U.S. NUCLEAR REGULATORY COMMISSION
OPERATOR LICENSING EXAMINATION REPORT

Examination Report No.:	92-21 (OL)
Facility Docket No.:	50-352/353
Facility License No.:	NPF-39/85
Licensee:	Philadelphia Electric Company P. O. Box A Sanatoga, Pennsylvania 19464
Facilities:	Limerick Unit 1 & 2
Examination Dates:	July 20 - 29, 1992
Examiners:	S. Hansell, Operations Engineer A. Burritt, Operations Engineer K. Shembarger, Reactor Engineer M. Daniels, Examiner, Sonalyst

Chief Examiner: S C Hansell Jr — 9/17/92
S. Hansell, Operations Engineer — Date

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BWR Section
Operations Branch, DRS

EXAMINATION SUMMARY

Initial examinations were administered to four senior reactor operator (SRO) upgrade, six SRO instant and three reactor operator (RO) candidates. Nine of ten SRO and all of the RO applicants passed both portions of the examinations. One SRO upgrade did not pass the operating examination. A Limited Senior Reactor Operator (LSRO) retake operating exam was also administered with the initial examinations. The LSRO passed the retake of section B of the operating examination; sections A and C were waived. In general, the applicants were well prepared for the examinations. The applicants' effective communications during the simulator portion of the examination were a noted strength. Strengths and weaknesses were identified as feedback to the licensee's training program. The facility staff demonstrated a high level of cooperation with the NRC Examiners during the examination preparation and administration.

A revision to the plant procedures removed references to certain criteria used for recognizing thermal hydraulic instabilities. This removal is an apparent deviation from licensee written commitments made in response to NRC Bulletin No. 88-07 Supplement 1, which addressed core thermal hydraulic instabilities. Section 4.1 of this report has the details.

A potential problem with operation of the RHR system was identified. The possibility exists for drywell spray and LPCI injection to occur simultaneously, resulting in Residual Heat Removal pump runout and system degradation. Section 4.2 of this report has the details.

There appears to be a connection between simulator deficiencies and repeated operator performance weaknesses in prioritization of emergency operating procedure actions. Operator conditioning during simulator exercises may cause incorrect emphasis on emergency procedure mitigation strategies. Section 4.3 of this report has the details.

DETAILS

1.0 INTRODUCTION

The NRC examiners administered initial examinations to four Senior Reactor Operator (SRO) upgrade, six SRO instant, and three Reactor Operator (RO) applicants. A retake examination was administered to one Limited Senior Reactor Operator (LSRO) applicant. The examinations were administered in accordance with NUREG 1021, Examiner Standards, Revision 6. The results of the examination are summarized below:

	SRO Pass/Fail	RO Pass/Fail
Written	10/0	3/0
Operating	9/1	3/0
Overall	9/1	3/0

The LSRO applicant passed his retake examination.

2.0 PREEXAMINATION ACTIVITIES

The facility reviewed the written examinations in the facility training center from July 7 - 8, 1992. The review team included the Supervisor Operations Training, two Senior Training Instructors, and two licensed Senior Reactor Operators from the operations group. The simulator scenarios and JPMs were validated July 9 - 10, 1992, on the facility's simulator. The facility staff who were involved with these reviews signed security agreements to ensure that the examination was not compromised.

3.0 EXAMINATION FINDINGS AND OBSERVATIONS

The following is a summary of the strengths and weaknesses noted during examination administration. This information is being provided to aid the licensee in upgrading their training program.

3.1 Written Section

The following subjects were missed by at least four of the ten SRO candidates, indicating a weak performance in these areas:

- Knowledge of required sequence for Control Room HVAC startup
- Knowledge of required use of Load Dispatcher's restrictions
- Knowledge of responsibilities for reviewing a Temporary Circuit Alteration

- Knowledge of posting requirements for radiological controlled areas
- Knowledge of safe work practices when working on energized electrical equipment
- Knowledge of Reactor Enclosure Ventilation system response to loss of division 1 safeguard 125/250 VDC bus
- Ability to determine required actions following a significant radiation release to the environment

The following subjects were missed by at least two of the three RO candidates, indicating a weak performance in these areas:

- Knowledge of required sequence for Control Room HVAC startup;
- Knowledge of required use of Load Dispatcher's restrictions;
- Knowledge of posting requirements for radiological controlled areas;
- Knowledge of when a motor operated valve should be backseated;
- Knowledge of safe work practices when working on energized electrical equipment;
- Knowledge of the effect of drywell temperature on Upset range rea .or water level indication;
- Knowledge of reason for tripping recirculation pumps 10 seconds apart when Rx power is unknown;
- Knowledge of reason for maintaining plant conditions on the safe side of the Heat Capacity Temperature limit;
- Ability to determine reactor water level during Primary Containment Flooding given containment water level; and
- Knowledge of EHC failures that will result in an RPV high pressure scram.

3.2 Walk-through Section

No specific strengths or weaknesses were noted.

3.3 Simulator Section

Strengths

- The applicants' demonstration of effective communications, particularly excellent use of formal repeat backs; and

- The applicants' demonstration of effective scram margin monitoring and maintenance during power changes.

Weaknesses

- SRO candidates did not perform crew briefings during abnormal and emergency events to ensure all crew members were aware of system/plant status, and direction of mitigation effort.

- SRO candidates often provided direction without reasons or basis when directing abnormal and emergency response actions. During the majority of these cases time permitted a statement as to why an action was being taken. This would allow informed unsolicited feedback as appropriate during transient mitigation efforts.

- Two of three SRO candidates incorrectly directed that symmetric rods be inserted following a single rod scram. This action is contrary to procedure ON-104, "Control Rod Problems" which directs that symmetric rods only be inserted if thermal limits have been exceeded.

4.0 OTHER EXAMINATION-RELATED FINDINGS

4.1 Core Thermal Hydraulic Instabilities

Procedures OT-104, "Unexpected/Unexplained Reactivity Insertion," and OT-112, "Recirculation Pump Trip," were modified and approved on June 12, 1992. The purpose of the revision was to modify the identification and actions associated with core thermal hydraulic instabilities. The new identification criteria are as follows:

1. Any LPRM
   OR APRM noise signal grows by two
   OR more times its initial noise level;

2. The characteristics of the LPRM
   AND APRM signals change from random to a regular periodic variation (with approximately 1 to 2 second oscillation period); and

3. Period meters display strong positive to negative swings (with approximately 1 to 2 second oscillation period).

The facility representatives stated that the procedure revision was based on information contained in BWROG - 92030, dated March 18, 1992, "Implementation Guidance for Stability Interim Corrective Actions."

In response to NRC bulletin No. 88-07, Supplement 1, in a letter dated March 7, 1989, Philadelphia Electric Company committed that the GE interim stability recommendations were implemented for Limerick Unit 1 and would be implemented for Limerick Unit 2. The committed conditions (interim corrective action 5) for evidence of thermal hydraulic instabilities are, in part, as follows:

> "APRM peak to peak oscillations greater than 10% or periodic LPRM upscale or downscale alarms in addition to the guidance provided in SIL 380, revision 1."

The procedure change of June 12, 1992, appears to have been made without consideration of the previously made written commitments to the NRC staff. This is an apparent deviation from a licensee written commitment (352/353//92-21-01).

Further, it appears to the NRC staff that, when compared to the written commitment, the new procedure no longer contains discreet, easily identifiable criteria for the operator to determine when thermal hydraulic instabilities exist. This lack of clear criteria could lead to a subjective identification of conditions that require a manual reactor scram to prevent a Minimum Critical Power Ratio (MCPR) safety limit violation.

The facility representatives have independently identified potential implementation problems through Licensed Operator Requalification training feedback. The facility is currently evaluating the concerns for usefulness of the revised procedure.

4.2 Drywell Spray - Low Pressure Injection Interlock

During examination development, NRC examiners noted a situation where the Residual Heat Removal (RHR) system could be operated outside its design limits. Such operation could occur if drywell spray was in service at the same time that the low pressure coolant injection (LPCI) system began injecting into the vessel. The effect of this spray-with-injection scenario (in contrast to just spray or just injection) is that with two flowpaths available, RHR pump runout could likely occur, with the loss of the RHR pumps on an overcurrent trip as the ultimate result.

The scenario leading to a two flowpath situation most likely would begin as a result of executing T-225, "Startup and Shutdown of Suppression Pool and Drywell Spray Operation." Per T-225, if no loss of coolant accident (LOCA) signal exists at the time when sprays are directed, then jumpers are installed to override the LOCA logic requirement. By overriding

the logic, the spray valves can be opened. As long as no subsequent LOCA signal is received, installing the jumpers to initiate sprays poses no problem.

However, if a LOCA signal is received after establishing drywell sprays, the potential exists for a second flowpath (LPCI's) to be established. Normal automatic plant response to a LOCA signal includes LPCI pump start with eventual injection into the vessel when reactor pressure drops below the pumps' discharge pressure. When LPCI injection begins, the second flowpath is established in addition to the spray flowpath already in service. With two flowpaths available, RHR pump runout could occur, with the loss of the RHR pumps on an overcurrent trip as the ultimate result.

Excessive flow leading to pump runout is an identified concern for other similar circumstances. Procedure S51.8.1, revision 6, "Use of Dedicated LPCI Pumps for Suppression Pool Cooling Operation," precaution 7.6, identifies that, with suppression pool cooling established during a small break LOCA, a subsequent LPCI injection may cause runout. This potential design problem requires further review and is considered unresolved (353/353//92-021-02).

4.3 Other Performance Observations During Simulator Scenarios

The NRC examination team made two observations during the simulator scenarios. First, the candidates appeared to place a higher priority on performing T-101, which controls RPV parameters, than they did on performing T-102, which controls primary containment parameters. The SROs did enter T-101 and T-102 concurrently but often delayed initiating containment control actions, particularly with respect to initiating sprays.

In two instances, with adequate core cooling established and conditions met for suppression chamber spray, the candidates failed to initiate spray for several minutes because they focussed on trending RPV level. In each of these cases, the candidates waited until reactor water level was at the top of active fuel, initiated an emergency depressurization, recovered reactor water level to above the top of active fuel and then addressed containment parameters. Similar observations were noted in NRC examination report numbers 50-352/88-21, 90-01 and 91-01 (OL).

Secondly, operators isolated the main steam isolation valves (MSIVs) in order to control cooldown to the exclusion of primary containment conditions. In two instances, MSIVs were shut in response to lowering RPV pressure caused by a steam leak in the containment; in one case MSIVs were shut at 700 psig and in the other at 500 psig. Had the candidates left the MSIVs open, much of the reactor's decay heat energy could have been directed through the turbine bypass valves and into the main condenser. Instead, by closing the MSIVs, all of the reactor's heat energy was directed through the break, needlessly aggravating the heat load on the primary containment.

4.4 Simulator Performance

A number of discrepancies noted in the Simulation Facility Report (Attachment 4) have been identified in previous Simulation Facility Reports. These problems appear to be a result of model deficiencies. A number of the discrepancies listed are based on the failure of a transient or malfunction to repeat with similar conditions. In one case, an additional simulator scenario was required to complete the evaluation. In another case, the transient deviated from the anticipated response for no plausible reason, significantly reducing the examination difficulty intended. When the facility was questioned by the examiner regarding the simulator repeatability, the facility confirmed that at least one of the two cases impacting the examination were related to simulator model problems. The facility representative also identified a number of other simulator model problems with a potential impact on operator training.

It appears that the repeated weakness noted with TRIP procedure prioritization discussed in the previous section may be related to identified simulator model problems. This is based on the number of outstanding discrepancies with potential impact on operator training related to the RPV level/pressure and the primary containment models. The overall effect of the level/pressure problems causes an exaggerated shrink and swell effect leading to rapid and excessive level response. These transients are more difficult to control and require more operator attention than expected plant responses. The overall effect of the primary containment parameters is slower and to a lesser degree than expected, tending to stabilize readily with no operator action. The cumulative effect of RPV level/pressure and containment response leads to the operators incorrectly emphasizing the RPV more than the primary containment, leading to incorrect prioritization of operator actions during simulator exercises. Although the facility has initiated action to determine the entire spectrum of simulator problems, many model related discrepancies were identified by the facility prior to 1989. The facility has not established a specific plan and timetable for corrective actions related to the number and significance of simulator discrepancies.

4.5 In-Plant Observations

The examiners noted that the material condition of the plant was good. Access into the plant and through the radiological control areas was smooth. The control room atmosphere was conducive to the conduct of the examinations. The examiners also observed excellent communication by the control room crews.

4.6 Procedure Changes

During the operating portion of the examination, the following procedures were identified by the examiners as potentially requiring changes and were discussed with the Operations Training Supervisor.

S.43.1.A, "Startup of Recirculation System," has no step to open the suction valve prior to pump start, when loop warmup is not required.

ON-104, "Control Rod Problems," whether or not to insert symmetric rods is unclear; and, during the simulator exam, two of three groups performed this incorrectly. For the case of a single rod scram, symmetric rods are only inserted if thermal limits have been exceeded, per step 2.3.4.a. If thermal limits are acceptable, procedure step 2.3.4.b requires the user to continue at step 2.3.4.g, which breaks the sequential continuity of the procedure. This format may lead to confusion and inconsistent performance.

Licensee representatives acknowledged these findings.

4.7 Summary

A revision to the plant procedures removed the discreet easily identifiable criteria for recognition of thermal hydraulic instabilities. The deletion of the APRM and LPRM criteria could result in plant operation within a thermal hydraulic instability region, and subsequent MCPR safety limit violation. This is a an apparent deviation from licensee written commitments in response to NRC Bulletin No. 88-07 supplement 1, core thermal hydraulic instabilities. (352/353/92-21-01; Section 4.1)

A potential problem with operation of the RHR system was identified. The possibility exists for Drywell spray and LPCI injection to occur simultaneously resulting in Residual Heat Removal pump runout and system degradation. This design problem is considered unresolved. (352/352/92-21-02; Section 4.2)

There appears to be connection between simulator deficiencies and repeated operator performance weaknesses in prioritization of emergency operating procedure actions. Operator conditioning during simulator exercises may cause incorrect emphasis on emergency procedure mitigation strategies.

5.0 UNRESOLVED ITEMS

Unresolved items are matters about which more information is required in order to determine whether they are acceptable, a violation or a deviation. Unresolved items disclosed during the inspection are discussed in Section 4.

6.0 EXIT MEETING

An exit meeting was conducted July 29, 1992, following the administration of the examinations. Exit attendees are listed in Attachment 5. The facility presented their comments on the written examinations (Attachment 3). The NRC exam team discussed generic findings regarding the applicants performance and training program strengths.

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Operator Licensing
Examination

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U. S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC EXAMINATION
REACTOR OPERATOR LICENSE
REGION 1

CANDIDATE'S NAME: _____

FACILITY: Limerick 1 & 2

REACTOR TYPE: BWR-GE4

DATE ADMINISTERED: 92/07/20

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	%
98.00	_____	___ % TOTALS
	FINAL GRADE	

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

_____
Candidate's Signature

MASTER COPY

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 ___
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005 MATCHING
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MULTIPLE CHOICE

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A N S W E R S H E E T

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

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075	a	b	c	d	___
076	a	b	c	d	___

077 MATCHING

a ___

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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

078	a	b	c	d	___
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(********** END OF EXAMINATION **********)

NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on the examination means an automatic denial of your application and could result in more severe penalties.

2. After the examination has been completed, you must 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. This must be done after you complete the examination.

3. Restroom trips are to be limited and only one applicant at a time may leave. You must avoid all contacts with anyone outside the examination room to avoid even the appearance or possibility of cheating.

4. Use black ink or dark pencil ONLY to facilitate legible reproductions.

5. Print your name in the blank provided in the upper right-hand corner of the examination cover sheet and each answer sheet.

6. Mark your answers on the answer sheet provided. USE ONLY THE PAPER PROVIDED AND DO NOT WRITE ON THE BACK SIDE OF THE PAGE.

7. Before you turn in your examination, consecutively number each answer sheet, including any additional pages inserted when writing your answers on the examination question page.

8. Use abbreviations only if they are commonly used in facility literature. Avoid using symbols such as < or > signs to avoid a simple transposition error resulting in an incorrect answer. Write it out.

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

10. Show all calculations, methods, or assumptions used to obtain an answer to any short answer questions.

11. Partial credit may be given except on multiple choice questions. Therefore, ANSWER ALL PARTS OF THE QUESTION AND DO NOT LEAVE ANY ANSWER BLANK.

12. Proportional grading will be applied. Any additional wrong information that is provided may count against you. For example, if a question is worth one point and asks for four responses, each of which is worth 0.25 points, and you give five responses, each of your responses will be worth 0.20 points. If one of your five responses is incorrect, 0.20 will be deducted and your total credit for that question will be 0.80 instead of 1.00 even though you got the four correct answers.

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

14. When turning in your examination, assemble the completed examination with examination questions, examination aids and answer sheets. In addition, turn in all scrap paper.

15. Ensure all information you wish to have evaluated as part of your answer is on your answer sheet. Scrap paper will be disposed of immediately following the examination.

16. To pass the examination, you must achieve a grade of 80% or greater.

17. There is a time limit of four (4) hours for completion of the examination.

18. When you are done and have turned in your examination, leave the examination area (EXAMINER WILL DEFINE THE AREA). If you are found in this area while the examination is still in progress, your license may be denied or revoked.

QUESTION: 001 (1.00)

Each train of the Standby Gas Treatment System (SGTS) consists of the following components:

1. Pre-HEPA filter
2. After-HEPA FILTER
3. Fans, two in parallel
4. Electric air heater
5. Charcoal absorber bed

Which ONE of the following describes the SGTS flow path from suction to discharge?

a. 1-2-4-5-3

b. 1-3-4-5-2

c. 4 1-5-3-2

d. 4-1-5-2-3

QUESTION: 002 (1.00)

Which ONE of the following is indicated when the amber lights directly above each Safety Relief Valve (SRV) control switch is illuminated on Panel *.626?

a. The SRV pilot solenoid is energized

b. SRV has lifted

c. Control power is available to the SRV pilot solenoid

d. SRV control switch has been placed to MANUAL

QUESTION: 003 (1.00)

Which ONE of the following describes the effects on indicated reactor water level as read on various reactor level instruments due to reactor operation at different temperatures?

a. Wide range instruments are calibrated hot and during cold temperature operation indicated level will be higher than actual

b. Narrow range instruments are calibrated hot and during cold temperature operation indicated level will be lower than actual

c. Shutdown range instruments are calibrated cold and during hot temperature operation indicated level will be higher than actual

d. Upset range instruments are calibrated hot and during cold temperature operation indicated level will be lower than actual

QUESTION: 004 (1.00)

The operations listed below are necessary to meet the interlocks to start the Control Room HVAC system.

1. Start return fans
2. Start supply fans
3. Ensure supply fan dampers open
4. Place standby fans in AUTO
5. Ensure return fan dampers open

Concerning the Control Room HVAC system, SELECT the sequence of operation to ensure proper system startup.

a. 2-3-1-5-4

b. 1-5-2-3-4

c. 2-1-3-5-4

d. 4-3-5-2-1

QUESTION: 005 (2.00)

For each system/component that is associated with the Secondary Containment, listed in Column A, SELECT the associated function from Column B.

(NOTE: Items in column B may be used once, more than once or not at all. Only one answer may occupy a space in Column A.)

(4 required at 0.50 each)

COLUMN A (Systems/Components)		COLUMN B (Functions)	
_____a.	Outboard MSIV Blowout Panel	1.	Maintains air recirculation for the refueling floor only.
_____b.	Standby Gas Treatment System	2.	Actuates at a differential pressure of 0.25 psid.
_____c.	Reactor Enclosure Recirculation System	3.	Maintains Secondary Containment at -0.25" wg after a LOCA.
_____d.	Reactor Enclosure Ventilation System	4.	Maintains Secondary Containment at -0.25" during normal operation.
		5.	Actuates at a differential pressure of 0.50 psid.
		6.	Maintains air circulation in Zones I & II of Secondary Containment after a LOCA

QUESTION: 006 (1.00)

Refueling operations are in progress at Limerick with the reactor cavity flooded. The water level in the cavity begins to decrease due to a leak.

Which ONE of the following describes the response of the level indication for this plant condition?

a. The level decrease will be indicated immediately on the Wide Range Level indicator.

b. The level decrease will be indicated immediately on the Upset Range Level recorder.

c. The level decrease will be indicated on the Narrow Range Level recorder when level decreases to the top of the steam lines.

d. The level decrease will begin to be indicated on the Shutdown Level Indicator when level decreases to below the vessel flange.

QUESTION: 007 (1.00)

Off-Normal procedure ON-113, Loss of RECW, requires tripping the reactor recirculation pumps if cooling is lost for ten (10) minutes.
Which ONE of the following describes the BASIS for tripping the recirculation pumps TEN (10) MINUTES after the loss of RECW.

a. To provide time for the operator to re-establish RECW operability.

b. Continued operation of the recirculation pump after ten (10) minutes could damage the pump seals.

c. Continued operation of the recirculation pumps after ten (10) minutes will challenge the motor high temperature trip.

d. To provide time to insert control rods and stay within the constraints of the operating map when the recirculation pumps are tripped.

QUESTION: 008 (1.00)

The plant is at 100% power when MG set lube oil pressure for the "A" recirculation pump decreases to 20 psig for 4 seconds, then returns to the normal operating pressure, and remains steady.

Which ONE of the following describes the response of the "A" recirculation MG set?

a. Drive motor breaker trip only

b. Drive motor breaker and field breaker trips

c. Scoop tube lock only

d. No automatic action

QUESTION: 009 (1.00)

Which ONE of the following components assures there is adequate core flow to the high powered fuel bundles?

a. Core plate

b. Orificed fuel support piece

c. Fuel channel

d. Stub tubes

QUESTION: 010 (1.00)

Unit 1 is at 100% power with the EHC Pressure Regulator A in control and Pressure Regulator B as backup when Steam Throttle Pressure to Pressure Regulator A fails low.
Which ONE of the following is the expected plant response if no operator action is taken? (See attached figure 1)

a. Control valves fully close and bypass valves fully open. The Reactor scrams due to high neutron flux.

b. Control valves fully open and bypass valves fully open. Reactor pressure decreases until a Group 1 isolation occurs.

c. Control valves open slightly and bypass valves remain closed. Reactor pressure stabilizes slightly lower than before the transient.

d. Control valves close slightly and bypass valves remain closed. Reactor pressure stabilizes slightly higher than before the transient.

QUESTION: 011 (1.00)

Both reactors have scrammed from 100% power due to a loss of offsite power. The following conditions exist at Unit 1:

- All EDGs started, but D11, D12, D13, and D14 have bus lockouts.
- Reactor pressure is cycling with relief valve actuation.
- Reactor power is less than 2%
- Reactor water level is -129 inches and decreasing at 1 inch/minute.
- RCIC is injecting at rated flow.
- HPCI initiated then tripped.
- Drywell pressure is 2.0 psig and slowly increasing.

Which ONE of the following describes the response of Unit 1 Automatic Depressurization System (ADS), if no operator action is taken?

a. ADS will automatically initiate in 105 seconds

b. ADS will automatically initiate in 420 seconds

c. ADS will automatically initiate in 525 seconds

d. ADS will NOT automatically initiate

QUESTION: 012 (1.00)

A reactor startup is in progress with the mode switch in the STARTUP position.

Which ONE of the following describes the operation of the SRM system?

a. A rod block will occur if 'A' SRM is not fully inserted and it reads 90 cps with all IRMs at range 4.

b. With the shorting links installed, a full scram will occur if SRM 'A' reads 3x10E5 cps.

c. A rod block will occur if SRM 'A' experienced a low detector voltage with all IRMs at range 4.

d. A rod block will NOT occur if SRM 'A' failed downscale with all IRMs on range 2 or above.

QUESTION: 013 (1.00)

Unit 1 is operating at 5% power with the MODE SWITCH in STARTUP and all IRMs on range 9. The operator increases the recirculation flow which increases the power to 11% as read on APRMs. (Assume no other operator action).

Which ONE of the following describes the response of the nuclear instrumentation and RPS system due to this action?

a. APRM UPSCALE alarm, rod block and SCRAM

b. IRM UPSCALE alarm and ROD BLOCK

c. IRM UPSCALE alarm, rod block and SCRAM

d. APRM UPSCALE alarm and ROD BLOCK

QUESTION: 014 (1.00)

Which ONE of the following sets of plant conditions will result in the LPCI mode of the RHR system INJECTING into the Reactor Vessel?

a. Reactor Pressure 465 psig
Drywell Pressure 1.68 psig
Reactor Level - 40 inches

b. Reactor Pressure 465 psig
Drywell Pressure 1.68 psig
Reactor Level - 133 inches

c. Reactor Pressure 155 psig
Drywell Pressure 1.58 psig
Reactor Level - 40 inches

d. Reactor Pressure 155 psig
Drywell Pressure 1.58 psig
Reactor Level - 133 inches

QUESTION: 015 (1.00)

Which ONE of the following conditions will cause a rod withdrawal block from the APRM system when the Reactor Mode Switch is in the RUN position?

a. APRM output increases to 106%

b. Only 14 LPRM inputs are available to an APRM Channel

c. APRM Flow Unit Comparator has 4% difference in flow between inputs

d. APRM Flow Unit internal module unplugged

QUESTION: 016 (1.00)

A TIP trace is being taken when an instrument technician error causes a containment isolation signal.

