APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Operator Licensing Examination Report: 50-298/OL 92-01

Operating License: DPR-46

Docket: 50-298

Licensee: Nebraska Public Power District
P.O. Box 499
Columbus, Nebraska 68602-0499

Examinations at: Cooper Nuclear Station

Examinations Conducted: During the week of May 18, 1992

Chief Examiner: John L. Pellet

Approved by: John L Pellet 6/4/92
J. L. Pellet, Chief Date
Operator Licensing Section
Division of Reactor Safety

Summary

NRC Administered Examinations Conducted During the Week of May 18, 1992 (Examination Report 50-298/OL 92-01)

NRC administered examinations to two reactor operator (RO) applicants and o senior reactor operator (SRO) applicant. All applicants passed all portions of the examination and have been issued the appropriate license. NRC also administered two requalification reexaminations to individuals who had previously failed an NRC administered requalification examination. Both individuals passed these examinations and have been issued the appropriate letters for license renewal purposes.

DETAILS

1. PERSONS EXAMINED

		SRO	RO	Total
Licensee Examinations:	Pass -	1	2	3
	Fail -	0	0	0
Requalification Examinations:	Pass -	2	0	2
	Fail -	0	0	0

2. EXAMINERS

J. Pellet, Chief Examiner
K. Kennedy
D. Prawdzik

3. EXAMINATION REPORT

Performance results for individual examinees are not included in this report as it will be placed in the NRC Public Document Room and these results are not subject to public disclosure.

3.1 Examination Review Comment/Resolution

In general, editorial comments or changes made as a result of facility reviews prior to the examination, during the examination, or subsequent grading reviews are not addressed by this resolution section. This section reflects resolution of substantive comments submitted to the NRC by the facility licensee after the examination. The facility licensee post-examination comments, less the supporting documentation, are included in the report immediately following the master examination key. Unless otherwise indicated in this section, the facility licensee comments were incorporated into the master examination key. Facility licensee comments which were not accepted are described below along with the NRC resolution. The question numbers for the RO examination are listed first (RO/SRO numbers).

40/40: The facility comment is that, although not explicitly stated, answers b and d are acceptable operator actions within plant procedures and that answer c could be correct if a specific procedure were to be developed and approved. Therefore with three potentially correct answers, the question should be deleted. The answer key was modified to accept both answers b and d as correct within current procedures. Since answer c would be correct only if a new procedure were developed, this question is considered to have two correct answers and was retained.

NA/58: The facility comment is that answers a and b are correct so the question should be deleted. The answer key was modified to accept both a and b as correct answers and the question was retained.

3.2 Site Visit Summary

The facility licensee was provided a copy of the examination and answer key for the purpose of commenting on the examination content validity. The facility licensee was informed that examination results could be expected within 30 days of the completion of the examination.

The NRC met with members of the facility licensee's staff and summarized the results of the examinations as presented in this report. The following personnel were present:

NRC	FACILITY
R. Kopriva	R. Black
J. Pellet	R. Brungardt
	R. Creason
	J. Dutton
	E. Mace

Given the small number of examinations administered during the week, no generic weaknesses or findings were observed. The operations and training departments' support of the initial and requalification examinations was very good. A small number of simulator fidelity errors were observed and they have been discussed with the training department personnel involved in the examinations. These errors did not seriously affect the examinations.

The draft requalification examinations submitted for these reexaminations essentially met the examiner standards and were used with minor changes. The preliminary results of the requalification reexaminations, pending regional management approval, are that all individuals and the crew passed.

3.3 General Comments

3.3.1 Written Examination

The average grade on the written examination for the three examinees was 81.9 percent. The following questions were missed by at least two of the examinees (question numbers are from the RO examination): 9, 19, 22, 32, 57, 60, 74, 82, 88, 89, 91, and 92. Half of these questions are from portions of the examination dealing with the emergency plant evolutions, which comprised only 36 percent of the examination. One question was deleted from both the RO and the SRO examinations because the facility Technical Specifications, which were supplied as a reference, did not correspond to the actual plant design.

3.3.2 Operating Examination

Performance on the operating test was good. One individual had difficulty properly completing an elevated release point release calculation, which has been observed in the past and another individual had apparent difficulty understanding reactor feedwater indications with a single pump in service. One Job Performance Measure of the 10 selected for this set of examinations, from the material supplied by the facility, was found during the examinations not to match the current revision to the procedure. These problems appeared to be isolated occurrences.

3.3.3 Requalification Reexaminations

Operating test reexaminations for license renewal purposes were administered to two individuals. No significant performance weaknesses were observed.

3.3.4 Conclusion

Given the small number of the initial and requalification examinations administered during this set of examinations, observations may be of limited general applicability. However, the following findings are provided for facility consideration for future training needs:

- The average written examination results were marginal, with indications of significant weakness in emergency plant evolution topics.
- A long-standing error in Technical Specifications was identified involving whether the MSIV closure scram was required to be in effect when the mode switch was not in "RUN." The error did not affect safe plant operation.
- All other findings appeared to be isolated occurrences.

3.4 Master Examination and Answer Key

A master copy of the written examination and answer key is attached. The facility licensee post-examination comments which have been accepted are incorporated into the answer key.

3.5 Facility Post-Examination Review Comments

The facility post-examination review comment regarding the written examination are attached following the master examination key. Those comments not accepted were addressed in the resolution section of this report.

3.6 Simulation Facility Report

All items on the attached Simulation Facility Report have been discussed with the facility personnel.

SIMULATION FACILITY REPORT

Licensee: DPR-46

Docket No: 50-298

Operating Tests Administered at: Cooper Nuclear Station

Operating Tests Administered: Week of May 18, 1992

This report does not constitute an audit or inspection and is not, without further verification and review, indicative of non-compliance with 10 CFR Part 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 operating examinations identified above, the following items were observed:

- A turbine trip resulted in a "slow" house load transfer rather than a "fast" transfer.

- RCIC isolated on high differential pressure during an ATWS scenario with the reactor at normal pressure.

- During a main steam line break, the steam tunnel sump indicated high level but the sump pumps did not automatically start.

U. S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC EXAMINATION
SENIOR OPERATOR LICENSE
REGION 4

CANDIDATE'S NAME: _____

FACILITY: Cooper Station

REACTOR TYPE: BWR-GE4

DATE ADMINISTERED: 92/05/19

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	%	
99.00	_____	____ %	TOTALS
	FINAL GRADE		

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

_____
Candidate's Signature

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.

COOPER NUCLEAR STATION
TABLE 3.1.1
REACTOR PROTECTION SYSTEM INSTRUMENTATION REQUIREMENTS

Reactor Protection System Trip Function	Applicability Conditions Mode Switch Position Shutdown	Startup	Refuel	Run	Trip Level Setting	Minimum Number of Operable Channels Per Trip Systems (1)	Action Required When Equipment Operability is Not Assured (1)
Mode Switch in Shutdown	X(7)	X	X	X		1	A
Manual Scram	X(7)	X	X	X		1	A
IRM (17) High Flux	X(7)	X	X	(5)	≤ 120/125 of indicated scale	3	A
Inoperative		X	X	(5)		3	A
APRM (17) High Flux (Flow biased)				X	≤ (0.58W+62%-0.58ΔW) (14)(19) with a maximum of 120% of rated power	2	C
High Flux (fixed)				X	≤ 120% of Rated Power	2	A
High Flux	X(7)	X(9)	X(9)	(16)	≤ 15% Rated Power	2	A
Inoperative		X(9)	X(9)	X	(13)	2	A
Downscale	(12)	(12)	(12)	X(11)	≥ 2.5%	2	A
High Reactor Pressure NBI-PS-55 A,B,C, & D		X(9)	X(10)	X	≤ 1045 psig	2	A
High Drywell Pressure PC-PS-12 A,B,C, & D		X(9)(3)	X(8)	X	≤ 2 psig	2	A or D
Reactor Low Water Level NBI-LIS-101 A,B,C, & D		X	X	X	≥ + 4.5 in. indicated level	2	A or D
Scram Discharge Instrument Volume High Water Level CRD-LS-231 A & B CRD-LS-234 A & B CRD-LT-231 C & D CRD-LT-234 C & D		X	X(2)	X	≤ 92 inches	3 (18)	A

COOPER NUCLEAR STATION

TABLE 3.1.1 (Page 2)

REACTOR PROTECTION SYSTEM INSTRUMENTATION REQUIREMENTS

Reactor Protection System Trip Function	Applicability Conditions Mode Switch Position				Trip Level Setting	Minimum Number of Operable Channels Per Trip Systems (1)	Action Required When Equipment Operability is Not Assured (1)
	Shutdown	Startup	Refuel	Run			
Main Steam Line High Radiation RMP-RM-251, A,B,C, & D		X(9)		X	≤ 3 Times normal full power back ground	2	A or D
Main Steam Line Isolation Valve Closure MS-LMS-86 A,B,C, & D		X(6)(9)		X(6)	≤ 10% of valve closure	4	A or C
MS-LMS-80 A,B,C, & D						4	A or C
Turbine Control Valve Fast Closure TGF-63/OPC-1,2,3,4				X(4)	≥ 1000 psig turbine control fluid	2	A or B
Turbine Stop Valve Closure SVOS-1(1), SVOS-1(2) SVOS-2(1), SVOS-2(2)				X(4)	≤10% of valve Closure	2	A or B
Turbine First Stage Permissive MS-PS-14 A,B,C, & D		X(9)		X	≤ 30% first stage press.	2	A or B

NOTES FOR TABLE 3.1.1

1. There shall be two operable or tripped trip systems for each function. If the minimum number of operable instrument channels for a trip system cannot be met, the affected trip system shall be placed in the safe (tripped) condition, or the appropriate actions listed below shall be taken.

   A. Initiate insertion of operable rods and complete insertion of all operable rods within four hours.

   B. Reduce power to less than 30% of rated.

   C. Reduce power level to IRM range and place mode switch in the Startup position within 8 hours and depressurize to less than 1000 psig.

   D. Reduce turbine load and close main steam line isolation valves within 8 hours.

2. Permissible to bypass, with control rod block, for reactor protection system reset in refuel and shutdown positions of the reactor mode switch.

3. This note deleted.

4. Permissible to bypass when turbine first stage pressure is less than 30% of full load.

5. IRM's are bypassed when APRM's are onscale and the reactor mode switch is in the run position.

6. The design permits closure of any two lines without a full scram being initiated.

7. When the reactor is subcritical, fuel is in the vessel, and the reactor water temperature is less than 212°F, only the following trip functions need to be operable:

   a. Mode switch in shutdown.
   b. Manual scram.
   c. IRM high flux. 120/125 indicated scale.
   d. APRM (15%) high flux scram.

8. Not required to be operable when primary containment integrity is not required.

9. Not required while performing low power physics tests at atmospheric pressure during or after refueling at power levels not to exceed 5 MW(t).

10. Not required to be operable when the reactor pressure vessel head is not bolted to the vessel.

11. The APRM downscale trip function is only active when the Reactor Mode Selector Switch is in RUN. When in RUN, this function is automatically bypassed when the companion IRM instrumentation is operable and not upscale.

12. The APRM downscale trip is automatically bypassed when the Reactor Mode Selector Switch is not in RUN.

13. An APRM will be considered inoperable if there are less than 2 LPRM inputs per level or there is less than 11 operable LPRM detectors to an APRM.

14. W is the two-loop recirculation flow in percent of rated flow.

15. This note deleted.

16. The 15% APRM scram is bypassed when the Reactor Mode Selector Switch is in RUN.

17. The APRM and IRM instrument channels function in both the Reactor Protection System and Reactor Manual Control System (Control Rod Withdraw Block, Section 3.2.C.). A failure of one channel will affect both of these systems.

18. The minimum number operable associated with the Scram Discharge Instrument Volume are three instruments per Scram Discharge Instrument Volume and three level devices per RPS channel.

19. ΔW is the difference between two-loop and single-loop effective drive flow and is used for single recirculation loop operation. $\Delta W=0$ for two recirculation loop operation.

QUESTION: 001 (1.00)

Partial clearance release under the clearance order tagging system is prohibited if it:

a. contains a locked closed valve.

b. is requested by someone not listed on the SIGN ON section.

c. contains an information tag.

d. is on safeguards related equipment.

QUESTION: 002 (1.00)

On increasing suppression temperature, at what temperature is a manual Scram required?

a. 95 deg F

b. 105 deg F

c. 110 deg F

d. 120 deg F

QUESTION: 003 (1.00)

Which one of the following provides the basis for the drywell average air temperature operating limit of 150 degrees F?

a. Ensures that mechanical equipment in the containment does not degrade due to high temperature during the design life of the plant.

b. Based on the highest allowable operating temperature of the most limiting electrical component in the drywell.

c. Ensures advance warning of potential emergency conditions allowing early action to prevent more severe consequences.

d. Ensures that the containment peak air temperature during a LOCA does not exceed the design temperature of the containment.

QUESTION: 004 (1.00)

Which one of the following Reactor Core Isolation Cooling (RCIC) turbine trips must be manually reset?

a. Loss of turbine oil pressure.

b. Mechanical overspeed.

c. Manual pushbutton on 9-4 panel.

d. Auto isolation signal

QUESTION: 005 (1.00)

Which one of the following conditions require a LPRM calibration using TIP?

a. Two weeks of power operations above 20% power since the last calibration.

b. A reactor startup after being shutdown for 31 days.

c. A major control rod pattern change one week after the last calibration.

d. Two LPRMs in a vertical string differ by greater than 5%.

QUESTION: 006 (1.00)

Which one of the following Control Room reactor vessel water level instruments are available to monitor RPV level during a loss of all site AC power (station blackout)?

a. Fuel Zone, narrow range and Wide Range.

b. Only Fuel Zone and Yarway type detectors.

c. Narrow Range indicators and associated recorder.

d. Only Wide Range and Fuel Zone indicators.

QUESTION: 007 (1.00)

Which one of the following set of conditions will cause the High Pressure Coolant Injection (HPCI) system to automatically switch suction from the primary source to the secondary source?

a. A high level in BOTH emergency condensate storage tanks or a low level in the suppression pool.

b. A low level in EITHER emergency condensate storage tank or a high level in the suppression pool.

c. A high level in EITHER emergency condensate storage tank or a low level in the suppression pool.

d. A low level in BOTH emergency condensate storage tanks or a high level in the suppression pool.

QUESTION: 008 (1.00)

While operating at 100% power, the Core Spray System Loop "B" line break detection indication is reading approximately -3.5 psid.

With all other plant parameters normal, what is the status of the Core Spray System?

a. A core spray line "B" break has occurred between the inboard injection valve and the testable check valve.

b. The standby liquid "outer" pipe has a leak, core spray flow will go directly to the area just below the core plate.

c. A core spray line "B" break may have occurred inside the vessel but outside the shroud. A leak detection alarm should have occurred.

d. A core spray line "B" break may have occurred inside the shroud but core spray "A" loop will provide full spray coverage.

QUESTION: 009 (1.00)

Why is the Rod Worth Minimizer NOT required to be operable when greater than 20% reactor power?

a. The requirement to have each control rod manipulation second checked by another person ensures the correct sequence is maintained.

b. At this power level, the worst possible single rod withdrawal error can not result in a fuel enthalpy greater than the 280 cal/gram limit.

c. Above this power level, the increased core voiding results in a decrease in control rod worth, reducing the reactivity added during a rod drop accident to an acceptable level.

d. Above this power level, the Rod Sequence Control System continues to provide enough control rod withdrawal limitations to keep fuel enthalpy less than 100 cal/gram.

QUESTION: 010 (1.00)

The following conditions exist:

The plant is at power.
The "A"' CRD Pump has a RED danger tag to allow minor maintenance.
The "B" CRD pump has just tripped and cannot be restarted.
The clearance holder for the "A" CRD Pump can not be found.

Which one of the following MAY sign for release of the clearance order?

a. The Maintenance Supervisor

b. The Operations Manager

c. The Shift Supervisor

d. The Control Room Supervisor

QUESTION: 011 (1.00)

Which one of the following describes the minimum watchstanding requirements in order to maintain an "Active" license per 10 CFR 55.53, "Conditions Of Licenses?"

a. Two 8 hour shifts or one 12 hour shift per calendar month.

b. One 8 hour shift or one 12 hour shift per calendar month.

c. Seven 8 hour shifts or five 12 hour shifts per calendar quarter.

d. Six 8 hour shifts or four 12 hour shifts per calendar quarter.

QUESTION: 012 (1.00)

Which one of the following is the proper method of verifying that an INFORMATION ONLY copy of a procedure to fill and vent HPCI is the correct procedure revision, including all changes, to use it for the task?

a. Refer to a hard copy of the CNS Procedure Index.

b. Insure the procedure is the same as the one in the control room.

c. All copies are maintained current so verification is not required.

d. A controlled copy must be used for this task.

QUESTION: 013 (1.00)

Which one of the following describes the response of the Scram Discharge Volume valves following a half scram signal?

a. Pilot air valves do not change position. Vent and drain valves remain open.

b. One pilot air valve repositions. Vent and drain valves remain open.

c. Pilot air valves change position. One set of vent and drain valves close.

d. One pilot air valve repositions. Both vent and drain valves close.

QUESTION: 014 (1.00)

Which of the following conditions will result in indicated reactor vessel water level being LOWER than actual level?

a. A leak occurs in the reference leg.

b. A decrease in drywell temperature.

c. A rapid decrease in reactor pressure.

d. Reactor temperature above saturation temperature for the drywell.

QUESTION: 015 (1.00)

An ATWS has occurred and the following conditions exist:

Reactor power 25% on APRMs.
Reactor water level is 20 inches
Drywell pressure is 1.1 psig.
All scram valves are opened
The SDV vent and drain valves are shut.
Mode switch is in SHUTDOWN

Which one of the following describes resetting of the scram to allow draining of the Scram Discharge Volume?

a. The scram cannot be reset in this condition because the scram condition cannot be cleared.

b. The scram can be reset by placing the CRD Discharge Volume Bypass switches in "BYPASS".

c. The scram can be reset by placing the mode switch in RUN and placing the CRD Discharge Volume Bypass switches in "BYPASS".

d. The scram can be reset by placing the mode switch in STARTUP and placing the CRD Discharge Volume Bypass switches in "BYPASS".

QUESTION: 016 (1.00)

The EOP's direct the Standby Liquid Control system to be secured when:

a. Suppression pool temperature decreases below 110 F.

b. SLC tank level decreases to 0%.

c. SLC tank level decreases to 58%.

d. Reactor power decreases to less than 2.5%.

QUESTION: 017 (1.00)

The following plant conditions exist:

Automatic Depressurization System (ADS) is actuated
Reactor water level: -157 inches
All RHR pumps: running
Both Core Spray (CS) pumps: running
120 second timer: timed out
6 ADS SRVs: open
Reactor pressure: 150 psig and lowering

WHICH one of the following will cause the Automatic Depressurization System SRV's to close and remain closed without further operator action?

a. BOTH ADS Logic Timer Reset Buttons are depressed.

b. The ADS manual inhibit switches are placed in "INHIBIT".

c. Water level is raised above 12.5 inches.

d. All RHR and CS pumps are stopped for a period greater than 120 seconds and then restarted.

QUESTION: 018 (1.00)

Which one of the following will generate a rod block with the Reactor Mode Switch in "Refuel"?

a. The refuel platform is over the fuel pool and is moving a fuel bundle.

b. The refuel platform is over the core, unloaded and one control rod is withdrawn.

c. The refuel platform is over the core and is raising a fuel bundle.

d. The refuel platform is over the fuel pool and the trolley mounted hoist is loaded.

QUESTION: 019 (1.00)

Should it become necessary to lower reactor level during an ATWS condition, certain injection systems are specified for use (Table 13 of EP 5.8) to maintain that level.

Which one of the following provides the reason why only these systems are to be used?

a. These systems all provide the cleanest source of water to inject into the reactor.

b. At this point in the ATWS, reactor pressure precludes use of other systems.

c. Their point of injection ensures mixing of the cold injection water to reduce the potential reactivity transient.

d. They provide the operator with more precise level control to reduce the potential reactivity transient.

QUESTION: 020 (1.00)

Which one of the following is the MINIMUM reactor water level necessary to aid in removing decay heat by thermal convection flow (natural circulation) if ALL shutdown cooling is lost?

a. 37.0 inches

b. 48.0 inches

c. 58.5 inches

d. 92.0 inches

QUESTION: 021 (1.00)

An ATWS has occurred and the following conditions exist:

Reactor power is 8%.
A high temperature condition in the reactor building exists due to a fire which is in progress.
Main Steam Isolation valves have closed.
RCIC is maintaining RPV level at -100 inches.
Rods are being inserted using CRD system.

