UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

Report No.: 50-369/94-300 and 50-370/94-300

Licensee: Duke Power Company
422 South Church Street
Charlotte, NC 28242

Docket Nos.: 50-369 and 50-370 License Nos.: NPF-9 and NPF-17

Facility Name: William B. McGuire Nuclear Station Units 1 and 2

Examination Conducted: December 5-9, 1994

Chief Examiner: Edwin Lea, Jr. 1/5/95
Edwin Lea, Jr. Date Signed

Accompanying Personnel: Brian C. Haagensen, Sonalysts
David W. Lane, Sonalysts
Gary W. Weals, Sonalysts

Approved By: for 1/6/95
Lawrence L. Lawyer, Chief Date Signed
Operator Licensing Section
Operations Branch
Division of Reactor Safety

SUMMARY

Scope:

NRC examiners conducted regular, announced operator licensing initial examinations during the week of December 5-9, 1994. Examiners administered examinations under the guidelines of the Examiner Standards (ES), NUREG-1021, Revision 7. Six reactor operators (ROs) and five senior reactor operator (SRO) candidates received both written and operating examinations.

Results:

Applicant Pass/Fail:

OVERALL RESULTS	Total No.	No. Passed	% Passed	No. Failed	% Failed
RO	6	4	66.7%	2	33.3%
SRO	5	5	100%	0	0.0%

1. On November 8-10, 1994, three of your SRO licensed staff were provided the opportunity to review the proposed initial examinations. Subsequently, during the week of November 14, 1994, your staff was again provided the opportunity to review and comment. In each case, comments were made and incorporated. These pre-examination reviews had two purposes:

   a. Provide the best possible examination vehicle to the candidates. This review should have insured an operationally relevant, plant-specific examination which could adequately and accurately discern minimally competent operators.

   b. Reduce the administrative burden on both the Commission and facility staffs. By resolving issues prior to the examination administration, the lengthy comment and resolution process could be avoided.

   Based upon the number of comments which you submitted to us after the examination (Duke Power Letter dated December 16, 1994) neither of these purposes was fully met. Sixteen comments were made on the individual test items after the examination. All of the issues identified should have been resolved during the pre-examination review. This includes items such as misleading pre-examination comments, additional acceptable responses (alternate answers), and changes to the answer key due to questions being beyond the scope of the training program. It is of concern to the NRC that so many items of this kind were not identified and fixed prior to the examination. The "cost efficiency" of conducting the pre-examination review becomes very questionable.

   Incorporating the pre-examination review into the examination process is a costly resource expenditure for both the Commission and your facility. When a return on this investment is not seen by reduced post-examination comments, continuation of the pre-examination review process for that case is not prudent. Manpower allocations do not allow for both the pre-examination review and the resolution of comprehensive post-examination comments. To assist us in identifying the root cause of these excessive post-examination comments, we invite you to meet with us in the Regional offices as soon as possible to present your root-cause analysis and suggestions for preventing future incidents of this nature.

2. The results of the written examination indicated a very low average in examination scores and a sharp decline in examination scores compared to the last initial examination. We are concerned with this trend and request that you include in the presentation suggested above, your analysis and remedial actions to reverse this trend.

No violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*D. Baxter, Operations Support Manager
*A. Beaver, Shift Operations Manager
*B. Caldwell, Training Manager
*M. Geddie, Station Manager
*S. Helms, Supervisor, Nuclear Station Training
*R. Jones, Operations Superintendent
*A. Lindsey, Manager, Operations Training
*J. Snider, Manager, Regulatory Compliance
*C. Trezise, Single Point of Contact Manager
*R. White, Quality Director

Other licensee employees contacted included instructors, engineers, technicians, operators, and office personnel.

NRC Personnel

*G. Harris, Resident Inspector
*B. Haagensen, Sonalysts
*D. Lane, Sonalysts
*G. Weals, Sonalysts

*Attended exit interview

2. Discussion

a. Results

NRC examiners conducted regular, announced operator licensing initial examinations during the week of December 5-9, 1994. Examiners administered examinations under the guidelines of the Examiner Standards (ES), NUREG-1021, Revision 7. Six reactor operators (ROs) and five senior reactor operator (SRO) candidates received both written and operating examinations. Two ROs failed the written examination. The SRO and RO average score on the written examination was 81.64, which was below the average score received on past written examinations administered at McGuire. The licensee submitted 16 post examination comments on the written examinations.

b. Examination Development

The NRC developed the initial examinations from material supplied by the licensee. The licensee provided procedures, lessons planes, JPMs, and simulator information in binders. The binders had no labels or numbers on their spines. The absence of any type of labeling made it impossible to determine what was contained in the binders without removing binders from the shelves. The lesson plans provided by the licensee were not very detailed; therefore, much of the information

licensee were not very detailed; therefore, much of the information typically available to provide a understanding of how various systems work and relate to other systems was not available.

The written examinations were reviewed by three licensee personnel in the NRC Region II office during the week of November 7, 1994. The licensee reviewed the examinations over a three day period. The licensee performed a second review of the examinations on site from November 14-16, 1994. Two of the individuals who reviewed the examinations in the RII office and other licensee individuals conducted the review on site. The chief examiner, the contract examiner, and two licensee representatives discussed all additional comments and agreed on what changes were necessary to make the examination questions valid and correct. The changes that were agreed on were then incorporated into the examination.

c. Candidate Performance

The candidates performed adequately on the operating portion of the examination, but poorly on the written examinations. All candidates passed the operating section of the examination. Two ROs failed the written examination. The average score on the RO examination was 80.44 percent and the average score on the SRO examination was 83.09 percent. The overall average on the written examination was 81.64 percent. The NRC performed an analysis of the written examination results to identify which questions had a high failure rate. Below are samples of the questions and a brief description of the subject matter on which the candidates performed poorly.

(SRO 17/RO 16) - Describe the McGuire Station ALARA Program goals

(SRO 18/RO 17) - Waste gas system operation/description

(SRO 34/RO 39) - Basis for immediate actions of E-0, Reactor Trip, or Safety Injection

(SRO 50/RO 53) - NV system response when RWST supply fail to open upon receipt of an Si signal

(SRO 97) - Maximum expected dose limit at the site boundary given a specific release.

The examiner reviewed the summary sheet for the initial examination administered at McGuire in December 1992. The examination scores for the December 1992 examination and the December 1994 examination were compared. From the comparison it was determined that the December 1994 examination average score had declined by 9 percentage points from the December 1992 examination. The average score on the December 1992 examination was 90.6 percent. The SRO examination had an average score of 89.9 percent, and the RO examination had an average score of 93.5 percent for the December 1992 examination.

3. Post Examinations Comments

The licensee provided post examination comments on 16 questions. NRC operator licensing examiners reviewed all comments. Following the review, it was determined that three of the questions would be deleted and two answers would be accepted for seven of the questions. The remaining six questions were determined to be adequate as administered and warranted no changes. The 16 licensee comments are contained in Enclosure 3, and the NRC response to the comments are provided in Enclosure 4. The 16 post examination comments provided by the licensee were considered high in light of the consideration that the examinations were pre-reviewed by 4 to 5 licensed operators or training instructors over a 6-day period.

4. Exit Interview

At the conclusion of the site visit, the examiners met with representatives of the plant staff listed in paragraph one to discuss the results of the examinations. The licensee did not identify as proprietary, any material provided to, or reviewed by the examiners. Dissenting comments were not received from the licensee.

SIMULATOR FACILITY REPORT

Facility Licensee: William B. McGuire Nuclear Station Units 1 and 2

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

Operating Tests Administered on: December 5-9, 1994

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

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

ITEM	DESCRIPTION

None noted.

Enclosure 2

QUESTION: RO - 33
SRO - NA

ANSWER: C

REFERENCE: LP: OP-MC-IC-EDA
Rev. 4, Page 18 of 25
Paragraph 6, Objective 7

CONCERN: The "D" distractor draws too fine a line in that greater than 12 steps is right, but 12 steps greater can be misconstrued as correct.

SUGGEST: Accept "C" or "D" as correct.

NOTE: References for CONCERNS are attached.

QUESTION: RO - 36
SRO - NA

ANSWER: B

REFERENCE: LP: OP-MC-IC-ENB
Rev. 11, Page 28 of 52
Paragraph 2, Objective 9

CONCERN: "B" answer is incorrect.

The channel comparator in the question stem compares the summed output of the upper and lower detectors of each channel to all other channels. For QPTR determination, the upper detectors are compared to the other uppers and the lowers are compared to the other lowers, NOT total channel output.

See notes on attached reference drawing.

SUGGEST: Change correct answer to "D".

NOTE: References for CONCERNS are attached.

QUESTION:	RO - 39 SRO - 34
ANSWER:	C
REFERENCE:	LP: E-0, Reactor Trip or Safety Injection Rev. 0, Pages 25 and 27 of 175, Section 3.4.2 through 3.4.4 Objective: 2 and 9
CONCERN:	This question has more to do with guessing what is meant by certain terms than it tests knowledge vital to the safe operation of the plant. The **intent** of the question is excellent; to test the knowledge of what is accomplished by the immediate actions of E-0. However, as written all answers are correct and the one that is most correct is a matter of semantics. For example: choices B and C are effectively identical. If the reactor trips then fission is, in fact, removed as a practical heat source. There are other heat sources too so you can also say that the heat source (note singular) is limited. The difference between ensuring power is available to safeguards equipment and ensuring power is available to ANY safeguards equipment is a distinction without any real difference. This question does not distinguish between the competent and the less than competent operator as set out in NUREG/BR-0122. An operator that believes that the intent of the immediate actions of E-0 is ANY of the choices in this question can be said to have a good understanding of the topic. We do not think that it can be claimed that those who picked choice "C" have any meaningful knowledge advantage over the others.
SUGGEST:	Delete question from exam.
NOTE:	References for CONCERNS are attached.

QUESTION: RO - 47
SRO - 42

ANSWER: D

REFERENCE: Tech Specs, Section 4.1.3.1.2, 3.1.3.1.c
Pages 3/4-1-14 through 15
Objective: LPRO/LPSO 14.b. of LP: OP-MC-IC-IPE

CONCERN: "D" is only correct if the rod is "untrippable". Since this information was not explicitly given, it forces the examinee to make assumptions such as: the PT surveillance was performed incorrectly. Also, surveillance intervals are not required knowledge for examinees.

SUGGEST: Delete question from exam..

NOTE: References for CONCERNS are attached.

QUESTION: RO - 55
SRO - 51

ANSWER: D

REFERENCE: MSD 965.5, Fire Protection and Surveillance
Rev. 0, Page 965-11, Paragraph 965.5
Objective: none found

CONCERN: Answer "B" is correct as well as "D"

Fire Brigade Training teaches that foam is electrically conductive and should not be used on electrical fires.

See attached lesson plan for Fire Brigade Training.

SUGGEST: Accept "B" or "D" as correct.

NOTE: References for CONCERNS are attached.

QUESTION:	RO - 57 SRO - 52
ANSWER:	C
REFERENCE:	LP: Loss of All AC Power Rev. 0, Page 77 of 144 Objective : 2
CONCERN:	The action this question refers to is in the RNO for verifying that the Standby Makeup pump is running. The point of the procedural step is to see if the Standby Makeup pump is running and keeping the seals cool. The procedure does NOT instruct the operator to close or check closed 1KC-425A UNLESS there is no seal cooling. The status of the Standby Makeup pump is not provided in the question. Providing complete information about plant conditions at the time would be expected when asking this question. In that case the operator would have been required to evaluate and analyze conditions in a setting similar to the one that would be faced during actual operations. The lesson plan objective referenced for this question reads: "GIVEN SCENARIOS DESCRIBING ACCIDENT EVENTS AND PLANT CONDITIONS, discuss the basis for any caution, note or step." The candidates were not given **any** description of the plant conditions. As such, the question does not match the objective.
SUGGEST:	Delete question from exam.
NOTE:	References for CONCERNS are attached.

QUESTION: RO - 60
SRO - 55

ANSWER: B

REFERENCE: LP: OP-MC-SS-RFY
Rev. 5, Page 20 of 45, Paragraph B.
Objective : LPRO/LPSO 3

CONCERN: The RF/RY System pressure is read from either the system or the pressurization tank. If looking at the system pressure, pump starts are 81 psig, 76 psig and 71 psig. Candidates are not required to memorize which pressure relates to which setpoint.

SUGGEST: Accept "A" or "B" as correct.

NOTE: References for CONCERNS are attached.

QUESTION: RO - NA
SRO - 60

ANSWER: B

REFERENCE: LP: E-1, Loss of Reactor or Secondary Coolant
Rev. 0, Page 45 of 252, Paragraph 3.4.13
Objective 5

CONCERN: This question mis-states the procedural requirement. The procedural requirement as it is presented in the stem of the question, states that hot leg temperature must be less than 354° F before the operators are permitted to isolate the CLAs. This implies that the CLAs may be isolated at any time as long as the hot legs are less than 354° F. In fact, the procedure REQUIRES that the CLAs be isolated AS SOON AS hot leg temperature decreases below 354° F. If the CLAs are not isolated immediately upon reaching 354° F, then nitrogen will be injected into the NC system. The situation, as stated in the question, runs counter to the objective of isolating the CLAs while temperature is still hot enough to keep pressure up and prevent nitrogen injection into the NC System.

SUGGEST: Delete question from exam.

NOTE: References for CONCERNS are attached.

QUESTION: RO - 67
SRO - 64

ANSWER: C

REFERENCE: LP: OP-MC-EL-EPL
Rev. 5, Page 11 & 12 OF 24
Paragraph D & E; Figure EPL-1
Objective: LPRO/LPSO 5

CONCERN: The lesson plan objective referenced for this question requires the candidate to know the FSAR committed time for battery duration. Per the FSAR, each battery is sized to carry the continuous emergency load of its own vital buses and also assume the loads of another battery in a "backup" capacity, if required, for a period of one hour.

However, the question complicates the situation by removing loads that the FSAR assumes are present (i.e. 2EVDA, 2EVDB, 2EVDC, 2EVDD). Since the question does not specifically ask for the FSAR committed time, a candidate could reasonably assume that the batteries would last longer than listed. The word "expected" could be understood by the candidate to mean "committed" (FSAR time) or actual (time based on actual load). There is no further guidance to clarify this issue given in the question. Without more information there is no real basis to assume that they will last longer than the committed time. Therefore, either the FSAR committed time or a time slightly longer could be a correct answer.

Answer "B" must be considered correct, since that is the time referenced in the FSAR. However, the complication of the question's initial conditions should also make "C" be accepted as correct.

SUGGEST: Accept "B" or "C" as correct.

NOTE: Reference for CONCERNS are attached.

QUESTION: RO - NA
SRO - 71

ANSWER: C

REFERENCE: Tech Specs: Page B 3/4 2-5, Paragraph 3/4.2.5
Objective: LPRO/LPSO 33 of LP: OP-MC-CTH-CP
Candidates to be provided T.S. 3/4.2.5

CONCERN: There is no completely correct answer.

The "correct" answer "C" is actually wrong. To determine the answer, use the following steps:

1) Determine what region on figure 3.2-1 the combination of reactor coolant flow and reactor power places you:

   a) by determining that 98% of 382,000 GPM is 374,360 GPM.

   b) by determining that at 100% power for 374,360 GPM reactor coolant flow, you are in the prohibited region of the graph.

2) Apply action c.1.b) of LCO 3.2.5.

   a) per the action statement, restore parameters within restricted region of graph and comply with action b.

   b) determine that the only way to do this is to reduce power to < 94% for flow rate of 374,360 GPM (assume inability to change flow rate).

   c) action c.1.b) then requires you to apply action statement "b.". This has you to reduce the P.R. neutron flux-high trip setpoint (109% - see reference LP: OP-MC-IC-IPE, handout MC-IC-IPE-1) to below the nominal setpoint (i.e. 109%) by the same amount (% RTP) [100% - 94% = 6%] as required by figure 3.2-1.

QUESTION: RO - 72
SRO - 69

ANSWER: B

REFERENCE: LP: FR-C.1
Rev. 0, Page 37 of 89
Objective: 11 and 12

CONCERN: In order to determine the correct answer, an operator must have memorized the procedure steps, which is not required by our objectives or the K/A catalogue. The objectives listed are not related to the question. Concerning objective OP-MC-EP-FRC11, the objective asks the operator to determine if S/G depressurization has been effective. The question assumes it has not been effective and asks the operator what to do about it. Concerning objective OP-MC-EP-FRC12, the objective asks the operator to explain the basis for allowing the start of an NC pump. It does not ask the operator to specify an EOP action without the use of the EOP. Concerning the K/A - 000015A211, "Ability to determine when to jog RCP's during ICC", the question does not address the way this determination is made in the actual conduct of such operations. This question goes beyond expectations required of the operators.

SUGGEST: Delete question from exam.

NOTE: References for CONCERNS are attached.

QUESTION: RO - 74
SRO - 73

ANSWER: A

REFERENCE: LP: Faulted SG Isolation
Rev. 0, Page 43 of 87
Objective 2

CONCERN: Both "A" and "B" are correct answers. The purpose of the step is to minimize subsequent thermal shock ("A"). The lesson plan then goes on to state that the reason for choosing 25 GPM is that it is the minimum measurable flow rate. Since the question does not distinguish between keeping some flow (to minimize shock) and the value of 25 GPM (minimum verifiable), there is no reason the expect the candidates to do so either.

SUGGEST: Accept "A" or "B" as correct.

NOTE: References for CONCERNS are attached.

QUESTION: RO - 78
SRO - 78

ANSWER: D

REFERENCE: OP/1/A/6100/10G, 1AD6-E7, Pzr Lo Level Deviation
Objective: LPRO/LPSO 3 and 56 of LP: OP-MC-PS-NV

CONCERN: The answer is incorrect and there is no correct answer available.

In order to maintain pressurizer level constant with 120 GPM letdown flow, charging flow must be 132 GPM [letdown flow rate (120 GPM) + reactor coolant pump seal return flow rate (12 GPM total for 4 pumps)]. Since in the initial conditions given charging flow is lower than 132 GPM (stated as 108 GPM), the only direction of failure of the controlling channel can be in the upward direction (failed high). If the controlling channel fails high, then the alarm "PZR LOW LEVEL DEV" will not be activated, since the alarm results from a comparison of actual level (of the controlling channel) compared to reference level.

If the controlling level channel fails low, this can produce the alarm "PZR LOW LEVEL DEV", but would cause charging flow to increase greater than the necessary 132 GPM - not decrease as stated in the initial conditions as 108 GPM.

The most logical explanation for the given conditions is a failure of the pressurizer level control master, where it is not responding properly to a valid level decrease. In this case, the proper action would be to manually control level and not to change level control channels.

SUGGEST: Delete question from exam.

NOTE: References for CONCERNS are attached.

QUESTION: RO - 91
SRO - 90

ANSWER: C

REFERENCE: AP/1/A/5500/13 Boron Dilution, Rev 0, Page 2 of 3, Paragraph D.2
OP/1/A/6100/10C, 1AD2-D3, S/R HI FLUX at Shutdown Alarm, Probable Causes
Objective: LPRO/LPSO 10.b of LP: OP-MC-PS-NV

CONCERN: The symptoms given in this question overlap in some of the options given. For instance, given are inadequate SDM and reactor power increasing which are symptoms of AP/38. Also "D" is correct since AP/13, step 2 sends the operation to AP/38 to borate.

SUGGEST: Accept "C" or "D" as correct.

NOTE: References for CONCERNS are attached.

QUESTION: RO - 96
SRO - 96

ANSWER: A

REFERENCE: EP/1/A/5000/E-1, Loss of Reactor or Secondary Coolant
Rev. 0, Page 19 of 19, Paragraph 4
Objective: 5 of LP-E-1, Loss of Reactor or Secondary Coolant

CONCERN: This step requires knowledge of the associated Foldout Page. This step is also not an immediate action and is not required knowledge of examinee.

Also, the transition step to the correct procedure occurs just prior to this step (examinee would not know from memory).

SUGGEST: Accept "A" or "C" as correct.

NOTE: References for CONCERNS are attached.

QUESTION: RO - 98
SRO - 99

ANSWER: A

REFERENCE: Tech Spec 3.6.1.5, Page 3/4 6-13
Objective: LPRO/LPSO 5.B of LP: OP-MC-CNT-VUL

CONCERN: This question requires the candidate to memorize footnotes listed under Tech Spec surveillance requirements. The operators have 8 hours to restore conditions and our expectation is that they would refer to a copy of Tech Specs within that time. The learning objective and K/A referenced for this question do not require this depth of knowledge.

SUGGEST: Accept "A" or "D" as correct.

NOTE: Reference for CONCERNS are attached.

RESPONSE TO FACILITY COMMENTS

The following information identifies those questions for which the facility provided comments and the NRC's response to the comments.

- (RO 33) - accepted "c" or "d" as a correct answer

- (RO 36) - The question asked "Which ONE of the following statements describes one of the purposes of the nuclear instrument channel comparators?" The correct answer was "b," Monitor Quadrant Power Tilt. The comments provided by the licensee indicated that "d", "Alarm on a 4% deviation between ANY two detectors," was the correct answer. It was also stated that "The channel comparator in the question stem compares the summed output of the upper and the lower detector of each channel to all other channels. For QPTR determination, the upper detectors are compared to the other uppers and the lowers are compared to the other lowers, NOT total channel output." It should be noted that answer "b" did not state monitor QPTR; it stated monitor Quadrant Power Tilt. A quadrant power tilt might occur in the event of a dropped rod. LP OP-MC-IC-ENB indicated that there are four NI channels, and each power range nuclear instrumentation channel has an upper and lower detector. It also stated on page 28 of 52 that "channel current comparator provides channel deviation alarm and setpoint deviation from the highest channel to the lowest channel." Choice "d" was incorrect. The stem of the question specifically stated "... channel comparator." Each channel was designed with two detectors; an upper and a lower detector. Choice "d" specifies"... between any two detectors." The phrase "any two detectors" made the choice incorrect. The question warranted no changes.

- (RO 39/SRO 34) - This item tested the applicant's knowledge of what the basis of Immediate Actions of E-0 and the knowledge of how those first few actions are intended to meet those crucial determinations of the appropriate follow-on actions to take in response to placing the plant in a safe shutdown condition. We concur with the facility that the most correct choice is a matter of semantics; however, to make each possible choice a plausible one, required some degree of semantics to test such a broad and general concept as the one being tested here. If the available incorrect choices were not plausible, then very little value could be extracted from a question that only presented one plausible choice in a multiple choice formatted examination. Each incorrect distractor contained an invalid or incorrect statement. In distractors "a" and "d," the incorrect

statement was "ensure a controlled cooldown." A controlled cooldown is not necessarily ensured by the completion of the immediate actions of E-0. Also in distractor "a" and "b," performance of the immediate actions to determine if power is present which is a decision point that will redirect the operator to subsequent actions to attempt to restore power if none was available. Distractor "b" and "c" were also incorrect because the completion of E-0 does not ensure the heat source is removed; in fact, the heat source is never completely removed because some decay heat is nearly always present. This question warranted no change.

- (RO 47/SRO/42) - deleted the question

- (RO 55/SRO 51) - accepted "b" or "d" as a correct answer

- (RO 57/SRO 52) - The facility's concern was that the applicants were not given a description of plant conditions. The very first phrase of the question stated "Following a total loss of all AC power..." This phrase implied all AC power was lost including power to the standby makeup pump. In addition, it was clear that the operators had implemented ECA-0.0 for a total station blackout. There was no indication that this was unclear to the applicants taking the exam since no clarification questions were asked of the proctor during the examination pertaining to this item. The question warranted no change.

- (RO 60/SRO 55) - accepted "a" or "b" as a correct answer

- (SRO 60) - The licensee provided the following concern: "This question mis-stated the procedural requirement. The procedural requirement as it is presented in the stem of the question, states that hot leg temperature must be less than 354 degrees F before the operators are permitted to isolate the CLAs. This implies that the CLAs may be isolated at any time as long as the hot lets are less than 345 degree F. In fact, the procedure REQUIRES that the CLAs be isolated AS SOON AS hot leg temperature decreases below 354 degree F. If the CLAs are not isolated immediately upon reaching 354 degree F, then nitrogen will be injected into the NC system. The situation, as stated in the question, runs counter to the objective of isolating the CLAs while temperature is still hot enough to keep pressure up and prevent nitrogen injection into the NC System." The question stated "Which ONE of the following is the basis for requiring hot leg temperatures to be less than 354 degrees F before isolating the NI accumulators (cold leg accumulators) in accordance with step 15 of E-1, Loss of Reactor or Secondary Coolant?" Step 15 of E-1 stated the following: (15) Check if CLAs

should be isolated; (15.a) At least two NC T-Hots - less than 354 degrees F. (RNO.a.1) When at least two T-Hot less than 354 degrees F, **THEN** COMPLETE Steps 15.b through 15.2... The question does not imply that CLAs may be isolated at any time as long as the hot legs are less than 354 degree F as the licensee stated. The question clearly asked what is the bases for requiring hot leg temperatures to be less than 354 degrees F before isolating the NI accumulators. And the procedure does not state that CLAs should be isolated "AS SOON AS" as stated in the licensee's concern. If it must be performed "AS SOON AS," then the procedure does not provide adequate directions/instructions for the operators. The question warranted no changes.

- (RO 67/SRO 64) - The licensee's concern was "The lesson plan objective referenced for this question required to candidate to Know the FSAR committed time." Lesson Plan objective number 5 stated "discuss the FSAR committed time limit each battery is required to be sized to carry all DC loads without assistance." Objective 7 stated "Discuss the normal demand placed upon the Battery Chargers." The question provided a set of given conditions and asked what demand would be placed on the battery for the conditions given. The initial conditions indicated what equipment was not available and instructed the candidates to assume bus loads were equal. The question warranted no changes.

- (RO 72/SRO 69) - The licensee's concern was that "an operator was required to memorized the procedures steps... Concerning objective OP-MC-EP-FRC12, the objective asked the operator to explain the basis for allowing the start of an NC pump. It does not ask the operator to specify an EOP action without the use of the EOP. Concerning the K/A - 00015A211, 'Ability to determine when to jog RCP's during ICC,' the question does not address the way this determination is made in the actual conduct of such operations. This question goes beyond expectations required of the operators..."

The stem of the question clearly stated that inadequate core cooling conditions exist and that NCP support conditions were not established. The referenced lesson plan objective 12 clearly stated the trainee should be able to explain the basis for the note prior to Step 21.c in addition, the letter of 09/07/94 requesting the examiner to use more generic (approved) lesson plan objectives clearly stated the applicant was required to "Know all red path conditions". The Red Path condition was provided as well as the given value for NC Core Exit T/Cs in the correct answer choice.

The facility's Critical Safety Function Status Tree entry point for Core Cooling queried a Yes/No response of the operator "Core Exit T/Cs Less Than 1200 degree F." If the response is "Yes," this is a Red Path condition. The question warranted no changes.

- (RO 74/SRO 73) - accepted "a" or "b" as a correct answer
- (RO 78/SRO 78) - deleted the question
- (RO 91/SRO 90) - accepted "c" or "d" as a correct answer
- (RO 96/SRO 96) - accepted "a" or "c" as a correct answer.
- (RO 98/SRO 99) - accepted "a" or "d" as a correct answer.

McGuire Master
RO 94-300
12/5-9/94

Nuclear Regulatory Commission
Operator Licensing
Examination

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U. S. NUCLEAR REGULATORY COMMISSION
SITE-SPECIFIC
WRITTEN EXAMINATION

APPLICANT INFORMATION	
Name:	Region: I / **II** / III / IV / V
Date:	Facility/Unit: McGuire
License Level: **RO** / SRO	Reactor Type: **W** / CE / BW / GE

INSTRUCTIONS

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

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

_____
Applicant's Signature

RESULTS	
Examination Value	___100___ Points
Applicant's Score	_____ Points
Applicant's Grade	_____ Percent

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

2. After you complete the examination, sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination.

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

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

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

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

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

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

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

10. Restroom trips are permitted, but only one applicant at a time will be allowed to leave. Avoid all contact with anyone outside the examination room to eliminate even the appearance or possibility of cheating.

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

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

MULTIPLE CHOICE (Circle or X your choice)
If you change your answer, write your selection in the blank.

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

QUESTION: 001 (1.00)

Plant conditions:

- Reactor power is 80%.
- "A" CF pump trips.

Which ONE of the following conditions would exist upon COMPLETION of the immediate actions taken in response to this event?

a. Reactor trip.

b. FRV's in manual.

c. Steam dumps armed.

d. Rod control in manual.

QUESTION: 002 (1.00)

Plant conditions (steady state):

- All systems in auto	
- Reactor power	100%
- Letdown flow	75 gpm
- Seal injection flow	32 gpm
- Seal leakoff flow	3 gpm per pump
- Charging flow	115 gpm (constant)
- Pressurizer level	61% (constant)
- Containment humidity	increasing

Which ONE of the following is the NC unidentified valve leakage conditions based on the above indications?

a. Leakage is 43 gpm.

b. Leakage is 40 gpm.

c. Leakage is 28 gpm.

d. Leakage is 8 gpm.

QUESTION: 003 (1.00)

Plant conditions:

- Reactor power is 8%.
- All controls are in automatic and/or operating normally.

Which ONE of the following will result in a reactor trip for these conditions?

a. Removal of control power fuses for power range channel N-43.

b. Blown control power fuses for source range channel N-31.

c. Blown instrument power fuse for source range channel N-32.

d. Removal of instrument power fuses for intermediate range N-36.

QUESTION: 004 (1.00)

Plant Conditions:

- Reactor power is 100%.
- MSIV testing is in progress per PT/1/A/4250/01A.
- The test pushbutton for the "D" S/G MSIV (SM-9) is depressed.
- The "D" S/G MSIV indicates 10% closed.

A Main Steam Isolation Signal is received.

Which ONE of the following describes the response of valve SM-9?

a. Closes along with MSIV's for the other S/G's.

b. Closes only after the operator releases the test pushbutton.

c. Remains in its present position until the operator manually closes SM-9.

d. Closes when SM-9 returns to its full open position after the operator releases the test pushbutton.

QUESTION: 005 (1.00)

With the plant at 85% power and all systems in automatic, turbine first stage pressure transmitter channel I fails LOW.

Assuming no operator action, which ONE of the following will occur?

a. Control rods will insert.

b. Pressurizer level will increase.

c. Train "A" of the Steam Dump System arms but does not actuate.

d. A reactor trip occurs, due to high pressurizer pressure.

QUESTION: 006 (1.00)

An operator is performing a valve line-up per procedure and identifies a step that needs to be performed out of sequence.

Which ONE of the following actions is acceptable under these circumstances?

a. Any change in the sequence of performance shall be reviewed by two licensed operators, one of which is an SRO, before actual performance.

b. Any change in the sequence of performance shall be reviewed by two licensed operators, one of which is an SRO, after actual performance.

c. Performance of procedural steps out of sequence is strictly prohibited without verbal approval of a licensed reactor operator.

d. Performance of procedural steps out of sequence is strictly prohibited without an approved procedure change.

QUESTION: 007 (1.00)

A plant cooldown is being performed in mode 4 using both ND trains. The following data has been recorded:

TIME	NC TEMP	NC PRESS
1000	330 deg.	355 psig
1030	306 deg.	360 psig
1100	282 deg.	360 psig
1130	260 deg.	358 psig
1200	225 deg.	355 psig

Which ONE of the following actions are to be taken based on the above data?

a. Restore NC temperature to 235 degrees within 30 minutes.

b. Increase NC pressure to 360 psig to maintain NPSH for the running NC pump.

c. Restore the cooldown rate to less than 50 degrees per hour.

d. Restore cooldown rate to within Technical Specification Limits within 30 minutes.

QUESTION: 008 (1.00)

An increase in NCS charging flow rate has occurred over several days with no change in letdown flow rate.

Which ONE of the following will confirm that a steam generator tube leak exists for entry into AP/1/A/5500/10, NC System Leakage Within the Capacity of Both NV Pumps, Case I, Steam Generator Tube Leakage?

a. NCS makeup/letdown flow mismatch, makeup flow less than letdown flow.

b. A discernible Steam flow - Feed flow mismatch, feed flow greater than steam flow with increasing SG level.

c. The steam generator sample isolation valves auto-close on high radiation.

d. An unexplained decrease in the affected steam generator level.

QUESTION: 009 (1.00)

Given the following data concerning the power range nuclear instruments (channel N42 is OOS):

	N41	N42	N43	N44
upper actual reading	52 mA	0	58 mA	57 mA
lower actual reading	53 mA	0	56 ma	54 mA

Which ONE of the following is the quadrant power tilt ratio (QPTR)?

a. 1.0345

b. 1.0566

c. 1.0788

d. 1.1513

QUESTION: 010 (1.00)

Given the following plant conditions:

Reactor power is 60%.
Loop 1 delta-T is off-scale LOW.
Loop 1 Tavg indication is off-scale HIGH.

Which ONE of the following RTD failures in loop 1 caused these indications?

a. Two of the loop 1 T-hot RTDs are failed low.

b. Two of the loop 1 T-hot RTDs are failed high.

c. One of the loop 1 T-cold RTDs is failed low.

d. One of the loop 1 T-cold RTDs is failed high.