Which ONE of the following describes the response of the TIP system?

a. The TIP shear valve automatically fires to cut the detector cable and seal the guide tube.

b. The TIP guide tube ball valve automatically closes, cutting the detector cable and sealing the guide tube.

c. The TIP drive automatically shifts to manual reverse and withdraws the detector to the shield position, and the ball valve closes.

d. The TIP drive automatically shifts to manual reverse and withdraws the detector to the shield position, and the shear valve closes.

QUESTION: 017 (1.00)

Draining of the area between the Fuel Storage Pool and the Reactor Cavity gates has been completed (per 5.53.4A, Drain Reactor Well and Drywell Generator Storage Pool.)

Which ONE of the following is the reason for IMMEDIATELY CLOSING the Fuel Pool Gates Drain isolation valves (53-*047 and -*099) after the well is drained? (P&ID M-53 attached)

a. Prevents inadvertent draining of the Fuel Pool or Reactor Cavity if a leak develops on the gates.

b. Allows for monitoring of the telltale drains in the event of a leak occurring on one of the gates.

c. Provides a seal on the inner and outer gate surfaces to prevent leakage.

d. Establishes the boundary that is required to provide secondary containment.

QUESTION: 018 (1.00)

Which ONE of the following is an indication of an uncoupled control rod when performing a control rod coupling integrity check at position 48?

a. Four rod display does not change from position 48 and the CONTROL ROD DRIFT annunciator alarms.

b. Four rod display indicates blanks and rod backlighting on the full core display extinguishes.

c. Four rod display indicates blank and ROD OVERTRAVEL annunciator alarms.

d. Red backlight on the full core display extinguishes and ROD OVERTRAVEL annunciator alarms.

QUESTION: 019 (1.00)

Select the choice that completes the following statement.

The Clearance and Tagging Manual allows a Special Condition Tag (SCT) to be applied to a component that has _____.

a. a danger tag attached.

b. a SCT already attached.

c. been listed on a Master Clearance.

d. been listed on a Sub-Clearance.

QUESTION: 020 (1.00)

Which ONE of the following is a condition that requires a Load Dispatcher's Restriction? (Assume work is related to Station Switchyard Equipment.)

a. To work on or near energized electrical equipment

b. To install a grounding device

c. To work on deenergized equipment beyond the station boundary

d. To tag-out station equipment that will affect station capacity or reliability

QUESTION: 021 (1.00)

A clearance on the condensate system must be suspended.

Which ONE of the following describes the method of denoting this suspension on the equipment tags?

a. A green label is attached to the associated danger tags in the plant and to the associated information tags in the Control Room.

b. A green label is attached only to the associated danger tags in the plant

c. A blue label is attached only to the associated danger tags in the control room.

d. A blue label is attached to the associated danger tags in the plant and to the associated information tags in the Control Room.

QUESTION: 022 (1.00) Palisades Question

Which ONE of the following describes the operation and the use of OPS Blocking Locks in accordance with Administrative Procedure A-8, Locked Valves?

a. Will NOT be keyed alike and may be used in place of a station lock for a station clearance

b. Will NOT capture the key when unlocked and may be used with a red colored chain to prevent operation of MOV handwheels

c. Will be keyed alike and may be used on administrative tagouts to control equipment status

d. Will capture the key when unlocked and may be used as specified on station clearances

QUESTION: 023 (2.00)

For each ERFDS Display Code in Column A, SELECT the indicated condition from Column B.

(NOTE: The items in Column B may be used once, more than once, or not at all, and only a single answer may occupy one answer space.)
(4 answers required at 0.5 each)

COLUMN A (SPDS Display)	COLUMN B (Indicated Condition)
_____a. RPV Pressure Tag box is magenta	1. Parameter has exceeded its limit setpoint
_____b. RPV Level Tag box is yellow	2. Parameter is approaching its limit setpoint
_____c. Heat Capacity Limit Tag box is yellow	3. Parameter is within its normal range
_____d. Scram vent indicated in red border	4. Parameter signals being sensed are invalid
	5. Parameter signals being sent have not been validated.
	6. Associated parameter safety action has been demanded and completed successfully
	7. Scram command present with prescribed time elapsed, all rods not full in.
	8. All rods not full in, the specified scram time has not elapsed.

QUESTION: 024 (1.00)

Which ONE of the following describes a condition in which the lock and chain may be left when a manual locked valve is UNLOCKED? (Per procedure A-8, Procedure for Control of Locked Valves and Devices).

a. The chain is looped through the valve yoke with the lock in the UNLOCKED condition.

b. The chain is looped through the valve handwheel so as not to obstruct valve movement with the lock in the LOCKED condition.

c. The chain is wrapped around the pipe next to the valve with the lock in the LOCKED condition.

d. The chain is wrapped around the valve yoke with the lock in the UNLOCKED condition.

QUESTION: 025 (1.00)

A worker has just obtained approval from Shift Supervision on a Troubleshooting Control Form (TCF) to perform troubleshooting.

Which ONE of the following is the purpose of the workers notification to the Control Room Operator?

a. To obtain the operators signature for concurrence to commence troubleshooting

b. To log the TCF number and title in the Control Room TCF logbook

c. To log the TCF number to prevent the troubleshooting activity from exceeding one shift

d. To inform the operator of the potential impact on plant operations

QUESTION: 026 (1.00)

An area of the plant has a general area radiation of 75 mRem/hr and contains a Hot Spot of 500 mRem/hr at 18 inches.

Which ONE of the following describes the radiological posting of this area?

a. Posted as High Radiation Area, and the area must be barricaded

b. Posted as High Radiation Area, and the area must have a locked entrance

c. Posted as a Radiation Area, and the Hot Spot must be surrounded by a rope barricade

d. Posted as a Radiation Area, and the Hot Spot must posted for conspicuous identification

QUESTION: 027 (1.00)

An operator is required to enter an area with a general area radiation level of 1000 mRem/hr for a surveillance test. The operators radiation history is as follows:

- 250 mRem exposure for the week
- 300 mRem exposure for the current quarter
- 3500 mRem exposure for the current year
- 19 Rem lifetime exposure
- 22 year old male
- NRC form Four completed and on file
- No special additional approvals have been obtained.

Which ONE of the following LGS administrative radiation exposure limits is exceeded if the operator remains in the area for 45 minutes due to an equipment failure?

a. Weekly and lifetime limits

b. Quarterly and lifetime limits

c. Quarterly and annual limits

d. Weekly and annual limits

QUESTION: 028 (1.00)

The shift crew composition may be one less than the minimum Technical Specification manning requirements for up to 2 hours to accommodate unexpected absences.

Which ONE of the following positions must be maintained at the minimum crew complement requirements, regardless of the above exception?

a. Shift Manager

b. Chief Operator

c. Shift Technical Advisor

d. Reactor Operator

QUESTION: 029 (1.00)

COMPLETE THE FOLLOWING STATEMENT.
The number of Reactor Operators on-shift may be one less than the minimum Technical Specification manning requirements to accommodate unexpected absences _____.

a. at shift change due to sickness of the relieving RO, provided the RO position is immediately filled by the Chief Operator for the remainder of the shift.

b. at shift change due to sickness of the relieving RO, provided immediate action is taken to call in a replacement RO.

c. during the shift due to an unanticipated illness, provided the RO position is immediately filled by the Chief Operator for the remainder of the shift.

d. during the shift due to an unanticipated illness, provided immediate action is taken to call in a replacement RO.

QUESTION: 030 (1.00)

Which ONE of the following describes a practice that is observed when a Motor Operated Valve (MOV) is backseated in accordance with the Operations Manual?

a. The MOV should normally be backseated by operations personnel using the local valve handwheel.

b. The MOV should be backseated by using valve wrenches to achieve the extra torque required to prevent leakage past the backseat.

c. A MOV should be backseated when normal packing adjustments are unsuccessful in correcting valve stem leakage problems.

d. A MOV backseated when the system is cold should be removed from the backseat prior to system heatup.

QUESTION: 031 (1.00)

An operator is performing a system checkoff list (COL).

Which ONE of the following problems encountered during the performance of the COL would allow the operator to complete the COL and then identify the error via the Procedure Problem Identification System (PPIS)?

a. A step has an incorrect identification number.

b. A step has an incorrect location provided for the component.

c. The component cannot be placed in the target position.

d. The sequence of steps appears to be in error.

QUESTION: 032 (1.00)

Which ONE of the following is an electrical safe work practice in accordance with the Operations Manual?

a. Use two hands whenever possible to ensure tools are not accidentally grounded.

b. Look directly at a breaker handle when closing a breaker locally to ensure proper positioning.

c. Bag personal dosimetry and badging to prevent accidental grounding.

d. Insulated tools must be tested to ensure insulation is intact.

QUESTION: 033 (1.00)

Which ONE of the following describes the constraints on the physical location of licensed personnel in accordance with the Administrative Procedure on Shift Operations?

a. With either unit in Operational Condition 3, a single RO may assume the AT THE CONTROLS position of both units for short periods of time, provided both units are stable.

b. With either unit in Operational Condition 1, the Chief Operator may assume the responsibility of the Control Supervisor for a short term relief provided he does not leave the control room complex..

c. With both units in Operational Condition 4, the Chief Operator may access anywhere in the Control Room when substituting for the RO, as long as he does NOT enter the adjoining offices.

d. With both units in Operational Condition 5, a Chief Operator may function as the Control Supervisor for both units during fuel handling but is restricted to the same areas as the Control Supervisor.

QUESTION: 034 (1.00)

Refueling is in progress, when a Refueling Floor Operator reports to the Refueling Floor Supervisor that a fuel bundle has just been dropped over the reactor core.

Which ONE of the following states an action that is required to be taken in accordance with ON-120, Fuel Handling Problems?

a. Notify Health Physics and evacuate the refueling floor if requested by Health Physics

b. Evacuate the refuel floor, notify Health Physics, ensure normal ventilation is isolated, and SBGT is initiated

c. Isolate refueling floor normal ventilation and start SBGTS if Reactor Engineering determines fuel damage has occurred

d. Evacuate the refueling floor and declare an alert due to fuel handling accident

QUESTION: 035 (1.00)

Which ONE of the following confirming indications would occur upon a loss of "2B" RPS UPS Power? (Assume Unit 2 is operating at 75% power.)

a. Outboard MSIVs close on half group I isolation

b. SBGT fan "A" starts

c. Reactor Recirculation pump "B" trips

d. Reactor Enclosure supply and exhaust fans trip

QUESTION: 036 (1.00)

Which ONE of the following will occur upon a loss of "2FA" Safeguard 125/250 VDC Bus? (Assume plant is operating at 100% power.)

a. Reactor Enclosure Ventilation System will isolate.

b. RCIC will automatically initiate.

c. Main Control Room HVAC will isolate.

d. HPCI will trip if operating.

QUESTION: 037 (1.00)

A LOCA signal occurred on Unit 1 just prior to a Loss of Offsite Power (LOOP). Prior to the LOOP, Division I Diesel Generator was feeding its 4 KV Bus. Following the LOOP, its output breaker trips and remains open.

Which ONE of the following is the action that the operator is required to take in accordance with the Offnormal Procedure for LOOP?

a. Place the output breaker control switch in the Control Room to the CLOSE position

b. Place the output breaker control switch in the Control Room to the TRIP position and then to the CLOSE position

c. Place the output breaker control switch in the Control Room to the TRIP position

d. Place the output control switch in the Control Room to the TRIP position and reset the trip when the Diesel is shutdown

QUESTION: 038 (1.00)

Unit 1 is operating at 98% power when an unexplained increase in reactor pressure occurs.

Which ONE of the following is an acceptable method for controlling reactor pressure in accordance with the OT Procedure for Reactor High Pressure?

a. Manually jack open the turbine bypass valves

b. Reduce the EHC maximum combined limit potentiometer

c. Reduce the EHC load setpoint

d. Manually cycle one SRV

QUESTION: 039 (1.00)

Unit 2 is operating at 100% power when the Main Steam Line Radiation Monitors are observed to be continuously increasing.

Which ONE of the following describes when the reactor must be scrammed (in accordance with the OT Procedure for Main Steam Line High Radiation) and the reason for the scram?

a. When a MAIN STEAM LINE HIGH RADIATION alarm for 1.5 x normal full power operating level is received; to maintain the condenser as a heat sink by preventing the need for isolating SJAEs and Offgas on high radiation levels

b. When a MAIN STEAM LINE HIGH RADIATION alarm for 1.5 x normal full power operating level is received; to maintain the condenser as a heat sink by preventing an MSIV isolation on high radiation levels

c. When a DIVISION NSSSS MSIV INITIATED alarm is received; to maintain the condenser as a heat sink by preventing the need for isolating SJAEs and Offgas on high radiation levels

d. When a DIVISION NSSSS MSIV INITIATED alarm is received; to maintain the condenser as a heat sink by preventing a MSIV isolation on high radiation levels

QUESTION: 040 (1.00)

Unit 1 is operating at 100% rated power when the following conditions are observed:

- Reactor power is steadily increasing at about 3% per minute.
- No operator actions caused the power increase and no operator actions have been taken.

Which ONE of the following describes the immediate operator actions that must be taken per Operational Transient Procedures?

a. Place the Reactor Mode Switch in SHUTDOWN to initiate a scram and prevent MSIV closure on low reactor pressure

b. Reduce power to at least 80% using recirculation flow to prevent overpowering the fuel rods

c. Reduce power using recirculation flow to establish sufficient margin between reactor power and the APRM scram setpoint

d. Reduce recirculation flow to 45% and insert control rods to the 80% rod line to prevent core thermal hydraulic instabilities

QUESTION: 041 (1.00)

Unit 2 is operating at 85% rated power when the following plant conditions occur:

- Reactor pressure spikes to 1025 psig and then stabilizes at 1010 psig.
- Reactor power increases to 91% and then stabilizes at 85%.

Which ONE of the following component/system malfunctions would cause the above plant response?

a. One MSIV disk separated from its stem and has failed closed

b. EHC backup regulator failed high.

c. One turbine control valve is stuck in the 85% open position

d. One SRV has popped open and failed to fully reseat upon reclosing

QUESTION: 042 (1.00)

Unit 1 is operating at 100% rated power when Reactor Recirculation Pump 'A' trips.

Which ONE of the following is the IMMEDIATE operator action directed by the Operational Transient Procedure for Recirculation Pump Trip?

a. Insert control rods to reduce power below the 80% rod line

b. Insert control rods to maintain APRM noise level less than 10%

c. Insert control rods to reduce power below 35% rated thermal power

d. Insert control rods to maintain power below the 100% rod line

QUESTION: 043 (1.00)

The Operational Transient Procedure for Reactor High Level allows the operator to decide whether to secure condensate/feedwater injection into the RPV by closing the RFP discharge valves or by tripping the condensate pumps.

SELECT the choice that completes the following statement.
Although closure of the RFP discharge valves is preferred, the operator would trip the condensate pumps when rapid termination of condensate/feedwater injection is required to _____.

a. prevent excessive thermal stresses on the RPV vessel wall and head due to the rapid level increase.

b. avoid flooding the Main Steam Lines and prevent damage to the SRVs by operation with a water and steam discharge mixture.

c. avoid column separation and feedwater flashing in the feed lines to prevent water hammer during depressurization.

d. avoid column separation and reference leg flashing in the RPV level instruments during cooldown and depressurization.

QUESTION: 044 (1.00)

Which ONE of the following is the highest drywell temperature and reason at which the UPSET RANGE REACTOR WATER LEVEL indication is ACCURATE?

a. 135 deg. F; because the differential pressure cell is not qualified for operation at elevated temperatures

b. 135 deg. F; because the density decrease in the reference leg results in an indicated level considerably higher than actual level

c. 340 deg. F; because the differential pressure cell is not qualified for operation at elevated temperatures

d. 340 deg. F; because the density decrease in the reference leg results in an indicated level considerably higher than actual level

QUESTION: 045 (1.00)

Emergency Operating Procedure T-101, RPV Control, is being executed.

Which ONE of the following is the reason that the operator is directed to trip the reactor recirculation pumps at least 10 seconds apart when reactor power is UNKNOWN?

a. To minimize the reactor level oscillations to prevent tripping the main turbine on high reactor level

b. To minimize the reactor level oscillations to prevent losing natural circulation mixing of boron

c. To reduce reactor power without tripping the main turbine on high reactor level

d. To reduce reactor power without losing natural circulation mixing of boron

QUESTION: 046 (1.00)

A loss of instrument air is in progress on Unit 1, and instrument air pressure is 50 psig decreasing.

Which ONE of the following is the reason that feedwater flow to the reactor may be lost?

a. RFP and condensate pump minimum flow valves will open on low instrument air pressure

b. RFP discharge valves fail closed on a complete loss of instrument air

c. RFP turbine steam governor valves will close on low instrument air pressure

d. RFPs trip when sealing water and turbine gland seal control valves fail closed on complete loss of air

QUESTION: 047 (1.00)

Which ONE of the following could place the reactor into the region of thermal hydraulic instability? (Assume reactor is initially operating 100% power.)

a. Loss of greater than 100 deg. F of feedwater heating

b. Control rod drop

c. Trip of both reactor recirculation pumps

d. EHC pressure regulation fails high

QUESTION: 048 (1.00)

Plant conditions are as follows on Unit 1 during a startup:

- Reactor pressure is 1000 psig.
- CRD Pump 'B' is running.
- All rods are withdrawn beyond 02.
- CRD scram accumulator for rod 30-11 is inoperable and the rod is currently withdrawn to 08.
- CRD ACCUMULATOR TROUBLE alarm has just been received on rod 18-27.

Which ONE of the following is the REQUIRED operator action that is required when the floor operator reports accumulator 18-27 is at ZERO psig?

a. Insert a control rod one notch to verify that one CRD pump is operating.

b. Check CRD drive flow and place the alternate CRD drive filter in service.

c. Place the Reactor Mode Switch in shutdown and align CRD Pump 'A' for operation.

d. Place the Reactor Mode Switch in shutdown and fully insert and disarm rods 30-11 and 18-27.

QUESTION: 049 (1.00)

Which ONE of the following is the purpose of maintaining the plant on the SAFE side of the Heat Capacity Temperature Limit (HCTL) Curve?

a. To prevent exceeding the Pressure Suppression Limit during a design basis LOCA

b. To prevent excessive dynamic loads on the suppression chamber structure during a design basis LOCA

c. To prevent exceeding the Primary Containment Pressure Limit during an Emergency Blowdown

d. To prevent excessive dynamic loads on the submerged suppression chamber components during an Emergency Blowdown

QUESTION: 050 (1.00)

Which ONE of the following situations will allow operators to disregard RPV cooldown rate limits?

a. SRVs are being used to depressurize the RPV in Step RC/P-14 and all PCIG groups are isolated.

b. Drywell pressure is on the UNSAFE side of the Drywell Spray Initiation Limit curve of T-102.

c. RPV pressure is on the UNSAFE side of the RPV Pressurization Limit curve of T-99.

d. Suppression pool level cannot be maintained on the SAFE side of the SRV Tail Pipe Level Limit curve of T-102.

QUESTION: 051 (1.00)

A steam leak inside Unit 1 Containment causes the Drywell to pressurize, resulting in a reactor scram. Plant conditions are as follows:

- Drywell Pressure: 31 psig
- Suppression Pool Pressure: 29 psig
- Suppression Pool Airspace Temperature: 105 deg. F
- RPV Pressure: 100 psig
- Drywell Temperature: 306 deg. F

Which ONE of the following combinations of RPV water level instruments will provide RPV level indication?

a. Wide range, narrow range, upset range

b. Narrow range, fuel zone, upset range

c. Narrow range, wide range, shutdown range

d. Upset range, wide range, fuel zone

QUESTION: 052 (1.00)

The purpose of T-227, Bypass of Reactor Enclosure HVAC Isolations, is to allow the operator to restore Reactor Enclosure (RE) HVAC.

Which ONE of the following isolation signals, in addition to Manual, will stop the restoration of RE HVAC?

a. RE pressure below -0.5 inches of water

b. High RE HVAC supply temperature

c. RPV water level below Level 1

d. High RE exhaust radiation

QUESTION: 053 (1.00)

A steam leak has occurred on Unit 1 in the Outboard MSIV Room. Plant conditions are as follows:

- Outboard MSIV room temperature is 210 deg. F and steady.
- Reactor level is + 15 inches and slowly increasing on RPV Wide Range Level Instrument B.
- T-291 is being performed to evaluate reactor level instrumentation.

Which ONE of the following describes the capability of RPV Wide Range Level Instrument B to provide level indication in accordance with Procedure T-291 provided?

a. A level error factor must be added for accurate level indication

b. RPV level indication is valid

c. Only RPV level trend information only is valid

d. Cannot be used for level determination or level trends

QUESTION: 054 (1.00)

During an ATWS and a Main Turbine trip, the operators are controlling RPV pressure by cycling SRVs per Emergency Operating Procedure RC/P.

Which ONE of the following Bypass Valve conditions indicates that RPV pressure is above 950 psig?

a. All BPVs are closed.

b. Half of the BPVs are closed, all others are fully open.

c. All Bypass Valves are fully open.

d. One BPV is closed, all others are nearly full open.

QUESTION: 055 (1.00)

A small steam leak has occurred in the Unit 2 drywell and the reactor has been manually scrammed. Plant conditions are as follows:

- RPV water level is -120 inches.
- RPV pressure is 275 psig, slowly decreasing.

Which ONE of the following describes WHEN and HOW CS and LPCI systems would be prevented from injecting?

a. RPV level -120 inches increasing, drywell pressure 1.68 psig and increasing; take the control switches for LPCI and CS injection valves to CLOSE (MANUAL OVERRIDE).

b. RPV level -120 inches increasing, drywell pressure 1.55 psig and decreasing; take pump control switches to STOP (MANUAL OVERRIDE).

c. RPV level -120 inches decreasing, drywell pressure 1.68 psig and increasing; take pump control switches to STOP (MANUAL OVERRIDE).

d. RPV level -120 inches decreasing, drywell pressure 1.55 psig and decreasing; take the control switches for LPCI and CS injection valves to CLOSE (MANUAL OVERRIDE).

QUESTION: 056 (1.00)

Emergency Operating Procedure, Primary Containment Flooding is being executed.

Which ONE of the following is the water level in the RPV if the Primary Containment level reaches and stabilizes at 111 feet?

a. Two thirds core height

b. Top of Active Fuel

c. Bottom of the moisture separators

d. Bottom of the main steam line penetrations

QUESTION: 057 (1.00)

Which ONE of the following describes the reason for terminating drywell sprays if suppression pool level reaches 39 feet?

a. The drywell to suppression chamber vacuum breakers could be submerged.

b. The suppression chamber to reactor enclosure vacuum breakers could be submerged.

c. The design Pressure Limit at the bottom of the suppression chamber could be exceeded.

d. The SRV Tailpipe Level Limit could be exceeded.

QUESTION: 058 (1.00)

Which ONE of the following is the reason for terminating drywell sprays if drywell pressure drops below 1.68 psig?

a. To prevent opening the Reactor Enclosure to Suppression Chamber vacuum breakers.

b. To prevent cycling the Suppression Chamber to Drywell vacuum breakers.

c. To prevent collapsing the Drywell to Suppression Pool downcomers.

d. To prevent creating a negative Drywell to Reactor Enclosure differential pressure.

QUESTION: 059 (1.00)

Which ONE of the following describes the reason for emergency depressurizing the RPV if suppression pool level cannot be maintained above the Heat Capacity Level Limit?

a. To prevent damage to the SRV Tailpipes during an Emergency Blowdown.

b. To prevent ECCS NPSH and vortex limits from being violated during an Emergency Blowdown.

c. To accomplish an Emergency Blowdown before the SRV tailpipes are uncovered.

d. To accomplish an Emergency Blowdown before the suppression pool is unable to condense the steam discharged to the pool.

QUESTION: 060 (1.00)

Which ONE of the following describes the reason for inserting SRMs and IRMs following a scram?

a. To ensure that the reactor is below the point of adding heat by monitoring reactor power.

b. To verify that the reactor has been shutdown by monitoring the trend of reactor power.

c. To ensure that the operator can detect a return to criticality before reactor power enters the power range.

d. To determine that the reactor will remain shutdown under all conditions by monitoring that reactor power stabilizes low in the IRM range.

QUESTION: 061 (1.00)

Which ONE of the following states the three parameters controlled by T-103, Secondary Containment Control, in order to maintain Reactor Enclosure (RE) integrity and protect equipment inside the RE?

a. Radiation levels, radiation release rates, and area temperatures

b. RE pressure, area temperatures, and area water levels

c. Radiation levels, area temperatures, and area water levels

d. Radiation release rates, RE pressure, and area water levels

QUESTION: 062 (1.00)

When aligning RWCU per T-212, RWCU System SLC Injection Procedure, for alternate boron injection, the high differential flow and high area temperature isolations are NOT jumpered out of service.

