U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-254/OL-95-01 Licenses No. DPR-29; DPR-30

Licensee: Commonwealth Edison

Facility Name: Quad Cities Nuclear Power Station

Examination Administered At: Quad Cities Nuclear Power Station
Cordova, IL

Examination Conducted: March 20-24, 1995

Examiner: _____ 4/21/95
D. E. Roth Date

Chief Examiner: _____ 4/21/95
R. L. Doornbos Date

Approved By: _____ 4/21/95
T. M. Burdick, Chief Date
Operator Licensing

Examination Summary

Examinations were administered during the week of March 20, 1995 No. 50-254/OL-95-01).
Initial Reactor Operator (RO) license examinations were given to two candidates, Senior Reactor Operator (SRO) examinations were given to five candidates, and one Senior Reactor Operator Limited to Fuel Handling (LSRO) examination was given.

Initial Licensed Operator Examination Results:

All individuals taking the Initial Licensed Operator Examinations passed all portions of their respective examinations and were issued licenses.

The following is a summary of the strengths and weaknesses noted during the performance of this examination.

STRENGTHS and WEAKNESSES:

Strengths:

- Pre-examination review of the RO/SRO initial license written examination. (Section 3.a)

- Operator communications during Job Performance Measures (JPMs) and dynamic simulator examinations. (Section 3.b and c)

Weaknesses:

- Entry condition knowledge for QGA 300, Secondary Containment Control. (Section 3.a)
- Understanding of Diesel Generator (DG) expected system response during specific alignment situations. (Section 3.b)
- Unfamiliarity with the fuse control procedure. (Sections 3)
- Lack or ineffectiveness of Out-of-Service training. (Section 3.b)
- Plant procedures in error. (Section 4)

REPORT DETAILS

1. Examiners

*R. L. Doornbos Chief Examiner, NRC, Region III
D. E. Roth, Examiner, NRC, Region III
B. Ferguson, Examiner, Pacific Northwest Laboratory (PNL)

2. Persons Contacted

Facility

*L. W. Pearce, Station Manager
*D. Cook, Operations Manager
*R. Svaleson, Shift Operations Supervisor
*J. Kudalis, Support Services Director
*A. Chernick, Training Supervisor
*R. Armitage, Acting Station Training Manager
*D. Bowman, Acting Operations Training Supervisor
*D. Haas, Examination Coordinator
*K. Rack, BWR Operations Training Supervisor
*R. Schroeder, Instructor
*K. Moreland, Instructor

U. S. Nuclear Regulatory Commission (NRC)

*R. Walton, Resident Inspector, Quad Cities Site
*M. J. Jordan, Chief, Operator Licensing Section 1

*Denotes those present at the exit meeting on March 24, 1995.

3. Training Program Observations

With the exception of the use and contents of QCAP 400-13, Control and Maintenance of Fuses and the Fuse List Procedure, the trainers appeared to be knowledgeable of plant procedures, practices, and the examination process. They were courteous throughout the examination process, put in extra time when necessary, and maintained a professional attitude at all times.

The following information is provided for evaluation by the licensee via their SAT based training program. No response is required.

a. Written Examination

1. The initial RO and SRO license examinations were each standard 100 question examinations as prescribed by NUREG 1021, Revision 7. The LSRO examination was a standard 50 question examination as prescribed by NUREG 1021, Revision 7. The LSRO examination was altered as a result of the facility's post examination review. See Enclosure 2 for post exam comments and resolutions.

Strengths:

The pre exam review for the RO and SRO written examination was noted as a strength. The effectiveness of the review was demonstrated during administration of the examination where there were only three requests for question clarification and after the examination there were no post exam comments.

Weaknesses:

Grading of the initial RO and SRO written examinations revealed three generic weaknesses. Candidates failed to correctly answer questions concerning:

a. QGA 300, Secondary Containment Control, entry conditions (all SROs and 1 RO);

b. the Rod Worth Minimizer (both ROs);

c. CRD response to generic system component failure (all SROs and 1 RO).

It is understood that the small sample size may not give a true indication of training weaknesses. However, these weaknesses are reported because of the number of candidates missing each question. Due to the small sample size of the LSRO exam (one candidate) no analysis for training weaknesses was performed.

b. Job Performance Measures (JPMs)

The JPMs performed in the simulator/control room were;

1. Reject water to Main Condenser.
2. Re-pressurize the MSL.
3. Read LPRM outputs using back-panel indications.
4. Relieve torus pressure through SBGT.
5. Perform CRD exercise. (Alternate path)
6. Control reactor pressure using RCIC.
7. Perform Diesel Generator monthly load test.
8. Use HPCI to restore and maintain reactor water level during small break LOCA. (Alternate path)
9. Remove RHR Loop "B" from Shutdown Cooling and place in standby.
10. Change-over feedwater regulator. (Alternate path)
11. Perform CRD insert and withdraw timing.
12. Roll the turbine.
13. Perform post-accident venting of primary containment through torus to SBGT.

The JPMs performed in the plant were:

1. Bypass RWCU isolation signals.
2. Shutdown EDG (alternate path)
3. Lock-up 'A' recirc MG scoop tube.
4. Respond to SRM Channel 24 withdraw failure.
5. Pull fuses to prevent ADS.
6. Perform Quarterly Test of CRHVAC RHR SW ISOL CK VLV.

Strengths:

Operators were familiar with component locations in the plant. They were able to rapidly proceed to equipment and simulate operation of the equipment as directed by procedures.

Three way communications during the administration of the JPMs were good in that they continued to follow established plant expectations.

Weaknesses:

Candidates and trainers were unfamiliar with the requirements of QCAP 400-13, CONTROL AND MAINTENANCE OF FUSES AND THE FUSE LIST PROCEDURE. One candidate was not aware of the existence of the procedure. While operators adequately completed the JPM associated with this procedure, it was evident that each was unfamiliar with its contents and the requirements associated with it.

Use of the "as found" checklist in QCOS 5750-4, QUARTERLY TEST OF CRHVAC RHR SW ISOL CK VLV. All three operators that performed this JPM failed to perform the "as found" checklist.

Understanding of Diesel Generator (DG) expected system response during specific alignment situations. During JPM questions, operators were asked to describe DG system response to specific alignment and malfunction conditions. Operators consistently had difficulty in determining the correct system response.

LSRO responsibility for the performance of Out-Of-Service (OOS) on specific RHR valves prior to the performance of refuel activities. Unfamiliarity with QCAP 230-4, Equipment Out of Service activities indicates a training weakness in this area due to a lack of or ineffectiveness of the OOS training provided to the LSRO. Additionally, other SRO candidates indicated that they had not had the latest OOS training on taking electrical breakers OOS.

c. Simulator Scenarios

Five scenarios were required to adequately evaluate the candidates' control room skills.

Scenario 1 included: 1) a reactivity manipulation (reduce reactor power using control rods), 2) a normal evolution (restore running emergency diesel generator to standby lineup), 3) a stuck control rod, 4) a failure of a drywell pressure indicator, 5) an upscale failure of the MSL "A" radiation indication, 6) failure of the lower end of recirc loop "A" resulting in a large break Loss of Coolant Accident (LOCA), 7) electrical grid instabilities resulting in a loss of off-site power, 8) failure of the 1/2 EDG to start, 9) failure of the electrical cross-ties thus preventing cross tying of electrical power to the alternate unit, and 10) a failure of the "C" ADS valve to open when required.

Scenario 2 included: 1) a reactivity manipulation (reduction in reactor power using control rods), 2) a normal evolution (perform QCOS 250-1, MSIV Closure Monthly Scram Sensor Functional Test for the "D" main steam line, 3) a failure (high) of the turbine building area radiation monitor Channel 23, 4) a runaway condition on the "A" recirc pump which resulted in fuel damage, 5) increasing rad levels result in an automatic reactor scram and a failure of one steam line to isolate, 6) Turbine blade damage causes condenser cracks and tube leaks, 7) SBGT system fails to develop sufficient flow, and the standby train doesn't auto-start, 8) increasing radiation levels force an emergency depressurization of the reactor.

Scenario 3 included: 1) a normal evolution (Shift Reactor Feed Pumps), 2) a reactivity manipulation (raise reactor power using recirc flow), 3) EHC Regulator Failure To 0% (750 psig), 4) MSIVs fail to isolate on low reactor pressure (825 psig) in RUN, 5) Medium severity ATWS, and 6) SBLC Pump 'A' Trip; SBLC Pump 'B' Disch Line Relief Fails Open.

Scenario 4 included: 1) a normal evolution (Performance of QCOS 1400-4, Monthly Core Spray Pump Operability Test), 2) (Recirc Loop Flow Transmitter Failure, 3) a reactivity manipulation (Power Reduction using control rods and recirc flow Due To High Coolant Activity), 4) HP FW Heater 1D2 Tube Rupture, 5) Gross Fuel Failure, 6) Scram Discharge Volume North Rupture Scram air header leak, and 7) Two ADS Valves Fail To Open During RPV Blowdown

Scenario 5 included: 1) a normal evolution (Main Generator Synchronization), 2) a reactivity manipulation (Power Increase using control rods), 3) ECCS Instrument Failure Downscale, 4) RHR Instrument Failure, 5) Reactor Building Ventilation Fails To Isolate, 6) 'B' Loop Drywell Spray Valve Fails To Open, 7) Drywell To Torus Vacuum Breaker Failure, and 8) RPV Blowdown Due To Exceeding Pressure Suppression Pressure.

Strengths:

Communications between crew members were good. Operators typically performed three way communications throughout the dynamic simulator scenarios.

Weaknesses:

No generic weaknesses were identified during scenario performance.

4. Procedural Problems:

During the development, validation and conduct of the examination several procedural problems were noted. The following details are provided:

a. QCOP 300-18, CONTROL ROD DRIVE EXERCISING, Rev. 0, was unclear.

Step F.1.b discussed rod withdrawal and used the term, "easily," but did not define "easily." Step B.2 discussed "high" stall flows, but did not define "high," and Step B.3 discussed "fast" withdraw times, but did not define "fast."

b. The QARP 1000-series safe shutdown procedures required actions of personnel not qualified to perform the actions. The procedures had a typographical error.

Actions to be taken by the Center Desk NSO (CD NSO) were discussed in QARP 1000-T6, Rev. 2, in QARP 1000-1, Rev. 8, step D.13, and in the caution under step D.11.d of QARP 1000-T9, Rev. 3. For a period of time the CD position was not occupied by an NSO qualified person. (Note that recent changes have returned an NSO to the Center Desk position.)

In the caution in QARP 1000-T7, Rev. 3, "stop" was used when "step" was intended.

c. C&ID-13, contained an irrelevant reference; Reference 4 did not apply to the steam flow signal.

d. QCOS 300-1, CRD EXERCISE, Rev. 2, was performed during the Job Performance Measures (JPM) portion of the examination. One of the control rods to be exercised was uncoupled from its drive mechanism as part of the JPM. Trainers validating the JPM did not execute QCOS 300-1 as written. Also, when they detected the uncoupled control rod and switched to QCOA 300-5, UNCOUPLED CONTROL ROD, they determined QCOA 300-5 could not be performed as written.

The CRD exercise procedure (QCOS 300-1) directed that rods be inserted a step, returned to their original position and, if the rod was at notch 48, a continuous withdraw signal was to be applied to the rod to verify mechanical coupling. The apparent operations

practice for a control rod originally at notch 48 was to insert it to notch 46, then apply a continuous withdraw signal from notch 46 without stopping at notch 48. Personnel were not executing the procedure as it was written. (Note that the use of a continuous withdraw signal from step 46 was also contrary to precaution F.1, which stated that rod movement should be restricted to single notch due to the potential for fuel failure resulting from excessive rod movement.)

When trainers detected the uncoupled control rod during validation of the JPM (using QCOS 300-1), they correctly made a transition to QCOA 300-3, UNCOUPLED CONTROL ROD. QCOA 300-3, Rev. 2, Step D.1.a. directed personnel to insert the uncoupled control rod to notch 46. Because the rod was in an overtravel condition (due to the uncoupling) the Rod Worth Minimizer (RWM) prevented control rod movement and trainers were unable to insert the uncoupled control rod mechanism as required by the procedure. They were unable to execute the procedure as it was written.

e. QCOP 300-5, CRD INSERT AND WITHDRAW TIMING, Rev. 0, appeared inadequate.

The procedure did not provide guidance on what to do if adjustments failed to place the CRD insert and withdraw times within tolerance. Discussions with the Training Manager and the Operators Shift Supervisor concluded that there were generic conditions under which timing adjustments would be inadequate, so procedural guidance may be appropriate.

f. QCOP 250-1, PRESSURIZING THE MAIN STEAM LINES, Rev. 1, was numbered incorrectly.

Steps F.2, F.5.c, and F.11.c were noted as missing in the procedure and in the associated Quad Cities JPM (LS-009-II). Investigation showed that all needed steps were present, but they were numbered wrong.

g. QCAP 400-13, CONTROL AND MAINTENANCE OF FUSES AND THE FUSE LIST PROCEDURE, Rev. 0, assumed discrepancies were caused by inaccurate design documents, had unclear guidance, and had a typographical error.

The procedure required that a blown fuse be replaced with an identical fuse even if the blown fuse was not correct per the Design Documents (DD). This practice returns the circuit to the same configuration under which the fuse blew in the first place and may leave the circuit vulnerable to fail again. (Note that it is understood that paperwork is initiated to resolve the discrepancy between the failed fuse and that shown on the DD.)

The examiners noted that the guidance on fuse orientation in Attachment C of QCOP 4\0-13 was not useful for fuses similar to

those in the SRM/IRM Drive Control Panel 2201-14. If the intent of the guidance is to proved examples of acceptable fuse orientation for all fuses, further guidance is required.

Page three had a typographical error; it said step H.1 was continued instead of step D.1.

h. QFP 100-6, REFUELING SHIFT CHECKS, Rev. 6, was apparently not routinely completed as-written.

The procedure required visual certification of the correct operation of the emergency brake on the main hoist per SIL No. 530. Observations and discussion indicated the verification was typically done audibly due to the difficulty of the visual verification.

i. QAP 300-1, OPERATIONS DEPARTMENT ORGANIZATION, Rev. 25, incorrectly listed information as available in QCAP 100-1.

Step C.8.e. of QAP 300-1 said that the Fuel Handling Foreman reports to an Operating Engineer; step C.2.a. said the Operating Engineer's responsibilities are given in QCAP 100-1. However, QCAP 100-1 Rev. 1 listed no "Operating Engineer."

j. QCAN 901-3 D-1, TURBINE BLDG AREA RADIATION MONITOR CHANNEL HIGH, Rev. 0, implied surveys of areas with failed ARMs were optional while QCOP 1800-4, BYPASSING AREA RADIATION MONITORS BY DISCONNECTING ALARM/SENSOR CABLES, Rev. 1, required the surveys.

The QCAN stated in step B.3.b.(3) that rad protection was to survey an area with a failed ARM "if necessary." QCOP 1800-4 required twice-per-shift surveys for areas with disconnected ARMs. The procedures appeared to provide conflicting guidance.

k. QFP 150-1, REFUELING PLATFORM PREPARATION FOR OPERATION, Rev. 5 was apparently not routinely completed as-written.

The procedure required the telephone cable on the platform to be disconnected from the floor receptacle during movements between fuel pools. Platform operators apparently disregard this step as a longer phone cord has been installed making the step unnecessary.

5. Operations, Security, Rad Protection, Other

a. Strengths:

Operations, Security, and Rad protection provided good assistance to the examiners, during both the prep and exam week. They were all professional in their dealings with the examination team. Contractor access to the plant and NRC examiner access to the refuel floor was efficiently done by both the radiation protection and security groups.

b. Weaknesses:

No weaknesses were noted in this area during the administration of the examination.

6. Simulator Observations:

a. No simulator discrepancies were identified.

7. Exit Meeting

a. An exit meeting was conducted with Quad Cities management and training representatives at the Quad Cities training offices on March 24, 1995. Those attending are listed in Section 2 of this report. The following items were discussed during the exit meeting:

- Strengths and weaknesses noted in this report.
- Procedure problems identified in this report.

b. No proprietary information was disclosed during the examination and no licensing commitments were made.

Enclosure 2

FACILITY COMMENTS and RESOLUTION of FACILITY COMMENTS
FOR THE LSRO EXAMINATION

Question #22:

Given the following conditions:

Mode Switch is in STARTUP
Refuel floor radiation level is 20 mr/hr
Platform is directly over the spent fuel pool
Main Hoist is unloaded
Aux hoist is unloaded and is NOT full up
Rod 03-17 is fully withdrawn

Which one of the following is true?

a. Control rod withdrawal is prevented.

b. Main hoist upward motion is prevented.

c. 125 Ton Crane upward motion is prevented.

d. Platform movement over the core is prevented.

Answer: c

Reference:
QFP 150-3, Rev 13, Section E.11, page 4
K/A 234000K403 (3.4/4.2)

Facility Comment: When the mode switch is in STARTUP, refueling platform motion over the core is restricted by Reverse Motion Stop #2, making distractor D also correct. This is referenced in QFP 100-1, the Master Refueling Procedure Revision 28, under the limitations and actions section item E.1.c(2).(a), and in Technical Specification 3.10.A.2.a.

This information is also referenced in LSRO lesson plan "Refueling Interlocks" on page 6 of 23, lesson item II.C.2.b.1.

FACILITY RECOMMENDATION:

Accept answer c or d as the correct answer.

NRC Resolution: Comment accepted. This question had no comments during the facility pre-exam review.

Enclosure 4

SIMULATION FACILITY REPORT

Facility Licensee: Quad Cities Nuclear Power Station

Facility Docket No.: 50-254, 50-265

Operating Tests Administered on: March 20, 1995

This form is to be used only to report observations. These observations do not constitute audit or inspection findings and are not, without further verification and review, indicative of noncompliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information that may be used in future evaluations. No licensee action is required in response to these observations.

While conducting the simulator portion of the operating tests, the following items were observed (if none, so state):

ITEM	DESCRIPTION
	None noted.

U. S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC EXAMINATION
REACTOR OPERATOR LICENSE
REGION 3

CANDIDATE'S NAME: MASTER EXAMINATION

FACILITY: Quad-Cities 1 & 2

REACTOR TYPE: BWR-GE3

DATE ADMINISTERED: 95/03/24

INSTRUCTIONS TO CANDIDATE:

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. Points for each question are indicated in parentheses after the question. The passing grade requires a final grade of at least 80%. Examination papers will be picked up four (4) hours after the examination starts.

	TEST VALUE	CANDIDATE'S SCORE	
	100.00		
TOTALS	_____	_____	_____ FINAL GRADE

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

_____
Candidate's Signature

A N S W E R S H E E T

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

MULTIPLE CHOICE

001	a	b	c	d	___	023	a	b	c	d	___
002	a	b	c	d	___	024	a	b	c	d	___
003	a	b	c	d	___	025	a	b	c	d	___
004	a	b	c	d	___	026	a	b	c	d	___
005	a	b	c	d	___	027	a	b	c	d	___
006	a	b	c	d	___	028	a	b	c	d	___
007	a	b	c	d	___	029	a	b	c	d	___
008	a	b	c	d	___	030	a	b	c	d	___
009	a	b	c	d	___	031	a	b	c	d	___
010	a	b	c	d	___	032	a	b	c	d	___
011	a	b	c	d	___	033	a	b	c	d	___
012	a	b	c	d	___	034	a	b	c	d	___
013	a	b	c	d	___	035	a	b	c	d	___
014	a	b	c	d	___	036	a	b	c	d	___
015	a	b	c	d	___	037	a	b	c	d	___
016	a	b	c	d	___	038	a	b	c	d	___
017	a	b	c	d	___	039	a	b	c	d	___
018	a	b	c	d	___	040	a	b	c	d	___
019	a	b	c	d	___	041	a	b	c	d	___
020	a	b	c	d	___	042	a	b	c	d	___
021	a	b	c	d	___	043	a	b	c	d	___
022	a	b	c	d	___	044	a	b	c	d	___
						045	a	b	c	d	___

A N S W E R S H E E T

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

046	a	b	c	d	___	069	a	b	c	d	___
047	a	b	c	d	___	070	a	b	c	d	___
048	a	b	c	d	___	071	a	b	c	d	___
049	a	b	c	d	___	072	a	b	c	d	___
050	a	b	c	d	___	073	a	b	c	d	___
051	a	b	c	d	___	074	a	b	c	d	___
052	a	b	c	d	___	075	a	b	c	d	___
053	a	b	c	d	___	076	a	b	c	d	___
054	a	b	c	d	___	077	a	b	c	d	___
055	a	b	c	d	___	078	a	b	c	d	___
056	a	b	c	d	___	079	a	b	c	d	___
057	a	b	c	d	___	080	a	b	c	d	___
058	a	b	c	d	___	081	a	b	c	d	___
059	a	b	c	d	___	082	a	b	c	d	___
060	a	b	c	d	___	083	a	b	c	d	___
061	a	b	c	d	___	084	a	b	c	d	___
062	a	b	c	d	___	085	a	b	c	d	___
063	a	b	c	d	___	086	a	b	c	d	___
064	a	b	c	d	___	087	a	b	c	d	___
065	a	b	c	d	___	088	a	b	c	d	___
066	a	b	c	d	___	089	a	b	c	d	___
067	a	b	c	d	___	090	a	b	c	d	___
068	a	b	c	d	___	091	a	b	c	d	___

A N S W E R S H E E T

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

092	a	b	c	d	___
093	a	b	c	d	___
094	a	b	c	d	___
095	a	b	c	d	___
096	a	b	c	d	___
097	a	b	c	d	___
098	a	b	c	d	___
099	a	b	c	d	___
100	a	b	c	d	___

(********** END OF EXAMINATION **********)

Policies and Guidelines
for Taking NRC Written Examinations

1. Cheating on the examination will result in a denial of your application and could result in more severe penalties.

2. 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.

3. To pass the examination, you must achieve a grade of 80 percent or greater.

4. The point value for each question is indicated in parentheses after the question number.

5. There is a time limit of 4 hours for completing the examination.

6. Use only black ink or dark pencil to ensure legible copies.

7. Print your name in the blank provided on the examination cover sheet and the answer sheet.

8. Mark your answers on the answer sheet provided and do not leave any question blank.

9. If the intent of a question is unclear, ask questions of the examiner only.

10. 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.

11. When you complete the examination, assemble a package including the examination questions, examination aids, and answer sheets and give it to the examiner or proctor. Remember to sign the statement on the examination cover sheet.

12. After you have turned in your examination, leave the examination area as defined by the examiner.

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QUESTION: 001 (1.00)

WHICH ONE (1) of the following is the PRIMARY reason that the discharge valve on the non-operating CRD pump is maintained in the CLOSED position?

a. To prevent runout of the operating CRD pump.

b. To prevent reverse flow through the non-operating CRD pump.

c. To prevent reactor pressure from pressurizing the CRD suction piping.

d. To ensure that the non-operating CRD pump can be started within 10 minutes following a trip of the inservice CRD pump.

QUESTION: 002 (1.00)

The exhaust ports of both scram pilot valves on a control rod have become plugged.

WHICH ONE (1) of the following explains how this will affect the ability of the control rod to scram?

a. The control rod WILL insert normally on a scram signal since the backup scram valves will energize to vent air off the scram inlet and outlet valves.

b. The control rod WILL NOT insert on a scram signal OR an Alternate Rod Insertion (ARI) signal.

c. The control rod WILL NOT insert on a scram signal but WILL insert via the ARI System.

d. The control rod WILL insert on a scram signal but the scram time will be slower.

QUESTION: 003 (1.00)

After completing a control rod withdrawal to raise reactor power to 50% on Unit 2, the NSO de-selects the control rod by placing the Rod Select Power Switch in the "OFF" position. WHICH ONE (1) of the following actions should occur?

a. A "TIMER MALF ROD SELECT BLOCK" will be initiated.

b. A control rod "INSERT BLOCK" will be initiated.

c. The "ROD OUT PERMIT" light will extinguish.

d. A "SELECT ERROR" alarm will be received.

QUESTION: 004 (1.00)

A reactor startup is in progress. Reactor power is approximately 1%. When a coupling check of a control rod was being performed the following annunciator alarms were received.

- ROD OVTRVL
- ROD DRIFT

WHICH ONE (1) of the following actions should be taken?

a. Insert the control rod drive mechanism until a visible response is seen on the nuclear instrumentation to recouple the control rod.

b. Insert the control rod drive mechanism one notch to recouple the control rod.

c. Repeat the coupling check to verify the rod is uncoupled.

d. Insert the control rod drive to position 00.

QUESTION: 005 (1.00)

The NSO has noticed that the CRD Hydraulic System cooling water header pressure is 78 psid. WHICH ONE (1) of the following describes the effect that this would have on the operation of control rods?

a. Control rods may drift inward.

b. Control rods may drift outward.

c. Control rod scram times will be slightly slower than normal.

d. The CRD stop piston seals will experience increased wear during movement.

QUESTION: 006 (1.00)

The NSO has placed the Rod Worth Minimizer in the "RWM POWER REDUCTION" mode to facilitate rapid power reduction. WHICH ONE (1) of the following describes the operation of the RWM while in this mode?

a. ALL RWM rod blocks associated with the selected group are bypassed.

b. ALL RWM insert and withdraw rod blocks are bypassed for all control rods.

c. A withdraw rod block will be generated if the operator attempts to withdraw a control rod unless the rod is at an unknown position, indicated by '??'.

d. An insert rod block will be generated if the operator attempts to insert a control rod and the previous array control rods are NOT fully inserted.

QUESTION: 007 (1.00)

A reactor shutdown is in progress with reactor power at approximately 12%. During control rod insertion the first control rod in the selected group is driven in one notch beyond its target position.

WHICH ONE (1) of the following describes the plant response to this condition? (Assume that the control rod remains selected and that there were NO previous insert or withdraw errors).

a. Insert blocks will be applied to ALL control rods; the control rod may be withdrawn to its proper position.

b. Insert AND withdraw blocks will be applied to the selected control rod ONLY; the RWM must be bypassed to return the rod to its proper position.

c. An insert block will be applied to ALL rods except for those in the current sequence step; the control rod may be withdrawn to its proper position.

d. Insert blocks ONLY will be applied to ALL control rods in the current sequence step; Insert AND Withdraw blocks will be applied to ALL other control rods.

QUESTION: 008 (1.00)

The plant is operating at power when a slight increase in drywell leakage rate was observed. Indications on the A recirc pump are as follows:

- Inboard No. 1 seal pressure 990 psig and steady
- Outboard No. 2 seal pressure 785 psig and rising

WHICH ONE (1) of the following has occurred?

a. A failure of the No. 1 seal.

b. A failure of the No. 2 seal.

c. Plugging of the No. 1 internal restricting orifice.

d. Plugging of the No. 2 internal restricting orifice.

QUESTION: 009 (1.00)

The reactor is operating at 50% rated core flow when the nozzles of a jet pump fail. WHICH ONE (1) of the following statements describes how this failure will affect plant operations?

a. Flow through the operable jet pumps will decrease slightly.

b. Indicated core flow will be higher than actual core flow.

c. The failed jet pump differential pressure will go to zero.

d. Actual core flow will increase slightly.

QUESTION: 010 (1.00)

Unit 2 is operating at 30% power. Preparations are being made to start the 'B' reactor recirculation pump. WHICH ONE (1) of the following describes a limitation associated with starting the reactor recirc pump?

a. The discharge valve on the idle recirc pump must be at least 90% open prior to starting the pump.

b. The recirc pump must not be started until 15 minutes after two successive bumpings of the motor to check pump rotation.

c. The recirc pump must be tripped if the discharge valve is NOT full open within two minutes following the first valve open signal.

d. The recirc pump must be tripped if a flow response OR dual valve position indication on the discharge valve is not received within two minutes following the first valve open signal.

QUESTION: 011 (1.00)

Unit 1 plant conditions are as follows:

- Reactor power is 100%.
- Both recirc pumps are operating at 90% speed in "INDIVIDUAL MANUAL" control.
- The Master Controller is selected to "MANUAL" with its potentiometer set to MINIMUM.

WHICH ONE (1) of the following would occur if the 'A' recirc pump Individual Manual/Auto (M/A) Transfer Station was placed to "AUTO"? (Assume NO operator action is taken after placing the M/A Station in "AUTO".)

