APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Operator Licensing Exam Report: 50-313/OL 90-01 Operating License: DPR-51

Docket: 50-313

Licensee: Arkansas Power & Light Company
P.O. Box 551
Little Rock, Arkansas 72203

Facility Name: Arkansas Nuclear One, Unit 1 (ANO 1)

Examination at: Arkansas Nuclear One, Unit 1

Chief Examiner: _____ 1/16/90
S. L. McCrory, Examiner Date
Operator Licensing Section
Division of Reactor Safety

Approved by: _____ 1/16/90
J. L. Pellet, Section Chief Date
Operator Licensing Section
Division of Reactor Safety

Summary

NRC Administered Examinations Conducted During the Week of November 13, 1989 (NRC Report 50-313/OL 90-01)

NRC administered examinations to four reactor operator (RO) applicants. Two of the applicants passed all portions of the examination and have been issued the appropriate licenses. The remaining applicants failed the written examination only. Performance on both the four written and operating examinations was marginal. The average score on the written examinations was 79 percent with the highest score being 84 percent. On the simulator portion of the operating examination, the applicants displayed hesitance, confusion, and inattentiveness to the point that their performance was marginal. NRC examination results for the past year have highlighted declining senior operator performance. In recent weeks, operating errors committed by licensed operators, including a senior operator, resulted in two unnecessary plant trips. The performance of the applicants on this examination coupled with the above facts further emphasized the NRC conclusion that a downward trend in overall operator and applicant performance is in progress.

The written examination consisted entirely of multiple choice and matching test items. Remarks from facility individuals conveyed the impression that unfamiliarity with this test item format adversely affected examination scores. This is the second time that ANO applicants have been given a written examination of this type. The first was given to Unit 2 senior operator upgrades in August 1989. While changing examination formats will affect examination scores to some extent, the time between this and the August examination should have been sufficient to familiarize applicants with these types of test items to reduce the impact on examination scores because of format changes.

Comments provided by the facility licensee at the exit meeting and later in ANO Letter 1CAN118909 of November 27, 1989, indicated serious concerns over validity of the written examination. The extent of these comments and the perceptions conveyed by them prompted the Region IV staff to request a meeting with members of your staff to address the comments. The meeting was held on December 21, 1989, in the Region IV offices. It was apparent from the comments and discussions in the meeting that facility licensee training staff had a very different interpretation of the NRC license examination process found in the various NUREGs, which govern examination development and administration. Three major characterizations are evident from the post-examination review comments.

1. Test items designed to require synthesis of system knowledge to determine system behavior or proper system operation were perceived as requiring memorization of procedures relating to the system operation. Frequently this appears to stem from the fact that the questions could be answered by recalling specific procedural knowledge or the use of a system related procedure as a reference to test item development.

2. The perspective from which a test item solicits knowledge was mistakenly seen as the focus of an expected knowledge area. For example, asking about safety and safety-related system knowledge from the perspective of system related alarms or annunciators should not be construed as expecting operators to know the cause of all alarms or annunciators.

3. Individual test items that were otherwise sound were challenged for minor deviations from development guidelines. The Examiners' Handbook (NUREG/BR-0122) and other development guides must be read carefully and in context to be properly applied.

Because of the small number of applicants examined and crew responses to recent plant trips from operator error, the NRC concludes that safe plant operation is not jeopardized at this time. However, NRC is concerned that indications of declining performance that are no longer limited to senior operator applicants as noted in prior examination results.

DETAILS

1. PERSONS EXAMINED

		RO	SRO	Total
Licensee Examinations:	Pass -	0	2	2
	Fail -	0	2	2

2. EXAMINERS

S. L. McCrory, Chief Examiner
D. N. Graves

3. EXAMINATION REPORTS

Performance results for individual candidates are not included in this report because examination reports are placed in the NRC Public Document Room as a matter of course. Individual performance results are not subject to public disclosure.

3.1 Examination Review Comment/Resolution

In general, editorial comments or changes made as a result of facility reviews prior to the examination, during the examination, or subsequent grading reviews are not addressed by this resolution section. This section reflects resolution of substantive comments submitted to the NRC by the facility licensee after the examination. The facility licensee post-examination comments, less the supporting documentation, are included in the report immediately following the master examination key. Unless otherwise indicated in this section, the facility licensee comments were incorporated into the answer key.

At the end of the examination visit, the chief examiner was given the facility licensee post-examination review comments. The cover letter to those comments expressed the facility licensee opinion that the written examination was invalid in scope and content. In subsequent discussions, the ANO Training Manager stated that the cover letter inaccurately expressed the facility licensee perception of and concerns about the written examination. The ANO Training Manager was asked to clarify formally the facility licensee's position on the validity of the written examination and to make further comments to express fully concerns about the test items. This was completed in ANO Letter 1CAN118909, which concluded the examination was valid, but made extensive comments. The extent of the additional comments and the perceptions conveyed by them prompted the Region IV staff to request a meeting with facility staff to address the comments. The meeting was held on December 21, 1989, in the Region IV offices. The detailed resolutions of the post-review comments were covered during this meeting and are not contained in this report. However, three major characterizations are evident from the post-examination review comments.

3.1.1 Synthesis Versus Memorization

Test items designed to require synthesis of system knowledge to determine system behavior or proper system operation can be perceived as requiring memorization of procedures relating to the system operation. Frequently this appears to stem from the fact that the questions could be answered by recalling specific procedural knowledge or the use of a system related procedure as a reference to test item development.

The NRC neither expects nor advocates extensive memorization of procedures related to system operation. The NRC does expect operators to have sufficient system design and behavior knowledge along with a general familiarity with facility procedures to respond to test items focusing on system response or proper operation. The fact that system related operating procedures are often referenced is largely the result of the lack of detail in the system description material provided. Such detail is necessary in order to provide the assurance that a test item is accurate.

3.1.2 Question Perspective

The perspective from which a test item solicits knowledge is often mistakenly seen as the focus of an expected knowledge area. For example, asking about safety and safety-related system knowledge from the perspective of system-related alarms or annunciators should not be construed as expecting operators to know the cause of all alarms or annunciators.

The operator knowledge required to assure safe plant operation is a subset of the knowledge base an operator needs to operate a plant safely and efficiently. Tested knowledge is linked to plant safety, but individual test items may be phrased or placed in an operational context using the larger knowledge base. However, operators have neither been expected nor required to demonstrate knowledge of all systems as they relate to these perspectives.

3.1.3 Development Guidelines

Individual test items that were otherwise sound were challenged for minor deviations from development guidelines. The Examiners' Handbook (NUREG/BR-0122) and other development guides must be read carefully and in context to be properly applied.

Absolute adherence to the development guidelines by each individual test item is of much less importance than the collective impact of deviations on the examination as a whole. Any imbalance is undesirable, whether it relates to importance factors, negative focus, or any other types of deviations. Comments in this area should focus on overall examination impact rather than individual test items.

3.2 Site Visit Summary

The facility licensee was provided a copy of the examination and answer key for the purpose of commenting on the examination content validity. The facility licensee was informed that examination results could be expected the week of November 20, 1989, if comments on the written examination could be provided by the end of the examination visit.

A working level exit meeting was held with the following persons in attendance:

NRC	FACILITY
S. L. McCrory	E. Force
D. N. Graves	K. Canitz
J. L. Pellet	D. Slusher
	D. Smith
	J. Vandergrift

Facility personnel asked about simulator performance during that portion of the operating examination. The chief examiner reported that no simulator deficiencies arose during the examinations nor did simulator modeling or design limitations prohibit the use of the prepared scenarios.

The Chief Examiner provided feedback to the facility personnel in three areas.

3.2.1 Distracting Examination Activities

There were some activities peripheral to actual examination administration which may have adversely affected conduct of the examinations. The start of the written examination had to be delayed because pens, paper, steam tables, and calculators were not prepositioned in the examination room. Unescorted access levels of badged examiners had not been upgraded to allow freedom of movement during the walkthrough portion of the operating examinations. Health physics personnel were resistive to inquiries as to how to enter the radiologically controlled areas while the computer logging system was down. The main impact of these events was that applicants were forced to deal with matters which are not a part of their examinations and were required to wait while these matters were corrected. While not directly tied to tested knowledge, such problems may have had a negative impact on applicant performance during the license examinations.

3.2.2 Recognition of Passive Failures

During the simulator examinations, there were several instances in which applicants failed to notice passive system failures. Specific instances included an emergency diesel generator (EDG) service water valve failing to open on an EDG start signal and an emergency feedwater pump remaining shutdown following an emergency feedwater start signal. In the case of the EDG service water valve, the affected EDG was the only source of electrical power available, and an EDG critical condition alarm in the control room was not

sufficient to cause the control room operators to verify all control room indications of systems affecting EDG operation. Proper implementation of the emergency operating procedures could have revealed the problem before the critical alarm was received.

3.2.3 Radiologically Controlled Area Entry

During the walkthrough examinations, applicants repeatedly demonstrated lack of familiarity with the current procedure for entry in radiologically controlled areas. They further admitted to not having been in the plant recently.

3.3 General Comments

Performance on both the written and operating examinations was marginal. The average score on the written examinations was 79 percent with the highest being 84 percent. On the simulator portion of the operating examination, the applicants displayed hesitance, confusion, and inattentiveness to the point that their performance was marginal. NRC examination results for the past year have highlighted declining senior operator performance. In recent weeks, operating errors committed by licensed operators, including a senior operator, resulted in two unnecessary plant trips. These facts coupled with the results of this examination visit further support the NRC's concern that performance of ANO operators and applicants is declining.

The written examination consisted entirely of multiple choice and matching test items. Remarks from facility individuals conveyed the impression that lack of familiarity with this test item format adversely affected examination scores. This is the second time that ANO applicants have been given a written examination of this type. The first was given to Unit 2 senior upgrades in August 1989. While examination formats will affect examination scores to some extent, the time between this examination and the one in August should have been sufficient to familiarize applicants with these types of test items to be expected and to reduce the impact on examination scores resulting from format changes.

From the nature of the post-examination comments on the written examination test items and discussions in the December meeting, it appears that facility licensee training staff had an incomplete understanding of the content and application of the NRC license examination process. This examining process is set forth in NUREG-1021 (Operator Licensing Examiner Standards), NUREG/BR-0122 (Examiners' Handbook for Developing Operator Licensing Examinations), and NUREG-1122 (Knowledges and Abilities (KA)) Catalog for Nuclear Power Plant Operators: Pressurize Water Reactors; these documents govern examination development and administration. During the last three years, the objectives and methods for development and administration of license examinations have been well publicized. There have been no significant changes in the objectives or methods during this time. The increased use of multiple choice and matching test items in the written examination has been most noticeable, but does not represent a change in programmatic focus. The KA catalog defines the bulk of information on which an applicant may be tested with subjects outside the KA

catalog or with low KA importance factors being approved on a case basis. The sampling outline developed in accordance with the Examiners' Handbook helps assure that a random, but balanced sample of KA subjects, is used for each examination. This process has and will continue to result in some test items which were not emphasized in facility licensee training.

The following question numbers represent those on which 50 percent or more of the applicants scored less than 70 percent of the question value and are provided to assist facility evaluation of training weaknesses.

11	30	44	65
15	32	45	68
16	33	48	74
20	37	49	
25	42	59	

Because of the small number of applicants examined and crew responses to recent plant trips from operator error, we conclude that operator performance is acceptable to assure safe plant operation. However, there is concern that the indications of declining performance are no longer limited to senior operator applicants as noted in previous examination reports. The facility licensee is encouraged to continue investigating training effectiveness and operator performance.

3.4 Master Examination and Answer Key

A master copy of the ANO 1 license examination and answer key is attached. The facility licensee comments which have been accepted are incorporated into the answer key.

3.5 Facility Examination Review Comments

The facility licensee comments regarding the written examination are attached. Those comments not acceptable for incorporation into the examination answer key were addressed in a separate meeting with facility licensee representatives as stated in the resolution section of this report.

3.6 Simulation Facility Fidelity Report

All items on the attached Fidelity Report have been brought to the attention of the facility for corrective action as appropriate.

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

FACILITY: ARKANSAS NUCLEAR ONE UNIT_1

REACTOR TYPE: PWR-B&W177

DATE ADMINISTERED: 1989/11/13

CANDIDATE: _____

INSTRUCTIONS TO CANDIDATE:
Read and follow the NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS attached to your examination. An overall grade of at least 80% is required to pass the examination. Examination papers will be picked up four and a half (4½) hours after the examination starts.