Which ONE of the following is the reason leaving these RWCU isolations in operation?

a. To provide leak detection

b. To provide injection flow indication

c. To provide pump runout protection

d. To provide for RPV level control with reject flow

QUESTION: 063 (1.00)

According to SE-1 "Remote Shutdown", which ONE of the following RCIC system interlocks remains active when control is transferred to the remote shutdown panel?

a. Turbine trip on overspeed.

b. Steam supply valve closure on high reactor water level.

c. Transfer of suction from CST to suppression pool.

d. Start on low reactor water level (-38").

QUESTION: 064 (1.00)

In accordance with OT-117, RPS Failure, which ONE of the following is an IMMEDIATE action required to be taken?

a. Perform rapid plant shutdown per GP-4.

b. Initiate rod insertion using the Reactor Manual Control System.

c. Place the mode switch in shutdown.

d. Trip the reactor recirculation pumps.

QUESTION: 065 (1.00)

Which ONE of the following failures in the Electro-Hydraulic Control (EHC) system would cause a reactor scram on RPV high pressure? (No operator actions are taken.) (See attached Figure 1)

a. Pressure regulator "A" signal output fails high

b. Pressure regulator "A" signal output fails low.

c. Pressure setpoint fails high.

d. Pressure setpoint fails low.

QUESTION: 066 (1.00)

The TRIP procedure for a SCRAM, T-100, directs operators to trip the main turbine when generator load reaches 50 MWe.

Which ONE of the following describes the reason for this step?

a. Assures there is adequate capacity of the bypass valves to handle this load transfer.

b. Guards against overspeed of the turbine by preventing the generator from tripping on reverse power.

c. Assures that the End of Cycle Recirculation Pump Trip does not occur.

d. Prevents MSIV closure by NSSSS actuation on low steam line pressure.

QUESTION: 067 (1.00)

SELECT the choice that completes the following statement.
Automatic initiation of the Standby Liquid Control system will occur on High RPV Pressure (1093 psig) AND _____

a. Low reactor water level (-38 inches) AND 118 sec timer timed out.

b. No APRM downscale (4%) AND 118 sec timer timed out.

c. Low reactor water level (-129 inches) AND 118 sec timer timed out.

d No APRM downscale (4%) AND Low reactor water level (-38 inches).

QUESTION: 068 (1.00)

Which ONE of the following describes the effect of increasing power from 50% to rated?

a. Indicated core flow decreases due to a decrease in delta-P across the reactor core.

b. The steam flow signal being sent to the feedwater control system increases.

c. The delta-P from the reactor pressure vessel to the main steam header decreases.

d. Indicated core flow increases due to a decrease in delta-P across the reactor core.

QUESTION: 069 (1.00)

Unit 1 is operating at 100% power. Reactor water level control is in the three-element mode with the level selector switch positioned to "A".

Which ONE of the following describes the effect on reactor level if Steam Flow Signal "A", to the Feedwater Control System, fails LOW? ASSUME NO operator actions are taken.

a. Reactor water level will stabilize at some higher value.

b. Reactor water level will increase to the trip set point (+54 inches) resulting in a reactor scram, main turbine and feed pump turbine trips.

c. Reactor water level will stabilize at some lower value.

d. Reactor water level will decrease to the trip set point (+12.5 inches) resulting in a reactor scram and level continues to decrease until ECCS systems start.

QUESTION: 070 (1.00)

A LOCA occurs concurrent with a loss of offsite power.

Which ONE of the following pieces of equipment must be MANUALLY restarted?

a. RHR pumps 1A and 1B

b. Core spray pumps 1B and 1D

c. CRD pumps

d. ESW pumps

QUESTION: 071 (1.00)

Which ONE of the following describes the Control Rod Drive Hydraulic System response during a SCRAM?

a. The Scram pilot valve energizes to vent the air off the Scram inlet and outlet valves.

b. The Scram Discharge Volume (SDV) vent and drain air pilot valves energize to vent the air off the Scram discharge volume vent and drain valves.

c. The Scram Discharge Volume will remain vented and drained if one of the Scram Discharge Volume (SDV) vent and drain air pilot valves fails to reposition.

d. If a Scram pilot valve fails, the backup scram valves will vent the air off the scram valves for any rod that has a failed scram pilot valve.

QUESTION: 072 (1.00)

Which ONE of the following systems, in conjunction with the Control Rod Velocity Limiter, reduces the consequences of a rod drop accident?

a. Rod Drive Control System

b. Rod Worth Minimizer System

c. Reactor Manual Control System

d. Rod Block Monitor System

QUESTION: 073 (1.00)

Which ONE of the following indicates a jet pump failure? (Assume reactor is operating at 80% power initially.)

a. Unexplained increase in reactor power.

b. Unexplained rise in indicated differential pressure on the jet pump sharing the riser with the defective jet pump.

c. Unexplained decrease in core flow indication and an increase in core plate differential pressure.

d. Unexplained rise in recirculation flow to the loop containing the defective jet pump.

QUESTION: 074 (1.00)

CRD pump "A" is in service supplying the CRD system.

Which ONE of the following describes the response of the system when CRD pump "A'"trips?

a. A trip of both reactor recirculation pumps on loss of seal purge flow.

b. The CRD Pumps Suction Filter Bypass Valve opens on low suction pressure.

c. The CRD Flow Control automatically shifts to the alternate flow control valve.

d. System pressure continues to drop until manual action is taken to start CRD pump 'B'.

QUESTION: 075 (1.00)

Due to a loss of the Steam Jet Air Ejectors, condenser vacuum has decreased to 21.2 in Hg.

Which ONE of the following actions is expected to occur?

a. MSIV closure

b. Feed pump turbine trip

c. Main turbine trip

d. Bypass valve closure

QUESTION: 076 (1.00)

Which ONE of the following will cause the recirculation pumps to run back to the 28% Speed Limiter? (Assume initially operating at 100% power.)

a. Reactor water level is less than 27.5 inches AND individual feedpump flow is less than 20%.

b. Total feedwater flow is greater than 85% AND less than three condensate pump breakers are closed.

c. Total feedwater flow is less than 20% for 15 seconds.

d. Total feedwater flow is greater than 85% AND one feedpump trips.

QUESTION: 077 (2.00)

For each of the NSSSS group isolations in Column A, SELECT the plant conditions in Column B that would initiate isolation signals. (Assume that the MODE Switch is in RUN).

(NOTE: The conditions listed in Column B may be used once, more than once, or not at all. Only one answer may occupy a space in Column A)
(4 answers required at 0.50 each)

COLUMN A (Group Isolations)	COLUMN B (Reactor Conditions)
a. Main Steam and Reactor Sample Lines (IB)	1. Main steam line high radiation (3.5 X N)
b. RHR Heat Exchanger Vacuum Breaker Lines (IIC)	2. Steam supply low pressure (700 psig)
c. Reactor Water Cleanup Lines (III)	3. High drywell pressure (1.72 psig)
d. HPCI Turbine Exhaust Vacuum Breaker Lines (IVB)	4. Steam line low pressure (90 psig) - AND - high drywell pressure (1.72 psig)
	5. Low condenser vacuum (23"Hg)
	6. Standby liquid control initiation
	7. Steam line high flow (140%)

QUESTION: 078 (1.00)

Which ONE of the following automatic actions is initiated by a LEVEL 3 trip (+12.5 inches) on the RPV level?

a. Recirc pump trip.

b. Low Level alarm.

c. RCIC initiation.

d. Confirmatory low level to ADS.

QUESTION: 079 (1.00)

ASSUMING full power operation, three-element control, and no operator action, which ONE of the following would be the expected Feedwater Control System (FWCS) response if the selected level transmitter failed HIGH? (Assume NO operator action is taken.)

a. RFP turbines will lockup due to the loss of level signal input and level will remain approximately the same.

b. Steam and feed flow inputs will compensate for the error signal and level will stabilize at a slightly lower level.

c. Level input will automatically transfer to the other level transmitter and level will remain approximately the same.

d. RFP turbines reduce speed in response to high level signal and level will continue to decrease.

QUESTION: 080 (1.00)

All APRMs have spiked up and exceeded their scram setpoint and have now returned to normal. (No initial operator actions taken.)

Which ONE of the following actions is required to be taken?

a. Place one RPS channel in the tripped condition, notify Shift Supervision and investigate the scram failure.

b. Immediately depress both manual scram pushbuttons and verify scram actions have been completed.

c. Immediately place the Mode Switch in SHUTDOWN and enter T-101 procedure.

d. Notify Shift Supervision and perform a rapid shutdown per GP-4.

QUESTION: 081 (1.00)

The fast closure of the Turbine Control Valves is an input to the Reactor Protection System.

Which ONE of the following describes the basis for this RPS trip during 100% power operation?

a. Prevents rapid pressurization of the RPV when closure of MSIVs due to sudden main generator load decrease.

b. Prevents a RPV pressure spike from causing SRVs to open due to the loss of heat sink.

c. Backs up the End of Cycle Recirculation Pump Trip and lessens the severity of the pressure transient.

d. Initiates a scram in anticipation of the RPV pressure and neutron scrams to reduce the heat flux transient.

QUESTION: 082 (1.00)

Which ONE of the following plant conditions will allow the 'A' loop Drywell Spray Isolation Valves, HV-F016A and HV-F021A to be opened?

a. Reactor vessel level -135 inches, drywell pressure 2.0 psig and reactor pressure 600 psig.

b. Reactor vessel level -135 inches, drywell pressure 1.60 psig and reactor pressure 300 psig.

c. Reactor vessel level -115 inches, drywell pressure 1.60 psig and LPCI injection valves HV F0-17A and F0-17C closed.

d. Reactor vessel level -115 inches, drywell pressure 2.0 psig and reactor pressure 300 psig.

QUESTION: 083 (1.00)

Which ONE of the following conditions will cause the 62% limiter in the recirculation flow control system to enforce recirculation motor generator speed limitations?

a. Total feed flow is than 1b%.

b. RPV level decreases to 27 inches.

c. Recirculation pump discharge valve F031B leaves its full open position.

d. Condensate pump 'C' trips during full power operation.

QUESTION: 084 (1.00)

A notch withdraw signal has been applied to a control rod. The following indications are observed.

- Drive flow goes off scale high.
- The ROD DRIFT alarm annunciates.
- The four rod display shows the rod to be continuously inserting.

Which ONE of the following describes the REQUIRED operator response in accordance with ON-104, Control Rod Problems?

a. Apply a continuous withdraw signal to the rod until it is fully withdrawn.

b. Apply a continuous insert signal to the rod until it is fully inserted.

c. Individually scram the rod to attempt to free the stuck collet.

d. Apply a withdraw signal to the rod as required to maintain its position.

QUESTION: 085 (1.00)

A plant cooldown is in progress FROM THE REMOTE SHUTDOWN PANEL. RHR 'A' is in Shutdown Cooling. A large leak develops in RHRHX 1A causing heat exchanger and loop RHRSW outlet activity to exceed the radiation monitor setpoints.

Which ONE of the following describes the RHR response to the leak?

a. Two yellow warning lights will light on the RSP, and RHRSW will continue to operate.

b. RHRSW pump 'A' will trip, and the RHR heat exchanger will isolate.

c. The RHR heat exchanger will isolate, and the RHRSW pump will continue to operate on minimum flow.

d. RHRSW pump 'A' will trip, and the RHR heat exchanger will remain in service.

QUESTION: 086 (1.00)

RCIC has initiated due to low RPV water level. Level has been restored and normal feedwater has been reestablished. The supervisor has directed that RCIC be secured. The following plant conditions exist:

- Reactor water level +35 inches and stable
- Drywell pressure 2.5 psig and stable

Which ONE of the following describes the proper way to secure RCIC?

a. Depress the RCIC Manual Isolation pushbutton, and realign RCIC to STANDBY.

b. Close the Core Spray and Feedwater injection valves with the control room hand switches.

c. Depress the RCIC Turbine Trip pushbutton and close the steam supply valve.

d. Close the outboard steam isolation valve using the keylock handswitch and realign RCIC to STANDBY.

QUESTION: 087 (1.00)

Which ONE of the following indications result from the loss of power supply 1AY160?

a. All red RPS scram annunciators lit

b. Half scram on RPS A

c. Loss of SRM's B and D

d. Loss of B, D, and F APRM's

QUESTION: 088 (1.00)

Channel 1075 on RM-11, North Stack Normal Range Monitor 'A' has just experienced a HIGH alarm trip.

Which ONE of the following will be indicated on the Grid 1 display?

a. The channel identifier BLINKING RED, and the grid status identifiers SOLID RED.

b. The channel identifier BLINKING RED, and the grid status identifiers BLINKING RED.

c. The channel identifier SOLID RED, and the grid status identifiers SOLID RED.

d. The channel identifier SOLID RED, and the grid status identifiers BLINKING RED.

QUESTION: 089 (1.00)

Unit 2 is at 100% power when a small steam leak develops which causes drywell pressure to increase to 3.0 psig. The reactor scrams and reactor water level decreases to +5 inches before being restored to the normal band.

Which ONE of the following NSSSS group isolations should have occurred?

a. Group 1A, MSIVs and Steam Line Drains
Group 1B, Main Steam and Reactor Water Sample Lines

b. Group IIA, Shutdown Cooling
Group IIB, RHR Heat Exchanger Sample Lines and RHR Drain to Rad Waste Lines

c. Group IVA, High Pressure Coolant Injection Process Lines
Group IVB, HPCI Turbine Exhaust Vacuum Breaker Line

d. Group VA, RCIC Process Lines
Group VB, RCIC Turbine Exhaust Vacuum Breaker Line

QUESTION: 090 (1.00)

A loss of 125 VDC Control Power occurred to the D11 diesel.

Which ONE of the following describes the response of the diesel to this loss of power?

a. The diesel will auto start on a LOCA, but will not tie to its associated Bus.

b. The diesel jacket water cooling circulating pump will trip.

c. The diesel will trip if previously running.

d. The diesel generator breaker indicating lights will be extinguished.

QUESTION: 091 (1.00)

Which ONE of the following describes the response of the Containment/Standby Gas Treatment systems?

a. On receipt of a Unit 1 Reactor Enclosure Ventilation High Radiation Isolation signal, the Unit 2 Primary Containment Purge Supply and Exhaust Valves will receive an isolation signal.

b. On receipt of a Low Delta P Isolation in Unit 2 Reactor Enclosure, SGTS will automatically start and line up to both Unit 1 and Unit 2 Reactor Enclosures.

c. Closure of the Refuel Area Slide Gate Damper will bypass ONLY the Refuel Area Low Delta P Isolation signal.

d. On receipt of a Unit 2 Refuel Area Ventilation High Radiation Isolation signal, the Primary Containment Sampling and Recombiner lines (Group VIC) on Unit 1 AND Unit 2 will receive an isolation signal.

QUESTION: 092 (1.00)

Which ONE of the following describes the operation of the Diesel AND Motor Driven Fire Pumps?

a. The Motor Driven Fire Pump can only be started and stopped from local panel (00C518).

b. The Motor Driven Fire Pump will start automatically when fire main pressure decreases to 100 psig.

c. A loss of off-site power (LOOP) will cause the loss of both the Motor Driven and Diesel Driven Fire Pumps.

d. The Motor Driven Fire Pump normally maintains 12[illegible] psig on the fire main header.

QUESTION: 093 (1.00)

Unit 1 is in OPCON 4 with the 'A' loop of RHR lined up and operating in the Shutdown Cooling Mode.

Which ONE of the following describes the response of the RHR system if an operator attempts to open Suppression Pool Spray Valve (HV-F027A)?

a. HV-F027A would fail to open because HV-F006A is open.

b. The 1A RHR pump would trip as soon as HV-F027A leaves the full closed position.

c. HV-F006A will automatically close as soon as HV-F027A leaves the full closed position.

d. HV-F027A will open since there is no LPCI initiation signal present.

QUESTION: 094 (1.00)

The Rod Block Monitor (RBM) will prevent a control rod withdrawal from exceeding which ONE of the following thermal limits?

a. Average Planar Linear Heat Generation Rate (APLHGR)

b. Linear Heat Generation Rate (LHGR)

c. Minimum Critical Power Ratio (MCPR)

d. Maximum Fraction of Limiting Power Density (MFLPD)

QUESTION: 095 (1.00)

ASSUMING full power operation, three-element control, and no operator action, which ONE of the following would be the expected Feedwater Control System (FWCS) response if the selected level transmitter failed HIGH? (Assume NO operator action is taken.)

a. RFP turbines will lockup due to the loss of level signal input and level will remain approximately the same.

b. Steam and feed flow inputs will compensate for the error signal and level will stabilize at a slightly lower level.

c. Level input will automatically transfer to the other level transmitter and level will remain approximately the same.

d. RFP turbines reduce speed in response to high level signal and level will continue to decrease.

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

ANSWER: 001 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0200, Reactor Enclosure Ventilation
Section II.C.4
Learning Objective 4.e
261000G004 [3.5/3.7]

261000G004 ..(KA's)

ANSWER: 002 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT-0120, Main Steam and Pressure Relief System
Section V.A.6.b.3
Learning Objective 9
239002A407 [3.6/3.6]

239002A407 ..(KA's)

ANSWER: 003 (1.00)

a.

REFERENCE:

Limerick Lesson Plan LOT-0050, Reactor Vessel Instrumentation
Section VI.A.6, 7
Learning Objectives 7.e and f
216000K510 [3.1/3.3]

216000K510 ..(KA's)

ANSWER: 004 (1.00)

a.

REFERENCE:

Limerick Procedure S78.1.A Section 8
Limerick Lesson Plan LOT-0450, Control Enclosure Ventilation
Section II.B.2
Learning Objective 2
290003K401 [3.1/3.2]
290003K401 ..(KA's)

ANSWER: 005 (2.00)

a 2
b 3
c 6
d 4 (4 required at 0.50 each)

REFERENCE:

Limerick Lesson Plan LOT-0190, Secondary Containment.
Section V
Learning Objectives 5 and 6
288000K402 [3.7/3.8]

288000K402 ..(KA's)

ANSWER: 006 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT-0050, Reactor Vessel Instrumentation
Section III.B.8
Learning Objective 3
234000K505 [3.0/3.7]

234000K505 ..(KA's)

ANSWER: 007 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT-1550, Off Normal Procedures Section III.J
Learning Objective 8
Limerick LOT-0460, Reactor Enclosure Cooling Water System Section V.B
Limerick ON-113, Loss of RECW, Section 2.1
295018K303 [3.1/3.3]

295018K303 ..(KA's)

ANSWER: 008 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0040, Recirculation Flow Control
Section IV.E.1
Learning Objective 10 and p. 14-19
202001A307 [3.3/3.3]

202001A307 ..(KA's)

ANSWER: 009 (1.00)

b.

REFERENCE:

Limerick: LOT-0010, Reactor Vessel and Internals
Section VI.A.1.g
Learning Objectives 6 and 7
290002K403 [3.2/3.3]

290002K403 ..(KA's)

ANSWER: 010 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0590, Electro Hydraulic Control Logic
Learning Objective 12.b
241000K302 [4.2/4.3]

241000K302 ..(KA's)

ANSWER: 011 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT- 0330, Automatic Depressurization System (ADS)
Section V.C
Learning Objective 6.a
218000K501 [3.8/3.8]

218000K501 ..(KA's)

ANSWER: 012 (1.00)

c.

REFERENCE:

Limerick Lesson Plan LOT-0240, Source Range Monitor System
Section IV.A.1
Learning Objective 7
215004K401 [3.7/3.7]

215004K401 ..(KA's)

ANSWER: 013 (1.00)

c.

REFERENCE:

Limerick Lesson Plan LOT- 0250, Intermediate Range Monitoring System
Section IV A and B
Learning Objective 10
215003K402 [4.0/4.0]

215003K402 ..(KA's)

ANSWER: 014 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0370, Residual Heat Removal System
Section IV.B.1
Learning Objective 6
KA: 203000K401 (4.2/4.2)

203000K401 201002K403 ..(KA's)

ANSWER: 015 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0270, Average Power Range Monitor System
Section III.E.5
Learning Objective 7
215005K401 [3.7/3.7]

215005K401 ..(KA's)

ANSWER: 016 (1.00)

c.

REFERENCE:

Limerick Lesson Plan LOT-0290, Traversing In-core Probe (TIP)
Section V.D.1.a
Learning Objective 6

215001K401 [3.3/3.3]

215001K401 ..(KA's)

ANSWER: 017 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0190, Secondary Containment
Section VI.6.2.e
Learning Objective 4
290001G010 [3.3/3.4]

290001G010 ..(KA's)

ANSWER: 018 (1.00)

c.

REFERENCE:

Limerick Lesson Plan LOT-0060, Control Rod Drive Mechanisms
Section V.B.1.b
Learning Objective 5.c.
201003K402 [3.8/3.9]

201003K402 ..(KA's)

ANSWER: 019 (1.00)

d.

REFERENCE:

Limerick Lesson Plan, LOT-1860, pg 4
Obj. 3

294001K102 [3.9/4.5]

294001K102 ..(KA's)

ANSWER: 020 (1.00)

a.

REFERENCE:

Limerick Lesson Plan, LOT-1860, pg 23
Obj. 18

294001K102 [3.9/4.5]

294001K102 ..(KA's)

ANSWER: 021 (1.00)

b.

REFERENCE:

Limerick Lesson Plan, LOT-1860, pg 5
Obj. 8 (related)

294001K102 [3.9/4.5]

294001K102 ..(KA's)

ANSWER: 022 (1.00) QUESTION DELETED

c.

REFERENCE:

Limerick Lesson Plan, LOT-1860, pg 18
Obj. None

294001K101 [3.7/3.7]

294001K101 ..(KA's)

ANSWER: 023 (2.00)

a. 4
b. 5 ~~4~~ 2
c. 2
d. 7 (0.5 each)

REFERENCE:

Limerick Lesson Plan, LOT-0768, pg 6-13
Obj. 4

294001A115 [3.2/3.4]

294001A115 ..(KA's)

ANSWER: 024 (1.00)

c.

REFERENCE:

A-8, Rev 7, pg 4
Limerick LOT-1570, pg 11
Obj. 2a

294001K101 [3.7/3.7]

294001K101 ..(KA's)

ANSWER: 025 (1.00)

d.

REFERENCE:

A-41.1, Rev 12, pg 10
Limerick LOT-1570, pg 28
Obj. 3

294001A110 [3.6/4.2]

294001A110 ..(KA's)

ANSWER: 026 (1.00)

a.

REFERENCE:

Limerick LOT-1705, pg 17
Obj. 1.L
and Limerick LOT-1760, pg 12
Obj. 4

294001K103 [3.3/3.8]

294001K103 ..(KA's)

ANSWER: 027 (1.00)

c.

REFERENCE:

Limerick LOT-1705, pg 19
Obj. 2

294001K103 [3.3/3.8]

294001K103 ..(KA's)

ANSWER: 028 (1.00)

a.

REFERENCE:

Technical Specification Table 6.2.2-1 and Notes, pg 6-5
Obj. Not located

294001A103 [2.7/3.7]

294001A103 ..(KA's)

ANSWER: 029 (1.00)

d.

REFERENCE:

Technical Specification Table 6.2.2-1 and Notes, pg 6-5
Obj. Not located
294001A109 [3.3/4.2]

294001A109 ..(KA's)

ANSWER: 030 (1.00)

c.

REFERENCE:

Ops Man 6.3, Rev 1, pg . 2, 3
Limerick LOT-1574 Obj. 5, 6

294001K101 [3.7/3.7]

294001K101 ..(KA's)

ANSWER: 031 (1.00)

b.

REFERENCE:

Ops Man 6.14, Rev 3, pg 10
Limerick LOT-1574 Obj. 11, 13 (related)

294001A102 [4.2/4.2]

294001A102 ..(KA's)

ANSWER: 032 (1.00)

c.

REFERENCE:

Ops Man 6.16, Rev 0, pg 1
Limerick LOT-1574 Obj. 14

294001K107 [3.3/3.6]

294001K107 ..(KA's)

ANSWER: 033 (1.00)

d.

REFERENCE:

A-7, pg 20
Limerick LOT-1571 Obj. 3

294001A111 [3.6/4.2]

294001A110 ..(KA's)

ANSWER: 034 (1.00)

b.

REFERENCE:

ON-120, Rev 1, pg 2
Limerick LOT-1550, Obj. None

295023G010 [3.8/3.9]

295023G010 ..(KA's)

ANSWER: 035 (1.00)

d.

REFERENCE:

E-2BY160, Rev 4, pg 1
Limerick LOT-1566 Obj. 1.d

295003K306 [3.7/3.7]

295003K306 ..(KA's)

ANSWER: 036 (1.00)

a.

REFERENCE:

E-2FA, Rev 1, pg 1
Limerick LOT-1566 Obj. 1.e

295004A204 [3.2/3.3]

295004A204 ..(KA's)

ANSWER: 037 (1.00)

c.

REFERENCE:

E-10/20, Rev 13
LOT 1563 Learning Objective 4

295003A102 [4.2/4.3]

295003A102 ..(KA's)

ANSWER: 038 (1.00)

a.

REFERENCE:

OT-102, Rev 4, pg 1
Limerick LOT-1540 Obj. 2

295007A105 [3.7/3.8]

295007A105 ..(KA's)

ANSWER: 039 (1.00)

d.

REFERENCE:

OT-103, Rev 4, pg 1, 3
Limerick LOT-1540 Obj. 2, 4

NOTE: Check the MSL Hi Rad Alarm name.

