min and power will stabilize at 40%.

Question No. *18* **QID:** 0152 **Point Value:** 1

Answer:

b. Startup Transformer #2 and Unit Auxiliary Transformer powered from 22 KV switchyard line

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Question No. *19* **QID:** 0153 **Point Value:** 1

Answer:

d. One emergency Recirc Fan will start, all isolation dampers close

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Question No. *20* **QID:** 0154 **Point Value:** 1

Answer:

a. RCP trip

Question No. *21* **QID:** 0155 **Point Value:** 1

Answer:

b. RPS channel A will trip.

Question No. *22* **QID:** 0156 **Point Value:** 1

Answer:

b. Overcooling 1202.003

Question No. *23* **QID:** 0157 **Point Value:** 1

Answer:

d. Condenser vacuum pump auto starting.

Question No. *24* **QID:** 0158 **Point Value:** 1

Answer:

c. 6 days

Question No. *25* **QID:** 0159 **Point Value:** 1

Answer:

b. Stop one RCP in each loop.

Question No. *26* **QID:** 0160 **Point Value:** 1

Answer:

b. Loss of DC Bus D11

Question No. *27* **QID:** 0161 **Point Value:** 1

Answer:

d. Refer to Tech Specs and recover the dropped rod.

Question No. *28* **QID:** 0162 **Point Value:** 1

Answer:

a. 360 MWe

Question No. *29* **QID:** 0163 **Point Value:** 1

Answer:

d. CETs rising above 610 deg F with all of the RCPs off.

Question No. *30* **QID:** 0164 **Point Value:** 1

Answer:

a. Reduce decay heat removal flow below 2000 gpm.

Question No *31* **QID:** 0165 **Point Value:** 1

Answer:

b. Turbine d not trip

Question No. *32* **QID:** 0166 **Point Value:** 1

Answer:

a. Bad OTSG level 410" and rising

Question No. *33* **QID:** 0167 **Point Value:** 1

Answer:

b. Verify no release in progress at Disch Flow to Flume (FI-4642) on C19.

Question No. *34* **QID:** 0168 **Point Value:** 1

Answer:

b. The alignment can result in conditions that may cause excessive radiation exposure.

Question No. *35* **QID:** 0169 **Point Value:** 1

Answer:

a. PZR Level Control Valve, CV-1235, will open to establish a higher steady-state PZR level.

Question No. *36* **QID:** 0170 **Point Value:** 1

Answer:

d. To re-establish instrument air and ICW cooling.

Question No. *37* **QID:** 0171 **Point Value:** 1

Answer:

b. Declare the rod inoperable and verify a 1.5% available shutdown margin exists.

Question No. *38* **QID:** 0172 **Point Value:** 1

Answer:

a. A plant cooldown is required and normal offsite power is NOT available.

Question No. *39* **QID:** 0173 **Point Value:** 1

Answer:

b. For maximum batch size and adjusted based on calculation.

Question No. *40* **QID:** 0174 **Point Value:** 1

Answer:

a. The EDG output breaker will automatically close once the EDG has started and all other feeder breakers to it's respective bus are open.

Question No. *41* **QID:** 0175 **Point Value:** 1

Answer:

c. Verify ICW for RCP Air and Lube Oil Coolers and Control Rod Drive Outlets (CV-2220 & CV-2221) are open.

Question No. *42* **QID:** 0176 **Point Value:** 1

Answer:

c. Notify Health Physics Dept. and dispatch two operators with SCBAs to Lower North Piping Area.

Question No. *43* **QID:** 0177 **Point Value:** 1

Answer:

c. RCS Tave would rise, RCS pressure would rise, Pressurizer level would rise

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Question No. *44* **QID:** 0178 **Point Value:** 1

Answer:

a. Start all RCPs even if RCP services are not available.

Question No. *45* **QID:** 0180 **Point Value:** 1

Answer:

d. Tave 560 degrees, SCM 25 degrees, RCS pressure 2100 psig

Question No. *46* **QID:** 0181 **Point Value:** 1

Answer:

c. Only one train of HPI operating and RCS pressure >600 psig.

