

July 14, 2000

Mr. Harold W. Keiser  
President and Chief Nuclear Officer  
Nuclear Business Unit  
Public Service Electric & Gas Company  
Post Office Box 236  
Hancocks Bridge, NJ 08038

SUBJECT: HOPE CREEK NUCLEAR GENERATING STATION REACTOR OPERATOR  
AND SENIOR REACTOR OPERATOR INITIAL EXAMINATION REPORT  
50-354/2000-301

Dear Mr. Keiser:

This report transmits the results of the reactor operator and senior reactor operator licensing examinations conducted by the NRC from May 30 thru June 7, 2000. This examination addressed areas important to public health and safety and was developed and administered using the guidelines of the "Examination Standards for Power Reactors" (NUREG-1021, Revision 8).

Based on the results of the examination, all applicants (five Reactor Operator and five Senior Reactor Operator) passed all portions of the examination. The preliminary performance insights observed during the examination were discussed between Mr. P. Bissett and Mr. M. Shaffer on May 6, 2000. The final results were discussed via telephone during an exit meeting with Mr. D. Jackson, and other members of your staff on June 29, 2000. No significant inspection findings were identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

IEH2

Mr. Harold W. Keiser

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No reply to this letter is required, but should you have any questions regarding this examination, please contact me at 610-337-5183, or by E-mail at [RJC@NRC.GOV](mailto:RJC@NRC.GOV).

Sincerely,

/RA/

Richard J. Conte, Chief  
Operational Safety Branch  
Division of Reactor Safety

Docket No. 05000354  
License No. NPF-57

Enclosure: Initial Examination Report No. 05000354/2000-301 w/Attachments 1, 2, 3, 4,  
and 5

cc w/encl; w/Attachment 1-5:

J. McMahon, Director, QA/Nuclear Training/EP

cc w/encl; w/o Attachment 1-5:

E. Simpson, Senior Vice President and Chief Administrative Officer  
M. Bezilla, Vice President - Nuclear Operations  
D. Garchow, Vice President - Technical Support  
M. Trum, Vice President - Maintenance  
T. O'Connor, Vice President - Plant Support  
E. Salowitz, Director - Nuclear Business Support  
G. Salamon, Manager - Licensing  
A. F. Kirby, III, External Operations - Nuclear, Conectiv Energy  
R. Kankus, Joint Owner Affairs  
A. Tapert, Program Administrator  
J. J. Keenan, Esquire  
Consumer Advocate, Office of Consumer Advocate  
F. Pompper, Chief of Police and Emergency Management Coordinator  
M. Wetterhahn, Esquire  
State of New Jersey  
State of Delaware  
J. Guinan, NJ PIRG  
N. Cohen, Coalition for Peace and Justice  
R. Fisher  
F. Berryhill  
B. August

Mr. Harold W. Keiser

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Distribution w/encl; w/Attachment 1-4:  
DRS Master Exam File

Distribution w/encl; w/o Attachment 1-4: (VIA ADAMS)

Region I Docket Room (with concurrences)

W. Lanning, DRS

B. Holian, DRS

P. Bissett, Chief Examiner, DRS

NRC Resident Inspector

V. Curley, DRS (OL Facility File)

R. Conte, DRS

G. Meyer, DRP

H. Miller, RA/J. Wiggins, DRA (IRs)

P. Bonnett, DRP

R. Barkley, DRP

C. O'Daniell, DRP

J. Shea, OEDO

E. Adensam, NRR (RidsNrrDlpmLpdi)

R. Ennis, PM, NRR

T. Frye, NRR

Inspection Program Branch, NRR (IPAS)

T. Frye, NRR

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OFFICE	RI/DRS	RI/DRP	RI/DRS				
NAME	PBissett <i>AB for</i>	GMeyer <i>[Signature]</i>	RConte <i>[Signature]</i>				
DATE	07/11/00	07/13/00	07/13/00	07/ /00	07/ /00	07/ /00	07/ /00

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No. 05000354

License No. NPF-57

Report No. 05000354/2000-301

Licensee: Public Service Electric Gas Company

Facility: Hope Creek Nuclear Generating Station

Location: Hancocks Bridge, New Jersey

Dates: May 30 - June 7, 2000 (Operating and Written Test Administration)  
June 14 - 28, 2000 (Grading)

Examiners: P. Bissett, Senior Operations Engineer (Chief Examiner)  
J. Caruso, Operations Engineer  
J. D'Antonio, Operations Engineer

Approved by: Richard J. Conte, Chief  
Operational Safety Branch  
Division of Reactor Safety

**SUMMARY OF FINDINGS**  
Hope Creek Nuclear Generating Station  
NRC Inspection Report 05000354/2000-301

The report covers a six day period of onsite examination by NRC region-based examiners in a cross-cutting inspection area. If applicable, the significance of issues is indicated by their color (green, white, yellow, red) and was determined by the Significance Determination Process described in Inspection Manual Chapter 0609 (further described in Attachment 1).

- There were no inspection findings.

## Report Details

### 4. OTHER ACTIVITIES (OA)

#### 4OA4 Cross-Cutting Issues

##### .1 Reactor and Senior Reactor Operator Initial License Examination

###### a. Scope

The NRC examination team reviewed the written and operating initial examination submitted by the Hope Creek training staff to verify or ensure, as applicable, the following:

- The exam was developed in accordance with the guidelines of Revision 8 of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors." The review was conducted both in the Region I office and at the Hope Creek training facility. Final resolution of comments and incorporation of test revisions was conducted during and following the onsite preparation week (May 2-4, 2000).
- The exam met the overall quality goals (range of acceptability) of NUREG-1021, Revision 8 (interim guidance is contained in Report of Interaction 99-18, dated November 24, 1999, and posted on the NRC's internet home page).
- Simulation facility problems, if any, did not interfere with the examination process.
- Facility licensee completed a test item analysis for feedback into the systems approach to training programs.
- Security requirements were met.
- Facility operating procedures can be adequately implemented.

The NRC examiners administered the operating portion of the exam to all applicants from May 30 - June 6, 2000. The written exam was administered by Hope Creek training staff on June 7, 2000.

###### b. Observations and Findings

###### Grading and Results

All ten applicants passed all portions of the initial licensing examination.

The facility submitted five post-examination comments. All comments were accepted by NRC. See Attachments 1 and 2 for details.

###### Examination Preparation and Quality

No inspection findings were identified.

Examination Administration and Performance

No inspection findings were identified.

**40A6 Exit Meeting Summary**

On June 6, 2000, the NRC examiners discussed preliminary overall observations during the examination with the Hope Creek training personnel. On June 29, 2000, the NRC provided final conclusions and examination results to Mr. D. Jackson, and other staff members, at an exit meeting conducted via telephone. License numbers for the ten applicants were also provided during the final exit meeting.

The NRC Chief Examiner also expressed appreciation for the cooperation and assistance that was provided during the preparation and actual conduct of the exam by the licensee's training staff.

**Attachments:**

1. NRC's Revised Reactor Oversight Process
2. NRC Resolution of Post-Exam Written Comments
3. Facility Post-Exam Written Comments
4. RO Written Exam w/Answer Key
5. SRO Written Exam w/Answer Key

PARTIAL LIST OF PERSONS CONTACTED

Hope Creek

D. Jackson	Manager, Nuclear Training
J. Reid	Manager, Nuclear Operations Training
M. Shaffer	Supervisor, Licensed Operator Training - Hope Creek

NRC

P. Bissett	Senior Operations Engineer/Examiner
J. Caruso	Operations Engineer/Examiner
J. D'Antonio	Operations Engineer/Examiner

# ATTACHMENT 1

## NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

### Reactor Safety

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness

### Radiation Safety

- Occupational
- Public

### Safeguards

- Physical Protection

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.

## Attachment 2

### NRC Resolution of Facility Comments

#### Question No. 40 RO/40 SRO

Facility Comment: Answers "b" and "c" each present one of the two conditions required for adequate core cooling ("b" states "core spray injection," and "c" states "steam cooling until level reaches -190"). Answer "b" is implied in the stem of the question, therefore both answers "b" and "c" are correct.

Facility Recommendation: Accept either "b" or "c" as correct answers.

NRC Resolution: Agree with facility's comment. Answers "b" or "c" will be accepted as being correct.

#### Question No. 65 RO/SRO 65

Facility Comment: Answer choice "a" Low sample Flow to the Liquid Radwaste Radiation Monitor" is an isolation signal to the Liquid Radwaste Discharge line at anytime. The stem does not include sufficient information to exclude answer choice "a."

Facility Recommendation: Accept either "a" or "c" as correct answers.

NRC Resolution: Agree with facility's comment. Answers "a" or "c" will be accepted as being correct.

#### Question No. 53 RO/53 SRO

Facility Comment: The keyed answer is not correct. Answer choice "d" states "At 9.5 psig....". Procedure HC.OP-AB.ZZ-0155Q states "...is below 9.5 psig, then Drywell Sprays may be secured." Only answer choice "c" is below 9.5 psig and provides the proper basis.

Facility Recommendation: Change answer key to "c" from "d" to reflect the correct answer.

NRC Recommendation: Agree with facility comment and recommendation. Answer key to be revised to reflect the correct answer as being "c" in accordance with applicable facility references.

**Attachment 2 (Cont'd)**

**NRC Resolution of Facility Comments**

**Question No. 1 RO/1SRO**

Facility Comment: Keyed answer "b" is correct as read from the reference section of HC.OP-AB.ZZ-0208, Rev. 6, section 5.4 for rate of decay if there was a total loss of sealing steam supply to the turbine. However, the stem did not exclude extraction steam supply to the Steam Seal Evaporator. At 100 percent power, the extraction steam supply to the SSE is the primary supply of steam. Loss of the Main Steam supply with these conditions would not have any adverse consequences, therefore there is no correct answer.

Facility Recommendation: Delete Question No. 1 RO/1 SRO.

NRC Resolution: Agree with facility comment and recommendation. Question No. 1 RO/1 SRO will be deleted.

**Question No. 60 RO/60 SRO**

Facility Comment: The keyed answer is correct, however, the applicant cannot discriminate between answer choices "a" and "c" without a copy of HC.OP-SO.GU-001, section 5.2 "FRVS Auto Initiation Verification." This procedure places the fans in a 4 Recirc Fan and 1 Vent Fan lineup after manual operator actions, which makes answer "a" being correct. Memory recall of these manual operations in this procedure section is not supported by the training objectives, nor by Operations Management expectations specified in HC.OP-AS.ZZ-0002 "Hope Creek Operations Standards." In addition, HC.OP-SO.SM-0001 "Isolation Systems Operation" has the operator observe the automatic start of 6 Recirc Fans and 1 Vent Fan upon the -38" RPV Level 2 initiation signal, as stated in the stem of the question. This would result in answer "c" being correct.

Facility Recommendation: Delete Question No. 60 RO/60 SRO.

NRC Resolution: Agree with facility comment; however, disagree in part with facility recommendation. Answers "a" or "c" will be accepted as being correct for Question No 60 RO/60 SRO as supported by facility references..

**Attachment 3**

**Facility Post Examination Comments on the Written Exam**



Public Service Electric and Gas Company 244 Chestnut Street Salem, N.J. 08079 Phone 609/935-8560

Nuclear Training Center

June 13, 2000  
NTD-00-0029

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RECEIVED  
REGION 1

Mr. Paul Bissett  
Chief Examiner  
Division of Reactor Safety  
US Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA. 19406-1415

Dear Mr. Bissett:

### HOPE CREEK SRO/RO EXAMINATION COMMENTS

Attached is our post-examination analysis comments and related backup information from our recently conducted SRO/RO examination. Our comments are on the page with the applicable question and are broken into two (2) categories:

#### Category I Correct Alternate choice answers from original answer key

- RO #40 / SRO #40
- RO #53 / SRO #53
- RO #65 / SRO #65

#### Category II Question Deletions

- RO #1 / SRO #1
- RO #60 / SRO #60

If you have any questions, comments, or require any additional information, please contact Archie E. Faulkner, Operations Superintendent - Hope Creek Operations Training, at 856-339-3966 or Jim Reid, Manager - Operations Training, at 856-339-3896.

Sincerely,

Donald E. Jackson  
Manager- Nuclear Training

DEJ:al  
Attachments



**Category I Correct Alternate choice answers from original answer key**

**Question:** RO #40 / SRO #40

**Reference:** HC.OP-EO.ZZ-0101 Bases step ALC-9

**Learning Objective:** 0302-000.00H-000124-12 Obj 6

Given the following conditions:

- A loss of coolant accident has occurred
- Reactor pressure is 50 psig and lowering
- Core Spray Loop A is injecting at rated flow
- Actual reactor water level is -170 inches and lowering
- All other water sources are unavailable

Which one of the following methods currently assures adequate core cooling for this situation?

- a. Core submergence
- b. Core Spray injection
- c. Steam cooling until level reaches -190
- d. Steam cooling after level reaches -200

**Answer:** c

Procedure HC.OP-EO.ZZ-0101, "Reactor Pressure Vessel Control" Section 3.1 lists three viable mechanisms of adequate core cooling (in order of preference):

1. Core Submergence
2. Steam Cooling with injection of makeup water to the RPV
3. Steam Cooling without injection of makeup water to the RPV

1. Core Submergence is achieved when each fuel bundle is completely covered with water.

Adequate Core Cooling is assured when indicated by RPV level at or above the Top of Active Fuel (TAF). This level is -161" for Hope Creek.

- The stem of the question states that "Actual reactor water level is -170 inches and lowering"; since this level is below TAF, answer A not correct – Core Submergence under the stated conditions does not assure adequate core cooling.

Steam Cooling is achieved when the updraft of steam flow through the uncovered portion of fuel bundles is sufficient to remove heat and prevent Peak Cladding Temperature from exceeding the limiting value. The limiting value is

**Category I Correct Alternate choice answers from original answer key**

dependent on the mode of steam cooling being employed (with and without injection of makeup water to the RPV).

2. With injection, adequate core cooling is assured under non-ATWS conditions when RPV level is above the Minimum Steam Cooling RPV water level. This level is –190” for Hope Creek.
  - The stem of the question states; “A loss of coolant accident has occurred”, and “Reactor pressure is 50 psig and lowering”. These two conditions imply that there is steam flow updraft capability, and that steam cooling may be occurring.
  - The stem of the question also states that “Core Spray Loop A is injecting at rated flow”. This indicates that injection is occurring.
  - The stem of the question states that “Actual reactor water level “is –170” and lowering”; this level is the above –190” required to assure adequate core cooling with injection.
  - Because steam cooling with injection requires two conditions (injection and level above –190”), and the stem of the question implies that both of these conditions are met, the core is being adequately cooled.
  - Answers "b" and "c" each present one of the two conditions required for adequate core cooling ("b" states “Core Spray Injection”, and "c" states “Steam Cooling until level reaches –190”)
  - Because the other condition is implied in the stem, both of these answers are correct.
  
3. Without injection, adequate core cooling is assured when RPV level is above the Minimum Zero Injection RPV Water Level. This level is –200” for Hope Creek.
  - Answer "d" implies the adequate core cooling will exist with RPV Level below –200”; and therefore is not correct.

**Recommendation: Accept both "b" and "c" answers**

**Category I Correct Alternate choice answers from original answer key**

**Question:** RO #53 / SRO #53

**Reference:** HC.OP-AB.ZZ-0155(Q) Rev 2 Attachment 1 Section 2.0

**Learning Objective:** LP 0303-000.00H-000114-05 Obj 3

Given the following:

- B RHR loop Drywell spray is in-service following a LOCA.
- B RHR pump amps are fluctuating
- A RHR pump is not available
- Suppression chamber pressure is 10.2 psig and lowering
- Abnormal procedure HC.OP-AB.ZZ-155 "Degraded ECCS Performance/ Loss of NPSH" has been implemented

For these conditions, which of the following describes the condition allowing removal of Drywell sprays from service and the basis for their removal?