295017K304 [3.6/3.8]

295017K304 ..(KA's)

ANSWER: 040 (1.00)

c.

REFERENCE:

OT-104, Rev 12, pg 1 and Bases pg 1
Limerick LOT-1540 Obj. 2

295014G010 [4.0/3.9]

295014G010 ..(KA's)

ANSWER: 041 (1.00)

a.

REFERENCE:

OT-102, Bases pg 2
Limerick LOT-1540 Obj. 3, 5 (related)

295007K206 [3.5/3.7]

295007K206 ..(KA's)

ANSWER: 042 (1.00)

c.

REFERENCE:

OT-112, pg 1
Limerick LOT-1540, Obj. 2

295001G010 [3.8/3.7]

295001G010 ..(KA's)

ANSWER: 043 (1.00)

b.

REFERENCE:

OT-110 Bases, pg 2
Limerick LOT-1540 Obj. 4

295008G007 [3.2/3.3]

295008G007 ..(KA's)

ANSWER: 044 (1.00)

b.

REFERENCE:

T-102 Bases, pg 22
Limerick LOT-1560, Obj. 3

295028K101 [3.5/3.7]

295028K101 ..(KA's)

ANSWER: 045 (1.00)

c.

REFERENCE:

T-101 Bases, pg 6
Limerick LOT-1560 Obj. 5

295037K301 [4.1/4.2]

295037K301 ..(KA's)

ANSWER: 046 (1.00)

a.

REFERENCE:

ON-119, pg 2
Limerick LOT-1550, Obj. 2

295019K203 [3.2/3.3]

2950.)K203 ..(KA's)

ANSWER: 047 (1.00)

c.

REFERENCE:

ON-113, pg 1
Limerick LOT-1550, Obj. 1, 2

295001K302 [3.7/3.8]

295001K302 ..(KA's)

ANSWER: 048 (1.00)

a. Also ACCEPT d as correct answer

REFERENCE:

T.S. 3.1.3.5
Limerick LOT-1550, Obj. 1, 2
Note: Perform close interpretation review of ON-107 with facility.
295022G010 [3.7/3.5]

295022G010 ..(KA's)

ANSWER: 049 (1.00)

c.

REFERENCE:

T-102 Bases, pg 6
Limerick LOT-1560, Obj. 4

295026K301 [3.8/4.1]

295026K301 ..(KA's)

ANSWER: 050 (1.00)

d.

REFERENCE:

T-101, T-102
Lesson Plan: LOT-1560, Obj. 3
L 803 (modified)

295029K301 [3.5/3.9]

295029K301 ..(KA's)

ANSWER: 051 (1.00)

c.

REFERENCE:

T-102
Lesson Plan: LOT-1560, Obj. 3, 5
L 807 (reworded)

295012G007 [3.3/3.5]

295012G007 ..(KA's)

ANSWER: 052 (1.00)

d.

REFERENCE:

Lesson Plan: LOT-1561, Obj. 1
L 289 (reword)

295034A103 [4.0/3.9]

295034A103 ..(KA's)

ANSWER: 053 (1.00)

c.

REFERENCE:

T-291, Secondary Containment Temperature Effects on Reactor Level Instrumentation Page 8
Lesson Plan: LOT-1561, Obj. 1
L 834 (reworded)

295032A202 [3.3/3.5]

295032A202 ..(KA's)

ANSWER: 054 (1.00)

c.

REFERENCE:

T-101 Bases, pg 17
Lesson Plan: LOT-1560, Obj. None located
L 841 (reworded)

295007A201 [4.1/4.1]

295007A201 ..(KA's)

ANSWER: 055 (1.00)

a.

REFERENCE:

T-101 Bases, pg 15
Lesson Plan: LOT-1560, Obj. 5
L 842 (modified)

295024K204 [3.9/3.9]

295024K204 ..(KA's)

ANSWER: 056 (1.00)

a.

REFERENCE:

T-118 Bases, pg 4
Lesson Plan: LOT-1560, Obj. 5
L 843 (modified)

295009A201 [4.2/4.2]

295009A201 ..(KA's)

ANSWER: 057 (1.00)

a.

REFERENCE:

T-102 Bases, pg 18
Lesson Plan: LOT-1560, Obj. 5
L 846 (modified)

295024G007 [3.6/3.9]

295024G007 ..(KA's)

ANSWER: 058 (1.00)

d.

REFERENCE:

T-102 Bases, pg 18
Lesson Plan: LOT-1560, Obj. 5
L 851 (modified)

295010G007 [3.6/3.8]

295010G007 ..(KA's)

ANSWER: 059 (1.00)

d.

REFERENCE:

T-102 Bases, pg 8
Lesson Plan: LOT-1560, Obj. 5
L 855

295027G007 [3.4/3.8]

295027G007 ..(KA's)

ANSWER: 060 (1.00)

b.

REFERENCE:

Lesson Plan: LOT-1560, Obj. 5
L 862 (modified)

295006A105 [4.2/4.2]

295006A105 ..(KA's)

ANSWER: 061 (1.00)

c.

REFERENCE:

T-103 Bases, pg 1
Limerick LOT-1560 Obj. 1

295036A201 [3.0/3.2]

295036A201 ..(KA's)

ANSWER: 062 (1.00)

a.

REFERENCE:

Limerick LOT-1561, pg 6
Obj. 2

295037K213 [3.4/4.1]

295037K213 ..(KA's)

ANSWER: 063 (1.00)

a.

REFERENCE:

Limerick Lesson Plan LOT-0735, Remote Shutdown Panel Section IV.G.4.a
Page 14
Learning Objective 4.f.
Limerick: SE-1, Attachment 1
295016K201 [4.4/4.5]

295016K201 ..(KA's)

ANSWER: 064 (1.00)

c.

REFERENCE:

Limerick: OT-117, Rev 3 RPS Failure Section 2.1.1.a Page 1
LOT-1540 Operational Transient Procedures
Learning Objective 2
295015G010 [4.0/3.9]

295015G010 ..(KA's)

ANSWER: 065 (1.00)

c.

REFERENCE:

Limerick LOT-0590, Electro Hydraulic Control Logic Section III.A
Learning Objective 12.b
295025A102 [3.8/3.8]

295025A102 ..(KA's)

ANSWER: 066 (1.00)

b.

REFERENCE:

Limerick: T-100
Limerick Lesson Plan LOT-1560, Introduction to LGS Transient Response Implementation Plan
Learning Objective 5.
295005K304 [3.2/3.2]

295005K304 ..(KA's)

ANSWER: 067 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT-0310, Standby Liquid Control System
Section V.B.4
Learning Objective 10.
211000A308 [4.2/4.2]

211000A308 ..(KA's)

ANSWER: 068 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT-0120, Main Steam and Pressure Relief System
Learning Objective 10.a
Limerick Lesson Plan LOT-0550, Feedwater Control System Section V.D
Learning Objective 2.
259002A104 [3.6/3.6]

259002A104 ..(KA's)

ANSWER: 069 (1.00)

c.

REFERENCE:

Limerick Lesson Plan LOT-0550, Feedwater Control System Section V.F.3
Learning Objective 4
259002K603 [3.1/3.1]

259002K603 ..(KA's)

ANSWER: 070 (1.00)

c.

REFERENCE:

Limerick Lesson Plan LOT-0660, 4.16 KV AC Power Distribution
Section IV.B.3.b
Learning Objective 6.c
262001K602 [3.6/3.9]

262001K602 ..(KA's)

ANSWER: 071 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0070, Control Rod Drive Hydraulic System
Section VI.E
Learning Objective 8.
201001K107 [3.4/3.4]

201001K107 ..(KA's)

ANSWER: 072 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT-0095, Rod Worth Minimizer LGS II
Section I.A
Learning Objective 1.
201006K501 [3.3/3.7]

201006K501 ..(KA's)

ANSWER: 073 (1.00)

d.

REFERENCE:

Limerick ON-100. Failure of a Jet Pump Section 1.1
295001K207 [3.4/3.4]

295001K207 ..(KA's)

ANSWER: 074 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0070, Control Rod Drive Hydraulic System
Section VI.J
Learning Objective 5.c., 10.a
Limerick: LOT-1550, Off Normal Procedures Section III.F
Learning Objective 1.
Limerick ON-107, Control Rod Drive System Problems Section 2.2
295022A202 [3.3/3.4]

295022A202 ..(KA's)

ANSWER: 075 (1.00)

c.

REFERENCE:

Limerick OT-116, Loss of Condenser Vacuum Section 4
Limerick Lesson Plan LOT-1540, Operational Transient Procedures
Section III.J
Learning Objective 3
295002K304 [3.4/3.6]

295002K304 ..(KA's)

ANSWER: 076 (1.00)

c.

REFERENCE:

Limerick Lesson Plan LOT-0040, Recirculation Flow Control Section III.D.1.b
LO 3, and 4
202001K119 [3.2/3.2]

202001K119 ..(KA's)

ANSWER: 077 (2.00)

a. 1
b. 3
c. 6
d. 4

REFERENCE:

Limerick Lesson Plan LOT-0180, Nuclear Steam Supply Shutoff System Section III
Learning Objective 2.a.
223002K104 [3.5/3.8]

223002K104 ..(KA's)

ANSWER: 078 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0050, Reactor Vessel Instrumentation
216000K107 [3.9/4.1]

216000K107 ..(KA's)

ANSWER: 079 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0550, Feedwater Control System
Section V.F.4
Learning Objective 7.c.
259002A203 [3.6/3.7]

259002A203 ..(KA's)

ANSWER: 080 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0300, Reactor Protection System
Section V.C.6.b
Learning Objective 8
212000G015 [4.5/4.7]

212000G015 ..(KA's)

ANSWER: 081 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0300, Reactor Protection System III.D.3
Learning Objective 4.
245000K307 [3.6/3.7]

245000K307 ..(KA's)

ANSWER: 082 (1.00)

a.

REFERENCE:

Limerick Lesson Plan LOT-0370, Residual Heat Removal System
Section III.C.6.c and IV.B.1
Learning Objective 9.a.
226001A101 [3.6/3.8]

226001A101 ..(KA's)

ANSWER: 083 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0040, Recirculation Flow Control
Learning Objective 4.
202002K604 [3.5/3.5]

202002K604 ..(KA's)

ANSWER: 084 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT-1550, Off Normal Procedure
Learning Objective 2
Limerick Off Normal Procedure ON-104, Control Rod Problems
Section 2.2
201003A203 [3.4/3.7]

201003A203 ..(KA's)

ANSWER: 085 (1.00)

a.

REFERENCE:

Limerick Lesson Plan LOT 0735, Remote Shutdown Panel
Section IV.B.1.b
Learning Objective 4.c
203000K414 [3.6/3.7]

203000K414 ..(KA's)

ANSWER: 086 (1.00)

c.

REFERENCE:

Limerick Lesson Plan LOT 0380, Reactor Core Isolation Cooling
Section V.D.2
Learning Objective 9
217000G001 [3.7/4.0]
217000G001 ..(KA's)

ANSWER: 087 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT 1566, Event Procedures
Section II.C.1
Learning Objective 4
262002G008 [3.1/3.1]

262002G008 ..(KA's)

ANSWER: 088 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOR 9106-C
Learning Objective 3
272000A101 [3.2/3.2]

272000A101 ..(KA's)

ANSWER: 089 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT 0180, Nuclear Steam Supply Shutoff System (NSSSS) Section III
Learning Objective 2
223002A102 [3.7/3.7]

223002A102 ..(KA's)

ANSWER: 090 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT 0670, Diesel Generator and Auxiliaries
Section IV.D.6
Learning Objective 10.b
264000K609 [3.3/3.5]

264000K609 ..(KA's)

ANSWER: 091 (1.00)

a.

REFERENCE:

Limerick Lesson Plan 0200, Reactor Enclosure Ventilation
Section IV.I.2.d
Learning Objective 5
223001K403 [3.7/3.8]

223001K403 ..(KA's)

ANSWER: 092 (1.00)

b.

REFERENCE:

Limerick Lesson Plan 0733, Fire Protection System
Section IV.A.4, 5
Learning Objective 4
286000K402 [3.3/3.5]

286000K402 ..(KA's)

ANSWER: 093 (1.00)

d.

REFERENCE:

Limerick Lesson Plan 0370, Residual Heat Removal System
Section III.C.7.b.1
Learning Objective 8
205000K403 [3.8/3.8]

205000K403 ..(KA's)

ANSWER: 094 (1.00)

c.

REFERENCE:

Limerick Lesson Plan LOT-0280, Rod Block Monitor
Section III
Learning Objective 1
215002K302 [3.1/3.6]

215002K302 ..(KA's)

ANSWER: 095 (1.00) Reject, Hypothetical Question

d.

REFERENCE:

Limerick Lesson Plan LOT-0550, Feedwater Control System
Section V.F.4
Learning Objective 7.c.

259002A203 [3.6/3.7]

259002A203 ..(KA's)

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

R O E x a m B W R R e a c t o r

O r g a n i z e d b y Q u e s t i o n N u m b e r

QUESTION	VALUE	REFERENCE
050	1.00	9000352
051	1.00	9000354
052	1.00	9000356
053	1.00	9000357
054	1.00	9000359
055	1.00	9000360
056	1.00	9000361
057	1.00	9000362
058	1.00	9000363
059	1.00	9000364
060	1.00	9000365
061	1.00	9000367
062	1.00	9000368
063	1.00	9000369
064	1.00	9000370
065	1.00	9000372
066	1.00	9000373
067	1.00	9000374
068	1.00	9000376
069	1.00	9000377
070	1.00	9000378
071	1.00	9000380
072	1.00	9000381
073	1.00	9000382
074	1.00	9000383
075	1.00	9000384
076	1.00	9000385
077	2.00	9000386
078	1.00	9000387
079	1.00	9000388
080	1.00	9000389
081	1.00	9000390
082	1.00	9000391
083	1.00	9000392
084	1.00	9000394
085	1.00	9000395
086	1.00	9000400
087	1.00	9000401
088	1.00	9000403
089	1.00	9000404
090	1.00	9000406
091	1.00	9000407
092	1.00	9000408
093	1.00	9000409
094	1.00	9000410
095	1.00	9000412
	98.00	

98,00

A N S W E R K E Y

MULTIPLE CHOICE

001 d

002 b

003 a

004 a

005 MATCHING

a 2

b 3

c 6

d 4

MULTIPLE CHOICE

006 b

007 b

008 d

009 b

010 d

011 d

012 c

013 c

014 d

015 d

016 c

017 d

018 c

019 d

020 a

021 b

022 c Deleted

023 MATCHING

a 4

b 5 or 2

c 2

d 7

MULTIPLE CHOICE

024 c

025 d

026 a

027 c

028 a

029 d

030 c

031 b

032 c

033 d

034 b

035 d

A N S W E R K E Y

036	a	059	d
037	c	060	b
038	a	061	c
039	d	062	a
040	c	063	a
041	a	064	c
042	c	065	c
043	b	066	b
044	b	067	b
045	c	068	b
046	a	069	c
047	c	070	c
048	a	071	d
049	c	072	b
050	d	073	d
051	c	074	d
052	d	075	c
053	c	076	c
054	c	077	MATCHING
055	a		a 1
056	a		b 3
057	a		c 6
058	d		d 4

A N S W E R K E Y

MULTIPLE CHOICE

078 d

079 d

080 d

081 d

082 a

083 c

084 b

085 a

086 c

087 b

088 b

089 b

090 d

091 a

092 b

093 d

094 c

095 d Deleted duplicate question

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

RO Exam BWR Reactor

Organized by KA Group

PLANT WIDE GENERICS

QUESTION	VALUE	KA
031	1.00	294001A102
028	1.00	294001A103
029	1.00	294001A109
025	1.00	294001A110
033	1.00	294001A110
023	2.00	294001A115
024	1.00	294001K101
030	1.00	294001K101
022	1.00	294001K101
020	1.00	294001K102
019	1.00	294001K102
021	1.00	294001K102
026	1.00	294001K103
027	1.00	294001K103
032	1.00	294001K107
PWG Total	16.00	

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA
071	1.00	201001K107
083	1.00	202002K604
014	1.00	203000K401
085	1.00	203000K414
067	1.00	211000A308
080	1.00	212000G015
013	1.00	215003K402
012	1.00	215004K401
015	1.00	215005K401
078	1.00	216000K107
003	1.00	216000K510
086	1.00	217000G001
011	1.00	218000K501
091	1.00	223001K403
089	1.00	223002A102
077	2.00	223002K104
002	1.00	239002A407
010	1.00	241000K302
068	1.00	259002A104
095	1.00	259002A203
079	1.00	259002A203
069	1.00	259002K603

R O E x a m B W R R e c t o r

O r g a n i z e d b y K A G r o u p

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA
001	1.00	261000G004
090	1.00	264000K609
PS-I Total	25.00	

Group II

QUESTION	VALUE	KA
084	1.00	201003A203
018	1.00	201003K402
072	1.00	201006K501
008	1.00	202001A307
076	1.00	202001K119
093	1.00	205000K403
094	1.00	215002K302
082	1.00	226001A101
081	1.00	245000K307
070	1.00	262001K602
087	1.00	262002K008
088	1.00	272000A101
092	1.00	286000K402
017	1.00	290001G010
004	1.00	290003K401
PS-II Total	15.00	

Group III

QUESTION	VALUE	KA
016	1.00	215001K401
006	1.00	234000K505
005	2.00	288000K402
009	1.00	290002K403
PS-III Total	5.00	
PS Total	45.00	

EMERGENCY PLANT EVOLUTIONS

Group I

R O E x a m B W R R e a c t o r

O r g a n i z e d b y K A G r o u p

EMERGENCY PLANT EVOLUTIONS

Group I

QUESTION	VALUE	KA
066	1.00	295005K304
060	1.00	295006A105
038	1.00	295007A105
054	1.00	295007A201
041	1.00	295007K206
056	1.00	295009A201
058	1.00	295020G007
040	1.00	295014G010
064	1.00	295015G010
057	1.00	295024G007
055	1.00	295024K204
065	1.00	295025A102
062	1.00	295037K213
045	1.00	295037K301
EPE-I Total	14.00	

Group II

QUESTION	VALUE	KA
042	1.00	295001G010
073	1.00	295001K207
047	1.00	295001K302
075	1.00	295002K304
037	1.00	295003A102
035	1.00	295003K306
036	1.00	295004A204
043	1.00	295008G007
051	1.00	295012G007
063	1.00	295016K201
039	1.00	295017K304
067	1.00	295018K303
046	1.00	295019K203
074	1.00	295022A204
048	1.00	295022G010
049	1.00	295026K304
069	1.00	295027G006
044	1.00	295028K101
050	1.00	295029K303
052	1.00	295034A203
EPE-II Total	20.00	

Group III

R O E x a m B W R R e a c t o r

O r g a n i z e d b y K A G r o u p

EMERGENCY PLANT EVOLUTIONS

Group III

QUESTION	VALUE	KA
034	1.00	295023G010
053	1.00	295032A202
061	1.00	295036A201
EPE-III Total	3.00	
EPE Total	37.00	
Test Total	98.00	

MASTER
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Examination

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U. S. NUCLEAR REGULATORY COMMI3SION
SITE SPECIFIC EXAMINATION
SENIOR OPERATOR LICENSE
REGION 1

CANDIDATE'S NAME: _____

FACILITY: Limerick 1 & 2

REACTOR TYPE: BWR-3E4

DATE ADMINISTERED: 92/07/20

INSTRUCTIONS TO CANDIDATE:

se the answer sheets provided to document your answers. Staple this cover sheet on top of tne 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 'ALUE	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 ___

002 a b c d ___

003 a b c d ___

004 a b c d ___

005 MATCHING

a ___

b ___

c ___

d ___

MULTIPLE CHOICE

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 MATCHING

a ___

b ___

c ___

d ___

MULTIPLE CHOICE

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 ___

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.

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	___
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	___
051	a	b	c	d	___
052	a	b	c	d	___
053	a	b	c	d	___
054	a	b	c	d	___
055	a	b	c	d	___
056	a	b	c	d	___
057	a	b	c	d	___
058	a	b	c	d	___
059	a	b	c	d	___
060	a	b	c	d	___
061	a	b	c	d	___
062	a	b	c	d	___
063	a	b	c	d	___
064	a	b	c	d	___
065	a	b	c	d	___
066	a	b	c	d	___
067	a	b	c	d	___
068	a	b	c	d	___
069	a	b	c	d	___
070	a	b	c	d	___
071	a	b	c	d	___
072	a	b	c	d	___
073	a	b	c	d	___
074	a	b	c	d	___
075	a	b	c	d	___
076	a	b	c	d	___
077	a	b	c	d	___
078	a	b	c	d	___
079	a	b	c	d	___

A N S W Σ R S H E E T

Multiple Choice (Circle or X your choice)

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

080 MATCHING

a ___

b ___

c ___

d ___

096 MATCHING

a ___

b ___

c ___

d ___

MULTIPLE CHOICE

081	a	b	c	d	___
082	a	b	c	d	___
083	a	b	c	d	___
084	a	b	c	d	___
085	a	b	c	d	___
086	a	b	c	d	___
087	a	b	c	d	___
088	a	b	c	d	___
089	a	b	c	d	___
090	a	b	c	d	___
091	a	b	c	d	___
092	a	b	c	d	___
093	a	b	c	d	___
094	a	b	c	d	___
095	a	b	c	d	___

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

NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on the examination means an automatic denial of your application and could result in more severe penalties.

2. After the examination has been completed, you must 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. This must be done after you complete the examination.

3. Restroom trips are to be limited and only one applicant at a time may leave. You must avoid all contacts with anyone outside the examination room to avoid even the appearance or possibility of cheating.

4. Use black ink or dark pencil ONLY to facilitate legible reproductions.

5. Print your name in the blank provided in the upper right-hand corner of the examination cover sheet and each answer sheet.

6. Mark your answers on the answer sheet provided. USE ONLY THE PAPER PROVIDED AND DO NOT WRITE ON THE BACK SIDE OF THE PAGE.

7. Before you turn in your examination, consecutively number each answer sheet, including any additional pages inserted when writing your answers on the examination question page.

8. Use abbreviations only if they are commonly used in facility literature. Avoid using symbols such as < or > signs to avoid a simple transposition error resulting in an incorrect answer. Write it out.

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

10. Show all calculations, methods, or assumptions used to obtain an answer to any short answer questions.

11. Partial credit may be given except on multiple choice questions. Therefore, ANSWER ALL PARTS OF THE QUESTION AND DO NOT LEAVE ANY ANSWER BLANK.

12. Proportional grading will be applied. Any additional wrong information that is provided may count against you. For example, if a question is worth one point and asks for four responses, each of which is worth 0.25 points, and you give five responses, each of your responses will be worth 0.20 points. If one of your five responses is incorrect, 0.20 will be deducted and your total credit for that question will be 0.80 instead of 1.00 even though you got the four correct answers.

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

14. When turning in your examination, assemble the completed examination with examination questions, examination aids and answer sheets. In addition, turn in all scrap paper.

15. Ensure all information you wish to have evaluated as part of your answer is on your answer sheet. Scrap paper will be disposed of immediately following the examination.

16. To pass the examination, you must achieve a grade of 80% or greater.

17. There is a time limit of four (4) hours for completion of the examination.

18. When you are done and have turned in your examination, leave the examination area (EXAMINER WILL DEFINE THE AREA). If you are found in this area while the examination is still in progress, your license may be denied or revoked.

QUESTION: 001 (1.00)

Each train of the Standby Gas Treatment System (SGTS) consists of the following components:

1. Pre-HEPA filter
2. After-HEPA FILTER
3. Fans, two in parallel
4. Electric air heater
5. Charcoal absorber bed

Which ONE of the following describes the SGTS flow path from suction to discharge?

a. 1-2-4-5-3

b. 1-3-4-5-2

c. 4-1-5-3-2

d. 4-1-5-2-3

QUESTION: 002 (1.00)

Which ONE of the following is indicated when the amber lights directly above each Safety Relief Valve (SRV) control switch is illuminated on Panel *0C626?

a. The SRV pilot solenoid is energized

b. SRV has lifted

c. Control power is available to the SRV pilot solenoid

d. SRV control switch has been placed to MANUAL

QUESTION: 003 (1.00)

Which ONE of the following describes the effects on indicated reactor water level as read on various reactor level instruments due to reactor operation at different temperatures?

a. Wide range instruments are calibrated hot and during cold temperature operation indicated level will be higher than actual

b. Narrow range instruments are calibrated hot and during cold temperature operation indicated level will be lower than actual

c. Shutdown range instruments are calibrated cold and during hot temperature operation indicated level will be higher than actual

d. Upset range instruments are calibrated hot and during cold temperature operation indicated level will be lower than actual

QUESTION: 004 (1.00)

The operations listed below are necessary to meet the interlocks to start the Control Room HVAC system.

1. Start return fans
2. Start supply fans
3. Ensure supply fan dampers open
4. Place standby fans in AUTO
5. Ensure return fan dampers open

Concerning the Control Room HVAC system, SELECT the sequence of operation to ensure proper system startup.

a. 2-3-1-5-4

b. 1-5-2-3-4

c. 2-1-3-5-4

d. 4-3-5-2-1

QUESTION: 005 (2.00)

For each system/component that is associated with the Secondary Containment, listed in Column A, SELECT the associated function from Column B.

