UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

ENCLOSURE 1

EXAMINATION REPORT NO. 50-369/OL-90-03

Facility Licensee: Duke Power Company
P. O. Box 1007
Charlotte, NC 28201-1007

Facility Name: McGuire Nuclear Station

Facility Docket Nos.: 50-369 and 50-370

Facility License Nos.: NPF-9 and NPF-17

Examinations were administered at McGuire Nuclear Station near Charlotte, North Carolina.

Chief Examiner: _____ 1-28-91
Curt Rapp — Date Signed

Approved By: _____ 1-28-91
Charles A. Casto, Chief
Operator Licensing Section 2
Division of Reactor Safety — Date Signed

SUMMARY

Requalification written and operating examinations were conducted during the period December 10 - 21, 1990, to eight Reactor Operators (ROs) and twelve Senior Reactor Operators (SROs). All SROs and seven ROs passed these examinations. One RO did not pass the JPM portion of the operating examination. Six crew simulator examinations were administered; all were rated as satisfactory.

Based upon the above described results, 23 of 24 licensed operators (95.8 percent) passed the examination.

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REPORT DETAILS

1. Facility Employees Attending Exit

L. Weaver, Training Manager, McGuire
D. McGinnis, Director Operator Training, McGuire
B. Travis, Operations Superintendent
D. Baxter, Operations Support Manager
B. Griffin, Senior Instructor
D. Arndt, Instructor
S. Helms, Instructor
M. Lackey, Instructor
K. Carnley, Instructor
J. Sadler, Instructor

2. Examiners

*C. Rapp, NRC, Region II
J. Moorman, III, NRC, Region II
L. Sherfey, PNL
**K. VanDoorn, Senior Resident Inspector, McGuire

*Chief Examiner
**Attended Exit Meeting Only

3. A list of initialisms and acronyms used in this reprt is provided in paragraph 5.

4. Exit Meeting

At the conclusion of the site visit, the examiners met with representatives of the plant staff to discuss the results of the examinations. The following observations were made during these examinations:

During the JPM for starting a hydrogen recombiner, several of the displays on the temperature monitoring panel were observed not correctly indicating temperature.

During a simulator examination involving a ruptured and faulted steam generator, discussion over maintaining CA flow to the affected steam generator was evident. EP-03 directs all CA flow to any faulted steam generator be isolated while EP-04 directs CA flow to any ruptured steam generator be maintained. Discussion with the training staff indicated a difference between classroom and simulator instruction. The classroom and simulator instruction should be similar so implementation of these two procedures is uniform. Also, the procedures could be clarified if CA flow should or should not be maintained for a ruptured and faulted steam generator.

During a simulator examination involving a loss of containment recirculation capability, the SS and SRO were unsure if all Safety Injection pumps should be stopped. EP-06 directs all pumps taking a suction on the containment sump stopped but does not address the FWST. FWST level decreased rapidly and suction was lost to the containment spray pumps in one instance. EP-06 should be clarified as to when stopping of pumps taking a suction on the FWST should be stopped.

The cooperation given to the examiners and the effort to ensure an atmosphere in the control room conducive to oral examinations was also noted and appreciated.

The licensee did not identify as proprietary any material provided to or reviewed by the examiners.

5. Initialisms and Acronyms

CA	Auxiliary Feedwater
EP	Emergency Procedures
FWST	Fueling Water Storage Tank
JPM	Job Performance Measure
LOCA	Loss of Coolant Accident
SRO	Senior Reactor Operator
SS	Shift Supervisor

ENCLOSURE 3

REQUALIFICATION PROGRAM EVALUATION REPORT

Facility Generated Reference Material

The reference material supplied by the facility was reviewed to determine its adequacy for examination development and administration. The facility supplied an adequate number of open reference questions and static simulator scenarios for development of the written examination. The JPMs and dynamic simulator scenarios provided for the development of the operating examinations were acceptable. A sufficient amount of additional reference material was provided to the examination team.

NRC examiners met with members of the facility training staff the week of November 26, 1990, for the purpose of constructing the examination. This week was devoted exclusively to examination development. The examination team used the licensee generated sample plan to develop this examination. The sample plan adequately identified applicable examination topics and served as the test outline.

The content and scope of the written examination was satisfactory. Some deficiencies in test item construction were identified, and the facility examination team made appropriate changes to these test items. Specific lessons learned from this portion of the examination process include:

Written Examination

Question stems were extremely long and need to be shortened. This could be accomplished by limiting the plant conditions for each question.

Several questions contained duplicate distractors or had more than one correct answer. Each distractor must be unique, and there must be only one correct answer for the question.

Correct answers were not evenly split between the four distractors. Correct answers need to be split between the four distractors to prevent an individual from passing the examination by selecting the same distractor on each question.

JPMs

Follow-up questions are short and involve memorized responses. Follow-up questions should be developed to test higher knowledge levels such as application and comphension. Additionally, the same follow-up question was presented to the same group on different JPMs. Follow-up questions should be different for each JPM.

Several JPMs required the operation of only one or two components or excessive examiner cueing. JPMs should contain enough operations to demonstrate the individuals ability to operate the system. Cues should be limited to only those related to system response necessary to complete the JPM.

Simulator Examinations

The simulator examination bank lacks a varity of transients. The bank could be improved by adding transients such as LOCA Outside Containment or ones that require using Functional Recovery Guidelines.

Exam Administration

The facility's administration of the examination was acceptable. Plans for maintaining examination security, while minimizing operator wait time, were thorough and well executed.

Facility Examiner Evaluation

An evaluation of the facility's evaluators was conducted. The evaluation consisted of assessing the evaluator's skills in the following areas:

- Detection Skills,
- Probing of Examinee Weaknesses, as required,
- Properly Grading JPMs,
- Differentiating Training Knowledges,
- Judgement (Pass/Fail Decisions), and
- Cues (Verbal and Non-verbal).

The NRC determined that no licensee evaluator was unsatisfactory and evaluator performance was very good.

Requalification Program Evaluation

Based on the information above, the McGuire Nuclear Station requalification program met all the evaluation criteria and is rated as SATISFACTORY.

Enclosure 4

SIMULATOR FIDELITY REPORT

Facility Licensee: Duke Power Company

Facility Docket Nos.: 50-369 and 50-370

Operating Tests Administered On: December 10 - 21, 1990

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

During the conduct of the simulator portion of the operating exami[illegible]ns no discrepencies were observed.

WRITTEN EXAMINATION COVER SHEET

U. S. NUCLEAR REGUALTORY COMMISSION
REACTOR OPERATOR REQUALIFICATION EXAMINATION
ANSWER KEY

FACILITY: McGuire

REACTOR TYPE: PWR

DATE ADMINISTERED: 12/10/90

OPERATOR: _____

SECTION	CATEGORY VALUE	OPERATOR'S SCORE	% OF CATEGORY VALUE
A - Plant and Control Systems (SSE-01)	18	_____	_____

FINAL GRADE _____

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

_____
Candidate's Signature

RO WEEK 1 PART A SSE-01
12/10/90

1.B

2.C

3.D

4.A

5.C

6.B

7.B

8.A

9.B

10.D

11.D

12.A

13.A

14.B

15.C

16.A

17.D

18.B

QUESTION 1

(1.0 pt) During the performance of EP/1/A/5000/01 the "B" reactor trip breaker failed to open. What impact, if any, will this have on ANY future control room actions? (Select One)

A. Train "B" feedwater isolation (FWI) will have to be manually initiated to accomplish complete FWI.

B. This will result in the inability to reset "B" train Safety Injection.

C. This will result in the inability to reset "B" train main steam isolation.

D. This will not have any affect on any future actions.

ANSWER: B

REFERENCES: OP-MC-ECC-ISE

LESSON: OP-MC-ECC-ISE

TASK: M0-8301

OBJECTIVES: LPRO OBJ: 1I
LPSO OBJ: 1I

TIME: 2 min

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
012	000	K1.05	3.8	3.9

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 2

(1.0 pt) Is total Safety Injection flow what you would expect it to be if all ESF Systems had actuated as designed? Explain. (Select One)

A. Yes, all ESF Systems actuated as designed.

B. No, NV flow is lower than expected.

C. No, NI flow is lower than expected.

D. No, ND flow is lower than expected.

ANSWER: C

REFERENCES: OP-MC-ECC-NI
EP/1/A/5000/01

LESSON: OP-MC-ECC-NI

TASK: M0-8301

OBJECTIVES: LPRO OBJ: 4
LPSO OBJ: 4

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	011	EK3.05	4.0	4.1

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 3

(1.0 pt) Which valves do NOT automatically close upon a SM Isolation Signal? (Select One)

A. SM Isolation Valves

B. SM Isolation Bypass Valves

C. S/G PORV's

D. SM line drains

ANSWER: D

REFERENCES: OP-MC-STM-SM

LESSON: OP-MC-STM-SM

TASK: M0-8302

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	011	EK3.01	3.4	3.5

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 4

(1.0 pt) Based on present plant conditions, what was the root cause of the automatic CF Isolation? (Select One)

A. Ss signal

B. AMSAC Actuation

C. Hi Hi S/G level (P-14)

D. Hi Hi Doghouse level

ANSWER: A

REFERENCES: OP-MC-CF-CF

LESSON: OP-MC-CF-CF

TASK: M0-8301

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

TIME: 2 min

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	011	EK3.02	3.5	3.7

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 5

(1.0 pt) Which of the following conditions/signals resulted in the loss of KC flow to all NCP's? (Select One)

A. Ss and Containment Phase "A" Isolation

B. Hi Thermal Barrier KC Outlet Flow

C. Phase "B" Containment Isolation

D. Ss and Hi Containment Pressure

ANSWER: C

REFERENCES: OP-MC-PSS-KC

LESSON: OP-MC-PSS-KC

TASK: MO-3331

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 5

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
008	030	A3.04	3.6	3.7

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 6

(1.0 pt) Based on the present plant conditions, what was the condition that auto started CA? (Select One)

A. Loss of both CF Pumps

B. Safety Injection

C. AMSAC

D. Lo-Lo S/G level

ANSWER: B

REFERENCES: MC-1
MC-2

LESSON: OP-MC-CF-CA

TASK: M0-3333

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 5

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
061	000	A3.03	3.9	3.9

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED: _____
(SENIOR INST.)

QUESTION 7

(1.0 pt) Given existing plant conditions, which of the following statements is correct concerning the RN to KC Heat Exchanger Outlet Control Valves? (Select One)

A. Both outlet valves are aligned as demanded by switch positioner.

B. Both outlet valves are failed open.

C. "B" Train will fail to the B KC Hx outlet temperature controller position.

D. "A" Train will fail to the "miniflow" position.

ANSWER: B

REFERENCES: OP-MC-PSS-RN

LESSON: OP-MC-PSS-RN

TASK: MO-3314

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 5

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
008	000	A3.01	3.2	3.0

TIME: 2 min

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 8

(1.0 pt) Based on present plant conditions, what containment pressure control systems are in service to mitigate containment pressure? (Select One)

A. Containment spray and the Ice Condenser.

B. EHM Igniters and the Ice Condenser.

C. Hydrogen Skimmer and Air Return Fans.

D. Containment Spray and ND Auxiliary Containment Spray.

ANSWER: A

REFERENCES: OP-MC-ECC-ISE

LESSON: OP-MC-ECC-ISE

TASK: M0-4013

OBJECTIVES: LPRO OBJ: 1E
LPSO OBJ: 1E

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
026	000	K4.04	3.7	4.1

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 9

(1 pt) What current situation, if any, will prevent pressurizer heaters from being re-energized? (Select One)

A. The D/G load sequencer has sequenced off all the pressurizer heaters preventing any of them from being re-energized until the sequencer is reset.

B. The current pressurizer level will prevent all pressurizer heaters from being re-energized.

C. The current pressurizer pressure master reading 0% will prevent all pressurizer heaters from being re-energized.

D. Pressurizer heater banks can be re-energized with current plant conditions.

ANSWER: B

REFERENCES: OP-MC-PS-ILE

LESSON: OP-MC-PS-ILE

TASK: MO-6306

OBJECTIVES: LPRO OBJ: 1L
LPSO OBJ: 1L

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	009	EA2.04	3.8	4.0

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SR INST.)

QUESTION 10

(1.0 pt) If under current plant conditions, a breech of containment released a significant quantity of airborne radioactive material into the annulus, which of the following would be the most probable indication? (Select One)

A. EMF-51A would increase from its current reading.

B. EMF-41 would increase from its current reading.

C. EMF-39(L) would increase from its current reading.

D. EMF-36(L) would increase from its current reading.

ANSWER: D

REFERENCES: OP-MC-TA-AM

LESSON: OP-MC-TA-AM

TASK: M0-2314

OBJECTIVES: LPRO OBJ: 8
LPSO OBJ: 8

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
072	000	A1.01	3.4	3.6

TIME: 2 min

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

THE FOLLOWING QUESTIONS DO NOT APPLY TO SCENARIO

QUESTION 11

(1.0 pt) Which ONE (1) of the following changes in plant parameters will result in a DECREASE in the Tech Spec defined shutdown margin?

A. Power level is decreased from 40% to 30% with no rod motion and constant boron concentration

B. Shutdown banks are withdrawn during startup while maintaining constant NC temperature and boron concentration

C. Bank D rod height is increased from 125 steps to 200 steps while maintaining constant power and boron concentration

D. Boron concentration is decreased while maintaining constant power and no rod motion

ANSWER: D

REFERENCES: OP-MC-RT-RB

LESSON: OP-MC-RT-RB

TASK: MO-2309

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
192	002	EK1.14	3.8	3.0

TIME: 2 mins

REVIEWED: JRP (TRNG. INST.)

REVIEWED: ARC (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 12

(1.0 pt) NCP "Limits and Precautions" state "within any two-hour period, the number of starts should be limited to a maximum of three (3) with a minimum idle period of thirty (30) minutes prior to restart."

What is the basis for this precaution?

A. Damage to motor due to overheating

B. Damage to motor breaker due to high current

C. Damage to pump due to overheating

D. Prevent undervoltage condition on 6.9 KV switchgear

ANSWER: A

REFERENCES: OP-MC-PS-NCP

LESSON: OP-MC-PS-NCP

TASK: MO-3308

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
191	005	EK1.06	3.0	3.1

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 13

(1.0 pt) Which one of the following statements is correct following a safety injection, concerning containment sump isolation valves?

A. The containment sump isolation valves will automatically open on a low level alarm from the FWST.

B. Unless bypassed, the containment sump isolation valves will NOT open unless the ND pump suction valves (from FWST) are closed.

C. The contai en. sump isolation valves will NOT open unless the ainment sump reaches the interlock level.

D. The containment sump isolation valves will automatically open IF the ND pump suction valves (from FWST) are closed.

ANSWER: A

REFERENCES: OP-MC-PS-ND

LESSON: OP-MC-PS-ND

TASK: MO-8302

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 5

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
013	000	A1.06	3.6	3.9

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 14

(1.0 pt) Which one (1) of the following is the correct response of the VUL system if containment pressure increases to greater than 0.5 psig?

A. VU AHUs and RA Fans go to max. cool

B. VL AHUs not running in Hi speed will go to high speed

C. VL AHUs RV flow goes to max.

D. PZR booster fans alternate fan auto starts

ANSWER: B

REFERENCES: OP-MC-CNT-VUL

LESSON: OP-MC-CNT-VUL

TASK: MO-2313

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
022	000	A3.01	4.1	4.3

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 15

(1.0 pt) The plant is at full power when a source range channel inadvertently energizes. All of the source range fuses are immediately removed. If they are not reinserted before the next shutdown, what will occur during the plant shutdown? (Select One)

A. The plant will trip below P-8

B. The plant will trip below P-10

C. The plant will trip below P-6

D. No effect on plant if P-7 permissive is lit

ANSWER: C

REFERENCES: OP-MC-IC-ENB

LESSON: OP-MC-IC-ENB

TASK: MO-7314

OBJECTIVES: LPRO OBJ: 11
LPSO OBJ: 11

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	032	EK3.02	3.7	4.1

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

QUESTION 16

(1.0 pt) Following a reactor trip PORV NC-36B stuck open. (Note: Its switch was left in the "Auto" position.) The operator placed the NC-35B (PORV NC-36B Block Valve) switch to tne "Close" position but the valve fails to close. Prior to the reactor trip, NC-33A (PORV NC-34A Block Valve) had been closed by placing its switch to the "Close" position due to NC-34A leaking.

Concerning the above situation which of the following statements is true? (Select One)

A. In order to close the second PORV block valve its switch must be selected to "Override".

B. In order to close any PORV block valve the switch of its associated PORV must be selected to "Close".

C. In order to close the second PORV block valve both switches must be selected to "Override".

D. NC-35B should have closed.

ANSWER: A

REFERENCES: OP-MC-PS-IPE

LESSON: OP-MC-PS-IPE

TASK: MO-6303

OBJECTIVES: LPRO OBJ: 1.I
LPSO OBJ: 1.I

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
002	000	K4.10	4.2	4.4

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 17

(1.0 pt) Given the following conditions:

- Reactor power is 75%
- Channel N41 is the highest reading Power Range Channel.
- Rod control is in AUTOMATIC
- Channel N42 instantaneously fails LOW.
- NO operator action is taken.

WHICH ONE(1) of the following describes the resultant control rod system response?

A. Control rods will drive in at maximum rate.

B. Control rods will drive in at minimum rate.

C. Control rods will drive out.

D. Control rods will not move.

ANSWER: D

REFERENCES: OP-MC-IC-IRX

LESSON: OP-MC-IC-IRX

TASK: MO-3310

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
015	000	K3.02	3.3	3.5

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 18

(1.0 pt) WHICH ONE(1) of the following statements contains logic that would result in containment spray actuation?

A. Manual actuation with Containment Spray/Phase B actuation PB Depressed and CPCS at 0.28 psig

B. Manual actuation with Containment Spray/Phase B actuation PB Depressed and CPCS at 0.40 psig

C. Auto actuation of Containment Spray/Phase B and CPCS at 0.20 psig

D. Auto actuation of Containment Spray/Phase B and CPCS at 0.28 psig

ANSWER: B

REFERENCES: OP-MC-ECC-NS

LESSON: OP-MC-ECC-NS

TASK: M0-8302

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
026	000	A4.01	4.5	4.3

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

WRITTEN EXAMINATION COVER SHEET

U. S. NUCLEAR REGUALTORY COMMISSION
REACTOR OPERATOR REQUALIFICATION EXAMINATION
ANSWER KEY

FACILITY: McGuire

REACTOR TYPE: PWR

DATE ADMINISTERED: 12/18/90

OPERATOR: _____

SECTION	CATEGORY VALUE	OPERATOR'S SCORE	% OF CATEGORY VALUE
A - Plant and Control Systems (SSE-03)	14	_____	_____

FINAL GRADE _____

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

_____
Candidate's Signature

RO WEEK 2 PART A SSE-03
12/18/90

1.A

2.C

3.D

4.A

5.C

6.A

7.C

8.D

9.B

10.D

11.D

12.C

13.C

14.B

QUESTION 1

(1.0 pt) Why is "B" Diesel Generator not running? (select one)

A. SI was "A" Train only

B. B.O. was "A" Train only

C. "B" D/G has tripped due to loss of RN

D. No sequencer power available for "B" D/G

ANSWER: A

REFERENCES: OP-MC-DG-EQB

LESSON: OP-MC-DG-EQB

TASK: MO8301

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
64	000	K4.11	3.5	4.0

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 2

(1.0 pt) Which one of the following statements is CORRECT concerning the paralleling of electrical systems? (select one)

A. Although it is desirable to have speed and phase position matched, it is much more important to have voltage matched.

B. If voltages are not matched at the time the synchronizing switch is closed, there will be VAR flow from the lower voltage source to the higher one.

C. If the incoming machine is at synchronous speed but out of phase with the running bus when the breaker is closed, heavy currents will flow to either accelerate or retard the incoming machine.

D. If the incoming machine is in phase but slightly faster than synchronous speed when paralleled, the system will tend to speed up to synchronous speed.

ANSWER: C

REFERENCES: OP-MC-EL-ETR

LESSON: OP-MC-EL-ETR

TASK: MO3328

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
062	000	A4.07	3.1	3.1

REVIEWED: WHG (TRNG. INST.)

REVIEWED: JRP ~~(SRO)~~

APPROVED: [signature] (SENIOR INST.)

QUESTION 3

(1.0 pt) What conditions had to exist for the existing "Reactor Firstout" to have taken place? (select one)

A. Reactor power > P-8 with 3/4 stop valves closed

B. Reactor power > P-8 with auto stop oil pressure less than 65 PSIG

C. Reactor power > P-8 with 3/4 stop valves closed AND auto stop oil pressure less than 45 psig

D. Reactor Power > P-8 with 4/4 stop valves closed OR Reactor Power > P-8 with auto stop oil pressure less than 45 PSIG

ANSWER: D

REFERENCES: OP-MC-IC-IPE

LESSON: OP-MC-IC-IPE

TASK: MO2301

OBJECTIVES: LPRO OBJ: 1.F
LPSO OBJ: 1.F

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
012	000	A3.06	3.7	3.7

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (~~SRO~~)

APPROVED: [signature] (SENIOR INST.)

QUESTION 4

(1.0 pt) If the "LOCA SEQ Actuated Train A" status light was NOT illuminated, which of the following could be used to determine an Ss signal and not a Blackout signal caused the sequencer to actuate? (select one)

A. ND Pumps running

B. Motor Driven CA Pumps running

C. KC Pumps running

D. NV Pumps running

ANSWER: A

REFERENCES: 1 SI-14
OP-MC-DG-EQB

LESSON: OP-MC-DG-EQB

TASK: MO3328

OBJECTIVES: LPRO OBJ: 6
LPSO OBJ: 6

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
064	000	A3.07	3.6	3.7

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 5

(1.0 pt) Why does the charging line flow indicate approximately 40 gpm? (select one)

A. NV 244A (Charging line cont. isol.) did not close

B. NV 244A (Charging line cont. isol.) closed, causing the NV pump discharge relief valve to lift with about 40 gpm flow

C. NV 244A (Charging line cont. isol.) closed, about 40 gpm is seal inj. flow

D. NV 244A (Charging line cont. isol) closed, and about a 40 gpm leak on the charging line exists.

ANSWER: C

REFERENCES: MC-10
OP-MC-PS-NV

LESSON: OP-MC-PS-NV

TASK: MO8301

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

TIME: 4 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
004	000	K4.05	3.3	3.2

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED: [signature]
(SENIOR INST.)

QUESTION 6

(1.0 pt) Based on present plant conditions what was the cause of the Safety Injection signal? (select one)

A. Inadvertent signal

B. Low steam line pressure

C. Low pressurizer pressure

D. Hi containment pressure

ANSWER: A

REFERENCES: 1SI-14, OP-MC-ECC-ISE

LESSON: OP-MC-ECC-ISE

TASK: MO2313

OBJECTIVES: LPRO OBJ: 1
LPSO OBJ: 1

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
013	000	K1.01	4.2	4.4

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 7

(1.0 pt) Which channel of Pzr Pressure is presently controlling the Pzr. Htrs.? (select one)

A. Channel 1

B. Channel 2

C. Channel 3

D. No auto Pzr Pressure control is available due to the SI signal

ANSWER: C

REFERENCES: MC-10
OP-MC-PS-IPE

LESSON: OP-MC-PS-IPE

TASK: MO6303

OBJECTIVES: LPRO OBJ: 1.M
LPSO OBJ: 1.M

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
010	000	K6.03	3.2	3.6

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (~~SRO~~)

APPROVED: [signature] (SENIOR INST.)

QUESTION 8

(1.0 pt) Which channel of Pzr. Pressure is currently controlling open signals to each of the Pzr. PORV's? (select one)

A. Channel 3 for NC 32, 34 and 36

B. Channel 2 for NC 32, 34 and 36

C. Channel 3 for NC 32 & 36, Channel 2 for NC 34

D. Channel 3 for NC 34, Channel 2 for NC 32 and 36

ANSWER: D

REFERENCES: MC-10,
OP-MC-PS-IPE

LESSON: OP-MC-PS-IPE

TASK: MO7310

OBJECTIVES: LPRO OBJ: 1.M
LPSO OBJ: 1.M

TIME: 5 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
010	000	A4.03	4.0	3.8

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED: [signature]
(SENIOR INST.)

QUESTION 9

(1.0 pt) Based on present plant conditions, why does the "B" RN Pump Lo Suction Press" alarm exist? (select one)

A. A significant RN Header leak has developed on B Essential Header.

B. A Train Ss splits RN suction alignment with A Train to LLI and isolating B Train from LLI.

C. A Train Ss splits RN suction alignment with A Train to LLI. B RN Train did not align to the SNSWP due to Loss of Power to 1EMXH.

D. Following the Swap of A Train to LLI and B Train to the SNSWP, the NPSHA available for B Train was insufficient to maintain the required NPSH for B RN Pump.

ANSWER: B

REFERENCES: OP-MC-PSS-RN

LESSON: OP-MC-PSS-RN

TASK: MO7318

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

TIME: 4 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	062	EK 3.02	3.6	3.9

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 10

(1.0 pt) Based on present plant conditions, if SI was Reset which of the following describes auto ESF functions available in the event of a LOCA? (select one)

A. Both Trains will Auto initiate

B. Neither Train will Auto initiate

C. A Train will Auto initiate, B Train will not

D. B Train will Auto initiate, A Train will not

ANSWER: D

REFERENCES: OP-MC-IC-IPE

LESSON: OP-MC-IC-IPE

TASK: MO7310

OBJECTIVES: LPRO OBJ: 1.F
LPSO OBJ: 1.F

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
045	050	K4.08	4.0	4.3

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

THE FOLLOWING QUESTIONS DO NOT APPLY TO SCENARIO

QUESTION 11

(1.0 pt) Which one of the following components will lose KC flow as a result or a LOCA signal?

A. ND Heat Exchanger

B. Post Accident Liquid Sample Heat Exchanger

C. Safety Injection Pump Seal Heat Exchanger

D. Excess Letdown Heat Exchanger

ANSWER: D

REFERENCES: OP-MC-PSS-KC

LESSON: OP-MC-PSS-KC

TASK: MO-8301

OBJECTIVES: LPRO OBJ: 4
LPSO OBJ: 4

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	026	EK3.02	3.6	3.9

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

QUESTION 12

(1 pt) Given the following conditions:

- A Loss of Off-site Power is in progress
- Tavg is 557°F
- Steam dumps are placed in Steam Pressure mode
- Steam dump demand is manually increased to begin cooldown
- The steam dumps will NOT open

Which of the following correctly explains why the steam dumps will NOT open? (select one)

A. P-12, Lo-Lo Tavg, has disarmed the steam dumps

B. P-4, Reactor Trip, has locked out the steam header pressure controller

C. C-9, Condenser Available, interlock is not met

D. The trip controller has not been reset.

ANSWER: C

REFERENCES: OP-MC-STM-IDE

LESSON: OP-MC-STM-IDE

TASK: MO-3318

OBJECTIVES: LPRO OBJ: 1
LPSO OBJ: 1

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	C51	EK3.4	2.8	3.1

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 13

(1.0 pt) Given the following conditions:

- Reactor is in MODE 5.
- Source range instrument N31 has read 80 cps for several hours
- Boron concentration is 1300 ppm
- Electronic noise from a welder caused N31 to reach 3000 cps for 30 seconds.