SITE SPECIFIC WRITTEN EXAMINATION

EXAMINATION POINTS 84.00

CANDIDATE'S SCORE _____

FINAL GRADE _____ %

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

_____
Candidate's Signature

NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

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

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

3. To pass the examination, you must achieve an overall grade of 80%.

4. There is a time limit of 4½ hours for completion of the examination.

5. The point value for each question is indicated in parentheses after the question. The amount of blank space on an examination question page is NOT an indication of the depth of answer required.

6. Show all calculations, methods, or assumptions used to obtain an answer except for multiple choice and matching questions.

7. Partial credit may be given. Therefore, ANSWER ALL PARTS OF THE QUESTION AND DO NOT LEAVE ANY ANSWER BLANK. NOTE: partial credit will NOT be given on multiple choice questions.

8. Proportional grading will be applied. Any additional wrong information that is provided may count against you. For example, if a question is worth one point and asks for four responses, each of which is worth 0.25 points, and you give five responses, each of your responses will be worth 0.20 points. If one of your five responses is incorrect, 0.20 will be deducted and your total credit for that question will be 0.80 instead of 1.00 even though you got the four correct answers. NOTE: Proportional grading will NOT be applied to multiple choice, matching, or fill-in-the-blank questions.

9. Multiple choice questions may contain one or more choices which are correct IF certain assumptions are made. However, the correct answer will not need assumptions or qualifiers. Therefore, when more than one choice seems to be correct, select the choice which BEST answers or completes the question or statement.

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

11. Use black ink or dark pencil only to facilitate legible reproductions.

12. Print your name in the blank provided in the upper right-hand corner of the examination cover sheet.

13. Fill in the date on the cover sheet of the examination (if necessary).

14. Write your answers on the examination question page or on a separate sheet of paper as specified by the examiner. USE ONLY THE PAPER PROVIDED AND DO NOT WRITE ON THE BACK SIDE OF THE PAGE.

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* When examination specific answer sheets are provided, ONLY the answers *
* marked on the answer sheet will be considered for examination grading. *
* Information or answers marked on scratch paper or on the examination *
* will NOT be credited during examination grading. *
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15. Print your name in the upper right-hand corner of the first page of your answer sheets whether you use the examination question pages or separate sheets of paper. Initial each succeeding page.

*16. If you write your answers on the examination question page and you need more space to answer a specific question, use a separate sheet of the paper provided and insert it directly after the specific question. DO NOT WRITE ON THE BACK SIDE OF THE EXAMINATION QUESTION PAGE.

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

*18. If you are using separate sheets, number each answer the same as the question to which it refers and skip at least 3 lines between answers to allow space for grading.

*19. Write "Last Page" on the last answer sheet.

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

21. After you complete your examination, you must sign the statement on the cover sheet indicating that the work is your own and you have not received nor given assistance in completing the examination.

22. When turning in your examination, assemble the completed examination in the following order:
    1. Signed cover sheet
    2. Answer sheets
    3. All other examination material
    4. Scrap paper

23. When you are done and have turned in your examination, leave the examination area as defined by the examiner. If you are found in this area while the examination is still in progress, your license may be denied or revoked.

* These instructions do not apply if an examination specific answer sheet is provided

QUESTION: 001 (1.00)

Which ONE (1) of the following statements describing the design of the fuel transfer tube is correct?

a. A blind flange is used to close the transfer tube on BOTH the containment side and the spent fuel side.

b. A valve is used to close the transfer tube on BOTH the containment side and the spent fuel side.

c. A valve is used to close the transfer tube on the containment side and a blind flange is used on the spent fuel side.

d. A blind flange is used to close the transfer tube on the containment side and a valve is used on the spent fuel side.

ANSWER: 001 (1.00)

d (1.0)

REFERENCE:

ANO1 STM-1-51 pg 7

034000K101 034000K402 ..(KA's)

QUESTION: 002 (1.00)

Group rod motion is stopped at the full in or out positions by:

a. a cam operated mechanical switch

b. a magnetically operated mechanical switch

c. a magnetically operated solid state electronic switch

d. an optically operated solid state electronic switch

ANSWER: 002 (1.00)

b (1.0)

REFERENCE:

ANO1 LP AA-51002-010 pgs 18, 19

001000K602 ..(KA's)

QUESTION: 003 (1.00)

Which one of the following sets of trip components will remove all power from the CRDMs when actuated or tripped?

a. "A", "B", "C", "E"

b. "B", "C", "D", "F"

c. "A", "C", "D", "E"

d. "B", "D", "E", "F"

ANSWER: 003 (1.00)

a. (1.0)

REFERENCE:

ANO1 STM-1-02 pg 14, LP AA-51002-010 pg 16

001000A202 ..(KA's)

QUESTION: 004 (1.00)

The loss of a RCP while at full power will result in which one of the following automatic responses?

a. A runback to 75% ULD and the affected loop OTSG being on low level limits.

b. Tave input to ICS from the affected loop selected and △ To near zero.

c. Reactor power reduced to less than 79.9% and upper load limit reset to 750 MW.

d. A 2:1 apportionment of OTSG feed flow and ICS in track.

ANSWER: 004 (1.00)

d (1.0)

REFERENCE:

ANO1 STM-1-64 pgs 57, 58, AOP 1203.22 REV 2 pg 1, OI 1105.04 REV 8 pg 3

003000K305 ..(KA's)

QUESTION: 005 (1.00)

Which one of the following choices represents a correct cause for and preferred response to a RCP 1P32 SEAL COOLING FLOW LO alarm while at full power?

a. ICW flow to any RCP <30gpm, start standby ICW pump.

b. Seal flow to any RCP <3gpm, adjust valve MU-28 (A-D).

c. ICW flow to any RCP <30gpm, trip affected RCP.

d. Seal flow to any RCP <3gpm, trip affected RCP.

ANSWER: 005 (1.00)

a (1.0)

REFERENCE:

ANO1 AOI 1203.12G pgs 6, 7, AOP 1203.31 pg 6

003000G008 ..(KA's)

QUESTION: 006 (1.00)

The pressurizer level control and indicating system provides control signals to which one of the following?

a. Primary makeup pumps and the pressurizer ERV.

b. Letdown isolation valve CV-1221 and high pressure aux spray.

c. Pressurizer heaters and makeup valve CV-1235.

d. Pressuizer spray valve and letdown orifice bypass valve CV-1223.

ANSWER: 006 (1.00)

c (1.0)

REFERENCE:

ANO1 STM-1-4 pgs 4-16, LP AA-51002-003 pgs 38-40, STM-1-69 pg 8

004000K101 ..(KA's)

QUESTION: 007 (1.00)

With primary makeup pump P-36A designated as the running makeup pump, the status of the remaining primary makeup pumps will be:

a. P-36B in ES standby on A3 and P-36C in standby on A4.

b. P-36B in standby on A3 and P-36C in ES standby on A4.

c. P-36B in ES standby on A4 and P-36C in standby on A3.

d. P-36B in standby on A4 and P-36C in ES standby on A3.

ANSWER: 007 (1.00)

b (1.0)

REFERENCE:

ANO1 STM-1-4 pgs 12, 13

004000K202 ..(KA's)

QUESTION: 008 (1.00)

Once the trip signal has cleared following ESAS actuation, which one of the following recovery sequences MUST occur in the order specified to successfully reset ESAS?

a. Override actuated devices, then reset digital subsystems.

b. Reset analog subsystems, then reset digital subsystems.

c. Override actuated devices, then reset analog subsystems.

d. Reset digital subsystems, then reset analog subsystems.

ANSWER: 008 (1.00)

b (1.0)

REFERENCE:

ANO1 OI 1105.03 REV 5 pg 12, STM-1-65 pgs 2-8

013000K401 ..(KA's)

QUESTION: 009 (1.00)

The Technical Specifications for ECCS identify a train of emergency cooling as a HPI pump, a LPI pump and both:

a. spray pumps.

b. service water pumps.

c. RB fan and cooling units.

d. core flood tanks.

ANSWER: 009 (1.00)

d (1.0)

REFERENCE:

ANO1 TS 3.3 pg 39

013000X501 ..(KA's)

QUESTION: 010 (1.00)

Which one of the following will most likely result in an increase in source range NI (gamma-metrics) indication following a reactor trip?

a. Release of corrosion products from RCS internal surfaces.

b. Purification demineralizer resin retention element failure.

c. Rapid uncontrolled depressurization of the RCS.

d. High reactor building temperature and humidity.

ANSWER: 010 (1.00)

c (1.0)

REFERENCE:

ANO1 LP AA-21008-009 pgs 1-4, STM-1-67 pgs 2, 3, TABLES 67.2-4

015000A103 ..(KA's)

QUESTION: 011 (1.00)

Which one of the following conditions will generate a REACT PROT SYSTEM TROUBLE alarm?

a. Any power range NI channel detector power off.

b. Any channel of RPS in bypass.

c. Any power range NI channel in test or calibrate.

d. Any channel of RPS in test.

ANSWER: 011 (1.00)

a (1.0)

REFERENCE:

ANO1 AOP 1203.12I pg 32

015000A302 ..(KA's)

QUESTION: 012 (1.00)

Which one of the following events will most likely result in automatic operation of the Reactor Building Ventilation system in the ES mode from a full power condition?

a. OTSG tube rupture.

b. PZR ERV fail open.

c. Reactor trip without a turbine trip.

d. OTSG manway access cover rupture.

ANSWER: 012 (1.00)

d (1.0)

REFERENCE:

ANO1 STM-1-09 pgs 1-4, LP AA-51002-030 pg 6

022000A301 ..(KA's)

QUESTION: 013 (1.00)

A rupture in the common discharge header from the main chilled water pumps (VP1A,B) will have which one of the following impacts on the Reactor Building Ventilation system fan and cooling units?

a. They will be inoperable in the ES mode but available for normal cooling.

b. They will be inoperable in the normal mode but available for ES cooling.

c. They are not affected by the loss of main chilled water.

d. They are not capable of any cooling without main chilled water.

ANSWER: 013 (1.00)

b (1.0)

REFERENCE:

ANO1 STM-1-09 pgs 1-4, STM-1-45 pgs 4-6

022000A205 ..(KA's)

QUESTION: 014 (1.00)

Which one of the following condensate system parameters affects control signals to the main feedwater pumps?

a. Seal water pressure.

b. Low pressure heater ΔT.

c. Discharge pressure.

d. Hotwell level.

ANSWER: 014 (1.00)

c (1.0)

REFERENCE:

ANO1 STM-1-19 pg 4, STM-1-20

056000K103 ..(KA's)

QUESTION: 015 (1.00)

At full power with condensate pumps P2B and P2C running, breaker 152-111 is shut resulting in a CONDENSATE PUMP TRIP alarm. Which one of the following will be the result of this event?

a. P2C running with runback in progress.

b. P2A starts in standby and P2C remains running.

c. P2A running with runback in progress.

d. P2A starts in standby and P2B remains running.

ANSWER: 015 (1.00)

a (1.0)

REFERENCE:

ANO1 STM-1-20 pg 8, OP 1107.01 REV 33 pg 12

056000A204 ..(KA's)

QUESTION: 016 (1.00)

Which one of the following is correct concerning the operation or behavior of the Reactor Vessel and Hot Leg Level Indicating System?

a. The delta T between the heated and the unheated thermocouple decreases in a steam environment.

b. Loss of heating to the junction of the heated thermocouple will cause a low level indication.

c. An unheated thermocouple at 690 deg.F will generate a low level alarm.

d. Indicated level will be greater than actual level if reverse flow is initiated through the reactor vessel and core.

ANSWER: 016 (1.00)

d (1.00)

REFERENCE:

ANO1 LP AA-51002-009 pg 8

017000A202 000074A116 ..(KA's)

QUESTION: 017 (1.00)

Which one of the following is a correct response of the Gaseous Radioactive Waste (GRW) system to a high gaseous activity level?

a. High activity at the stack gas monitor (RE 7400) secures flow from the Gas Collection Header and diverts ABVH to the waste gas surge tank.

b. High activity at the waste gas monitor (RE 4830) secures flow from the GRW header downstream of F-16 and diverts ABVH to tank T-17.

c. High activity at the stack gas monitor (RE 7400) secures flow from the ABVH and diverts flow from the RBVH to the waste gas decay tanks.

d. High activity at the waste gas monitor (RE 4830) secures flow from the ABVH and diverts flow from the RBVH to the waste gas decay tanks.