Question No. *47* **QID:** 0182 **Point Value:** 1

Answer:

b. Align Pressurizer AUX Spray to LPI system.

Question No. *48* **QID:** 0183 **Point Value:** 1

Answer:

c. If RCP seal bleedoff temperatures are >180 degrees, CV-1207 is slowly opened to minimize thermal shock to the RCP seals.

Question No. *49* **QID:** 0184 **Point Value:** 1

Answer:

c. Trip the reactor due to no on-scale indication of neutron flux available.

Question No. *50* **QID:** 0186 **Point Value:** 1

Answer:

b. Overheating (1202.004)

Question No. *51* **QID:** 0187 **Point Value:** 1

Answer:

d. Transfer D21 to emergency supply D01.

Question No. *52* **QID:** 0188 **Point Value:** 1

Answer:

d. Secure fuel handling activities until RI-8017 is operable or a suitable portable survey instrument is obtained.

Question No. *53* **QID:** 0189 **Point Value:** 1

Answer:

b. CV-1235 fails closed and Pressurizer level will lower.

Question No. *54* **QID:** 0190 **Point Value:** 1

Answer:

b. 1.6 gpm
40 / 25 = 1.6

Question No. *55* **QID:** 0191 **Point Value:** 1

Answer:

c. 18 inches

Question No. *56* **QID:** 0192 **Point Value:** 1

Answer:

a. RS1

Question No. *57* **QID:** 0193 **Point Value:** 1

Answer:

a. Tave 579 degrees, Thot 593 degrees, Tcold 564 degrees, total FW flow 6.5 million lbm/hr.

Question No. *58* **QID:** 0194 **Point Value:** 1

Answer:

c. Difficulty in reducing RCS pressure.

Question No. *59* **QID:** 0195 **Point Value:** 1

Answer:

c. 'B' MFP Suction Pressure computer point (P2830)

Question No. *60* **QID:** 0196 **Point Value:** 1

Answer:

c. A high radiation setpoint has been exceeded on SFING 1.

Question No. *61* **QID:** 0197 **Point Value:** 1

Answer:

c. Levels may not be sufficient to reflood the vessel following a LOCA.

Question No. *62* **QID:** 0198 **Point Value:** 1

Answer:

a. To prevent inadequate pump suction pressure on ECCS pumps.

Question No. *63* **QID:** 0199 **Point Value:** 1

Answer:

b. The valves receive an ESAS actuation signal from ESAS channels 3 & 4.

Question No. *64* **QID:** 0200 **Point Value:** 1

Answer:

c. The SFP level will stay relatively constant due to siphon holes in the discharge piping.

Question No. *65* **QID:** 0201 **Point Value:** 1

Answer:

c. 300-340 inches.

Question No. *66* **QID:** 0202 **Point Value:** 1

Answer:

d. Trip the reactor and go to Reactor Trip tab (1202.001) of the EOP.

Question No. *67* **QID:** 0203 **Point Value:** 1

Answer:

c. Declare SV-2663 inoperable and deenergize CV-2663 closed.

Question No. *68* **QID:** 0204 **Point Value:** 1

Answer:

b. #1 DG is inoperable due to the level in T-30A being <160 gallons.

Question No. *69* **QID:** 0205 **Point Value:** 1

Answer:

b. The discharge valve on the tripped pump did not go completely closed and circulating water is short cycling.

Question No. *70* **QID:** 0206 **Point Value:** 1

Answer:

d. It can be actuated locally or by placing the MAN TRIP switch on C463 to the OPERATED position.

Question No. *71* **QID:** 0207 **Point Value:** 1

Answer:

d. Loss of decay heat removal.

Question No. *72* **QID:** 0208 **Point Value:** 1

Answer:

b. Close the ERV Isolation Valve (CV-1000).