WHICH ONE (1) of the following describes plant response?

A. If a VQ release was in progress, it should be secured

B. Containment purge supply and exhaust dampers close.

C. Containment evacuation alarm sounds.

D. A containment ventilation isolation actuates.

ANSWER: C

REFERENCES: OP-MC-IC-ENB

LESSON: OP-MC-IC-ENB

TASK: M0-2302

OBJECTIVES: LPRO OBJ: 8
LPSO OBJ: 8

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
015	000	K6.04	3.1	3.2

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED: _____
(SENIOR INST.)

QUESTION 14

(1.0 pt) WHICH ONE(1) of the following sets of signals are used to control the feedwater bypass flow control valve when in AUTOMATIC?

A. Steam header pressure, feed pump discharge pressure, steam flow.

B. Steam generator level, programmed steam generator level, actioneered high nuclear power.

C. Steam generator level, feed pump discharge pressure, steam flow.

D. Steam header pressure, programmed steam generator level, actioneered high nuclear power.

ANSWER: B

REFERENCES: OP-MC-CF-IFE

LESSON: OP-MC-CF-IFE

TASK: MO-6308

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 5

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
035	010	A1.01	3.6	3.8

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

WRITTEN EXAMINATION COVER SHEET

U. S. NUCLEAR REGUALTORY COMMISSION
REACTOR OPERATOR REQUALIFICATION EXAMINATION
ANSWER KEY

FACILITY: McGuire

REACTOR TYPE: PWR

DATE ADMINISTERED: 12/10/90

OPERATOR: _____

SECTION	CATEGORY VALUE	OPERATOR'S SCORE	% OF CATEGORY VALUE
A - Plant and Control Systems (SSE-04)	14	_____	_____

FINAL GRADE _____

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

_____
Candidate's Signature

PC WEEK 1 PART A SSL 04
12/10/90

1.D

2.B

3.A

4.C

5.D

6.B

7.C

8.D

9.A

10.A

11.B

12.C

13.C

14.A

QUESTION 1

(1.0 pt) What effect will the failure of the power range channel N42 have on the SG Level Control system if operator action is not taken promptly? (select one)

A. N42 Failure will cause S/G's B&C to underfeed causing a Lo-Lo Level Rx Trip on B&C

B. N42 Failure will cause S/G's B&C to overfeed causing a P-14 signal

C. N42 failure will cause all S/G's to underfeed generating a trip on Lo-Lo Level

D. N42 failure will not effect S/G level control

ANSWER: D

REFERENCES: OP-MC-CF-IFE

LESSON: OP-MC-CF-IFE

TASK: MO7314

OBJECTIVES: LPRO OBJ: 10
LPSC OBJ: 10

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
015	000	A4.01	3.6	3.6

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 2

(1.0 pt) Which of the following explains why the "P/R Hi Flux Rate Alert" status annunciator is lit?

A. Positive rate on N42 due to N42 failing high

B. Negative rate on N42 due to N42 failing low

C. Power Range N42 being in test

D. The DEH Runback Rate

ANSWER: B

REFERENCES: NIS Panels
OP-MC-IC-ENB

LESSON: OP-MC-SRT-R00

TASK: MO 7316

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 7

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
015	000	A4.05	4.3	4.5

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: WGH (~~SRO~~)

APPROVED: (SENIOR INST.)

QUESTION 3

(1.0 pt) Based on present plant conditions, which explains the cause of the recent transient observed in pressurizer pressure? (select one)

A. A pressure increase was seen due to an insurge, which is restored by Pzr Sprays.

B. A pressure increase was seen due to an outsurge, which is restored by Pzr Sprays.

C. A pressure increase was seen due to failed Pzr heater control.

D. Actual pressure did not increase, the Pzr pressure master has failed opened Pzr Sprays and PORV's.

ANSWER: A

REFERENCES: MC-10, OP-MC-PS-IPE

LESSON: OP-MC-PS-IPE

TASK: MO6306

OBJECTIVES: LPRO OBJ: 1
LPSO OBJ: 1

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
010	000	G - 5	3.2	3.6

TIME: 4 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 4

(1.0 pt) Which of the following best explains why Tavg is higher than expected for the present plant conditions? (select one)

A. N42 failure caused rods to move out

B. Runback signal reduced secondary load to a lower than normal value

C. Control rods were in manual and did not respond to the Tavg-Tref mismatch caused by the turbine runback

D. Condenser steam dumps failed to operate as required

ANSWER: C

REFERENCES: MC-10
MC-2
OP-MC-IC-IRX

LESSON: OP-MC-IC-IRX

TASK: MO6302

OBJECTIVES: LPRO OBJ: 3.L
LPSO OBJ: 3.L

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
002	00C	K5.11	4.0	4.2

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 5

(1.0 pt) Which of the following best describes the condition of 1CM-420 (Full Load Rejection Valve)? (Select One)

A. 100% Open due to low CM booster pump suction pressure

B. 50% open due to low CM booster pump suction pressure.

C. 50% Open due to load rejection.

D. 100% Open due to load rejection.

ANSWER: D

REFERENCES: OP-MC-CF-CM

LESSON: OP-MC-CF-CM

TASK: MO7303

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 5

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
059	000	Gen 1	3.1	3.2

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 6

(1.0 pt) Given initial plant conditions, if the control rods would not insert, approx. how much boric acid (gallons) is required to bring Rx. power to 50%? (select one)

A. 770 gals

B. 870 gals

C. 970 gals

D. 1070 gals

ANSWER: B

1. From curve 6.4 (pwr. defect) (.5 pt)
   95% pwr approx. 1786 pcm
   50% pwr approx. 971 pcm
   815 pcm defect

2. From curve 6.8 (differential boron reactivity)
   approx. -9.05 pcm/ppm

3. 815 pcm / 9.05 pcm/ppm = 90 ppm

4. From Section 5.1
   622 ppm + 90 ppm = 712 ppm final

5. Approximately 870 GAL

REFERENCES: Data Book
OP-MC-RT-RP

LESSON: OP-MC-RT-RP

TASK: MO1310

OBJECTIVES: LPRO OBJ: 4
LPSO OBJ: 4

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
004	000	A4.04	3.2	3.6

TIME: 8 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (~~SRO~~)

APPROVED: [signature] (SENIOR INST.)

QUESTION 7

(1.0 pt) What would the approximate Pzr Reference Level be when steady state conditions are met? (Assume Rx power has decreased to match turbine load once the DEH Runback is completed). (select one)

A. ~25%

B. ~35%

C. ~45%

D. ~55%

ANSWER: C

REFERENCES: OP-MC-PS-ILE

LESSON: OP-MC-PS-ILE

TASK: MO6306

OBJECTIVES: LPRO OBJ: 1.G
LPSO OBJ: 1.G

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
002	000	A1.02	3.6	3.7

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (~~SRO~~)

APPROVED: (SENIOR INST.)

QUESTION 8

(1.0 pt) Under current plant conditions, if Power Range N-43 were to instantaneously fail high, which one of the following would be the result of this failure? (select one)

A. The reactor would not automatically trip because only 1 out of 4 logic would be met on High Flux Level Trip of 109%.

B. The reactor would automatically trip because 2 out of 4 logic would be met on High Flux Level Trip of 109%.

C. The reactor would not automatically trip because the Power Range N-42 failed low causing a negative rate bistable trip, and Power Range N-43 failed high causing a positive rate bistable trip.

D. The reactor would automatically trip because the Power Range N-42 failed low causing a negative rate bistable trip, and N-43 failed high causing a positive rate bistable trip.

ANSWER: D

REFERENCES: OP-MC-IC-IPE

LESSON: OP-MC-IC-IPE TASK: MO2310

OBJECTIVES: LPRO OBJ: 1.F
LPSO OBJ: 1.F

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
015	000	K4.05	4.3	4.5

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 9

(1.0 pt) Under present plant conditions, the operator selects OFF on the steam dump select switches. Which one of the following would be the response of the plant to this operator action? (select one)

A. Reactor power would decrease due to reduction in steam demand.

B. Condenser steam dump valves would "Trip Open" due to excessive Tave - Tno Load Deviation.

C. Reactor power would not change because control rods are in "MANUAL".

D. Atmospheric steam dump valves would "trip open" due to excessive Tave-Tref deviation.

ANSWER: A

REFERENCES: OP-MC-STM-IDE

LESSON: OP-MC-STM-IDE

TASK: MO7303

OBJECTIVES: LPRO OBJ: 1.D
LPSO OBJ: 1.D

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
001	000	K5.29	3.7	3.9

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

THE FOLLOWING QUESTIONS DO NOT APPLY TO SCENARIO

QUESTION 10

(1.0 pt) The following plant conditions exist:

- A steamline rupture has occurred inside containment.
- Containment pressure is 4.2 psig
- Steamline pressure is 500 psig
- NC system pressure is 1800 psig
- A steamline isolation has occurred
- The low steamline pressure SI has been blocked

Which one of the following must occur before the steamline isolation signal can be reset?

A. It can be reset under the current conditions.

B. Containment pressure must decrease to less than 3 psig.

C. Steamline pressure must increase to greater than 585 psig.

D. Containment pressure must decrease to less than 3 psig and steamline pressure must increase to greater than 585 psig.

ANSWER: A

REFERENCES: OP-MC-STM-SM

LESSON: OP-MC-STM-SM

TASK: MO-2313

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
039	000	K4.05	3.7	3.7

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED: _____
(SENIOR INST.)

QUESTION 11

(1.0 pt) A LOCA has occurred and containment pressure reached a maximum of 4.5 psig. Containment spray initiated and containment pressure has been restored to 0 psig. Containment Spray has not been reset. Which one of the following most accurately describes the present status of containment spray?

A. Containment Spray is off and will not restart automatically until it has been reset.

B. Containment Spray is off and will automatically restart if containment pressure rises to greater than 0.35 psig.

C. Containment Spray is off and will automatically restart only if containment pressure rises to greater than 3.0 psig.

D. Containment Spray should still be in operation.

ANSWER: B

REFERENCES: OP-MC-ECC-NS

LESSON: OP-MC-ECC-NS

TASK: MO-2313

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
026	000	4.01	4.5	4.3

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 12

(1.0 pt) Which one of the following automatic actions occurs as a result of Phase B Isolation (Sp) but NOT as a result of safety injection (Ss)?

A. Crossover valves between RN A and B Trains close.

B. RN to the AB non-essential header isolates.

C. RN to the NC pumps is isolated.

D. B Train aligns to the SNSWP.

ANSWER: C

REFERENCES: OP-MC-PSS-RN

LESSON: OP-MC-PSS-RN

TASK: MO-2313

OBJECTIVES: LPRO OBJ: 6
LPSO OBJ: 6

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
076	000	K1.16	3.6	3.8

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 13

(1.0 pt) Given the following conditions:

- Reactor power is 60%.
- Loop "C" Delta-T indicates LOW.
- Loop "C" Tave indicates HIGH.

WHICH ONE(1) of the following RTD failures cause these indications?

A. T-hot failed high.

B. T-hot failed low.

C. T-cold failed high.

D. T-cold failed low.

ANSWER: C

REFERENCES: OP-MC-IC-IRX

LESSON: OP-MC-IC-IRX

TASK: M0-3310

OBJECTIVES: LPRO OBJ: 8
LPSO OBJ: 8

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
002	020	K5.09	3.6	3.9

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 14

(1.0 pt) WHICH ONE(1) of the following will result in clearing the "ROD AT BOTTOM" annunciator as the control banks are withdrawn?

A. Bank A reaches 7 steps.

B. Bank B reaches 7 steps.

C. Bank C reaches 7 steps.

D. Bank D reaches 7 steps.

ANSWER: A

REFERENCES: OP-MC-IC-IRE

LESSON: OP-MC-IC-IRE

TASK: MO-3310

OBJECTIVES: LPRO OBJ: 12
LPSO OBJ: 12

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
014	000	K4.03	3.2	3.4

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED: _____
(SENIOR INST.)

WRITTEN EXAMINATION COVER SHEET

U. S. NUCLEAR REGUALTORY COMMISSION
REACTOR OPERATOR REQUALIFICATION EXAMINATION
ANSWER KEY

FACILITY: McGuire

REACTOR TYPE: PWR

DATE ADMINISTERED: 12/18/90

OPERATOR: _____

SECTION	CATEGORY VALUE	OPERATOR'S SCORE	% OF CATEGORY VALUE
A - Plant and Control Systems (SSE-07)	16	_____	_____

FINAL GRADE _____

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

_____
Candidate's Signature

RO WEEK 2 PART A SSE-07
12/18/90

1.D

2.B

3.C

4.D

5.A

6.B

7.C

8.B

9.D

10.B

11.D

12.A

13.D

14.D

15.C

16.B

QUESTION 1

(1.0 pt) Based on plant conditions, would an AUTOMATIC Turbine Trip have occurred? (select one)

A. Yes, Reactor Power remained above P-8, therefore an Automatic Turbine Trip Signal was generated.

B. No, Reactor Power dropped below P-8 before a Turbine Trip Signal was generated.

C. Yes, an Automatic Turbine Trip Signal is generated due to an overspeed condition any time a Reactor Trip occurs.

D. No, due to the Reactor Trip Breakers failure to open, there was no Turbine Trip Signal generated.

ANSWER: D

REFERENCES: OP-MC-MT-MT

LESSON: OP-MC-MT-MT

TASK: MO7302

OBJECTIVES: LPRO OBJ: 21
LPSO OBJ: 21

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
012	000	K1.06	3.1	3.1

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (~~SRO~~)

APPROVED: [signature] (SENIOR INST.)

QUESTION 2

(1.0 pt) Based on present plant conditions, what mode of control is being used by the Steam Dump Control System? (select one)

A. Load Rejection, due to C7A and C7B present with condenser and atmospheric dumps open.

B. Load Rejection, due to C7A present with only condenser dumps open.

C. Plant trip controller, due to C7A present with Atmos/Cond. Stm Dump Trip open status indication.

D. Steam dumps are open, but should be blocked due to P-12 signal.

ANSWER: B

REFERENCES: MCB
OP-MC-STM-IDE

LESSON: OP-MC-STM-IDE

TASK: MO6309

OBJECTIVES: LPRO OBJ: 1.D
LPSO OBJ: 1.D

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
041	040	A4.08	3.0	3.1

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 3

(1.0 pt) Based on present plant conditions, how was the reactor shut down? (select one)

A. Automatic Trip signal

B. Manual rod insertion

C. Local operator action of de-energizing the MG sets

D. LXF and LXG were de-energized

ANSWER: C

REFERENCES: OP-MC-IC-RTB

LESSON: OP-MC-IC-RTB

TASK: MO8310

OBJECTIVES: LPRO OBJ: ISS 5
LPSO OBJ: ISS 5

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	029	EA1.12	4.1	4.0

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (~~SRO~~)

APPROVED: [signature] (SENIOR INST.)

QUESTION 4

(1.0 pt) Based on present plant conditions why is there no "Red" first out annunciator on 1FO-1? (select one

A. The first out Annunciator has been reset manually.

B. The "Red" first out automatically resets.

C. Annunciator Panel 1FO-1 has lost power.

D. The automatic reactor trip failed to take place.

ANSWER: D

REFERENCES: OP-MC-IC-IPE

LESSON: OP-MC-IC-IPE

TASK: MO2301

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	029	EK3.01	4.2	4.5

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: (SRO)

APPROVED: (SENIOR INST.)

QUESTION 5

(1.0 pt) Given the current CA system status, which one(1) of the following statements concerning the "A" MD CA pump miniflow valve is true? (select one)

A. Flowrate through the "A" MD CA pump currently has no effect on either MD CA pump miniflow valve.

B. If Flowrate through the "A" MD CA pump were to decrease to 100 gpm the "A" Train MD CA pump miniflow valve would open.

C. If Flowrate through the "A" MD CA pump were to decrease to 100 gpm both MD CA pump miniflow valves would open.

D. Given current CA system Flowrates both MD CA pump miniflow valves should be open.

ANSWER: A

REFERENCES: OP-MC-CF-CA

LESSON: OP-MC-CF-CA

TASK: MO3314

OBJECTIVES: LPRO OBJ: 7
LPSO OBJ: 7

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
061	000	A3.01	4.2	4.2

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP SRO)

APPROVED: (SENIOR INST.)

QUESTION 6

(1.0 pt) Which one(1) of the following statements is true concerning RN given current plant status? (select one)

A. "A" Train RN was automatically started due to the "B" Train CA Automatic Start.

B. "A" Train RN was automatically started due to the "A" Train CA Automatic Start.

C. "B" Train RN was automatically started due to the "A" Train CA Automatic Start.

D. "B" Train RN was automatically started due to the "B" Train CA Automatic Start.

ANSWER: B

REFERENCES: OP-MC-PSS-RN

LESSON: OP-MC-PSS-RN

TASK: MO3333

OBJECTIVES: LPRO OBJ: 6
LPSO OBJ: 6

TIME: 3 mins

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED: _____
(SENIOR INST.)

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
076	000	K1.02	3.4	3.4

QUESTION 7

(1.0 pt) Given current plant conditions, which one(1) of the following automatic actions would NOT occur? (select one)

A. A Containment Phase "A" Isolation if a Manual Safety Injection was initiated.

B. A Main Steam Isolation if Main Steam Pressure decreased to 520 PSIG.

C. A Main Feedwater Isolation if Tave was decreased to 550°F.

D. A Safety Injection Actuation if Containment Pressure increased to 1.2 PSIG.

ANSWER: C

REFERENCES: MC-2
OP-MC-ECC-ISE

LESSON: OP-MC-ECC-ISE

TASK: MO8301

OBJECTIVES: LPRO OBJ: 1.C
LPSO OBJ: 1.C

TIME: 5 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
059	000	K4.19	3.2	3.4

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 8

(1.0 pt) Which controller in the steam dump circuitry is currently controlling the steam dumps? (select one)

A. The Steam pressure controller

B. The Load rejection controller

C. The Plant trip controller

D. No steam Dumps are available

ANSWER: B

REFERENCES: MC-1, 2
OP-MC-STM-IDE

LESSON: OP-MC-STM-IDE

TASK: MO2309

OBJECTIVES: LPRO OBJ: 1.D
LPSO OBJ: 1.D

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
041	020	K4.09	3.0	3.0

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 9

(1.0 pt) Based on present plant conditions, why is charging flow much less than 87 gpm? (select one)

A. Pzr Level master output has failed to minimum

B. M/A Station for NV-238 has failed to minimum

C. Charging Header Containment Isolation valves are closed

D. Pzr Level is greater than program and charging has reduced to minimum

ANSWER: D C

REFERENCES: MCB's
OP-MC-PS-ILE

LESSON: OP-MC-PS-ILE

TASK: MO6305

OBJECTIVES: LPRO OBJ: 1.C
LPSO OBJ: 1.C

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
011	000	K4.02	3.3	3.4

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED:
(SENIOR INST.)

THE FOLLOWING QUESTIONS DO NOT APPLY TO SCENARIO

QUESTION 10

(1.0 pt) Assume Unit is in Cold Shutdown with the NC drained for mid Loop Operations. Which of the following will be indicated if the ND Pump in Operation cavitates? (Select One)

A. Pump Amps Constant.

B. Pump discharge Pressure Oscillating.

C. Pump discharge Flow Constant.

D. NC Narrow Range Level Increases.

ANSWER: B

REFERENCES: AP/1/A/5500/19

LESSON: OP-MC-CP-PRO

TASK: MO-7317

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	025	EK3.03	3.5	4.1

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 11

(1.0 pt) The reactor is at 60% RTP when the Channel II Turbine Impulse Pressure instrument fails high. How will this affect the plant? Assume rod control in auto, no other failures and no operator action. (Select One)

A. Control rods will begin to step in.

B. Control rods will begin to step out.

C. A DEH runback will occur.

D. If a DEH runback were to occur the steam dumps will not open.

ANSWER: D

REFERENCES: OP-MC-STM-IDE

LESSON: OP-MC-STM-IDE

TASK: MO-2301

OBJECTIVES: LPRO OBJ: 1.D
LPSO OBJ: 1.D

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
041	020	K4.18	3.4	3.6

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 12

(1.0 pt) WHICH ONE (1) of the following responses completes the following statement?

If flashing is occurring in the letdown line, then charging flow is too (1) _____ or NV-124 (letdown pressure control valve) is (2) _____ too far.

A. (1) Low, (2) opened

B. (1) Low, (2) closed

C. (1) High, (2) opened

D. (1) High, (2) closed

ANSWER: A

REFERENCES: OP-MC-PS-NV

LESSON: OP-MC-PS-NV

TASK: M0-3302

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
004	020	A4.02	3.7	3.3

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 13

(1.0 pt) Given the following plant condition:

- Performance of OP/1/A/6100/01, "Controlling Procedure for Unit Startup".

WHICH ONE (1) of the following would cause the CL' discharge isolation valves to receive an open signal?

A. P-4 actuation

B. Pressurizer low level

C. St m generator low level

D. P-11 setpoint

ANSWER: D

REFERENCES: OP-MC-ECC-CLA

LESSON: OP-MC-ECC-CLA

TASK: M0-3303

OBJECTIVES: LPRO OBJ: 6
LPSO OBJ: 6

TIME. 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
013	000	K1.06	4.2	4.4

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED
(SENIOR INST.)

QUESTION 14

(1.0 pt) Given the following conditions:

- Reactor power is 100%
- Pressurizer spray control is in AUTO
- Pressurizer spray valves open

WHICH ONE(1) of the following is the response of the PORV's and spray valves if pressurizer master controller setpoint is inadvertently changed to 2370 psig? ASSUME a step change in the setpoint and that pressurizer pressure control remains in automatic.

The automatic responses of the PORV's and spray valves over the next hour will be:

A. PORV NC 34 opens, spray valves remain open.

B. PORV's NC 32, 34 and 36 remain closed, spray valves remain open.

C. PORV's NC 32, 34, and 36 remain closed, spray valves close.

D. PORV's NC 32 and NC 36 open, spray valves close.

ANSWER: D

REFERENCES: OP-MC-PS-IPE

LESSON: OP-MC-PS-IPE TASK: M0-6303

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
010	000	A4.03	4.0	3.8

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 15

(1.0 pt) WHICH ONE(1) of the following conditions indicates an intermediate range channel detector which has had a loss of compensating voltage?

A. Some neutron flux and all gamma flux signals are being subtracted from the outer detector output.

B. Detector output will read less than actual neutron flux level.

C. Detector output will read higher than actual neutron flux level.

D. Source range detectors may be automatically re-energized too early.

ANSWER: C

REFERENCES: OP-MC-IC-ENB

LESSON. OP-MC-IC-ENB TASK: M0-2302

OBJECTIVES: LPRO OBJ: 6
LPSO OBJ: 6

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	033	A2.11	3.1	3.4

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 16

(1.0 pt) If pressurizer level control select switch is in the 3-2 position when the reference leg for level III develops a leak, WHICH ONE(1) of the following describes plant response?

	LEVEL II PZR LVL INDICATION	LEVEL III PZR LVL INDICATION	VCT LEVEL
A.	INCREASING	DECREASING	INCREASING
B.	DECREASING	INCREASING	INCREASING
C.	INCREASING	DECREASING	DECREASING
D.	DECREASING	INCREASING	DECREASING

ANSWER: B

REFERENCES: OP-MC-PS-ILE

LESSON: OP-MC-PS-ILE

TASK: M0-6305

OBJECTIVES: LPRO OBJ: 1
LPSO OBJ: 1

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
011	000	A1.01	3.5	3.6

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

WRITTEN EXAMINATION COVER SHEET

U. S. NUCLEAR REGUALTORY COMMISSION
REACTOR OPERATOR REQUALIFICATION EXAMINATION

FACILITY: McGuire

REACTOR TYPE: PWR

DATE ADMINISTERED: 12/10/90

OPERATOR: _____

SECTION	CATEGORY VALUE	OPERATOR'S SCORE	% OF CATEGORY VALUE
B - Administrative Controls/ Procedural Limits	24	_____	_____

FINAL GRADE _____

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

_____
Candidate's Signature

RO WEEK #1 - PART B
12/10/90

1.C

2.B

3.B

4.A

5.C

6.A

7.B

8.B

9.B

10.A

11.A

12.D

13.D

14.C

15.B

16.D

17.C

18.C

19.A

20.B

21.D

22.C

23.D

24.A

(1 pt) 1. Following a steam line break outside of the containment on "1B" S/G, the RO terminates SI and establishes normal charging flow as directed in the "SI Termination Following Excessive Cooldown" procedure (EP/1/A/5000/3.1). Once VI is restored to the containment the procedure directs the RO to check NC system temperature and pressure. The RO observes the following:

NOTE: The fault on "1B" S/G occurred 40 minutes prior to this with the unit at 50% RTP.

a.	NC System WR Pressure		1750 psig
b.	NC Loop Cold Leg WR Temp.	"1A"	500°F
		"1B"	350°F
		"1C"	500°F
		"1D"	500°F
c.	NC Loop Hot Leg WR Temp.	"1A"	505°F
		"1B"	400°F
		"1C"	505°F
		"1D"	505°F
d.	"1B" S/G WR Level		0%
e.	"1B" S/G Pressure		0 psig

Based on this information the RO should decrease NC system pressure. Which of the following would be an acceptable pressure? (Select one)

A. 1600 psig

B. 1500 psig

C. 1000 psig

D. 300 psig

ANSWER: C

REFERENCES: EP/1/A/5000/3.1 8/6/90

LESSON: OP-MC-EP-EP3

TASK: MO-8303

OBJECTIVES: LPRO OBJ: 3b
LPSO OBJ: 3b

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	040	EK1.01 G-12	4.1 3.8	4.4 4.1

REVIEWED: WGH (TRNG. INST.)

REVIEWED: HLM (~~SRO~~)

APPROVED: _____ (SENIOR INST.)

(1 pt) 2. Unit 1 is in Mode 1 at 100% RTP. The Maint. Supervisor informs the Shift Supervisor that SA-2 (SM1B to #1 TD CA pump isol.) and SA-6 (SM1B to #1 TD CA pump ck) needs to be isolated and red tagged so that SA-49 (SM from S/G B to TD CA pump Isol.) may be repaired. It will take approximately 48 hours to complete work on the valve and the work will not affect SA-48 (SM from S/G C to TD CA pump Isol.) steam supply

Evaluate the above information and select the correct response based on that evaluation: (Select one)

A. Declare the CA TD pump inoperable and begin a unit shutdown to Hot Standby immediately.

B. Declare the TD CA pump inoperable, and return pump to operable status within 72 hours or be in Hot Standby within next 6 hours.