ANSWER: 017 (1.00)

b (1.0)

REFERENCE:

ANO1 STM-1-54 pgs 1-5, STM-1-62, pgs 10, 11

071000K106 ..(KA's)

QUESTION: 018 (0.00)

DELETED AS A RESULT OF POST-EXAMINATION REVIEW

ANSWER: 018 (0.00)

DELETED

REFERENCE:

DELETED

071000A202 ..(KA's)

QUESTION: 019 (1.00)

In which one of the following areas does the ventilation system use a control signal developed from an area radiation monitor?

a. Penetration rooms

b. Spent fuel handling area

c. Control Room

d. Auxiliary building

ANSWER: 019 (1.00)

c (1.0)

REFERENCE:

STM-1-47 pgs 6-15, STM-1-62 pgs 16-18

072000K101 ..(KA's)

QUESTION: 020 (1.00)

Which one of the following would result from the loss of power to the detector of most area radiation monitors?

a. Indication at full scale.

b. Indication at minimum scale.

c. Indication at warning setpoint.

d. Indication at alarm setpoint.

ANSWER: 020 (1.00)

b (1.0)

REFERENCE:

ANO1 STM-1-62 pgs 1-3

BEGIN GROUP II

072000A201 ..(KA's)

QUESTION: 021 (1.00)

Select the answer which correctly completes the following statement.

If pressurizer pressure is 2100 psia, quench tank pressure is 5 psig and initial quench tank temperature is 90 deg.F, a leak across the pressurizer ERV while at full power will cause a downstream temperature indication of about:

a. 162 deg.F
b. 228 deg.F
c. 318 deg.F
d. 640 deg.F

ANSWER: 021 (1.00)

b. 228 deg.F (1.0)

REFERENCE:

Steam Tables
THT&FF THEORY

000008K302 000008K101 002000K105 ..(KA's)

QUESTION: 022 (1.00)

The loss of which one of the following DC panels would directly impact the automatic operation of pump P34B?

a. D11
b. D21
c. D15
d. D25

ANSWER: 022 (1.00)

b. (1.0)

REFERENCE:

ANO1 OP 1107.04 pgs 28-31, STM-1-32 pg 28, STM-1-5 pg 4

006000K201 ..(KA's)

QUESTION: 023 (1.00)

Which one of the following pressurizer pressure control system malfunctions would most likely result in ESAS actuation?

a. Pressure instrument fails low.

b. Heaters fail on.

c. Heaters fail off.

d. Spray valve sticks open.

ANSWER: 023 (1.00)

d (1.0)

REFERENCE:

ANO1 STM-1-69 pgs 2,3,13, STM-1-65 pg 2, STM-1-3 pgs 6-8, LP AA-51002-001

010000K303 ..(KA's)

QUESTION: 024 (1.00)

Which one of the following is the correct initial response of the Makeup and Purification system to the loss of temperature compensation to the controlling pressurizer level channel?

a. Makeup flow increases while letdown flow remains constant.

b. Makeup flow increases while letdown flow decreases.

c. Makeup flow decreases while letdown flow remains constant.

d. Makeup flow decreases while letdown flow increases.

ANSWER: 024 (1.00)

a (1.0)

REFERENCE:

ANO1 OP 1103.05 pg 5, OP 1104.02 pg 8-11, STM-1-69 pg 7, CHARTERISTICS OF SATURATED LIQUID

011000K402 ..(KA's)

QUESTION: 025 (1.00)

According to Technical Specifications, which one of the following RPS trips is NOT specifically intended for DNB protection?

a. Power imbalance - flow

b. Low pressure

c. High temperature

d. Variable low pressure

ANSWER: 025 (1.00)

c (1.0)

REFERENCE:

ANO1 TS pgs 11-13, LP AA-51002-006 pgs 18-23

012000K501 ..(KA's)

QUESTION: 026 (1.00)

The CONTROL ROD PATTERN ASYMMETRICAL alarm is generated by an indiviual rod position more than:

a. 7" out from its RPI group average and will be accompanied by the asymetric rods lamp on the diamond panel being on.

b. 9" out from its API group average and will be accompanied by the individual fault lamp on the PI panel being on.

c. 7" out from its API group average and will be accompanied by the individual fault lamp on the PI panel being on.

d. 9" out from its RPI group average and will be accompanied by the asymetric rods lamp on the diamond panel being on.

ANSWER: 026 (1.00)

c (1.0)

REFERENCE:

ANO1 STM-1-02 pgs 17-21, AOP 1203.12I pg 49, AOP 1203.03 pg 1

014000A102 ..(KA's)

QUESTION: 027 (1.00)

Following a failure of an ICS Turbine Header Pressure Instrument LOW, at which one of the following ICS control stations can the transient be terminated by the operator?

a. Diamond Panel

b. Turbine Bypass Valve H/A station

c. Steam Generator-Reactor Master

d. TG control station

ANSWER: 027 (1.00)

d (1.0)

REFERENCE:

ANO1 STM-1-64 pgs 20-30

016000A201 ..(KA's)

QUESTION: 028 (1.00)

Which one of the following is correct concerning automatic operation of the Reactor Building Spray system?

a. At 6' BWST level, RBS pumps stop until the suction is shifted to the RB sump.

b. At RB pressure of 4 psig, the outlet/discharge valves from the BWST and RBS pumps open.

c. After ESAS actuation, a loss of bus A3 or A4 will strip the RBS pump which will have to be manually restarted.

d. At RB pressure of 30 psig, the NAOH tank outlet and spray header discharge valves open.

ANSWER: 028 (1.00)

d (1.0)

REFERENCE:

ANO1 STM-1-8 pgs 2-7

026000A301 ..(KA's)

QUESTION: 029 (1.00)

When startin the RB Purge system with a negative pressure on the RB, open the purge inlet valves before openin the purge outlet valves to prevent:

a. damaging RB penetrations during sudden pressure change.

b. inadvertent release of radioactive contaminants.

c. damaging purge discharge due to reverse air flow.

d. reverse air flow through stack sample monitor (RE-7400)

ANSWER: 029 (1.00)

c (1.0)

REFERENCE:

ANO1 STM-1-09 pgs 4-6, STM-1-47 pgs 6-11, 19

029000A401 ..(KA's)

QUESTION: 030 (1.00)

Which one of the following spent fuel system parameters or conditions produce abnormal condition alarms directly observable in the control room?

a. Spent fuel pool recirculation flow.

b. ICW flow through the spent fuel coolers.

c. Spent fuel cooler filter differential pressure.

d. Fuel transfer tube gate valve not fully shut.

ANSWER: 030 (1.00)

a (1.0)

REFERENCE:

ANO1 STM-1-07 pgs 2-6, OP 1101.02 REV 8 pgs 16, 18

033000G008 ..(KA's)

QUESTION: 031 (1.00)

Which one of the following is correct concerning design and/or operation of the MSIVs?

a. Going to "open" on the HS causes an internal equalizing valve to open and when pressure across the MSIV is </= 50 psi, the pilot-operated pneumatic vent valves open the MSIV.

b. The accumulator keeps the MSIVs open to allow continued power generation with low IA header pressure.

c. On "close", springs provide the motive force for valve closure while closure speed is regulated by an orifice in the vent line of pilot-operated pneumatic vent valves.

d. The hydraulic operator on the valve is intended to ensure valve closure on loss of instrument air.

ANSWER: 031 (1.00)

b (1.0)

REFERENCE:

ANO1 STM-1-15 pgs 10, 11, 19-22

035000K601 ..(KA's)

QUESTION: 032 (1.00)

Which one of the following will be the response of the turbine bypass valves to a steam header pressure increase to 960 psig from the initial conditions below:

Load demand 12%
Turbine latched and loaded to 12% in operator auto
Turbine bypass valves shut
Steam header pressure at normal setpoint - 5 psig.

a. Valves remain shut since setpoint + normal bias not exceeded.

b. Valves open and reduce pressure to setpoint + 50 psig.

c. Valves open and reduce pressure to setpoint + 10 psig.

d. Valves open and reduce pressure to setpoint.

ANSWER: 032 (1.00)

d (1.0)

REFERENCE:

ANO1 STM-1-15 pgs 11, 18, STM-1-64 pgs 8, 9

039000K106 ..(KA's)

QUESTION: 033 (1.00)

Which one of the following condenser vacuum system malfunctions will have the MOST immediate adverse effect on condenser vacuum? Assume the plant is at full power in July, the condenser vacuum system is in normal automatic operation, and all automatic functions occur as designed except as specified by the malfunction.

a. Operating seal water recirculation pump trips.

b. Auxiliary cooling water to the seal water coolers is lost.

c. The motive air valve to the air ejector fails shut.

d. Air ejector bypass valve fails (open) to hogging mode.

ANSWER: 033 (1.00)

a (1.0)

REFERENCE:

ANO1 STM-1-22 pgs 2-6

055000K301 ..(KA's)

QUESTION: 034 (1.00)

Which one of the following is correct concerning the continuous run time of a single EDG running fully loaded with ALL fuel oil storage facilities on site filled to capacity, fuel oil systems designated for Unit 2 not available and system realignments performed as necessary?

a. less than 3 days
b. 3-5 days
c. 6-8 days
d. more than 9 days

ANSWER: 034 (1.00)

d (1.0)

REFERENCE:

ANO1 STM-1-31, pgs 6, 7, 15

064000K103 ..(KA's)

QUESTION: 035 (1.00)

Aside from improving plant operating efficiency, the Circ Water Waterbox Vacuum system is important to:

a. Prevent lake water from entering the feedwater system as a result of small condenser tube leaks.

b. Reduce circ water pump discharge back pressure to keep pump motor temperatures within limits.

c. Prevent damage to condenser tubes which results from steam impacting on dry tubing.

d. Remove disolved gases from lake water which interfere with antifouling chlorination treatment.

ANSWER: 035 (1.00)

c (1.0)

REFERENCE:

ANO1 STM-1-40 pg 2

075000A203 ..(KA's)

QUESTION: 036 (1.00)

The service air to instrument air crossover valve (SV-5400) automatically opens when:

a. instrument air header pressure decreases to 50 psig.

b. service air header pressure decreases to 50 psig.

c. instrument air header pressure decreases to 75 psig.

d. service air header pressure decreases to 75 psig.

ANSWER: 036 (1.00)

a (1.0)

REFERENCE:

ANO1 STM-1-49 pg 1, AOP 1203.12K pg 29, AOP 1203.24

079000A401 ..(KA's)

QUESTION: 037 (1.00)

With respect to fire protection instrumentation, the term "cross-zone detection system" refers to the fact that:

a. multiple zones are monitored by a common detection system.

b. automatic actuation requires a signal from at least two detectors.

c. detectors for one safety train are powered from the opposite train.

d. a zone is monitored by more than one type of detector.

ANSWER: 037 (1.00)

b (1.0)

REFERENCE:

ANO1 STM-1-60 pgs 17, 18

GROUP III

086000A302 ..(KA's)

QUESTION: 038 (1.00)

Once the hydrogen recombiners have been started following a LOCA, significant hydrogen recombination will not begin for about: (ATT C to OP 1104.31 provided)

a. 1 - 2 hours.

b. 2 - 3 hours.

c. 3 - 4 hours.

d. 4 - 5 hours.

ANSWER: 038 (1.00)

c (1.0)

REFERENCE:

ANO1 OP 1104.31 pgs 2, 12

028000K601 028000A401 028000A202 028000A101 ..(KA's)

QUESTION: 039 (1.00)

On ES actuation the DHR coolers are protected from overpressurization by:

a. shutting the inlet and outlet valves and opening the bypass valve.

b. check valves in the core flood injection/DH removal lines.

c. the automatic closure and interlock system.

d. nothing since the coolers are designed for normal RCS pressure.

ANSWER: 039 (1.00)

b (1.0)

REFERENCE:

ANO1 STM-1-5 pgs 2-10, P&ID M-232

005000K603 ..(KA's)

QUESTION: 040 (1.00)

Which one of the following sets of containment parameters would have the most impact on the reliability of NNI in the containment following a LOCA with 1% fuel failure?

a. Temperature, pressure, humidity.

b. Pressure, humidity, radiation.

c. Humidity, radiation, temperature.

d. Radiation, temperature, pressure.

ANSWER: 040 (1.00)

a (1.0)

REFERENCE:

ANO

PLANT-WIDE GENERICS

103000A101 ..(KA's)

QUESTION: 041 (1.00)

Which one of the following is correct concerning performing an independent verification to an INITIAL valve/breaker line up?

a. Remove the locking device from locked valves and then check position in the same manner as the initial positioner/verifier.

b. Independent verification of valves in high radiation areas may be waived by the Shift Supervisor.

c. For throttled valves, shut the valve counting the number of turns, then reopen to the original throttled position.

d. Independent verification of breakers may be performed by observing control room board indications when available.

