

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

Applicant Information

Name:

Date: July 20, 2009

Facility/Unit: Davis Besse U1

Region: I II III IV

Reactor Type: W CE BW GE

Start Time: 0800

Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination, you must achieve a final grade of at least 80.00 percent. Examination papers will be collected 6 hours after the examination begins.

Applicant Certification

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

Applicant's Signature

Results

Examination Value _____ 75 _____ Points

Applicant's Score _____ Points

Applicant's Grade _____ Percent

APPENDIX E
POLICIES AND GUIDELINES FOR TAKING NRC EXAMINATIONS

Each examinee shall be briefed on the policies and guidelines applicable to the examination category (written, operating, walk-through, and/or simulator test) being administered. The examinees may be briefed individually or as a group. Facility licensees are encouraged to distribute a copy of this appendix to every examinee before the examination begins. All items apply to both initial and requalification examinations, except as noted.

Part A: General Guidelines

1. **[Read Verbatim]** Cheating on any part of the examination will result in a denial of your application and/or action against your license.
2. If you have any questions concerning the administration of any part of the examination, do not hesitate to ask them before starting that part of the test.
3. SRO applicants will be tested at the level of responsibility of the senior licensed shift position (i.e., shift manager).
4. You must pass every part of the examination to receive a license or to continue performing license duties. Applicants for an SRO-upgrade license may require remedial training in order to continue their RO duties if the examination reveals deficiencies in the required knowledge and abilities.
5. The NRC examiner is not allowed to reveal the results of any part of the examination until they have been reviewed and approved by NRC management. Grades provided by the facility licensee are preliminary until approved by the NRC. You will be informed of the official examination results about 30 days after all the examinations are complete.

Part B: Written Examination Guidelines

1. **[Read Verbatim]** After you complete the examination, sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination.
2. To pass the examination, you must achieve an overall grade of 80.00 percent or greater, with 70.00 percent or greater on the SRO-only items, if applicable. If you only take the SRO portion of the exam (as a retake or with an upgrade waiver of the RO exam), you must achieve an overall grade of 80.00 percent or better to pass. SRO-upgrade applicants who do take the RO portion of the exam and score below 80.00 percent on that part of the exam can still pass overall, but may require remediation. Grades will not be rounded up to achieve a passing score. Every question is worth one point.
3. For an initial examination, the nominal time limit for completing the examination is 6 hours for the RO exam; 3 hours for the 25-question, SRO-only exam; and 8 hours for the combined RO/SRO exam. Notify the proctor if you need more time.
4. You may bring pens, pencils, and calculators into the examination room; however, programmable memories must be erased. Use black dark pencil for marking your answer sheets.

5. Print your name in the blank provided on the examination cover sheet **and** the answer sheet. You may be asked to provide the examiner with some form of positive identification.
6. Mark your answers on the answer sheet provided, and do not leave any question blank. Use only the paper provided; you may write anywhere on the provided examination. If you have a machine-gradable form that offers more than four answer choices (e.g., "a" through "e"), be careful to mark the correct column.
7. If you have any questions concerning the intent or the initial conditions of a question, do *not* hesitate to ask them before answering the question. Note that questions asked during the examination are taken into consideration during the grading process and when reviewing applicant appeals. Ask questions of the NRC examiner or the designated facility instructor *only*. A dictionary is available if you need it.

When answering a question, do *not* make assumptions regarding conditions that are not specified in the question unless they occur as a consequence of other conditions that are stated in the question. For example, you should not assume that any alarm has activated unless the question so states or the alarm is expected to activate as a result of the conditions that are stated in the question. Similarly, you should assume that no operator actions have been taken, unless the stem of the question or the answer choices specifically state otherwise. Finally, answer all questions based on actual plant operation, procedures, and references. If you believe that the answer would be different based on simulator operation or training references, you should answer the question based on the *actual plant*.

8. Restroom trips are permitted, but only one applicant at a time will be allowed to leave. Avoid all contact with anyone outside the examination room to eliminate even the appearance or possibility of cheating.
9. When you complete the examination, assemble a package that includes the examination cover sheet and the answer sheet, and give it to the NRC examiner or proctor. Remember to sign the statement on the examination cover sheet indicating that the work is your own and that you have neither given nor received assistance in completing the examination. Leave all other items at your examination table face down. The examination will be retained by the station training department.
10. After turning in your examination, leave the examination area as defined by the proctor or NRC examiner. If you are found in this area while the examination is still in progress, your license may be denied or revoked.
11. Do you have any questions?

Question# 001

If RE 609, Main Steam Line 1 Radiation Monitor was placed in the GROSS mode at 50% RTP, display count rate would . . .

- a. decrease due to lower detector sensitivity to N-16 gammas.
- b. increase due to greater sample flow rate through the detector.
- c. decrease due to detector saturation in the higher radiation field.
- d. increase due to extended band of isotopes RE 609 would detect.

Question# 002

Given the following conditions:

- Reactor power is 2%.
- The Motor Driven Feedwater Pump is the only source of feedwater available.
- Service Water Loop 1 has just been lost to the primary loads.
- Various system temperatures are being monitored and are as indicated below.
 - MDFP lube oil temperature is 160°F.
 - Main Generator cold gas temperature is 115°F.
 - CCW HX outlet temperature is 115°F.
 - CRD stator temperatures are at 160°F.
- An equipment operator reports the 50GS relay target is actuated for Service Water Pump #1.

Which ONE of the following actions is required to be performed at this time?

- a. Direct the equipment operator to reset the 50 GS relay and attempt one restart on the #1 Service Water Pump.
- b. Trip the reactor, trip all RCPs, and go to DB-OP-02000, "RPS, SFAS, SFRCS Trip, or SG Tube Rupture."
- c. Transfer the MDFP from the Main Feedwater Mode to the Auxiliary Feedwater Mode per DB-OP-06225, "MDFP Operating Procedure."
- d. Trip the reactor, initiate and isolate both SGs with the SFRCS Manual Actuation Switches, stop the MDFP, and go to DB-OP-02000, "RPS, SFAS, SFRCS Trip, or SG Tube Rupture."

Question# 003

The plant was operating at 100% RTP when annunciator 9-1-F, INSTR AIR HDR PRESS LO alarmed. The Reactor Operator reported that instrument air pressure (using PI 810) reads 72 psig and the secondary plant appears stable.

Which of the following sets of actions is required to be performed under these circumstances?

- a. Manually trip the reactor, initiate AFW flow and isolation of both SGs.
- b. Maintain reactor power at the present level, dispatch operators to locate the cause of excessive air demand.
- c. Rapidly decrease power per DB-OP-0254, Rapid Shutdown, until instrument air increases to approximately 90 psig.
- d. Perform a rapid plant shutdown per DB-OP-02504, Rapid Shutdown, start the standby station air compressor and the emergency instrument air compressor.

Question# 004

The following plant conditions exist:

- The reactor has tripped.
 - SG Pressures = 780 psig
 - RCS Pressure = 1500 psig
 - Incore Thermocouples = 600°F
- Containment Pressure = 22 psia.
- All safety equipment actuates as designed.
- The ROs have taken actions per Specific Rule 2.

Which one of the following sets of equipment responses best describes the expected equipment response to this event?

- | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a. | Auxiliary Feedwater Pumps
High Pressure Injection
Low Pressure Injection
Makeup Pumps
Containment Air Coolers
Containment Spray Pumps | off
running following Automatic Start
off
stop automatically
running in Fast Speed
running following Automatic Start |
| b. | Auxiliary Feedwater Pumps
High Pressure Injection
Low Pressure Injection
Makeup Pumps
Containment Air Coolers
Containment Spray Pumps | running following Automatic Start
running following Automatic Start
running following Automatic Start
stop automatically
shift to slow speed
off |
| c. | Auxiliary Feedwater Pumps
High Pressure Injection
Low Pressure Injection
Makeup Pumps
Containment Air Coolers
Containment Spray Pumps | off
off
off
running following Automatic Start
running in fast speed
running following Automatic Start |
| d. | Auxiliary Feedwater Pumps
High Pressure Injection
Low Pressure Injection
Makeup Pumps
Containment Air Coolers
Containment Spray Pump | running following Automatic Start
running following Automatic Start
running following Automatic Start
running following Manual Start
shift to slow speed
off |

Question# 005

Given the following conditions:

- The plant experienced a small break LOCA.
- An SFAS Level 1, 2, and 3 actuation occurred.
- There was a need to sample the containment and thus a need to re-open the Containment Air Sample Supply and Return containment isolation valves (CV5010A through CV5010E, and CV5011A through CV5011E) that were closed due to the SFAS actuations.
- The BLOCK pushbuttons on the Output Modules for the associated valves were PRESSED.
- The Containment Air Sample Supply and Return Isolation Valves were then re-opened.

After the valves were re-opened, the associated Safety Actuation Monitoring (SAM) lights for the Containment Air Sample Supply and Return Isolation Valves would be . . .

- a. NOT LIT.
- b. DIM.
- c. BRIGHT (NOT FLASHING).
- d. BRIGHT and FLASHING.

Question# 006

The plant has been operating at 100% RTP for 7 months. The following conditions were noted:

- Annunciator alarms:
 - 2-2-B, MU TK LVL HI
 - 4-2-E, PZR LVL LO

Control Room Indications:

- MU Pump 1 Red light ON.
- MU Pump 1 indicates 55 amps and STEADY.
- MU 32, PZR LEVEL CONTROL, indicates 100% demand.
- FI MU34, TRAIN 2 MAKEUP FLOW indicates 15 gpm.
- FI 6435, TRAIN 1 MAKEUP FLOW, indicates 0 gpm.

Which one of the following conditions would cause these symptoms to be observed?

- a. MU Pump #1 Locked Rotor.
- b. Isolation of letdown, MU2B CLOSED.
- c. Small RCS leak DOWNSTREAM of MU32.
- d. Failure CLOSED of PZR LEVEL CONTROL, MU32.

Question# 007

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

- SW Pumps 1 and 2 are in service.
- SW Pump 3 is aligned to train 1.
- CCW Pump 1 is in service; CCW Pump 2 is in standby.
- TPCW Pumps 1 and 2 are in service.

Over the next fifteen minutes the following annunciators alarmed starting with the strainer alarms:

- (11-1-C) SW PMP 1 STRNR DISCH PRESS LO
- (11-2-C) SW PMP 2 STRNR DISCH PRESS LO
- (Control Room indicating lights for SWP 1 and 2 are GREEN.)
- (11-1-B) CCW HX 1 OUTLET TEMP HI
- (11-3-F) TPCW HX OUTLET TEMP HI

You should . . .

- a. isolate the non-seismic service water return headers in an attempt to isolate the service water system leak.
- b. start CCW Pump 2 to supply primary loads per DB-OP-02523, "Component Cooling Water System Malfunctions."
- c. dispatch an operator to line up Circulating Water to supply SW Primary Loads per DB-OP-02511, "Loss of Service Water Pumps/System."
- d. start TPCW Pump 3 to provide additional cooling to turbine plant cooling water loads per DB-OP- 02514, "Loss of Turbine Plant Cooling Water Pump(s)."

Question# 008

The following plant conditions exist:

- The plant is operating at 100% RTP.
- All systems are in a normal full power lineup.
- CCW Pump 1 is in standby.
- CCW Pump 2 is in running.
- CCW pump 3 is lined-up to CCW Train 1.

After scanning his panels, the RO reported:

- 11-5-B, CCW PMP 2 FLOW LO, is alarming.
- HIS 1418, CCW Pump 2, red light is on.
- All lights on CCW Pump 1 breaker, AC 113, are out.

What effects will the described condition have on the CCW Nonessential Header Isolation Valves (CC 5095, CC 5097, CC 2645, CC 5096, CC 5098, and CC 2649)?