QUESTION: 011 (1.00)

The Operator at the Controls observes an alarm annunciator but, he is unable to fully understand what initiated the alarm.

Which ONE of the following actions is required per Operation Management Procedure OMP 2-2, Responsibilities of Operations Personnel?

a. Refer to the system operating procedure to determine the alarm meaning.

b. Verbally announce the occurrence of the alarm to other control room personnel.

c. Silence (acknowledge) the audible alarm and observe other appropriate system parameters.

d. Wait for another control room operator to respond to the alarm.

UNI[illegible] 1

Calculation Sheet for Quadrant Power Tilt

TIME _____	PR41		PR42		PR43		PR44	
	A	B	A	B	A	B	A	B
1) Measured Current			0	0				
2) Calibration Current	242.43	265.27	0	0	247.65	281.27	226.19	257.27
3) Relative Flux (RF)			0	0				

1) From the NI cabinet's current meter (located on respective Power Range B Drawers). Ensure Detector Milliamp Range Switches are in the ".5" position and read 0-500 microamp scale.
2) From the most recent calibration data using the "0" Incore Axial Offset Current in the Data Book, Table 2.2 (I_T for detector A I_B for detector B)
3) Divide line 1 by line 2 to calculate Relative Flux (RF) for each upper (A) and lower (B) detector.

Quadrant Power Tilts Calculate by dividing each upper relative flux by the average upper relative flux and dividing each lower relative flux by the average lower relative flux.

Average RF of A Detectors (RFA) = _____ / RF of PR41A + _____ / RF of PR42A + _____ / RF of PR43A + _____ / RF of PR44A x ¼ = _____

Average RF of B Detectors (RFB) = _____ / RF of PR41B + _____ / RF of PR42B + _____ / RF of PR43B + _____ / RF of PR44B x ¼ = _____

PR41A TILT = RF of PR41A / RFA = _____

PR41B TILT = RF of PR41B / RFB = _____

PR42A TILT = RF of PR42A / RFA = _____

PR42B TILT = RF of PR42B / RFB = _____

PR43A TILT = RF of PR43A / RFA = _____

PR43B TILT = RF of PR43B / RFB = _____

PR44A TILT = RF of PR44A / RFA = _____

PR44B TILT = RF of PR44B / RFB = _____

QUESTION: 012 (1.00)

Which ONE of the following activities is PROHIBITED in a confined space that is designated as IDLH (Immediately Dangerous to Life or Health)?

a. Use of SCBA compressed gas cylinders.

b. Use of air purifying respirators.

c. Metal burning with an oxy/acetylene torch.

d. Entry without continuous forced air ventilation.

QUESTION: 013 (1.00)

Which ONE of the following should be independently verified using the "Separate Verification" technique?

a. Complete valve lineup of the NI system at the request of the Unit Staff.

b. Valve line-up of ND system following routine maintenance during Mode 1 operations.

c. Electrical line-up of fire detection systems following the removal of temporary modifications.

d. Electrical line-up of locked reactor safeguards equipment breakers.

QUESTION: 014 (1.00)

Which ONE of the following describes a person who is authorized for unescorted access to the Control Room?

a. Any Duke Power Company employee with a picture ID and Area 2 listed on the ID.

b. Any contractor or vendor with a valid parent company picture ID with Area 1 listed on the ID.

c. Anyone with a Blue coded picture badge that has completed a Security Badge Authorization form and Area 4 listed on the badge.

d. Anyone that has completed a Security Badge Authorization form and is in possession of a picture badge with Area 3 listed on the badge.

QUESTION: 015 (1.00)

Which ONE of the following actions should be taken to remove a safety tag that has been contaminated?

a. Obtain the Group Superintendent's approval to waive Recall and Removal requirements.

b. Dispose of the contaminated tag in an appropriate radwaste container and note disposal on the completed tag stub.

c. Direct Health Physics to bag the contaminated tag before attaching it to the completed tag stub.

d. Complete stub entries to recall the tag and attach the tag stub to a Tag Occurrence Report Form.

QUESTION: 016 (1.00)

Which ONE of the following describes the Mcguire Station ALARA Program goals and efforts based on the concepts of Design, Time, Distance, and Shielding?

a. To maintain the individual's dose as low as economically achievable.

b. To maintain the collective dose as low as economics and technology permit.

c. To maintain individual annual dose and total person-Rem as low as possible.

d. To maintain collective dose of all plant personnel as far below the individual exposure limits as possible.

QUESTION: 017 (1.00)

Which ONE of the following describes the radioactive Waste Gas Discharge system?

a. Six waste gas decay tanks, one tank in service for discharge, WG-160, Waste Gas Discharge Flow Controller auto-closes on high-high radiation signal from Plant Vent Monitor, EMF 36(L).

b. Six waste gas decay tanks, one tank isolated for discharge, WG-160, Waste Gas Discharge Flow Controller auto-closes on high radiation signal from Waste Gas Discharge Monitor, EMF 50(L).

c. Two waste gas decay banks, one bank in service for discharge, WG-160, Waste Gas Discharge Flow Controller auto-closes on high-high radiation signal from Waste Gas Discharge Monitor, EMF 50(L).

d. Two waste gas decay banks, one bank isolated for discharge, WG-160 Waste Gas Discharge Flow Controller auto-closes on high radiation signal from Plant Vent Monitor, EMF 36(L).

QUESTION: 018 (1.00)

Which ONE of the following explains how auctioneered high Tavg is used in the Steam Dump control system?

a. Compared with steam pressure to generate a deviation signal to control the modulation of the steam dump valves.

b. Compared with no-load Tavg to generate an output signal that is the input to the load rejection controller.

c. Compared with Tref to generate an output signal to arm the steam dump valve controllers.

d. Compared with Tref to generate a deviation signal to control the modulation of the steam dump valves.

QUESTION: 019 (1.00)

Which ONE of the following describes the signals that are used to control the feedwater bypass flow control valves when in automatic?

a. Steam header pressure, feed pump discharge pressure, total steam flow.

b. Steam header pressure, steam generator level, programmed steam generator level, steam flow, feed flow.

c. Steam generator level, programmed steam generator level, auctioneered high nuclear power.

d. Steam generator level, total steam flow, power range nuclear instruments.

QUESTION: 020 (1.00)

Which ONE of the following will cause the Interface Valve of the Main Turbine EH Control System to open, resulting in a turbine trip?

a. Fluid Operated Air Pilot (FOAP) Valve goes closed.

b. Auto Stop Oil (ASO) pressure is at 50 psig.

c. Mechanical Turbine Overspeed actuation.

d. Electrical Trip Solenoid 20ET energizes.

QUESTION: 021 (1.00)

Which ONE of the following degraded 6.9KV AC bus electrical parameters will result in reactor core DNBR approaching the limit of 1.3?

a. System resistance to ground decreases to 1 megohm.

b. Voltage 5 volts less than normal operating voltage.

c. Frequency 1 Hz less than normal operating frequency.

d. System power factor 5% less than unity.

QUESTION: 022 (1.00)

Which ONE of the following events will initiate a control rod insertion at 72 steps/minute with rod control in automatic?

a. Power range channel N-42 lower detector fails LOW.

b. Turbine impulse pressure channel I fails LOW.

c. Loop 2 narrow range T-cold RTD fails LOW.

d. Loop 2 narrow range T-hot RTD fails LOW.

QUESTION: 023 (1.00)

Which ONE of the following conditions will start the Accelerated Sequence (Blackout Mode) operation of the sequencer?

a. The emergency diesel generator (EDG) output breaker is SHUT and a safety injection signal is present.

b. A safety injection signal present and the normal and standby power supply breakers are OPEN.

c. The EDG has auto-started; the EDG output breaker is SHUT and the normal and standby power supply breakers are OPEN.

d. Normal and standby power supply breakers are OPEN to perform a surveillance and the EDG emergency stop pushbutton is inadvertently depressed.

QUESTION: 024 (1.00)

Which ONE of the following describes the method used to ensure the "working copy" of a procedure is acceptable for use?

a. Verify the working copy approval date is more recent than the "Control Copy" approval date.

b. Verify the working copy approval date is before the "Master File Copy" approval date.

c. Verify the revision date on both the working copy and the "Master File Copy" are the same.

d. Verify the approval date on both the working copy and the "Control Copy" are the same.

QUESTION: 025 (1.00)

Which ONE of the following components discharges to the Pressurizer Relief Tank (PRT)?

a. NC to ND suction relief valve.

b. Positive displacement pump discharge relief valve.

c. Relief valve (NV-156) downstream of letdown pressure control valve.

d. VCT relief valve.

QUESTION: 026 (1.00)

Which ONE of the following is the LOWEST emergency classification that REQUIRES activation of the Technical Support Center?

a. Unusual event.

b. Alert.

c. Site area emergency.

d. General emergency.

QUESTION: 027 (1.00)

Which ONE of the following individuals may authorize defeating the interlocks on the refueling machine?

a. The shift technical advisor.

b. The fuel handling supervisor.

c. The maintenance department supervisor in charge of refueling.

d. The reactor engineer.

QUESTION: 028 (1.00)

Which ONE of the following describes the method of containment hydrogen removal following a design basis LOCA?

a. Hydrogen recombiners decrease hydrogen by electrically heating the air flow with high voltage electrodes to sufficiently high temperatures to ignite and burn the excess hydrogen.

b. Both Hydrogen recombiners MUST be operated to remove excess hydrogen generated when containment hydrogen concentration exceeds 4%.

c. Hydrogen recombiner operations is acceptable up to 6% hydrogen concentration, TSC approval must be obtained to operate above 6%.

d. Hydrogen Skimmer fans MUST be operated first to reduce containment hydrogen concentrations to less than 4% before operating the Hydrogen recombiners.

QUESTION: 029 (1.00)

Which ONE of the following describes the operation of the ice compartment doors in the event of a LOCA?

a. Lower inlet doors are opened by hydraulic operators when containment pressure exceeds 3 psig.

b. Lower inlet doors automatically open when the pressure on the doors increases by one pound per square foot.

c. Both lower and upper compartment doors are opened by shock absorber mechanisms actuated by containment air pressure.

d. Both lower and upper compartment doors are opened by tension spring mechanisms when actuated by a Phase "A" isolation signal.

QUESTION: 030 (1.00)

Which ONE of the following is designed to minimize NCP seal injection bypass flow through the thermal barrier heat exchanger to the NCS?

a. Labyrinth seal.

b. NCP seal leak off.

c. Number 1 seal.

d. Separation plate.

QUESTION: 031 (1.00)

Which ONE of the following provides input to the Control Rod Drive System Bank Overlap Unit?

a. Master Cycler.

b. Step Counters.

c. P/A Converter.

d. Slave Cyclers.

QUESTION: 032 (1.00)

Which ONE of the following groups of setpoints and coincidences will initiate a Main Steam Line Isolation signal?

a. Hi-Hi containment pressure is 3.7 psig (1/4 channels).

b. Steam line pressure at 750 psig (2/3 channels on 2/4 S/G's with P-11 blocked).

c. Steam line pressure is 92 psig (2/3 channels on 1/4 S/G's with P-11 blocked).

d. Steam line pressure is 547 psig (2/3 channels on 1/4 S/G's with P-11 NOT blocked).

QUESTION: 033 (1.00)

Which ONE of the following will generate a "Rod Position Deviation" computer alarm?

a. The position of any shutdown bank rod below 218 steps.

b. The position of any control bank rod below 161 steps.

c. The position of a control bank rod is 14 steps greater than bank demand (step counter).

d. The position of a control bank rod is 12 steps greater than any other rod in that bank.

QUESTION: 034 (1.00)

Which ONE of the following has the greatest radioactive iodine removal capability following a LOCA within containment?

a. Operating the containment spray system using lost NC system inventory only.

b. Operating the containment spray system using high pH water from the containment sump.

c. Operating the containment spray system using low pH water from the containment sump.

d. Operating the containment spray system using FWST water only.

QUESTION: 035 (1.00)

Which ONE of the following describes the operation of the Containment Spray pumps following an actuation on High High Containment Pressure?

(Assume Containment Spray is NOT reset by operator action).

a. Pumps will re-start automatically if Containment Pressure Control System (CPCS) pressure increases above 0.8 psig regardless of Containment pressure.

b. Pumps auto-stop when Containment pressure decreases below 3 psig.

c. Pumps will re-start automatically if CPCS increases above 0.35 psig with Containment pressure below 3 psig.

d. Pumps will auto-stop when CPCS pressure decreases below 0.8 psig and Containment pressure is below 3 psig.

QUESTION: 036 (1.00)

Which ONE of the following statements describes one of the purposes of the nuclear instrument channel comparator?

a. Monitor Axial Flux Tilt.

b. Monitor Quadrant Power Tilt.

c. Compare upper detectors with lower detectors.

d. Alarm on a 4% deviation between any two detectors.

QUESTION: 037 (1.00)

Which ONE of the following conditions will result in a continued NCS pressure increase if all pressurizer heaters are manually energized?

a. Loss of air signal to spray valves, NC-27 and NC-29.

b. Pressurizer pressure control channel I fails HIGH.

c. Pressurizer pressure control channel II fails HIGH.

d. Loss of air signal to 1NV-9, Letdown Reheat HX Backpressure Control Isolation Valve.

QUESTION: 038 (1.00)

Which ONE of the following describes the Reactor Coolant process radiation monitor (EMF-48)?

a. Monitors reactor coolant hot leg for N-16 gamma to detect fuel cladding failures.

b. Monitors all remaining gamma activity after a 1 minute sample line transport delay.

c. Monitors reactor coolant cold leg downstream of the NC sample heat exchanger.

d. Monitors reactor coolant letdown flow for gamma indicative of fuel clad failure.

QUESTION: 039 (1.00)

Which ONE of the following describes the basis for the IMMEDIATE ACTION steps of E-0, Reactor Trip or Safety Injection?

a. Ensure heat source is limited, ensures a controlled cooldown, ensures power is available to safeguards equipment, and determine if emergency core cooling is required.

b. Ensure heat source is removed, prevent an uncontrolled cooldown, ensure power is available to safeguards equipment, and determine the appropriate emergency procedure to implement.

c. Ensure heat source is limited, prevent an uncontrolled cooldown, determine if ANY safeguards equipment is available, and determine the appropriate emergency procedure to implement.

d. Ensure heat source is removed, ensures a controlled cooldown, determine if ANY safeguards equipment is available, and determine if emergency core cooling is required.

QUESTION: 040 (1.00)

Which ONE of the following conditions must be met to permit closure of Letdown Isolation valves NV-1 and NV-2 using their main control board switches?

a. Pressurizer level must be greater than 17%.

b. Phase A isolation signal must be reset.

c. All orifice isolation valves must be closed.

d. Pressurizer level must be less than 17%.

QUESTION: 041 (1.00)

Which ONE of the following conditions requires the operator to EMERGENCY BORATE per AP/1/A/5500/38, "Emergency Boration"?

a. Failure of a full length rod to insert after a reactor trip.

b. Receipt of the CONTROL ROD BANK LO-LO LIMIT annunciator with the reactor at 15% power.

c. An unisolated main steam line break resulting in a 30 degree per minute NCS cooldown with the reactor critical.

d. An uncontrolled or unexplained decrease in source range count rate during a reactor startup.

QUESTION: 042 (1.00)

Which ONE of the following features of the rod control system provides for a more uniform differential rod worth?

a. Rod insertion limits.

b. Control rod materials.

c. Rod bank sequencing.

d. Control rod bank overlap.

QUESTION: 043 (1.00)

Which ONE of the following is the reason ECA 0.0, "Loss of All AC Power", has priority over ALL FRG's?

a. Restoration of power to both ESF buses must occur before objectives of FRG actions can be achieved.

b. Electrical power must be restored first to prevent a LOCA through NCP seal leakage.

c. All FRG's are written assuming that at least one AC emergency bus is energized.

d. FRG's were developed assuming both ESF buses are energized and available.

QUESTION: 044 (1.00)

Which ONE of the following describes a condition required to permit the opening of the #1 seal bypass valve?

a. When NC pump radial bearing temperature is greater than 120 degrees F.

b. When #1 seal flow is too low to provide adequate flow to #2 and #3 seals.

c. When #1 seal leak off is less than 0.2 gpm and #1 seal delta-P is less than 200 psid.

d. When NCS pressure is less than 1000 psig.

QUESTION: 045 (1.00)

Which ONE of the following lists ONLY possible causes for actuating the Solid State Protection System (SSPS) General Warning alarm?

a. Reactor trip bypass breaker racked in and closed, SSPS in test, a loose SSPS printed circuit card.

b. Loss of either SSPS 15 VDC power supply, SSPS in test, blown fuse in the Input Relay, 48 VDC ground circuit.

c. INPUT ERROR INHIBIT switch in INHIBIT position, LOGIC A switch the OFF position, loss of either 48 VDC power supply.

d. MEMORY switch in ON position, SLAVE RELAY TEST MODE SELECTOR switch in BLOCK position, both reactor trip bypass breakers racked out.

QUESTION: 046 (1.00)

Which ONE of the following conditions represents a loss of containment integrity as defined by Technical Specifications?

a. Both air lock doors are open while in MODE 5.

b. ND train B suction valves are open in MODE 4.

c. The equipment hatch is closed but NOT sealed while in MODE 4.

d. The outer airlock door is open and the inner door is sealed while in MODE 2.

QUESTION: 047 (1.00)

Which ONE of the following conditions constitutes an inoperable control rod while operating in Mode 1 and requires corrective action within 1 hour?

a. The group demand position for control bank D is misaligned by 3 steps.

b. A misalignment between group demand position and individual rod position of 10 steps for 20 hours.

c. Rod position indication for a control bank D rod and the demand position indication differ by 11 steps.

d. A Shutdown bank rod has remained in the fully withdrawn position since the last startup 56 days ago.

QUESTION: 048 (1.00)

Which ONE of the following conditions will initiate a Feedwater Isolation signal?

a. Actuation of P12 and P4.

b. Actuation of P4 and High Doghouse Level.

c. Turbine trip, P4 actuation and Tavg at no-load value.

d. Steam generator level below the P14 setpoint.

QUESTION: 049 (1.00)

The Unit is operating in Mode 1 at 100% power. Boron concentration is adjusted to compensate for fuel burnup.

Which ONE of the following times is the new boron concentration required to be logged in the Reactor Operator's logbook?

a. Immediately upon completion of the change in boron concentration.

b. Upon receipt of the NCS boron concentration chemistry analysis report.

c. At the beginning of the next new day (midnight).

d. At the beginning of the next shift.

QUESTION: 050 (1.00)

The NCP Thermal Barrier Isolation Valve, KC-394, fails to close on high flow.

Assume NO operator action is taken.

Which ONE of the following describes the expected sequence of system responses?

a. KC surge tank relief valve will lift at 15 psig, EMF-46 (Component Cooling Monitor) will energize the solenoid to CLOSE KC surge tank vent valve, KC-122.

b. EMF-46 will de-energize the solenoid to CLOSE KC surge tank vent valve, KC-122, and a radioactive release will occur when the surge tank relief valve lifts.

c. EMF-46 will energize the solenoid to CLOSE KC surge tank vent valve, KC-122, and the KC drain tank pump will auto-start on high surge tank level.

d. KC drain tank pump will auto-start on high surge tank level if the pushbutton is in "AUTO" and the surge tank vent valve, KC-122, will close to prevent a radioactive release.

QUESTION: 051 (1.00)

The unit is entering Mode 4 from Mode 3 with the following conditions:

- Pressure is being controlled at 425 psig.
- All wide range cold leg temperatures are 350 degrees F.
- Low Temperature - Overpressure Protection is ARMED.

Which ONE of the following describes the plant response to wide range loop "A" Tcold failing LOW?

a. Only PORV 34A would open.

b. Only PORV 32B would open.

c. PORV 36B, 34A and 32B would open.

d. Neither PORV 36B, 34A nor 32B would open.

QUESTION: 052 (1.00)

The following readings are noted on the Intermediate Range and Power Range NIS Channels:

N-35 at 5 x 10E-6 amps
N-36 at 6 x 10E-5 amps
N-41 at 8.5%
N-42 at 9%
N-43 at 8.4%
N-44 at 9%

Which ONE of the following describes the problem indicated by these readings?

a. N-35 reading low for existing conditions.

b. N-36 reading high for existing conditions.

c. N-41 and N-43 reading low for existing conditions.

d. N-42 and N-44 reading high for existing conditions.

QUESTION: 053 (1.00)

FWST Supply to charging pump suction valve, NV-221, fails to open (remains CLOSED) upon receipt of an Ss signal.

Which ONE of the following describes the NV system response to this condition?

a. NV-141, VCT outlet isolation will remain OPEN, NV-142, VCT outlet isolation will CLOSE.

b. NV-142, VCT outlet isolation will remain OPEN, NV-141, VCT outlet isolation will CLOSE.

c. NV-141 and NV-142 outlet isolation valves will remain OPEN.

d. NV-141 and NV-142 outlet isolation valves will CLOSE.

QUESTION: 054 (1.00)

E-1, "Loss of Reactor or Secondary Coolant", Enclosure 1; (Foldout) states that NCPs should be stopped if specified conditions are met.

Which ONE of the following is the basis for continuously monitoring for the criteria to perform this step in response to a small break LOCA?

a. To minimize NCS inventory loss if the LOCA break size increases to design basis.

b. To minimize NCS inventory release to the environment during a steam break/tube rupture event.

c. To minimize the effects of an uncontrolled cooldown rate during a steam break event.

d. To minimize NCS inventory loss and/or minimize peak clad temperatures.

QUESTION: 055 (1.00)

In which ONE of the following areas is the use of foam to extinguish a fire PROHIBITED?

a. Containment.

b. Electrical switchgear.

c. Spent fuel storage.

d. New fuel storage.

QUESTION: 056 (1.00)

Loss of power to which ONE of the following will result in an auto-start failure of the Unit 1 CA pump motor 1A?

a. 1EMXH

b. 1EMXA

c. 1EVDA

d. 1ETA

QUESTION: 057 (1.00)

Following a total loss of all AC power the operator is directed to CLOSE/check CLOSED 1KC-425A (NC Pumps Return Header Outside Isolation) per ECA-0.1, "Loss of All AC Power Without SI Required" and ECA-0.2, "Loss of All AC Power With SI Required".

Which ONE of the following is the basis for isolating the KC return path prior to restarting a KC pump?

a. To reduce KC heat loads to the minimum possible prior to restarting a KC pump during recovery.

b. To prevent exceeding the cooling capacity of the NCP thermal barrier heat exchangers due to reduced NCP seal flows.

c. To prevent steam from forming and circulating in the KC system and ensures the KC system is available for recovery.

d. To prevent thermal shock to the NCP pump shafts upon restart of the KC system during recovery.

QUESTION: 058 (1.00)

Given the following conditions:

- The Standby Shutdown Facility (SSF) has been activated due to a security event.
- The SSF diesel generator (D/G) has been started.

Which ONE of the following D/G trips is available for the given conditions of SSF diesel generator mode of operation?

a. Engine overspeed.

b. Low lube oil pressure.

c. Low jacket water pressure.

d. High jacket water temperature.

QUESTION: 059 (1.00)

During a loss of coolant accident, all automatic safety injection systems function properly, pressurizer level stabilizes, and NCS pressure stabilizes at about 1500 psig.

Which ONE of the following is the approximate injection flow rate in gallons per minute? (Assume design pump flow rates at nominal design operating pressure, see typical ECCS pump curves provided.)

a. 350 gpm.

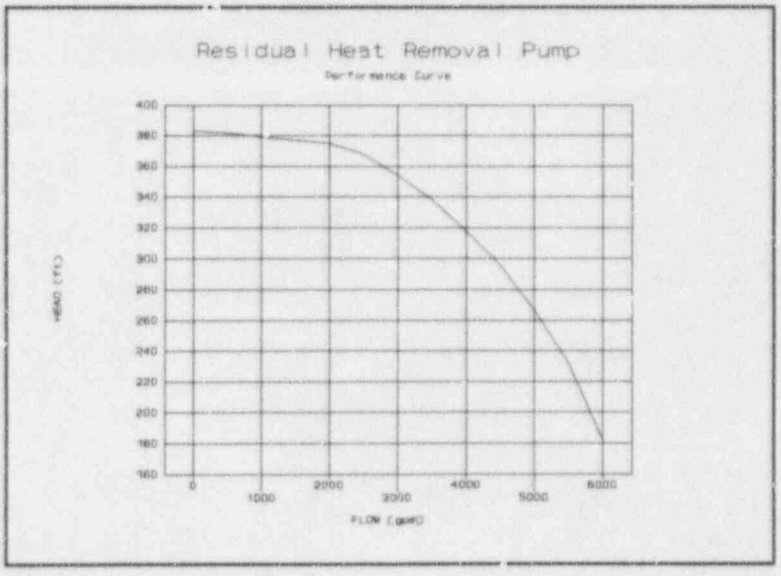
b. 750 gpm.

c. 1500 gpm.

d. 3000 gpm.

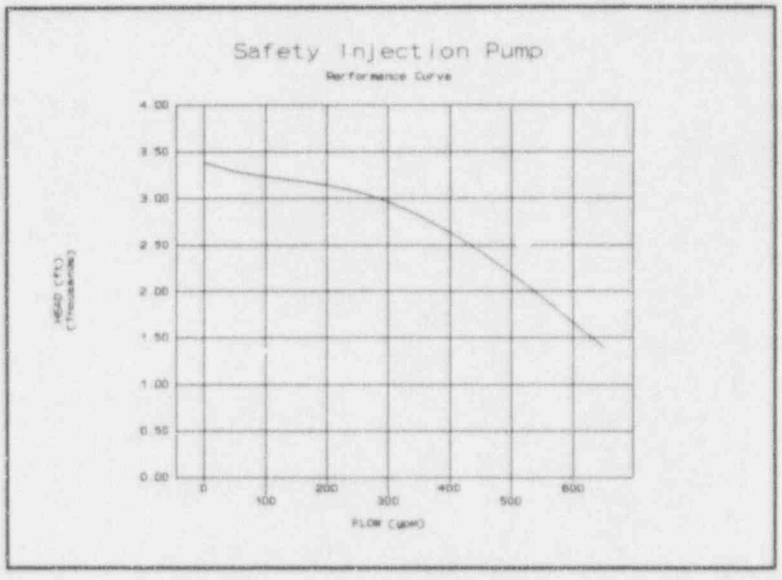
Residual Heat Removal (ND) Pump

Head (Ft)	Flow (gpm)
383	0
382	500
379	1000
377	1500
375	2000
368	2500
354	3000
338	3500
318	4000
296	4500
267	5000
232	5500
182	6000



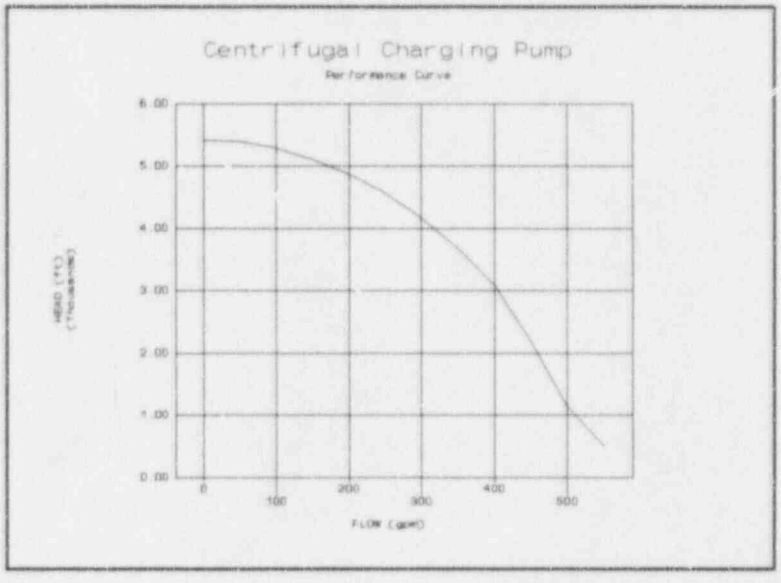
Safety Injection (NI) pump

Head (Ft)	Flow (gpm)
3387	0
3287	50
3232	100
3192	150
3143	200
3071	250
2965	300
2823	350
2643	400
2430	450
2190	500
1931	550
1662	600
1389	650



Centrifugal Charging (NV) pump

Head (Ft)	Flow (gpm)
5410	0
5400	50
5300	100
5110	150
4875	200
4575	250
4175	300
3675	350
3085	400
2200	450
1140	500
500	525



QUESTION: 060 (1.00)

Which ONE of the following describes the Main Fire pump response to pressure in the Jockey Pump pressurization tank decreasing from 81 psig to 50 psig?

a. "A" Main Fire pump starts at 81 psig, "B" Main Fire pump starts at 76 psig, "C" Main Fire pump starts at 71 psig pressure in the pressurization tank.

b. "A" Main Fire pump is running at 81 psig, "B" Main Fire pump starts at 80 psig, "C" Main Fire pump starts at 75 psig pressure in the pressurization tank.

c. "A", "B", and "C" Main Fire pumps start at 70 psig pressure in the pressurization tank.

d. "A", "B", and "C" Main Fire pumps start when the Jockey pumps can no longer maintain system pressure above 85 psig in the pressurization tank.

QUESTION: 061 (1.00)

The following plant conditions exist:

- The reactor is at 75% power.
- The "A" CA pump breaker is tagged for cleaning.
- "CA" pump turbine trip throttle valve will NOT latch.

An NLO reports that the RN suction header to "B" motor driven CA pump indicates leakage past the isolation valve CA-18, and he has closed the local pump suction isolation valve CA-30.

Which ONE of the following describes the action(s) required to be taken in accordance with Technical Specifications?

a. Immediately initiate corrective action to return one CA pump to OPERABLE as soon as possible.

b. Within 1 hour initiate a unit shutdown to HOT STANDBY in accordance with Technical Specification 3.0.3.

c. The RN path to the motor driven CA pump must be restored to OPERABLE or be in HOT STANDBY within 6 hours.

d. Immediately take action to place the plant in at least HOT STANDBY within 6 hours.

QUESTION: 062 (1.00)

Plant conditions:

- Unit 1 is in a refueling outage.
- NO fuel movement is in progress.
- A leak has developed which has caused level to drop in the spent fuel pool.
- The SPENT FUEL POOL LEVEL LOW computer alarm has actuated.
- Pool was initially at normal level and area radiation at 7 mrem/hr.
- After 20 minutes the pool level has decreased further and area radiation is 18 mrem/hr.

Which ONE of the following describes the FIRST required operator response to the current conditions, per AP/1/A/5500/40, "Loss of Refueling Canal Level"?

a. Begin makeup to the pool from the Boric Acid Tank.

b. De-energize the underwater lights before they become uncovered.

c. Move the fuel transfer cart to the spent fuel side and close the transfer tube valve.

d. Notify radiation protection to monitor radiation levels.

QUESTION: 063 (1.00)

Plant conditions:

- Reactor trip and SI actuated.
- NCS temperature is 500 degrees F.
- Pressurizer pressure is 2000 psig.
- S/G A, B & C pressures are 450 psig.
- S/G A, B & C levels are at 50% wide range.
- S/G D pressure is 0 psig.
- S/G D level is 5% wide range.
- All MSIV's and MSIV bypasses are shut.
- CA flow is 125 gpm to each S/G.
- Containment pressure is 10 psig.

Which ONE of the following actions will meet the objectives of E-2, Faulted Steam Generator Isolation for these conditions?

a. Maintain minimum CA flow to S/G's A, B & C and at least 125 gpm flow to D S/G to avoid dry-out.

b. Maintain 50 gpm CA flow to the D S/G to avoid dry-out and 100 gpm to S/G's A, B & C.

c. Maintain a minimum total CA flow of 450 gpm to all S/G's until S/G D level is greater than 9% narrow range.

d. Isolate CA flow to the D S/G to minimize containment pressure increase and maintain 450 gpm CA flow to S/G's A, B, & C.

QUESTION: 064 (1.00)

OP/1/A/6150/08, "Rod Control" contains a precaution that states "after moving rods in or out, the operator must wait at least 2 seconds before moving rods again".

Which ONE of the following is the reason for the 2 second waiting period?

a. To allow proper operation of the P/A converter.

b. To eliminate the possibility of a stuck rod.

c. To reduce the possibility of a dropped rod.

d. To allow nuclear instruments time to react to the reactivity change.

QUESTION: 065 (1.00)

Which ONE of the following ventilation Airborne Monitor channels will stop Auxiliary Building unfiltered exhaust fans upon receipt of a high radiation alarm?

a. 1 EMF 35 (H), Unit Vent Particulate (High Range).

b. 1 EMF 36 (L), Unit Vent Gas (Low Range).

c. 1 EMF 37, Unit Vent Iodine.

d. 1 EMF 41, Auxiliary Building Ventilation.

QUESTION: 066 (1.00)

Plant conditions:

- Mode 1 with power at 50%.
- Rod control is in MANUAL.
- All other control systems are in AUTOMATIC.

Which ONE of the following will cause actual pressurizer level to initially DECREASE?

a. Pressurizer Level channel II failing LOW.

b. Control rods inserted 5 steps.

c. Turbine load is decreased by 50 MWe.

d. An inadvertent dilution of 100 gallons.