The 'A' recirc pump would run back to ...

a. 32% speed.

b. 45% speed.

c. 63% speed.

d. 94% speed.

QUESTION: 012 (1.00)

The Unit 2 NSO is increasing reactor power from 70% to 85% by increasing recirc pump speed (using the Master Controller in "MANUAL") when the following annunciator alarms.

- RECIRC MG A SPEED SIGNAL FAILURE

The 'A' recirc .....

a. pump should runback to 32% speed.

b. pump should run back to 63% speed.

c. pump flow control will transfer to "INDIVIDUAL MANUAL".

d. MG set scoop tube should lockup, and reset is prevented from the control room.

QUESTION: 013 (1.00)

Unit 2 was operating at approximately 65% power when the 'A' Recirc pump tripped. Shortly after the recirc pump tripped a LOCA occurred. Plant conditions are as follows.

- Reactor power: 0%
- Drywell pressure: 9 psig and rising
- Reactor pressure: 900 psig and decreasing
- 'A' recirc loop riser pressure: 895 psig and decreasing
- 'B' recirc loop riser pressure: 890 psig and decreasing

WHICH ONE (1) of the following actions should occur?

a. The 'A' recirc pump discharge valve will close.

b. The selected recirc loop equalizer valve will open.

c. The 'A' LPCI injection valves will open when reactor pressure reaches 500 psig.

d. The 'B' LPCI injection valves will open when reactor pressure reaches 325 psig.

QUESTION: 014 (1.00)

Unit 1 is lined up for Shutdown Cooling using the 'A' RHR loop. Reactor water level is in the normal band.

Which one of the following actions will occur if reactor water level lowers to 0 inches?

a. Shutdown Cooling suction valves (1-1001-43A and 43B) will close.

b. LPCI inboard injection valve (1-1001-29A) will close.

c. Main steam line drains (MO-220-1 and 2) will close.

d. Recirc sample valves (AO-220-44 and 45) will close.

QUESTION: 015 (1.00)

The Reactor Water Cleanup System (RWCU) is aligned for reject to the main condenser. The following conditions exist on the RWCU system.

- Non-Regen Hx Outlet Temp.	130 degs. F
- MO 1201-80	Throttled OPEN
- Filter-Demin d/p	25 psid
- FCV-1239 downstream pressure	145 psig
- RWCU Pump bearing Cooling water temp.	120 degs. F

WHICH ONE (1) of the following actions is expected to occur?

a. The RWCU containment isolation valves (MO 1201-[illegible] 1201-5, and 1201-80) should close.

b. The RWCU filter-demin outlet isolation valve (AO-1279-14A/B) should close.

c. The reject flow control valve (FCV-1239) should close.

d. The RWCU pump should trip.

QUESTION: 016 (1.00)

Unit 2 is shutdown with shutdown cooling in operation. Both reactor recirc pumps are shutdown. WHICH ONE (1) of the following would indicate that water temperature stratification was occurring in the vessel?

a. A reactor flange to shell temperature differential of less than 140 degrees F.

b. An INCREASE in reactor pressure from 0 psig to 10 psig during steady state operations.

c. A DECREASE in reactor vessel metal temperature after throttling closed the RHR heat exchanger bypass valve.

d. An INCREASE in reactor vessel metal temperature following a reduction in reactor water level from 40 inches to 30 inches.

QUESTION: 017 (1.00)

WHICH ONE (1) of the following explains why the CCST suction valves (1001-42A,B,C,D) are locked closed on the RHR loop that is used for shutdown cooling?

a. To ensure that the inventory in the CCST is available for RCIC/HPCI operations on the other Unit.

b. To prevent inadvertent injection of CCST water into the reactor vessel.

c. To prevent inadvertent draining of the CCST to the suppression pool.

d. To prevent draining the reactor vessel to the CCST.

QUESTION: 018 (1.00)

The HPCI system has automatically initiated on high drywell pressure. Reactor water level is 0 inches and slowly decreasing. The following conditions exist on the HPCI system.

- Turbine speed	3700 rpm
- HPCI pump suction press.	10 psig
- HPCI flow	4600 gpm
- HPCI exhaust pressure	fluctuating 10 to 45 psig
- Torus level	+ 2 inches
- CCST level	1.5 feet
- HPCI suction source	CCST

WHICH ONE (1) of the following actions should be taken concerning HPCI system operation?

a. Trip the turbine AND isolate the system due to low pump suction pressure.

b. Trip the turbine since the turbine exhaust line has ruptured.

c. Shift the HPCI system suction to the suppression pool.

d. Increase system flow using the flow controller.

QUESTION: 019 (1.00)

The Unit 1 HPCI System is in a standby lineup when the following annunciator alarms.

- HPCI SIGNAL CONVERTER TROUBLE

WHICH ONE (1) of the following is the cause of the alarm?

a. A loss of MCC 19-1.

b. A loss of Turbine Building bus 1B-1.

c. A loss of Turbine Building bus 1A-1.

d. A loss of 120 VAC from the Essential Service Bus.

QUESTION: 020 (1.00)

WHICH ONE (1) of the following conditions will meet the permissive needed to allow the Automatic Depressurization System (ADS) to sense Core Spray system availability before depressurizing the vessel?

a. At least ONE Core Spray pump running with a discharge pressure of 130 psig.

b. The inboard AND outboard Core Spray injection valves in ONE Core Spray loop open.

c. BOTH Core Spray pumps running with the discharge pressure in each loop at 50 psig.

d. The inboard AND outboard Core Spray injection valves in BOTH Core Spray loops open.

QUESTION: 021 (1.00)

An ATWS has occurred with the 'A' SBLC pump out of service (the electrical supply breaker is open with the control power fuses removed). In response to the ATWS the NSO places the SBLC initiation keylock switch to the "SYS 1 & 2" position. WHICH ONE (1) of the following explains how the SBLC system should respond?

a. ONLY the 'A' injection valve should fire.

b. ONLY the 'B' injection valve should fire.

c. NEITHER injection valve should fire.

d. BOTH injection valves should fire.

QUESTION: 022 (1.00)

A reactor shutdown is in progress. The reactor mode switch has just been placed in STARTUP. WHICH ONE (1) of the following RPS scram signals is still operable?

a. APRM downscale

b. APRM High Flux (Flow Biased)

c. Main steam line high radiation

d. Turbine EHC control fluid low pressure

QUESTION: 023 (1.00)

Unit 1 is operating at 40% power when the main power supply breaker to the 'A' RPS MG Set trips. WHICH ONE (1) of the following describes the RPS system response to this event?

a. The RPS MG Set flywheel will maintain proper generator output until the automatic bus transfer to reserve power occurs at 110 VAC. No interruption of RPS Bus power will occur.

b. The RPS MG Set flywheel will maintain proper generator output until the automatic bus transfer to reserve power occurs at 57 Hz. A half scram will occur during the transfer.

c. The associated Electrical Protection Assemblies (EPAs) will open and a half scram will occur.

d. The associated EPAs will remain shut but a half scram will still occur.

QUESTION: 024 (1.00)

The plant is operating at approximately 35% reactor power when the "SELECT BLOCK" light illuminates on the 901-5 Panel Apron Section.

WHICH ONE (1) of the following conditions would cause this light to illuminate?

a. A loss of power to the Rod Position Information System (RPIS).

b. The selected control rod has a withdraw block applied to it.

c. The selected control rod is fully withdrawn.

d. A control rod drift is detected.

QUESTION: 025 (1.00)

WHICH ONE (1) of the following conditions will cause the Rod Block Monitor (RBM) System to use the alternate APRM signal?

a. The normal reference APRM fails downscale.

b. Taking the normal reference APRM mode switch out of OPERATE.

c. Bypassing the normal reference APRM with the joystick on the 901-5 panel.

d. The normal reference APRM Flow Converter reads 10% less than the alternate reference APRM Flow Converter.

QUESTION: 026 (1.00)

A TIP trace is being run in the automatic mode. The TIP detector is at the TOP CORE LIMIT when 120 VAC power is lost to the TIP System. While troubleshooting the loss of electrical power, drywell radiation levels reach 110 R/hr. WHICH ONE (1) of the following automatic or manual actions should occur?

a. The TIP detector will shift to the reverse mode and withdraw to its in-shield position; the associated ball valve will NOT close; the shear valve will automatically fire to isolate the system.

b. The TIP detector will shift to the reverse mode and withdraw to its in-shield position; the associated ball valve will then close.

c. The TIP detector will remain in its present position; the shear valve has to be manually fired to isolate the system.

d. The TIP detector will remain in its present position; the shear valve CANNOT fire due to a loss of electrical power.

QUESTION: 027 (1.00)

A reactor startup is in progress. IRMs are beginning to come on scale. WHICH ONE (1) of the following describes when the heating range has been entered and sensible heat is being added in the reactor?

a. As soon as ALL IRMs are on scale.

b. When IRMs are on range 7.

c. When IRMs are on range 5.

d. When IRMs are on range 3.

QUESTION: 028 (1.00)

The nuclear instrumentation is aligned as follows:

- The SRM/IRM DETECTOR POSITION display switch was in the selected condition.
- The individual SRM and IRM SELECT switches were in the selected condition.

A spurious reactor scram from 80% reactor power has occurred. The NSO RESETS the scram thirty (30) seconds after the scram signal was received.

WHICH ONE (1) of the following describes the expected positions of the SRM and IRM detectors five (5) minutes following the scram signal? (Assume that NO OPERATOR ACTION associated with the SRMs/IRMs has been taken).

a. All SRM and IRM detectors are fully withdrawn.

b. All SRM and IRM detectors are fully inserted into the core.

c. All SRM and IRM detectors are partially inserted into the core.

d. All SRMs are fully withdrawn; All IRMs are partially inserted into the core.

QUESTION: 029 (1.00)

A reactor startup is in progress on Unit 2 following refueling. All shorting links have been removed. Control rods are being withdrawn to criticality. The SRM period meters indicate the following:

- Channel 21 18 seconds
- Channel 22 25 seconds
- Channel 23 15 seconds
- Channel 24 15 seconds

WHICH ONE (1) of the following alarms and/or trip functions should have occurred?

a. SRM short period alarm ONLY

b. SRM short period alarm AND SRM rod block

c. SRM short period alarm AND SRM half-scram signal

d. SRM short period alarm AND SRM full scram signal

QUESTION: 030 (1.00)

During a power increase on Unit 1, using recirc flow, the following annunciator alarms.

- APRM FLOW REF OFF NORM

Investigation reveals that one of the flow converters is reading upscale. WHICH ONE (1) of the following is the consequence of this failure?

a. An APRM INOP half scram occurs.

b. The individual recirc loop flow controllers shift to MANUAL.

c. The APRM Hi Hi flow biased trip setpoints are non-conservative.

d. The affected APRMs automatically shift to the other flow converter.

QUESTION: 031 (1.00)

The relationship between actual reactor vessel water level inside the shroud compared to indicated water level, as power is DECREASED from 100% to 0% is represented by a water level inside the shroud that will.....

a. increase until it is approximately the same as indicated level.

b. decrease until it is approximately the same as indicated level.

c. increase until it is approximately 7 inches above indicated level.

d. increase until it is approximately 7 inches less than indicated level.

QUESTION: 032 (1.00)

RCIC has automatically initiated. Shortly after initiation the system tripped on low pump suction pressure during a shift in the suction source. Reactor water level is 0 inches and steady. WHICH ONE (1) of the following describes how RCIC injection is reinitiated? (Assume that the low pump suction pressure has cleared).

The RCIC System will restart automatically ...

a. WITHOUT any operator action.

b. as soon as the operator resets the trip in the control room.

c. when reactor water level drops to -59 inches WITHOUT any other operator action.

d. when reactor water level reaches -59 inches ONLY IF the operator has reset the trip from the control room.

QUESTION: 033 (1.00)

WHICH ONE (1) of the following explains why operation of the RCIC turbine below 2200 rpm should be avoided?

a. Cavitation may occur in the RCIC pump.

b. RCIC turbine speed oscillations may occur.

c. Water hammer may occur in the steam supply piping.

d. The RCIC flow control valve will not operate correctly.

QUESTION: 034 (1.00)

Thirty seconds into a plant transient the following annunciator is received.

- AUTO BLOWDN TIMER START

WHICH ONE (1) of the following will reset the 110 second timer?

a. Drywell pressure decrease to 1.5 psig.

b. The Core Spray and RHR pumps are shutdown.

c. Reactor water level increase to -40 inches.

d. ADS control switches are placed in the CLOSE position.

QUESTION: 035 (1.00)

The RHR System has been placed in torus cooling following a LOCA. WHICH ONE (1) of the following describes the operational restrictions while in this lineup?

a. The LPCI injection mode of RHR is INOPERABLE.

b. Torus cooling should be secured if drywell pressure drops to less than 2.5 psig.

c. RHR service water pressure should be maintained slightly below RHR system pressure.

d. RHR pump discharge pressure should be kept above 100 psig to prevent pump runout.

QUESTION: 036 (1.00)

Unit 1 is preparing to de-inert the Primary Containment using the Reactor Building Ventilation System. The procedure cautions the Operator to NOT open the "DW OR TORUS PRG VLV" (AO 1-1601-22) until drywell pressure is approximately zero psig.

WHICH ONE (1) of the following explains the reason for this precaution?

a. To prevent an inadvertent release of contaminated atmosphere to the Reactor Building.

b. To prevent an inadvertent isolation of the Reactor Building Ventilation system.

c. To prevent cycling the Torus-to-Reactor Building vacuum breakers.

d. To prevent tripping the DW/Torus purge fans.

QUESTION: 037 (1.00)

While operating at 100% rated power, a valid high steam line flow signal is sensed in the 'D' main steam line.

WHICH ONE (1) of the following is the expected response of the Main Steam Line Isolation Valves (MSIVs)?

a. All MSIVs will close.

b. Only the MSIVs in main steam line 'D' will close.

c. Only the inboard MSIV in main steam line 'D' will close.

d. Only the inboard MSIVs in all four main steam lines will close.

QUESTION: 038 (1.00)

Unit 1 has experienced a LOCA. Plant conditions are as follows.

- Drywell pressure 8.0 psig and slowly increasing
- Reactor water level -30 inches and slowly decreasing
- Reactor pressure 600 psig and slowly decreasing

WHICH ONE (1) of the following describes the operation of the TORUS TEST OR SPRAY VLV (MO1-1001-34A/B) and the TORUS SPRAY SHUTOFF VLV (MO1-1001-36A/B)?

The TORUS TEST OR SPRAY VLV (MO1-1001-34A/B) and the TORUS SPRAY SHUTOFF VLV (MO1-1001-36A/B) ...

a. CAN be opened after placing the RHR Loop A/B CNMT CLG 2/3 LVL AND ECCS INIT BYP SWITCH 18 to the MANUAL OVERRIDE position.

b. CAN be opened after placing the RHR Loop A/B CONTAINMENT CLG PERMISSIVE SWITCH 17 to the ON position.

c. CAN be opened normally without bypassing any interlocks.

d. CANNOT be opened under the given conditions.

QUESTION: 039 (1.00)

Drywell Spray is in service on Unit 2. Proper RHR system discharge pressure is maintained while operating in this lineup by throttling the.....

a. TORUS H2O TEST VLV (MO2-1001-36A/B).

b. INBD SPRAY ISOL VLV (MO2-1001-26A/B).

c. OUTBD SPRAY ISOL VLV (MO2-1001-23A/B).

d. TORUS TEST OR SPRAY VLV (MO2-1001-34A/B).

QUESTION: 040 (1.00)

Unit 1 is recovering from a scram due to a spurious Group I isolation. The cause of the isolation has been repaired and preparations are being made to reopen the MSIVs. Plant conditions are as follows:

- Reactor power 1%
- Reactor pressure 825 psig and steady
- Turbine throttle pressure 675 psig steady
- Outboard MSIVs Open
- Inboard MSIVs Closed

WHICH ONE (1) of the following explains why consideration should be given to opening two inboard MSIVs simultaneously under the given conditions?

a. To minimize erosion of the MSIV valve seats.

b. To avoid a possible reactor scram from bypass valve cycling.

c. To avoid a possible Group 1 isolation due to main steam line low pressure.

d. To avoid a possible Group 1 isolation due to main steam line high flow rates.

QUESTION: 041 (1.00)

WHICH ONE (1) of the following is an indication of a correctly installed fuel cell?

a. The bail handles on the fuel bundles should point towards the center of the cell.

b. The orientation boss on the fuel assembly handle points to the inside of the fuel cell.

c. The bundle serial number should appear to be right-side up from the outside of the cell.

d. The channel fastener assemblies should be oriented towards the outside of the fuel cell.

QUESTION: 042 (1.00)

Refueling is in progress with the reactor mode switch in the REFUEL position. The refueling crew has just completed placing a spent fuel bundle into the spent fuel pool and was traversing towards the core when the refueling bridge stopped movement. The mast was full up.

WHICH ONE (1) of the following would have caused the refueling bridge to stop?

a. The main grapple was NOT raised to the "NORMAL UP" position.

b. A control rod was withdrawn from the control room.

c. The reactor mode switch was placed in STARTUP.

d. A "SLACK CABLE" signal was received.

QUESTION: 043 (1.00)

A reactor scram and Group 1 isolation has occurred. ERV 203-3B has opened to relieve reactor pressure. WHICH ONE (1) of the following explains the operation of ERV 203-3B for subsequent automatic reopenings?

ERV 203-3B will ...

a. reopen immediately if reactor pressure is above its lift setpoint.

b. be time delayed before reopening to ensure that the ERV has properly reseated.

c. be time delayed before reopening to allow the tailpipe vacuum breakers to cycle properly.

d. be time delayed before reopening to allow cycling of the other ERVs to prevent uneven heating of the suppression pool.

QUESTION: 044 (1.00)

Unit 1 is operating at 50% reactor power and 50% rated flow with the 'A' EHC Pressure Regulator in control set at 920 psig. The 'B' EHC Pressure Regulator is the backup regulator.

WHICH ONE (1) of the following explains how the plant would respond if the 'A' EHC Pressure Regulator fails downscale? (Assume that no operator action is taken).

The turbine control valves would.....

a. open until turbine throttle pressure stabilized at 900 psig.

b. open until turbine throttle pressure stabilized at 910 psig.

c. close until turbine throttle pressure stabilized at 930 psig.

d. remain as-is with turbine throttle pressure stabilized at 920 psig.

QUESTION: 045 (1.00)

Unit 1 is operating at 30% power when a Condensate/ Condensate Booster Pump trips on overcurrent. WHICH ONE (1) of the following actions is expected to occur as a result of this pump trip?

a. The standby condensate/condensate booster pump will auto start ONLY if reactor feedwater pump suction pressure drops to less than 145 psig.

b. The running reactor feedwater pump will immediately trip if suction pressure drops below 165 psig.

c. The standby condensate/condensate booster pump will IMMEDIATELY auto start.

d. The Feedwater Regulating Valve (FRV) will lock up in its present position.

QUESTION: 046 (1.00)

Unit 1 is in the process of starting up. Preparations are being made to start the first reactor feed pump. The following conditions exist:

- Reactor feed pump suction pressure 130 psig
- Bearing lube oil pressure 12 psig
- Reactor feed pump ventilation Shutdown
- Reactor feed pump discharge valve Closed

WHICH ONE (1) of the following explains how the associated reactor feed pump will respond when the operator attempts a start with the given conditions?

a. The reactor feed pump will NOT start because suction pressure is too low.

b. The reactor feed pump will NOT start because ventilation is shutdown.

c. The reactor feed pump WILL start but then trip since the discharge valve is closed.

d. The reactor feed pump WILL start but then trip since bearing lube oil pressure is too low.

QUESTION: 047 (1.00)

Unit 2 was operating at 40% power with the 'A' FWRV off line and isolated when a reactor scram occurred. WHICH ONE (1) of the following describes how reactor water level will be controlled?

With no operator action the 'B' FWRV will.....

a. cycle to maintain reactor water level at +15 inches.

b. automatically position to maintain reactor water level at approximately +30 inches.

c. leakby causing level to increase to +48 inches at which point the reactor feed pumps will trip.

d. fully close and the Low Flow Controller will automatically maintain reactor water level at approximately +25 inches.

QUESTION: 048 (1.00)

A loss of the normal power supply to the Unit 1 Essential Service System (ESS) UPS has occurred. WHICH ONE (1) of the following should begin supplying power to the ESS bus?

a. Bus 18

b. 125 VDC

c. MCC 19-1

d. 250 VDC MCC-1

QUESTION: 049 (1.00)

Unit 1 has received the following annunciator alarm:

- 4KV BUS 14-1 VOLTAGE DEGRADED

All other plant conditions are normal. WHICH ONE (1) of the following describes the expected plant response to this condition?

a. Unit 1 Diesel Generator will immediately start and load to bus 14-1.

b. Unit 1 Diesel Generator will immediately start but will not load to the bus unless voltage is completely lost.

c. Unit 1 Diesel Generator will start immediately and then, after a five minute time delay, will load to bus 14-1.

d. Unit 1 Diesel Generator will start after a five minute time delay and, once it has started, will load to bus 14-1.

QUESTION: 050 (1.00)

The Unit 2 Diesel Generator has started due to a loss of off site power. Shortly after starting, the diesel engine automatically shutdown and the generator output breaker opened. Diesel Generator operating conditions just prior to the trip were as follows:

- Lube oil pressure: 19 psig
- Engine cooling water outlet temperature: 210 degrees F
- Generator load current: 550 amps
- Generator voltage: 4200 volts

WHICH ONE (1) of the following signals caused the diesel generator to trip?

a. Hot engine trip.

b. Low lube oil pressure.

c. Generator overcurrent.

d. Differential overcurrent.

QUESTION: 051 (1.00)

The 'A' Air Handling Unit (AHU) in the Control Room Ventilation System is in service. WHICH ONE (1) of the following explains how the system will respond if smoke is detected in the Control Room return air duct of the 'A' AHU?

a. The 'A' AHU will automatically shift to the smoke purge mode.

b. The 'A' AHU will automatically shift to the recirculation mode.

c. The 'A' AHU will shutdown and the 'B' AHU will automatically start in the smoke purge mode.

d. The 'A' AHU will shutdown; the 'B' AHU will has to be manually started in the smoke purge mode.

QUESTION: 052 (1.00)

Reactor power is being raised on Unit 1, with recirc pumps, when a jet pump failure occurs. Following the failure the NSO notices sustained sharp positive and negative swings on the SRM period meters. WHICH ONE (1) of the following IMMEDIATE actions should be taken?

a. Reduce power by inserting control rods in reverse sequence using the Reactor Manual Control System

b. Enter QCOA 400-2, "Core Instabilities" to determine if instabilities exist.

c. Reduce reactor power by lowering recirc flow.

d. Manually scram the reactor.

QUESTION: 053 (1.00)

WHICH ONE (1) of the following explains why the operating recirc pump speed is reduced to less than 78% following the trip of a recirc pump?

a. To ensure that the recirc pump has adequate net positive suction head.

b. To minimize the possibility of jet pump riser brace failure.

c. To prevent flow reversal through the idle jet pumps.

d. To prevent core instabilities from occurring.

QUESTION: 054 (1.00)

Unit 1 is operating at 100% reactor power with two circulating water pumps running when the following annunciator alarms.

- CIRC WATER PUMP AUTO TRIP

WHICH ONE (1) of the following actions should be taken?

a. Immediately insert a manual reactor scram.

b. Attempt to start the standby Circulating Water Pump.

c. Attempt to restart the tripped Circulating Water pump.

d. Reduce recirc pump speed to minimum then manually scram the reactor.

QUESTION: 055 (1.00)

WHICH ONE (1) of the following conditions would cause a loss of condenser vacuum on Unit 1?

a. The differential pressure across the traveling screens exceeds 6 psid.

b. The level in the condenser pit reaches 5 feet.

c. A complete loss of Bus 14.

d. A complete loss of Bus 16.

QUESTION: 056 (1.00)

Unit 1 is at 80% power when a fault causes a loss of Transformer 12. WHICH ONE (1) of the following describes the response of the electrical distribution system to this failure? (Assume that the fault is NOT a bus fault).

a. Bus 12 and Bus 13 will remain deenergized until the operator reenergizes them manually from Transformer 11.

b. Bus 12 and 13 will remain deenergized until the fault in Transformer 12 is cleared.

c. The Diesel Generators will start and reenergize Bus 12 and Bus 13.

d. Bus 12 and Bus 13 will automatically transfer to Transformer 11.

QUESTION: 057 (1.00)

A Station Blackout has occurred. WHICH ONE (1) of the following explains how torus temperature is monitored?

a. By monitoring the temperature indicators in the auxiliary electric room.

b. Take grab samples of torus water and measure the temperature.

c. By monitoring the indications on the 901-30 Panel recorder.

d. By monitoring the indications on the 901-4 Panel recorder.

QUESTION: 058 (1.00)

Unit 2 has experienced a total loss of 125 VDC. WHICH ONE (1) of the following describes how plant operations are affected by this loss of power?

a. The running RWCU pumps will trip.

b. The main turbine will automatically trip.

c. The ADS valves will NOT open automatically.

d. The RCIC system will NOT automatically initiate.

QUESTION: 059 (1.00)

Unit 1 is operating at 30% reactor power when the following annunciator alarm is received.

- MOIST SEP 1A HIGH LEVEL

WHICH ONE (1) of the following will occur?

a. The main turbine will immediately trip and the reactor will scram.

b. The main turbine will immediately trip; the reactor will remain on line.

c. The main turbine will trip after a 15 second time delay and the reactor will scram.

d. The main turbine will trip after a 15 second time delay; the reactor will remain on line.

QUESTION: 060 (1.00)

Unit 2 was operating at 30% power when the main turbine tripped due to high vibration. While responding to the turbine trip the NSO noticed that turbine speed was not dropping even though the turbine stop valves were closed.

WHICH ONE (1) of the following actions should be taken?

a. Close the MSIVs.

b. Scram the reactor.

c. Trip the main generator.

d. Open the main turbine vacuum breaker.

QUESTION: 061 (1.00)

The Shift Engineer has determined that a reactor scram is needed. WHICH ONE (1) of the following actions should be taken, if time permits, before inserting the manual scram?

a. Start a second CRD pump.

b. Raise reactor water level.

c. Place torus cooling in service.

d. Open main turbine bypass valves to unload the main turbine.

QUESTION: 062 (1.00)

A transient on Unit 1 has resulted in reactor pressure slowly increasing. WHICH ONE (1) of the following operator actions should be taken to control reactor pressure in accordance with QCOA 201-3, "Reactor High Pressure"?

a. Manually open an ADS valve.

b. Reduce the EHC Load Limit setpoint.

c. Line up the RWCU System to reject to the main condenser.

d. Open the main turbine bypass valves using the bypass valve opening jack.

QUESTION: 063 (1.00)

Following a reactor water level transient, feedwater is under the control of the Runout Flow Controller. WHICH ONE (1) of the following describes how feedwater flow control is shifted back to the normal feedwater controller?

Normal feedwater flow control is automatically restored ...

a. as soon as feedwater flow decreases to less than 5.6 E6 lbm/hr.

b. as soon as feedwater flow decreases to less than 11.2 E6 lbm/hr.

c. when reactor water level increases to 21 inches.

d. when reactor water level lowers to 20 inches.

QUESTION: 064 (1.00)

The Unit 1 drywell is being vented through the SBGT in accordance with QCOP 1600-1 "DRYWELL PRESSURE RELIEF THROUGH SBGT". During the vent the NSO notices that drywell pressure is approaching torus pressure so he lines up to vent the torus. WHICH ONE (1) of the following explains why the torus is vented under these conditions?

a. To increase the vent flow rate.

b. To ensure that the drywell is not de-inerted.

c. To slow down the decrease in drywell pressure.

d. To prevent cycling of the torus-to-drywell vacuum breakers.

QUESTION: 065 (1.00)

Given that the reactor is at full power, WHICH ONE (1) of the following would NOT result in entry to QCOA 400-1, "REACTIVITY ADDITION"?

a. High Pressure Coolant Injection system injection into the core.

b. Reactor Feedwater pump trip.

c. Feedwater Heater trip.

d. Control Rod drop.

QUESTION: 066 (1.00)

A reactor scram has occurred on Unit 1. The Rod Worth minimizer has determined that six control rods DID NOT fully insert to position 00. Four rods are at position 02 and two rods are at position 04. All blue scram lights are illuminated. CRD Drive Water pressure is approximately 50 psid.