(NOTE: Items in column B may be used once, more than once or not at all. Only one answer may occupy a space in Column A.)
(4 required at 0.50 each)

COLUMN A (Systems/Components)		COLUMN B (Functions)	
_____a.	Outboard MSIV Blowout Panel	1.	Maintains air recirculation for the refueling floor only.
_____b.	Standby Gas Treatment System	2.	Actuates at a differential pressure of 0.25 psid.
_ __c.	Reactor Enclosure Recirculation System	3.	Maintains Secondary Containment at -0.25" wg after a LOCA.
_____d.	Reactor Enclosure Ventilation System	4.	Maintains Secondary Containment at -0.25" during normal operation.
		5.	Actuates at a differential pressure of 0.50 psid.
		6.	Maintains air circulation in Zones I & II of Secondary Containment after a LOCA

QUESTION: 006 (1.00)

Refueling operations are in progress at Limerick with the reactor cavity flooded. The water level in the cavity begins to decrease due to a leak.

Which ONE of the following describes the response of the level indication for this plant condition?

a. The level decrease will be indicated immediately on the Wide Range Level indicator.

b. The level decrease will be indicated immediately on the Upset Range Level recorder.

c. The level decrease will be indicated on the Narrow Range Level recorder when level decreases to the top of the steam lines.

d. The level decrease will begin to be indicated on the Shutdown Level Indicator when level decreases to below the vessel flange.

QUESTION: 007 (1.00)

Off-Normal procedure ON-113, Loss of RECW, requires tripping the reactor recirculation pumps if cooling is lost for ten (10) minutes.
Which ONE of the following describes the BASIS for tripping the recirculation pumps TEN (10) MINUTES after the loss of RECW.

a. To provide time for the operator to re-establish RECW operability.

b. Continued operation of the recirculation pump after ten (10) minutes could damage the pump seals.

c. Continued operation of the recirculation pumps after ten (10) minutes will challenge the motor high temperature trip.

d. To provide time to insert control rods and stay within the constraints of the operating map when the recirculation pumps are tripped.

QUESTION: 008 (1.00)

The plant is at 100% power when MG set lube oil pressure for the "A" recirculation pump decreases to 20 psig for 4 seconds, then returns to the normal operating pressure, and remains steady.

Which ONE of the following describes the response of the "A" recirculation MG set?

a. Drive motor breaker trip only

b. Drive motor breaker and field breaker trips

c. Scoop tube lock only

d. No automatic action

QUESTION: 009 (1.00)

Which ONE of the following components assures there is adequate core flow to the high powered fuel bundles?

a. Core plate

b. Orificed fuel support piece

c. Fuel channel

d. Stub tubes

QUESTION: 010 (1.00)

A reactor startup is in progress with the mode switch in the STARTUP position.

Which ONE of the following describes the operation of the SRM system?

a. A rod block will occur if 'A' SRM is not fully inserted and it reads 90 cps with all IRMs at range 4.

b. With the shorting links installed, a full scram will occur if SRM 'A' reads 3x10E5 cps.

c. A rod block will occur if SRM 'A' experienced a low detector voltage with all IRMs at range 4.

d. A rod block will NOT occur if SRM 'A' failed downscale with all IRMs on range 2 or above.

QUESTION: 011 (1.00)

Unit 1 is operating at 5% power with the MODE SWITCH in STARTUP and all IRMs on range 9. The operator increases the recirculation flow which increases the power to 11% as read on APRMs. (Assume no other operator action).

Which ONE of the following describes the response of the nuclear instrumentation and RPS system due to this action?

a. APRM UPSCALE alarm, rod block and SCRAM

b. IRM UPSCALE alarm and ROD BLOCK

c. IRM UPSCALE alarm, rod block and SCRAM

d. APRM UPSCALE alarm and ROD BLOCK

QUESTION: 012 (1.00)

Which ONE of the following sets of plant conditions will result in the LPCI mode of the RHR system INJECTING into the Reactor Vessel?

a. Reactor Pressure 465 psig
Drywell Pressure 1.68 psig
Reactor Level - 40 inches

b. Reactor Pressure 465 psig
Drywell Pressure 1.68 psig
Reactor Level - 133 inches

c. Reactor Pressure 155 psig
Drywell Pressure 1.58 psig
Reactor Level - 40 inches

d. Reactor Pressure 155 psig
Drywell Pressure 1.58 psig
Reactor Level - 133 inches

QUESTION: 013 (1.00)

A TIP trace is being taken when an instrument technician error causes a containment isolation signal.

Which ONE of the following describes the response of the TIP system?

a. The TIP shear valve automatically fires to cut the detector cable and seal the guide tube.

b. The TIP guide tube ball valve automatically closes, cutting the detector cable and sealing the guide tube.

c. The TIP drive automatically shifts to manual reverse and withdraws the detector to the shield position, and the ball valve closes.

d. The TIP drive automatically shifts to manual reverse and withdraws the detector to the shield position, and the shear valve closes.

QUESTION: 014 (1.00)

Draining of the area between the Fuel Storage Pool and the Reactor Cavity gates has been completed (per 5.53.4A, Drain Reactor Well and Drywell Cenerator Storage Pool.)

Which ONE of the following is the reason for IMMEDIATELY CLOSING the Fuel Pool Gates Drain isolation valves (53-*047 and -*099) after the well is drained? (P&ID M-53 attached)

a. Prevents inadvertent draining of the Fuel Pool or Reactor Cavity if a leak develops on the gates.

b. Allows for monitoring of the telltale drains in the event of a leak occurring on one of the gates.

c. Provides a seal on the inner and outer gate surfaces to prevent leakage.

d. Establishes the boundary that is required to provide secondary containment.

QUESTION: 015 (1.00)

Select the choice that completes the following statement.

The Clearance and Tagging Manual allows a Special Condition Tag (SCT) to be applied to a component that has _____.

a. a danger tag attached.

b. a SCT already attached.

c. been listed on a Master Clearance.

d. been listed on a Sub-Clearance.

QUESTION: 016 (1.00)

Which ONE of the following is a condition that requires a Load Dispatcher's Restriction? (Assume work is related to Station Switchyard Equipment.)

a. To work on or near energized electrical equipment

b. To install a grounding device

c. To work on deenergized equipment beyond the station boundary

d. To tag-out station equipment that will affect station capacity or reliability

QUESTION: 017 (1.00)

A clearance on the condensate system must be suspended.

Which ONE of the following describes the method of denoting this suspension on the equipment tags?

a. A green label is attached to the associated danger tags in the plant and to the associated information tags in the Control Room.

b. A green label is attached only to the associated danger tags in the plant

c. A blue label is attached only to the associated danger tags in the control room.

d. A blue label is attached to the associated danger tags in the plant and to the associated information tags in the Control Room.

QUESTION: 018 (1.00) QUESTION DELETED

Which ONE of the following describes the operation and the use of OPS Blocking Locks in accordance with Administrative Procedure A-8, Locked Valves?

a. Will NOT be keyed alike and may be used in place of a station lock for a station clearance

b. Will NOT capture the key when unlocked and may be used with a red colored chain to prevent operation of MOV handwheels

c. Will be keyed alike and may be used on administrative tagouts to control equipment status

d. Will capture the key when unlocked and may be used as specified on station clearances

QUESTION: 019 (2.00)

For each ERFDS Display Code in Column A, SELECT the indicated condition from Column B.

(NOTE: The items in Column B may be used once, more than once, or not at all, and only a single answer may occupy one answer space.)
(4 answers required at 0.5 each)

COLUMN A (SPDS Display)	COLUMN B (Indicated Condition)
_____a. RPV Pressure Tag box is magenta	1. Parameter has exceeded its limit setpoint
_____b. RPV Level Tag box is yellow	2. Parameter is approaching its limit setpoint
_____c. Heat Capacity Limit Tag box is yellow	3. Parameter is within its normal range
_____d. Scram vent indicated in red border	4. Parameter signals being sensed are invalid
	5. Parameter signals being sent have not been validated.
	6. Associated parameter safety action has been demanded and completed successfully
	7. Scram command present with prescribed time elapsed, all rods not full in.
	8. All rods not full in, the specified scram time has not elapsed.

QUESTION: 020 (1.00)

Which ONE of the following describes the constraints on the Control Supervisor position per the Administrative Procedure on Shift Operations?

a. The Control Supervisor may enter any of the shop areas for short periods of time to communicate when the reactor is in refueling.

b. The Control Supervisor position may be fulfilled by the Chief Operator as long as both units are in HOT SHUTDOWN

c. The Control Supervisor may enter the Shift Managers Office for short periods of time during power operations.

d. The Control Supervisor may be relieved by the duty STA as long as the STA holds a valid Senior Operator License.

QUESTION: 021 (1.00)

Which ONE of the following describes a condition in which the lock and chain may be left when a manual locked valve is UNLOCKED? (Per procedure A-8, Procedure for Control of Locked Valves and Devices).

a. The chain is looped through the valve yoke with the lock in the UNLOCKED condition.

b. The chain is looped through the valve handwheel so as not to obstruct valve movement with the lock in the LOCKED condition.

c. The chain is wrapped around the pipe next to the valve with the lock in the LOCKED condition.

d. The chain is wrapped around the valve yoke with the lock in the UNLOCKED condition.

QUESTION: 022 (1.00)

A worker has just obtained approval from Shift Supervision on a Troubleshooting Control Form (TCF) to perform troubleshooting.

Which ONE of the following is the purpose of the workers notification to the Control Room Operator?

a. To obtain the operators signature for concurrence to commence troubleshooting

b. To log the TCF number and title in the Control Room TCF logbook

c. To log the TCF number to prevent the troubleshooting activity from exceeding one shift

d. To inform the operator of the potential impact on plant operations

QUESTION: 023 (1.00)

Which ONE of the following is the nominal time period for which the Troubleshooting Control Form (TCF) is considered valid after approval by Shift Supervision?

a. One shift (8 to 12 hours)

b. One day (24 hours)

c. As designated by Shift Supervision

d. For the duration of the troubleshooting activity

QUESTION: 024 (1.00)

A worker has just initiated a Temporary Circuit Alteration (TCA) Control Form.

Which ONE of the following plant Personnel is responsible for reviewing the TCA for the impact on Operations and determining any required Control Room Operator compensating actions?

a. Shift Manager

b. Work Group Supervisor

c. Shift Technical Advisor

d. Control Supervisor

QUESTION: 025 (1.00)

Which ONE of the following plant personnel must approve a Permanent Operator Aid prior to posting?

a. Assistant Superintendent of Operations

b. Shift Manager

c. Control Supervisor

d. Shift Technical Advisor

QUESTION: 026 (1.00)

An area of the plant has a general area radiation of 75 mRem/hr and contains a Hot Spot of 500 mRem/hr at 18 inches.

Which ONE of the following describes the radiological posting of this area?

a. Posted as High Radiation Area, and the area must be barricaded

b. Posted as High Radiation Area, and the area must have a locked entrance

c. Posted as a Radiation Area, and the Hot Spot must be surrounded by a rope barricade

d. Posted as a Radiation Area, and the Hot Spot must posted for conspicuous identification

QUESTION: 027 (1.00)

An operator is required to enter an area with a general area radiation level of 1000 mRem/hr for a surveillance test. The operators radiation history is as follows:

- 250 mRem exposure for the week
- 300 mRem exposure for the current quarter
- 3500 mRem exposure for the current year
- 19 Rem lifetime exposure
- 22 year old male
- NRC form Four completed and on file
- No special additional approvals have been obtained.

Which ONE of the following LGS administrative radiation exposure limits is exceeded if the operator remains in the area for 45 minutes due to an equipment failure?

a. Weekly and lifetime limits

b. Quarterly and lifetime limits

c. Quarterly and annual limits

d. Weekly and annual limits

QUESTION: 028 (1.00)

A Fire Watch is being established for arc welding due to outage repairs and is expected to continue for several weeks.

Which ONE of the following is the reason that the Shift Supervisor would require that Step 4.f of the Ignition Source Control Check List be REVALIDATED once per day? ~~(A-12, Appendix A, Ignition Source Control Check List attached for reference.)~~

a. To ensure that Shift Supervision is aware of the ongoing welding activities to prevent the operation of SBGT.

b. To ensure that the Work Supervisor verifies the proper fire extinguisher is used.

c. To ensure that the fire watch is being maintained in accordance with the requirements the approved Check List.

d. To ensure plant conditions have not changed to the extent that a revision of the Check List is required.

QUESTION: 029 (1.00)

The shift crew composition may be one less than the minimum Technical Specification manning requirements for up to 2 hours to accommodate unexpected absences.

Which ONE of the following positions must be maintained at the minimum crew complement requirements, regardless of the above exception?

a. Shift Manager

b. Chief Operator

c. Snift Technical Advisor

d. Reactor Operator

QUESTION: 030 (1.00)

COMPLETE THE FOLLOWING STATEMENT.
The number of Reactor Operators on-shift may be one less than the minimum Technical Specification manning requirements to accommodate unexpected absences _____ _____.

a. at shift change due to sickness of the relieving RO, provided the RO position is immediately filled by the Chief Operator for the remainder of the shift.

b. at shift change due to sickness of the relieving RO, provided immediate action is taken to call in a replacement RO.

c. during the shift due to an unanticipated illness, provided the RO position is immediately filled by the Chief Operator for the remainder of the shift.

d. during the shift due to an unanticipated illness, provided immediate action is taken to call in a replacement RO.

QUESTION: 031 (1.00)

Which ONE of the following describes a practice that is observed when a Motor Operated Valve (MOV) is backseated in accordance with the Operations Manual?

a. The MOV should normally be backseated by operations personnel using the local valve handwheel.

b. The MOV should be backseated by using valve wrenches to achieve the extra torque required to prevent leakage past the backseat.

c. A MOV should be backseated when normal packing adjustments are unsuccessful in correcting valve stem leakage problems.

d. A MOV backseated when the system is cold should be removed from the backseat prior to system heatup.

QUESTION: 032 (1.00)

An operator is performing a system checkoff list (COL).

Which ONE of the following problems encountered during the performance of the COL would allow the operator to complete the COL and then identify the error via the Procedure Problem Identification System (PPIS)?

a. A step has an incorrect identification number.

b. A step has an incorrect location provided for the component.

c. The component cannot be placed in the target position.

d. The sequence of steps appears to be in error.

QUESTION: 033 (1.00)

Which ONE of the following is an electrical safe work practice in accordance with the Operations Manual?

a. Use two hands whenever possible to ensure tools are not accidentally grounded.

b. Look directly at a breaker handle when closing a breaker locally to ensure proper positioning.

c. Bag personal dosimetry and badging to prevent accidental grounding.

d. Insulated tools must be tested to ensure insulation is intact.

QUESTION: 034 (1.00)

Refueling is in progress, when a Refueling Floor Operator reports to the Refueling Floor Supervisor that a fuel bundle has just been dropped over the reactor core.

Which ONE of the following states an action that is required to be taken in accordance with ON-120, Fuel Handling Problems?

a. Notify Health Physics and evacuate the refueling floor if requested by Health Physics

b. Evacuate the refuel floor, notify Health Physics, ensure normal ventilation is isolated, and SBGT is initiated

c. Isolate refueling floor normal ventilation and start SBGTS if Reactor Engineering determines fuel damage has occurred

d. Evacuate the refueling floor and declare an alert due to fuel handling accident

QUESTION: 035 (1.00)

Which ONE of the following confirming indications would occur upon a loss of "2B" RPS UPS Power? (Assume Unit 2 is operating at 75% power.)

a. Outboard MSIVs close on half group I isolation

b. SBGT fan "A" starts

c. Reactor Recirculation pump "B" trips

d. Reactor Enclosure supply and exhaust fans trip

QUESTION: 036 (1.00)

Which ONE of the following will occur upon a loss of "2FA" Safeguard 125/250 VDC Bus? (Assume plant is operating at 100% power.)

a. Reactor Enclosure Ventilation System will isolate.

b. RCIC will automatically initiate.

c. Main Control Room HVAC will isolate.

d. HPCI will trip if operating.

QUESTION: 037 (1.00)

Which ONE of the following is the reason that the operator is cautioned by the Event Procedure for LOOP to monitor RHR pump motor upper bearing temperatures? (Assume all Diesel Generators have properly tied to the 4 KV busses.)

a. ESW flow to the RHR pump motor oil coolers will be reduced when ESW is aligned to the Drywell Chilled Water Source Mode

b. ESW flow to all RHR pump motor oil coolers will be reduced when ESW is aligned to RECW and TECW heat exchangers

c. The number of ESW pumps that can be run may not be able to supply cooling to all the RHR pump motor oil coolers

d. The number of RECW pumps that can be run may not be able to supply cooling to all the RHR pump motor oil coolers

QUESTION: 038 (1.00)

Unit 1 is operating at 98% power when an unexplained increase in reactor pressure occurs.

Which ONE of the following is an acceptable method for controlling reactor pressure in accordance with the OT Procedure for Reactor High Pressure?

a. Manually jack open the turbine bypass valves

b. Reduce the EHC maximum combined limit potentiometer

c. Reduce the EHC load setpoint

d. Manually cycle one SRV

QUESTION: 039 (1.00)

Unit 2 is operating at 100% power when the Main Steam Line Radiation Monitors are observed to be continuously increasing.

Which ONE of the following describes when the reactor must be scrammed (in accordance with the OT Procedure for Main Steam Line High Radiation) and the reason for the scram?

a. When a MAIN STEAM LINE HIGH RADIATION alarm for 1.5 x normal full power operating level is received; to maintain the condenser as a heat sink by preventing the need for isolating SJAEs and Offgas on high radiation levels

b. When a MAIN STEAM LINE HIGH RADIATION alarm for 1.5 x normal full power operating level is received; to maintain the condenser as a heat sink by preventing an MSIV isolation on high radiation levels

c. When a DIVISION NSSSS MSIV INITIATED alarm is received; to maintain the condenser as a heat sink by preventing the need for isolating SJAEs and Offgas on high radiation levels

d. When a DIVISION NSSSS MSIV INITIATED alarm is received; to maintain the condenser as a heat sink by preventing a MSIV isolation on high radiation levels

QUESTION: 040 (1.00)

Unit 1 is operating at 100% rated power when the following conditions are observed:

- Reactor power is steadily increasing at about 3% per minute.
- No operator actions caused the power increase and no operator actions have been taken.

Which ONE of the following describes the immediate operator actions that must be taken per Operational Transient Procedures?

a. Place the Reactor mode Switch in SHUTDOWN to initiate a scram and prevent MSIV closure on low reactor pressure

b. Reduce power to at least 80% using recirculation flow to prevent overpowering the fuel rods

c. Reduce power using recirculation flow to establish sufficient margin between reactor power and the APRM scram setpoint

d. Reduce recirculation flow to 45% and insert control rods to the 80% rod line to prevent core thermal hydraulic instabilities

QUESTION: 041 (1.00)

Unit 2 is operating at 85% rated power when the following plant conditions occur:

- Reactor pressure spikes to 1025 psig and then stabilizes at 1010 psig.
- Reactor power increases to 91% and then stabilizes at 85%.

Which ONE of the following component/system malfunctions would cause the above plant response?

a. One MSIV disk separated from its stem and has failed closed

b. EHC backup regulator failed high.

c. One turbine control valve is stuck in the 85% open position

d. One SRV has popped open and failed to fully reseat upon reclosing

QUESTION: 042 (1.00)

Following a transient, RPV FLOODING, T-116, is being executed and LPCI is injecting into the RPV.

Which ONE of the following conditions will result in inadequate core cooling? (Assume NO corrective operator actions are taken.)

a. 1 SRV open
RPV pressure is 1120 psig

b. 2 SRVs open
RPV pressure is 580 psig

c. 3 SRVs open
RPV pressure is 310 psig

d. 5 SRVs open
RPV pressure is 230 psig

QUESTION: 043 (1.00)

RPV FLOODING, T-116, is being executed following a transient on Unit 2. Step RF-7 reads, "Can 4 OR 5 ADS/SRVS be opened". Shift Supervision has determined that only 3 SRVs can be opened.

Which ONE of the following is the reason that the MSIVs, main steam line drains, and RCIC isolation valves are left open?

a. To maintain additional vent paths available to depressurize the RPV.

b. To maintain additional injection systems available for RPV level control.

c. To prevent RPV overpressurization during an ATWS.

d. To reduce reactor power by increasing core voiding during an ATWS.

QUESTION: 044 (1.00)

Level/Power Control, T-117, allows the operator to restore RPV level when 525 lbs of Boron have been injected into the core.

Which ONE of the following describes the maximum RPV level and the minimum reactor coolant temperature for which the reactor will remain shutdown?

a. Below +54 inches and greater than or equal to COLD SHUTDOWN temperature

b. Below +54 inches and greater than or equal to HOT STANDBY temperature

c. RPV completely flooded and greater than or equal to COLD SHUTDOWN temperature

d. RPV completely flooded and greater than or equal to HOT STANDBY temperature

QUESTION: 045 (1.00)

Unit 1 is operating at 100% rated power when Reactor Recirculation Pump "A" trips.

Which ONE of the following is the reason that the Operational Transient Procedure for Recirculation Pump Trip directs the operator to immediately insert rods to reduce thermal power to less than 35%?

a. To reduce reactor power to re-establish the margin between actual reactor power and the APRM scram setpoint.

b. To suppress the power increase from the burnout of Xenon as the neutron flux shifts to the top and the periphery of the core.

c. To further reduce reactor feedwater flow rate to allow for increased feedwater heating to reduce core inlet subcooling.

d. To further reduce reactor feedwater flow rate to decrease feedwater heating in order to maintain recirculation pump NPSH.

QUESTION: 046 (1.00)

The Operational Transient Procedure for Reactor High Level allows the operator to decide whether to secure condensate/feedwater injection into the RPV by closing the RFP discharge valves or by tripping the condensate pumps.

SELECT the choice that completes the following statement.
Although closure of the RFP discharge valves is preferred, the operator would trip the condensate pumps when rapid termination of condensate/feedwater injection is required to _____.

a. prevent excessive thermal stresses on the RPV vessel wall and head due to the rapid level decrease.

b. avoid flooding the Main Steam lines and prevent damage to the SRVs by operation with a water slug discharge mixture.

c. avoid column separation and feedwater flashing in the feed lines to prevent water hammer during depressurization.

d. avoid column separation and reference leg flashing in the RPV level instruments during cooldown and depressurization.

QUESTION: 047 (1.00)

Which ONE of the following is the highest drywell temperature and reason at which the UPSET RANGE REACTOR WATER LEVEL indication is ACCURATE?

a. 135 deg. F; because the differential pressure cell is not qualified for operation at elevated temperatures

b. 135 deg. F; because the density decrease in the reference leg results in an indicated level considerably higher than actual level

c. 340 deg. F; because the differential pressure cell is not qualified for operation at elevated temperatures

d. 340 deg. F; because the density decrease in the reference leg results in an indicated level considerably higher than actual level

QUESTION: 048 (1.00)

A transient has occurred on Unit 2. Plant conditions following a scram signal are as follows:

- Drywell temperature is 150 deg. F, increasing.
- Drywell pressure is 2.2 psig, increasing.
- Only half of the drywell coolers are available and operating.
- Reactor power is 10%.
- Suppression Pool temperature is 110 deg. F, increasing.

Which ONE of the following is the action that Shift Supervision will direct to reduce drywell temperature in accordance with Emergency Operating Procedures?

a. Initiate SBLC

b. Initiate normal RPV depressurization to COLD SHUTDOWN

c. Initiate Drywell sprays

d. Initiate high or low volume purge of the drywell

QUESTION: 049 (1.00)

Which ONE of the following could place the reactor into the region of thermal hydraulic instability? (Assume reactor is initially operating at 100% power.)

a. Loss of greater than 100 deg. F of feedwater heating

b. Control rod drop

c. Trip of both reactor recirculation pumps

d. EHC pressure regulation fails high

QUESTION: 050 (1.00)

Plant conditions are as follows on Unit 1 during a startup:

- Reactor pressure is 1000 psig.
- CRD Pump 'B' is running.
- All rods are withdrawn beyond 02.
- CRD scram accumulator for rod 30-11 is inoperable and the rod is currently withdrawn to 08.
- CRD ACCUMULATOR TROUBLE alarm has just been received on rod 18-27.

Which ONE of the following is the REQUIRED operator action that is required when the floor operator reports accumulator 18-27 is at ZERO psig?

a. Insert a control rod one notch to verify that one CRD pump is operating.

b. Check CRD drive flow and place the alternate CRD drive filter in service.

c. Place the Reactor Mode Switch in shutdown and align CRD Pump 'A' for operation.

d. Place the Reactor Mode Switch in shutdown and fully insert and disarm rods 30-11 and 18-27.

QUESTION: 051 (1.00)

Plant conditions are as follows on Unit 2:

- An accident has resulted in the failure of all normal RPV injection systems.
- Alternate injection systems, Condensate Transfer and Fire Water, have been aligned for injection.
- RPV pressure is 110 psig and steady.
- RPV level is -120 inches, decreasing about 5 inches/minute.
- 30 control rods are stuck in the fully withdrawn position.
- Shift Supervision is executing T-111, Level Restoration, Step LR-11.