Which one of the following systems should be isolated if they are discharging into the reactor building?

a. Control Rod Drive

b. Reactor Water Cleanup

c. Reactor Core Isolation Cooling

d. Fire suppression

QUESTION: 022 (1.00)

Which one of the following describes the actions to be taken by persons on the refuel floor during core reload in response to a Local Continuous Air Monitor alarm?

a. Check dosimetry and those individuals with higher than expected readings must evacuate.

b. Immediately evacuate to elevation 976 of the reactor building and notify the control room.

c. Attempt to clear the alarm by performing local manipulations (such as lowering an item underwater).

d. Notify Health physics and IF a subsequent ARM high radiation alarm sounds then evacuate the refuel floor.

QUESTION: 023 (1.00)

Given the following conditions:

- Today's date is May 18, 1992.
- A fully trained, male radiation worker is 25 years old today.
- He has a current Cooper HP-4 (equiv. to NRC Form 4) on record.
- His previous lifetime whole body exposure is 26 Rem.

What is the MAXIMUM whole body radiation exposure for 1992 allowed by Cooper Nuclear Station Health Physics Procedures for this individual without invoking EPIP limits for emergency and accidental exposure?

a. 1250 mrem/quarter for the entire year.

b. 2500 mrem/quarter not to exceed 4000 mrem for the year.

c. 3000 mrem/quarter for 3 quarters in the year.

d. 3000 mrem/quarter not to exceed 5 rem total for the year.

QUESTION: 024 (1.00)

Which one of the following describes the AUTOMATIC actions that should have occurred if reactor power is 18% with condenser vacuum 12" Hg and decreasing?

a. Turbine trip

b. Turbine trip, reactor scram

c. Turbine trip, bypass valve closure and reactor scram

d Turbine trip, feed pump trip and bypass valve closure.

QUESTION: 025 (1.00)

Which one of the following correctly describes the requirements on physical location of licensed personnel in the red zone area during cold shutdown or refueling conditions?

a. The operator "AT THE CONTROLS" may momentarily be absent from the red zone area in order to acknowledge nuisance annunciator alarms provided he remains within the Control Room area.

b. The operator "AT THE CONTROLS" may leave the red zone area provided that the Shift Supervisor is at his desk.

c. When there is fuel in the reactor, an operator "AT THE CONTROLS" shall be present in the red zone area at all times

d. At least two licensed reactor operators shall be present in the red zone area during startup, shutdown or periods involving significant control rod movement.

QUESTION: 026 (1.00)

During performance of a High Pressure Coolant Injection surveillance test, rated flow can not be achieved.

Which one of the following describes the correct action of the Licensed Operator performing the test?

a. Restore the system to standby status.

b. Immediately reperform the test to verify the results.

c. Continue with the test and document the results.

d. Place the flow controller in manual at maximum output signal.

QUESTION: 027 (1.00)

In order to protect the health and safety of the public, an action which departs from Technical Specifications and has no procedure guidance is required to be immediately performed by a licensed reactor operator.

Which one of the following describes the course of action this operator is authorized to take.

a. Immediately take whatever action is required without further direction.

b. Notify the Shift Supervisor then perform the required action.

c. Perform the required action then notify the Control Room Supervisor of his action.

d. Obtain approval from the Control Room Supervisor and then perform the action.

QUESTION: 028 (1.00)

Which one of the following describes a properly oriented fuel bundle?

a. Orientation tab on the bail handle points away from the control rod.

b. The channel spacer buttons face the control rod.

c. Serial number on the bail handle is readable from outside edge of bundle in towards control rod.

d. Channel fastener is located on the outside edge 180 degrees away from fuel cell center.

QUESTION: 029 (1.00)

The following plant conditions exist:

A LOCA is in progress
Drywell pressure is 2.2 psig
Reactor water level is -40.0 inches
Main steam line area temperature is 210 degrees F
Reactor pressure is 875 psig

Which one of the following sets of Containment Isolation System groups should have received automatic isolation signals?

a. Gp 1
Gp 2
Gp 6

b. Gp 1
Gp 2

c. Gp 2
Gp 6

d. Gp 2
Gp 3
Gp 7

QUESTION: 030 (1.00)

Which one of the following describes the response of the Safety Relief alves (SRV's) to a loss of the nitrogen/instrument air supply?

a. All SRV's including ADS valves, are automatically supplied from the backup air accumulators and have enough air for only five actuations.

b. All SRV's including ADS valves, are automatically supplied from the backup air accumulators and have enough air for at least two hours.

c. The non-ADS valves will function only as safety valves. The ADS valves will be supplied from their backup air accumulator volumes sufficiently to operate five times.

d. The ADS valves will be supplied from air accumulators enough to operate five times. The non-ADS valves will be supplied by air accumulators for an additional nine operations.

QUESTION: 031 (1.00)

Identify the reason that reactor power goes down when reactor water level is deliberately lowered during a failure to scram (ATWS) event.

a. Lowering RPV level below the moisture separator removes the flow path through it thereby minimizing flow through the core.

b. Lowering RPV level reduces the pressure in the core by reducing the head of water above the core

c. Lowering RPV water level reduces the natural circulation driving head and core flow.

d. Lowering RPV level reduces power by increasing the subcooling of the water entering the core.

QUESTION: 032 (1.00)

The reactor was scrammed due to suppression pool water temperature being greater than the Technical Specification Limit.

Which one of the following describes the minimum condition required to resume power operation?

a. Suppression Pool Temperature is less than 105 degrees F and must be less than 95 degrees F within 24 hours.

b. Reactor start up may commence if Suppression Pool temperature is less than 105 F and readings show that temperature will be below 95 degrees before placing the mode switch in RUN.

c. Suppression Pool Temperature must be less than 95 degrees F prior to placing the Mode Switch in STARTUP.

d. Suppression Pool temperature must be less than 95 degrees F prior to exceeding 1% power.

QUESTION: 033 (1.00)

Which one of the following is the expected plant response if the in-control DEH Pressure Controller A fails high and no operator action is taken with the plant at 100% power?

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

b. Control valves open and reactor pressure decreases until a Group 1 isolation occurs to stop the pressure decrease.

c. Control valves close slightly and bypass valves open slightly. Reactor pressure stabilizes slightly higher than before the transient.

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

QUESTION: 034 (1.00)

Which one of the following is the correct sequence for returning a pump to service before removing tag on the control switch?

a. Rack in the breaker, close the vent or drain valve, open the suction isolation valve, then open the discharge isolation valve.

b. Close the vent or drain valve, open the suction valve, open the discharge valve, rack in the breaker.

c. Rack in the breaker, open the suction isolation valve, then open the discharge isolation valve, close the vent or drain valve.

d. Close the vent or drain valve, open the discharge valve, open the suction valve, rack in the breaker.

QUESTION: 035 (1.00)

A mandatory operational assignment must be completed in a high level radiation area. Which one of the following is the preferred method of completing the assignment within "ALARA" guidelines?

a. One man who will receive a dose of 250 mr.

b. Two men who will each receive a dose of 130 mr.

c. Two men who will receive doses of 150 mr and 110 mr respectively.

d. Three men who will each receive a dose of 90 mr.

QUESTION: 036 (1.00)

The following plant conditions exist:

Reactor power is 100%
A severe storm is causing disturbances on the grid.

An electrical grid transient occurs. The following plant conditions are noted after the transient:

Reactor vessel level +20 inches and decreasing
Reactor vessel pressure 1060 psig and increasing
Drywell pressure 1.2 psig
Generator output 500 MWe
Generator output breakers: 3310 tripped open, 3312 closed
Turbine bypass valves are fully open
No protective functions have occurred

Which one of the following actions is required?

a. Take manual control of the feedwater control system and raise reactor vessel water level to normal .

b. Adjust the DEH pressure regulator to reduce reactor pressure.

c. Trip the main turbine and enter AP 2.4.9.1.10, Turbine Trip.

d. Enter EOP 5.8, 1A, RPV Control

QUESTION: 037 (1.00)

Which one of the following describes the operation/configuration of the two backup scram valves?

a. Normally energized, one valve will de-energize with each RPS channel to vent air header.

b. One powered from each RPS trip channel, either valve must energize to vent the scram air header.

c. Each requires both RPS channels tripped to energize, both valves must energize to vent the air header.

d. Both RPS channels must trip to energize, either valve, one valve must energize to vent the air header.

QUESTION: 038 (1.00)

Which one of the following will immediately initiate the Alternate Rod Insertion system AND trip the Reactor Recirculation pumps?

a. Arm and depress both Alternate Rod Insertion pushbuttons at the same time.

b. Reactor vessel water level less than -37 inches for 9 seconds.

c. Reactor vessel dome pressure greater than 1120 psig.

d. Reactor vessel water level less than -37 inches (no time delay).

QUESTION: 039 (1.00)

Which one of the following would constitute a "Radiation Area"?

a. An accessible area where a person could accumulate a whole body dose greater than 100 m/rem in 5 consecutive days.

b. An accessible area where a person could receive a whole body NEUTRON dose rate greater than 2.5 m/rem.

c. Any area designated as an Radiologically Controlled Area (RCA).

d. Any area designated as a Contaminated Area.

QUESTION: 040 (1.00)

A loss of RPS Bus "A" has occurred due to actuation of an Electrical Protection Assembly (EPA). Upon restoration of power to RPS Bus "A" only three (3) of the WHITE Scram solenoid indicating lights for RPS Bus "A" are reenergized. All "B" side Scram indicating lights are energized.

Which one of the following describes the appropriate action?

a. Assume 1/4 of the control rods should have scrammed, depress both reactor scram push buttons and enter GOP 2.1.5.

b. Assume 1/4 of the control rods have received a 1/2 scram, continue operations and investigate.

c. Momentarily insert then clear an "A" side half scram to pick up the relay and energize the light.

d. If no control rods have scrammed, assume the light bulb is burned out and replace it.

QUESTION: 041 (0.00)

Which one of the following Reactor Protection System automatic scrams is bypassed when the mode switch is taken from "RUN" to "STARTUP"?

a Turbine Stop Valve - Closure
Turbine Control Valve Fast Closure

b. Main Steam Line Isolation Valve - Closure
APRM - Downscale with IRM - Upscale

c. IRM - Upscale
APRM - Upscale

d. Main Steam Line Isolation Valve - Closure
Main Steam Line Radiation - High

QUESTION: 042 (1.00)

The plant is in cold shutdown.
Technical Specifications table 3.1.1 is provided.

What conditions must be met to allow ALL Reactor Protection System Instrumentation channel trips to be inoperable?

a. The reactor water temperature is less than 212 degrees F and no fuel is in the vessel.

b. All control rods fully inserted and electrically or hydraulically disarmed.

c. The reactor vessel head is removed or unbolted and engineering determines that sufficient shutdown margin exists without rods.

d. The reactor Mode Switch is locked in the "Shutdown Position" with all control rods fully inserted.

QUESTION: 043 (1.00)

Which one of the following describes why the charging water header to the Hydraulic Control Unit (HCU) should not exceed a MAXIMUM of 1510 psig?

a. ensure control rod insertion speeds are not excessive on a scram.

b. Minimize leakage and resultant damage to the scram valves.

c. prevent damage to the CRD mechanism during a scram due to a high differential pressures.

d. prevent damage to the accumulator during a scram due to a high differential pressures.

QUESTION: 044 (1.00)

During a scram from 100% power, which one of the following describes system response if the CRD Hydraulic Control Unit accumulator piston does NOT move?

NOTE: Assume the ACCUMULATOR is mechanically bound up.

a. The control rod will fully insert using charging water pressure.

b. The control rod will insert until reactor and CRD pressures equalize.

c. The control rod will insert until the flow control valve opens.

d. The control rod will fully insert using reactor pressure.

QUESTION: 045 (1.00)

Which one of the following is the required action for a sustained reactor period of 30 seconds during reactor startup?

a. Manually scram the reactor.

b. Insert control rods until period is greater than 50 seconds.

c. Stop control rod movement until period increases greater than 50 seconds.

d. Stop withdrawing control rods and contact Reactor Engineering.

QUESTION: 046 (1.00)

The reactor is operating at 75% power. Which one of the following is the required action when Minimum Critical Power Ratio (MCPR) is reduced to 1.055 following a transient?

a. The cause of the transient must be corrected immediately or the reactor must be shutdown within the next 2 hours.

b. Power must be reduced to a level where MCPR limits do not apply (less than 25%) within two hours or be in cold shutdown within 24 hours.

c. Immediate action must be initiated to restore MCPR to acceptable values and be in cold shutdown within 24 hours.

d. The reactor must be shutdown within 2 hours and not restarted until NRC review.

QUESTION: 047 (1.00)

Which one of the following describes the minimum required initial conditions for Source Range Monitor (SRM) system in order to perform a reactor startup?

a. At least 2 SRM channels must be operable with detectors inserted far enough to provide a positive count rate of 3.0 CPS.

b. All SRM channels must be operable with count rate of 3.0 cps or greater when the detector is FULLY inserted.

c. At least 2 SRM channels must be operable with count rate of 3.0 cps or greater when the detector is FULLY inserted.

d. All SRM channels must be operable with at least 2 SRM channels equal to or greater than 3.0 cps.

QUESTION: 048 (1.00)

The following conditions exist:

An ATWS is in progress.
Reactor power is 22%
Reactor water level is being maintained at -135 inches.

Which one of the following is most severely challenged if a full MSIV closure should occur?

a. Fuel integrity

b. Reactor pressure vessel integrity

c. Containment integrity

d. Injection system operability

QUESTION: 049 (1.00)

A Licensed Reactor Operator has worked the following schedule during a refueling outage:

- Monday Scheduled day Off.
- Tuesday -- 7 am to 7 pm
- Wednesday -- 7 am to 5 pm
- Thursday -- 7 am to 3 pm
- Friday -- 7 am to 3 pm
- Saturday -- 7 am to 3 pm
- Sunday -- 7 am to 9 pm

CHOOSE the work schedule for the following Monday that is the MAXIMUM allowed without additional authorization.

a. 7 am to 5 pm

b. 7 am to 3 pm

c. 5 am to 5 pm

d. 7 am to 7 pm

QUESTION: 050 (1.00)

What is the MAXIMUM emergency load allowed on the Emergency Diesel Generators in order to achieve safe shutdown conditions?

a. 3900 KW

b. 4160 KW

c. 4400 KW

d. 4750 KW

QUESTION: 051 (1.00)

Which one of the following methods will result in the largest overall differential pressure across the Control Rod Drive piston for inserting control rods?

a. Open individual scram test switches.

b. Maximize CRD cooling water differential pressure.

c. Drive control rods using maximum drive pressure.

d. Vent the scram air header.

QUESTION: 052 (1.00)

While at power, the MSL RAD Hi-Hi/INOP alarm annunciates for MSL A. Investigation shows that no actual Hi RAD condition exists and that MSL RAD MONITOR channel "A" is INOP.

What subsequent MSL RAD Hi-Hi channels MUST trip in order to result in a FULL Main Steam Line Hi-Hi RAD Trip of the protective system?

a. channel "B" and "C" or "D"

b. channel "C" and "B" or "D"

c. channel "D" and "B" or "C"

d. either channel "B" or "D"

QUESTION: 053 (1.00)

You are the SRO assigned to observe and supervise core alterations during fuel offload from the reactor vessel. A situation has occurred that requires you to immediately leave the refuel floor. The only other SRO on shift is the Shift Supervisor.

Which one of the following is permitted?

a. If the operator performing core alterations has a valid reactor operator license then he may continue to move fuel from the reactor to the fuel pool without your presence but may not pick up another bundle until you return.

b. Since the plant is in refueling, an individual with a valid reactor operator license may be designated at the controls and the Shift Supervisor may temporarily assume your function.

c. You may, if qualified, exchange shift positions with the Shift supervisor and continue moving fuel provided that control room manning requirements are met.

d. An individual with a valid reactor operator license may be designated to assume the supervision of core alterations provided he has no other concurrent duties.

QUESTION: 054 (1.00)

During a control room evacuation, with time permitting, which one of the following is NOT an immediate action per the emergency procedure for Shutdown from Outside the Control Room.

a. Place Reactor Mode Switch in REFUEL.

b. Verify all control rods are inserted.

c. Trip the main turbine generator.

d. Place RFPT turning gear control switches in AUTO.

QUESTION: 055 (1.00)

While at full power, one MSIV has gone closed for an unknown reason. The following post transient plant conditions are noted:

Pressure is 1010 psig and stable.
Level is 31 inches and trending to normal.
Reactor power spiked to 125% and is now 99%.
Generator output has dropped 30MWe.
One SRV lifted and has not reseated
No RPS actuations have occurred.

Which one of the following is the required action?

a. Attempt to shut the SRV by cycling the control switch and establish suppression pool cooling.

b. Establish suppression pool cooling and commence a normal reactor shutdown and cooldown to remain within the Heat Capacity Temperature Limit.

c. Scram, establish suppression pool cooling and depressurize the RPV maintaining cooldown rate below 100 deg F/hr.

d. Reduce reactor power to less than 75% then enter abnormal procedure for Relief Valve Stuck Open

QUESTION: 056 (1.00)

Which one of the following THERMAL HYDRAULIC INSTABILITY conditions requires an immediate reactor scram if power to flow operation is in the region of instability?

a. LPRM upscale-to-downscale oscillations.

b. APRM swings of 5% occurring each 2.3 seconds.

c. Increasing oscillations on APRM's with an increase in thermal power.

d. Operation above 80% rod line with less than 45% core flow.

QUESTION: 057 (1.00)

The main generator has just been synchronized to the grid and is carrying approximately 100 MWe. The "TG ROTOR HI VIBRATION" Alarm is received shortly thereafter. A quick check of the bearing and shaft vibration recorders shows vibration at 12 mils and trending up rapidly.

The correct action should be to :

a. immediately unload the turbine and consult the Alarm Procedure.

b. trip open the generator output breakers, 3310 & 3312.

c. initiate a reactor scram and trip the turbine.

d. immediately trip the turbine manually.

QUESTION: 058 (1.00)

Which one of the following describes the required emergency notifications in response to an emergency event?

a. State and local agencies must be notified immediately and not later than 15 minutes except for an Unusual Event which can utilize a letter report.

b. The NRC must by notified within 15 minutes after declaration of the emergency. State and local agencies must be notified immediately thereafter not to exceed one hour.

c. State and local agencies must be notified within 15 minutes and the NRC should be notified within 4 hours after declaration of the event.

d. State and local agency notification must be completed within 15 minutes and the NRC initial notification must be made immediately thereafter within one hour from classification.

QUESTION: 059 (1.00)

Which one of the following represent the lower and upper bounds of percent HYDROGEN in air where the mixture is flammable or explosive?

a. 0 - 8%

b. 4 - 18%

c. 18 - 59%

d. 4 - 74%

QUESTION: 060 (1.00)

Which one of the following describes what happens to the MSIV's when ALL RPS AC electrical power is lost?

The MSIV's will:

a. Close because ALL pilot solenoids will deenergize to align the pneumatic supply to close the MSIV.

b. Remain open because the DC pilot solenoid continues to align the pneumatic supply to open the MSIV.

c. Remain open because the pilot solenoids are energized to close the MSIV's.

d. Close because either pilot solenoid becoming deenergized will vent the pneumatic supply.

QUESTION: 061 (1.00)

Which one of the following actions is specifically PROHIBITED as part of the attempts to recouple or move a stuck control rod?

a. Driving the rod full in.

b. Driving the rod full out.

c. Increasing Drive pressure.

d. Manually scramming the rod.

QUESTION: 062 (1.00)

Under which one of the following conditions is continuous rod withdrawal allowable during a reactor startup, if NOT otherwise specified by Reactor Engineering?

a. All rods in the first two groups pulled up to the point where SRM count rate has increased to 10 times the initial count rate.

b. All rods up to the point where average SRM count rate has increased to 10 times the initial count rate.

c. Groups 1 and 2 and all rods after passing position 24 until the initial SRM count rate doubles three times.

d. Groups 1 and 2 and all other rods until any SRM reaches 10 times the initial count rate.

QUESTION: 063 (1.00)

Which one of the following describes the response of the Diesel Generators (D/G) to a total loss of power to 4160V bus 1F?

a. D/G 1 and D/G 2 start, D/G 1 bus supply breaker will close after 10 second time delay.

b. D/G 1 start, supply breaker will close after a 10 second time delay relay times out.

c. D/G 1 start, supply breaker will close if bus 1F is still deenergized.

d. D/G 1 and D/G 2 start, D/G 1 bus supply breaker will close after 1 second time delay for load shed.

QUESTION: 064 (1.00)

Which one of the following pair of scrams is NOT always required during power operation?

a. Turbine control valve fast closure
Main steam isolation valve closure

b. Turbine stop valve closure
Turbine control valve fast closure

c. Main steam isolation valve closure
Turbine stop valve closure

d. Main steam line high radiation
APRM High Flux (120%)

QUESTION: 065 (1.00)

Diesel Generator #2 is supplying power to it's respective bus in parallel with the grid.