- a. The valves will cycle (open and closed).
- b. The valves will remain in their current position.
- c. The valves will open, or if open, will remain open.
- d. The valves will close, or if closed, will remain closed

Question# 009

Given the following plant conditions:

- The plant is operating at 75% RTP.
- PZR level at 80 inches and lowering.
- RCS Pressure is 1800 psig and lowering.

Under these conditions, the ATC operator reports he has indications of a 300 gpm rupture leak in OTSG 2.

Choose the REQUIRED operator action.

- a. Restore PZR level by realigning the BWST suction valves, starting the second make-up pump, and place alternate injection in service.
- b. Close the Block Orifice Bypass valve and adjust the PZR Level Make-up valve (MU-32) setpoint to maintain PZR level.
- c. Verify the PZR heaters have de-energized. Verify PZR level control valve (MU-32) is opening to restore PZR level.
- d. Trip the reactor by manually depressing the Reactor Trip pushbuttons. Ensure Letdown Isolation Valve (MU-2B) is closed.

Question# 010

Given the following conditions:

- A SGTR has occurred on SG 2.
 - The reactor has been shutdown.
 - RCS T_H temperatures are 550°F.
 - RCPs are off and are not available.
 - An RCS cooldown and depressurization is in progress per DB-OP-02000, Section 8.0, Steam Generator Tube Rupture.
 - The TBVs are being used for the RCS cooldown, and the PZR Vent Line Method is being used for the RCS depressurization.
 - SG 2 level is 195 inches and rising.
- (1) What action is required at this time?
(2) What action will be required if an SFRCS High Level Trip on SG 2 occurs?
- a. (1) Increase the steaming rate on SG 2 to provide a maximum RCS cooldown rate of 235°F.
(2) Continue cooldown on SG 1 using the TBVs.
 - b. (1) Increase the steaming rate on both SGs to provide a maximum RCS cooldown rate of 235°F.
(2) Continue cooldown on SG 1 using the TBVs.
 - c. (1) Increase the steaming rate on SG 2 to provide a maximum RCS cooldown rate of 235°F.
(2) Continue cooldown on SG 1 using its AVV.
 - d. (1) Increase the steaming rate on both SGs to provide a maximum RCS cooldown rate of 235°F.
(2) Continue cooldown on SG 1 using its AVV.

Question# 011

The following plant conditions exist:

- The plant is at 98% power.
- Selected pressurizer level indication is from LT RC14-2.
- Selected pressurizer temperature indication is from TT RC15-1.
- A Loss of **NNI-X DC Power** just occurred.
- SASS functions as designed.

In accordance with DB-OP-02532, Loss of NNI/ICS Power, what actions are directed?

- a. Take manual control of EHC Control Panel and the SG/RX Demand Station and Manually Lower Turbine Load.
Manually control Pressurizer Heaters and Spray.
- b. Take manual control of EHC Control Panel but **not** the SG/RX Demand Station and Manually Lower Turbine Load.
Manually control Pressurizer Heaters and allow Pressurizer Spray to function in Auto.
- c. Take Pressurizer level transmitter and Pressurizer temperature transmitter to NNI-Y powered transmitters to allow compensated Pressurizer Level indication to be obtained.
- d. When MU Tank Level drops below 10 inches, verify both MU 3971, MU Pump 2 Suction Three-Way Valve, and MU 6405, MU Pump 1 Suction Three-Way Valve, transfer to the BWST.

Question# 012

The plant is operating at 100% power. Annunciator 2-1-A, "LETDOWN RADIATION HI," alarms due to a small fuel leak. A steam generator tube leak has now developed and a rapid shutdown is in progress per DB-OP-02504, "Rapid Shutdown." To minimize offsite releases you should place. . .

- a. the letdown filter in service.
- b. the vacuum system vent filter in service.
- c. an additional condensate polisher in service.
- d. the mechanical hogger in service and shut down the steam jet air ejectors.

Question# 013

The plant was operating at 100% RTP with all systems in their normal full-power lineup when a loss of all power to the Integrated Control System occurred.

If no operator actions are taken, what will be the status of the main feed pumps after the loss of ICS DC power?

The main feed pumps will . . .

- a. be tripped and coasting to a stop.
- b. coast down and run at 4400 rpm.
- c. accelerate and continue to run at the high speed stop (5300 rpm).
- d. coast down and continue to run at the turbine low speed stop (3900 rpm).

Question# 014

The plant was operating at 100% RTP. All plant systems were in their normal full power lineup with CCW Train 1 in operation. Ambient temperature was 35°F. The following then occurred:

- Loss of offsite power.
- 4160 Bus C1 locked out.

Which of the following describes the plant response to these conditions?

- a. SW Train 2 will cool CCW Train 2. Circ water will cool secondary loads.
- b. SW Train 2 will cool CCW Train 2 and secondary loads will have no cooling.
- c. SW Train 2 will cool CCW Train 2. Secondary loads will be cooled by the Station Fire Protection System.
- d. No cooling will occur until a control room operator manually aligns circ water to cool CCW Train 2 and secondary loads.

Question# 015

Given the following conditions:

- The reactor was at 90% power.
- A loss of NNI-X AC power occurred.
- Plant conditions have been stabilized.

Which of the following actions is required to be taken per DB-OP-02532, "Loss of NNI/ICS Power"?

- a. Maintain PZR level using MU 32, "Makeup Flow Controller," in MANUAL.
- b. Maintain SG pressure using local operators at the Atmospheric Vent Valve
- c. Maintain RCS pressure using RC-2, "Pressurizer Spray Valve," in MANUAL.
- d. Re-Establish RCP Seal Injection flow using MU216, "RCP Seal Injection Flow Controller Bypass Valve."

Question# 016

The following plant conditions exist:

- AF 6451, Auxiliary Feed Pump 2 Level Control Valve, failed open.
- AFP 2 Governor Control failed as is.
- EDG 2 will not start.

Which of the following will cause the above conditions?

- a. Loss of YBU.
- b. Loss of Y2.
- c. Loss of D2P.
- d. Loss of D2N.

Question# 017

Given the following conditions:

- The plant is in Mode 5.
- The plant is drained down with RCS level at 30 inches above the Hot Leg center line.
- It is 10 days after reactor shutdown.
- Refueling Canal temperature is 100°F

If a loss of Decay Heat Removal occurs under these conditions and a source of decay heat removal is not restored, of the following choices, what is CLOSEST time (in minutes), it would take for the RCS to boil down to an RCS level corresponding to the Top of Core?

- a. 35 minutes
- b. 39 minutes
- c. 155 minutes
- d. 190 minutes

Question# 018

The plant was operating at 100% RTP when a main feedwater pump tripped. All equipment operated as designed. The following inputs to the ICS currently exist:

- Demanded Feedwater Flow is the equivalent of 90%.
- Actual Feedwater Flow is 60%.
- Demanded flux is the equivalent of 95%.
- Actual flux is 90%.

At this moment in time, which of the following describes how cross limits will affect the ICS?

Demanded flux signal will be modified with a (1) (lower) signal because (2) .

- | | (1) | (2) |
|----|------|----------------------------------|
| a. | -25% | Feedwater is limited by Reactor |
| b. | -25% | Reactor is limited by Feedwater. |
| c. | -10% | Feedwater is limited by Reactor |
| d. | -10% | Reactor is limited by Feedwater. |

Question# 019

The plant had been operating at 100% RTP for 2 years and had shutdown for a refuel outage. The following plant conditions exist:

- Mode 5
- T_{ave} is 155°F
- RCS pressure is 60 psig
- PZR level is 85 inches
- SBODG is out of service

RCS cooldown and depressurization was in progress using DHR Train 1 when the following annunciators actuated:

- 1-3-D, BUS C1 LOCKOUT
- 1-3-H, BUS D1 LOCKOUT
- 1-4-D, BUS C1 VOLTAGE
- 1-4-E, BUS A LOCKOUT
- 1-4-G, BUS B LOCKOUT
- 1-4-H, BUS D1 VOLTAGE

Which of the following represent the final plant conditions?

- a. Mode 5, Natural circulation
- b. Mode 4, Natural circulation
- c. Mode 4, Gravity draining the BWST into the RCS
- d. Mode 5, Gravity draining the BWST into the RCS

Question# 020

The following plant conditions exist:

- Reactor Power is 95% and steady.
- RCS Pressure is 2150 psig and steady.
- Pressurizer Level is 218 inches and slowly lowering.
- MU TK LEVEL LO (2-2-C) is in alarm.
- RC MU FLOW HI TRN 2 (2-4-C) is in alarm.
- RCP Seal Flow is 9 GPM per RCP, total 36 GPM.

Which ONE of the following abnormal conditions would explain the above conditions?

- a. MU 32 fails open
- b. Normal MU line leak
- c. MU pumps are tripped
- d. Loss of suction to running MU pump

Question# 021

The plant was at full power operations when an upset caused a high pressure condition in the main steam system. The reactor tripped. The plant responded as expected with the TBVs controlling steam header pressure.

Two minutes later, without operator intervention, the balance of plant operator noticed that the TBVs had just closed and the AVVs have just opened.

A possible cause for this is:

- a. Loss of one circulating water pump.
- b. AVVs automatically opened at 1025 psig.
- c. Pressure is 18" HgA in the main condenser.
- d. Steam Header Pressure error exceeded 125 psig.

Question# 022

Annunciator 9-3-A, UNIT VENT RAD HI has alarmed.

The control room operators determined that the cause of the annunciator was RE 4598BA in HIGH Alarm due to a valid release.

Regarding operation of the Control Room Emergency Ventilation System (CREVS), as supplementary actions, the operators . . .

- a. verify both Control Room Ventilation systems have shutdown ONLY.
- b. verify Control Room HVAC Dampers have closed AND manually start both CREVS Trains ONLY.
- c. verify both Control Room Ventilation systems have shutdown AND verify both CREVS Trains automatically started ONLY.
- d. verify both Control Room Ventilation systems have shutdown AND Control Room HVAC Dampers have closed AND manually start both CREVS Trains.

Question# 023

The plant was operating at 100% RTP with the ICS in full automatic. An unexpected reduction in feedwater occurred with the following results:

- Pressurizer level is 280 inches and rising at 5 inches per minute.
- Reactor coolant outlet temperature is 619°F and rising at 2°F per minute.
- Pressurizer Spray is open as required.
- RCS pressure is 2320 psig and rising at 50 psi per minute.

Which of the following action is required?

- a. Manually trip the reactor.
- b. Initiate a controlled plant shutdown.
- c. Manually reduce reactor power to match current feedwater flow.
- d. No action is required. Monitor ICS response to the event and ensure the runback is tracking correctly. Take manual control only as necessary to stabilize the plant.

Question# 024

Given the following conditions:

- The reactor was at 90% power.
- A loss of NNI-Y AC power occurred.
- The following annunciator alarms were then received:
 - (14-2-D) ICS/NNI 118V AC PWR TRBL
 - (14-4-E) ICS INPUT MISMATCH
 - (14-4-F) ICS INPUT TRANSFER.
- Plant conditions have been stabilized.

Which of the following is an action that is specified to be taken per DB-OP-02532, "Loss of NNI/ICS Power," and what is the reason for the action?

- a. Manually control PZR heaters to maintain RCS pressure since the SCR heaters will not function.
- b. Transfer PZR temperature to TT RC15-2 using HS RC15 due to loss of PZR temperature compensation.
- c. Control MU Tank level by positioning MU 11, "Three-Way (Letdown to Radwaste or MU Tank)," as necessary, due to loss of the 18-inch automatic transfer of MU 11 back to the MU Tank.
- d. Control RCS letdown flow by closing MU 85, "Letdown Flow Control Inlet Isolation to MU 6," and cycling MU 4, "Letdown Block Orifice Isolation," as necessary, since MU 6, "Letdown Flow Control Valve" fails to 50% open.