Which ONE of the following is the reason for waiting until RPV water level decreases to -161 inches before initiating an Emergency RPV Blowdown?

a. To maximize the time to restore injection systems because the core is adequately cooled by core submergence.

b. To maximize the time to restore injection systems because the core is adequately cooled by steam cooling.

c. To minimize suppression pool heatup by reducing the RPV volume discharged to the suppression pool during an Emergency Blowdown.

d. To minimize suppression pool heatup by reducing the length of time necessary to accomplish an Emergency Blowdown.

QUESTION: 052 (1.00)

Which ONE of the following is the purpose of maintaining the plant on the SAFE side of the Heat Capacity Temperature Limit (HCTL) Curve?

a. To prevent exceeding the Pressure Suppression Limit during a design basis LOCA

b. To prevent excessive dynamic loads on the suppression chamber structure during a design basis LOCA

c. To prevent exceeding the Primary Containment Pressure Limit during an Emergency Blowdown

d. To prevent excessive dynamic loads on the submerged suppression chamber components during an Emergency Blowdown

QUESTION: 053 (1.00) QUESTION DELETED

During an accident, Unit 2 plant conditions are as follows:

- Drywell pressure increased to 35 psig in less than 1 minute and is continuing to slowly increase.
- Drywell temperature is 335 deg. F, slowly increasing.
- Suppression pool pressure is 30 psig, slowly increasing.
- Suppression pool level is 27 feet 4 inches.
- RPV pressure is 100 psig.
- No Emergency Operating Procedure actions have been taken.
- RPV level -132" decreasing at 2"/min.

Which ONE of the following is the action that Shift Supervision is required to direct per Emergency Operating Procedures?

a. Initiate drywell sprays only.

b. Initiate drywell and suppression pool sprays.

c. Initiate emergency blowdown only.

d. Initiate emergency blowdown and suppression pool sprays.

QUESTION: 054 (1.00)

Which ONE of the following situations will allow operators to disregard RPV cooldown rate limits?

a. SRVs are being used to depressurize the RPV in Step RC/P-14 and all PCIG groups are isolated.

b. Drywell pressure is on the UNSAFE side of the Drywell Spray Initiation Limit curve of T-102.

c. RPV pressure is on the UNSAFE side of the RPV Pressurization Limit curve of T-99.

d. Suppression pool level cannot be maintained on the SAFE side of the SRV Tail Pipe Level Limit curve of T-102.

QUESTION: 055 (1.00)

During an accident on Unit 1, plant conditions are as follows:

- Drywell Pressure is 9 psig
- Drywell Temperature, 280½F
- Drywell Oxygen Concentration is 4.1%
- Drywell Hydrogen Concentration is 7.5%
- Suppression Pool Pressure is 8 psig
- Suppression Pool Temperature is 130 deg F
- Suppression Pool Level is 24 feet
- Suppression Pool Hydrogen 7.1%
- Suppression Pool Oxygen 3.9%
- RPV Water Level is -161 inches, stable
- RPV pressure is 475 psig, slowly decreasing

Which ONE of the following is the action that Shift Supervision will direct per Emergency Operating Procedures?

a. Secure drywell cooler fans, secure post-LOCA recombiners, and initiate an Emergency Blowdown

b. Secure drywell cooler fans, secure post-LOCA recombiners, and initiate drywell and suppression pool sprays

c. Start post-LOCA recombiners, operate drywell cooler fans, and immediately isolate any containment vent and purge paths that could result in radiation release to the environment.

d. Start post-LOCA recombiners, operate drywell cooler fans, and determine that offsite release rate LCO will not be exceeded for containment venting and purging

QUESTION: 056 (1.00)

A steam leak inside Unit 1 Containment causes the Drywell to pressurize, resulting in a reactor scram. Plant conditions are as follows:

- Drywell Pressure: 31 psig
- Suppression Pool Pressure: 29 psig
- Suppression Pool Airspace Temperature: 105 deg. F
- RPV Pressure: 100 psig
- Drywell Temperature: 306 deg. F

Which ONE of the following combinations of RPV water level instruments will provide RPV level indication?

a. Wide range, narrow range, upset range

b. Narrow range, fuel zone, upset range

c. Narrow range, wide range, shutdown range

d. Upset range, wide range, fuel zone

QUESTION: 057 (1.00)

Following an accident on Unit 1, plant conditions are as follows:

- RPV water level is unknown.
- Suppression Pool pressure is 45 psig.

Which ONE of the following sets of conditions, if not corrected, will require primary containment flooding?

a. Reactor power - 0% all control rods full in
RPV pressure - 250 psig
SRVs - 5 open
Pri Cont Water Level - 40 feet

b. Reactor power - 10% with scram condition present
RPV pressure - 280 psig
SRVs - 5 open
Pri Cont Water Level - 40 feet

c. Reactor power - 10% with scram condition present
RPV pressure - 550 psig
SRVs - 4 open
Pri Cont Water Level - 70 feet

d. Reactor power - 0% all control rods full in
RPV pressure - 95 psig
SRVs - 4 open
Pri Cont Water Level - 70 feet

QUESTION: 058 (1.00)

The purpose of T-227, Bypass of Reactor Enclosure HVAC Isolations, is to allow the operator to restore Reactor Enclosure (RE) HVAC.

Which ONE of the following isolation signals, in addition to Manual, will stop the restoration of RE HVAC?

a. RE pressure below -0.5 inches of water

b. High RE HVAC supply temperature

c. RPV water level below Level 1

d. High RE exhaust radiation

QUESTION: 059 (1.00)

During an accident on Unit 1, plant conditions are as follows:

- Main steam line B has ruptured in the Turbine Enclosure and the associated Inboard and Outboard MSIVs cannot be fully closed.
- Turbine Enclosure HVAC is operating.
- Site boundary whole body dose rate is measured at 600 mr/hr and decreasing for the past 40 minutes.
- Site boundary thyroid dose rate is calculated at 1000 mr/hr and decreasing for the past 40 minutes.
- RPV pressure is 500 psig, and decreasing.
- Main Steam Line Radiation Monitors indicate 10,000 mr/hr, decreasing.
- Chemistry reports gross fuel failure.

Which ONE of the following describes the actions that Shift Supervision is required to direct per Emergency Plant Procedures?

a. Declare a Site Area Emergency and cool down at normal rates to reduce radiation release rate below ALERT level and maintain ALARA

b. Declare a Site Area Emergency and initiate an Emergency Blowdown

c. Declare a General Emergency and cool down at normal rates to reduce radiation release rate below ALERT level and maintain ALARA

d. Declare a General Emergency and initiate an Emergency Blowdown

QUESTION: 060 (1.00)

Emergency Operating Procedure, Primary Containment Flooding is being executed.

Which ONE of the following is the water level in the RPV if the Primary Containment level reaches and stabilizes at 111 feet?

a. Two thirds core height

b. Top of Active Fuel

c. Bottom of the moisture separators

d. Bottom of the main steam line penetrations

QUESTION: 061 (1.00)

Which ONE of the following is the reason for terminating drywell sprays if drywell pressure drops below 1.68 psig?

a. To prevent opening the Reactor Enclosure to Suppression Chamber vacuum breakers.

b. To prevent cycling the Suppression Chamber to Drywell vacuum breakers.

c. To prevent collapsing the Drywell to Suppression Pool downcomers.

d. To prevent creating a negative Drywell to Reactor Enclosure differential pressure.

QUESTION: 062 (1.00)

Which ONE of the following describes the reason for emergency depressurizing the RPV if suppression pool level cannot be maintained above the Heat Capacity Level Limit?

a. To prevent damage to the SRV Tailpipes during an Emergency Blowdown.

b. To prevent ECCS NPSH and vortex limits from being violated during an Emergency Blowdown.

c. To accomplish an Emergency Blowdown before the SRV tailpipes are uncovered.

d. To accomplish an Emergency Blowdown before the suppression pool is unable to condense the steam discharged to the pool.

QUESTION: 063 (1.00)

Which ONE of the following describes the reason for inserting SRMs and IRMs following a scram?

a. To ensure that the reactor is below the point of adding heat by monitoring reactor power.

b. To verify that the reactor has been shutdown by monitoring the trend of reactor power.

c. To ensure that the operator can detect a return to criticality before reactor power enters the power range.

d. To determine that the reactor will remain shutdown under all conditions by monitoring that reactor power stabilizes low in the IRM range.

QUESTION: 064 (1.00)

T-111, Level Restoration, has been entered and Step LR-6 is being executed.

Which ONE of the following combinations of operating systems constitutes "AT LEAST TWO SUBSYSTEMS LINED UP" and will allow a "YES" response to Step LR-7?

a. Condensate pumps "A" and "B"

b. Core Spray pump "A" and "C" and LPCI pump "C"

c. Core Spray pumps "A" and "B"

d. Condensate pumps "A" and "B" and Feed pump "B"

QUESTION: 065 (1.00)

When aligning RWCU per T-212, RWCU System SLC Injection Procedure, for alternate boron injection, the high differential flow and high area temperature isolations are NOT jumpered out of service.

Which ONE of the following is the reason leaving these RWCU isolations in operation?

a. To provide leak detection

b. To provide injection flow indication

c. To provide pump runout protection

d. To provide for RPV level control with reject flow

QUESTION: 066 (1.00)

According to SE-1 "Remote Shutdown", which ONE of the following RCIC system interlocks remains active when control is transferred to the remote shutdown panel?

a. Turbine trip on overspeed.

b. Steam supply valve closure on high reactor water level.

c. Transfer of suction from CST to suppression pool.

d. Start on low reactor water level (-38").

QUESTION: 067 (1.00)

In accordance with OT-117, RPS Failure, which ONE of the following is an IMMEDIATE action required to be taken?

a. Perform rapid plant shutdown per GP-4.

b. Initiate rod insertion using the Reactor Manual Control System.

c. Place the mode switch in shutdown.

d. Trip the reactor recirculation pumps.

QUESTION: 068 (1.00)

Which ONE of the following is the basis for the Technical Specification minimum suppression pool level (22 ft)?

a. Ensures that the downcomers are submerged and that no blowdown flow can bypass the suppression pool.

b. Ensures that adequate head will be available to the suction of the ECCS pumps.

c. Ensures that a sufficient volume is available to absorb the heat released during a blowdown and not exceed the design pressure of containment.

d. Ensures that the SRV tailpipes will remain submerged so that no steam flow can bypass the suppression pool.

QUESTION: 069 (1.00)

Which ONE of the following failures in the Electro-Hydraulic Control (EHC) system would cause a reactor scram on RPV high pressure? (No operator actions are taken.) (See attached Figure 1)

a. Pressure regulator "A" signal output fails high

b. Pressure regulator "A" signal output fails low.

c. Pressure setpoint fails high.

d. Pressure setpoint fails low.

QUESTION: 070 (1.00)

The TRIP procedure for a SCRAM, T-100, directs operators to trip the main turbine when generator load reaches 50 MWe.

Which ONE of the following describes the reason for this step?

a. Assures there is adequate capacity of the bypass valves to handle this load transfer.

b. Guards against overspeed of the turbine by preventing the generator from tripping on reverse power.

c. Assures that the End of Cycle Recirculation Pump Trip does not occur.

d. Prevents MSIV closure by NSSSS actuation on low steam line pressure.

QUESTION: 071 (1.00)

SELECT the choice that completes the following statement.
Automatic initiation of the Standby Liquid Control system will occur on High RPV Pressure (1093 psig) AND _____

a. Low reactor water level (-38 inches) AND 118 sec timer timed out.

b. No APRM downscale (4%) AND 118 sec timer timed out.

c. Low reactor water level (-129 inches) AND 118 sec timer timed out.

d. No APRM downscale (4%) AND Low reactor water level (-38 inches).

QUESTION: 072 (1.00)

Limerick Unit 1 Technical Specifications for Emergency Core Cooling System (ECCS) allows "one Automatic Depressurization System (ADS) valve to be inoperable for up to fourteen days provided High Pressure Core Injection (HPCI), Core Spray System (CSS) and Low Pressure Coolant Injection (LPCI) are operable."

Which ONE of the following is the basis for this Technical Specification?

a. Safety analysis only takes credit for four valves, so one valve out of service for up to fourteen days does not reduce system reliability as analyzed.

b. Safety analysis risk assessment for these valves indicates a negligible chance that a second valve will fail within fourteen days.

c. Safety analysis only takes credit for HPCI, together with CSS and LPCI to provide adequate decay heat removal from 100% power for up to fourteen days.

d. Safety analysis shows the heat capacity of the suppression pool is conservatively analyzed to allow continuous operation with one (1) fully opened valve.

QUESTION: 073 (1.00)

Which ONE of the following describes the effect of increasing power from 50% to rated?

a. Indicated core flow decreases due to a decrease in delta-P across the reactor core.

b. The steam flow signal being sent to the feedwater control system increases.

c. The delta-P from the reactor pressure vessel to the main steam header decreases.

d. Indicated core flow increases due to a decrease in delta-P across the reactor core.

QUESTION: 074 (1.00)

A LOCA occurs concurrent with a loss of offsite power.

Which ONE of the following pieces of equipment must be MANUALLY restarted?

a. RHR pumps 1A and 1B

b. Core spray pumps 1B and 1D

c. CRD pumps

d. ESW pumps

QUESTION: 075 (1.00)

During a performance of the 7-day Operability Surveillance on Division 1 125VDC Battery System, it was found that Battery 1A1 did not meet its category "A" requirements for float voltage. (float voltage = 2.11).

Which ONE of the following describes the status of the DC Electrical system?

a. Division I is INOPERABLE and must be restored to operability within 8 hours or be in hot shutdown within the next 12 hours.

b. Battery 1A1 is OPERABLE if all of its category 'B' limits are verified within limits in 24 hours and category 'A' and 'B' limits are met within 6 days.

c. Battery 1A1 is INOPERABLE and must be restored to operability within 8 hours or verify the operability of Division I battery 1A2 within 12 hours.

d. Battery 1A1 is OPERABLE if all of the remaining category 'A' limits are verified within limits and the out-of-limit parameter is restored to operable limits within the next 12 hours.

QUESTION: 076 (1.00)

Which ONE of the following describes the Control Rod Drive Hydraulic System response during a SCRAM?

a. The Scram pilot valve energizes to vent the air off the Scram inlet and outlet valves.

b. The Scram Discharge Volume (SDV) vent and drain air pilot valves energize to vent the air off the Scram discharge volume vent and drain valves.

c. The Scram Discharge Volume will remain vented and drained if one of the Scram Discharge Volume (SDV) vent and drain air pilot valves fails to reposition.

d. If a Scram pilot valve fails, the backup scram valves will vent the air off the scram valves for any rod that has a failed scram pilot valve.

QUESTION: 077 (1.00)

Which ONE of the following systems, in conjunction with the Control Rod Velocity Limiter, reduces the consequences of a rod drop accident?

a. Rod Drive Control System

b. Rod Worth Minimizer System

c. Reactor Manual Control System

d. Rod Block Monitor System

QUESTION: 078 (1.00)

CRD pump "A" is in service supplying the CRD system.

Which ONE of the following describes the response of the system when CRD pump "A'"trips?

a. A trip of both reactor recirculation pumps on loss of seal purge flow.

b. The CRD Pumps Suction Filter Bypass Valve opens on low suction pressure.

c. The CRD Flow Control automatically shifts to the alternate flow control valve.

d. System pressure continues to drop until manual action is taken to start CRD pump 'B'.

QUESTION: 079 (1.00)

Due to a loss of the Steam Jet Air Ejectors, condenser vacuum has decreased to 21.2 in Hg.

Which ONE of the following actions is expected to occur?

a. MSIV closure

b. Feed pump turbine trip

c. Main turbine trip

d. Bypass valve closure

QUESTION: 080 (2.00)

For each of the NSSSS group isolations in Column A, SELECT the plant conditions in Column B that would initiate isolation signals. (Assume that the MODE Switch is in RUN).

(NOTE: The conditions listed in Column B may be used once, more than once, or not at all. Only one answer may occupy a space in Column A)
(4 answers required at 0.50 each)

COLUMN A (Group Isolations)	COLUMN B (Reactor Conditions)
a. Main Steam and Reactor Sample Lines (IB)	1. Main steam line high radiation (3.5 X N)
b. RHR Heat Exchanger Vacuum Breaker Lines (IIC)	2. Steam supply low pressure (700 psig)
c. Reactor Water Cleanup Lines (III)	3. High drywell pressure (1.72 psig)
d. HPCI Turbine Exhaust Vacuum Breaker Lines (IVB)	4. Steam line low pressure (90 psig) - AND - high drywell pressure (1.72 psig)
	5. Low condenser vacuum (23"Hg)
	6. Standby liquid control initiation
	7. Steam line high flow (140%)

QUESTION: 081 (1.00)

ASSUMING full power operation, three-element control, and no operator action, which ONE of the following would be the expected Feedwater Control System (FWCS) response if the selected level transmitter failed HIGH? (Assume NO operator action is taken.)

a. RFP turbines will lockup due to the loss of level signal input and level will remain approximately the same.

b. Steam and feed flow inputs will compensate for the error signal and level will stabilize at a slightly lower level.

c. Level input will automatically transfer to the other level transmitter and level will remain approximately the same.

d. RFP turbines reduce speed in response to high level signal and level will continue to decrease.

QUESTION: 082 (1.00)

All APRMs have spiked up and exceeded their scram setpoint and have now returned to normal. (No initial operator actions taken.)

Which ONE of the following actions is required to be taken?

a. Place one RPS channel in the tripped condition, notify Shift Supervision and investigate the scram failure.

b. Immediately depress both manual scram pushbuttons and verify scram actions have been completed.

c. Immediately place the Mode Switch in SHUTDOWN and enter T-101 procedure.

d. Notify Shift Supervision and perform a rapid shutdown per GP-4.

QUESTION: 083 (1.00)

The fast closure of the Turbine Control Valves is an input to the Reactor Protection System.

Which ONE of the following describes the basis for this RPS trip during 100% power operation?

a. Prevents rapid pressurization of the RPV when closure of MSIVs due to sudden main generator load decrease.

b. Prevents a RPV pressure spike from causing SRVs to open due to the loss of heat sink.

c. Backs up the End of Cycle Recirculation Pump Trip and lessens the severity of the pressure transient.

d. Initiates a scram in anticipation of the RPV pressure and neutron scrams to reduce the heat flux transient.

QUESTION: 084 (1.00)

Which ONE of the following plant conditions will allow the 'A' loop Drywell Spray Isolation Valves, HV-FO16A and HV-FO21A to be opened?

a. Reactor vessel level -135 inches, drywell pressure 2.0 psig and reactor pressure 600 psig.

b. Reactor vessel level -135 inches, drywell pressure 1.60 psig and reactor pressure 300 psig.

c. Reactor vessel level -115 inches, drywell pressure 1.60 psig and LPCI injection valves HV FO-17A and FO-17C closed.

d. Reactor vessel level -115 inches, drywell pressure 2.0 psig and reactor pressure 300 psig.

QUESTION: 085 (1.00)

Which ONE of the following conditions will cause the 62% limiter in the recirculation flow control system to enforce recirculation motor generator speed limitations?

a. Total feed flow is than 18%.

b. RPV level decreases to 27 inches.

c. Recirculation pump discharge valve F031B leaves its full open position.

d. Condensate pump 'C' trips during full power operation.

QUESTION: 086 (1.00)

Technical Specification 3.6.6.2, Drywell Hydrogen Mixing System action statement is "with one Drywell unit c[illegible] ydrogen mixing subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours.

Which ONE of the following drywell unit cooler fan configurations requires the SS to execute the action statement for Technical Specification 3.6.6.2, "Drywell Hydrogen Mixing System"?

a. Both fans on unit cooler 'E' out of service.

b. One fan each on unit coolers 'A' and 'B' out of service.

c. Both fans on unit cooler 'G' out of service.

d. One fan on unit cooler 'H' and both fans on unit cooler 'C' out of service.

QUESTION: 087 (1.00)

A notch withdraw signal has been applied to a control rod. The following indications are observed.

- Drive flow goes off scale high.
- The ROD DRIFT alarm annunciates.
- The four rod display shows the rod to be continuously inserting.

Which ONE of the following describes the REQUIRED operator response in accordance with ON-104, Control Rod Problems?

a. Apply a continuous withdraw signal to the rod until it is fully withdrawn.

b. Apply a continuous insert signal to the rod until it is fully inserted.

c. Individually scram the rod to attempt to free the stuck collet.

d. Apply a withdraw signal to the rod as required to maintain its position.

QUESTION: 088 (1.00)

A plant cooldown is in progress FROM THE REMOTE SHUTDOWN PANEL. RHR 'A' is in Shutdown Cooling. A large leak develops in RHRHX 1A causing heat exchanger and loop RHRSW outlet activity to exceed the radiation monitor setpoints.

Which ONE of the following describes the RHR response to the leak?

a. Two yellow warning lights will light on the RSP, and RHRSW will continue to operate.

b. RHRSW pump 'A' will trip, and the RHR heat exchanger will isolate.

c. The RHR heat exchanger will isolate, and the RHRSW pump will continue to operate on minimum flow.

d. RHRSW pump 'A' will trip, and the RHR heat exchanger will remain in service.

QUESTION: 089 (1.00)

HPCI has initiated due to low RPV water level. Level has been restored and normal feedwater has been reestablished. The supervisor has directed that HPCI be secured.
The following plant conditions exist:

- Reactor water level +35 inches
- Drywell pressure 0.2 psig
- HPCI initiation seal in light illuminated

Which ONE of the following describes the proper way to secure HPCI in accordance with Procedure 55.2.A?

a. Depress the HPCI Manual Isolation pushbutton, and realign HPCI to STANDBY.

b. Close the Core Spray and Feedwater injection valves with the control room hand switches.

c. Depress the HPCI initiation seal in reset pushbutton, then depress the HPCI trip pushbutton while closing the steam supply valve.

d. Close the outboard steam isolation valve using the keylock handswitch and realign HPCI to STANDBY.

QUESTION: 090 (1.00)

Unit 1 is in OPCON 1, with "A" RHR pump INOP. While performing a test of Division 3 Core Spray logic, the logic fails to provide a LOCA signal for any automatic initiation.

Which ONE of the following describes the action to be taken?

a. Declare the 'C' Core Spray Pump INOP. Restore the 'A' Core Spray Pump to operable within 30 days or be in HOT SHUTDOWN in the next 12 hours and COLD SHUTDOWN in the following 24 hours.

b. Declare the entire 'A' Core Spray loop and D13 diesel INOP. Restore Division 3 logic to operable within 7 days or be in HOT SHUTDOWN in the next 12 hours and COLD SHUTDOWN in the following 24 hours.

c. Declare the entire 'A' Core Spray loop and D13 diesel INOP. Enter LCO 3.0.3 and begin a controlled shutdown of the reactor.

d. Declare the 'C' Core Spray Pump, D11 and D13 diesels INOP. Restore the Core Spray logic to operable within 72 hours or be in HOT SHUTDOWN in the next 24 hours.

QUESTION: 091 (1.00)

Which ONE of the following conditions requires a minimum CST volume?

a. Under all conditions while operating at power.

b. When Suppression Pool water level is below the minimum limit in COLD SHUTDOWN or REFUELING.

c. AT any time that HPCI and/or RCIC cannot be aligned to the Suppression Pool.

d. Whenever HPCI and/or RCIC Suppression Pool to CST suction transfer logic is inoperable.

QUESTION: 092 (1.00)

Unit 1 is operating at 100% power.
The following plant conditions exist:

- Recirculation Flow Unit "D" is bypassed for maintenance.
- RBM "A" failed its monthly channel functional test and is bypassed.

Which ONE of the following describes the actions to be taken if the "B" recirculation flow unit fails high?

a. Verify the reactor is not operating on a LIMITING CONTROL ROD PATTERN and restore one inoperable RBM to operable within 24 hours.

b. Place at least one inoperable RBM channel and "B" RPS in the tripped condition within 12 hours.

c. Be in at least STARTUP within the next 6 hours, at least HOT SHUTDOWN within the following 6 hours and COLD SHUTDOWN in the following 24 hours.

d. Be in at least HOT SHUTDOWN within 2 hours and comply with Technical Specification 6.7.1.

QUESTION: 093 (1.00)

Which ONE of the following indications result from the loss of power supply 1AY160?

a. All red RPS scram annunciators lit

b. Half scram on RPS A

c. Loss of SRM's B and D

d. Loss of B, D, and F APRM's

QUESTION: 094 (1.00)

The plant is operating at rated power. The D12 diesel generator air start compressors are running and the air receivers are reading 205 psig. Investigation reveals a leak on the air start system cross-connect valves which cannot be repaired without depressurizing the system.

Which ONE of the following is the action required by the Limerick Technical Specifications?

a. Declare D12 D/G inoperable. Demonstrate operability of the remaining diesel generators and perform breaker alignment surveillance within 24 hours and at least once per 7 days thereafter.

b. No action required as long as the fuel oil day tank level and the fuel oil storage tank level are verified to be within specification, and the fuel oil transfer pump remains operable.

c. Demonstrate the operability of the remaining diesel generators within 1 hour and at least once every 8 hours thereafter and perform breaker alignment surveillance within 8 hours.

d. Perform breaker alignment surveillance within 1 hour and at least once per 8 hours thereafter. Demonstrate the operability of the remaining diesel generators within 24 hours and once per 7 days thereafter.