QUESTION: 067 (1.00)

Plant conditions:

- Unit 1 is operating at 95% power.
- Unit 2 is shutdown, performing maintenance & testing on DC distribution centers 2EVDA, 2EVDB, 2EVDC and 2EVDD which are NOT available for service.
- 1EVDA and 1EVDC are cross-connected via their bus tie breakers due to a fault in the common output breaker from 1EVDA battery charger/battery.
- Standby battery charger EVCS is NOT available for service.
- Assume bus loads are equal.

Which ONE of the following is the expected time 1EVDC battery will carry loads upon a loss of AC to its battery charger?

a. 0.5 hour

b. 1.0 hours

c. 1.5 hours

d. 2.0 hours

QUESTION: 068 (1.00)

Plant conditions:

- Operating in MODE 1, at 100% power.
- 1EMF-48, Reactor Coolant Hi Rad, alarm is ALARMING.
- 1EMF-18, Reactor Coolant Hi Filter 1A, alarm is ALARMING.

Which ONE of the following operator actions is required per AP/1/A/5500/18, "High Activity in Reactor Coolant"?

a. Reduce power.

b. Isolate letdown.

c. Increase letdown to 120 gpm.

d. Initiate hourly sampling of NC system.

QUESTION: 069 (1.00)

Which ONE of the following must be maintained to ensure that the Heat Flux Hot Channel Factor and the Enthalpy Rise Hot Channel Factor are within limits between periodic surveillances?

a. Shutdown rod groups must be within +/- 12 steps in modes 1 and 2.

b. QPTR must NOT exceed 1.02 when operating at any power level in mode 1.

c. AFD must be maintained within limits when operating below 50% power in mode 1.

d. Control bank rods must be above their insertion limits when operating at any power level in mode 1.

QUESTION: 070 (1.00)

Plant conditions:

- Loop 3 T-Avg circuitry is failed and removed from service.
- Loop 2 T-hot RTD fails to 611 degrees F while operating at 75% power.

(All systems are in automatic and NO operator action taken.)

Which ONE of the following will occur IMMEDIATELY as a result of this failure?

a. Control Bank D rods will begin stepping out.

b. The charging flow control valve, NV-238, will open to increase charging flow.

c. If steam dumps are placed in the Steam Pressure Mode, the steam dumps would open.

d. The reactor will trip on over-temperature delta-T.

QUESTION: 071 (1.00)

Power has been lost to heat tracing on the NV Makeup Control System, resulting in a blockage of the entire line between NV-267A, Boric Acid Flow Control Valve, and NV-175A, Blender discharge to charging pump suction header.

Which ONE of the following paths to the charging pump suction header is the only path available to add a combination of boric acid and primary water?

a. Via NV-171, Isolation to VCT Spray valve flowpath.

b. Via NV-269, Manual Emergency Boration valve flowpath.

c. Via NV-252, Primary water makeup valve flowpath.

d. Via NV-265, Emergency Boration valve flowpath.

QUESTION: 072 (1.00)

Which ONE of the following requires starting one or more NCP's under inadequate core cooling conditions per EP/1/A/5000/FR-C.1, "Response to Inadequate Core Cooling" even if support conditions are not established?

a. Both trains of ECCS have failed.

b. Core exit thermocouples indicate 1300 degrees F.

c. Loss of all feedwater to S/Gs and all S/G's have boiled dry.

d. RVLIS indicates less than 40% and core exit thermocouples are indicating 800 degrees and increasing.

QUESTION: 073 (1.00)

Unit 1, has been operating at 100 percent rated thermal power for two months. Twelve hours ago, the residual heat removal (ND) heat exchanger A was declared INOPERABLE. Maintenance department has just reported that the suction valve from the containment sump to ND pump B is INOPERABLE and will take approximately 8 hours to repair.

Which ONE of the following describes the allowances and/or limitations imposed by the Technical Specifications that apply in this situation?

a. Restore at least one ND train (ECCS subsystem) to OPERABLE status within 1 hour or be in COLD SHUTDOWN within the next 20 hours.

b. Within 1 hour, action shall be initiated to place the unit in at least HOT STANDBY within the next six hours and at least HOT SHUTDOWN within the following six hours and COLD SHUTDOWN within the next 24 hours.

c. Restore at least one ECCS subsystem to OPERABLE status or SHUTDOWN and reduce NCS temperature to less than 350 degrees F by use of alternate heat removal methods.

d. Action shall be initiated immediately to place the unit in HOT STANDBY within the next hour and at least HOT SHUTDOWN within the following six hours and COLD SHUTDOWN within the next 24 hours.

QUESTION: 074 (1.00)

Which ONE of the following describes the basis for maintaining a minimum feedwater flow of at least 25 gpm to each Steam Generator during the performance of ECA-2.1, "Uncontrolled Depressurization of All Steam Generators"?

a. To minimize thermal shock due to subsequent increases in feed flow.

b. To maintain a minimum verifiable/measurable feed flow.

c. To maintain steam generator levels above the low limit of narrow range indication.

d. To ensure minimum flow through CA pumps is maintained.

QUESTION: 075 (1.00)

Plant conditions:

- Tavg is 557 degrees F.
- Pressurizer pressure is 2235 psig.
- NCS boron concentration is 1000 ppm (ECP value).
- Source range count rate is 30 cps.
- 72 hours since shutdown.

The shutdown banks are withdrawn in accordance with OP/1/A/6150/08, Rod Control, Enclosure 3, Rod Control During Startup. When the shutdown banks are fully withdrawn, the Source Range count rate is 110 cps on N31 and 30 cps on N32.

Which ONE of the following actions should be taken?

a. Immediately open the Reactor Trip Breakers and enter E-0, Reactor Trip or Safety Injection.

b. Perform an emergency boration per AP/1/A/5500/38, Emergency Boration.

c. Verify operability of Source Range N32 by performance of Analog Channel Operation Test.

d. Place the Level Trip switch for Source Range channel N32 in BYPASS per AP/1/A/5500/16, Malfunction of Nuclear Instrumentation, Case I.

QUESTION: 076 (1.00)

The reactor has tripped from 100% power due to a loss of off-site electrical power, the EDGs failed to reenergize their respective ESF buses and the following plant indications are noted.

- NCS pressure is 1575 psig and decreasing.
- Core exit thermocouples indicate 604 degrees F, increasing.
- Wide range RVLIS indicates 90%, decreasing.
- Pressurizer level indicates 90%, increasing.

Which ONE of the following is the most likely cause of the above indications?

a. A pressurizer PORV has failed in the open position.

b. NCS over-cooling has caused a partial bubble formation in the reactor vessel.

c. The cold leg accumulators are injecting and filling the pressurizer.

d. The steam dump controller has failed with all steam dumps fully open.

QUESTION: 077 (1.00)

The plant is in Mode 5 with NCS inventory at midloop conditions.

Which ONE of the following is the basis for limiting the number of running ND pumps to ONE (except when swapping trains) when NCS inventory is at midloop conditions?

a. Running both ND pumps could result in exceeding the 50 degree/hr (100 degree/hr T.S.) NCS cooldown rate.

b. Running both ND pumps could result in ND pump vortexing (air entrainment).

c. High ND flow rates will result in exceeding the Technical Specification limit of 1000 gpm.

d. High ND flow rates will result in exceeding the NCS temperature limit of 140 degrees F.

QUESTION: 078 (1.00)

Shortly after placing an additional letdown orifice in service to clean up a crud burst per AP/18, High Activity in Reactor Coolant, conditions are as follows:

- Annunciator 1AD6-E7, PZR LOW LEVEL DEV, in alarm.
- Letdown flow is 120 gpm with the 45 gpm and one 75 gpm orifice in service.
- Charging flow is 108 gpm with the "B" NV pump running.
- Pressurizer level control is in automatic.

Which ONE of the following would correct the charging-letdown flow imbalance?

a. Start the PDP and stop the "B" charging pump.

b. Shut the "B" charging pump recirculation valve.

c. Increase NCP seal injection flow via seal injection flow control.

d. Select the alternate channel for pressurizer level control.

QUESTION: 079 (1.00)

Plant conditions:

- The reactor has tripped from 100% power due to a loss of off-site electrical power.
- The EDGs failed to reenergize their respective ESF buses.
- Operators have successfully performed step 5 of ECA-0.0, Loss of all AC Power, ensuring:
  - PORV's are CLOSED.
  - Letdown isolation valves are CLOSED.
  - Excess letdown isolation valves are CLOSED.
  - Letdown control valve (NV-121) is CLOSED.
- Plant Indications:
  - Pressurizer level continues to slowly decrease.
  - PRT level continues to increase.
  - Assume NO OTHER alarms are present.

Which ONE of the following is the most likely cause of the above indications?

a. NCP seal return relief valve has lifted and failed to reseat.

b. Letdown relief valve has lifted and failed to reseat.

c. A pressurizer safety valve has lifted and failed full open.

d. NV pump suction header relief valve has lifted and failed full open.

QUESTION: 080 (1.00)

Plant conditions:

- Unit 1 is operating in Mode 1 at 100% power.
- All systems and controls are operating normally and in automatic.

Power is then lost to 1EMXB, the reactor operator manually trips the reactor and FR-S.1, "Response to Nuclear Power Generation/ATWS" is entered due to an ORANGE path on SUBCRITICALITY.

Which ONE of the following main control board actions must be performed in response to the loss of power to 1EXMB?

a. Initiate emergency boration by opening 1NV-269, Boric Acid to NV pumps.

b. Initiate emergency boration by opening 1NV-221, NV Pumps Suction from FWST.

c. Initiate emergency boration by opening 1NV-1025, PDP Suction from VCT.

d. Open 1NI-3, Boron Injection Check Valve Flush Line Isolation.

QUESTION: 081 (1.00)

Plant conditions:

- The plant is operating in mode 1.
- The OAC has inadvertently left the manual block switches associated with P-11 in BLOCK.
- P-11 failed to automatically cut-in when Pressurizer pressure exceeded 1955 psig.

(Assume all other switches and controls are in their correct positions for the operating condition).

Which ONE of the following describes a safety function that will FAIL to operate under these conditions?

a. Ss (Safety Injection) actuation signal on Hi-containment pressure on 2 of 4 channels.

b. Auto-start of the turbine driven CA pump on receipt of an Ss signal.

c. Auto-start of motor driven CA pumps on loss of both FWPT's.

d. Injection of Cold Leg Accumulator contents into reactor coolant system upon receipt of Ss signal.

QUESTION: 082 (1.00)

Plant conditions:

- Reactor trip and safety injection have occurred.
- Immediate actions of E-0 are complete.

Which ONE of the following concurrent conditions should receive first priority by the operator?

a. NCS inventory loss rate at 1300 gpm.

b. S/G "B" pressure at 590 psig and decreasing rapidly.

c. Condenser air ejector radiation alarm in progress.

d. "B" S/G narrow range level at 5% slowly decreasing with the Turbine Driven CA pump running, Motor Driven CA pumps are NOT available.

QUESTION: 083 (1.00)

Containment isolation valve NV-245B inadvertently CLOSES resulting in a loss of normal charging. Annunciator 1AD7-G2, CHARGING LINE ABNORMAL FLOW, is in alarm.

Which ONE of the following is the required IMMEDIATE ACTION?

a. Fully open NV-13B, alternate charging valve.

b. Close NV-238, charging line flow control valve.

c. Close NV-458A, 457A and 35A, letdown orifice isolation valves.

d. Fully open NV-241, seal injection flow control valve.

QUESTION: 084 (1.00)

Which ONE of the following describes why correction factors are required to be used when the temperature of the Incore Thermocouple Reference Junction Box is more than 1 degree from 160 degrees F?

a. To compensate for the chromel to alumel junctions located in the box.

b. To correct for temperature errors as a result of electrical connections contained in the box.

c. To compensate for the use of less expensive copper wiring in field wiring circuits.

d. To correct for OAC computational errors.

QUESTION: 085 (1.00)

Which ONE of the following is the Spent Fuel Pool water level, as read on the control room gage (1KF-5120), required by Technical Specifications when irradiated fuel is in the spent fuel pool?

a. + 2.0 feet.

b. 0.0 feet.

c. - 2.0 feet.

d. - 6.0 feet.

QUESTION: 086 (1.00)

Given the following conditions while pumping out the ENA sump:

- ENA ROOM SUMP HI LEVEL alarm is LIT.
- Containment Sump Totalizer was counting, but STOPPED.
- The Liquid Waste system is in it's normal alignment.
- Initial radiation alarms are normal.

Which ONE of the following is a possible cause for this condition?

a. The totalizer has failed tripping the ENA sump pumps.

b. EMF-49L (Waste Liquid Monitor) has reached the TRIP 2 setpoint, securing the release.

c. WL-64A (RB Sump Pump inside isolation valve) closed.

d. The Floor Drain Tank reached the "Hi Level" setpoint and secured the release to prevent overflow.

QUESTION: 087 (1.00)

Given the following conditions:

- Unit 1 is in MODE 3.
- Entry into lower containment must be made to inspect for suspected NC system leakage.

Which ONE of the following determines how "stay time" will be affected if respirators are to be used?

a. It is NOT affected if ice vests are used.

b. The Low Metabolism chart is used.

c. The Moderate Metabolism chart is used.

d. The High Metabolism chart is used.

QUESTION: 088 (1.00)

Which ONE of the following lists the MINIMUM required conditions (INTERLOCKS) that must be met before the fuel transfer system conveyor cart can be moved from containment to the fuel building?

a. Transfer tube valve open, containment side frame in the DOWN position, fuel building side frame in the UP position.

b. Manipulator crane grippers UP or UP disengaged, rod gripper UP on the containment side frame and transfer tube valve open.

c. Manipulator crane grippers UP, rod gripper UP or UP disengaged for the frame on BOTH containment and fuel building sides.

d. Transfer tube valve open, both containment and fuel building frames in the DOWN position.

QUESTION: 089 (1.00)

Step 15 of ES-1.2, Post LOCA Cooldown and Depressurization reads:

"In subsequent steps, stop NV and NI pumps in alternate trains when possible".

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

a. Balance injection flow to NCS loops.

b. Equalize loads on ECCS trains to maintain pump suction head.

c. Minimize the probability of losing NCS injection flow if one 4 KV bus loses power.

d. To prevent the possibility of a common mode failure.

QUESTION: 090 (1.00)

Plant conditions:

- A fire has occurred on-site.
- Operators are placing the plant in HOT STANDBY from the SSF.
- The reactor and main turbine have been manually tripped.
- Pressurizer level is being maintained between 60% and 80%.

Which ONE of the following describes the method of pressurizer level control for the above conditions per AP/1/A/5500/24, "Loss of Plant Control Due to Fire"?

a. Starting & stopping NV Pumps 1A and/or 1B.

b. Starting & stopping the NV positive displacement charging pump.

c. Opening & closing the reactor vessel head vent valves.

d. Opening & closing the pressurizer PORV's.

QUESTION: 091 (1.00)

Plant conditions:

- The plant is shutdown operating in MODE 4, and preparing to enter MODE 5.
- Alarm 1AD2-D3, S/R HI FLUX AT SHUTDOWN, is alarming.
- Protection set I and II bistables in both S/R drawers are tripped.
- Power is available to both source range instruments.

Which ONE of the following actions is required?

a. Enter AP/1/A/5500/16, Nuclear Instrumentation System Malfunction, Case I, Source Range Malfunction.

b. Place both Source Range Select switches in "Block" per alarm response procedure OP/1/A/6100/10C, 1AD2-D3.

c. Increase shutdown margin per AP/1/A/5500/13, Boron Dilution.

d. Immediately shift NV charging pump suctions to FWST per AP/1/A/5500/38, Emergency Boration.

QUESTION: 092 (1.00)

Initial Plant Conditions:

- Mode 1 with reactor power at 99%.
- Rod control is in manual.

Following a transient due to grid instabilities conditions are as follows:

- Turbine power at 60%.
- Steam dump arming signal failed to initiate.
- Pressurizer pressure is 2380 psig.

Which ONE of the following describes the expected status of the pressurizer pressure control system in response to the above conditions?

a. Spray valves partially open, pressurizer PORV's shut, pressurizer safeties shut.

b. Spray valves full open, pressurizer PORV's shut, pressurizer safeties lifting.

c. Spray valves full open, pressurizer PORV's full open, pressurizer safeties lifting.

d. Spray valves full open, pressurizer PORV's full open, pressurizer safeties shut.

QUESTION: 093 (1.00)

Given the following conditions:

- A Loss of Offsite Power has occurred.
- Tavg is 557 degrees F.
- Steam dumps are in the Steam Pressure mode.
- Steam dump demand is manually increased to begin cooldown.
- The steam dump valves will NOT open.

Which ONE of the following explains why the steam dumps will NOT open?

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

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

c. P-12, LO-LO Tavg, has disarmed the steam dumps.

d. The plant trip controller has not been reset.

QUESTION: 094 (1.00)

The Unit is in Mode 1 at 100% power. A reactor operator trainee inadvertently changes the Pressurizer Pressure Master Controller setting to 8.38 (2370 psig).

Assume a step change in the setpoint and assume pressurizer pressure control remains in automatic.

Which ONE of the following describes the system response to these conditions?

a. Spray valves close and pressurizer heaters energize.

b. The PORV's and spray valves open and pressurizer heaters de-energize.

c. The spray valves open and pressurizer heaters energize.

d. The PORV's and spray valves open and pressurizer heaters energize.

QUESTION: 095 (1.00)

During a refueling outage the NIS intermediate range channels were not adjusted to account for the changes in neutron leakage resulting from the core reload. All other NIS channels were properly adjusted as required.

Which ONE of the following will occur during the startup following the refueling outage?

a. Source and intermediate range overlap will be excessive.

b. A rod stop will occur due to the significantly lower intermediate range high flux setpoints.

c. The intermediate range high flux trips will occur at a significantly higher core flux level.

d. Intermediate and power range overlap will be excessive.

QUESTION: 096 (1.00)

A reactor trip and safety injection have occurred. The crew has transitioned to E-1, Loss of Reactor or Secondary Coolant. During the performance of step 5 of E-1, the chemistry technician calls the control room and reports that there is high activity in the "A" S/G.

Which ONE of the following should be performed?

a. Transition to E-3, Steam Generator Tube Rupture, per the fold out page of E-1.

b. Transition to ES-1.2, Post LOCA Cooldown and Depressurization.

c. Continue in E-1, Loss of Reactor or Secondary Coolant.

d. Return to E-0, Reactor Trip or Safety Injection, and perform the diagnosis steps.

QUESTION: 097 (1.00)

In the RVLIS differential pressure range (Dynamic Head) and with units 1 and 2 at full power, the Unit 1 normal differential pressure (DP) reads lower than Unit 2.

Which ONE of the following statements is the reason for this condition?

a. Some of the Unit 1 core exit thermocouples are reading cold leg temperatures.

b. The OAC has failed to make the required additional correction for this inconsistency.

c. The thermocouple reference junction boxes are NOT being controlled at 160 degrees F, or T/C correction factors as determined by calibration have NOT been manually adjusted.

d. The capillary RTDs measure containment temperature instead of NCS temperature. The correction factors are incorrect for the colder containment temperatures.

QUESTION: 098 (1.00)

Which ONE of the following exceeds the Technical Specification limit for average containment air temperature if the average containment air temperature for the past 14 months has been 102 degrees F while operating in Mode 3 with reduced containment temperature limits?

a. Upper compartment 70 degrees F; Lower compartment 58 degrees F.

b. Upper compartment 72 degrees F; Lower compartment 98 degrees F.

c. Upper compartment 97 degrees F; Lower compartment 88 degrees F.

d. Upper compartment 98 degrees F; Lower compartment 124 degrees F.

QUESTION: 099 (1.00)

Which ONE of the following actions is the first action required per FR-S.1, Response to Nuclear Power Generation/ATWS, if the main turbine will NOT trip?

a. Place the turbine in manual and fast close the governor valves.

b. Close the MSIV's and MSIV bypass valves.

c. Stop the EHC pumps.

d. Manually initiate a Main Steam Isolation.

QUESTION: 100 (1.00)

Plant conditions:

- Unit 1 is shutdown, Unit 2 is operating at 100% power.
- A Unit 1 containment purge is in progress.

The operator notes an unexpected increase in Unit 1 Vent Activity Monitor (1EMF-36) and investigates. His investigation reveals that the low range Containment Gas monitor (1EMF-39(L)) is malfunctioning and has determined it to be INOPERABLE.

Which ONE of the following actions should be taken?

a. Immediately terminate the containment purge per OP/1/A/6450/15, Containment Purge System.

b. Verify containment purge flow is proper and less than or equal to 28,000 cfm.

c. Continue purge as per HP/0/B/1009/14, Radiation Protection Actions for Inoperable Gaseous Effluent Monitoring and Flowrate Measurement Devices.

d. Verify 1EMF-36(L), Unit Vent Gas (Low Range) and 1EMF-50(L) Waste Gas (Low Range) are operating properly.

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

MULTIPLE CHOICE

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

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

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

See Interpretation

3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding specifications is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met.

3.0.2 Noncompliance with a specification shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals. If the Limiting Condition for Operation is restored prior to expiration of the specified time intervals, completion of the Action requirements is not required.

See Interpretation

3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within 1 hour action shall be initiated to place the unit in a MODE in which the specification does not apply by placing it, as applicable, in:

a. At least HOT STANDBY within the next 6 hours,
b. At least HOT SHUTDOWN within the following 6 hours, and
c. At least COLD SHUTDOWN within the subsequent 24 hours.

Where corrective measures are completed that permit operation under the ACTION requirements, the action may be taken in accordance with the specified time limits as measured from the time of failure to meet the Limiting Condition for Operation. Exceptions to these requirements are stated in the individual specifications.

This specification is not applicable in MODE 5 or 6.

3.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made when the conditions for the Limiting Condition for Operation are not met and the associated ACTION requires a shutdown if they are not met within a specified time interval. Entry into an OPERATIONAL MODE or specified condition may be made in accordance with ACTION requirements when conformance to them permits continued operation of the facility for an unlimited period of time. This provision shall not prevent passage through or to OPERATIONAL MODES as required to comply with ACTION requirements. Exceptions to these requirements are stated in the individual specifications.

3.0.5 Limiting Conditions for Operation including the associated ACTION requirements shall apply to each unit individually unless otherwise indicated as follows:

a. Whenever the Limiting Condition for Operation refers to systems or components which are shared by both units, the ACTION requirements will apply to both units simultaneously. This will be indicated in the ACTION section;

b. Whenever the Limiting Condition for Operation applies to only one unit, this will be identified in the APPLICABILITY section of the specification; and

c. Whenever certain portions of a specification contain operating parameters, setpoints etc., which are different for each unit, this will be identified in parentheses or footnotes. (For example, "...flow rate of 54,000 cfm (Unit 1) or 43,000 cfm (Unit 2)...").

4.0.1 Surveillance Requirements shall be met during the OPERATIONAL MODES or other conditions specified for individual Limiting Conditions for Operation unless otherwise stated in an individual Surveillance Requirement.

4.0.2 Each Surveillance Requirement shall be performed within the specified time interval with a maximum allowable extension not to exceed 25% of the surveillance interval.

4.0.3 Failure to perform a Surveillance Requirement within the allowed surveillance interval, defined by Specification 4.0.2, shall constitute noncompliance with the OPERABILITY requirements for a Limiting Condition for Operation. The time limits of the ACTION requirements are applicable at the time it is identified that a Surveillance Requirement has not been performed. The ACTION requirements may be delayed for up to 24 hours to permit the completion of the surveillance when the allowable outage time limits of the ACTION requirements are less than 24 hours. Surveillance Requirements do not have to be performed on inoperable equipment.

4.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made unless the Surveillance Requirement(s) associated with the Limiting Condition for Operation have been performed within the stated surveillance interval or as otherwise specified. This provision shall not prevent passage through or to OPERATIONAL MODES as required to comply with ACTION requirements.

4.0.5 Surveillance Requirements for inservice inspection and testing of ASME Code Class 1, 2, and 3 components shall be applicable as follows:

a. Inservice inspection of ASME Code Class 1, 2, and 3 components and inservice testing of ASME Code Class 1, 2, and 3 pumps and valves shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50, Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50, Section 50.55a(g)(6)(i);

3/4.5.2 ECCS SUBSYSTEMS - $T_{avg} \geq 350°F$

LIMITING CONDITION FOR OPERATION

SEE INTERPRETATIONS

3.5.2 Two independent Emergency Core Cooling System (ECCS) subsystems shall be OPERABLE with each subsystem comprised of:

a. One OPERABLE centrifugal charging pump,

b. One OPERABLE Safety Injection pump,

c. One OPERABLE RHR heat exchanger,

d. One OPERABLE RHR pump, and

e. An OPERABLE flow path capable of taking suction from the refueling water storage tank on a Safety Injection signal and automatically transferring suction to the containment sump during the recirculation phase of operation.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date. The current value of the usage factor for each affected Safety Injection nozzle shall be provided in this Special Report whenever its value exceeds 0.70.

2) A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or abnormal corrosion.

e. At least once per 18 months, during shutdown, by:

1) Verifying that each automatic valve in the flow path actuates to its correct position on Safety Injection actuation and automatic switchover to Containment Sump Recirculation test signals, and

2) Verifying that each of the following pumps start automatically upon receipt of a Safety Injection actuation test signal:

a) Centrifugal charging pump,

b) Safety Injection pump, and

c) RHR pump.

f. By verifying that each of the following pumps develops the indicated differential pressure when tested pursuant to Specification 4.0.5:

1)	Centrifugal charging pump	$\geq$ 2347 psid,
2)	Safety Injection pump	$\geq$ 1418 psid, and
3)	RHR pump	$\geq$ 166 psid.

g. By verifying the correct position of each electrical and/or mechanical position stop for the following ECCS throttle valves:

1) Within 4 hours following completion of each valve stroking operation or maintenance on the valve when the ECCS subsystems are required to be OPERABLE, and

4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the following valves are in the indicated positions with power to the valve operators removed:

Valve Number	Valve Function	Valve Position
NI162A	Cold Leg Recirc.	Open*
NI121A	Hot Leg Recirc.	Closed
NI152B	Hot Leg Recirc.	Closed
NI183B	Hot Leg Recirc.	Closed
NI173A	RHR Pump Discharge	Open*
NI178B	RHR Pump Discharge	Open*
NI100B	SI Pump RWST Suction	Open
FW27A	RHR/RWST Suction	Open*
NI147A	SI Pump Mini flow	Open

b. At least once per 31 days by:

1) Verifying that the ECCS piping is full of water by venting the ECCS pump casings and accessible discharge piping high points, unless the pumps and associated piping are in service or have been in service within 31 days, and

2) Verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

c. By a visual inspection which verifies that no loose debris (rags, trash, clothing, etc.) is present in the containment which could be transported to the containment sump and cause restriction of the pump suctions during LOCA conditions. This visual inspection shall be performed:

1) For all accessible areas of the containment prior to establishing CONTAINMENT INTEGRITY, and

2) Of the areas affected within containment at the completion of each containment entry when CONTAINMENT INTEGRITY is established.

d. At least once per 18 months by:

1) Verifying automatic interlock action of the RHR System from the Reactor Coolant System by ensuring that with a simulated or actual Reactor Coolant System pressure signal greater than or equal to 425 psig the interlocks prevent the valves from being opened.

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* Valves may be realigned to place RHR System in service and for testing pursuan to Specification 4.4.6.2.2.

2) At least once per 18 months.

Boron Injection Throttle Valves	Safety Injection Throttle Valves
Valve Number	Valve Number
NI-480	NI-488
NI-481	NI-489
NI-482	NI-490
NI-483	NI-491

h. By performing a flow balance test, during shutdown, following completion of modifications to the ECCS subsystems that alter the subsystem flow characteristics and verifying that:

1) For centrifugal charging pump lines, with a single pump running:

a) The sum of the injection line flow rates, excluding the highest flow rate, is greater than or equal to 325 gpm for Unit 1 and 320 gpm for Unit 2, and

b) The total pump flow rate is less than or equal to 560 gpm.

2) For Safety Injection pump lines, with a single pump running:

a) The sum of the injection line flow rates, excluding the highest flow rate, is greater than or equal to 423 gpm, and

b) The total pump flow rate is less than or equal to 675 gpm.

3) For RHR pump lines, with a single pump running, the sum of the injection line flow rates is greater than or equal to 4025 gpm.

3/4.5.3 ECCS SUBSYSTEMS - $T_{avg} \geq 350°F$

LIMITING CONDITION FOR OPERATION

3.5.3 As a minimum, one ECCS subsystem comprised of the following shall be OPERABLE:

a. One OPERABLE centrifugal charging pump,#

b. One OPERABLE RHR heat exchanger,

c. One OPERABLE RHR pump, and

d. An OPERABLE flow path capable of taking suction from the refueling water storage tank upon being manually realigned and transferring suction to the containment sump during the recirculation phase of operation.

APPLICABILITY: MODE 4.

ACTION:

a. With no ECCS subsystem OPERABLE because of the inoperability of either the centrifugal charging pump or the flow path from the refueling water storage tank, restore at least one ECCS subsystem to OPERABLE status within 1 hour or be in COLD SHUTDOWN within the next 20 hours.

b. With no ECCS subsystem OPERABLE because of the inoperability of either the RHR heat exchanger or RHR pump, restore at least one ECCS subsystem to OPERABLE status or maintain the Reactor Coolant System T_{avg} less than 350°F by use of alternate heat removal methods.

c. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date. The current value of the usage factor for each affected Safety Injection nozzle shall be provided in this Special Report whenever its value exceeds 0.70.

#A maximum of one centrifugal charging pump and one Safety Injection pump shall be OPERABLE whenever the temperature of one or more of the RCS cold legs is less than or equal to 300°F.

SURVEILLANCE REQUIREMENTS

4.5.3.1 The ECCS subsystem shall be demonstrated OPERABLE per the applicable requirements of Specification 4.5.2.

4.5.3.2 All centrifugal charging pumps and Safety Injection pumps, except the above required OPERABLE pumps, shall be demonstrated inoperable by verifying that the motor circuit breakers are secured in the open position or by verifying the discharge of each pump has been isolated from the RCS by at least two isolation valves with power removed from the valve operators at least once per 12 hours whenever the temperature of one or more of the RCS cold legs is less than or equal to 300°F.

ANSWER: 001 (1.00) SRO - 1

c.

REFERENCE:

LP: OP-MC-GEN-EHC, Rev. 11, page 43 of 60, para. B.
OP-MC-STM-IDE, Rev. 8, page 37 of 38, para. E and fig. MC-STM-IDE-1
AP/2/A/5500/03, Rev. 0, page 14 of 20
Objective: LPRO/LPSO 7 of OP-MC-CF-CF

059000A401 [3.1/3.1]
059000G014 [3.3/3.5]

059000G014 059000A401 ..(KA's)

ANSWER: 002 (1.00)

c.

REFERENCE:

Technical Specifications 3.4.6.2
Objective: LPRO 12 of LP: OP-MC-PS-NC

002000G005 [3.6/4.1]
002000G011 [3.3/4.0]
002000A201 [4.3/4.4]

002000A201 002000G011 002000G005 ..(KA's)

ANSWER: 003 (1.00)

d.

REFERENCE:

AP/1/A/5500/16, "Malfunction of Nuclear Instrumentation, Case II", Rev. 0, page 6 of 16 para. CAUTION
Objective: LPRO 15 of LP: OP-MC-IC-ENB

012000A202 [3.6/3.9]
012000A204 [3.1/3.2]

012000A204 012000A202 ..(KA's)

ANSWER: 004 (1.00) SRO - 6

a.

REFERENCE:

LP: OP-MC-STM-SM, Rev. 10, Fig. MC-STM-SM-3
Objective: LPRO/LPSO 9.B.

039000A302 [3.1/3.5]
039000K405 [3.7/3.7]

039000K405 039000A302 ..(KA's)

ANSWER: 005 (1.00) SRO-7

a.

REFERENCE:

LP: OP-MC-IC-IRX, Rev. 6, page 12 of 29, para. E.2.b.
Objective: LPRO/LPSO 3.K

016000A201 [3.0/3.1]
016000K403 [2.8/2.9]
016000A203 [3.0/3.3]
016000K301 [3.4/3.6]

016000K301 016000A203 016000K403 016000A201 ..(KA's)

ANSWER: 006 (1.00) SRO - 8

a.

REFERENCE:

OMP 4-1, Use of Operating and Periodic Test Procedures, Rev. 0,
page 19 of 22, para. 10.1.1
Objective: NONE FOUND

194001A102 [4.1/3.9]

194001A102 ..(KA's)

ANSWER: 007 (1.00) S20-9

c.

REFERENCE:

LP: OP-MC-PS-ND, Rev. 15, page 21 of 30, para. 2.2.D
OP/1/A/6100/02, Rev. 0, page 2 of 6, para. 2.4
Objective: LPRO/LPSO 8.

005000A101 [3.5/3.6]
005000G010 [3.3/3.5]

005000G010 005000A101 ..(KA's)

ANSWER: 008 (1.00) S100-10

c.