WHICH ONE (1) of the following actions should be taken?

a. Enter and execute QGA 101, RPV Control-ATWS.

b. Pull fuses to deenergize the scram solenoids.

c. Open the CRD drive water pressure control valve (MO 1-302-8) and attempt to insert rods using the CRD system.

d. Close the CRD charging water isolation valve (MO 1-301-25) and attempt to insert rods using the CRD system.

QUESTION: 067 (1.00)

A severe fire in the Auxiliary Electric Room and Control Room has resulted in a control room evacuation. NO IMMEDIATE ACTIONS have been performed for the evacuation. The Shift Engineer has directed use of the QARPs. WHICH ONE (1) of the following explains how reactor water level and pressure are controlled while placing the reactor in a safe shutdown condition from outside the Control Room?

a. Reactor feedwater pumps are used to maintain level; pressure is controlled by opening main steam relief valves.

b. HPCI is used to maintain level; pressure is controlled by opening main turbine bypass valves.

c. RCIC is used to maintain level; pressure is controlled by RCIC and main steam relief valves.

d. CRD is used to maintain level; pressure is controlled by opening main turbine bypass valves.

QUESTION: 068 (1.00)

WHICH ONE (1) of the following conditions will result in an automatic closure of AO 1-5406, OG DISCH TO STACK OR VENT after a 15 minute time delay?

a. SJAE Radiation Monitors 1 AND 2 reach their HIGH alarm setpoint.

b. One Main Steam Line Radiation Monitor reaches its HIGH-HIGH trip setpoint.

c. Both Reactor Building Ventilation System exhaust radiation monitors exceed their trip setpoint.

d. SJAE Radiation Monitor 1 reaches its HIGH-HIGH trip setpoint AND SJAE Radiation Monitor 2 fails downscale.

QUESTION: 069 (1.00)

During a LOCA and loss of off-site power it is important to ensure that at least one service water pump is running and supplying the RBCCW heat exchangers. WHICH ONE (1) of the following is the most important RBCCW heat load during these conditions?

a. Drywell coolers.

b. Fuel Pool heat exchangers.

c. Reactor recirculation pumps.

d. Non-regenerative heat exchanger.

QUESTION: 070 (1.00)

WHICH ONE (1) of the following explains why the main condenser will not be available as a heat sink following a loss of all Instrument Air?

a. The Off-gas System isolates.

b. The inboard MSIVs will fail closed.

c. The main turbine vacuum breaker fails open.

d. The hotwell level control valve fails open and floods up the condenser.

QUESTION: 071 (1.00)

A reactor startup is in progress on Unit 2. Reactor power is approximately 1% and reactor pressure is 725 psig. While withdrawing a control rod the running CRD pump trips and cannot be restarted. Attempts to start the second CRD pump were unsuccessful.

Based on the above conditions, when is a manual reactor scram required?

a. Immediately after identifying that the standby CRD pump would not start.

b. Immediately if reactor pressure drops to less than 700 psig.

c. As soon as the first accumulator trouble light comes on.

d. Whenever three accumulator trouble lights come on.

QUESTION: 072 (1.00)

A fuel element is being lowered into the reactor, the element is halfway inserted into the core when the SRM in that quadrant starts indicating a sustained upward trend in count rate. The other SRMs are also showing an increase in count rate. WHICH ONE (1) of the following describes the actions that should be taken.

a. Fully withdraw the fuel element from the reactor, actuate Standby liquid control, evacuate the entire reactor building.

b. Fully withdraw the fuel element from the reactor, scram the reactor, evacuate the refuel floor.

c. Stop all fuel movement, actuate Standby liquid control, evacuate the refuel floor.

d. Stop all fuel movement, scram the reactor, evacuate the entire reactor building.

QUESTION: 073 (1.00)

A loss of shutdown cooling has occurred. The SRO has directed that reactor water level be raised to perform a feed and bleed. WHICH ONE (1) of the following describes the limitation imposed on controlling reactor water level?

Reactor water level should be maintained ...

a. less than 40 inches to ensure the reactor feed pumps are available to inject.

b. less than 80 inches to prevent thermal stressing the shell flange.

c. at approximately 120 inches to ensure natural recirculation occurs.

d. less than 100 inches to prevent flooding the main steam lines.

QUESTION: 074 (1.00)

The following conditions exist on Unit 2.

- The unit is shutdown for a refueling outage.
- A fuel bundle is in the process of being lifted out of the reactor.
- A Fuel Pool Storage Low Level alarm has just been received.
- Fuel Pool water level has been confirmed to be decreasing.
- All fuel pool cooling pumps have tripped.

WHICH ONE (1) of the following IMMEDIATE OPERATOR ACTIONS should be taken?

a. Transport the fuel bundle to the Fuel Storage Rack then evacuate the refuel floor.

b. Lower the fuel bundle back to its original position in the vessel.

c. Line up to fill the fuel pool from the CCST or the Fire System.

d. Restart the fuel pool cooling pumps to fill the fuel pool.

QUESTION: 075 (1.00)

A large break LOCA has occurred on Unit 2. Plant conditions are as follows.

- Reactor water level 0 inches
- Reactor pressure 20 psig
- Drywell pressure 20 psig and rising slowly
- Torus pressure 20 psig and rising slowly
- Torus water level +31 feet

The SRO has directed the NSO to vent the primary containment to prevent exceeding the Primary Containment Pressure Limit. WHICH ONE (1) of the following explains why venting should be aligned to the drywell instead of the torus?

a. The torus water level is too high.

b. The drywell vent lineup has a larger flow rate capacity.

c. The Group II isolation signal prevents using the torus vent valves.

d. The differential pressure across the torus vent valves will prevent them from opening.

QUESTION: 076 (1.00)

An EHC failure has resulted in reactor pressure increasing to 1090 psig but the reactor DID NOT scram. In response to the failure to scram the NSO manually initiated the Alternate Rod Insertion (ARI) System. WHICH ONE (1) of the following describes the response of the reactor recirculation pumps to the ARI initiation? (Assume the hydraulic ATWS continues.)

a. The recirculation pumps will trip.

b. The recirculation pumps will run back to minimum speed.

c. The recirculation pumps will remain running at their present speed with the scoop tubes locked up.

d. The recirculation pumps will remain running at their present speed with the scoop tubes operational.

QUESTION: 077 (1.00)

The following conditions exist in the Unit 1 primary containment:

- Drywell temperature 171 degrees F
- Torus temperature 98 degrees F
- Torus water level -1 inch
- Drywell oxygen concentration 2.2%.

WHICH ONE (1) of the following explains why entry into QGA 200 "Primary Containment Control" is required.?

a. Drywell oxygen concentration is too high.

b. Drywell temperature is too high.

c. Torus temperature is too high.

d. Torus water level is too low.

QUESTION: 078 (1.00)

A steam leak has occurred outside the primary containment. The leak CANNOT be isolated. WHICH ONE (1) of the following reactor water level instruments is valid for ALL temperature and level conditions under these conditions?

a. Yarway Narrow Range

b. GEMAC Narrow Range

c. Yarway Wide Range

d. GEMAC Upper 400

QUESTION: 079 (1.00)

WHICH ONE (1) of the following explains why drywell sprays are secured if Torus water level exceeds 17 feet?

a. To prevent de-inerting the containment.

b. To prevent failure of the ADS valve tailpipes.

c. To ensure the torus to drywell vacuum breakers operate properly.

d. To prevent chugging from occurring in the drywell to torus downcomers.

QUESTION: 080 (1.00)

Unit 1 was operating at power when a loss of off-site power occurred. Shortly thereafter, the following annunciator alarmed.

- TORUS HIGH/LOW LEVEL

Investigation reveals that torus water level low. WHICH ONE (1) of the following should be used to add water to the torus?

a. Transfer water from the Main Condenser to the torus.

b. Transfer water from the CCST via the RCIC System.

c. Fill the torus from the Floor Drain Surge Tank.

d. Fill the torus from the Waste Collector Tank.

QUESTION: 081 (1.00)

WHICH ONE (1) of the following is NOT a viable mechanism of core cooling?

a. Spray Cooling

b. Core Submergence

c. Steam Cooling WITH injection

d. Steam Cooling WITHOUT injection

QUESTION: 082 (1.00)

WHICH ONE (1) of the following valid annunciator alarms would require entry into QGA 300, "SECONDARY CONTAINMENT CONTROL"?

a. TURB BLDG HI RADIATION

b. HPCI FLOOR DRN SUMP HIGH LEVEL

c. RWCU LEAK DETECTION "A" HIGH TEMP

d. RX BLDG VENT CHANNEL A OR B HI RADIATION

QUESTION: 083 (1.00)

A refueling is in progress. While raising a fuel bundle, both Refuel Floor Radiation Monitors alarm. WHICH ONE (1) of the following actions should occur?

a. A control rod block will be initiated.

b. Control Room ventilation will isolate.

c. The fuel prep machine will be deenergized.

d. Upward movement of the main refueling hoist will automatically stop.

QUESTION: 084 (1.00)

In preparing to vent the Unit 1 Primary Containment, the NSO has placed the "MASTER VENT MODE SWITCH" on the 901-5 panel to the "APCV" position. WHICH ONE (1) of the following valves will be interlocked CLOSED as a result of this action?

a. AO 1-1699-7, VENT TO RX BLDG

b. AO 1-1601-60, TORUS 18-INCH VENT

c. AO 1-1699-6, VENT TO MAIN CHIMNEY

d. AO 1-1601-24, VENT TO RX BLDG EXH SYS

QUESTION: 085 (1.00)

Plant conditions are as follows:

- A reactor scram has occurred on Unit 2 but several control rods have failed to fully insert.
- QGA 101, RPV CONTROL-ATWS has been entered.
- Reactor power is 2% and reactor shutdown cannot be guaranteed.
- The MSIVs are shut.

WHICH ONE (1) of the following explains why the reactor recirculation pumps are allowed to run under these conditions?

a. To promote decay heat removal.

b. To prevent thermal stratification from occurring.

c. To enhance boron mixing should boron injection be required.

d. To minimize the thermal stresses between the reactor vessel and the reactor recirculation loops.

QUESTION: 086 (1.00)

If the normal SBLC tank becomes unavailable, boron is injected into the reactor vessel when it is added to the..... ?

a. condensate demineralizer and injected with the feedwater system.

b. RWCU demineralizers and injected with the RWCU pumps.

c. SBLC test tank and injected with the SBLC pumps.

d. CCST and injected with HPCI or RCIC.

QUESTION: 087 (1.00)

WHICH ONE (1) of the following conditions would require entry into QGA 400, Radioactivity Release Control?

a. Off-site release rates have exceeded the Unusual Event emergency action level.

b. Off-site release rates have exceeded the Technical Specification LCO limit.

c. Off-site release rates have exceeded the Alert emergency action level.

d. Turbine building ventilation has isolated on high radiation.

QUESTION: 088 (1.00)

When conducting refueling operations, WHICH ONE (1) of the following is the normal daily whole body exposure limit? (Assume that no special permission to exceed normal limits has been given by the HPSS).

a. 50 mRem

b. 100 mRem

c. 200 mRem

d. 300 mRem

QUESTION: 089 (1.00)

During refueling operations, a plant operator reports the discovery of a Fuel Pool Cooling system manual valve out of position. WHICH ONE (1) of the following is the correct course of action?

a. Immediately correct the valve position and notify the Fuel Handling foreman.

b. Immediately correct the valve position and notify the Shift Engineer or Shift Foreman.

c. DO NOT alter the valve position until/unless permission is granted by the Fuel Handling foreman.

d. DO NOT alter the valve position until/unless permission is granted by the Shift Engineer or Shift Foreman.

QUESTION: 090 (1.00)

Unit 2 is operating at 100% power when the reactor pressure bar graph on SPDS turns cyan (light blue).

WHICH ONE (1) of the following describes the meaning of this indication?

a. Reactor pressure is greater than 1060 psig.

b. SPDS has determined that the reactor pressure signal is invalid.

c. Reactor pressure is reading full scale on the selected pressure instrument.

d. A low pressure isolation condition has been sensed but the isolation DID NOT occur.

QUESTION: 091 (1.00)

WHICH ONE (1) of the following explains how Personnel Protection Cards are used?

Personnel Protection Cards are attached to ...

a. Associate Out-of-Service Cards.

b. Master Out-of-Service Cards.

c. Do-Not-Operate/Caution Tags.

d. Equipment-In-Test Tags.

QUESTION: 092 (1.00)

The Unit 1 NSO is directing a surveillance from the control room. A step in the surveillance requires a non-licensed operator to operate a valve locally. WHICH ONE (1) of the following explains how this action is to be recorded on the surveillance record?

a. The non-licensed operator will initial a field copy of the surveillance which will be attached to the control room copy of the surveillance.

b. The non-licensed operator will come to the control room at the completion of the surveillance and initial all appropriate steps.

c. The NSO will enter the initials of the non-licensed operator and then enter his/her own initials.

d. The NSO will enter his/her initials and then the initials of the non-licensed operator.

QUESTION: 093 (1.00)

WHICH ONE (1) of the following describes how the position of a CLOSED Limitorque Operated Valve can be verified in accordance with QCAP 230-5, "Independent Verification"?

a. Utilize the mechanical position indicator.

b. Attempt to manually operate the valve in the CLOSED direction.

c. Manually operate the valve one turn in the OPEN direction then reclose the valve.

d. Verify that the clutch is disengaged by ensuring that the valve actuator handwheel rotates freely in both directions.

QUESTION: 094 (1.00)

WHICH ONE (1) of the following describes a situation where the use of an Interim Procedure (IP) would be acceptable?

a. A procedure is written for a one-time evolution.

b. A procedure is written for newly installed equipment and will become a permanent procedure once the testing is complete.

c. A change to a permanent procedure is required AND the change DOES NOT change the intent of the procedure.

d. Write an additional IP against the same procedure, resulting in both IPs being in effect.

QUESTION: 095 (1.00)

Given the following conditions:

- A member of the Operations department and an escorted visitor are in protective clothing for inspection of some contaminated equipment.
- A Site Emergency has just been declared.
- The Station Director has implemented a Plant Assembly.

WHICH ONE (1) of the following actions should be taken concerning these two personnel?

Both personnel should ...

a. remove all protective clothing at the step off area and proceed to the Operations Support Center.

b. don an additional set of gloves and shoe covers and proceed to the hallway between the RPA and the maintenance shop.

c. leave all protective clothing on and proceed to the Operations Support Center for surveys and possible decontamination.

d. proceed to the hallway between the RPA and the maintenance shop and remove gloves and shoe covers when proceeding through the step off area.

QUESTION: 096 (1.00)

A radiological survey has determine that an area in the plant would give an individual a dose of 1100 mrem in one hour at 30 cm. WHICH ONE (1) of the following radiological postings is required?

a. Locked High Radiation Area.

b. Caution, High Radiation Area.

c. Danger, Radioactive Material Area.

d. Grave Danger, Very High Radiation Area.

QUESTION: 097 (1.00)

WHICH ONE (1) of the following describes when "Short Duration Time Clocks" can be used to track entry into Technical Specification Limiting Conditions for Operations (LCOs)?

Whenever the LCO that is entered is expected to last a MAXIMUM of ...

a. less than 6 hours

b. 8 hours

c. 12 hours

d. 24 hours

QUESTION: 098 (1.00)

Refueling operations are in progress on Unit 2. WHICH ONE (1) of the following describes the requirements for maintaining communications between the control room and the refueling floor?

a. Direct communications are ONLY required when inserting a fuel bundle; any standard method of communication is acceptable.

b. The NSO must be on headsets, in communication with the SRO in charge of fuel handling, whenever fuel movements are in progress.

c. A Qualified Nuclear Engineer must be on headsets, in communication with the SRO in charge of fuel handling, whenever fuel movements are in progress.

d. Continuous communication must be maintained between the control room and the refuel floor by use of the control room speaker phone during reload and unload operations.

QUESTION: 099 (1.00)

WHICH ONE (1) of the following describes how Post Accident Monitoring instrumentation is identified in the control room?

a. A red dot is placed near the instrument.

b. A black dot is placed near the instrument.

c. The instrument label is written in yellow.

d. The instrument number is followed by an asterisk (*).

QUESTION: 100 (1.00)

WHICH ONE (1) of the following precautions must be met prior to racking out a 4160 volt breaker?

a. Additional personnel who are not wearing protective clothing must be at least two cubicles away.

b. The CLOSE fuses must be removed first followed by the TRIP fuses.

c. The person racking out the breaker must stand on a rubber mat.

d. The breaker Test Selector Switch must be in "TEST".

(********** END OF EXAMINATION **********)

ANSWER: 001 (1.00)

c.

REFERENCE:

1. QCOP 300-01, Rev. 2, Section F.4, Limitations and Actions (page 3).

K/A: 201001G010 [3.2/3.3]

201001G010 ..(KA's)

ANSWER: 002 (1.00)

b.

REFERENCE:

1. P&ID M-41, Sheet 1.
2. Facility Event.

K/A: 201001K405 [3.8/3.8]

201001K405 ..(KA's)

ANSWER: 003 (1.00)

c.

REFERENCE:

1. ILT 0281, Reactor Manual Control and RPIS, Rev. 3, LO 10 (page 29).
2. QCAN 902-5 A-7, Rev. 0.

K/A: 201002A301 [3.2/3.1]

201002A301 ..(KA's)

ANSWER: 004 (1.00)

d.

REFERENCE:

1. QCOA 300-3, Uncoupled Control Rod, Rev. 2, Immediate Operator Action C.1.b (page 1).

   K/A: 201003A202 [3.7/3.8]

201003A202 ..(KA's)

ANSWER: 005 (1.00)

a.

REFERENCE:

1. QCOA 300-6, Control Rod Drive Flow Control Valve Failure, Rev. 0, Caution Statement on page 3.

   K/A: 201003K601 [3.3/3.3]

201003K601 ..(KA's)

ANSWER: 006 (1.00)

c.

REFERENCE:

1. QCOP 207-1, RWM Operation, Rev. 1, Section F.11 (note on page 12).
2. LIC-207, Rod Worth Minimizer, Rev. 0, Section III.G.5.e, LO 11 (page 50).

   K/A: 201006K402 [3.5/3.5]

201006K402 ..(KA's)

ANSWER: 007 (1.00)

c.

REFERENCE:

1. LIC-207, Rod Worth Minimizer, Rev. 0, Section IV.B, LO 6 (page 56).
2. QCOP 207-1, RWM Operation, Rev. 1, Limitation and Actions Section E.1.b (page 2).

K/A: 201006K511 [3.2/3.3]

201006K511 ..(KA's)

ANSWER: 008 (1.00)

a.

REFERENCE:

1. QCOA 202-6, Recirculation Pump Seal Failure, Rev. 3, Symptoms Section, A.1 (page 1).
2. ILT 0202-1, Reactor Recirc System, Rev. 3, Section I.B.2.b (page 6), LO 3.

K/A: 202001A109 [3.3/3.3]

202001A109 ..(KA's)

ANSWER: 009 (1.00)

b.

REFERENCE:

1. ILT 0201-1, Reactor Vessel and Internals, Rev. 4, Section IV.D (page 30), LO 12.

K/A: 202001K301 [3.6/3.6]

202001K301 ..(KA's)

ANSWER: 010 (1.00)

d.

REFERENCE:

1. QCOP 202-2, Reactor Recirculation System Startup, Rev. 5, Limitations and Actions E.11.a (page 3).

K/A: 202001K602 [3.1/3.2]

202001G013 ..(KA's)

ANSWER: 011 (1.00)

b.

REFERENCE:

1. QCOP 202-3, Reactor Recirc System Flow Controller Operation, Rev. 1, Limitations and Actions E.6 (page 2).
2. ILT 202-1, Reactor Recirc System, Rev. 3, Section II.H (page 30), LO 6.

K/A: 202002A101 [3.2/3.2]

202002A101 ..(KA's)

ANSWER: 012 (1.00)

d.

REFERENCE:

1. QCAN 902-4 A-1, Rev. 0.
2. ILT 202-1, Reactor Recirc System, LO 11.

K/A: 202002A303 [3.1/3.0]

202002A303 ..(KA's)

ANSWER: 013 (1.00)

a.

REFERENCE:

1. ILT 1000, RHR System, Rev. 0, Section V.A.2.b (page 56,58), LO 8.

K/A: 203000K411 [4.0/4.0]

203000K411 ..(KA's)

ANSWER: 014 (1.00)

d.

REFERENCE:

1. ILT 1000, RHR System, Rev. 0, Section III.D.12.d (page 20) LO 12.
2. QCAP 200-10, Rev. 10, Attachment D (page 13).

K/A: 203000A402 [4.1/4.1]

203000A402 ..(KA's)

ANSWER: 015 (1.00)

c.

REFERENCE:

1. ILT 1200, RWCU, Rev. 3, Section II.H.4 (page 14), LO 6.
2. QCOP 1200-7, Rev 1, Limitation & Action, F.1.b, pg 2

K/A: 204000A303 [3.6/3.6]

204000A303 ..(KA's)

ANSWER: 016 (1.00)

b.

REFERENCE:

1. QCOP 1000-17, Shutdown Cooling, Reactor Temperature Trending, Rev. 3, Section G. Caution statement (page 2).

   K/A: 205000A106 [3.7/3.7]

205000A106 ..(KA's)

ANSWER: 017 (1.00)

d.

REFERENCE:

1. QCOP 1000-5, Shutdown Cooling Operation, Rev. 7 IP, Precautions Section D.6 (page 2).

   K/A: 205000G010 [3.2/3.3]

205000G010 ..(KA's)

ANSWER: 018 (1.00)

d.

REFERENCE:

1. QCOA 2300-1, HPCI Automatic Initiation, Rev. 3, Step D.9 and Caution before step 10 (page 4).

   K/A: 206000A206 [3.3/3.5]

206000A206 ..(KA's)

ANSWER: 019 (1.00)

d.

REFERENCE:

1. QCAN 901-3 H-9, HPCI Controller Signal Converter Output Failed, Probable Causes Section C.2, Rev. 1.
2. ILT 2300, HPCI, Rev. 3, Section V.C.3 (page 92), LO 7.

K/A: 206000K204 [2.5/2.7]

206000K204 ..(KA's)

ANSWER: 020 (1.00)

a.

REFERENCE:

1. QCAN 901-3 C-15, Auto blowdown Interlock Core Spray/RHR, Rev. 0.
2. Core Spray lesson plan, Rev. 0, Section IV.C (page 30), LO 8.
K/A: 209001K105 [3.7/3.7]

209001K105 ..(KA's)

ANSWER: 021 (1.00)

b.

REFERENCE:

1. ILT 1100, SBLC System. Rev. 1, Section V.c (page 22), LO 7.

K/A: 211000K202 [3.1/3.2]

211000K202 ..(KA's)

ANSWER: 022 (1.00)

c.

REFERENCE:

1. Technical Specification Table 3.1-2. (Tech Spec will be provided)
2. ILT 0500, RPS, Rev. 1, Appendix B, LO 9.

K/A: 212000K412 [3.9/4.1]

212000K412 ..(KA's)

ANSWER: 023 (1.00)

c.

REFERENCE:

1. ILT 0500, RPS, Rev. 1, Section II.A.1 and II.A.2 (page 6 and 8), LO 6 and 7.
2. QOA 7000-1, pg 6, E.2

K/A: 212000A201 [3.7/3.9]

212000A201 ..(KA's)

ANSWER: 024 (1.00)

a.

REFERENCE:

1. QCAN 902-5 G-5, Rod Position Indication Inoperable, Rev. 0.
2. ILT 0281, RMCS and RPIS, Section II.E.4, LO 12, pg 20 says 'red'

K/A: 214000K303 [3.1/3.2]

214000A302 ..(KA's)

ANSWER: 025 (1.00)

c.

REFERENCE:

1. ILT 0700-5, RBM System, Rev. 0, Section VI.2 (page 26), LO 12.

K/A: 215002A306 [2.6/2.6]

215002A306 ..(KA's)

ANSWER: 026 (1.00)

c.

REFERENCE:

1. QCOP 700-6, TIP, Rev. 0, Section D.4 (page 2).
2. ILT 700-6, TIP, Rev. 1, Section II.E (page 12), LO 6.

K/A: 215001A207 [3.4/3.7]

215001A207 ..(KA's)

ANSWER: 027 (1.00)

b.

REFERENCE:

1. QCOP 700-2, IRM Operation, Rev. 1, Discussion Section B.2 (page 1).
2. QCGP 1-1, Startup, Rev. 8, Section G.3.a Note (page 14).

K/A: 215003A301 [3.3/3.3]

215003A301 ..(KA's)

ANSWER: 028 (1.00)

c.

REFERENCE:

1. QCOP 700-2, IRM Operation, Rev. 1, Section E.3 (page 3).
2. ILT 700-1, SRM, Rev. 2, Section II.B.4.d (page 18), LO 6.

K/A: 215003A406 [3.0/2.9]

215003A406 ..(KA's)

ANSWER: 029 (1.00)

a.

REFERENCE:

1. QCAN 902-5 E-5, SRM Short Period, Rev. 1.
2. ILT 0700-1, SRM. Rev. 2, Section III.B.d (page 30), LO 9.

K/A: 215004A105 [3.6/3.8]

215004A105 ..(KA's)

ANSWER: 030 (1.00)

c.

REFERENCE:

1. QCAN 901-5 D-6, Flow Converter Reference Off Normal Rod Block, Rev. 0.

K/A: 215005K607 [3.2/3.3]

215005K607 ..(KA's)

ANSWER: 031 (1.00)

a.

REFERENCE:

1. ILT 0263, Reactor Vessel Instrumentation, Rev. 2, Section IV.B.3

   K/A: 216000K508 [3.1/3.2]

   216000K508 ..(KA's)

ANSWER: 032 (1.00)

d.

REFERENCE:

1. QCOA 1300-1, RCIC Turbine Trip/Isolation Recovery, Rev. 1, Caution before step D.3 (page 3).
2. ILT 1300, RCIC, Rev. 2, LO 12.

   K/A: 217000A202 [3.8/3.7]

   217000A202 ..(KA's)

ANSWER: 033 (1.00)

b.

REFERENCE:

1. QCOP 1300-2, RCIC System Manual Startup, Rev. 7, Precautions Section D.3 (page 1).
2. ILT 1300, RCIC, Rev. 2, Section II.C.3 (page 8), LO 6.

   K/A: 217000A401 [3.7/3.7]

   217000A401 ..(KA's)

ANSWER: 034 (1.00)

c.

REFERENCE:

1. QCAN 901(2)-3 B-13, Automatic Blowdown Timer Start, Rev. 0.
2. ILT 0202, ADS, Rev. 0, Section III.E.3.c (page 16), LO 3.

K/A: 218000K501 [3.8/3.8]

218000K501 ..(KA's)

ANSWER: 035 (1.00)

d.

REFERENCE:

1. QCOP 1000-30, Post-Accident RHR Operation, Rev. 2, Limitations and Actions Section E.10 (page 3).

K/A: 219000A408 [2.9/2.9]

219000A408 ..(KA's)

ANSWER: 036 (1.00)

a.

REFERENCE:

1. QCOP 1600-8, De-inerting the Primary Containment using the Reactor Building Ventilation System, Rev. 5, Precaution Section D.1 (page 1).

K/A: 223001G010 [3.2/3.6]

223001G010 ..(KA's)

ANSWER: 037 (1.00)

a.

REFERENCE:

1. ILT-0250, Main Steam, Rev. 0, Section VI.B.1.e (page 50), LO 18.

   K/A: 223002K101 [3.8/3.9]

   223002K101 ..(KA's)

ANSWER: 038 (1.00)

b.

REFERENCE:

1. QCOP 1000-30, Post-Accident RHR Operation, Rev. 2, Section F.1 (page 4).
2. ILT 1000, RHR, Rev. 0, Section III.D.11 (page 18 and 20), LO 12.

   K/A: 230000A215 [4.0/4.1]

   230000A215 ..(KA's)

ANSWER: 039 (1.00)

a.

REFERENCE:

1. QCOP 1000-30, Post-Accident RHR Operation, Rev. 2, Section F.5 (page 5).

   K/A: 226001A409 [2.8/2.7]

   226001A409 ..(KA's)

ANSWER: 040 (1.00)

d.