Which one of the following describes the system response if ALL off site power is lost coincident with an emergency start signal from decreasing reactor water level?

a. BKR 1GB and BKR EG2 will open, EG2 will close after the 5 second time delay for load shedding.

b. BKR 1GB will open, bus 1G will load shed, D/G #2 will pick up loads as they are sequenced back onto bus 1G.

c. D/G #2 will attempt to pick up bus 1B loads until BKR EG2 trips on overcurrent or BKR 1GB trips on reverse power.

d. BKR 1GB will open, D/G #2 will pick up bus 1G safety related loads as they are sequenced onto the bus.

QUESTION: 066 (1.00)

Which one of the following is the design purpose/function of the Standby Gas Treatment System (SGTS)?

a. To limit environmental release rate of radioisotopes to the environs and remain within the guidelines of 10CFR100.

b. To maintain 0.25 inches Wg negative pressure in the secondary containment at all times.

c. To provide a vent path for excess containment pressure.

d. To monitor exhaust for high activity to comply with the requirements of 10CFR 20.

QUESTION: 067 (1.00)

Which one of the following represents the definition of "Adequate Core Cooling"?

a. Plant systems are available and operating to remove the sensible decay heat during a postulated Loss of Coolant Accident.

b. Heat is being removed from the core at such a rate that the average fuel rod cladding temperature will not reach 2400 degrees F.

c. The heat removal from the reactor is sufficient to prevent rupturing the fuel clad.

d. Long term decay heat is being removed under all possible combinations of equipment failure.

QUESTION: 068 (1.00)

Which one of the following is the justification for inhibiting the Automatic Depressurization System (ADS) during an ATWS.

a. Uncontrolled RPV depressurization will put a considerable amount of energy into the Suppression Pool well before it is necessary or required.

b. Depressurization would drive plant conditions above the RPV Saturation Temperature curve where RPV water level instrumentation may not be reliable.

c. Uncontrolled depressurization under these conditions would cause a large loss of RPV inventory and impose a severe thermal transient on the RPV.

d. Once depressurized below the shutoff head of the low pressure ECCS systems, the injection water might cause a large power excursion which could damage the core.

QUESTION: 069 (1.00)

Which one of the following requires a manual scram during a "Loss of Instrument Air"?

a. The Scram Valve Pilot air low pressure alarm is received.

b. Service air pressure has reached 65 psig with all compressors operating.

c. The "Rod Drift" annunciator is in, control rod 40-17 has scrammed no other rods appear to have moved.

d. Control rod 10-23 has moved from position 48 to position 42, control rod 44-11 is moving in slowly.

QUESTION: 070 (1.00)

Which one of the following limits does the Rod Block Monitor (RBM) prevent exceeding?

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: 071 (1.00)

The following plant conditions exist:
Level has decreased to -155 inches
ADS timer is counting down
All RHR and CS pumps are running

Prior to any SRV's opening, level is increased to -140 inches.

Which one of the following describes automatic ADS system response?

a. Timer resets to zero when level increased above -145.5 inches, if level again goes below 145.5 inches, blowdown will occur in 120 seconds.

b. Timer sequence will stop and blowdown will only occur if level goes below 145.5 inches sufficiently to finish 120 second timer.

c. Timer will time out but blowdown will be inhibited until level again goes below 145.5 inches, then blowdown will then occur.

d. Timer will continue it's sequence and blowdown will occur at completion of 120 second timer countdown independent of level.

QUESTION: 072 (1.00)

Which one of the following is the FIRST load that will be repowered by critical bus following a loss of off-site power concurrent with a LOCA?

a. CS pump,

b. Standby REC pump,

c. SGT,

d. Standby SW pump,

QUESTION: 073 (1.00)

Which one of the following describes the purpose of the jet pumps as a reactor vessel internal component?

a. Maximize core flow while minimizing flow external to the reactor vessel.

b. Assure 2/3 core coverage capability following a main steam line break.

c. Provide for separation of the core region and downcomer annulus.

d. Increase power capability of the core by providing forced circulation

QUESTION: 074 (1.00)

Select the statement that describes why having an inoperable jet pump is a technical specification condition that requires a plant shutdown and cooldown?

a. Will decrease subcooling resulting in potential recirculation pump cavitation.

b. Will increase subcooling and could result in a positive reactivity addition.

c. Could decrease the standpipe effect in the reactor vessel following a design basis accident.

d. Could decrease the blowdown area from that analyzed for a design basis accident.

QUESTION: 075 (1.00)

If an automatic fire extinguishing system is shutdown after extinguishing a fire, which one of the following describes the MINIMUM personnel manning requirements in the fire area?

a. Station a Fire Watch OR a Valve Attender for at least 30 minutes.

b. Station a Fire Watch AND a Valve Attender for at least 30 minutes.

c. Station a Fire Watch for at least 30 minutes and if the system is not restored in 24 hours then station a Valve Attender.

d. Station a Fire Watch or a Valve Attender until the system is restored to service or a backup system is established.

QUESTION: 076 (1.00)

An offsite radioactivity release rate which requires emergency plan implementation at which of the levels below also satisfies an entry condition for the Radioactivity Release Control section of EOP Flowchart 5A, "Secondary Containment Control/ Radioactivity Release Control"?

NOTE: Choose the LOWEST level that is also an entry condition.

a. Notification of Unusual Event

b. Alert

c. Site Area Emergency

d. General Emergency

QUESTION: 077 (1.00)

Which set of conditions will BYPASS the Group I low vacuum isolation?

a. Condenser low vacuum logic test switches in BYPASS.
Turbine stop valves CLOSED.
Reactor mode switch in STARTUP.

b. Condenser low vacuum logic test switches in BYPASS.
Turbine control valve FAST CLOSURE actuation.
Turbine stop valves CLOSED.

c. Condenser low vacuum logic test switches in BYPASS.
Turbine control valve FAST CLOSURE actuation.
Reactor mode switch in STARTUP.

d. Turbine control valve FAST CLOSURE actuation.
Turbine stop valves CLOSED.
Reactor mode switch in SHUTDOWN

QUESTION: 078 (1.00)

For actions taken after a full reactor scram, which one of the following describes why the reactor mode switch is first placed in REFUEL and then later moved to SHUTDOWN rather than being placed directly in SHUTDOWN?

a. Permits SDV vent and drain valves to go closed.

b. Allows time for the automatic scram actions to occur before a backup scram is inserted.

c. Enables rapid determination of rod position.

d. The reactor mode switch design requires the switch to go through Refuel prior to reaching the SHUTDOWN position.

QUESTION: 079 (1.00)

Which one of the following states the operational consequences of losing both divisions of the 24V DC power system?

a. A reactor scram signal occurs if the mode switch is in RUN.

b. Loss of all SRM's and IRM's administratively prohibits a shutdown.

c. A group 6 isolation is initiated.

d. Reactor recirculation MG speed control will lock up.

QUESTION: 080 (1.00)

The following plant conditions exist:

A plant startup is in progress.
Reactor Recirculation (RR) pump "B" is tagged out.
Reactor power is presently 30%.

Without any operator action, RR pump "A" starts to increase speed thereby increasing power about 1% each 5 seconds. Attempts to reduce flow or initiate a SCOOP TUBE LOCKOUT are unsuccessful.

Which one of the following is the required action?

a. Enter GOP 2.1.5 and trip RR pump "A".

b. Trip RR pump "A" field breaker.

c. Enter GOP 2.1.5 "Emergency Shutdown from Power"

d. Take local manual control of RR pump "A".

QUESTION: 081 (1.00)

When operating within the guidelines of EOP Flowchart 2A, RPV level, the preferred level range is between +4.5 inches and 58.5 inches.

Which one of the following provides a justification for this level band?

a. Preserves use of the condenser as a heat sink.

b. Feedwater may be used to maintain level.

c. Core Standby Cooling Systems (CSCS) signals may be reset

d. Preserves the availability of steam driven equipment.

QUESTION: 082 (1.00)

The following conditions exist:

Reactor in cold shutdown,
RHR loop A pumps are tagged out.
Maintenance on a leaking SRV is in progress in the drywell.
Both RHR loop B pumps have tripped and cannot be restarted.
Within 30 minutes of the RHR trip, coolant temperature has increased from 140 deg F to 190 deg F.

Which one of the following actions MUST be taken?

a. Increase operating recirculation pump speed to maximum.

b. Maximize heat removal by maximizing CRD flow.

c. Establish primary containment integrity

d. Open RHR heat exchanger bypass valve RHR-MO-66A.

QUESTION: 083 (1.00)

While operating at power, both Service Water Discharge Header LOW pressure alarms and the SW Class I Isolation alarm are received. Attempts to restore pressure and flow are not successful and take LONGER THAN 1 MINUTE.

Which one of the following actions must be immediately performed?

a. Scram, stop the oil pumps for both recirculation MG sets.

b. Conduct GOP 2.1.5, open the bypass valves for both SW strainers.

c. Trip the Main Turbine, air purge the drywell, isolate RWCU.

d. Scram, isolate RWCU, shutdown both recirculation MG sets.

QUESTION: 084 (1.00)

Which one of the following conditions ALONE would require ENTRY into EOP Flowchart 1A "RPV control"?

a. Reactor has scrammed and one SRV is lifting due to pressure.

b. Drywell pressure is 1.88 psig.

c. Reactor has scrammed and two control rods did not insert.

d. RPV water level has dropped to 14.4 inches.

QUESTION: 085 (1.00)

Which one of the following would be the adverse effect of energizing the 125V DC distribution panel A or B after it has been lost?

a. Restoration of DC control power may inadvertently close various 4160V and 480V breakers.

b. The undervoltage relays of 4160V breakers may lock out the trip coil preventing UV protection.

c. Various 4160V and 480V breakers could inadvertently trip.

d. The diesel generator breakers will be locked out until reset.

QUESTION: 086 (1.00)

While flooding the Reactor Pressure Vessel without direct indication of RPV water level, which one of the following will meet the conditions to assure adequate core cooling?

a. 2 SRV's open, RPV pressure 120 psig above torus pressure and steady.

b. 3 SRV's open, RPV pressure 50 psig above torus pressure and increasing

c. 4 SRV's open, RPV pressure 60 psig above torus pressure and decreasing.

d. 3 SRV's open, RPV pressure 80 psig above torus pressure and steady.

QUESTION: 087 (1.00)

The Hot Shutdown Boron Weight (HSBW) is the amount of boron that will maintain the reactor shutdown under certain conditions using a variety of assumptions:

SELECT the RPV water level assumed for the determination of HSBW.

a. The high level trip setpoint.

b. The normal operating band.

c. The low water level scram setpoint.

d. The Top of Active Fuel (TAF).

QUESTION: 088 (1.00)

SELECT the statement describing the relationship between the Boron Injection Initiation Temperature (BIIT) graph and the Heat Capacity Temperature Limit (HCTL) graph?

a. The BIIT graph and the HCTL graph combined, monitor the energy additions to the torus to prevent exceeding the limits of the Pressure Suppression Pressure graph.

b. The BIIT graph attempts to inject boron early enough to shutdown the reactor before torus water temperature reaches the HCTL.

c. Operating below the BIIT graph or the HCTL graph, whichever is most restrictive, ensures the Primary Containment Pressure Limit will not be reached.

d. The HCTL graph, based on reactor pressure, determines how long the operator has until boron injection is required by the BIIT graph.

QUESTION: 089 (1.00)

What is the MINIMUM RPV water level at which the core is adequately cooled with NO injection using Steam Cooling?

a. Top of Active Fuel (TAF)

b. -40 inches

c. -145.5 inches

d. 358 inches above Vessel Zero

QUESTION: 090 (1.00)

IDENTIFY the reason why Primary Containment is vented and purged irrespective of off-site radioactive release rates when Containment hydrogen concentration reaches 6% in combination with a Drywell or Torus oxygen concentration of 5%?

a. This action will prevent conditions from reaching the point that will require Containment Spray initiation.

b. At this point, Primary Containment pressure is near the Containment Spray Initiation Limit curve and must be reduced to allow initiation of Containment Spray.

c. Conditions are such that a deflagration could occur resulting in failure of the Primary Containment.

d. These hydrogen and oxygen concentration levels are beyond the compensation capabilities of the Drywell inerting nitrogen supply system.

QUESTION: 091 (1.00)

Which one of the following describes operation of 4160V breakers if the control power is lost?

a. The breaker can only be operated using the local Close-Trip switches, remote breaker operations are not possible.

b. No remote operation of that breaker can occur, it can be tripped locally once with no further operation possible.

c. It will not operate remotely, but can be locally tripped then closed one time and tripped open again.

d. It can only be tripped using the local Close-Trip switches when in the TEST position.

QUESTION: 092 (1.00)

The Maximum Safe Operating Value for secondary containment radiation levels as listed in Table 10 of the EOP's is 1000 mr/hr. This limit is based upon which one of the following?

a. Not exceeding the one time emergency exposure limit of 25 REM during a 24 hr accident recovery period.

b. An arbitrary limit to allow reasonable corrective actions.

c. Not exceeding an individuals quarterly dose limit during emergency conditions assuming a one hour stay time.

d. ALARA estimates for accident mitigation.

QUESTION: 093 (1.00)

Which one of the following describes the automatic load shed actions of bus 1F/1G in response to a loss of both the Normal and Startup transformer when the Emergency transformer remains available?

a. All 4160V loads are shed.

b. All 4160V motors are shed.

c. All 4160V and 480V motors are shed except CRD pumps.

d. All 4160V motors, 480V motors, and MCC's.

QUESTION: 094 (1.00)

The following conditions exist:

The plant is at full power.
The Instrument Air supply is lost.
The outboard MSIV's start to drift from their open positions.
No automatic scrams have occurred.

Which one of the following outboard MSIV positions would require a manual reactor scram? ?

a. A intermediate, B closed.

b. B closed, C closed.

c. A closed, C intermediate.

d. A intermediate, D intermediate.

QUESTION: 095 (1.00)

The following conditions have occurred:

HPCI automatically initiated on low reactor water level.
Water level increased to +18 inches.
HPCI tripped on low suction pressure.

Select the MINIMUM conditions that must occur for the HPCI turbine to AUTOMATICALLY restart.

a. Pump suction pressure increases above the trip reset point.

b. Reactor vessel level falls below -37 inches.

c. Pump suction pressure increases above the trip point AND reactor vessel level falls below -37 inches.

d. Pump suction pressure increases above the trip point after the turbine has been manually reset.

QUESTION: 096 (1.00)

Which one of the following represents a whole body radiation exposure that the Emergency Director may authorize, (in accordance with station procedures), for emergency response personnel to accomplish RESCUE and RE-ENTRY activities?

a. 30 REM to prevent failed fuel from being released to the atmosphere.

b. 20 REM to remove an injured operator from the reactor water clean up (RWCU) pump room.

c. 40 REM to stop a LOCA.

d. 50 REM to find a coolant leak in the drywell while at power.

QUESTION: 097 (1.00)

Which one of the following constitutes the MINIMUM condition to be considered "Reactor Power Operation"?

a. Reactor critical

b. Power greater than 1%.

c. At least one bypass valve open.

d. Turbine on the grid.

QUESTION: 098 (1.00)

The following reactor conditions exist:

Reactor feed flow is 18%
Reactor steam flow is 20%
Reactor power is 22%

Which one of the following describes the status of the Rod Worth Minimizer?

a. The RWM is below the LPSP, alarms and rod blocks are enforced.

b. The RWM is above the LPSP, alarms and rod blocks are not enforced.

c. The RWM is in the transition zone, alarms are active but rod blocks are not enforced.

d. The RWM is in the transition zone, alarms and rod blocks are not enforced.

QUESTION: 099 (1.00)

Which one of the following may prevent Standby Liquid Control (SLC) Pump 1A from injecting Boron to the reactor vessel?

a. Squib Valve SLC 14A fired.

b. SLC "B" System Injection in progress.

c. SLC Pump 1A Accumulator charging hose connection open.

d. SLC Pump 1A suction from Test Tank open.

QUESTION: 100 (1.00)

Which one of the following describes why the Reactor Water Level must drop to -40 inches below Top of Active Fuel (TAF) before initiation of Emergency Depressurization when using Steam Cooling (with no injection)?

a. This level was selected to be consistent with the level that requires RPV depressurization.

b. Steam Cooling is effective in removing decay heat when RPV level has decreased into the core region until this level.

c. If Steam Cooling is initiated with level above TAF, the initial swell will not break up the boundary layer in the core region.

d. The need for additional time to line up an injection source takes precedence over optimum Steam Cooling.

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

ANSWER: 001 (1.00)

b.

REFERENCE:

CNS Procedure 0.9, Clearance Orders, sect 8.1.7 NOTE 1.

3.9/4.5

294001K102 ..(KA's)

ANSWER: 002 (1.00)

c.

REFERENCE:

EP 5.8 3A S?/T4
Tech/Spec 3.7.a.e

[3.8/3.6].

295013G010 ..(KA's)

ANSWER: 003 (1.00)

c.

REFERENCE:

INT008 06-13 sect II.C pg 4

[3.1/4.2].

295028G003 ..(KA's)

ANSWER: 004 (1.00)

b.

REFERENCE:

COR002-18, Pp. 38, 39
LO #6

[3.8/3.7]

217000A202 ..(KA's)

ANSWER: 005 (1.00)

c.

REFERENCE:

COR002-31, P. 31, 32
L.O. #7.

[2.5/2 8]

215001K101 ..(KA's)

ANSWER: 006 (1.00)

c.

REFERENCE:

EP 5.2.5.1 page 6
COR002-15 Table 4
LO #3.

[4.2/4.3]

295003A202 ..(KA's)

ANSWER: 007 (1.00)

b.

REFERENCE:

Facility exam bank, COR002-11 Question #27, LO-7
COR002-11, pg 10 sect 3,b

[3.7/3.7]

206000K105 ..(KA's)

ANSWER: 008 (1.00)

d.

REFERENCE:

COR002-06, Core Spray, Page 12, sect 4.c
LO #7

[3.3/3.6]

209001A205 ..(KA's)

ANSWER: 009 (1.00)

c.

REFERENCE:

COR002-26, RWM, Pages 6 and 7
LO #3

[3.3/3.7]

201006K501 ..(KA's)

ANSWER: 010 (1.00)

a.

REFERENCE:

CNS procedure 0.9 Clearance Orders sect 8.1.8, 8.2 NOTE, 8.2.2.1

[3.9/4.5]

294001K102 ..(KA's)

ANSWER: 011 (1.00)

c.

REFERENCE:

10 CFR 55.53(e).

[2.7/3.7]

294001A103 ..(KA's)

ANSWER: 012 (1.00)

d.

REFERENCE:

CNS Operations Manual 1.10, Rev. 5, p. 7

[2.9/3.4]

294001A101 ..(KA's)

ANSWER: 013 (1.00)

b.

REFERENCE:

COR002-04 sect II.C.3, pg 24&25
LO #10e and 10i

[3.5/3.4]

201001A105 ..(KA's)

ANSWER: 014 (1.00)

b.

REFERENCE:

COR002-15 NBI sect IV.C.7.c, IV.C.9.b, IV.C.11.a, pg 30&32
LO # 7a through 7g

[3.6/3.8]

216000K507 ..(KA's)

ANSWER: 015 (1.00)

a.

REFERENCE:

COR002-21 RPS Table 2, Reactor Scrams
LO #5

[3.9/3.9]

212000A404 ..(KA's)

ANSWER: 016 (1.00)

b.

REFERENCE:

EP-6A Reactor Power (Failure-To-Scram), FS/Q-12

[4.0/4.2]

211000G001 ..(KA's)

ANSWER: 017 (1.00)

b.

REFERENCE:

COR002-16 NPR system, sect II.d.3.b, pg15
LO #3,4,5,6,

[3.8/4.0]

218000K403 ..(KA's)

ANSWER: 018 (1.00)

c.

REFERENCE:

COR001-21 Refueling Figure 39
Lo #6

[3.1/3.7]

234000A302 ..(KA's)

ANSWER: 019 (1.00)

c.

REFERENCE:

EOP 5.8.13, pg 2, sect 2.1
INT008-06-10, Flowchart 7A pg 12 sect 8, FS/L-13
LO #7,8

[4.0/4.2]

295037K106 ..(KA's)

ANSWER: 020 (1.00)

b.

REFERENCE:

AP 2.4.2.4.1 pg 2 sect 4.4.
LO #3e

[3.6/3.8]

295021K305 ..(KA's)

ANSWER: 021 (1.00)

b.

REFERENCE:

EP 5.8 att 1 #5A, Secondary Containment Control, SC 9.

[3.8/3.9]

295032K208 ..(KA's)

ANSWER: 022 (1.00)

b.