ANSWER: 041 (1.00)

d (1.0)

REFERENCE:

ANO OAP 1015.01, SEC 15. pgs 41-43, REV 37

194001K101 ..(KA's)

QUESTION: 042 (1.00)

Which one of the following represents the correct method for INITIAL alignment of valves/breakers per OP 1015.01, Conduct of Operations?

a. Normally open valves are fully backseated then shut 1 1/2 turns and finally reopened 1 1/4 turns.

b. Throttled valves are fully shut while counting turns then reopened to the number of turns specified on the valve alignment sheet.

c. Locked open valves must be verified by available position indicators or system parameters if the locking device will not allow movement.

d. Normally closed valves are verified by available position indicators or system parameters, they should not be operated in either direction.

ANSWER: 042 (1.00)

b (1.0)

REFERENCE:

ANO OAP 1015.01, pgs 39, 40, REV 37

194001K101 ..(KA's)

QUESTION: 043 (1.00)

Select the choice which represents the MAXIMUM exposure an operator could receive in an area posted "CAUTION-RADIATION AREA" inside the controlled access if he/she remained there for 30 minutes.

a. 2.5 mrem
b. 5.0 mrem
c. 50 mrem
d. 100 mrem

ANSWER: 043 (1.00)

c (1.0)

REFERENCE:

ANO OPA 1000.31, REV 8, pg 18

001000K100 194001K103 ..(KA's)

QUESTION: 044 (1.00)

If a RWP indicates that a task is subject to a Standing ALARA Review (SAR), this means that:

a. an ALARA breifing is not required prior to each entry under the RWP.

b. an ALARA breifing must be conducted prior to each entry under the RWP.

c. the total estimated man-rem for the task is less than 1 man-rem.

d. the total estimated man-rem for the task is greater than 10 man-rem.

ANSWER: 044 (1.00)

a (1.0)

REFERENCE:

ANO OPAP 1000.33, REV 5, pgs 10-13

194001K104 ..(KA's)

QUESTION: 045 (1.00)

Which one of the following correctly represents requirements for access control per OP 1000.19, Station Security Requirements?

a. Individuals responding to an emergency but not normally authorized access to a particular vital area may piggyback with an individual with proper access and then report to security after the emergency is controlled.

b. When escorting a large group, only the escort needs to enter his/her PID and card to pass through doors as long as the group is not divided up with additional escorts.

c. An individual checking out a key for a security door will specify the reason for entry and all personnel entering the space, during key check out. Further reports to security are not necessary until the key is returned.

d. An escorted visitor is permitted to enter a space alone as long as there is only one way in or out and the space is not a vital or sensitive area, such as a restroom or conference room, and the exit is monitored by the escort.

ANSWER: 045 (1.00)

d (1.0)

REFERENCE:

ANO SAP 1000.19, REV 17, pgs 10 - 15

194001K105 ..(KA's)

QUESTION: 046 (1.00)

Excessive water level is of concern in affected areas since the integrity of safe shutdown electrical equipment is only verified for an actuation time of:

a. 10 minutes
b. 20 minutes
c. 30 minutes
d. 60 minutes

ANSWER: 046 (1.00)

b (1.0)

REFERENCE:

ANO OAP 1015.07 REV 8 pg 2

194001K116 001000K100 ..(KA's)

QUESTION: 047 (1.00)

Under normal circumstances the two Fire Brigade (Security Force) Support Personnel should not perform extinguishing activities unless directly instructed by:

a. the Shift Supervisor.
b. operations personnel at the scene.
c. the Fire Brigade Leader.
d. the SAS Supervisor.

ANSWER: 047 (1.00)

c (1.0)

REFERENCE:

ANO OA 1015.07, REV 8, pg 3

001000K100 194001K116 ..(KA's)

QUESTION: 048 (0.00)

DELETED AS A RESULT OF POST-EXAMINATION REVIEW

ANSWER: 048 (0.00)

DELETED

REFERENCE:

DELETED

194001A114 001000K100 ..(KA's)

QUESTION: 049 (1.00)

The unit is operating at 100% power when the following alarms are received:

RCP 1P32 SEAL WATER FLOW LO (K08-F1)
RCP 1P32 SEAL COOLING FLOW LO (K08-E1)
RCP'S BLEEDOFF WTR TEMP HI (K08-A4)
RCP SEAL CAVITY PRESS HI/LO (K08-A5)
RCP HIGH VIBRATION (K08-B3)

A review of panel instrumentation during the next five minutes indicates:

Seal cavity pressure indications are erratic for RCP P-32C and 32D
Controlled bleedoff temperatures are indicating 175 degrees F for RCP P-32C and 32D
CV-1207 (RC Pump Seals Total INJ Flow) indicates closed
CV-2233 (Nuclear ICW For Letdown Coolers and RCP Seal Coolers RB Inlet) indicates closed

Which one of the following is the correct immediate actions per 1203.31, "Reactor Coolant Pump and Motor Emergencies?"

a. Trip the reactor and refer to OP 1202.01.

b. Trip RCP P-32C and 32D and verify ICS in track and runback in progress.

c. Reopen CV-1207 and verify seal injection flow rates of 8-10 gpm per pump.

d. Trip the reactor and then trip RCP P-32C and 32D.

ANSWER: 049 (1.00)

d.

REFERENCE:

1203.31, Rev. 4, p. 6

000005K105 ..(KA's)

QUESTION: 050 (1.00)

Which one of the following correctly describes the amount of boron expected to be required if two control rods fail to insert on a reactor trip at end of life?

a. 200 ppm.

b. 400 ppm.

c. 600 ppm.

d. 800 ppm.

ANSWER: 050 (1.00)

c.

REFERENCE:

1202.01, Rev. 17, p. 314

000024K302 ..(KA's)

QUESTION: 051 (1.00)

If reactor pressure has slowly decreased to 2115 psig, what heater banks will automatically energize in addition to those normally energized?

a. Banks 1 and 2

b. Banks 1, 2, and 3

c. Banks 1, 2, 3, and 4

d. Banks 1, 2, 3, 4, and 5

ANSWER: 051 (1.00)

c.

EEFERENCE:

1203.15, Rev. 5, p. 5

000027A205 ..(KA's)

QUESTION: 052 (1.00)

Which one of the following is the correct tab or tabs in 1202.01, "Emergency Operating Procedure," for the following conditions.

T+0 Reactor trip from 100% power due to low RC pressure.
All control rods fully insert.
No secondary activity alarms.

T+30sec Immediate actions of Reactor Trip tab were completed successfully.
Follow-up actions of Reactor Trip tab were completed until transfer criteria met.

T+1min Main steam line pressures are 800 psig and decreasing.
RCS subcooling is 40 degrees F and decreasing.
Pressurizer level is 40 inches and decreasing.
RCS pressure 1650 psig and decreasing.
RCS T-cold is 540 degrees and decreasing. T-hot is following T-cold

a. REACTOR TRIP concurrent with OVERCOOLING.

b. OVERCOOLING.

c. LOSS OF SUBCOOLING MARGIN.

d. OVERCOOLING concurrent with LOSS OF SUBCOOLING.

ANSWER: 052 (1.00)

b.

REFERENCE:

1202.01, Rev. 17, p. 20, 29

000040G012 ..(KA's)

QUESTION: 053 (1.00)

Which one of the following is a correct statement regarding condenser vacuum and reactor operation?

a. If reactor power is at 40% and condenser vacuum cannot be maintained above 24.5" Hg, then the reactor must be tripped.

b. If reactor power is less than 30% and condenser vacuum cannot be maintained above 26.5" Hg, then the plant must be shutdown per OP 1102.10.

c. If condenser vacuum decreases to less than 17" Hg, then reactor power must be reduced to less than 3%.

d. If condenser vacuum decreases to less than 5" Hg, then the reactor must be placed in a subcritical condition within 6 hours.

ANSWER: 053 (1.00)

c.

REFERENCE:

1203.16, Rev. 4, p. 2-4

000051A202 ..(KA's)

QUESTION: 054 (1.00)

Which one of the following is stopped per 1202.01 during a station blackout to reduce drain on station batteries?

a. FW pump emergency lube oil pumps.

b. EFW pump emergency lube oil pump.

c. HPI AUX lube oil pumps.

d. EDG soak back oil pumps.

ANSWER: 054 (1.00)

a.

REFERENCE:

1202.01, Rev. 17, p. 216

000055K101 ..(KA's)

QUESTION: 055 (1.00)

Which one of the following statements correctly describes the relationship between a loss of X and Y NNI power supplies?

a. Loss of NNI X DC is more severe than NNI Y DC and loss of NNI X AC is more severe than loss of NNI Y AC.

b. Loss of NNI Y DC is more severe than NNI X DC and loss of NNI Y AC is more severe than loss of NNI X AC.

c. Loss of NNI X DC is more severe than NNI Y DC and loss of NNI Y AC is more severe than loss of NNI X AC.

d. Loss of NNI Y DC is more severe than NNI X DC and loss of NNI X AC is more severe than loss of NNI Y AC.

ANSWER: 055 (1.00)

a.

REFERENCE:

1202.01, Rev. 17, p. 243

000057K301 ..(KA's)

QUESTION: 056 (1.00)

Which one of the following actions is required to enable reflash of subsequent alarms after the initial FIRE alarm (K12-A1) on the fire protection panel C463 control unit?

a. Reset panel C463 using Reset/Lamp Test switch on Control Unit.

b. Depress the "Alarm Silence," button on CP-35 in panel C463.

c. Toggle the "Trouble Silence," switch on CP-35 in panel C463.

d. Reset the FIU by depressing the Reset/Lamp Test switch on CP-35.

ANSWER: 056 (1.00)

b.

REFERENCE:

1203.09, Rev. 10, p. 31

000067A106 ..(KA's)

QUESTION: 057 (1.00)

Which one of the following is an INCORRECT statement of the requirements for Reactor Building Integrity per 1203.05, "Loss of Reactor Building Integrity?"

a. Both doors of the personnel lock are closed and sealed.

b. One door on the personnel airlock is closed and sealed during personnel access.

c. All non-automatic reactor building isolation valves are closed as required.

d. All automatic reactor building isolation valves are operable.

ANSWER: 057 (1.00)

d.

REFERENCE:

1203.05, Rev. 5, p. 1

000069A201 ..(KA's)

QUESTION: 058 (1.00)

The entry conditions for 1202.01, section 7.0, "Actions to Correct Inadequate Core Cooling," are:

7.1.1 Superheated core exit temperatures,
or
7.1.2 Primary to secondary heat transfer cannot be established AND HPI cooling is inadequate.

Which one of the following INDICATED conditions satisfies these entry conditions (Assume all RC pumps are stopped in all cases):

	RCS Press. (psia)	Core Exit Temp. (deg. F/trend)	Tc/Th difference (deg. F/trend)	EFW Demand to maintain SG level
a.	1000	440 / decr.	25 / decr.	Yes
b.	500	420 / incr.	200 / incr.	No
c.	200	300 / decr.	100 / decr.	No
d.	1800	500 / incr.	10 / incr.	Yes

ANSWER: 058 (1.00)

b.

REFERENCE:

1202.01, Rev. 17, p. 102, 106

000074G011 ..(KA's)

QUESTION: 059 (1.00)

Which one of the following is a symptom of FAILED FUEL per 1203.19, "High Activity in Reactor Coolant?"

a. Increase in gross/iodine activity ratio on recorder RR-1237.

b. Decrease in gross/iodine activity ratio on monitor RI-1237.

c. Increase in gross/iodine activity ratio on monitor RI-1237.

d. Decrease in gross/iodine activity ratio on recorder RR-1237.

ANSWER: 059 (1.00)

d.

REFERENCE:

1203.19, Rev. 4, p. 3

000076A104 ..(KA's)

QUESTION: 060 (1.00)

Which one of the following is the first corrective action for a blackout condition, per 1202.01, section 10, "Actions to Correct Blackout?"

a. Establish natural circulation decay heat removal.

b. Verify HPI cooling established.

c. Verify 480V MCC B55 & B56 energized.

d. Select REFLUX BOILING setpoint for EFW.

ANSWER: 060 (1.00)

a.