REFERENCE:

1. QCOP 250-1, Pressurizing the Main Steam Lines, Rev. 1, Caution before Step F.9, (page 3).

   K/A: 239001A109 [3.5/3.4]

   239001A109 ..(KA's)

ANSWER: 041 (1.00)

b.

REFERENCE:

1. QFP 100-1, Rev 28.

   K/A: 234000K505 [3.0/3.7]

   234000K505 ..(KA's)

ANSWER: 042 (1.00)

c.

REFERENCE:

1. ILT -REFU, Refueling, Rev. 2, Section III.B.4.b.2 (page 28).

   K/A: 234000K502 [3.1/3.7]

   234000K502 ..(KA's)

ANSWER: 043 (1.00)

c.

REFERENCE:

1. ILT 0203, ADS, Rev. 0, Section III.A.4 (page 6), LO 13.

   K/A: 239002A302 [4.3/4.3]

239002A302 ..(KA's)

ANSWER: 044 (1.00)

c.

REFERENCE:

1. ILT 5650-2, EHC Logic, Rev. 2, Section II.A.1 (page 10), LO 12.
2. QCOA 5650-1, Rev 1, B.2
   K/A: 241000K302 [4.2/4.3]

241000K302 ..(KA's)

ANSWER: 045 (1.00)

c.

REFERENCE:

1. QCAN 901(2)-H-11, Condensate Makeup Pumps Auto Trip
2. ILT 3200/3300, Feed and Condensate, Rev. 2, Section III.B.2.b (page 48), LO 9.

   K/A: 256000K401 [3.4/3.4]

256000K401 ..(KA's)

ANSWER: 046 (1.00)

b.

REFERENCE:

1. QCOP 3200-2, Startup of the First Reactor Feed Pump, Rev. 8, Section E.2.a (page 20).

   K/A: 259001G010 [3.2/3.3]

259001G010 ..(KA's)

ANSWER: 047 (1.00)

c.

REFERENCE:

1. ILT 0600, Reactor Water Level Control, Rev. 0, Section IV.B.3 (page 36), LO 6.
2. QCOP 600-3
   K/A: 259002A306 [3.0/3.0]

259002A306 ..(KA's)

ANSWER: 048 (1.00)

d.

REFERENCE:

1. ILT 6000-1, Electrical Distribution, Rev. 3, Section II.J.2.c.2 (page 38), LO 7.

   K/A: 262002K601 [2.7/2.9]

262002K601 ..(KA's)

ANSWER: 049 (1.00)

d.

REFERENCE:

1. QOA 900-8 G-12, 4KV BUS 14-1 VOLTAGE DEGRADED, Rev. 2.

   K/A: 262001A211 [3.2/3.6]

262001A211 ..(KA's)

ANSWER: 050 (1.00)

d.

REFERENCE:

1. ILT 6600, Emergency Diesel Generator, Rev. 3, Section III.C.2 (page 42), LO 9.
2. QCOA 6600-1; Rev 2, pg 7, E.1.b; Diesel Generator 1(2) Fails to Start
   K/A: 264000K402 [4.0/4.2]

264000K402 ..(KA's)

ANSWER: 051 (1.00)

a.

REFERENCE:

1. QCAN 2212-89 A-3, Rev. 0, Automatic Action A.1 (page 1).
   K/A: 288000A301 [3.8/3.8]

288000A301 ..(KA's)

ANSWER: 052 (1.00)

d.

REFERENCE:

1. QCOA 400-2, Core Instabilities, Rev o, Immediate Operator Action C.2 (page 1).

   K/A: 295001G010 [3.8/3.7]

295001G010 ..(KA's)

ANSWER: 053 (1.00)

b.

REFERENCE:

1. QCOA 202-4, Loss of Flow Single Pump, Rev. 3, Discussion Section E.4 (page 4).

   K/A: 295001K201 [3.6/3.7]

295001K201 ..(KA's)

ANSWER: 054 (1.00)

b.

REFERENCE:

1. QCAN 901-7 A-15, Circ Water Pump Auto Trip, Operator Actions B.1 (page 1).

   K/A: 295018G009 [3.5/3.3]

295018G009 ..(KA's)

ANSWER: 055 (1.00)

b.

REFERENCE:

1. QCAN 901-7 A-15, Circ Water Pump Auto Trip (page 1).
2. QCOA 4400-1, Rev 0, A.1, Loss of All Circulating Water Pumps
3. QOA 7000-1, Rev 17, 120 VAC Reactor Protection Bus Failure, pg 1, item 2.e
   K/A: 295002K208 [3.1/3.2]

295002K208 ..(KA's)

ANSWER: 056 (1.00)

d.

REFERENCE:

1. QOA 6100-1, Loss Of Transformer 12 During Power Operation, Rev. 7, Automatic Actions B.1 (page 1).

   K/A: 295003A103 [3.7/3.8]

295003A101 ..(KA's)

ANSWER: 057 (1.00)

b.

REFERENCE:

1. QOA 6100-4, Station Blackout, Rev. 10, Step D.4 (page 2).

   K/A: 295003K106 [3.8/4.0]

295003K106 ..(KA's)

ANSWER: 058 (1.00)

d.

REFERENCE:

1. QOA 6900-4, Total Loss of Unit 2 125 VDC, Rev. 9, Discussion Section E.2 (page 5).

   K/A: 295004A102 [3.8/4.1]

295004A102 ..(KA's)

ANSWER: 059 (1.00)

d.

REFERENCE:

1. QCAN 901-6 A-1, Moisture Separator 1A High Level, Rev. 0, Automatic Action A.1 (page 1).
2. QOA 5600-4, Loss of Turbine Generator, Rev. 6, Immediate Operator Action C.1 (page 1).

   K/A: 295005K204 [3.6/3.7]

295005K204 ..(KA's)

ANSWER: 060 (1.00)

c.

REFERENCE:

1. QOA 5600-4, Loss of Turbine Generator, Rev. 6, Immediate Operator Action C.3.a (page 1).

   K/A: 295005G010 [3.8/3.6]

295005G010 ..(KA's)

ANSWER: 061 (1.00)

b.

REFERENCE:

1. QCGP 2-3, Reactor Scram, Rev. 12, Procedure Step F.1.c (page 3).

   K/A: 295006A102 [3.9/3.8]

295006A102 ..(KA's)

ANSWER: 062 (1.00)

d.

REFERENCE:

1. QCOA 201-3, Reactor High Pressure, Rev. 0, Immediate Operator Action C.3.b (page 3),

   K/A: 295007A105 [3.7/3.8]

295007A105 ..(KA's)

ANSWER: 063 (1.00)

c.

REFERENCE:

1. ILT 0600, Reactor Water Level Control, Rev. 0, Section IV.B.2 (page 34 and 36), LO 9.
2. QCOA 201-9, Reactor Low Water Level, Rev. 1, Automatic Action B.3 (page 2).
3. QCOA 600-9, Rev 0, Main Feedpump Run Out, pg 1, B.3
   K/A: 295009K202 [3.9/3.9]

295009K202 ..(KA's)

ANSWER: 064 (1.00)

d.

REFERENCE:

1. QCOP 1600-1, Drywell Pressure Relief Through SBGT, Rev. 2, Precaution E.1 (page 3).
2. QCOP 1600-8, De-inerting of Primary Containment Through The Reactor Building Ventilation System, Rev. 5, Precaution D.2 (page 2).

K/A: 295010G007 [3.6/3.8]

295010G007 ..(KA's)

ANSWER: 065 (1.00)

b.

REFERENCE:

1. Quad Cities QCOA 400-1, E.1
2. KA 295014A203 [4.0/4.3]

295014A203 ..(KA's)

ANSWER: 066 (1.00)

d.

REFERENCE:

1. QCGP 2-3, Reactor Scram, Rev. 12, Step F.2.c.2 (page 4).

K/A: 295015A101 [3.8/3.9]

295015A101 ..(KA's)

ANSWER: 067 (1.00)

c.

REFERENCE:

1. QARP 800-1, Safe Shutdown Procedure E2, Rev. 7.

   K/A: 295016A202 [4.2/4.3]

   295016A202 ..(KA's)

ANSWER: 068 (1.00)

d.

REFERENCE:

1. QCOA 1700-4, Abnormal Off Gas Radiation, Rev. 0, Automatic Action B.1 (page 1).

   K/A: 295017K301 [3.6/3.9]

   295017K301 ..(KA's)

ANSWER: 069 (1.00)

a.

REFERENCE:

1. ILT 3900, Service Water System, Rev. 0, Section III.D.1 (page 8), Lo 13.

   K/A: 295018K101 [3.5/3.6]

   295018K101 ..(KA's)

ANSWER: 070 (1.00)

a.

REFERENCE:

1. QOA 4700-6, Total Loss of Instrument Air, Rev. 5, Immediate Operator Action C.8 (page 2).

   K/A: 295019K205 [3.4/3.4]

295019K205 ..(KA's)

ANSWER: 071 (1.00)

a.

REFERENCE:

1. QCOA 300-1, CRD Pump Failure, Rev. 0, Immediate Operator Action C.1 (page 1).

   K/A: 295022K301 [3.7/3.9]

295022K301 ..(KA's)

ANSWER: 072 (1.00)

d.

REFERENCE:

1. QCFHP 110-2, Rev 0, Item C, IMMEDIATE ACTIONS (page 2).

   K/A: 295023G010 [3.8/3.9]

295023G010 ..(KA's)

ANSWER: 073 (1.00)

d.

REFERENCE:

1. QCOA 1000-2, Loss of Shutdown Cooling, Rev. 4, Caution before step D.4.d (page 5).

   K/A: 295021A203 [3.5/3.5]

295021A203 ..(KA's)

ANSWER: 074 (1.00)

b.

REFERENCE:

1. QCOA 1900-1, Loss of Water Level in the Fuel Storage Pool or Reactor Cavity, Rev. 0, Immediate Operator Action C.1 (page 2).

   K/A: 295023G010 [3.8/3.9]

295023G010 ..(KA's)

ANSWER: 075 (1.00)

a.

REFERENCE:

1. Lesson Plan QGA 200, Primary Containment Control, Rev. 3, Section II.B.5.a.(4) (page 18).

   K/A: 295024K307 [3.5/4.0]

295024K307 ..(KA's)

ANSWER: 076 (1.00)

d.

REFERENCE:

1. ILT 0300, ARI, Rev. 1, Appendix A, Section D.3, LO 10.
   K/A: 295025K306 [4.2/4.4]

295025K306 ..(KA's)

ANSWER: 077 (1.00)

c.

REFERENCE:

1. QGA 200, Primary Containment Control, Entry Conditions.
   K/A: 295026G011 [4.4/4.6]

295026G011 ..(KA's)

ANSWER: 078 (1.00)

b.

REFERENCE:

1. QGA 200, Primary Containment Control, Detail QGA-D1.
   K/A: 295028A203 [3.7/3.9]

295028A203 ..(KA's)

ANSWER: 079 (1.00)

c.

REFERENCE:

1. Lesson Plan QGA 200, Primary Containment Control, Rev. 3, Section II.E.1.c.1.d (page 34).

   K/A: 295029K101 [3.4/3.7]

295029K101 ..(KA's)

ANSWER: 080 (1.00)

b.

REFERENCE:

1. QCOP 1600-12, Torus Normal Level Control, Fill and Drain Procedure Directory, Rev. 2.

   K/A: 295030A106 [3.4/3.4]

295030A106 ..(KA's)

ANSWER: 081 (1.00)

a.

REFERENCE:

1. Lesson Plan Introduction to QGAs, Rev. 3, Section II.C.1.a.5 (page 30), LO 6.

   K/A: 295031K101 [4.6/4.7]

295031K101 ..(KA's)

ANSWER: 082 (1.00)

c.

REFERENCE:

1. QCAN 901(2)-4 A-12, Rev. 0.

   K/A: 295032G011 [4.1/4.2]

   295032G011 ..(KA's)

ANSWER: 083 (1.00)

b.

REFERENCE:

1. QOA 1800-1, Area High Radiation, Rev. 1, Section B.1.c Automatic Actions (page 1).

   K/A: 295033K303 [3.8/3.9]

   295033K303 ..(KA's)

ANSWER: 084 (1.00)

a.

REFERENCE:

1. QCOP 1600-13, Post Accident Venting of the Primary Containment, Rev. 6, Section F.4 (page 6).

   K/A: 295038K203 [3.6/3.8]

   295038K203 ..(KA's)

ANSWER: 085 (1.00)

c.

REFERENCE:

1. Lesson Plan QGA 101, RPV Control-ATWS, Rev. 5, Section II.D.4.b (page 52).

   K/A: 295037K202 [4.0/4.2]

295037K202 ..(KA's)

ANSWER: 086 (1.00)

b.

REFERENCE:

1. QCOP 1200-10, Injection of Boron Using the Reactor Water Cleanup System, Rev. 4, G.4.g.8, pg 7.

   K/A: 295037K213 [3.4/4.1]

295037K213 ..(KA's)

ANSWER: 087 (1.00)

c.

REFERENCE:

1. QGA 400, Radioactivity Release Control, Entry Condition.

   K/A: 295038G011 [4.2/4.5]

295038G011 ..(KA's)

ANSWER: 088 (1.00)

d.

REFERENCE:

1. QCAP 630-6, Rev. 2, item D.2.a.(1), (page 3).
   K/A: 294001K103 [3.3/3.8]

294001K103 ..(KA's)

ANSWER: 089 (1.00)

d.

REFERENCE:

1. QAP 300-18, Rev. 6, item 9 (page 1).
   K/A: 294001K101 [3.7/3.7]

294001K101 ..(KA's)

ANSWER: 090 (1.00)

b.

REFERENCE:

1. ILT 9900-1, PCS/SPDS, Rev. 1 Section II.B.3.e.4 (page 32).
   K/A: 294001A115 [3.2/3.4]

294001A115 ..(KA's)

ANSWER: 091 (1.00)

b.

REFERENCE:

1. QCAP 230-4, Rev. 5, Section C.3 (page 2).
2. QAP 300-13, Rev. 20, Section C.3.b (page 2).

K/A: 294001K102 [3.9/4.5]

294001K102 ..(KA's)

ANSWER: 092 (1.00)

c.

REFERENCE:

1. QCAP 211-2, Rev. 0, Section D.12 (page 4).

K/A: 294001A106 [3.4/3.6]

294001A106 ..(KA's)

ANSWER: 093 (1.00)

a.

REFERENCE:

1. QCAP 230-5, Rev. 1, Section E.5.c and E.6.e (page 6 and 12).

K/A: 294001K101 [3.7/3.7]

294001K101 ..(KA's)

ANSWER: 094 (1.00)

a.

REFERENCE:

1. QCAP 1100-5, Rev. 5, Section B (page 1).
   K/A: 294001A103 [2.7/3.7]

294001A103 ..(KA's)

ANSWER: 095 (1.00)

d.

REFERENCE:

1. QEP 400-1, Rev. 8, Section E.2 (page 2).
   K/A: 294001A116 [2.9/4.7]

294001A116 ..(KA's)

ANSWER: 096 (1.00)

a.

REFERENCE:

1. QCRP 5010-1, Rev. 1, Section G.1.c.2 (page 4).
   K/A: 294001K103 [3.3/3.8]

294001K103 ..(KA's)

ANSWER: 097 (1.00)

a.

REFERENCE:

1. QCAP 230-15, Rev. 2, Section C.1 (page 1).

   K/A: 294001A106 [3.4/3.6]

294001A106 ..(KA's)

ANSWER: 098 (1.00)

d.

REFERENCE:

1. QFP 100-1, Master Refueling Procedure, Rev. 28., Limitations and Actions 14 (page 10).

   K/A: 294001A110 [3.6/4.2]

294001A110 ..(KA's)

ANSWER: 099 (1.00)

b.

REFERENCE:

1. QAP 300-2, Rev. 40, Section D.16.b (page 19).

   K/A: 294001A113 [4.5/4.3]

294001A113 ..(KA's)

ANSWER: 100 (1.00)

b.

REFERENCE:

1. QCOP 6500-4, Rev. 1, Section D.6 (page 3).

   K/A: 294001K107 [3.3/3.6]

294001K107 ..(KA's)

(********** END OF EXAMINATION **********)

A N S W E R K E Y

MULTIPLE CHOICE

001	c
002	b
003	c
004	d
005	a
006	c
007	c
008	a
009	b
010	d
011	b
012	d
013	a
014	d
015	c
016	b
017	d
018	d
019	d
020	a
021	b
022	c
023	c
024	a
025	c
026	c
027	b
028	c
029	a
030	c
031	a
032	d
033	b
034	c
035	d
036	a
037	a
038	b
039	a
040	d
041	b
042	c
043	c
044	c
045	c

A N S W E R K E Y

046	b	069	a
047	c	070	a
048	d	071	a
049	d	072	d
050	d	073	d
051	a	074	b
052	d	075	a
053	b	076	d
054	b	077	c
055	b	078	b
056	d	079	c
057	b	080	b
058	d	081	a
059	d	082	c
060	c	083	b
061	b	084	a
062	d	085	c
063	c	086	b
064	d	087	c
065	b	088	d
066	d	089	d
067	c	090	b
068	d	091	b

A N S W E R K E Y

092 c

093 a

094 a

095 d

096 a

097 a

098 d

099 b

100 b

(********** END OF EXAMINATION **********)

U. S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC EXAMINATION
SENIOR REACTOR OPERATOR LICENSE
REGION 3

CANDIDATE'S NAME: MASTER EXAMINATION

FACILITY: Quad-Cities 1 & 2

REACTOR TYPE: BWR-GE3

DATE ADMINISTERED: 95/03/24

INSTRUCTIONS TO CANDIDATE:

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. Points for each question are indicated in parentheses after the question. The passing grade requires a final grade of at least 80%. Examination papers will be picked up four (4) hours after the examination starts.

	TEST VALUE	CANDIDATE'S SCORE	
TOTALS	100.00	_____	_____ FINAL GRADE

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

_____
Candidate's Signature

A N S W E R S H E E T

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

MULTIPLE CHOICE

001	a	b	c	d	___
002	a	b	c	d	___
003	a	b	c	d	___
004	a	b	c	d	___
005	a	b	c	d	___
006	a	b	c	d	___
007	a	b	c	d	___
008	a	b	c	d	___
009	a	b	c	d	___
010	a	b	c	d	___
011	a	b	c	d	___
012	a	b	c	d	___
013	a	b	c	d	___
014	a	b	c	d	___
015	a	b	c	d	___
016	a	b	c	d	___
017	a	b	c	d	___
018	a	b	c	d	___
019	a	b	c	d	___
020	a	b	c	d	___
021	a	b	c	d	___
022	a	b	c	d	___
023	a	b	c	d	___
024	a	b	c	d	___
025	a	b	c	d	___
026	a	b	c	d	___
027	a	b	c	d	___
028	a	b	c	d	___
029	a	b	c	d	___
030	a	b	c	d	___
031	a	b	c	d	___
032	a	b	c	d	___
033	a	b	c	d	___
034	a	b	c	d	___
035	a	b	c	d	___
036	a	b	c	d	___
037	a	b	c	d	___
038	a	b	c	d	___
039	a	b	c	d	___
040	a	b	c	d	___
041	a	b	c	d	___
042	a	b	c	d	___
043	a	b	c	d	___
044	a	b	c	d	___
045	a	b	c	d	___

A N S W E R S H E E T

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

046	a	b	c	d	___	069	a	b	c	d	___
047	a	b	c	d	___	070	a	b	c	d	___
048	a	b	c	d	___	071	a	b	c	d	___
049	a	b	c	d	___	072	a	b	c	d	___
050	a	b	c	d	___	073	a	b	c	d	___
051	a	b	c	d	___	074	a	b	c	d	___
052	a	b	c	d	___	075	a	b	c	d	___
053	a	b	c	d	___	076	a	b	c	d	___
054	a	b	c	d	___	077	a	b	c	d	___
055	a	b	c	d	___	078	a	b	c	d	___
056	a	b	c	d	___	079	a	b	c	d	___
057	a	b	c	d	___	080	a	b	c	d	___
058	a	b	c	d	___	081	a	b	c	d	___
059	a	b	c	d	___	082	a	b	c	d	___
060	a	b	c	d	___	083	a	b	c	d	___
061	a	b	c	d	___	084	a	b	c	d	___
062	a	b	c	d	___	085	a	b	c	d	___
063	a	b	c	d	___	086	a	b	c	d	___
064	a	b	c	d	___	087	a	b	c	d	___
065	a	b	c	d	___	088	a	b	c	d	___
066	a	b	c	d	___	089	a	b	c	d	___
067	a	b	c	d	___	090	a	b	c	d	___
068	a	b	c	d	___	091	a	b	c	d	___

A N S W E R S H E E T

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

092	a	b	c	d	___
093	a	b	c	d	___
094	a	b	c	d	___
095	a	b	c	d	___
096	a	b	c	d	___
097	a	b	c	d	___
098	a	b	c	d	___
099	a	b	c	d	___
100	a	b	c	d	___

(********** END OF EXAMINATION **********)

Policies and Guidelines for Taking NRC Written Examinations

1. Cheating on the examination will result in a denial of your application and could result in more severe penalties.

2. 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.

3. To pass the examination, you must achieve a grade of 80 percent or greater.

4. The point value for each question is indicated in parentheses after the question number.

5. There is a time limit of 4 hours for completing the examination.

6. Use only black ink or dark pencil to ensure legible copies.

7. Print your name in the blank provided on the examination cover sheet and the answer sheet.

8. Mark your answers on the answer sheet provided and do not leave any question blank.

9. If the intent of a question is unclear, ask questions of the examiner only.

10. 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.

11. When you complete the examination, assemble a package including the examination questions, examination aids, and answer sheets and give it to the examiner or proctor. Remember to sign the statement on the examination cover sheet.

12. After you have turned in your examination, leave the examination area as defined by the examiner.

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QUESTION: 001 (1.00)

The exhaust ports of both scram pilot valves on a control rod have become plugged.

WHICH ONE (1) of the following explains how this will affect the ability of the control rod to scram?

a. The control rod WILL insert normally on a scram signal since the backup scram valves will energize to vent air off the scram inlet and outlet valves.

b. The control rod WILL NOT insert on a scram signal OR an Alternate Rod Insertion (ARI) signal.

c. The control rod WILL NOT insert on a scram signal but WILL insert via the ARI System.

d. The control rod WILL insert on a scram signal but the scram time will be slower.

QUESTION: 002 (1.00)

During quarterly operability testing of the scram discharge volume vent and drain valves (per QCOS 300-11) the inboard drain valve on the North Instrument Volume (AO 1-302-22A) failed to reopen.

WHICH ONE (1) of the following describes how this failure will affect plant operations?

a. Operation can continue as long as a half scram is inserted on the associated RPS channel.

b. Operation can continue as long as the outboard drain valve is OPERABLE.

c. The plant must be in HOT SHUTDOWN within 12 hours.

d. The plant must be in HOT SHUTDOWN within 24 hours.

QUESTION: 003 (1.00)

A reactor startup is in progress. Reactor power is approximately 1%. When a coupling check of a control rod was being performed the following annunciator alarms were received.

- ROD OVTRVL
- ROD DRIFT

WHICH ONE (1) of the following actions should be taken?

a. Insert the control rod drive mechanism until a visible response is seen on the nuclear instrumentation to recouple the control rod.

b. Insert the control rod drive mechanism one notch to recouple the control rod.

c. Repeat the coupling check to verify the rod is uncoupled.

d. Insert the control rod drive to position 00.

QUESTION: 004 (1.00)

The NSO has noticed that the CRD Hydraulic System cooling water header pressure is 78 psid. WHICH ONE (1) of the following describes the effect that this would have on the operation of control rods?

a. Control rods may drift inward.

b. Control rods may drift outward.

c. Control rod scram times will be slightly slower than normal.

d. The CRD stop piston seals will experience increased wear during movement.

QUESTION: 005 (1.00)

A reactor startup is in progress on Unit 1. The NSO was withdrawing the twelfth control rod when the plant experiences a loss of both Rod Worth Minimizer (RWM) computers, causing the control rod to stop at position 24.

WHICH ONE (1) of the following actions should be taken concerning the reactor startup?

a. An immediate manual reactor scram should be initiated.

b. The startup must be discontinued until the RWM is restored.

c. Individual scram signals should be applied to each withdrawn control rod.

d. The startup can continue after bypassing the RWM and stationing a Qualified Nuclear Engineer (QNE) to monitor the control rod sequence.

QUESTION: 006 (1.00)

The plant is operating at power when a slight increase in drywell leakage rate was observed. Indications on the A recirc pump are as follows:

- Inboard No. 1 seal pressure 990 psig and steady
- Outboard No. 2 seal pressure 785 psig and rising

WHICH ONE (1) of the following has occurred?

a. A failure of the No. 1 seal.

b. A failure of the No. 2 seal.

c. Plugging of the No. 1 internal restricting orifice.

d. Plugging of the No. 2 internal restricting orifice.

QUESTION: 007 (1.00)

Unit 2 power is 38% and preparations are underway to startup the 'B' reactor recirculation pump. The 'A' reactor recirc pump is running at 40% rated speed. Plant conditions are as follows:

- Reactor pressure 980 psig
- Loop 'A' temperature 530 degrees F
- Loop 'B' temperature 475 degrees F
- Bottom head drain temperature 475 degrees F

WHICH ONE (1) of the following describes the limitations, if any, imposed on starting the 'B' reactor recirc pump under the given conditions?

a. The pump may be started immediately.

b. The pump should NOT be started because the bottom head drain temperature is too low.

c. The pump should NOT be started because the loop differential temperature is too high.

d. The pump should NOT be started because the 'A' reactor recirc pump is running too fast.

QUESTION: 008 (1.00)

Operation with a loss of flow indication for both jet pumps on the same riser is NOT permitted. WHICH ONE (1) of the following is the reason for this restriction?

a. Recirc loop flow oscillations could go undetected.

b. Integrity of the affected jet pump cannot be ensured.

c. Recirc loop flow mismatch cannot be monitored properly.

d. The Process Computer cannot accurately calculate core thermal limits.

QUESTION: 009 (1.00)

Unit 1 plant conditions are as follows:

- Reactor power is 100%.
- Both recirc pumps are operating at 90% speed in "INDIVIDUAL MANUAL" control.
- The Master Controller is selected to "MANUAL" with its potentiometer set to MINIMUM.

WHICH ONE (1) of the following would occur if the 'A' recirc pump Individual Manual/Auto (M/A) Transfer Station was placed to "AUTO"? (Assume NO operator action is taken after placing the M/A Station in "AUTO".)

The 'A' recirc pump would run back to ...

a. 32% speed.

b. 45% speed.

c. 63% speed.

d. 94% speed.

QUESTION: 010 (1.00)

WHICH ONE (1) of the following statements explains why recirc pump speed is limited to 32% when feedwater flow is less than 20% rated?

a. To prevent core flow instabilities from occurring in the event of a trip of a recirc pump.

b. To prevent thermal gradients from forming in the reactor vessel bottom head region.

c. To ensure there is adequate net positive suction head to the recirc pump.

d. To prevent damage to the recirc pump from excessive axial thrust.

QUESTION: 011 (1.00)

Unit 2 was operating at approximately 65% power when the 'A' Recirc pump tripped. Shortly after the recirc pump tripped a LOCA occurred. Plant conditions are as follows.

- Reactor power: 0%
- Drywell pressure: 9 psig and rising
- Reactor pressure: 900 psig and decreasing
- 'A' recirc loop riser pressure: 895 psig and decreasing
- 'B' recirc loop riser pressure: 890 psig and decreasing

WHICH ONE (1) of the following actions should occur?

a. The 'A' recirc pump discharge valve will close.

b. The selected recirc loop equalizer valve will open.

c. The 'A' LPCI injection valves will open when reactor pressure reaches 500 psig.

d. The 'B' LPCI injection valves will open when reactor pressure reaches 325 psig.

QUESTION: 012 (1.00)

Unit 1 is lined up for Shutdown Cooling using the 'A' RHR loop. Reactor water level is in the normal band.

A LOCA has resulted in reactor water level lowering to -60 inches. WHICH ONE (1) of the following actions needs to be taken to align RHR loop 'A' for LPCI injection?

a. Shift the RHR pump suction to the CCST.

b. Depress the "RESET FOR GRP 2 ISOL VLV 1-1001-29" pushbutton.

c. Manually open the LPCI outboard injection valve (1-1001-28A).

d. Place the "CNMT CLG 2/3 LVL AND ECCS INT BYP SWITCH" to "MANUAL OVERRD".