C. No action required provided SA-48 remains operable during the repair of SA-49, otherwise declare the TD CA pump inoperable.

D. Immediately place SA-48 in its ESF position and continue unit operation.

ANSWER: B

REFERENCES: Tech. Spec. 3.7.1.2
Interpretation 3.7.1.2

LESSON: OP-MC-CF-CA

TASK: MO-3314

OBJECTIVES: LPRO OBJ: 9B
LPSO OBJ: 9B

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
061	000	G-11	3.4	4.1

REVIEWED: DWA (TRNG. INST.)

REVIEWED: RMP (SRO)

APPROVED: (SENIOR INST.)

(1 pt) 3. Unit 1 is being shutdown to Mode 5. Reactor Coolant System T-ave = 557°F and Pressure = 2235 psig. The RO has just completed fully inserting shutdown bank "A". While opening the reactor trip switches, the RO fails to depress and hold either train "1A" or "1B" "Feedwater Isolation Reset" pushbuttons.

Should a feedwater isolation result?

A. Yes, the setpoint is 564°F with a reactor trip.

B. No, the setpoint is 553°F with a reactor trip.

C. No, the setpoint is 551°F with a reactor trip.

D. Yes, the setpoint is 557°F with steam dumps in pressure mode.

ANSWER: B

REFERENCES: OP/1/A/6150/08 10/5/87
OP/1/A/6100/02 9/9/88
EP/1/A/5000/01
EP/1/A/5000/1.3

LESSON: OP-MC-CF-CF

TASK: MO-2313.2
MO-3310.5
MO-5304.3

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
059	000	K4.19	3.2	3.4
		G-7	3.1	3.2
013	000	K1.15	3.4	3.8
		K4.13	3.7	3.9

REVIEWED: WGH (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 4. With Unit 2 at 60% RTP, Channel 41 of Nuclear Instrumentation fails to 120%. If the S/G level program select switch is in the "Normal" position, which of the following describes the effect this failure will have on the S/G level control system.

A. The feedwater regulating valves on "A" and "D" S/G will open to increase the levels to 66% since NI Channel 41 is now the controlling channel for these S/G's

B. The feedwater regulating valves will remain in the same position for all S/G's. Trip program for "A and "D" S/G's will increase

C. All feedwater regulating valves will open to feed all S/G levels to 66%. Since the programmed level is a "High Select" circuit, Channel 41 will be controlling

D. Tne feedwater regulating valves on "B' and "C" S/G will open to increase the levels to 66% since NI Channel 41 is now the controlling channel for these S/G's

ANSWER: A

REFERENCES: AP/2/A/5500/16

LESSON: OP-MC-CF-IFE

TASK: MO-7314.4
MO-6308.3

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
035	010	G-15	3.6	3.9

REVIEWED: DWA (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 5. The plant is operating at 100% power. An NCS leak rate calculation indicates that there is a small primary-to-secondary leak present. The control room operators check the S/G's for a tube leak and observe the following:

- The demand signal for the S/G A feedwater-regulating valve is slightly greater than the demand signals for the other feedwater-regulating valves.
- The steam flow rate for S/G B is slightly less than the steam flow rates for the other S/G's.
- The feedwater flow rate for S/G C is slightly less than the feedwater flow rates for the other S/G's.
- The feedwater flow rate for S/G D is slightly greater than the feedwater flow rates for the other S/G's.

Based on these indications, the S/G that most likely has a tube leak is: (Select one)

A. S/G A

B. S/G B

C. S/G C

D. S/G D

ANSWER: C

REFERENCES: EP/1/A/5000/04
WOG-000-037-004

LESSON: OP-MC-EP-EP4

TASK: MO-8304

OBJECTIVES: LPRO OBJ: A
LPSO OBJ: A

TIME: 2 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	037	EA2.13	4.1	4.3
000	037	EA2.03	3.4	3.9

REVIEWED: RCN (TRNG. INST.)

REVIEWED: RMP (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 6. Determine the amount of Boric Acid required to increase the Unit one Reactor Coolant boron concentration from 920 ppm to 950 ppm. (Select one)

A. 301 gal

B. 402 gal

C. 1580 gal

D. 1958 gal

ANSWER: A

REFERENCES: OP/1/A/6100/22 Sect. 5.1
OP/1/A/6150/09 10/15/86

LESSON: OP-MC-RT-RP

TASK: MO-1310.1
MO-3305.3

OBJECTIVES: LPRO OBJ: 4
LPSO OBJ: 4

TIME: 2 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
004	000	A4.04	3.2	3.6
004	010	A4.03	3.9	3.7
004	020	A4.01	3.8	3.3

REVIEWED: RCN
(TRNG. INST.)

REVIEWED: HLM
(SRO)

APPROVED: _____
(SENIOR INST.)

(1 pt) 7. You have just completed a VQ Release which took 32 minutes to reduce containment pressure from .19 psig to .12 psig. The VQ Totalizer has been inoperable for the last two days. What is the total VOLUME released?

A. 6453.2 ft^3

B. 5990.8 ft^3

C. 5854.0 ft^3

D. 5253.8 ft^3

ANSWER: B

REFERENCES: OP/1/A/6450/17 Enc. 5.2

LESSON: OP-MC-CNT-VQ

TASK: MO-3340.1
MO-3340.3

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 5

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	A1.02	4.1	3.9

REVIEWED: DWA (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 8. Following a Unit 1 Loss of Coolant Accident, the H_2 Recombiners must be placed in operation per EP/1/A/5000/15.1 Step 10C. Determine the power setting for H_2 recombiner 1A if containment pressure is 5.2 psig. (Select one)

A. ≈ 51.3 KW

B. ≈ 49.9 KW

C. ≈ 35.6 KW

D. ≈ 25.6 KW

ANSWER: B (calculation worksheet not needed for full credit)

Power Setting = Reference Power x Pressure Factor

Reference Power = 35.670 KW from Data Book Curve
Pressure Factor = 1.4

Power Setting = 35.670 KW x 1.4

Power Setting = 49.938

REFERENCES: OP/1/A/6100/22 Curve 1.8 (11-11-87)
OP/1/A/6450/10 Encl. 4.2 (11-17-87)

LESSON: OP-MC-CNT-VX

TASK: MO-3341

OBJECTIVES: LPRO OBJ: 11A
LPSO OBJ: 11A

TIME: 6 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
028	000	A2.01	3.4	3.6
		G-9	3.2	3.4
		G-13	3.1	3.2

REVIEWED: DWA (TRNG. INST.)

REVIEWED: RMP (SRO)

APPROVED: (SENIOR INST.)

(1 pt) 9. A reactor trip and SI occurred at 0100 with the reactor initially at 100% power. The control room operators were directed by EP/2.3, Transfer to Cold Leg Recirculation, to EP/06, Loss of Emergency Coolant Recirculation due to the inability to open NI 184 and 185 (Containment Sump Suction Valves). The following conditions currently exist at 0400:

- Total SI Flow Rate: 500 GPM
- ECCS Systems aligned for injection mode
- FWST level: 110 inches
- Subcooling: -5°F
- All NC pumps are off
- Attempts are being made to open NI 184 & 185 locally

Based on these conditions the control room operators should:

A. Maintain 500 GPM flow and proceed to the next step

B. Reduce total SI flow to approximately 225 GPM

C. Reduce total SI flow to approximately 290 GPM

D. Reduce total SI flow to approximately 115 GPM

ANSWER: B

REFERENCES: EP/1/A/5000/06
EXERCISE GUIDE - SRT-R00

LESSON: OP-MC-EP-EP2

TASK: MO-8306
MO-4610

OBJECTIVES: LPRO OBJ: 3, 14 (Sim)
LPSO OBJ: 14 (Sim)

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	011	G-12	4.0	4.1

REVIEWED: RCN (TRNG. INST.)

REVIEWED: RMP (SRO)

APPROVED: (SENIOR INST.)

(1 pt) 10. During performance of the Standby Shutdown Facility Operability Test, the operator records the following S/G Levels:

S/G "A" - 55%
S/G "B" - 74%
S/G "C" - 75%
S/G "D" - 81%

Do the S/G levels meet the Acceptance Criteria?

A. No - because the "A" S/G level is outside the acceptable range.

B. No - because the "A" and "D" S/G levels are outside the acceptable range.

C. Yes - because all S/G's are within the acceptable range.

D. Yes - because the "B", "C", and "D" S/G's are within the acceptable range and only 3 of 4 S/G's must meet the acceptance criteria.

ANSWER: A

REFERENCES: PT/0/A/4200/02
Selected License Commitment 16.9-7
Sept. 7, 1984 Memorandum for Standby Shutdown Systems

LESSON: OP-MC-CP-AD

TASK: MO-5307.9

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
035	000	G-5	3.2	3.8
		G-11	2.9	3.7

REVIEWED: WGH (TRNG. INSTR.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 11. Your shift crew is in the process of cooling down Unit 1 from the Aux. Shutdown Panel following control room evacuation. You are attempting to place the ND System in service to continue the cooldown, however, ND-2 (ND Suction from NC System Isolation) cannot be opened. The following conditions exist at this time:

NC Wide Range Th = 325°F
ND Pump Discharge Temperature = 180°F
NC Wide Range Pressure = 395 psig
Pressurizer level = 22%
Pzr Steam Space Temp from OAC = 450°F

What must be done to open ND-2? (Select one)

A. Depressurize NC system pressure to < 385 psig

B. Ensure ND-2 enable/disconnect switch is in the "Enable" position

C. Decrease NC wide range Th to < 300°F

D. Decrease pressurizer steam space temperature to < 385°F

ANSWER: A

REFERENCES: OP/1/A/6100/04 3/27/87

LESSON: OP-MC-CP-SS

TASK: MO-6305

OBJECTIVES: LPRO OBJ: 2A
LPSO OBJ: 2A

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	068	G-7	3.4	3.5

REVIEWED: RCN (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 12. Given the following:

- A Steamline break in the containment
- EP/1/A/5000/02 "HELBIC" in progress
- The OAC is inoperable
- The STA is monitoring CSF status trees

Power range (% Power)		0%
Intermediate Range (Ion Chamber Amps)	≈	$5x10^{-11}$ amps
Intermediate Range SUR (DPM)		0.0 DPM
Source Range Counts (CPS)	≈	$5x10^{3}$ CPS
Source Range SUR (DPM)	+	.5 DPM

What is the correct action based on this status tree evaluation?

A. Immediately go to EP/1/A/5000/11.1, Response to Nuclear Power Generation (ATWS).

B. Immediately go to EP/1/A/5000/11.2, Response to loss of core shutdown.

C. Evaluate the other 5 status trees for non green status, if all are green then immediately go to EP/1/A/5000/11.2, Response to loss of core shutdown.

D. Evaluate the other 5 status trees. If all are green then implement EP/1/A/5000/11.2, Response to loss of core shutdown when practical.

ANSWER: D

REFERENCES: EP/1/A/5000/10
EP/1/A/5000/11.2

LESSON: OP-MC-EP-EPF

TASK: MO-8309.3
MO-8310

OBJECTIVES: LPRO OBJ: 9D
LPSO OBJ: 9D

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	029	EA2.01	4.4	4.7
		G-11	4.4	4.6

REVIEWED: RHD (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 13. Unit 1 is at 55% RTP. The following information was recorded during the monthly diesel generator "1A" operability test:

1) Fuel oil storage tank level of 45,000 gallons
2) Fuel oil day tank level of 20 inches
3) Time to 4160V of 9.8 seconds
4) Time from synchronization to loaded at 3000 KW of 48 seconds
5) Time from synchronization to loaded at 4000 KW of 555 seconds

Assuming all parameters other than those stated above are within their allowable tolerance, does the 1A D/G meet the acceptance criteria? Explain your answer. (Select one)

A. No, the time from synchronization to loaded at 4000 KW must not exceed 10 minutes.

B. Yes, all parameters are within their allowable tolerance.

C. No, the time to 4160V must be greater than 10 seconds but less than 11 seconds.

D. No, the fuel oil day tank level is less than 120 gallons.

ANSWER: D

REFERENCES: PT/1/A/4350/02A
Tech. Spec. 3.8.1.1
OP/1/A/6100/22 Enclosure 4.3, curve 7.36

LESSON: OP-MC-DG-DG

TASK: MO-3328.5

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

TIME: 6 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
064	000	G-5 G-11	3.4 3.4	3.9 3.9

REVIEWED: WGH (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 14. The following data was taken from the Cold Leg Accumulator Boron Concentration monthly PT:

Concentration		Level
1A	2090 ppm	26%
1B	2060 ppm	24%
1C	1490 ppm	28%
1D	2090 ppm	27%

Based on this information, which of the following best describes the status of the Unit 1 cold leg accumulators? (Assume Unit 1 is at 80% rated full power.) (Select one)

A. The "1C" Cold Leg Accumulator is inoperable and we must apply Tech. Spec. 3.5.1.1 action a.

B. The "1C" cold leg accumulator is inoperable and since the volume weighted average boron concentration is greater than 1900 ppm we must apply Tech. Spec. 3.5.1.1 Action C.1).

C. The "1C" cold leg accumulator is inoperable and since the volume weighted average boron concentration is less than 1900 ppm but greater than 1500 ppm we must apply Tech. Spec. 3.5.1.1 Action C.2).

D. The "1C" cold leg accumulator is inoperable and since the volume weighted average boron concentration is less than 1500 ppm we must apply Tech. Spec. 3.5.1.1 Action C.3).

ANSWER: C

REFERENCES: Tech. Spec. 3.5.1.1
Tech. Spec. 3.5.1.1 Interpretation
PT/1/A/4600/03D
OP/1/A/6100/22

LESSON: OP-MC-ECC-CLA

TASK: MO-3303.9

OBJECTIVES: LPRO OBJ: 7
LPSO OBJ: 7

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
006	000	A1.02	3.0	3.6
		G-5	3.5	4.2
		G-11	3.6	4.2
	020	A1.07	3.5	3.7

REVIEWED: DWA (TRNG. INST.)

REVIEWED: HLM (~~SRO~~)

APPROVED: _____ (SENIOR INST.)

(1 pt) 15. A reactor trip has occurred. The reactor trip and bypass breakers are open, and neutron flux is decreasing. Rod bottom lights are on, and individual rod position indication is zero for all control rods, except rods D-4 and P-12. They indicate that they are in the full out position. Select the statement that correctly describes the operator action required with respect to core reactivity.

A. No action is required, unless a red path condition for the SUBCRITICALITY critical safety function is present.

B. Compensate for the stuck control rods by using the emergency boration method to increase boron concentration 125 ppm.

C. Compensate for the stuck control rods by using the emergency boration method to increase boron concentration 250 ppm.

D. Compensate for the stuck control rods by using the normal boration method to increase boron concentration 125 ppm.

ANSWER: B

REFERENCES: AP/1/A/5500/38
EP/1/A/5000/1.3

LESSON: OP-MC-EP-AP

TASK: MO-8301
MO-7325

OBJECTIVES: LPRO OBJ: 2
LPSO OBJ: 2

TIME: 2 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	024	EA2.05	3.3	4.9

REVIEWED: RHD (TRNG. INST.)

REVIEWED: RMP (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 16. During testing of the Solid State Protection System an I&E Technician inadvertently actuated safety injection. The criteria to enter the "Termination Following Spurious SI" procedure has been met. SI and the D/G load sequencers have been reset. Once the RO stops all SI pumps except one NV pump, the following information is noted:

NC System Pressure	1830 psig ↓ slowly
All NC Loop T-Hot's	600°F ↔
Pressurizer Level	15% ↓ slowly

Based on the above information what action should the RO take? (Select one)

A. Restart other NV pump and monitor NCS pressure and Pzr level.

B. Continue on with the procedure in effect until pressurize level decreases to 5%, then manually initiate SI.

C. Close NI 9 and NI 10 and restart other NV pump.

D. Manually reinitiate SI. Go to EP/1/A/5000/01 Safety Injection immediate actions step 6.

ANSWER: D

REFERENCES: EP/1/A/5000/1.2 Chg. 1

LESSON: OP-MC-EP-EP1

TASK: MO-8301.3

OBJECTIVES: LPRO OBJ: A-1, C-3
LPSO OBJ: A-1, C-3

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	009	EK1.02	3.5	4.2
		EA2.01	4.2	4.8
		EA2.04	3.8	4.0
		G-11	4.2	4.4
000	011	G-11	4.3	4.5

REVIEWED: WGH (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 17. The refueling cavity water level is greater than 23 feet above the top of the reactor vessel flange. Unit 1 is in Mode 6. Core reload is in progress. The fuel loading supervisor requests that the operating Decay Heat Removal Pump be secured to facilitate loading fuel assemblies adjacent to the C loop hot leg outlet. He states that the ND flow is causing the assemblies to swing enough that they cannot be seated.

Which of the following indicates a response which is in compliance with Tech Specs and Plant Operating Procedures? (Select one)

A. Do not secure the pump, in Mode 6 when water level is above the top of the reactor vessel flange by greater than 23 feet, at least one ND loop shall be operable and in operation.

B. Do not secure the pump, when in Mode 5 and 6 a boron injection flow path shall be operable and capable of being powered from an operable emergency power source

C. Secure the pump, in Mode 6 when water level is above the top of the reactor vessel flange by greater than 23 feet. The ND loop may be removed from operation for up to 1 hour per 8 hour period for core alterations in the vicinity of the hot legs.

D. Secure the pump, in Mode 5 or 6 the ND system is required to be operable but not in operation.

ANSWER: C

REFERENCES: Tech. Spec. 3.9.8

LESSON: OP-MC-FH-FC

TASK: MO-9313

OBJECTIVES: LPRO OBJ: 14
LPSO OBJ: 14

TIME: 2 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
015	000	G-11	3.1	3.8

REVIEWED: RCN (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 18. During normal operation with Unit 1 at 100% RTP, the "FWST at Makeup Level" annunciator alarm (1AD12-E4) is received. The alarm is due to normal usage and it is determined to makeup to the FWST using the Reactor Makeup Water Blender. Given the following parameters:

1. Total blended flow to FWST of 75 gpm
2. Desired blended flow Boron Concentration of 2050 ppm
3. Boric Acid Tank Concentration of 7600 ppm

The Boric Acid Flow Controller Set Pot should be set at approximately: (Select one)

A. 2.1
B. 3.5
C. 5.1
D. 6.7

ANSWER: C

NOTE: Calculation not needed for full credit, but is essential for choosing correct answer.

$$\text{B.A Flowrate} = \frac{2050 \times 75}{7600} = 20.23$$

$$\text{Pot Setting} = \frac{20.23}{4} = 5.05$$

REFERENCES: OP/1/A/6200/14 9-20-88
OP/1/A/6100/22 Enc. 4.3
Table 5.2 (12-3-85)

LESSON: OP-MC-FH-FW

TASK: MO-3307

OBJECTIVES: LPRO OBJ: 3, 8
LPSO OBJ: 3, 8

TIME: 7 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
006	020	A1.09	3.3	3.9
006	020	G-8	3.8	3.8
		G-13	3.9	4.0

REVIEWED: DWA (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: (SENIOR INST.)

(1 pt) 19. The following conditions exist:

Time - 0 sec
- Unit at 100% RTP
- A valving error caused a DEH runback due to a loss of KG flow

Time - 30 sec
- The NOT reports that KG flow will be restored in 5 mins

Time - 60 sec
- Reactor power is 60% RTP and decreasing slowly
- Turbine impulse pressure 410 psig and stable
- C-7A and C-7B are lit
- Condenser steam dumps open
- NCO manually opened both generator breakers

Assume all other systems operated as designed. Which one of the following statements is correct: (Select one)

A. The generator lockout should have occurred if stator cooling flow is lost for greater than 45 seconds with turbine impulse pressure greater than 10%.

B. The generator lockout should have occurred due to a loss of load (runback) with turbine impulse pressure > 56%.

C. The control room operators action was incorrect due to the possibility that KG flow would be restored within the allowed 5 minute time period.

D. The control room operators action was incorrect since this action would not result in a reactor trip if at 60% RTP.

ANSWER: A

REFERENCES: OP/1/A/6100/10B
OP/1/A/6101/10D
AP/1/A/5500/03

LESSON: OP-MC-GEN-EHC

TASK: MO-7303.3

OBJECTIVES: LPRO OBJ: 1.S
LPSO OBJ: 1.S

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
045	000	A3.04	3.4	3.6
	050	K1.01	3.4	3.6
		G-15	2.9	3.2

REVIEWED: WGH (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 20. Due to a problem with the air side seal oil pump relief valve leaking, full air side seal oil pressure cannot be maintained. The decision is made to continue operation with a reduced generator hydrogen pressure of 45 psig. The generator has a 0.9 lagging power factor. Select one of the following:

A. Full power operation may continue for 1 hour

B. Limit power to approximately 975 MW

C. Start the DC air side seal oil pump, continue full power operation

D. Generator H-2 pressure must be reduced to 2 psig and load reduced to 10% if the relief cannot be repaired

ANSWER: B

REFERENCES: OP/1/B/6300/04
OP/1/A/6100/22 Enclosure 4.3, Curve 3.1

LESSON: OP-MC-GEN-MG

TASK: MO-3321.3

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	A1.02	4.1	3.9
		A1.08	2.6	3.1

REVIEWED: WGH (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: (SENIOR INST.)

(1 pt) 21. The OPΔT trip provides core p ..ection to ensure that the allowable heat generation ..te (KW/FT) will not be exceeded. During normal power operation the OPΔT trip setpoint is automatically varied with: (Select one)

A. Pressurizer Pressure and Auctioneered High Tave

B. Reactor Power Range Power Level

C. Reactor Coolant Average Temperature, Pressurizer Pressure and AFD (ΔI)

D. Reactor Coolant Average Temperature and Rate of Cnange of Average Temperature.

ANSWER: D

REFERENCES: Tech. Spec. 2.2.1
Tech. Spec. Bases 2.2.1

LESSON: OP-MC-IC-IPE

TASK: MO-2301

OBJECTIVES: LPRO OBJ: 1B, 1F
LPSO OBJ: 1B, 1F

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
012	000	K4.02	3.9	4.3
		K4.04	3.1	3.3
		G-6	2.9	4.1

REVIEWED: DWA (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: (SENIOR INST.)

(1 pt) 22. While performing a heatup on Unit 1 from Mode 4 the following temperatures were logged. Based on this information. Select the correct response:

TIME	NC PRESS	NC TEMP	PZR LIQ SPACE TEMP
1015	450 psi	355	460°F
1045	742 psi	392	512°F
1115	1260 psi	420	575°F

A. The heatup rate on the NC System is in compliance with our Tech. Spec. limit.

B. The pressurizer heatup rate was not exceeded.

C. The Tech. Spec. limits on the NC System/Pressurizer heatup rate were exceeded.

D. The Tech. Spec. pressure/temperature limit was exceeded.

ANSWER: C

RFFERENCES: Tech. Spec. 3.4.9.1, 3.4.9.2
OP/1/A/6100/01
PT/1/A/4600/08
Data Book Curve 1.5

LESSON: OP-MC-PS-NC

TASK: MO-4332
MO-5304
MO-6310

OBJECTIVES: LPRO OBJ: 11
LPSO OBJ: 11

TIME: 6 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
002	000	A1.03	3.7	3.8
		G-5	3.6	4.1
		G-10	3.4	3.9
		G-11	3.3	4.0
010	000	A1.07	3.7	3.7
		G-5	3.2	3.8
		G-10	3.3	3.6
		G-11	3.2	3.9

REVIEWED: RHD
(TRNG. INST.)

REVIEWED: HLM
(SRO)

APPROVED: _____
(SENIOR INST.)

(1 pt) 23. If Train "A" VC/YC is running and the Train "B" Selector Switch is selected to the "TR B" position with the "B" Train chiller "Start" pushbutton depressed, taking the Train "A" Selector Switch to the "OFF" position will stop "A" Train VC/YC equipment and: (Select One)

A. Has no effect on "B" Train VC/YC equipment.

B. Will immediately start all "B" Train VC/YC equipment and align YC to series.

C. Will start all "B" train VC/YC equipment immediately except the "B" Train YC pump.

D. Will start all "B" train VC/YC equipment.

ANSWER: D

REFERENCES: OP/0/A/6450/11 Enc. 4.2

LESSON: OP-MC-PSS-VC

TASK: MO-3344

OBJECTIVES: LPRO OBJ: 1B
LPSO OBJ: 1B

TIME: 2 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	K1.06	3.4	3.4

REVIEWED: RHD (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: (SENIOR INST.)

(1 pt) 24. You are in the process of calculating the estimated critical rod position for a startup and determine that the "Reactivity Worth of the Rods to be inserted" is -20 pcm. What must be done for this situation and why? Select the correct statement.

A. Calculate an Estimated Critical Boron concentration because the ECP would be above the all rods out position.

B. Calculate an Estimated Critical Boron concentration because the ECP is below the rod insertion limits.

C. Nothing needs to be done, since inserted rod worth is negative.

D. Calculate the ECP for a different estimated time of startup to allow Xenon to buildup.

ANSWER: A

REFERENCES: OP/0/A/6100/06

LESSON: OP-MC-RT-RB

TASK: MO-2309

OBJECTIVES: LPRO OBJ: 6
LPSO OBJ: 6

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
192	008	K1.07	3.5	3.6

REVIEWED: RCN (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: (SENIOR INST.)

WRITTEN EXAMINATION COVER SHEET

U. S. NUCLEAR REGUALTORY COMMISSION
REACTOR OPERATOR REQUALIFICATION EXAMINATION

FACILITY: McGuire

REACTOR TYPE: PWR

DATE ADMINISTERED: 12/18/90

OPERATOR: _____

SECTION	CATEGORY VALUE	OPERATOR'S SCORE	% OF CATEGORY VALUE
B - Adminstrative Controls/ Procedural Limits	23	_____	_____

FINAL GRADE _____

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

_____
Candidate's Signature

RO WEEK #2 - PART B
12/18/90

1.C

2.C

3.B

4.B

5.A

6.A

7.D

8.C

9.A

10.B

11.C

12.C

13.D

14.A

15.B

16.D

17.B

18.D

19.A

20.C

21.C

22.D

23.B

(1 pt) 1. While performing the CA TD monthly operability test, during a unit startup, with Unit 1 in Mode 3, the TD CA pump developed a discharge pressure of 1240 psig with a 970 GPM flow. It was noted that steam pressure is 865 psig. Based on this information the operator must: (Select one)

A. Declare the TD CA pump inoperable, because steam pressure is < 900 psig and the test should not be performed.

B. Increase steam pressure to > 900 psig and retest the TD CA pump prior to the time extension for performing the test expires.