REFERENCE:

Refueling Floor Hi Rad, EP 5.3.5. sect 3.1.1.

[3.8/3.9]

295023G010 ..(KA's)

ANSWER: 023 (1.00)

b.

REFERENCE:

CNS HP 9.1.3 sect 8.8.2.4 and 8.8.3.2.

[3.3/3.8]

294001K103 ..(KA's)

ANSWER: 024 (1.00)

a.

REFERENCE:

COR002-14 MT&aux pg 28 sect B.1.c

[3.3/3.2]

245000A106 ..(KA's)

ANSWER: 025 (1.00)

a or c. (per facility post-exam comments)

REFERENCE:

Manning requirements CNS 2.0.3, sect 2.2.5, 8.3.1.6, 8.3.2.4. T/S 6.1.3.B, 6.1.3.C.

[3.3/4.2]

294001A109 ..(KA's)

ANSWER: 026 (1.00)

c.

REFERENCE:

CNS Surveillance Program 0.26 sect 8.2.3., 8.2.4.

[4.2/4.2]

294001A102 ..(KA's)

ANSWER: 027 (1.00)

d.

REFERENCE:

10CFR50.54(x)(y)
CNS Conduct of Operations 2.0.1. sect 8.3

[4.2/4.2]

294001A102 ..(KA's)

ANSWER: 028 (1.00)

b.

REFERENCE:

COR002-10 FUEL, SECT II.E. 1 through 5, pg 25
LO #8

[3.0/3.7]

234000K505 ..(KA's)

ANSWER: 029 (1.00)

a.

REFERENCE:

COR002-03 Containment Table 2
Learning Objective 5

[3.7/3.7]

223002A102 ..(KA's)

ANSWER: 030 (1.00)

d.

REFERENCE:

COR002-16 NPR system pg 9, sect II.B.4.b.
Learning Objective 9.d

[3.4/3.5]

239002K602 ..(KA's)

ANSWER: 031 (1.00)

c.

REFERENCE:

INT008-06-10, sect II.B.9 pgs13&14
LO #6

[4.1/4.5]

295037K303 ..(KA's)

ANSWER: 032 (1.00)

d.

REFERENCE:

Technical Specifications 3.7.A.1.e, 1.0.R (definitions)

[3.2/4.3]

295026G003 ..(KA's)

ANSWER: 033 (1.00)

b

REFERENCE:

COR002-09 pg 39 4.c
LO #8

[4.2/4.3]

241000K302 ..(KA's)

ANSWER: 034 (1.00)

b.

REFERENCE:

CNS procedure 0.9, Pg 7, sect 8.1.2

[3.7/3.7]

294001K101 ..(KA's)

ANSWER: 035 (1.00)

a

REFERENCE:

CNS procedure 0.32.2

[3.3/3.6]

294001K104 ..(KA's)

ANSWER: 036 (1.00)

d.

REFERENCE:

COR002-21 RPS pg 17 sect II.D.2
LO #5

[4.4/4.7]

295037G011 ..(KA's)

ANSWER: 037 (1.00)

d.

REFERENCE:

COR002-04 CRDH, pg27, II.D.2
LO #10

[3.5/3.6]

201001K203 ..(KA's)

ANSWER: 038 (1.00)

c.

REFERENCE:

COR 002-33 rev 6, II.B.2, II.B.3.

[2.7/2.7]

201001A303 ..(KA's)

ANSWER: 039 (1.00)

a.

REFERENCE:

CNS procedure 9.1.2.4. Access Control - Radiological, sect 2.2.8

[3.3/3.8]

294001K103 ..(KA's)

ANSWER: 040 (1.00)

b or d. (per facility post-exam comments)

REFERENCE:

COR002-21 RPS Fig 3 & Fig 10
LO for SO #5

[4.0/4.2]

295015A102 ..(KA's)

ANSWER: 041 (0.00)

none - question deleted per facility post-exam comments

REFERENCE:

Tech Specs table 3.1.1.
COR002-21, Table 2
LO #5

[3.7/4.5]

212000G011 ..(KA's)

ANSWER: 042 (1.00)

a.

REFERENCE:

Technical Specifications Table 3.1.1. step 7.

[3.8/4.5]

212000G005 ..(KA's)

ANSWER: 043 (1.00)

c.

REFERENCE:

SOP 2.2.8, CRD SYSTEM VI.F PG 11

[3.2/3.3]

201001G010 ..(KA's)

ANSWER: 044 (1.00)

d.

REFERENCE:

COR002-05 sect II A.1.c. pg 12
LO #6a

[3.6/3.7]

201003K404 ..(KA's)

ANSWER: 045 (1.00)

b.

REFERENCE:

Startup Procedure 2.1.1. sections 6.2.2, 8.2.4, Cautions #1&2.

[4.0/3.9]

295014G010 ..(KA's)

ANSWER: 046 (1.00)

d.

REFERENCE:

Tech Spec 1.1 Action pg 6, Definitions pg 5 U Safety Limits

[3.8/4.3]

295014G008 ..(KA's)

ANSWER: 047 (1.00)

c.

REFERENCE:

Startup Procedure 2.1.1. sect 8.1.15.1 (fully inserted)
Tech Spec 3.3.B.4. (2 channels > 3cps)
IOP 4.1.1. sect 4.1.1. pg 3 (Full in interlock)

[3.4/3.6]

215004A407 ..(KA's)

ANSWER: 048 (1.00)

c.

REFERENCE:

INT008 06-06 II.B.4.a pg 7
INT008 06-13 lo #9

[3.7/3.9]

295020K101 ..(KA's)

ANSWER: 049 (1.00)

a.

REFERENCE:

CNS Station Overtime 0.12 sect 8.1.5.

[2.7/3.7]

294001A103 ..(KA's)

ANSWER: 050 (1.00)

c.

REFERENCE:

Diesel Generator Operations 2.2.20.1 sect 8.2.8 Notes #1 & 2

[3.7/4.1]

264000A209 ..(KA's)

ANSWER: 051 (1.00)

a.

REFERENCE:

COR002-04 CRDH system
LO # 12e & 12f

[4.2/4.3]

295037K307 ..(KA's)

ANSWER: 052 (1.00)

d.

REFERENCE:

COR002-21 Fig #3 RPS Trip system
LO # 5

[3.7/3.8]

272000K304 ..(KA's)

ANSWER: 053 (1.00)

c.

REFERENCE:

TS, Section 6, sect 6.1.3.b
CNS procedure 2.0.3. sect 8.3.2, 8.3.3.

294001A112 [3.5/4.2].

294001A112 ..(KA's)

ANSWER: 054 (1.00)

a.

REFERENCE:

EP 5.2.1. sect 3.2.2 (specifically states leave in RUN)

[3.8/3.6]

295016G010 ..(KA's)

ANSWER: 055 (1.00)

c.

REFERENCE:

Abnormal procedure 2.4.2.3.3. sect 3.1
EP 5.8, 1A

[4.1/4.2]

295025K205 ..(KA's)

ANSWER: 056 (1.00)

a.

REFERENCE:

AP 2.4.1.6. sect 3.0

[3.9/4.2]

295001G011 ..(KA's)

ANSWER: 057 (1.00)

d.

REFERENCE:

Abnormal Procedure 2.4.9.1.1. step 3.1.2 & 3.1.3.
Alarm Procedure 2.3.2.5. B-1/C-2 pg 18 of 51

[3.8/3.6]

295005G010 ..(KA's)

ANSWER: 058 (1.00)

d.

REFERENCE:

CNS Emergency Plan Implementing Procedure 5.7.6 step 6.0

[2.9/4.7]

294001A116 ..(KA's)

ANSWER: 059 (1.00)

d.

REFERENCE:

CNS procedure 0.7, sect 8.3.2.4.

[3.4/3.8]

294001K115 ..(KA's)

ANSWER: 060 (1.00)

a.

REFERENCE:

COR002-14, Fig 5 MSIV Control Logic
LO #8e

[4.2/4.1]

239001A301 ..(KA's)

ANSWER: 061 (1.00)

d.

REFERENCE:

Abnormal Procedure 2.4.1.1.2. sect 4.0 Caution
Abnormal Procedure 2.4.1.1.1. sect 4.6.3. Caution

[3.7/3.8]

201003A202 ..(KA's)

ANSWER: 062 (1.00)

a.

REFERENCE:

NPP 10.13 Att 2 pg #9

[4.0/3.6]

201004G013 ..(KA's)

ANSWER: 063 (1.00)

c.

REFERENCE:

COR001-01, pg 41, sect IV.B.4 c.2
SOP 2.2.18, sect 4.4

[3.6/3.9]

262001K406 ..(KA's)

ANSWER: 064 (1.00)

b.

REFERENCE:

Tech/Specs table 3.1.1
COR002-21 RPS Table 2
LO # 5

[4.0/4.1]

212000A212 ..(KA's)

ANSWER: 065 (1.00)

b or d. (per facility post-exam comments)

REFERENCE:

SOP 2.2.18 sect 4.0
COR001-01 sect IV.F operational summary
Learning Objective #9

[3.4/3.5]

264000K506 ..(KA's)

ANSWER: 066 (1.00)

a or c. (per facility post-exam comments)

REFERENCE:

COR002-28 pg 6 sect I.A.1 through 3
SGT SOP 2.2.73 sect 2.2.1
LO # 1

[3.6/3.9]

261000K302 ..(KA's)

ANSWER: 067 (1.00)

c.

REFERENCE:

INT008-06-02 pg 12 sect II.H.1

[4.6/4.7]

295031K101 ..(KA's)

ANSWER: 068 (1.00)

d.

REFERENCE:

INT008-06-08 pg 7, FS/L-3
LO #5

[3.9/4.1]

295015K102 ..(KA's)

ANSWER: 069 (1.00)

d.

REFERENCE:

EP 5.2.8. Loss of instrument air, sect 3.2

[3.7/3.4]

295019G010 ..(KA's)

ANSWER: 070 (1.00)

c.

REFERENCE:

COR002-24 pg #6, sect I.A
LO #1

[3.3/3.4]

215002G004 ..(KA's)

ANSWER: 071 (1.00)

a.

REFERENCE:

Facility exam bank, COR002-16 Question #52, LO #3
COR002-16 sect II.D.3

[3.8/3.8]

218000K501 ..(KA's)

ANSWER: 072 (1.00)

c.

REFERENCE:

Facility exam bank COR001-01, Ques #88
COR001-01 table 6
LO #9b

[3.6/3.9]

262001K602 ..(KA's)

ANSWER: 073 (1.00)

a.

REFERENCE:

Facility exam bank COR001-15, ques # 55
COR002-22 sect II.E.1.
LO #4g

[3.2/3.3]

290002G007 ..(KA's)

ANSWER: 074 (1.00)

c.

REFERENCE:

Facility exam bank, COR002-22, Ques #152
COR002-22 sect II,E
LO #2

[3.5/3.7]

202001K601 ..(KA's)

ANSWER: 075 (1.00)

b.

REFERENCE:

General fire procedure 5.4.1. pg 3, sect 4.2.5
Tech Spec 3.15.c.1 pg 216c

[3.5/3.8]

294001K116 ..(KA's)

ANSWER: 076 (1.00)

b.

REFERENCE:

Facility exam bank, INT008-06-17, Ques #004
Objective 3
EOP flowchart 3A,

[3.8/4.1]

295036G011 ..(KA's)

ANSWER: 077 (1.00)

a.

REFERENCE:

Facility exam bank, INT032-01-07, Ques #10
LO #4
CNS 2.4.9.3.5. sect 2.2.2. Note pg 1

[3.5/3.6]

295002K203 ..(KA's)

ANSWER: 078 (1.00)

c.

REFERENCE:

GOP 2.1.7. pg 4 sect 8.1.4.

[4.3/4.4]

295006A202 ..(KA's)

ANSWER: 079 (1.00)

c.

REFERENCE:

Facility exam bank, COR002-07, questions 042&043
LO #7
COR002-07 sect IV.C

[3.1/3.5]

295004K303 ..(KA's)

ANSWER: 080 (1.00)

a.

REFERENCE:

AP 2.4.2.2.1. sect 4.3.
AP 2.4.2.2.2. sect 3.3.

[3.9/4.2]

295001G011 ..(KA's)

ANSWER: 081 (1.00)

d.

REFERENCE:

Facility exam bank, INT008-06-09, Ques # 009
LO # 9
INT008, pg 9, sect II.B.1

[3.7/4.0/4.0]

295031G007 ..(KA's)

ANSWER: 082 (1.00)

c.

REFERENCE:

Facility exam bank, INT032-01-07, Ques 102
LO #4
CNS AP 2.4.2.4.1, sect 6.2

[3.2/3.9]

295021G008 ..(KA's)

ANSWER: 083 (1.00)

d.

REFERENCE:

Facility exam bank, INT032-01-12, ques 019
LO #2
EP 5.2.3. sect 4.3

[3.1/3.3]

295018K303 ..(KA's)

ANSWER: 084 (1

a.

REFERENCE:

Facility exam bank, INT008-06=05, ques 001
LO #1
INT008-06-05, pg 5, sect II.A.1 through II.A.4

[4.1/4.3]

295007G011 ..(KA's)

ANSWER: 085 (1.00)

c.

REFERENCE:

Facility exam bank, INT032-01-12, ques 014
LO #5
COR002-07 pg 27, sect 3.

[3.3/3.6]

295004K106 ..(KA's)

ANSWER: 086 (1.00)

d.

REFERENCE:

Facility exam bank, INT008-06-11, ques 005
LO #5
INT008-06-11, pg 7&8, sect II.B.7a,b,c,

[4.6/4.8]

295031A204 ..(KA's)

ANSWER: 087 (1.00)

a.

REFERENCE:

INT-06-06 pg 19 sect 8

[3.4/3.6]

295037K104 ..(KA's)

ANSWER: 088 (1.00)

b.

REFERENCE:

INT008-06-18, pg 9, sect F.1
INT008-06-06 pg 18, sect C.8, FS/Q10 & 11
LO #12

[3.7/4.1]

295026K304 ..(KA's)

ANSWER: 089 (1.00)

b.

REFERENCE:

INT 008-06-02, pg 12, sect H.1.
LO #8

[4.2/4.2]

295009A201 ..(KA's)

ANSWER: 090 (1.00)

c.

REFERENCE:

INT008-06-15 pg 3. B.1, PC/H3
LO #2

[3.5/4.0]

295024K307 ..(KA's)

ANSWER: 091 (1.00)

b.

REFERENCE:

COR001-01, pg 22 & 23, sect C.3.
LO #5a

[3.8/4.1]

295004A102 ..(KA's)

ANSWER: 092 (1.00)

c.

REFERENCE:

INT008-06=17, pg 8, sect b
LO #7

[3.9/4.2]

295033K102 ..(KA's)

ANSWER: 093 (1.00)

b.

REFERENCE:

COR001-01, LO #9a

[3.1/3.4]

295003K102 ..(KA's)

ANSWER: 094 (1.00)

b.

REFERENCE:

COR002-21, pg 19, sect6 4.a. and LO #5
COR002-03, PCIS Isolations Table 2, GP 1 150% flow and LO #5

[3.9/4.1]

295020G011 ..(KA's)

ANSWER: 095 (1.00)

a.

REFERENCE:

Facility exam bank, COR002-11, ques 022, LO #6
COR002-11, IV.D.1, pg 39

[3.8/3.9]

206000K401 ..(KA's)

ANSWER: 096 (1.00)

b

REFERENCE:

EPIP 5.7.15, pg 2 sect 5.3, pg 9 Att 3,

[3.3/3.8]

294001K103 ..(KA's)

ANSWER: 097 (1.00)

b.

REFERENCE:

Tech Specs, 1.R, pg 5

[3.4/4.3]

212000G006 ..(KA's)

ANSWER: 098 (1.00)

a.

REFERENCE:

Facility exam bank, COR002-26, ques 024, LO #2b
COR002-26, pg 10, sect 5.

[3.1/3.2]

201006K104 ..(KA's)

ANSWER: 099 (1.00)

d.

REFERENCE:

COR002-2 SLC System Fig #1 flow paths
LO # 5

[4.2/4.2]

211000A408 ..(KA's)

ANSWER: 100 (1.00)

b.

REFERENCE:

INT008 06-09. pg 19, step RC/L16

[4.0/4.3]

295031K304 ..(KA's)

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

U. S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC EXAMINATION
REACTOR OPERATOR LICENSE
REGION 4

CANDIDATE'S NAME: _____

FACILITY: Cooper Station

REACTOR TYPE: BWR-GE4

DATE ADMINISTERED: 92/05/19

INSTRUCTIONS TO CANDIDATE:

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

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

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

_____
Candidate's Signature

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 examinatior 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.

COOPER NUCLEAR STATION
TABLE 3.1.1
REACTOR PROTECTION SYSTEM INSTRUMENTATION REQUIREMENTS

Reactor Protection System Trip Function	Applicability Conditions Mode Switch Position				Trip Level Setting	Minimum Number of Operable Channels Per Trip Systems (1)	Action Required When Equipment Operability is Not Assured (1)
	Shutdown	Startup	Refuel	Run			
Mode Switch in Shutdown	X(7)	X	X	X		1	A
Manual Scram	X(7)	X	X	X		1	A
IRM (17) High Flux	X(7)	X	X	(5)	≤ 120/125 of indicated scale	3	A
Inoperative		X	X	(5)		3	A
APRM (17) High Flux (Flow biased)				X ≤ (0.58W+62%-0.58ΔW) (14)(19) with a maximum of 120% of rated power		2	C
High Flux (fixed)				X	≤ 120% of Rated Power	2	A
High Flux	X(7)	X(9)	X(9)	(16)	≤ 15% Rated Power	2	A
Inoperative		X(9)	X(9)	X	(13)	2	A
Downscale	(12)	(12)	(12)	X(11)	≥ 2.5%	2	A
High Reactor Pressure NBI-PS-55 A,B,C, & D		X(9)	X(10)	X	≤ 1045 psig	2	A
High Drywell Pressure PC-PS-12 A,B,C, & D		X(9)(8)	X(8)	X	≤ 2 psig	2	A or D
Reactor Low Water Level NBI-LIS-101 A,B,C, & D		X	X	X	≥ + 4.5 in. indicated level	2	A or D
Scram Discharge Instrument Volume High Water Level CRD-LS-231 A & B CRD-LS-234 A & B CRD-LT-231 C & D CRD-LT-234 C & D		X	X(2)	X	≤ 92 inches	3 (18)	A

COOPER NUCLEAR STATION

TABLE 3.1.1 (Page 2)

REACTOR PROTECTION SYSTEM INSTRUMENTATION REQUIREMENTS

Reactor Protection System Trip Function	Applicability Conditions Mode Switch Position				Trip Level Setting	Minimum Number of Operable Channels Per Trip Systems (1)	Action Required When Equipment Operability is Not Assured (1)
	Shutdown	Startup	Refuel	Run			
Main Steam Line High Radiation RMP-RM-251, A,B,C, & D		X(9)		X	≤ 3 Times normal full power back ground	2	A or D
Main Steam Line Isolation Valve Closure MS-LMS-86 A,B,C, & D		X(6)(9)		X(6)	≤ 10% of valve closure	4	A or C
MS-LMS-80 A,B,C, & D						4	A or C
Turbine Control Valve Fast Closure TGF-63/OPC-1,2,3,4				X(4)	≥ 1000 psig turbine control fluid	2	A or B
Turbine Stop Valve Closure SVOS-1(1), SVOS-1(2) SVOS-2(1), SVOS-2(2)				X(4)	≤10% of valve Closure	2	A or B
Turbine First Stage Permissive MS-PS-14 A,B,C, & D		X(9)		X	≤ 30% first stage press.	2	A or B

NOTES FOR TABLE 3.1.1

1. There shall be two operable or tripped trip systems for each function. If the minimum number of operable instrument channels for a trip system cannot be met, the affected trip system shall be placed in the safe (tripped) condition, or the appropriate actions listed below shall be taken.

   A. Initiate insertion of operable rods and complete insertion of all operable rods within four hours.

   B. Reduce power to less than 30% of rated.

   C. Reduce power level to IRM range and place mode switch in the Startup position within 8 hours and depressurize to less than 1000 psig.

   D. Reduce turbine load and close main steam line isolation valves within 8 hours.

2. Permissible to bypass, with control rod block, for reactor protection system reset in refuel and shutdown positions of the reactor mode switch.

3. This note deleted.

4. Permissible to bypass when turbine first stage pressure is less than 30% of full load.

5. IRM's are bypassed when APRM's are onscale and the reactor mode switch is in the run position.

6. The design permits closure of any two lines without a full scram being initiated.

7. When the reactor is subcritical, fuel is in the vessel, and the reactor water temperature is less than 212°F, only the following trip functions need to be operable:

   a. Mode switch in shutdown.
   b. Manual scram.
   c. IRM high flux. 120/125 indicated scale.
   d. APRM (15%) high flux scram.