REFERENCE:

LP: OP-MC-WE-EMF, Rev. 12, page 11 of 48, para. B.2. and
AP/1/A/5500/10, NC System Leakage Within the Capacity of Both NV Pumps, Case I, Steam Generator Tube Leakage, Rev. 0,
Objective: LPRO/LPSO 1 and 3

000037G011 [3.9/4.1]
000037A206 [4.3/4.5]
000037A211 [3.8/3.8]

000037A211 000037A206 000037G011 ..(KA's)

ANSWER: 009 (1.00)

c.

REFERENCE:

Technical Specifications 3.2.4, "Quadrant Power Tilt Ratio".
Objective: LPRO 13 of OP-MC-CTH-CP

Candidates to be provided OAC PT/1/A/4600/21A, data sheet, Enclosure 13.5 for QPTR calculation including calibration currents.

Normalized currents	N41	N42	N43	N44	avg
Upper	0.2145	0	0.2342	0.2520	0.2336
Lower	0.1998	0	0.1991	0.2099	0.2029

Max upper/avg upper = 1.0788
Max lower/avg lower = 1.0345
QPTR = 1.0788

015000A104 [3.5/3.7]

015000A104 ..(KA's)

ANSWER: 010 (1.00)

d.

REFERENCE:

LP: OP-MC-PS-NC, Rev. 12, page 27 & 28 of 50, para. 1.5.A.1
Objective: LPRO/LPSO 8

002020K509 [3.6/3.9]

002020K509 ..(KA's)

ANSWER: 011 (1.00) SRO - 12

b.

REFERENCE:

OMP 2-2, Responsibilities of Operations Personnel, Rev. 0, page 6 of 11, para. 10.9
Objective: NONE FOUND

194001A105 [3.6/3.8]

194001A105 ..(KA's)

ANSWER: 012 (1.00) SRO - 13

b.

REFERENCE:

MSD 962, Confined Space Safety Directive, Rev. 0, page 962-35, para. 962.13
Objective: NONE FOUND

194001K114 [3.3/3.6]

194001K114 ..(KA's)

ANSWER: 013 (1.00) SRO - 14

a.

REFERENCE:

OMP 8-2
NSD 700, Independent Verification, Rev. 2, page 700-7, para 700.5.3
Objective: NONE FOUND

194001K101 [3.6/3.7]

194001K101 ..(KA's)

ANSWER: 014 (1.00) STRO - 15

d.

REFERENCE:

MSD 950.5, Rev. 0, page 950-11
Objective: NONE FOUND

194001K105 [3.1/3.4]

194001K105 ..(KA's)

ANSWER: 015 (1.00) STRO - 16

d.

REFERENCE:

NSD 500, Safety Tags, Rev. 1, page 500-12, para. 500.6.10
Objective: LPRO/LPSO K of LP: Site Directives

194001K102 [3.7/4.1]

194001K102 ..(KA's)

ANSWER: 016 (1.00) STRO - 17

c.

REFERENCE:

LP: OP-MC-RAD-HPM, Rev. 10, page 38 of 41, para. 2.
Objective: 57

194001K104 [3.3/3.5]

'94001K104 ..(KA's)

ANSWER: 017 (1.00) STRO-18

d.

REFERENCE:

LP: OP-MC-WE-WG, Rev. 2, page 20 & 21 of 33, para. C.
Objective: LPRO/LPSO 4 & 7

071000A302 [3.6/3.8]

071000A302 ..(KA's)

ANSWER: 018 (1.00) STRO-19

d.

REFERENCE:

OP-MC-STM-IDE, Rev. 8, page 12 of 38, para. E
Objective: LPRO/LPSO 1.D.

041020A302 [3.3/3.4]
041020A408 [3.0/3.1]

041020A408 041020A302 ..(KA's)

ANSWER: 019 (1.00) STRO-20

c.

REFERENCE:

LP: OP-MC-CF-ILE, Rev. 8, page 9 of 25, para. B and page 12 of 25, para. E.3.
Objective: LPRO/LPSO 5

035010K401 [3.6/3.8]
035010A301 [4.0/3.9]

035010A301 035010K401 ..(KA's)

ANSWER: 020 (1.00) STCO - 21

c.

REFERENCE:

LP: OP-MC-MT-MT, Rev. 8, page 39 & 40 of 64, para. 4.
Objective: LPRO/LPSO 21
LP OP-MC-GEN-EHC, Rev. 11, page 12 of 60, para. D.; Drawings EHC 5 & 6.
Objective: LPRO/LPSO 1.N

045000K411 [3.6/3.9]
045010K423 [3.4/3.6]
045050K101 [3.4/3.6]
045050K301 [2.9/3.1]

045000K411 045050K301 045050K101 045010K423 ..(KA's)

ANSWER: 021 (1.00) STCO - 22

c.

REFERENCE:

OP-MC-PS-NCP, Rev. 12, page 8 of 37, para. 1.1.B.
Objective: LPRO/LPSO 1

062000A201 [3.4/3.9]
062000G005 [3.1/3.8]

062000G005 062000A201 ..(KA's)

ANSWER: 022 (1.00)

b.

REFERENCE:

LP: OP-MC-IC-IRX, Rev. 6, page 19 of 29, para. 3
Objective: LPRO/LPSO 5.C.

000001K105 [3.5/3.8]
000001A204 [4.2/4.3]
000001G011 [4.0/4.1]

000001G011 000001A204 000001K105 ..(KA's)

ANSWER: 023 (1.00) Stec - 23

c.

REFERENCE:

LP: OP-MC-DG-EQB, Rev. 6, page 9, 10 & 11 of 27, para. A.
Objective: LPRO/LPSO 3

064000A307 [3.6/3.7]
064000K410 [3.5/4.0]
064050A303 [3.3/3.5]

064050A303 064000K410 064000A307 ..(KA's)

ANSWER: 024 (1.00) Stec - 24

d.

REFERENCE:

OMP 4-1, Use of Operating and Periodic Test Procedures, Rev. 0,
page 2 of 22, para. 4.2.3
Objective: NONE FOUND

194001A101 [3.3/3.4]

194001A101 ..(KA's)

ANSWER: 025 (1.00)

a.

REFERENCE:

LP: OP-MC-PS-ND, Rev.15. page 12 of 30, para.E.8; Dwg MC-PS-ND-5
Objective: LPRO/LPSO 6

007000K103 [3.0/3.2]
007000A301 [2.7/2.9]
005000K401 [3.0/3.2]

005000K401 007000A301 007000K103 ..(KA's)

ANSWER: 026 (1.00)

b.

REFERENCE:

RP/0/A/5700/02, Alert, Rev. 0, Section 2.1, page 1 of 7
Objective: NONE FOUND

194001A116 [3.1/4.4]

194001A116 ..(KA's)

ANSWER: 027 (1.00)

b.

REFERENCE:

OP/0/A/6550/22, Rev. 0, page 1 of 3.
Objective: NONE FOUND

194001A112 [3.1/4.1]

194001A112 ..(KA's)

ANSWER: 028 (1.00)

c.

REFERENCE:

OP-MC-CNT-VX, Rev. 12, page 15 of 25, NOTE
Objective: LPRO/LPSO 5

028000A202 [3.5/3.9]
028000A101 [3.4/3.8]
028000G007 [3.2/3.3]

028000G007 028000A101 028000A202 ..(KA's)

ANSWER: 029 (1.00)

b.

REFERENCE:

LP: OP-MC-CNT-NF, Rev. 9, page 16 of 40, para. c.3).
Objective: 1.B.4)

025000K601 [3.4/3.6]

025000K601 ..(KA's)

ANSWER: 030 (1.00) SRO - 27

a.

REFERENCE:

LP: OP-MC-PS-NCP, Rev. 12, page 15/16 of 37 para's. B.4, 1.5.A.2.
Objective: LPRO 5

003000K103 [3.3/3.6]

003000K103 ..(KA's)

ANSWER: 031 (1.00)

a.

REFERENCE:

L.P: OP-MC-IC-IRE, Rev. 08, Fig. MC-IC-IRE-3
OP-MC-IC-IRE, Rev. 08, page 12 of 45, para. 4.
Objective: LPRO/LPSO 5

001000A403 [4.0/3.7]

001000A403 ..(KA's)

ANSWER: 032 (1.00)

d.

REFERENCE:

LP: OP-MC-ECC-ISE, Rev. 12, page 19 of 32, para. F.2
OP-MC-IC-IPE, Rev. 8, page 23 of 37, para. B.6.c
Objective: LPRO 1.N.3) of OP-MC-ECC-ISE
LPRO 1.G. of OP-MC-IC-IPE

013000K403 [3.9/4.4]

013000K403 ..(KA's)

ANSWER: 033 (1.00)

c. or d

REFERENCE:

LP: OP-MC-IC-EDA, Rev. 4, page 18 of 25, para. 6.
Objective: 7

014000K406 [3.4/3.7]
014000G008 [2.9/3.1]

014000G008 014000K406 ..(KA's)

ANSWER: 034 (1.00)

b.

REFERENCE:

LP: OP-MC-CNT-NF, Rev. 9, page 28 of 40, para. 2.e.
Objective: LPRO/LPSO 1.D

027000K101 [3.4/3.7]
026000K402 [3.1/3.6]
026020K401 [2.8/3.2]

026020K401 026000K402 027000K101 ..(KA's)

ANSWER: 035 (1.00)

a.

REFERENCE:

LP: OP-MC-ECC-ISE, Rev. 12, page 17 of 32, para. C.5
Objective: LPRO 1.E.

026000A301 [4.3/4.5]
026000K404 [3.7/4.1]
026020A404 [3.5/3.5]

026020A404 026000K404 026000A301 ..(KA's)

ANSWER: 036 (1.00)

b.

REFERENCE:

LP: OP-MC-IC-ENB, Rev. 11, page 28 of 52, para. 2
Objective: 9

015000A103 [3.7/3.7]
015000A104 [3.5/3.7]
015000A402 [3.9/3.9]
015000G004 [3.4/3.4]

015000G004 015000A402 015000A104 015000A103 ..(KA's)

ANSWER: 037 (1.00)

a.

REFERENCE:

LP: OP-MC-PS-IPE, Rev. 10, page 18 of 39, para. 7.c.
AP/1/A/5500/11, Rev. 0, Case II
Objective: LPRO/LPSO 1.G & 6

000065K308 [3.7/3.9]
000065A105 [3.3/3.3]
000065A208 [2.9/3.8]
000065G012 [3.1/3.3]

000065G012 000065A208 000065A105 000065K308 ..(KA's)

ANSWER: 038 (1.00) SRO - 33

b.

REFERENCE:

LP: OP-MC-WF-EMF, Rev. 12, page 22 of 48, para. N.
Objective: LPRO/LPSO 2

073000K101 [3.6/3.9]

073000K101 ..(KA's)

ANSWER: 039 (1.00) SRO - 34

c.

REFERENCE:

LP: E-0, Reactor Trip of Safety Injection, Rev. 0, pages 25 and 27 of 75, Section 3.4.2 thru 3.4.4
Objective: 2 and 8

000007K301 [4.0/4.6]
000007K103 [3.7/4.0]
000007A206 [4.3/4.5]
000007G012 [3.8/3.9]

000007G012 000007A206 000007K103 000007K301 ..(KA's)

ANSWER: 040 (1.00) SRO - 35

c.

REFERENCE:

LP: OP-MC-PS-NV, Rev. 18, page 13 of 58, para. 1.3.A.4.c
Objective: LPRO/LPSO 6.

004010K403 [3.1/3.6]

004010K403 ..(KA's)

ANSWER: 041 (1.00) SRO - 36

b.

REFERENCE:

AP/1/A/5500/38, "Emergency Boration", page 2 of 5, Symptoms
Objective: LPRO/LPSO 10 of LP: OP-MC-PS-NV

000024A206 [3.6/3.7]
000024K301 [4.1/4.4]
000024K302 [4.2/4.4]
000024G009 [3.6/3.7]

000024G009 000024K302 000024K301 000024A206 ..(KA's)

ANSWER: 042 (1.00) SRO - 37

d.

REFERENCE:

L.P: OP-MC-IC-IRE, Rev. 08, page 31 of 45, para. E.1
Objective: LPRO/LPSO 5

001010K501 [2.7/3.4]

001010K501 ..(KA's)

ANSWER: 043 (1.00) SRO - 38

c.

REFERENCE:

LP: Loss of All AC Power, Rev. 0, page 5 of 144
Objective: 1

000055A203 [3.9/4.7]
000055K302 [4.3/4.6]
000055G012 [3.9/4.0]

000055G012 000055K302 000055A203 ..(KA's)

ANSWER: 044 (1.00) SRO - 39

d.

REFERENCE:

McGuire EQB: Item PSNCP002
LP: OP-MC-PS-NCP, Rev. 12, page 31/32 of 37 para. L.
Objective: LPRO/LPSO 13

003000A107 [3.4/3.4]

003000A107 ..(KA's)

ANSWER: 045 (1.00) SRO - 40

a.

REFERENCE:

LP: OP-MC-IC-IPE, Rev. 8, page 28 of 37, para D.
Objective: LPRO/LPSO 1.E.

012000A202 [3.6/3.9]
012000G008 [3.9/3.8]
012000K104 [3.2/3.3]

012000K104 012000G008 012000A202 ..(KA's)

ANSWER: 046 (1.00) SRO - 41

c.

REFERENCE:

Technical Specifications: Definitions 1.7, page 1-2, Section 3/4.6.1.1
Objective: LPRO/LPSO 9.B of LP: OP-MC-CNT-VQ

000069A201 [3.7/4.3]
000069G008 [3.4/4.1]

000069G008 000069A201 ..(KA's)

ANSWER: 047 (1.00) STEP - 42

~~d.~~ Delete

REFERENCE:

Technical Specifications, section 4.1.3.1.2, 3.1.3.1.c, pages 3/4-1-14 through 15.
Objective: LPRO/LPSO 14.B. of LP: OP-MC-IC-IPE

000005G008 [3.1/3.8]
000005A203 [3.5/4.4]
000005K306 [3.9/4.2]

000005K306 000005A203 000005G008 ..(KA's)

ANSWER: 048 (1.00) STEP - 43

a.

REFERENCE:

LP: OP-MC-ECC-ISE, Rev. 12, page 20 of 32, para. H.a.b
OP-MC-IC-IPE, Rev. 8, page 23 of 37, para. B.7.a
Objective: LPRO/LPSO 1.N.4) of OP-MC-ECC-ISE
LPRO/LPSO 1.G. of OP-MC-IC-IPE

013000K413 [3.7/3.9]

013000K413 ..(KA's)

ANSWER: 049 (1.00) STEP - 44

d.

REFERENCE:

OMP 5-1 Reactor Operator Logbook, Rev. 0, page 2 of 4, para. 7.1.
Objective: NONE FOUND

194001A106 [3.4/3.4]

194001A106 ..(KA's)

ANSWER: 050 (1.00) SRO - 45

b.

REFERENCE:

LP: OP-MC-WE-EMF, Rev. 12, page 21 of 48, para. L.
OP-MC-PSS-KC, Rev. 9, page 23 of 33, para. 12; page 17 of 33, para. 15; page 13 of 33, para. 7; page 28 of 33, para. 7, 8, & 9
Objective: LPRO/LPSO 4 & 6 of OP-MC-PSS-KC

008000A301 [3.2/3.0]
008000A202 [3.2/3.5]

008000A202 008000A301 ..(KA's)

ANSWER: 051 (1.00) SRO - 46

d.

REFERENCE:

LP: OP-MC-PS-IPE, Rev. 10, page 23 of 59, para. J.5
Objective: LPRO/LPSO 3

010000K403 [3.8/4.1]

010000K403 ..(KA's)

ANSWER: 052 (1.00) SRO - 48

a.

REFERENCE:

LP: OP-MC-IC-ENB, Rev. 11, fig. MC-IC-ENB-2
Objective: 15 & 16

015000A303 [3.9/3.9]

015000A303 ..(KA's)

ANSWER: 053 (1.00) SRO - 50

a.

REFERENCE:

LP: OP-MC-PS-NV, Rev. 18, page 35 of 58, para. 3.
Objective: LPRO/LPSO 3 and 6

004010K404 [3.1/3.4]
004000K407 [3.0/3.3]
004000K115 [3.8/4.0]
004000K123 [3.4/3.7]

004000K123 004000K115 004000K407 004010K404 ..(KA's)

ANSWER: 054 (1.00)

d.

REFERENCE:

LP: Introduction to Emergency Procedures, Rev. 7/25/94, page 53 of 57, para. 54.
Objective: 19

000009K323 [4.2/4.3]
000009A109 [3.6/3.6]
000009A215 [3.3/3.4]
000009G012 [4.1/4.3]

000009G012 000009A215 000009A109 000009K323 ..(KA's)

ANSWER: 055 (1.00) SRO - 51

d. ~~c~~ b

REFERENCE:

MSD 965.5, Fire Protection and Surveillance, Rev. 0, page 965-11, para. 965.5
Objective: NONE FOUND

194001K116 [3.5/4.2]

194001K116 ..(KA's)

ANSWER: 056 (1.00)

d.

REFERENCE:

LP: OP-MC-CF-CA, Rev. 14, page 29 of 29
Objective: LPRO 8.

061000K202 [3.7/3.7]

061000K202 ..(KA's)

ANSWER: 057 (1.00) SRO-52

c.

REFERENCE:

LP: Loss of All AC Power, Rev 0, page 77 of 144
Objective: 2

000026K303 [4.0/4.2]

000026K303 ..(KA's)

ANSWER: 058 (1.00) SRO-53

a.

REFERENCE:

LP: OP-MC-CP-AD, Rev. 11, page 15 of 38 para. 10.
Objective: LPRO/LPSO 6.A.

000068K207 [3.3/3.4]
000068A131 [3.9/4.0]

000068A131 000068K207 ..(KA's)

ANSWER: 059 (1.00) SRO - 54

b.

REFERENCE:

LP: OP-MC-THF-FF, Rev. 3, page 33 of 37, para. D. & fig FF-15
Objective: LPRO/LPSO 6e.

NOTE: Examinees to be provided typical CCP(NV), SI(NI) and RHR(ND) pump curves and steam tables for reference.

Conversion: (From steam tables conversion chart [Combustion Engineering Steam Tables, page 31]).

TO OBTAIN ft of H-2-O at 39.2 degrees F MULTIPLY Lb/sq-in by 2.3066

1500 psig + 15 = 1515 psia
1515 psia x 2.3066 (from steam tables) = 3494.499 Total Head in ft.

From pump curves at a 3500 ft head:

CCP(NV) = about 365 gpm; 365 gpm x 2 CCP's = 730 gpm
SI(NI) pump = 0 gpm; 0 gpm x 2 SI pumps = 0 gpm
RHR(ND) pump = 0 gpm; 0 gpm x 2 SI pumps = 0 gpm
Total = 730 gpm or about 750 gpm

006030A102 [4.2/4.3]

006030A102 ..(KA's)

ANSWER: 060 (1.00) SRO - 55

b. or b

REFERENCE:

LP: OP-MC-SS-RFY, Rev. 5, page 20 of 45, para. B.
Objective: LPRO/LPSO 3

086000K402 [3.0/3.4]
086000K401 [3.1/3.7]
086000A202 [3.0/3.3]

086000A202 086000K401 086000K402 ..(KA's)

ANSWER: 061 (1.00) SRO-56

a.

REFERENCE:

Tech. Specs. 3.7.1.2, page 3/4 7-4
Objective: LPRO/LPSO 9.B. of OP-MC-CF-CA

061000G005 [3.3/4.0]
061000G011 [3.4/4.1]

061000G011 061000G005 ..(KA's)

ANSWER: 062 (1.00) SRO - 58

c.

REFERENCE:

AP/1/A/5500/40, Rev. 0, page 2 of 5, Step. 2.
Objective: 15.C.

000036A104 [3.1/3.7]
000036A202 [3.4/4.1]
000036A201 [3.2/3.9]
000036G012 [3.2/3.4]

000036G012 000036A201 000036A202 000036A104 ..(KA's)

ANSWER: 063 (1.00) SRO-61

d.

REFERENCE:

LP: E-2, Faulted Steam Generator Isolation, Rev. 0, page 23 of 87, para. 3.4.6
EP/1/A/5000/E-1, Loss of Reactor or Secondary Coolant, Rev. 0, page 3 of 19, Step 3.
Objective: 1 and 6 of LP: E-2, Faulted Steam Generator Isolation

000054A204 [4.2/4.3]
000054A206 [4.0/4.3]
000054G012 [3.2/3.2]
000054G012 000054A206 000054A204 ..(KA's)

ANSWER: 064 (1.00) SRO - 62

c.

REFERENCE:

OP/1/A/6150/08, Rod Control, Rev. 24, page 2 of 2, para. 2.7
L.P.: OP-MC-IC-IRE, Rev. 08, page 36 of 45, para Q.
Objective: LPRO/LPSO 12

000003G007 [3.4/3.6]

000003G007 ..(KA's)

ANSWER: 065 (1.00) SRO - 63

c.

REFERENCE:

LP: OP-MC-WE-EMF, Rev. 12, page 14 of 48, para. 4.a.
Objective: LPRO/LPSO 3

072000K403 [3.2/3.6]
072000A301 [2.9/3.1]

072000A301 072000K403 ..(KA's)

ANSWER: 066 (1.00)

b.

REFERENCE:

LP: OP-MC-PS-ILE, Rev. 7, page 6 of 20, para. 4.
Objective: LPRO 1

011000K105 [3.4/3.5]
011000K402 [3.3/3.4]
011000K604 [3.1/3.1]
011000A104 [3.1/3.3]

011000A104 011000K604 011000K402 011000K105 ..(KA's)

ANSWER: 067 (1.00) SRO-6d

c.

REFERENCE:

LP: OP-MC-EL-EPL, Rev. 5, page 11 & 12 of 24, para. D & E; Fig. EL-EPL-1
Objective: LPRO/LPSO 5.

000058A101 [3.4/3.5]
000058A103 [3.1/3.3]
000058A203 [3.5/3.9]

000058A203 000058A103 000058A101 ..(KA's)

ANSWER: 068 (1.00) SRO-65

c.

REFERENCE:

AP/1/A/5500/18, High Activity in Reactor Coolant, Rev. 0, page 2 of 3.
Objective: LPRO 34, LPSO 32 of LP: OP-MC-CH-PC

000076A202 [2.8/3.4]
000076G011 [3.4/3.6]
000076G006 [3.0/3.3]
000076A203 [2.5/3.0]

000076A203 000076G006 000076G011 000076A202 ..(KA's)

ANSWER: 069 (1.00) SRO-66

d.

REFERENCE:

LP: OP-MC-CTH-CP, Rev. 7, page 91 & 92 of 103, para. 5.4.A
Objective: LPRO/LPSO 32

001000K504 [4.3/4.7]

001000K504 ..(KA's)

ANSWER: 070 (1.00) SRO - 67

b.

REFERENCE:

LP: OP-MC-PS-ILE, Rev.7, page 8 of 20 para. B. and Fig. MC-PS-ILE-3
Objective: LPRO/LPSO 1.0

011000K301 [3.2/3.4]

011000K301 ..(KA's)

ANSWER: 071 (1.00) SRO - 68

d.

REFERENCE:

P&ID MC-1554-3.1, L-10..!-11
Objective: LPRO/LPSO 3.E & 4 of LP: OP-MC-PS-NV, Rev. 18

NOTE: PW may be added (blended) via valve NV-262.

004010A201 [3.0/3.7]

004010A201 ..(KA's)

ANSWER: 072 (1.00) SRO - 69

b.

REFERENCE:

LP: FR-C.1, Rev. 0, page 37 of 89,
Objective: 11 & 12

000015A211 [3.4/3.8]

000015A211 ..(KA's)

ANSWER: 073 (1.00) S20-70

b.

REFERENCE:

T.S. 3/4.5.2 and 3/4.0, 3.0.3
Objective: LPRO/LPSO 9.C. of LP OP-MC-PS-ND
NOTE: T.S. 3/4.5.2; 3/4.5.3 and 3.0.3 are to be provided to the examinee for reference.

006000G011 [3.6/4.2]

006000G011 ..(KA's)

ANSWER: 074 (1.00) S20-73

a. or b

REFERENCE:

LP: Faulted Steam Generator Isolation, Rev. 0, page 43 of 87
Objective: 2.

000040A110 [4.1/4.1]
000040K304 [4.5/4.7]
000040K107 [3.4/4.2]
000040G007 [3.3/3.6]

000040G007 000040K107 000040K304 000040A110 ..(KA's)

ANSWER: 075 (1.00) S20-74

d.

REFERENCE:

AP/1/A/5500/16, Malfunction of Nuclear Instrumentation, Case I, Rev. 0, page 4 of 16
Objective: LPRO/LPSO 15B of LP: OP-MC-IC-EMB

000032A202 [3.6/3.9]
000032A207 [2.8/3.4]
000032G011 [3.1/3.4]

000032A202 000032G011 000032A207 ..(KA's)

ANSWER: 076 (1.00) STEO - 76

a.

REFERENCE:

LP: OP-MC-TA-II, Rev. 5, page 12 of 39, para. 1.3
Objective: LPRO/LPSO 4

000008A212 [3.4/3.7]
000008A229 [3.9/4.2]
000008A107 [4.0/4.2]
000008A106 [3.6/3.6]

000008A106 000008A107 000008A229 000008A212 ..(KA's)

ANSWER: 077 (1.00) STEO - 77

b.

REFERENCE:

NOTE: The item author could not locate a specific reference to the basis for NOT running more than 1 ND pump under these conditions although the requirement/precaution exists in OP1/A/6200/04, Section 2.4. Item & answer is based on reference material from similar plants and NUREG-1122 requirements. However, the objective listed does specifically require the trainee to know the information being tested.

Objective: LPRO/LPSO 8 of LP: OP-MC-PS-ND

000025G007 [3.4/3.6]
000025A207 [3.4/3.7]
005000K409 [2.2/2.5]
000025K101 [3.9/4.3]

000025K101 005000K409 000025A207 000025G007 ..(KA's)

ANSWER: 078 (1.00) SRO-78

~~d.~~ Delete

REFERENCE:

OP/1/A/6100/10G, 1AD6-E7, PZR LO LEVEL DEVIATION
Objective: LPRO/LPSO 3 and 5 of LP: OP-MC-PS-NV

000028A212 [3.1/3.5]
000028A206 [2.7/2.8]
000028A203 [2.8/3.3]
000028A107 [3.3/3.3]

000028A107 000028A203 000028A206 000028A212 ..(KA's)

ANSWER: 079 (1.00) SRO-79

a.

REFERENCE:

LP: ES-0.0, Loss of All AC Power, Rev. 0, page 21 of 144, para. 3.4.4
Objective: 2

000009A117 [3.4/3.4]
000009K310 [3.4/3.6]
000009A202 [3.5/3.8]
000009A204 [3.8/4.0]

000009A204 000009A202 000009K310 000009A117 ..(KA's)

ANSWER: 080 (1.00) SRO - 81

b.

REFERENCE:

LP: OP-MC-PS-NV, Rev. 18, page 56 & 57 of 58, para. B.
EP/1/A/5000/FR-S.1, "Response to Nuclear Generation/ATWS", Rev. 0, RNO step 4.b.3).a).
Objective: 1 of LP: FR-S, Response to Nuclear Generation/ATWS

000057A106 [3.5/3.5]
000057A217 [3.1/3.4]
000057A218 [3.1/3.1]

000057A106 000057A218 000057A217 ..(KA's)

ANSWER: 081 (1.00)

c.

REFERENCE:

LP: OP-MC-IC-IPE, Rev. 8, page 23 of 37, para. 6.
Objective: LPRO/LPSO 1.G.

013000K101 [4.2/4.4]
013000A401 [4.5/4.8]
013000K404 [4.3/4.5]

013000K404 013000A401 013000K101 ..(KA's)

ANSWER: 082 (1.00) STRO - 82

b.

REFERENCE:

LP: Reactor Trip or Safety Injection, Rev. 0, page 7 of 175,
para. 2.1
E-0, Reactor Trip or Safety Injection,
E-1, Loss of Reactor or Secondary Coolant,
E-2, Faulted Steam Generator Isolation,
Objective: 3

000040G012 [3.8/4.1]
000040K304 [4.5/4.7]
000040A106 [4.0/4.1]
000040A203 [4.6/4.7]

000040A203 000040A106 000040K304 000040G012 ..(KA's)

ANSWER: 083 (1.00) STRO - 84

c.

REFERENCE:

AP/1/A/5500/12, Loss of Letdown, Charging or Seal Injection, Case
II, Rev. 0, page 9 of 26, step C.1.
Objective: LPRO/LPSO 10.C.

000022G010 [3.5/3.4]
000022A102 [3.0/2.9]
000022A101 [3.4/3.3]
000022G009 [3.2/3.2]

000022G009 000022A101 000022A102 000022G010 ..(KA's)

ANSWER: 084 (1.00) SRO - 85

b.

REFERENCE:

LP: OP-MC-IC-ENA, Rev. 4, page 9 of 15, para. 3
Objective: LPRO/LPSO 5

017020A401 [3.8/4.1]

017020A401 ..(KA's)

ANSWER: 085 (1.00) SRO - 86

c.

REFERENCE:

PT/1/A/4600/03C, Weekly Surveillance Items, Encl. 13.1, page 2 of 4, dated 8/26/93.
LP: OP-MC-FH-KF, Rev. 7, page 7 & 8 of 19, para. A.
Objective: 6 & 7,

033000K401 [2.9/3.1]
033000A101 [2.7/3.3]
033000A203 [3.1/3.5]

033000A203 033000A101 033000K401 ..(KA's)

ANSWER: 086 (1.00) SRO - 87

c.

REFERENCE:

LP: OP-MC-WE-WL, page 20
Objective LPRO/LPSO 8

068000A404 [3.8/3.7]

068000A404 ..(KA's)

ANSWER: 087 (1.00) 5120 - 88

d.

REFERENCE:

Site Directive 963, Heat Stress Program, Rev. 0, page 963-11,
para. 963.5.2.4.a.
Objective: NONE FOUND

194001K108 [3.5/3.4]

194001K108 ..(KA's)

ANSWER: 088 (1.00)

d.

REFERENCE:

LP: OP-MC-FH-FC, Rev. 6, page 43 of 64, para. 4.b.
Objective: LPRO/LPSO 6

034000K402 [2.5/3.3]
034000K601 [2.1/3.0]

034000K601 034000K402 ..(KA's)

ANSWER: 089 (1.00)

c.

REFERENCE:

LP: ES-1.2, Post LOCA Cooldown and Depressurization, Rev. 0, page
119 of 252
Objective: 5

000011A113 [4.1/4.2]
000011K312 [4.4/4.6]
000011A208 [3.4/3.9]
000011A211 [3.9/4.3]

000011A211 000011A208 000011K312 000011A113 ..(KA's)

ANSWER: 090 (1.00) STRO - 89

c.

REFERENCE:

AP/1/A/5500/24, "Loss of Plant Control Due to Fire", Rev. 2, page 6 of 28, Step 18.
Objective: LPRO/LPSO 3.B. of LP: OP-MC-CP-AD

000067A216 [3.3/4.0]
000067G012 [3.4/3.4]
000067K304 [3.3/4.1]

000067K304 000067G012 000067A216 ..(KA's)

ANSWER: 091 (1.00) STRO - 90

c. or d

REFERENCE:

AP/1/A/5500/13, Boron Dilution, Rev. 0, page 2 of 3, para. D.2.
OP/1/A/6100/10C, 1AD2-D3, S/R Hi Flux at Shutdown alarm, Probable Causes.
Objective: LPRO/LPSO 10.B of LP: OP-MC-PS-NV

000024G011 [3.8/3.9]
000024A206 [3.6/3.7]

000024A206 000024G011 ..(KA's)

ANSWER: 092 (1.00)

d.

REFERENCE:

LP: OP-MC-PC-NC, Rev. 12, page 21 & 22 of 50, para. 5 & 6
OP-MC-PC-IPE, Rev. 10, page 32 of 39, para 3.
Objective: LPRO/LPSO 4 of OP-MC-PC-IPE

000027A203 [3.3/3.4]
000027A103 [3.6/3.5]

000027A103 000027A203 ..(KA's)

ANSWER: 093 (1.00) STRO - 91

b.

REFERENCE:

LP: OP-MC-STM-IDE, Rev. 8, page 37 of 38, para. E
Objective: LPRO/LPSO 1.F.

000051K301 [2.8/3.1]
000051A202 [3.9/4.1]

000051A202 000051K301 ..(KA's)

ANSWER: 094 (1.00)

a.

REFERENCE:

LP: OP-MC-PC-IPE, Rev. 10, page 34 of 39, para. 2.1
Objective: LPRO 1.D.

010000K603 [3.2/3.6]
010000K403 [3.8/4.1]
010000K607 [2.3/2.5]
010000A107 [3.7/3.7]
010000A302 [3.6/3.5]

010000K603 010000A107 010000K607 010000K403 ..(KA's)

ANSWER: 095 (1.00) STRO - 94

c.

REFERENCE:

LP: OP-MC-IC-ENB, Rev. 11, page 20 of 52, para. D.1
OP-MC-RT-NMF, Rev. 2, page 27 of 44, para. C.2
Objective: LPRO/LPSO 5.A of LP: OP-MC-RT-NMF and LPRO/LPSO 6.A of LP: OP-MC-IC-ENB

000033A202 [3.3/3.6]
000033A204 [3.2/3.6]

000033A204 000033A202 ..(KA's)

ANSWER: 096 (1.00) STRO - 96

a.