C. Consider the TD CA pump as passing the operability test.

D. Declare the TD CA pump inoperable due to the 970 GPM flow rate.

ANSWER: C

REFERENCES: Tech. Spec. 3.7.1.2
Tech. Spec. Interpretation 4.7.1.2

LESSON: OP-MC-CF-CA

TASK: MO-3314

OBJECTIVES: LPRO OBJ: 9B
LPSO OBJ: 9B

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
061	000	G-11	3.4	4.1

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 2. If 1CM-420 has opened due to a Full Load Rejection, what must be done to return 1CM-420 to normal operation after the transient is terminated? (Select One)

A. Close 1CM-420 manual loader and leave manual loader closed.

B. Reset the C7A and C7B load rejection signals and this will reset 1CM-420 to normal.

C. Close the 1CM-420 manual loader and then return the manual loader to 100% open position.

D. Reset the C7A and C7B load rejection signals and return 1CM-420 manual loader to 100% open.

ANSWER: C

REFERENCES: AP/1/A/5500/03 (10/12/87)

LESSON: OP-MC-CF-CM

TASK: MO-7303

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 5

TIME: 2 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	A1 02	4.1	3.9
045	050	A1.02	3.3	3.7

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED: _____
(SENIOR INST.)

(1 pt) 3. You have just completed a VQ Release which took 32 minutes to reduce containment pressure from .19 psig to .12 psig. The VQ Totalizer has been inoperable for the last two days. What is the total VOLUME released?

A. 6453.2 ft^3

B. 6090.8 ft^3

C. 5854.0 ft^3

D. 5253.8 ft^3

ANSWER: B

REFERENCES: OP/1/A/6450/17 Enc. 5.2

LESSON: OP-MC-CNT-VQ

TASK: MO-3340.1
MO-3340.3

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 5

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	A1.02	4.1	3.9

REVIEWED: DWA (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 4. Following a Unit 1 Loss of Coolant Accident, the H_2 Recombiners must be placed in operation per EP/1/A/5000/15.1 Step 10C. Determine the power setting for H_2 recombiner 1A if containment pressure is 5.2 psig. (Select one)

A. ≈ 51.3 KW

B. ≈ 49.9 KW

C. ≈ 35.6 KW

D. ≈ 25.6 KW

ANSWER: B (calculation worksheet not needed for full credit)

Power Setting = Reference Power x Pressure Factor

Reference Power = 35.670 KW from Data Book Curve
Pressure Factor = 1.4

Power Setting = 35.670 KW x 1.4

Power Setting = 49.938

REFERENCES: OP/1/A/6100/22 Curve 1.8 (11-11-87)
OP/1/A/6450/10 Enc. 4.2 (11-17-87)

LESSON: OP-MC-CNT-VX

TASK: MO-3341

OBJECTIVES: LPRO OBJ: 11A
LPSO OBJ: 11A

TIME: 6 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
028	000	A2.01	3.4	3.6
		G-9	3.2	3.4
		G-13	3.1	3.2

REVIEWED: DWA (TRNG. INST.)

REVIEWED: RMP (SRO)

APPROVED: (SENIOR INST.)

(1 pt) 5. While performing a unit 1 startup with Turbine load at 50% RTP, the operator notices that the QPTR is 1.03. The power escalation:

A. May continue provided the QPTR is calculated to be $\leq$ 1.09 at least once per hour and reactor power $\leq$ 91%.

B. May continue with the approval of the Unit Duty Engineer.

C. May continue, but not to exceed 50% power, until the QPTR out of limit condition has been identified and corrected.

D. Must be terminated and power reduced at least 3% for each 1% of indicated QPTR in excess of 1.0.

ANSWER: A

REFERENCES: OP/1/A/6100/03
Tech. Spec. 3.2.4
Tech. Spec. Int. QPTR 3.2.4 (6-6-85)

LESSON: OP-MC-CTH-CP

TASK: MO-5303.2

OBJECTIVES: LPRO OBJ: 38
LPSO OBJ: 38

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
015	020	G-5	3.3	3.8

REVIEWED: DWA (TRNG. INST.)

REVIEWED: ARC (~~SRO~~)

APPROVED: (SENIOR INST.)

(1 pt) 6. While performing the "1A" diesel generator (D/G) operability test, the "1A" D/G heat exchanger supply isolation valve (1RN-70A) did not automatically open, but was opened manually. All other components operated as they should have during the operability test.

Assuming 1RN-70A will not automatically open, which of the following is correct? (Select one)

A. If 1RN-70A is left open, with power removed, the "1A" D/G is operable.

B. Until 1RN-70A is repaired and can again automatically open (regardless of its position) "1A" D/G must be declared inoperable.

C. With 1RN-70A closed and incapable of automatically opening, but capable of being manually opened, the "1A" D/G is operable.

D. The operation of 1RN-70A has no effect on the operability of "1A" D/G.

ANSWER: A

REFERENCES: PT/1/A/4350/02A
ESF Valve Study

LESSON: OP-MC-DG-DG

TASK: MO-3328.5
MO-4314

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

TIME: 2 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
064	000	G-5 G-11	3.4 3.4	3.9 3.9

REVIEWED: WGH (TRNG. INST.)

REVIEWED: HLM (~~SRO~~)

APPROVED: _____ (SENIOR INST.)

(1 pt) 7. During decay heat removal operations with no significant NCS vent, NC level is 13 inches and ND train "B" in service. The RO notices ND Pump "B" amps abnormally high and ND flow approximately 4300 gpm. It appears that ND-34 (A & B ND Hx Bypass) has failed open. What action should be taken? (Select One)

A. Immediately trip ND Pump "B" and start ND Pump "A".

B. Close ND-1B or ND-2A, trip "B" ND pump and locally vent both ND pumps suctions.

C. Close ND-33 (A ND Hx Bypass) and ND-18 (B ND Hx Bypass), if bypass flow is required use ND-18 to throttle flow.

D. Throttle NI-178B (Train B ND to C & D CL) and NI-173A (Train A ND to A & B CL) locally to control ND flow.

ANSWER: D

REFERENCES: AP/1/A/5500/19 (10/16/90)

LESSON: OP-MC-EP-AP

TASK: MO-7317

OBJECTIVES: LPRO OBJ: OP-MC-SAO-A19; 3
LPSO OBJ: OP-MC-SAO-A19; 1

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	025	EK3.01	3.1	3.4
		G-7	3.4	3.6
		G-11	3.6	3.9
		G-12	3.3	3.5

REVIEWED: RHD
(TRNG. INST.)

REVIEWED: HLM
(SRO)

APPROVED:
(SENIOR INST.)

(1 pt) 8. The following conditions exist:

- Unit 1 at 100% RTP
- S/G "1B" Steamline pressure Channel 1 (1SMP-5110) is 970 psig
- S/G "1B" Steamline pressure Channel 2 (1SMP-5120) is 980 psig
- S/G "1B" Steamline pressure Channel 3 (1SMO-5130) is 920 psig
- Steamline Header pressure (1SMP-5200) is 980 psig

Determine the operability of S/G "1B" steamline pressure Channel 3.

A. It is operable because it's within ± 100 psig of the steamline header pressure meter.

B. It is operable because it's within ± 50 psig of the average of the remaining pressure meters.

C. It is inoperable because it's not within ± 50 psig of the steamline header pressure meter.

D. It is inoperable because it's not within 50 psig of the average of the remaining pressure meters.

ANSWER: C

REFERENCES: Tech. Spec. 3.3.2
PT/1/A/4600/03A
Tech. Spec. 3.0.3

LESSON: OP-MC-ECC-ISE

TASK: MO-2315.5

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

TIME: 6 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
013	000	A1.05	3.4	3.6
		G-11	3.5	4.2
039	000	G-11	2.6	3.1

REVIEWED: WGH (TRNG. INST.)

REVIEWED: HLM ~~(SRO)~~

APPROVED: _____ (SENIOR INST.)

(1 pt) 9. Which of the following indications would signify that voiding has occurred while performing a natural circulation cooldown?

A. Pressurizer level begins to increase faster when NV Aux. Spray is used to reduce pressure.

B. Pressurizer level begins to decrease when NV Aux. Spray is used to reduce pressure.

C. Pressurizer level begins to increase when NV Aux. Spray is stopped.

D. Pressurizer level remains constant when NV Aux. Spray is used to reduce pressure.

ANSWER: A

REFERENCES: EP/1/A/5000/1.1

LESSON: OP-MC-EP-EP1

TASK: MO-8301

OBJECTIVES: LPRO OBJ: B-4
LPSO OBJ: B-4

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
011	000	K5.10	3.7	4.0

REVIEWED: RCN (TRNG. INST.)

REVIEWED: HLM (~~SRO~~)

APPROVED: (SENIOR INST.)

(1 pt) 10. Following a steam line break outside of the containment, while performing the "SI Termination Following a Steam Line Break" procedure (EP/1/A/5000/3.1), the RO is directed to ensure that the VCT makeup control system is set for a boron concentration which is greater than the NC system shutdown boron concentration. The RO notes the following:

NC System Pressure	800 psig
NC System Temperature	380°F
Boric Acid Tank Concentration	7500 ppm
Total Blender Flow Rate	90 gpm
Shutdown Boron Concentration	1100 ppm

Given the above information what is the minimum that the potentiometer should be set? (Select one)

A. 1.3

B. 3.3

C. 7.6

D. 13.2

ANSWER: B

REFERENCES: OP/1/A/6100/22 Enc. 4.3 Table 5.2

LESSON: OP-MC-EP-EP3

TASK: MO-8303
MO-3305

OBJECTIVES: LPRO OBJ: 3b
LPSO OBJ: 3b

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
004	000	K1.06 A4.04	3.1 3.2	3.1 3.6

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: HLM
(SRO)

APPROVED: _____
(SENIOR INST.)

(1 pt) 11. During testing of the Containment Pressure Control System (CPCS), the Containment Spray pump 1A pressure channel trip setpoint (Instrument NSPT 5520) was found to be .21 PSIG. Unit 1 is at 100% RTP. What action, if any, is required? (Select One)

A. Place the affected channel in the start permissive mode within one hour and 100% RTP operation may continue indefinitely.

B. Place the affected channel in the inhibit mode within one hour and if not repaired within 72 hours be in hot standby within the next 6 hours.

C. Place the affected channel in the start permissive mode within one hour and if not repaired within 72 hours be in hot standby within the next 6 hours.

D. No action is required and 100% RTP operation may continue indefinitely.

ANSWER: C

REFERENCES: Tech. Spec. 3.3.2
Tech. Spec. 3.6.2

LESSON: OP-MC-ECC-NS

TASK: MO-3327.5

OBJECTIVES: LPRO OBJ: 7
LPSO OBJ: 7

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
026	000	G-11	3.2	4.1

REVIEWED: JHS (TRNG. INST.)

REVIEWED: RMP (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 12. DURING a SGTR on Unit 1 the operator has isolated S/G "A". The following conditions/indications exist:

1)	NCS subcooling	23°F
2)	NCS pressure	1080 psig stable
3)	Ruptured S/G "A" pressure	480 psig decreasing
4)	Ruptured S/G "A" NR level	67%
5)	FWST level	240 inches
6)	Containment Sump Level	1.5 ft

Select the procedure the operator will be using to perform the NCS cooldown, given the above information: (Select one)

A. EP/4.1 SGTR Cooldown Using Steam Dump

B. EP/4.2 SGTR Cooldown Using Backfill

C. EP/5.1 Ruptured and Faulted S/G - Subcooled Recovery

D. EP/5.2 Ruptured and Faulted S/G - Saturated Recovery

ANSWER: C

REFERENCES: EP/1/A/5000/04
EP/1/A/5000/5.1

LESSON: OP-MC-EP-EP4

TASK: MO-8305
MO-4608

OBJECTIVES: LPRO OBJ: G
LPSO OBJ: G

TIME: 6 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	038	EA2.07	4.4	4.8
		G-11	4.2	4.3
		G-12	3.8	4.0

REVIEWED: RHD
(TRNG. INST.)

REVIEWED: HLM
(~~SRO~~)

APPROVED: [signature]
(SENIOR INST.)

(1 pt) 13. Which one of the following indicates how NC pump operation decreases the likelihood of pressurized thermal shock? (Select one)

A. Increased heat input from the NC pumps will reduce cooldown rate.

B. Provides more accurate temperature indication due to increased coolant flow past the T_h RTD's.

C. Causes NC pressure to decrease due to collapsing the void in the upper head.

D. Improves mixing of the cold incoming SI flow with warm reactor coolant.

ANSWER: D

REFERENCES: EP/1/A/5000/14.1

LESSON: OP-MC-EP-EP9

TASK: MO-8313
MO-4615

OBJECTIVES: LPRO OBJ: B2
LPSO OBJ: B2

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	009	EK3.08	3.8	4.4

REVIEWED: RHD (TRNG. INST.)

REVIEWED: RMP (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 14. The following conditions exist:

- Unit 1 is in Mode 6
- Defueling in progress with one half of the assemblies removed
- "A" ND Pump operating with 3200 gpm flow
- "B" ND Pump is inoperable
- NC WR level meter is inoperable
- Refueling cavity water level is 25 inches below the cavity window

Evaluate the above information and select the proper action based on that evaluation: (Select one)

A. Immediately suspend all operations involving movement of fuel assemblies or control rods within the reactor vessel and take action to immediately restore ND pump 1B to operable or restore refueling canal level to $\geq$ 23 ft. above reactor vessel.

B. Immediately suspend core alterations and begin Emergency Boration of refueling cavity to ensure Keff is $\leq$ .95.

C. Continue to defuel the unit while monitoring ND Train "A" temperature to be $\leq$ 140°F and radiation levels within the reactor building to be stable or decreasing.

D. Continue to defuel the unit while monitoring ND Train "A" flow to be $\geq$ 2000 gpm.

ANSWER: A

REFERENCES: Tech. Spec. 3.9.8.2, 3.9.9
PT/1/A/4600/03A 3/23/89
PT/1/A/4600/03B 3/28/89

LESSON: OP-MC-FH-FC

TASK: MO-9313
MO-4326
MO-4327

OBJECTIVES: LPRO OBJ: 14
LPSO OBJ: 14

TIME: 7 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
015	000	G-11	3.1	3.8

REVIEWED: RCN (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 15. The following conditions exist:

- Unit 1 at 100% RTP
- FWST Level Channel I 160 inches
- FWST Level Channel II 148 inches
- FWST Level Channel III 160 inches

Select the correct response concerning these indications:

A. The FWST level channels meet the acceptance criteria.

B. Channel II must be placed in the tripped condition within one hour.

C. Operation at 100% RTP may continue with one channel inoperable as long as NI-184 is placed in the bypass condition.

D. Plant power reduction must commence and be in at least Hot Standby in 6 hours and Cold Shutdown in the next 30 hours.

ANSWER: B

REFERENCES: PT/1/A/4600/03A
Tech. Spec. 3.3.2
Reading Package 89-007

LESSON: OP-MC-FH-FW

TASK: MO-3307

OBJECTIVES: LPRO OBJ: 6, 8
LPSO OBJ: 6, 8

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
002	020	G-11	3.3	4.0
006	020	A1.09	3.3	3.9
		A3.04	4.2	4.3

REVIEWED: DWA (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 16. The refueling cavity water level is greater than 23 feet above the top of the reactor vessel flange. Unit 1 is in Mode 6. Core reload is in progress. The fuel loading supervisor requests that the operating Decay Heat Removal Pump be secured to facilitate loading fuel assemblies adjacent to the C loop hot leg outlet. He states that the ND flow is causing the assemblies to swing enough that they cannot be seated.

Which of the following indicates a response which is in compliance with Tech Specs and Plant Operating Procedures? (Select one)

A. Do not secure the pump, in Mode 6 when water level is above the top of the reactor vessel flange by greater than 23 feet, at least one ND loop shall be operable and in operation.

B. Do not secure the pump, when in Mode 5 and 6 a boron injection flow path shall be operable and capable of being powered from an operable emergency power source.

C. Secure the pump, in Mode 5 or 6 the ND system is required to be operable but not in operation.

D. Secure the pump, in Mode 6 when water level is above the top of the reactor vessel flange by greater than 23 feet. The ND loop may be removed from operation for up to 1 hour per 8 hour period for core alterations in the vicinity of the hot legs.

ANSWER: D

REFERENCES: Tech. Spec. 3.9.8

LESSON: OP-MC-FH-FC

TASK: MO-9313

OBJECTIVES: LPRO OBJ: 14
LPSO OBJ: 14

TIME: 2 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
015	000	G-11	3.1	3.8

REVIEWED: RCN (TRNG. INST.)

REVIEWED: HLM (~~SRO~~)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 17. Due to a problem with the air side seal oil pump relief valve leaking, full air side seal oil pressure cannot be maintained. The decision is made to continue operation with a reduced generator hydrogen pressure of 45 psig. The generator has a 0.9 lagging power factor. Select one of the following:

A. Full power operation may continue for 1 hour

B. Limit power to approximately 975 MW

C. Start the DC air side seal oil pump, continue full power operation

D. Generator H-2 pressure must be reduced to 2 psig and load reduced to 10% if the relief cannot be repaired

ANSWER: B

REFERENCES: OP/1/B/6300/04
OP/1/A/6100/22 Enclosure 4.3, Curve 3.1

LESSON: OP-MC-GEN-MG

TASK: MO-3321.3

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	A1.02	4.1	3.9
		A1.08	2.6	3.1

REVIEWED: WGH (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 18. Unit 1 is at 100% RTP. The "Rod Control Urgent Failure" (1AD2 A-10) annunciator alarms. The RO places the rods in manual and matches T-ave = T-ref by adjusting turbine load. Upon locally checking the rod control cabinets it is found that power cabinet 1SCDE [which powerr Shutdown Bank (SD) C Group 1, SD D Grp. 1, and SD E Grp. 1] has an urgent failure. I&E informs the SRO that the problem with power cabinet 1SCDE is electrical in nature affecting only SD D's stepping mechanism. (Select one)

A. In this situation you are not permitted to move control rods at all and must maintain turbine load to maintain T-ave = T-ref.

B. Since the problem is in the power cabinet in banks other than the controlling bank you should return the rods to automatic.

C. Since rods can not be moved, you should trip the reactor and go to EP/1/A/5000/01 "Reactor Trip or Safety Injection".

D. Since the alarm is in the power cabinet in banks other than the controlling bank, then you may control T-ave = T-ref by controlling CB D in the "Bank Select" Mode.

ANSWER: D

REFERENCES: AP/1/A/5500/14
OP/1/A/6100/10B
Tech. Spec. 3.1.3.1

LESSON: OP-MC-IC-IRE

TASK: MO-2315
MO-6302.5
MO-6302.11
MO-7313.1

OBJECTIVES: LPRO CBJ: 10, 14
LPSO OJJ: 10, 14

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
001	000	K4.02	3.8	3.8
		G-1	3.7	3.8
		G-8	3.6	3.6
		G-11	3.4	3.9
		G-12	3.8	3.6
		G-15	3.9	4.1

REVIEWED: RHD (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 19. While performing a normal shutdown to Mode 5, mechanical maintenance requested operations to remove the Main Turbine from the turning gear 12 hours after sealing steam had been removed from the turbine. Based on the following turbine metal and steam temperature recorder information:

1)	Point 5	HP Impulse Chamber Metal	135°
2)	Point 13	LP No. 1 Inlet Inner Cylinder	125°
3)	Point 14	LP No. 2 Inlet Inner Cylinder	130°
4)	Point 15	LP No. 3 Inlet Inner Cylinder	130°
5)	Point 16	LP No. 1 Exhaust Hood (Gov. End)	125°
6)	Point 17	LP No. 1 Exhaust Hood (Gen. End)	125°
7)	Point 18	LP No. 2 Exhaust Hood (Gov. End)	130°
8)	Point 19	LP No. 2 Exhaust Hood (Gen. End)	130°
9)	Point 20	LP No. 3 Exhaust Hood (Gov. End)	130°
10)	Point 21	LP No. 3 Exhaust Hood (Gen. End)	125°

Which statement is the correct evaluation as to whether the turbine should be removed from the turning gear? Assume all other conditions are met. (Select One)

A.) No, since all exhaust hood temperatures are not $\leq$ 125°F.

B.) No, since all exhaust hood temperatures are not $\leq$ 115°F.

C.) Yes, all exhaust hood temperatures are $\leq$ 150°F.

D.) Yes, all inner cyclinder temperatures are less $\leq$ 300°F.

ANSWER: A

REFERENCES: OP/1/A/6300/01 Chg. 28
OP/1/B/6300/05 Chg. 21

LESSON: OP-MC-MT-MT

TASK: MO-3322.1
MO-5311.1

OBJECTIVES: LPRO OBJ: 24
LPSO OBJ: 24

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	A1.02	4.1	3.9

REVIEWED: WGH (TRNG. INST.)

REVIEWED: HLM ~~(SRO)~~

APPROVED: (SENIOR INST.)

(1 pt) 20. Unit 1 is at 29% RTP. The RO accidentally trips "1A" Reactor Coolant Pump (NCP) while replacing a burned out NCP indicator. After verifying "1A" S/G narrow range level at its programmed level and noting the following for "1A" NCP:

A. Unit 1 at 29% RTP
B. #1 Seal D/P is > 400 psi
C. NCP Standpipe alarms cleared
D. VCT Pressure is 40 psig
E. Seal Injection Flow is 8 gpm
F. #1 Seal Leakoff is 1.5 gpm
G. NCP Oil Pot levels are satisfactory

Should "1A" NCP be restarted? (Select one)

A. Yes, seal leak off and seal injection flow are adequate

B. Yes, "1A" steam generator level is at program level

C. No, reactor power is greater than 25%

D. No, VCT pressure is greater than 25 psig

ANSWER: C

REFERENCES: OP/1/A/6150/02A
AP/1/A/5500/04

LESSON: OP-MC-PS-NCP

TASK: MO-3308
MO-7304

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	A1.02	4.1	3.9
003	000	G-1	3.7	3.8
		G-10	3.3	3.6

REVIEWED: RHD (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 21. In preparation for a Unit 1 Startup, an Estimated Critical Boron Determination is performed. The ECB is 320 ppm. The present boron concentration is 430 ppm.

Select the amount of pure water required to reduce the boron concentration to the ECB value.

A. 1,013 gallons

B. 1,852 gallons

C. 18,035 gallons

D. 19,438 gallons

ANSWER: C

REFERENCES: OP/1/A/6100/22 Sect. 5.1
OP/1/A/6150/09 10/15/86

LESSON: OP-MC-RT-RP

TASK: MO-1310.1
MO-3305.3

OBJECTIVES: LPRO OBJ: 4
LPSO OBJ: 4

TIME: 2 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
004	000	A4.04	3.2	3.6
004	010	A4.03	3.9	3.7
004	020	A4.01	3.8	3.3

REVIEWED: RCN
(TRNG. INST.)

REVIEWED: HLM
(SRO)

APPROVED: [signature]
(SENIOR INST.)

(1 pt) 22. While performing a reactor startup with reactor power at 3%, I&E informs the control room SRO that sample points 2, 5, 8, and 10 of EMF-41 (The Aux. Building Ventilation Radioactivity Monitor) are out of service. (Assume all other EMF-41 sample points are in service.)

What actions are required to continue with the startup?

A. Place the Auxiliary Building Filter in service.

B. Notify Health Physics to take hourly grab samples at the affected sample points.

C. Verify operability of the area monitors nearest the affected sample points.

D. No action is required to continue startup.

ANSWER: D

REFERENCES: Tech. Spec. 3.3.3.9
PT/1/A/4600/03B

LESSON: OP-MC-WE-EMF

TASK: MO-2314.4

OBJECTIVES: LPRO OBJ: 12
LPSO OBJ: 12

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
073	000	G-5 G-11	3.1 2.8	3.6 3.4

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: HLM
(SRO)

APPROVED: _____
(SENIOR INST.)

(1 pt) 23. Unit 1 is being cooled down to Mode 5. Select the statement below which is the MINIMUM action which must be performed while in Mode 4 in order to comply with Tech. Specs.

Prior to any cold leg temperature decreasing below 300°F, rack out and tag the breaker for:

A. One centrifugal charging pump only.

B. One centrifugal charging pump and one safety injection pump.

C. Both centrifugal charging pumps and one safety injection pump.

D. Both centrifugal charging pumps and both safety injection pumps.

ANSWER: B

REFERENCES: Tech. Spec. 3.5.3
OP/1/A/6100/02 1/20/89
PT/1/A/4600/03A 1/18/89

LESSON: OP-MC-ECC-NI

TASK: MO-4326

OBJECTIVES: LPRO OBJ: 7
LPSO OBJ: 7

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
006	000	G-5 G-11	3.5 3.6	4.2 4.2

REVIEWED: RCN (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: [signature] (SENIOR INST.)

WRITTEN EXAMINATION COVER SHEET

U. S. NUCLEAR REGUALTORY COMMISSION
SENIOR REACTOR OPERATOR REQUALIFICATION EXAMINATION
ANSWER KEY

FACILITY: McGuire

REACTOR TYPE: PWR

DATE ADMINISTERED: 12/10/90

OPERATOR: _____

SECTION	CATEGORY VALUE	OPERATOR'S SCORE	% OF CATEGORY VALUE
A - Plant and Control Systems (SSE-01)	17	_____	_____

FINAL GRADE _____

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

_____
Candidate's Signature

SRO WEEK 1 PART A SSE-01
12/10/90

1.B

2.C

3.A

4.C

5.C

6.A

7.C

8.B

9.B

10.A

11.B

12.D

13.A

14.C

15.B

16.A

17.A

QUESTION 1

(1.0 pt) During the performance of EP/1/A/5000/01 the "B" reactor trip breaker failed to open. What impact, if any, will this have on ANY future control room actions? (Select One)

A. Train "B" feedwater isolation (FWI) will have to be manually initiated to accomplish complete FWI.

B. This will result in the inability to reset "B" train Safety Injection.

C. This will result in the inability to reset "B" train main steam isolation.

D. This will not have any affect on any future actions.

ANSWER: B

REFERENCES: OP-MC-ECC-ISE

LESSON: OP-MC-ECC-ISE

TASK: M0-8301

OBJECTIVES: LPRO OBJ: 1I
LPSO OBJ: 1I

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
012	000	K1.05	3.8	3.9

TIME: 2 min

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

QUESTION 2

(1.0 pt) Assume during the onset of this event, you received a 86N (Relay Actuation) on 1ETA. How will this affect D/G operation? (Select One)

A. D/G will fail to start

B. D/G will start with D/G breaker locked out

C. D/G will start, D/G breaker will close

D. D/G will have to be started and loaded manually

ANSWER: C

REFERENCES: OP-MC-EL-ERD, MNS relay book

LESSON: OP-MC-EL-ERD

TASK: MO-2308

OBJECTIVES: LPRO OBJ: 22
LPSO OBJ: 22

TIME: 4 min

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
064	000	K4.02	3.9	4.2

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (~~SRO~~)

APPROVED: [signature] (SENIOR INST.)

QUESTION 3

(1.0 pt) Based on current indications, is a site assembly required? Justify your answer. (Select One)

A. Yes, required for site area emergency classification.

B. Yes, due to imminent loss of containment due to both NS pump failure.

C. No, emergency classification not high enough to warrant site assembly.

D. No, due to both NS pumps operating properly.

ANSWER: A

REFERENCES: RP/0/A/5700/03
Station Directive 3.8.1

LESSON: OP-MC-EP-EMP

TASK: M0-9301
M0-9305

OBJECTIVES: LPRO OBJ: N/A
LPSO OBJ: 2

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	011	G-1	3.4	3.9

TIME: 3 min

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED: _____
(SENIOR INST.)