Question# 025

The plant was operating at 100% RTP when a loss of all feedwater occurred. The main turbine tripped and, while executing procedures, three RCPs were tripped (2-2 is running). Currently RCS pressure is 2340 psig and RCS temperature is 598°F.

If auxiliary feedwater pump 1 becomes available, you should maintain SG (1) level at (2) inches on the startup range.

- | | (1) | (2) |
|----|-----|-----|
| a. | 1 | 40 |
| b. | 1 | 49 |
| c. | 2 | 49 |
| d. | 2 | 124 |

Question# 026

Given the following conditions:

- The plant is in Cold Shutdown.
- DH pump 1 is in service for DHR cooling.
- DH pump 2 is in standby.

A loss of offsite power then occurs.

- 1-3-D, "BUS C1 LOCKOUT" annunciator alarms.
- No operator actions have been taken.

(1) What action is required to be taken with respect to EDG 1?

(2) What is the status of DHR cooling?

- a. (1) Trip EDG 1 from the Control Room.
(2) DH pump 2 is supplying DHR cooling.
- b. (1) Trip EDG 1 from the Control Room.
(2) No DHR cooling is presently in service.
- c. (1) Trip EDG 1 locally.
(2) DH pump 2 is supplying DHR cooling.
- d. (1) Trip EDG 1 locally.
(2) No DHR cooling is presently in service.

Question# 027

Given the following conditions:

- A LOCA has occurred.
 - The reactor was shutdown.
 - The crew transitioned to DB-OP-02000, Section 5.0, "Lack of Adequate Subcooling Margin."
 - The crew then transitioned to DB-OP-02000, Section 11.0, "RCS Saturated with SGs Removing Heat Cooldown."
 - BWST level is 9 feet.
 - The crew is preparing to transfer the suction of the LPI pumps to the emergency sump per Attachment 7, "Transferring LPI Suction to the Emergency Sump."
- (1) Why is a specific route in the plant designated in Attachment 7 for the local operator to take in order to close the breakers for DH7A, DH7B, DH9A, DH9B, and HP31?
- (2) What would be the effect if the transfer of the suction of the LPI pumps to the emergency sump was attempted with BWST level at 9.5 feet?
- a. (1) Failure to follow this route could result in an excessive dose to perform the task.
(2) The transfer of the LPI suction could not be performed due to an interlock on the LPI suction valves.
 - b. (1) The route specified has emergency lighting provided to allow safe performance of the task.
(2) The transfer of the LPI suction could not be performed due to an interlock on the LPI suction valves.
 - c. (1) Failure to follow this route could result in an excessive dose to perform the task.
(2) The transfer of the LPI suction at this level would allow additional time to complete the transfer prior to loss of LPI suction.
 - d. (1) The route specified has emergency lighting provided to allow safe performance of the task.
(2) The transfer of the LPI suction at this level would allow additional time to complete the transfer prior to loss of LPI suction.

Question# 028

Given the following conditions:

- A plant heatup is in progress.
- Three RCPs are running.
- RCS Temperature is 445°F.
- Seal Return Temperature is 179°F.

Under these conditions the following occurred:

- RCP Seal Injection was lost.
- RCP Seal Injection restoration was started to all RCPs 25 minutes ago.
- Component Cooling Water is operable and available to all RCPs.
- The SRO ordered the 4th RCP to be started.

When can the 4th RCP be started?

- a. IMMEDIATELY.
- b. After 5 minutes have elapsed.
- c. After RCS temperature is raised 5°F.
- d. After RCS temperature is raised 55°F.

Question# 029

The plant was operating at 100% power in a normal full-power line-up with the emergency diesel generator running for its monthly surveillance. The emergency diesel generator was paralleled with the grid and at full load when the pressurizer PORV opened. Operators were unable to shut the PORV block valve before RCS pressure decreased to 1500 psig. Which of the following describes the condition of the EDG and the SFAS load sequencer under these plant conditions?

The EDG . . .

- a. engine trips and the load sequencer is not started.
- b. engine remains running and the load sequencer is started.
- c. engine remains running and the load sequencer is not started.
- d. output breaker trips, then recloses. The load sequencer is then started.

Question# 030

Given the following conditions:

- Power has been lowered from 100% to 50% per DB-OP-02504, Rapid Shutdown to remove Main Feed Pump 2 from service.
- Power will remain at 50% until Main Feed Pump 2 is repaired and returned to service.
- DB-OP-02504, Attachment 7, "Plant Stabilization at a Lower Power Level" is being implemented with a target rod index of 260.
- All ICS hand auto stations are in automatic.

Which of the following describes the expected operator actions under these conditions?

- a. Select Group 8 (APSRs) and restore Axial Power Imbalance to 0 to +10%. Leave all ICS controls in automatic to control reactor power at 50%.
- b. Allow the control rods to automatically withdraw until the target rod index is reached, then adjust RCS boron concentration to maintain target rod index and reactor power at 50%.
- c. Place the Diamond Control Panel in manual; manually withdraw control rods to the pre-event rod index, adjust boron concentration as necessary to maintain reactor power at 50%.
- d. Select Group 8 (APSRs) and establish a Group 8 position of 50% to prevent or minimize a positive Axial Power Imbalance. Leave all other ICS controls in automatic to control reactor power at 50%.

Question# 031

The following plant conditions exist:

- Power to 120V Bus Y4 was lost two minutes ago due to a bus fault.
- Applicable operating procedures have been entered.
- SFAS Channel 3 Containment Pressure Transmitter PT2002 has just failed high.

Based on the above conditions, what is the status of the Containment Spray System?

- a. ONLY Containment Spray Pump A is running with its discharge valve open.
- b. ONLY Containment Spray Pump B is running with its discharge valve closed.
- c. BOTH Containment Spray Pumps are running with their discharge valves open.
- d. NEITHER Containment Spray Pump is running; Both discharge valves are closed.

Question# 032

The plant was at 100 % rated thermal power with DH Pump 2 tagged out and disassembled for motor bearing replacement when a small break LOCA occurred. An SFAS Level 2 actuation occurred and all safety systems responded as expected. Approximately 2 hours later the following conditions exist:

- BWST level is approaching 9 ft.
- RCS pressure is 500 psig; temperature is 460°F.

Which one of the following is the correct operator action for these conditions?

- a. Transfer LPI suction to the emergency sump, then stop both HPI pumps.
- b. Stop HPI Pump 2, then establish piggyback to HPI Pump 1 and MU Pump 1.
- c. Transfer LPI suction to the emergency sump, then piggyback HPI Pump 1 and stop HPI Pump 2.
- d. Piggyback both HPI Pumps from LPI Pump 1, then transfer LPI suction to the emergency sump.

Question# 033

The plant was operating at 100% RTP with SFAS Channels 2, 3, and 4 sequencers operable. SFAS Channel 1 has been de-energized for maintenance.

If an SFAS Level 2 trip occurred in conjunction with a loss of offsite power, which of the following describes the response of HPI Pump 1 to these conditions?

HPI Pump 1 . . .

- a. starts as soon as AC 101 closes.
- b. starts five seconds after AC 101 closes.
- c. starts 25 seconds after AC 101 closes.
- d. does NOT start automatically.

Question# 034

The plant was operating at 100% power under normal operating conditions except for a small leak on the PORV seat when IA 2011 (Instrument Air Containment Isolation Valve) failed closed due to an air leak on its controller. Because of this the containment instrument air header depressurized.

The above conditions will cause:

- a. Quench Tank pressure to decrease due to RC 222, Quench Tank Vent to Vent Header, failing open.
- b. Quench Tank level to increase due to RC 229B, Quench Tank Outlet, failing closed.
- c. Reactor Coolant Drain Tank level to increase due to RC 232, Quench Tank Return, failing open.
- d. Reactor Coolant Drain Tank pressure to increase due to RC 2548, RCDT Gas Outlet to the Waste Gas System, failing closed.

Question# 035

Given the following conditions:

- The reactor is at 100% power.
- CCW Pumps 1-1 and 1-2 are running.
- CCW Pump 1-3 is spare and aligned to CCW Train 1.

A leak in the Auxiliary Building then occurs in the CCW system.

- CCW surge tank levels are as follows:
 - Side 1 is steady at 33 inches.
 - Side 2 is at 30 inches and lowering.

Which ONE of the following will be the condition of the plant as the event progresses, based on automatic actions occurring as expected and operator actions taken as required?

- a. CC 1469 (DH Cooler #2 CCW Outlet) auto closed.
CC 1411A and CC 1411B (CCW CTMT isolation) auto closed.
CC 1328 and CC 1338 (CCW to CRD booster pump suction) auto closed.
- b. All non-essential CCW headers have automatically isolated.
Both CRD booster pumps have automatically tripped.
The plant is stable on natural circulation flow.
- c. CC 1495 (CCW to Aux BLDG. Non-Essential header) auto closed.
CCW pump 1-3 has automatically started on CCW surge tank lo-lo level.
CCW pump 1-2 was manually tripped.
- d. CCW pumps 1-1, and 1-2 are manually tripped due to low suction pressure.

Question# 036

When setting RC 49, "Pressurizer Minimum Flow Spray Valve," a MINIMUM bypass spray flow of (1) is required to provide for boron equalization between the RCS and the Pressurizer and to prevent thermal shock of the PZR spray nozzles.

When setting RC 49, "Pressurizer Minimum Flow Spray Valve," per DB-OP-06003, "Pressurizer Operating Procedure," notifications are required to appropriate personnel ONLY if the total PZR heater output with the minimum spray flow exceeds the (2).

- | | (1) | (2) |
|----|--------------|-----------------------------------------------------|
| a. | (1) 0.75 gpm | the rated size of SCR Bank 1 |
| b. | (1) 3.0 gpm | the rated size of SCR Bank 1 |
| c. | (1) 0.75 gpm | the rated size of one Essential Bank of PZR heaters |
| d. | (1) 3.0 gpm | the rated size of one Essential Bank of PZR heaters |

Question# 037

Given the following conditions:

- Pressurizer pressure is 2155 psig.
- Quench tank pressure is 5 psig.

Which one of the following would be the approximate initial downstream tailpipe temperature (if local temperature indication was obtained) if RC 2A, Pressurizer Relief Valve, opened?

- a. 165°F
- b. 212°F
- c. 230°F
- d. 340°F

Question# 038

The following plant conditions exist:

- A plant startup is in progress with the Reactor at 77% power.
- Reactor Coolant Pump (RCP) 1-2 amps reads 100 amps.
- RCS loop 1 flow is lowering.
- Total RCS flow is lowering.

Which one of the following Reactor Protection System (RPS) indications can be expected for the conditions above?

- a. All four RPS Reactor Trip module lights will be bright.
- b. All four RPS Cabinet RCP Contact Monitor modules will have a bright light for RCP 1-2.
- c. Only the Channel 2 RPS Cabinet Reactor Trip Module light will be bright.
- d. Only the Channel 2 RPS Cabinet RCP Contact Monitor module will have a bright light for RCP 1-2.

Question# 039

The RPS RCS Pressure transmitters on RCS Loop 2 Hot leg have lost power.

This condition would cause the RPS RCS Pressure Trip Bistable output state lamps on ___(1)___ to become ___(2)___.

- | | (1) | (2) |
|----|--------------------|--------|
| a. | RPS Channels 1 & 3 | dim |
| b. | RPS Channels 2 & 4 | dim |
| c. | RPS Channels 1 & 3 | bright |
| d. | RPS Channels 2 & 4 | bright |

Question# 040

The plant was operating at 100% power with all systems normal when the following occurred:

- R.C. Pressure Lo Bistable, BA 404, tripped on SFAS Channel 4.
- RCS pressure remained at 2155 psig.