QUESTION: 095 (1.00)

Unit 1 is at 100% power when a complete loss of instrument air occurs.

Which ONE of the following describes the automatic valve response for the Feedwater System air operated valves. (Assume valve response is based only on its loss of air supply and not on the response of the plant)

a. Startup Bypass Valve(HV 120) - FAIL CLOSED
Reactor Feedpump Min Flow Valves - FAIL CLOSED
Startup Level Control Valve(FCV 138 A) - FAIL CLOSED

b. Startup Bypass Valve(HV 120) - FAIL OPEN
Reactor Feedpump Min Flow Valves - FAIL OPEN
Startup Level Control Valve(FCV 138 A) - FAIL OPEN

c. Startup Bypass Valve(HV 120) - FAIL OPEN
Reactor Feedpump Min Flow Valves - FAIL CLOSED
Startup Level Control Valve(FCV 138 A) - FAIL OPEN

d. Startup Bypass Valve(HV 120) - FAIL CLOSED
Reactor Feedpump Min Flow Valves - FAIL OPEN
Startup Level Control Valve(FCV 138 A) - FAIL CLOSED

QUESTION: 096 (2.00)

For each Suppression Pool temperature listed in Column A, SELECT the appropriate action statement from Column B.

(NOTE: The items in Column B may be used once, more than once or not at all. Only one answer may occupy an answer space)
ASSUME 100% power operation, no testing in progress and temperature conditions exist for less than 24 hours.

(4 answers required at 0.5 each)

COLUMN A (Suppression Pool Temperature)	COLUMN B (Action Statement)
_____a. 100 Deg F.	1. Place the Reactor Mode Switch to SHUTDOWN and operate at least one loop of RHR in the Suppression Pool Cooling Mode.
_____b. 107 Deg F	
_____c. 112 Deg F	2. Depressurize the reactor to less than 200 psig within 12 hours.
_____d. 123 Deg F	3. Restore the average temperature to less than 100 Deg F within the next 12 hours or be in at least HOT SHUTDOWN within the next 12 hours and COLD SHUTDOWN within the following 24 hours.
	4. Restore the temperature to less than 95 Deg F within one (1) hour,or be in at least HOT SHUTDOWN within the next 12 hours and COLD SHUTDOWN within the following 24 hours.
	5. Restore the temperature to less than 95 Deg F within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours and COLD SHUTDOWN within the following 24 hours.
	6. Restore the temperature to less than 105 Deg F within 48 hours or be in at least HOT SHUTDOWN within the following 12 hours and COLD SHUTDOWN within the following 24 hours.

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

ANSWER: 001 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0200, Reactor Enclosure Ventilation
Section II.C.4
Learning Objective 4.e
261000G004 [3.5/3.7]

261000G004 ..(KA's)

ANSWER: 002 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT-0120, Main Steam and Pressure Relief System
Section V.A.6.b.3
Learning Objective 9
239002A407 [3.6/3.6]

239002A407 ..(KA's)

ANSWER: 003 (1.00)

a.

REFERENCE:

Limerick Lesson Plan LOT-0050, Reactor Vessel Instrumentation
Section VI.A.6, 7
Learning Objectives 7.e and f
216000K510 [3.1/3.3]

216000K510 ..(KA's)

ANSWER: 004 (1.00)

a.

REFERENCE:

Limerick Procedure S78.1.A Section 8
Limerick Lesson Plan LOT-0450, Control Enclosure Ventilation
Section II.B.2
Learning Objective 2
290003K401 [3.1/3.2]
290003K401 ..(KA's)

ANSWER: 005 (2.00)

a 2
b 3
c 6
d 4 (4 required at 0.50 each)

REFERENCE:

Limerick Lesson Plan LOT-0190, Secondary Containment.
Section V
Learning Objectives 5 and 6
288000K402 [3.7/3.8]

288000K402 ..(KA's)

ANSWER: 006 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT-0050, Reactor Vessel Instrumentation
Section III.B.8
Learning Objective 3
234000K505 [3.0/3.7]

234000K505 ..(KA's)

ANSWER: 007 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT-1550, Off Normal Procedures Section III.J
Learning Objective 8
Limerick LOT-0460, Reactor Enclosure Cooling Water System Section V.B
Limerick ON-113, Loss of RECW, Section 2.1
295018K303 [3.1/3.3]

295018K303 ..(KA's)

ANSWER: 008 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0040, Recirculation Flow Control
Section IV.E.1
Learning Objective 10 and p. 14-19
202001A307 [3.3/3.3]

202001A307 ..(KA's)

ANSWER: 009 (1.00)

b.

REFERENCE:

Limerick: LOT-0010, Reactor Vessel and Internals
Section VI.A.1.g
Learning Objectives 6 and 7
290002K403 [3.2/3.3]

290002K403 ..(KA's)

ANSWER: 010 (1.00)

c.

REFERENCE:

Limerick Lesson Plan LOT-0240, Source Range Monitor System
Section IV.A.1
Learning Objective 7
215004K401 [3.7/3.7]

215004K401 ..(KA's)

ANSWER: 011 (1.00)

c.

REFERENCE:

Limerick Lesson Plan LOT- 0250, Intermediate Range Monitoring System
Section IV A and B
Learning Objective 10
215003K402 [4.0/4.0]

215003K402 ..(KA's)

ANSWER: 012 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0370, Residual Heat Removal System
Section IV.B.1
Learning Objective 6
KA: 203000K401 (4.2/4.2)

203000K401 201002K403 ..(KA's)

ANSWER: 013 (1.00)

c.

REFERENCE:

Limerick Lesson Plan LOT-0290, Traversing In-core Probe (TIP)
Section V.D.1.a
Learning Objective 6

215001K401 [3.3/3.3]

215001K401 ..(KA's)

ANSWER: 014 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0190, Secondary Containment
Section VI.6.2.e
Learning Objective 4
290001G010 [3.3/3.4]

290001G010 ..(KA's)

ANSWER: 015 (1.00)

d.

REFERENCE:

Limerick Lesson Plan, LOT-1860, pg 4
Obj. 3

294001K102 [3.9/4.5]

294001K102 ..(KA's)

ANSWER: 016 (1.00)

a.

REFERENCE:

Limerick Lesson Plan, LOT-1860, pg 23
Obj. 18

294001K102 [3.9/4.5]

294001K102 ..(KA's)

ANSWER: 017 (1.00)

b.

REFERENCE:

Limerick Lesson Plan, LOT-1860, pg 5
Obj. 8 (related)

294001K102 [3.9/4.5]

294001K102 ..(KA's)

ANSWER: 018 (1.00) QUESTION DELETED

c.

REFERENCE:

Limerick Lesson Plan, LOT-1860, pg 18
Obj. None

294001K101 [3.7/3.7]

294001K101 ..(KA's)

ANSWER: 019 (2.00)

a. 4
b. 5 or 2
c. 2
d. 7 (0.5 each)

REFERENCE:

Limerick Lesson Plan, LOT-0768, pg 6-13
Obj. 4

294001A115 [3.2/3.4]

294001A115 ..(KA's)

ANSWER: 020 (1.00)

a.

REFERENCE:

A-7, Rev 14, pg 20, 21 and Figure 3
Limerick Lesson Plan, LOT-1571, Obj. 3
Note: Facility verify that "Control Supervisor" is the proper terminology for SRO required to be in the Control Room.
294001A111 [3.3/4.3]

294001A111 ..(KA's)

ANSWER: 021 (1.00)

c.

REFERENCE:

A-8, Rev 7, pg 4
Limerick LOT-1570, pg 11
Obj. 2a

294001K101 [3.7/3.7]

294001K101 ..(KA's)

ANSWER: 022 (1.00)

d.

REFERENCE:

A-41.1, Rev 12, pg 10
Limerick LOT-1570, pg 28
Obj. 3

294001A110 [3.6/4.2]

294001A110 ..(KA's)

ANSWER: 023 (1.00)

b.

REFERENCE:

A-41.1, Rev 12, pg 6
Limerick LOT-1570, pg 28
Obj. 3

294001A110 [3.6/4.2]

294001A110 ..(KA's)

ANSWER: 024 (1.00)

c.

REFERENCE:

A-42, Rev 15, pg 5
Limerick LOT-1570, pg 31
Obj. 3

294001A109 [3.3/4.2]

294001A109 ..(KA's)

ANSWER: 025 (1.00)

a.

REFERENCE:

A-95, Rev 2, pg 1, 3, 4
Limerick LOT-1570, pg 37
Obj. 3

294001A101 [2.9/3.4]

294001A101 ..(KA's)

ANSWER: 026 (1.00)

a.

REFERENCE:

Limerick LOT-1705, pg 17
Obj. 1.L
and Limerick LOT-1760, pg 12
Obj. 4

294001K103 [3.3/3.8]

294001K103 ..(KA's)

ANSWER: 027 (1.00)

c.

REFERENCE:

Limerick LOT-1705, pg 19
Obj. 2

294001K103 [3.3/3.8]

294001K103 ..(KA's)

ANSWER: 028 (1.00)

d.

REFERENCE:

A-12, Rev 3, pg 7
Limerick LOT-1570, pg 17
Obj. 3

294001K116 [3.5/3.8]

294001K116 ..(KA's)

ANSWER: 029 (1.00)

a.

REFERENCE:

Technical Specification Table 6.2.2-1 and Notes, pg 6-5
Obj. Not located

294001A103 [2.7/3.7]

294001A103 ..(KA's)

ANSWER: 030 (1.00)

d.

REFERENCE:

Technical Specification Table 6.2.2-1 and Notes, pg 6-5
Obj. Not located
294001A109 [3.3/4.2]

294001A109 ..(KA's)

ANSWER: 031 (1.00)

c.

REFERENCE:

Ops Man 6.3, Rev 1, pg 1, 2, 3
Limerick LOT-1574 Obj. 5, 6

294001K101 [3.7/3.7]

294001K101 ..(KA's)

ANSWER: 032 (1.00)

b.

REFERENCE:

Ops M n 6.14, Rev 3, pg 10
Limerick LOT-1574 Obj. 11, 13 (related)

294001A102 [4.2/4.2]

294001A102 ..(KA's)

ANSWER: 033 (1.00)

c.

REFERENCE:

Ops Man 6.16, Rev 0, pg 1
Limerick LOT-1574 Obj. 14

294001K107 [3.3/3.6]

294001K107 ..(KA's)

ANSWER: 034 (1.00)

b.

REFERENCE:

ON-120, Rev 1, pg 2
Limerick LOT-1550, Obj. None

295023G010 [3.8/3.9]

295023G010 ..(KA's)

ANSWER: 035 (1.00)

d.

REFERENCE:

E-2BY160, Rev 4, pg 1
Limerick LOT-1566 Obj. 1.d

295003K306 [3.7/3.7]

295003K306 ..(KA's)

ANSWER: 036 (1.00)

a.

REFERENCE:

E-2FA, Rev 1, pg 1
Limerick LOT-1566 Obj. 1.e

295004A204 [3.2/3.3]

295004A204 ..(KA's)

ANSWER: 037 (1.00)

b.

REFERENCE:

E-10/20, Rev 13, pg 2-4
Limerick LOT-1566 Obj. 4

295018A203 [3.2/3.5]

295018A203 ..(KA's)

ANSWER: 038 (1.00)

a.

REFERENCE:

OT-102, Rev 4, pg 1
Limerick LOT-1540 Obj 2

295007A105 [3.7/3.8]

295007A105 ..(KA's)

ANSWER: 039 (1.00)

d.

REFERENCE:

OT-103, Rev 4, pg 1, 3
Limerick LOT-1540 Obj. 2, 4

NOTE: Check the MSL Hi Rad Alarm name.

295017K304 [3.6/3.8]

295017K304 ..(KA's)

ANSWER: 040 (1.00)

c.

REFERENCE:

OT-104, Rev 12, pg 1 and Bases pg 1
Limerick LOT-1540 Obj. 2

295014G010 [4.0/3.9]

295014G010 ..(KA's)

ANSWER: 041 (1.00)

a.

REFERENCE:

OT-102, Bases pg 2
Limerick LOT-1540 Obj. 3, 5 (related)

295007K206 [3.5/3.7]

295007K206 ..(KA's)

ANSWER: 042 (1.00)

c.

REFERENCE:

T-116 Bases, pg 5, 6
Limerick LOT-1560 Obj. 5

295031K101 [4.6/4.7]

295031K101 ..(KA's)

ANSWER: 043 (1.00)

a.

REFERENCE:

T-116 Bases, pg 4
Limerick LOT-1560 Obj. 5

295025K305 [3.6/3.7]

295025K305 ..(KA's)

ANSWER: 044 (1.00)

b.

REFERENCE:

T-117 Bases, pg 15
Limerick LOT-1560, Obj. 5

295037K104 [3.4/3.6]

295037K104 ..(KA's)

ANSWER: 045 (1.00)

a.

REFERENCE:

OT-112 Bases, pg 1
Limerick LOT-1540 Obj. 5

295001K102 [3.3/3.5]

295001K102 ..(KA's)

ANSWER: 046 (1.00)

b.

REFERENCE:

OT-110 Bases, pg 2
Limerick LOT-1540 Obj. 4

295008G007 [3.2/3.3]

295008G007 ..(KA's)

ANSWER: 047 (1.00)

b.

REFERENCE:

T-102 Bases, pg 22
Limerick LOT-1560, Obj. 3

295028K101 [3.5/3.7]

295028K101 ..(KA's)

ANSWER: 048 (1.00)

d. OR a.

REFERENCE:

T-102, PCC, DW/T Step 4
T-102 Bases, pg 22
Limerick LOT-1560, Obj. 6

295028G012 [3.6/4.2]

295028G012 ..(KA's)

ANSWER: 049 (1.00)

c.

REFERENCE:

ON-113, pg 1
Limerick LOT-1550, Obj. 1, 2

295001K302 [3.7/3.8]

295001K302 ..(KA's)

ANSWER: 050 (1.00)

a.

REFERENCE:

T.S. 3.1.3.5
Limerick LOT-1550, Obj. 1, 2
Note: Perform close interpretation review of ON-107 with facility.
295022G010 [3.7/3.5]

295022G010 ..(KA's)

ANSWER: 051 (1.00)

a.

REFERENCE:

T-111 Bases, pg 4
Limerick LOT-1560, Obj. 5

295031K208 [4.2/4.3]

295031K208 ..(KA's)

ANSWER: 052 (1.00)

c.

REFERENCE:

T-102 Bases, pg 6
Limerick LOT-1560, Obj. 4

295026K301 [3.8/4.1]

295026K301 ..(KA's)

ANSWER: 053 (1.00) 6 OPTIONAL DELETED

b.

REFERENCE:

T-102, Step PC/P-4, PC/P-7
T-102 Bases, pg 17
Limerick LOT-1560, Obj. 5, 6

295024K302 [3.5/3.8]

295024K302 ..(KA's)

ANSWER: 054 (1.00)

d.

REFERENCE:

T-101, T-102
Lesson Plan: LOT-1560, Obj. 3
L 803 (modified)

295029K301 [3.5/3.9]

295029K301 ..(KA's)

ANSWER: 055 (1.00)

d.

REFERENCE:

T-102, PC/H
Lesson Plan: LOT-1560, Obj. 6
L 806 (modified)

223001A204 [3.7/3.8]

223001A204 ..(KA's)

ANSWER: 056 (1.00)

c.

REFERENCE:

T-102
Lesson Plan: LOT-1560, Obj. 3, 5
L 807 (reworded)

295012G007 [3.3/3.5]

295012G007 ..(KA's)

ANSWER: 057 (1.00)

d.

REFERENCE:

T-116, T118
Lesson Plan: LOT-1560, Obj. 5
L 814 (modified)

295024G012 [3.6/4.4]

295024G012 ..(KA's)

ANSWER: 058 (1.00)

d.

REFERENCE:

Lesson Plan: LOT-1561, Obj. 1
L 289 (reword)

295034A103 [4.0/3.9]

295034A103 ..(KA's)

ANSWER: 059 (1.00)

d. ANSWER CHANGED TO C

REFERENCE:

T-104, ERP-101, pg 10
Lesson Plan: LOT-1560, Obj. 5
L 837 (modified)
NOTE: Provide ERP-101 to SRO applicants.

295038A201 [3.3/4.3]

295038A201 ..(KA's)

ANSWER: 060 (1.00)

a.

REFERENCE:

T-118 Bases, pg 4
Lesson Plan: LOT-1560, Obj. 5
L 843 (modified)

295009A201 [4.2/4.2]

295009A201 ..(KA's)

ANSWER: 061 (1.00)

d.

REFERENCE:

T-102 Bases, pg 18
Lesson Plan: LOT-1560, Obj. 5
L 851 (modified)

295010G007 [3/6/3.8]

295010G007 ..(KA's)

ANSWER: 062 (1.)

d.

REFERENCE:

T-102 Bases, pg 8
Lesson Plan: LOT-1560, Obj. 5
L 855

295027G007 [3.4/ 8]

295027G007 ..(KA's)

ANSWER: 063 (1.00)

b.

REFERENCE:

Lesson Plan: LOT-1560, Obj. 5
L 862 (modified)

295006A105 [4.2/4.2]

295006A105 ..(KA's)

ANSWER: 064 (1.00)

b.

REFERENCE:

T-111 Bases, pg 3
Lesson Plan: LOT-1560, Obj. 6
L 863 (modified)

295031G012 [3.9/4.5]

295031G012 ..(KA's)

ANSWER: 065 (1.00)

a.

REFERENCE:

Limerick LOT-1561, pg 6
Obj. 2

295037K213 [3.4/4.1]

295037K213 ..(KA's)

ANSWER: 066 (1.00)

a.

REFERENCE:

Limerick Lesson Plan LOT-0733, Remote Shutdown Panel Section IV.G.4.a
Page 14
Learning Objective 4.f.
Limerick: SE-1, Attachment 1
295016K201 [4.4/4.5]

295016K201 ..(KA's)

ANSWER: 067 (1.00)

c.

REFERENCE:

Limerick: OT-117, Rev 3 RPS Failure Section 2.1.1.a Page 1
LOT-1540 Operational Transient Procedures
Learning Objective 2
295015G010 [4.0/3.9]

295015G010 ..(KA's)

ANSWER: 068 (1.00)

c.

REFERENCE:

Limerick Technical Specifications B3/4-6-4
Limerick: TRIP Procedure T-102
295030G004 [2.7/4.2]

295030G004 ..(KA's)

ANSWER: 069 (1.00)

c.

REFERENCE:

Limerick LOT-0590, Electro Hydraulic Control Logic Section III.A
Learning Objective 12.b
295025A102 [3.8/3.8]

295025A102 ..(KA's)

ANSWER: 070 (1.00)

b.

REFERENCE:

Limerick: T-100
Limerick Lesson Plan LOT-1560, Introduction to LGS Transient Response Implementation Plan
Learning Objective 5.
295005K304 [3.2/3.2]

295005K304 ..(KA's)

ANSWER: 071 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT-0310, Standby Liquid Control System
Section V.B.4
Learning Objective 10.
211000A308 [4.2/4.2]

211000A308 ..(KA's)

ANSWER: 072 (1.00)

a.

REFERENCE:

Limerick Unit 1 Technical Specifications 3/4, 5.2, Basis Section.
218000G006 [3.3/4.2]

218000G006 ..(KA's)

ANSWER: 073 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT-0120, Main Steam and Pressure Relief System
Learning Objective 10.a
Limerick Lesson Plan LOT-0550, Feedwater Control System Section V.D
Learning Objective 2.
259002A104 [3.6/3.6]

259002A104 ..(KA's)

ANSWER: 074 (1.00)

c.

REFERENCE:

Limerick Lesson Plan LOT-0660, 4.16 KV AC Power Distribution
Section IV.B 3.b
Learning Objective 6.c
262001K602 [3.6/3.9]

262001K602 ..(KA's)

ANSWER: 075 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT-0690, DC Distribution Section
Learning Objective 8
Limerick Unit 1 Technical Specifications 3.8.2.1 and, Table 4.8.2.1-1.
263000G011 [3.2/3.9]

263000G011 ..(KA's)

ANSWER: 076 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0070, Control Rod Drive Hydraulic System
Section VI.E
Learning Objective 8.
201001K107 [3.4/3.4]

201001K107 ..(KA's)

ANSWER: 077 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT-0095, Rod Worth Minimizer LGS II
Section I.A
Learning Objective 1.
201006K501 [3.3/3.7]

201006K501 ..(KA's)

ANSWER: 078 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0070, Control Rod Drive Hydraulic System
Section VI.J
Learning Objective 5.c., 10.a
Limerick: LOT-1550, Off Normal Procedures Section III.F
Learning Objective 1.
Limerick ON-107, Control Rod Drive System Problems Section 2.2
295022A202 [3.3/3.4]

295022A202 ..(KA's)

ANSWER: 079 (1.00)

c.

REFERENCE:

Limerick OT-116, Loss of Condenser Vacuum Section 4
Limerick Lesson Plan LOT-1540, Operational Transient Procedures
Section III.J
Learning Objective 3
295002K304 [3.4/3.6]

295002K304 ..(KA's)

ANSWER: 080 (2.00)

a. 1
b. 3
c. 6
d. 4

REFERENCE:

Limerick Lesson Plan LOT-0180, Nuclear Steam Supply Shutoff System
Section III
Learning Objective 2.a.
223002K104 [3.5/3.8]

223002K104 ..(KA's)

ANSWER: 081 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0550, Feedwater Control System
Section V.F.4
Learning Objective 7.c.
259002A203 [3.6/3.7]

259002A203 ..(KA's)

ANSWER: 082 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0300, Reactor Protection System
Section V.C.6.b
Learning Objective 8
212000G015 [4.5/4.7]

212000G015 ..(KA's)

ANSWER: 083 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0300, Reactor Protection System III.D.3
Learning Objective 4.
245000K307 [3.6/3.7]

245000K307 ..(KA's)

ANSWER: 084 (1.00)

a.

REFERENCE:

Limerick Lesson Plan LOT-0370, Residual Heat Removal System
Section III.C.6.c and IV.B.1
Learning Objective 9.a.
226001A101 [3.6/3.8]

226001A101 ..(KA's)

ANSWER: 085 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT-0040, Recirculation Flow Control
Learning Objective 4.
202002K604 [3.5/3.5]

202002K604 ..(KA's)

ANSWER: 086 (1.00)

c.

REFERENCE:

Limerick Lesson Plan LOT-0140, Drywell Ventilation
Section VII.A.1.a, b
Learning Objective 3.
223001K609 [3.3/4.1]

223001K609 ..(KA's)

ANSWER: 087 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT-1550, Off Normal Procedure
Learning Objective 2
Limerick Off Normal Procedure ON-104, Control Rod Problems
Section 2.2
201003A203 [3.4/3.7]

201003A203 ..(KA's)

ANSWER: 088 (1.00)

a.

REFERENCE:

Limerick Lesson Plan LOT 0735, Remote Shutdown Panel
Section IV.B.1.b
Learning Objective 4.c
203000K414 [3.6/3.7]

203000K414 ..(KA's)

ANSWER: 089 (1.00)

c.

REFERENCE:

Limerick Lesson Plan LOT 0340, High Pressure Coolant Injection (HPCI)
Section V.D.4
Learning Objective 6.c
206000G014 [4.0/3.7]

206000G014 ..(KA's)

ANSWER: 090 (1.00)

b.

REFERENCE:

Limerick Technical Specification 3.5.1.a and 3.3.3
Limerick Lesson Plan LOT 1840, Technical Specifications Limiting Conditions for Operation Section IX.A
Limerick Learning Objectives 1 and 2.a
209001G011 [3.4/4.2]

209001G011 ..(KA's)

ANSWER: 091 (1.00)

b.

REFERENCE:

Limerick Technical Specification 3.5.2.a.2.b
Limerick Lesson Plan LOT 0480, Condensate and Refueling Water Storage System, Section VI
Learning Objective 8
209001G011 [3.4/4.2]

209001G011 ..(KA's)

ANSWER: 092 (1.00)

b.

REFERENCE:

Limerick Technical Specification 3.1.4.3
Limerick Lesson Plan 0280, Rod Block Monitor Section VII.A
Learning Objective SRO 2.b
215002A202 [3.3/3.3]

215002A202 ..(KA's)

ANSWER: 093 (1.00)

b.

REFERENCE:

Limerick Lesson Plan LOT 1566, Event Procedures
Section II.C.1
Learning Objective 4
262002G008 [3.1/3.1]

262002G008 ..(KA's)

ANSWER: 094 (1.00)

a.

REFERENCE:

Limerick Technical Specification 3.8.1.1
Limerick Lesson Plan LOT 0670, Diesel Generator and Auxiliaries
Section VI.A
Learning Objective 13.a
264000K601 [3.8/3.9]

264000K601 ..(KA's)

ANSWER: 095 (1.00)

d.