REFERENCE:

1202.01, Rev. 17, p. 205

000055G012 ..(KA's)

QUESTION: 061 (1.00)

Which one of the following tabs is to be performed while attempting to restore NNI power supplies per 1202.01, section 11, "Actions for Loss of NNI Power," step 11.5?

a. Emergency Boration.

b. ESAS Actuation.

c. Main Steam Isolation.

d. Reactor Trip.

ANSWER: 061 (1.00)

d.

REFERENCE:

1202.01, Rev. 17, p. 237

000057G012 ..(KA's)

QUESTION: 062 (0.00)

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ANSWER: 062 (0.00)

DELETED

REFERENCE:

DELETED

000003K205 ..(KA's)

QUESTION: 063 (1.00)

Which one of the following correctly completes the paragraph below?

Following a reactor trip, the SPDS CRT ATOG displays will show a normal transient window with the minimum and maximum expected post-trip _____. The small box inside this window shows the expected _____ for normal hot shutdown conditions. Two boxes show expected _____ during natural circulation.

a. T-hot and T-cold, average temperature, pressure and temperature.

b. Pressures and temperatures, P-T relationship, T-hot and T-cold.

c. Pressures and temperatures, average temperatures, T-hot and T-cold.

d. T-hot and T-cold, P-T relationship, pressure and temperature.

ANSWER: 063 (1.00)

b.

REFERENCE:

1202.01, Rev. 17, p. 28

000007K203 ..(KA's)

QUESTION: 064 (0.00)

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ANSWER: 064 (0.00)

DELETED

REFERENCE:

DELETED

000008A106 ..(KA's)

QUESTION: 065 (1.00)

For which of the following regions (refer to the attached Figure 5) does 1202.01 require that the operator run all four RC pumps, defeating starting interlocks if necessary?

a. Region 1.

b. Region 2.

c. Region 3.

d. Region 4.

ANSWER: 065 (1.00)

d.

REFERENCE:

1202.01, Rev. 17, p. 110

000009A201 ..(KA's)

QUESTION: 066 (0.00)

DELETED AS A RESULT OF POST-EXAMINATION REVIEW

ANSWER: 066 (0.00)

DELETED

REFERENCE:

DELETED

000011G012 ..(KA's)

QUESTION: 067 (1.00)

Which one of the following alarms indicates that the DH pump has lost suction, causing a loss of DH removal, per 1203.28?

a. DH pump trip.

b. DH flow low.

c. RCS low level.

d. Aux. building sump level.

ANSWER: 067 (1.00)

b.

REFERENCE:

1203.28, Rev. 5, p. 4

000025K202 ..(KA's)

QUESTION: 068 (1.00)

Which one of the following correctly completes the two reactor trip verifications from 1202.01, REACTOR TRIP tab?

2.1.1 Verify _____.

2.1.2 Verify power decreasing on _____ range NI's.

a. No more than one control rod failed to fully insert, wide.

b. All rods on bottom, intermediate.

c. No more than one control rod failed to fully insert, intermediate.

d. All rods on bottom, wide.

ANSWER: 068 (1.00)

b.

REFERENCE:

1202.01, Rev. 17, p. 3

000029K301 ..(KA's)

QUESTION: 069 (1.00)

If source range indication was lost during a reactor startup due to loss of the power supply, which one of the following alarms is likely when restoring the power?

a. CONTROL ROD WITHDRAWAL INHIBITED (K10-D5).

b. POWER DISTRIBUTION ALARM (K08-B7).

c. REACTOR PROT SYSTEM TROUBLE (K10-A4).

d. UNIT MASTER IN TRACKING (K07-E4).

ANSWER: 069 (1.00)

a.

REFERENCE:

1203.21, Rev. 3, p. 5

000032A101 ..(KA's)

QUESTION: 070 (1.00)

Which one of the following conditions indicates a loss of subcooling margin during a Steam Generator Tube Rupture per the TUBE RUPTURE tab of 1202.01?

	RCS Pressure (psig)	T-hot (deg. F)	T-cold (deg. F)	Max. Core Exit (deg. F)
a.	1050	530	525	540
b.	1150	510	505	520
c.	1250	520	515	530
d.	1350	530	520	540

ANSWER: 070 (1.00)

a.

REFERENCE:

1202.01, Rev. 17, p. 28

000038K101 ..(KA's)

QUESTION: 071 (1.00)

Which one of the following correctly describes why the OVERHEATING tab of 1202.01 directs the operator to feed a dry SG slowly?

a. To allow the turbine bypass valves to maintain SG pressure.

b. To reduce the probability of emptying the PZR during the cooldown.

c. To minimize the probability of SG failure due to thermal stress.

d. To minimize the potential for water carryover into the steam lines.

ANSWER: 071 (1.00)

c.

REFERENCE:

1202.01, rev. 17, p. 78

000054K305 ..(KA's)

QUESTION: 072 (1.00)

If pressurizer level transmitter LT-1001 is selected by the Pressurizer Level Transmitter hand switch on panel C04 when the reference leg for LT-1001 develops a slow leak, which one of the following correctly describes anticipated instrument or plant response?

	LRS-1001 (Pzr level)	LIS-1002 (Pzr level)	LR-1248 (M/U tank)
a.	Increasing	Decreasing	Increasing
b.	Decreasing	Increasing	Increasing
c.	Increasing	Decreasing	Decreasing
d.	Decreasing	Increasing	Decreasing

ANSWER: 072 (1.00)

a.

REFERENCE:

1203.15, Rev. 5, p. 8, 9

000028K101 ..(KA"s)

QUESTION: 073 (3.00)

For each of the events/conditions given below (a-g) select the correct EFIC response (1-5). In all cases assume that: the plant starts from a normal full power lineup, all automatic responses are as designed, no malfunctions exist other than what is stated, and NO OPERATOR ACTION is taken. Responses (1-5) may be used more than once or not at all.

EFIC RESPONSE

1. EFIC actuated and feeding both OTSGs
2. EFIC actuated and feeding no OTSGs
3. EFIC actuated and feeding OTSG A only
4. EFIC actuated and feeding OTSG B only
5. EFIC does not actuate

	EVENT/CONDITION	OTSG LEVEL A	OTSG LEVEL B	OTSG PRESS A	OTSG PRESS B
a.	Plant trips due to loss of offsite power	100"	120"	850	860
b.	Following a manual reactor trip RCS pressure = 1865 psia	29"	30"	800	780
c.	Plant trips on low pressure with a steam leak upstream of the MSIV on OTSG B, current RCS pressure = 1750 psia	25"	05"	580	270
d.	Trip due to high reactor power.	50"	65"	880	885
e.	Trip due to loss of MFW	12"	13"	590	650
f.	Trip on low pressure due to large break LOCA, current pressure = 1400 psia	41"	43"	520	540

ANSWER: 073 (3.00)

a. 1. d. 5.
b. 5. e. 4.
c. 3. f. 2.
(0.5 EA)

REFERENCE:

ANO1 STM-1-66 pgs 1-3, 34, 35, OP 1102.04 ATTs E-H, EOP 1202.01

061000K402 194001K100 ..(KA's)

QUESTION: 074 (3.00)

Match each load in column 1 (a-h) with its closest (immediate) power supply in column 2 (1-10). If a load has multiple alternate power supplies, select the normal (perferred) power supply. No credit will be given for selecting a power supply which indirectly supplies the load through its closest power supply. Items in column 2 may be used more than once or not at all.

LOAD		POWER SUPPLY	
a.	Battery charger D03	1.	1A1
		2.	1A2
b.	Core flood tank T-2A outlet (CV-2415)	3.	1A3
		4.	1A4
c.	CRD 480V supply	5.	B5
		6.	B6
d.	Circ water pump P3D	7.	MCC B51
		8.	MCC B56
e.	EFW pump P7B	9.	MCC B61
		10.	MCC B71
f.	Fire pump P6A		
g.	AFW pump (P-75)		
h.	IA compressor C2B		

ANSWER: 074 (3.00)

a.	7	e.	3
b.	8	f.	1
c.	6	g.	2
d.	2	h.	9

(0.375 each)

REFERENCE:

ANO1 STM-1-32 pgs 100-104, OP 1107.02 ATT A-C, OP 1107.01 pgs 21-28

062000K201 194001K100 ..(KA's)

QUESTION: 075 (3.00)

Match the components/systems in column 1 (a-h) to the cooling systems in column 2 (1-4) by which each is most directly cooled.

COMPONENT/SYSTEM	COOLING SYSTEM
a. Circ water pump motors	1. CIRC WATER
b. Waterbox vacuum pump seals	2. SERVICE WATER
c. DHR pump room cooler	3. CHILLED WATER
d. SA compressor aftercoolers	4. ACW
e. OTSG sample cooler	5. ICW
f. Control room chiller	
g. EFW pump room cooler	
h. TG lube oil cooler	

ANSWER: 075 (3.00)

a. 2
b. 4
c. 2
d. 5
e. 5
f. 4
g. 3
h. 4
(0.375 ea)

REFERENCE:

075000K101 076000K119 008000K102 194001K100 ..(KA's)

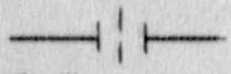
QUESTION: 076 (2.00)

Match the P&ID symbols in column 1 (a-j) with the one name or function in column 2 (1-16) which best identifies the symbol. Arrows indicate the normal or design fluid flow direction.

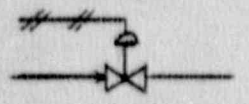
SYMBOL

a.

b.

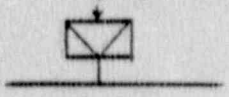


c.



d.

e.



f.

g.

h.

i.

j.

NAME/FUNCTION

1. Manual gate valve
2. Air actuated valve
3. Check valve
4. Venturi
5. Orifice
6. Vacuum breaker
7. Temperature Regulator
8. Relief valve
9. Backpressure regulator
10. Pressure reducer
11. Motor operated valve
12. Damper
13. Hydraulic valve
14. Solenoid actuated valve
15. Stop-check valve
16. D/P level detector

ANSWER: 076 (2.00)

a.	11	f.	15
b.	5	g.	8
c.	2	h.	12
d.	13	i.	9
e.	6	j.	7

(0.2 ea)

REFERENCE:

ANO P&ID M-2200, 2201

194001A107 ..(KA's)

QUESTION: 077 (2.00)

Match each piece of equipment in column 1 (a-f) with the appropriate location in column 2 (1-7). Locations may be used more than once or not at all.

	EQUIPMENT		LOCATION
a.	RO #1 copy of 1203.02 (Alt S/D)	1.	Lower south penetration room
b.	HPI Loop A Block Valves (CV-1219 & CV-1220)	2.	Alt. shutdown file cabinet
		3.	Upper north piping penetration
c.	RB Coolers VCC-2C & 2D PI-3813A ISOL (SW-3813A)	4.	Alt. shutdown radio cabinet
d.	P-7A (CV-2802) & P-7B (CV-2800) SUCT from CST	5.	Main steam line penthouse
		6.	EFW pump room
e.	P-7A to SG-B isolation (CV-2620) ISOL (SW-3812A)	7.	Outside letdown filter rooms on elev. 335
f.	RCP Seal Bleedoff (Normal) Return (CV-1274)		

ANSWER: 077 (2.00)

a. 2
b. 3
c. 7
d. 6
e. 1
f. 3
(0.33 ea)

REFERENCE:

1203.02, Rev. 6, p. 16-19

194001K100 000068K201 ..(KA's)

QUESTION: 078 (2.00)

Match the primary to secondary leak rates in column 1 (a-d) to the appropriate action in column 2 (1-6). Each action may be used more than once or not at all.

	LEAK RATE		ACTION REQUIRED
a.	> 0.1 gpm	1.	Normal shutdown per 1102.04 & 1102.10.
b.	> 0.35 gpm	2.	Trip reactor.
c.	> 1.0 gpm	3.	Notify NRC through plant licensing.
d.	> 10.0 gpm	4.	Shutdown at ~5%/minute per 1102.04 & 1102.10.
		5.	Shutdown at 10~30%/minute per 1102.04 & 1102.10.
		6.	Go to 1202.01 TUBE RUPTURE tab.

ANSWER: 078 (2.00)

a. 1
b. 3
c. 4
d. 6
(0.5 ea)

REFERENCE:

1203.23, Rev. 5, p. 2

194001K100 000037G005 ..(KA's)

QUESTION: 079 (2.00)

Match the critical air-operated components in column 1 (a-e) to the appropriate loss of air pressure failure mode in column 2 (1-3). Failure modes may be used more than once or not at all.