REFERENCE:

EP/1/A/5000/E-1, Loss of Reactor or Secondary Coolant, Rev. 0,
page 19 of 19, para. 4
Objective: 5 of LP: E-1, Loss of Reactor or Secondary Coolant

000038K306 [4.2/4.5]
000038A202 [4.5/4.8]
000038A204 [3.9/4.2]
000038G010 [4.1/4.2]

000038G010 000038A204 000038A202 000038K306 ..(KA's)

ANSWER: 097 (1.00)

a.

REFERENCE:

LP: OP-MC-IC-ICM, Rev. 4, pages 17 and 18 of 48, para. C.1.
Objective: LPRO/LPSO 6.E.

000074A116 [4.4/4.6]
000074A101 [4.2/4.4]

000074A101 000074A116 ..(KA's)

ANSWER: 098 (1.00) STRO-99

a. or d

REFERENCE:

Tech. Spec. 3.6.1.5, page 3/4 6-13
Objective: LPRO/LPSO 5.B of LP: OP-MC-CNT-VUL

022000G011 [2.9/3.6]

022000G011 ..(KA's)

ANSWER: 099 (1.00)

a.

REFERENCE:

EP/1/A/5000/FR-S.1, Response to Nuclear Power Generation/ATWS, Rev. 0, page 2 of 23.
LP: OP-MC-EP-INTRO, Rev. 7/25/94, page 35 of 57, para. 4.3
Objective: 10 of OP-MC-EP-INTRO; 4 of LP: FR-S, Response to Nuclear Power Generation/ATWS

000029G010 [4.5/4.5]
000029A113 [4.1/3.9]
000029A206 [3.8/3.9]
000029K306 [4.2/4.3]

000029K306 000029A206 000029A113 000029G010 ..(KA's)

ANSWER: 100 (1.00) SRO-100

a.

REFERENCE:

*NOTE: A complete listing(index) of ALL procedures as required by NUREG-1021, Operator Licensing Examiner Standards, Attachment 2, para. 2, page 10 of 15, was NOT provided to the contract examiner.

LP: OP-MC-WE-RGR, Rev. 1, page 13 of 15, para. D.
Objective: LPRO/LPSO 4 of LP: OP-MC-WE-RGR
LPRO/LPSO 3 and 5 of LP: OP-MC-WE-EMF

000060G010 [3.8/3.8]
000060A206 [3.6/3.8]
000060A205 [3.7/4.2]

000060A205 000060A206 000060G010 ..(KA's)

RO Exam PWR Reactor

Organized by Question Number

QUESTION	VALUE	REFERENCE
001	1.00	9000189
002	1.00	9000190
003	1.00	9000194
004	1.00	9000196
005	1.00	9000197
006	1.00	9000198
007	1.00	9000199
008	1.00	9000200
009	1.00	9000201
010	1.00	9000202
011	1.00	9000203
012	1.00	9000204
013	1.00	9000205
014	1.00	9000206
015	1.00	9000207
016	1.00	9000208
017	1.00	9000209
018	1.00	9000210
019	1.00	9000211
020	1.00	34556
021	1.00	9000213
022	1.00	9000214
023	1.00	9000215
024	1.00	9000216
025	1.00	9000217
026	1.00	23072
027	1.00	23075
028	1.00	9000227
029	1.00	9000228
030	1.00	9000229
031	1.00	9000230
032	1.00	9000231
033	1.00	9000232
034	1.00	9000233
035	1.00	9000234
036	1.00	9000235
037	1.00	9000236
038	1.00	9000237
039	1.00	9000238
040	1.00	9000239
041	1.00	9000240
042	1.00	9000241
043	1.00	9000242
044	1.00	9000243
045	1.00	9000244
046	1.00	9000245
047	1.00	9000246
048	1.00	9000247
049	1.00	9000248
050	1.00	9000249

RO Exam PWR Reactor

Organized by Question Number

QUESTION	VALUE	REFERENCE
051	1.00	9000250
052	1.00	9000252
053	1.00	9000254
054	1.00	9000255
055	1.00	9000256
056	1.00	9000257
057	1.00	9000258
058	1.00	34600
059	1.00	9000260
060	1.00	9000261
061	1.00	9000262
062	1.00	34621
063	1.00	9000267
064	1.00	9000268
065	1.00	9000269
066	1.00	9000270
067	1.00	9000271
068	1.00	9000272
069	1.00	9000273
070	1.00	9000274
071	1.00	9000275
072	1.00	9000276
073	1.00	9000277
074	1.00	9000280
075	1.00	9000281
076	1.00	9000283
077	1.00	9000284
078	1.00	9000285
079	1.00	9000286
080	1.00	9000288
081	1.00	9000289
082	1.00	9000290
083	1.00	9000292
084	1.00	9000293
085	1.00	9000294
086	1.00	34582
087	1.00	34625
088	1.00	9000297
089	1.00	9000298
090	1.00	9000299
091	1.00	9000300
092	1.00	9000301
093	1.00	9000302
094	1.00	9000303
095	1.00	9000306
096	1.00	9000308
097	1.00	23026
098	1.00	9000311
099	1.00	9000312
100	1.00	9000313
	100.00	
	100.00	

RO Exam PWR Reactor

Organized by KA Group

PLANT WIDE GENERICS

QUESTION	VALUE	KA
024	1.00	194001A101
006	1.00	194001A102
011	1.00	194001A105
049	1.00	194001A106
027	1.00	194001A112
026	1.00	194001A116
013	1.00	194001K101
015	1.00	194001K102
016	1.00	194001K104
014	1.00	194001K105
087	1.00	194001K108
012	1.00	194001K114
055	1.00	194001K116

PWG Total 13.00

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA
031	1.00	001000A403
069	1.00	001000K504
042	1.00	001010K501
044	1.00	003000A107
030	1.00	003000K103
053	1.00	004000K123
071	1.00	004010A201
040	1.00	004010K403
032	1.00	013000K403
081	1.00	013000K404
048	1.00	013000K413
009	1.00	015000A104
052	1.00	015000A303
036	1.00	015000G004
084	1.00	017020A401
098	1.00	022000G011
029	1.00	025000K601
001	1.00	059000G014
061	1.00	061000G011
056	1.00	061000K202
086	1.00	068000A404
017	1.00	071000A302
065	1.00	072000A301

PS-I Total 23.00

RO Exam PWR Reactor

Organized by KA Group

Group II

QUESTION	VALUE	KA
002	1.00	002000A201
010	1.00	002020K509
073	1.00	006000G011
059	1.00	006030A102
051	1.00	010000K403
094	1.00	010000K603
066	1.00	011000A104
070	1.00	011000K301
003	1.00	012000A204
045	1.00	012000K104
033	1.00	014000G008
005	1.00	016000K301
035	1.00	026020A404
034	1.00	026020K401
085	1.00	033000A203
019	1.00	035010A301
004	1.00	039000K405
021	1.00	062000G005
023	1.00	064050A303
038	1.00	073000K101
060	1.00	086000A202
PS-II Total	21.00	

Group III

QUESTION	VALUE	KA
007	1.00	005000G010
025	1.00	005000K401
050	1.00	008000A202
028	1.00	028000G007
088	1.00	034000K601
018	1.00	041020A408
020	1.00	045000K411
PS-III Total	7.00	
PS Total	51.00	

RO Exam PWR Reactor

Organized by KA Group

EMERGENCY PLANT EVOLUTIONS

Group I

QUESTION	VALUE	KA
047	1.00	000005K306
072	1.00	000015A211
091	1.00	000024A206
041	1.00	000024G009
057	1.00	000026K303
092	1.00	000027A103
082	1.00	000040A203
074	1.00	000040G007
093	1.00	000051A202
043	1.00	000055G012
080	1.00	000057A106
090	1.00	000067K304
058	1.00	000068A131
046	1.00	000069G008
097	1.00	000074A101
068	1.00	000076A203
EPE-I Total	16.00	

Group II

QUESTION	VALUE	KA
022	1.00	000001G011
064	1.00	000003G007
039	1.00	000007G012
076	1.00	000008A106
079	1.00	000009A204
054	1.00	000009G012
089	1.00	000011A211
083	1.00	000022G009
077	1.00	000025K101
099	1.00	000029K306
075	1.00	000032A202
095	1.00	000033A204
008	1.00	000037A211
096	1.00	000038G010
063	1.00	000054G012
067	1.00	000058A203
100	1.00	000060A205
EPE-II Total	17.00	

Group III

QUESTION	VALUE	KA
078	1.00	000028A107
062	1.00	000036G012
037	1.00	000065G012
EPE-III Total	3.00	

EPE Total 36.00

Test Total 100.00

McGuire 94-300
Master SRO
12/5-9/94

Nuclear Regulatory Commission
Operator Licensing
Examination

MASTER
COPY

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Official Use Only category on
date of examination.

U. S. NUCLEAR REGULATORY COMMISSION
SITE-SPECIFIC
WRITTEN EXAMINATION

APPLICANT INFORMATION	
Name:	Region: I / **II** / III / IV / V
Date:	Facility/Unit: McGuire
License Level: RO / **SRO**	Reactor Type: **W** / CE / BW / GE

INSTRUCTIONS

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

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

_____
Applicant's Signature

RESULTS	
Examination Value	___100___ Points
Applicant's Score	_____ Points
Applicant's Grade	_____ Percent

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

2. After you complete the examination, sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination.

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

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

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

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

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

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

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

10. Restroom trips are permitted, but only one applicant at a time will be allowed to leave. Avoid all contact with anyone outside the examination room to eliminate even the appearance or possibility of cheating.

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

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

SENIOR REACTOR OPERATOR ANSWER SHEET

MULTIPLE CHOICE (Circle or X your choice)
If you change your answer, write your selection in the blank.

001 a b c d ___
002 a b c d ___
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(********** END OF EXAMINATION **********)

QUESTION: 001 (1.00)

Plant conditions:

- Reactor power is 80%.
- "A" CF pump trips.

Which ONE of the following conditions would exist upon COMPLETION of the immediate actions taken in response to this event?

a. Reactor trip.

b. FRV's in manual.

c. Steam dumps armed.

d. Rod control in manual.

QUESTION: 002 (1.00)

Plant conditions:

- Reactor power is 78%.
- NCS pressure is 2200 psig and is being restored to 2235 psig with backup heater control switches in "ON".
- Pressurizer pressure control is in automatic.
- Pressurizer pressure control switch is in its normal position selected to 1-2.

Which one of the following would occur if pressurizer pressure channel 2 failed HIGH?

a. Backup heaters OFF.

b. Spray valves full OPEN.

c. PORV 34 OPEN.

d. PORVs 32 and 36 OPEN.

QUESTION: 003 (1.00)

Plant conditions:

- Reactor power at 99%.
- All systems are in automatic.

Suddenly the following annunciators start alarming:

- 1AD2-B3, P/R Channel Deviation.
- 1AD2-A1, P/R Hi Flux Rate Alert.
- 1AD2-D9, RPI at Bottom Rod Drop.
- 1AD2-E9, RPI at Bottom >1 Rod Dropped.

The Unit reactor operator announces the Control Bank D rods D-8, H-12, and M-8 have dropped.

Which ONE of the following immediate action(s) should be taken?

a. Place rod control in manual and insert rods to match Tavg and Tref.

b. Adjust Tavg with boration/dilution to match Tref.

c. Place rod control in manual and adjust turbine load to match Tref with Tavg.

d. Trip the reactor and go to E-0.

QUESTION: 004 (1.00)

Plant conditions:

- Reactor power is 99%.
- Turbine generator output is 1200 MWe.
- All systems are in automatic.

The control rod bank D begins to step IN. A check of indications shows that turbine power is steady and NO instrument failures are obvious.

Which ONE of the following describes the action to be taken if control rods continue to insert when rod control is selected to MANUAL?

a. Trip the reactor.

b. Initiate emergency boration.

c. Lower turbine power to match Tavg.

d. Select Bank D on the rod control selector switch.

QUESTION: 005 (1.00)

Plant conditions:

- Reactor power	100%
- NC system pressure	2200 psig (slowly decreasing)
- Pressurizer level	40% (decreasing)
- Tavg	588 degrees F (stable)
- Charging/letdown	NV pump 1A running
- Charging flow	98 gpm
- VCT level	30% (decreasing)
- Containment humidity	Increasing
- Containment sump levels	Increasing

Which ONE of the following describes an IMMEDIATE action per AP/1/A/5500/10, "NC System Leakage Within the Capacity of Both NV Pumps" in response to this situation?

a. Operate additional charging pumps and reduce or isolate letdown as necessary to maintain pressurizer level.

b. Maintain letdown at 75 gpm then isolate letdown when pressurizer level decreases to less than 11%.

c. Trip the reactor, NC system leakage is beyond the capacity of the 1A NV pump.

d. Operate additional charging pumps as necessary and isolate NCP seal injection to maintain pressurizer level.

QUESTION: 006 (1.00)

Plant Conditions:

- Reactor power is 100%.
- MSIV testing is in progress per PT/1/A/4250/01A.
- The test pushbutton for the "D" S/G MSIV (SM-9) is depressed.
- The "D" S/G MSIV indicates 10% closed.

A Main Steam Isolation Signal is received.

Which ONE of the following describes the response of valve SM-9?

a. Closes along with MSIV's for the other S/G's.

b. Closes only after the operator releases the test pushbutton.

c. Remains in its present position until the operator manually closes SM-9.

d. Closes when SM-9 returns to its full open position after the operator releases the test pushbutton.

QUESTION: 007 (1.00)

With the plant at 85% power and all systems in automatic, turbine first stage pressure transmitter channel I fails LOW.

Assuming no operator action, which ONE of the following will occur?

a. Control rods will insert.

b. Pressurizer level will increase.

c. Train "A" of the Steam Dump System arms but does not actuate.

d. A reactor trip occurs, due to high pressurizer pressure.

QUESTION: 008 (1.00)

An operator is performing a valve line-up per procedure and identifies a step that needs to be performed out of sequence.

Which ONE of the following actions is acceptable under these circumstances?

a. Any change in the sequence of performance shall be reviewed by two licensed operators, one of which is an SRO, before actual performance.

b. Any change in the sequence of performance shall be reviewed by two licensed operators, one of which is an SRO, after actual performance.

c. Performance of procedural steps out of sequence is strictly prohibited without verbal approval of a licensed reactor operator.

d. Performance of procedural steps out of sequence is strictly prohibited without an approved procedure change.

QUESTION: 009 (1.00)

A plant cooldown is being performed in mode 4 using both ND trains. The following data has been recorded:

TIME	NC TEMP	NC PRESS
1000	330 deg.	355 psig
1030	306 deg.	360 psig
1100	282 deg.	360 psig
1130	260 deg.	358 psig
1200	225 deg.	355 psig

Which ONE of the following actions are to be taken based on the above data?

a. Restore NC temperature to 235 degrees within 30 minutes.

b. Increase NC pressure to 360 psig to maintain NPSH for the running NC pump.

c. Restore the cooldown rate to less than 50 degrees per hour.

d. Restore cooldown rate to within Technical Specification Limits within 30 minutes.

QUESTION: 010 (1.00)

An increase in NCS charging flow rate has occurred over several days with no change in letdown flow rate.

Which ONE of the following will confirm that a steam generator tube leak exists for entry into AP/1/A/5500/10, NC System Leakage Within the Capacity of Both NV Pumps, Case I, Steam Generator Tube Leakage?

a. NCS makeup/letdown flow mismatch, makeup flow less than letdown flow.

b. A discernible Steam flow - Feed flow mismatch, feed flow greater than steam flow with increasing SG level.

c. The steam generator sampie isolation valves auto-close on high radiation.

d. An unexplained decrease in the affected steam generator level.

QUESTION: 011 (1.00)

Given the following plant conditions:

Reactor power is 60%.
Loop 1 delta-T is off-scale LOW.
Loop 1 Tavg indication is off-scale HIGH.

Which ONE of the following RTD failures in loop 1 caused these indications?

a. Two of the loop 1 T-hot RTDs are failed low.

b. Two of the loop 1 T-hot RTDs are failed high.

c. One of the loop 1 T-cold RTDs is failed low.

d. One of the loop 1 T-cold RTDs is failed high.

QUESTION: 012 (1.00)

The Operator at the Controls observes an alarm annunciator but, he is unable to fully understand what initiated the alarm.

Which ONE of the following actions is required per Operation Management Procedure OMP 2-2, Responsibilities of Operations Personnel?

a. Refer to the system operating procedure to determine the alarm meaning.

b. Verbally announce the occurrence of the alarm to other control room personnel.

c. Silence (acknowledge) the audible alarm and observe other appropriate system parameters.

d. Wait for another control room operator to respond to the alarm.

QUESTION: 013 (1.00)

Which ONE of the following activities is PROHIBITED in a confined space that is designated as IDLH (Immediately Dangerous to Life or Health)?

a. Use of SCBA compressed gas cylinders.

b. Use of air purifying respirators.

c. Metal burning with an oxy/acetylene torch.

d. Entry without continuous forced air ventilation.

QUESTION: 014 (1.00)

Which ONE of the following should be independently verified using the "Separate Verification" technique?

a. Complete valve lineup of the NI system at the request of the Unit Staff.

b. Valve line-up of ND system following routine maintenance during Mode 1 operations.

c. Electrical line-up of fire detection systems following the removal of temporary modifications.

d. Electrical line-up of locked reactor safeguards equipment breakers.

QUESTION: 015 (1.00)

Which ONE of the following describes a person who is authorized for unescorted access to the Control Room?

a. Any Duke Power Company employee with a picture ID and Area 2 listed on the ID.

b. Any contractor or vendor with a valid parent company picture ID with Area 1 listed on the ID.

c. Anyone with a Blue coded picture badge that has completed a Security Badge Authorization form and Area 4 listed on the badge.

d. Anyone that has completed a Security Badge Authorization form and is in possession of a picture badge with Area 3 listed on the badge.

QUESTION: 016 (1.00)

Which ONE of the following actions should be taken to remove a safety tag that has been contaminated?

a. Obtain the Group Superintendent's approval to waive Recall and Removal requirements.

b. Dispose of the contaminated tag in an appropriate radwaste container and note disposal on the completed tag stub.

c. Direct Health Physics to bag the contaminated tag before attaching it to the completed tag stub.

d. Complete stub entries to recall the tag and attach the tag stub to a Tag Occurrence Report Form.

QUESTION: 017 (1.00)

Which ONE of the following describes the Mcguire Station ALARA Program goals and efforts based on the concepts of Design, Time, Distance, and Shielding?

a. To maintain the individual's dose as low as economically achievable.

b. To maintain the collective dose as low as economics and technology permit.

c. To maintain individual annual dose and total person-Rem as low as possible.

d. To maintain collective dose of all plant personnel as far below the individual exposure limits as possible.

QUESTION: 018 (1.00)

Which ONE of the following describes the radioactive Waste Gas Discharge system?

a. Six waste gas decay tanks, one tank in service for discharge, WG-160, Waste Gas Discharge Flow Controller auto-closes on high-high radiation signal from Plant Vent Monitor, EMF 36(L).

b. Six waste gas decay tanks, one tank isolated for discharge, WG-160, Waste Gas Discharge Flow Controller auto-closes on high radiation signal from Waste Gas Discharge Monitor, EMF 50(L).

c. Two waste gas decay banks, one bank in service for discharge, WG-160, Waste Gas Discharge Flow Controller auto-closes on high-high radiation signal from Waste Gas Discharge Monitor, EMF 50(L).

d. Two waste gas decay banks, one bank isolated for discharge, WG-160 Waste Gas Discharge Flow Controller auto-closes on high radiation signal from Plant Vent Monitor, EMF 36(L).

QUESTION: 019 (1.00)

Which ONE of the following explains how auctioneered high Tavg is used in the Steam Dump control system?

a. Compared with steam pressure to generate a deviation signal to control the modulation of the steam dump valves.

b. Compared with no-load Tavg to generate an output signal that is the input to the load rejection controller.

c. Compared with Tref to generate an output signal to arm the steam dump valve controllers.

d. Compared with Tref to generate a deviation signal to control the modulation of the steam dump valves.

QUESTION: 020 (1.00)

Which ONE of the following describes the signals that are used to control the feedwater bypass flow control valves when in automatic?

a. Steam header pressure, feed pump discharge pressure, total steam flow.

b. Steam header pressure, steam generator level, programmed steam generator level, steam flow, feed flow.

c. Steam generator level, programmed steam generator level, auctioneered high nuclear power.

d. Steam generator level, total steam flow, power range nuclear instruments.

QUESTION: 021 (1.00)

Which ONE of the following will cause the Interface Valve of the Main Turbine EH Control System to open, resulting in a turbine trip?

a. Fluid Operated Air Pilot (FOAP) Valve goes closed.

b. Auto Stop Oil (ASO) pressure is at 50 psig.

c. Mechanical Turbine Overspeed actuation.

d. Electrical Trip Solenoid 20ET energizes.

QUESTION: 022 (1.00)

Which ONE of the following degraded 6.9KV AC bus electrical parameters will result in reactor core DNBR approaching the limit of 1.3?

a. System resistance to ground decreases to 1 megohm.

b. Voltage 5 volts less than normal operating voltage.

c. Frequency 1 Hz less than normal operating frequency.

d. System power factor 5% less than unity.

QUESTION: 023 (1.00)

Which ONE of the following conditions will start the Accelerated Sequence (Blackout Mode) operation of the sequencer?

a. The emergency diesel generator (EDG) output breaker is SHUT and a safety injection signal is present.

b. A safety injection signal present and the normal and standby power supply breakers are OPEN.

c. The EDG has auto-started; the EDG output breaker is SHUT and the normal and standby power supply breakers are OPEN.

d. Normal and standby power supply breakers are OPEN to perform a surveillance and the EDG emergency stop pushbutton is inadvertently depressed.

QUESTION: 024 (1.00)

Which ONE of the following describes the method used to ensure the "working copy" of a procedure is acceptable for use?

a. Verify the working copy approval date is more recent than the "Control Copy" approval date.

b. Verify the working copy approval date is before the "Master File Copy" approval date.

c. Verify the revision date on both the working copy and the "Master File Copy" are the same.

d. Verify the approval date on both the working copy and the "Control Copy" are the same.

QUESTION: 025 (1.00)

Which ONE of the following describes the operation and design basis of the pressurizer safety valves?

a. Sequentially open from 2335 to 2485 psig to prevent exceeding the NC system pressure safety limit.

b. Open at 2385 to limit pressure to a value below the high pressure reactor trip setpoint.

c. Sequentially open from 2435 to 2485 psig to prevent a large LOCA due to all safety valves opening and then failing to re-close.

d. Open at 2485 to prevent overpressurization of the NC system due to a complete loss of load without a reactor trip.

QUESTION: 026 (1.00)

Which ONE of the following describes when a main steam line break accident will add the most positive reactivity to the core?

a. End of life (EOL) at full power.

b. Beginning of life (BOL) at full power.

c. End of life (EOL) with the plant in hot standby.

d. Beginning of life (BOL) with the plant in hot standby.

QUESTION: 027 (1.00)

Which ONE of the following is required to permit the starting of a reactor coolant pump?

a. Bus frequency greater than 56 Hz on 3/4 6.9KV buses.

b. Cold leg temperature is within plus or minus 100 degrees of steam generator temperature.

c. The NCP has stood idle for at least 30 minutes before a fourth restart attempt within 2 hours.

d. Reactor power is less than 50% and greater than 25% with 3 NCP's running.

QUESTION: 028 (1.00)

Which ONE of the following describes the neutron produced signal used in the Nuclear Instrumentation System?

a. Neutrons interact with B-10 producing Li-7 and an Alpha which causes ionization in the source range which results in a current flow.

b. Neutrons produce a current signal sufficient to contribute 97% of the power range detector current.

c. Neutrons produce current signals in the upper and lower chambers of the wide range neutron detectors which are added in the summing amplifier.

d. Neutrons produce a current signal which is compensated for gamma flux above 10E-9 amps in the intermediate range.

QUESTION: 029 (1.00)

Which ONE of the following states the Emergency Plan notification time requirements for a Site Area Emergency?

a. The state and counties must be notified within 15 minutes and the NRC within 30 minutes.

b. The state and counties must be notified within 15 minutes and the NRC within 60 minutes.

c. The state and counties must be notified within 30 minutes; all individuals on site must be notified within 15 minutes.

d. The state and counties must be notified within 60 minutes; all individuals on site must be notified within 30 minutes.

QUESTION: 030 (1.00)

Which ONE of the following is the required IMMEDIATE ACTION in response to the report of a hydrogen tank leak within the protected area?

(Assume the hydrogen leak is exterior to any building or structure.)

a. Notify the Environmental Management duty person to take appropriate action to notify state and local authorities.

b. Dispatch the fire brigade to standby in the area in the event a fire or explosion occurs.

c. Notify the Hazardous Materials Response Coordinator to evaluate the conditions.

d. Evacuate the affected area and notify the Shift Supervisor.

QUESTION: 031 (1.00)

Which ONE of the following should be used to determine the required position of 1RN-304, 1A1 KC Motor Cooler Control Outlet Isolation valve?

a. Drawing number MC-1574-2.0, Flow Diagram of Nuclear Service Water System (RN).

b. Drawing number MC-1573-1.0, Flow Diagram of Component Cooling Water (KC).

c. OP/1/A/6400/05, Component Cooling Water System, Enclosure 4.9, Valve and Power Supply Checklist.

d. OP/1/A/6100/22, Unit 1 Data Book, Section 9, Throttle Valves/Travel Stop Required Positions and Miscellaneous Information.

QUESTION: 032 (1.00)

Which ONE of the following describes the operation of the ice compartment doors in the event of a LOCA?

a. Lower inlet doors are opened by hydraulic operators when containment pressure exceeds 3 psig.

b. Lower inlet doors automatically open when the pressure on the doors increases by one pound per square foot.

c. Both lower and upper compartment doors are opened by shock absorber mechanisms actuated by containment air pressure.

d. Both lower and upper compartment doors are opened by tension spring mechanisms when actuated by a Phase "A" isolation signal.

QUESTION: 033 (1.00)

Which ONE of the following describes the Reactor Coolant process radiation monitor (EMF-48)?

a. Monitors reactor coolant hot leg for N-16 gamma to detect fuel cladding failures.

b. Monitors all remaining gamma activity after a 1 minute sample line transport delay.

c. Monitors reactor coolant cold leg downstream of the NC sample heat exchanger.

d. Monitors reactor coolant letdown flow for gamma indicative of fuel clad failure.

QUESTION: 034 (1.00)

Which ONE of the following describes the basis for the IMMEDIATE ACTION steps of E-0, Reactor Trip or Safety Injection?

a. Ensure heat source is limited, ensures a controlled cooldown, ensures power is available to safeguards equipment, and determine if emergency core cooling is required.

b. Ensure heat source is removed, prevent an uncontrolled cooldown, ensure power is available to safeguards equipment, and determine the appropriate emergency procedure to implement.

c. Ensure heat source is limited, prevent an uncontrolled cooldown, determine if ANY safeguards equipment is available, and determine the appropriate emergency procedure to implement.

d. Ensure heat source is removed, ensures a controlled cooldown, determine if ANY safeguards equipment is available, and determine if emergency core cooling is required.

QUESTION: 035 (1.00)

Which ONE of the following conditions must be met to permit closure of Letdown Isolation valves NV-1 and NV-2 using their main control board switches?

a. Pressurizer level must be greater than 17%.

b. Phase A isolation signal must be reset.

c. All orifice isolation valves must be closed.

d. Pressurizer level must be less than 17%.

QUESTION: 036 (1.00)

Which ONE of the following conditions requires the operator to EMERGENCY BORATE per AP/1/A/5500/38, "Emergency Boration"?

a. Failure of a full length rod to insert after a reactor trip.

b. Receipt of the CONTROL ROD BANK LO-LO LIMIT annunciator with the reactor at 15% power.

c. An unisolated main steam line break resulting in a 30 degree per minute NCS cooldown with the reactor critical.

d. An uncontrolled or unexplained decrease in source range count rate during a reactor startup.

QUESTION: 037 (1.00)

Which ONE of the following features of the rod control system provides for a more uniform differential rod worth?

a. Rod insertion limits.

b. Control rod materials.

c. Rod bank sequencing.

d. Control rod bank overlap.

QUESTION: 038 (1.00)

Which ONE of the following is the reason ECA 0.0, "Loss of All AC Power", has priority over ALL FRG's?

a. Restoration of power to both ESF buses must occur before objectives of FRG actions can be achieved.

b. Electrical power must be restored first to prevent a LOCA through NCP seal leakage.

c. All FRG's are written assuming that at least one AC emergency bus is energized.

d. FRG's were developed assuming both ESF buses are energized and available.

QUESTION: 039 (1.00)

Which ONE of the following describes a condition required to permit the opening of the #1 seal bypass valve?

a. When NC pump radial bearing temperature is greater than 120 degrees F.

b. When #1 seal flow is too low to provide adequate flow to #2 and #3 seals.

c. When #1 seal leak off is less than 0.2 gpm and #1 seal delta-P is less than 200 psid.

d. When NCS pressure is less than 1000 psig.

QUESTION: 040 (1.00)

Which ONE of the following lists ONLY possible causes for actuating the Solid State Protection System (SSPS) General Warning alarm?

a. Reactor trip bypass breaker racked in and closed, SSPS in test, a loose SSPS printed circuit card.

b. Loss of either SSPS 15 VDC power supply, SSPS in test, blown fuse in the Input Relay, 48 VDC ground circuit.

c. INPUT ERROR INHIBIT switch in INHIBIT position, LOGIC A switch the OFF position, loss of either 48 VDC power supply.

d. MEMORY switch in ON position, SLAVE RELAY TEST MODE SELECTOR switch in BLOCK position, both reactor trip bypass breakers racked out.

QUESTION: 041 (1.00)

Which ONE of the following conditions represents a loss of containment integrity as defined by Technical Specifications?

a. Both air lock doors are open while in MODE 5.

b. ND train B suction valves are open in MODE 4.

c. The equipment hatch is closed but NOT sealed while in MODE 4.

d. The outer airlock door is open and the inner door is sealed while in MODE 2.

QUESTION: 042 (1.00)

Which ONE of the following conditions constitutes an inoperable control rod while operating in Mode 1 and requires corrective action within 1 hour?

a. The group demand position for control bank D is misaligned by 3 steps.

b. A misalignment between group demand position and individual rod position of 10 steps for 20 hours.

c. Rod position indication for a control bank D rod and the demand position indication differ by 11 steps.

d. A Shutdown bank rod has remained in the fully withdrawn position since the last startup 56 days ago.

QUESTION: 043 (1.00)

Which ONE of the following conditions will initiate a Feedwater Isolation signal?

a. Actuation of P12 and P4.

b. Actuation of P4 and High Doghouse Level.

c. Turbine trip, P4 actuation and Tavg at no-load value.

d. Steam generator level below the P14 setpoint.

QUESTION: 044 (1.00)

The Unit is operating in Mode 1 at 100% power. Boron concentration is adjusted to compensate for fuel burnup.

Which ONE of the following times is the new boron concentration required to be logged in the Reactor Operator's logbook?

a. Immediately upon completion of the change in boron concentration.

b. Upon receipt of the NCS boron concentration chemistry analysis report.

c. At the beginning of the next new day (midnight).

d. At the beginning of the next shift.

QUESTION: 045 (1.00)

The NCP Thermal Barrier Isolation Valve, KC-394, fails to close on high flow.

Assume NO operator action is taken.

Which ONE of the following describes the expected sequence of system responses?

a. KC surge tank relief valve will lift at 15 psig, EMF-46 (Component Cooling Monitor) will energize the solenoid to CLOSE KC surge tank vent valve, KC-122.

b. EMF-46 will de-energize the solenoid to CLOSE KC surge tank vent valve, KC-122, and a radioactive release will occur when the surge tank relief valve lifts.

c. EMF-46 will energize the solenoid to CLOSE KC surge tank vent valve, KC-122, and the KC drain tank pump will auto-start on high surge tank level.

d. KC drain tank pump will auto-start on high surge tank level if the pushbutton is in "AUTO" and the surge tank vent valve, KC-122, will close to prevent a radioactive release.

QUESTION: 046 (1.00)

The unit is entering Mode 4 from Mode 3 with the following conditions:

- Pressure is being controlled at 425 psig.
- All wide range cold leg temperatures are 350 degrees F.
- Low Temperature - Overpressure Protection is ARMED.

Which ONE of the following describes the plant response to wide range loop "A" Tcold failing LOW?

a. Only PORV 34A would open.

b. Only PORV 32B would open.

c. PORV 36B, 34A and 32B would open.

d. Neither PORV 36B, 34A nor 32B would open.

QUESTION: 047 (1.00)

An NLO who is NOT in an approved license training class is assigned to observe control room operations.

Which ONE of the following may be operated by the NLO under the direct supervision of a licensed RO or SRO?

a. Starting the "A" Reactor Make-up Water pump for a boron concentration adjustment.

b. Adjusting the speed of the Main Turbine before its output breaker is closed.

c. Driving a control rod in or out for testing while shutdown with all other control rods fully inserted.

d. Adjusting Steam Generator water level in Mode 5.