- a. At 1.68 psig in the Suppression Chamber to prevent "chugging" of the downcomer vent pipes
- b. At 9.5 psig in the Suppression Chamber to prevent "chugging" of the downcomer vent pipes
- c. At 1.68 psig in the Suppression Chamber to minimize transport of debris to the pump suction strainers
- d. At 9.5 psig in the Suppression Chamber to minimize transport of debris to the pump suction strainers

**Answer:** d

- The keyed answer is not correct. Answer choice "d" states "At 9.5 psig...". Procedure HC.OP-AB.ZZ-0155Q Rev 2 states "... is below 9.5 psig, then Drywell Sprays may be secured." Only answer choice "c" is below 9.5 psig and provides the proper basis.

**Recommendation:** Change keyed answer to "c"

**Category I Correct Alternate choice answers from original answer key**

**Question:** RO #65 / SRO #65

**Reference:** HC.OP-SO.SP-00001 Rev 5

**Learning Objective:** 0301-000.00H-000086-08 Obj 5

Given the following conditions:

- The plant is operating at 100 percent power
- A severe marsh grass intrusion is in progress at the Service Water Intake Structure
- Over the next hour, the operators note that cooling tower basin level is lowering due to insufficient Service Water makeup to the basin
- Radwaste Operators report the Liquid Radwaste Discharge line to the Cooling Tower Blowdown (CTB) just isolated in the middle of a tank release

What caused the Liquid Radwaste discharge isolation?

- a. Low Sample Flow to the Liquid Radwaste Radiation Monitor
- b. Low Sample Flow to the Cooling Tower Blowdown Radiation Monitor
- c. Low CTB Weir Flow to the Liquid Radwaste Radiation Monitor
- d. Low CTB Weir Flow to the Cooling Tower Blowdown Radiation Monitor

**Answer:** c

- Answer choice "a" "Low Sample Flow to the Liquid Radwaste Radiation Monitor" is an isolation signal to the Liquid Radwaste Discharge line at any time. The stem does not include sufficient information to exclude answer choice "a".

**Recommendation:** ACCEPT both "a" and "c" answers.

## Category II Question Deletions

**Question:** RO #1 / SRO #1

**Reference:** HC.OP-AB.ZZ-0208(Q) Rev 6 page 4

**Learning Objective:** LP 0302-000.00H-000114 Obj 3

The reactor is operating normally at 100 percent power with the Auxiliary Boilers unavailable. Then, Main condenser Vacuum begins a steady degradation at 1.5 inHgA per minute.

Given the following:

- Reactor power remains at 100 percent
- Main Generator load is decreasing
- Average Circ Water inlet/outlet waterbox temperature differential is 22 DegF
- RM-11 Offgas Train Outlet Flow CRIDS point shows 10 times normal flowrate

Which one of the following is the cause of the loss?

- a. Hydrogen Water Chemical Injection System has tripped
- b. Steam Seal Evaporator Main Steam Supply valve closes
- c. In-service Steam Jet Air Ejector Low Steam Supply pressure
- d. Circulating Water to Cooling Tower Return Bypass valve opens

**Answer:** b

- Keyed answer "b" is correct as read from the referenced section of HC.OP-AB.ZZ-0208 Rev 6 section 5.4 for rate of decay if there was a total loss of sealing steam supply to the turbine. However, the stem did not exclude extraction steam supply to the Steam Seal Evaporator. At 100 percent power, the extraction steam supply to the SSE is the primary supply of steam the SSE. Loss of the Main Steam supply with these conditions would not have any adverse consequences. Therefore, there is no correct answer.

**Recommendation:** Delete this question.

## Category II Question Deletions

**Question:** RO #60 / SRO #60

**Reference:** HC.OP-SO.GU-0001(q) rev 16 step 5.2.3

**Learning Objective:** LP 0301-000.00H-000042-11 Obj 31

Given the following:

- All FRVS Recirculation Fans are in AUTO
- "A" FRVS Vent Fan is in Auto Lead
- "B" FRVS Vent Fan is in Auto
- FRVS automatically initiates on RPV Level 2

Select the total FRVS Recirculation and total Vent flow after the operator has completed HC.OP-SO.GU-0001 "Filtration, Recirculation and Ventilation System Operation" actions for initiation verification.

- a. 120,000 cfm; 9000 cfm
- b. 120,000 cfm; 18,000 cfm
- c. 180,000 cfm; 9000 cfm
- d. 180,000 cfm; 18,000 cfm

**Answer:** a

- The keyed answer is correct; however,
- The candidate cannot discriminate between answer choices "a" and "c" without a copy of HC.OP-SO.GU-0001, section 5.2 "FRVS Auto Initiation Verification". This procedure places the fans in a 4 Recirc Fan and 1 Vent Fan lineup after **manual operator actions**. Memory recall of these manual operations in this procedure section is not supported by the training objectives, nor by Operations Management expectations specified in HC.OP-AS.ZZ-0002 "Hope Creek Operations Standards".
- In addition, HC.OP-SO.SM-0001 "Isolation Systems Operation" has the operator observe the automatic start of 6 Recirc Fans and 1 Vent Fan upon the -38" RPV Level 2 initiation signal. This would result in Answer "c" being correct.

**Recommendation:** DELETE this question.

**Attachment 4**

**RO Written Exam with Answer Key**

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

APPLICANT'S NAME: \_\_\_\_\_ (print)

FACILITY: \_\_\_\_\_ HOPE CREEK

REACTOR TYPE: \_\_\_\_\_ BWR-GE4

DATE ADMINISTERED: 6/7/00

**INSTRUCTIONS TO APPLICANT:**

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. Each question is one (1) point. The passing grade requires a final grade of at least 80.00%. Examination papers will be picked up five (5) hours after the examination starts.

TEST VALUE	APPLICANT'S SCORE	FINAL GRADE %
100.00		

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

\_\_\_\_\_  
Applicant's Signature

REACTOR OPERATOR ANSWER SHEET

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

MULTIPLE CHOICE

- |                 |                 |
|-----------------|-----------------|
| 001 a b c d ___ | 023 a b c d ___ |
| 002 a b c d ___ | 024 a b c d ___ |
| 003 a b c d ___ | 025 a b c d ___ |
| 004 a b c d ___ | 026 a b c d ___ |
| 005 a b c d ___ | 027 a b c d ___ |
| 006 a b c d ___ | 028 a b c d ___ |
| 007 a b c d ___ | 029 a b c d ___ |
| 008 a b c d ___ | 030 a b c d ___ |
| 009 a b c d ___ | 031 a b c d ___ |
| 010 a b c d ___ | 032 a b c d ___ |
| 011 a b c d ___ | 033 a b c d ___ |
| 012 a b c d ___ | 034 a b c d ___ |
| 013 a b c d ___ | 035 a b c d ___ |
| 014 a b c d ___ | 036 a b c d ___ |
| 015 a b c d ___ | 037 a b c d ___ |
| 016 a b c d ___ | 038 a b c d ___ |
| 017 a b c d ___ | 039 a b c d ___ |
| 018 a b c d ___ | 040 a b c d ___ |
| 019 a b c d ___ | 041 a b c d ___ |
| 020 a b c d ___ | 042 a b c d ___ |
| 021 a b c d ___ | 043 a b c d ___ |
| 022 a b c d ___ | 044 a b c d ___ |
|                 | 045 a b c d ___ |

REACTOR OPERATOR ANSWER SHEET

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

- |                 |                 |
|-----------------|-----------------|
| 046 a b c d ___ | 069 a b c d ___ |
| 047 a b c d ___ | 070 a b c d ___ |
| 048 a b c d ___ | 071 a b c d ___ |
| 049 a b c d ___ | 072 a b c d ___ |
| 050 a b c d ___ | 073 a b c d ___ |
| 051 a b c d ___ | 074 a b c d ___ |
| 052 a b c d ___ | 075 a b c d ___ |
| 053 a b c d ___ | 076 a b c d ___ |
| 054 a b c d ___ | 077 a b c d ___ |
| 055 a b c d ___ | 078 a b c d ___ |
| 056 a b c d ___ | 079 a b c d ___ |
| 057 a b c d ___ | 080 a b c d ___ |
| 058 a b c d ___ | 081 a b c d ___ |
| 059 a b c d ___ | 082 a b c d ___ |
| 060 a b c d ___ | 083 a b c d ___ |
| 061 a b c d ___ | 084 a b c d ___ |
| 062 a b c d ___ | 085 a b c d ___ |
| 063 a b c d ___ | 086 a b c d ___ |
| 064 a b c d ___ | 087 a b c d ___ |
| 065 a b c d ___ | 088 a b c d ___ |
| 066 a b c d ___ | 089 a b c d ___ |
| 067 a b c d ___ | 090 a b c d ___ |
| 068 a b c d ___ | 091 a b c d ___ |

ANSWER SHEET

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

092 a b c d \_\_\_

093 a b c d \_\_\_

094 a b c d \_\_\_

095 a b c d \_\_\_

096 a b c d \_\_\_

097 a b c d \_\_\_

098 a b c d \_\_\_

099 a b c d \_\_\_

100 a b c d \_\_\_

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

## NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on the examination means an automatic denial of your application and could result in more severe penalties.
2. After the examination has been completed, you must sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination. This must be done after you complete the examination.
3. Restroom trips are to be limited and only one applicant at a time may leave. You must avoid all contacts with anyone outside the examination room to avoid even the appearance or possibility of cheating.
4. Use black ink or dark pencil ONLY to facilitate legible reproductions.
5. Print your name in the blank provided in the upper right-hand corner of the examination cover sheet and each answer sheet.
6. Mark your answers on the answer sheet provided. **USE ONLY THE PAPER PROVIDED AND DO NOT WRITE ON THE BACK SIDE OF THE PAGE.**
7. The point value for each question is indicated in parentheses after the question.
8. If the intent of a question is unclear, ask questions of the examiner only.
9. When turning in your examination, assemble the completed examination with examination questions, examination aids and answer sheets. In addition, turn in all scrap paper.
10. Ensure all information you wish to have evaluated as part of your answer is on your answer sheet. Scrap paper will be disposed of immediately following the examination.
11. To pass the examination, you must achieve a grade of 80.00% or greater.
12. There is a time limit of five (5) hours for completion of the examination.
13. When you are done and have turned in your examination, leave the examination area (EXAMINER WILL DEFINE THE AREA). If you are found in this area while the examination is still in progress, your license may be denied or revoked.

RO QUESTION #

1

QUESTION

The reactor is operating normally at 100 percent power with the the Auxiliary Boilers unavailable. Then, Main condenser Vacuum begins a steady degradation at 1.5 inHgA per minute.

Given the following:

- Reactor power remains at 100 percent
- Main Generator load is decreasing
- Average Circ Water inlet/outlet waterbox temperature differential is 22 DegF
- RM-11 Offgas Train Outlet Flow CRIDS point shows 10 times normal flowrate

Which one of the following is the cause of the loss?

Answer A

Hydrogen Water Chemical Injection System has tripped

Answer B

Steam Seal Evaporator Main Steam Supply valve closes

Answer C

In-service Steam Jet Air Ejector Low Steam Supply pressure

Answer D

Circulating Water to Cooling Tower Return Bypass valve opens

RO QUESTION # 2

QUESTION Given the following:

- The plant is operating at 85% power
- A LOCA coincident with a loss of offsite power occurs
- "A" Emergency Diesel Generator (EDG) output breaker fails to automatically close
- The operator closes the "A" EDG output breaker from the Control Room

Which of the following describes the status of the 125 VDC battery chargers powered from "A" EDG?

Answer A 1E chargers must be MANUALLY restored.

Answer B NON-1E chargers must be MANUALLY restored.

Answer C 1E chargers are AUTOMATICALLY restored by the Load Sequencer.

Answer D NON-1E chargers are AUTOMATICALLY restored by the Load Sequencer.

RO QUESTION #

3

QUESTION

Given the following conditions:

- The plant is at 25% with power ascension to 100% in progress
- One of the Electrical Protection Assembly (EPA) breakers on the "A" Reactor Protection System (RPS) MG set has just tripped, de-energizing "A" RPS bus
- Investigation shows the breaker tripped on "undervoltage"

Which of the following describes the response of the Recirculation Pumps if a Main Turbine trip occurs before the "A" RPS Bus is re-energized?

Answer A

Both Recirculation Pumps trip

Answer B

Only "A" Recirculation Pump trips

Answer C

Only "B" Recirculation Pump trips

Answer D

Both Recirculation Pumps continue operating

RO QUESTION #

4

QUESTION

Given the following:

- The plant is operating at 100 percent power
- A Main Generator Load Rejection occurs causing a reactor scram

Which of the following describes the plant parameter response to the Load Rejection immediately PRIOR to the scram?

Answer A

Reactor pressure decreases; reactor water level increases; reactor power decreases

Answer B

Reactor pressure decreases; reactor water level increases; reactor power increases

Answer C

Reactor pressure increases; reactor water level decreases; reactor power increases

Answer D

Reactor pressure increases; reactor water level decreases; reactor power decreases

RO QUESTION #

5

QUESTION

Given the following:

- The plant is operating at 100 percent power at the end of the fuel cycle
- A Main Turbine Trip initiated a reactor scram
- Reactor pressure peaked at 1050 psig.
- MSIV's are open
- Reactor pressure has dropped to 921 psig with 1 turbine bypass valve open

Which of the following describes the initial response and current status of the "H" and "P" Safety Relief Valves (SRV)?

Answer A

Neither the "H" or "P" SRV open

Answer B

The "H" and "P" SRVs open initially and remain open

Answer C

The "H" and "P" SRVs open initially, only the "H" SRV remains open

Answer D

The "H" and "P" SRVs open initially, only the "P" SRV remains open

RO QUESTION #

6

QUESTION

Given the following:

- A high Drywell pressure condition has occurred due to a unisolable Reactor Recirc Pump double seal failure (50 gpm)
- HPCI has automatically initiated
- CRD has been restored

Assuming no operator action, what will be the status of HPCI five minutes after the initiation?

Answer A

Turbine Steam Stop Valve FV-4880 will automatically close on High RPV Level

Answer B

Turbine Steam Supply Valve HV-F001 will automatically close on High RPV Level

Answer C

Turbine Steam Stop Valve FV-4880 will automatically close on High Exhaust Pressure

Answer D

Turbine Steam Supply Valve HV-F001 will automatically close on High Exhaust Pressure

RO QUESTION #

7

QUESTION

Given the following:

- The plant is operating at 85% power
- A feedwater transient is in progress
- Overhead annunciator "RPV LEVEL 8" alarm is received
- The Main Turbine does not automatically trip

Which one of the following describes the basis for the Main Turbine Trip at RPV Level 8?

Answer A

To prevent turbine blade damage

Answer B

To prevent overfilling the reactor vessel

Answer C

To reduce erosion of control valve surfaces

Answer D

To reduce the differential pressure across the moisture separators

RO QUESTION #

8

QUESTION

Given the following:

- The plant is operating at 80 percent power conducting a normal shutdown
- "C" Reactor Feed Pump trips inadvertently as it is being removed from service
- The Digital Feed Control System has malfunctioned causing Master Level Setpoint to drift down to +25 inches
- Reactor water level has now reached +25 inches

Assuming no operator action, which of the following correctly describes the Reactor Recirculation M/G sets response to these conditions?

Answer A

A Full runback

Answer B

A Scoop Tube lockup

Answer C

An Intermediate runback

Answer D

Remain at original speed

RO QUESTION #

9

QUESTION

Given the following:

- A large packing leak exists on an Inboard MSIV
- Drywell Pressure has increased from 0.5 psig to 1.55 psig
- Suppression Chamber pressure is 0.5 psig

Which one of the following describes the effect of this pressure change on the ability of the downcomer vent pipes to perform their function?

Answer A

NO significant effect because the water level inside the vent pipe will lower, the level outside the vent pipe will rise slightly

Answer B

NO significant effect because the water level inside the vent pipe will rise, the level outside the vent pipe will lower slightly

Answer C

Significant effect because the water level outside the vent pipe will lower to uncover the vent pipes causing a decrease of the pressure suppression function capability of the Suppression Pool

Answer D

Significant effect because the water level inside the vent pipe will rise to flood the vent pipe header preventing proper opening of the Drywell to Suppression Chamber Vacuum Breakers

RO QUESTION #

10

QUESTION

Given the following:

- A reactor Startup was in progress following a 7 day forced outage.
- Criticality was achieved and heatup in progress.
- Problems with EHC delayed the rod withdrawals for approximately 1.5 hours.
- RPV pressure decreased from 360 psig to 325 psig during this delay.
- Control rod 14-19 was withdrawn one notch from 10 to 12 in order to re-establish a heatup rate.
- Reactor period continued to shorten and the operator re-inserted the rod to notch 10 to determine why SRM Count Rate is higher now than when previously on notch 10.