	COMPONENTS	FAILURE MODE
a.	Letdown orifice block valve (CV-1222)	1. Open.
b.	Pressurizer level control (CV-1235)	2. Closed.
c.	Main steam isolation valves (CV-2691/2692)	3. As is.
d.	RC pump seal total injection flow (CV-1207)	
e.	SG-A atmospheric dump control valve (CV-2618)	

ANSWER: 079 (2.00)

a. 3
b. 2
c. 2
d. 1
e. 2
(0.4 ea)

REFERENCE:

1203.24, Rev. 4, p. 13-15
194001K100 000065A208 ..(KA's)

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

FACILITY LICNESEE COMMENTS

QUESTIONS RELATING TO ANNUNCIATOR OR COMPUTER ALARMS:

Operators are trained to refer to 1203.12, Annunciator Corrective Actions, when an alarm is received. The symptom is "alarm", the action is "refer to 1203.12", Annunciator Corrective Actions. The 1203.12 procedures list "Causes" and "Actions Required". These are not taught in the same regard as "Symptom" and "Immediate Actions" of the abnormal operation procedure. There are 650 different annunciator responses (causes and actions required) not including the causes of plant computer alarms of which there are hundreds more. Memorization of 650+ causes and actions is not required of the operators since these procedures are available to the operators in the control room. Any condition that would require an immediate action is covered by EOP 1202.01 and AOP 1203.XX Abnormal Operating Procedures.

Questions 5, 11, 26 and 30 all refer to control room alarms. The RO is expected to respond to all control room alarms. He acknowledges the alarm, confirms the alarm, and reports the alarm condition to the SRO.

QUESTION #5

Which one of the following choices represents a correct cause for and preferred response to a RCP 1P32 SEAL COOLING FLOW LO alarm while at full power?

a. ICW flow to any RCP < 30 gpm, start standby ICW pump
b. Seal flow to any RCP < 3 gpm, adjust valve MU-28 (A-D)
c. ICW flow to any RCP < 30 gpm, trip affected RCP
d. Seal flow to any RCP < 3 gpm, trip affected RCP

Answer:

a.

Reference:

ANO1 AOP 1203.12G Pgs 6, 7, AOP 1203.31 Pg 6
003000G008 . . . (KA)

QUESTION #11

Which one of the following conditions will generate a REACT PROT SYSTEM TROUBLE alarm?

a. Any power range NI channel detector power off
b. Any channel of RPS in bypass
c. Any power range NI channel in test or calibrate
d. Any channel of RPS in test

Answer:

a.

Reference:

ANO1 AOP 1203.12I Pg. 32
015000A302 . . .(KA)

QUESTION #26

The CONTROL ROD PATTERN ASYMMETRICAL alarm is generated by an individual rod position more than:

a. 7" out from its RPI group average and will be accompanied by the asymmetric rods lamp on the diamond panel being on
b. 9" out from its API group average and will be accompanied by the individual fault lamp on the PI panel being on
c. 7" out from its API group average and will be accompanied by the individual fault lamp on the PI panel being on
d. 9" out from its RPI group average and will be accompanied by the asymmetric rods lamp on the diamond panel being on

Answer:

c.

References:

ANO1 STM-1-02 Pgs 17-21, AOP 1203.12I Pg 49, AOP 1203.03 Pg. 1
014000A102 . . . (KA)

QUESTION #30

Which one of the following spent fuel system parameters or conditions produce abnormal condition alarms directly observable in the control room?

a. Spent fuel pool recirculation flow
b. ICW flow through the spent fuel coolers
c. Spent fuel cooler filter differential pressure
d. Fuel transfer tube gate valve not fully shut

Answer:

a.

References:

ANO1 STM-1-07 Pgs 2-6, OP 1101.02 Rev. 8 Pgs 16, 18
033000G008 . . . (KA)

QUESTIONS CONCERNING THE SCOPE OF RO KNOWLEDGE

The scope of RO level knowledge is not clearly defined. In exam item construction, questions should come from information that is expected that the RO has memorized. Obviously no one can memorize every paragraph of every procedure. The following questions relate to test items requiring memorization over understanding and items not considered relevant to safe operation concerns.

QUESTION #8

Once the trip signal has cleared following ESAS actuation, which one of the following recovery sequences MUST occur in the order specified to successfully reset ESAS?

a. Override actuated devices, then reset digital subsystems
b. Reset analog subsystems, then reset digital subsystems
c. Override actuated devices, then reset analog subsystems
d. Reset digital subsystems, then reset analog subsystems

Answer:

b.

References:

ANO1 OI 1105.03 Rev. 5 Pg 12, STM-1-65 Pgs 2-8

Comments

This question requires the RO to pick 2 of 3 procedure steps from a normal operating procedure and then place them in the correct order in which they are required to be performed. All 3 steps are required by the procedure when resetting the ES signal. This question does not examine the operators knowledge of ESAS but rather his ability to memorize procedure steps, and decide that procedural complaince is not required to accomplish the task.

QUESTION #16

Which one of the following is correct concerning the operation or behavior of the Reactor Vessel and Hot Leg Indicating System?

a. The Delta T between the heated and the unheated thermocouple decreases in a steam environment.
b. Loss of heating to the junction of the heated thermocouple will cause a low level indication.
c. An unheated thermocouple at 690 deg. F will generate a low level alarm.
d. Indicated level will be greater than actual level if reverse flow is initiated through the reactor vessel and core.

Answer:

d.

References:

ANO1 LP AA-51002-009 Pg. 8
017000A202 000074A116 . . . (KA)

Comments

There is no ANO specific reference for this question. The specific information could not be found that would allow this question to be answered. This question was described as "Generic Industry Knowledge" by NRC. Unless ANO has a reference to support this knowledge we cannot train our operators to respond to the conditions specified by the question.

QUESTION #18

When initiating a gaseous release from the waste gas decay tanks per OP1104.22, CV-4820 is slowly opened to:

a. </= flow rate determined in the preliminary release report by monitoring flow on FR-4831
b. </= flow rate determined in the preliminary release report by monitoring total flow on FR-8001
c. The lesser of 10 CFM or the preliminary report flow rate by monitoring flow on FR-4831
d. The lesser of 10 CFM or the preliminary report flow rate by monitoring total flow on FR-8001

Answer:

a.

References:

ANO1 OP 1104.22 Att. C Pg 4
071000A202 . . . (KA)

Comments

Half of this question's answer requires the RO to have memorized the numerical designation of flow recorders, differentiating between FR4831 and FR8001.

QUESTION #38

Once the hydrogen recombiners have been started following a LOCA, significant hydrogen recombination will not begin for about: (Att. C to OP 1104.31 provided)

a. 1 - 2 hours
b. 2 - 3 hours
c. 3 - 4 hours
d. 4 - 5 hours

Answer:

c.

References:

AN01 OP 1104.31 Pgs 2, 12

028000K601 028000A401 028000A202 028000A101 . . . (KAs)

Comments

This question keys on the RO knowing that H_2 recombination occurs at 1135° F. This number comes from the body of the EOP. The figure provided is of no value without the 1135° F knowledge. This information is not necessary for the RO to safely operate the system as he is directed by the SRO when to start up the recombiner. The SRO level is more appropriate for the understanding of this recombination temperature. This is not a question of the importance of H_2 control following a LOCA, rather a question of the importance that an RO have the 1135° F number memorized.

QUESTION #44

Which one of the following is the correct tab or tabs in 1202.01, "Emergency Operating Procedure," for the following conditions?

T+0 Reactor trip from 100% power due to low RC pressure.
All control rods fully insert.
No secondary activity alarms.

T+30sec Immediate actions of Reactor Trip tab were completed successfully.
Follow-up actions of Reactor Trip tab were completed until transfer criteria met.

T+1min Main steam line pressures are 800 psig and decreasing.
RCS subcooling is 40 degrees F and decreasing.
Pressurizer level is 40 inches and decreasing.
RCS pressure 1650 psig and decreasing.
RCS T-cold is 540 degrees and decreasing. T-hot is following T-cold.

a. REACTOR TRIP concurrent with OVERCOOLING
b. OVERCOOLING
c. LOSS OF SUBCOOLING MARGIN
d. OVERCOOLING concurrent with LOSS OF SUBCOOLING

Answer:

b.

References:

1202.01 Rev. 17, Pgs. 20, 29
000040G012 . . . (KA)

QUESTION #53

Which one of the following tabs is to be performed while attempting to restore NNI power supplies per 1202.01, section 11, "Actions for Loss of NNI Power," step 11.5?

a. Emergency Boration
b. ESAS Actuation
c. Main Steam Isolation
d. Reactor Trip

Answer:

d.

References:

1202.01, Rev. 17, Pg. 237
000057G012 . . . (KA)

QUESTION #58

If, following a small break LOCA, the RCS stabilizes at 200 psig and 300 deg. F while performing the actions of the ESAS Actuation tab in 1202.01, which one of the following is the correct EOP use to continue recovery?

a. Go to LOSS OF SUBCOOLING
b. Go to OVERCOOLING AND continue in ESAS ACTUATION
c. Go to OVERCOOLING
d. Go to LOSS OF SUBCOOLING and continue in ESAS ACTUATION

Answer:

b.

References:

1202.01, Rev. 17, Pg. 281
000011G012 . . . (KA)

Comments

Questions 44, 53, and 58 all relate to plant conditions that require entry into a specific tab of 1202.01 by application of "GO-TO" statements from the EOP. ROs are not expected to have memorized as symptoms the 64+ "GO-TO" statements that would direct actions to another EOP tab. The RO is expected to monitor his control boards and keep the SRO informed of changing plant conditions. The SRO will use the plant conditions and apply them to the EOP "GO-TO" statements for direction to the appropriate tab. The SRO would have the benefit of the complete transient, the RO's reports of plant conditions, and the EOP as references for identifying appropriate "GO-TO" statements.

QUESTION #52

Which one of the following is the first corrective action for a blackout condition, per 1202.01, section 10, "Actions to Correct Blackout?"

a. Establish natural circulation decay heat removal
b. Verify HPI cooling established
c. Verify 480V MCC B55 and B56 energized
d. Select REFLUX BOILING setpoint for EFW

Answer:

a.

References:

1202.01, Rev. 17, Pg. 205
000055G012 . . . (KA)

Comments

Requires memorization of the order that steps in the "follow-up" section of the EOP occur in. This is not relevant for the RO as the SRO will direct the RO action to establish natural circulation decay heat removal.

QUESTION #54

If the unit is operating at 100% power, with all systems normal, when the PROGRAMMER LAMP FAULT LIGHT on the Diamond panel illuminates and group 7 rods start driving in at jog speed, which one of the following is correct if the fault is in lamp group A?

a. Pulling the fuse for lamp group A, fuse F-3, will cause the rods to drop
b. Pulling the fuse for lamp group B, fuse F-1, will cause the rods to stop.
c. Pulling the fuse for lamp group A, fuse F-3, will cause the rods to stop.
d. Pulling the fuse for lamp group B, fuse F-1, will cause the rods to drop.

Answer:

c.

References:

1203.03, Rev. 12, Pg. 10
000003K205 . . . (KA)

Comments

This question requires memorization of fuse numbers that are clearly listed in the abnormal operating procedure. ROs are not required to have specific paragraphs from the "follow up" actions of the AOPs memorized to the level of detail this question requires. Since the question does not ask for the correct action , there are two answers that are true if the appropriate fuse is pulled. Answers "C" & "D" are both true. Although the correct action is to stop the rods, if the F-1 fuse is pulled, the rods would drop.

QUESTION #57

For which of the following regions (refer to the attached Figure 5) does 1202.01 require that the operator run all four RC pumps, defeating starting interlocks, if necessary?

a. Region 1
b. Region 2
c. Region 3
d. Region 4

Answer:

d.

References:

1202.01, Rev. 17, Pg. 110
000009A201 . . . (KA)

Comments

This question requires the memorization of actions detailed in the "follow-up" section of an EOP tab. This is an SRO level question.

QUESTION #68

If a RWP indicates that a task is subject to a Standing ALARA Review (SAR), this means that:

a. An ALARA briefing is not required prior to each entry under the RWP
b. An ALARA briefing must be conducted prior to each entry under the RWP
c. The total estimated man-rem for the task is less than 1 man-rem
d. The total estimated man-rem for the task is greater than 10 man-rem

Answer:

a.

Reference:

ANO OPAP 1000.33, Rev. 5, Pgs 10-13

194001K104 . . . (KA)

Comments

This question addresses ALARA procedures for review of RWPs. The vast majority of operator duties are covered by standing RWPs for general operator activities. The question requires the RO to have memorized details concerning ALARA reviews that do not significantly affect the performing of his job.