QUESTION 4

(1.0 pt) Is total Safety Injection flow what you would expect it to be if all ESF Systems had actuated as designed? Explain. (Select One)

A. Yes, all ESF Systems actuated as designed.

B. No, NV flow is lower than expected.

C. No, NI flow is lower than expected.

D. No, ND flow is lower than expected.

ANSWER: C

REFERENCES: OP-MC-ECC-NI
EP/1/A/5000/01

LESSON: OP-MC-ECC-NI

TASK: M0-8301

OBJECTIVES: LPRO OBJ: 4
LPSO OBJ: 4

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	011	EK3.05	4.0	4.1

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 5

(1.0 pt) Based on present plant conditions what was the cause of the SM Isolation Signal? (Select One)

A. Low steam line pressure

B. High steam line pressure rate of decrease

C. > 3 psig containment pressure

D. Manual

ANSWER: C

REFERENCES: OP-MC-STM-SM

LESSON: OP-MC-STM-SM

TASK: M0-8302

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	011	EK3.01	3.4	3.5

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (~~SRO~~)

APPROVED: [signature] (SENIOR INST.)

QUESTION 6

(1.0 pt) Based on present plant conditions, what was the root cause of the automatic CF Isolation? (Select One)

A. Ss signal

B. AMSAC Actuation

C. Hi Hi S/G level (P-14)

D. Hi Hi Doghouse level

ANSWER: A

REFERENCES: OP-MC-CF-CF

LESSON: OP-MC-CF-CF

TASK: M0-8301

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	011	EK3.02	3.5	3.7

TIME: 2 min

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

QUESTION 7

(1.0 pt) Which of the following conditions/signals resulted in the loss of KC flow to all NCP's? (Select One)

A. Ss and Containment Phase "A" Isolation

B. Hi Thermal Barrier KC Outlet Flow

C. Phase "B" Containment Isolation

D. Ss and Hi Containment Pressure

ANSWER: C

REFERENCES: OP-MC-PSS-KC

LESSON: OP-MC-PSS-KC

TASK: M0-3331

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 5

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
008	030	A3.04	3.6	3.7

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 8

(1.0 pt) Based on the present plant conditions, what was the condition that auto started CA? (Select One)

A. Loss of both CF Pumps

B. Safety Injection

C. AMSAC

D. Lo-Lo S/G level

ANSWER: B

REFERENCES: MC-1
MC-2

LESSON: OP-MC-CF-CA

TASK: MO-3333

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 5

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
061	000	A3.03	3.9	3.9

QUESTION 9

(1.0 pt) Given existing plant conditions, which of the following statements is correct concerning the RN to KC Heat Exchanger Outlet Control Valves? (Select One)

A. Both outlet valves are aligned as demanded by switch positioner.

B. Both outlet valves are failed open.

C. "B" Train will fail to the B KC Hx outlet temperature controller position.

D. "A" Train will fail to the "miniflow" position.

ANSWER: B

REFERENCES: OP-MC-PSS-RN

LESSON: OP-MC-PSS-RN

TASK: MO-3314

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 5

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
008	000	A3.01	3.2	3.0

TIME: 2 min

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 10

(1.0 pt) Based on present plant conditions, what containment pressure control systems are in service to mitigate containment pressure? (Select One)

A. Containment spray and the Ice Condenser.

B. EHM Igniters and the Ice Condenser.

C. Hydrogen Skimmer and Air Return Fans.

D. Containment Spray and ND Auxiliary Containment Spray.

ANSWER: A

REFERENCES: OP-MC-ECC-ISE

LESSON: OP-MC-ECC-ISE

TASK: M0-4013

OBJECTIVES: LPRO OBJ: 1E
LPSO OBJ: 1E

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
026	000	K4.04	3.7	4.1

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 11

(1 pt) What current situation, if any, will prevent pressurizer heaters from being re-energized? (Select One)

A. The D/G load sequencer has sequenced off all the pressurizer heaters preventing any of them from being re-energized until the sequencer is reset.

B. The current pressurizer level will prevent all pressurizer heaters from being re-energized.

C. The current pressurizer pressure master reading 0% will prevent all pressurizer heaters from being re-energized.

D. Pressurizer heater banks can be re-energized with current plant conditions.

ANSWER: B

REFERENCES: OP-MC-PS-ILE

LESSON: OP-MC-PS-ILE

TASK: M0-6306

OBJECTIVES: LPRO OBJ: 1L
LPSO OBJ: 1L

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	009	EA2.04	3.8	4.0

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

THE FOLLOWING QUESTIONS DO NOT APPLY TO SCENARIO

QUESTION 12

(1.0 pt) Which ONE (1) of the following changes in plant parameters will result in a DECREASE in the Tech Spec defined shutdown margin?

A. Power level is decreased from 40% to 30% with no rod motion and constant boron concentration

B. Shutdown banks are withdrawn during startup while maintaining constant NC temperature and boron concentration

C. Bank D rod height is increased from 125 steps to 200 steps while maintaining constant power and boron concentration

D. Boron concentration is decreased while maintaining constant power and no rod motion

ANSWER: D

REFERENCES: OP-MC-RT-RB

LESSON: OP-MC-RT-RB

TASK: MO-2309

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
192	002	EK1.14	3.8	3.0

TIME: 2 mins

REVIEWED: JRP (TRNG. INST.)

REVIEWED: ARC (SRO)

APPROVED: (SENIOR INST.)

QUESTION 13

(1.0 pt) Which one of the following statements is correct following a safety injection, concerning containment sump isolation valves?

A. The containment sump isolation valves will automatically open on a low level alarm from the FWST.

B. Unless bypassed, the containment sump isolation valves will NOT open unless the ND pump suction valves (from FWST) are closed.

C. The containment sump isolation valves will NOT open unless the containment sump reaches the interlock level.

D. The containment sump isolation valves will automatically open IF the ND pump suction valves (from FWST) are closed.

ANSWER: A

REFERENCES: OP-MC-PS-ND

LESSON: OP-MC-PS-ND

TASK: MO-8302

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 5

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
013	000	A1.06	3.6	3.9

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (~~SRO~~)

APPROVED: [signature] (SENIOR INST.)

QUESTION 14

(1.0 pt) The plant is at full power when a source range channel inadvertently energizes. All of the source range fuses are immediately removed. If they are not reinserted before the next shutdown, what will occur during the plant shutdown? (Select One)

A. The plant will trip below P-8

B. The plant will trip below P-10

C. The plant will trip below P-6

D. No effect on plant if P-7 permissive is lit

ANSWER: C

REFERENCES: OP-MC-IC-ENB

LESSON: OP-MC-IC-ENB

TASK: MO-7314

OBJECTIVES: LPRO OBJ: 11
LPSO OBJ: 11

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	032	EK3.02	3.7	4.1

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 15

(1.0 pt) A LOCA has occurred and containment pressure reached a maximum of 4.5 psig. Containment spray initiated and containment pressure has been restored to 0 psig. Containment Spray has not been reset. Which one of the following most accurately describes the present status of containment spray?

A. Containment Spray is off and will not restart automatically until it has been reset.

B. Containment Spray is off and will automatically restart if containment pressure rises to greater than 0.35 psig.

C. Containment Spray is off and will automatically restart only if containment pressure rises to greater than 3.0 psig.

D. Containment Spray should still be in operation.

ANSWER: B

REFERENCES: OP-MC-ECC-NS

LESSON: OP-MC-ECC-NS

TASK: MO-2313

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
026	000	A4.01	4.5	4.3

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 16

(1.0 pt) WHICH ONE (1) of the following responses completes the following statement?

If flashing is occurring in the letdown line, then charging flow is too (1) _____ or NV-124 (letdown pressure control valve) is (2) _____ too far.

A. (1) Low, (2) opened

B. (1) Low, (2) closed

C. (1) High, (2) opened

D. (1) High, (2) closed

ANSWER: A

REFERENCES: OP-MC-PS-NV

LESSON: OP-MC-PS-NV

TASK: M0-3302

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
004	020	A4.02	3.7	3.3

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

QUESTION 17

(1.0 pt) WHICH ONE (1) of the following items will AUTOMATICALLY terminate a waste gas discharge?

A. High radiation alarm on EMF-36 UNIT VENT GAS (Low Range).

B. EMF-50 WASTE GAS (High Range) fails low.

C. Waste gas analyzer high oxygen in discharge line.

D. Waste gas decay tank high pressure.

ANSWER: A

REFERENCES: OP-MC-WE-EMF

LESSON: OP-MC-WE-EMF

TASK: MO-2314

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
071	000	A3.03	3.6	3.8

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

TABLE OF SPECIFICATIONS
QUESTIONS GROUPED BY TOPIC
10/18/90

SSE00 QUESTIONS

QUESTION ID	POINTS	TIME MINUTES	FORMAT	SRO ONLY?	REV. DATE	LESSON PLAN	SEGMENT COVERED	KA CATALOG SYS	MODE	NO.	IMPORTANCE RO	SRO	TASK ID
SSE-00-R001	1.0	3	MC			RT-RB	89-3	192	002	EK1-14	3.8	3.9	2309
SSE-00-R009	1.0	2	MC		09/07/90	PS-ACP	90-1	191	005	EK1-06	3.0	3.1	3308
SSE-00-R019	1.0	3	MC		09/07/90	PS-ND	90-2	013	000	A1-06	3.6	3.9	8302
SSE-00-R026	1.0	2	MC		09/07/90	CNT-VUL	90-4	022	000	A3-01	4.1	4.3	2313
SSE-00-R041	1.0	3	MC		09/07/90	IC-ENB	89-3	000	032	EK3-02	3.7	4.1	7314
SSE-00-R051	1.0	2	SA		09/11/90	PS-IPE	89-3	002	000	K4-10	4.2	4.4	6303
SSE-00-R083	1.0	3	MC		09/17/90	IC-IRX	89-4	015	000	K3.02	3.3	3.5	3310
SSE-00-R098	1.0	3	MC		10/16/90	ECC-NS	89-4	026	000	A4.01	4.5	4.3	8302

TOTAL QUESTIONS FOR SSE00 TOPIC: 8 TOPIC POINTS 8.00 TOPIC TIME 21.00

SSE01 QUESTIONS

QUESTION ID	POINTS	TIME MINUTES	FORMAT	SRO ONLY?	REV. DATE	LESSON PLAN	SEGMENT COVERED	KA CATALOG SYS	MODE	NO.	IMPORTANCE RO	SRO	TASK ID
SSE-01-R05	1.0	2	MC		09/11/90	ECC-ISE	90-4	012	000	K1-05	3.8	3.9	8301
SSE-01-R08	1.0	2	MC		09/11/90	ECC-NI	90-2	000	011	EK3-05	4.0	4.1	8301
SSE-01-R16	1.0	2	MC		09/11/90	STM-SM	89-1	000	011	EK3-01	3.4	3.5	8302
SSE-01-R17	1.0	2	MC		10/16/90	CF-CF	90-4	000	011	EK3-02	3.5	3.7	8301
SSE-01-R19	1.0	2	MC		09/11/90	PSS-KC	89-5	008	030	A3.04	3.6	3.7	3331
SSE-01-R20	1.0	2	MC		09/11/90	CF-CA	89-4	061	000	A3.03	3.9	3.9	3333
SSE-01-R21	1.0	2	MC		09/11/90	PSS-RN	89-5	008	000	A3.01	3.2	3.0	3314

SSE01 QUESTIONS

QUESTION ID	POINTS	TIME MINUTES	FOR-MAT	SRO ONLY?	REV. DATE	LESSON PLAN	SEGMENT COVERED	KA CATALOG SYS	MODE	NO.	IMPORTANCE RO	SRO	TASK ID
SSE-01-R22	1.0	2	MC		09/11/90	ECC-ISE	90-4	026	000	K4.04	3.7	4.1	4013
SSE-01-R23	1.0	2	MC		09/11/90	PS-ILE	89-3	000	009	EA2.04	3.8	4.0	6306
SSE-01-R24	1.0	2	MC		09/11/90	TA-AM	87-2	072	000	A1.01	3.4	3.6	2314

TOTAL QUESTIONS FOR SSE01 TOPIC: 10 TOPIC POINTS 10.00 TOPIC TIME 20.00

TOTAL QUESTIONS 18 TOTAL POINTS 18.00 TOTAL TIME 41.00

TABLE OF SPECIFICATIONS
QUESTIONS GROUPED BY TOPIC
10/18/90

SSE00 QUESTIONS

QUESTION ID	POINTS	TIME MINUTES	FORMAT	SRO ONLY?	REV. DATE	LESSON PLAN	SEGMENT COVERED	KA CATALOG SYS	MODE	NO	IMPORTANCE RO	SRO	TASK ID
SSE-00-R001	1.0	3	MC			RT-RD	89-3	192	002	EK1-14	3.8	3.9	2309
SSE-00-R019	1.0	3	MC		09/07/90	PS-ND	90-2	013	000	A1-06	3.6	3.9	8302
SSE-00-R041	1.0	3	MC		09/07/90	IC-ENB	89-3	000	032	EK3-02	3.7	4.1	7314
SSE-00-R053	1.0	2	MC		09/07/90	ECC-NS	89-4	026	000	A4-01	4.5	4.3	2313
SSE-00-R079	1.0	3	MC		09/17/90	PS-NV	89-3	004	020	A4.02	3.7	3.3	3302
SSE-00-R091	1.0	3	MC		09/17/90	ME-EMF	90-3	071	000	A3.03	3.6	3.8	2314

TOTAL QUESTIONS FOR SSE00 TOPIC: 6 TOPIC POINTS 6.00 TOPIC TIME 17.00

SSE01 QUESTIONS

QUESTION ID	POINTS	TIME MINUTES	FORMAT	SRO ONLY?	REV. DATE	LESSON PLAN	SEGMENT COVERED	KA CATALOG SYS	MODE	NO.	IMPORTANCE RO	SRO	TASK ID
SSE-01-R05	1.0	2	MC		09/11/90	ECC-ISE	90-4	012	000	K1-05	3.8	3.9	8301
SSE-01-R06	1.0	4	MC		09/11/90	EL-ERD	90-4	064	000	K4-02	3.9	4.2	2301
SSE-01-R07	1.0	3	MC	Y	09/11/90	EP-EMP	90-2	000	011	G-1	3.4	3.9	9301 9305
SSE-01-R08	1.0	2	MC		09/11/90	ECC-MI	90-2	000	011	EK3-05	4.0	4.1	8301
SSE-01-R15	1.0	2	MC		09/11/90	STM-SM	89-1	000	011	EK3-01	3.4	3.5	8302
SSE-01-R17	1.0	2	MC		10/16/90	CF-CF	90-4	000	011	EK3-02	3.5	3.7	8301
SSE-01-R19	1.0	2	MC		09/11/90	PSS-KC	89-5	008	030	A3.04	3.6	3.7	3331
SSE-01-R20	1.0	2	MC		09/11/90	CF-CA	89-4	061	000	A3.03	3.9	3.9	3333
SSE-01-R21	1.0	2	MC		09/11/90	PSS-RN	89-5	008	000	A3.01	3.2	3.0	3314

SSE01 QUESTIONS

QUESTION ID	POINTS	TIME MINUTES	FORMAT	SRO ONLY?	REV. DATE	LESSON PLAN	SEGMENT COVERED	KA CATALOG SYS	MODE	NO.	IMPORTANCE RO	SRO	TASK ID
SSE-01-R22	1.0	2	MC		09/11/90	ECC-ISE	90-4	026	000	K4.04	3.7	4.1	
SSE-01-R23	1.0	2	MC		09/11/90	Ps-ILE	89-3	000	009	EA2.04	3.8	4.0	4013
TOTAL QUESTIONS FOR SSE01 TOPIC: 11					TOPIC POINTS		11.00	TOPIC TIME			25.00		6306
TOTAL QUESTIONS 17					TOTAL POINTS		17.00	TOTAL TIME			42.00		

WRITTEN EXAMINATION COVER SHEET

U. S. NUCLEAR REGUALTORY COMMISSION
SENIOR REACTOR OPERATOR REQUALIFICATION EXAMINATION
ANSWER KEY

FACILITY: McGuire

REACTOR TYPE: PWR

DATE ADMINISTERED: 12/18/90

OPERATOR: _____

SECTION	CATEGORY VALUE	OPERATOR'S SCORE	% OF CATEGORY VALUE
A - Plant and Control Systems (SSE-03)	15	_____	_____

FINAL GRADE _____

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

_____
Candidate's Signature

SRO WEEK 2 PART A SSE-03
12/18/90

1.A

2.C

3.D

4.A

5.A

6.C

7.C

8.D

9.B

10.D

11.A

12.D

13.D

14.A

15.A

QUESTION 1

(1.0 pt) Why is "B" Diesel Generator not running? (select one)

A. SI was "A" Train only

B. B.O. was "A" Train only

C. "B" D/G has tripped due to loss of RN

D. No sequencer power available for "B" D/G

ANSWER: A

REFERENCES: OP-MC-DG-EQB

LESSON: OP-MC-DG-EQB

TASK: MO8301

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
64	000	K4.11	3.5	4.0

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED: _____
(SENIOR INST.)

QUESTION 2

(1.0 pt) Which one of the following statements is CORRECT concerning the paralleling of electrical systems? (select one)

A. Although it is desirable to have speed and phase position matched, it is much more important to have voltage matched.

B. If voltages are not matched at the time the synchronizing switch is closed, there will be VAR flow from the lower voltage source to the higher one.

C. If the incoming machine is at synchronous speed but out of phase with the running bus when the breaker is closed, heavy currents will flow to either accelerate or retard the incoming machine.

D. If the incoming machine is in phase but slightly faster than synchronous speed when paralleled, the system will tend to speed up to synchronous speed.

ANSWER: C

REFERENCES: OP-MC-EL-ETR

LESSON: OP-MC-EL-ETR

TASK: MO3328

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

TIME: 3 mins

REVIEWED: WHG (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
062	000	A4.07	3.1	3.1

QUESTION 3

(1.0 pt) What conditions had to exist for the existing "Reactor Firstout" to have taken place? (select one)

A. Reactor power > P-8 with 3/4 stop valves closed

B. Reactor power > P-8 with auto stop oil pressure less than 65 PSIG

C. Reactor power > P-8 with 3/4 stop valves closed AND auto stop oil pressure less than 45 psig

D. Reactor Power > P-8 with 4/4 stop valves closed OR Reactor Power > P-8 with auto stop oil pressure less than 45 PSIG

ANSWER: D

REFERENCES: OP-MC-IC-IPE

LESSON: OP-MC-IC-IPE

TASK: MO2301

OBJECTIVES: LPRO OBJ: 1.F
LPSO OBJ: 1.F

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
012	000	A3.06	3.7	3.7

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 4

(1.0 pt) What control logic must be satisfied for the source range NIS to automatically re-energize? (select one)

A. 3/4 P.R. channels < 10% and 2/2 I.R. channels < 10^{-10} amps

B. 3/4 P.R. channels < 10% or 2/2 I.R. channels < 10^{-10} amps

C. 2/2 I.R. Channels < 10^{-10} amps

D. 3/4 P.R. channels < 10%

ANSWER: A

REFERENCES: OP-MC-IC-ENB

LESSON: OP-MC-IC-ENB

TASK: MO2302

OBJECTIVES: LPRO OBJ: 12
LPSO OBJ: 12

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
015	000	K4.07	3.7	3.8

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SR OR INST.)

QUESTION 5

(1.0 pt) If the "LOCA SEQ Actuated Train A" status light was NOT illuminated, which of the following could be used to determine an Ss signal and not a Blackout signal caused the sequencer to actuate? (select one)

A. ND Pumps running

B. Motor Driven CA Pumps running

C. KC Pumps running

D. NV Pumps running

ANSWER: A

REFERENCES: 1 ST-14
OP-MC-DG-EQB

LESSON: OP-MC-DG-EQB

TASK: MO3328

OBJECTIVES: LPRO OBJ: 6
LPSO OBJ: 6

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
064	000	A3.07	3.6	3.7

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED: _____
(SENIOR INST.)

QUESTION 6

(1.0 pt) Why does the charging line flow indicate approximately 40 gpm? (select one)

A. NV 244A (Charging line cont. isol.) did not close

B. NV 244A (Charging line cont. isol.) closed, causing the NV pump discharge relief valve to lift with about 40 gpm flow

C. NV 244A (Charging line cont. isol.) closed, about 40 gpm is seal inj. flow

D. NV 244A (Charging line cont. isol) closed, and about a 40 gpm leak on the charging line exists.

ANSWER: C

REFERENCES: MC-10
OP-MC-PS-NV

LESSON: OP-MC-PS-NV

TASK: MO8301

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

TIME: 4 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
004	000	K4.05	3.3	3.2

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 7

(1.0 pt) Which channel of Pzr Pressure is presently controlling the Pzr. Htrs.? (select one)

A. Channel 1

B. Channel 2

C. Channel 3

D. No auto Pzr Pressure control is available due to the SI signal

ANSWER: C

REFERENCES: MC-10
OP-MC-PS-IPE

LESSON: OP-MC-PS-IPE

TASK: MO6303

OBJECTIVES: LPRO OBJ: 1.M
LPSO OBJ: 1.M

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
010	000	K6.03	3.2	3.6

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 8

(1.0 pt) Which channel of Pzr. Pressure is currently controlling open signals to each of the Pzr. PORV's? (select one)

A. Channel 3 for NC 32, 34 and 36

B. Channel 2 for NC 32, 34 and 36

C. Channel 3 for NC 32 & 36, Channel 2 for NC 34

D. Channel 3 for NC 34, Channel 2 for NC 32 and 36

ANSWER: D

REFERENCES: MC-10,
OP-MC-PS-IPE

LESSON: OP-MC-PS-IPE

TASK: MO7310

OBJECTIVES: LPRO OBJ: 1.M
LPSO OBJ: 1.M

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
010	000	A4.03	4.0	3.8

TIME: 5 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

QUESTION 9

(1.0 pt) Based on present plant conditions, why does the "B" RN Pump Lo Suction Press" alarm exist? (select one)

A. A significant RN Header leak has developed on B Essential Header.

B. A Train Ss splits RN suction alignment with A Train to LLI and isolating B Train from LLI.

C. A Train Ss splits RN suction alignment with A Train to LLI. B RN Train did not align to the SNSWP due to Loss of Power to 1EMXH.

D. Following the Swap of A Train to LLI and B Train to the SNSWP, the NPSHA available for B Train was insufficient to maintain the required NPSH for B RN Pump.

ANSWER: B

REFERENCES: OP-MC-PSS-RN

LESSON: OP-MC-PSS-RN

TASK: MO7318

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

TIME: 4 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	062	EK 3.02	3.6	3.9

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 10

(1.0 pt) Based on present plant conditions, if SI was Reset which of the following describes auto ESF functions available in the event of a LOCA? (select one)

A. Both Trains will Auto initiate

B. Neither Train will Auto initiate

C. A Train will Auto initiate, B Train will not

D. B Train will Auto initiate, A Train will not

ANSWER: D

REFERENCES: OP-MC-IC-IPE

LESSON: OP-MC-IC-IPE

TASK: MO7310

OBJECTIVES: LPRO OBJ: 1.F
LPSO OBJ: 1.F

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
045	050	K4.08	4.0	4.3

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

THE FOLLOWING QUESTIONS DO NOT APPLY TO SCENARIO

QUESTION 11

(1.0 pt) NCP "Limits and Precautions" state "within any two-hour period, the number of starts should be limited to a maximum of three (3) with a minimum idle period of thirty (30) minutes prior to restart."

What is the basis for this precaution?

A. Damage to motor due to overheating

B. Damage to motor breaker due to high current

C. Damage to pump due to overheating

D. Prevent undervoltage condition on 6.9 KV switchgear

ANSWER: A

REFERENCES: OP-MC-PS-NCP

LESSON: OP-MC-PS-NCP

TASK: MO-3308

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
191	005	EK1.06	3.0	3.1

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED: _____
(SENIOR INST.)

QUESTION 12

(1.0 pt) Primary to secondary leakage has been determined to be as follows:

SG A - 4 gph
SG B - 0 gph
SG C - 22 gph
SG D - 0 gph

What Technical Specification limit(s) is/are being exceeded?

A. 0 gpm pressure boundry leakage.

B. 1 gpm total leakage through all S/G's.

C. 10 gpm identified leakage.

D. 500 gpd total leakage through all S/G's.

ANSWER: D

REFERENCES: Tech Specs 3.4.6.2

LESSON: OP-MC-STM-SG

TASK: MO-7309

OBJECTIVES: LPRO OBJ: 8
LPSO OBJ: 8

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
035	010	G-6	2.7	3.7

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

QUESTION 13

(1.0 pt) Which one of the following components will lose KC flow as a result of a LOCA signal?

A. ND Heat Exchanger

B. Post Accident Liquid Sample Heat Exchanger

C. Safety Injection Pump Seal Heat Exchanger

D. Excess Letdown Heat Exchanger

ANSWER: D

REFERENCES: OP-MC-PSS-KC

LESSON: OP-MC-PSS-KC

TASK: MO-8301

OBJECTIVES: LPRO OBJ: 4
LPSO OBJ: 4

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	026	EK3.02	3.6	3.9

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

QUESTION 14

(1.0 pt) Following a reactor trip PORV NC-36B stuck open. (Note: Its switch was left in the "Auto" position.) The operator placed the NC-35B (PORV NC-36B Block Valve) switch to the "Close" position but the valve fails to close. Prior to the reactor trip, NC-33A (PORV NC-34A Block Valve) had been closed by placing its switch to the "Close" position due to NC-34A leaking.

Concerning the above situation which of the following statements is true? (Select One)

A. In order to close the second PORV block valve its switch must be selected to "Override".

B. In order to close any PORV block valve the switch of its associated PORV must be selected to "Close".

C. In order to close the second PORV block valve both switches must be selected to "Override".

D. NC-35B should have closed.

ANSWER: A

REFERENCES: OP-MC-PS-IPE

LESSON: OP-MC-PS-IPE

TASK: MO-6303

OBJECTIVES: LPRO OBJ: 1.I
LPSO OBJ: 1.I

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
002	000	K4.10	4.2	4.4

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 15

(1.0 pt) The following plant conditions exist:

- A steamline rupture has occurred inside containment.
- Containment pressure is 4.2 psig
- Steamline pressure is 500 psig
- NC system pressure is 1800 psig
- A steamline isolation has occurred
- The low steamline pressure SI has been blocked

Which one of the following must occur before the steamline isolation signal can be reset?