The change in Count Rate indication is normal because:

Answer A

Moderator temperature had decreased

Answer B

Xenon burnout in the high flux region had begun

Answer C

A positive Moderator Temperature Coefficient exists

Answer D

The Void fraction had decreased due to the lower pressure

RO QUESTION #

11

QUESTION

Given the following conditions:

- The plant is operating at 100% power
- A complete loss of the TACS has occurred requiring a scram
- Recirculation flow has been reduced to minimum
- The "RMCS DISPLAYS INOP" Overhead annunciator alarms
- The Reactor Mode Switch is placed in "Shutdown"

For these conditions, operators can determine if injection of Standby Liquid Control is immediately required by evaluating which of the following?

Answer A

APRM power levels

Answer B

the Full Core Display

Answer C

the Four Rod Display

Answer D

the RPS Group logic white lights

RO QUESTION # 12

QUESTION The control room HAS BEEN evacuated due to heavy smoke.

Current plant conditions are:

- Reactor power is 100 percent
- Reactor pressure is 1000 psig
- RPV level is +35 inches

IAW HC.OP-IO.ZZ-0008 "Shutdown From Outside Control Room", which one of the following operator actions is required if time did NOT permit any immediate actions of HC.OP-AB.ZZ-0130 "Control Room Evacuation" to be completed before evacuating the control room?

Answer A Manually vent the scram air header

Answer B Remove RPS fuses to de-energize the scram solenoids

Answer C Open appropriate breakers in the RPS distribution panels

Answer D Place individual HCU SRI test switches in the TEST position

RO QUESTION #

13

QUESTION

Given the following:

- The plant is operating at 100% reactor power.
- "A" Reactor Recirc pump trips
- The "B" Reactor Recirc pump receives a full runback
- Power oscillations greater than 10% are observed
- The reactor is manually scrammed
- Approximately 15 minutes after the transient, both Offgas Pre-Treatment Radiation Monitors go into High Alarm and continue to rise

IAW HC.OP-AB.ZZ-0127, which one of the following operator actions must be taken?

Answer A

Swap the Offgas Recombiner trains

Answer B

Secure the Steam Jet Air Ejector trains

Answer C

Place the mechanical vacuum pumps in service

Answer D

Place the affected radiation monitors in trip condition

RO QUESTION #

14

QUESTION

Which one of the following describes how the Control Area Ventilation / Control Room Emergency Filtration systems limit radioactive material contamination in the Control Room?

Answer A

Iodine activity is limited by pressurization

Answer B

Iodine activity is removed by HEPA filters

Answer C

Noble Gas activity is limited by charcoal filters

Answer D

Noble Gas activity is removed by HEPA filters

RO QUESTION #

15

QUESTION

Due to a loss of drywell cooling, drywell pressure has increased to 2.0 psig.

Which one of the following describes ALL major actions IN PROPER SEQUENCE that would have to be performed to restart a CRD Pump? (Select the choice of actions from the following list)

I - Press CRD Pump STOP PB

II - Press CRD Pump START PB

III - Press LOCA OVERRIDE PB

IV - Press CLOSE PB for 1E breaker on 10C650E

Answer A

I, III, II

Answer B

I, III, IV

Answer C

III, II, IV

Answer D

III, IV, II

RO QUESTION #

16

QUESTION

Given the following conditions:

- The plant is shutdown for refueling
- The Reactor Protection System shorting links have been removed
- Core Spiral reload is continuing
- 45 fuel bundles are in the core
- SRM channel "D" has just failed "downscale"

Which one of the following describes the required operator actions?

Answer A

Verify a half scram is received and terminate fuel movement

Answer B

Verify a full reactor scram and a control rod withdrawal block is received

Answer C

Verify a control rod withdrawal block is received and terminate fuel movement

Answer D

Verify refueling bridge movement is blocked and then manually insert a full reactor scram

RO QUESTION #

17

QUESTION

Given the following:

- The plant is in Operational Condition 5
- A Spiral Fuel Load is in progress
- The Reactor Mode Switch is in REFUEL.
- The refuel bridge is over the Fuel Pool lifting a fuel bundle
- A control rod is withdrawn to position 48 for speed adjustment.

Under these conditions, which of the following prevents inadvertant fuel loading into a cell with a withdrawn control rod?

Answer A

Fuel Hoist Interlock

Answer B

Rod Block Interlock #1

Answer C

Reverse Bridge Stop # 1

Answer D

Procedural compliance only

RO QUESTION #

18

QUESTION

Which of the following is the basis of the 65 psig Drywell pressure limit during a LOCA?

Answer A

Hydrostatic test limit for the Drywell

Answer B

The Drywell Spray Isolation valves may not operate

Answer C

The system lineup for containment venting may not be able to be completed

Answer D

Maximum primary containment pressure assumption in UFSAR accident analysis

RO QUESTION #

19

QUESTION

During a valid high reactor pressure condition, the Recirculation Pumps did NOT automatically trip as designed.

Which of the following actions must be taken by the Control Room to open the Recirculation Pump Trip (RPT) Breakers?

Answer A

Direct the local tripping of the RPT Breakers

Answer B

Depress the RPT Breakers' "Tripped" pushbuttons

Answer C

Manually initiate Redundant Reactivity Control System (RRCS)

Answer D

Verify the RPT Breakers trip when the Recirculation Pump MG Set Drive Motor Breakers are opened

RO QUESTION #

20

QUESTION

Given the following:

- The plant was operating at 100 percent power when a small break LOCA occurred
- Drywell pressure is 4.0 psig and slowly rising
- Drywell temperature is 325 DegF and slowly rising
- Reactor pressure is steady at 75 psig
- HPCI is NOT available
- Condensate and Feedwater are NOT available
- RCIC is in Standby
- RPV indicated water level is -10 inches and slowly lowering
- ASSUME NO FURTHER OPERATOR ACTIONS

Which one of the following correctly describes the RCIC System automatic

Answer A

early because indicated wide range level is lower than actual level

Answer B

early because indicated wide range level is higher than actual level

Answer C

late because indicated wide range level is lower than actual level

Answer D

late because indicated wide range level is higher than actual level

RO QUESTION #

21

QUESTION

During an emergency, the Drywell Spray Initiation Limit Curve predicts parameters for which drywell spray would be unsafe.

What is the bases for NOT spraying the drywell when parameters are in the UNSAFE region?

Answer A

Convective cooling is ineffective

Answer B

Evaporative cooling is ineffective

Answer C

Unstable steam condensation will damage Suppression Chamber components

Answer D

Relief capacity of the Suppression Chamber to Drywell vacuum breakers is exceeded

RO QUESTION #

22

QUESTION

Given the following:

- A failure to scram has occurred
- SLC is injecting
- Reactor power is 35%
- The recirc pumps have been tripped
- The MSIV's are closed
- Suppression pool temperature is 98 DegF

Which one of the following describes the reason why it is necessary to terminate and prevent injection at step LP-13 of HC.OP-EO.ZZ-0101A ATWS-RPV Control?

Answer A

increase natural circulation to remove decay heat

Answer B

increase natural circulation to increase void fraction

Answer C

decrease natural circulation to remove decay heat

Answer D

decrease natural circulation to increase void fraction

RO QUESTION #

23

QUESTION

With the plant at power the Main Steam/ Reactor Water Cleanup Area Leak Temperature High alarm was received and the RWCU system automatically isolated. The leak has been determined to be in the RWCU Pipe Chase Room 4402.

Which of the following is a required immediate operator action for the given conditions?

Answer A

Enter HC-OP.EO-ZZ-0101(Q)-FC, "Reactor Pressure Vessel (RPV) Control"

Answer B

Close the Recirc Sample Line Isolation Valves (BB-SV-4310 and BB-SV-4311)

Answer C

Isolate RBVS Supply and Exhaust Dampers (GU-HD-9370A/B and GU-HD-9414A/B)

Answer D

Start an additional Reactor Building Exhaust Fan to maintain > .50 inches of vac water gauge

RO QUESTION #

24

QUESTION

Plant conditions are as follows:

- The plant is operating at 100% power
- RWCU resin spill has occurred in the Reactor Building
- Reactor Building HVAC Exhaust rad level is  $2 \times 10E-2$  uci/ml
- Access to the Reactor Building is required

Which one of the following actions is required?

Answer A

Isolate Refuel Floor HVAC

Answer B

Verify Reactor Building Ventilation (RBVS) is in operation

Answer C

Manually scram the reactor IAW HC.OP-AB.ZZ-0000 "Scram"

Answer D

Ensure Filtration Recirculation and Ventilation System (FRVS) initiated

RO QUESTION #

25

QUESTION

Given the following:

- LPRM changouts are being performed within the reactor vessel cavity
- One of the old fission chambers is accidentally lifted 1 inch clear of the water

Which one of the choices correctly completes the following statement regarding the Refueling Floor Evacuation Alarm in the reactor building?

The \_\_\_\_\_ radiation monitor activates the Evacuation Alarm because its detector(s) is(are) located in \_\_\_\_\_ .

Answer A

New Fuel Vault; line-of-sight to the refueling cavity

Answer B

Spent Fuel Pool; line-of-sight to the refueling cavity

Answer C

Refuel Floor Exhaust; the ducts above the refueling cavity

Answer D

Reactor Building Exhaust; the ducts above the refueling cavity

RO QUESTION #

26

QUESTION

While responding in accordance with AB-0000, "Scram", on a normal plant shutdown reactor scram, which of the following criteria is utilized to determine if EOP-101A, "ATWS RPV Control" entry is also required?

Answer A

The status of the IRM "Downscale" lights.

Answer B

The position and number of control rods inserted.

Answer C

The ability to monitor current reactor pressure and level.

Answer D

The value of SRM period after detector insertion is complete.

RO QUESTION #

27

QUESTION

A radioactive release in the Turbine Building is in progress. Which of the following describes the effect of failing to restart the Turbine Building Ventilation System if it trips while operating in HC.OP-EO.ZZ-0103/4(Q)-FC, "Reactor Building & Radioactive Release Control"?

Answer A

The Turbine Building will go to a slightly negative pressure

Answer B

The Turbine Building release will be monitored but not treated

Answer C

The off-site calculated release could be lower than the actual release

Answer D

The off-site calculated release could be higher than the actual release

RO QUESTION #

28

QUESTION

Given the following:

- An ATWS condition exists
- The MSIVs are closed
- SLC is injecting
- Lo-Lo Set is controlling reactor pressure
- Suppression Pool temperature is 105 DegF, rising slowly
- Reactor level is swinging from +12.5 inches to +54 inches

Which one of the following is the correct operator action IAW Emergency Operating Procedures?

Answer A

Lower reactor level until all SRVs are closed

Answer B

Lower reactor pressure until power is below 4%

Answer C

Lower and maintain reactor pressure 500 to 600 psig

Answer D

Lower and maintain reactor level -190 inches to -50 inches

RO QUESTION #

29

QUESTION

The primary containment Hydrogen Oxygen Analyzer 1AC200 selector switch is moved from Standby to Analyze to perform a required surveillance.

Why is there a requirement to wait 90 minutes before taking a reading?

Answer A

Ensure sample lines are clear of moisture

Answer B

Allow sample flow rate to stabilize below 500 cc/m

Answer C

Obtain a sample indicative of containment conditions

Answer D

Allow the analyzer to warm up to proper operating temperature

RO QUESTION #

30

QUESTION

Which of the following Fire Suppression systems and/or components can be manually operated from the Main Control Room to assist the Fire Department in response to a fire?

Answer A

Motor Driven Fire Pump AND FRVS Deluge

Answer B

Diesel Driven Fire Pump AND CREF Deluge

Answer C

Bulk Fuel Oil Storage Tank Foam System AND EDG Room CO2

Answer D

Bulk Fuel Oil Storage Tank Foam System AND Diesel Driven Fire Pumps

RO QUESTION #

31

QUESTION

Given the following:

- Plant startup and heatup is in progress
- The reactor is critical
- Reactor pressure is 850 psig
- The "B" CRD pump is INOP
- The "A" CRD pump discharge pressure decreased to 875 psig
- An operator has been dispatched to the CRD pumps to investigate

Which one of the following is the correct action for the crew in accordance with HC.OP-AB.ZZ-0105 "Loss of CRD Regulating Function"?

Answer A

Place the Mode Switch in SHUTDOWN when two CRDMs temperatures exceed 250 F

Answer B

Place the Mode Switch in SHUTDOWN when an accumulator becomes inoperable on withdrawn control rods

Answer C

Commence a normal shutdown within 20 minutes when one CRDM temperature exceeds 250 F

Answer D

Commence a normal shutdown when an accumulator becomes inoperable on withdrawn control rods

RO QUESTION #

32

QUESTION

Given the following:

- A LOCA has occurred
- The crew is implementing HC.OP-EO.ZZ-0101 Reactor Pressure Vessel Control for Alternate Level Control
- A loss of high pressure feed sources occurred
- Both CRD Pumps have been restarted for 2 pump emergency makeup IAW HC.OP-SO.BF-0001 "CRD System Operation"
- The operator observes CRD pump discharge header pressure is 1050 psig

Which one of the following describes the operator action required to maintain CRD pump discharge header pressure >1083 psig to prevent runout of the CRD pumps?

Throttle the CRD Drive Water \_\_\_\_\_ .

Answer A

Pressure Control Valve F003 open

Answer B

Pressure Control Valve F003 closed

Answer C

Flow Control Valve F002A(B) open

Answer D

Flow Control Valve F002A(B) closed

RO QUESTION #

33

QUESTION

Given the following conditions:

- The plant is operating at 25% power performing a shutdown
- Control rod 18-23 has been determined to be stuck at position 48
- While attempting to insert the control rod, indicated drive water flow is reading "0" gpm

Which of the following is the cause of this indication?

Answer A

The 2 gpm Stabilizing Valve has failed to reposition.

Answer B

HCU Directional Control Valve (122) has failed to reposition.

Answer C

HCU Directional Control Valve (123) has failed to reposition.

Answer D

Both Cooling Water Header to Exhaust Header Pressure Equalizing Valves have failed open.

RO QUESTION #

34

QUESTION

Given the following:

- The plant startup is in progress
- Start attempt of the "B" Reactor Recirc pump fails
- The drive motor breaker trips open 20 seconds after closure
- 10A120 Bus voltage remained at 7.2 kv
- M/G set lube oil temperature is 120 degF
- M/G set lube oil pressure is 35 psig
- Pump suction valve BB-HV-F023B is open
- Pump discharge valve BB-HV-F031B is stoking open

Which one of the following is the cause of the breaker trip?

Answer A

Exciter field overcurrent

Answer B

Generator neutral undervoltage

Answer C

Switchgear Bus differential overcurrent

Answer D

MG Set Drive Motor Bus undervoltage

RO QUESTION #

35

QUESTION

Given the following conditions:

- The reactor is operating at 95% power
- An instrumentation technician causes a zero percent feedwater flow signal to be sensed by the Recirculation Flow Control System
- The Instrumentation Technician recognizes the error and removes the cause of the low feedwater flow signal 10 seconds later

Which one of the following correctly describes the Reactor Recirculation Pumps speed initial response, and response when the error is corrected?

Answer A

Remains unchanged

Answer B

Lowers to and remains at 30 %

Answer C

Lowers to and remains at 45 %

Answer D

Lowers, then returns to original value

RO QUESTION #

36

QUESTION

Given the following:

- The plant is operating at 100 percent power
- "D" ECCS Jockey Pump trips
- RHR LOOP B TROUBLE and RHR LOOP D TROUBLE overhead alarms are received
- 10 minutes later, Condensate Transfer is manually valved in
- The Reactor Building EO reports significant air was vented from the high point vents

Which one of the following describes the Jockey Pump trip effect on the "B" and "D" RHR subsystems until the air is vented?