Which one of the following describes all of the associated indications on the SFAS Output Modules?

A 1/5 light lights on all SA Levels (1) Output Modules in SFAS Channels (2) .

- | | (1) | (2) |
|----|-------------|---------------|
| a. | 1 and 2; | 2 and 4 ONLY |
| b. | 1 and 2; | 1, 2, 3 and 4 |
| c. | 1, 2 and 3; | 1, 2, 3 and 4 |
| d. | 1, 2 and 3; | 2 and 4 ONLY |

Question# 041

The following plant conditions exist during the refueling outage:

- Unit is in Mode 6.
- Core Refueling has been completed.
- Vessel Internal Indexing fixture is seated on the vessel flange.
- Making preparations to move Upper Plenum Assembly into the vessel.
- DH Pump 1 is in operation for decay heat removal.
- DH Pump 2 is being used to transfer water from the refueling canal to the BWST.

Radiological Technicians calling from containment note an increase in containment radiation levels and see a "hole" in the water above the reactor vessel. A control room operator notes oscillating amps on both Decay Heat Removal Pumps. The operator stops both Decay Heat Removal Pumps.

Which of the following is a Technical Specification-required IMMEDIATE action for this event?

- a. Evacuate containment.
- b. Secure the equipment hatch with at least 4 bolts.
- c. Add water from the Clean Waste Monitor Tank to raise reactor vessel level to the reactor vessel flange.
- d. Restore DHR loop to OPERABLE status OR Initiate action to establish 23 feet of water above the top of the reactor vessel flange.

Question# 042

The following plant conditions exist:

- The plant is operating at 100% power.
- All systems are in their normal full power lineup.
- EDG 2 is disassembled for preventative maintenance.
- CAC Fans 1 and 3 are running in FAST speed.
- CAC Fan 3 is aligned to the CAC 2 side.

If a loss of offsite power occurred under these conditions, what would be the status of the Containment Air Cooling Fans?

- a. ONLY Fan 1 stops.
- b. ONLY Fan 3 stops.
- c. BOTH Fan 1 and 3 stop.
- d. BOTH fan 1 and 3 stop and then ONLY Fan 1 restarts after 5 seconds.

Question# 043

The alarm that occurs when Containment Spray System (CSS) flow drops below 1100 gpm provides warning that . . .

- a. NPSH limits have been exceeded.
- b. flow has dropped below CSS system minimum flow rate.
- c. flow has dropped below the adequate CSS pump cooling flow rate.
- d. Containment Isolation Valves CS1530 and CS1531, Containment Spray Discharge Valves, have stroked to their throttled position.

Question# 044

Ten minutes after a main feedwater line rupture occurring just upstream of FW147 (FW check valve to SG 1), each AFPT will be supplied steam from (1) .

Ten minutes after a main feedwater line rupture occurring just downstream of FW147 (FW check valve to SG 1), each AFPT will be supplied steam from (2) .

- | | (1) | (2) |
|----|----------|----------|
| a. | SG 2 | both SGs |
| b. | SG 2 | SG 2 |
| c. | both SGs | both SGs |
| d. | both SGs | SG 2 |

Question# 045

The plant is operating at 100% power.

The Motor Driven Feed Pump suction would be NORMALLY aligned to the (1)
and the discharge would be NORMALLY aligned to the (2).

(1)

(2)

- | | | |
|----|-------------------------|-----------------------------|
| a. | Deaerator Storage Tank | Main Feed Water System |
| b. | Condensate Storage Tank | Main Feed Water System |
| c. | Condensate Storage Tank | Auxiliary Feed Water System |
| d. | Deaerator Storage Tank | Auxiliary Feed Water System |

Question# 046

Given the following conditions:

- The reactor was In Mode 3 at full RCS temperature and pressure.
- AFW flow was throttled to control flow to each SG.

A loss of an Essential DC Distribution Panel then occurs.

- AF6452, AFP 1 Level Control Valve has failed open.

Which Essential DC Distribution panel has lost power?

- a. D1N
- b. D1P
- c. D2N
- d. D2P

Question# 047

Given the following conditions:

- EDG 1 is operating in parallel at 2600 KW.
 - A loss of offsite power then occurs.
- (1) What is a concern associated with the operation of EDG 1?
(2) What action will be required to mitigate the effect?
- a. (1) EDG 1 will load shed and become reverse powered.
(2) Locally place the Isochronous-Droop switch for EDG 1 in the isochronous mode.
 - b. (1) EDG 1 may overload reaching 3300 KW until an undervoltage condition occurs.
(2) Locally place the Isochronous-Droop switch for EDG 1 in the isochronous mode.
 - c. (1) EDG 1 will load shed and become reverse powered.
(2) Align EDG 1 as the sole source of power to Bus C-1.
 - d. (1) EDG 1 may overload reaching 3300 KW until an undervoltage condition occurs.
(2) Align EDG 1 as the sole source of power to Bus C-1.

Question# 048

The plant was operating at 100% RTP in a normal full power lineup when the following events occurred:

- A loss of breaker status indication for all B bus load breakers and all D1 Bus breakers.
- The reactor tripped.
- A Main Steam Safety Valve on SG 1 opened and stuck open.

Which one of the following should the control room operators perform?

- a. Perform an emergency shutdown of EDG 2.
- b. Direct an auxiliary operator to take local manual control of AFP2 to prevent SG overfeed.
- c. Direct an auxiliary operator to locally trip MFPT 1 because it cannot be tripped from the control room.
- d. Monitor the ICS to ensure the plant responds correctly. Take manual action only if necessary to compensate for unexpected equipment failure.

Question# 049

ONE purpose of the Makeup/Purification/Letdown system is to . . .

- a. provide seal water for Containment Spray Isolation valves CS 1530 and CS 1531.
- b. provide seal water for the Containment (CTMT) Hydrogen Dilution Blowers.
- c. add hydrazine to the Reactor Coolant System (RCS) for oxygen control.
- d. add Oxygen to the Reactor Coolant System(RCS) for Hydrogen scavenging.

Question# 050

Given the following conditions:

- EDG 1 is running at 900 rpm.
- Bus C1 voltage is 4160 Vac.
- You have just closed breaker AC101, "DG 1 To Bus C1," according to procedure.

Which ONE of the following is the action to be taken and the reason for the action?

- a. Go to raise on EDG 1 speed control switch to prevent a reverse power trip.
- b. Go to lower on EDG 1 speed control switch to prevent an overspeed trip of EDG 1.
- c. Go to raise on EDG 1 voltage regulator control switch to prevent an undervoltage condition on C1 bus.
- d. Go to lower on EDG 1 voltage regulator control switch to prevent an overvoltage condition on C1 bus.

Question# 051

An automatic reactor trip has occurred.

Approximately two minutes after the trip the following indications are present in the Control Room:

- RCS pressure is 1675 psig and stable.
- Subcooling Margin is 30°F in both loops.
- Pressurizer level is at 45 inches.
- OTSG steam pressure is 885 psig in both steam generators.
- CTMT pressure is at 14.8 psia.
- T_{hot} is 539°F.
- T_{cold} is 532°F.
- A Second Makeup pump has been started.
- The Alternate Injection line is in service per DB-OP-02000 Attachment 8.
- Main Feedwater flow is 0 mpph to each OTSG.
- Both OTSG levels are approximately 49 inches on the startup range and stable.

Based on the above conditions, IDENTIFY which ONE of the following actions MUST be taken.

- a. Isolate Letdown.
- b. NO actions are required at this time.
- c. Control Main Feedwater flow to the OTSGs.
- d. Actuate BOTH channels of SFRCS Initiation and Isolation.

Question# 052

The following plant conditions exist:

- A plant startup is in progress.
- Reactor power was being raised from 10% Rated Thermal Power (RTP) to 15% RTP.

The following event occurred:

- Reactor Coolant System (RCS) pressure rose to 2225 psig and then lowered.

The following indications were also observed:

- RC 2, Spray Valve, red indicator light is on.
- RC 10, Pressurizer Spray Block Valve, red indicator light is on.
- RC 2A, PORV, red indicator light is on.
- RC 11, PORV Block Valve, red indicator light is on.
- RCS T_{ave} is fluctuating around 557°F.
- RCS pressure is slowly lowering.
- Subcooling margin is 35°F and slowly lowering.
- Makeup flow is steady.

Which ONE of the following describes the cause of the indications and the correct operator response?

Pressure is lowering due to. . .

- a. an overcooling event, all groups of Pressurizer Heaters should be turned on.
- b. an overcooling event, the PORV and Spray Block Valves should be closed.
- c. RC 2A or RC 2 being open, all groups of Pressurizer Heaters should be turned on.
- d. RC 2A or RC 2 being open, the PORV Block Valve and Spray Block Valve should be closed.

Question# 053

Given the following conditions:

- The reactor has tripped from 100% power.
- The Subcooling Margin is 0°F.
- RCPs are off.
- No HPI is available.
- RCS pressure is 785 psig.
- T_{hot} is 518°F.
- T_{cold} is 516°F.
- OTSG pressure is 770 psig.

Select the mode of RCS cooling occurring for the present conditions.

- a. Forced convection
- b. Dual phase convection
- c. Single phase Natural Circulation
- d. Boiler-condenser Natural Circulation

Question# 054

Which one of the following effects will a loss of instrument air (zero psig indicated) have on the Chemical Addition System?

- a. No effect.
- b. MU 23 (flow control) fails CLOSED.
- c. Boric Acid Mix Tank pump will not start.
- d. Boric Acid Addition Tank immersion heaters will not ENERGIZE.

Question# 055

The plant was operating at 70% RTP when RCP 1-1 tripped. Which of the following seal injection flow rates is the MINIMUM required to ensure that Reactor Coolant Pump 1-1 seals will stage properly and prevent reactor coolant from leaking out of the pump seals into containment atmosphere?

- a. 1 gpm
- b. 3 gpm
- c. 6 gpm
- d. 9 gpm

Question# 056

Curve CC 4.3 of DB-PF-06703, Miscellaneous Operations Curves, provides a recommended pressurizer level versus reactor coolant system temperature for the ramp up in T_{ave} from 0 – 28% power.

Which one of the following responses describes the direction provided in DB-OP-06901, Plant Startup to maintain PZR level in the recommended band?

- a. Isolate letdown and manually control makeup flow so pressurizer level remains constant.
- b. Maximize letdown flow so pressurizer level will remain constant with pressurizer level control in automatic.
- c. Allow pressurizer level to rise with T_{ave} by making small setpoint changes to the pressurizer level controller.
- d. Allow pressurizer level to lower with T_{ave} by making small setpoint changes to the pressurizer level controller.

Question# 057

The plant was in Mode 5 with DHR Train 1 in service. DHR was aligned as follows:

- DH 13B (DH Cooler 1 Bypass Flow Control) demand is 40%.
- DH 14B (DH Cooler 1 Outlet Flow Control) demand is 30%.

The following annunciators energized:

- 14-4-E, ICS INPUT MISMATCH
- 14-4-F, ICS INPUT TRANSFER

While checking the control boards, the RO discovered that the NNI-Y AC power indicating light was NOT LIT.

Which ONE of the following describes the effect on DH System flow control?

- a. Flow will DECREASE because BOTH valves FAIL closed.
- b. Flow will NOT change because BOTH valves FAIL as is.
- c. Flow will NOT change because NEITHER valve should be affected.
- d. Flow will INCREASE because BOTH valves FAIL to the 50% demand position.

Question# 058

Given the following conditions:

- RC pressure is 1600 psig
- Pressurizer level is ZERO (0) inches
- All components operated as designed
- No operator actions were taken

Which valve(s) will have AUTOMATICALLY isolated letdown?