A. It can be reset under the current conditions.

B. Containment pressure must decrease to less than 3 psig.

C. Steamline pressure must increase to greater than 585 psig.

D. Containment pressure must decrease to less than 3 psig and steamline pressure must increase to greater than 585 psig.

ANSWER: A

REFERENCES: OP-MC-STM-SM

LESSON: OP-MC-STM-SM

TASK: MO-2313

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
039	000	K4.05	3.7	3.7

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

WRITTEN EXAMINATION COVER SHEET

U. S. NUCLEAR REGUALTORY COMMISSION
SENIOR REACTOR OPERATOR REQUALIFICATION EXAMINATION
ANSWER KEY

FACILITY: McGuire

REACTOR TYPE: PWR

DATE ADMINISTERED: 12/10/90

OPERATOR: _____

SECTION	CATEGORY VALUE	OPERATOR'S SCORE	% OF CATEGORY VALUE
A - Plant and Control Systems (SSE-04)	14	_____	_____

FINAL GRADE _____

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

_____
Candidate's Signature

SRO WEEK 1 PART A SSE-04
12/10/90

1.C

2.D

3.A

4.D

5.D

6.B

7.B

8.D

9.A

10.B

11.C

12.D

13.A

14.D

QUESTION 1

(1.0 pt) Based on present plant conditions what was the cause of the turbine runback? (select one)

A. OTDT due to Power Range Channel 42 failing

B. OPDT due to Power Range Channel 42 failing

C. Loss of "A" CFPT

D. Loss of KG Flow

ANSWER: C

REFERENCES: MC-3
OP-MC-GEN-EHC

LESSON: OP-MC-GEN-EHC

TASK: MO2317

OBJECTIVES: LPRO OBJ: 1.S
LPSO OBJ: 1.S

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
045	000	K4.12	3.3	3.6

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 2

(1.0 pt) What effect will the failure of the power range channel N42 have on the SG Level Control system if operator action is not taken promptly? (select one)

A. N42 Failure will cause S/G's B&C to underfeed causing a Lo-Lo Level Rx Trip on B&C

B. N42 Failure will cause S/G's B&C to overfeed causing a P-14 signal

C. N42 failure will cause all S/G's to underfeed generating a trip on Lo-Lo Level

D. N42 failure will not effect S/G level control

ANSWER: D

REFERENCES: OP-MC-CF-IFE

LESSON: OP-MC-CF-IFE TASK: MO7314

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
015	000	A4.01	3.6	3.6

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 3

(1.0 pt) Based on present plant conditions, which explains the cause of the recent transient observed in pressurizer pressure? (select one)

A. A pressure increase was seen due to an insurge, which is restored by Pzr Sprays.

B. A pressure increase was seen due to an outsurge, which is restored by Pzr Sprays.

C. A pressure increase was seen due to failed Pzr heater control.

D. Actual pressure did not increase, the Pzr pressure master has failed opened Pzr Sprays and PORV's.

ANSWER: A

REFERENCES: MC-10, OP-MC-PS-IPE

LESSON: OP-MC-PS-IPE

TASK: MO6306

OBJECTIVES: LPRO OBJ: 1
LPSO OBJ: 1

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
010	000	G - 5	3.2	3.6

TIME: 4 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (~~SRO~~)

APPROVED: _____ (SENIOR INST.)

QUESTION 4

(1.0 pt) What action if taken would NOT help the plant to stabilize?

A. Place rods in auto

B. Insert rods manually

C. Borate the NC System

D. Start the motor driven CA Pumps manually

ANSWER: D

REFERENCES: OP-MC-IC-IRX

LESSON: OP-MC-IC-IRX

TASK: MO7305

OBJECTIVES: LPRO OBJ: 3.K
LPSO OBJ: 3.K

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
001	050	K5.01	3.3	3.6

TIME: 2 min

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

QUESTION 5

(1.0 pt) Which of the following best describes the condition of 1CM-420 (Full Load Rejection Valve)? (Select One)

A. 100% Open due to low CM booster pump suction pressure

B. 50% open due to low CM booster pump suction pressure.

C. 50% Open due to load rejection.

D. 100% Open due to load rejection.

ANSWER: D

REFERENCES: OP-MC-CF-CM

LESSON: OP-MC-CF-CM

TASK: MO7303

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 5

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
059	000	Gen 1	3.1	3.2

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 6

(1.0 pt) Given initial plant conditions, if the control rods would not insert, approx. how much boric acid (gallons) is required to bring Rx. power to 50%? (select one)

A. 770 gals

B 870 gals

C. 970 gals

D. 1070 gals

ANSWER: B

1. From curve 6.4 (pwr. defect) (.5 pt)
   95% pwr approx. 1786 pcm
   50% pwr approx. 971 pcm
   815 pcm defect

2. From curve 6.8 (differential boron reactivity)
   approx. -9.05 pcm/ppm

3. 815 pcm / 9.05 pcm/ppm = 90 ppm

4. From Section 5.1
   622 ppm + 90 ppm = 712 ppm final

5. Approximately 870 GAL

REFERENCES: Data Book
OP-MC-RT-RP

LESSON: OP-MC-RT-RP

TASK: MO1310

OBJECTIVES: LPRO OBJ: 4
LPSO OBJ: 4

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
004	000	A4.04	3.2	3.6

TIME: 8 mins

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(~~SRO~~)

APPROVED: [signature]
(~~SENIOR~~ INST.)

QUESTION 7

(1.0 pt) Given initial plant conditions and assuming Rods have NOT moved since the event initiation, which of the following is True concerning Technical Specification Rod insertion limits prior to the event? (select one)

A. Since Bank C was greater than 225 steps withdrawn, rod insertion limits were not violated.

B. Since Bank D was greater than 161 steps withdrawn, rod insertion limits were not violated.

C. Since Bank C was less than 225 steps withdrawn, rod insertion limits were violated.

D. Since Bank D was less than 161 steps withdrawn, rod insertion limits were violated.

ANSWER: B

REFERENCES: OP-MC-IC-IRX
COLR

LESSON: OP-MC-IC-IRX

TASK: MO3310

OBJECTIVES: LPRO OBJ: 4
LPSO OBJ: 4

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
001	000	K5.08	3.9	4.4

TIME: 3 mins

REVIEWED: VGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 8

(1.0 pt) Under current plant conditions, if Power Range N-43 were to instantaneously fail high, which one of the following would be the result of this failure? (select one)

A. The reactor would not automatically trip because only 1 out of 4 logic would be met on High Flux Level Trip of 109%.

B. The reactor would automatically trip because 2 out of 4 logic would be met on High Flux Level Trip of 109%.

C. The reactor would not automatically trip because the Power Range N-42 failed low causing a negative rate bistable trip, and Power Range N-43 failed high causing a positive rate bistable trip.

D. The reactor would automatically trip because the Power Range N-42 failed low causing a negative rate bistable trip, and N-43 failed high causing a positive rate bistable trip.

ANSWER: D

REFERENCES: OP-MC-IC-IPE

LESSON: OP-MC-IC-IPE TASK: MO2310

OBJECTIVES: LPRO OBJ: 1.F
LPSO OBJ: 1.F

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
015	000	K4.05	4.3	4.5

QUESTION 9

(1.0 pt) Under present plant conditions, the operator selects OFF on the steam dump select switches. Which one of the following would be the response of the plant to this operator action? (select one)

A. Reactor power would decrease due to reduction in steam demand.

B. Condenser steam dump valves would "Trip Open" due to excessive Tave - Tno Load Deviation.

C. Reactor power would not change because control rods are in "MANUAL".

D. Atmospheric steam dump valves would "trip open" due to excessive Tave-Tref deviation.

ANSWER: A

REFERENCES: OP-MC-STM-IDE

LESSON: OP-MC-STM-IDE

TASK: MO7303

OBJECTIVES: LPRO OBJ: 1.D
LPSO OBJ: 1.D

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
001	000	K5.29	3.7	3.9

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

THE FOLLOWING QUESTIONS DO NOT APPLY TO SCENARIO

QUESTION 10

(1.0 pt) Which one (1) of the following is the correct response of the VUL system if containment pressure increases to greater than 0.5 psig?

A. VU AHUs and RA Fans go to max. cool

B. VL AHUs not running in Hi speed will go to high speed

C. VL AHUs RV flow goes to max.

D. PZR booster fans alternate fan auto starts

ANSWER: B

REFERENCES: OP-MC-CNT-VUL

LESSON: OP-MC-CNT-VUL

TASK: MO-2313

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
022	000	A3.01	4.1	4.3

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 11

(1.0 pt) Given the following conditions:

- Reactor power is 100%.
- Pressurizer level control switch in the 1-2 position.
- Pressurizer level channel 1 fails LOW.
- Pressurizer level control is in AUTO.

WHICH ONE (1) of the following describes the plant response to the pressurizer level channel failure? ASSUME NO operator action is taken.

A. Charging flow decreases, actual level decreases, letdown isolates, and the level stabilizes at setpoint.

B. Charging flow remains the same, letdown flow temperatures increase, and backup heaters turn on.

C. Charging flow increases, letdown isolates, actual level increases, and the reactor trips on high pressurizer level.

D. Charging flow remains the same, letdown isolates, heaters turn off, and the reactor trips on low pressurizer pressure.

ANSWER: C

REFERENCES: OP-MC-PS-ILE

LESSON: OP-MC-PS-ILE TASK: M0-6305

OBJECTIVES: LPRO OBJ: 1
LPSO OBJ: 1

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
004	000	A2.02	3.9	4.2

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 12

(1.0 pt) Given the following plant condition:

- Performance of OP/1/A/6100/01, "Controlling Procedure for Unit Startup".

WHICH ONE (1) of the following would cause the CLA discharge isolation valves to receive an open signal?

A. P-4 actuation

B. Pressurizer low level

C. Steam generator low level

D. P-11 setpoint

ANSWER: D

REFERENCES: OP-MC-ECC-CLA

LESSON: OP-MC-ECC-CLA

TASK: M0-3303

OBJECTIVES: LPRO OBJ: 6
LPSO OBJ: 6

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
013	000	K1.06	4.2	4.4

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 13

(1.0 pt) WHICH ONE (1) of the following causes the steam to flow up through the ice condenser following a LOCA?

A. Lower inlet doors opening to the turning vanes.

B. Containment fans in the bottom of the ice condenser blowing steam up through the ice condenser.

C. Impingement plates directing steam flow upward from the lower plenum.

D. Containment fans in upper containment drawing the steam flow upward.

ANSWER: A

REFERENCES: OP-MC-CNT-NF

LESSON: OP-MC-CNT-NF

TASK: MO-2305

OBJECTIVES: LPRO OBJ: 1
LPSO OBJ: 1

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
022	000	A3.01	4.1	4.3

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

QUESTION 14

(1.0 pt) WHICH ONE(1) of the following is the time delay for the automatic start of the hydrogen skimmer fans on a phase "B" actuation?

A. 10 seconds

B. 30 seconds

C. 7 minutes

D. 10 minutes

ANSWER: D

REFERENCES: OP-MC-CNT-VX

LESSON: OP-MC-CNT-VX

TASK: M0-3341

OBJECTIVES: LPRO OBJ: 6
LPSO OBJ: 6

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
028	000	A4.01	4.0	4.0

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: (SENIOR INST.)

WRITTEN EXAMINATION COVER SHEET

U. S. NUCLEAR REGUALTORY COMMISSION
SENIOR REACTOR OPERATOR REQUALIFICATION EXAMINATION
ANSWER KEY

FACILITY: McGuire

REACTOR TYPE: PWR

DATE ADMINISTERED: 12/18/90

OPERATOR: _____

SECTION	CATEGORY VALUE	OPERATOR'S SCORE	% OF CATEGORY VALUE
A - Plant and Control Systems (SSE-07)	15	_____	_____

FINAL GRADE _____

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

_____
Candidate's Signature

SRO WEEK 2 PART A SSE-07
12/18/90

1.D

2.A

3.B

4.D

5.A

6.B

7.C

8.D

9.A

10.D

11.D

12.D

13.B

14.C

15.B

QUESTION 1

(1.0 pt) Based on plant conditions, would an AUTOMATIC Turbine Trip have occurred? (select one)

A. Yes, Reactor Power remained above P-8, therefore an Automatic Turbine Trip Signal was generated.

B. No, Reactor Power dropped below P-8 before a Turbine Trip Signal was generated.

C. Yes, an Automatic Turbine Trip Signal is generated due to an overspeed condition any time a Reactor Trip occurs.

D. No, due to the Reactor Trip Breakers failure to open, there was no Turbine Trip Signal generated.

ANSWER: D

REFERENCES: OP-MC-MT-MT

LESSON: OP-MC-MT-MT

TASK: MO7302

OBJECTIVES: LPRO OBJ: 21
LPSO OBJ: 21

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
012	000	K1.06	3.1	3.1

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 2

(1.0 pt) Based on present plant conditions, why is the level in "C" Steam Generator signiiicantly lower than in S/G's "A, B, and D"? (select one)

A. The Feedwater Containment Isolation Valve for "C" S/G has failed closed.

B. Wnen CA Auto started, the motor driven CA flow path to "C" S/G was isolated.

C. "C" S/G is faulted inside containment.

D. "C" S/G is faulted outside containment.

ANSWER: A

REFERENCES: OP-MC-CF-CF
MCB's

LESSON: OP-MC-CF-CF

TASK: MO5310

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
059	000	A2.11	3.0	3.3

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

QUESTION 3

(1.0 pt) Based on present plant conditions, what mode of control is being used by the Steam Dump Control System? (select one)

A. Load Rejection, due to C7A and C7B present with condenser and atmospheric dumps open.

B. Load Rejection, due to C7A present with only condenser dumps open.

C. Plant trip controller, due to C7A present with Atmos/Cond. Stm Dump Trip open status indication.

D. Steam dumps are open, but should be blocked due to P-12 signal.

ANSWER: B

REFERENCES: MCB
OP-MC-STM-IDE

LESSON: OP-MC-STM-IDE

TASK: MO6309

OBJECTIVES: LPRO OBJ: 1.D
LPSO OBJ: 1.D

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
041	040	A4.08	3.0	3.1

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(~~SRO~~)

APPROVED:
(SENIOR INST.)

QUESTION 4

(1.0 pt) Based on present plant conditions why is there no "Red" first out annunciator on 1FO-1? (select one

A. The first out Annunciator has been reset manually.

B. The "Red" first out automatically resets.

C. Annunciator Panel 1FO-1 has lost power.

D. The automatic reactor trip failed to take place.

ANSWER: D

REFERENCES: OP-MC-IC-IPE

LESSON: OP-MC-IC-IPE

TASK: MO2301

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	029	EK3.01	4.2	4.5

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED: [signature]
(SENIOR INST.)

QUESTION 5

(1.0 pt) Given the current CA system status, which one(1) of the following statements concerning the "A" MD CA pump miniflow valve is true? (select one)

A. Flowrate through the "A" MD CA pump currently has no effect on either MD CA pump miniflow valve.

B. If Flowrate through the "A" MD CA pump were to decrease to 100 gpm the "A" Train MD CA pump miniflow valve would open.

C. If Flowrate through the "A" MD CA pump were to decrease to 100 gpm both MD CA pump miniflow valves would open.

D. Given current CA system Flowrates both MD CA pump miniflow valves should be open.

ANSWER: A

REFERENCES: OP-MC-CF-CA

LESSON: OP-MC-CF-CA

TASK: MO3314

OBJECTIVES: LPRO OBJ: 7
LPSO OBJ: 7

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
061	000	A3.01	4.2	4.2

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 6

(1.0 pt) Which one(1) of the following statements is true concerning RN given current plant status? (select one)

A. "A" Train RN was automatically started due to the "B" Train CA Automatic Start.

B. "A" Train RN was automatically started due to the "A" Train CA Automatic Start.

C. "B" Train RN was automatically started due to the "A" Train CA Automatic Start.

D. "B" Train RN was automatically started due to the "B" Train CA Automatic Start.

ANSWER: B

REFERENCES: OP-MC-PSS-RN

LESSON: OP-MC-PSS-RN

TASK: MO3333

OBJECTIVES: LPRO OBJ: 6
LPSO OBJ: 6

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
076	000	K1.02	3.4	3.4

TIME: 3 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

QUESTION 7

(1.0 pt) Given current plant conditions, which one(1) of the following automatic actions would NOT occur? (select one)

A. A Containment Phase "A" Isolation if a Manual Safety Injection was initiated.

B. A Main Steam Isolation if Main Steam Pressure decreased to 520 PSIG.

C. A Main Feedwater Isolation if Tave was decreased to 550°F.

D. A Safety Injection Actuation if Containment Pressure increased to 1.2 PSIG.

ANSWER: C

REFERENCES: MC-2
OP-MC-ECC-ISE

LESSON: OP-MC-ECC-ISE

TASK: MO8301

OBJECTIVES: LPRO OBJ: 1.C
LPSO OBJ: 1.C

TIME: 5 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
059	000	K4.19	3.2	3.4

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 8

(1.0 pt) Based on present plant conditions, why is charging flow much less than 87 gpm? (select one)

A. Pzr Level master output has failed to minimum

B. M/A Station for NV-238 has failed to minimum

C. Charging Header Containment Isolation valves are closed

D. Pzr Level is greater than program and charging has reduced to minimum

ANSWER: D

REFERENCES: MCB's
OP-MC-PS-ILE

LESSON: OP-MC-PS-ILE

TASK: MO6305

OBJECTIVES: LPRO OBJ: 1.C
LPSO OBJ: 1.C

TIME: 3 mins

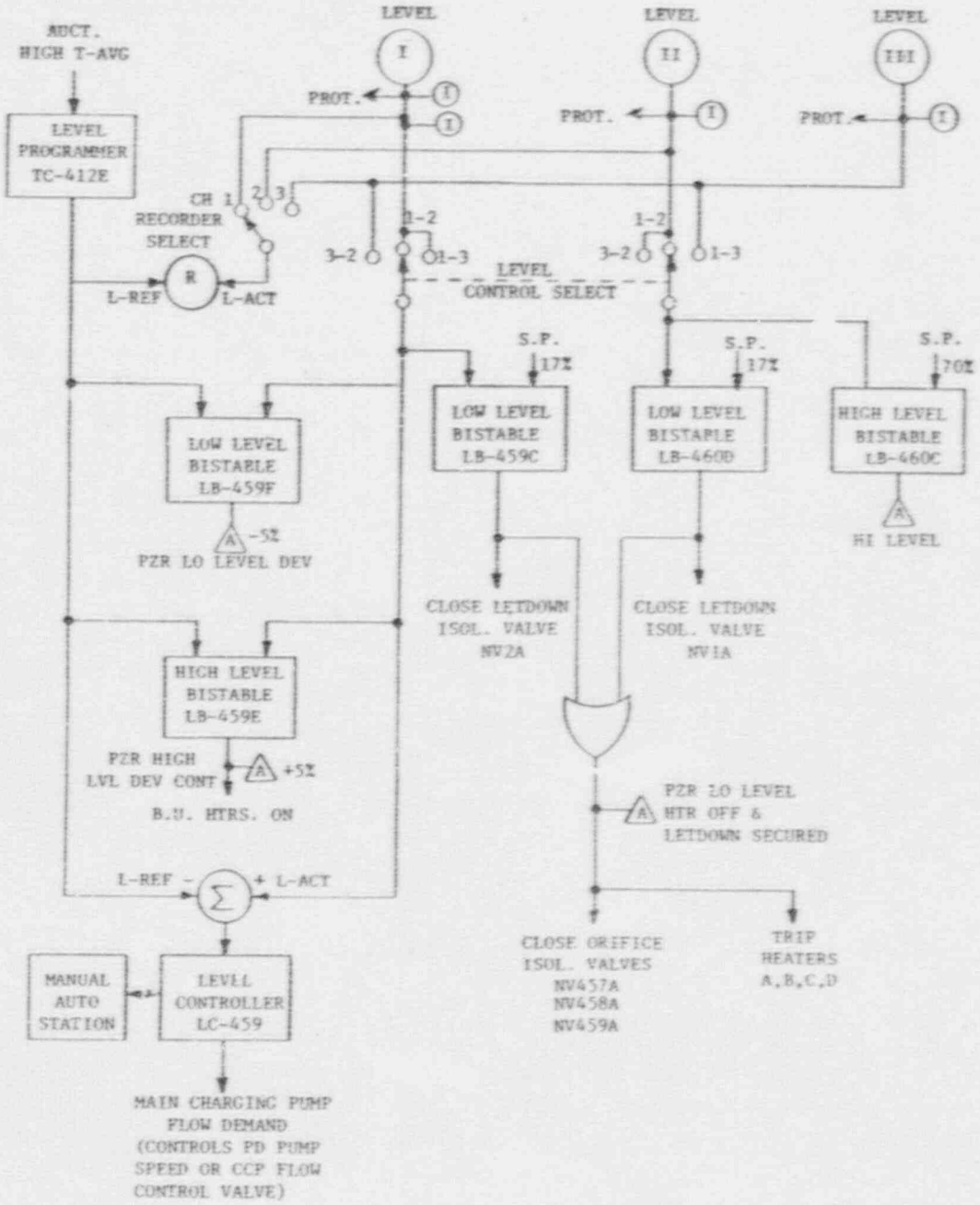
KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
011	000	K4.02	3.3	3.4

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED: _____
(SENIOR INST.)



PRESSURIZER LEVEL CONTROL	
1. COMPOSITE DRAWING OF PZR LEVEL CONTROL CKT.	
MC-IC-ILE-2	DATE: 5/22/85
REF.	TP76313
DRAWN: ARB	APP. WMC
TRAINING USE ONLY	

THE FOLLOWING QUESTIONS DO NOT APPLY TO SCENARIO

QUESTION 9

(1.0 pt) As an operator you determine that you must deviate from the sequence of steps in an operating procedure. What approval must you obtain prior to doing this?

A. Agreement of two licensed operators, one of who is an SRO.

B. Generate a restricted procedure change, obtain Normal Approval.

C. Generate a permanent procedure change, obtain Normal Approval.

D. Agreement of two licensed operator; both must be SRO's.

ANSWER: A

REFERENCES: OMP 1-2

LESSON: OP-MC-ADM-OMP

TASK: MO-1301

OBJECTIVES: LPRC OBJ: 9.B.4
LPSO OBJ: 9.A.4

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	A1.02	4.1	3.9

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 10

(1.0 pt) The reactor is at 60% RTP when the Channel II Turbine Impulse Pressure instrument fails high. How will this affect the plant? Assume rod control in auto, no other failures and no operator action. (Select One)

A. Control rods will begin to step in.

B. Control rods will begin to step out.

C. A DEH runback will occur.

D. If a DEH runback were to occur the steam dumps will not open.

ANSWER: D

REFERENCES: OP-MC-STM-IDE

LESSON: OP-MC-STM-IDE

TASK: MO-2301

OBJECTIVES: LPRO OBJ: 1.D
LPSO OBJ: 1.D

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
041	020	K4.18	3.4	3.6

TIME: 2 mins

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

QUESTION 11

(1.0 pt) If the control rod insertion limits are exceeded during critical operation:

A. QPTR may have been outside Tech Spec limits.

B. There may be excessive boron in the reactor coolant.

C. Radial peaking factors may have been exceeded.

D. The shutdown margin may be inadequate.

ANSWER: D

REFERENCES: Tech Spec 3/4.1.3 Bases
OP-MC-RT-RB

LESSON: OP-MC-RT-RB

TASK: MO-1309

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
001	000	K5.08	3.9	4.4

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED: _____
(SENIOR INST.)

QUESTION 12

(1.0 pt) Given the following conditions:

- Reactor power is 75%
- Channel N41 is the highest reading Power Range Channel.
- Rod control is in AUTOMATIC
- Channel N42 instantaneously fails LOW.
- NO operator action is taken.

WHICH ONE(1) of the following describes the resultant control rod system response?

A. Control rods will drive in at maximum rate.

B. Control rods will drive in at minimum rate.

C. Control rods will drive out.

D. Control rods will not move.

ANSWER: D

REFERENCES: OP-MC-IC-IRX

LESSON: OP-MC-IC-IRX

TASK: M0-3310

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
015	000	K3.02	3.3	3.5

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

QUESTION 13

(1.0 pt) WHICH ONE (1) of the following describes the response of the VUL system if containment pressure increases to 0.5 psig?

A. VU AHU's and RA fans go to maximum cool

B. VL AHU's shift to hi speed

C. VL AHU's RV flow goes to maximum

D. Pressurizer booster fans alternate fan auto starts

ANSWER: B

REFERENCES: OP-MC-CNT-VUL

LESSON: OP-MC-CNT-VUL

TASK: M0-3334

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
022	000	K4.02	3.1	3.4

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

QUESTION 14

(1.0 pt) At WHICH ONE (1) of the following NC system pressures would a CLA tank level decrease first be noted following a large break LOCA?

A. 780 psig

B. 680 psig

C. 580 psig

D. 480 psig

ANSWER C

REFERENCES: OP-MC-ECC-CLA

LESSON: OP-MC-ECC-CLA

TASK: MO-3303

OBJECTIVES: LPRO OBJ: 1
LPSO OBJ: 1

TIME: 2 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
006	000	A3.01	4.0	3.9

REVIEWED: WGH (TRNG. INST.)

REVIEWED: (SRO)

APPROVED: (SENIOR INST.)

QUESTION 15

(1.0 pt) WHICH ONE(1) of the following statements contains logic that would result in containment spray actuation?

A. Manual actuation with Containment Spray/Phase B actuation PB Depressed and CPCS at 0.28 psig

B. Manual actuation with Containment Spray/Phase B actuation PB Depressed and CPCS at 0.40 psig

C. Auto actuation of Containment Spray/Phase B and CPCS at 0.20 psig

D. Auto actuation of Containment Spray/Phase B and CPCS at 0.28 psig

ANSWER: B

REFERENCES: OP-MC-ECC-NS

LESSON: OP-MC-ECC-NS

TASK: M0-8302

OBJECTIVES: LPRO OBJ: 3
LPSO OBJ: 3

TIME: 3 mins

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
026	000	A4.01	4.5	4.3

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

WRITTEN EXAMINATION COVER SHEET

U. S. NUCLEAR REGUALTORY COMMISSION
SENIOR REACTOR OPERATOR REQUALIFICATION EXAMINATION

FACILITY: McGuire

REACTOR TYPE: PWR

DATE ADMINISTERED: 12/10/90

OPERATOR: _____

SECTION	CATEGORY VALUE	OPERATOR'S SCORE	% OF CATEGORY VALUE
B - Adminstrative Controls/ Procedural Limits	24	_____	_____

FINAL GRADE _____

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

_____
Candidate's Signature

SRO WEEK #1
12/10/90

1.C

2.A

3.B

4.B

5.A

6.B

7.C

12.D

13.D

14.C

15.B

16.D

17.A

18.D

19.A

20.B

21.A

22.D

23.C

24.B

(1 pt) 1. While performing the "Transfer to Cold Recirculation (CLR)" procedure (EP/1/A/5000/2.3), the RO has aligned NS for CLR and verified proper CLR flows and valve alignments. While evaluating whether an ND pump should be aligned for Aux. Containment Spray the following information is noted:

1)	Containment Pressure	2.5 psig stable
2)	NC System Pressure	500 psig stable
3)	NC System Highest Temp.	405°F stable
4)	Flow exists from both NV pumps	
5)	Flow exists from "1B" NI pump	
6)	NI pump "1A" is inoperable	
7)	The reactor trip occurred 80 minutes ago	
8)	No ND train is in the RHR mode	

Based on the above, the SRO directs the RO to align ND for Aux. Containment Spray. Is the SRO's decision correct? Why?