QUESTION: 048 (1.00)

The following readings are noted on the Intermediate Range and Power Range NIS Channels:

N-35 at 5 x 10E-6 amps
N-36 at 6 x 10E-5 amps
N-41 at 8.5%
N-42 at 9%
N-43 at 8.4%
N-44 at 9%

Which ONE of the following describes the problem indicated by these readings?

a. N-35 reading low for existing conditions.

b. N-36 reading high for existing conditions.

c. N-41 and N-43 reading low for existing conditions.

d. N-42 and N-44 reading high for existing conditions.

QUESTION: 049 (1.00)

During ESFAS surveillance testing one channel was determined to be INOPERABLE and the appropriate entry was made in the TSAIL.

Which ONE of the following times starts the 6-hour time clock to place the plant in HOT STANDBY?

a. Immediately upon locating the problem.

b. Within 1 hour of the TSAIL logged time.

c. TSAIL time logged for testing.

d. Within 2 hours of locating the problem.

QUESTION: 050 (1.00)

FWST Supply to charging pump suction valve, NV-221, fails to open (remains CLOSED) upon receipt of an Ss signal.

Which ONE of the following describes the NV system response to this condition?

a. NV-141, VCT outlet isolation will remain OPEN, NV-142, VCT outlet isolation will CLOSE.

b. NV-142, VCT outlet isolation will remain OPEN, NV-141, VCT outlet isolation will CLOSE.

c. NV-141 and NV-142 outlet isolation valves will remain OPEN.

d. NV-141 and NV-142 outlet isolation valves will CLOSE.

QUESTION: 051 (1.00)

In which ONE of the following areas is the use of foam to extinguish a fire PROHIBITED?

a. Containment.

b. Electrical switchgear.

c. Spent fuel storage.

d. New fuel storage.

QUESTION: 052 (1.00)

Following a total loss of all AC power the operator is directed to CLOSE/check CLOSED 1KC-425A (NC Pumps Return Header Outside Isolation) per ECA-0.1, "Loss of All AC Power Without SI Required" and ECA-0.2, "Loss of All AC Power With SI Required".

Which ONE of the following is the basis for isolating the KC return path prior to restarting a KC pump?

a. To reduce KC heat loads to the minimum possible prior to restarting a KC pump during recovery.

b. To prevent exceeding the cooling capacity of the NCP thermal barrier heat exchangers due to reduced NCP seal flows.

c. To prevent steam from forming and circulating in the KC system and ensures the KC system is available for recovery.

d. To prevent thermal shock to the NCP pump shafts upon restart of the KC system during recovery.

QUESTION: 053 (1.00)

Given the following conditions:

- The Standby Shutdown Facility (SSF) has been activated due to a security event.
- The SSF diesel generator (D/G) has been started.

Which ONE of the following D/G trips is available for the given conditions of SSF diesel generator mode of operation?

a. Engine overspeed.

b. Low lube oil pressure.

c. Low jacket water pressure.

d. High jacket water temperature.

QUESTION: 054 (1.00)

During a loss of coolant accident, all automatic safety injection systems function properly, pressurizer level stabilizes, and NCS pressure stabilizes at about 1500 psig.

Which ONE of the following is the approximate injection flow rate in gallons per minute? (Assume design pump flow rates at nominal design operating pressure, see typical ECCS pump curves provided.)

a. 350 gpm.

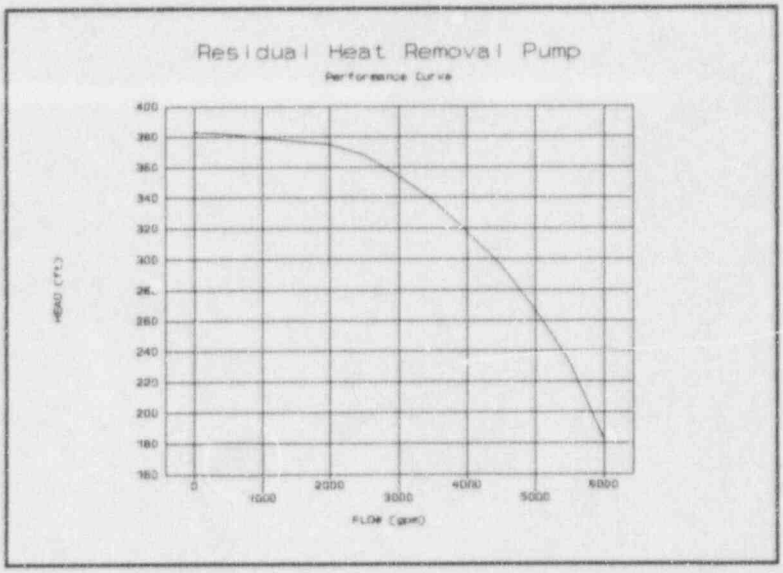
b. 750 gpm.

c. 1500 gpm.

d. 3000 gpm.

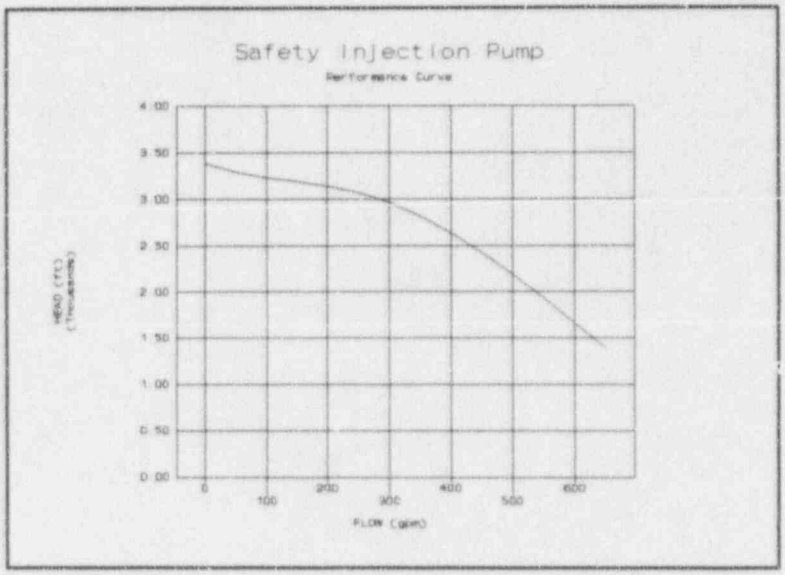
Residual Heat Removal (ND) Pump

Head (Ft)	Flow (gpm)
383	0
382	500
379	1000
377	1500
375	2000
368	2500
354	3000
338	3500
318	4000
296	4500
267	5000
232	5500
182	6000



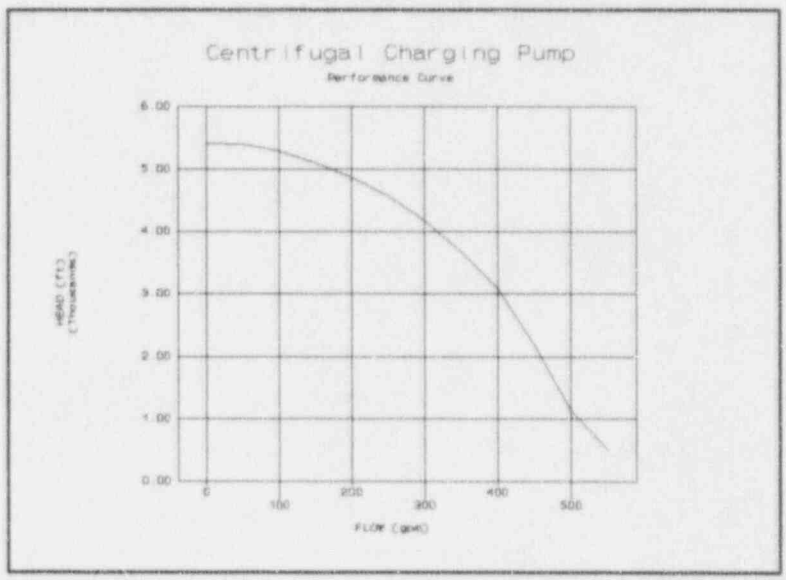
Safety Injection (NI) pump

Head (Ft)	Flow (gpm)
3387	0
3287	50
3232	100
3192	150
3143	200
3071	250
2965	300
2823	350
2643	400
2430	450
2190	500
1931	550
1662	600
1389	650



Centrifugal Charging (NV) pump

Head (Ft)	Flow (gpm)
5410	0
5400	50
5300	100
5110	150
4875	200
4575	250
4175	300
3675	350
3085	400
2200	450
1140	500
500	525



QUESTION: 055 (1.00)

Which ONE of the following describes the Main Fire pump response to pressure in the Jockey Pump pressurization tank decreasing from 81 psig to 50 psig?

a. "A" Main Fire pump starts at 81 psig, "B" Main Fire pump starts at 76 psig, "C" Main Fire pump starts at 71 psig pressure in the pressurization tank.

b. "A" Main Fire pump is running at 81 psig, "B" Main Fire pump starts at 80 psig, "C" Main Fire pump starts at 75 psig pressure in the pressurization tank.

c. "A", "B", and "C" Main Fire pumps start at 70 psig pressure in the pressurization tank.

d. "A", "B", and "C" Main Fire pumps start when the Jockey pumps can no longer maintain system pressure above 85 psig in the pressurization tank.

QUESTION: 056 (1.00)

The following plant conditions exist:

- The reactor is at 75% power.
- The "A" CA pump breaker is tagged for cleaning.
- "CA" pump turbine trip throttle valve will NOT latch.

An NLO reports that the RN suction header to "B" motor driven CA pump indicates leakage past the isolation valve CA-18, and he has closed the local pump suction isolation valve CA-30.

Which ONE of the following describes the action(s) required to be taken in accordance with Technical Specifications?

a. Immediately initiate corrective action to return one CA pump to OPERABLE as soon as possible.

b. Within 1 hour initiate a unit shutdown to HOT STANDBY in accordance with Technical Specification 3.0.3.

c. The RN path to the motor driven CA pump must be restored to OPERABLE or be in HOT STANDBY within 6 hours.

d. Immediately take action to place the plant in at least HOT STANDBY within 6 hours.

QUESTION: 057 (1.00)

Plant conditions:

- Reactor power is at 99%.
- All systems in automatic.
- A NCS boron dilution is in progress.
- Low KC surge tank level in both "A" and "B" sections of the surge tank.
- Running KC pumps show indications of cavitation.
- NC pump motor bearing temperatures are 198 degrees and increasing.

Which ONE of the following describes the required sequence of actions to be taken per AP/1/A/5500/21, Loss of KC or KC System Leakage, in response to the above conditions in an effort to limit possible damage to NC pumps?

a. Secure the dilution, trip running KC pumps, and start standby KC pumps.

b. Trip the reactor, trip NC pumps, and secure the dilution.

c. Trip the reactor, trip running KC pumps, and start standby KC pumps.

d. Trip the reactor, secure dilution, and start standby KC pumps.

QUESTION: 058 (1.00)

Plant conditions:

- Unit 1 is in a refueling outage.
- NO fuel movement is in progress.
- A leak has developed which has caused level to drop in the spent fuel pool.
- The SPENT FUEL POOL LEVEL LOW computer alarm has actuated.
- Pool was initially at normal level and area radiation at 7 mrem/hr.
- After 20 minutes the pool level has decreased further and area radiation is 18 mrem/hr.

Which ONE of the following describes the FIRST required operator response to the current conditions, per AP/1/A/5500/40, "Loss of Refueling Canal Level"?

a. Begin makeup to the pool from the Boric Acid Tank.

b. De-energize the underwater lights before they become uncovered.

c. Move the fuel transfer cart to the spent fuel side and close the transfer tube valve.

d. Notify radiation protection to monitor radiation levels.

QUESTION: 059 (1.00)

Which ONE of the following is the reason the Jockey Pumps must be stopped when Fire Pumps have been in operation for more than 1/2 hour per OP/1/A/6400/02A, Fire Protection System?

a. To prevent exceeding 3.0 psid on the Duplex Strainers.

b. To prevent overheating of the Jockey Pumps.

c. To prevent an inadvertent actuation of Mulsifyre or Deluge systems due to excessive pressure.

d. To prevent overpressurization of the fire protection system if the fire pump pressure regulator fails.

QUESTION: 060 (1.00)

Which ONE of the following is the basis for requiring hot leg temperatures to be less than 354 degrees F before isolating the NI accumulators (cold leg accumulators) in accordance with step 15 of E-1, Loss of Reactor or Secondary Coolant?

a. Ensures that a sufficient volume of borated water will be injected into the core to maintain reactor shutdown with one control rod stuck fully out.

b. Ensures the NCS saturation pressure exceeds the accumulator pressure after the accumulators have been discharged to preclude nitrogen injection into the NCS.

c. Ensures sufficient core cooling to maintain peak cladding temperatures within acceptable limits during large NCS pipe breaks.

d. Ensures further NCS depressurization can be performed to meet long-term recovery requirements.

QUESTION: 061 (1.00)

Plant conditions:

- Reactor trip and SI actuated.
- NCS temperature is 500 degrees F.
- Pressurizer pressure is 2000 psig.
- S/G A, B & C pressures are 450 psig.
- S/G A, B & C levels are at 50% wide range.
- S/G D pressure is 0 psig.
- S/G D level is 5% wide range.
- All MSIV's and MSIV bypasses are shut.
- CA flow is 125 gpm to each S/G.
- Containment pressure is 10 psig.

Which ONE of the following actions will meet the objectives of E-2, Faulted Steam Generator Isolation for these conditions?

a. Maintain minimum CA flow to S/G's A, B & C and at least 125 gpm flow to D S/G to avoid dry-out.

b. Maintain 50 gpm CA flow to the D S/G to avoid dry-out and 100 gpm to S/G's A, B & C.

c. Maintain a minimum total CA flow of 450 gpm to all S/G's until S/G D level is greater than 9% narrow range.

d. Isolate CA flow to the D S/G to minimize containment pressure increase and maintain 450 gpm CA flow to S/G's A, B, & C.

QUESTION: 062 (1.00)

OP/1/A/6150/08, "Rod Control" contains a precaution that states "after moving rods in or out, the operator must wait at least 2 seconds before moving rods again".

Which ONE of the following is the reason for the 2 second waiting period?

a. To allow proper operation of the P/A converter.

b. To eliminate the possibility of a stuck rod.

c. To reduce the possibility of a dropped rod.

d. To allow nuclear instruments time to react to the reactivity change.

QUESTION: 063 (1.00)

Which ONE of the following ventilation Airborne Monitor channels will stop Auxiliary Building unfiltered exhaust fans upon receipt of a high radiation alarm?

a. 1 EMF 35 (H), Unit Vent Particulate (High Range).

b. 1 EMF 36 (L), Unit Vent Gas (Low Range).

c. 1 EMF 37, Unit Vent Iodine.

d. 1 EMF 41, Auxiliary Building Ventilation.

QUESTION: 064 (1.00)

Plant conditions:

- Unit 1 is operating at 95% power.
- Unit 2 is shutdown, performing maintenance & testing on DC distribution centers 2EVDA, 2EVDB, 2EVDC and 2EVDD which are NOT available for service.
- 1EVDA and 1EVDC are cross-connected via their bus tie breakers due to a fault in the common output breaker from 1EVDA battery charger/battery.
- Standby battery charger EVCS is NOT available for service.
- Assume bus loads are equal.

Which ONE of the following is the expected time 1EVDC battery will carry loads upon a loss of AC to its battery charger?

a. 0.5 hour

b. 1.0 hours

c. 1.5 hours

d. 2.0 hours

QUESTION: 065 (1.00)

Plant conditions:

- Operating in MODE 1, at 100% power.
- 1EMF-48, Reactor Coolant Hi Rad, alarm is ALARMING.
- 1EMF-18, Reactor Coolant Hi Filter 1A, alarm is ALARMING.

Which ONE of the following operator actions is required per AP/1/A/5500/18, "High Activity in Reactor Coolant"?

a. Reduce power.

b. Isolate letdown.

c. Increase letdown to 120 gpm.

d. Initiate hourly sampling of NC system.

QUESTION: 066 (1.00)

Which ONE of the following must be maintained to ensure that the Heat Flux Hot Channel Factor and the Enthalpy Rise Hot Channel Factor are within limits between periodic surveillances?

a. Shutdown rod groups must be within +/- 12 steps in modes 1 and 2.

b. QPTR must NOT exceed 1.02 when operating at any power level in mode 1.

c. AFD must be maintained within limits when operating below 50% power in mode 1.

d. Control bank rods must be above their insertion limits when operating at any power level in mode 1.

QUESTION: 067 (1.00)

Plant conditions:

- Loop 3 T-Avg circuitry is failed and removed from service.
- Loop 2 T-hot RTD fails to 611 degrees F while operating at 75% power.

(All systems are in automatic and NO operator action taken.)

Which ONE of the following will occur IMMEDIATELY as a result of this failure?

a. Control Bank D rods will begin stepping out.

b. The charging flow control valve, NV-238, will open to increase charging flow.

c. If steam dumps are placed in the Steam Pressure Mode, the steam dumps would open.

d. The reactor will trip on over-temperature delta-T.

QUESTION: 068 (1.00)

Power has been lost to heat tracing on the NV Makeup Control System, resulting in a blockage of the entire line between NV-267A, Boric Acid Flow Control Valve, and NV-175A, Blender discharge to charging pump suction header.

Which ONE of the following paths to the charging pump suction header is the only path available to add a combination of boric acid and primary water?

a. Via NV-171, Isolation to VCT Spray valve flowpath.

b. Via NV-269, Manual Emergency Boration valve flowpath.

c. Via NV-252, Primary water makeup valve flowpath.

d. Via NV-265, Emergency Boration valve flowpath.

QUESTION: 069 (1.00)

Which ONE of the following requires starting one or more NCP's under inadequate core cooling conditions per EP/1/A/5000/FR-C.1, "Response to Inadequate Core Cooling" even if support conditions are not established?

a. Both trains of ECCS have failed.

b. Core exit thermocouples indicate 1300 degrees F.

c. Loss of all feedwater to S/Gs and all S/G's have boiled dry.

d. RVLIS indicates less than 40% and core exit thermocouples are indicating 800 degrees and increasing.

QUESTION: 070 (1.00)

Unit 1, has been operating at 100 percent rated thermal power for two months. Twelve hours ago, the residual heat removal (ND) heat exchanger A was declared INOPERABLE. Maintenance department has just reported that the suction valve from the containment sump to ND pump B is INOPERABLE and will take approximately 8 hours to repair.

Which ONE of the following describes the allowances and/or limitations imposed by the Technical Specifications that apply in this situation?

a. Restore at least one ND train (ECCS subsystem) to OPERABLE status within 1 hour or be in COLD SHUTDOWN within the next 20 hours.

b. Within 1 hour, action shall be initiated to place the unit in at least HOT STANDBY within the next six hours and at least HOT SHUTDOWN within the following six hours and COLD SHUTDOWN within the next 24 hours.

c. Restore at least one ECCS subsystem to OPERABLE status or SHUTDOWN and reduce NCS temperature to less than 350 degrees F by use of alternate heat removal methods.

d. Action shall be initiated immediately to place the unit in HOT STANDBY within the next hour and at least HOT SHUTDOWN within the following six hours and COLD SHUTDOWN within the next 24 hours.

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

See Interpretation 3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding specifications is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met.

3.0.2 Noncompliance with a specification shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals. If the Limiting Condition for Operation is restored prior to expiration of the specified time intervals, completion of the Action requirements is not required.

See Interpretation 3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within 1 hour action shall be initiated to place the unit in a MODE in which the specification does not apply by placing it, as applicable, in:

a. At least HOT STANDBY within the next 6 hours,
b. At least HOT SHUTDOWN within the following 6 hours, and
c. At least COLD SHUTDOWN within the subsequent 24 hours.

Where corrective measures are completed that permit operation under the ACTION requirements, the action may be taken in accordance with the specified time limits as measured from the time of failure to meet the Limiting Condition for Operation. Exceptions to these requirements are stated in the individual specifications.

This specification is not applicable in MODE 5 or 6.

3.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made when the conditions for the Limiting Condition for Operation are not met and the associated ACTION requires a shutdown if they are not met within a specified time interval. Entry into an OPERATIONAL MODE or specified condition may be made in accordance with ACTION requirements when conformance to them permits continued operation of the facility for an unlimited period of time. This provision shall not prevent passage through or to OPERATIONAL MODES as required to comply with ACTION requirements. Exceptions to these requirements are stated in the individual specifications.

3.0.5 Limiting Conditions for Operation including the associated ACTION requirements shall apply to each unit individually unless otherwise indicated as follows:

a. Whenever the Limiting Condition for Operation refers to systems or components which are shared by both units, the ACTION requirements will apply to both units simultaneously. This will be indicated in the ACTION section;

b. Whenever the Limiting Condition for Operation applies to only one unit, this will be identified in the APPLICABILITY section of the specification; and

c. Whenever certain portions of a specification contain operating parameters, setpoints etc., which are different for each unit, this will be identified in parentheses or footnotes. (For example, "...flow rate of 54,000 cfm (Unit 1) or 43,000 cfm (Unit 2)...").

4.0.1 Surveillance Requirements shall be met during the OPERATIONAL MODES or other conditions specified for individual Limiting Conditions for Operation unless otherwise stated in an individual Surveillance Requirement.

4.0.2 Each Surveillance Requirement shall be performed within the specified time interval with a maximum allowable extension not to exceed 25% of the surveillance interval.

4.0.3 Failure to perform a Surveillance Requirement within the allowed surveillance interval, defined by Specification 4.0.2, shall constitute noncompliance with the OPERABILITY requirements for a Limiting Condition for Operation. The time limits of the ACTION requirements are applicable at the time it is identified that a Surveillance Requirement has not been performed. The ACTION requirements may be delayed for up to 24 hours to permit the completion of the surveillance when the allowable outage time limits of the ACTION requirements are less than 24 hours. Surveillance Requirements do not have to be performed on inoperable equipment.

4.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made unless the Surveillance Requirement(s) associated with the Limiting Condition for Operation have been performed within the stated surveillance interval or as otherwise specified. This provision shall not prevent passage through or to OPERATIONAL MODES as required to comply with ACTION requirements.

4.0.5 Surveillance Requirements for inservice inspection and testing of ASME Code Class 1, 2, and 3 components shall be applicable as follows:

a. Inservice inspection of ASME Code Class 1, 2, and 3 components and inservice testing of ASME Code Class 1, 2, and 3 pumps and valves shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50, Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50, Section 50.55a(g)(6)(i);

3/4.5.2 ECCS SUBSYSTEMS - $T_{avg} \geq 350°F$

LIMITING CONDITION FOR OPERATION

SEE INTERPRETATIONS

3.5.2 Two independent Emergency Core Cooling System (ECCS) subsystems shall be OPERABLE with each subsystem comprised of:

a. One OPERABLE centrifugal charging pump,

b. One OPERABLE Safety Injection pump,

c. One OPERABLE RHR heat exchanger,

d. One OPERABLE RHR pump, and

e. An OPERABLE flow path capable of taking suction from the refueling water storage tank on a Safety Injection signal and automatically transferring suction to the containment sump during the recirculation phase of operation.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date. The current value of the usage factor for each affected Safety Injection nozzle shall be provided in this Special Report whenever its value exceeds 0.70.

4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the following valves are in the indicated positions with power to the valve operators removed:

Valve Number	Valve Function	Valve Position
NI162A	Cold Leg Recirc.	Open*
NI121A	Hot Leg Recirc.	Closed
NI152B	Hot Leg Recirc.	Closed
NI183B	Hot Leg Recirc.	Closed
NI173A	RHR Pump Discharge	Open*
NI178B	RHR Pump Discharge	Open*
NI100B	SI Pump RWST Suction	Open
FW27A	RHR/RWST Suction	Open*
NI147A	SI Pump Mini flow	Open

b. At least once per 31 days by:

1) Verifying that the ECCS piping is full of water by venting the ECCS pump casings and accessible discharge piping high points, unless the pumps and associated piping are in service or have been in service within 31 days, and

2) Verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

c. By a visual inspection which verifies that no loose debris (rags, trash, clothing, etc.) is present in the containment which could be transported to the containment sump and cause restriction of the pump suctions during LOCA conditions. This visual inspection shall be performed:

1) For all accessible areas of the containment prior to establishing CONTAINMENT INTEGRITY, and

2) Of the areas affected within containment at the completion of each containment entry when CONTAINMENT INTEGRITY is established.

d. At least once per 18 months by:

1) Verifying automatic interlock action of the RHR System from the Reactor Coolant System by ensuring that with a simulated or actual Reactor Coolant System pressure signal greater than or equal to 425 psig the interlocks prevent the valves from being opened.

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* Valves may be realigned to place RHR System in service and for testing pursuant to Specification 4.4.6.2.2.

2) A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or abnormal corrosion.

e. At least once per 18 months, during shutdown, by:

1) Verifying that each automatic valve in the flow path actuates to its correct position on Safety Injection actuation and automatic switchover to Containment Sump Recirculation test signals, and

2) Verifying that each of the following pumps start automatically upon receipt of a Safety Injection actuation test signal:

a) Centrifugal charging pump,

b) Safety Injection pump, and

c) RHR pump.

f. By verifying that each of the following pumps develops the indicated differential pressure when tested pursuant to Specification 4.0.5:

1)	Centrifugal charging pump	≥ 2347 psid,
2)	Safety Injection pump	≥ 1418 psid, and
3)	RHR pump	≥ 166 psid.

g. By verifying the correct position of each electrical and/or mechanical position stop for the following ECCS throttle valves:

1) Within 4 hours following completion of each valve stroking operation or maintenance on the valve when the ECCS subsystems are required to be OPERABLE, and

2) At least once per 18 months.

Boron Injection Throttle Valves	Safety Injection Throttle Valves
Valve Number	Valve Number
NI-480	NI-488
NI-481	NI-489
NI-482	NI-490
NI-483	NI-491

h. By performing a flow balance test, during shutdown, following completion of modifications to the ECCS subsystems that alter the subsystem flow characteristics and verifying that:

1) For centrifugal charging pump lines, with a single pump running:

a) The sum of the injection line flow rates, excluding the highest flow rate, is greater than or equal to 325 gpm for Unit 1 and 320 gpm for Unit 2, and

b) The total pump flow rate is less than or equal to 560 gpm.

2) For Safety Injection pump lines, with a single pump running:

a) The sum of the injection line flow rates, excluding the highest flow rate, is greater than or equal to 423 gpm, and

b) The total pump flow rate is less than or equal to 675 gpm.

3) For RHR pump lines, with a single pump running, the sum of the injection line flow rates is greater than or equal to 4025 gpm.

3/4.5.3 ECCS SUBSYSTEMS - $T_{avg} \leq 350°F$

LIMITING CONDITION FOR OPERATION

3.5.3 As a minimum, one ECCS subsystem comprised of the following shall be OPERABLE:

a. One OPERABLE centrifugal charging pump,#

b. One OPERABLE RHR heat exchanger,

c. One OPERABLE RHR pump, and

d. An OPERABLE flow path capable of taking suction from the refueling water storage tank upon being manually realigned and transferring suction to the containment sump during the recirculation phase of operation.

APPLICABILITY: MODE 4.

ACTION:

a. With no ECCS subsystem OPERABLE because of the inoperability of either the centrifugal charging pump or the flow path from the refueling water storage tank, restore at least one ECCS subsystem to OPERABLE status within 1 hour or be in COLD SHUTDOWN within the next 20 hours.

b. With no ECCS subsystem OPERABLE because of the inoperability of either the RHR heat exchanger or RHR pump, restore at least one ECCS subsystem to OPERABLE status or maintain the Reactor Coolant System T_{avg} less than 350°F by use of alternate heat removal methods.

c. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date. The current value of the usage factor for each affected Safety Injection nozzle shall be provided in this Special Report whenever its value exceeds 0.70.

#A maximum of one centrifugal charging pump and one Safety Injection pump shall be OPERABLE whenever the temperature of one or more of the RCS cold legs is less than or equal to 300°F.

SURVEILLANCE REQUIREMENTS

4.5.3.1 The ECCS subsystem shall be demonstrated OPERABLE per the applicable requirements of Specification 4.5.2.

4.5.3.2 All centrifugal charging pumps and Safety Injection pumps, except the above required OPERABLE pumps, shall be demonstrated inoperable by verifying that the motor circuit breakers are secured in the open position or by verifying the discharge of each pump has been isolated from the RCS by at least two isolation valves with power removed from the valve operators at least once per 12 hours whenever the temperature of one or more of the RCS cold legs is less than or equal to 300°F.

QUESTION: 071 (1.00)

Which ONE of the following describes an acceptable action per Technical Specifications if the measured NCS flow rate is 2.0% less than the minimum design flow rate of 382,000 gpm required for 100% power?

a. Restore the combination of NCS total flow rate and thermal power to within the region of restricted operations per Technical Specification curve for NCS flow rate versus rated thermal power.

b. Reduce power to ensure calculated DNBR does NOT decrease below the design DNBR value while operating in the region of restricted operations per Technical Specification curve for NCS flow rate versus rated thermal power.

c. Reduce the Power Range Neutron Flux-High Trip setpoint to the nominal setpoint for 98% power and reduce power to within the region of restricted operations per Technical Specification curve for NCS flow rate versus rated thermal power.

d. Reduce thermal power to ensure NCS total flow rate is greater than the minimum flowrate for prohibited operations region of the Technical Specification curve for NCS flow rate versus rated thermal power.

POWER DISTRIBUTION LIMITS

3/4.2.5 DNB PARAMETERS

LIMITING CONDITION FOR OPERATION

3.2.5 The following DNB related parameters shall be maintained within the limits shown on Table 3.2-1.

a. Reactor Coolant System T_{avg},

b. Pressurizer Pressure, and

c. Reactor Coolant System Total Flow Rate.

APPLICABILITY: MODE 1.

ACTION:

a. With either of the parameters identified in 3.2.5a. and b. above exceeding its limit, restore the parameter to within its limit within 2 hours or reduce THERMAL POWER to less than 5% of RATED THERMAL POWER within the next 4 hours.

b. With the combination of Reactor Coolant System total flow rate and THERMAL POWER within the region of restricted operation specified on Figure 3.2.1, within 6 hours reduce the Power Range Neutron Flux-High Trip Setpoint to below the nominal setpoint by the same amount (% RTP) as the power reduction required by Figure 3.2-1.

c. With the combination of RCS total flow rate and THERMAL POWER within the region of prohibited operation specified on Figure 3.2-1:

1. Within 2 hours either:

a) Restore the combination of RCS total flow rate and THERMAL POWER to within the region of permissible operation,

b) Restore the combination of Reactor Coolant System total flow rate and THERMAL POWER to within the region of restricted operation and comply with action b. above, or

c) Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER and reduce the Power Range Neutron Flux - High Trip Setpoint to less than or equal to 55% of RATED THERMAL POWER within the next 4 hours.

2. Within 24 hours of initially being within the region of prohibited operation specified in Figure 3.2-1, verify that the combination of THERMAL POWER and RCS total flow rate are restored to within the regions of permissible or restricted operation, or reduce THERMAL POWER to less than 5% of RATED THERMAL POWER within the next 2 hours.

POWER DISTRIBUTION LIMITS

3/4.2.5 DNB PARAMETERS

SURVEILLANCE REQUIREMENTS

4.2.5.1 Each of the parameters of Table 3.2-1 shall be measured by averaging the indications (meter or computer) of the operable channels and verified to be within their limits at least once per 12 hours.