QUESTION: 013 (1.00)

The Reactor Water Cleanup System (RWCU) is aligned for reject to the main condenser. The following conditions exist on the RWCU system.

- Non-Regen Hx Outlet Temp.	130 degs. F
- MO 1201-80	Throttled OPEN
- Filter-Demin d/p	25 psid
- FCV-1239 downstream pressure	145 psig
- RWCU Pump bearing Cooling water temp.	120 degs. F

WHICH ONE (1) of the following actions is expected to occur?

a. The RWCU containment isolation valves (MO 1201-2, 1201-5, and 1201-80) should close.

b. The RWCU filter-demin outlet isolation valve (AO-1279-14A/B) should close.

c. The reject flow control valve (FCV-1239) should close.

d. The RWCU pump should trip.

QUESTION: 014 (1.00)

Unit 2 is shutdown with a cooldown in progress. No de-inerting of the drywell will be done for 48 hours. Reactor pressure is presently at 180 psig.

WHICH ONE (1) of the following is the LOWEST allowable vessel shell temperature if the cooldown continues for three hours?

a. 280 degrees F.

b. 180 degrees F.

c. 100 degrees F.

d. 80 degrees F.

QUESTION: 015 (1.00)

WHICH ONE (1) of the following explains why the CCST suction valves (1001-42A,B,C,D) are locked closed on the RHR loop that is used for shutdown cooling?

a. To ensure that the inventory in the CCST is available for RCIC/HPCI operations on the other Unit.

b. To prevent inadvertent injection of CCST water into the reactor vessel.

c. To prevent inadvertent draining of the CCST to the suppression pool.

d. To prevent draining the reactor vessel to the CCST.

QUESTION: 016 (1.00)

The HPCI system is running for a surveillance when a loss of normal and reserve DC control power occurs. WHICH ONE (1) of the following explains how HPCI operation will be affected by this loss of power?

a. The HPCI turbine will trip and cannot be restarted.

b. The HPCI turbine will remain on line but will decelerate to minimum speed.

c. The HPCI turbine will remain on line but it cannot be controlled from the control room.

d. HPCI pump suction will be lost since the CCST suction valves will close and the suppression pool suction valves will remain closed.

QUESTION: 017 (1.00)

WHICH ONE (1) of the following explains how the HPCI System is operated for pressure control when an automatic initiation signal is present?

a. HPCI flow is directed through the test return line after bypassing the automatic closure signal on the test return valves (1-2301-15 and 1-2301-10).

b. HPCI flow is directed through the minimum flow line while closely monitoring HPCI flow indication to ensure flow is at least 5000 gpm.

c. HPCI flow is directed through the minimum flow line while closely monitoring HPCI discharge pressure and turbine speed.

d. HPCI flow is directed through the test return line by manually opening the test return valves (1-2301-15 and 1-2301-10).

QUESTION: 018 (1.00)

WHICH ONE (1) of the following conditions will meet the permissive needed to allow the Automatic Depressurization System (ADS) to sense Core Spray system availability before depressurizing the vessel?

a. At least ONE Core Spray pump running with a discharge pressure of 130 psig.

b. The inboard AND outboard Core Spray injection valves in ONE Core Spray loop open.

c. BOTH Core Spray pumps running with the discharge pressure in each loop at 50 psig.

d. The inboard AND outboard Core Spray injection valves in BOTH Core Spray loops open.

QUESTION: 019 (1.00)

An ATWS has occurred with the 'A' SBLC pump out of service (the electrical supply breaker is open with the control power fuses removed). In response to the ATWS the NSO places the SBLC initiation keylock switch to the "SYS 1 & 2" position. WHICH ONE (1) of the following explains how the SBLC system should respond?

a. ONLY the 'A' injection valve should fire.

b. ONLY the 'B' injection valve should fire.

c. NEITHER injection valve should fire.

d. BOTH injection valves should fire.

QUESTION: 020 (1.00)

Unit 1 is shutdown with the reactor mode switch in REFUEL. WHICH ONE (1) of the following conditions will give relief from the RPS Operability requirements of Technical Specifications?

a. All fuel must be removed from the reactor.

b. The reactor mode switch must be locked in SHUTDOWN.

c. Reactor coolant temperature must be less than 212 degrees F.

d. All control rods must be fully inserted and the SBLC system must be OPERABLE.

QUESTION: 021 (1.00)

Unit 1 is operating at 40% power when the main power supply breaker to the 'A' RPS MG Set trips. WHICH ONE (1) of the following describes the RPS system response to this event?

a. The RPS MG Set flywheel will maintain proper generator output until the automatic bus transfer to reserve power occurs at 110 VAC. No interruption of RPS Bus power will occur.

b. The RPS MG Set flywheel will maintain proper generator output until the automatic bus transfer to reserve power occurs at 57 Hz. A half scram will occur during the transfer.

c. The associated Electrical Protection Assemblies (EPAs) will open and a half scram will occur.

d. The associated EPAs will remain shut but a half scram will still occur.

QUESTION: 022 (1.00)

A failure of the RPIS System has resulted in a total loss of rod position indication on twelve control rods. A review of the rod sequence sheets indicated that eight of the control rods were at position 48 and the other four control rods were at position 12.

WHICH ONE (1) of the following describes the restrictions placed on plant operations?

a. Power operation can continue as long as the affected control rods are individually scrammed AND disarmed electrically.

b. Power operation can continue as long as the position of the affected control rods is not changed.

c. Power operation can continue as long as the affected control rods are individually scrammed.

d. The Unit should be placed in HOT SHUTDOWN within 12 hours.

QUESTION: 023 (1.00)

A Qualified Nuclear Engineer has determined that the reactor is operating at a limiting control rod pattern. WHICH ONE (1) of the following describes the Rod Block Monitor system requirements under these conditions?

a. One RBM channel may be bypassed but the other RBM channel must be tripped.

b. One RBM channel may be bypassed indefinitely with NO other restrictions.

c. One RBM channel may be bypassed for a maximum of 8 hours with NO other restrictions.

d. One RBM channel may be bypassed as long as the upscale and downscale trips on the other RBM channel are operable.

QUESTION: 024 (1.00)

A TIP trace is being run in the automatic mode. The TIP detector is at the TOP CORE LIMIT when 120 VAC power is lost to the TIP System. While troubleshooting the loss of electrical power, drywell radiation levels reach 110 R/hr. WHICH ONE (1) of the following automatic or manual actions should occur?

a. The TIP detector will shift to the reverse mode and withdraw to its in-shield position; the associated ball valve will NOT close; the shear valve will automatically fire to isolate the system.

b. The TIP detector will shift to the reverse mode and withdraw to its in-shield position; the associated ball valve will then close.

c. The TIP detector will remain in its present position; the shear valve has to be manually fired to isolate the system.

d. The TIP detector will remain in its present position; the shear valve CANNOT fire due to a loss of electrical power.

QUESTION: 025 (1.00)

A reactor startup is in progress. IRMs are beginning to come on scale. WHICH ONE (1) of the following describes when the heating range has been entered and sensible heat is being added in the reactor?

a. As soon as ALL IRMs are on scale.

b. When IRMs are on range 7.

c. When IRMs are on range 5.

d. When IRMs are on range 3.

QUESTION: 026 (1.00)

A reactor startup is in progress on Unit 2 following refueling. All shorting links have been removed. Control rods are being withdrawn to criticality. The SRM period meters indicate the following:

- Channel 21 18 seconds
- Channel 22 25 seconds
- Channel 23 15 seconds
- Channel 24 15 seconds

WHICH ONE (1) of the following alarms and/or trip functions should have occurred?

a. SRM short period alarm ONLY

b. SRM short period alarm AND SRM rod block

c. SRM short period alarm AND SRM half-scram signal

d. SRM short period alarm AND SRM full scram signal

QUESTION: 027 (1.00)

Unit 1 is operating at approximately 95% power. The following are the indications received when the APRM meter function switches located on Panel 901-37 are placed in the AVERAGE, COUNT, and FLOW positions:

	AVERAGE	COUNT	FLOW
APRM CHANNEL 1	99%	75%	82%
APRM CHANNEL 2	94%	60%	82%
APRM CHANNEL 3	95%	80%	82%
APRM CHANNEL 4	99%	65%	88%
APRM CHANNEL 5	93%	65%	88%
APRM CHANNEL 6	95%	70%	88%

WHICH ONE (1) of the following describes the expected plant response for these conditions?

a. Rod block ONLY

b. Rod block AND half scram

c. Rod block AND full scram

d. APRM Flow Reference Off Normal Alarm

QUESTION: 028 (1.00)

Unit 1 is in the process of cooling down for a maintenance outage. The Unit 1 RVLIS backfill system has been OOS for the past 21 days and current plant pressure is 250 psig. Which one of the following would indicate significant notching as applied to reactor vessel level instrumentation?

a. Narrow range Yarways A and B read 5 inches lower than narrow range Gemacs A and B throughout the cooldown.

b. A 10 inch downward spike occurs on narrow range Yarway A and returns to normal after 10 minutes.

c. A 10 inch upward spike occurs on "A" Gemac and immediately returns to normal.

d. A 10 inch upward spike occurs on "A" Gemac and returns to normal after 8 minutes.

QUESTION: 029 (1.00)

The relationship between actual reactor vessel water level inside the shroud compared to indicated water level, as power is DECREASED from 100% to 0% is represented by a water level inside the shroud that will.....

a. increase until it is approximately the same as indicated level.

b. decrease until it is approximately the same as indicated level.

c. increase until it is approximately 7 inches above indicated level.

d. increase until it is approximately 7 inches less than indicated level.

QUESTION: 030 (1.00)

RCIC has automatically initiated. Shortly after initiation the system tripped on low pump suction pressure during a shift in the suction source. Reactor water level is 0 inches and steady. WHICH ONE (1) of the following describes how RCIC injection is reinitiated? (Assume that the low pump suction pressure has cleared).

The RCIC System will restart automatically ...

a. WITHOUT any operator action.

b. as soon as the operator resets the trip in the control room.

c. when reactor water level drops to -59 inches WITHOUT any other operator action.

d. when reactor water level reaches -59 inches ONLY IF the operator has reset the trip from the control room.

QUESTION: 031 (1.00)

A failure of CCST level instrumentation has resulted in an automatic realignment of RCIC to the torus. The HPCI system was unaffected. Which of the following actions are required?

a. Perform the HPCI operability surveillance.

b. Immediately declare RCIC INOPERABLE and enter a 14 day LCO.

c. Verify that the RCIC discharge piping is full of water every 24 hours.

d. Restore the CCST suction valves to service within 24 hours or declare RCIC INOPERABLE.

QUESTION: 032 (1.00)

Thirty seconds into a plant transient the following annunciator is received.

- AUTO BLOWDN TIMER START

WHICH ONE (1) of the following will reset the 110 second timer?

a. Drywell pressure decrease to 1.5 psig.

b. The Core Spray and RHR pumps are shutdown.

c. Reactor water level increase to -40 inches.

d. ADS control switches are placed in the CLOSE position.

QUESTION: 033 (1.00)

While operating at 100% rated power, a valid high steam line flow signal is sensed in the 'D' main steam line.

WHICH ONE (1) of the following is the expected response of the Main Steam Line Isolation Valves (MSIVs)?

a. All MSIVs will close.

b. Only the MSIVs in main steam line 'D' will close.

c. Only the inboard MSIV in main steam line 'D' will close.

d. Only the inboard MSIVs in all four main steam lines will close.

QUESTION: 034 (1.00)

Unit 1 has experienced a LOCA. Plant conditions are as follows.

- Drywell pressure 8.0 psig and slowly increasing
- Reactor water level -30 inches and slowly decreasing
- Reactor pressure 600 psig and slowly decreasing

WHICH ONE (1) of the following describes the operation of the TORUS TEST OR SPRAY VLV (MO1-1001-34A/B) and the TORUS SPRAY SHUTOFF VLV (MO1-1001-36A/B)?

The TORUS TEST OR SPRAY VLV (MO1-1001-34A/B) and the TORUS SPRAY SHUTOFF VLV (MO1-1001-36A/B) ...

a. CAN be opened after placing the RHR Loop A/B CNMT CLG 2/3 LVL AND ECCS INIT BYP SWITCH 18 to the MANUAL OVERRIDE position.

b. CAN be opened after placing the RHR Loop A/B CONTAINMENT CLG PERMISSIVE SWITCH 17 to the ON position.

c. CAN be opened normally without bypassing any interlocks.

d. CANNOT be opened under the given conditions.

QUESTION: 035 (1.00)

Drywell Spray is in service on Unit 2. Proper RHR system discharge pressure is maintained while operating in this lineup by throttling the.....

a. TORUS H2O TEST VLV (MO2-1001-36A/B).

b. INBD SPRAY ISOL VLV (MO2-1001-26A/B).

c. OUTBD SPRAY ISOL VLV (MO2-1001-23A/B).

d. TORUS TEST OR SPRAY VLV (MO2-1001-34A/B).

QUESTION: 036 (1.00)

Technical Specifications requires that a minimum spent fuel pool level be maintained during refueling. WHICH ONE (1) of the following is the BASIS for this minimum required fuel pool level?

a. To provide adequate cooling and shielding of fuel assemblies in the fuel pool.

b. To provide enough water to absorb 90% of the volatile fission products released from a postulated damaged fuel bundle.

c. To prevent the area around the fuel prep machine from becoming a high radiation area with a spent fuel bundle in the full up position.

d. To provide an adequate heat sink to delay boiling in the pool for a minimum of 8 hours in the event of a plant blackout immediately after a full core offload.

QUESTION: 037 (1.00)

A reactor scram and Group 1 isolation has occurred. ERV 203-3B has opened to relieve reactor pressure. WHICH ONE (1) of the following explains the operation of ERV 203-3B for subsequent automatic reopenings?

ERV 203-3B will ...

a. reopen immediately if reactor pressure is above its lift setpoint.

b. be time delayed before reopening to ensure that the ERV has properly reseated.

c. be time delayed before reopening to allow the tailpipe vacuum breakers to cycle properly.

d. be time delayed before reopening to allow cycling of the other ERVs to prevent uneven heating of the suppression pool.

QUESTION: 038 (1.00)

Unit 1 is operating at 50% reactor power and 50% rated flow with the 'A' EHC Pressure Regulator in control set at 920 psig. The 'B' EHC Pressure Regulator is the backup regulator.

WHICH ONE (1) of the following explains how the plant would respond if the 'A' EHC Pressure Regulator fails downscale? (Assume that no operator action is taken).

The turbine control valves would.....

a. open until turbine throttle pressure stabilized at 900 psig.

b. open until turbine throttle pressure stabilized at 910 psig.

c. close until turbine throttle pressure stabilized at 930 psig.

d. remain as-is with turbine throttle pressure stabilized at 920 psig.

QUESTION: 039 (1.00)

Unit 2 was operating at 40% power with the 'A' FWRV off line and isolated when a reactor scram occurred. WHICH ONE (1) of the following describes how reactor water level will be controlled?

With no operator action the 'B' FWRV will.....

a. cycle to maintain reactor water level at +15 inches.

b. automatically position to maintain reactor water level at approximately +30 inches.

c. leakby causing level to increase to +48 inches at which point the reactor feed pumps will trip.

d. fully close and the Low Flow Controller will automatically maintain reactor water level at approximately +25 inches.

QUESTION: 040 (1.00)

Unit 1 has received the following annunciator alarm:

- 4KV BUS 14-1 VOLTAGE DEGRADED

All other plant conditions are normal. WHICH ONE (1) of the following describes the expected plant response to this condition?

a. Unit 1 Diesel Generator will immediately start and load to bus 14-1.

b. Unit 1 Diesel Generator will immediately start but will not load to the bus unless voltage is completely lost.

c. Unit 1 Diesel Generator will start immediately and then, after a five minute time delay, will load to bus 14-1.

d. Unit 1 Diesel Generator will start after a five minute time delay and, once it has started, will load to bus 14-1.

QUESTION: 041 (1.00)

Reactor power is being raised on Unit 1, with recirc pumps, when a jet pump failure occurs. Following the failure the NSO notices sustained sharp positive and negative swings on the SRM period meters. WHICH ONE (1) of the following IMMEDIATE actions should be taken?

a. Reduce power by inserting control rods in reverse sequence using the Reactor Manual Control System

b. Enter QCOA 400-2, "Core Instabilities" to determine if instabilities exist.

c. Reduce reactor power by lowering recirc flow.

d. Manually scram the reactor.

QUESTION: 042 (1.00)

A trip of the 'B' recirc pump on Unit 1 has occurred due to a breaker fault. It is estimated that it will take approximately 72 hours to repair. WHICH ONE (1) of the following actions needs to be taken to allow continued plant operation?

a. The idle recirc loop must be isolated.

b. The MCPR Safety Limit must be adjusted to 1.06.

c. The MCPR Safety Limit must be adjusted to 1.08.

d. The APRM Upscale Rod Block trip setpoints must be changed to 101.5% rated power.

QUESTION: 043 (1.00)

Unit 1 is operating at 100% reactor power with two circulating water pumps running when the following annunciator alarms.

- CIRC WATER PUMP AUTO TRIP

WHICH ONE (1) of the following actions should be taken?

a. Immediately insert a manual reactor scram.

b. Attempt to start the standby Circulating Water Pump.

c. Attempt to restart the tripped Circulating Water pump.

d. Reduce recirc pump speed to minimum then manually scram the reactor.

QUESTION: 044 (1.00)

WHICH ONE (1) of the following conditions would cause a loss of condenser vacuum on Unit 1?

a. The differential pressure across the traveling screens exceeds 6 psid.

b. The level in the condenser pit reaches 5 feet.

c. A complete loss of Bus 14.

d. A complete loss of Bus 16.

QUESTION: 045 (1.00)

Unit 1 is at 80% power when a fault causes a loss of Transformer 12. WHICH ONE (1) of the following describes the response of the electrical distribution system to this failure? (Assume that the fault is NOT a bus fault).

a. Bus 12 and Bus 13 will remain deenergized until the operator reenergizes them manually from Transformer 11.

b. Bus 12 and 13 will remain deenergized until the fault in Transformer 12 is cleared.

c. The Diesel Generators will start and reenergize Bus 12 and Bus 13.

d. Bus 12 and Bus 13 will automatically transfer to Transformer 11.

QUESTION: 046 (1.00)

A Station Blackout has occurred. WHICH ONE (1) of the following explains how torus temperature is monitored?

a. By monitoring the temperature indicators in the auxiliary electric room.

b. Take grab samples of torus water and measure he temperature.

c. By monitoring the indications on the 901-30 Panel recorder.

d. By monitoring the indications on the 901-4 Panel recorder.

QUESTION: 047 (1.00)

Unit 2 has experienced a total loss of 125 VDC. WHICH ONE (1) of the following describes how plant operations are affected by this loss of power?

a. The running RWCU pumps will trip.

b. The main turbine will automatically trip.

c. The ADS valves will NOT open automatically.

d. The RCIC system will NOT automatically initiate.

QUESTION: 048 (1.00)

Unit 1 is operating at 30% reactor power when the following annunciator alarm is received.

- MOIST SEP 1A HIGH LEVEL

WHICH ONE (1) of the following will occur?

a. The main turbine will immediately trip and the reactor will scram.

b. The main turbine will immediately trip; the reactor will remain on line.

c. The main turbine will trip after a 15 second time delay and the reactor will scram.

d. The main turbine will trip after a 15 second time delay; the reactor will remain on line.

QUESTION: 049 (1.00)

Unit 2 was operating at 30% power when the main turbine tripped due to high vibration. While responding to the turbine trip the NSO noticed that turbine speed was not dropping even though the turbine stop valves were closed.

WHICH ONE (1) of the following actions should be taken?

a. Close the MSIVs.

b. Scram the reactor.

c. Trip the main generator.

d. Open the main turbine vacuum breaker.

QUESTION: 050 (1.00)

The Shift Engineer has determined that a reactor scram is needed. WHICH ONE (1) of the following actions should be taken, if time permits, before inserting the manual scram?

a. Start a second CRD pump.

b. Raise reactor water level.

c. Place torus cooling in service.

d. Open main turbine bypass valves to unload the main turbine.

QUESTION: 051 (1.00)

A transient on Unit 1 has resulted in reactor pressure slowly increasing. WHICH ONE (1) of the following operator actions should be taken to control reactor pressure in accordance with QCOA 201-3, "Reactor High Pressure"?

a. Manually open an ADS valve.

b. Reduce the EHC Load Limit setpoint.

c. Line up the RWCU System to reject to the main condenser.

d. Open the main turbine bypass valves using the bypass valve opening jack.

QUESTION: 052 (1.00)

A failure to scram has occurred on Unit 2. Plant conditions are as follows:

- Reactor power 40%
- MSIVs Open
- Main turbine On-line
- RPV water level +30 inches
- Drywell pressure 2.1 psig

The SRO has directed the NSO to run recirc pumps back to minimum and then trip the recirc pumps. The basis for running back the recirc pumps to minimum speed prior to tripping them is to prevent.....

a. inadvertent group isolations.

b. core instabilities from occurring.

c. the main turbine from tripping on high reactor water level.

d. the reactor feed pumps from entering the runout flow control mode.

QUESTION: 053 (1.00)

Following a reactor water level transient, feedwater is under the control of the Runout Flow Controller. WHICH ONE (1) of the following describes how feedwater flow control is shifted back to the normal feedwater controller?

Normal feedwater flow control is automatically restored ...

a. as soon as feedwater flow decreases to less than 5.6 E6 lbm/hr.

b. as soon as feedwater flow decreases to less than 11.2 E6 lbm/hr.

c. when reactor water level increases to 21 inches.

d. when reactor water level lowers to 20 inches.

QUESTION: 054 (1.00)

The Unit 1 drywell is being vented through the SBGT in accordance with QCOP 1600-1 "DRYWELL PRESSURE RELIEF THROUGH SBGT". During the vent the NSO notices that drywell pressure is approaching torus pressure so he lines up to vent the torus. WHICH ONE (1) of the following explains why the torus is vented under these conditions?

a. To increase the vent flow rate.

b. To ensure that the drywell is not de-inerted.

c. To slow down the decrease in drywell pressure.

d. To prevent cycling of the torus-to-drywell vacuum breakers.

QUESTION: 055 (1.00)

Unit 1 is operating at 60% power with a HPCI surveillance in progress when the following annunciator is received.

- ELEC RELIEF VALVE 3A/3B OPEN

Assuming reactor pressure is normal, when would the crew be REQUIRED to initiate a manual reactor scram?

a. Immediately after verifying the relief valve is actually open.

b. When Torus water temperature reaches 95 degrees F.

c. Before Torus water temperature reaches 105 degrees F.

d. Immediately if the valve can not be closed with the keylock switch.

QUESTION: 056 (1.00)

Given that the reactor is at full power, WHICH ONE (1) of the following would NOT result in entry to QCOA 400-1, "REACTIVITY ADDITION"?

a. High Pressure Coolant Injection system injection into the core.

b. Reactor Feedwater pump trip.

c. Feedwater Heater trip.

d. Control Rod drop.

QUESTION: 057 (1.00)

A reactor scram has occurred on Unit 1. The Rod Worth minimizer has determined that six control rods DID NOT fully insert to position 00. Four rods are at position 02 and two rods are at position 04. All blue scram lights are illuminated. CRD Drive Water pressure is approximately 50 psid.

WHICH ONE (1) of the following actions should be taken?

a. Enter and execute QGA 101, RPV Control-ATWS.

b. Pull fuses to deenergize the scram solenoids.

c. Open the CRD drive water pressure control valve (MO 1-302-8) and attempt to insert rods using the CRD system.

d. Close the CRD charging water isolation valve (MO 1-301-25) and attempt to insert rods using the CRD system.

QUESTION: 058 (1.00)

A severe fire in the Auxiliary Electric Room and Control Room has resulted in a control room evacuation. NO IMMEDIATE ACTIONS have been performed for the evacuation. The Shift Engineer has directed use of the QARPs. WHICH ONE (1) of the following explains how reactor water level and pressure are controlled while placing the reactor in a safe shutdown condition from outside the Control Room?

a. Reactor feedwater pumps are used to maintain level; pressure is controlled by opening main steam relief valves.

b. HPCI is used to maintain level; pressure is controlled by opening main turbine bypass valves.

c. RCIC is used to maintain level; pressure is controlled by RCIC and main steam relief valves.

d. CRD is used to maintain level; pressure is controlled by opening main turbine bypass valves.

QUESTION: 059 (1.00)

WHICH ONE (1) of the following conditions will result in an automatic closure of AO 1-5406, OG DISCH TO STACK OR VENT after a 15 minute time delay?

a. SJAE Radiation Monitors 1 AND 2 reach their HIGH alarm setpoint.

b. One Main Steam Line Radiation Monitor reaches its HIGH-HIGH trip setpoint.

c. Both Reactor Building Ventilation System exhaust radiation monitors exceed their trip setpoint.

d. SJAE Radiation Monitor 1 reaches its HIGH-HIGH trip setpoint AND SJAE Radiation Monitor 2 fails downscale.

QUESTION: 060 (1.00)

During a LOCA and loss of off-site power it is important to ensure that at least one service water pump is running and supplying the RBCCW heat exchangers. WHICH ONE (1) of the following is the most important RBCCW heat load during these conditions?

a. Drywell coolers.

b. Fuel Pool heat exchangers.

c. Reactor recirculation pumps.

d. Non-regenerative heat exchanger.

QUESTION: 061 (1.00)

WHICH ONE (1) of the following explains why the main condenser will not be available as a heat sink following a loss of all Instrument Air?

a. The Off-gas System isolates.

b. The inboard MSIVs will fail closed.

c. The main turbine vacuum breaker fails open.

d. The hotwell level control valve fails open and floods up the condenser.

QUESTION: 062 (1.00)

At 2:12 pm Unit 1 is in shutdown cooling awaiting head removal in two hours. At 3:30 pm the following plant conditions exist:

RPV level	-40 inches; slowly decreasing
RPV pressure	10 psig; slowly increasing
RPV temperature	218 degrees F; slowly increasing
Torus level	15 feet; slowly decreasing
Drywell pressure	2 psig; slowly increasing

The NSO should.....

a. enter QGA 200 and increase torus level using QCOP 1600-12.

b. continue to monitor conditions but take no actions at this time.

c. Enter QGA 100 and operate the loop not providing shutdown cooling of RHR to maintain vessel level.

d. depress the RESET FOR GRP 2 ISOL VLV 1-1001-29 switch and verify open the selected MO 1-1001-29A/B INBD LPCI INJ VLV.

QUESTION: 063 (1.00)

A loss of shutdown cooling has occurred. WHICH ONE (1) of the following describes the adverse condition that could develop if reactor vessel water temperature stratification occurs?

a. The reactor vessel could repressurize.

b. Reactor water level indicators would be inaccurate.

c. An inadvertent isolation of the RWCU system may occur.

d. A loss of NPSH to the reactor recirculation pumps may occur.

QUESTION: 064 (1.00)

A reactor startup is in progress on Unit 2. Reactor power is approximately 1% and reactor pressure is 725 psig. While withdrawing a control rod the running CRD pump trips and cannot be restarted. Attempts to start the second CRD pump were unsuccessful.

Based on the above conditions, when is a manual reactor scram required?

a. Immediately after identifying that the standby CRD pump would not start.

b. Immediately if reactor pressure drops to less than 700 psig.

c. As soon as the first accumulator trouble light comes on.

d. Whenever three accumulator trouble lights come on.

QUESTION: 065 (1.00)

A fuel element is being lowered into the reactor, the element is halfway inserted into the core when the SRM in that quadrant starts indicating a sustained upward trend in count rate. The other SRMs are also showing an increase in count rate. WHICH ONE (1) of the following describes the actions that should be taken.

a. Fully withdraw the fuel element from the reactor, actuate Standby liquid control, evacuate the entire reactor building.

b. Fully withdraw the fuel element from the reactor, scram the reactor, evacuate the refuel floor.

c. Stop all fuel movement, actuate Standby liquid control, evacuate the refuel floor.

d. Stop all fuel movement, scram the reactor, evacuate the entire reactor building.

QUESTION: 066 (1.00)

The following conditions exist on Unit 2.