A. No. Cont. Press. must be > 1 psig, > 50 minutes elapsed since Rx trip, and flow from one NV or one NI pump.

B. No. Cont. Press. must be > 3 psig, > 50 minutes elapsed since Rx trip, and flow from one NV and one NI pump.

C. Yes. Cont. Press. must be > 1 psig, > 50 minutes have elapsed since Rx trip, and flow from one NV and one NI pump.

D. No. Cont. Press. must be > 1 psig, > 50 minutes elapsed since Rx trip, and flow from two NI and two NV pumps.

ANSWER: C

REFERENCES: EP/1/A/5000/2.3

LESSON: OP-MC-EP-EP2

TASK: MO-8302

OBJECTIVES: LPRO OBJ: E2
LPSO OBJ: E2

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	009	G-12	4.1	4.3
000	011	G-12	4.0	4.1
194	001	A1.02	4.1	3.9

REVIEWED: RHD (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 2. Unit 1 is in Mode 2 when maintenance requests permission for a single maintenance technician to enter the ice condenser. The Shift Manager and Shift Supervisor agree to allow the individual to make the entry alone.

Is their decision to allow this individual to enter the reactor building and ice condenser alone, correct? Select the correct response:

A. No, if the reactor building, including the ice condenser, is to be entered while the NC System is > 200°F, the "Buddy System" must be used.

B. Yes, the ice condenser is not considered to be part of the Reactor Building requiring the buddy system for entry.

C. No, neither the reactor building nor the ice condenser may be entered by anyone while the Unit is in Mode 2 due to high radiation levels.

D. Yes, as long as the technician remains in constant communciation with a person stationed outside the personnel hatch.

ANSWER: A

REFERENCES: S. D. 3.1.8 10/29/87

LESSON: OP-MC-ADM-SD

TASK: MO-1302.1
MO-1610.2

OBJECTIVES: LPRO OBJ: 10.D.4
LPSO OBJ: 10.G.5

TIME: 2 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	K1.08	3.5	3.4
025	000	G-1	3.5	3.8
103	000	G-1	3.5	3.8
194	001	K1.05	3.1	3.4

REVIEWED: WGH (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 3. A reactor trip has occurred. The reactor trip and bypass breakers are open, and neutron flux is decreasing. Rod bottom lights are on, and individual rod position indication is zero for all control rods, except rods D-4 and P-12. They indicate that they are in the full out position. Select the statement that correctly describes the operator action required with respect to core reactivity.

A. No action is required, unless a red path condition for the SUBCRITICALITY critical safety function is present.

B. Compensate for the stuck control rods by using the emergency boration method to increase boron concentration 125 ppm.

C. Compensate for the stuck control rods by using the emergency boration method to increase boron concentration 250 ppm.

D. Compensate for the stuck control rods by using the normal boration method to increase boron concentration 125 ppm.

ANSWER: B

REFERENCES: AP/1/A/5500/38
EP/1/A/5000/1.3

LESSON: OP-MC EP-AP

TASK: MO-8301
MO-7325

OBJECTIVES: LPRO OBJ: 2
LPSO OBJ: 2

TIME: 2 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	024	EA2.05	3.3	4.9

REVIEWED: RHD (TRNG. INST.)

REVIEWED: RMP (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 4. Unit 1 is in Mode 1 at 100% RTP. The Maint. Supervisor informs the Shift Supervisor that SA-2 (SM1B to #1 TD CA pump isol.) and SA-6 (SM1B to #1 TD CA pump ck) needs to be isolated and red tagged so that SA-49 (SM from S/G B to TD CA pump Isol.) may be repaired. It will take approximately 48 hours to complete work on the valve and the work will not affect SA-48 (SM from S/G C to TD CA pump Isol.) steam supply

Evaluate the above information and select the correct response based on that evaluation: (Select one)

A. Declare the CA TD pump inoperable and begin a unit shutdown to Hot Standby immediately.

B. Declare the TD CA pump inoperable, and return pump to operable status within 72 hours or be in Hot Standby within next 6 hours.

C. No action required provided SA-48 remains operable during the repair of SA-49, otherwise declare the TD CA pump inoperable.

D. Immediately place SA-48 in its ESF position and continue unit operation.

ANSWER: B

REFERENCES: Tech. Spec. 3.7.1.2
Interpretation 3.7.1.2

LESSON: OP-MC-CF-CA

TASK: MO-3314

OBJECTIVES: LPRO OBJ: 9B
LPSO OBJ: 9B

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
061	000	G-11	3.4	4.1

REVIEWED: DWA (TRNG. INST.)

REVIEWED: RMP (~~SRO~~)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 5. Your shift crew is in the process of cooling down Unit 1 from the Aux. Shutdown Panel following control room evacuation. You are attempting to place the ND System in service to continue the cooldown, however, ND-2 (ND Suction from NC System Isolation) cannot be opened. The following conditions exist at this time:

NC Wide Range Th = 325°F
ND Pump Discharge Temperature = 180°F
NC Wide Range Pressure = 395 psig
Pressurizer level = 22%
Pzr Steam Space Temp from OAC = 450°F

What must be done to open ND-2? (Select one)

A. Depressurize NC system pressure to < 385 psig

B. Ensure ND-2 enable/disconnect switch is in the "Enable" position

C. Decrease NC wide range Th to < 300°F

D. Decrease pressurizer steam space temperature to < 385°F

ANSWER: A

REFERENCES: OP/1/A/6100/04 3/27/87

LESSON: CP-MC-CP-SS

TASK: MO-6305

OBJECTIVES: LPRO OBJ: 2A
LPSO OBJ: 2A

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	068	G-7	3.4	3.5

REVIEWED: RCN (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: [signature] (SENIOR) INST.)

(1 pt) 6. Unit 1 is being shutdown to Mode 5. Reactor Coolant System T-ave = 557°F and Pressure = 2235 psig. The RO has just completed fully inserting shutdown bank "A". While opening the reactor trip switches, the RO fails to depress and hold either train "1A" or "1B" "Feedwater Isolation Reset" pushbuttons.

Should a feedwater isolation result?

A. Yes, the setpoint is 564°F with a reactor trip.

B. No, the setpoint is 553°F with a reactor trip.

C. No, the setpoint is 551°F with a reactor trip.

D. Yes, the setpoint is 557°F with steam dumps in pressure mode.

ANSWER: B

REFERENCES: OP/1/A/6150/08 10/5/87
OP/1/A/6100/02 9/9/88
EP/1/A/5000/01
EP/1/A/5000/1.3

LESSON: OP-MC-CF-CF

TASK: MO-2313.2
MO-3310.5
MO-5304.3

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
059	000	K4.19	3.2	3.4
		G-7	3.1	3.2
013	000	K1.15	3.4	3.8
		K4.13	3.7	3.9

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: HLM
(SRO)

APPROVED: _____
(SENIOR INST.)

(1 pt) 7. While moving spent fuel in the Unit 1 Spent Fuel Building, a spent fuel assembly accidentally drops due to a fuel handling crane mechanical failure. Almost immediately 1EMF-17 (Spent Fuel Bldg. Refuel. Bridge) and 1EMF-42 (Spent Fuel Bldg. Ventilation) both exceed their Trip II alarm setpoint. The fuel handling SRO reports seeing major damage to several spent fuel assemblies in the bottom of the spent fuel pool. (Dose rate calculations indicate 70 mRem/Hr whole body for 30 minutes at the site boundary.)

Based on this information the control room SRO should declare the following emergency classification: (Select one)

A. Unusual Event

B. Alert

C. Site Area Emergency

D. General Emergency

ANSWER: C

REFERENCES: RP/C/A/5700/00 8/11/89

LESSON: OP-MC-EP-EMP

TASK: MO-9302
MO-9305

OBJECTIVES: LPRO OBJ: 1, 8
LPSO OBJ: 1, 10

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	A1.16	3.1	4.4
000	036	G-2	2.6	4.1

REVIEWED: WGH (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 8. You have just completed a VQ Release which took 32 minutes to reduce containment pressure from .19 psig to .12 psig. The VQ Totalizer has been inoperable for the last two days. What is the total VOLUME released?

A. 6453.2 ft^3

B. 6090.8 ft^3

C. 5854.0 ft^3

D. 5253.8 ft^3

ANSWER: B

REFERENCES: OP/1/A/6450/17 Enc. 5.2

LESSON: OP-MC-CNT-VQ

TASK: MO-3340.1
MO-3340.3

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 5

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	A1.02	4.1	3.9

REVIEWED: DWA (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 9. Unit 1 is at 100% RTP when a low steam line pressure safety injection occurs. The RO notes the following information while performing the "Safety Injection" procedure (EP/1/A/5000/01):

1)	The MSIV's have shut	
2)	Containment Radiation Monitors (1EMF-51A, 51B, 1EMF-9, 1EMF-16)	Normal
3)	Containment Pressure	.12 psig
4)	Containment Sump Level	Normal
5)	"Ice Cond. Lower Inlet Doors Open" Alarm	Dark
6)	"1A" S/G SM Pressure	800 psig ↔
7)	"1B" S/G SM Pressure	800 psig ↔
8)	"1C" S/G SM Pressure	400 psig ↓
9)	"1D" S/G SM Pressure	800 psig ↔
10)	"1A" S/G NR Level	35% ↔
11)	"1B" S/G NR Level	38% ↔
12)	"1C" S/G NR Level	10% ↓
13)	"1D" S/G NR Level	39% ↔

Based on the information available, the SRO should implement: (Select one)

A. EP/1/A/5000/02 (High energy line break inside containment)

B. EP/1/A/5000/1.2 (SI Termination following spurious SI)

C. EP/1/A/5000/03 (Steam break outside containment)

D. EP/1/A/5000/04 (S/G tube rupture)

ANSWER: C

REFERENCES: EP/1/A/5000/03
EP/1/A/5000/01

LESSON: OP-MC-EP-EP3

TASK: MO-8301
MO-8303

OBJECTIVES: LPRO OBJ: 1
LPSO OBJ: 1

TIME: 2 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	040	EA2.01	4.2	4.7
		EA2.03	4.6	4.7
		G-11	4.1	4.3
		G-12	3.8	4.1

REVIEWED: RHD (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 10. Following a Unit 1 Loss of Coolant Accident, the H_2 Recombiners must be placed in operation per EP/1/A/5000/15.1 Step 10C. Determine the power setting for H_2 recombiner 1A if containment pressure is 5.2 psig.[2] (Select one)

A. ≈ 25.6 KW

B. ≈ 35.6 KW

C. ≈ 49.9 KW

D. ≈ 51.3 KW

ANSWER: C (calculation worksheet not needed for full credit)

Power Setting = Reference Power x Pressure Factor

Reference Power = 35.670 KW from Data Book Curve
Pressure Factor = 1.4

Power Setting = 35.670 KW x 1.4

Power Setting = 49.938

REFERENCES: OP/1/A/6100/22 Curve 1.8 (11-11-87)
OP/1/A/6450/10 Enc. 4.2 (11-17-87)

LESSON: OP-MC-CNT-VX

TASK: MO-3341

OBJECTIVES: LPRO OBJ: 11A
LPSO OBJ: 11A

TIME: 6 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
028	000	A2.01	3.4	3.6
		G-9	3.2	3.4
		G-13	3.1	3.2

REVIEWED: DWA (TRNG. INST.)

REVIEWED: RMP (SRO)

APPROVED: (SENIOR INST.)

(1 pt) 11. During performance of the Standby Shutdown Facility Operability Test, the operator records the following S/G Levels:

S/G "A" - 55%
S/G "B" - 74%
S/G "C" - 75%
S/G "D" - 81%

Do the S/G levels meet the Acceptance Criteria?

A. No - because the "A" S/G level is outside the acceptable range.

B. No - because the "A" and "D" S/G levels are outside the acceptable range.

C. Yes - because all S/G's are within the acceptable range.

D. Yes - because the "B", "C", and "D" S/G's are within the acceptable range and only 3 of 4 S/G's must meet the acceptance criteria.

ANSWER: A

REFERENCES: PT/0/A/4200/02
Selected License Commitment 16.9-7
Sept. 7, 1984 Memorandum for Standby Shutdown Systems

LESSON: OP-MC-CP-AD

TASK: MO-5307.9

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
035	000	G-5	3.2	3.8
		G-11	2.9	3.7

REVIEWED: WGH (TRNG. INSTR.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 12. During decay heat removal operations with no significant NCS vent, NC level is 13 inches and ND train "B" in service. The RO notices ND Pump "B" amps abnormally high and ND flow approximately 4300 gpm. It appears that ND-34 (A & B ND Hx Bypass) has failed open. What action should be taken? (Select One)

A. Immediately trip ND Pump "B" and start ND Pump "A".

B. Close ND-1B or ND-2A, trip "B" ND pump and locally vent both ND pumps suctions.

C. Close ND-33 (A ND Hx Bypass) and ND-18 (B ND Hx Bypass), if bypass flow is required use ND-18 to throttle flow.

D. Throttle NI-178B (Train B ND to C & D CL) and NI-173A (Train A ND to A & B CL) locally to control ND flow.

ANSWER: D

REFERENCES: AP/1/A/5500/19 (10/16/90)

LESSON: OP-MC-EP-AP

TASK: MO-7317

OBJECTIVES: LPRO OBJ: OP-MC-SAO-A19; 3
LPSO OBJ: OP-MC-SAO-A19; 1

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	025	EK3.01	3.1	3.4
		G-7	3.4	3.6
		G-11	3.6	3.9
		G-12	3.3	3.5

REVIEWED: RHD (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: (SENIOR INST.)

(1 pt) 13. A safety injection occurred on Unit 1 and the following conditions exist:

A)	Main Steam Header Pressure	950 psig stable
B)	S/G Pressures	950 psig stable
C)	Containment Pressure	.15 psig stable
D)	All S/G Narrow Range Levels	29% slowly increasing
E)	Floor & Equipment Sump Level	6 inches stable
F)	NC Loop T-Hot All ≈	542°F slowly decreasing
G)	EMF's (Radiation Monitoring)	
	1) Containment EMF's	Normal
	2) Steamline EMF's 1EMF-24, 25, 26, 27	Normal
	3) Condenser Air Ejector (1EMF-33)	Inoperable
	4) S/G Sample (1EMF-34)	Normal
H)	NCS pressure	2170 psig increasing slowly
I)	Pressurizer level	28% slowly increasing

Select the procedure the operator will use to address this accident: (Select one)

A.	EP/1/A/5000/02	High Energy Line Break Inside Containment
B.	EP/1/A/5000/03	Steamline Break Outside Containment
C.	EP/1/A/5000/04	Steam Generator Tube Rupture
D.	EP/1/A/5000/1.2	SI Termination following Spurious SI

ANSWER: D

REFERENCES: EP/1/A/5000/01 Chg. 1

LESSON: OP-MC-EP-EP1

TASK: MO-8301.1

OBJECTIVES: LPRO OBJ: A4
LPSO OBJ: A4

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	037	EK3.02	3.2	3.5
		EK3.05	3.7	4.0
		EK3.07	4.2	4.4
		EA1.06	3.8	3.9
		EA1.13	3.9	4.0
		G-11	3.9	4.1

REVIEWED: DWA (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 14. While performing the Semi-daily PT/1/A/4600/03A with the unit at 100% RTP, the following level indications were noted associated with the FWST:

CH I	CH II	CH IV
160"	155"	160"

Does the FWST level channels meet the acceptance criteria of the procedure? (Select one)

A. No, Channel II is not within ± 4% of the average of the three level channels.

B. No, Channel II is not within ± 4" of the average of the three level channels.

C. Yes, Channel II is within ± 4% of the average of the three level channels.

D. Yes, The FWST level channels meet acceptance criteria because they are not required to be operable in this mode.

ANSWER: C

REFERENCES: PT/1/A/4600/03A
Tech. Spec. 3.3.2
Reading Package 89-007

LESSON: OP-MC-FH-FW

TASK: MO-3307

OBJECTIVES: LPRO OBJ: 6, 8
LPSO OBJ: 6, 8

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
002	020	G-11	3.3	4.0
006	C20	A1.09	3.3	3.9
		A3.04	4.2	4.3

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 15. Due to a problem with the air side seal oil pump relief valve leaking, full air side seal oil pressure cannot be maintained. The decision is made to continue operation with a reduced generator hydrogen pressure of 45 psig. The generator has a 0.9 lagging power factor. Select one of the following:

A. Full power operation may continue for 1 hour

B. Limit power to approximately 975 MW

C. Start the DC air side seal oil pump, continue full power operation

D. Generator H-2 pressure must be reduced to 2 psig and load reduced to 10% if the relief cannot be repaired

ANSWER: B

REFERENCES: OP/1/B/6300/04
OP/1/A/6100/22 Enclosure 4.3, Curve 3.1

LESSON: OP-MC-GEN-MG

TASK: MO-3321.3

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	A1.02	4.1	3.9
		A1.08	2.6	3.1

REVIEWED: WGH (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 16. Given the following:

- A Steamline break in the containment
- EP/1/A/5000/02 "HELBIC" in progress
- The OAC is inoperable
- The STA is monitoring CSF status trees

Power range (% Power)		0%
Intermediate Range (Ion Chamber Amps)	≈	5×10^{-11} amps
Intermediate Range SUR (DPM)		0.0 DPM
Source Range Counts (CPS)	≈	5×10^{3} CPS
Source Range SUR (DPM)	+	.5 DPM

What is the correct action based on this status tree evaluation?

A. Immediately go to EP/1/A/5000/11.1, Response to Nuclear Power Generation (ATWS).

B. Immediately go to EP/1/A/5000/11.2, Response to loss of core shutdown.

C. Evaluate the other 5 status trees for non green status, if all are green then immediately go to EP/1/A/5000/11.2, Response to loss of core shutdown.

D. Evaluate the other 5 status trees. If all are green then implement EP/1/A/5000/11.2, Response to loss of core shutdown when practical.

ANSWER: D

REFERENCES: EP/1/A/5000/10
EP/1/A/5000/11.2

LESSON: OP-MC-EP-EPF

TASK: MO-8309.3
MO-8310

OBJECTIVES: LPRO OBJ: 9D
LPSO OBJ: 9D

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	029	EA2.01	4.4	4.7
		G-11	4.4	4.6

REVIEWED: RHD (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 17. Unit 1 is at 100% power with the pressurizer level master in manual due to maintenance on the Auto level control.

What automatic actions will occur if pressurizer level decreases to 15%? Select the most complete choice.

A. Letdown isolation valves NV-1 and 2 close. Orifice and flow control valves NV 457, 458 and ~~459~~ 35 close. All pzr. heaters trip.

B. Letdown orifice and flow control valves NV-457, 458 and ~~459~~ 35 close and ALL pzr. heaters trip.

C. All pzr. heaters trip and letdown isolation valves NV-1 and 2 close. Excess letdown isolation valves NV-24 and 25 close.

D. Letdown isolation valves NV-1 and 2 close. Letdown orifice and flow control valves NV-457, 458 and ~~459~~ 35 close.

ANSWER: A

REFERENCES: Annunciator Response
OP/1/A/6100/10G AD6-D7

LESSON: OP-MC-PS-ILE

TASK: MO-6305.7

OBJECTIVES: LPRO OBJ: 1E
LPSO OBJ: 1E

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
011	000	K4.01 K4.06	3.3 3.3	3.7 3.7

REVIEWED: RCN (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 18. On 2/1/90 a DEH runback from 100% RTP to 50% RTP occurred. 1EMF-48 (Reactor Coolant Hi Rad) alarmed. The following NC System Chemistry data was obtained:

DATE	TIME	RTP	DOSE EQUIVALENT I-131 IN MICROCURIES PER GRAM
2/1/90	1300	50%	1.1
	1700	60%	6.0
	2100	70%	18.2
2/2/90	0100	80%	32.5
	0500	90%	58.5
	0900	100%	42.9
	1300	100%	30.1
	1700	100%	10.6
	2100	100%	2.1
2/3/90	0100	100%	0.7
	0500	100%	0.9
	0900	100%	0.4
	1300	100%	0.5
	1700	100%	0.8

Given the above information which of the following should have been the correct action? (Select one)

A. The reactor should have been placed in hot standby with T-avg less than 500°F within 6 hours of the 1300 sample taken on 2/1/90.
B. The reactor should have been placed in hot standby with T-avg less than 500°F within 6 hours of the 2100 sample taken on 2/1/90.
C. The reactor should have been placed in hot standby with T-avg less than 500°F within 6 hours of the 0500 sample taken on 2/3/90.
D. No reactor shutdown was required and RTP could be returned to 100%.

ANSWER: D

REFERENCES: Tech. Spec. 3.4.8
AP/1/A/5500/18

LESSON: OP-MC-PS-NC

TASK: MO-7316
MO-9300

OBJECTIVES: LPRO OBJ: 11
LPSO OBJ: 11

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	076	EK3.06	3.2	3.8
002	000	G-5	3.6	4.1
		G-11	3.3	4.0

REVIEWED: WGH
(TRNG. INST.)

REVIEWED: JRP
(SRO)

APPROVED: _____
(SENIOR INST.)

(1 pt) 19. Unit 1 is in cold shutdown with the loops filled. ND Train A is in operation, steam generators A and B have been drained, C & D SG levels are 15% and 25% respectively. Mechanical maintenance has submitted a work request for approval to begin work on the B train ND pump which requires disconnecting the motor from the pump to replace the mechanical seal.

Which of the following statements are justified? (select one)

A. Approve the work request, since Tech. Specs. require only one RHR loop to be in operation and 2 SG levels greater than 12%.

B. Do not approve the work request, even though Tech. Specs. allow one RHR loop to be inoperable for up to 2 hours for surveillance testing this work request is not considered to be surveillance testing.

C. Do not approve the work request, Tech. Specs. require both RHR trains operable with one in operation in this plant condition.

D. Approve the work request, since the ONLY Tech. Specs. requirement in this plant condition for decay heat removal is one RHR Loop.

ANSWER: A

REFERENCES: Tech. Spec. 3.4.1.4.1
PT/1/A/4600/03A

LESSON: OP-MC-PS-NC

TASK: MO-4326

OBJECTIVES: LPRO OBJ: 11
LPSO OBJ: 11

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
002	000	G-11	3.3	4.0

REVIEWED: RCN (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 20. Unit 1 is in Mode 3 at normal operating temperature and pressure. Preparations for a normal startup are underway. I&E has been testing the "1B" Reactor Coolant Pump (NCP) safety breaker. In cooperation with I&E, the RO has stopped and started "1B" NCP as follows: (NOTE: Prior to 1100 the "1B" NCP had not run for 24 hours.)

1100 Started "1B" NCP	1146 Stopped "1B" NCP
1108 Stopped "1B" NCP	1220 Started "1B" NCP
1140 Started "1B" NCP	1225 Stopped "1B" NCP

The measured stator temperature is 245°F. I&E requests the RO to again start "1B" NCP at 1257. Assume all NCP starting parameters are normal, should the RO start the NCP? (Select one)

A. Yes; NCP starts are limited to every thirty minutes and therefore a fourth start can be made at this time.

B. No; When three NCP starts have been made within a two hour period, a fourth start should not be made until the NCP has cooled for at least one hour.

C. Yes; A fourth NCP start would be allowed within a two hour period if stator winding temperatures are less than 248°F.

D. No; NCP starts are limited to two starts in an hour to be followed by only one start every hour thereafter.

ANSWER: B

REFERENCES: OP/1/A/6150/02A

LESSON: OP-MC-PS-NCP

TASK: MO-3308

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
003	000	G-10	3.3	3.6

REVIEWED: RHD (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 21. Unit 1 is at 30% RTP when the Aux. Building NOT reports that he has secured the "1A" Aux. Building (VA) filtered exhaust fan accidentally. Assume VA is in a normal alignment prior to filtered exhaust fan "1A" being secured. Which of the following lists all actions which will occur as a result of VA filtered exhaust fan "1A" being secured? (Select one)

A. VA Supply Fans "1A", "1B", "2A" and "2B" will trip.

B. VA Supply Fans "1A" and "2A" will trip.

C. VA Supply Fans "1B" and "2B" will trip.

D. VA Supply Fans "1A" and "1B" will trip.

ANSWER: A

REFERENCES: OP/0/A/6450/03

LESSON: OP-MC-PSS-VA

TASK: MO-3339

OBJECTIVES: LPRO OBJ: 1
LPSO OBJ: 1

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	A1.13	4.3	4.1

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 22. Select the action required if, during a reactor startup you observe the following conditions on the control room instrumentation following a Control Bank C withdrawal to 38 steps. The ECP is 110 steps Bank D.

Source Range Counts = 1500 CPS and Increasing. Source Range Start-up Rate = + .25 DPM and constant.

A. Insert the Control Banks, recheck the ECP calculations, check shutdown margin and notify the Reactor Unit.

B. Manually trip the reactor and notify the Reactor Unit.

C. Maintain reactor power constant and notify the Reactor Unit.

D. Emergency borate and continue to withdraw rods to maintain criticality until the control banks are above the insertion limit, stop boration and notify the Reactor Unit.

ANSWER: D

REFERENCES: OP/0/A/6100/06

LESSON: OP-MC-RT-RB

TASK: MO-2309

OBJECTIVES: LPRO OBJ: 4D
LPSO OBJ: 4D

TIME: 7 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
001	010	A2.07	3.6	4.2

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 23. Unit 1 has experienced a small break LOCA and you are performing EP2.2 Post LOCA Cooldown and Depressurization. While monitoring the CSF Status Trees the following conditions are observed:

1) The Operator Aid Computer is inoperable.
2) Subcooling: -10°F
3) Pressurizer level: 2%
4) Containment Pressure: 3.5 psig
5) Avg. of 5 highest core exit T/C's: 710°F
6) RVLIS lower range level: 40%
7) All RC pumps are off.
8) Source Range Count Rate: 1500 CPS and constant
9) Total CA flow to SG's: 200 gpm
10) All SG Narrow Range levels: 0%

Which Emergency Procedure should be implemented?

A. EP/1/A/5000/16.2 Response to Low Pressure Level

B. EP/1/A/5000/15.1 Response to High Containment Pressure

C. EP/1/A/5000/12.1 Response to Inadequate Core Cooling

D. EP/1/A/5000/11.2 Response to Loss of Core Shutdown

ANSWER: C

REFERENCES: EP/1/A/5000/12.1
EP/1/A/5000/10

LESSON: OP-MC-EP-EP7

TASK: MO-8309
MO-8311
MO-4613

OBJECTIVES: LPRO OBJ: B
LPSO OBJ: B

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	074	G-11	4.5	4.6

REVIEWED: RCN (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 24. With Unit 1 in Mode 6, a Health Physics technician brings the Containment Purge Gaseous Release Paperwork to the Control Room. The Radiation Monitor used on the paperwork is EMF-39 (Containment Gas Low Range). During the Containment Purge release authorizing review, the Shift Supervisor noted that EMF-39 (Containment Gas Low Range) was inoperable.