8. Not required to be operable when primary containment integrity is not required.

9. Not required while performing low power physics tests at atmospheric pressure during or after refueling at power levels not to exceed 5 MW(t).

10. Not required to be operable when the reactor pressure vessel head is not bolted to the vessel.

11. The APRM downscale trip function is only active when the Reactor Mode Selector Switch is in RUN. When in RUN, this function is automatically bypassed when the companion IRM instrumentation is operable and not upscale.

12. The APRM downscale trip is automatically bypassed when the Reactor Mode Selector Switch is not in RUN.

13. An APRM will be considered inoperable if there are less than 2 LPRM inputs per level or there is less than 11 operable LPRM detectors to an APRM.

14. W is the two-loop recirculation flow in percent of rated flow.

15. This note deleted.

16. The 15% APRM scram is bypassed when the Reactor Mode Selector Switch is in RUN.

17. The APRM and IRM instrument channels function in both the Reactor Protection System and Reactor Manual Control System (Control Rod Withdraw Block, Section 3.2.C.). A failure of one channel will affect both of these systems.

18. The minimum number operable associated with the Scram Discharge Instrument Volume are three instruments per Scram Discharge Instrument Volume and three level devices per RPS channel.

19. ΔW is the difference between two-loop and single-loop effective drive flow and is used for single recirculation loop operation. ΔW 0 for two recirculation loop operation.

QUESTION: 001 (1.00)

Partial clearance release under the clearance order tagging system is prohibited if it:

a. contains a locked closed valve.

b. is requested by someone not listed on the SIGN ON section.

c. contains an information tag.

d. is on safeguards related equipment.

QUESTION: 002 (1.00)

On increasing suppression temperature, at what temperature is a manual Scram required?

a. 95 deg F

b. 105 deg F

c. 110 deg F

d. 120 deg F

QUESTION: 003 (1.00)

Which one of the following Reactor Core Isolation Cooling (RCIC) turbine trips must be manually reset?

a. Loss of turbine oil pressure.

b. Mechanical overspeed.

c. Manual pushbutton on 9-4 panel.

d. Auto isolation signal

QUESTION: 004 (1.00)

Which one of the following actions occur AUTOMATICALLY after the control room ventilation system receives a high radiation signal?

a. The emergency supply fan starts, the intake valves shift and the pantry/toilet exhaust fan (1-EF-C-1B) trips.

b. The intake valves shift, the emergency fan supply starts and the control room exhaust fan (1-BF-C-1B) trips.

c. The emergency supply fan starts, the normal supply fans trip and the pantry/toilet exhaust fan (1-EF-C-1B) trips.

d. The intake valves reposition to isolate outside air and shift to recirculation mode using the normal supply fans.

QUESTION: 005 (1.00)

Which one of the following Control Room reactor vessel water level instruments are available to monitor RPV level during a loss of all site AC power (station blackout)?

a. Fuel Zone, narrow range and Wide Range.

b. Only Fuel Zone and Yarway type detectors.

c. Narrow Range indicators and associated recorder.

d. Only Wide Range and Fuel Zone indicators.

QUESTION: 006 (1.00)

Which one of the following set of conditions will cause the High Pressure Coolant Injection (HPCI) system to automatically switch suction from the primary source to the secondary source?

a. A high level in BOTH emergency condensate storage tanks or a low level in the suppression pool.

b. A low level in EITHER emergency condensate storage tank or a high level in the suppression pool.

c. A high level in EITHER emergency condensate storage tank or a low level in the suppression pool.

d. A low level in BOTH emergency condensate storage tanks or a high level in the suppression pool.

QUESTION: 007 (1.00)

While operating at 100% power, the Core Spray System Loop "B" line break detection indication is reading approximately -3.5 psid.

With all other plant parameters normal, what is the status of the Core Spray System?

a. A core spray line "B" break has occurred between the inboard injection valve and the testable check valve.

b. The standby liquid "outer" pipe has a leak, core spray flow will go directly to the area just below the core plate.

c. A core spray line "B" break may have occurred inside the vessel but outside the shroud. A leak detection alarm should have occurred.

d. A core spray line "B" break may have occurred inside the shroud but core spray "A" loop will provide full spray coverage.

QUESTION: 008 (1.00)

Why is the Rod Worth Minimizer NOT required to be operable when greater than 20% reactor power?

a. The requirement to have each control rod manipulation second checked by another person ensures the correct sequence is maintained.

b. At this power level, the worst possible single rod withdrawal error can not result in a fuel enthalpy greater than the 280 cal/gram limit.

c. Above this power level, the increased core voiding results in a decrease in control rod worth, reducing the reactivity added during a rod drop accident to an acceptable level.

d. Above this power level, the Rod Sequence Control System continues to provide enough control rod withdrawal limitations to keep fuel enthalpy less than 100 cal/gram.

QUESTION: 009 (1.00)

The Service Water Pump Room Halon Fire Protection System has actuated and is in the "PRE-DISCHARGE" mode.

Which one of the following actions will permanently abort the automatic discharge?

a. Turn the key on the abort switch.

b. Turn the key and then momentarily press the button on the abort switch.

c. Press and hold the button on the abort switch for greater than 20 seconds.

d. Press and hold the abort button then turn the key and release the button.

QUESTION: 010 (1.00)

Which one of the following describes the minimum watchstanding requirements in order to maintain an "Active" license per 10 CFR 55.53, "Conditions Of Licenses?"

a. Two 8 hour shifts or one 12 hour shift per calendar month.

b. One 8 hour shift or one 12 hour shift per calendar month.

c. Seven 8 hour shifts or five 12 hour shifts per calendar quarter.

d. Six 8 hour shifts or four 12 hour shifts per calendar quarter.

QUESTION: 011 (1.00)

As Reactor Operator at the Controls you are performing a complex procedure (under normal plant operating conditions) when you reach a step that contains several errors and conflicts with another procedure that is in progress.

SELECT the action you are REQUIRED to take.

a. Continue in the procedure until a convenient stopping point is reached where the problems can be resolved.

b. Have the Control Room Supervisor resolve the problems and perform the step as he directs to finish the procedure.

c. Perform no further steps, ensure a Temporary Change Notice (TPCN) is implemented before proceeding with the procedure.

d. Continue with the procedure and report the errors using a TPCN for incorporation into the next procedure revision.

QUESTION: 012 (1.00)

Which one of the following is the proper method of verifying that an INFORMATION ONLY copy of a procedure to fill and vent HPCI is the correct procedure revision, including all changes, to use it for the task?

a. Refer to a hard copy of the CNS Procedure Index.

b. Insure the procedure is the same as the one in the control room.

c. All copies are maintained current so verification is not required.

d. A controlled copy must be used for this task.

QUESTION: 013 (1.00)

Which one of the following describes the response of the Scram Discharge Volume valves following a half scram signal?

a. Pilot air valves do not change position. Vent and drain valves remain open.

b. One pilot air valve repositions. Vent and drain valves remain open.

c. Pilot air valves change position. One set of vent and drain valves close.

d. One pilot air valve repositions. Both vent and drain valves close.

QUESTION: 014 (1.00)

Which of the following conditions will result in indicated reactor vessel water level being LOWER than actual level?

a. A leak occurs in the reference leg.

b. A decrease in drywell temperature.

c. A rapid decrease in reactor pressure.

d. Reactor temperature above saturation temperature for the drywell.

QUESTION: 015 (1.00)

An ATWS has occurred and the following conditions exist:

Reactor power 25% on APRMs.
Reactor water level is 20 inches
Drywell pressure is 1.1 psig.
All scram valves are opened
The SDV vent and drain valves are shut.
Mode switch is in SHUTDOWN

Which one of the following describes resetting of the scram to allow draining of the Scram Discharge Volume?

a. The scram cannot be reset in this condition because the scram condition cannot be cleared.

b. The scram can be reset by placing the CRD Discharge Volume Bypass switches in "BYPASS".

c. The scram can be reset by placing the mode switch in RUN and placing the CRD Discharge Volume Bypass switches in "BYPASS".

d. The scram can be reset by placing the mode switch in STARTUP and placing the CRD Discharge Volume Bypass switches in "BYPASS".

QUESTION: 016 (1.00)

The EOP's direct the Standby Liquid Control system to be secured when:

a. Suppression pool temperature decreases below 110 F.

b. SLC tank level decreases to 0%.

c. SLC tank level decreases to 58%.

d. Reactor power decreases to less than 2.5%.

QUESTION: 017 (1.00)

The following plant conditions exist:

Automatic Depressurization System (ADS) is actuated
Reactor water level: -157 inches
All RHR pumps: running
Both Core Spray (CS) pumps: running
120 second timer: timed out
6 ADS SRVs: open
Reactor pressure: 150 psig and lowering

WHICH one of the following will cause the Automatic Depressurization System SRV's to close and remain closed without further operator action?

a. BOTH ADS Logic Timer Reset Buttons are depressed.

b. The ADS manual inhibit switches are placed in "INHIBIT".

c. Water level is raised above 12.5 inches.

d. All RHR and CS pumps are stopped for a period greater than 120 seconds and then restarted.

QUESTION: 018 (1.00)

Other than providing the automatic initiation signal for the Reactor Core Isolation Cooling (RCIC) system, which one of the following is an additional use of the -37 inch reactor water level signal to RCIC?

a. Disables two of the RCIC system automatic isolations (High RCIC compartment temperature and low steam supply pressure).

b. Disables the RCIC system low suction pressure trip.

c. Enables the logic for the automatic suction change from the Condensate Storage Tank to the Suppression Pool.

d. Enables the RCIC system manual isolation logic.

QUESTION: 019 (1.00)

Should it become necessary to lower reactor level during an ATWS condition, certain injection systems are specified for use (Table 13 of EP 5.8) to maintain that level.

Which one of the following provides the reason why only these systems are to be used?

a. These systems all provide the cleanest source of water to inject into the reactor.

b. At this point in the ATWS, reactor pressure precludes use of other systems.

c. Their point of injection ensures mixing of the cold injection water to reduce the potential reactivity transient.

d. They provide the operator with more precise level control to reduce the potential reactivity transient.

QUESTION: 020 (1.00)

Which one of the following is the MINIMUM reactor water level necessary to aid in removing decay heat by thermal convection flow (natural circulation) if ALL shutdown cooling is lost?

a. 37.0 inches

b. 48.0 inches

c. 58.5 inches

d. 92.0 inches

QUESTION: 021 (1.00)

Which one of the following describes the actions to be taken by persons on the refuel floor during core reload in response to a Local Continuous Air Monitor alarm?

a. Check dosimetry and those individuals with higher than expected readings must evacuate.

b. Immediately evacuate to elevation 976 of the reactor building and notify the control room.

c. Attempt to clear the alarm by performing local manipulations (such as lowering an item underwater).

d. Notify Health physics and IF a subsequent ARM high radiation alarm sounds then evacuate the refuel floor.

QUESTION: 022 (1.00)

Given the following conditions:

- Today's date is May 18, 1992.
- A fully trained, male radiation worker is 25 years old today.
- He has a current Cooper HP-4 (equiv. to NRC Form 4) on record.
- His previous lifetime whole body exposure is 26 Rem.

What is the MAXIMUM whole body radiation exposure for 1992 allowed by Cooper Nuclear Station Health Physics Procedures for this individual without invoking EPIP limits for emergency and accidental exposure?

a. 1250 mrem/quarter for the entire year.

b. 2500 mrem/quarter not to exceed 4000 mrem for the year.

c. 3000 mrem/quarter for 3 quarters in the year.

d. 3000 mrem/quarter not to exceed 5 rem total for the year.

QUESTION: 023 (1.00)

Which one of the following correctly describes the requirements on physical location of licensed personnel in the red zone area during cold shutdown or refueling conditions?

a. The operator "AT THE CONTROLS" may momentarily be absent from the red zone area in order to acknowledge nuisance annunciator alarms provided he remains within the Control Room area.

b. The operator "AT THE CONTROLS" may leave the red zone area provided that the Shift Supervisor is at his desk.

c. When there is fuel in the reactor, an operator "AT THE CONTROLS" shall be present in the red zone area at all times

d. At least two licensed reactor operators shall be present in the red zone area during startup, shutdown or periods involving significant control rod movement.

QUESTION: 024 (1.00)

During performance of a High Pressure Coolant Injection surveillance test, rated flow can not be achieved.

Which one of the following describes the correct action of the Licensed Operator performing the test?

a. Restore the system to standby status.

b. Immediately reperform the test to verify the results.

c. Continue with the test and document the results.

d. Place the flow controller in manual at maximum output signal.

QUESTION: 025 (1.00)

In order to protect the health and safety of the public, an action which departs from Technical Specifications and has no procedure guidance is required to be immediately performed by a licensed reactor operator.

Which one of the following describes the course of action this operator is authorized to take.

a. Immediately take whatever action is required without further direction.

b. Notify the Shift Supervisor then perform the required action.

c. Perform the required action then notify the Control Room Supervisor of his action.

d. Obtain approval from the Control Room Supervisor and then perform the action.

QUESTION: 026 (1.00)

Which one of the following rod motion sequences does NOT open the "settle" valve, (directional control valve 120)?

a. Notch IN.

b. Emergency IN.

c. Continuous IN.

d. Notch Override.

QUESTION: 027 (1.00)

Which one of the following describes a properly oriented fuel bundle?

a. Orientation tab on the bail handle points away from the control rod.

b. The channel spacer buttons face the control rod.

c. Serial number on the bail handle is readable from outside edge of bundle in towards control rod.

d. Channel fastener is located on the outside edge 180 degrees away from fuel cell center.

QUESTION: 028 (1.00)

Which one of the following describes the power supply configuration of the two solenoids for each Main Steam Isolation Valve?

a. One 120 volt AC from RPS A/B and one 125 volt DC for each MSIV.

b. One 120 volt AC from RPS A/B for inboard MSIV's.
One 125 volt DC for outboard MSIV's.

c. One 120 volt AC from RPS "A" and one 120 volt AC from RPS "B" for each MSIV.

d. 120 volt AC from RPS "B" to outboard MSIV's.
120 volt AC from RPS "A" to inboard MSIV's.

QUESTION: 029 (1.00)

The following plant conditions exist:

A LOCA is in progress
Drywell pressure is 2.2 psig
Reactor water level is -4[illegible].0 inches
Main steam line area temperature is 210 degrees F
Reactor pressure is 875 psig

Which one of the following sets of Containment Isolation System groups should have received automatic isolation signals?

a. Gp 1
Gp 2
Gp 6

b. Gp 1
Gp 2

c. Gp 2
Gp 6

d. Gp 2
Gp 3
Gp 7

QUESTION: 030 (1.00)

Which one of the following describes the response of the Safety Relief Valves (SRV's) to a loss of the nitrogen/instrument air supply?

a. All SRV's including ADS valves, are automatically supplied from the backup air accumulators and have enough air for only five actuations.

b. All SRV's including ADS valves, are automatically supplied from the backup air accumulators and have enough air for at least two hours.

c. The non-ADS valves will function only as safety valves. The ADS valves will be supplied from their backup air accumulator volumes sufficiently to operate five times.

d. The ADS valves will be supplied from air accumulators enough to operate five times. The non-ADS valves will be supplied by air accumulators for an additional nine operations.

QUESTION: 031 (1.00)

Identify the reason that reactor power goes down when reactor water level is deliberately lowered during a failure to scram (ATWS) event.

a. Lowering RPV level below the moisture separator removes the flow path through it thereby minimizing flow through the core.

b. Lowering RPV level reduces the pressure in the core by reducing the head of water above the core

c. Lowering RPV water level reduces the natural circulation driving head and core flow.

d. Lowering RPV level reduces power by increasing the subcooling of the water entering the core.

QUESTION: 032 (1.00)

Which one of the following is the expected plant response if the in-control DEH Pressure Controller A fails high and no operator action is taken with the plant at 100% power?

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

b. Control valves open and reactor pressure decreases until a Group 1 isolation occurs to stop the pressure decrease.

c. Control valves close slightly and bypass valves open slightly. Reactor pressure stabilizes slightly higher than before the transient.

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

QUESTION: 033 (1.00)

Which one of the following is the correct sequence for returning a pump to service before removing tag on the control switch?

a. Rack in the breaker, close the vent or drain valve, open the suction isolation valve, then open the discharge isolation valve.

b. Close the vent or drain valve, open the suction valve, open the discharge valve, rack in the breaker.

c. Rack in the breaker, open the suction isolation valve, then open the discharge isolation valve, close the vent or drain valve.

d. Close the vent or drain valve, open the discharge valve, open the suction valve, rack in the breaker.

QUESTION: 034 (1.00)

Which one of the following is the primary concern should a sustained loss of shutdown cooling occur when in a refueling outage condition?

a. Excessive airborne radiation on the refueling floor.

b. Excessive radiation levels inside primary containment.

Fuel clad degradation.

. Airborne release from the primary containment.

QUESTION: 035 (1.00)

The following plant conditions exist:

Reactor power is 100%
A severe storm is causing disturbances on the grid.

An electrical grid transient occurs. The following plant conditions are noted after the transient:

Reactor vessel level +20 inches and decreasing
Reactor vessel pressure 1060 psig and increasing
Drywell pressure 1.2 psig
Generator output 500 Mwe
Generator output breakers: 3310 tripped open, 3312 closed
Turbine bypass valves are fully open
No protective functions have occurred

Which one of the following actions is required?

a. Take manual control of the feedwater control system and raise reactor vessel water level to normal .

b. Adjust the DEH pressure regulator to reduce reactor pressure.

c. Trip the main turbine and enter AP 2.4.9.1.10, Turbine Trip.

d. Enter EOP 5.8, 1A, RPV Control

QUESTION: 036 (1.00)

Which one of the following is indication of an uncoupled control rod when fully withdrawing a control rod?

a. Rod notch position indicates 48 on the 4-rod display and the ROD OVERTRAVEL annunciator alarms.

b. Rod indication at Position 48 is lost and ROD OVERTRAVEL annunciator alarms.

c. Rod position indication is blank on panel 9-5 and rod FULL OUT lights become lighted.

d. Rod FULL OUT lights are lost and rod position indication remains at position 48.

QUESTION: 037 (1.00)

Which one of the following describes the operation/configuration of the two backup scram valves?

a. Normally energized, one valve will de-energize with each RPS channel to vent air header.

b. One powered from each RPS trip channel, either valve must energize to vent the scram air header.

c. Each requires both RPS channels tripped to energize, both valves must energize to vent the air header.

d. Both RPS channels must trip to energize, either valve, one valve must energize to vent the air header.

QUESTION: 038 (1.00)

Which one of the following will immediately initiate the Alternate Rod Insertion system AND trip the Reactor Recirculation pumps?

a. Arm and depress both Alternate Rod Insertion pushbuttons at the same time.

b. Reactor vessel water level less than -37 inches for 9 seconds.

c. Reactor vessel dome pressure greater than 1120 psig.

d. Reactor vessel water level less than -37 inches (no time delay).

QUESTION: 039 (1.00)

Which one of the following would constitute a "Radiation Area"?

a. An accessible area where a person could accumulate a whole body dose greater than 100 m/rem in 5 consecutive days.

b. An accessible area where a person could receive a whole body NEUTRON dose rate greater than 2.5 m/rem.

c. Any area designated as an Radiologically Controlled Area (RCA).

d. Any area designated as a Contaminated Area.

QUESTION: 040 (1.00)

A loss of RPS Bus "A" has occurred due to actuation of an Electrical Protection Assembly (EPA). Upon restoration of power to RPS Bus "A" only three (3) of the WHITE Scram solenoid indicating lights for RPS Bus "A" are reenergized. All "B" side Scram indicating lights are energized.

Which one of the following describes the appropriate action?

a. Assume 1/4 of the control rods should have scrammed, depress both reactor scram push buttons and enter GOP 2.1.5.

b. Assume 1/4 of the control rods have received a 1/2 scram, continue operations and investigate.

c. Momentarily insert then clear an "A" side half scram to pick up the relay and energize the light.

d. If no control rods have scrammed, assume the light bulb is burned out and replace it.

QUESTION: 041 (0.00)

Which one of the following Reactor Protection System automatic scrams is bypassed when the mode switch is taken from "RUN" to "STARTUP"?

a. Turbine Stop Valve - Closure
Turbine Control Valve Fast Closure

b. Main Steam Line Isolation Valve - Closure
APRM - Downscale with IRM - Upscale

c. IRM - Upscale
APRM - Upscale

d. Main Steam Line Isolation Valve - Closure
Main Steam Line Radiation - High

QUESTION: 042 (1.00)

Which one of the following describes why the charging water header to the Hydraulic Control Unit (HCU) should not exceed a MAXIMUM of 1510 psig?

a. ensure control rod insertion speeds are not excessive on a scram.

b. Minimize leakage and resultant damage to the scram valves.

c. prevent damage to the CRD mechanism during a scram due to a high differential pressures.

d. prevent damage to the accumulator during a scram due to a high differential pressures.