QUESTION #69

Which one of the following correctly represents requirements for access control per OP 1000.19, Station Security Requirements?

a. Individuals responding to an emergency but not normally authorized access to a particular vital area may piggyback with an individual with proper access and then report to security after the emergency is controlled.
b. When escorting a large group, only the escort needs to enter his/her PID and card to pass through doors as long as the group is not divided up with additional escorts
c. An individual checking out a key for a security door will specify the reason for entry and all personnel entering the space, during key check out. Further reports to security are not necessary until the key is returned.
d. An escorted visitor is permitted to enter a space alone as long as there is only one way in or out and the space is not a vital or sensitive area, such as a restroom or conference room, and the exit is monitored by the escort.

Answer:

d.

References:

ANO SAP 1000.19, Rev. 17, Pgs 10-15
194001K105 . . . (KA)

Comments

This question is not related to safe operation of the plant nor is it related to a significant part of the ROs job duties. The RO spends < 1% of his total job time escorting visitors in the plant.

QUESTION #72

Which one of the following analyses is performed on the secondary system DAILY or more frequently during normal power operations?

a. Total iron
b. Total copper
c. Boric acid
d. Tritium/Flourine

Answer:

d.

References:

AND1 LP AA-51002-023 Table 23.1
194001A114 001000K100 . . . (KAs)

Comments

This is an SRO level question and was addressed in the initial comments presented at the exit. It falls into the category of irrelevant at the RO level in terms of differentiating between daily or weekly samples of the secondary system that is performed by plant chemists and the results reported to the Shift Supervisor (SRO).

QUESTION #74

Match each load in column 1 (a-h) with its closest (immediate) power supply in column 2 (1-10). If a load has multiple alternate power supplies, select the normal (preferred) power supply. No credit will be given for selecting a power supply which indirectly supplies the load through its closest power supply. Items in column 2 may be used more than once or not at all.

LOAD		POWER SUPPLY	
a.	Battery charger D03	1.	1A1
b.	Core flood tank T-2A outlet (CV-2415)	2.	1A2
c.	CRD 480V supply	3.	1A3
d.	EFW pump P7B	4.	1A4
e.	EFW pump P7B	5.	B5
f.	Fire pump P6A	6.	B6
g.	AFW pump (P-75)	7.	MCC B51
h.	IA compressor C2B	8.	MCC B56
		9.	MCC B61
		10.	MCC B71

Answer:

a.	7	e.	3
b.	8	f.	1
c.	6	g.	2
d.	2	h.	9

Comments

Questions like this one need to be moderated to include memorization of only vital or important equipment. The choices should not require differentiation between B51 or B52 as the power supply but rather B51 or B61. Only major busses rather than specific breakers should be asked. Operators are not required to have all equipment power supplies memorized. Further, the power supplies for control board equipment are identified on labels attached to the board near the handswitch that operates the equipment.

QUESTION #78

Match the primary to secondary leak rates in column 1 (a-d) to the appropriate action in column 2 (1-6). Each action may be used more than once or not at all.

LEAK RATE		ACTION REQUIRED	
a.	> 0.1 gpm	1.	Normal shutdown per 1102.04 & 1102.10
b.	> 0.35 gpm	2.	Trip reactor
c.	> 1.0 gpm	3.	Notify NRC through plant licensing
d.	> 10.0 gpm	4.	Shutdown at ~ 5%/minute per 1102.04 & 1102.10
		5.	Shutdown at 10 ~ 30%/minute per 1102.04 & 1102.10
		6.	Go to 1202.01 TUBE RUPTURE tab

Answer:

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

References:

1203.23, Rev. 5, Pg. 2
194001K100 000037G005 . . . (KA)

Comments

This is an SRO level question. The RO on the boards combating a tube failure is not concerned about notifying the NRC through plant licensing at > .35 gpm. This is directed by the procedure for the SRO to perform.

QUESTION #79

Match the critical air-operated components in column 1 (a-e) to the appropriate loss of air pressure failure mode in column 2 (1-3). Failure modes may be used more than once or not at all.

COMPONENTS		FAILURE MODE	
a.	Letdown orifice block valve (CV-1222)	1.	Open
b.	Pressurizer level control (CV-1235)	2.	Closed
c.	Main steam isolation valves (CV-2691/2692)	3.	As is
d.	RC pump seal total injection flow (CV-1207)		
e.	SG-A atmospheric dump control valve (CV-2618)		

Answer:

a. 3
b. 2
c. 2
d. 1
e. 2

References:

1203.24, Rev. 4, Pgs. 13-15
194001K100 000065A208 . . . (KA)

Comments

The RO should not be required to have the failure mode of all or even the significant air operated valves memorized. The AOP lists the valves and the failure modes. There are 28 valves listed in 1203.24. It is not reasonable for the RO to be expected to have all of them memorized.

The following questions have individual concerns which will be stated for each question separately.

QUESTION #10

Which one of the following will most likely result in an increase in source range NI (gamma-metrics) indication following a reactor trip?

a. Release of corrosion products from RCS internal surfaces
b. Purification demineralizer resin retention element failure
c. Rapid uncontrolled depressurization of the RCS
d. High reactor building temperature and humidity

Answer:

c.

References:

AN01 LP AA-21008-009 Pgs 1-4, STM-1-67 Pgs 2, 3, Tables 67.2-4
015000A103 . . . (KA)

Comments

The response that is correct assumes without stating that VOIDING is occurring. A rapid depressurization to 1° subcooled with no voiding is possible.

QUESTION #21

If pressurizer pressure is 2100 psia, quench tank pressure is 5 psig and initial quench tank temperature is 90 deg. F a leak across the pressurizer ERV while at full power will cause a downstream temperature indication of about:

a. 162 deg. F
b. 228 deg. F
c. 318 deg. F
d. 640 deg. F

Answer:

b.

References:

Steam Tables
THT&FF Theory
000008K302 000008K101 002000K105 . . . (KAs)

Comments

There are no control panel indications of RCS (pressurizer) pressure that read out in PSIA. Therefore, this is a trick question in that the RO must pick out the PSIA in the RCS pressure and the PSIG for the quench tank to obtain the correct answer.

QUESTION #29

When starting the RB Purge System with a negative pressure on the RB, open the purge inlet valves before opening the purge outlet valves to prevent:

a. Damaging RB penetrations during sudden pressure change
b. Inadvertant release of radioactive contaminants
c. Damaging purge discharge due to reverse air flow
d. Reverse air flow through stack sample monitor (RE-7400)

Answer:

c.

References:

AN01 STM-1-09 Pgs. 4-6, STM-1-47 Pgs 6-11, 19
029000A401 . . . (KA)

Comments

As per the pre-exam review, this question was to be modified to include the word "filter" as part of the correct answer "C". "Reverse air flow through the discharge filter".

QUESTION #56

Which one of the following actions is required to balance RCS inventory if a pressurizer steam space leak is indicated and pressurizer level cannot be maintained < 290 inches?

a. Stop all but one RCP
b. Isolate letdown
c. Close RC Pump Seals Total INJ Flow Valve (CV-1207)
d. De-energize all heaters

Answer:

a.

References:

1202.01, Rev. 17, Pg. 19
000008A106 . . . (KA)

Comments

This question was identified in the pre-exam review but was inappropriately modified when "Balance RCS Inventory" was added. This modification makes the answers inappropriate. Refer to exit meeting comments.

QUESTION #70

Excessive water level is of concern in affected areas since the integrity of safe shutdown electrical equipment is only verified for an actuation time of:

a. 10 minutes
b. 20 minutes
c. 30 minutes
d. 60 minutes

Answer:

b.

References:

ANO OAP 1015.07 Rev. 8, Pg. 2

Comments

Without reading something into the question, this question does not stand alone. The actuation of a "Fire Suppression System" must be read into the question.

The following questions relate to a deviation from BR0122 and ES401 as indicated for each item.

QUESTION #22

The loss of which one of the following DC panels would directly impact the automatic operation of pump P34B?

a. D11
b. D21
c. D15
d. D25

Answer:

b.

References:

ANO1 OP 1107.04 Pgs. 28-31, STM-1-32, Pg. 28, STM-1-05, Pg. 4
006000K201 . . . (KA)

Comments

In conflict with BR0122 Page 4-13 Item #9. The logical sequence should be D11, D15, D21, D25.

QUESTION #25

According to Technical Specifications, which one of the following RPS trips is NOT specifically intended for DNB protection?

a. Power imbalance - flow
b. Low pressure
c. High temperature
d. Variable low pressure

Answer:

c.

References:

ANO1 STM-1-02 Pgs. 17-21, AOP 1203.12I Pg. 49, AOP 1203.03 Pg. 1
014000A102 . . . (KA)

Comments

In conflict with BR0122 Page 4-10 Item #5. "When possible avoid using negatively stated items".

QUESTION #49

Which one of the following is an INCORRECT statement of the requirements for Reactor Building Integrity per 1203.05, "Loss of Reactor Building Integrity?"

a. Both doors of the personnel lock are closed and sealed
b. One door on the personnel airlock is closed and sealed during personnel access
c. All non-automatic reactor building isolation valves are closed as required
d. All automatic reactor building isolation valves are operable

Answer:

d.

References:

1203.05, Rev. 5, Pg. 1
000069A201 . . . (KA)

Comments

In conflict with BR0122 Page 4-10 Item #5. "When possible, avoid using negatively stated items".

QUESTION #38

Once the hydrogen recombiners have been started following a LOCA, significant hydrogen recombination will not begin for about: (Att C to OP 1104.31 provided)

a. 1 - 2 hours
b. 2 - 3 hours
c. 3 - 4 hours
d. 4 - 5 hours

Answer:

c.

References:

ANO1 OP 1104.31 Pgs. 2, 12
028000K601 028000A401 028000A202 028000A101 . . . (KAs)

Comments

In conflict with BR0122 Page 4-13 Item #10. Avoid overlapping answers. 1-2 hrs, 2-3 hrs, 3-4 hrs, 4-5 hrs.

QUESTION #45

Which one of the following is a correct statement regarding condenser vacuum and reactor operation?

a. If reactor power is at 40% and condenser vacuum cannot be maintained above 24.5" Hg, then the reactor must be tripped
b. If reactor power is less than 30% and condenser vacuum cannot be maintained above 26.5" Hg, then the plant must be shutdown per OP 1102.10
c. If condenser vacuum decreases to less than 17" Hg, then reactor power must be reduced to less than 3%.
d. If condenser vacuum decreases to less than 5" Hg, then the reactor must be placed in a subcritical condition within 6 hours

Answer:

c.

References:

1203.16 Rev. 4, Pg. 2-4
000051A202 . . . (KA)

Comments

In conflict with BR0122 Page 4-8 Item #3. "Don't present a collection of true-false statements as a multiple choice item".

QUESTION #69

Which one of the following correctly represents requirements for access control per OP 1000.19, Station Security Requirements?

a. Individuals responding to an emergency but not normally authorized access to a particular vital area may piggyback with an individual with proper access and then report to security after the emergency is controlled.

b. When escorting a large group, only the escort needs to enter his/her PID and card to pass through doors as long as the group is not divided up with additional escorts
c. An individual checking out a key for a security door will specify the reason for entry and all personnel entering the space, during key check out. Further reports to security are not necessary until the key is returned.
d. An escorted visitor is permitted to enter a space alone as long as there is only one way in or out and the space is not a vital or sensitive area, such as a restroom or conference room, and the exit is monitored by the escort.

Answer:

d.

References:

ANO SAO 1000.19, Rev. 17, Pgs. 10-15
1940001K105

Comments

In conflict with BR0122 Page 4-8 Item #3. "Don't present a collection of true-false statements as a multiple choice item".

QUESTION #55

Which one of the following correctly completes the paragraph below?

Following a reactor trip, the SPDS CRT ATOG displays will show a normal transient window with the minimum and maximum expected post-trip _____. The small box inside this window shows the expected _____ for normal hot shutdown conditions. Two boxes show expected _____ during natural circulation.

a. T-hot and T-cold, average temperature, pressure and temperature
b. Pressures and temperatures, P-T relationship, T-hot and T-cold
c. Pressures and temperatures, average temperatures, T-hot and T-cold
d. T-hot and T-cold, P-T relationship, pressure and temperature

Answer:

b.

References:

1202.01, Rev. 17, Pg. 28
000007K203 . . . (KA)

Comments

In conflict with BR0122 Page 4-7 Item #2. "Avoid the use of too many blanks. Use no more than two in any question".