Answer A

LPCI response time will be longer

Answer B

Alternate Injection System flowpaths are lost

Answer C

Air binding of the affected RHR pumps would occur

Answer D

Water hammer damage has occurred to the RHR piping

RO QUESTION #

37

QUESTION

Given the following:

- The plant has scrambled from a Loss of Offsite Power
- HPCI is operating in Pressure Control mode
- HPCI flow controller is in Auto set at 3000 gpm
- HPCI discharge pressure is steady at 900 psig
- Reactor pressure is steady at 700 psig
- The operator lowers the HPCI flow controller setpoint to 2500 gpm in Auto

Which of the following describes the response of reactor pressure and HPCI discharge pressure AFTER HPCI flow has STABILIZED? (Assume reactor decay heat load remains constant.)

Reactor pressure will \_\_\_\_\_ and HPCI discharge pressure will

Answer A

decrease; increase

Answer B

decrease; decrease

Answer C

increase; increase

Answer D

increase; decrease

RO QUESTION #

38

QUESTION

During a loss of feedwater, a manual start of the High Pressure Coolant Injection (HPCI) system was done at a water level of -20 inches by operator manipulation of the system components.

Which of the following describes the HPCI system response as reactor water level continues to change?

Answer A

It will automatically trip at +54 inches and will automatically restart at -38 inches.

Answer B

It will automatically trip at +54 inches and will require operator action to restart when level reaches -38 inches.

Answer C

Operator action is required to secure injection when level reaches +54 inches but it automatically restarts at -38 inches.

Answer D

Operator action is required to secure injection when level reaches +54 inches and also to restart when level reaches -38 inches.

RO QUESTION #

39

QUESTION

Given the following conditions:

- A loss of coolant accident has occurred
- Reactor water level reached -140 inches, then recovered to -50 inches and is now rising
- Reactor pressure is 50 psig
- Drywell pressure is 6 psig
- All plant systems responded as designed

Which of the following describes the system isolation capabilities for the Core Spray System (CSS) Downstream Loop Injection Valve (F005B) and the CSS Upstream Loop Injection Valve (F004B), if Core Spray Loop "B" isolation is required?

Answer A

Only F005B valve may be overridden closed

Answer B

Only the F004B valve may be overridden closed

Answer C

Both the F004B and F005B valves may be overridden closed

Answer D

Neither the F004B or F005B valves may be overridden closed

RO QUESTION #

40

QUESTION

Given the following conditions:

- A loss of coolant accident has occurred
- Reactor pressure is 50 psig and lowering
- Core Spray Loop A is injecting at rated flow
- Actual reactor water level is -170 inches and lowering
- All other water sources are unavailable

Which one of the following methods currently assures adequate core cooling for this situation?

Answer A

Core submergence

Answer B

Core Spray injection

Answer C

Steam cooling until level reaches -190

Answer D

Steam cooling after level reaches -200

RO QUESTION #

41

QUESTION

Given the following conditions:

- The plant was operating at 100 percent power
- The plant has experienced a failure-to-scram (ATWS)
- The Standby Liquid Control (SLC) system was initiated and injected for 52 minutes before both SLC Pumps tripped simultaneously
- Reactor power is in the source range

How do the SLC pump trips affect reactor cooldown and depressurization?

Answer A

Cooldown can be accomplished if completed before Xenon decays out of the core.

Answer B

Boron concentration is sufficient to allow a complete cooldown under any plant conditions.

Answer C

Reactor Engineering must make the determination if current boron concentration will allow a complete cooldown.

Answer D

Boron concentration is sufficient to allow a complete cooldown with a maximum of 8 control rods not fully inserted.

RO QUESTION #

42

QUESTION

Given the following conditions:

- A plant startup was in progress following a refueling outage
- The reactor mode switch is in Startup
- A reactor scram occurred (all rods inserted)
- The sequence of events printout shows that just prior to the scram, Average Power Range Monitoring (APRM) channels "B" and "D" were upscale HI-HI

Which of the following additional conditions, by itself, would have caused the full reactor scram signal?

Answer A

RPS Bus "B" has de-energized.

Answer B

Recirculation Loop flow unit "A" fails downscale

Answer C

The Reactor Protection System shorting links are removed.

Answer D

SRM Channels "A" and "C" are reading 1.5 E5 counts per second.

RO QUESTION #

43

QUESTION

Given the following:

- The plant is operating at 100 percent power
- The fuse supplying power to the "A" RPS Backup Scram Solenoid Valve has blown

Which of the following correctly describes the effect on the scram air header?

Answer A

Will immediately depressurize

Answer B

Will depressurize on receipt of a full scram signal

Answer C

Will remain pressurized on receipt of a full scram signal

Answer D

Will remain depressurized when the scram is reset following receipt of a full scram signal

RO QUESTION # 44

QUESTION

Given the following conditions:

- No control motion signal is present
- Control rod 50-43 ROD DRIFT illuminates on the Full Core Display
- Overhead annunciator "ROD DRIFT" C6-E3 alarms

Which one of the following caused the alarm?

Control Rod 50-43 has \_\_\_\_\_ .

Answer A an odd reed switch opened

Answer B an odd reed switch closed

Answer C an even reed switch opened

Answer D an even reed switch closed

RO QUESTION #

45

QUESTION

Given the following:

- TIP traces are being performed
- The "B" TIP detector is in the core
- A feedwater transient causes a reactor scram
- HPCI and RCIC receive Auto Initiation signals
- "A" NSSSS channel fails to trip when required

Which one of the following describes the automatic response of "B" TIP detector to the NSSSS failure?

Answer A

The "B" TIP detector will withdraw. The Ball Valve closes.

Answer B

The "B" TIP detector will withdraw. The Ball Valve remains open.

Answer C

The "B" TIP detector will NOT withdraw. The Ball Valve closes.

Answer D

The "B" TIP detector will NOT withdraw. The Ball Valve remains open.

RO QUESTION # 46

QUESTION Given the following:

- A plant startup is in progress
- A 100 second positive period has been attained
- SRMs are being withdrawn
- All IRMs are on range 2
- "B" SRM count rate continues to increase as the "B" detector is withdrawn
- The ROD OUT MOTION BLOCK annunciator alarms

Can the startup continue and what actions are required by HC.OP-AB.ZZ-0107?

Answer A No, insert all SRMs to the full in position

Answer B No, insert all control rods using the stuff sheet

Answer C Yes, bypass the channel using the joystick

Answer D Yes, the channel will automatically bypass when IRM range 3 is selected

RO QUESTION #

47

QUESTION

Given the following:

- The plant is in Cold Shutdown
- 24 VDC Battery charger 1AD304 has tripped off line
- Battery voltage has dropped to +10.5 VDC

Which one of the following correctly describes how the SRM's are affected?

Answer A

Channel A and C drift upscale

Answer B

Channel A and C drift downscale

Answer C

Channel B and D drift upscale

Answer D

Channel B and D drift downscale

RO QUESTION # 48

QUESTION Given the following:

- The plant is operating at 100 percent power
- B2 channel of RPS is in the TRIP condition

Which one of the following failures of Nuclear Boiler Instrumentation channels would complete the RPS trip logic, initiating an automatic scram?

Answer A Drywell pressure transmitter "C" fails downscale

Answer B Recirculation Loop flow unit "A" fails downscale

Answer C Narrow Range reactor pressure channel "A" fails upscale

Answer D Wide Range reactor water level transmitter "C" fails upscale

RO QUESTION #

49

QUESTION

Given the following conditions:

- The Reactor Core Isolation Cooling (RCIC) is operating in Full Flow Recirc
- The RCIC flow controller is in "MAN"
- The RCIC flow controller indicates 300 gpm
- RCIC turbine speed is 2450 rpm
- The operator throttles open the RCIC Test Bypass To CST Isolation Valve (F022) for 2 seconds

Which of the following describes the response of RCIC turbine speed and system flow AFTER conditions have STABILIZED?

RCIC Turbine speed is \_\_\_\_\_ and system flow is \_\_\_\_\_.

Answer A

lower; lower

Answer B

lower; the same

Answer C

the same; higher

Answer D

higher; higher

RO QUESTION # 50

QUESTION The plant has experienced a LOCA in the Drywell, resulting in automatic initiations of all low pressure ECCS, HPCI and RCIC. Following initiation, the RCIC steam line ruptured in the RCIC Turbine room and successfully isolated on high steam flow.

Current plant conditions are:

- All rods are in
- RPV level is being maintained at +5 inches with condensate
- RPV pressure is 200 psig and lowering at 10 psig per minute through the break
- Low pressure ECCS and HPCI have been secured
- Drywell pressure is 6 psig and slowly rising

Which one of the following additional AUTOMATIC VALVE CLOSURES will occur

Answer A Steam Supply Valve HV-F045

Answer B Turbine Exhaust Isolation Valve HV-F059

Answer C Lube Oil Cooling Water Isolation Valve HV-F046

Answer D Turbine Exhaust Vacuum Breaker Isolation Valve HV-F062

RO QUESTION #

51

QUESTION

The Suppression Chamber to Drywell vacuum breakers fail to operate when required.

Which one of the following is a consequence of the failure of Suppression Chamber vacuum breakers to operate when required?

Answer A

Drywell failure caused by high internal pressure

Answer B

Drywell failure caused by high external pressure

Answer C

Suppression chamber failure caused by high internal pressure

Answer D

Suppression chamber failure caused by high external pressure

RO QUESTION #

52

QUESTION

Given the following:

- A small leak has occurred in the RWCU system.
- The operator depresses the "C" and "D" NSSSS manual isolation pushbuttons.

Which one of the following correctly describes the response of valves RWCU Inboard and Outboard Isolation Valves BG-HV-F001 and F004?

Answer A

F001 closes, F004 remains open

Answer B

F004 closes, F001 remains open

Answer C

Both F001 and F004 close

Answer D

Both F001 and F004 remain open

RO QUESTION #

53

QUESTION

Given the following:

- B RHR loop Drywell spray is in-service following a LOCA.
- B RHR pump amps are fluctuating
- A RHR pump is not available
- Suppression chamber pressure is 10.2 psig and lowering
- Abnormal procedure HC.OP-AB.ZZ-155 "Degraded ECCS Performance/ Loss of NPSH" has been implemented

For these conditions, which of the following describes the condition allowing removal of Drywell sprays from service and the basis for their removal?

Answer A

At 1.68 psig in the Suppression Chamber to prevent "chugging" of the downcomer vent pipes

Answer B

At 9.5 psig in the Suppression Chamber to prevent "chugging" of the downcomer vent pipes

Answer C

At 1.68 psig in the Suppression Chamber to minimize transport of debris to the pump suction strainers

Answer D

At 9.5 psig in the Suppression Chamber to minimize transport of debris to the pump suction strainers

RO QUESTION #

54

QUESTION

Which of the following conditions would PREVENT opening the RHR "B" Loop Inboard and Outboard Drywell Spray Valves (F021B and F016B) following a LOCA?

Answer A

Reactor water level is above -129 inches

Answer B

The LPCI Injection Valve (F017B) is not fully closed

Answer C

The RHR Full Flow Test Valve (F024B) is not fully closed

Answer D

Less than 5 minutes have elapsed since the "B" RHR initiation occurred

RO QUESTION # 55

QUESTION

The plant was operating at 100 percent power when a reactor scram and MSIV closure occurred. An SRV tailpipe has broken in the Suppression Chamber air space as the SRV opened to control reactor pressure.

Given the following:

- Suppression Chamber pressure is 5 psig
- Suppression Chamber air space temperature is 225 DegF and rising
- "B" RHR Pump in running in Suppression Pool Cooling

Which of the following operator actions are required IAW HC.OP-SO.BC-0001 to establish flow through the Suppression Chamber Spray Valve BC-HV-F027B?

Answer A F027B Auto Open Override must be pressed.

Answer B F027B Auto Close Override must be pressed.

Answer C F027B Auto Open Override must be pressed AND the LPCI Initiation must be RESET.

Answer D F027B Auto Close Override must be pressed AND the LPCI Initiation must be RESET.

RO QUESTION #

56

QUESTION

Given the following:

- The reactor is at 90% power.
- Main Turbine Bypass Valve testing is in progress
- The Plant Operator inadvertently depresses the INCREASE push button for the bypass valve jack and the button sticks down until the percent demand indication on panel 10C651D reads 100%.

WHICH ONE of the following describe the turbine control and bypass valve response?

(Reference Attachment B-1 provided)

Answer A

Bypass valves open and control valves throttle closed to maintain reactor pressure

Answer B

Bypass valves open and control valves throttle open to the Load Limit setpoint

Answer C

Bypass valves remain closed and control valves throttle closed to raise reactor pressure

Answer D

Bypass valves remain closed and control valves throttle open to lower reactor pressure

RO QUESTION #

57

QUESTION

Given the following:

- A plant startup is in progress
- Reactor power is at 2 percent
- Reactor pressure is 110 psig
- The first Secondary Condensate Pump (SCP) is running on min-flow
- The StartUp Level Control is in AUTO at 5 percent Demand
- Reactor level is stable at 35 inches
- The operator opens the SCP discharge valve

Which one of the following describes the initial Reactor water level response, and Start Up Level Control Valve (SULCV) Demand after conditions stabilize?

Answer A

Initially RPV level will decrease; stable SULCV demand will be higher

Answer B

Initially RPV level will decrease; stable SULCV demand will be lower

Answer C

Initially RPV level will increase; stable SULCV demand will be higher

Answer D

Initially RPV level will increase; stable SULCV demand will be lower

RO QUESTION # 58

QUESTION Given the following conditions:

- A plant startup is in progress.
- Reactor power is 60%
- "A" and "B" Primary Condensate Pumps (PCP) are running
- "A" and "C" Secondary Condensate Pumps (SCP) are running
- "B" and "C" Reactor Feed Pumps (RFP) are running

What is the response of the Feedwater System to a trip of the "A" PCP?

(Reference Attachments B-2A & B-2B provided)

Answer A "A" SCP Trips, "B" RFP trips

Answer B "A" SCP Trips, "C" RFP Trips

Answer C "C" SCP Trips, "B" RFP trips

Answer D "C" SCP Trips, "C" RFP Trips

RO QUESTION #

59

QUESTION

Given the following conditions:

- A plant startup is in progress
- Reactor power at 5%
- "B" Reactor Feedwater Pump operating in Differential Pressure (D/P) Control
- SV-1783B, "B" RFP Minimum Flow Recirculation valve solenoid, loses electrical power

Which of the following correctly describes "B" RFP response?

The "B" RFP will \_\_\_\_\_ .

(Reference Attachments B-3A & B-3B provided)

Answer A

trip on overspeed

Answer B

control at a lower speed

Answer C

control at a higher speed

Answer D

control at the same speed

RO QUESTION #

60

QUESTION

Given the following:

- All FRVS Recirculation Fans are in AUTO
- "A" FRVS Vent Fan is in Auto Lead
- "B" FRVS Vent Fan is in Auto
- FRVS automatically initiates on RPV Level 2

Select the total FRVS Recirculation and total Vent flow after the operator has completed HC.OP-SO.GU-0001 "Filtration, Recirculation and Ventilation System Operation" actions for initiation verification.

Answer A

120,000 cfm; 9000 cfm

Answer B

120,000 cfm; 18,000 cfm

Answer C

180,000 cfm; 9000 cfm

Answer D

180,000 cfm; 18,000 cfm

RO QUESTION #

61

QUESTION

Given the following:

- The plant is operating at 100 percent power
- Energized testing activities are in progress on the 1AD481 1E 20 KVA Uninterruptable Power Supply (UPS).
- The Manual Bypass switch in the BYPASSED TO ALTERNATE position

The Backup AC power input breaker CB301 has tripped open to the 1AD481.

The power supplied to distribution panel 1AJ481 will be \_\_\_\_\_ because the load was on the \_\_\_\_\_.