QUESTION: 043 (1.00)

Which one of the following describes the response if one recirculation flow transmitter is lost to an APRM while operating at full power?

a. rod block, "FLOW REFERENCE OFF NORMAL ALARM".

b. rod block, downscale trip.

c. upscale trip, "COMPAR" alarm

d. rod block, "COMPAR" alarm, "FLOW REFERENCE OFF NORMAL ALARM".

QUESTION: 044 (1.00)

During a scram from 100% power, which one of the following describes system response if the CRD Hydraulic Control Unit accumulator piston does NOT move?

NOTE: Assume the ACCUMULATOR is mechanically bound up.

a. The control rod will fully insert using charging water pressure.

b. The control rod will insert until reactor and CRD pressures equalize.

c. The control rod will insert until the flow control valve opens.

d. The control rod will fully insert using reactor pressure.

QUESTION: 045 (1.00)

Which one of the following is the required action for a sustained reactor period of 30 seconds during reactor startup?

a. Manually scram the reactor.

b. Insert control rods until period is greater than 50 seconds.

c. Stop control rod movement until period increases greater than 50 seconds.

d. Stop withdrawing control rods and contact Reactor Engineering.

QUESTION: 046 (1.00)

Which one of the following describes the minimum required initial conditions for Source Range Monitor (SRM) system in order to perform a reactor startup?

a. At least 2 SRM channels must be operable with detectors inserted far enough to provide a positive count rate of 3.0 CPS.

b. All SRM channels must be operable with count rate of 3.0 cps or greater when the detector is FULLY inserted.

c. At least 2 SRM channels must be operable with count rate of 3.0 cps or greater when the detector is FULLY inserted.

d. All SRM channels must be operable with at least 2 SRM channels equal to or greater than 3.0 cps.

QUESTION: 047 (1.00)

A Licensed Reactor Operator has worked the following schedule during a refueling outage:

- Monday Scheduled day Off.
- Tuesday -- 7 am to 7 pm
- Wednesday -- 7 am to 5 pm
- Thursday -- 7 am to 3 pm
- Friday -- 7 am to 3 pm
- Saturday -- 7 am to 3 pm
- Sunday -- 7 am to 9 pm

CHOOSE the work schedule for the following Monday that is the MAXIMUM allowed without additional authorization.

a. 7 am to 5 pm

b. 7 am to 3 pm

c. 5 am to 5 pm

d. 7 am to 7 pm

QUESTION: 048 (1.00)

What is the MAXIMUM emergency load allowed on the Emergency Diesel Generators in order to achieve safe shutdown conditions?

a. 3900 KW

b. 4160 KW

c. 4400 KW

d. 4750 KW

QUESTION: 049 (1.00)

Which one of the following methods will result in the largest overall differential pressure across the Control Rod Drive piston for inserting control rods?

a. Open individual scram test switches.

b. Maximize CRD cooling water differential pressure.

c. Drive control rods using maximum drive pressure.

d. Vent the scram air header.

QUESTION: 050 (1.00)

Which one of the following describes the correct opening sequence for the listed HCU valves to prevent damage to the CRD.

insert riser valve- 101
withdraw riser valve-102
scram discharge riser valve-112

a. 101 then 102 then 112

b. 112 then 102 then 101

c. 112 then 101 then 102

d. 112 OR 102 first then 101

QUESTION: 051 (1.00)

While at power, the MSL RAD Hi-Hi/INOP alarm annunciates for MSL A. Investigation shows that no actual Hi RAD condition exists and that MSL RAD MONITOR channel "A" is INOP.

What subsequent MSL RAD Hi-Hi channels MUST trip in order to result in a FULL Main Steam Line Hi-Hi RAD Trip of the protective system?

a. channel "B" and "C" or "D"

b. channel "C" and "B" or "D"

c. channel "D" and "B" or "C"

d. either channel "B" or "D"

QUESTION: 052 (1.00)

During a control room evacuation, with time permitting, which one of the following is NOT an immediate action per the emergency procedure for Shutdown from Outside the Control Room.

a. Place Reactor Mode Switch in REFUEL.

b. Verify all control rods are inserted.

c. Trip the main turbine generator.

d. Place RFPT turning gear control switches in AUTO.

QUESTION: 053 (1.00)

While at full power, one MSIV has gone closed for an unknown reason. The following post transient plant conditions are noted:

Pressure is 1010 psig and stable.
Level is 31 inches and trending to normal.
Reactor power spiked to 125% and is now 99%.
Generator output has dropped 30MWe.
One SRV lifted and has not reseated
No RPS actuations have occurred.

Which one of the following is the required action?

a. Attempt to shut the SRV by cycling the control switch and establish suppression pool cooling.

b. Establish suppression pool cooling and commence a normal reactor shutdown and cooldown to remain within the Heat Capacity Temperature Limit.

c. Scram, establish suppression pool cooling and depressurize the RPV maintaining cooldown rate below 100 deg F/hr.

d. Reduce reactor power to less than 75% then enter abnormal procedure for Relief Valve Stuck Open

QUESTION: 054 (1.00)

Which one of the following THERMAL HYDRAULIC INSTABILITY conditions requires an immediate reactor scram if power to flow operation is in the region of instability?

a. LPRM upscale-to-downscale oscillations.

b. APRM swings of 5% occurring each 2.3 seconds.

c. Increasing oscillations on APRM's with an increase in thermal power.

d. Operation above 80% rod line with less than 45% core flow.

QUESTION: 055 (1.00)

The main generator has just been synchronized to the grid and is carrying approximately 100 MWe. The "TG ROTOR HI VIBRATION" Alarm is received shortly thereafter. A quick check of the bearing and shaft vibration recorders shows vibration at 12 mils and trending up rapidly.

The correct action should be to :

a. immediately unload the turbine and consult the Alarm Procedure.

b. trip open the generator output breakers, 3310 & 3312.

c. initiate a reactor scram and trip the turbine.

d. immediately trip the turbine manually.

QUESTION: 056 (1.00)

Which one of the following represent the lower and upper bounds of percent HYDROGEN in air where the mixture is flammable or explosive?

a. 0 - 8%

b. 4 - 18%

c. 18 - 59%

d. 4 - 74%

QUESTION: 057 (1.00)

Which one of the following describes what happens to the MSIV's when ALL RPS AC electrical power is lost?

The MSIV's will:

a. Close because ALL pilot solenoids will deenergize to align the pneumatic supply to close the MSIV.

b. Remain open because the DC pilot solenoid continues to align the pneumatic supply to open the MSIV.

c. Remain open because the pilot solenoids are energized to close the MSIV's.

d. Close because either pilot solenoid becoming deenergized will vent the pneumatic supply.

QUESTION: 058 (1.00)

Which one of the following is NOT an expected indication of a single control rod scram?

a. Increased CRD cooling water flow.

b. HCU TROUBLE Annunciator.

c. Control Rod Drift Annunciator.

d. Blue SCRAM light on full core display.

QUESTION: 059 (1.00)

RWCU blowdown to the Main Condenser is in progress.

Which one of the following is the adverse consequence of opening RWCU MO-56, BLOWDOWN TO MAIN CNDSR VLV, and RWCU MO-57, DRAIN TO RW COLL TK VLV, simultaneously?

a. Formation of a void space would occur causing excessive water hammer.

b. Any vacuum in the condenser will be lost via radwaste.

c. Excessive blowdown flow could cause a Group 3 isolation due to pump cavitation.

d. Excessive blowdown flow could cause resin damage and a system isolation at 140 degrees F.

QUESTION: 060 (1.00)

Which one of the following actions is specifically PROHIBITED as part of the attempts to recouple or move a stuck control rod?

a. Driving the rod full in.

b. Driving the rod full out.

c. Increasing Drive pressure.

d. Manually scramming the rod.

QUESTION: 061 (1.00)

Under which one of the following conditions is continuous rod withdrawal allowable during a reactor startup, if NOT otherwise specified by Reactor Engineering?

a. All rods in the first two groups pulled up to the point where SRM count rate has increased to 10 times the initial count rate.

b. All rods up to the point where average SRM count rate has increased to 10 times the initial count rate.

c. Groups 1 and 2 and all rods after passing position 24 until the initial SRM count rate doubles three times.

d. Groups 1 and 2 and all other rods until any SRM reaches 10 times the initial count rate.

QUESTION: 062 (1.00)

Which one of the following condition(s) of the Reactor Building Vent Exhaust Radiation Monitoring System is the MINIMUM which must occur in order to start the Standby Gas Treatment System?

a. one Downscale trip

b. one Inop trip

c. one HI-HI trip

d. two HI-HI trips

QUESTION: 063 (1.00)

Which one of the following describes the response of the Diesel Generators (D/G) to a total loss of power to 4160V bus 1F?

a. D/G 1 and D/G 2 start, D/G 1 bus supply breaker will close after 10 second time delay.

b. D/G 1 start, supply breaker will close after a 10 second time delay relay times out.

c. D/G 1 start, supply breaker will close if bus 1F is still deenergized.

d. D/G 1 and D/G 2 start, D/G 1 bus supply breaker will close after 1 second time delay for load shed.

QUESTION: 064 (1.00)

Which one of the following pair of scrams is NOT always required during power operation?

a. Turbine control valve fast closure
Main steam isolation valve closure

b. Turbine stop valve closure
Turbine control valve fast closure

c. Main steam isolation valve closure
Turbine stop valve closure

d. Main steam line high radiation
APRM high Flux (120%)

QUESTION: 065 (1.00)

Diesel Generator #2 is supplying power to it's respective bus in parallel with the grid.

Which one of the following describes the system response if ALL off site power is lost coincident with an emergency start signal from decreasing reactor water level?

a. BKR 1GB and BKR EG2 will open, EG2 will close after the 5 second time delay for load shedding.

b. BKR 1GB will open, bus 1G will load shed, D/G #2 will pick up loads as they are sequenced back onto bus 1G.

c. D/G #2 will attempt to pick up bus 1B loads until BKR EG2 trips on overcurrent or BKR 1GB trips on reverse power.

d. BKR 1GB will open, D/G #2 will pick up bus 1G safety related loads as they are sequenced onto the bus.

QUESTION: 066 (1.00)

Which one of the following states an interlock associated with the Intermediate Range System?

a. Withdrawal of an IRM will cause a rod block if the mode switch is NOT in "RUN".

b. Insertion of an IRM will cause a rod block if the mode switch is in "RUN".

c. An IRM Downscale rod block is bypassed if the respective IRM is on range 1.

d. An IRM Upscale rod block prevents rod insertion or withdrawal until the IRM is retracted.

QUESTION: 067 (1.00)

Which one of the following is the reactor pressure safety limit for power operation that the pressure relief system is designed to limit under transient conditions?

a. 1375 psig at the reactor vessel bottom.

b. 1337 psig anywhere in the reactor recirculation system.

c. 1337 psig plus 10% allowance for a pressure transients.

d. 1250 psig as measured by the Rx vessel steam dome pressure indicator

QUESTION: 068 (1.00)

Which one of the following requires a manual scram during a "Loss of Instrument Air"?

a. The Scram Valve Pilot air low pressure alarm is received.

b. Service air pressure has reached 65 psig with all compressors operating.

c. The "Rod Drift" annunciator is in, control rod 40-17 has scrammed no other rods appear to have moved.

d. Control rod 10-23 has moved from position 48 to position 42, control rod 44-11 is moving in slowly.

QUESTION: 069 (1.00)

The following plant conditions exist:
Level has decreased to -155 inches
ADS timer is counting down
All RHR and CS pumps are running

Prior to any SRV's opening, level is increased to -140 inches.

Which one of the following describes automatic ADS system response?

a. Timer resets to zero when level increased above -145.5 inches, if level again goes below 145.5 inches, blowdown will occur in 120 seconds.

b. Timer sequence will stop and blowdown will only occur if level goes below 145.5 inches sufficiently to finish 120 second timer.

c. Timer will time out but blowdown will be inhibited until level again goes below 145.5 inches, then blowdown will then occur.

d. Timer will continue it's sequence and blowdown will occur at completion of 120 second timer countdown independent of level.

QUESTION: 070 (1.00)

Which one of the following is the FIRST load that will be repowered by critical bus following a loss of off-site power concurrent with a LOCA?

a. CS pump,

b. Standby REC pump,

c. SGT,

d. Standby SW pump,

QUESTION: 071 (1.00)

Which one of the following describes the purpose of the jet pumps as a reactor vessel internal component?

a. Maximize core flow while minimizing flow external to the reactor vessel.

b. Assure 2/3 core coverage capability following a main steam line break.

c. Provide for separation of the core region and downcomer annulus.

d. Increase power capability of the core by providing forced circulation

QUESTION: 072 (1.00)

Which one of the following conditions will automatically start the turbine lube oil emergency bearing oil pump?

a. Emergency bearing oil pump control switch in AUTO and loss of AC power.

b. Loss of AC power and bearing oil header pressure decreasing to 10-14 psig.

c. Bearing oil header pressure less than 10-14 psig and Turning Gear Oil Pump not running.

d. Emergency bearing oil pump control switch in AUTO and bearing oil pressure less than 9 psig.

QUESTION: 073 (1.00)

Which one of the following subsystems will initiate an automatic shutdown or isolation of the Off Gas system?

a. Main Steam Line radiation monitoring.

b. Refueling Floor Radiation monitoring.

c. Elevated Release Point radiation monitoring.

d. Standby Gas Treatment radiation monitoring.

QUESTION: 074 (1.00)

If an automatic fire extinguishing system is shutdown after extinguishing a fire, which one of the following describes the MINIMUM personnel manning requirements in the fire area?

a. Station a Fire Watch OR a Valve Attender for at least 30 minutes.

b. Station a Fire Watch AND a Valve Attender for at least 30 minutes.

c. Station a Fire Watch for at least 30 minutes and if the system is not restored in 24 hours then station a Valve Attender.

d. Station a Fire Watch or a Valve Attender until the system is restored to service or a backup system is established.

QUESTION: 075 (1.00)

The following plant conditions exist:

A loss of all AC power has occurred.
The diesel generators (DG) are supplying buses 1F and 1G.
All automatically started loads are running.
Service Water (SW) pumps 1C and 1D are running

If DG-1 is subsequently lost, which one of the following actions should be taken to prevent running out the SW pump supplied by DG-2?

a. Open SW-MO-117, NON-CRITICAL SERVICES HEADER.

b. Close SW-MO-117, NON-CRITICAL SERVICES HEADER.

c. Close SW-MO-37, LOOP CROSSTIE VLV.

d. Open SW-MO-37, LOOP CROSSTIE VLV.

QUESTION: 076 (1.00)

An offsite radioactivity release rate which requires emergency plan implementation at which of the levels below also satisfies an entry condition for the Radioactivity Release Control section of EOP Flowchart 5A, "Secondary Containment Control/ Radioactivity Release Control"?

NOTE: Choose the LOWEST level that is also an entry condition.

a. Notification of Unusual Event

b. Alert

c. Site Area Emergency

d. General Emergency

QUESTION: 077 (1.00)

Which set of conditions will BYPASS the Group I low vacuum isolation?

a. Condenser low vacuum logic test switches in BYPASS.
Turbine stop valves CLOSED.
Reactor mode switch in STARTUP.

b. Condenser low vacuum logic test switches in BYPASS.
Turbine control valve FAST CLOSURE actuation.
Turbine stop valves CLOSED.

c. Condenser low vacuum logic test switches in BYPASS.
Turbine control valve FAST CLOSURE actuation.
Reactor mode switch in STARTUP.

d. Turbine control valve FAST CLOSURE actuation.
Turbine stop valves CLOSED.
Reactor mode switch in SHUTDOWN

QUESTION: 078 (1.00)

For actions taken after a full reactor scram, which one of the following describes why the reactor mode switch is first placed in REFUEL and then later moved to SHUTDOWN rather than being placed directly in SHUTDOWN?

a. Permits SDV vent and drain valves to go closed.

b. Allows time for the automatic scram actions to occur before a backup scram is inserted.

c. Enables rapid determination of rod position.

d. The reactor mode switch design requires the switch to go through Refuel prior to reaching the SHUTDOWN position.

QUESTION: 079 (1.00)

Which one of the following states the operational consequences of losing both divisions of the 24V DC power system?

a. A reactor scram signal occurs if the mode switch is in RUN.

b. Loss of all SRM's and IRM's administratively prohibits a shutdown.

c. A group 6 isolation is initiated.

d. Reactor recirculation MG speed control will lock up.

QUESTION: 080 (1.00)

The following plant conditions exist:

A plant startup is in progress.
Reactor Recirculation (RR) pump "B" is tagged out.
Reactor power is presently 30%.

Without any operator action, RR pump "A" starts to increase speed thereby increasing power about 1% each 5 seconds. Attempts to reduce flow or initiate a SCOOP TUBE LOCKOUT are unsuccessful.

Which one of the following is the required action?

a. Enter GOP 2.1.5 and trip RR pump "A".

b. Trip RR pump "A" field breaker.

c. Enter GOP 2.1.5 "Emergency Shutdown from Power"

d. Take local manual control of RR pump "A".

QUESTION: 081 (1.00)

When operating within the guidelines of EOP Flowchart 2A, RPV level, the preferred level range is between +4.5 inches and 58.5 inches.

Which one of the following provides a justification for this level band?

a. Preserves use of the condenser as a heat sink.

b. Feedwater may be used to maintain level.

c. Core Standby Cooling Systems (CSCS) signals may be reset

d. Preserves the availability of steam driven equipment.

QUESTION: 082 (1.00)

While operating at power, both Service Water Discharge Header LOW pressure alarms and the SW Class I Isolation alarm are received. Attempts to restore pressure and flow are not successful and take LONGER THAN 1 MINUTE.

Which one of the following actions must be immediately performed?

a. Scram, stop the oil pumps for both recirculation MG sets.

b. Conduct GOP 2.1.5, open the bypass valves for both SW strainers.

c. Trip the Main Turbine, air purge the drywell, isolate RWCU.

d. Scram, isolate RWCU, shutdown both recirculation MG sets.

QUESTION: 083 (1.00)

Which one of the following describes the AUTOMATIC response of the Reactor Equipment Cooling (REC) pumps to a loss of normal AC power?

a. The REC pumps in standby will restart after a 20 second delay once bus 1F and 1G are reenergized from any source.

b. The REC pumps in standby will restart after a 20 second delay if reenergized by the diesel or the emergency transformer.

c. All REC pumps previously running will restart if reenergized by emergency power after a time delay.

d. The REC pumps selected to standby will restart after a time delay once reenergized by the startup transformer.

QUESTION: 084 (1.00)

Which one of the following conditions ALONE would require ENTRY into EOP Flowchart 1A "RPV control"?

a. Reactor has scrammed and one SRV is lifting due to pressure.

b. Drywell pressure is 1.88 psig.

c. Reactor has scrammed and two control rods did not insert.

d. RPV water level has dropped to 14.4 inches.

QUESTION: 085 (1.00)

If the MSIV's close due to High Radiation, why is the operator directed to NOT break vacuum and ensure the gland seal exhauster in service?

a. Ensures that the turbine seals will not become contaminated.

b. Excess contamination of the turbine building will be prevented.

c. Ensures that gland seal steam does not escape to the environment.

d. Prevents contamination of the auxiliary steam system.

QUESTION: 086 (1.00)

Which one of the following would be the adverse effect of energizing the 125V DC distribution panel A or B after it has been lost?

a. Restoration of DC control power may inadvertently close various 4160V and 480V breakers.

b. The undervoltage relays of 4160V breakers may lock out the trip coil preventing UV protection.

c. Various 4160V and 480V breakers could inadvertently trip.

d. The diesel generator breakers will be locked out until reset.

QUESTION: 087 (1.00)

What is the MINIMUM RPV water level at which the core is adequately cooled with NO injection using Steam Cooling?

a. Top of Active Fuel (TAF)

b. -40 inches

c. -145.5 inches

d. 358 inches above Vessel Zero

QUESTION: 088 (1.00)

Which one of the following describes operation of 4160V breakers if the control power is lost?

a. The breaker can only be operated using the local Close-Trip switches, remote breaker operations are not possible.

b. No remote operation of that breaker can occur, it can be tripped locally once with no further operation possible.

c. It will not operate remotely, but can be locally tripped then closed one time and tripped open gain.

d. It can only be tripped using the local Close-Trip switches when in the TEST position.