- a. MU1A and MU1B (Letdown Cooler Isolations)
- b. MU3 (Letdown Containment Isolation) and MU2B (Letdown Isolation)
- c. MU2A (Letdown Cooler Outlet Isolation) and MU4 (Block Orifice Isolation)
- d. MU2A (Letdown Cooler Outlet Isolation) and MU3 (Letdown Containment Isolation)

Question# 059

The following plant conditions exist:

- Reactor power is 92% and rising.
- RCS pressure is 2155 psig and rising.
- Tave is 584°F and rising.
- Neutron error is 2% in the "IN" direction.
- Rod Index is 293% and increasing.
- Diamond panel OUT COMMAND red light lit.
- Main Feedwater flow is rising.
- Turbine header pressure is 885 psig and stable.

You should . . .

- a. reduce the ULD MAX LOAD LIMIT.
- b. push the ROD STOP button and hold.
- c. place the SG/RX HAND/AUTO station in HAND and reduce the demand.
- d. put Feedwater Demand HAND/AUTO stations in HAND and reduce feedwater.

Question# 060

During a reactor start-up, you should expect the Control Rod Withdrawal Inhibit to be automatically deactivated / blocked when . . .

- a. any one Power Range NI channel exceeds 10% power.
- b. NI-5 and NI-6 Power Range NI channels exceed 10% power.
- c. NI-7 and NI-8 Power Range NI channels exceed 10% power.
- d. NI-5 and NI-7 Power Range NI channels exceed 10% power.

Question# 061

Given the following conditions:

- A reactor trip from 100% power occurred.
- The crew entered DB-OP-02000, "RPS, SFAS, SFRCS Trip, or SG Tube Rupture."
- The crew has transitioned to Section 7.0, "Overcooling," of DB-OP-02000.
- SG pressure is lowering in SG 1.
- RCS Loop 1 T_{ave} is 440°F.
- SG 1 Shell temperature is 520°F as indicated on SPDS.

(1) Is the SG Tube to Shell differential temperature within limits at this time?

(2) What is the basis for the SG Tube to Shell differential temperature limits?

- a. (1) Yes
(2) Limits the stresses imposed on the SG tubes minimizing the potential for a SGTR.
- b. (1) Yes
(2) Limits Pressurized Thermal Shock to the SG shell when feedwater is initiated to a dry SG.
- c. (1) No
(2) Limits the stresses imposed on the SG tubes minimizing the potential for a SGTR.
- d. (1) No
(2) Limits Pressurized Thermal Shock to the SG shell when feedwater is initiated to a dry SG.

Question# 062

The plant was operating at 100% RTP with all major controls in AUTO when the diaphragm ruptured on the differential pressure (D/P) cell causing an instantaneous change in the level signal to the selected SG Operating Range level channel.

Which of the following correctly describes Steam Generator level response? (Assume NO operator actions.)

The control room SG Operating Level indicators indicates (1); actual SG level will (2).

- | | (1) | (2) |
|----|------|----------------------------------------|
| a. | HIGH | lower until low level limit is reached |
| b. | HIGH | remain the same due to SASS transfer |
| c. | LOW | remain the same due to SASS transfer |
| d. | LOW | rise until a cross-limit is reached |

Question# 063

Given the following conditions:

- A reactor trip occurred from 100% power.
 - 4160V Bus C1 and 4160V Bus D1 have lost power and can not be re-energized.
- (1) What is a required action at this time?
(2) What is an indication of natural circulation cooling?
- a. (1) Initiate an RCS cooldown at a maximum rate of 50°F/hour.
(2) RCS T_{cold} and SG T_{sat} are 30°F apart.
 - b. (1) Maintain HOT STANDBY condition.
(2) RCS T_{cold} and SG T_{sat} are 30°F apart.
 - c. (1) Initiate an RCS cooldown at a maximum rate of 50°F/hour.
(2) RCS T_{hot} and RCS T_{cold} are 40°F apart.
 - d. (1) Maintain HOT STANDBY condition.
(2) RCS T_{hot} and RCS T_{cold} are 40°F apart.

Question# 064

The following plant conditions exist:

- A liquid rad waste discharge is in progress from Clean Waste Monitor Tank 1 to the Collection Box.
- The Clean Waste System Out Rad HI annunciator (7-1-B, CLN WST SYS OUT RAD HI) is in alarm.
- The operator determines that the clean waste system outlet monitor | RE-1770A has failed high.

Which one of the following is the expected automatic response of the Clean Waste system?

- a. The operating Clean Waste System Transfer Pump trips and WC-1704 (Clean Waste Monitor Tank Outlet Valve) receives a close signal.
- b. The operating Clean Waste System Transfer Pump trips and isolation valve WC-1771 (Discharge from Clean Waste System) receives a close signal.
- c. Isolation valve WC-1771 (Discharge from the Clean Waste System) and WC-1701A and WC-1701B (Discharges to the Collection Box) will receive a close signal.
- d. Isolation valves WC-1771A and WC-1771B (Discharges to the Collection Box) receive a close signal and WC-1701C (Discharge to the Primary Water Storage Tank) will receive an open signal.

Question# 065

Fuel Handling (FH) Radiation Monitor RE-8446 has just failed HIGH. Radiation Monitor RE-8447 is reading normally. How will the plant respond to this failure?

- a. There will be NO automatic plant response.
- b. The running FH HVAC will NOT TRIP but one train of EVS will start.
- c. The running FH HVAC train WILL TRIP and one train of EVS will start.
- d. The running FH HVAC train WILL TRIP and BOTH trains of EVS will start.

Question# 066

For this calendar quarter, a licensed operator performed the following activities:

July 1:	0600-1800 hours	ATC operator
July 2:	0600-1800 hours	Work Support Center
July 3:	0600-1800 hours	BOP operator
July 4:	0600-1400 hours	BOP operator
July 16:	1800-0600 hours	ATC operator

What is the MINIMUM number of additional hours, if any, required in this calendar quarter for the operator to maintain an active license according to NT-OT-07001, "Training and Qualifications of Operations Personnel"?

- a. None
- b. 12 hours
- c. 16 hours
- d. 24 hours

Question# 067

The plant has experienced a Severe Loss of Instrument Air during power operation.

PRIOR TO restoration of air and when possible, which ONE of the following is required to be done with any failed pneumatic valve controllers?

- a. The air supply to the controller should be ISOLATED and the controller VENTED.
- b. The air supply to the controller should be ISOLATED and the controller DEENERGIZED.
- c. The controller should be placed in MANUAL and the demand signal should be run down to the ZERO position.
- d. The controller should be placed in MANUAL and the demand signal should be MATCHED with actual position.

Question# 068

The plant is in MODE 3 with a startup in progress. Which ONE of the following departments should you contact to obtain a listing of surveillance requirements applicable for entry into MODE 2?

- a. Engineering
- b. Quality Assurance
- c. Outage Management
- d. Work Planning and Support

Question# 069

Given the following conditions:

- Reactor power is at 80% and stable.
 - All ICS stations are in AUTO.
 - Control Rod Group 7 suddenly starts to move out.
 - There is no change in electrical load on the generator (MWe).
 - DB-OP-02516, "CRD Malfunctions," is entered.
- (1) What immediate action is required per DB-OP-02516?
- (2) If control rod motion stops, but a transient is in progress due to a Reactor Power/Feedwater mismatch, what action is specified per DB-OP-02516 to allow Feedwater to control RCS T_{ave} ?
- a. (1) Depress AND Hold the ROD STOP pushbutton.
(2) Place the Reactor Demand H/A station AND the Diamond Control Panel in MANUAL.
 - b. (1) Momentarily depress the ROD STOP pushbutton.
(2) Place the Reactor Demand H/A station AND the Diamond Control Panel in MANUAL.
 - c. (1) Depress AND Hold the ROD STOP pushbutton.
(2) Leave all ICS stations in AUTO for optimal response.
 - d. (1) Momentarily depress the ROD STOP pushbutton.
(2) Leave all ICS stations in AUTO for optimal response.

Question# 070

The plant is in Mode 5 with preparations being made for a plant startup/heatup. The following electrical plant conditions exist:

- The 120 VAC Inverter YV1 is supplied from the DC bus.
- Vital Bus Y1 has been manually transferred to the 480 VAC MCC via the constant voltage transformer.
- A risk assessment has not been performed.

Which of the following describes the status of moving the plant to Mode 4 with the associated plant heatup?

- a. Technical Specifications prohibit unlimited operation when the inverter is bypassed with power supplied via the constant voltage transformer. Entry into Mode 4 is NOT permitted until the inverter is restored.
- b. The applicable LCO is NOT met when the inverter is supplied from the DC bus regardless of the manual inverter bypass switch position. Entry into Mode 4 is NOT permitted until the inverter is restored.
- c. The applicable LCO is met provided the inverter is restored to operable status within 24 hours after exceeding 200°F. Entry into Mode 4 is permitted.
- d. The applicable LCO is NOT met. However, entry into Mode 4 is permitted provided the inverter is restored to operable status within 24 hours of entering MODE 4.

Question# 071

A male radiation worker at Davis-Besse has just returned from 3 weeks of outage support at Beaver Valley in April 2009.

- His Total Effective Dose Equivalent (TEDE) received at Beaver Valley was 150 mrem.
- After a fall at home in May 2009, the worker had a hip x-ray estimated at 22 mrem exposure to the hip area.
- The worker's current TEDE from Davis-Besse for this year is 75 mrem.

Based on these exposures, choose the calculated MAXIMUM annual non-emergency TEDE that he can receive at Davis-Besse for the remainder of this year without exceeding the Federal Exposure Limits assuming all required approvals are obtained.

- a. 4753 mrem.
- b. 4775 mrem.
- c. 4903 mrem.
- d. 4925 mrem.

Question# 072

Which ONE of the following process radiation monitors has an AUTOMATIC plant response associated with a HIGH alarm?

- a. RE 4597AB and BB, Containment Vessel
- b. RE 1412/1413, Component Cooling Water
- c. RE 8432, Service Water Discharge Header
- d. RE 5327/5328A, B, and C, Control Room Emergency Ventilation

Question# 073

Which of the following sets of parameters is kept within limits to prevent exceeding DNB limits?

- a. RCS Temperature, RCS Pressure, RCS Flow, Thermal Power
- b. Axial Power Imbalance, RCS Pressure, PZR Level, Thermal Power
- c. RCS Temperature, Quadrant Power Tilt, PZR Level, Control Rod Position
- d. Axial Power Imbalance, Quadrant Power Tilt, RCS Flow, Control Rod Position

Question# 074

Main Control Room annunciator windows associated with Emergency Operating Procedure entry conditions are identified by:

- a. the color of the alarm window's lamps
- b. their position within the corresponding alarm group
- c. the letter "R" in the lower left hand corner of the window
- d. an alternating beige and black border around the window

Question# 075

The unit had been operating at full power for several days when an event (not a fire) required evacuation of the Main Control Room. Abnormal Procedure DB-OP-2508, Control Room Evacuation, immediate actions have been completed.

In accordance with DB-OP-2508, the Primary Side Reactor Operator is responsible for ensuring that. . . .

- a. Reactor Coolant Letdown is restored.
- b. the Aux Feedwater Pumps are operating properly.
- c. instrument air to the Main Steam Atmosphere Vent is isolated.
- d. local shutdown control from the Aux Shutdown Panel is established.

Question# 076

The plant was operating at 35% power when the following conditions occurred:

- (1-5-F) DC PANEL VOLTAGE LO Annunciates
- The reactor does NOT trip
- The turbine trips

Which of the following are the appropriate actions for these conditions?