QUESTIONS RELATING TO PROPER TERMINOLOGY AND LABELING:

The Procedures Writers Guide emphasizes the use of proper and consistent terms for noun names of components. This terminology is used in training and required of the operators while operating the plant. Questions should use complete and accurate noun names of equipment as used in procedures along with the numerical designation for a piece of equipment. Training requires accurate identification of equipment by either a noun name or a numerical designation. Either designation is acceptable. Since either is acceptable both (name and number) should be referenced in a question.

QUESTION #2

Group rod motion is stopped at the full in or out positions by:

a. A cam operated mechanical switch
b. A magnetically operated mechanical switch
c. A magnetically operated solid state electronic switch
d. An optically operated solid state electronic switch

Answer:

b.

References:

AN01 LP AA-51002-010 Pgs. 18, 19
001000K602 . . . (KA)

Comments

The correct term for this device is a mechanical REED switch.

QUESTION #5

Which one of the following choices represents a correct cause for and preferred response to a RCP 1P32 SEAL COOLING FLOW LO alarm while at full power?

a. ICW flow to any RCP < 30 gpm, start standby ICW pump
b. Seal flow to any RCP < 3 gpm, adjust valve MU-28 (A-D)
c. ICW flow to any RCP < 30 gpm, trip affected RCP
d. Seal flow to any RCP < 3 gpm, trip affected RCP

Answer:

a.

References:

ANO1 AOP 1203.12G Pgs. 6, 7, AOP 1203.31 Pg. 6
003000G008 . . . (KA)

Comments

The correct answer in part "A" is standby ICS "BOOSTER" pump.

QUESTION #15

At full power with condensate pumps P2B and P2C running, breaker 152-111 is shut resulting in a CONDENSATE PUMP TRIP alarm. Which one of the following will be the result of this event?

a. P2C running with runback in progress
b. P2A starts in standby and P2C remains running
c. P2A running with runback in progress
d. P2A starts in standby and P2B remains running

Answer:

a.

Reference :

ANO1 STM-1-20 Pg. 8, OP 1107.01 Rev. 33 Pg. 12
056000A204 . . . (KA)

Comments

152-111 is the startup transformer #2 feeder breaker to A1.

QUESTION #14

Which one of the following condensate system parameters affects control signals to the main feedwater pumps?

a. Seal water pressure
b. Low pressure heater ΔT
c. Discharge pressure
d. Hotwell level

Answer:

c.

References:

ANO1 STM-1-19 Pg. 4, STM-1-20
056000K103 . . . (KA)

Comments

The correct answer is a feed pump "TRIP" condition not a parameter that "affects control signals".

K & A RATING CONCERNS:

In general, many of the selected KAs have only a vague relationship to the questions asked. Realizing the difficulty of referencing specific plant equipment and procedures with the generic KA catalog, a great deal of latitude was taken into account. The following references either do not apply or question and KA have differing objectives.

QUESTION #1

Which ONE (1) of the following statements describing the design of the fuel transfer tube is correct?

a. A blind flange is used to close the transfer tube on BOTH the containment side and the spent fuel side
b. A valve is used to close the transfer tube on BOTH the containment side and the spent fuel side
c. A valve is used to close the transfer tube on the containment side and a blind flange is used on the spent fuel side
d. A blind flange is used to close the transfer tube on the containment side and a valve is used on the spent fuel side

Answer:

d.

References:

ANO1 STM-1-51 Pg. 7
034000K101 034000K402 . . . (KAs)

Comments

Referenced KA is not appropriate. The KA which should have been used is 000-069 EA1.02, "Ability to operate and monitor: Blind flanges as part of containment isolation". This KA has a rating of 2.2.

QUESTION #10

Which one of the following will most likely result in an increase in source range NI (gamma-metrics) indication following a reactor trip?

a. Release of corrosion products from RCS internal surfaces
b. Purification demineralizer resin retention element failure
c. Rapid uncontrolled depressurization of the RCS
d. High reactor building temperature and humidity

Answer:

c.

References:

ANO1 LP AA-21008-009 Pgs. 1-4, STM-1-67 Pgs. 2, 3, Tables 67.2-4
015000A103 . . . (KA)

Comments

Referenced KA is not appropriate. The question should deal with the monitoring of the nuclear instrumentation system to prevent exceeding design limits. The question should be a generic fundamentals exam question under the components section. The generic fundamentals exam KA is 192002K1.17, "Effects of Core Voiding on Neutron Detection".

QUESTION #15

At full power with condensate pumps P2B and P2C running, breaker 152-111 is shut resulting in a CONDENSATE PUMP TRIP alarm. Which one of the following will be the result of this event?

a. P2C running with runback in progress
b. P2A starts in standby and P2C remains running
c. P2A running with runback in progress
d. P2A starts in standby and P2B remains running

Answer:

a.

References:

ANO1 STM-1-20 Pg. 8, OP 1107.01 Rev. 33, Pg. 12
056000A204 . . . (KA)

Comments

KA is the ability to predict the impact of a loss of condensate pumps. The question refers to the load shedding of condensate pumps when shifting to startup transformer #2.

QUESTION #29

When starting the RB Purge System with a negative pressure on the RB, open the purge inlet valves before opening the purge outlet valves to prevent:

a. Damaging RB penetrations during sudden pressure change
b. Inadvertant release of radioactive contaminants
c. Damaging purge discharge due to reverse air flow
d. Reverse air flow through stack sample monitor (RE-7400)

Answer:

c.

References:

ANO1 STM-1-09 Pgs. 4-6, STM-1-47 Pgs. 6-11, 19
029000A401

Comments

Since the question deals with a reverse flow across the reactor building purge exhaust filters, the correct KA should be "Knowledge of CPS Design Feature(s) and/or Interlock(s) which provide for the following: Use of filters for purging to the atmosphere" 029000K4.01. This has a rating of 2.4.

QUESTION #35

Aside from improving plant operating efficiency, the Circ Water Waterbox Vacuum System is important to:

a. Prevent lake water from entering the feedwater system as a result of small condenser tube leaks
b. Reduce circ water pump discharge back pressure to keep pump motor temperatures within limits
c. Prevent damage to condenser tubes which results from steam impacting on dry tubing
d. Remove dissolved gases from lake water which interfere with anti-fouling chlorination treatment

Answer:

c.

References:

ANO1 STM-1-40 Pg. 2
075000A203 . . . (KA)

Comments

Incorrect KA referenced. Correct KA should be 075000K1.09, Knowledge of the physical connections and/or cause-effect relationships between the circulating water system and the following systems: Vacuum priming". This rating is 1.5.

QUESTION #39

On ES actuation the DHR coolers are protected from overpressurization by:

a. Shutting the inlet and outlet valves and opening the bypass valve
b. Check valves in the core flood injection/DH removal lines
c. The automatic closure and interlock system
d. Nothing since the coolers are designed for normal RCS pressure

Answer:

b.

References:

ANO1 STM-1-5 Pgs. 2-10, P&ID M-232
005000K603 . . . (KA)

Comments

Since the function asked in the question deals with the check valves, KA should be 005000K6.04. "Knowledge of the applicable performance and design attributes of the following RHRS components". The rating is 1.9.

QUESTION #78

Match the primary to secondary leak rates in column 1 (a-d) to the appropriate action in column 2 (1-6). Each action may be used more than once or not at all.

LEAK RATE		ACTION REQUIRED	
a.	> 0.1 gpm	1.	Normal shutdown per 1102.04 & 1102.10
b.	> 0.35 gpm	2.	Trip reactor
c.	> 1.0 gpm	3.	Notify NRC through plant licensing
d.	> 10.0 gpm	4.	Shutdown at ~ 5%/minute per 1102.04 & 1102.10
		5.	Shutdown at 10 ~ 30%/minute per 1102.04 & 1102.10
		6.	Go to 1202.01 TUBE RUPTURE tab

Answer:

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

References:

1203.23 Rev. 5, Pg. 2
194001K100 000037G005 . . . (KA)

Comments

Referenced KA implies the "use of the response instructions" not the memorization of the followup actions of the abnormal operating procedure for "High Activity in the Reactor Coolant System".

QUESTION #79

Match the critical air-operated components in column 1 (a-e) to the appropriate loss of air pressure failure mode in column 2 (1-3). Failure modes may be used more than once or not at all.

COMPONENTS		FAILURE MODE	
a.	Letdown orifice block valve (CV-1222)	1.	Open
b.	Pressurizer level control (CV-1235)	2.	Closed
c.	Main steam isolation valves (CV-2691/2692)	3.	As is
d.	RC pump seal total injection flow (CV-1207)		
e.	SG-A atmospheric dump control valve (CV-2618)		

Answer:

a. 3
b. 2
c. 2
d. 1
e. 2

References:

1203.24 Rev. 4, Pgs. 13-15
194001K100 000065A208 . . . (KAs)

Comments

Referenced KA "Ability to determine or interpret: Failure modes of air operated equipment". In order to utilize KA, candidate should be asked to determine the failure mode (i.e., indications of failure, piping drawing, etc.) not simply to memorize the failure modes from an attachment in the Loss of Instrument Air Abnormal Operating Procedure.

SPECIFIC QUESTIONS

These are the comments from the original letter presented at the exit meeting.

QUESTION #30

Which one of the following spent fuel system parameters or conditions produce abnormal condition alarms directly observable in the control room?

a. Spent fuel pool recirculation flow
b. ICW flow through the spent fuel coolers
c. Spent fuel cooler filter differential pressure
d. Fuel transfer tube gate valve not fully shut

Answer:

a.

References:

ANO1 STM-1-07 Pgs. 2-6, OP 1101.02 Rev. 8, Pgs. 16, 18
033000G008 . . . (KA)

Comments

It is requested that this question be dropped from the exam. This question requires memorization of plant computer alarms as listed in 1101.02 "Setpoint". This computer alarm is not referenced in 1101.01 "Limits and Precautions" nor is it referenced in 1104.06 "Spent Fuel Cooling System". Further, P&ID M-235 identifies the borated water pump P-66 as a "recirculation" pump which has no flow alarms. Spent fuel pump P-40A/B is referred to as a "circulation" pump. This question was identified as a problem during the pre-exam review where the concern was stated. The current RO license training does not require the memorization of plant computer alarms to the point of discerning one point our of a list of four parameters where three are not alarms on the plant computer or annunciator.

QUESTION #56

Which one of the following actions is required to balance RCS inventory if a pressurizer steam space leak is indicated and pressurizer level cannot be maintained < 290 inches?

a. Stop all but one RCP
b. Isolate letdown
c. Close RC Pump Seals Total INJ Flow Valve (CV-1207)
d. De-energize all heaters

Answer:

a.

References:

1202.01, Rev. 17, Pg. 19
000008A106 . . . (KA)

Comments

It is requested that this question be dropped from the exam. There is no correct answer to the question as stated. The question is misleading in that the correct answer (a) "Stop all but one RCP" (leaving one RCP running) is performed in the HPI cooldown tab to " . . . promote mixing of the cold HPI coolant with RCS coolant". This is not required to "balance RCS inventory". Answer "a" would not be correct to "balance RCS inventory" as all RCPs are tripped on a loss of subcooling margin.

QUESTION #72

Which one of the following analyses is performed on the secondary system DAILY or more frequently during normal power operations?

a. Total iron
b. Total copper
c. Boric acid
d. Tritium Flourine

Answer:

d.

References:

ANO1 LP AA-51002-023 Table 23.1
194001A114 001000K100 . . . (KAs)

Comments

It is requested that this question be dropped from the exam. This question does not have a correct answer. The stated reference for the question is a table from a lesson plan that is out of date with the current secondary sampling frequencies. As noted in OP1000.42, Att. 4 and 1042.01, Form 1042.001GG, none of the choices given in the answer are performed as a daily analysis.

SIMULATION FACILITY FIDELITY REPORT

Facility Licensee: Arkansas Power & Light Company

Facility Licensee Docket No.: 50-313

Facility License No.: DPR-51

Operating Tests Administered at: Arkansas Nuclear One, Unit 1

Operating Tests given on: November 14, 1989

During the conduct of the simulator portion of the operating tests identified above, the following apparent performance and/or human factors discrepancies were observed:

NONE

This report should not be construed as an evaluation of the performance or capabilities of the ANO 1 simulation facility. Only two scenario sets were required to conduct the simulator portion of the operating examination. This is too small a sample to provide a meaningful evaluation of the simulation facility.