(Reference Attachment B-4 provided)

Answer A

lost; Backup AC source

Answer B

lost; Static Inverter output

Answer C

maintained; Normal AC source

Answer D

maintained; Static Switch output

RO QUESTION #

62

QUESTION

Given the following:

- The plant is operating at 100 percent power
- The RCIC 250 VDC battery is being returned to service following maintenance
- Maintenance requests 1BD433 250 VDC battery charger placed in service for testing

Why is it necessary to have Battery Room Exhaust ventilation in-service prior to this testing?

Answer A

Permissive to energize battery room duct heater

Answer B

Prevent overheating of the battery charger rectifier stack

Answer C

Prevent accumulation of hydrogen gas in the battery room

Answer D

Maintain battery room temperature above Tech Spec minimum

RO QUESTION #

63

QUESTION

Given the following:

- The plant is operating at 100% power
- Main Condenser vacuum is being maintained with Steam Jet Air Ejectors
- Feed Gas Recombiner Preheater outlet temperatures are lowering
- Feed Gas Recombiner temperatures are lowering

Which one of the following would cause this change?

Answer A

Feed Gas Pre-heater drain pot low level

Answer B

Feed Gas Cooler Condenser high RACS flow

Answer C

Main Steam Supply Valve HA-HV-5640 is closed

Answer D

Feed Gas Recombiner strip heater power supply is lost

RO QUESTION #

64

QUESTION

Given the following conditions:

- The plant is operating at 100 percent power
- Offgas Post Treatment Radiation monitor channel RE-6281 fails upscale

What actions would occur as a result of this failure?

Answer A

An isolation of the Offgas Recombiner System

Answer B

An alarm only from the Radiation Monitor System

Answer C

Trip of the Hydrogen Water Injection System (HWCI)

Answer D

Loss of Offgas Post Treatment manual sample capability

RO QUESTION #

65

QUESTION

Given the following conditions:

- The plant is operating at 100 percent power
- A severe marsh grass intrusion is in progress at the Service Water Intake Structure
- Over the next hour, the operators note that cooling tower basin level is lowering due to insufficient Service Water makeup to the basin
- Radwaste Operators report the Liquid Radwaste Discharge line to the Cooling Tower Blowdown (CTB) just isolated in the middle of a tank release

What caused the Liquid Radwaste discharge isolation?

Answer A

Low Sample Flow to the Liquid Radwaste Radiation Monitor

Answer B

Low Sample Flow to the Cooling Tower Blowdown Radiation Monitor

Answer C

Low CTB Weir Flow to the Liquid Radwaste Radiation Monitor

Answer D

Low CTB Weir Flow to the Cooling Tower Blowdown Radiation Monitor

RO QUESTION #

66

QUESTION

Given the following:

- The plant is operating at 100 percent power with all systems normal
- A LOCA with a containment breach has occurred
- Control Room HVAC has sensed high radiation in the intake plenum

Which one of the following describes the automatic response?

Answer A

CREF dampers re-position to the OA mode. The Control Room envelope maintains a positive pressure

Answer B

CREF dampers re-position to the OA mode. The Control Room envelope maintains a negative pressure

Answer C

CREF dampers re-position to the RECIRC mode. The Control Room envelope maintains a positive pressure

Answer D

CREF dampers re-position to the RECIRC mode. The Control Room envelope maintains a negative pressure

RO QUESTION #

67

QUESTION

During a loss of offsite power, the operator is cautioned NOT to acknowledge the flashing "Trip" pushbuttons for the 4.16 KV Vital 1E Bus infeed breakers.

Which of the following will occur if these pushbuttons are pressed?

Answer A

The Diesel Generator associated with that bus will NOT load and its output breaker will NOT close.

Answer B

The Diesel Generator associated with that bus, if running, will trip and its output breaker will open.

Answer C

That bus' alternate feeder breaker will trip open and then immediately reclose when the pushbutton is released.

Answer D

That bus' feeder breaker will attempt to close until the anti-pump feature causes it to trip open and remain open.

RO QUESTION #

68

QUESTION

Given the following:

- The plant is in a refueling outage.
- Fuel movement is in progress.
- The refueling bridge operator is moving a fuel assembly from the pool to the core when the control room RO reports to the Refuel Floor that the SRM in the destination core quadrant has failed upscale and will not be returned to service for 4 hours.

What action is required by the Refuel bridge operator if the assembly has been raised halfway out of the Fuel Pool storage racks?

Answer A

Suspend the move, leave the bundle as-is until the SRM is repaired

Answer B

Suspend the move, insert the fuel assembly to its previous position in the fuel pool

Answer C

Continue the move, it can be completed because of symmetric SRM coverage

Answer D

Continue the move, stopping just short of the core to allow for repair of the SRM

RO QUESTION #

69

QUESTION

Which of the following is the Technical Specification limit value that is changed during single loop operation?

Answer A

Linear Heat Generation Rate thermal limit

Answer B

Minimum Critical Power Ratio Safety Limit

Answer C

The size of the Exit region of the Power/Flow Map

Answer D

The Temperature/Pressure limits for heatups and cooldowns

RO QUESTION #

70

QUESTION

Which of the following is the reason why HC.OP-EO.ZZ-0103/4(Q)-FC, "Reactor Building & Rad Release Control", is entered on high Reactor Building HVAC Exhaust radiation levels?

Answer A

Provides rapid, initial indications of the size of the off-site releases.

Answer B

Required to direct the operator to verify RBVS initiates and FRVS isolates.

Answer C

These high radiation conditions are indication that radioactivity is being released and automatic system isolations may not have occurred.

Answer D

These high radiation levels can only be caused by the primary containment parameters monitored and controlled by the EOP.

RO QUESTION #

71

QUESTION

Given the following:

- The plant is operating at 100 percent power
- SACS loop "A" supplying TACS
- SACS pump "B" supplying loop "B" loads
- SACS pump "D" is in AUTO NOT running
- The Loop "A" expansion tank level instrument ( LLLLL-2508A ) fails downscale

Which of the below describes the SACS/TACS alignment as a result of this instrument failure?

ASSUME NO OPERATOR ACTIONS

Answer A

"A" SACS Pump trips because "A" TACS Supply and Return valves close

Answer B

"A" SACS Pump trips because the failed transmitter inputs into the pump trip logic

Answer C

"D" SACS Pump auto starts because "A" TACS Supply and Return valves close

Answer D

"D" SACS Pump auto starts because the failed transmitter inputs into the pump start logic

RO QUESTION #

72

QUESTION

Given the following:

- A failure to scram has occurred
- HC.OP-EO.ZZ-0302 "De-energization of Scram Solenoids" is being implemented
- The operator is cautioned to pull the SDV Vent and Drain fuses first

Fuse removal in the sequence listed in HC.OP-EO.ZZ-0302 is required to prevent \_\_\_\_\_.

Answer A

inconsistent rod patterns from occurring

Answer B

manual bypass of the Hi SDV Level Scram

Answer C

damage to the CRD mechanism inner tubes

Answer D

creating a flow path from the RPV to the Reactor Building

RO QUESTION #

73

QUESTION

Given the following:

- A steam break has occurred in the drywell coincident with a failure to scram.
- Drywell Temperature is 345 DegF
- Emergency depressurization was not initiated at the required drywell temperature.

Which one of the following describes the effect of this condition?

Answer A

The ability to monitor drywell temperature is lost

Answer B

The ability to emergency depressurize cannot be assured

Answer C

Design temperature of SRV tailpipes have been exceeded

Answer D

Drywell spray, if initiated, will rapidly vaporize causing a rapid pressure increase

RO QUESTION # 74

QUESTION Given the following conditions:

- Unit is operating at 75% power
- One Safety Relief Valve opened one minute ago and will not close by pressing the associated SRV Open and Close pushbuttons
- Suppression Pool average water temperature is 115 degrees F and rising
- "SV ENRGZ" light is NOT lit

Which one of the following is a required action for these conditions?

Answer A Reduce pressure set to 840 psig

Answer B Reduce the Reactor Recirculation Pumps to 45% speed

Answer C Place the Reactor Mode Switch in the "Shutdown" position

Answer D Rotate "Max Combined Flow" potentiometer fully counter-clockwise

RO QUESTION #

75

QUESTION

The plant is operating at 100% power with all systems normal when the 250 VDC TROUBLE overhead annunciator alarms. The Auxiliary Building Operator reports that the 250 VDC supply breaker to RCIC MCC has tripped open.

Which of the following describes the effect on the RCIC System?

RCIC will respond to \_\_\_\_\_ .

Answer A

Low RPV Water Level 2 initiation

Answer B

Low Condensate Storage Tank Level

Answer C

High Room Temperature isolation

Answer D

High Suppression Chamber Water Level

RO QUESTION #

76

QUESTION

Given the following conditions:

- A LOCA has occurred
- Drywell pressure is 1.8 psig
- HPCI is controlling reactor vessel level
- ALL ECCS have responded as designed

Which of the following describes the response of the Drywell Ventilation System (DVS) to this event?

The DVS fans \_\_\_\_\_ .

Answer A

tripped and may be manually restarted, if necessary

Answer B

tripped, but were restored within 13 seconds by the LOCA sequencer

Answer C

continue to operate, but on low speed until manually switched to high speed

Answer D

continue to operate, but the cooling coils must be manually aligned to RACS

RO QUESTION #

77

QUESTION

Given the following:

- The plant is operating at 100% power with all systems normal
- A large pipe break occurs in the Turbine Building Chilled Water system
- All Turbine Building Chilled Water Pumps trip on low flow
- Turbine Building Floor Drain Sump levels are rising

Which of the following operator actions BY ITSELF will control Drywell temperature before a reactor shutdown is required?

Answer A

Manually align Drywell cooling to RACS

Answer B

Press the OPEN RACS PB on 10C651E

Answer C

Place additional Drywell Cooling Fans in service

Answer D

Place additional Drywell Cooler cooling coils in service

RO QUESTION # 78

QUESTION Given the following:

- A LOCA has occurred
- RPV Pressure is 15 psig
- Drywell Pressure is 15 psig and steady
- Drywell Sprays are in service
- Adequate core cooling is assured
- HPCI Suction is lined up to the Suppression Pool
- HPCI Min Flow isolation valve has been cycled
- HPCI suction pressure is 21 psig and steady
- Suppression Pool water level instruments are not working
- Instrument Zero = 94 inches Containment level

Which one of the following is the Suppression Pool level indication equivalent to

Answer A 98.0 inches

Answer B 110.0 inches

Answer C 144.5 inches

Answer D 192.0 inches

RO QUESTION #

79

QUESTION

Given the following:

- "E" APRM back-panel indicator lights are as shown on the attached drawing

Which of the following correctly describes APRM "E" operation?

(Reference Attachment R-~~5~~<sup>6</sup> provided)

QES

Answer A

The APRM is inoperable when LPRM 1D-32-49 is bypassed

Answer B

The APRM is inoperable when LPRM 3B-32-33 is bypassed

Answer C

The INOP lamp should illuminate when LPRM 1D-32-49 is bypassed

Answer D

The INOP lamp should illuminate when LPRM 3B-32-33 is bypassed

RO QUESTION #

80

QUESTION

Given the following :

- A plant startup is in progress
- Reactor power is 25 percent
- Control rods are being withdrawn using the startup rod pull sequence
- Permission is granted by the RE to use the Continuous Withdraw PB
- The selected rod is being continuously withdrawn from 00 to 48 when the operator notices the rod has stopped moving at notch 22

Which one of the following indicates a condition that would interrupt the continuous withdrawal of the control rod?

Answer A

DATA FAULTS light illuminated

Answer B

ROD SELECTION BLOCK light illuminated

Answer C

RWM Display WITHDRAW BLOCK illuminated

Answer D

ACTIVITY CONTROLS DISAGREE light illuminated

RO QUESTION #

81

QUESTION

Given the following:

- The plant is operating at 100 percent power
- The "A" Reactor Recirculation MG Set speed control signal fails downscale

Which one of the following describes the effect of this failure on the "A" Reactor Recirc loop?

Answer A

Scoop tube lockup

Answer B

Overhead alarm only

Answer C

Drive Motor breaker trips

Answer D

Runback to 30% speed limiter

RO QUESTION #

82

QUESTION

Given the following:

- A valid high drywell pressure condition is reached coincident with a loss of offsite power
- Only 'A' and 'C' emergency diesel generators have started

The \_\_\_\_\_ RHR pump will start \_\_\_\_\_ seconds after its respective diesel output breaker closes.

Answer A

A; zero (immediately)

Answer B

A; five

Answer C

C; six

Answer D

C; ten

RO QUESTION #

83

QUESTION

Given the following conditions:

- The plant is operating at 40 percent power
- The Reactor Engineer is performing LPRM calibrations
- The "C" Transversing Incore Probe (TIP) is being used
- The "C" TIP drawer Mode switch is in AUTO
- The READY light is illuminated
- The FWD light is extinguished
- The REVERSE light is extinguished
- The VALVE light is dim

Which one of the following is the current location for the "C" probe?

(Reference Attachment R-<sup>5</sup> provided)

afj

Answer A

In the indexer

Answer B

At the core top

Answer C

In the shield pig

Answer D

At the core bottom

RO QUESTION # 84

QUESTION

Given the following conditions:

- The Automatic Depressurization System (ADS) Manual Initiation Channel "B" and "F" pushbuttons (S6B and S6F) have been armed and depressed
- There is no Safety Relief Valve response

Which one of the following failures caused this system response?

Answer A Loss of 125 VDC Bus 1BD318

Answer B Loss of 125 VDC Bus 1BD417

Answer C Loss of 120 VAC Bus 1BJ481

Answer D Loss of 120 VAC Bus 1BJ482

RO QUESTION #

85

QUESTION

Which of the following describes the EOP bases for the minimum required number of SRVs for Emergency Depressurization?

Answer A

To ensure steam removal rate during a LOCA is adequate to prevent exceeding the drywell design pressure

Answer B

To ensure steam removal rate from the core is sufficient to remove all decay heat with adequate ECCS makeup flow

Answer C

To ensure the pressure reduction rate will allow low pressure injection systems to inject soon enough to recover level before core uncover occurs

Answer D

To ensure the pressure reduction rate will allow low pressure injection systems to inject prior to reaching the Minimum Steam Cooling RPV Water Level

RO QUESTION #

86

QUESTION

Given the following:

- The plant has scrambled on full MSIV closure
- "B" RHR loop is in Suppression Pool Cooling at rated flow
- HPCI is running in pressure control mode
- Reactor level is +35 inches
- Reactor pressure is 900 psig
- "B" RHR loop has just initiated on High Drywell Pressure

Assuming no other operator action, which one of the following describes the "B" RHR loop flow as indicated by the Flow Recorder FR-R608B after the "B" RHR Loop valves respond and conditions have stabilized?

Answer A

Flow increases because the RHR F017B Injection Valve has opened

Answer B

Flow decreases because the RHR F007B Min Flow Valve has closed

Answer C

Flow increases because the RHR F048B HX Bypass Valve has opened

Answer D

Flow decreases because the RHR F024B Test Return Valve has closed

RO QUESTION #

87

QUESTION

Given the following:

- The plant is in a Refueling outage
- Fuel moves are in progress IAW HC.OP-IO.ZZ-0009 "Refueling Operations"
- The Refueling SRO reports visibility in the core region is marginal and has stopped fuel moves

Which one of the following operator actions will improve water clarity?

Answer A

Align RHR in Fuel Pool Cooling Assist

Answer B

Shift FPCC return to the Reactor cavity

Answer C

Place a Reactor Recirculation Pump in-service

Answer D

Bypass the RWCU Regenerative Heat Exchanger

RO QUESTION #

88

QUESTION

Plant conditions are as follows:

- Reactor Power is at 70%
- Condenser Vacuum is 5.1" Hg absolute and degrading

Which one of the following states a required Immediate Operator Action?