Question No. *73* **QID:** 0209 **Point Value:** 1

Answer:

b. Prevent NaOH from leaking into the DH system and causing chemical contamination of the RCS.

Question No. *74* **QID:** 0210 **Point Value:** 1

Answer:

d. When H2 concentration exceeds 3% with M-55A temperature at 1450°F.

Question No. *75* **QID:** 0211 **Point Value:** 1

Answer:

d. Start P-4C, stop P-4B, swap P-4B MOD (A6) to the A3 supply and start P-4B.

Question No. *76* **QID:** 0212 **Point Value:** 1

Answer:

c. A Pressurizer Code Safety valve becomes inoperable.

Question No. *77* **QID:** 0213 **Point Value:** 1

Answer:

a. Notify fuel handlers to stop fuel movement in the Spent Fuel Pool area.

Question No. *78* **QID:** 0214 **Point Value:** 1

Answer:

d. Control Panel C13

Question No. *79* **QID:** 0215 **Point Value:** 1

Answer:

c. A marked rise in the indicated ratio on R1237R will be observed.

Question No. *80* **QID:** 0216 **Point Value:** 1

Answer:

b. A high primary to secondary DP is increasing primary coolant loss.

Question No. *81* **QID:** 0218 **Point Value:** 1

Answer:

a. Condensate Pump P-2C will trip leaving only P-2A running; trip reactor and carry out immediate actions of 1202.001, Reactor Trip.

Question No. *82* **QID:** 0219 **Point Value:** 1

Answer:

b. EDG #1 critical trouble alarm

Question No. *83* **QID:** 0220 **Point Value:** 1

Answer:

a. Makeup flow drops, Makeup Tank level will rise.

Question No. *84* **QID:** 0221 **Point Value:** 1

Answer:

b. Reactor is at 100% power with one channel of RPS tripped.

Question No. *85* **QID:** 0222 **Point Value:** 1

Answer:

a. Initially remain closed and then respond to pressure changes.

Question No. *86* **QID:** 0223 **Point Value:** 1

Answer:

d. P-35B NaOH Tank Outlet valve (CV-1617) open.

Question No. *87* **QID:** 0224 **Point Value:** 1

Answer:

d. No, the swap will result in tripping the #1 DG.

Question No. *88* **QID:** 0225 **Point Value:** 1

Answer:

c. A protective feature will prevent the output breaker from closing in.

Question No. *89* **QID:** 0226 **Point Value:** 1

Answer:

b. seal return coolers

Question No. *90* **QID:** 0227 **Point Value:** 1

Answer:

b. Open Unit 1 to Unit 2 Instrument Air cross-connect.

Question No. *91* **QID:** 0228 **Point Value:** 1

Answer:

c. Train "B" EFIC EFW actuation

Question No. *92* **QID:** 0229 **Point Value:** 1

Answer:

b. Only TBVs for E-11A will close, both ADV isolations open and 'A' SG ADV will begin controlling 'A' SG pressure.

Question No. *93* **QID:** 0230 **Point Value:** 1

Answer:

d. Simultaneously anounce action while manually actuating ESAS.

Question No. *94* **QID:** 0231 **Point Value:** 1

Answer:

c. Installation shall be authorized by both the Unit 1 and the Unit 2 CRS.

Question No. *95* **QID:** 0232 **Point Value:** 1

Answer:

a. >= 1.0% power
1.5% delta k/k

Question No. *96* **QID:** 0233 **Point Value:** 1

Answer:

c. Within the next 24 hours.

Question No. *97* **QID:** 0234 **Point Value:** 1

Answer:

d. Removing all but C & D condensate polishers from service.

Question No. *98* **QID:** 0235 **Point Value:** 1

Answer:

b. 10 minutes

Question No. *99* **QID:** 0236 **Point Value:** 1

Answer:

d. Align steam to EFW pump P-7A.

Question No. *100* **QID:** 0237 **Point Value:** 1

Answer:

d. EOP parameter values for these conditions are inside brackets.