- The unit is shutdown for a refueling outage.
- A fuel bundle is in the process of being lifted out of the reactor.
- A Fuel Pool Storage Low Level alarm has just been received.
- Fuel Pool water level has been confirmed to be decreasing.
- All fuel pool cooling pumps have tripped.

WHICH ONE (1) of the following IMMEDIATE OPERATOR ACTIONS should be taken?

a. Transport the fuel bundle to the Fuel Storage Rack then evacuate the refuel floor.

b. Lower the fuel bundle back to its original position in the vessel.

c. Line up to fill the fuel pool from the CCST or the Fire System.

d. Restart the fuel pool cooling pumps to fill the fuel pool.

QUESTION: 067 (1.00)

In preparation for an upcoming refueling outage, a spent fuel element is being moved in the pool. This element has been out of the reactor for at least 18 months. The element falls and is damaged, bubbles are seen to rise from it.

WHICH ONE (1) of the following describes the alarm(s) produced by the release of the Kr-85 Beta radiation in the gas from the damaged fuel?

a. CAM alarms only

b. Rad monitor alarms only

c. Both CAM and Rad monitor alarms

d. Neither CAM nor Rad monitor alarms

QUESTION: 068 (1.00)

A large break LOCA has occurred on Unit 2. Plant conditions are as follows.

- Reactor water level — 0 inches
- Reactor pressure — 20 psig
- Drywell pressure — 20 psig and rising slowly
- Torus pressure — 20 psig and rising slowly
- Torus water level — +31 feet

The SRO has directed the NSO to vent the primary containment to prevent exceeding the Primary Containment Pressure Limit. WHICH ONE (1) of the following explains why venting should be aligned to the drywell instead of the torus?

a. The torus water level is too high.

b. The drywell vent lineup has a larger flow rate capacity.

c. The Group II isolation signal prevents using the torus vent valves.

d. The differential pressure across the torus vent valves will prevent them from opening.

QUESTION: 069 (1.00)

A LOCA has occurred on Unit 1. Plant conditions are as follows.

- Reactor water level — -10 inches and steady
- Reactor pressure — 60 psig
- Drywell pressure — 22 psig and rising slowly
- Torus pressure — 22 psig and rising slowly
- Torus water level — +18 feet

WHICH ONE (1) of the following operations SHOULD be stopped?

a. Injection with alternate injection systems.

b. Drywell sprays.

c. RPV Blowdown.

d. Torus sprays.

QUESTION: 070 (1.00)

An EHC failure has resulted in reactor pressure increasing to 1090 psig but the reactor DID NOT scram. In response to the failure to scram the NSO manually initiated the Alternate Rod Insertion (ARI) System. WHICH ONE (1) of the following describes the response of the reactor recirculation pumps to the ARI initiation? (Assume the hydraulic ATWS continues.)

a. The recirculation pumps will trip.

b. The recirculation pumps will run back to minimum speed.

c. The recirculation pumps will remain running at their present speed with the scoop tubes locked up.

d. The recirculation pumps will remain running at their present speed with the scoop tubes operational.

QUESTION: 071 (1.00)

WHICH ONE (1) of the following indicates a condition where the Heat Capacity Limit is being approached?

a. Reactor pressure decreasing
Torus temperature steady
Drywell temperature increasing

b. Torus pressure decreasing
Torus temperature decreasing
Torus level increasing

c. Reactor pressure increasing
Torus temperature increasing
Torus level steady

d. Reactor pressure steady
Drywell temperature steady
Torus level increasing

QUESTION: 072 (1.00)

A steam leak has occurred outside the primary containment. The leak CANNOT be isolated. WHICH ONE (1) of the following reactor water level instruments is valid for ALL temperature and level conditions under these conditions?

a. Yarway Narrow Range

b. GEMAC Narrow Range

c. Yarway Wide Range

d. GEMAC Upper 400

QUESTION: 073 (1.00)

QGA-200, Primary Containment Control, directs that the RPV be blown down if drywell temperature cannot be held below 280 degrees F. WHICH ONE (1) of the following states the reason for this direction?

a. To prevent exposure of environmentally qualified emergency equipment in the drywell to temperature extremes beyond their qualification limits.

b. To minimize further release of energy from the RPV and halt or reduce continued increases in drywell temperature.

c. Reactor water level instrumentation is not reliable at this temperature.

d. To prevent torus design limits from being exceeded.

QUESTION: 074 (1.00)

Unit 1 was operating at power when a loss of off-site power occurred. Shortly thereafter, the following annunciator alarmed.

- TORUS HIGH/LOW LEVEL

Investigation reveals that torus water level low. WHICH ONE (1) of the following should be used to add water to the torus?

a. Transfer water from the Main Condenser to the torus.

b. Transfer water from the CCST via the RCIC System.

c. Fill the torus from the Floor Drain Surge Tank.

d. Fill the torus from the Waste Collector Tank.

QUESTION: 075 (1.00)

QGA-200, "Primary Containment Control" directs that HPCI operation be prevented if torus water level cannot be held above 11 feet. QGA-200 does allow operation of the RCIC System regardless of torus water level. WHICH ONE (1) of the following explains why RCIC operation is allowed?

a. The RCIC turbine exhaust steam discharge is near the bottom of the torus.

b. The RCIC turbine will automatically trip on high steam flow when its exhaust is uncovered.

c. The energy of RCIC exhaust can be removed via the primary containment vent without challenging the primary containment.

d. The RCIC turbine is allowed to run to ensure at least one high pressure system is available to provide adequate core cooling.

QUESTION: 076 (1.00)

A large break LOCA has occurred. WHICH ONE (1) of the following conditions represents "Adequate Core Cooling"?

a. Reactor power: Shutdown
RPV water level: - 170 inches being maintained with Fire System water.
Reactor pressure: 50 psig.

b. Reactor power: Shutdown
RPV water level: - 190 inches with no injection sources.
Reactor pressure; 200 psig

c. Reactor power: NOT Shutdown
RPV water level: Unknown
ADS valves: 5 are open
Reactor pressure: 250 psig
Drywell pressure: 25 psig

d. Reactor power: Shutdown
RPV water level: Unknown
ADS valves: 5 are open
Reactor pressure: 90 psig
Torus pressure: 25 psig

QUESTION: 077 (1.00)

WHICH ONE (1) of the following valid annunciator alarms would require entry into QGA 300, "SECONDARY CONTAINMENT CONTROL"?

a. TURB BLDG HI RADIATION

b. HPCI FLOOR DRN SUMP HIGH LEVEL

c. RWCU LEAK DETECTION "A" HIGH TEMP

d. RX BLDG VENT CHANNEL A OR B HI RADIATION

QUESTION: 078 (1.00)

A refueling is in progress. While raising a fuel bundle, both Refuel Floor Radiation Monitors alarm. WHICH ONE (1) of the following actions should occur?

a. A control rod block will be initiated.

b. Control Room ventilation will isolate.

c. The fuel prep machine will be deenergized.

d. Upward movement of the main refueling hoist will automatically stop.

QUESTION: 079 (1.00)

In preparing to vent the Unit 1 Primary Containment, the NSO has placed the "MASTER VENT MODE SWITCH" on the 901-5 panel to the "APCV" position. WHICH ONE (1) of the following valves will be interlocked CLOSED as a result of this action?

a. AO 1-1699-7, VENT TO RX BLDG

b. AO 1-1601-60, TORUS 18-INCH VENT

c. AO 1-1699-6, VENT TO MAIN CHIMNEY

d. AO 1-1601-24, VENT TO RX BLDG EXH SYS

QUESTION: 080 (1.00)

Plant conditions are as follows:

- A reactor scram has occurred on Unit 2 but several control rods have failed to fully insert.
- QGA 101, RPV CONTROL-ATWS has been entered.
- Reactor power is 2% and reactor shutdown cannot be guaranteed.
- The MSIVs are shut.

WHICH ONE (1) of the following explains why the reactor recirculation pumps are allowed to run under these conditions?

a. To promote decay heat removal.

b. To prevent thermal stratification from occurring.

c. To enhance boron mixing should boron injection be required.

d. To minimize the thermal stresses between the reactor vessel and the reactor recirculation loops.

QUESTION: 081 (1.00)

An ATWS has occurred with a failure of the SBLC pumps to inject. Jumpers are being installed to allow the RWCU System to inject boron. WHICH ONE (1) of the following describes how operation of the RWCU System is affected by the installation of these jumpers?

a. ALL RWCU System isolations EXCEPT low reactor water level are defeated.

b. ALL RWCU System isolations EXCEPT high temperature are defeated.

c. ONLY the RWCU isolation on SBLC initiation is defeated.

d. ALL RWCU System isolations are defeated.

QUESTION: 082 (1.00)

Plant conditions are as follows:

- A scram condition exists on Unit 2 but the reactor did not shutdown.
- Reactor power is 15%.
- Only one SBLC pump is injecting; the other pump has failed.
- The MSIVs are closed and 3 ADS valves are open for pressure control.
- RPV Water Level is +30 inches and is being deliberately lowered.
- Suppression pool temperature is 112 degrees F.

WHICH ONE (1) of the following is the PRIMARY reason for deliberately lowering RPV water level under these conditions?

a. To promote boron mixing.

b. To minimize the challenge to the fuel cladding.

c. To minimize the threat to primary containment integrity.

d. To increase the boron concentration inside the reactor vessel.

QUESTION: 083 (1.00)

WHICH ONE (1) of the following conditions would require entry into QGA 400, Radioactivity Release Control?

a. Off-site release rates have exceeded the Unusual Event emergency action level.

b. Off-site release rates have exceeded the Technical Specification LCO limit.

c. Off-site release rates have exceeded the Alert emergency action level.

d. Turbine building ventilation has isolated on high radiation.

QUESTION: 084 (1.00)

When conducting refueling operations, WHICH ONE (1) of the following is the normal daily whole body exposure limit? (Assume that no special permission to exceed normal limits has been given by the HPSS).

a. 50 mRem

b. 100 mRem

c. 200 mRem

d. 300 mRem

QUESTION: 085 (1.00)

During refueling operations, a plant operator reports the discovery of a Fuel Pool Cooling system manual valve out of position. WHICH ONE (1) of the following is the correct course of action?

a. Immediately correct the valve position and notify the Fuel Handling foreman.

b. Immediately correct the valve position and notify the Shift Engineer or Shift Foreman.

c. DO NOT alter the valve position until/unless permission is granted by the Fuel Handling foreman.

d. DO NOT alter the valve position until/unless permission is granted by the Shift Engineer or Shift Foreman.

QUESTION: 086 (1.00)

A female worker has just reported to you that she is three months pregnant. It has been determined that her occupational exposure for the three months of her pregnancy is 225 mrem deep dose equivalent (DDE).

WHICH ONE (1) of the following represents her occupational exposure limit during the remainder of her pregnancy?

a. She may receive a maximum of 50 mrem per month for the remainder of her pregnancy.

b. She may receive up to 500 mrem exposure from the day that she declared her pregnancy.

c. She may receive a maximum of 225 mrem of exposure for the remainder of her pregnancy.

d. She may receive a maximum of 275 mrem of exposure for the remainder of her pregnancy.

QUESTION: 087 (1.00)

Unit 2 is operating at 100% power when the reactor pressure bar graph on SPDS turns cyan (light blue).

WHICH ONE (1) of the following describes the meaning of this indication?

a. Reactor pressure is greater than 1060 psig.

b. SPDS has determined that the reactor pressure signal is invalid.

c. Reactor pressure is reading full scale on the selected pressure instrument.

d. A low pressure isolation condition has been sensed but the isolation DID NOT occur.

QUESTION: 088 (1.00)

WHICH ONE (1) of the following explains how Personnel Protection Cards are used?

Personnel Protection Cards are attached to ...

a. Associate Out-of-Service Cards.

b. Master Out-of-Service Cards.

c. Do-Not-Operate/Caution Tags.

d. Equipment-In-Test Tags.

QUESTION: 089 (1.00)

The Unit 1 NSO is directing a surveillance from the control room. A step in the surveillance requires a non-licensed operator to operate a valve locally. WHICH ONE (1) of the following explains how this action is to be recorded on the surveillance record?

a. The non-licensed operator will initial a field copy of the surveillance which will be attached to the control room copy of the surveillance.

b. The non-licensed operator will come to the control room at the completion of the surveillance and initial all appropriate steps.

c. The NSO will enter the initials of the non-licensed operator and then enter his/her own initials.

d. The NSO will enter his/her initials and then the initials of the non-licensed operator.

QUESTION: 090 (1.00)

WHICH ONE (1) of the following describes how the position of a CLOSED Limitorque Operated Valve can be verified in accordance with QCAP 230-5, "Independent Verification"?

a. Utilize the mechanical position indicator.

b. Attempt to manually operate the valve in the CLOSED direction.

c. Manually operate the valve one turn in the OPEN direction then reclose the valve.

d. Verify that the clutch is disengaged by ensuring that the valve actuator handwheel rotates freely in both directions.

QUESTION: 091 (1.00)

WHICH ONE (1) of the following describes a situation where the use of an Interim Procedure (IP) would be acceptable?

a. A procedure is written for a one-time evolution.

b. A procedure is written for newly installed equipment and will become a permanent procedure once the testing is complete.

c. A change to a permanent procedure is required AND the change DOES NOT change the intent of the procedure.

d. Write an additional IP against the same procedure, resulting in both IPs being in effect.

QUESTION: 092 (1.00)

Given the following conditions:

- A member of the Operations department and an escorted visitor are in protective clothing for inspection of some contaminated equipment.
- A Site Emergency has just been declared.
- The Station Director has implemented a Plant Assembly.

WHICH ONE (1) of the following actions should be taken concerning these two personnel?

Both personnel should ...

a. remove all protective clothing at the step off area and proceed to the Operations Support Center.

b. don an additional set of gloves and shoe covers and proceed to the hallway between the RPA and the maintenance shop.

c. leave all protective clothing on and proceed to the Operations Support Center for surveys and possible decontamination.

d. proceed to the hallway between the RPA and the maintenance shop and remove gloves and shoe covers when proceeding through the step off area.

QUESTION: 093 (1.00)

WHICH ONE (1) of the following explains when the Emergency Response Data System is REQUIRED to be activated?

a. Whenever ANY GSEP Emergency Action Level has been exceeded.

b. Whenever an event that is reportable to the NRC has occurred.

c. When a GSEP Alert or higher emergency classification has been declared.

d. ONLY when the NRC requests continuous communication via the Emergency Event Notification System.

QUESTION: 094 (1.00)

A radiological survey has determine that an area in the plant would give an individual a dose of 1100 mrem in one hour at 30 cm. WHICH ONE (1) of the following radiological postings is required?

a. Locked High Radiation Area.

b. Caution, High Radiation Area.

c. Danger, Radioactive Material Area.

d. Grave Danger, Very High Radiation Area.

QUESTION: 095 (1.00)

WHICH ONE (1) of the following describes when "Short Duration Time Clocks" can be used to track entry into Technical Specification Limiting Conditions for Operations (LCOs)?

Whenever the LCO that is entered is expected to last a MAXIMUM of ...

a. less than 6 hours

b. 8 hours

c. 12 hours

d. 24 hours

QUESTION: 096 (1.00)

Refueling operations are in progress on Unit 2. WHICH ONE (1) of the following describes the requirements for maintaining communications between the control room and the refueling floor?

a. Direct communications are ONLY required when inserting a fuel bundle; any standard method of communication is acceptable.

b. The NSO must be on headsets, in communication with the SRO in charge of fuel handling, whenever fuel movements are in progress.

c. A Qualified Nuclear Engineer must be on headsets, in communication with the SRO in charge of fuel handling, whenever fuel movements are in progress.

d. Continuous communication must be maintained between the control room and the refuel floor by use of the control room speaker phone during reload and unload operations.

QUESTION: 097 (1.00)

WHICH ONE (1) of the following describes how Post Accident Monitoring instrumentation is identified in the control room?

a. A red dot is placed near the instrument.

b. A black dot is placed near the instrument.

c. The instrument label is written in yellow.

d. The instrument number is followed by an asterisk (*).

QUESTION: 098 (1.00)

WHICH ONE (1) of the following precautions must be met prior to racking out a 4160 volt breaker?

a. Additional personnel who are not wearing protective clothing must be at least two cubicles away.

b. The CLOSE fuses must be removed first followed by the TRIP fuses.

c. The person racking out the breaker must stand on a rubber mat.

d. The breaker Test Selector Switch must be in "TEST".

QUESTION: 099 (1.00)

WHICH ONE (1) of the following is REQUIRED to be reviewed by the oncoming Shift Engineer BEFORE Turnover?

a. Degraded Equipment Log.

b. Unit 1 and Unit 2 Logs.

c. Control Room Panels.

d. Center Desk Logs.

QUESTION: 100 (1.00)

WHICH ONE (1) of the following situations adheres to the guide-lines dealing with overtime (excluding turnover time)?

a. A Shift Control Room Supervisor works 10 hours a day for 4 consecutive days and 12 hours a day for the following 3 days.

b. During a refueling outage, a Shift Supervisor is scheduled to work 12 hour shifts for 7 days, followed by 5 days off.

c. The shift operator works 16 hours a day for two consecutive days with an 8 hour break after the first shift.

d. A shift operator works 8 hours this shift, returns in 8 hours then works a 16 hour shift.

(********** END OF EXAMINATION **********)

ANSWER: 001 (1.00)

b.

REFERENCE:

1. P&ID M-41, Sheet 1.
2. Facility Event.

K/A: 201001K405 [3.8/3.8]

201001K405 ..(KA's)

ANSWER: 002 (1.00)

c.

REFERENCE:

1. Technical Specification 3.0.A and 4.3.B.6. (Tech Spec provided)
2. QCOS 300-11, Rev. 1.

K/A: 201001G005 [3.3/3.9]

201001G005 ..(KA's)

ANSWER: 003 (1.00)

d.

REFERENCE:

1. QCOA 300-3, Uncoupled Control Rod, Rev. 2, Immediate Operator Action C.1.b (page 1).

K/A: 201003A202 [3.7/3.8]

201003A202 ..(KA's)

ANSWER: 004 (1.00)

a.

REFERENCE:

1. QCOA 300-6, Control Rod Drive Flow Control Valve Failure, Rev. 0, Caution Statement on page 3.

   K/A: 201003K601 [3.3/3.3]

201003K601 ..(KA's)

ANSWER: 005 (1.00)

b.

REFERENCE:

1. QCOP 207-2, RWM Bypass Control, Rev. 1, Limitations and Actions E.1 (page 1).
2. Technical Specification 3.3.B. (Tech Spec WILL be provided)

   K/A: 201006G011 [3.5/4.2]

201006G011 ..(KA's)

ANSWER: 006 (1.00)

a.

REFERENCE:

1. QCOA 202-6, Recirculation Pump Seal Failure, Rev. 3, Symptoms Section, A.1 (page 1).
2. ILT 0202-1, Reactor Recirc System, Rev. 3, Section I.B.2.b (page 6), LO 3.

   K/A: 202001A109 [3.3/3.3]

202001A109 ..(KA's)

ANSWER: 007 (1.00)

c.

REFERENCE:

1. QCOP 202-2, Reactor Recirculation System Startup, Rev. 5, Limitations and Actions E.5.a (page 2).
2. Technical Specification 3.6.H.5.a. (Tech Spec will be provided)
3. ILT 0202-1, Reactor Recirc System, LO 6 and 15.
4. Steam Tables (Provided).

K/A: 202001G005 [3.4/4.2]

202001G005 ..(KA's)

ANSWER: 008 (1.00)

b.

REFERENCE:

1. Technical Specification Bases, Section 3.6.G. (Tech Spec Bases will NOT be provided)

K/A: 202001G006 [3.0/4.1]

202001G006 ..(KA's)

ANSWER: 009 (1.00)

b.

REFERENCE:

1. QCOP 202-3, Reactor Recirc System Flow Controller Operation, Rev. 1, Limitations and Actions E.6 (page 2).
2. ILT 202-1, Reactor Recirc System, Rev. 3, Section II.H (page 30), LO 6.

K/A: 202002A101 [3.2/3.2]

202002A101 ..(KA's)

ANSWER: 010 (1.00)

c.

REFERENCE:

1. ILT 202-1, Reactor Recirc System, Rev. 3, Section II.H.2.e.(4) (page 34), LO 6.
2. QCOP 202-2, Rev 5, E.11.d, pg 3
   K/A: 202002K108 [3.1/3.2]

202002K108 ..(KA's)

ANSWER: 011 (1.00)

a.

REFERENCE:

1. ILT 1000, RHR System, Rev. 0, Section V.A.2.b (page 56,58), LO 8.

K/A: 203000K411 [4.0/4.0]

203000K411 ..(KA's)

ANSWER: 012 (1.00)

b.

REFERENCE:

1. QCOA 1000-4, LPCI Automatic Initiation, Rev. 4, Immediate Operator Actions Section C.3.a (page 3).
2. ILT 1000, RHR System, Rev. 0, Section III.D.12.d (page 20), LO 11.

K/A: 203000A216 [4.4/4.5]

203000A216 ..(KA's)

ANSWER: 013 (1.00)

c.

REFERENCE:

1. ILT 1200, RWCU, Rev. 3, Section II.H.4 (page 14), LO 6.
2. QCOP 1200-7, Rev 1, Limitation & Action, F.1.b, pg 2
   K/A: 204000A303 [3.6/3.6]

204000A303 ..(KA's)

ANSWER: 014 (1.00)

c.

REFERENCE:

1. QCOP 1000-17, Shutdown Cooling, Reactor Temperature Trending, Rev. 3, Precautions Section E.3 (page 2).
2. Technical Specification 3.6.B.2. (Tech Spec will be provided)
3. Steam Tables (Provided).

K/A: 205000A407 [3.7/3.7]

205000A407 ..(KA's)

ANSWER: 015 (1.00)

d.

REFERENCE:

1. QCOP 1000-5, Shutdown Cooling Operation, Rev. 7 IP, Precautions Section D.6 (page 2).

   K/A: 205000G010 [3.2/3.3]

   205000G010 ..(KA's)

ANSWER: 016 (1.00)

c.

REFERENCE:

1. QCAN 901-3 G-12, Rev. 0, HPCI Control Power Failure, Automatic Action A.2.
   K/A: 206000K602 [3.3/3.7]

   206000K602 ..(KA's)

ANSWER: 017 (1.00)

c.

REFERENCE:

1. QCOP 2300-6, HPCI System Manual Startup, Rev. 4, Caution in Step G.7 (page 14).

   K/A: 206000G013 [4.2/4.0]

   206000G013 ..(KA's)

ANSWER: 018 (1.00)

a.

REFERENCE:

1. QCAN 901-3 C-15, Auto blowdown Interlock Core Spray/RHR, Rev. 0.
2. Core Spray lesson plan, Rev. 0, Section IV.C (page 30), LO 8.
   K/A: 209001K105 [3.7/3.7]

209001K105 ..(KA's)

ANSWER: 019 (1.00)

b.

REFERENCE:

1. ILT 1100, SBLC System. Rev. 1, Section V.c (page 22), LO 7.

   K/A: 211000K202 [3.1/3.2]

211000K202 ..(KA's)

ANSWER: 020 (1.00)

a.

REFERENCE:

1. Technical Specification 3.1.A Interpretation (dated 6/4/94). (Tech Spec will be provided).

   K/A: 212000G005 [3.8/4.5]

212000G005 ..(KA's)

ANSWER: 021 (1.00)

c.

REFERENCE:

1. ILT 0500, RPS, Rev. 1, Section II.A.1 and II.A.2 (page 6 and 8), LO 6 and 7.
2. QOA 7000-1, pg 6, E.2

K/A: 212000A201 [3.7/3.9]

212000A201 ..(KA's)

ANSWER: 022 (1.00)

d.

REFERENCE:

1. Technical Specification 3.3.A.3.b, 3.3.A.2.e, and 3.0.A (Tech Spec WILL be provided)

K/A: 214000A303 [3.5/3.7]

214000A303 ..(KA's)

ANSWER: 023 (1.00)

a.

REFERENCE:

1. QOP 700-5, Rod Block Monitor, Rev. 7, Limitations and Actions E.4 (page 2).
2. ILT 0700-5, RBM System, Rev. 0, Section VII.C (page 30), LO 15.
3. Technical Specification 3.3.B.5. (Tech Spec WILL be provided)

K/A: 215002K302 [3.1/3.6]

215002K302 ..(KA's)

ANSWER: 024 (1.00)

c.

REFERENCE:

1. QCOP 700-6, TIP, Rev. 0, Section D.4 (page 2).
2. ILT 700-6, TIP, Rev. 1, Section II.E (page 12), LO 6.

K/A: 215001A207 [3.4/3.7]

215001A207 ..(KA's)

ANSWER: 025 (1.00)

b.

REFERENCE:

1. QCOP 700-2, IRM Operation, Rev. 1, Discussion Section B.2 (page 1).
2. QCGP 1-1, Startup, Rev. 8, Section G.3.a Note (page 14).

K/A: 215003A301 [3.3/3.3]

215003A301 ..(KA's)

ANSWER: 026 (1.00)

a.

REFERENCE:

1. QCAN 902-5 E-5, SRM Short Period, Rev. 1.
2. ILT 0700-1, SRM. Rev. 2, Section III.B.d (page 30), LO 9.

K/A: 215004A105 [3.6/3.8]

215004A105 ..(KA's)

ANSWER: 027 (1.00)

b.

REFERENCE:

1. ILT 0700-4, APRM, Rev. 0, Section III.B.2 (page 18 and 20), LO 9.
2. ILT 0700-3, LPRM, Rev. 0, Section II.D.4 (page 12), LO 6.

K/A: 215005A104 [4.1/4.1]

215005A104 ..(KA's)

ANSWER: 028 (1.00)

d.

REFERENCE:

1. QCOA 201-12, Rev 3, pg 2, D.1

K/A: 216000K305 [3.8/3.9]

216000K305 ..(KA's)

ANSWER: 029 (1.00)

a.

REFERENCE:

1. ILT 0263, Reactor Vessel Instrumentation, Rev. 2, Section IV.B.3

K/A: 216000K508 [3.1/3.2]

216000K508 ..(KA's)

ANSWER: 030 (1.00)

d.

REFERENCE:

1. QCOA 1300-1, RCIC Turbine Trip/Isolation Recovery, Rev. 1, Caution before step D.3 (page 3).
2. ILT 1300, RCIC, Rev. 2, LO 12.

K/A: 217000A202 [3.8/3.7]

217000A202 ..(KA's)

ANSWER: 031 (1.00)

c.

REFERENCE:

1. Technical Specification 3.5.G. (Tech Spec will be provided)
2. QCOS 1300-9, RCIC 24 Hour Verification When Suction Lined Up From Torus, Rev. 2, Discussion Section B (page 1).

K/A: 217000A203 [3.4/3.3]

217000A203 ..(KA's)

ANSWER: 032 (1.00)

c.

REFERENCE:

1. QCAN 901(2)-3 B-13, Automatic Blowdown Timer Start, Rev. 0.
2. ILT 0202, ADS, Rev. 0, Sectior III.E.3.c (page 16), LO 3.

K/A: 218000K501 [3.8/3.8]

218000K501 ..(KA's)

ANSWER: 033 (1.00)

a.

REFERENCE:

1. ILT-0250, Main Steam, Rev. 0, Section VI.B.1.e (page 50), LO 18.

   K/A: 223002K101 [3.8/3.9]

   223002K101 ..(KA's)

ANSWER: 034 (1.00)

b.

REFERENCE:

1. QCOP 1000-30, Post-Accident RHR Operation, Rev. 2, Section F.1 (page 4).
2. ILT 1000, RHR, Rev. 0, Section III.D.11 (page 18 and 20), LO 12.

   K/A: 230000A215 [4.0/4.1]

   230000A215 ..(KA's)

ANSWER: 035 (1.00)

a.

REFERENCE:

1. QCOP 1000-30, Post-Accident RHR Operation, Rev. 2, Section F.5 (page 5).

   K/A: 226001A409 [2.8/2.7]

   226001A409 ..(KA's)

ANSWER: 036 (1.00)

a.

REFERENCE:

1. T.S. Bases, Amend. 114, 3.10.C. (Tech Spec Bases will NOT be provided)

   K/A: 233000G006 [2.5/3.4]

   233000G006 ..(KA's)

ANSWER: 037 (1.00)

c.