QUESTION: 089 (1.00)

The Maximum Safe Operating Value for secondary containment radiation levels as listed in Table 10 of the EOP's is 1000 mr/hr. This limit is based upon which one of the following?

a. Not exceeding the one time emergency exposure limit of 25 REM during a 24 hr accident recovery period.

b. An arbitrary limit to allow reasonable corrective actions.

c. Not exceeding an individuals quarterly dose limit during emergency conditions assuming a one hour stay time.

d. ALARA estimates for accident mitigation.

QUESTION: 090 (1.00)

Which one of the following effects may be seen on panel 9-5 level instruments due to a small leak in the drywell (not from an instrument line) that does not result in reactor depressurization?

a. Indicated level may read lower than actual level.

b. Actual level may decrease to below the lower instrument tap with indicated level still on scale.

c. Reference leg flashing may occur causing erratic level indication.

d. Indicated level will be correct unless drywell temperature approaches 280 deg F.

QUESTION: 091 (1.00)

Which one of the following describes the automatic load shed actions of bus 1F/1G in response to a loss of both the Normal and Startup transformer when the Emergency transformer remains available?

a. All 4160V loads are shed.

b. All 4160V motors are shed.

c. All 4160V and 480V motors are shed except CRD pumps.

d. All 4160V motors, 480V motors, and MCC's.

QUESTION: 092 (1.00)

The following conditions exist:

The plant is at full power.
The Instrument Air supply is lost.
The outboard MSIV's start to drift from their open positions.
No automatic scrams have occurred.

Which one of the following outboard MSIV positions would require a manual reactor scram? ?

a. A intermediate, B closed.

b. B closed, C closed.

c. A closed, C intermediate.

d. A intermediate, C intermediate.

QUESTION: 093 (1.00)

Which one of the following set of conditions will indicate plant operation in the Instability Region?

a. 70% rod line with 40% core flow

b. 80% rod line with 50% core flow

c. 90% rod line with 40% core flow

d. 100% rod line with 50% core flow

QUESTION: 094 (1.00)

The following conditions have occurred:

HPCI automatically initiated on low reactor water level.
Water level increased to +18 inches.
HPCI tripped on low suction pressure.

Select the MINIMUM conditions that must occur for the HPCI turbine to AUTOMATICALLY restart.

a. Pump suction pressure increases above the trip reset point.

b. Reactor vessel level falls below -37 inches.

c. Pump suction pressure increases above the trip point AND reactor vessel level falls below -37 inches.

d. Pump suction pressure increases above the trip point after the turbine has been manually reset.

QUESTION: 095 (1.00)

Select the required sequence for properly opening the MSIV's after a Group 1 isolation with the reactor at rated pressure?

a. Reset the isolation signal, open the outboard MSIV's, open the inboard MSIV's.

b. Place MSIV control switches to CLOSE, open the outboard MSIV's, equalize across the inboard MSIV's, open the inboard MSIV'S.

c. Place MSIV control switches to CLOSE, reset the isolation signal, equalize across the MSIV's, open the outboard MSIV's, open the inboard MSIV's.

d. Place MSIV control switches to CLOSE, reset the isolation signal, open the outboard MSIV's, equalize across the MSIV's, open the inboard MSIV's.

QUESTION: 096 (1.00)

Which one of the following is an automatic action that will occur when a High-High radiation level is sensed in the Reactor Building Ventilation exhaust plenum?

a. Dilution air is admitted to the Reactor Building ventilation exhaust air flow.

b. Primary containment vent and purge valves open.

c. Reactor Equipment Cooling system critical loop isolation valves close.

d. Reactor Recirculation MG ventilation system isolates.

QUESTION: 097 (1.00)

Which one of the following is the speed demand signal that is generated by the dual limiter when a reactor recirculation pump is initially started?

a. 22%

b. 36%

c. 40%

d. 45%

QUESTION: 098 (1.00)

Which one of the following constitutes the MINIMUM condition to be considered "Reactor Power Operation"?

a. Reactor critical

b. Power greater than 1%.

c. At least one bypass valve open.

d. Turbine or the grid.

QUESTION: 099 (1.00)

During a Loss of All Site AC Power, the operator is cautioned against tripping certain breakers if either the Startup or the Emergency Transformer is lost in order to prevent the anti-pumping circuit from being picked up.

Which one of the following identifies those breakers?

a. 1FA & 1GB

b. 1FE & 1GE

c. EG1 & EG2

d. 1FS & 1GS

QUESTION: 100 (1.00)

The following reactor conditions exist:

Reactor feed flow is 18%
Reactor steam flow is 20%
Reactor power is 22%

Which one of the following describes the status of the Rod Worth Minimizer?

a. The RWM is below the LPSP, alarms and rod blocks are enforced.

b. The RWM is above the LPSP, alarms and rod blocks are not enforced.

c. The RWM is in the transition zone, alarms are active but rod blocks are not enforced.

d. The RWM is in the transition zone, alarms and rod blocks are not enforced.

QUESTION: 101 (1.00)

Which one of the following may prevent Standby Liquid Control (SLC) Pump 1A from injecting Boron to the reactor vessel?

a. Squib Valve SLC 14A fired.

b. SLC "B" System Injection in progress.

c. SLC Pump 1A Accumulator charging hose connection open.

d. SLC Pump 1A suction from Test Tank open.

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

ANSWER: 001 (1.00)

b.

REFERENCE:

CNS Procedure 0.9, Clearance Orders, sect 8.1.7 NOTE 1.

3.9/4.5

294001K102 ..(KA's)

ANSWER: 002 (1.00)

c.

REFERENCE:

EP 5.8 3A SP/T4
Tech/Spec 3.7.a.e

[3.8/3.6].

295013G010 ..(KA's)

ANSWER: 003 (1.00)

b.

REFERENCE:

COR002-18, Pp. 38, 39
LO #6

[3.8/3.7]

217000A202 ..(KA's)

ANSWER: 004 (1.00)

a.

REFERENCE:

COR001-08, P. 40; L.O. #8.

[3.3./3.6]

288000K105 ..(KA's)

ANSWER: 005 (1.00)

c.

REFERENCE:

EP 5.2.5.1 page 6
COR002-15 Table 4
LO #3.

[4.2/4.3]

295003A202 ..(KA's)

ANSWER: 006 (1.00)

b.

REFERENCE:

Facility exam bank, COR002-11 Question #27, LO-7
COR002-11, pg 10 sect 3,b

[3.7/3.7]

206000K105 ..(KA's)

ANSWER: 007 (1.00)

d.

REFERENCE:

COR002-06, Core Spray, Page 12, sect 4.c
LO #7

[3.3/3.6]

209001A205 ..(KA's)

ANSWER: 008 (1.00)

c.

REFERENCE:

COR002-26, RWM, Pages 6 and 7
LO #3

[3.3/3.7]

201006K501 ..(KA's)

ANSWER: 009 (1.00)

d.

REFERENCE:

COR001-05, FP system, Pg 38 and 39
LO #12

[3.6/3.7]

286000K404 ..(KA's)

ANSWER: 010 (1.00)

c.

REFERENCE:

10 CFR 55.53(e).

[2.7/3.7]

294001A103 ..(KA's)

ANSWER: 011 (1.00)

c.

REFERENCE:

CNS Conduct of operations 2.0.1 sect 8.5.2.1.and 8.5.3
CNS TPCN procedure 0.4.2. sect 2.1

[4.2/4.2]

294001A102 ..(KA's)

ANSWER: 012 (1.00)

d.

REFERENCE:

CNS Operations Manual 1.10, Rev. 5, p. 7

[2.9/3.4]

294001A101 ..(KA's)

ANSWER: 013 (1.00)

b.

REFERENCE:

COR002-04 sect II.C.3, pg 24&25
LO #10e and 10i

[3.5/3.4]

201001A105 ..(KA's)

ANSWER: 014 (1.00)

b.

REFERENCE:

COR002-15 NBI sect IV.C.7.c, IV.C.9.b, IV.C.11.a, pg 30&32
LO # 7a through 7g

[3.6/3.8]

216000K507 ..(KA's)

ANSWER: 015 (1.00)

a.

REFERENCE:

COR002-21 RPS Table 2, Reactor Scrams
LO #5

[3.9/3.9]

212000A404 ..(KA's)

ANSWER: 016 (1.00)

b.

REFERENCE:

EP-6A Reactor Power (Failure-To-Scram), FS/Q-12

[4.0/4.2]

211000G001 ..(KA's)

ANSWER: 017 (1.00)

b.

REFERENCE:

COR002-16 NPR system, sect II.d.3.b, pg15
LO #3,4,5,6,

[3.8/4.0]

218000K403 ..(KA's)

ANSWER: 018 (1.00)

d.

REFERENCE:

COR002-18, RCIC, pg39, sect 3.b
LO #7

[4.0/4.1]

295031K204 ..(KA's)

ANSWER: 019 (1.00)

c.

REFERENCE:

EOP 5.8.13, pg 2, sect 2.1
INT008-06-10, Flowchart 7A pg 12 sect 8, FS/L-13
LO #7,8

[4.0/4.2]

295037K106 ..(KA's)

ANSWER: 020 (1.00)

b.

REFERENCE:

AP 2.4.2.4.1 pg 2 sect 4.4.
LO #3e

[3.6/3.8]

295021K305 ..(KA's)

ANSWER: 021 (1.00)

b.

REFERENCE:

Refueling Floor Hi Rad, EP 5.3.5. sect 3.1.1.

[3.8/3.9]

295023G010 ..(KA's)

ANSWER: 022 (1.00)

b.

REFERENCE:

CNS HP 9.1.3 sect 8.8.2.4 and 8.8.3.2.

[3.3/3.8]

294001K103 ..(KA's)

ANSWER: 023 (1.00)

a or c. (per facility post-exam comments)

REFERENCE:

Manning requirements CNS 2.0 3, sect 2.2.5, 8.3.1.6, 8.3.2.4.
T/S 6.1.3.B, 6.1.3.C.

[3.3/4.2]

294001A109 ..(KA's)

ANSWER: 024 (1.00)

c.

REFERENCE:

CNS Surveillance Program 0.26 sect 8.2.3., 8.2.4.

[4.2/4.2]

294001A102 ..(KA's)

ANSWER: 025 (1.00)

d.

REFERENCE:

10CFR50.54(x)(y)
CNS Conduct of Operations 2.0.1. sect 8.3

[4.2/4.2]

294001A102 ..(KA's)

ANSWER: 026 (1.00)

b.

REFERENCE:

COR002-20 RMCS pg 25, sect IV.F.2.
LO # 5a and 5b

[3.2/3.2]
201002[illegible]408 ..(KA's)

ANSWER: 027 (1.00)

b.

REFERENCE:

COR002-10 FUEL, SECT II.E. 1 through 5, pg 25
LO #8

[3.0/3.7]

234000K505 ..(KA's)

ANSWER: 028 (1.00)

a.

REFERENCE:

COR002-14, sect 5.I.1 through 5.I.3
LO #8

[3.2/3.3]

239001K201 ..(KA's)

ANSWER: 029 (1.00)

a.

REFERENCE:

COR002-03 Containment Table 2
Learning Objective 5

[3.7/3.7]

223002A102 ..(KA's)

ANSWER: 030 (1.00)

d.

REFERENCE:

COR002-16 NPR system pg 9, sect II.B.4.b.
Learning Objective 9.d

[3.4/3.5]

239002K602 ..(KA's)

ANSWER: 031 (1.00)

c.

REFERENCE:

INT008-06-10, sect II.B.9 pgs13&14
LO #6

[4.1/4.5]

295037K303 ..(KA's)

ANSWER: 032 (1.00)

b

REFERENCE:

COR002-09 pg 39 4.c
LO #8

[4.2/4.3]

241000K302 ..(KA's)

ANSWER: 033 (1.00)

b.

REFERENCE:

CNS procedure 0.9, Pg 7, sect 8.1.2

[3.7/3.7]

294001K101 ..(KA's)

ANSWER: 034 (1.00)

d.

REFERENCE:

AOP 2.4.2.4.1, sect 6.2

[2.9/3.2]

295021G007 ..(KA's)

ANSWER: 035 (1.00)

d.

REFERENCE:

COR002-21 RPS pg 17 sect II.D.2
LO #5

[4.4/4.7]

295037G011 ..(KA's)

ANSWER: 036 (1.00)

b.

REFERENCE:

IOP 4.3 pg 10, step 8.7.1.
AP 2.4.1.1.2. pg 1, step 4.3.2.
Alarm response 2.3.2.27., 9-5-1/B4

[3.8/3.9]

201003K402 ..(KA's)

ANSWER: 037 (1.00)

d.

REFERENCE:

COR002-04 CRDH, pg27, II.D.2
LO #10

[3.5/3.6]

201001K203 ..(KA's)

ANSWER: 038 (1.00)

c.

REFERENCE:

COR 002-33 rev 6, II.B.2, II.B.3.

[2.7/2.7]

201001A303 ..(KA's)

ANSWER: 039 (1.00)

a.

REFERENCE:

CNS procedure 9.1.2.4. Access Control - Radiological, sect 2.2.8

[3.3/3.8]

294001K103 ..(KA's)

ANSWER: 040 (1.00)

b or d. (per facility post-exam comments)

REFERENCE:

COR002-21 RPS Fig 3 & Fig 10
LO for SO #5

[4.0/4.2]

295015A102 ..(KA's)

ANSWER: 041 (0.00)

none - question deleted per facility post-exam comments

REFERENCE:

Tech Specs table 3.1.1.
COR002-21, Table 2
LO #5

[3.7/4.5]

212000G011 ..(KA's)

ANSWER: 042 (1.00)

c.

REFERENCE:

SOP 2.2.8, CRD SYSTEM VI.F PG 11

[3.2/3.3]

201001G010 ..(KA's)

ANSWER: 043 (1.00)

d.

REFERENCE:

COR002-01 pg 20 & 22
COR002-01 fig 2 APRM Schematic

[3.5/3.6]

215005A205 ..(KA's)

ANSWER: 044 (1.00)

d.

REFERENCE:

COR002-05 sect II A.1.c. pg 12
LO #6a

[3.6/3.7]

201003K404 ..(KA's)

ANSWER: 045 (1.00)

b.

REFERENCE:

Startup Procedure 2.1.1. sections 6.2.2, 8.2.4, Cautions #1&2.

[4.0/3.9]

295014G010 ..(KA's)

ANSWER: 046 (1.00)

c.

REFERENCE:

Startup Procedure 2.1.1. sect 8.1.15.1 (fully inserted)
Tech Spec 3.3.B.4. (2 channels > 3cps)
IOP 4.1.1. sect 4.1.1. pg 3 (Full in interlock)

[3.4/3.6]

215004A407 ..(KA's)

ANSWER: 047 (1.00)

a.

REFERENCE:

CNS Station Overtime 0.12 sect 8.1.5.

[2.7/3.7]

294001A103 ..(KA's)

ANSWER: 048 (1.00)

c.

REFERENCE:

Diesel Generator Operations 2.2.20.1 sect 8.2.8 Notes #1 & 2

[3.7/4.1]

264000A209 ..(KA's)

ANSWER: 049 (1.00)

a.

REFERENCE:

COR002-04 CRDH system
LO # 12e & 12f

[4.2/4.3]

295037K307 ..(KA's)

ANSWER: 050 (1.00)

b.

REFERENCE:

CRD operating procedure 2.2.8 sect VI.A Precautions
IEN 86-68 Stuck Control Rod
LO # 5a.b.c.

[3.6/3.3]

201001G013 ..(KA's)

ANSWER: 051 (1.00)

d.

REFERENCE:

COR002-21 Fig #3 RPS Trip system
LO # 5

[3.7/3.8]

272000K304 ..(KA's)

ANSWER: 052 (1.00)

a.

REFERENCE:

EP 5.2.1. sect 3.2.2 (specifically states leave in RUN)

[3.8/3.6]

295016G010 ..(KA's)

ANSWER: 053 (1.00)

c.

REFERENCE:

Abnormal procedure 2.4.2.3.3. sect 3.1
EP 5.8, 1A

[4.1/4.2]

295025K205 ..(KA's)

ANSWER: 054 (1.00)

a.

REFERENCE:

AP 2.4.1.6. sect 3.0

[3.9/4.2]

295001G011 ..(KA's)

ANSWER: 055 (1.00)

d.

REFERENCE:

Abnormal Procedure 2.4.9.1.1. step 3.1.2 & 3.1.3.
Alarm Procedure 2.3.2.5. B-1/C-2 pg 18 of 51

[3.8/3.6]

295005G010 ..(KA's)

ANSWER: 056 (1.00)

d.

REFERENCE:

CNS procedure 0.7, sect 8.3.2.4.

[3.4/3.8]

294001K115 ..(KA's)

ANSWER: 057 (1.00)

a.

REFERENCE:

COR002-14, Fig 5 MSIV Control Logic
LO #8e

[4.2/4.1]

239001A301 ..(KA's)

ANSWER: 058 (1.00)

a or b. (per facility post-exam comments)

REFERENCE:

COR002-20 pg # 9 II.A.1.a.2 through 4.
LO #4

[3.5/3.3]

214000G008 ..(KA's)

ANSWER: 059 (1.00)

b.

REFERENCE:

RWCU Procedure 2.2.26 sect 5.10.1
COR001-20 LO #8

[3.2/3.2]

204000G010 ..(KA's)

ANSWER: 060 (1.00)

d.

REFERENCE:

Abnormal Procedure 2.4.1.1.2. sect 4.0 Caution
Abnormal Procedure 2.4.1.1.1. sect 4.6.3. Caution

[3.7/3.8]

201003A202 ..(KA's)

ANSWER: 061 (1.00)

a.

REFERENCE:

NPP 10.13 Att 2 pg #9

[4.0/3.6]

201004G013 ..(KA's)

ANSWER: 062 (1.00)

c.

REFERENCE:

COR001-18 pg 70 item # 6 (ref conflicts and assumed wrong)
COR001-18 pg 44 item 6.c.1 (assumed correct ref)

[3.7/4.1].

272000K402 ..(KA's)

ANSWER: 063 (1.00)

c.

REFERENCE:

COR001-01, pg 41, sect IV.B.4 c.2
SOP 2.2.18, sect 4.4

[3.6/3.9]

262001K406 ..(KA's)

ANSWER: 064 (1.00)

b.

REFERENCE:

Tech/Specs table 3.1.1
COR002-21 RPS Table 2
LO # 5

[4.0/4.1]

212000A212 ..(KA's)

ANSWER: 065 (1.00)

b or d. (per facility post-exam comments)

REFERENCE:

SOP 2.2.18 sect 4.0
COR001-01 sect IV.F operational summary
Learning Objective #9

[3.4/3.5]

264000K506 ..(KA's)

ANSWER: 066 (1.00)

c.

REFERENCE:

COR002-12 IRM system pg 22, Interlocks and trips
LO # 5

[3.7/3.7]

215003K401 ..(KA's)

ANSWER: 067 (1.00)

a.

REFERENCE:

Tech Specs 1.2.1, Safety Limit Bases 1.2 pg 24
LO #1

[3.9/4.0]

239002G007 ..(KA's)

ANSWER: 068 (1.00)

d.

REFERENCE:

EP 5.2.8. Loss of instrument air, sect 3.2

[3.7/3.4]

295019G010 ..(KA's)

ANSWER: 069 (1.00)

a.

REFERENCE:

Facility exam bank, COR002-16 Question #52, LO #3
COR002-16 sect II.D.3

[3.8/3.8]

218000K501 ..(KA's)

ANSWER: 070 (1.00)

c.

REFERENCE:

Facility exam bank COR001-01, Ques #88
COR001-01 table 6
LO #9b

[3.6/3.9]

262001K602 ..(KA's)

ANSWER: 071 (1.00)

a.

REFERENCE:

Facility exam bank COR001-15, ques # 55
COR002-22 sect II.E.1.
LO #4g

[3.2/3.3]

290002G007 ..(KA's)

ANSWER: 072 (1.00)

d.

REFERENCE:

Facility exam bank, COR001-14, Ques #82
COR001-14 sect II.N
LO #7

[2.8/2.9]

245000K610 ..(KA's)

ANSWER: 073 (1.00)

a.

REFERENCE:

Facility exam bank, COR001-16, Ques #78
COR001-16 V.B.1
LO #9b

[3.1/3.3]

271000K102 ..(KA's)

ANSWER: 074 (1.00)

b.

REFERENCE:

General fire procedure 5.4.1. pg 3, sect 4.2.5.
Tech Spec 3.15.C.1 pg 216c

[3.5/3.8]

294001K116 ..(KA's)

ANSWER: 075 (1.00)

c.

REFERENCE:

COR002-27, SW system, pg 36, sect 4.a & 4.b
LO # 6.c &6.d

[4.4/4.4]

295003A103 ..(KA's)

ANSWER: 076 (1.00)

b.