REFERENCE:

Limerick Lesson Plan LOT 0540, Feedwater System
Section III.E
Learning Objective 14.a
259001K601 [3.0/3.0]

259001K601 ..(KA's)

ANSWER: 096 (2.00)

a. 5

b. 5

c. 1

d. 2

REFERENCE:

Limerick Technical Specifications Section 3.6.2.1
Limerick Lesson Plan LOT 0370
Learning Objective 23

219000A412 [4.1/4.1]

219000A412 ..(KA's)

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

A N S W E R K E Y

MULTIPLE CHOICE

001 d

002 b

003 a

004 a

005 MATCHING

a 2

b 3

c 6

d 4

MULTIPLE CHOICE

006 b

007 b

008 d

009 b

010 c

011 c

012 d

013 c

014 d

015 d

016 a

017 b

018 c Question Deleted

019 MATCHING

a 4

b 5 or 2

c 2

d 7

MULTIPLE CHOICE

020 a

021 c

022 d

023 b

024 c

025 a

026 a

027 c

028 d

029 a

030 d

031 c

032 b

033 c

034 b

035 d

A N S W E R K E Y

036	a	
037	b	
038	a	
039	d	
040	c	
041	a	
042	c	
043	a	
044	b	
045	a	
046	b	
047	b	
048	d	a or c
049	c	
050	a	
051	a	
052	c	
053	b	Question deleted
054	d	
055	d	
056	c	
057		
058	d	
059	d	Answer changed to c
060	a	
061	d	
062	d	
063	b	
064	b	
065	a	
066	a	
067	c	
068	c	
069	c	
070	b	
071	b	
072	a	
073	b	
074	c	
075	b	
076	d	
077	b	
078	d	
079	c	

A N S W E R K E Y

080 MATCHING

a 1

b 3

c 6

d 4

096 MATCHING

a 5

b 5

c 1

d 2

MULTIPLE CHOICE

081 d

082 d

083 d

084 a

085 d

086 c

087 b

088 a

089 c

090 b

091 b

092 b

093 b

094 a

095 d

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

S R O E x a m B W R R e a c t o r

O r g a n i z e d b y Q u e s t i o n N u m b e r

QUESTION	VALUE	REFERENCE
001	1.00	13916
002	1.00	13918
003	1.00	13919
004	1.00	13921
005	2.00	13980
006	1.00	13981
007	1.00	13983
008	1.00	14224
009	1.00	14225
010	1.00	14234
011	1.00	14238
012	1.00	14239
013	1.00	14252
014	1.00	15594
015	1.00	9000308
016	1.00	9000309
017	1.00	9000310
018	1.00	9000311
019	2.00	9000312
020	1.00	9000313
021	1.00	9000314
022	1.00	9000315
023	1.00	9000316
024	1.00	9000317
025	1.00	9000318
026	1.00	9000319
027	1.00	9000320
028	1.00	9000321
029	1.00	9000322
030	1.00	9000323
031	1.00	9000324
032	1.00	9000325
033	1.00	9000326
034	1.00	9000328
035	1.00	9000329
036	1.00	9000330
037	1.00	9000332
038	1.00	9000333
039	1.00	9000334
040	1.00	9000335
041	1.00	9000336
042	1.00	9000337
043	1.00	9000338
044	1.00	9000339
045	1.00	9000340
046	1.00	9000342
047	1.00	9000343
048	1.00	9000344
049	1.00	9000347

S R O E x a m B W R R e a c t r

o r g a n i z e d b y Q u e s t i o n N u m b e r

QUESTION	VALUE	REFERENCE
050	1.00	9000348
051	1.00	9000349
052	1.00	9000350
053	1.00	9000351
054	1.00	9000352
055	1.00	9000353
056	1.00	9000354
057	1.00	9000355
058	1.00	9000356
059	1.00	9000358
060	1.00	9000361
061	1.00	9000363
062	1.00	9000364
063	1.00	9000365
064	1.00	9000366
065	1.00	9000368
066	1.00	9000369
067	1.00	9000370
068	1.00	9000371
069	1.00	9000372
070	1.00	9000373
071	1.00	9000374
072	1.00	9000375
073	1.00	9000376
074	1.00	9000378
075	1.00	9000379
076	1.00	9000380
077	1.00	9000381
078	1.00	9000383
079	1.00	9000384
080	2.00	9000386
081	1.00	9000388
082	1.00	9000389
083	1.00	9000390
084	1.00	9000391
085	1.00	9000392
086	1.00	9000393
087	1.00	9000394
088	1.00	9000395
089	1.00	9000396
090	1.00	9000397
091	1.00	9000398
092	1.00	9000399
093	1.00	9000401
094	1.00	9000402
095	1.00	9000405
096	2.00	9000411
	100.00	

100.00

S R O E x a m B W R R e a c t o r

o r g a n i z e d b y K A G r o u p

PLANT WIDE GENERICS

QUESTION	VALUE	KA
025	1.00	294001A101
032	1.00	294001A102
029	1.00	294001A103
030	1.00	294001A109
024	1.00	294001A109
023	1.00	294001A110
022	1.00	294001A110
020	1.00	294001A111
019	2.00	294001A115
031	1.00	294001K101
018	1.00	294001K101
021	1.00	294001K101
017	1.00	294001K102
016	1.00	294001K102
015	1.00	294001K102
026	1.00	294001K103
027	1.00	294001K103
033	1.00	294001K107
028	1.00	294001K116

PWG Total	20.00	

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA
085	1.00	202002K604
012	1.00	203000K401
088	1.00	203000K414
089	1.00	206000G014
091	1.00	209001G011
090	1.00	209001G011
071	1.00	211000A308
082	1.00	212000G015
010	1.00	215004K401
003	1.00	216000K510
072	1.00	218000G006
055	1.00	223001A204
086	1.00	223001K609
080	2.00	223002K104
084	1.00	226001A101
002	1.00	239002A407
073	1.00	259002A104
081	1.00	259002A203

SRO Exam BWR Reactor

Organized by KA Group

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA
001	1.00	261000G004
074	1.00	262001K602
094	1.00	264000K601
014	1.00	290001G010
PS-I Total	23.00	

Group II

QUESTION	VALUE	KA
076	1.00	201001K107
077	1.00	201006K501
008	1.00	202001A307
092	1.00	215002A202
011	1.00	215003K402
096	2.00	219000A412
006	1.00	234000K505
083	1.00	245000K307
095	1.00	259001K601
093	1.00	262002G008
075	1.00	263000G011
004	1.00	290003K401
PS-II Total	13.00	

Group III

QUESTION	VALUE	KA
087	1.00	201003A203
013	1.00	215001K401
005	2.00	288000K402
009	1.00	290002K403
PS-III Total	5.00	
PS Total	41.00	

EMERGENCY PLANT EVOLUTIONS

Group I

S R O E x a m B W R R e a c t o r

O r g a n i z e d b y K A G r o u p

EMERGENCY PLANT EVOLUTIONS

Group I

QUESTION	VALUE	KA
035	1.00	295003K306
063	1.00	295006A105
038	1.00	295007A105
041	1.00	295007K206
060	1.00	295009A201
061	1.00	295010G007
040	1.00	295014G010
067	1.00	295015G010
066	1.00	295016K201
039	1.00	295017K304
034	1.00	295023G010
057	1.00	295024G012
053	1.00	295024K302
069	1.00	295025A102
043	1.00	295025K305
052	1.00	295026K301
062	1.00	295027G007
068	1.00	295030G004
064	1.00	295031G012
042	1.00	295031K101
051	1.00	295031K208
044	1.00	295037K104
065	1.00	295037K213
059	1.00	295038A201

EPE-I Total	24.00	

Group II

QUESTION	VALUE	KA
045	1.00	295001K102
049	1.00	295001K302
079	1.00	295002K304
036	1.00	295004A204
070	1.00	295005K304
046	1.00	295008G007
056	1.00	295012G007
037	1.00	295018A203
007	1.00	295018K303
078	1.00	295022A202
050	1.00	295022G010
048	1.00	295028G012
047	1.00	295028K101
054	1.00	295029K301

S R O E x a m B W R R e a c t o r

O r g a n i z e d b y K A G r o u p

EMERGENCY PLANT EVOLUTIONS

Group II

QUESTION	VALUE	KA
058	1.00	295034A103
EPE-II Total	15.00	
EPE Total	39.00	
Test Total	100.00	

ATTACHMENT 3

FACILITY COMMENTS AND NRC RESOLUTION

SRO QUESTION #48

A transient has occurred on Unit 2. Plant conditions following a scram signal are as follows:

- Drywell temperature is 150 degrees F, increasing.
- Drywell pressure is 2.2 psig, increasing.
- Only half of the drywell coolers are available and operating.
- Reactor power is 10%.
- Suppression Pool temperature is 110 degrees F, increasing.

Which ONE of the following is the action that Shift Supervision will direct to reduce drywell temperature in accordance with Emergency Operating Procedures?

a. Initiate SBLC
b. Initiate normal RPV depressurization to COLD SHUTDOWN
c. Initiate Drywell sprays
d. Initiate high or low volume purge of the drywell

ANSWER: a.

FACILITY COMMENT:

Request the answer key be changed to "a" or the question be deleted.

The question does not supply enough information to determine if a leak exists in the Drywell. If a leak does exist, venting is prohibited by OT-101 which is directed to be performed by T-100 step PC/P-1. In addition, a purge cannot be performed due to the high Drywell pressure (> 1.68 psig). This is an isolation signal for all vent and purge lines. Furthermore, answer 'a," initiating SBLC, must be done to comply with T-101 step RC/Q-12. The action to inject SBLC will shutdown the reactor and eliminate the heat source thereby allowing a reduction in Drywell temperature.

Reference T-101
T-102
OT-101

NRC RESPONSE:

Comment partially accepted.

By making a several assumptions, the candidate could have been led to the correct action being to initiate SBLC. It is recognized that the initiation of SBLC will eventually reduce the heat source into the drywell. It is, however, a long term effect and would not have any immediate result in drywell pressure or temperature reduction. It would be an action to be taken, but not for the purpose of reducing the drywell pressure and temperature, but to stay below the Suppression Pool Heat Capacity temperature Limit. Since "d" is a definite correct answer, both "d" and "a" will be accepted as correct answers.

The following is an explanation of why "d" is the most correct answer.

> There is no indication in the stem of the question that there is a leak in the drywell. The fact that an ATWS is in progress is sufficient to justify the elevated temperature and pressure in the drywell. Therefore, venting is not prohibited.
>
> Procedure T-102 basis provides the option of venting, decreasing reactor pressure, and maximizing drywell cooling. Since the distractors do not include maximizing drywell cooling and reducing RPV pressure during an ATWS would increase reactor power, there is no other option in the basis except venting.
>
> Procedure T-200, Primary Containment Emergency Vent Procedures specify the actions to be taken in order to bypass the isolation signals for the vent and purge lines. Although not stated in the question stem, this action would of course have to be performed in order to vent.

RO QUESTIONS #23b AND SRO QUESTION #19b

For each ERFDS Display Code in Column A, SELECT the indicated condition from Column B.

NOTE: (The items in Column B may be used once, more than once, or not at all, and only a single answer may occupy one answer space.) (4 answers required at 0.5 each)

COLUMN A (SPDS Display)		COLUMN B (Indicated Condition)
___a. RPV Pressure Tag box is magenta	1.	Parameter has exceeded its limit setpoint
___b. RPV Level Tag box is yellow	2.	Parameter is approaching its limit setpoint

____c. Heat Capacity Limit Tag box is yellow

____d. Scram vent indicated in red border

3. Parameter is within its normal range

4. Parameter signals being sensed are invalid

5. Parameter signals being sent have not been validated

6. Associated parameter safety action has been demanded and completed successfully

7. Scram command present with prescribed time elapsed, all rods full in

8. All rods not full in, the specified scram time has not elapsed

ANSWER: Column A, item b = 5

FACILITY COMMENT: Request that you accept both answers 5 and 2.

There are two (2) conditions of the listed conditions that will turn the tag box yellow; parameter approaching its limit setpoint (#2), and parameter not validated (#5).

Reference: LOT-0768, page 6, D.3.e and page 4, A.3.6

NRC RESPONSE: Comment accepted.

Answers 2 or 5 will be accepted as the proper response to b in column A

SRO QUESTION #53

During an accident, Unit 2 plant conditions are as follows:

- Drywell pressure increased to 35 psig in less than 1 minute and is continuing to slowly increase.
- Drywell temperature is 335 degrees F, slowly increasing.
- Suppression pool pressure is 30 psig, slowly increasing.

- RPV pressure is 100 psig.
- No Emergency Operating Procedure actions have been taken.
- RPV level -132" decreasing at 2"/minute.
- Suppression pool level is 27 feet, 4 inches.

Which ONE of the following is the action that Shift Supervisor is required to direct per Emergency Operating Procedures?

a. Initiate drywell sprays only.
b. Initiate drywell and suppression pool sprays.
c. Initiate emergency blowdown only.
d. Initiate emergency blowdown and suppression pool sprays.

ANSWER: b.

FACILITY COMMENT: Request that question #53 be deleted.

As the answer indicates, it is correct to spray both the Drywell and the Suppression Pool. In addition, it is required to perform an Emergency Blowdown. T-102, step PC/P-9 states that "When the safe side of the curve PC/P-2 cannot be maintained then continue." Using the initial conditions provided in the question you are on the line of the curve still moving to the unsafe side. The procedure requires the action to be taken as soon as you know that the safe side of the curve cannot be maintained. The initial conditions make it clear that pressure is increasing and any increase in suppression pool pressure places you on the unsafe side of the curve.

In summary, there are three actions that should be performed. Of the answers listed, b, c, and d are all correct, but incomplete. There is no completely correct answer.

Reference: T-102

NRC RESOLUTION: Comment accepted.

Question 53 will be deleted from the SRO examination

SRO QUESTION #59

During an accident, Unit 1 plant conditions are as follows:

- Main steam line B has ruptured in the Turbine Enclosure and the associated Inboard and Outboard MSIVs cannot be fully closed.

- Turbine Enclosure HVAC is operating.
- Site boundary whole body dose rate is measured at 600 mr/hr and decreasing for the past 40 minutes.
- RPV pressure is 500 psig, and decreasing.
- Main Steam Line Radiation Monitors indicate 10,000 mr/hr, decreasing.
- Chemistry reports gross fuel failure.

Which ONE of the following describes the action that Shift Supervision is required to direct per Emergency Plant Procedures?

a. Declare a Site Area Emergency and cool down at normal rates to reduce radiation release rate below ALERT level and maintain ALARA.

b. Declare a Site Area Emergency and initiate an Emergency Blowdown.

c. Declare a General Emergency and cool down at normal rates to reduce radiation release rate below ALERT level and maintain ALARA.

d. Declare a General Emergency and initiate an Emergency Blowdown.

ANSWER: d.

FACILITY COMMENT: Request that both "c" and "d" be accepted as correct answers.

Whether or not an Emergency Blowdown is required is dependent on the trend of radiation levels at the time that step RR-14 of T-104 is being performed. If radiation levels are decreasing, as the question states, then you would not get to the step requiring a blowdown.

Step RR-14 of T-104 asks if radiation levels are decreasing. If they are, then you are directed to restore radiation release rates below the Alert level. This would be done by normal depressurization, and answer "c" would be correct.

If, however, it is assumed that radiation levels were still going up when step RR-14 was reached, then step RR-15 would required an emergency blowdown as soon as it is determined that radiation levels exceed the General Emergency level. In this situation answer "d" would be correct.

The answer chosen on this question is dependent on the conditions assumed by the examinee. If only one answer is to be accepted, "c" would be the better answer.

References: T-104

NRC RESOLUTION: Comment partially accepted.

After careful review of the documentation and reviewing the stem of the question, "c" is the correct answer, since the stem established that radiation levels were decreasing. The answer will be changed to "c."

SRO AND RO QUESTION #26

An area of the plant has a general area radiation of 75 mRem/hr and contains a Hot spot of 500 mRem/hr at 18 inches.

Which ONE of the following describes the radiological posting of this area?

a. Posted as High Radiation Area, and the area must be barricaded

b. Posted as High Radiation Area, and the area must have a locked entrance

c. Posted as a Radiation Area, and the Hot Spot must be surrounded by a rope barricade

d. Posted as a Radiation Area, and the Hot Spot must be posted for conspicuous identification

ANSWER: a.

FACILITY COMMENT: Request that question #26 be deleted.

The stem of the question contains two contradictory initial conditions; that the general area radiation level is 75 mrem/hr, and that the general area radiation level is 500 mrem/hr.

Additionally, the term HOT SPOT should not be utilized in association with a radiation reading taken at 18 inches. This contradicts the definition of a HOT SPOT as provided in HP-215.

In practice, the plant area of concern would probably be posted as a radiation area with a posted high radiation area placed around the HOT SPOT where general radiation levels exceed 100 mrem/hr.

In summary, the use of contradictory information and the misuse of the term HOT SPOT produce a question that may not appropriately test the knowledge level of the student.

References: HP-215

NRC RESOLUTION: Comment NOT accepted.

There is no indication in the stem of the question that the general area radiation level is 500 mrem/hr. The stem indicates that a HOT SPOT is causing reading of 500 mrem/hr at 18 inches. Even though HP-215 specifies that the definition of a HOT SPOT is equal to or greater than 100 mrem on contact, there is nothing wrong with providing a dose rate at a distance of 18 inches from the HOT SPOT. The definition of a High Radiation Area is "Any area accessible to personnel, in which there exists radiation originating in whole or in part within licensed material, at such levels that a major portion of the body could receive in any one hour a dose in excess of 100 mrem." At 18 inches from the HOT SPOT this level would have been exceeded. There is no specification that the entire area has to be greater than 100 mrem/hr. The practice of posting it as a Radiation area with a posted High Radiation Area around the HOT SPOT does not seem to be addressed in the HP procedures.

HP-215 does, however, state the following: "At LGS any area with radiation' levels greater than or equal to 100 mrem/hr at 18 inches shall be posted as a High Radiation Area."

HP-215 also makes provisions for establishing a barrier for all High Radiation Areas.

SRO QUESTION #18 AND RO QUESTION #22

Which ONE of the following describes the operation and the use of OPS Blocking Locks in accordance with Administrative Procedure A-8, Locked Valves?

a. Will NOT be keyed alike and may be used in place of a station lock for a station clearance.

b. Will NOT capture the key when unlocked and may be used with a red colored chain to prevent operation of MOV handwheels.

c. Will be keyed alike and may be used on administrative tagouts to control equipment status.

d. Will capture the key when unlocked and may be used as specified on station clearance.

ANSWER: c.

FACILITY COMMENT: Request that this question be deleted.

...PS Blocking Locks is no longer a valid name for any locks at the station. As of Nov... ...1, when the Clearance and Blocking system was changed, the OPS Blocking Lock ...ned the Operations Lock.

... Lock (previously the OPS Blocking Lock) has no connection with ... Procedure A-8, Locked Valves. The Locked Valve Lock is the lock utilized ...mentation of Procedure A-8.

The usage of the Operations Lock and the Locked Valve Lock is differentiated in Procedure A-85, Procedure or Control of Locked Valves and Devices.

In summary, it is not obvious which of the various locks utilized at the Limerick Generating Station should be characterized in answering the question.

Reference: A-8 and A-85

NRC RESOLUTION: Comment Accepted.

The question submitted during the initial NRC/Facility was as follows:

> **Which ONE of the following describes the operation and the use of Operation (OPS) Locks?**

During the course of the NRC/Facility review and at the request of the facility, the question was changed to the present form. In reviewing the documentation, it is evident that the changes have made the question at least subject to interpretation.

SRO AND RO QUESTION #04

The operations listed below are necessary to meet the interlocks to start the Control Room HVAC system.

1. Start return fans
2. Start supply fans

3. Ensure supply fan dampers open
4. Place standby fans in AUTO
5. Ensure return fan dampers open

Concerning the Control Room HVAC system, SELECT the sequence of operation to ensure proper system startup.

a. 2-3-1-5-4
b. 1-5-2-3-4
c. 2-1-3-5-4
d. 4-3-5-2-1

ANSWER: a.

FACILITY COMMENT: Request that question #4 be deleted.

All items listed in the question are procedure but not necessarily interlock based. This question also requires the examinee to memorize the order of steps in a system operating procedure. It is normally only required for licensee's to know from memory the bases for cautions and notes in system procedures. They are normally given the procedure when asked how to perform steps in a system procedure.

There are currently no interlocks between the Control Room HVAC Supply and Return Fans that affect their sequencing on system startup. (See LOT-0450)

References: LOT-0450, S.78.1.A

NRC RESOLUTION: Comment not accepted.

Lesson Plan LOT-450 Section II.B.2.a. specifies that, "the supply fan must be running in order to start a return fan." A caution in Procedure S78.1.A states, "the supply fans should be started prior to starting the return fan to avoid developing negative pressures in the main control room."

Although not all of the items listed are interlocks, the question does solicit the knowledge of a procedure precaution and does not necessarily require the examinee to memorize the order of steps in a procedure. This is further supported by Lesson Plan LOT-450 objective 4, "Describe normal system startup of the Control Room HVAC System," which does not provide the procedure as a condition of the objective.

ATTACHMENT 4

SIMULATION FACILITY REPORT

Facility License: NFP-39/85

Facility Docket No.: 50-352/353

Operating Test Preparation and Administered from: July 9, to July 28. 1992

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 non-compliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information which may be used in future evaluations. No licensee action is required in response to these observations.

During the conduct of the simulator portion of the operating tests, the following items were observed.

ITEM	DESCRIPTION
Drywell	No significant affect on Drywell parameters following a failure of both seals of a recirculation pump (loop not isolated).
TCV testing	With conditions established IAW procedure, a scram occurred during turbine control valve testing.
Core Spray	Core spray surveillance failed to meet acceptance criteria (flow versus pressure and valve timing of injection valve) with no malfunctions active.
Condenser	Main condenser air in-leakage not large enough to cause loss of all vacuum with malfunction set at 100% severity
EHC	EHC pressure regulator oscillations caused an extreme transient (in excess of 20% peak to peak on APRMs) with the malfunction set at the lowest severity. The response becomes more exaggerated when starting from a lower initial power.
HPCI/RCIC	HPCI and RCIC response during FW line rupture was inaccurate. The pump discharge pressure remained at or above Rx pressure while injecting into the ruptured header.

Stuck rods	When using the stuck rod malfunction, the number of rods failing to insert was different from one scenario to the next with the same number of malfunctions input. The response was inconsistent, with no apparent pattern. (multiple occurrences during examination and prep weeks)
Lighting	Simulator lighting has been simplified resulting in an inaccurate response. Loss of the D14 safeguard bus results in loss of all AC simulator lighting.
DC lighting	DC lighting is not functional.
Fuel failure	No observable affect when fuel failure input following a scram.
HPCI	HPCI steam line break did not cause rad response or stack response.
Recirc.	When both recirculation pumps tripped within 30 seconds, only the "B" recirculation pump trip annunciator illuminated , the "A" pump annunciator remained out.
Containment	With a steam leak in the drywell, there was an excessive pressure difference between the drywell pressure (18#) and suppression pool pressure (11#). The maximum differential pressure range should be 4 to 5 psid.
Rod indication	First two rod position indicators did not blink during rod coupling checks, the third rod did blink.
Process comp.	Following a single rod scram with an asymmetric rod pattern, an OD-22 (P-1) edit could not be printed out.
RPV level	RPV level response was different when the same scenario was used on two groups of candidates. This could not be justified by difference in actions taken by the operators. The actions and response for each case are as follows: RPV level decreased to -170 and then stabilized during a power ATWS with only CRD injecting and SRVs cycling to control pressure. RPV level decreased to -191 before operators Emergency Depressurized during a power ATWS with HPCI, RCIC and CRD injecting while SRVs cycled to control pressure.
Printers	Printers locked up and could not be used until the simulator was reset on several scenarios.

Rx power	Rx power response was different when the same scenario was used on two groups of candidates. In one session following the activation of loss of feedwater heating malfunction APRM power level could be observed slowly increasing and was controlled by the operator. In the other session a Rx scram occurred with no observable change in APRM levels allowing no time for operator response. The APRM chart recorders showed no trend or spike prior to the Rx scram.
Rx core	When 100% Rx power initial conditions are used and recirculation flow is reduced then FRTP/MFLPD < 1. This is not the expected thermal parameter response for a power reduction.
Core display	One full out light remained lit momentarily with all rods inserted.
Feedwater	With RFP @ 2500 rpm, reactor pressure @ 450 psig, the RFP discharge pressure was 600 psig, (condensate pressure transmitted through the RFP)
RWM	While performing the RWM verification, rod 02-31 was withdrawn out of sequence, but rod 02-39 indicated on error display. (All number ones are displayed as number nines) The RWM prohibits movement of out of sequence rods at position 02 verses position 04 as designed.
Core Spray	While performing a faulted Core Spray JPM the malfunction that was selected failed to activate. The JPM was run two times, during the first case the malfunction inhibiting valve F037 worked. In the second case the malfunction failed to activate with all conditions the same.

ATTACHMENT 5

Licensee Personnel

J. Doering	Plant Manager
J. Phillabaum	Licensing Engineer
K. Walsh	Technical Branch Head
M. Gallagher	Operations Support Supervisor
V. Cwietniewicz	Training Superintendent
J. Kantner	Operations Training Supervisor
R. Lisko	Simulator Support Supervisor
S. Carr	Lead Instructor (LOT)
V. Hydro	Simulator Analyst

NRC Personnel

R. Conte	BWR Section Chief
S. Hansell	Operations Engineer, Chief Examiner
A. Burritt	Operations Engineer
K. Shembarger	Reactor Engineer
T. Kenny	Senior Resident Inspector