- a. Enter DB-0P-02537, LOSS OF D1P AND DAP, trip the reactor, and GO TO DB-OP-02000, RPS, SFAS, SFRCS Trip, or SG Tube Rupture.
- b. Enter DB-0P-02537, LOSS OF D1P AND DAP and initiate a rapid power reduction while referring to DB-OP-02504, Rapid Shutdown.
- c. Enter DB-0P-02538, LOSS OF D2P AND DBP and GO TO DB-OP-02500, Turbine Trip.
- d. Enter DB-0P-02538, LOSS OF D2P AND DBP, trip the reactor, and GO TO DB-OP-02000, RPS, SFAS, SFRCS Trip, or SG Tube Rupture.

Question# 077

A loss of both Main Feedwater Pumps has resulted in a reactor trip from 100% reactor power. The following plant conditions exist:

- Incore thermocouples read 1600°F.
- RCS pressure is 500 psig.

Which of the following should you direct based on these plant conditions?

- a. Trip ALL running RCPs.
- b. Establish one RCP running in each loop.
- c. Bump one RCP in each loop.
- d. Bump ONLY one RCP in the loop with the highest SG level.

Question# 078

Given the following conditions:

- The plant is operating at 100% power.
- A zone operator calls the control room and reports that he has found the stem on CV-5090 (Hydrogen Dilution System 1 Containment Isolation) broken.

Which one of the following is NOT required based on the given conditions?

- a. Initiate a condition report to identify the valve as failed.
- b. Direct the equipment operator to complete a material deficiency tag.
- c. Evaluate the problem as a potential loss of containment penetration isolation capability.
- d. Complete a 4-hour notification to the NRC of the failed hydrogen dilution train in accordance with 10 CFR 50.72.

Question# 079

Given the following conditions:

- A reactor trip from 100% power occurred.
- The crew entered DB-OP-02000, "RPS, SFAS, SFRCS Trip, or SG Tube Rupture."
- The crew has transitioned to Section 7.0, "Overcooling," of DB-OP-02000.
- SG pressure is lowering in BOTH SGs.
- SG 1 has been determined to be the SG with the most significant steam leak based on the SG pressure and level decrease.
- Local reports have determined that SG 2 pressure is lowering due to a stuck open Main Steam Safety Valve (MSSV) on the associated MS line.

Based on Section 7.0, "Overcooling," of DB-OP-02000, you should direct the control room operators to (PREFERRED action) . . .

- a. IMMEDIATELY isolate AFW flow to BOTH SGs, and Go to Attachment 4, "Initiate MU/HPI Cooling."
- b. IMMEDIATELY establish trickle feed cooling to BOTH SGs, while observing Specific Rule 4, "Steam Generator Control."
- c. isolate AFW flow to SG 1, and when SG 1 boils dry, and if an overcooling condition still exists, then establish trickle feed cooling to SG 2.
- d. isolate AFW flow to SG 1, and when SG 1 boils dry, and if an overcooling condition still exists, then isolate AFW flow to SG 2, and go to Attachment 4, "Initiate MU/HPI Cooling."

Question# 080

Fuel movement from the spent fuel pool to containment is in progress. Which of the following events would NOT require suspension of fuel movements in containment?

- a. Lowering of spent fuel pool level.
- b. Water clarity prevents visual position verification.
- c. A malfunction of one of the two fuel transfer mechanisms.
- d. A discrepancy between fuel movement sheets and evolutions in progress.

Question# 081

Given the following conditions:

- The plant was operating at 100% power with a small SG tube leak in SG 1.
- A reactor trip then occurred due a steam line break on SG 2 inside containment.
- The crew entered DB-OP-02000, "RPS, SFAS, SFRCS Trip, or SG Tube Rupture," and was performing Section 4.0, "Supplemental Actions," when a SGTR occurred on SG 1 followed by a loss of offsite power.
- RCS subcooling is 23°F.

As the HIGHEST priority, the crew is required to implement . . .

- a. Section 7.0, "Overcooling."
- b. Section 8.0, "Steam Generator Tube Rupture."
- c. Specific Rule 2, "Actions for Loss of Subcooling Margin."
- d. Specific Rule 6, "Power for C1 And D1 Buses or EDG Start."

Question# 082

The following plant conditions exist:

- The plant is in Mode 1.
- A power ascension is in progress following a refueling outage.
- Thermal power is currently 80% RTP and four reactor coolant pumps are running.
- All rods are within alignment and insertion limits.
- QPT is 8.25 as indicated by the Incore Detector System.
- Axial Power Imbalance (API) is (+) 24 as indicated by the Excore Detector System.

Which one of the following describes the tech spec actions for these plant conditions?

- a. Reactor power must NOT exceed 92% RTP, but can be maintained above 80% RTP.
- b. Reactor power must NOT exceed 80% RTP, but can be maintained above 74% RTP.
- c. Reactor power must be lowered to $\leq 74\%$ RTP, but does NOT have to be lowered to $<72\%$ RTP.
- d. Reactor power must be lowered to $\leq 72\%$ RTP, but does NOT have to be lowered to $<60\%$ RTP.

Question# 083

Given the following conditions:

- The plant is in Mode 6.
- Containment Purge is in operation and aligned to containment.
- Fuel was being removed from the reactor core.
- The Fuel Handling Director reported from containment that bubbles were observed in the vessel during the last fuel movement.
- The following annunciator was received shortly after the report:
 - R320 CTMT PURGE EXH FLT RAD

The CONTROLLING procedure which is expected to be used for this event is . . .

- a. DB-OP-02530, "Fuel Handling Accident"
- b. RA-EP-02864, "Containment Evacuation"
- c. Plant Services Alarm Panel 9 Annunciators
- d. DB-OP-06503, "Containment Purge System Procedure"

Question# 084

An extremely serious fire in the Cable Spreading Room has required that the Control Room be evacuated.

- (1) Prior to leaving the Control Room, which RCPs are to be tripped?
- (2) Which of the following procedure(s), would be selected to mitigate the event?
 - a. (1) No RCPs are required to be tripped.
(2) DB-OP-02519, "Serious Control Room Fire" ONLY.
 - b. (1) Trip RCPs 1-1 and 2-2 ONLY.
(2) DB-OP-02519, "Serious Control Room Fire" ONLY.
 - c. (1) Trip RCPs 1-1, 2-1 and 2-2 ONLY.
(2) DB-OP-02519, "Serious Control Room Fire" and DB-OP-02000, RPS, SFAS, SFRCS Trip, or SG Tube Rupture."
 - d. (1) Trip all 4 RCPs.
(2) DB-OP-02519, "Serious Control Room Fire" and DB-OP-02000, "RPS, SFAS, SFRCS Trip, or SG Tube Rupture."

Question# 085

During the back shift the Shift Manager may authorize deviations from the requirements of the temporary modification procedure (NOP-CC-2003, Engineering Changes, Section 4.7.5, Temporary Modifications) in the event that a temporary modification is required for . . .

- a. a significant personnel hazard.
- b. a significant operator burden that is not a hazard to safe operation.
- c. forced entry into a 72 hour or less technical specification action statement.
- d. fire protection system equipment that becomes inoperable requiring an eight hour fire watch.

Question# 086

The following plant initial conditions exist:

- The plant is in MODE 5.
- The RCS is drained to 48".
- Loop 1 DH system is in operation.

The following indications are then received:

- Annunciator (3-1-H) LPI INJ 1 FLOW LO is lit intermittently.
- Annunciator (4-5-B) RCS LVL LO/LO-LO is lit.

Which ONE of the following sections of DB-OP-02527, Loss of Decay Heat Removal, should be performed?

- a. Loss of DH Pump
- b. Loss of Flowpath
- c. Loss of Instrument Air
- d. Loss of Inventory

Question# 087

Given the following conditions:

- A LOCA has occurred.
- BWST level is 9 feet.
- The crew is preparing to transfer the suction of the LPI pumps to the emergency sump per Attachment 7, "Transferring LPI Suction to the Emergency Sump."

When transferring the suction of the LPI and CS pumps to the emergency sump, the CS Discharge Valves CS1530 and CS1531 (1) to ensure adequate CS pump NPSH.

- (2) Following transfer of the LPI and CS pumps to the emergency sump, if the LPI or CS pumps have indications of fluctuating flows or fluctuating amps, which procedure should be implemented to respond to these indications?
- a. (1) must be manually throttled closed from full open to partially open
(2) DB-OP-02000, Attachment 4, Initiate MU/HPI Cooling.
 - b. (1) are automatically throttled closed from full open to partially open
(2) DB-OP-02000, Attachment 12, Establishing Long Term Boron Dilution.
 - c. (1) must be manually throttled closed from full open to partially open
(2) DB-OP-02000, Attachment 22, Cross Connect LPI Pump Discharge.
 - d. (1) are automatically throttled closed from full open to partially open
(2) DB-OP-02000, Attachment 27, Mitigation of Containment Emergency Sump Degradation."

Question# 088

Given the following conditions:

- The plant is stable at 90% power.
 - All ICS stations are in AUTO.
 - The following Annunciator Alarms are then received:
 - (4-5-C) LOOP 1 VS 2 COLD LEG ΔT HI
 - (12-3-A) SG 1 OPERATE LVL HI
 - SG 1 level is rising above that level expected for plant conditions.
- (1) What procedure would be entered FIRST for the above plant conditions?
(2) What are initial actions expected for the plant conditions specified above?
- a. (1) DB-OP-02526, "Primary to Secondary Heat Transfer Upset"
(2) Place the Rod Control diamond station in MANUAL and then place BOTH Feedwater Loop Demands in HAND.
 - b. (1) DB-OP-02526, "Primary to Secondary Heat Transfer Upset"
(2) Place the Reactor Demand station in HAND and then place BOTH Feedwater Loop Demands in HAND.
 - c. (1) DB-OP-06401, "Integrated Control System Operating Procedure"
(2) Place BOTH Feedwater Loop Demands in HAND, and then, place SP7B, "Startup FW Control Valve," and SP-6B, "Main FW Control Valve," in HAND.
 - d. (1) DB-OP-06401, "Integrated Control System Operating Procedure"
(2) Place SP7A, "Startup FW Control Valve," and SP-6A, "Main FW Control Valve," in HAND, and then, place BOTH Feedwater Loop Demands in HAND.

Question# 089

Given the following conditions:

- MUP 2 was disassembled for maintenance yesterday evening.
- The reactor had been operating at 100% power for 100 days when a reactor trip occurred due to a loss of both Main Feed Pump Turbines.
- Both auxiliary feed water pumps have tripped and attempts to restart them have been unsuccessful.
- The MDFP has also failed to start.

The Command SRO should direct MU/HPI cooling be initiated . . .

- a. IMMEDIATELY.
- b. when T_{hot} exceeds 600°F if feedwater is NOT restored.
- c. when T_{hot} exceeds 600°F even if feedwater is restored.
- d. when the check for heat transfer step is reached in DB-OP-02000.

Question# 090

Which one of the following describes the operation you should direct for the LPI, HPI, and MU pumps during a loss of Component Cooling Water?

You should direct the control room operators to . . .

- a. start a timer for the LPI, HPI, and MU pumps. They may be operated for up to an hour.
- b. IMMEDIATELY trip the LPI and HPI pumps. Start a timer for the MU pumps; they may be operated for up to one hour.
- c. IMMEDIATELY trip the MU pumps. Monitor ECCS Room Coolers. As long as they are in service, LPI and HPI pumps can be operated.
- d. start a timer for the LPI and HPI pumps. They may be operated for up to an hour. The MU pumps can be operated as long as the MU Pump Room HVAC unit is in service.

Question# 091

Given the following conditions:

- The plant was at 100% power.
- RC 2, "PZR Spray Valve," then failed open and RC10, "PZR Spray Block Valve," could not be closed.
- RCS pressure is lowering.