Answer A

Place the standby SJAE in-service

Answer B

Ensure turbine sealing steam pressure is normal

Answer C

Trip the Main Turbine if 350 Mwe is reached and back pressure exceeds 5.0" Hg ABS

Answer D

Reduce reactor power as necessary to maintain condenser vacuum less than 5.0" Hg ABS

RO QUESTION #

89

QUESTION

Given the following:

- The plant is operating at 100 percent power
- The South Plant Vent Low Range Gas RE-4875B detector has failed downscale

What effect does this failure have on the capability of the South Plant Vent RMS skid to monitor gaseous releases? (ASSUME NO OPERATOR ACTIONS TAKEN)

(Reference Attachment R-7 provided)

Answer A

Particulate, Iodine, & Gas (PIG) monitoring is still accurate

Answer B

Particulate, Iodine, & Gas (PIG) monitoring is no longer accurate

Answer C

The Bypass pump starts and the High Range monitor is still accurate

Answer D

The Bypass pump starts and the High Range monitor is no longer accurate

RO QUESTION # 90

QUESTION Given the following:

- An I&C tech has inadvertently generated a spurious "A" channel LOCA signal
- Drywell Cooler fans have tripped
- The LOCA signal has been reset
- All tripped MCC breakers have been reclosed

What actions must be performed to restore each Drywell Cooler Fan to service?

The \_\_\_\_\_ PB must be pressed followed by the \_\_\_\_\_ PB.

(Reference Attachment R-8 provided)

Answer A MAN; AUTO

Answer B MAN; START HI

Answer C STOP; AUTO

Answer D STOP; START HI

RO QUESTION #

91

QUESTION

Given the following:

- The plant is operating at 100 percent power
- A leak has occurred in the Service Air Header

Select the automatic response to the Service Air header leak.

If \_\_\_\_\_ Air header pressure has lowered to \_\_\_\_\_ .

Answer A

Instrument; 83 psig, the Emergency Instrument Air Compressor is running

Answer B

Instrument; 87 psig, the 1AF104 Instrument Air Dryer is on line

Answer C

Service; 93 psig, the Standby Service Air Compressor is running

Answer D

Service; 95 psig, the Service Air Supply header isolation valve closes

RO QUESTION #

92

QUESTION

Given the following conditions:

- The Control Room has been evacuated in accordance with HC.OP-AB.ZZ-0130(Q), "Control Room Evacuation"
- Control ~~has been~~ <sup>is being</sup> established at the Remote Shutdown Panel (RSP) in accordance with HC.OP-IO.ZZ-0008(Q), "Shutdown From Outside Control Room"
- All RSP Transfer switches have been placed to Emergency
- RCIC is operating, maintaining reactor water level at +35 inches
- Safety Relief Valves (SRV) are being used to control pressure
- No other operator actions have been taken

Which of the following must be placed in-service from the local breaker panels if the 10B460 Unit Substation infeed breaker trips open?

Answer A

"D" Station Service Water Pump

Answer B

HPCI Turbine in pressure control mode

Answer C

RHR Pump in Suppression Pool Cooling

Answer D

RCIC Gland Seal Condenser Condensate Pump

RO QUESTION #

93

QUESTION

Given the following:

- Reactor vessel hydrostatic testing is in progress
- Reactor coolant temperature is 199 degF
- Secondary Containment is in effect

Which one of the following describes the Operational Condition and maximum reactor coolant temperature allowed by Technical Specifications for these conditions?

Answer A

Operational Condition 3 and 200 degF

Answer B

Operational Condition 3 and 212 degF

Answer C

Operational Condition 4 and 200 degF

Answer D

Operational Condition 4 and 212 degF

RO QUESTION #

94

QUESTION

Given the following:

- The plant is operating at 94% reactor power
- Core Flow is 93%
- A significant feedwater heating loss occurs, and reactor power increases to 98%

In accordance with HC.OP-AB.ZZ-0118 "Loss of Feedwater Heaters", the required actions are to reduce power to \_\_\_\_\_.

Answer A

74%

Answer B

80%

Answer C

89%

Answer D

94%

RO QUESTION #

95

QUESTION

To ensure compliance with Tech Specs, administrative controls are placed on opening the drywell and suppression chamber purge system supply and exhaust isolation valves.

Which one of the following correctly describes the OPERATIONAL CONDITIONS requiring a permit and the TIME PERIOD for which the permit is valid IAW HC.OP-AP.ZZ-0104(Q) "Administrative Control of Containment Atmosphere Control (GS) Valve Open Time"?

Answer A

Any Operational Condition; any rolling 24 hour period

Answer B

Any Operational Condition; that calendar day ending at 2400

Answer C

Operational Condition 1, 2, or 3; any rolling 24 hour period

Answer D

Operational Condition 1, 2, or 3; that calendar day ending at 2400

RO QUESTION #

96

QUESTION

During the performance of Independent Verification of an ECCS valve lineup, some of the valves that need to be verified are located in Locked High Radiation Areas. Estimates indicate that a dose of 100 mrem could be received during the performance of the verification.

Which one of the following describes the Independent Verification method required?

Answer A

Hands On

Answer B

Assessment of system parameters

Answer C

A OFF-NORMAL report position review

Answer D

Must be performed by a licensed operator

RO QUESTION #

97

QUESTION

A trip of a recirculation pump has resulted in operation in the "Exit" region of the power to flow map.

Which of the following lists two indications which are both acceptable for monitoring for power oscillations?

(Reference Attachment R-9 provided)

Answer A

CRIDs and LPRM meters

Answer B

APRM Chart recorders and CRIDs

Answer C

LPRM meters and SPDS computer

Answer D

APRM Chart Recorders and period meters

RO QUESTION #

98

QUESTION

EOP HC.OP-EO.ZZ-0103/4 "Reactor Building & Rad Release Control", directs the operator to initiate a manual reactor scram before any floor level reaches its Maximum Safe Op Floor Level.

The reason the Reactor Building Control EOP, directs scrambling the reactor is to \_\_\_\_\_.

Answer A

ensure the reactor can be made subcritical by the insertion of all control rods

Answer B

ensure the reactor is shutdown prior to initiating a rapid reactor depressurization

Answer C

reduce the energy discharged through an unisolable primary leak to decay heat levels

Answer D

reduce the discharge rate through a primary system rupture to within the removal capacities of the sump pumps

RO QUESTION #

99

QUESTION

Given the following:

- The plant is operating at 100 percent power
- Accident Monitoring Instrumentation Channel Check - Monthly is being performed
- PAMS reactor pressure indicator PI-3684A (red) is reading 1050 psig
- PAMS reactor pressure indicator PR-3684B (red) is reading 1000 psig

Which of the following action(s) (if any) are required?

(Reference Attachment R-10 provided)

Answer A

Channel Check is SAT, no action required

Answer B

Channel Check is SAT, System Engineer notification required

Answer C

Channel Check is UNSAT, Tech Spec entry is required

Answer D

Channel Check is UNSAT, System Engineer notification required

RO QUESTION #

100

QUESTION

Following a reactor scram with a Main Steam Isolation Valve Closure, the plant is being depressurized using the Safety Relief Valves (SRV) in accordance with HC.OP-EO.ZZ-0101 "Reactor / Pressure Vessel (RPV) Control".

Which of the following is the reason why the depressurization must be accomplished with "sustained" versus "intermittent" SRV openings if PCIG and instrument air are lost to the SRVs?

Answer A

This ensures SRVs remain available to cooldown to below the shutdown cooling interlocks.

Answer B

This limits SRV usage to prevent exceeding the 100 DegF/hr cooldown limit during the depressurization.

Answer C

This conserves the SRVs for later use if the Emergency Operating Procedures require Emergency Depressurization.

Answer D

This directs the operator to complete the depressurization without regard to the Technical Specification cooldown limits before control of the SRVs is lost.

Hope Creek NRC Exam Key  
Original 6/7/00

Q#	RO KEY
-	<del>1 b</del> DELETE
2	b
3	a
4	c
5	c
6	a
7	a
8	c
9	a
10	a
11	a
12	c
13	b
14	a
15	d
16	c
17	c
18	c
19	a
20	d
21	d
22	d
23	b
24	d
25	b
26	b
27	c
28	d
29	c
30	d
31	b
32	d
33	c
34	a
35	a
36	a
37	d
38	a
39	a

Hope Creek NRC Exam Key  
Original 6/7/00

40	c OR b
41	b
42	c
43	b
44	b
45	d
46	c
47	b
48	b
49	c
50	d
51	b
52	b
53	<del>d</del> c
54	b
55	b
56	a
57	d
58	a
59	d
60	a OR c
61	a
62	c
63	c
64	b
65	c OR a
66	a
67	a
68	b
69	b
70	c
71	c
72	d
73	b
74	c
75	c
76	a
77	a
78	a
79	b

Hope Creek NRC Exam Key  
Original 6/7/00

80	d
81	a
82	a
83	c
84	b
85	b
86	d
87	b
88	d
89	a
90	d
91	a
92	c
93	d
94	a
95	d
96	b
97	d
98	c
99	b
100	c

**Attachment 5**

**SRO Written Exam with Answer Key**

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

APPLICANT'S NAME: \_\_\_\_\_ (print)

FACILITY: \_\_\_\_\_ HOPE CREEK

REACTOR TYPE: \_\_\_\_\_ BWR-GE4

DATE ADMINISTERED: 6/7/00

**INSTRUCTIONS TO APPLICANT:**

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. Each question is one (1) point. The passing grade requires a final grade of at least 80.00%. Examination papers will be picked up five (5) hours after the examination starts.

TEST VALUE	APPLICANT'S SCORE	FINAL GRADE %
100.00		

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

\_\_\_\_\_  
Applicant's Signature

SENIOR REACTOR OPERATOR ANSWER SHEET

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

MULTIPLE CHOICE

- |                 |                 |
|-----------------|-----------------|
| 001 a b c d ___ | 023 a b c d ___ |
| 002 a b c d ___ | 024 a b c d ___ |
| 003 a b c d ___ | 025 a b c d ___ |
| 004 a b c d ___ | 026 a b c d ___ |
| 005 a b c d ___ | 027 a b c d ___ |
| 006 a b c d ___ | 028 a b c d ___ |
| 007 a b c d ___ | 029 a b c d ___ |
| 008 a b c d ___ | 030 a b c d ___ |
| 009 a b c d ___ | 031 a b c d ___ |
| 010 a b c d ___ | 032 a b c d ___ |
| 011 a b c d ___ | 033 a b c d ___ |
| 012 a b c d ___ | 034 a b c d ___ |
| 013 a b c d ___ | 035 a b c d ___ |
| 014 a b c d ___ | 036 a b c d ___ |
| 015 a b c d ___ | 037 a b c d ___ |
| 016 a b c d ___ | 038 a b c d ___ |
| 017 a b c d ___ | 039 a b c d ___ |
| 018 a b c d ___ | 040 a b c d ___ |
| 019 a b c d ___ | 041 a b c d ___ |
| 020 a b c d ___ | 042 a b c d ___ |
| 021 a b c d ___ | 043 a b c d ___ |
| 022 a b c d ___ | 044 a b c d ___ |
|                 | 045 a b c d ___ |

SENIOR REACTOR OPERATOR ANSWER SHEET

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

- |                 |                 |
|-----------------|-----------------|
| 046 a b c d ___ | 069 a b c d ___ |
| 047 a b c d ___ | 070 a b c d ___ |
| 048 a b c d ___ | 071 a b c d ___ |
| 049 a b c d ___ | 072 a b c d ___ |
| 050 a b c d ___ | 073 a b c d ___ |
| 051 a b c d ___ | 074 a b c d ___ |
| 052 a b c d ___ | 075 a b c d ___ |
| 053 a b c d ___ | 076 a b c d ___ |
| 054 a b c d ___ | 077 a b c d ___ |
| 055 a b c d ___ | 078 a b c d ___ |
| 056 a b c d ___ | 079 a b c d ___ |
| 057 a b c d ___ | 080 a b c d ___ |
| 058 a b c d ___ | 081 a b c d ___ |
| 059 a b c d ___ | 082 a b c d ___ |
| 060 a b c d ___ | 083 a b c d ___ |
| 061 a b c d ___ | 084 a b c d ___ |
| 062 a b c d ___ | 085 a b c d ___ |
| 063 a b c d ___ | 086 a b c d ___ |
| 064 a b c d ___ | 087 a b c d ___ |
| 065 a b c d ___ | 088 a b c d ___ |
| 066 a b c d ___ | 089 a b c d ___ |
| 067 a b c d ___ | 090 a b c d ___ |
| 068 a b c d ___ | 091 a b c d ___ |

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

092 a b c d \_\_\_\_

093 a b c d \_\_\_\_

094 a b c d \_\_\_\_

095 a b c d \_\_\_\_

096 a b c d \_\_\_\_

097 a b c d \_\_\_\_

098 a b c d \_\_\_\_

099 a b c d \_\_\_\_

100 a b c d \_\_\_\_

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

NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on the examination means an automatic denial of your application and could result in more severe penalties.
2. After the examination has been completed, you must sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination. This must be done after you complete the examination.
3. Restroom trips are to be limited and only one applicant at a time may leave. You must avoid all contacts with anyone outside the examination room to avoid even the appearance or possibility of cheating.
4. Use black ink or dark pencil ONLY to facilitate legible reproductions.
5. Print your name in the blank provided in the upper right-hand corner of the examination cover sheet and each answer sheet.
6. Mark your answers on the answer sheet provided. **USE ONLY THE PAPER PROVIDED AND DO NOT WRITE ON THE BACK SIDE OF THE PAGE.**
7. The point value for each question is indicated in parentheses after the question.
8. If the intent of a question is unclear, ask questions of the examiner only.
9. When turning in your examination, assemble the completed examination with examination questions, examination aids and answer sheets. In addition, turn in all scrap paper.
10. Ensure all information you wish to have evaluated as part of your answer is on your answer sheet. Scrap paper will be disposed of immediately following the examination.
11. To pass the examination, you must achieve a grade of 80.00% or greater.
12. There is a time limit of five (5) hours for completion of the examination.
13. When you are done and have turned in your examination, leave the examination area (EXAMINER WILL DEFINE THE AREA). If you are found in this area while the examination is still in progress, your license may be denied or revoked.

SRO QUESTION #

1

QUESTION

The reactor is operating normally at 100 percent power with the the Auxiliary Boilers unavailable. Then, Main condenser Vacuum begins a steady degradation at 1.5 inHgA per minute.

Given the following:

- Reactor power remains at 100 percent
- Main Generator load is decreasing
- Average Circ Water inlet/outlet waterbox temperature differential is 22 DegF
- RM-11 Offgas Train Outlet Flow CRIDS point shows 10 times normal flowrate

Which one of the following is the cause of the loss?

Answer A

Hydrogen Water Chemical Injection System has tripped

Answer B

Steam Seal Evaporator Main Steam Supply valve closes

Answer C

In-service Steam Jet Air Ejector Low Steam Supply pressure

Answer D

Circulating Water to Cooling Tower Return Bypass valve opens

SRO QUESTION #

2

QUESTION

Given the following:

- The plant is operating at 85% power
- A LOCA coincident with a loss of offsite power occurs
- "A" Emergency Diesel Generator (EDG) output breaker fails to automatically close
- The operator closes the "A" EDG output breaker from the Control Room

Which of the following describes the status of the 125 VDC battery chargers powered from "A" EDG?

Answer A

1E chargers must be MANUALLY restored.

Answer B

NON-1E chargers must be MANUALLY restored.

Answer C

1E chargers are AUTOMATICALLY restored by the Load Sequencer.

Answer D

NON-1E chargers are AUTOMATICALLY restored by the Load Sequencer.

SRO QUESTION # 3

QUESTION

Given the following conditions:

- The plant is at 25% with power ascension to 100% in progress
- One of the Electrical Protection Assembly (EPA) breakers on the "A" Reactor Protection System (RPS) MG set has just tripped, de-energizing "A" RPS bus
- Investigation shows the breaker tripped on "undervoltage"

Which of the following describes the response of the Recirculation Pumps if a Main Turbine trip occurs before the "A" RPS Bus is re-energized?

Answer A Both Recirculation Pumps trip

Answer B Only "A" Recirculation Pump trips

Answer C Only "B" Recirculation Pump trips

Answer D Both Recirculation Pumps continue operating

SRO QUESTION # 4

QUESTION

Given the following:

- The plant is operating at 100 percent power
- A Main Generator Load Rejection occurs causing a reactor scram

Which of the following describes the plant parameter response to the Load Rejection immediately PRIOR to the scram?