REFERENCE:

Facility exam bank, INT008-06-17, Ques #004
Objective 3
EOP flowchart 3A,

[3.8/4.1]

295036G011 . ''s)

ANSWER: 077 (1.00)

a.

REFERENCE:

Facility exam bank, INT032-01-07, Ques #104
LO #4
CNS 2.4.9.3.5. sect 2.2.2. Note pg 1

[3.5/3.6]

295002K203 ..(KA's)

ANSWER: 078 (1.00)

c.

REFERENCE:

GOP 2.1.7. pg 4 sect 8.1.4.

[4.3/4.4]

295006A202 ..(KA's)

ANSWER: 079 (1.00)

c.

REFERENCE:

Facility exam bank, COR002-07, questions 042&043
LO #7
COR002-07 sect IV.C

[3.1/3.5]

295004K303 ..(KA's)

ANSWER: 080 (1.00)

B.

REFERENCE:

AP 2.4.2.2.1. sect 4.3.
AP 2.4.2.2.2. sect 3.3.

[3.9/4.2]

295001G011 ..(KA's)

ANSWER: 081 (1.00)

d.

REFERENCE:

Facility exam bank, INT008-06-09, Ques # 009
LO # 9
INT008, pg 9, sect II.B.4

[3.7/4.0/4.0]

295031G007 ..(KA's)

ANSWER: 082 (1.00)

d.

REFERENCE:

Facility exam bank, INT032-01-12, ques 019
LO #2
EP 5.2.3. sect 4.3

[3.1/3.3]

295018K303 ..(KA's)

ANSWER: 083 (1.00)

b.

REFERENCE:

COR002-19, PG 30, sect d
EPIP 5.2.4, sect 2.1
LO #7

[3.3/3.3]

295018K304 ..(KA's)

ANSWER: 084 (1.00)

a.

REFERENCE:

Facility exam bank, INT008-06=05, ques 001
LO #1
INT008-06-05, pg 5, sect II.A.1 through II.A.4

[4.1/4.3]

295007G011 ..(KA's)

ANSWER: 085 (1.00)

b.

REFERENCE:

Facility exam bank, INT032-01-12, ques 021
LO #4
EP 5.3.1, pg 4, sect V.B.

[3.2/3.4]

295038K210 ..(KA's)

ANSWER: 086 (1.00)

c.

REFERENCE:

Facility exam bank, INT032-01-12, ques 014
LO #5
COR002-07 pg 27, sect 3.

[3.3/3.6]

295004K106 ..(KA's)

ANSWER: 087 (1.00)

b.

REFERENCE:

INT 008-06-02, pg 12, sect H.1.
LO #8

[4.2/4.2]

295009A201 ..(KA's)

ANSWER: 088 (1.00)

b.

REFERENCE:

COR001-01, pg 22 & 23, sect C.3.
LO #5a

[3.8/4.1]

295004A102 ..(KA's)

ANSWER: 089 (1.00)

c.

REFERENCE:

INT008-06=17, pg 8, sect 8
LO #7

[3.9/4.2]

295033K102 ..(KA's)

ANSWER: 090 (1.00)

b

REFERENCE:

Facility exam bank, INT032-01-07, ques 013, LO #3&5
COR002-15, pg 32, sect 11.
LO #7d

[3.7/3.9]

295028A203 ..(KA's)

ANSWER: 091 (1.00)

b.

REFERENCE:

COR001-01, LO #9a

[3.1/3.4]

295003K102 ..(KA's)

ANSWER: 092 (1.00)

b.

REFERENCE:

COR002-21, pg 19, sect6 4.a. and LO #5
COR002-03, PCIS Isolations Table 2, GP 1 150% flow and LO #5

[3.9/4.1]

295020G011 ..(KA's)

ANSWER: 093 (1.00)

c.

REFERENCE:

Facility exam bank, TNT032-01-07, ques 084
LO # 2
2.4.1.6. sect 1.3

[3.3/3.5]

295001K102 ..(KA's)

ANSWER: 094 (1.00)

a.

REFERENCE:

Facility exam bank, COR002-11, ques 022, LO #6
COR002-11, IV.D.1, pg 39

[3.8/3.9]

206000K401 ..(KA's)

ANSWER: 095 (1.00)

d

REFERENCE:

Facility exam bank, COR002-14, ques 065, LO #11
COR002-14 sect IV.B.1

[4.2/4.0]

239001K401 ..(KA's)

ANSWER: 096 (1.00)

d.

REFERENCE:

Facility exam bank, COR001-18, LO #4, Ques 34,
COR001-18, pg 40, IX.B.1,a.

[3.3/3.6]

288000K105 ..(KA's)

ANSWER: 097 (1.00)

c.

REFERENCE:

Facility exam bank, COR002-22, Ques 087, LO #6
COR002-22, pg 29, II G.7

[3.0/3.0]

202002K402 ..(KA's)

ANSWER: 098 (1.00)

b.

REFERENCE:

Tech Specs, 1.P, pg 5

[3.4/4.3]

212000G006 ..(KA's)

ANSWER: 099 (1.00)

REFERENCE:

EP 5.2.5.1, pg 2, sect4.9. Caution

[3.0/3.4]

262001K401 ..(KA's)

ANSWER: 100 (1.00)

a.

REFERENCE:

Facility exam bank, COR002-26, ques 024, LO #2b
COR002-26, pg 10, sect 5.

[3.1/3.2]

201006K104 ..(KA's)

ANSWER: 101 (1.00)

d.

REFERENCE:

COR002-29 SLC System Fig #1 flow paths
LO # 5

[4.2/4.2]

211000A408 ..(KA's)

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

Nebraska Public Power District

COOPER NUCLEAR STATION
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NTM92190
May 21, 1992

U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive
Suite 1000
Arlington, TX 76011

Attention: Mr. John Pellet

Subject: Comments - NRC Examination Administered May 19 through May 21, 1992.

Dear Mr. Pellet:

Attached please find our comments on questions associated with the subject examination given on May 19, 1992. We believe that our comments should be considered in the grading of the written examinations.

Please contact us if you would like to pursue our comments further or if additional clarification is desired.

C. Michael Estes
Acting Senior Manager of Operations

JWD/djm

Attachments

pc: R.L. Gardner w/attachments
T.M. Meacham w/attachments
G.R. Horn w/attachments
D.A. Whitman w/attachments
R. Brungardt w/o attachments
J.W. Dutton w/attachments
TM File w/attachments

NRC OPERATING LICENSE EXAMINATION
COOPER NUCLEAR STATION
5/19/92-5/21/92

WRITTEN EXAMINATION COMMENTS

REACTOR OPERATOR EXAM QUESTION NUMBER 12
SENIOR REACTOR OPERATOR QUESTION NUMBER 12

QUESTION: Which one of the following is the proper method of verifying that an INFORMATION ONLY copy of a procedure to fill and vent the HPCI is the correct procedure revision, including all changes, to use it for the task?

a. Refer to a hard copy of the CNS Procedure Index

b. Insure the procedure is the same as the one on the control room.

c. All copies are maintained current so verification is not necessary.

d. A controlled copy must be used for this task.

ANSWER KEY ANSWER: b.

ANSWER KEY REFERENCE: CNS Operations Manual 1.10, Rev. 5, p. 7

CNS COMMENT: CNS Operations Manual Procedure 1.10, Rev. 5, Section V.A.6 (page 3) specifically states, "Use of INFORMATION ONLY copies for control of activities affecting Essential Systems is strictly prohibited." Since HPCI is an Essential System the correct answer to this question should be selection "d". (Reference attached)

CNS RECOMMENDATION: Change the answer key to reflect the correct answer, "d".

REACTOR OPERATOR EXAM QUESTION NUMBER 23
SENIOR REACTOR OPERATOR EXAM QUESTION NUMBER 25

QUESTION: Which one of the following correctly describes the requirements on physical location of licensed personnel in the red zone area during cold shutdown or refueling conditions?

a. The operator "AT THE CONTROLS" may momentarily be absent from the red zone area in order to acknowledge nuisance annunciator alarms provided he remains within the Control Room area.

b. The operator "AT THE CONTROLS" may leave the red zone area provided that the Shift Supervisor is at his desk.

c. When there is fuel in the reactor, an operator "AT THE CONTROLS" shall be present in the red zone at all times.

d. At least two licensed operators shall be present in the red zone area during startup, shutdown or periods involving significant control rod movement.ANSWER KEY ANSWER: c.

ANSWER KEY REFERENCE: Manning Requirements CNS 2.0.3, sect. 2.2.5, 8.3.1.6, 8.3.2.4. T/S 6.1.3.B, 6.1.3.C

CNS COMMENT: CNS Procedure 2.0.3, Rev. 12, Section 8.2.7.8 states, "...in the event of an emergency affecting safe plant operations, the Operator at the controls may momentarily be absent from his operating area to verify the receipt of an alarm or initiate corrective action provided the Operator

remains within the Control Room area." This statement contradicts the specified answer and thus the specified answer is incorrect. Answer "a" is not correct since it specifies a "nuisance" annunciator and not an emergency condition. Therefore, there is no correct answer. (Reference attached)

CNS RECOMMENDATION: Delete this question from the examination.

SENIOR REACTOR OPERATOR EXAM QUESTION 32

QUESTION: The reactor was scrammed due to suppression pool water temperature being greater than the Technical Specification Limit.

Which of the following describes the minimum condition required to resume power operations.

a. Suppression Pool Temperature is less than 105 degrees F and must be less than 95 degrees F within 24 hours.

b. Reactor startup may commence if Suppression Pool temperature is less than 105 F and readings show that temperature will be below 95 degrees before placing the mode switch in run.

c. Suppression Pool Temperature must be less than 95 degrees F prior to placing the Mode Switch in STARTUp

d. Suppression Pool temperature must be less than 95 degrees F prior to exceeding 1% power.

ANSWER KEY ANSWER: c.

ANSWER KEY REFERENCE: Technical Specifications 3.7.A.1.c 1.0.R (definitions)

CNS COMMENTS: This question asks what is the minimum condition prior to resuming power operation. Power operation is defined in Technical Specification as 1.0.R as "Reactor Power operation is any operation with the mode switch in the 'Startup/Hot Standby' or 'Run' position with the reactor critical and above 1% rated power." Technical Specification 3.7.A.1.c states, "Maximum suppression pool temperature during normal power operation - 95°F " Since the mode switch can, by the definition, be placed in the STARTUP position without being in power operation (if power is less than 1%), answer "d" is the most correct answer.

CNS RECOMMENDATION: Change the answer key to reflect the correct answer, "d".

REACTOR OPERATOR EXAM QUESTION NUMBER 40
SENIOR REACTOR OPERATOR EXAM QUESTION NUMBER 40

QUESTION: A loss of RPS Bus "A" has occurred due to the actuation of an Electrical Protection Assembly (EPA). Upon restoration of power to RPS Bus "A" only three (3) of the WHITE Scram solenoid indicating lights for RPS Bus "A" are reenergized. All "B" side Scram indicating lights are energized.

Which one of the following describes the appropriate action.

a. Assume 1/4 of the control rods should have scrammed, depress both reactor scram push buttons and enter GOP 2.1.5.

b. Assume 1/4 of the control rods have received a 1/2 scram, continue operations and investigate.

c. Momentarily insert then clear an "A" side half scram to pick up the relay and energize the light.

d. If no control rods have scrammed, assume the light bulb is burned out and replace it.

ANSWER KEY ANSWER: b.

ANSWER KEY REFERENCE: COR002-21 RPS Fig 3 & Fig 10
LO for SO #5

CNS COMMENT: There are two problems with this question. In the question root, no mention is made of resetting the half-scram signal. Therefore, strictly speaking, there would be no white scram solenoid indicating lights energized on side A.

If one assumes that the half-scram has been reset and then the indications spoken of are received, no procedural guidance exists as to the action to be taken. Since, no rods should scram under the conditions indicated, common sense would dictate to check the bulb since this, in any operator's experience, is the most likely cause of the problem. In actuality this would be the first step an operator would take to "investigate". This common sense approach to investigation would make selection d equally as valid as selection b. It should be noted that assuming the bulb is burned out and immediately replacing it is not unconservative in this case since there are no actions prescribed by procedures, the safety of the plant is not jeopardized and checking the bulb would probably be the first troubleshooting action anyway.

Additionally, selection "c" could also be considered correct. Although this action is also not procedurally prescribed, it is action that could be developed and approved in the course of further investigation.

There can be no references furnished to support these contentions just as there are no references to support the indicated correct answer. The references can only be used to eliminate answer "a".

CNS RECOMMENDATION: This question should be deleted from the examination.

REACTOR OPERATOR EXAM QUESTION 41
SENIOR REACTOR OPERATOR EXAM QUESTION 41

QUESTION: Which one of the following Reactor Protection System automatic scrams is bypassed when the mode switch is taken from "RUN" to "STARTUP"?

a. Turbine Stop Valve - Closure
Turbine Control Valve Fast Closure

b. Main Steam Line Isolation Valve - Closure
APRM - Downscale with IRM - Upscale

c. IRM - Upscale
APRM - Upscale

d. Main Steam Line Isolation Valve - Closure
Main Steam Line Radiation - High

ANSWER KEY ANSWER: b.

ANSWER KEY REFERENCE: Tech Specs table 3.3.1
COR002-21, Table 2

CNS COMMENT: The Technical Specification Table 3.1.1 which was supplied the students with the examination indicates that the MSIV closure scram is required when the mode switch is in STARTUP. Although this is clearly an error on the Technical Specification and is contrary to the training they have received, it served to confuse the candidates who referenced this table. Since this selection was clearly obviated by the table, the only remaining selection which could be correct is selection "a". This would be the most correct answer since these are bypassed at less than approximately 30% power and to place the mode switch in STARTUP, procedures require power to be less than 12%. Therefore, these would be bypassed when the mode switch is placed to STARTUP.

CNS RECOMMENDATION: Change the answer key to reflect "a." as the answer. Alternatively, delete the question.

REACTOR OPERATOR EXAM QUESTION NUMBER 46
SENIOR REACTOR OPERATOR EXAM QUESTION NUMBER 47

QUESTION: Which of the following describes the minimum required initial conditions for Source Range Monitor (SRM) system in order to perform a reactor startup?

a. At least 2 SRM channels must be operable with detectors inserted far enough to provide a positive count rate of 3.0 CPS.

b. All SRM channels must be operable with a count rate of 3.0 cps or greater when the detector is fully inserted.

c. At least 2 SRM channels must be operable with a count rate of 3.0 cps or greater when the detector is fully inserted.

d. All SRM channels must be operable with at least 2 SRM channels equal to or greater than 3.0 cps.

ANSWER KEY ANSWER: b.

ANSWER KEY REFERENCES: Startup Procedure 2.1.1. sect 8.1.15.1 (fully inserted)
Tech Specs 3.3.B.4 (2 channels > 3cps)
IOP 4.1.1. sect 4.1.1. pg 3 (Full in interlock)

CNS COMMENT: Procedure 2.1.1, Rev. 59, section 8.1.16.1 states "Operable SR detectors are fully inserted per Procedure 4.1.1." Tech Specs 3.3.B.4 states, "Control rods shall not be withdrawn for startup unless at least two source range channels have an observed count rate equal two or greater than three counts per second." Procedure 4.1.1, Rev. 12, section 4.1.1 states, "All four SRM detectors must be fully withdrawn without causing a rod withdrawal block when the IRM RANGE switches are set to range 3 or above and the IRM channels are indicating above the downscale trip point."

No requirement of, "All SRM channels must be operable with count rate of 3.0 cps or greater when the detector is FULLY inserted." , can be found. The references cited in the answer key support selection "c".

CNS RECOMMENDATION: Change the answer key to reflect selection "c" as the correct answer.

REACTOR OPERATOR EXAM QUESTION NUMBER 58

QUESTION: Which of the following is NOT an expected indication of a single control rod scram?

a. Increased CRD cooling water flow.

b. HCU TROUBLE annunciator

c. Control Rod Drift Annunciator

d. Blue SCRAM light on full core display.

ANSWER KEY ANSWER: a.

ANSWER KEY REFERENCE: COR002-20 pg. #9 II.A.1.a.2 through 4

CNS COMMENT: Selection "b" is correct since, under some conditions such as 100% power, and with only one control rod scramming, reactor pressure could be sufficiently high to prevent the actuation of the low accumulator pressure switch (955 psig nitrogen pressure). This is emphasized by the fact that no mention of using the accumulator annunciator as an indication of a control rod scram is made in the attached NPPD memo CNS5885222, SER 30-88, Scram of a Single Control Rod Goes Undetected... Valid indications of a single scrammed control rod are the Rod Drift annunciator and the full core display (blue scram light).

Additionally, the referenced lesson refers to an "amber light indicates accumulator trouble" This is not an HCU TROUBLE annunciator but rather an indicating light on the full core display. CNS has no HCU TROUBLE annunciator but rather a CRD ACCUM LOW PRESS OR HIGH LEVEL annunciator. The upper case use of the HCU TROUBLE would have led the candidates to assume a specific annunciator which they may have known does not exist. (Alarm Response Procedures 2.3.2.28, Window Location 9-5-2/G-6 is attached.,

CNS RECOMMENDATION: Delete this question since two answers could be considered correct.

SENIOR REACTOR OPERATOR EXAM QUESTION NUMBER 56

QUESTION: Which one of the following is the design purpose/function of the Standby Gas Treatment System (SGTS) ?

a. To limit environmental release rate of radioisotopes to the environs and remain within the guidelines of 10CFR100.

b. To maintain 0.25 inches Wg negative pressure in the secondary containment at all times.

c. To provide a vent path for excess containment pressure.

d. To monitor exhaust for high activity to comply with the requirements of 10CFR20.

ANSWER KEY ANSWER: a.

ANSWER KEY REFERENCE: COR002-28 pg 6 sect I.A.1 through 3
SGT SOP 2.2.73 sect. 2.2.1

CNS COMMENT: While one of the design purposes of the SGTS is to limit releases, Student Text COR002-28, section I.A.2 states "SGT provides the ability to process effluent from the primary and secondary containment when required to limit the discharge of radionuclides to the environ " Similarly, SGT SOP 2.2.73 section 2.2.1 states, "The SGT System provides the ability to process effluent from the primary and secondary containment when required to limit the discharge of radioactive material to the environs."

One of the conditions for which the SGT System is used is high primary containment pressure. This system provides the path for venting of the primary containment to remove this excess pressure just as is indicated in selection "c". An example of this process is contained in the procedure for drywell and suppression chamber venting, 2.2.60 section 8.1 (attached). The note following step 8.1 plainly indicates the SGT system would be used for overpressure conditions in the primary containment. The alarm procedure for high drywell pressure also references procedure 2.2.60.

Similarly, Emergency Operating Procedure 5.8.17, Primary Containment Venting (attached) also makes use of the SGT System during conditions of emergency venting the containment to relief overpressure conditions.

CNS RECOMMENDATION: Give credit for selection "c" as well as the answer indicated in the key. Alternatively, delete the question>

REACTOR OPERATOR EXAM QUESTION NUMBER 69
SENIOR REACTOR OPERATOR EXAM QUESTION NUMBER 71

QUESTION: The following plant conditions exist:
Level has decreased to -155"
ADS timer is counting down
All RHR and CS pumps are running

Prior to any SRV's opening, level is increased to -140 inches.

Which one of the following describes automatic ADS system response?

a. Timer resets to zero when level increased above -145.5 inches, if level again goes below -145.5' blowdown will occur in 120 seconds.

b Timer sequence will stop and blowdown will only occur if level goes below -145.5 inches and sufficiently to finish 120 second timer.

c. Timer will time out but blowdown will be inhibited until level again goes below -145.5 inches, then blowdown will occur.

d. Timer will continue it's sequence and blowdown will occur at completion of 120 second timer countdown independent of level.

ANSWER KEY ANSWER: d.

ANSWER KEY REFERENCE: Facility exam bank, COR002-16 Question #52
COR002-16 sect II.D.3

CNS COMMENT: The question answer in the facility examination bank, as is the answer in this question is incorrect. As can be seen on the attached simplified diagram (ADS figure 5 from COR002-16), which is derived from drawing 791E253 sheet 2, the seal-in contacts from 120 second delay relay K5A does not close until the 120 second time delay associated with relay K5A has timed out. If level increases above -145.5 inches prior

to this time or the reset pushbutton is depressed or the Inhibit switches are placed in inhibit, 120 second delay relay K5A is deenergized and resets to zero time. Blowdown will not occur unless level again decreases below -145.5 inches AND 120 seconds pass.

This is also explained in COR002-1 , II.D.3.a (attached) which states, "The two reactor level switches will be sealed in if the time delay relay times out."

Please note that a change has been submitted to revise this question in our examination bank. Also note that the correct answer was indicated in the pre-examination review.

CNS RECOMMENDATION: Change the answer key to reflect the correct answer, "a".