Under these plant conditions and in accordance with DB-OP-02513, "Pressurizer System Abnormal Operation," you should direct the operators to . . .

- a. IMMEDIATELY trip the reactor and enter DB-OP-02000, "RPS, SFAS, SFRCS Trip, or SG Tube Rupture."
- b. implement DB-OP-02504, "Rapid Shutdown," and reduce reactor power to $\leq 72\%$; shutdown RCP 2-1.
- c. implement DB-OP-02504, "Rapid Shutdown," and reduce reactor power to $\leq 72\%$; shutdown RCP 2-2.
- d. enter either DB-OP-02504, "Rapid Shutdown," or DB-OP-06902, "Power Operations," and shutdown the plant. Then stop RCPs 2-1 and RCPs 2-2 after the reactor is shutdown.

Question# 092

Given that the plant was operating at 100% power with a small tube leak on SG 2 with AFPT 2 out of service.

A reactor trip occurred followed by:

- SG 1 was isolated after the reactor trip due to an overcooling event.
- A SGTR then occurred on SG 2.
- Trickle Feed cooling using AFPT 1 was established to SG 1 and then SG 2 was isolated due to the SGTR.

(1) Compliance with Specific Rule 4, "Steam Generator Control," for SG level and feedwater flow is (1) when utilizing Trickle feed Cooling.

AFPT 1 then trips and can NOT be re-started.

(2) What action is required to be taken per DB-OP-02000?

- | | (1) | (2) |
|----|--------------|--------------------------------------------------------|
| a. | required | Establish Trickle Feed cooling to SG 1 using the MDFP. |
| b. | required | Establish MU/HPI Cooling. |
| c. | not required | Establish Trickle Feed cooling to SG 2 using the MDFP. |
| d. | not required | Establish MU/HPI Cooling. |

Question# 093

The unit was in Mode 6 with the equipment hatch installed with core alterations in progress.

- A new fuel bundle was placed in the core.
- The fuel handling bridge was then moved back to the transfer mechanism for the next bundle.
- The reactor operator in the control room reported rising counts on his source range indications.
- It was then determined that the last bundle was placed in the wrong core location.

Under these conditions you should. . .

- a. direct operators to begin an immediate boration of the reactor vessel via the decay heat removal system.
- b. direct operators to begin an immediate boration of the reactor vessel via the high pressure injection system.
- c. direct the operators on the fuel handling bridge to immediately retrieve the mis-placed bundle and return it to the transfer mechanism.
- d. direct the operators on the fuel handling bridge to immediately retrieve the mis-placed bundle and place it in its correct location.

Question# 094

During implementation of an Abnormal Procedure, what is REQUIRED to allow a deviation from a step sequence?

- a. The Shift Manager has concurred with the deviation.
- b. A Condition Report is written prior to taking the actions.
- c. The reason for the deviation is noted in a copy of the procedure.
- d. A Peer Check of the actions is conducted by any licensed operator.

Question# 095

Given the following conditions:

- Power is being lowered from 100%.
- AFPT 1 was out of service.

The following event then occurred:

- A reactor trip from 10% power occurred.
- SG startup levels are at 40 inches.
- SG pressures are at 900 psig.
- RCS Hot Leg temperatures are at 550°F due to an overcooling transient that occurred following the reactor trip.
- RCS pressure is 1750 psig.
- The running MFW Pump tripped, however both MFW Pumps are available.
- AFPT 2 just tripped and is not available.

Of the following, what is the PREFERRED method of restoring feedwater flow to the SGs per DB-OP-02000, Attachment 5, "Guidelines For Restoring Feedwater"?

- a. Using the SUFP at 300 gpm.
- b. Using a Main FW Pump at 900 gpm.
- c. Using the MDFP to the MFW header at 600 gpm.
- d. Using the MDFP to the AFW header at 600 gpm.

Question# 096

According to NOP-WM-1001, "Order Planning Process," an Operations SRO is responsible for which ONE of the following in regards to Order processing?

- a. Verifying proper RWPs are filled out.
- b. Assuring proper job priorities are assigned.
- c. Planning and scheduling of maintenance work activities.
- d. Determine need for reactivity impact review by Reactor Engineering.

Question# 097

The following plant conditions exist:

- The reactor was at 65% power ramping to 100% RTP.
- Control Rod Group 3 then dropped into the core.
- Reactor power dropped to 48% RTP as a result of the rods dropping.

You should GO TO . . .

- a. DB-OP-02504, "Rapid Shutdown," and commence a RAPID SHUTDOWN to HOT STANDBY.
- b. DB-OP-02516, "CRD Malfunctions," and direct the operators to maintain reactor power less than 50%.
- c. DB-OP-02000, "RPS, SFAS, SFRCS Trip or SG Tube Rupture," and direct the operators to TRIP the reactor.
- d. DB-OP-06902, "Power Operations," after verifying SHUTDOWN MARGIN. If power operation to 100% is permitted, restore Group 3 and return to the power ramp.

Question# 098

A Liquid Radwaste Release is needed to be performed from the Miscellaneous Waste Monitor Tank. However, Radiation Monitors RE-1878A and B are both currently inoperable. To perform the Liquid Release from the Miscellaneous Waste Monitor Tank what actions must be taken in accordance with the ODCM, Offsite Dose Calculation Manual, and DB-OP-03011, "Radioactive Liquid Batch Release," to accomplish this?

- a. Pull and analyze two independent samples ONLY.
- b. Pull and analyze two independent samples AND perform two independent verifications of the release rate calculations ONLY.
- c. Pull and analyze two independent samples AND perform two independent verifications of the release rate calculations AND two independent verifications of the discharge valve lineup ONLY.
- d. Pull and analyze two independent tank samples AND perform two independent verifications of the release rate calculations AND two independent verifications of the discharge valve lineup AND one of the Radiation Monitors RE-1878A or B must be returned to service prior to the release.

Question# 099

Given the following conditions:

- A SGTR has occurred that results in loss of subcooled margin.
- A lockout of D1 has occurred.
- Pressurizer level is 8 inches.

The use of both makeup injection lines is . . .

- a. allowed because of the low pressurizer level.
- b. allowed because of a loss of subcooled margin.
- c. NOT allowed because both makeup pumps are NOT available.
- d. NOT allowed because both low pressure injection pumps are NOT available.

Question# 100

An Alert has been declared. Security was notified to activate CANS. Ten minutes later the Shift Manager noted that his pager had not activated. Which of the following is the first alternative method available to the Shift Manager to activate the pager system on the proper event code?

- a. Activation of the Backup CANS.
- b. Manual activation of the group page.
- c. individual contact of emergency responders.
- d. Manual activation of Emergency Notification System (ENS).

***** END OF EXAM *****

Question# 001
 K/A 073K501
 Answer: d.
 Reference:
 Q 38229
 Bank
 Fundamental

Question# 006
 K/A 000022K103
 Answer: d.
 Reference:
 Bank
 Higher

Question# 002
 K/A 076A201
 Answer: d.
 Reference:
 DB-OP-02511
 Modified
 Higher

Question# 007
 K/A 002A204
 Answer: c.
 Reference:
 76241; OPS-GOP-437-K; ITS; UHS –
 Mode Change
 New
 Higher

Question# 003
 K/A 078K302
 Answer: a.
 Reference:
 OPS-GOP-128-02K
 ORQ-0824, 37548; Loss of Air
 BANK
 FUNDAMENTAL

Question# 008
 K/A 000026K304
 Answer: a.
 Reference:
 New
 Higher

Question# 004
 K/A 000011K303
 Answer: d
 Reference:
 Bank
 Fundamental

Question# 009
 K/A 000029A108
 Answer: d.
 Reference:
 New
 Fundamental

Question# 005
 K/A 103A404
 Answer: d.
 Reference:
 OPS-SYS-1506.04, Section 12, page 27
 DB-OP-02000, Attachment 9
 New
 Higher

Question# 010
 K/A 000038EA2.16
 Answer: c.
 REFERENCE
 DB-OP-02000, Revision 20 - Steps 8.34
 and 8.35
 New
 Higher

Question# 011
 K/A 016K301
 Answer: a.
 Reference:
 New
 Higher

Question# 012
 K/A 000054 2.3.14
 Answer: b.
 Reference:
 OPS-GOP-131-11K Question 3
 DB-OP-02531
 Bank
 Higher

Question# 013
 K/A 041K201
 Answer: b.
 Reference:
 OPS-SYS-524-04K; Loss of ICS power
 on MFP
 Bank
 Higher

Question# 014
 K/A 000056A204
 Answer: b.
 Reference:
 36847: OPS-GOP-111-03K (ORQ-
 0107): C1 L/O SW response
 New
 Higher

Question# 015
 K/A 000057A112
 Answer: a.
 Reference:
 DB-OP-02532
 New
 Fundamental

Question# 016
 K/A 000058K301
 Answer: c.
 Reference:
 37801 OPS-GOP-137-01K
 37801 ORQ-1085; Effects of D2P loss
 BANK
 FUNDAMENTAL

Question# 017
 K/A 2.1.25
 Answer: d.
 Reference:
 DB-OP-06703, Curves CC6.3c and
 CC6.3d
 Provide Pages 56 through 60 of DB-OP-
 06703, "Miscellaneous Operation
 Curves."
 New
 Higher

Question# 018
 K/A BW/E04K2.1
 Answer: b.
 Reference:
 OPS-SYS-517-05K: 62166; MFP trip
 effects on cross limits
 BANK
 HIGHER

Question# 019
 K/A 2.2.35
 Answer: b.
 Reference:
 39189, OPS-GOP-127-03K; OLE-4619;
 Loss of DH in Mode 5
 Bank
 Higher

Question# 020
 K/A 000028 AA1.02
 Answer: b.
 Reference:
 DB-OP-02512
 09-07-05
 New
 Higher

Question# 021
 K/A 000051K301
 Answer: c.
 Reference:
 New
 Fundamental

Question# 022
 K/A 000061A101
 Answer: d.
 Reference:
 New
 Fundamental

Question# 023
 K/A 2.4.1
 Answer: a.
 Reference:
 63036; OPS-GOP-302-01K: OPS-GOP-420-01K: ATWS (OLE-48152)
 BANK
 HIGHER

Question# 024
 K/A (B&W) A03 AK1.3
 Answer: d.
 Reference:
 DB-OP-02532
 New
 Fundamental

Question# 025
 K/A A04K1.3
 Answer: b.
 Reference:
 36841, OPS-GOP-305-02K,
 ORQ-0101; SG Level after regain AFW.
 MODIFIED
 HIGHER

Question# 026
 K/A B&WA05 AK2.02
 Answer: d.
 Reference:
 DB-OP-02521, DB-OP-02527
 New
 Fundamental

Question# 027
 K/A E03A2.2
 Answer: a.
 Reference:
 DB-OP-02000, Attachment 7 (and
 Bases for Attachment 7)
 New
 Higher

Question# 028
 K/A 003 2.2.44
 Answer: b.
 Reference:
 DB-OP-06005, RC Pump Operation,
 Revision 21
 DB-SD-039A, RCS System Description,
 Revision 5
 New
 Higher

Question# 029
 K/A 064K402
 Answer: c.
 Reference:
 OPS-SYS-506-07K
 Modified
 Higher

Question# 030
 K/A 004A401
 Answer: b.
 Reference:
 DB-OP-02504, Rapid Shutdown,
 Revision 14
 New
 Higher

Question# 031
 K/A 013K303
 Answer: c.
 Reference:
 OPS-SYS-1506.05, SFAS Lesson Plan
 NEW
 HIGHER

Question# 032
 K/A 006K605
 Answer: d.
 Reference:
 37079; OPS-GOP-304-04K
 ORQ-0343; SBLOCA, 9 ft in BWST
 BANK
 HIGHER