Answer A

Reactor pressure decreases; reactor water level increases; reactor power decreases

Answer B

Reactor pressure decreases; reactor water level increases; reactor power increases

Answer C

Reactor pressure increases; reactor water level decreases; reactor power increases

Answer D

Reactor pressure increases; reactor water level decreases; reactor power decreases

SRO QUESTION # 5

QUESTION

Given the following:

- The plant is operating at 100 percent power at the end of the fuel cycle
- A Main Turbine Trip initiated a reactor scram
- Reactor pressure peaked at 1050 psig.
- MSIV's are open
- Reactor pressure has dropped to 921 psig with 1 turbine bypass valve open

Which of the following describes the initial response and current status of the "H" and "P" Safety Relief Valves (SRV)?

Answer A

Neither the "H" or "P" SRV open

Answer B

The "H" and "P" SRVs open initially and remain open

Answer C

The "H" and "P" SRVs open initially, only the "H" SRV remains open

Answer D

The "H" and "P" SRVs open initially, only the "P" SRV remains open

SRO QUESTION # 6

QUESTION Given the following:

- A high Drywell pressure condition has occurred due to a unisolable Reactor Recirc Pump double seal failure (50 gpm)
- HPCI has automatically initiated
- CRD has been restored

Assuming no operator action, what will be the status of HPCI five minutes after the initiation?

Answer A Turbine Steam Stop Valve FV-4880 will automatically close on High RPV Level

Answer B Turbine Steam Supply Valve HV-F001 will automatically close on High RPV Level

Answer C Turbine Steam Stop Valve FV-4880 will automatically close on High Exhaust Pressure

Answer D Turbine Steam Supply Valve HV-F001 will automatically close on High Exhaust Pressure

SRO QUESTION # 7

QUESTION

Given the following:

- The plant is operating at 85% power
- A feedwater transient is in progress
- Overhead annunciator "RPV LEVEL 8" alarm is received
- The Main Turbine does not automatically trip

Which one of the following describes the basis for the Main Turbine Trip at RPV Level 8?

Answer A To prevent turbine blade damage

Answer B To prevent overfilling the reactor vessel

Answer C To reduce erosion of control valve surfaces

Answer D To reduce the differential pressure across the moisture separators

SRO QUESTION # 8

QUESTION

Given the following:

- The plant is operating at 80 percent power conducting a normal shutdown
- "C" Reactor Feed Pump trips inadvertently as it is being removed from service
- The Digital Feed Control System has malfunctioned causing Master Level Setpoint to drift down to +25 inches
- Reactor water level has now reached +25 inches

Assuming no operator action, which of the following correctly describes the Reactor Recirculation M/G sets response to these conditions?

Answer A A Full runback

Answer B A Scoop Tube lockup

Answer C An Intermediate runback

Answer D Remain at original speed

SRO QUESTION #

9

QUESTION

Given the following:

- A large packing leak exists on an Inboard MSIV
- Drywell Pressure has increased from 0.5 psig to 1.55 psig
- Suppression Chamber pressure is 0.5 psig

Which one of the following describes the effect of this pressure change on the ability of the downcomer vent pipes to perform their function?

Answer A

NO significant effect because the water level inside the vent pipe will lower, the level outside the vent pipe will rise slightly

Answer B

NO significant effect because the water level inside the vent pipe will rise, the level outside the vent pipe will lower slightly

Answer C

Significant effect because the water level outside the vent pipe will lower to uncover the vent pipes causing a decrease of the pressure suppression function capability of the Suppression Pool

Answer D

Significant effect because the water level inside the vent pipe will rise to flood the vent pipe header preventing proper opening of the Drywell to Suppression Chamber Vacuum Breakers

SRO QUESTION # 10

QUESTION

Given the following:

- A reactor Startup was in progress following a 7 day forced outage.
- Criticality was achieved and heatup in progress.
- Problems with EHC delayed the rod withdrawals for approximately 1.5 hours.
- RPV pressure decreased from 360 psig to 325 psig during this delay.
- Control rod 14-19 was withdrawn one notch from 10 to 12 in order to re-establish a heatup rate.
- Reactor period continued to shorten and the operator re-inserted the rod to notch 10 to determine why SRM Count Rate is higher now than when previously on notch 10.

The change in Count Rate indication is normal because:

Answer A

Moderator temperature had decreased

Answer B

Xenon burnout in the high flux region had begun

Answer C

A positive Moderator Temperature Coefficient exists

Answer D

The Void fraction had decreased due to the lower pressure

SRO QUESTION # 11

QUESTION

Given the following conditions:

- The plant is operating at 100% power
- A complete loss of the TACS has occurred requiring a scram
- Recirculation flow has been reduced to minimum
- The "RMCS DISPLAYS INOP" Overhead annunciator alarms
- The Reactor Mode Switch is placed in "Shutdown"

For these conditions, operators can determine if injection of Standby Liquid Control is immediately required by evaluating which of the following?

Answer A APRM power levels

Answer B the Full Core Display

Answer C the Four Rod Display

Answer D the RPS Group logic white lights

SRO QUESTION # 12

QUESTION

The control room HAS BEEN evacuated due to heavy smoke.

Current plant conditions are:

- Reactor power is 100 percent
- Reactor pressure is 1000 psig
- RPV level is +35 inches

IAW HC.OP-IO.ZZ-0008 "Shutdown From Outside Control Room", which one of the following operator actions is required if time did NOT permit any immediate actions of HC.OP-AB.ZZ-0130 "Control Room Evacuation" to be completed before evacuating the control room?

Answer A

Manually vent the scram air header

Answer B

Remove RPS fuses to de-energize the scram solenoids

Answer C

Open appropriate breakers in the RPS distribution panels

Answer D

Place individual HCU SRI test switches in the TEST position

SRO QUESTION #

13

QUESTION

Given the following:

- The plant is operating at 100% reactor power.
- "A" Reactor Recirc pump trips
- The "B" Reactor Recirc pump receives a full runback
- Power oscillations greater than 10% are observed
- The reactor is manually scrammed
- Approximately 15 minutes after the transient, both Offgas Pre-Treatment Radiation Monitors go into High Alarm and continue to rise

IAW HC.OP-AB.ZZ-0127, which one of the following operator actions must be taken?

Answer A

Swap the Offgas Recombiner trains

Answer B

Secure the Steam Jet Air Ejector trains

Answer C

Place the mechanical vacuum pumps in service

Answer D

Place the affected radiation monitors in trip condition

SRO QUESTION #

14

QUESTION

Which one of the following describes how the Control Area Ventilation / Control Room Emergency Filtration systems limit radioactive material contamination in the Control Room?

Answer A

Iodine activity is limited by pressurization

Answer B

Iodine activity is removed by HEPA filters

Answer C

Noble Gas activity is limited by charcoal filters

Answer D

Noble Gas activity is removed by HEPA filters

SRO QUESTION # 15

QUESTION

Due to a loss of drywell cooling, drywell pressure has increased to 2.0 psig.

Which one of the following describes ALL major actions IN PROPER SEQUENCE that would have to be performed to restart a CRD Pump? (Select the choice of actions from the following list)

- I - Press CRD Pump STOP PB
- II - Press CRD Pump START PB
- III - Press LOCA OVERRIDE PB
- IV - Press CLOSE PB for 1E breaker on 10C650E

Answer A I, III, II

Answer B I, III, IV

Answer C III, II, IV

Answer D III, IV, II

SRO QUESTION # 16

QUESTION

Given the following conditions:

- The plant is shutdown for refueling
- The Reactor Protection System shorting links have been removed
- Core Spiral reload is continuing
- 45 fuel bundles are in the core
- SRM channel "D" has just failed "downscale"

Which one of the following describes the required operator actions?

Answer A

Verify a half scram is received and terminate fuel movement

Answer B

Verify a full reactor scram and a control rod withdrawal block is received

Answer C

Verify a control rod withdrawal block is received and terminate fuel movement

Answer D

Verify refueling bridge movement is blocked and then manually insert a full reactor scram

SRO QUESTION # 17

QUESTION Given the following:

- The plant is in Operational Condition 5
- A Spiral Fuel Load is in progress
- The Reactor Mode Switch is in REFUEL.
- The refuel bridge is over the Fuel Pool lifting a fuel bundle
- A control rod is withdrawn to position 48 for speed adjustment.

Under these conditions, which of the following prevents inadvertant fuel loading into a cell with a withdrawn control rod?

Answer A Fuel Hoist Interlock

Answer B Rod Block Interlock #1

Answer C Reverse Bridge Stop # 1

Answer D Procedural compliance only

SRO QUESTION # 18

QUESTION Which of the following is the basis of the 65 psig Drywell pressure limit during a LOCA?

Answer A Hydrostatic test limit for the Drywell

Answer B The Drywell Spray Isolation valves may not operate

Answer C The system lineup for containment venting may not be able to be completed

Answer D Maximum primary containment pressure assumption in UFSAR accident analysis

SRO QUESTION # 19

QUESTION During a valid high reactor pressure condition, the Recirculation Pumps did NOT automatically trip as designed.

Which of the following actions must be taken by the Control Room to open the Recirculation Pump Trip (RPT) Breakers?

Answer A Direct the local tripping of the RPT Breakers

Answer B Depress the RPT Breakers' "Tripped" pushbuttons

Answer C Manually initiate Redundant Reactivity Control System (RRCS)

Answer D Verify the RPT Breakers trip when the Recirculation Pump MG Set Drive Motor Breakers are opened

SRO QUESTION #

20

QUESTION

Given the following:

- The plant was operating at 100 percent power when a small break LOCA occurred
- Drywell pressure is 4.0 psig and slowly rising
- Drywell temperature is 325 DegF and slowly rising
- Reactor pressure is steady at 75 psig
- HPCI is NOT available
- Condensate and Feedwater are NOT available
- RCIC is in Standby
- RPV indicated water level is -10 inches and slowly lowering
- ASSUME NO FURTHER OPERATOR ACTIONS

Which one of the following correctly describes the RCIC System automatic

Answer A

early because indicated wide range level is lower than actual level

Answer B

early because indicated wide range level is higher than actual level

Answer C

late because indicated wide range level is lower than actual level

Answer D

late because indicated wide range level is higher than actual level

SRO QUESTION # 21

QUESTION

During an emergency, the Drywell Spray Initiation Limit Curve predicts parameters for which drywell spray would be unsafe.

What is the bases for NOT spraying the drywell when parameters are in the UNSAFE region?

Answer A Convective cooling is ineffective

Answer B Evaporative cooling is ineffective

Answer C Unstable steam condensation will damage Suppression Chamber components

Answer D Relief capacity of the Suppression Chamber to Drywell vacuum breakers is exceeded

SRO QUESTION # 22

QUESTION Given the following:

- A failure to scram has occurred
- SLC is injecting
- Reactor power is 35%
- The recirc pumps have been tripped
- The MSIV's are closed
- Suppression pool temperature is 98 DegF

Which one of the following describes the reason why it is necessary to terminate and prevent injection at step LP-13 of HC.OP-EO.ZZ-0101A ATWS-RPV Control?

Answer A increase natural circulation to remove decay heat

Answer B increase natural circulation to increase void fraction

Answer C decrease natural circulation to remove decay heat

Answer D decrease natural circulation to increase void fraction

SRO QUESTION #

23

QUESTION

With the plant at power the Main Steam/ Reactor Water Cleanup Area Leak Temperature High alarm was received and the RWCU system automatically isolated. The leak has been determined to be in the RWCU Pipe Chase Room 4402.

Which of the following is a required immediate operator action for the given conditions?

Answer A

Enter HC-OP.EO-ZZ-0101(Q)-FC, "Reactor Pressure Vessel (RPV) Control"

Answer B

Close the Recirc Sample Line Isolation Valves (BB-SV-4310 and BB-SV-4311)

Answer C

Isolate RBVS Supply and Exhaust Dampers (GU-HD-9370A/B and GU-HD-9414A/B)

Answer D

Start an additional Reactor Building Exhaust Fan to maintain > .50 inches of vac water gauge

SRO QUESTION # 24

QUESTION

Plant conditions are as follows:

- The plant is operating at 100% power
- RWCU resin spill has occurred in the Reactor Building
- Reactor Building HVAC Exhaust rad level is  $2 \times 10E-2$  uci/ml
- Access to the Reactor Building is required

Which one of the following actions is required?

Answer A

Isolate Refuel Floor HVAC

Answer B

Verify Reactor Building Ventilation (RBVS) is in operation

Answer C

Manually scram the reactor IAW HC.OP-AB.ZZ-0000 "Scram"

Answer D

Ensure Filtration Recirculation and Ventilation System (FRVS) initiated

SRO QUESTION # 25

QUESTION

Given the following:

- LPRM changouts are being performed within the reactor vessel cavity
- One of the old fission chambers is accidentally lifted 1 inch clear of the water

Which one of the choices correctly completes the following statement regarding the Refueling Floor Evacuation Alarm in the reactor building?

The \_\_\_\_\_ radiation monitor activates the Evacuation Alarm because its detector(s) is(are) located in \_\_\_\_\_ .

Answer A

New Fuel Vault; line-of-sight to the refueling cavity

Answer B

Spent Fuel Pool; line-of-sight to the refueling cavity

Answer C

Refuel Floor Exhaust; the ducts above the refueling cavity

Answer D

Reactor Building Exhaust; the ducts above the refueling cavity

SRO QUESTION # 26

QUESTION While responding in accordance with AB-0000, "Scram", on a normal plant shutdown reactor scram, which of the following criteria is utilized to determine if EOP-101A, "ATWS RPV Control" entry is also required?

Answer A The status of the IRM "Downscale" lights.

Answer B The position and number of control rods inserted.

Answer C The ability to monitor current reactor pressure and level.

Answer D The value of SRM period after detector insertion is complete.

SRO QUESTION # 27

QUESTION A radioactive release in the Turbine Building is in progress. Which of the following describes the effect of failing to restart the Turbine Building Ventilation System if it trips while operating in HC.OP-EO.ZZ-0103/4(Q)-FC, "Reactor Building & Radioactive Release Control"?

Answer A The Turbine Building will go to a slightly negative pressure

Answer B The Turbine Building release will be monitored but not treated

Answer C The off-site calculated release could be lower than the actual release

Answer D The off-site calculated release could be higher than the actual release

SRO QUESTION # 28

QUESTION Given the following:

- An ATWS condition exists
- The MSIVs are closed
- SLC is injecting
- Lo-Lo Set is controlling reactor pressure
- Suppression Pool temperature is 105 DegF, rising slowly
- Reactor level is swinging from +12.5 inches to +54 inches

Which one of the following is the correct operator action IAW Emergency Operating Procedures?

Answer A Lower reactor level until all SRVs are closed

Answer B Lower reactor pressure until power is below 4%

Answer C Lower and maintain reactor pressure 500 to 600 psig

Answer D Lower and maintain reactor level -190 inches to -50 inches

SRO QUESTION # 29

QUESTION The primary containment Hydrogen Oxygen Analyzer 1AC200 selector switch is moved from Standby to Analyze to perform a required surveillance.

Why is there a requirement to wait 90 minutes before taking a reading?

Answer A Ensure sample lines are clear of moisture

Answer B Allow sample flow rate to stabilize below 500 cc/m

Answer C Obtain a sample indicative of containment conditions

Answer D Allow the analyzer to warm up to proper operating temperature

SRO QUESTION # 30

QUESTION Which of the following Fire Suppression systems and/or components can be manually operated from the Main Control Room to assist the Fire Department in response to a fire?

Answer A Motor Driven Fire Pump AND FRVS Deluge

Answer B Diesel Driven Fire Pump AND CREF Deluge

Answer C Bulk Fuel Oil Storage Tank Foam System AND EDG Room CO2

Answer D Bulk Fuel Oil Storage Tank Foam System AND Diesel Driven Fire Pumps

SRO QUESTION # 31

QUESTION Given the following:

- Plant startup and heatup is in progress
- The reactor is critical
- Reactor pressure is 850 psig
- The "B" CRD pump is INOP
- The "A" CRD pump discharge pressure decreased to 875 psig
- An operator has been dispatched to the CRD pumps to investigate

Which one of the following is the correct action for the crew in accordance with HC.OP-AB.ZZ-0105 "Loss of CRD Regulating Function"?