4.2.5.2 The RCS total flow rate indicators shall be subjected to a CHANNEL CALIBRATION at least once per 18 months.

4.2.5.3 The RCS total flow rate shall be determined by precision heat balance measurement at least once per 18 months.

TABLE 3.2-1

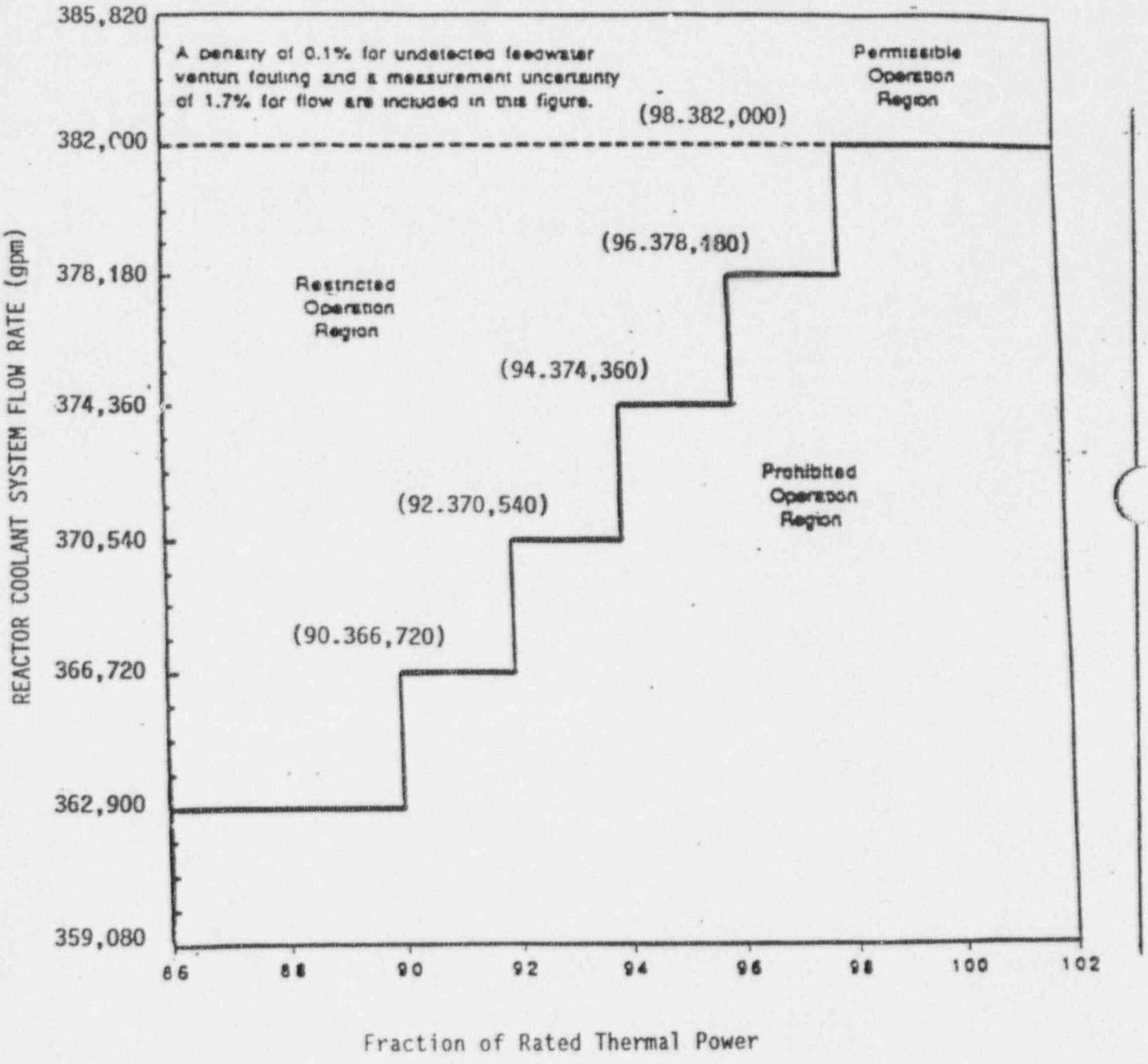
DNB PARAMETERS

PARAMETER	INDICATION	# OPERABLE CHANNELS	LIMITS*
Indicated Reactor Coolant System T_{avg}	meter	4	$\leq$590.5°F
	meter	3	$\leq$590.2°F
	computer	4	$\leq$591.0°F
	computer	3	$\leq$590.8°F
Indicated Pressurizer Pressure**	meter	4	$\geq$2226.5 psig
	meter	3	$\geq$2229.8 psig
	computer	4	$\geq$2221.7 psig
	computer	3	$\geq$2224.2 psig
Reactor Coolant System Total Flow Rate			Figure 3.2-1

*Limits applicable during four-loop operation.

**Limits not applicable during either a THERMAL POWER ramp in excess of 5% of RATED THERMAL POWER per minute or a THERMAL POWER step in excess of 10% RATED THERMAL POWER.

Figure 3.2-1 Reactor Coolant System Total Flow Rate Versus Reated Thermal Power - Four Loops in Operation



QUESTION: 072 (1.00)

Plant conditions:

- The plant has tripped due to an inadvertent Safety Injection.
- All systems functioned normally.
- Transition from E-0 at step 25 to ES-1.1, SI Termination has been completed.
- SI has just been reset in accordance with step 2 of ES-1.1.

Offsite power is lost just as step 2 of ES-1.1 was completed.

Which ONE of the following describes the response of the on-site safety related electrical system?

a. Both emergency diesels receive a start signal, the D/G output breakers shut, then the LOCA sequencer loads the bus.

b. An electrical load shed occurs, both D/G output breakers shut, then the LOCA sequencer loads the bus.

c. Both emergency diesels receive a start signal, the D/G output breakers shut, then LOCA loads must be started by the operator.

d. No electrical load shed occurs, both D/G output breakers shut, then LOCA loads must be started by the operator.

QUESTION: 073 (1.00)

Which ONE of the following describes the basis for maintaining a minimum feedwater flow of at least 25 gpm to each Steam Generator during the performance of ECA-2.1, "Uncontrolled Depressurization of All Steam Generators"?

a. To minimize thermal shock due to subsequent increases in feed flow.

b. To maintain a minimum verifiable/measurable feed flow.

c. To maintain steam generator levels above the low limit of narrow range indication.

d. To ensure minimum flow through CA pumps is maintained.

QUESTION: 074 (1.00)

Plant conditions:

- Tavg is 557 degrees F.
- Pressurizer pressure is 2235 psig.
- NCS boron concentration is 1000 ppm (ECP value).
- Source range count rate is 30 cps.
- 72 hours since shutdown.

The shutdown banks are withdrawn in accordance with OP/1/A/6150/08, Rod Control, Enclosure 3, Rod Control During Startup. When the shutdown banks are fully withdrawn, the Source Range count rate is 110 cps on N31 and 30 cps on N32.

Which ONE of the following actions should be taken?

a. Immediately open the Reactor Trip Breakers and enter E-0, Reactor Trip or Safety Injection.

b. Perform an emergency boration per AP/1/A/5500/38, Emergency Boration.

c. Verify operability of Source Range N32 by performance of Analog Channel Operation Test.

d. Place the Level Trip switch for Source Range channel N32 in BYPASS per AP/1/A/5500/16, Malfunction of Nuclear Instrumentation, Case I.

QUESTION: 075 (1.00)

The unit has just experienced a Safety Injection and recovery is in progress. The NC system has been depressurized to recover pressurizer level and the following parameters exist:

- Tavg	540 degrees F.
- Pressure	2200 psig.
- Pressurizer level	50 %
- Liquid temperature	610 degrees F.
- Vapor space temperature	615 degrees F.
- Pressurizer heaters	Energized

Which ONE of the following describes the PRESENT state of the pressurizer?

a. The pressurizer is at equilibrium saturation conditions and normal pressure control is available with heaters and spray.

b. The pressurizer liquid is subcooled and pressure is being maintained by Safety Injection flow compressing the vapor space.

c. Superheat conditions exist for the pressure, heaters and spray are maintaining pressure.

d. The pressurizer liquid is subcooled with pressurizer heaters maintaining pressure.

QUESTION: 076 (1.00)

The reactor has tripped from 100% power due to a loss of off-site electrical power, the EDGs failed to reenergize their respective ESF buses and the following plant indications are noted.

- NCS pressure is 1575 psig and decreasing.
- Core exit thermocouples indicate 604 degrees F, increasing.
- Wide range RVLIS indicates 90%, decreasing.
- Pressurizer level indicates 90%, increasing.

Which ONE of the following is the most likely cause of the above indications?

a. A pressurizer PORV has failed in the open position.

b. NCS over-cooling has caused a partial bubble formation in the reactor vessel.

c. The cold leg accumulators are injecting and filling the pressurizer.

d. The steam dump controller has failed with all steam dumps fully open.

QUESTION: 077 (1.00)

The plant is in Mode 5 with NCS inventory at midloop conditions.

Which ONE of the following is the basis for limiting the number of running ND pumps to ONE (except when swapping trains) when NCS inventory is at midloop conditions?

a. Running both ND pumps could result in exceeding the 50 degree/hr (100 degree/hr T.S.) NCS cooldown rate.

b. Running both ND pumps could result in ND pump vortexing (air entrainment).

c. High ND flow rates will result in exceeding the Technical Specification limit of 1000 gpm.

d. High ND flow rates will result in exceeding the NCS temperature limit of 140 degrees F.

QUESTION: 078 (1.00)

Shortly after placing an additional letdown orifice in service to clean up a crud burst per AP/18, High Activity in Reactor Coolant, conditions are as follows:

- Annunciator 1AD6-E7, PZR LOW LEVEL DEV, in alarm.
- Letdown flow is 120 gpm with the 45 gpm and one 75 gpm orifice in service.
- Charging flow is 108 gpm with the "B" NV pump running.
- Pressurizer level control is in automatic.

Which ONE of the following would correct the charging-letdown flow imbalance?

a. Start the PDP and stop the "B" charging pump.

b. Shut the "B" charging pump recirculation valve.

c. Increase NCP seal injection flow via seal injection flow control.

d. Select the alternate channel for pressurizer level control.

QUESTION: 079 (1.00)

Plant conditions:

- The reactor has tripped from 100% power due to a loss of off-site electrical power.
- The EDGs failed to reenergize their respective ESF buses.
- Operators have successfully performed step 5 of ECA-0.0, Loss of all AC Power, ensuring:
  - PORV's are CLOSED.
  - Letdown isolation valves are CLOSED.
  - Excess letdown isolation valves are CLOSED.
  - Letdown control valve (NV-121) is CLOSED.
- Plant Indications:
  - Pressurizer level continues to slowly decrease.
  - PRT level continues to increase.
  - Assume NO OTHER alarms are present.

Which ONE of the following is the most likely cause of the above indications?

a. NCP seal return relief valve has lifted and failed to reseat.

b. Letdown relief valve has lifted and failed to reseat.

c. A pressurizer safety valve has lifted and failed full open.

d. NV pump suction header relief valve has lifted and failed full open.

QUESTION: 080 (1.00)

The reactor is critical at 8% power and increasing, with the turbine rolling at 1800 rpm. Investigation reveals that intermediate range channel N36 has failed. (Assume NO reactor trip).

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

a. Place N36 Level Trip Bypass Switch in BYPASS and continue the power increase.

b. Place N36 Level Trip Bypass Switch in BYPASS and reduce power to less than 5%.

c. Stop the power increase and restore channel N36 to OPERABLE status before increasing power above 10%.

d. Increase power to 10% and BLOCK IR range Rod Stop and IR Reactor Trip.

QUESTION: 081 (1.00)

Plant conditions:

- Unit 1 is operating in Mode 1 at 100% power.
- All systems and controls are operating normally and in automatic.

Power is then lost to 1EMXB, the reactor operator manually trips the reactor and FR-S.1, "Response to Nuclear Power Generation/ATWS" is entered due to an ORANGE path on SUBCRITICALITY.

Which ONE of the following main control board actions must be performed in response to the loss of power to 1EXMB?

a. Initiate emergency boration by opening 1NV-269, Boric Acid to NV pumps.

b. Initiate emergency boration by opening 1NV-221, NV Pumps Suction from FWST.

c. Initiate emergency boration by opening 1NV-1025, PDP Suction from VCT.

d. Open 1NI-3, Boron Injection Check Valve Flush Line Isolation.

QUESTION: 082 (1.00)

Plant conditions:

- Reactor trip and safety injection have occurred.
- Immediate actions of E-0 are complete.

Which ONE of the following concurrent conditions should receive first priority by the operator?

a. NCS inventory loss rate at 1300 gpm.

b. S/G "B" pressure at 590 psig and decreasing rapidly.

c. Condenser air ejector radiation alarm in progress.

d. "B" S/G narrow range level at 5% slowly decreasing with the Turbine Driven CA pump running, Motor Driven CA pumps are NOT available.

QUESTION: 083 (1.00)

While transitioning to E-1, Loss of Reactor or Secondary Coolant, after completing the actions of E-0, Reactor Trip or Safety Injection, an ORANGE path is identified under SUBCRITICALITY.

Which ONE of the following should be performed with regard to implementing FR-S.1, Response to Nuclear Power Generation/ATWS?

a. Complete the actions of E-1, then implement FR-S.1.

b. Immediately implement FR-S.1, then continue the current pass through the status trees.

c. Continue current pass through the status trees, if NO red path condition is encountered, then implement FR-S.1.

d. Implement FR-S.1 at the discretion of the Shift Supervisor.

QUESTION: 084 (1.00)

Containment isolation valve NV-245B inadvertently CLOSES resulting in a loss of normal charging. Annunciator 1AD7-G2, CHARGING LINE ABNORMAL FLOW, is in alarm.

Which ONE of the following is the required IMMEDIATE ACTION?

a. Fully open NV-13B, alternate charging valve.

b. Close NV-238, charging line flow control valve.

c. Close NV-458A, 457A and 35A, letdown orifice isolation valves.

d. Fully open NV-241, seal injection flow control valve.

QUESTION: 085 (1.00)

Which ONE of the following describes why correction factors are required to be used when the temperature of the Incore Thermocouple Reference Junction Box is more than 1 degree from 160 degrees F?

a. To compensate for the chromel to alumel junctions located in the box.

b. To correct for temperature errors as a result of electrical connections contained in the box.

c. To compensate for the use of less expensive copper wiring in field wiring circuits.

d. To correct for OAC computational errors.

QUESTION: 086 (1.00)

Which ONE of the following is the Spent Fuel Pool water level, as read on the control room gage (1KF-5120), required by Technical Specifications when irradiated fuel is in the spent fuel pool?

a. + 2.0 feet.

b. 0.0 feet.

c. - 2.0 feet.

d. - 6.0 feet.

QUESTION: 087 (1.00)

Given the following conditions while pumping out the ENA sump:

- ENA ROOM SUMP HI LEVEL alarm is LIT.
- Containment Sump Totalizer was counting, but STOPPED.
- The Liquid Waste system is in it's normal alignment.
- Initial radiation alarms are normal.

Which ONE of the following is a possible cause for this condition?

a. The totalizer has failed tripping the ENA sump pumps.

b. EMF-49L (Waste Liquid Monitor) has reached the TRIP 2 setpoint, securing the release.

c. WL-64A (RB Sump Pump inside isolation valve) closed.

d. The Floor Drain Tank reached the "Hi Level" setpoint and secured the release to prevent overflow.

QUESTION: 088 (1.00)

Given the following conditions:

- Unit 1 is in MODE 3.
- Entry into lower containment must be made to inspect for suspected NC system leakage.

Which ONE of the following determines how "stay time" will be affected if respirators are to be used?

a. It is NOT affected if ice vests are used.

b. The Low Metabolism chart is used.

c. The Moderate Metabolism chart is used.

d. The High Metabolism chart is used.

QUESTION: 089 (1.00)

Plant conditions:

- A fire has occurred on-site.
- Operators are placing the plant in HOT STANDBY from the SSF.
- The reactor and main turbine have been manually tripped.
- Pressurizer level is being maintained between 60% and 80%.

Which ONE of the following describes the method of pressurizer level control for the above conditions per AP/1/A/5500/24, "Loss of Plant Control Due to Fire"?

a. Starting & stopping NV Pumps 1A and/or 1B.

b. Starting & stopping the NV positive displacement charging pump.

c. Opening & closing the reactor vessel head vent valves.

d. Opening & closing the pressurizer PORV's.

QUESTION: 090 (1.00)

Plant conditions:

- The plant is shutdown operating in MODE 4, and preparing to enter MODE 5.
- Alarm 1AD2-D3, S/R HI FLUX AT SHUTDOWN, is alarming.
- Protection set I and II bistables in both S/R drawers are tripped.
- Power is available to both source range instruments.

Which ONE of the following actions is required?

a. Enter AP/1/A/5500/16, Nuclear Instrumentation System Malfunction, Case I, Source Range Malfunction.

b. Place both Source Range Select switches in "Block" per alarm response procedure OP/1/A/6100/10C, 1AD2-D3.

c. Increase shutdown margin per AP/1/A/5500/13, Boron Dilution.

d. Immediately shift NV charging pump suctions to FWST per AP/1/A/5500/38, Emergency Boration.

QUESTION: 091 (1.00)

Given the following conditions:

- A Loss of Offsite Power has occurred.
- Tavg is 557 degrees F.
- Steam dumps are in the Steam Pressure mode.
- Steam dump demand is manually increased to begin cooldown.
- The steam dump valves will NOT open.

Which ONE of the following explains why the steam dumps will NOT open?

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

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

c. P-12, LO-LO Tavg, has disarmed the steam dumps.

d. The plant trip controller has not been reset.

QUESTION: 092 (1.00)

Which ONE of the following describes the type of leakage and the action required by Technical Specifications if a pressurizer PORV is leaking to the PRT at a rate of 2 gpm with all other systems operating normally?

a. Identified leakage across a pressure boundary that requires shutdown.

b. Unidentified leakage across a non-pressure boundary that requires shutdown.

c. Identified leakage across a non-pressure boundary that does not require shutdown.

d. Unidentified leakage across a pressure boundary that does not require shutdown.

QUESTION: 093 (1.00)

Which ONE of the following is the basis for McGuire's, "Selected Licensee Commitment" SLC 16.11.1 (Liquid Effluents) limiting the concentration of radioactive material release in liquid effluents to less than 10 times the effluent concentrations listed in 10-CFR-20, Appendix B, Table II, Column 2?

a. To ensure dissolved and noble gases entrained in the released liquid are maintained within the limits of 10-CFR-50, Appendix I, Section II.A.

b. To ensure radiation exposure resulting from radioactive liquid releases contributes less than 100 mrem per year to any plant operator's Total Effective Dose Equivalent (TEDE).

c. To ensure the estimated annual dose to any individual with access to unrestricted areas of the plant will NOT exceed 10 mrem to the total body.

d. To ensure the estimated annual dose to any member of the general public is limited to 3 mrem total body exposure in compliance with 10-CFR-50, Appendix I, Section II.A.

QUESTION: 094 (1.00)

During a refueling outage the NIS intermediate range channels were not adjusted to account for the changes in neutron leakage resulting from the core reload. All other NIS channels were properly adjusted as required.

Which ONE of the following will occur during the startup following the refueling outage?

a. Source and intermediate range overlap will be excessive.

b. A rod stop will occur due to the significantly lower intermediate range high flux setpoints.

c. The intermediate range high flux trips will occur at a significantly higher core flux level.

d. Intermediate and power range overlap will be excessive.

QUESTION: 095 (1.00)

Unit 1 is operating at 100% power. An operator reports that the measured valve stem leakage on 1NV-243, Charging Flow Control bypass valve, has increased since his last observation (last shift, yesterday).

Which ONE of the following actions should be taken FIRST?

a. Perform PT/1/A/4150/01B, Reactor Coolant Leakage Calculation using new measured stem leakage on 1NV-243 to determine if the leakage exceeds the UNIDENTIFIED LEAKAGE limit per Technical Specifications.

b. Perform PT/1/A/4150/01B, Reactor Coolant Leakage Calculation using new measured stem leakage on 1NV-243 to determine if the leakage exceeds the IDENTIFIED LEAKAGE limit per Technical Specifications.

c. Direct maintenance to tighten 1NV-243 valve stem packing to reduce leakage to within Tech. Spec. IDENTIFIED LEAKAGE limits per Mcguire Nuclear Station Operations Special Order #94-01, Addressing Known NCS Leakage Sources.

d. Direct maintenance to tighten 1NV-243 valve stem packing to reduce leakage to within Tech. Spec. UNIDENTIFIED LEAKAGE limits per Mcguire Nuclear Station Operations Special Order #94-01, Addressing Known NCS Leakage Sources.

QUESTION: 096 (1.00)

A reactor trip and safety injection have occurred. The crew has transitioned to E-1, Loss of Reactor or Secondary Coolant. During the performance of step 5 of E-1, the chemistry technician calls the control room and reports that there is high activity in the "A" S/G.

Which ONE of the following should be performed?

a. Transition to E-3, Steam Generator Tube Rupture, per the fold out page of E-1.

b. Transition to ES-1.2, Post LOCA Cooldown and Depressurization.

c. Continue in E-1, Loss of Reactor or Secondary Coolant.

d. Return to E-0, Reactor Trip or Safety Injection, and perform the diagnosis steps.

QUESTION: 097 (1.00)

Which ONE of the following is the MAXIMUM expected dose to a person at the site boundary following an inadvertent release from a Waste Gas Decay tank containing 49,000 curies of noble gases?

a. A skin exposure of 3.0 rem.

b. Not more than 10 times the 10-CFR-20 limit for Xenon 133 over a one hour period.

c. A small fraction of the 10-CFR-100 limit for Xenon 133 over a two hour period.

d. A total body exposure of 0.5 rem.

QUESTION: 098 (1.00)

In the RVLIS differential pressure range (Dynamic Head) and with units 1 and 2 at full power, the Unit 1 normal differential pressure (DP) reads lower than Unit 2.

Which ONE of the following statements is the reason for this condition?

a. Some of the Unit 1 core exit thermocouples are reading cold leg temperatures.

b. The OAC has failed to make the required additional correction for this inconsistency.

c. The thermocouple reference junction boxes are NOT being controlled at 160 degrees F, or T/C correction factors as determined by calibration have NOT been manually adjusted.

d. The capillary RTDs measure containment temperature instead of NCS temperature. The correction factors are incorrect for the colder containment temperatures.

QUESTION: 099 (1.00)

Which ONE of the following exceeds the Technical Specification limit for average containment air temperature if the average containment air temperature for the past 14 months has been 102 degrees F while operating in Mode 3 with reduced containment temperature limits?

a. Upper compartment 70 degrees F; Lower compartment 58 degrees F.

b. Upper compartment 72 degrees F; Lower compartment 98 degrees F.

c. Upper compartment 97 degrees F; Lower compartment 88 degrees F.

d. Upper compartment 98 degrees F; Lower compartment 124 degrees F.

QUESTION: 100 (1.00)

Plant conditions:

- Unit 1 is shutdown, Unit 2 is operating at 100% power.
- A Unit 1 containment purge is in progress.

The operator notes an unexpected increase in Unit 1 Vent Activity Monitor (1EMF-36) and investigates. His investigation reveals that the low range Containment Gas monitor (1EMF-39(L)) is malfunctioning and has determined it to be INOPERABLE.

Which ONE of the following actions should be taken?

a. Immediately terminate the containment purge per OP/1/A/6450/15, Containment Purge System.

b. Verify containment purge flow is proper and less than or equal to 28,000 cfm.

c. Continue purge as per HP/0/B/1009/14, Radiation Protection Actions for Inoperable Gaseous Effluent Monitoring and Flowrate Measurement Devices.

d. Verify 1EMF-36(L), Unit Vent Gas (Low Range) and 1EMF-50(L) Waste Gas (Low Range) are operating properly.

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

ANSWER: 001 (1.00) R20-1

c.

REFERENCE:

LP: OP-MC-GEN-EHC, Rev. 11, page 43 of 60, para. B.
OP-MC-STM-IDE, Rev. 8, page 37 of 38, para. E and fig. MC-STM-IDE-1
AP/2/A/5500/03, Rev. 0, page 14 of 20
Objective: LPRO/LPSO 7 of OP-MC-CF-CF

059000A401 [3.1/3.1]
059000G014 [3.3/3.5]

059000G014 059000A401 ..(KA's)

ANSWER: 002 (1.00)

d.

REFERENCE:

LP: OP-MC-PS-IPE, Rev. 10, page 10 of 39, para. B.2.b
Objective: LPRO/LPSO 3

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000027A215 [3.7/4.0]
000027A101 [4.0/3.9]
000027A218 [3.4/3.5]
000027G010 [3.7/3.8]

000027G010 000027A218 000027A101 000027A215 ..(KA's)

ANSWER: 003 (1.00)

c.

REFERENCE:

AP/1/A/5500/14, Case III, Rev. 0, page 6 of 17, para. C.
Objective: LPRO/LPSO 16 of LP: OP-MC-IC-IRE

000003G010 [3.9/3.8]
000003A203 [3.6/3.8]
000003A105 [4.1/4.1]
000003A103 [3.6/3.3]

000003A203 000003G010 000003A103 000003A105 ..(KA's)

ANSWER: 004 (1.00)

a.

REFERENCE:

AP/1/A/5500/14, Case II, Rev. 0, page 4 of 17, para. C.
Objective: LPRO/LPSO 16 of LP: OP-MC-IC-IRE

000001G010 [3.9/4.0]
000001G012 [3.7/3.9]
000001A105 [4.3/4.2]
000001A203 [4.5/4.8]

000001A203 000001A105 000001G012 000001G010 ..(KA's)

ANSWER: 005 (1.00)

a.

REFERENCE:

AP/1/A/5500/10 "NC System Leakage Within the Capacity of Both NV Pumps", Rev. 0, page 3 of 112 or page 30 of 112.
Objective: LPSO 8 of LP: OP-MC-TA-AT
LPSO 15.C. of LP: OP-MC-PS-NC

011000A203 [3.8/3.9]
011000K102 [3.7/3.8]
011000G014 [3.7/3.6]

011000G014 011000K102 011000A203 ..(KA's)

ANSWER: 006 (1.00) RD-4

a.

REFERENCE:

LP: OP-MC-STM-SM, Rev. 10, Fig. MC-STM-SM-3
Objective: LPRO/LPSO 9.B.

039000A302 [3.1/3.5]
039000K405 [3.7/3.7]

039000K405 039000A302 ..(KA's)

ANSWER: 007 (1.00) R0-5

a.

REFERENCE:

LP: OP-MC-IC-IRX, Rev. 6, page 12 of 29, para. E.2.b.
Objective: LPRO/LPSO 3.K

016000A201 [3.0/3.1]
016000K403 [2.8/2.9]
016000A203 [3.0/3.3]
016000K301 [3.4/3.6]

016000K301 016000A203 016000K403 016000A201 ..(KA's)

ANSWER: 008 (1.00) R0-6

a.

REFERENCE:

OMP 4-1, Use of Operating and Periodic Test Procedures, Rev. 0,
page 19 of 22, para. 10.1.1
Objective: NONE FOUND

194001A102 [4.1/3.9]

194001A102 ..(KA's)

ANSWER: 009 (1.00) R0-7

c.

REFERENCE:

LP: OP-MC-PS-ND, Rev. 15, page 21 of 30, para. 2.2.D
OP/1/A/6100/02, Rev. 0, page 2 of 6, para. 2.4
Objective: LPRO/LPSO 8.

005000A101 [3.5/3.6]
005000G010 [3.3/3.5]

005000G010 005000A101 ..(KA's)

ANSWER: 010 (1.00) KO-8

c.

REFERENCE:

LP: OP-MC-WE-EMF, Rev. 12, page 11 of 48, para. B.2. and
AP/1/A/5500/10, NC System Leakage Within the Capacity of Both NV Pumps, Case I, Steam Generator Tube Leakage, Rev. 0,
Objective: LPRO/LPSO 1 and 3

000037G011 [3.9/4.1]
000037A206 [4.3/4.5]
000037A211 [3.8/3.8]

000037A211 000037A206 000037G011 ..(KA's)

ANSWER: 011 (1.00) KO-10

d.

REFERENCE:

LP: OP-MC-PS-NC, Rev. 12, page 27 & 28 of 50, para. 1.5.A.1
Objective: LPRO/LPSO 8

002020K509 [3.6/3.9]

002020K509 ..(KA's)

ANSWER: 012 (1.00) KO-11

b.

REFERENCE:

OMP 2-2, Responsibilities of Operations Personnel, Rev. 0, page 6 of 11, para. 10.9
Objective: NONE FOUND

194001A105 [3.6/3.8]

194001A105 ..(KA's)

ANSWER: 013 (1.00) RO - 12

b.

REFERENCE:

MSD 962, Confined Space Safety Directive, Rev. 0, page 962-35, para. 962.13
Objective: NONE FOUND

194001K114 [3.3/3.6]

194001K114 ..(KA's)

ANSWER: 014 (1.00) RO - 13

a.

REFERENCE:

OMP 8-2
NSD 700, Independent Verification, Rev. 2, page 700-7, para 700.5.3
Objective: NONE FOUND

194001K101 [3.6/3.7]

194001K101 ..(KA's)

ANSWER: 015 (1.00) RO - 14

d.

REFERENCE:

MSD 950.5, Rev. 0, page 950-11
Objective: NONE FOUND

194001K105 [3.1/3.4]

194001K105 ..(KA's)

ANSWER: 016 (1.00) RO - 15

d.

REFERENCE:

NSD 500, Safety Tags, Rev. 1, page 500-12, para. 500.6.10
Objective: LPRO/LPSO K of LP: Site Directives

194001K102 [3.7/4.1]

194001K102 ..(KA's)

ANSWER: 017 (1.00) RO - 16

c.

REFERENCE:

LP: OP-MC-RAD-HPM, Rev. 10, page 38 of 41, para. 2.
Objective: 57

194001K104 [3.3/3.5]

194001K104 ..(KA's)

ANSWER: 018 (1.00) RO - 17

d.

REFERENCE:

LP: OP-MC-WE-WG, Rev. 2, page 20 & 21 of 33, para. C.
Objective: LPRO/LPSO 4 & 7

071000A302 [3.6/3.8]

071000A302 ..(KA's)

ANSWER: 019 (1.00) RO-18

d.

REFERENCE:

OP-MC-STM-IDE, Rev. 8, page 12 of 38, para. E
Objective: LPRO/LPSO 1.D.

041020A302 [3.3/3.4]
041020A408 [3.0/3.1]

041020A408 041020A302 ..(KA's)

ANSWER: 020 (1.00) RO-19

c.

REFERENCE:

LP: OP-MC-CF-ILE, Rev. 8, page 9 of 25, para. B and page 12 of 25, para. E.3.
Objective: LPRO/LPSO 5

035010K401 [3.6/3.8]
035010A301 [4.0/3.9]

035010A301 035010K401 ..(KA's)

ANSWER: 021 (1.00) RO-20

c.

REFERENCE:

LP: OP-MC-MT-MT, Rev. 8, page 39 & 40 of 64, para. 4.
Objective: LPRO/LPSO 21
LP OP-MC-GEN-EHC, Rev. 11, page 12 of 60, para. D.; Drawings EHC 5 & 6.
Objective: LPRO/LPSO 1.N

045000K411 [3.6/3.9]
045010K423 [3.4/3.6]
045050K101 [3.4/3.6]
045050K301 [2.9/3.1]

045000K411 045050K301 045050K101 045010K423 ..(KA's)

ANSWER: 022 (1.00) 120-21

c.

REFERENCE:

OP-MC-PS-NCP, Rev. 12, page 8 of 37, para. 1.1.B.
Objective: LPRO/LPSO 1

062000A201 [3.4/3.9]
062000G005 [3.1/3.8]

062000G005 062000A201 ..(KA's)

ANSWER: 023 (1.00) 120-23

c.

REFERENCE:

LP: OP-MC-DG-EQB, Rev. 6, page 9, 10 & 11 of 27, para. A.
Objective: LPRO/LPSO 3

064000A307 [3.6/3.7]
064000K410 [3.5/4.0]
064050A303 [3.3/3.5]

064050A303 064000K410 064000A307 ..(KA's)

ANSWER: 024 (1.00) 120-24

d.

REFERENCE:

OMP 4-1, Use of Operating and Periodic Test Procedures, Rev. 0,
page 2 of 22, para. 4.2.3
Objective: NONE FOUND

194001A101 [3.3/3.4]

194001A101 ..(KA's)

ANSWER: 025 (1.00)

d.

REFERENCE:

LP: OP-MC-PC-IPE, Rev. 10, page 34 of 39, para. 2.1
Technical Specifications Bases 3/4.4.2, page B 3/4 4-2
Objective: LPSO 8

002000K612 [3.0/3.5]
002000G007 [3.3/3.6]

002000G007 002000K612 ..(KA's)

ANSWER: 026 (1.00)

c.

REFERENCE:

Technical Specifications: page B 3/4 1-1, section 3/4.1.1
Objective: LPRO/LPSO 15 of LP: OP-MC-IC-IRE

000040K105 [4.1/4.4]
000040K106 [3.7/3.8]
000040K304 [4.5/4.7]
000040G004 [2.6/3.8]

000040K105 000040G004 000040K304 000040K106 ..(KA's)

ANSWER: 027 (1.00) RO - 30

a.

REFERENCE:

LP: OP-MC-PS-NCP, Rev. 12, page 18 of 37 para. D.4
Objective: LPRO 9

003000K201 [3.1/3.1]

003000K201 ..(KA's)

ANSWER: 028 (1.00)

a.

REFERENCE:

LP: OF-MC-IC-ENB, Rev. 11, page 11 of 52, paras. F. thru H.
Objective: 4

015000K601 [2.9/3.2]

015000K601 ..(KA's)

ANSWER: 029 (1.00)

b.

REFERENCE:

RP/0/A/5700/03, Site Area Emergency, Rev. 0, page 1 of 8 and 3 of 8, para. 2.1.1 & 3.4 respectively

194001A116 [3.1/4.4]

194001A116 ..(KA's)

ANSWER: 030 (1.00)

d.

REFERENCE:

RP/0/A/5700/08, Release of Toxic or Flammable Gases, Rev. 0, page 1 of 2, para. 2.2.1.
Objective: NONE FOUND

194001A116 [3.1/4.4]

194001A116 ..(KA's)

ANSWER: 031 (1.00)

d.

REFERENCE:

OP/1/A/6100/22, Unit 1 Data Book, Section 9, Throttle Valves/Travel Stop Required Positions and Miscellaneous Information.
Objective: NONE FOUND

194001A108 [2.6/3.1]
194001A102 [4.1/3.9]
194001A103 [2.5/3.4]
194001A110 [2.9/3.9]

194001A110 194001A103 194001A102 194001A108 ..(KA's)

ANSWER: 032 (1.00)

b.