Question# 033
 K/A 006A302
 Answer: b.
 Reference:
 OPS-SYS-302-02K; (OLC-36940): Ch 1
 Sequence Removed with LOOP and
 SA2
 Bank
 Higher

Question# 034
 K/A 007A101
 Answer: b.
 Reference:
 OPS-SYS-104-03K
 BANK
 HIGHER
 2008 NRC Exam

Question# 035
 K/A 008K402
 Answer: b.
 Reference:
 DB-OP-02523, SD-016
 Bank
 Higher

Question# 036
 K/A 010 EA1.01
 Answer: c.
 Reference:
 DB-OP-06003, OPSYSSI104.06
 New
 Higher

Question# 037
 K/A 010K502
 Answer: c.
 Reference:
 Steam Tables
 Bank
 Higher

Question# 038
 K/A 012A306
 Answer: b.
 Reference:
 76866; OPS-SYS-504-11K: RPS
 indication for RCP with low amps
 BANK
 HIGHER
 1008 NRC Exam

Question# 039
 K/A 012K606
 Answer: d.
 Reference:
 New
 Fundamental

Question# 040
 K/A 013A402
 Answer: b.
 Reference:
 OPS-SYS-506-08K
 BANK
 HIGHER

Question# 041
 K/A 005A203
 Answer: d.
 Reference:
 New
 Fundamental

Question# 042
 K/A 022K201
 Answer: c.
 Reference:
 OPS SYS-1306.05, SFAS Lesson Plan
 NEW
 HIGHER

Question# 047
 K/A 062K302
 Answer: d.
 Reference:
 DB-SC-03070, DB-OP-06316
 New
 Fundamental

Question# 043
 K/A 026K102
 Answer: b.
 Reference:
 System Description 022A, Revision 3,
 Containment Spray System, TABLE 2.5-
 3
 BASES FOR SETPOINTS (p. T2.5-3-1)
 New
 Fundamental

Question# 048
 K/A 063K402
 Answer: b.
 Reference:
 36465; OPS-GOP-137-04K, OPS-GOP-
 137-08K; Loss of D2P and DBP actions.
 Bank
 Higher

Question# 044
 K/A 039K107
 Answer: d.
 Reference:
 OPS-SYS-I207.05, Section H
 New
 Higher

Question# 049
 K/A 004 2.1.28
 Answer: c.
 Reference:
 System Question Review Bank, 07-03-
 02
 Bank
 Fundamental

Question# 045
 K/A 059K102
 Answer: c.
 Reference:
 SD-014, "System Description for Main
 Feedwater System," Rev. 5, page 2-6
 Bank
 Fundamental

Question# 050
 K/A 064A108
 Answer: a.
 Reference:
 DB-SC-03070, DB-OP-06316
 Bank
 Fundamental

Question# 046
 K/A 061K201
 Answer: b.
 Reference:
 DB-OP-02537, Attachment 2
 New
 Higher

Question# 051
 K/A 000007 2.1.7
 Answer: b.
 Reference:
 Bank
 Higher

Question# 052
 K/A 000008A201
 Answer: d.
 Reference:
 DB-OP-02513 Pressurizer Abnormal
 AB, Section 4.4
 Bank
 Higher

Question# 053
 K/A 000009K203
 Answer: d.
 Reference:
 Bank
 Higher

Question# 054
 K/A 078A301
 ANSWER: d.
 REFERENCE:
 08-04-20
 BANK
 Fundamental

Question# 055
 K/A 000015/17K207
 Answer: b.
 Reference:
 Bank
 Fundamental

Question# 056
 K/A 001A104
 Answer: c.
 Reference:
 58881
 DB-OP-06901, Plant Startup; Revision
 31
 Bank
 Higher

Question# 057
 K/A 000025K101
 Answer: d.
 Reference:
 Bank
 Higher

Question# 058
 K/A 011A303
 Answer: d.
 Reference:
 OPS-SYS-1106.07
 Bank
 Fundamental

Question# 059
 K/A 014A402
 Answer: b.
 Reference:
 Modified
 Fundamental

Question# 060
 K/A 015K101
 Answer: d.
 Reference:
 New
 Fundamental

Question# 061
 K/A 000040 2.2.37
 Answer: a.
 Reference:
 DB-OP-02000, Step 7.37 Bases
 New
 Higher

Question# 062
 K/A 035K401
 Answer: b.
 Reference:
 OPS-SYS-516-04K: 70963; SG level
 transmitter failure
 Bank
 Higher

Question# 063
 K/A 000055K102
 Answer: d.
 Reference:
 DB-OP-02521, DB-OP-06903
 New
 Fundamental

Question# 068
 K/A 2.2.12
 Answer: d.
 Reference:
 DB-OP-06911 p.41, Note 7.16.2-5
 Bank
 Fundamental

Question# 064
 K/A 068K610
 Answer: c.
 Reference
 38338
 DB-OP-03011, Radioactive Liquid Batch
 Release
 Bank
 Fundamental

Question# 069
 K/A 000001 AK206
 Answer: a.
 Reference:
 DB-OP-02516
 New
 Fundamental

Question# 065
 K/A 072K501
 Answer: c.
 Reference:
 Lesson Plan OPS-SYS-I508.06,
 Process and Area Rad Monitoring.
 New
 Higher

Question# 070
 K/A 2.2.42
 Answer: a.
 Reference:
 ITS 3.8.7
 Modified
 Higher

Question# 066
 K/A 2.1.4
 Answer: d.
 Reference:
 NT-OT-07001
 Modified
 Higher

Question# 071
 K/A 2.3.4
 Answer: b.
 Reference:
 10 CFR 20
 Modified
 Higher

Question# 067
 K/A 000065A103
 Answer: d.
 Reference:
 DB-OP-02528
 Bank
 Fundamental

Question# 072
 K/A 2.3.15
 Answer: b.
 Reference:
 BANK
 Fundamental
 32642

Question# 073
 K/A 000076 2.2.22
 Answer: a.
 Reference:
 76040; OPS-GOP-420-01K; OLE; What
 parameters affect DNB
 TS 3.4.1
 BANK
 FUNDAMENTAL

Question# 074
 K/A 2.4.31
 Answer: a.
 Reference:
 Lesson Plan OP-SYS-I509, Station
 Annunciator; Revision 6
 New
 Fundamental

Question# 075
 K/A 2.4.34
 Answer: a.
 Reference:
 DB-OP-2508, Control Room Evacuation;
 Revision 8
 New
 Fundamental

Question# 076
 K/A 063A201
 Answer: c.
 Reference:
 DB-OP-02538, LOSS OF D2P AND
 DBP, Revision 13
 DB-OP-02537, LOSS OF D1P AND
 DAP, Revision 14
 New
 Higher

Question# 077
 K/A 017A202
 Answer: a.
 Reference:
 DB-OP-02000, Figure 2, Incore T/C
 Temperature vs RC Pressure for
 Inadequate Core Cooling, and Section
 9.0
 Provide DB-OP-02000, Figure 2
 New
 Higher

Question# 078
 K/A 028 2.1.20
 Answer: d.
 Reference:
 DB-OP-06502
 New
 Higher

Question# 079
 K/A B&W E05 2.4.6
 Answer: c.
 Reference:
 DB-OP-02000, Section 7.0
 New
 Higher

Question# 080
 K/A 2.1.40
 Answer: c.
 Reference:
 DB-OP-00030, Fuel Handling
 Operations, Section 6.3 & Section 6.9
 New
 Higher

Question# 081
 K/A 000056AA2.46
 Answer: d.
 Reference:
 DB-OP-02000 Bases Document on
 Prioritization, DB-OP-02000, Specific
 Rule 6
 New
 Higher

Question# 082
 K/A 2.2.22
 Answer: c.
 Reference:
 Provide COLR with this question.
 76231; OPS-GOP-431-K
 ITS; QPT/API Actions
 BANK
 HIGHER

Question# 087
 K/A 026A207
 Answer: d.
 Reference:
 DB-OP-02000, Attachments 7 and 27,
 and SD-022A
 New
 Higher

Question# 083
 K/A 000036A203
 Answer: a.
 Reference:
 DB-OP-02530
 Bank
 Fundamental

Question# 088
 K/A 059 2.1.20
 Answer: a.
 Reference:
 DB-OP-02526
 New
 Higher

Question# 084
 K/A 000068 2.4.25
 Answer: b.
 Reference:
 DB-OP-02519
 New
 Fundamental

Question# 089
 K/A 061 2.4.22
 Answer: a.
 Reference:
 36838
 DB-OP-02000, Rev 23
 Specific Rule 4
 New
 Fundamental

Question# 085
 K/A BW/A01 2.1.1
 Answer: a.
 Reference:
 37680
 NOP-CC-2003, Engineering Changes
 Bank
 Fundamental

Question# 090
 K/A 000007 2.2.12
 Answer: a.
 Reference:
 20-6-08
 Bank
 Higher

Question# 086
 K/A 005A203
 Answer: d.
 Reference:
 DB-OP-02527, Loss of Decay Heat
 Removal, Revision 12
 23-4-03
 Bank
 Higher

Question# 091
 K/A 000008A201
 Answer: c.
 Reference:
 DB-OP-02513
 New
 Higher

Question# 092
 K/A 000038A210
 Answer: d.
 Reference:
 DB-OP-02000, Section 8.0
 New
 Higher

Question# 096
 K/A 2.2.19
 Answer: d.
 Reference:
 NOP-WM-1001
 Modified
 Fundamental

Question# 093
 K/A 034A203
 Answer: a.
 Reference:
 DB-OP-00030, Fuel Handling
 Operations
 NEW
 HIGHER

Question# 097
 K/A 000005A203
 Answer: a.
 Reference:
 13-6-21
 Bank
 Higher

Question# 094
 K/A 2.1.20
 Answer: deleted.
 Reference:
 DB-OP-01003, Step 6.1.5
 Bank
 Fundamental

Question# 098
 K/A 2.3.6
 Answer: c.
 Reference:
 New
 Higher

Question# 095
 K/A 000054 2.3.14
 Answer: c.
 Reference:
 DB-OP-02000, Attachment 5
 New
 Higher

Question# 099
 K/A 2.4.6
 Answer: c.
 Reference:
 DB-OP-02000, Specific Rule 3
 78726
 Bank
 Higher

Question# 100
 K/A 2.4.30
 Answer: a.
 Reference:
 OPS-GOP-603-04K (38755, ORQ-2061)
 All methods to CANS
 BANK
 FUNDAMENTAL

***** END OF EXAMINATION *****

001	d.	021	c.	041	d.	061	a.	081	d.
002	d.	022	d.	042	c.	062	b.	082	c.
003	a.	023	a.	043	b.	063	d.	083	a.
004	d.	024	d.	044	d.	064	c.	084	b.
005	d.	025	b.	045	c.	065	c.	085	a.
006	d.	026	d.	046	b.	066	d.	086	d.
007	c.	027	a.	047	d.	067	d.	087	d.
008	a.	028	b.	048	b.	068	d.	088	a.
009	d.	029	c.	049	c.	069	a.	089	a.
010	c.	030	b.	050	a.	070	a.	090	a.
011	a.	031	c.	051	b.	071	b.	091	c.
012	b.	032	d.	052	d.	072	b.	092	d.
013	b.	033	b.	053	d.	073	a.	093	a.
014	b.	034	b.	054	d.	074	a.	094	deleted
015	a.	035	b.	055	b.	075	a.	095	c.
016	c.	036	c.	056	c.	076	c.	096	d.
017	d.	037	c.	057	d.	077	a.	097	a.
018	b.	038	b.	058	d.	078	d.	098	c.
019	b.	039	d.	059	b.	079	c.	099	c.
020	b.	040	b.	060	d.	080	c.	100	a.

***** END OF EXAMINATION *****