With a containment air release in progress, what action must be taken? (Select one)

A. Recalculate the release paperwork using EMI-36 (Unit Vent Gaseous)

B. Stop the containment air release

C. Obtain hourly grab samples of containment air while the release is in progress.

D. Log the start and stop time of the release and use the last sample results to calculate activity released.

ANSWER: B

REFERENCES: Tech. Spec. 3.3.3.9
Tech. Spec. 3.3.3.9 interpretation

LESSON: [redacted]P-MC-WE-WG

TASK: MO-2603.4

OBJECT[redacted]

LPRO OBJ: 8
LPSO OBJ: 8

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
071	000	A2.02	3.3	3.6
		A3.02	3.6	3.8
		A4.26	3.1	3.9
		G-5	2.4	3.1
		G-11	2.4	3.1

REVIEWED: DWA (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: [signature] (SENIOR INST.)

WRITTEN EXAMINATION COVER SHEET

U. S. NUCLEAR REGUALTORY COMMISSION
SENIOR REACTOR OPERATOR REQUALIFICATION EXAMINATION

FACILITY: McGuire

REACTOR TYPE: PWR

DATE ADMINISTERED: 12/18/90

OPERATOR: _____

SECTION	CATEGORY VALUE	OPERATOR'S SCORE	% OF CATEGORY VALUE
B - Adminstrative Controls/ Procedural Limits	22	_____	_____

FINAL GRADE _____

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

_____
Candidate's Signature

SRO WEEK #2 - PART B
12/18/90

1.B

2.B

3.A

4.B

5.D

6.B

7.B

8.A

9.C

10.C

11.C

12.C

13.A

14.A

15.B

16.C

17.D

18.C

19.D

20.D

21.B

22.C

(1 pt) 1. The following conditions exist:

- Unit 1 is in Mode 6
- Defueling in progress with one half of the assemblies removed
- "A" ND Pump operating with 3200 gpm flow
- "B" ND Pump is inoperable
- NC WR level meter is inoperable
- Refueling cavity water level is 25 inches below the cavity window

Evaluate the above information and select the proper action based on that evaluation: (Select one)

A. Immediately suspend core alterations and begin Emergency Boration of refueling cavity to ensure Keff is $\leq$ .95.

B. Immediately suspend all operations involving movement of fuel assemblies or control rods within the reactor vessel and take action to immediately restore ND pump 1B to operable or restore refueling canal level to $\geq$ 23 ft. above reactor vessel.

C. Continue to defuel the unit while monitoring ND Train "A" temperature to be $\leq$ 140°F and radiation levels within the reactor building to be stable or decreasing.

D. Continue to defuel the unit while monitoring ND Train "A" flow to be $\geq$ 2000 gpm.

ANSWER: B

REFERENCES: Tech. Spec. 3.9.8.2, 3.9.9
PT/1/A/4600/03A 3/23/89
PT/1/A/4600/03B 3/28/89

LESSON: OP-MC-FH-FC

TASK: MO-9313
MO-4326
MO-4327

OBJECTIVES: LPRO OBJ: 14
LPSO OBJ: 14

TIME: 7 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
015	000	G-11	3.1	3.8

REVIEWED: RCN (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 2. Which one of the following indicates how NC pump operation decreases the likelihood of pressurized thermal shock? (Select one)

A. Increased heat input from the NC pumps will reduce cooldown rate.

B. Improves mixing of the cold incoming SI flow with warm reactor coolant.

C. Causes NC pressure to decrease due to collapsing the void in the upper head.

D. Provides more accurate temperature indication due to increased coolant flow past the T_h RTD's.

ANSWER: B

REFERENCES: EP/1/A/5000/14.1

LESSON: OP-MC-EP-EP9

TASK: MO-8313
MO-4615

OBJECTIVES: LPRO OBJ: B2
LPSO OBJ: B2

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	009	EK3.08	3.8	4.4

REVIEWED: RHD (TRNG. INST.)

REVIEWED: RMP (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 3. Unit 1 has been operating at 100% RTP when Radiation Protection informs the RO that the specific activity of the Secondary Coolant System is 0.15 micro-curies/gram dose equivalent Iodine-131.

What actions are required given these condtions? (Select one)

A) Be in Hot Standby within 6 hours and Cold Shutdown within the following 30 hours.

B) Ee in Hot Standby within 7 hours and in Cold Shutdown within the following 30 hours.

C) No action is required.

D) Be in Cold Shutdown within 30 hours.

ANSWER: A

REFERENCES: Tech. Spec. 3.7.1.3

LESSON: OP-MC-CF-CM

TASK: MO-5310

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	037	EK3.05 G-8	3.7 3.1	4.0 3.9

REVIEWED: WGH (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: (SENIOR INST.)

(1 pt) 4. You have just completed a VQ Release which took 32 minutes to reduce containment pressure from .19 psig to .12 psig. The VQ Totalizer has been inoperable for the last two days. What is the <u>total VOLUME</u> released?

A. 6453.2 ft^3

B. 6090.8 ft^3

C. 5854.0 ft^3

D. 5253.8 ft^3

ANSWER: B

REFERENCES: OP/1/A/6450/17 Enc. 5.2

LESSON: OP-MC-CNT-VQ

TASK: MO-3340.1
MO-3340.3

OBJECTIVES: LPRO OBJ: 5
LPSO OBJ: 5

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	A1.02	4.1	3.9

REVIEWED: DWA (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 5. A safety injection occurred on Unit 1 and the following conditions exist:

A)	Main Steam Header Pressure	950 psig stable
B)	S/G Pressures	950 psig stable
C)	Containment Pressure	.15 psig stable
D)	All S/G Narrow Range Levels	29% slowly increasing
E)	Floor & Equipment Sump Level	6 inches stable
F)	NC Loop T-Hot All ≈	542°F slowly decreasing
G)	EMF's (Radiation Monitoring)	
	1) Containment EMF's	Normal
	2) Steamline EMF's 1EMF-24, 25, 26, 27	Normal
	3) Condenser Air Ejector (1EMF-33)	Inoperable
	4) S/G Sample (1EMF-34)	Normal
H)	NCS pressure	2170 psig increasing slowly
I)	Pressurizer level	28% slowly increasing

Select the procedure the operator will use to address this accident: (Select one)

A.	EP/1/A/5000/02	High Energy Line Break Inside Containment
B.	EP/1/A/5000/03	Steamline Break Outside Containment
C.	EP/1/A/5000/04	Steam Generator Tube Rupture
D.	EP/1/A/5000/1.2	SI Termination following Spurious SI

ANSWER: D

REFERENCES: EP/1/A/5000/01 Chg. 1

LESSON: OP-MC-EP-EP1

TASK: MO-8301.1

OBJECTIVES: LPRO OBJ: A4
LPSO OBJ: A4

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	037	EK3.02	3.2	3.5
		EK3.05	3.7	4.0
		EK3.07	4.2	4.4
		EA1.06	3.8	3.9
		EA1.13	3.9	4.0
		G-11	3.9	4.1

REVIEWED: DWA (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: (SENIOR INST.)

(1 pt) 6. Following a Unit 1 Loss of Coolant Accident, the H_2 Recombiners must be placed in operation per EP/1/A/5000/15.1 Step 10C. Determine the power setting for H_2 recombiner 1A if containment pressure is 5.2 psig. (Select one)

A. ≈ 51.3 KW

B. ≈ 49.9 KW

C. ≈ 35.6 KW

D. ≈ 25.6 KW

ANSWER: B (calculation worksheet not needed for full credit)

Power Setting = Reference Power x Pressure Factor

Reference Power = 35.670 KW from Data Book Curve
Pressure Factor = 1.4

Power Setting = 35.670 KW x 1.4

Power Setting = 49.938

REFERENCES: OP/1/A/6100/22 Curve 1.8 (11-11-87)
OP/1/A/6450/10 Enc. 4.2 (11-17-87)

LESSON: OP-MC-CNT-VX

TASK: MO-3341

OBJECTIVES: LPRO OBJ: 11A
LPSO OBJ: 11A

TIME: 6 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
028	000	A2.01	3.4	3.6
		G-9	3.2	3.4
		G-13	3.1	3.2

REVIEWED: DWA (TRNG. INST.)

REVIEWED: RMP (SRO)

APPROVED: (SENIOR INST.)

(1 pt) 7. Unit 1 is being cooled down to Mode 5. Select the statement below which is the MINIMUM action which must be performed while in Mode 4 in order to comply with Tech. Specs.

Prior to any cold leg temperature decreasing below 300°F, rack out and tag the breaker for:

A. One centrifugal charging pump only.

B. One centrifugal charging pump and one safety injection pump.

C. Both centrifugal charging pumps and one safety injection pump.

D. Both centrifugal charging pumps and both safety injection pumps.

ANSWER: B

REFERENCES: Tech. Spec. 3.5.3
OP/1/A/6100/02 1/20/89
PT/1/A/4600/03A 1/18/89

LESSON: OP-MC-ECC-NI

TASK: MO-4326

OBJECTIVES: LPRO OBJ: 7
LPSO OBJ: 7

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
006	000	G-5 G-11	3.5 3.6	4.2 4.2

REVIEWED: RCN (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 8. During performance testing of NS Train "B", NS-12B (Containment Spray Pump B Discharge Isolation Valve) was determined to be incapable of automatic closing or opening, but could be manually positioned. What is the impact of NS-12B being open and incapable of automatic closing on the operability and operation of NS Train "B"? (Select one)

A. NS Train "B" is operable, however inadvertent operation of "B" NS Pump would spray down containment.

B. NS Train "B" is operable, however in the event of an automatic spray actuation, the Containment Pressure Control System (CPCS) would not function to prevent exceeding the design negative pressure in containment.

C. NS Train "B" is inoperable because operation of the "B" NS pump would result in a motor overload trip.

D. NS Train "B" is inoperable. If "B" NS pump was to start, a runout condition could result in pump damage.

ANSWER: A

REFERENCES: ESF Valve Study
Tech. Spec. 3.5.2
Tech. Spec. 3.6.2

LESSON: OP-MC-ECC-NS

TASK: MO-3327.2
MO-3327.5

OBJECTIVES: LPRO OBJ: 2, 7
LPSO OBJ: 2, 7

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
026	000	A3.01 G-11	4.3 3.2	4.5 4.1

REVIEWED: DWA (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 9. With Unit 1 in Mode 5 in preparation of entering Mode 6, the operator assigned to close the refueling canal drains discovered that the drain valves were already closed. Upon further investigation it was determined that the unit had been operating in modes 1-4 with the valves closed. This resulted in not having a return flowpath to containment sump of Containment Spray (NS) water if NS had actuated during an accident.

What action is required? (Select one)

A. With the valves in position for Mode 6, no action is necessary.

B. Open the valves and remain in Mode 5 until the Station Manager is notified and gives permission to continue to Mode 6.

C. Notify NRC within 4 hours of degraded plant safety barrier.

D. Evaluate any outstanding paperwork to determine when the valves were closed.

ANSWER: C

REFERENCES: RP/0/A/5700/10 Enc. 4.1
Step 4.1.4.1 or 4.1.4.3

LESSON: OP-MC-EP-EMP

TASK: MO-3607.1

OBJECTIVES: LPRO OBJ: N/A
LPSO OBJ: 12

TIME: 5 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	A1.16	3.1	4.4

REVIEWED: DWA (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: ~~DWA~~ (SENIOR INST.)

(1 pt) 10. DURING a SGTR on Unit 1 the operator has isolated S/G "A". The following conditions/indications exist:

1)	NCS subcooling	23°F
2)	NCS pressure	1080 psig stable
3)	Ruptured S/G "A" pressure	480 psig decreasing
4)	Ruptured S/G "A" NR level	67%
5)	FWST level	240 inches
6)	Containment Sump Level	1.5 ft

Select the procedure the operator will be using to perform the NCS cooldown, given the above information: (Select one)

A. EP/4.1 SGTR Cooldown Using Steam Dump

B. EP/4.2 SGTR Cooldown Using Backfill

C. EP/5.1 Ruptured and Faulted S/G - Subcooled Recovery

D. EP/5.2 Ruptured and Faulted S/G - Saturated Recovery

ANSWER: C

REFERENCES: EP/1/A/5000/04
EP/1/A/5000/5.1

LESSON: OP-MC-EP-EP4

TASK: MO-8305
MO-4608

OBJECTIVES: LPRO OBJ: G
LPSO OBJ: G

TIME: 6 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	038	EA2.07	4.4	4.8
		G-11	4.2	4.3
		G-12	3.8	4.0

REVIEWED: RHD
(TRNG. INST.)

REVIEWED: HLM
(SRO)

APPROVED:
(SENIOR INST.)

(1 pt) 11. A Safety Injection occurred due to a steamline break on "C" S/G's safety valve pipe connection with the Unit at 100% power. While monitoring the Critical Safety functions, the steamline break resulted in a NC System cooldown to 340°F in a period of 75 minutes. If the NC System cooldown continues, what actions must the operator take to stop the NC System cooldown? (Select one)

A. Manually initiate a Main Steam Isolation, allow the "C" S/G to blowdown, stop the "C" NC pump to minimize cooldown.

B. Manually initiate a Main Steam Isolation, isolate all feed flow to "C" S/G, verify SM PORV block valves are closed.

C. Ensure all SM PORV's are closed, ensure steam dumps are closed, isolate "C" S/G, control feed flow to non-faulted S/G's, if ND in service, stop cooldown.

D. Ensure all SM Isol. Vlvs. are closed, ensure all SM PORV's are closed, ensure steam dumps are closed, control feed flow to "C" S/G, stop all in service ND pumps.

ANSWER: C

REFERENCES: EP/1/A/5000/10
EP/1/A/5000/14.1

LESSON: OP-MC-EP-SPD

TASK: MO-8313.1

OBJECTIVES: LPRO OBJ: 6
LPSO OBJ: 6

TIME: 7 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	040	EK1.01 G-11	4.1 4.1	4.4 4.3

REVIEWED: DWA
(TRNG. INST.)

REVIEWED: HLM
(SRO)

APPROVED: _____
(SENIOR INST.)

(1 pt) 12. The refueling cavity water level is greater than 23 feet above the top of the reactor vessel flange. Unit 1 is in Mode 6. Core reload is in progress. The fuel loading supervisor requests that the operating Decay Heat Removal Pump be secured to facilitate loading fuel assemblies adjacent to the C loop hot leg outlet. He states that the ND flow is causing the assemblies to swing enough that they cannot be seated.

Which of the following indicates a response which is in compliance with Tech Specs and Plant Operating Procedures? (Select one)

A. Do not secure the pump, in Mode 6 when water level is above the top of the reactor vessel flange by greater than 23 feet, at least one ND loop shall be operable and in operation.

B. Do not secure the pump, when in Mode 5 and 6 a boron injection flow path shall be operable and capable of being powered from an operable emergency power source.

C. Secure the pump, in Mode 6 when water level is above the top of the reactor vessel flange by greater than 23 feet. The ND loop may be removed from operation for up to 1 hour per 8 hour period for core alterations in the vicinity of the hot legs.

D. Secure the pump, in Mode 5 or 6 the ND system is required to be operable but not in operation.

ANSWER: C

REFERENCES: Tech. Spec. 3.9.8

LESSON: OP-MC-FH-FC

TASK: MO-9313

OBJECTIVES: LPRO OBJ: 14
LPSO OBJ: 14

TIME: 2 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
015	000	G-11	3.1	3.8

REVIEWED: RCN (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 13. The following conditions exist:

Time - 0 sec
- Unit at 100% RTP
- A valving error caused a DEH runback due to a loss of KG flow

Time - 30 sec
- The NOT reports that KG flow will be restored in 5 mins

Time - 60 sec
- Reactor power is 60% RTP and decreasing slowly
- Turbine impulse pressure 410 psig and stable
- C-7A and C-7B are lit
- Condenser steam dumps open
- NCO manually opened both generator breakers

Assume all other systems operated as designed. Which one of the following statements is correct: (Select one)

A. The generator lockout should have occurred if stator cooling flow is lost for greater than 45 seconds with turbine impulse pressure greater than 10%.

B. The generator lockout should have occurred due to a loss of load (runback) with turbine impulse pressure > 56%.

C. The control room operators action was incorrect due to the possibility that KG flow would be restored within the allowed 5 minute time period.

D. The control room operators action was incorrect since this action would not result in a reactor trip if at 60% RTP.

ANSWER: A

REFERENCES: OP/1/A/6100/10B
OP/1/A/6101/10D
AP/1/A/5500/03

LESSON: OP-MC-GEN-EHC

TASK: MO-7303.3

OBJECTIVES: LPRO OBJ: 1.S
LPSO OBJ: 1.S

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
045	000	A3.04	3.4	3.6
	050	K1.01	3.4	3.6
		G-15	2.9	3.2

REVIEWED: WGH (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 14. Unit 1 is at 100% power when the ICC Monitor Train B Trouble Annunciator (1AD2-F6) alarms. Resetting the system does not clear the alarm. The following indications appear on the Train B RVLIS displays:

- A MALFUNCTION message over the lower range RVLIS indicator
- Train B lower range RVLIS reads 50%.

Select the action required by Tech. Specs. for this situation.

A. Declare B Train RVLIS inoperable. Restore to operable within 7 days or be in Hot Shutdown within the next 12 hours.

B. Declare B Train Lower Range RVLIS inoperable. Restore to operable within 48 hours or be in Hot Shutdown within the next 12 hours.

C. Declare both RVLIS trains inoperable and apply Tech. Spec. 3.0.3.

D. No action required since lower range RVLIS is not required by Tech. Specs.

ANSWER: A

REFERENCES: Tech. Spec. 3.3.3.6
OP/1/A/6100/10C
AD2-F6

LESSON: OP-MC-IC-ICM

TASK: MO-2318

OBJECTIVES: LPRO OBJ: 20
LPSO OBJ: 20

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
002	000	G-11	3.8	4.0

REVIEWED: RCN (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: (SENIOR INST.)

(1 pt) 15. Unit 1 is at 100% RTP. The "Rod Control Urgent Failure" (1AD2 A-10) annunciator alarms. The RO places the rods in manual and matches T-ave = T-ref by adjusting turbine load. Upon locally checking the rod control cabinets it is found that power cabinet 1SCDE [which powers Shutdown Bank (SD) C Group 1, SD D Grp. 1, and SD E Grp. 1] has an urgent failure. I&E informs the SRO that the problem with power cabinet 1SCDE is electrical in nature affecting only SD D's stepping mechanism. (Select one)

A. In this situation you are not permitted to move control rods at all and must maintain turbine load to maintain T-ave = T-ref.

B. Since the alarm is in the power cabinet in banks other than the controlling bank, then you may control T-ave = T-ref by controlling CB D in the "Bank Select" Mode.

C. Since rods can not be moved, you should trip the reactor and go to EP/1/A/5000/01 "Reactor Trip or Safety Injection".

D. Since the problem is in the power cabinet in banks other than the controlling bank you should return the rods to automatic.

ANSWER: B

REFERENCES: AP/1/A/5500/14
OP/1/A/6100/10B
Tech. Spec. 3.1.3.1

LESSON: OP-MC-IC-IRE

TASK: MO-2315
MO-6302.5
MO-6302.11
MO-7313.1

OBJECTIVES: LPRO OBJ: 10, 14
LPSO OBJ: 10, 14

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
001	000	K4.02	3.8	3.8
		G-1	3.7	3.8
		G-8	3.6	3.6
		G-11	3.4	3.9
		G-12	3.8	3.6
		G-15	3.9	4.1

REVIEWED: RHD (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 16. Unit 1 is in Mode 5. The NC System is drained to a level of +11 inches in the loops. ND Train "1A" is in operation. "1A" and "1D" S/G's are completely drained, while "1B" and "1C" S/G's have a narrow range level of 38%.

I&E requests permission to perform a surveillance test on the ND Pump "1B" supply breaker. The breaker will be racked into the "Test" position for at least 3 hours.

Select the correct evaluation as to whether permission should be granted to perform the test.

A. Yes, two steam generators have NR levels greater than 12%.

B. Yes, an ND pump may be de-energized for up to 4 hours.

C. No, an ND pump may only be inoperable for up to 2 hours.

D. No, an ND pump may only be de-energized for up to 1 hour.

ANSWER: C

REFERENCES: Tech. Spec. 3.4.1.4.2
PT/1/A/4600/03A

LESSON: OP-MC-PS-ND

TASK: MO-3311

OBJECTIVES: LPRO OBJ: 9
LPSO OBJ: 9

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
005	000	G-5 G-11	3.2 3.1	3.8 3.8

REVIEWED: RHD
(TRNG. INST.)

REVIEWED: HLM
(SRO)

APPROVED:
(SENIOR INST.)

(1 pt) 17. If Train "A" VC/YC is running and the Train "B" Selector Switch is selected to the "TR B" position with the "B" Train chiller "Start" pushbutton depressed, taking the Train "A" Selector Switch to the "OFF" position will stop "A" Train VC/YC equipment and: (Select One)

A. Has no effect on "B" Train VC/YC equipment.

B. Will immediately start all "B" Train VC/YC equipment and align YC to series.

C. Will start all "B" train VC/YC equipment immediately except the "B" Train YC pump.

D. Will start all "B" train VC/YC equipment.

ANSWER: D

REFERENCES: OP/0/A/6450/11 Enc. 4.2

LESSON: OP-MC-PSS-VC

TASK: MO-3344

OBJECTIVES: LPRO OBJ: 1B
LPSO OBJ: 1B

TIME: 2 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
194	001	K1.06	3.4	3.4

REVIEWED: RHD (TRNG. INST.)

REVIEWED: HLM (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 18. Under which set of plant conditions can credit for Xenon be included in shutdown margin determination? (Select one)

A. The Unit is to be cooled down to no lower than 400°F.

B. The Unit is to be cooled down to less than 200°F.

C. The Unit is to be cooled down to no lower than 520°F.

D. The Unit is to be cooled down to no lower than 200°F.

ANSWER: C

REFERENCES: OP/0/A/6100/06

LESSON: OP-MC-RT-RB

TASK: MO-2309

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
192	002	K1.13	3.5	3.7
001	010	A4.04	3.5	4.1

REVIEWED: RCN (TRNG. INST.)

REVIEWED: HLM (~~SRO~~)

APPROVED: (SENIOR INST.)

(1 pt) 19. During a Unit 1 power escalation you decide to dilute boron to compensate for the power increase rather than withdraw control rods above 90 steps Bank D.

How high can power be increased without further rod withdrawal? (Select One)

A. 76%

B. 73%

C. 70%

D. 67%

ANSWER: D

REFERENCES: Tech. Spec. 3.1.3.6
OP/1/A/6100/22 Graph 1.2

LESSON: OP-MC-RT-RP

TASK: MO-1310

OBJECTIVES: LPRO OBJ: 10
LPSO OBJ: 10

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
001	000	G-11	3.4	3.9

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: _____ (SENIOR INST.)

(1 pt) 20. With Unit 1 at 1180 MW, EMF-34 (S/G Blowdown Low Range) Trip II alarm actuates.

Chemistry identifies "C" S/G with a primary to secondary leak and calculates the leakage to be 0.4 gpm.

Based on the above information the following action should be taken: (Select one)

A. Continue power operations indefinitely while continuing to verify that secondary side activity is $\leq$ 1.0 microcurie/gram Dose equivalent I-131.

B. Continue power operations at 100% RTP since the S/G leakage is within limits.

C. Immediately begin unit shutdown and be in Hot standby within 6 hours.

D. Reduce leakage to within limits within 4 hours or be in at least Hot Standby within next 6 hours.

ANSWER: D

REFERENCES: AP/1/A/5500/10
Tech. Spec. 3.4.6.2

LESSON: OP-MC-STM-BB

TASK: MO-3319.7

OBJECTIVES: LPRO OBJ: 10, 19
LPSO OBJ: 10, 19

TIME: 4 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	037	EK3.10	3.3	3.7
		EA1.13	3.9	4.0
		EA2.10	3.2	4.1
		G-8	3.1	3.9

REVIEWED: WGH (TRNG. INST.)

REVIEWED: JRP (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 21. During a plant heatup from refueling to hot shutdown, a control room operator observes the following:

- NCS temperature 68°F
- NCS pressure 198 psig
- S/G A temperature 65°F
- S/G A pressure 213 psig

What undesirable event could result from these conditions? (Select one)

A. Brittle Fracture of the Reactor Vessel

B. Brittle Fracture of the Steam Generator shell

C. Fatigue Failure of the Pzr Spray Nozzle

D. Fatigue Failure of the Steam Generator shell

ANSWER: B

REFERENCES: Tech. Spec. 3.7.2 Basis
WOG-000-038-014
PT (Computer)

LESSON: OP-MC-STM-SM

TASK: MO-4304

OBJECTIVES: LPRO OBJ: 8
LPSO OBJ: 8

TIME: 3 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
000	038	EK3.05	4.0	4.3
000	038	G-11	3.3	4.0

REVIEWED: RCN (TRNG. INST.)

REVIEWED: RMP (SRO)

APPROVED: [signature] (SENIOR INST.)

(1 pt) 22. You are in the process of performing a normal "Shutdown to Mode 5" with reactor power at 8% RTP on Unit 1. The Unit 1 containment ventilation condensate drain tank (VUCDT) level monitoring system is isolated and tagged out for repairs. The control room operator, while performing the Semi-Daily Surveillance items, discovers the containment particulate radioactivity monitor (1EMF-36) operate light off with the meter pegged low. His attempt to reenergize the EMF is unsuccessful. What actions are required in response to the above situation?

A. Be in hot standby within the next six hours and cold shutdown within the following thirty hours.

B. No action required because the Containment Atmosphere Gasseous Radioactivity Monitoring System and the containment floor and equipment level system are both still operable.

C. Operation is allowed to continue for 30 days provided grab samples of the containment atmosphere are obtained and analyzed at least once every 24 hours when the particulate monitoring system is inoperable.

D. Initiate the provisions of Spec. 3.0.3 since redundant monitoring systems are inoperable.

ANSWER: C

REFERENCES: Tech. Spec. 3.3.3.1, 3.4.6.1 and 3.0.4
PT/1/A/4600/03A

LESSON: OP-MC-WE-EMF

TASK: MO-2314.4

OBJECTIVES: LPRO OBJ: 12
LPSO OBJ: 12

TIME: 7 MINUTES

KA CATALOG

SYS	MODE	NO	IMPORTANCE RO	IMPORTANCE SRO
073	000	G-5 G-11	3.1 2.8	3.6 3.4

REVIEWED: WGH (TRNG. INST.)

REVIEWED: HLM (~~SRO~~)

APPROVED: [signature] (SENIOR INST.)