REFERENCE:

LP: OP-MC-CNT-NF, Rev. 9, page 16 of 40, para. c.3).
Objective: 1.B.4)

025000K601 [3.4/3.6]

025000K601 ..(KA's)

ANSWER: 033 (1.00) R0 - 38

b.

REFERENCE:

LP: OP-MC-WF-EMF, Rev. 12, page 22 of 48, para. N.
Objective: LPRO/LPSO 2

073000K101 [3.6/3.9]

073000K101 ..(KA's)

ANSWER: 034 (1.00) RO-39

c.

REFERENCE:

LP: E-0, Reactor Trip of Safety Injection, Rev. 0, pages 25 and 27 of 75, Section 3.4.2 thru 3.4.4
Objective: 2 and 8

000007K301 [4.0/4.6]
000007K103 [3.7/4.0]
000007A206 [4.3/4.5]
000007G012 [3.8/3.9]

000007G012 000007A206 000007K103 000007K301 ..(KA's)

ANSWER: 035 (1.00) RO-40

c.

REFERENCE:

LP: OP-MC-PS-NV, Rev. 18, page 13 of 58, para. 1.3.A.4.c
Objective: LPRO/LPSO 6.

004010K403 [3.1/3.6]

004010K403 ..(KA's)

ANSWER: 036 (1.00) RO-41

b.

REFERENCE:

AP/1/A/5500/38, "Emergency Boration", page 2 of 5, Symptoms
Objective: LPRO/LPSO 10 of LP: OP-MC-PS-NV

000024A206 [3.6/3.7]
000024K301 [4.1/4.4]
000024K302 [4.2/4.4]
000024G009 [3.6/3.7]

000024G009 000024K302 000024K301 000024A206 ..(KA's)

ANSWER: 037 (1.00) RO - 42

d.

REFERENCE:

L.P: OP-MC-IC-IRE, Rev. 08, page 31 of 45, para. E.1
Objective: LPRO/LPSO 5

001010K501 [2.7/3.4]

001010K501 ..(KA's)

ANSWER: 038 (1.00) RO - 43

c.

REFERENCE:

LP: Loss of All AC Power, Rev. 0, page 5 of 144
Objective: 1

000055A203 [3.9/4.7]
000055K302 [4.3/4.6]
000055G012 [3.9/4.0]

000055G012 000055K302 000055A203 ..(KA's)

ANSWER: 039 (1.00) RO - 40

d.

REFERENCE:

McGuire EQB: Item PSNCP002
LP: OP-MC-PS-NCP, Rev. 12, page 31/32 of 37 para. L.
Objective: LPRO/LPSO 13

003000A107 [3.4/3.4]

003000A107 ..(KA's)

ANSWER: 040 (1.00) 20-45

a.

REFERENCE:

LP: OP-MC-IC-IPE, Rev. 8, page 28 of 37, para D.
Objective: LPRO/LPSO 1.E.

012000A202 [3.6/3.9]
012000G008 [3.9/3.8]
012000K104 [3.2/3.3]

012000K104 012000G008 012000A202 ..(KA's)

ANSWER: 041 (1.00) 20-46

c.

REFERENCE:

Technical Specifications: Definitions 1.7, page 1-2, Section 3/4.6.1.1
Objective: LPRO/LPSO 9.B of LP: OP-MC-CNT-VQ

000069A201 [3.7/4.3]
000069G008 [3.4/4.1]

000069G008 000069A201 ..(KA's)

ANSWER: 042 (1.00) 20-47

~~d. 17 or e~~ Deleted

REFERENCE:

Technical Specifications, section 4.1.3.1.2, 3.1.3.1.c, pages 3/4-1-14 through 15.
Objective: LPRO/LPSO 14.B. of LP: OP-MC-IC-IPE

000005G008 [3.1/3.8]
000005A203 [3.5/4.4]
000005K306 [3.9/4.2]

000005K306 000005A203 000005G008 ..(KA's)

ANSWER: 043 (1.00) RO-48

a.

REFERENCE:

LP: OP-MC-ECC-ISE, Rev. 12, page 20 of 32, para. H.a.b
OP-MC-IC-IPE, Rev. 8, page 23 of 37, para. B.7.a
Objective: LPRO/LPSO 1.N.4) of OP-MC-ECC-ISE
LPRO/LPSO 1.G. of OP-MC-IC-IPE

013000K413 [3.7/3.9]

013000K413 ..(KA's)

ANSWER: 044 (1.00) RO-49

d.

REFERENCE:

OMP 5-1 Reactor Operator Logbook, Rev. 0, page 2 of 4, para. 7.1.
Objective: NONE FOUND

194001A106 [3.4/3.4]

194001A106 ..(KA's)

ANSWER: 045 (1.00) RO-50

b.

REFERENCE:

LP: OP-MC-WE-EMF, Rev. 12, page 21 of 48, para. L.
OP-MC-PSS-KC, Rev. 9, page 23 of 33, para. 12; page 17 of 33, para. 15; page 13 of 33, para. 7; page 28 of 33, para. 7, 8, & 9
Objective: LPRO/LPSO 4 & 6 of OP-MC-PSS-KC

008000A301 [3.2/3.0]
008000A202 [3.2/3.5]

008000A202 008000A301 ..(KA's)

ANSWER: 046 (1.00) KO-51

d.

REFERENCE:

LP: OP-MC-PS-IPE, Rev. 10, page 23 of 59, para. J.5
Objective: LPRO/LPSO 3

010000K403 [3.8/4.1]

010000K403 ..(KA's)

ANSWER: 047 (1.00)

d.

REFERENCE:

OMP 2-2, Responsibilities of Operations Personnel, Rev. 0, page 10 of 11, para. 13.1
Objective: NONE FOUND

194001A109 [2.7/3.9]

194001A109 ..(KA's)

ANSWER: 048 (1.00) KO-52

a.

REFERENCE:

LP: OP-MC-IC-ENB, Rev. 11, fig. MC-IC-ENB-2
Objective: 15 & 16

015000A303 [3.9/3.9]

015000A303 ..(KA's)

ANSWER: 049 (1.00)

a.

REFERENCE:

Tech. Spec. Interpretation, 3/4.3.2, Table 3.3-3, Action 14
Objective: LPSO 3 of LP: OP-MC-ECC-ISE

013000G011 [3.5/4.2]

013000G011 ..(KA's)

ANSWER: 050 (1.00) RO-53

a.

REFERENCE:

LP: OP-MC-PS-NV, Rev. 18, page 35 of 58, para. 3.
Objective: LPRO/LPSO 3 and 6

004010K404 [3.1/3.4]
004000K407 [3.0/3.3]
004000K115 [3.8/4.0]
004000K123 [3.4/3.7]

004000K123 004000K115 004000K407 004010K404 ..(KA's)

ANSWER: 051 (1.00) RO-55

d. or d

REFERENCE:

MSD 965.5, Fire Protection and Surveillance, Rev. 0, page 965-11,
para. 965.5
Objective: NONE FOUND

194001K116 [3.5/4.2]

194001K116 ..(KA's)

ANSWER: 052 (1.00) RO-57

c.

REFERENCE:

LP: Loss of All AC Power, Rev. 0, page 7 / of 144
Objective: 2

000026K303 [4.0/4.2]

000026K303 ..(KA's)

ANSWER: 053 (1.00) RO-58

a.

REFERENCE:

LP: OP-MC-CP-AD, Rev. 11, page 15 of 38 para. 10.
Objective: LPRO/LPSO 6.A.

000068K207 [3.3/3.4]
000068A131 [3.9/4.0]

000068A131 000068K207 ..(KA's)

ANSWER: 054 (1.00) RO-59

REFERENCE:

LP: OP-MC-THF-FF, Rev. 3, page 33 of 37, para. D. & fig FF-15
Objective: LPRO/LPSO 6e.

NOTE: Examinees to be provided typical CCP(NV), SI(NI) and RHR(ND) pump curves and steam tables for reference.

Conversion: (From steam tables conversion chart [Combustion Engineering Steam Tables, page 31]).

TO OBTAIN ft of H-2-O at 39.2 degrees F MULTIPLY Lb/sq-in by 2.3066

1500 psig + 15 = 1515 psia
1515 psia x 2.3066 (from steam tables) = 3494.499 Total Head in ft.

From pump curves at a 3500 ft head:

CCP(NV) = about 365 gpm; 365 gpm x 2 CCP's = 730 gpm
SI(NI) pump = 0 gpm; 0 gpm x 2 SI pumps = 0 gpm
RHR(ND) pump = 0 gpm; 0 gpm x 2 SI pumps = 0 gpm
Total = 730 gpm or about 750 gpm

006030A102 [4.2/4.3]

006030A102 ..(KA's)

ANSWER: 055 (1.00) RO-60

b. or a

REFERENCE:

LP: OP-MC-SS-RFY, Rev. 5, page 20 of 45, para. B.
Objective: LPRO/LPSO 3

086000K402 [3.0/3.4]
086000K401 [3.1/3.7]
086000A202 [3.0/3.3]

086000A202 086000K401 086000K402 ..(KA's)

ANSWER: 056 (1.00) RO-61

a.

REFERENCE:

Tech. Specs. 3.7.1.2, page 3/4 7-4
Objective: LPRO/LPSO 9.B. of OP-MC-CF-CA

061000G005 [3.3/4.0]
061000G011 [3.4/4.1]

061000G011 061000G005 ..(KA's)

ANSWER: 057 (1.00)

b.

REFERENCE:

AP/1/A/5500/21, Loss of KC or KC System Leakage, Rev. 0, page 2 of 9, para. D.
Objective: LPRO/LPSO 10 & 14 of LP: OP-MC-PS-NCP

000026K303 [4.0/4.2]
000026A105 [3.1/3.1]
000026G007 [3.1/3.5]

000026G007 000026A105 000026K303 ..(KA's)

ANSWER: 058 (1.00) RO-62

c.

REFERENCE:

AP/1/A/5500/40, Rev. 0, page 2 of 5, Step. 2.
Objective: 15.C.

000036A104 [3.1/3.7]
000036A202 [3.4/4.1]
000036A201 [3.2/3.9]
000036G012 [3.2/3.4]

000036G012 000036A201 000036A202 000036A104 ..(KA's)

ANSWER: 059 (1.00)

b.

REFERENCE:

OP/1/A/6400/02A, Fire Protection System, Rev. 81, page 2 of 3, para. 2.8
Objective: LPRO/LPSO 10 of LP: OP-MC-SS-RFY

194001K116 [3.5/4.6]

194001K116 ..(KA's)

ANSWER: 060 (1.00)

b.

REFERENCE:

LP: E-1, Loss of Reactor of Secondary Coolant, Rev. 0, page 45 of 252, para. 3.4.13
Objective: 5

000011K312 [4.4/4.6]
000011A111 [4.2/4.2]
000011A113 [4.1/4.2]
000011A201 [4.2/4.7]

000011A111 000011K312 000011A201 000011A113 ..(KA's)

ANSWER: 061 (1.00) 20-63

d.

REFERENCE:

LP: E-2, Faulted Steam Generator Isolation, Rev. 0, page 23 of 87, para. 3.4.6
EP/1/A/5000/E-1, Loss of Reactor or Secondary Coolant, Rev. 0, page 3 of 19, Step 3.
Objective: 1 and 6 of LP: E-2, Faulted Steam Generator Isolation

000054A204 [4.2/4.3]
000054A206 [4.0/4.3]
000054G012 [3.2/3.2]

000054G012 000054A206 000054A204 ..(KA's)

ANSWER: 062 (1.00) RO - 64

c.

REFERENCE:

OP/1/A/6150/08, Rod Control, Rev. 24, page 2 of 2, para. 2.7
L.P.: OP-MC-IC-IRE, Rev. 08, page 36 of 45, para Q.
Objective: LPRO/LPSO 12

000003G007 [3.4/3.6]

000003G007 ..(KA's)

ANSWER: 063 (1.00) RO - 65

c.

REFERENCE:

LP: OP-MC-WE-EMF, Rev. 12, page 14 of 48, para. 4.a.
Objective: LPRO/LPSO 3

072000K403 [3.2/3.6]
072000A301 [2.9/3.1]

072000A301 072000K403 ..(KA's)

ANSWER: 064 (1.00) RO - 67

c.

REFERENCE:

LP: OP-MC-EL-EPL, Rev. 5, page 11 & 12 of 24, para. D & E; Fig. EL-EPL-1
Objective: LPRO/LPSO 5.

000058A101 [3.4/3.5]
000058A103 [3.1/3.3]
000058A203 [3.5/3.9]

000058A203 000058A103 000058A101 ..(KA's)

ANSWER: 065 (1.00) RO-68

c.

REFERENCE:

AP/1/A/5500/18, High Activity in Reactor Coolant, Rev. 0, page 2 of 3.
Objective: LPRO 34, LPSO 32 of LP: OP-MC-CH-PC

000076A202 [2.8/3.4]
000076G011 [3.4/3.6]
000076G006 [3.0/3.3]
000076A203 [2.5/3.0]

000076A203 000076G006 000076G011 000076A202 ..(KA's)

ANSWER: 066 (1.00) RO-69

d.

REFERENCE:

LP: OP-MC-CTH-CP, Rev. 7, page 91 & 92 of 103, para. 5.4.A
Objective: LPRO/LPSO 32

001000K504 [4.3/4.7]

001000K504 ..(KA's)

ANSWER: 067 (1.00) RO-70

b.

REFERENCE:

LP: OP-MC-PS-ILE, Rev.7, page 8 of 20 para. B. and Fig. MC-PS-ILE-3
Objective: LPRO/LPSO 1.O

011000K301 [3.2/3.4]

011000K301 ..(KA's)

ANSWER: 068 (1.00) RO - 71

d.

REFERENCE:

P&ID MC-1554-3.1, L-10..I-11
Objective: LPRO/LPSO 3.E & 4 of LP: OP-MC-PS-NV, Rev. 18

NOTE: PW may be added (blended) via valve NV-262.

004010A201 [3.0/3.7]

004010A201 ..(KA's)

ANSWER: 069 (1.00) RO - 72

b.

REFERENCE:

LP: FR-C.1, Rev. 0, page 37 of 89,
Objective: 11 & 12

000015A211 [3.4/3.8]

000015A211 ..(KA's)

ANSWER: 070 (1.00) RO - 73

b.

REFERENCE:

T.S. 3/4.5.2 and 3/4.0, 3.0.3
Objective: LPRO/LPSO 9.C. of LP OP-MC-PS-ND
NOTE: T.S. 3/4.5.2; 3/4.5.3 and 3.0.3 are to be provided to the examinee for reference.

006000G011 [3.6/4.2]

006000G011 ..(KA's)

ANSWER: 071 (1.00)

~~c.~~ Deleted

REFERENCE:

Technical Specifications: page B 3/4 2-5, para. 3/4.2.5
Objective: LPRO/LPSO 33 of LP: OP-MC-CTH-CP

Candidates to be provided T.S. 3/4.2.5.
000015G004 [2.4/3.5]
000015A105 [3.8/3.8]
000015K304 [3.1/3.2]
000015K103 [3.0/4.0]

000015K103 000015K304 000015A105 000015G004 ..(KA's)

ANSWER: 072 (1.00)

c.

REFERENCE:

LP: ES-1.1, Safety Injection Termination, Rev. 0, page 67 of 252, para. 4.4.2
ES-1.1, Safety Injection Termination, Rev. 0, page 2 of 42, step 2.e.
Objective: 4 & 5

000056A105 [3.8/3.9]
000056A247 [3.8/3.9]
000056A244 [4.3/4.5]
000056A202 [3.5/3.6]

000056A202 000056A244 000056A247 000056A105 ..(KA's)

ANSWER: 073 (1.00) R0-74

a. or b

REFERENCE:

LP: Faulted Steam Generator Isolation, Rev. 0, page 43 of 87
Objective: 2.

000040A110 [4.1/4.1]
000040K304 [4.5/4.7]
000040K107 [3.4/4.2]
000040G007 [3.3/3.6]

000040G007 000040K107 000040K304 000040A110 ..(KA's)

ANSWER: 074 (1.00) R0-75

d.

REFERENCE:

AP/1/A/5500/16, Malfunction of Nuclear Instrumentation, Case I,
Rev. 0, page 4 of 16
Objective: LPRO/LPSO 15B of LP: OP-MC-IC-EMB

000032A202 [3.6/3.9]
000032A207 [2.8/3.4]
000032G011 [3.1/3.4]

000032A202 000032G011 000032A207 ..(KA's)

ANSWER: 075 (1.00)

b.

REFERENCE:

LP: OP-MC-THF-STM, Rev. 1, page 13 of 23, para. c. and page 16
of 23, para. C.
Objective: LPSO 6

010000K501 [3.5/4.0]

010000K501 ..(KA's)

ANSWER: 076 (1.00) RO-76

a.

REFERENCE:

LP: OP-MC-TA-II, Rev. 5, page 12 of 39, para. 1.3
Objective: LPRO/LPSO 4

000008A212 [3.4/3.7]
000008A229 [3.9/4.2]
000008A107 [4.0/4.2]
000008A106 [3.6/3.6]

000008A106 000008A107 000008A229 000008A212 ..(KA's)

ANSWER: 077 (1.00) SRO-77

b.

REFERENCE:

NOTE: The item author could not locate a specific reference to the basis for NOT running more than 1 ND pump under these conditions although the requirement/precaution exists in OP1/A/6200/04, Section 2.4. Item & answer is based on reference material from similar plants and NUREG-1122 requirements. However, the objective listed does specifically require the trainee to know the information being tested.

Objective: LPRO/LPSO 8 of LP: OP-MC-PS-ND

000025G007 [3.4/3.6]
000025A207 [3.4/3.7]
005000K409 [2.2/2.5]
000025K101 [3.9/4.3]

000025K101 005000K409 000025A207 000025G007 ..(KA's)

ANSWER: 078 (1.00) RO-78

~~d.~~ Deleted

REFERENCE:

OP/1/A/6100/10G, 1AD6-E7, PZR LO LEVEL DEVIATION
Objective: LPPO/LPSO 3 and 5 of LP: OP-MC-PS-NV

000028A212 [3.1/3.5]
000028A206 [2.7/2.8]
000028A203 [2.8/3.3]
000028A107 [3.3/3.3]

000028A107 000028A203 000028A206 000028A212 ..(KA's)

ANSWER: 079 (1.00) RO-79

a.

REFERENCE:

LP: ES-0.0, Loss of All AC Power, Rev. 0, page 21 of 144, para. 3.4.4
Objective: 2

000009A117 [3.4/3.4]
000009K310 [3.4/3.6]
000009A202 [3.5/3.8]
000009A204 [3.8/4.0]

000009A204 000009A202 000009K310 000009A117 ..(KA's)

ANSWER: 080 (1.00)

c.

REFERENCE:

Technical Specifications 3.3.1, Table 3.3-1, Item 4, pages 3/4 3-2, 3-6 & 3-7
Objective: LPRO/LPSO 14 of LP: OP-MC-IC-ENB

000033G008 [2.8/3.4]
000033A208 [3.3/3.4]
000033A102 [3.0/3.1]
000033A202 [3.3/3.6]

000033A202 000033A102 000033A208 000033G008 ..(KA's)

ANSWER: 081 (1.00) RO - SO

b.

REFERENCE:

LP: OP-MC-PS-NV, Rev. 18, page 56 & 57 of 58, para. B.
EP/1/A/5000/FR-S.1, "Response to Nuclear Generation/ATWS", Rev. 0, RNO step 4.b.3).a).
Objective: 1 of LP: FR-S, Response to Nuclear Generation/ATWS

000057A106 [3.5/3.5]
000057A217 [3.1/3.4]
000057A218 [3.1/3.1]

000057A106 000057A218 000057A217 ..(KA's)

ANSWER: 082 (1.00) 20 - 22

b.

REFERENCE:

LP: Reactor Trip or Safety Injection, Rev. 0, page 7 of 175,
para. 2.1
E-0, Reactor Trip or Safety Injection,
E-1, Loss of Reactor or Secondary Coolant,
E-2, Faulted Steam Generator Isolation,
Objective: 3

000040G012 [3.8/4.1]
000040K304 [4.5/4.7]
000040A106 [4.0/4.1]
000040A203 [4.6/4.7]

000040A203 000040A106 000040K304 000040G012 ..(KA's)

ANSWER: 083 (1.00)

c.

REFERENCE:

LP: Introduction to Emergency Procedures, Rev. 0, page 41 of 57,
para. 4.10
Objective: 3, 11 & 12

000029G012 [4.1/4.2]
000029G011 [4.4/4.6]

000029G011 000029G012 ..(KA's)

ANSWER: 084 (1.00) RO-83

c.

REFERENCE:

AP/1/A/5500/12, Loss of Letdown, Charging or Seal Injection, Case II, Rev. 0, page 9 of 26, step C.1.
Objective: LPRO/LPSO 10.C.

000022G010 [3.5/3.4]
000022A102 [3.0/2.9]
000022A101 [3.4/3.3]
000022G009 [3.2/3.2]

000022G009 000022A101 000022A102 000022G010 ..(KA's)

ANSWER: 085 (1.00) RO-84

b.

REFERENCE:

LP: OP-MC-IC-ENA, Rev. 4, page 9 of 15, para. 3
Objective: LPRO/LPSO 5

017020A401 [3.8/4.1]

017020A401 ..(KA's)

ANSWER: 086 (1.00) RO-85

c.

REFERENCE:

PT/1/A/4600/03C, Weekly Surveillance Items, Encl. 13.1, page 2 of 4, dated 8/26/93.
LP: OP-MC-FH-KF, Rev. 7, page 7 & 8 of 19, para. A.
Objective: 6 & 7,

033000K401 [2.9/3.1]
033000A101 [2.7/3.3]
033000A203 [3.1/3.5]

033000A203 033000A101 033000K401 ..(KA's)

ANSWER: 087 (1.00) R0-86

c.

REFERENCE:

LP: OP-MC-WE-WL, page 20
Objective LPRO/LPSO 8

068000A404 [3.8/3.7]

068000A404 ..(KA's)

ANSWER: 088 (1.00) R0-87

d.

REFERENCE:

Site Directive 963, Heat Stress Program, Rev. 0, page 963-11, para. 963.5.2.4.a.
Objective: NONE FOUND

194001K108 [3.5/3.4]

194001K108 ..(KA's)

ANSWER: 089 (1.00) R0-90

c.

REFERENCE:

AP/1/A/5500/24, "Loss of Plant Control Due to Fire", Rev. 2, page 6 of 28, Step 18.
Objective: LPRO/LPSO 3.B. of LP: OP-MC-CP-AD

000067A216 [3.3/4.0]
000067G012 [3.4/3.4]
000067K304 [3.3/4.1]

000067K304 000067G012 000067A216 ..(KA's)

ANSWER: 090 (1.00) RO - 91

c. or d

REFERENCE:

AP/1/A/5500/13, Boron Dilution, Rev. 0, page 2 of 3, para. D.2.
OP/1/A/6100/10C, 1AD2-D3, S/R Hi Flux at Shutdown alarm, Probable Causes.
Objective: LPRO/LPSO 10.B of LP: OP-MC-PS-NV

000024G011 [3.8/3.9]
000024A206 [3.6/3.7]

000024A206 000024G011 ..(KA's)

ANSWER: 091 (1.00) RO - 93

b.

REFERENCE:

LP: OP-MC-STM-IDE, Rev. 8, page 37 of 38, para. E
Objective: LPRO/LPSO 1.F.

000051K301 [2.8/3.1]
000051A202 [3.9/4.1]

000051A202 000051K301 ..(KA's)

ANSWER: 092 (1.00)

c.

REFERENCE:

Technical Specifications 3.4.6.2
Objective: LPRO/LPSO 12 of LP: OP-MC-PC-NC

000009G008 [3.2/3.9]
000009A233 [3.3/3.8]
000009A202 [3.5/3.8]
000009A115 [3.9/4.1]

000009A115 000009A202 000009A233 000009G008 ..(KA's)

ANSWER: 093 (1.00)

d.

REFERENCE:

LP: OPMC-WE-RLR, Rev. 3, page 5 of 16, para. 2.1
Objective: LPRO/LPSO 1

000059G007 [3.0/3.5]
000059G003 [2.9/3.8]
000059G004 [2.3/3.8]

000059G004 000059G003 000059G007 ..(KA's)

ANSWER: 094 (1.00) 90-95

c.

REFERENCE:

LP: OP-MC-IC-ENB, Rev. 11, page 20 of 52, para. D.1
OP-MC-RT-NMF, Rev. 2, page 27 of 44, para. C.2
Objective: LPRO/LPSO 5.A of LP: OP-MC-RT-NMF and LPRO/LPSO 6.A of LP: OP-MC-IC-ENB

000033A202 [3.3/3.6]
000033A204 [3.2/3.6]

000033A204 000033A202 ..(KA's)

ANSWER: 095 (1.00)

b.

REFERENCE:

Mcguire Nuclear Station Operations Special Order #94-01, Rev. 0, 02/23/94, page 1 of 1
Objective: NONE FOUND

194001A111 [2.8/4.1]

194001A111 ..(KA's)

ANSWER: 096 (1.00) 10 - 96

a. or c

REFERENCE:

EP/1/A/5000/E-1, Loss of Reactor or Secondary Coolant, Rev. 0,
page 19 of 19, para. 4
Objective: 5 of LP: E-1, Loss of Reactor or Secondary Coolant

000038K306 [4.2/4.5]
000038A202 [4.5/4.8]
000038A204 [3.9/4.2]
000038G010 [4.1/4.2]

000038G010 000038A204 000038A202 000038K306 ..(KA's)

ANSWER: 097 (1.00)

d.

REFERENCE:

Technical Specification 3.11.2.6 Bases, page 3/4 11-6
Objective: LPRO/LPSO 8 of LP: OP-MC-WE-WG

000060G004 [2.4/3.9]
000060K102 [2.5/3.1]
000060K104 [2.5/3.7]
000060K301 [2.9/4.2]

000060G004 000060K301 000060K104 000060K102 ..(KA's)

ANSWER: 098 (1.00)

a.

REFERENCE:

LP: OP-MC-IC-ICM, Rev. 4, pages 17 and 18 of 48, para. C.1.
Objective: LPRO/LPSO 6.E.

000074A116 [4.4/4.6]
000074A101 [4.2/4.4]

000074A101 000074A116 ..(KA's)

ANSWER: 099 (1.00) 120 - 9'C

a. or d

REFERENCE:

Tech. Spec. 3.6.1.5, page 3/4 6-13
Objective: LPRO/LPSO 5.B of LP: OP-MC-CNT-VUL

022000G011 [2.9/3.6]

022000G011 ..(KA's)

ANSWER: 100 (1.00) 120 - 100

a.

REFERENCE:
*NOTE: A complete listing(index) of ALL procedures as required by NUREG-1021, Operator Licensing Examiner Standards, Attachment 2, para. 2, page 10 of 15, was NOT provided to the contract examiner.

LP: OP-MC-WE-RGR, Rev. 1, page 13 of 15, para. D.
Objective: LPRO/LPSO 4 of LP: OP-MC-WE-RGR
LPRO/LPSO 3 and 5 of LP: OP-MC-WE-EMF

000060G010 [3.8/3.8]
000060A206 [3.6/3.8]
000060A205 [3.7/4.2]

000060A205 000060A206 000060G010 ..(KA's)

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

MULTIPLE CHOICE

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

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

SRO Exam PWR Reactor

Organized by Question Number

QUESTION	VALUE	REFERENCE
001	1.00	9000189
002	1.00	9000191
003	1.00	9000192
004	1.00	9000193
005	1.00	9000195
006	1.00	9000196
007	1.00	9000197
008	1.00	9000198
009	1.00	9000199
010	1.00	9000200
011	1.00	9000202
012	1.00	9000203
013	1.00	9000204
014	1.00	9000205
015	1.00	9000206
016	1.00	9000207
017	1.00	9000208
018	1.00	9000209
019	1.00	9000210
020	1.00	9000211
021	1.00	34556
022	1.00	9000213
023	1.00	9000215
024	1.00	9000216
025	1.00	9000218
026	1.00	9000219
027	1.00	9000221
028	1.00	9000222
029	1.00	9000223
030	1.00	9000224
031	1.00	9000225
032	1.00	9000228
033	1.00	9000237
034	1.00	9000238
035	1.00	9000239
036	1.00	9000240
037	1.00	9000241
038	1.00	9000242
039	1.00	9000243
041	1.00	9000245
042	1.00	9000246
043	1.00	9000247
044	1.00	9000248
045	1.00	9000249
046	1.00	9000250
047	1.00	9000251
048	1.00	9000252
049	1.00	9000253
050	1.00	9000254

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Organized by Question Number

QUESTION	VALUE	REFERENCE
051	1.00	9000256
052	1.00	9000258
053	1.00	34600
054	1.00	9000260
055	1.00	9000261
056	1.00	9000262
057	1.00	9000263
058	1.00	34621
059	1.00	9000265
060	1.00	9000266
061	1.00	9000267
062	1.00	9000268
063	1.00	9000269
064	1.00	9000271
065	1.00	9000272
066	1.00	9000273
067	1.00	9000274
068	1.00	9000275
069	1.00	9000276
070	1.00	9000277
071	1.00	9000278
072	1.00	9000279
073	1.00	9000280
074	1.00	9000281
075	1.00	9000282
076	1.00	9000283
077	1.00	9000284
078	1.00	9000285
079	1.00	9000286
080	1.00	9000287
081	1.00	9000288
082	1.00	9000290
083	1.00	9000291
084	1.00	9000292
085	1.00	9000293
086	1.00	9000294
087	1.00	34582
088	1.00	34625
089	1.00	9000299
090	1.00	9000300
091	1.00	9000302
092	1.00	9000304
093	1.00	9000305
094	1.00	9000306
095	1.00	9000307
096	1.00	9000308
097	1.00	9000309
098	1.00	23026
099	1.00	9000311
100	1.00	9000313
	100.00	
	100.00	

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Organized by KA Group

PLANT WIDE GENERICS

QUESTION	VALUE	KA
024	1.00	194001A101
008	1.00	194001A102
012	1.00	194001A105
044	1.00	194001A106
047	1.00	194001A109
031	1.00	194001A110
095	1.00	194001A111
029	1.00	194001A116
030	1.00	194001A116
014	1.00	194001K101
016	1.00	194001K102
017	1.00	194001K104
015	1.00	194001K105
088	1.00	194001K108
013	1.00	194001K114
059	1.00	194001K116
051	1.00	194001K116
PWG Total	17.00	

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA
066	1.00	001000K504
037	1.00	001010K501
039	1.00	003000A107
027	1.00	003000K201
050	1.00	004000K123
068	1.00	004010A201
035	1.00	004010K403
049	1.00	013000G011
043	1.00	013000K413
048	1.00	015000A303
028	1.00	015000K601
085	1.00	017020A401
099	1.00	022000G011
032	1.00	025000K601
001	1.00	059000G014
056	1.00	061000G011
087	1.00	068000A404
018	1.00	071000A302
063	1.00	072000A301
PS-I Total	19.00	

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Group II

QUESTION	VALUE	KA
025	1.00	002000G007
011	1.00	002020K509
070	1.00	006000G011
054	1.00	006030A102
046	1.00	010000K403
075	1.00	010000K501
005	1.00	011000G014
067	1.00	011000K301
040	1.00	012000K104
007	1.00	016000K301
086	1.00	033000A203
020	1.00	035010A301
006	1.00	039000K405
022	1.00	062000G005
023	1.00	064050A303
033	1.00	073000K101
055	1.00	086000A202
PS-II Total	17.00	

Group III

QUESTION	VALUE	KA
009	1.00	005000G010
045	1.00	008000A202
019	1.00	041020A408
021	1.00	045000K411
PS-III Total	4.00	
PS Total	40.00	

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EMERGENCY PLANT EVOLUTIONS

Group I

QUESTION	VALUE	KA
004	1.00	000001A203
003	1.00	000003A203
062	1.00	000003G007
042	1.00	000005K306
060	1.00	000011A111
069	1.00	000015A211
071	1.00	000015K103
090	1.00	000024A206
036	1.00	000024G009
057	1.00	000026G007
052	1.00	000026K303
083	1.00	000029G011
082	1.00	000040A203
073	1.00	000040G007
026	1.00	000040K105
091	1.00	000051A202
038	1.00	000055G012
081	1.00	000057A106
093	1.00	000059G004
089	1.00	000067K304
053	1.00	000068A131
041	1.00	000069G008
098	1.00	000074A101
065	1.00	000076A203
EPE-I Total	24.00	

Group II

QUESTION	VALUE	KA
034	1.00	000007G012
076	1.00	000008A106
092	1.00	000009A115
079	1.00	000009A204
084	1.00	000022G009
077	1.00	000025K101
002	1.00	000027G010
074	1.00	000032A202
080	1.00	000033A202
094	1.00	000033A204
010	1.00	000037A211
096	1.00	000038G010
061	1.00	000054G012
064	1.00	000058A203
100	1.00	000060A205
097	1.00	000060G004
EPE-II Total	16.00	

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Organized by KA Group

Group III

QUESTION	VALUE	KA
078	1.00	000028A107
058	1.00	000036G012
072	1.00	000056A202

EPE-III Total	3.00
EPE Total	43.00
Test Total	100.00