REFERENCE:

1. ILT 0203, ADS, Rev. 0, Section III.A.4 (page 6), LO 13.

   K/A: 239002A302 [4.3/4.3]

   239002A302 ..(KA's)

ANSWER: 038 (1.00)

c.

REFERENCE:

1. ILT 5650-2, EHC Logic, Rev. 2, Section II.A.1 (page 10), LO 12.
2. QCOA 5650-1, Rev 1, B.2
   K/A: 241000K302 [4.2/4.3]

   241000K302 ..(KA's)

ANSWER: 039 (1.00)

c.

REFERENCE:

1. ILT 0600, Reactor Water Level Control, Rev. 0, Section IV.B.3 (page 36), LO 6.
2. QCOP 600-3
   K/A: 259002A306 [3.0/3.0]

259002A306 ..(KA's)

ANSWER: 040 (1.00)

d.

REFERENCE:

1. QOA 900-8 G-12, 4KV BUS 14-1 VOLTAGE DEGRADED, Rev. 2.

   K/A: 262001A211 [3.2/3.6]

262001A211 ..(KA's)

ANSWER: 041 (1.00)

d.

REFERENCE:

1. QCOA 400-2, Core Instabilities, Rev o, Immediate Operator Action C.2 (page 1).

   K/A: 295001G010 [3.8/3.7]

295001G010 ..(KA's)

ANSWER: 042 (1.00)

c.

REFERENCE:

1. QCOA 202-4, Loss of Flow Single Pump, Rev. 3, Discussion Section E.7 (page 5).
2. Technical Specification 3.6.H.3.a and 1.1A. (Tech Spec provided)

K/A: 295001K103 [3.6/4.1]

295001K103 ..(KA's)

ANSWER: 043 (1.00)

b.

REFERENCE:

1. QCAN 901-7 A-15, Circ Water Pump Auto Trip, Operator Actions B.1 (page 1).

K/A: 295018G009 [3.5/3.3]

295018G009 ..(KA's)

ANSWER: 044 (1.00)

b.

REFERENCE:

1. QCAN 901-7 A-15, Circ Water Pump Auto Trip (page 1).
2. QCOA 4400-1, Rev 0, A.1, Loss of All Circulating Water Pumps
3. QOA 7000-1, Rev 17, 120 VAC Reactor Protection Bus Failure, pg 1, item 2.e

K/A: 295002K208 [3.1/3.2]

295002K208 ..(KA's)

ANSWER: 045 (1.00)

d.

REFERENCE:

1. QOA 6100-1, Loss Of Transformer 12 During Power Operation, Rev. 7, Automatic Actions B.1 (page 1).

   K/A: 295003A103 [3.7/3.8]

295003A101 ..(KA's)

ANSWER: 046 (1.00)

b.

REFERENCE:

1. QOA 6100-4, Station Blackout, Rev. 10, Step D.4 (page 2).

   K/A: 295003K106 [3.8/4.0]

295003K106 ..(KA's)

ANSWER: 047 (1.00)

d.

REFERENCE:

1. QOA 6900-4, Total Loss of Unit 2 125 VDC, Rev. 9, Discussion Section E.2 (page 5).

   K/A: 295004A102 [3.8/4.1]

295004A102 ..(KA's)

ANSWER: 048 (1.00)

d.

REFERENCE:

1. QCAN 901-6 A-1, Moisture Separator 1A High Level, Rev. 0, Automatic Action A.1 (page 1).
2. QOA 5600-4, Loss of Turbine Generator, Rev. 6, Immediate Operator Action C.1 (page 1).

K/A: 295005K204 [3.6/3.7]

295005K204 ..(KA's)

ANSWER: 049 (1.00)

c.

REFERENCE:

1. QOA 5600-4, Loss of Turbine Generator, Rev. 6, Immediate Operator Action C.3.a (page 1).

K/A: 295005G010 [3.8/3.6]

295005G010 ..(KA's)

ANSWER: 050 (1.00)

b.

REFERENCE:

1. QCGP 2-3, Reactor Scram, Rev. 12, Procedure Step F.1.c (page 3).

K/A: 295006A102 [3.9/3.8]

295006A102 ..(KA's)

ANSWER: 051 (1.00)

d.

REFERENCE:

1. QCOA 201-3, Reactor High Pressure, Rev. 0 Immediate Operator Action C.3.b (page 3),

K/A: 295007A105 [3.7/3.8]

295007A105 ..(KA's)

ANSWER: 052 (1.00)

c.

REFERENCE:

1. Lesson Plan QGA 101 RPV Control-Atws, Rev. 5, Section II.D.3 (page 52), LO 20.

K/A: 295008A107 [3.4/3.4]

295008A107 ..(KA's)

ANSWER: 053 (1.00)

c.

REFERENCE:

1. ILT 0600, Reactor Water Level Control, Rev. 0, Section IV.B.2 (page 34 and 36), LO 9.
2. QCOA 201-9, Reactor Low Water Level, Rev. 1, Automatic Action B.3 (page 2).
3. QCOA 600-9, Rev 0, Main Feedpump Run Out, pg 1, B.3

K/A: 295009K202 [3.9/3.9]

295009K202 ..(KA's)

ANSWER: 054 (1.00)

d.

REFERENCE:

1. QCOP 1600-1, Drywell Pressure Relief Through SBGT, Rev. 2, Precaution E.1 (page 3).
2. QCOP 1600-8, De-inerting of Primary Containment Through The Reactor Building Ventilation System, Rev. 5, Precaution D.2 (page 2).

K/A: 295010G007 [3.6/3.8]

295010G007 ..(KA's)

ANSWER: 055 (1.00)

d.

REFERENCE:

1. QCOA 1600-3, Torus Water High Temperature, Rev. 0, Step D.2.a (page 2).
2. Technical Specification 3.7.A.1.c.3) (Tech Spec will be provided).
K/A: 295013A201 [3.8/4.0]

295013A201 ..(KA's)

ANSWER: 056 (1.00)

b.

REFERENCE:

1. Quad Cities QCOA 400-1, E.1
2. KA 295014A203 [4.0/4.3]

295014A203 ..(KA's)

ANSWER: 057 (1.00)

d.

REFERENCE:

1. QCGP 2-3, Reactor Scram, Rev. 12, Step F.2.c.2 (page 4).

   K/A: 295015A101 [3.8/3.9]

   295015A101 ..(KA's)

ANSWER: 058 (1.00)

c.

REFERENCE:

1. QARP 800-1, Safe Shutdown Procedure E2, Rev. 7.

   K/A: 295016A202 [4.2/4.3]

   295016A202 ..(KA's)

ANSWER: 059 (1.00)

d.

REFERENCE:

1. QCOA 1700-4, Abnormal Off Gas Radiation, Rev. 0, Automatic Action B.1 (page 1).

   K/A: 295017K301 [3.6/3.9]

   295017K301 ..(KA's)

ANSWER: 060 (1.00)

a.

REFERENCE:

1. ILT 3900, Service Water System, Rev. 0, Section III.D.1 (page 8), Lo 13.

   K/A: 295018K101 [3.5/3.6]

295018K101 ..(KA's)

ANSWER: 061 (1.00)

a.

REFERENCE:

1. QOA 4700-6, Total Loss of Instrument Air, Rev. 5, Immediate Operator Action C.8 (page 2).

   K/A: 295019K205 [3.4/3.4]

295019K205 ..(KA's)

ANSWER: 062 (1.00)

c.

REFERENCE:

1. QCOA 1000-2, Rev 4, C.1-3, LOSS OF SHUTDOWN COOLING
2. QCOA 1000-4, Rev 4, C.1-3, LPCI AUTOMATIC INITIATION
   K/A: 295021G010 [3.5/3.3]

295021G010 ..(KA's)

ANSWER: 063 (1.00)

a.

REFERENCE:

1. QCOA 1000-2, Loss of Shutdown Cooling, Rev. 4, Caution before Step D.3 (page 3).

   K/A: 295021K102 [3.3/3.4]

295021K102 ..(KA's)

ANSWER: 064 (1.00)

a.

REFERENCE:

1. QCOA 300-1, CRD Pump Failure, Rev. 0, Immediate Operator Action C.1 (page 1).

   K/A: 295022K301 [3.7/3.9]

295022K301 ..(KA's)

ANSWER: 065 (1.00)

d.

REFERENCE:

1. QCFHP 110-2, Rev 0, Item C, IMMEDIATE ACTIONS (page 2).

   K/A: 295023G010 [3.8/3.9]

295023G010 ..(KA's)

ANSWER: 066 (1.00)

b.

REFERENCE:

1. QCOA 1900-1, Loss of Water Level in the Fuel Storage Pool or Reactor Cavity, Rev. 0, Immediate Operator Action C.1 (page 2).

   K/A: 295023G010 [3.8/3.9]

295023G010 ..(KA's)

ANSWER: 067 (1.00)

d.

REFERENCE:

1. QCFHP 110-4, Rev 0, Caution and item C, IMMEDIATE ACTIONS.
2. NRC Information Notice 90-08, Feb 1, 1990
   K/A: 295023K101 [3.6/4.1]

295023K101 ..(KA's)

ANSWER: 068 (1.00)

a.

REFERENCE:

1. Lesson Plan QGA 200, Primary Containment Control, Rev. 3, Section II.B.5.a.(4) (page 18).

   K/A: 295024K307 [3.5/4.0]

295024K307 ..(KA's)

ANSWER: 069 (1.00)

b.

REFERENCE:

1. QGA 200 Primary Containment Control.
2. Lesson Plan QGA 200, Primary Containment Control, Rev. 3, Section II.E.1.c.1.d (page 34).

K/A: 295024A203 [3.8/3.8]

295024A203 ..(KA's)

ANSWER: 070 (1.00)

d.

REFERENCE:

1. ILT 0300, ARI, Rev. 1, Appendix A, Section D.3, LO 10.

K/A: 295025K306 [4.2/4.4]

295025K306 ..(KA's)

ANSWER: 071 (1.00)

c.

REFERENCE:

1. QGA 200, Primary Containment Control, Detail QGA-D7.

K/A: 295026A203 [3.9/4.0]

295026A203 ..(KA's)

ANSWER: 072 (1.00)

b.

REFERENCE:

1. QGA 200, Primary Containment Control, Detail QGA-D1.

   K/A: 295028A203 [3.7/3.9]

   295028A203 ..(KA's)

ANSWER: 073 (1.00)

b.

REFERENCE:

1. Lesson Plan QGA 200, Primary Containment Control, Rev. 3, Section II.C.4.c.3 (page 26), LO 16.

   K/A: 295028K301 [3.6/3.9]

   295028K301 ..(KA's)

ANSWER: 074 (1.00)

b.

REFERENCE:

1. QCOP 1600-12, Torus Normal Level Control, Fill and Drain Procedure Directory, Rev. 2.

   K/A: 295030A106 [3.4/3.4]

   295030A106 ..(KA's)

ANSWER: 075 (1.00)

c.

REFERENCE:

1. Lesson Plan ILT QGA-200, Primary Containment Control, Rev. 3, Section II.E.1.d.1.b.3.a (page 42).

   K/A: 295030K303 [3.6/3.7]

   295030K303 ..(KA's)

ANSWER: 076 (1.00)

d.

REFERENCE:

1. QGA 500-4, RPV Flooding. (RPV Flooding EOP to be provided)

   K/A: 295031A204 [4.6/4.8]

   295031A204 ..(KA's)

ANSWER: 077 (1.00)

c.

REFERENCE:

1. QCAN 901(2)-4 A-12, Rev. 0.

   K/A: 295032G011 [4.1/4.2]

   295032G011 ..(KA's)

ANSWER: 078 (1.00)

b.

REFERENCE:

1. QOA 1800-1, Area High Radiation, Rev. 1, Section B.1.c Automatic Actions (page 1).

   K/A: 295033K303 [3.8/3.9]

295033K303 ..(KA's)

ANSWER: 079 (1.00)

a.

REFERENCE:

1. QCOP 1600-13, Post Accident Venting of the Primary Containment, Rev. 6, Section F.4 (page 6).

   K/A: 295038K203 [3.6/3.8]

295038K203 ..(KA's)

ANSWER: 080 (1.00)

c.

REFERENCE:

1. Lesson Plan QGA 101, RPV Control-ATWS, Rev. 5, Section II.D.4.b (page 52).

   K/A: 295037K202 [4.0/4.2]

295037K202 ..(KA's)

ANSWER: 081 (1.00)

d.

REFERENCE:

1. QCOP 1200-2, Bypassing All RWCU Isolation Signals, Rev. 2, Discussion Section B (page 1).

K/A: 295037A110 [3.7/3.9]

295037A110 ..(KA's)

ANSWER: 082 (1.00)

c.

REFERENCE:

1. Lesson Plan QGA 100, RPV Control-ATWS, Rev. 5, Section II.B.6.b.1 (page 20).

K/A: 295037A207 [4.0/4.2]

295037A202 ..(KA's)

ANSWER: 083 (1.00)

c.

REFERENCE:

1. QGA 400, Radioactivity Release Control, Entry Condition.

K/A: 295038G011 [4.2/4.5]

295038G011 ..(KA's)

ANSWER: 084 (1.00)

d.

REFERENCE:

1. QCAP 630-6, Rev. 2, item D.2.a.(1), (page 3).
   K/A: 294001K103 [3.3/3.8]

294001K103 ..(KA's)

ANSWER: 085 (1.00)

d.

REFERENCE:

1. QAP 300-18, Rev. 6, item 9 (page 1).
   K/A: 294001K101 [3.7/3.7]

294001K101 ..(KA's)

ANSWER: 086 (1.00)

d.

REFERENCE:

1. QCAP 600-7, Rev. 1, Section D.2.a.1 (page 3).
   K/A: 294001K103 [3.3/3.8]

294001K103 ..(KA's)

ANSWER: 087 (1.00)

b.

REFERENCE:

1. ILT 9900-1, PCS/SPDS, Rev. 1 Section II.B.3.e.4 (page 32).

K/A: 294001A115 [3.2/3.4]

294001A115 ..(KA's)

ANSWER: 088 (1.00)

b.

REFERENCE:

1. QCAP 230-4, Rev. 5, Section C.3 (page 2).
2. QAP 300-13, Rev. 20, Section C.3.b (page 2).

K/A: 294001K102 [3.9/4.5]

294001K102 ..(KA's)

ANSWER: 089 (1.00)

c.

REFERENCE:

1. QCAP 211-2, Rev. 0, Section D.12 (page 4).

K/A: 294001A106 [3.4/3.6]

294001A106 ..(KA's)

ANSWER: 090 (1.00)

a.

REFERENCE:

1. QCAP 230-5, Rev. 1, Section E.5.c and E.6.e (page 6 and 12).

K/A: 294001K101 [3.7/3.7]

294001K101 ..(KA's)

ANSWER: 091 (1.00)

a.

REFERENCE:

1. QCAP 1100-5, Rev. 5, Section B (page 1).

K/A: 294001A103 [2.7/3.7]

294001A103 ..(KA's)

ANSWER: 092 (1.00)

d.

REFERENCE:

1. QEP 400-1, Rev. 8, Section E.2 (page 2).

K/A: 294001A116 [2.9/4.7]

294001A116 ..(KA's)

ANSWER: 093 (1.00)

c.

REFERENCE:

1. QEP 300-1, Rev. 14, Section F.2 (page 7).
   K/A: 294001A116 [2.9/4.7]

294001A116 ..(KA's)

ANSWER: 094 (1.00)

a.

REFERENCE:

1. QCRP 5010-1, Rev. 1, Section G.1.c.2 (page 4).
   K/A: 294001K103 [3.3/3.8]

294001K103 ..(KA's)

ANSWER: 095 (1.00)

a.

REFERENCE:

1. QCAP 230-15, Rev. 2, Section C.1 (page 1).
   K/A: 294001A106 [3.4/3.6]

294001A106 ..(KA's)

ANSWER: 096 (1.00)

d.

REFERENCE:

1. QFP 100-1, Master Refueling Procedure, Rev. 28., Limitations and Actions 14 (page 10).

K/A: 294001A110 [3.6/4.2]

294001A110 ..(KA's)

ANSWER: 097 (1.00)

b.

REFERENCE:

1. QAP 300-2, Rev. 40, Section D 6.b (page 19).

K/A: 294001A113 [4.5/4.3]

294001A113 ..(KA's)

ANSWER: 098 (1.00)

b.

REFERENCE:

1. QCOP 6500-4, Rev. 1, Section D.6 (page 3).

K/A: 294001K107 [3.3/3.6]

294001K107 ..(KA's)

ANSWER: 099 (1.00)

c.

REFERENCE:

1. QCAP 212-2, Rev. 0, Attachment A, page 3 of 3 (page 10).

   K/A: 294001A103 [2.7/3.7]

   294001A103 ..(KA's)

ANSWER: 100 (1.00)

d.

REFERENCE:

1. QAP 300 - 3 rev. 16 pp. 3
2. KA 294001A103 [2.7/3.7]

   294001A103 ..(KA's)

(********** END OF EXAMINATION **********)

A N S W E R K E Y

MULTIPLE CHOICE

001	b
002	c
003	d
004	a
005	b
006	a
007	c
008	b
009	b
010	c
011	a
012	b
013	c
014	c
015	d
016	c
017	c
018	a
019	b
020	a
021	c
022	d
023	a
024	c
025	b
026	a
027	b
028	d
029	a
030	d
031	c
032	c
033	a
034	b
035	a
036	a
037	c
038	c
039	c
040	d
041	d
042	c
043	b
044	b
045	d

A N S W E R K E Y

046	b	069	b
047	d	070	d
048	d	071	c
049	c	072	b
050	b	073	b
051	d	074	b
052	c	075	c
053	c	076	d
054	d	077	c
055	d	078	b
056	b	079	a
057	d	080	c
058	c	081	d
059	d	082	c
060	a	083	c
061	a	084	d
062	c	085	d
063	a	086	d
064	a	087	b
065	d	088	b
066	b	089	c
067	d	090	a
068	a	091	a

A N S W E R K E Y

092 d

093 c

094 a

095 a

096 d

097 b

098 b

099 c

100 d

(********** END OF EXAMINATION **********)

U. S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC EXAMINATION
LIMITED SENIOR OPERATOR LICENSE
REGION 3

CANDIDATE'S NAME: MASTER EXAMINATION

FACILITY: Quad-Cities 1 & 2

REACTOR TYPE: BWR-GE3

DATE ADMINISTERED: 95/03/20

INSTRUCTIONS TO CANDIDATE:

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. Points for each question are indicated in parentheses after the question. The passing grade requires a final grade of at least 80%. Examination papers will be picked up four (4) hours after the examination starts.

TEST VALUE	CANDIDATE'S SCORE	%
50.00		___ % TOTALS

FINAL GRADE

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

Candidate's Signature

A N S W E R S H E E T

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

MULTIPLE CHOICE

001	a	b	c	d	___	023	a	b	c	d	___
002	a	b	c	d	___	024	a	b	c	d	___
003	a	b	c	d	___	025	a	b	c	d	___
004	a	b	c	d	___	026	a	b	c	d	___
005	a	b	c	d	___	027	a	b	c	d	___
006	a	b	c	d	___	028	a	b	c	d	___
007	a	b	c	d	___	029	a	b	c	d	___
008	a	b	c	d	___	030	a	b	c	d	___
009	a	b	c	d	___	031	a	b	c	d	___
010	a	b	c	d	___	032	a	b	c	d	___
011	a	b	c	d	___	033	a	b	c	d	___
012	a	b	c	d	___	034	a	b	c	d	___
013	a	b	c	d	___	035	a	b	c	d	___
014	a	b	c	d	___	036	a	b	c	d	___
015	a	b	c	d	___	037	a	b	c	d	___
016	a	b	c	d	___	038	a	b	c	d	___
017	a	b	c	d	___	039	a	b	c	d	___
018	a	b	c	d	___	040	a	b	c	d	___
019	a	b	c	d	___	041	a	b	c	d	___
020	a	b	c	d	___	042	a	b	c	d	___
021	a	b	c	d	___	043	a	b	c	d	___
022	a	b	c	d	___	044	a	b	c	d	___
						045	a	b	c	d	___

A N S W E R S H E E T

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

046 a b c d ___

047 a b c d ___

048 a b c d ___

049 a b c d ___

050 a b c d ___

(********** END OF EXAMINATION **********)

Policies and Guidelines for Taking NRC Written Examinations

1. Cheating on the examination will result in a denial of your application and could result in more severe penalties.
2. 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.
3. To pass the examination, you must achieve a grade of 80 percent or greater.
4. The point value for each question is indicated in parentheses after the question number.
5. There is a time limit of 4 hours for completing the examination.
6. Use only black ink or dark pencil to ensure legible copies.
7. Print your name in the blank provided on the examination cover sheet and the answer sheet.
8. Mark your answers on the answer sheet provided and do not leave any question blank.
9. If the intent of a question is unclear, ask questions of the examiner only.
10. 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.
11. When you complete the examination, assemble a package including the examination questions, examination aids, and answer sheets and give it to the examiner or proctor. Remember to sign the statement on the examination cover sheet.
12. After you have turned in your examination, leave the examination area as defined by the examiner.

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QUESTION: 001 (1.00)

When a control rod is moved from position 16 to position 22, it is being...

a. inserted 18 inches.

b. inserted 36 inches.

c. withdrawn 18 inches.

d. withdrawn 36 inches.

QUESTION: 002 (1.00)

Refueling is in progress when a double-ended shear of the "A" recirculation suction line is caused by dropping a replacement recirculation pump in the drywell. WHICH ONE (1) of the following will prevent the core from being completely uncovered if no automatic ECCS pumps start and no operator action is taken?

a. The volume of water in the reactor cavity during refueling will fill the containment to a level above the top of active fuel.

b. The recirculation suction line connects to the reactor vessel above the core beltline, providing partial core coverage.

c. The core shroud will remain full of water providing complete core coverage to the top of active fuel.

d. The jet pumps will act as a standpipe and maintain partial core coverage.

QUESTION: 003 (1.00)

Core reload is nearly complete, with 6 new fuel bundles remaining to be loaded into the core, into the quadrant that contains SRM 22. SRM 22 indicates 100 cps, 21, 23, and 24 indicate 75 cps. After you load two (2) bundles into the core, SRM 22 indicates 200 cps, 21, 23, and 24 indicate 90 cps. WHICH ONE of the following states the expected results of loading the remaining bundles? (assume all 6 bundles have equal reactivity worth)

a. SRM 22 will indicate 400 cps when the core is fully loaded.

b. SRM 22 will indicate 600 cps when the core is fully loaded.

c. Two more bundles will cause a local criticality.

d. One more bundle will cause a local criticality.

QUESTION: 004 (1.00)

Quad Cities Unit 1 has been shut down for three weeks with all control rods fully inserted. If rod 42-19 is fully withdrawn from the core, WHICH ONE of the following is the expected response for the adjacent SRM?

a. remain unchanged.

b. increase and stabilize at a new higher level.

c. increase exponentially until the rod is reinserted.

d. increase temporarily then return to the original value.

QUESTION: 005 (1.00)

Assuming fuel pool level remains constant, WHICH ONE of the following are the indications that bearings are beginning to seize on a fuel pool cooling pump?

a. increase in motor amps, increase in pump discharge pressure.

b. decrease in motor amps, increase in pump discharge pressure.

c. increase in motor amps, decrease in pump discharge pressure.

d. decrease in motor amps, decrease in pump discharge pressure.

QUESTION: 006 (1.00)

WHICH ONE of the following groups of components provide LATERAL SUPPORT for the fuel bundles?

a. The shroud support and the core plate

b. The core shroud, core plate and top fuel guide

c. The fuel support castings and control rod guide tubes

d. The top guide, in-core guide tubes and control rod stub tube

QUESTION: 007 (1.00)

WHICH ONE of the following will DECREASE the reactor shutdown margin during refueling operations?

a. Reactor water temperature decrease

b. Control rod assembly installation

c. Reactor water level increase

d. Fuel assembly removal

QUESTION: 008 (1.00)

WHICH ONE of the following conditions will INCREASE the heat transfer rate in the Fuel Pool Cooling heat exchanger?

a. Fuel Pool temperature decreases by 20 degrees F AND RBCCW temperature decreases by 20 degrees F.

b. Fuel Pool temperature increases by 20 degrees F AND RBCCW temperature increases by 20 degrees F.

c. Flow rate of the fuel pool water increases by 10%.

d. Flow rate of the RBCCW system decreases by 10%.

QUESTION: 009 (1.00)

The reactor head has just been removed. Tygon tubing used for monitoring of level during cavity floodup is not yet installed. WHICH ONE of the following level indicators can be used for valid level indication in this configuration?

a. Lower 400 Range GEMAC

b. Wide Range Rosemount

c. Narrow Range Yarway

d. Narrow Range GEMAC

QUESTION: 010 (1.00)

Refueling is in progress with the reactor mode switch in the REFUEL position. The refueling crew has just completed placing a spent fuel bundle into the spent fuel pool and was traversing towards the core when the refueling bridge stopped movement. The mast was full up.

WHICH ONE (1) of the following would have caused the refueling bridge to stop?

a. The main grapple was NOT raised to the "NORMAL UP" position.

b. A control rod was withdrawn from the control room.

c. The reactor mode switch was placed in STARTUP.

d. A "SLACK CABLE" signal was received.

QUESTION: 011 (1.00)

Given the following conditions:

- Mode Switch is in REFUEL
- Refuel floor radiation level is 12 mr/hr
- Platform is directly over the core
- Main hoist is unloaded
- Aux hoist is loaded to 350 lbs
- Rod 03-17 is fully withdrawn with its one-rod-out interlock bypassed

WHICH ONE of the following is true?

a. Platform movement is prevented.

b. Main hoist upward motion is prevented.

c. Control rod withdrawal is prevented.

d. 125 Ton Crane movement is prevented.

QUESTION: 012 (1.00)

Refueling preparations are in progress with the reactor vessel head removed and a partial load of fuel in the vessel.

WHICH ONE of the following is a core alteration?

a. Conduct of a TIP trace.

b. Insertion of a dunking type detector into the NE Quadrant.

c. Withdrawal of a control rod from 00 to 48 using the CRD hydraulic system.

d. Driving a Source Range Monitor from full out to its fully inserted position.

QUESTION: 013 (1.00)

Refueling operations are in progress with Reactor Building ventilation running and Standby Gas Treatment system in standby. The MODE SWITCH is in REFUEL. During an instrument surveillance, an Instrument Technician inadvertently satisfies coincidence logic causing instruments to sense a High Drywell pressure condition.

WHICH ONE of the following correctly completes this statement?

Reactor Building Ventilation _____ and SBGT _____.

a. isolates; remains in standby.

b. isolates; starts automatically.

c. remains running; remains in standby.

d. remains running; starts automatically.

QUESTION: 014 (1.00)

Given the following conditions:

- Mode Switch is in REFUEL
- Refuel floor radiation level is 15 mr/hr
- Platform is directly over the core
- Main hoist is loaded to 500 lbs and is NOT full up with its hoist override pushbutton depressed
- Aux hoist is unloaded
- Rod 03-17 is at position 02

WHICH ONE of the following identifies the present status of system interlocks?

a. The main hoist remains fully operable. Platform travel in both directions is prevented.

b. Upward motion of the main hoist is prevented. Platform travel in both directions is prevented.

c. The main hoist remains fully operable. Platform travel away from the fuel pool only is prevented.

d. Upward motion of the main hoist is prevented. Platform travel away from the fuel pool only is prevented.

QUESTION: 015 (1.00)

Refueling is in progress. During a surveillance test of the two refueling floor radiation monitors, trip settings are discovered to be 95 mr/hr and 120 mr/hr respectively. WHICH ONE of the following actions is REQUIRED while repairs are made?

a. Refueling must cease immediately.

b. The current movement may be completed, then operation must cease.

c. Refueling can continue but the Reactor Building Ventilation must be isolated and Standby Gas Treatment must be operated within 24 hours.

d. Refueling can continue but the Reactor Building Ventilation must be isolated and Standby Gas Treatment must be operated immediately.

QUESTION: 016 (1.00)

When shutdown cooling is in operation which one of the following conditions will result in an automatic isolation of the Shutdown Cooling System?

a. RPV level of +5 inches

b. Drywell radiation of 80 Rem/hr

c. One refuel floor rad monitor reading 110 mRem/hr

d. Both refuel floor rad monitors reading downscale

QUESTION: 017 (1.00)

WHICH ONE of the following is the BASIS for requiring secondary containment to be in effect prior to initiating refueling activities?

a. To minimize any stack level release from a serious refueling accident.

b. To minimize any ground level release from a serious refueling accident.

c. To preclude unauthorized personnel access to transient security areas containing Special Nuclear Material.

d. To preclude unauthorized personnel access to areas of the reactor building which could become high radiation areas.

QUESTION: 018 (1.00)

Quad Cities Technical Specifications requires that a minimum spent fuel pool level be maintained during refueling. The BASIS for this minimum required fuel pool level is:

a. To provide adequate cooling and shielding of fuel assemblies in the fuel pool.

b. To provide enough water to absorb 90% of the volatile fission products released from a postulated damaged fuel bundle.

c. To provide an adequate volume of water to delay uncovering fuel for 10 minutes in the event of an unisolable rupture of the fuel pool cooling line.

d. To provide an adequate heat sink to delay boiling in the pool for 8 hours in the event of a plant blackout immediately after a full core offload.

QUESTION: 019 (1.00)

WHICH ONE of the following conditions will cause the Unit 1 Reactor Building Ventilation system to ISOLATE?

a. Loss of power on Bus 17

b. Instrument air pressure of 75 psig

c. Refuel floor radiation of 120 mR/hr

d. Reactor building vent exhaust radiation 0.2 mR/hr

QUESTION: 020 (1.00)

Given the following:

NW Quadrant	SRM 24 reads 8 cps; 50% of the fuel bundles are removed.
NE Quadrant	a dunking-type detector reading 9 cps has been installed for indication only and is connected to no other circuitry; 50% of the fuel bundles are removed.
SE Quadrant	SRM 23 reads 10 cps; 50% of the fuel bundles are removed.
SW Quadrant	SRM 22 reads 2 cps; all fuel has been removed from the quadrant except 2 bundles adjacent to the SRM.

All control rods are fully inserted.

WHICH ONE of the following identifies the limitations placed on performance of Control Rod maintenance?

a. Control Pod maintenance may not be performed in any quadrant.

b. Maintenance may be performed in the NW and SE quadrants ONLY.

c. Maintenance may be performed in the NW, NE and SE quadrants.

d. Maintenance may be performed in the NW, SW and SE quadrants.

QUESTION: 021 (1.00)

WHICH ONE of the following is the BASIS for requiring a minimum count rate on an SRM to consider it operable? The minimum count rate assures that...

a. neutron flux is being monitored by the SRM.

b. the SRM detector is fully inserted into the core.

c. the SRM system can meet scram time response requirements.

d. SRM circuitry is operating properly, minimum counts are being generated by the instrument internal source.

QUESTION: 022 (1.00)

Given the following conditions:

- Mode Switch is in STARTUP
- Refuel floor radiation level is 20 mr/hr
- Platform is directly over the spent fuel pool
- Main hoist is unloaded
- Aux hoist is unloaded and is NOT full up
- Rod 03-17 is fully withdrawn

WHICH ONE of the following is true?

a. Control rod withdrawal is prevented.

b. Main hoist upward motion is prevented.

c. 125 Ton Crane upward motion is prevented.

d. Platform movement over the core is prevented.

QUESTION: 023 (1.00)

The core assembly components are located by the use of an X-Y coordinate system. Unit 1 and Unit 2 reference point for the start of this coordinate system (position 00-00) is which corner of the reactor vessel?

a. North West

b. North East

c. South West

d. South East

QUESTION: 024 (1.00)

WHICH ONE of the following conditions REQUIRES that ALL Fuel Movement be IMMEDIATELY halted?

a. Fuel pool water temperature reaches 125 degrees F.

b. One SRM channel is declared inoperable.

c. One Refuel Floor ARM alarm annunciates.

d. Both Fuel Pool Cooling pumps trip.

QUESTION: 025 (1.00)

WHICH ONE of the following allows detensioning to begin?

a. All control rods are inserted, all 4 SRMs are operable with control room indication normal, all SRM shorting links are installed.

b. All control rods are inserted, control rod insert block active, 2 SRMs are operable with control room indication normal, all SRM shorting links are installed.

c. One control rod is fully withdrawn, all 4 SRMs are operable with control room indication normal, 2 SRM shorting links are removed such that SRM trips are in a coincident mode.

d. One control rod is fully withdrawn, control rod withdrawal is blocked, 2 SRMs are operable with control room indication normal, 2 SRM shorting links are removed such that SRM trips are in a coincident mode.

QUESTION: 026 (1.00)

WHICH ONE of the following operations would require secondary containment integrity to be maintained? Both units are in cold shutdown and the reactor coolant system is vented.

a. Fuel pool temperature reaches 146 degrees F.

b. Radiography is performed inside the reactor building.

c. New fuel is being channelled in the reactor building.

d. A loaded fuel cask is being moved with the 125 ton crane.

QUESTION: 027 (1.00)

WHICH ONE of the following fire suppression systems serves the refuel floor?

a. Fire hoses

b. Halon System

c. Cardox System

d. Wet pipe sprinklers

QUESTION: 028 (1.00)

WHICH ONE of the following is a consequence of failing to hydraulically isolate the Control Rod Drive after its control rod has been uncoupled?

a. Drifting of the control rod drive will occur during rod removal.

b. An inadvertent scram causing control rod insertion may result in serious equipment damage.

c. If the control rod drive drifts to overtravel from full in, the latch mechanism will be damaged.

d. If the control rod drive drifts to overtravel from full in, the drive to vessel seal lifts, resulting in a reactor vessel leak path.

QUESTION: 029 (1.00)

Before you may unload the Unit 2 core, you must, for each loop, take out of service MO-2-1001 valves inorder to prevent vessel draining. WHICH ONE of the following is the correct set of valves for 'A' loop?

a. 29 and 19B and 43A and 43B

b. 28 and 34 and 19A

c. 23 and 26 and 36

d. 26 and 37

QUESTION: 030 (1.00)

When using a Fuel Loading Chamber most movements that are not specifically called for on the Nuclear Component Transfer List are prohibited. WHICH ONE of the following movements of the Fuel Loading Chamber can be performed WITHOUT specifically being called for on the Nuclear Component Transfer List?

a. Moving the chamber from its current SRM location to the next for the SRM operability surveillance.

b. Lifting and restoring the chamber for the SRM operability surveillance.

c. Lifting the chamber less than one foot, from its initial depth in the new fuel vault, and placing it in the fuel pool.

d. Moving the chamber horizontally entirely within a core quadrant, with no change in chamber depth.

QUESTION: 031 (1.00)

A major refueling accident has occurred. Two people are injured and unconscious in a very high radiation field. WHICH ONE of the following is the MAXIMUM exposure that the person with "Command and Control" authority is RECOMMENDED to authorize for one volunteer of a rescue team that is NOT fully aware of the radiological risks involved?

a. 5 REM TEDE

b. 25 REM TEDE

c. 75 REM TEDE

d. [5 X ((Age in years) - 18)] REM TEDE

QUESTION: 032 (1.00)

WHICH ONE of the following describes a correctly installed fuel cell?

a. The bundle serial number should appear to be right-side up from the outside of the cell.

b. The bail handles on the fuel bundles should point towards the center of the cell.

c. The fuel channel spacer buttons are adjacent to other fuel channels.

d. The boss on the fuel assembly bail points toward the wide-wide corner.

QUESTION: 033 (1.00)

WHICH ONE of the following lifts would require that secondary containment be maintained AND a specific written procedure be prepared and used?

a. Movement of the RPV head from its storage location in the pit directly to the refuel floor for an inspection.

b. Movement of the empty 9-ton crane hook over the new fuel storage vault.

c. Movement of a new fuel storage vault plug over the spent fuel pool.

d. Movement of the empty 9-ton crane hook over the spent fuel pool.

QUESTION: 034 (1.00)

During a refueling outage, a Refueling Platform Operator has worked the following hours (turnover time has been excluded):

Friday	1600 to 0400
Saturday	1200 to 2400
Sunday	0800 to 1600
Monday	0800 to 1600
Tuesday	0800 to 2400
Wednesday	0800 to 2000
Thursday	0800 to 1200

WHICH ONE of the following statements below identifies the operators use and compliance with the Overtime Guidelines? (assume no special permissions have been granted)

a. The operator complied with all guidelines.

b. The operator worked more than the allowed number of hours in the 7 day period.

c. The operator worked more than the allowed number of hours in a 24 hour period.

d. The operator worked more than the allowed number of hours in a 48 hour period.

QUESTION: 035 (1.00)

WHICH ONE (1) of the following describes how the position of a CLOSED Limitorque Operated Valve can be verified in accordance with QCAP 230-5, "Independent Verification"?

a. Utilize the mechanical position indicator.

b. Attempt to manually operate the valve in the CLOSED direction.

c. Manually operate the valve one turn in the OPEN direction then reclose the valve.

d. Verify that the clutch is disengaged by ensuring that the valve actuator handwheel rotates freely in both directions.

QUESTION: 036 (1.00)

All fuel has been removed from the reactor during refueling, maintenance on jet pumps is in progress, fuel reload will not begin for 48 more hours. WHICH ONE of the following can be moved into or out of the reactor without using a Nuclear Component Transfer List (NCTL)?

a. A fuel support piece

b. A control rod blade

c. An LPRM string

d. A blade guide

QUESTION: 037 (1.00)

With the mode switch in REFUEL, a control rod is fully withdrawn from the reactor for maintenance and its directional control valves are electrically disarmed. Five minutes later, the reactor operator informs you that he has indications of criticality. Movement of fuel and grapple have been terminated. WHICH ONE of the following identifies the MINIMUM actions required?

a. Request the Reactor Operator actuate Standby Liquid Control; evacuate/control access to the entire reactor building.

b. Request the Reactor Operator actuate Standby Liquid Control; evacuate/control access to the refuel floor.

c. Request the Reactor Operator scram the reactor; evacuate/control access to the entire reactor building.

d. Request the Reactor Operator scram the reactor; evacuate/control access to the refuel floor.

QUESTION: 038 (1.00)

In preparation for an upcoming refueling outage, a spent fuel element is being moved in the pool. This element has been out of the reactor for at least 18 months. The element falls and is damaged, bubbles are seen to rise from it.

WHICH ONE (1) of the following describes the alarm(s) produced by the release of the Kr-85 Beta radiation in the gas from the damaged fuel?

a. CAM alarms only

b. Rad monitor alarms only

c. Both CAM and Rad monitor alarms

d. Neither CAM nor Rad monitor alarms

QUESTION: 039 (1.00)

You are moving a visibly bowed spent fuel assembly. When you attempt to seat the bundle in its assigned location in the spent fuel rack, it binds with the assembly protruding four (4) inches above the assemblies around it. WHICH ONE of the following is a procedurally acceptable solution to this problem?

a. Leave the assembly in its current location and position.

b. Remove the channel fastener and attempt to seat the assembly in its assigned location.

c. Seat the assembly in an alternate location, then change the NCTL to reflect the new location.

d. Temporarily store the assembly in the Fuel Prep Machine until the NCTL can be changed to reflect a new fuel rack location.

QUESTION: 040 (1.00)

What actions should be taken if neutron flux indication is lost and cannot be regained while refueling operations are in progress?

a. Place the fuel bundle being moved in the nearest rack location (in the reactor core or in a fuel pool rack).

b. Continue refuel operations only with permission of the reactor operator and the shift engineer.

c. Immediately evacuate the refuel floor.

d. Stop all core alterations.

QUESTION: 041 (1.00)

During refueling operations, a plant operator reports the discovery of a Fuel Pool Cooling system manual valve out of position. WHICH ONE of the following is the correct course of action?

a. Immediately correct the valve position and notify the Fuel Handling Foreman.

b. Immediately correct the valve position and notify the Shift Engineer or Shift Foreman.

c. DO NOT alter the valve position until/unless permission is granted by the Fuel Handling Foreman.

d. DO NOT alter the valve position until/unless permission is granted by the Shift Engineer or Shift Foreman.

QUESTION: 042 (1.00)

A fuel bundle being loaded into the NW quadrant results in a local criticality. WHICH ONE of the following is a true indication of criticality?

a. SRMs 21, 23, and 24 increase from 10 cps to 100 cps and level off.

b. SRMs 23 and 24 increase from 5 cps to 500 cps and level off.

c. SRMs 21 and 23 spike from 20 cps to full scale and return.

d. SRM 24 indicates a sustained upward trend.

QUESTION: 043 (1.00)

Under WHICH ONE of the following conditions must spent fuel movement in the reactor building be secured?

a. The LPCI room compartment door for the RHR pump operating in Shutdown Cooling mode is blocked open.

b. The reactor building automatic ventilation system isolation valves are stuck in the open position.

c. The Standby Gas Treatment System has been manually started as part of a surveillance.

d. New fuel is being moved in the reactor building.

QUESTION: 044 (1.00)

With one control rod withdrawn and isolated for maintenance, the Qualified Nuclear Engineer calculates that the core will remain subcritical by .32% delta K/K if the two strongest operable rods are withdrawn from the reactor. WHICH ONE of the following actions is REQUIRED prior to withdrawal of another control rod for extended core maintenance? (Assume no additional control rods are to be withdrawn.)

a. The MODE SWITCH must be locked in REFUEL and all fuel in the withdrawn rod's cell must be removed.

b. The MODE SWITCH must be locked in SHUTDOWN and all fuel in the withdrawn rod's cell must be removed.

c. A minimum of 8 control rods surrounding the second control rod must be fully inserted and their directional valves electrically disarmed.

d. A minimum of 8 control rods surrounding both control rods must be fully inserted and their directional valves electrically disarmed.

QUESTION: 045 (1.00)

WHICH ONE of the following point sources would deliver the greatest number of REM to a subject under the conditions stated? (assume all sources are bare and do not have any shielding material between them and the subject)

a. 1 Curie neutron source 3 feet away

b. 10 Curie gamma source 12 feet away

c. 5 Curie gamma source 6 feet away

d. 3 Curie beta source 3 feet away

QUESTION: 046 (1.00)

A radiological survey has determine that an area in the plant would give an individual a dose of 1100 mrem in one hour at 30 cm. WHICH ONE (1) of the following radiological postings is required?

a. Locked High Radiation Area.

b. Caution, High Radiation Area.

c. Danger, Radioactive Material Area.

d. Grave Danger, Very High Radiation Area.

QUESTION: 047 (1.00)

On the first day of May, a female worker reports to you that she is pregnant. She has been told by her doctor that she is due on September 30. Her occupational exposure for the first four months of the year is 200 mRem deep dose equivalent.

WHICH ONE of the following is her occupational exposure limit during the remainder of her pregnancy?

a. She is limited to a maximum of 60 mRem per month for the remainder of her pregnancy.

b. She is limited to a maximum of 100 mRem per month for the remainder of her pregnancy.

c. She is limited to a maximum of 300 mRem more of exposure for the remainder of her pregnancy but has no monthly limit.

d. She is limited to a maximum of 500 mRem more of exposure for the remainder of her pregnancy but has no monthly limit.

QUESTION: 048 (1.00)

Fuel pool temperature has exceeded the maximum limit set in QFP-100-1. WHICH ONE of the following concerns is associated with exceeding this limit?

The increased temperature will cause:

a. damage to the fuel pool cooling and cleanup resins.

b. elevated neutron radiation levels around the fuel pool.

c. increased airborne radioactivity levels around the fuel pool.

d. overheating of the fuel pool cooling and cleanup pump bearings.

QUESTION: 049 (1.00)

WHICH ONE of the following conditions will allow entry into a LOCKED HIGH RADIATION AREA (LHRA) or LOCKED VERY HIGH RADIATION AREA (LVHRA)?

a. if the whole body dose rate in the area is confirmed to be 5 Rem/hr, the Lead Health Physicist may approve the entry.

b. if the whole body dose rate in the area is confirmed to be 17 Rem/hr, the Station Manager may approve the entry.

c. if a continuously indicating dosimeter with an audible alarm is carried by each worker, no time keeper is required.

d. if an H.P. monitor accompanies the workers into the LHRA/LVHRA, no time keeper is required.

QUESTION: 050 (1.00)

You are removing junk material from the refueling pool in anticipation of an upcoming refueling outage. The inventory of this material lists the gamma dose rate each item is expected to generate in air. WHICH ONE of the following gamma dose rates, taken at 6 inches from the component, is the MINIMUM that would require a Radiation Technician be present when the component is removed from the pool.

a. 5 mRem/hr

b. 25 mRem/hr

c. 100 mRem/hr

d. 1000 mRem/hr

(********** END OF EXAMINATION **********)

ANSWER: 001 (1.00)

c.

REFERENCE:

1. NRC GFE Exam BanK, B854
2. ILT-0281, Rev 3, page 10, II.E.1.

292005K101 [3.2/3.3]

292005K101 ..(KA's)

ANSWER: 002 (1.00)

d.

REFERENCE:

1. ILT 0201-1, Rev 4, Obj. 6.c.7, p. 28 of 45

202001K401 [3.9/3.9]

202001K401 ..(KA's)

ANSWER: 003 (1.00)

c.

REFERENCE:

1. Doubling of counts indicates a halving of shutdown margin.
2. Intro to Nuclear Reactor Theory, Lamarsh, Eq'n 9-11, p. 284
3. (Power= (source)/(1-Keff)

295014K205 [4.0/4.1]

295014K205 ..(KA's)

ANSWER: 004 (1.00)

b.

REFERENCE:

1. NRC GFE exam bank, # B954

KA: 292005K104 [3.5/3.5]

292005K104 ..(KA's)

ANSWER: 005 (1.00)

c.

REFERENCE:

1. NRC GFE Exam bank, modified.

291005K101 [2.6/2.6]

291005K101 ..(KA's)

ANSWER: 006 (1.00)

b.

REFERENCE:

1. ILT 0201-1, Reactor Vessel and Internals, TKO 6c 5,8,9, p. 14-19

290002G004 [3.2/3.3]

290002G004 ..(KA's)

ANSWER: 007 (1.00)

a.

REFERENCE:

1. GFE Bank Question B948

292002K114 [2.6/2.9]

292002K114 ..(KA's)

ANSWER: 008 (1.00)

c.

REFERENCE:

1. NRC GFE exam bank, B631 (Mod.)

291006K103 (2.4/2.6)

291006K103 ..(KA's)

ANSWER: 009 (1.00)

a.

REFERENCE:

1. ILT 0263, p. 46 of 65

216000K501 [3.1/3.2]

216000K501 ..(KA's)

ANSWER: 010 (1.00)

c.

REFERENCE:

1. ILT -REFU, Refueling, Rev. 2, Section III.B.4.b.2 (page 28).

K/A: 234000K502 [3.1/3.7]

234000K502 ..(KA's)

ANSWER: 011 (1.00)

c.

REFERENCE:

1. QFP 150-2, Rev 17, page 7
2. ILT-REFU, page 20 of 79
3. Technical Specification 3.10.A.1.b.

201002K402 [3.5/3.5]

201002K402 ..(KA's)

ANSWER: 012 (1.00)

b.

REFERENCE:

1. T.S. 1.0, A, p. 1.0-1, Amend. 120
2. T.S. 3.10.B.1.

215004G010 [3.2/3.4]

215004G010 ..(KA's)

ANSWER: 013 (1.00)

b.

REFERENCE:

1. QCAN 901(2)-5 A-8, Group 2 ISOL CH TRIP, Rev 0, pg 2, A.2.d.
2. ILT 5750-1, Rev 2, Obj. 9,p. 10, 12
3. ILT 7500, Obj. 6, 7, p. 28, 30

261000A211 [3.2/3.3]

261000A211 ..(KA's)

ANSWER: 014 (1.00)

d.

REFERENCE:

1. QFP 150-2, Rev 17, pages 7 and 8
2. ILT-REFU, p. 20 of 79
3. Technical Specification 3.10.A.2. and 3.

234000K401 [3.3/4.1]

234000K401 ..(KA's)

ANSWER: 015 (1.00)

c.

REFERENCE:

1. T.S. 3.2.D.2, Amend. 114

272000G005 [2.9/3.9]

272000G005 ..(KA's)

ANSWER: 016 (1.00)

a.

REFERENCE:

1. QCAP 200-10, Rev 10, Attachment D, p. 13

205000K403 [3.8/3.8]

205000K403 ..(KA's)

ANSWER: 017 (1.00)

b.

REFERENCE:

1. T.S 3.7.D bases

290001G006 [2.8/3.8]

290001G006 ..(KA's)

ANSWER: 018 (1.00)

a.

REFERENCE:

1. T.S. Bases, Amend. 114, 3.10.C.
2. Assuming ~ 350 K gallons in pool, ~8 MW dK heat, 140 - 212 takes ~7 hrs.

233000G006 [2.5/3.4]

233000G006 ..(KA's)

ANSWER: 019 (1.00)

c.

REFERENCE:

1. ILT 5750-1, Rev 2, TKO 9, p. 12 of 67

288000K402 [3.7/3.8]

288000K402 ..(KA's)

ANSWER: 020 (1.00)

d.

REFERENCE:

1. Technical Specification 3.10.B. and 3.10.D.3.

201001G005 [3.3/3.9]

201001G005 ..(KA's)

ANSWER: 021 (1.00)

a.

REFERENCE:

1. T.S. Bases 3.10.B

215004G006 [2.8/3.7]

215004G006 ..(KA's)

ANSWER: 022 (1.00)

c and d

REFERENCE:

1. QFP 150-3, Rev 13, Section E.11., page 4

234000K403 [3.4/4.2]

234000K403 ..(KA's)

ANSWER: 023 (1.00)

d.

REFERENCE:

1. SYS-75000-TKO-03 00 ILT Refuel LP R2

234000K403 ..(KA's)

ANSWER: 024 (1.00)

c.

REFERENCE:

1. QFP 100-1, Rev 28, precaution #10, p. 5
2. QCOA 1800-1, Rev 1, Step C.1.
3. ILT-REFU Rev 2, p. 42 of 79

295033G011 [4.0/4.5]

295033G011 ..(KA's)

ANSWER: 025 (1.00)

c.

REFERENCE:

1. QFP 100-1, Rev 28, Precaution 2b, p.9
   215004G010 [3.2/3.4]

215004G010 ..(KA's)

ANSWER: 026 (1.00)

d.

REFERENCE:

1. QFP 100-2, Rev 11, p. 3, E.2.
2. T.S. 3.7.C.1.d.
3. T.S. 1.0.Y.2.

290001G005 [3.3/4.2]

290001G005 ..(KA's)

ANSWER: 027 (1.00)

a.

REFERENCE:

1. QCOA 1900-1, Rev 0, D.2.c.

286000G004 [3.8/3.9]

286000G004 ..(KA's)

ANSWER: 028 (1.00)

b.

REFERENCE:

1. QFP 900-1, Rev 9, Precaution 1, p. 2

201003G010 [3.2/3.2]

201003G010 ..(KA's)

ANSWER: 029 (1.00)

a.

REFERENCE:

1. SOER 85-1
2. P&ID M-39, Sheets 1 and 2

295031G007 [3.7/4.0]

295031G007 ..(KA's)

ANSWER: 030 (1.00)

b.

REFERENCE:

1. QFP 400-3, Rev 8, F.3, pg 2.

294001A112 [3.5/4.2]

294001A112 ..(KA's)

ANSWER: 031 (1.00)

b.

REFERENCE:

1. QEP 150-T2
2. QEP 165-S5, page 2

295023K101 [3.6/4.1]

295023K101 ..(KA's)

ANSWER: 032 (1.00)

d.

REFERENCE:

1. QFP 100-1, Rev 28, Note on page 15.

234000K505 [3.0/3.7]

234000K505 ..(KA's)

ANSWER: 033 (1.00)

c.

REFERENCE:

1. QFP 150-3, Rev 13, Limitations and Actions, 1,2, p. 2

290001G006 [2.8/3.8]

290001G006 ..(KA's)

ANSWER: 034 (1.00)

d.

REFERENCE:

1. QCAP 2400-3, Rev 1, Item D.2 p. 2

294001A110 [3.6/4.2]

294001A110 ..(KA's)

ANSWER: 035 (1.00)

a.

REFERENCE:

1. QCAP 230-5, Rev. 1, Section E.5.c and E.6.e (page 6 and 12).

294001K101 [3.7/3.7]

294001K101 ..(KA's)

ANSWER: 036 (1.00)

d.

REFERENCE:

1. QFP 100-1, Rev 28, Limitations and actions item 12, p. 10

290002G013 [3.2/3.2]

290002G013 ..(KA's)

ANSWER: 037 (1.00)

c.

REFERENCE:

1. QCFHP 110-2, Rev 0, Item C, IMMEDIATE ACTIONS, p. 2

295014G010 [4.0/3.9]

295014G010 ..(KA's)

ANSWER: 038 (1.00)

d.

REFERENCE:

1. QCFHP 110-4, Rev 0, Caution and Item C, IMMEDIATE ACTIONS.
2. NRC Information Notice 90-08, Feb 1, 1990

272000A212 [3.3/4.0]

272000A212 ..(KA's)

ANSWER: 039 (1.00)

a.

REFERENCE:

1. QCFHP 110-3, Rev 0, p, 4,5

234000G001 [3.4/3.8]

234000G001 ..(KA's)

ANSWER: 040 (1.00)

d.

REFERENCE:

1. QCOA 700-3, Rev 1, C.4, pg 2

234000G001 ..(KA's)

ANSWER: 041 (1.00)

d.

REFERENCE:

1. QAP 300-18, Rev 6, item 9, p. 1

294001K101 [3.7/3.7]

294001K101 ..(KA's)

ANSWER: 042 (1.00)

d.

REFERENCE:

1. QCFHP 110-2, Rev 0, page 1

295014K205 [4.0/4.1]

295014K205 ..(KA's)

ANSWER: 043 (1.00)

b.

REFERENCE:

1. T.S. 3/4.7.C, Amend. 114, p. 18

290001K601 [3.5/3.6]

290001K601 ..(KA's)

ANSWER: 044 (1.00)

d.

REFERENCE:

1. T.S. 3.10, E.1., Amendment 114, p. 5

212000G005 [3.8/4.5]

212000G005 ..(KA's)

ANSWER: 045 (1.00)

a.

REFERENCE:

1. Health Physics training, Ch. II, p. 4 of 39, item d
2. Using Curie-Meter-REM, a is 1 rad X qf 10 /(12) = 10 REM, b is 3 rad x qf 1 (12) = 3 REM, c is 5/(22) X qf 1 = 1.25 REM, d is 10/(42) X qf 1 = .625 REM.

294001K103 [3.3/3.8]

294001K103 ..(KA's)

ANSWER: 046 (1.00)

a.

REFERENCE:

1. QCRP 5010-1, Rev. 1, Section G.1.c.2 (page 4).
   294001K103 [3.3/3.8]

294001K103 ..(KA's)

ANSWER: 047 (1.00)

c.

REFERENCE:

1. QCAP 600-7, Rev 1, Section D.2.a.1, p. 3
   294001K103 [3.3/3.8]

294001K103 ..(KA's)

ANSWER: 048 (1.00)

c.

REFERENCE:

1. QCOA 1900-2, Rev 0, E.3.
   233000K306 [2.9/3.2]

233000K306 ..(KA's)

ANSWER: 049 (1.00)

a.

REFERENCE:

1. HP-CH 5 lesson plan, Obj. 9, p. 22 of 25

294001K104 [3.3/3.6]

294001K104 ..(KA's)

ANSWER: 050 (1.00)

b.

REFERENCE:

1. QCAP 270-2, Rev 2, E.3.b., page 3.
2. 2452G, FH training, Refueling operations, III.A.1.b, p. 14

294001K104 [3.3/3.6]

294001K104 ..(KA's)

(********** END OF EXAMINATION **********)

A N S W E R K E Y

MULTIPLE CHOICE

001	c
002	d
003	c
004	b
005	c
006	b
007	a
008	c
009	a
010	c
011	c
012	b
013	b
014	d
015	c
016	a
017	b
018	a
019	c
020	d
021	a
022	c and d
023	d
024	c
025	c
026	d
027	a
028	b
029	a
030	b
031	b
032	d
033	c
034	d
035	a
036	d
037	c
038	d
039	a
040	d
041	d
042	d
043	b
044	d
045	a

A N S W E R K E Y

046 a

047 c

048 c

049 a

050 b

(********** END OF EXAMINATION **********)