Answer A Place the Mode Switch in SHUTDOWN when two CRDMs temperatures exceed 250 F

Answer B Place the Mode Switch in SHUTDOWN when an accumulator becomes inoperable on withdrawn control rods

Answer C Commence a normal shutdown within 20 minutes when one CRDM temperature exceeds 250 F

Answer D Commence a normal shutdown when an accumulator becomes inoperable on withdrawn control rods

SRO QUESTION # 32

QUESTION Given the following:

- A LOCA has occurred
- The crew is implementing HC.OP-EO.ZZ-0101 Reactor Pressure Vessel Control for Alternate Level Control
- A loss of high pressure feed sources occurred
- Both CRD Pumps have been restarted for 2 pump emergency makeup IAW HC.OP-SO.BF-0001 "CRD System Operation"
- The operator observes CRD pump discharge header pressure is 1050 psig

Which one of the following describes the operator action required to maintain CRD pump discharge header pressure >1083 psig to prevent runout of the CRD pumps?

Throttle the CRD Drive Water \_\_\_\_\_ .

Answer A Pressure Control Valve F003 open

Answer B Pressure Control Valve F003 closed

Answer C Flow Control Valve F002A(B) open

Answer D Flow Control Valve F002A(B) closed

SRO QUESTION # 33

QUESTION

Given the following conditions:

- The plant is operating at 25% power performing a shutdown
- Control rod 18-23 has been determined to be stuck at position 48
- While attempting to insert the control rod, indicated drive water flow is reading "0" gpm

Which of the following is the cause of this indication?

Answer A

The 2 gpm Stabilizing Valve has failed to reposition.

Answer B

HCU Directional Control Valve (122) has failed to reposition.

Answer C

HCU Directional Control Valve (123) has failed to reposition.

Answer D

Both Cooling Water Header to Exhaust Header Pressure Equalizing Valves have failed open.

SRO QUESTION # 34

QUESTION

Given the following:

- The plant startup is in progress
- Start attempt of the "B" Reactor Recirc pump fails
- The drive motor breaker trips open 20 seconds after closure
- 10A120 Bus voltage remained at 7.2 kv
- M/G set lube oil temperature is 120 degF
- M/G set lube oil pressure is 35 psig
- Pump suction valve BB-HV-F023B is open
- Pump discharge valve BB-HV-F031B is stoking open

Which one of the following is the cause of the breaker trip?

Answer A

Exciter field overcurrent

Answer B

Generator neutral undervoltage

Answer C

Switchgear Bus differential overcurrent

Answer D

MG Set Drive Motor Bus undervoltage

SRO QUESTION #

35

QUESTION

Given the following conditions:

- The reactor is operating at 95% power
- An instrumentation technician causes a zero percent feedwater flow signal to be sensed by the Recirculation Flow Control System
- The Instrumentation Technician recognizes the error and removes the cause of the low feedwater flow signal 10 seconds later

Which one of the following correctly describes the Reactor Recirculation Pumps speed initial response, and response when the error is corrected?

Answer A

Remains unchanged

Answer B

Lowers to and remains at 30 %

Answer C

Lowers to and remains at 45 %

Answer D

Lowers, then returns to original value

SRO QUESTION # 36

QUESTION

Given the following:

- The plant is operating at 100 percent power
- "D" ECCS Jockey Pump trips
- RHR LOOP B TROUBLE and RHR LOOP D TROUBLE overhead alarms are received
- 10 minutes later, Condensate Transfer is manually valved in
- The Reactor Building EO reports significant air was vented from the high point vents

Which one of the following describes the Jockey Pump trip effect on the "B" and "D" RHR subsystems until the air is vented?

Answer A

LPCI response time will be longer

Answer B

Alternate Injection System flowpaths are lost

Answer C

Air binding of the affected RHR pumps would occur

Answer D

Water hammer damage has occurred to the RHR piping

SRO QUESTION # 37

QUESTION Given the following:

- The plant has scrammed from a Loss of Offsite Power
- HPCI is operating in Pressure Control mode
- HPCI flow controller is in Auto set at 3000 gpm
- HPCI discharge pressure is steady at 900 psig
- Reactor pressure is steady at 700 psig
- The operator lowers the HPCI flow controller setpoint to 2500 gpm in Auto

Which of the following describes the response of reactor pressure and HPCI discharge pressure AFTER HPCI flow has STABILIZED? (Assume reactor decay heat load remains constant.)

Reactor pressure will \_\_\_\_\_ and HPCI discharge pressure will

Answer A decrease; increase

Answer B decrease; decrease

Answer C increase; increase

Answer D increase; decrease

SRO QUESTION #

38

QUESTION

During a loss of feedwater, a manual start of the High Pressure Coolant Injection (HPCI) system was done at a water level of -20 inches by operator manipulation of the system components.

Which of the following describes the HPCI system response as reactor water level continues to change?

Answer A

It will automatically trip at +54 inches and will automatically restart at -38 inches.

Answer B

It will automatically trip at +54 inches and will require operator action to restart when level reaches -38 inches.

Answer C

Operator action is required to secure injection when level reaches +54 inches but it automatically restarts at -38 inches.

Answer D

Operator action is required to secure injection when level reaches +54 inches and also to restart when level reaches -38 inches.

SRO QUESTION # 39

QUESTION Given the following conditions:

- A loss of coolant accident has occurred
- Reactor water level reached -140 inches, then recovered to -50 inches and is now rising
- Reactor pressure is 50 psig
- Drywell pressure is 6 psig
- All plant systems responded as designed

Which of the following describes the system isolation capabilities for the Core Spray System (CSS) Downstream Loop Injection Valve (F005B) and the CSS Upstream Loop Injection Valve (F004B), if Core Spray Loop "B" isolation is required?

Answer A Only F005B valve may be overridden closed

Answer B Only the F004B valve may be overridden closed

Answer C Both the F004B and F005B valves may be overridden closed

Answer D Neither the F004B or F005B valves may be overridden closed

SRO QUESTION # 40

QUESTION Given the following conditions:

- A loss of coolant accident has occurred
- Reactor pressure is 50 psig and lowering
- Core Spray Loop A is injecting at rated flow
- Actual reactor water level is -170 inches and lowering
- All other water sources are unavailable

Which one of the following methods currently assures adequate core cooling for this situation?

Answer A Core submergence

Answer B Core Spray injection

Answer C Steam cooling until level reaches -190

Answer D Steam cooling after level reaches -200

SRO QUESTION # 41

QUESTION

Given the following conditions:

- The plant was operating at 100 percent power
- The plant has experienced a failure-to-scram (ATWS)
- The Standby Liquid Control (SLC) system was initiated and injected for 52 minutes before both SLC Pumps tripped simultaneously
- Reactor power is in the source range

How do the SLC pump trips affect reactor cooldown and depressurization?

Answer A

Cooldown can be accomplished if completed before Xenon decays out of the core.

Answer B

Boron concentration is sufficient to allow a complete cooldown under any plant conditions.

Answer C

Reactor Engineering must make the determination if current boron concentration will allow a complete cooldown.

Answer D

Boron concentration is sufficient to allow a complete cooldown with a maximum of 8 control rods not fully inserted.

SRO QUESTION # 42

QUESTION

Given the following conditions:

- A plant startup was in progress following a refueling outage
- The reactor mode switch is in Startup
- A reactor scram occurred (all rods inserted)
- The sequence of events printout shows that just prior to the scram, Average Power Range Monitoring (APRM) channels "B" and "D" were upscale HI-HI

Which of the following additional conditions, by itself, would have caused the full reactor scram signal?

Answer A

RPS Bus "B" has de-energized.

Answer B

Recirculation Loop flow unit "A" fails downscale

Answer C

The Reactor Protection System shorting links are removed.

Answer D

SRM Channels "A" and "C" are reading  $1.5 \times 10^5$  counts per second.

SRO QUESTION # 43

QUESTION

Given the following:

- The plant is operating at 100 percent power
- The fuse supplying power to the "A" RPS Backup Scram Solenoid Valve has blown

Which of the following correctly describes the effect on the scram air header?

Answer A

Will immediately depressurize

Answer B

Will depressurize on receipt of a full scram signal

Answer C

Will remain pressurized on receipt of a full scram signal

Answer D

Will remain depressurized when the scram is reset following receipt of a full scram signal

SRO QUESTION # 44

QUESTION

Given the following conditions:

- No control motion signal is present
- Control rod 50-43 ROD DRIFT illuminates on the Full Core Display
- Overhead annunciator "ROD DRIFT" C6-E3 alarms

Which one of the following caused the alarm?

Control Rod 50-43 has \_\_\_\_\_ .

Answer A an odd reed switch opened

Answer B an odd reed switch closed

Answer C an even reed switch opened

Answer D an even reed switch closed

SRO QUESTION # 45

QUESTION Given the following:

- TIP traces are being performed
- The "B" TIP detector is in the core
- A feedwater transient causes a reactor scram
- HPCI and RCIC receive Auto Initiation signals
- "A" NSSSS channel fails to trip when required

Which one of the following describes the automatic response of "B" TIP detector to the NSSSS failure?

Answer A The "B" TIP detector will withdraw. The Ball Valve closes.

Answer B The "B" TIP detector will withdraw. The Ball Valve remains open.

Answer C The "B" TIP detector will NOT withdraw. The Ball Valve closes.

Answer D The "B" TIP detector will NOT withdraw. The Ball Valve remains open.

SRO QUESTION # 46

QUESTION

Given the following:

- A plant startup is in progress
- A 100 second positive period has been attained
- SRMs are being withdrawn
- All IRMs are on range 2
- "B" SRM count rate continues to increase as the "B" detector is withdrawn
- The ROD OUT MOTION BLOCK annunciator alarms

Can the startup continue and what actions are required by HC.OP-AB.ZZ-0107?

Answer A

No, insert all SRMs to the full in position

Answer B

No, insert all control rods using the stuff sheet

Answer C

Yes, bypass the channel using the joystick

Answer D

Yes, the channel will automatically bypass when IRM range 3 is selected

SRO QUESTION # 47

QUESTION Given the following:

- The plant is in Cold Shutdown
- 24 VDC Battery charger 1AD304 has tripped off line
- Battery voltage has dropped to +10.5 VDC

Which one of the following correctly describes how the SRM's are affected?

Answer A Channel A and C drift upscale

Answer B Channel A and C drift downscale

Answer C Channel B and D drift upscale

Answer D Channel B and D drift downscale

SRO QUESTION # 48

QUESTION Given the following:

- The plant is operating at 100 percent power
- B2 channel of RPS is in the TRIP condition

Which one of the following failures of Nuclear Boiler Instrumentation channels would complete the RPS trip logic, initiating an automatic scram?

Answer A Drywell pressure transmitter "C" fails downscale

Answer B Recirculation Loop flow unit "A" fails downscale

Answer C Narrow Range reactor pressure channel "A" fails upscale

Answer D Wide Range reactor water level transmitter "C" fails upscale

SRO QUESTION # 49

QUESTION Given the following conditions:

- The Reactor Core Isolation Cooling (RCIC) is operating in Full Flow Recirc
- The RCIC flow controller is in "MAN"
- The RCIC flow controller indicates 300 gpm
- RCIC turbine speed is 2450 rpm
- The operator throttles open the RCIC Test Bypass To CST Isolation Valve (F022) for 2 seconds

Which of the following describes the response of RCIC turbine speed and system flow AFTER conditions have STABILIZED?

RCIC Turbine speed is \_\_\_\_\_ and system flow is \_\_\_\_\_.

Answer A lower; lower

Answer B lower; the same

Answer C the same; higher

Answer D higher; higher

SRO QUESTION # 50

QUESTION

The plant has experienced a LOCA in the Drywell, resulting in automatic initiations of all low pressure ECCS, HPCI and RCIC. Following initiation, the RCIC steam line ruptured in the RCIC Turbine room and successfully isolated on high steam flow.

Current plant conditions are:

- All rods are in
- RPV level is being maintained at +5 inches with condensate
- RPV pressure is 200 psig and lowering at 10 psig per minute through the break
- Low pressure ECCS and HPCI have been secured
- Drywell pressure is 6 psig and slowly rising

Which one of the following additional AUTOMATIC VALVE CLOSURES will occur

Answer A Steam Supply Valve HV-F045

Answer B Turbine Exhaust Isolation Valve HV-F059

Answer C Lube Oil Cooling Water Isolation Valve HV-F046

Answer D Turbine Exhaust Vacuum Breaker Isolation Valve HV-F062

SRO QUESTION # 51

QUESTION The Suppression Chamber to Drywell vacuum breakers fail to operate when required.

Which one of the following is a consequence of the failure of Suppression Chamber vacuum breakers to operate when required?

Answer A Drywell failure caused by high internal pressure

Answer B Drywell failure caused by high external pressure

Answer C Suppression chamber failure caused by high internal pressure

Answer D Suppression chamber failure caused by high external pressure

SRO QUESTION # 52

QUESTION Given the following:

- A small leak has occurred in the RWCU system.
- The operator depresses the "C" and "D" NSSSS manual isolation pushbuttons.

Which one of the following correctly describes the response of valves RWCU Inboard and Outboard Isolation Valves BG-HV-F001 and F004?

Answer A F001 closes, F004 remains open

Answer B F004 closes, F001 remains open

Answer C Both F001 and F004 close

Answer D Both F001 and F004 remain open

SRO QUESTION # 53

QUESTION

Given the following:

- B RHR loop Drywell spray is in-service following a LOCA.
- B RHR pump amps are fluctuating
- A RHR pump is not available
- Suppression chamber pressure is 10.2 psig and lowering
- Abnormal procedure HC.OP-AB.ZZ-155 "Degraded ECCS Performance/ Loss of NPSH" has been implemented

For these conditions, which of the following describes the condition allowing removal of Drywell sprays from service and the basis for their removal?

Answer A

At 1.68 psig in the Suppression Chamber to prevent "chugging" of the downcomer vent pipes

Answer B

At 9.5 psig in the Suppression Chamber to prevent "chugging" of the downcomer vent pipes

Answer C

At 1.68 psig in the Suppression Chamber to minimize transport of debris to the pump suction strainers

Answer D

At 9.5 psig in the Suppression Chamber to minimize transport of debris to the pump suction strainers

SRO QUESTION # 54

QUESTION Which of the following conditions would PREVENT opening the RHR "B" Loop Inboard and Outboard Drywell Spray Valves (F021B and F016B) following a LOCA?

Answer A Reactor water level is above -129 inches

Answer B The LPCI Injection Valve (F017B) is not fully closed

Answer C The RHR Full Flow Test Valve (F024B) is not fully closed

Answer D Less than 5 minutes have elapsed since the "B" RHR initiation occurred

SRO QUESTION # 55

QUESTION

The plant was operating at 100 percent power when a reactor scram and MSIV closure occurred. An SRV tailpipe has broken in the Suppression Chamber air space as the SRV opened to control reactor pressure.

Given the following:

- Suppression Chamber pressure is 5 psig
- Suppression Chamber air space temperature is 225 DegF and rising
- "B" RHR Pump in running in Suppression Pool Cooling

Which of the following operator actions are required IAW HC.OP-SO.BC-0001 to establish flow through the Suppression Chamber Spray Valve BC-HV-F027B?

Answer A F027B Auto Open Override must be pressed.

Answer B F027B Auto Close Override must be pressed.

Answer C F027B Auto Open Override must be pressed AND the LPCI Initiation must be RESET.

Answer D F027B Auto Close Override must be pressed AND the LPCI Initiation must be RESET.

SRO QUESTION # 56

QUESTION Given the following:

- The reactor is at 90% power.
- Main Turbine Bypass Valve testing is in progress
- The Plant Operator inadvertently depresses the INCREASE push button for the bypass valve jack and the button sticks down until the percent demand indication on panel 10C651D reads 100%.

WHICH ONE of the following describe the turbine control and bypass valve response?

(Reference Attachment B-1 provided)

Answer A Bypass valves open and control valves throttle closed to maintain reactor pressure

Answer B Bypass valves open and control valves throttle open to the Load Limit setpoint

Answer C Bypass valves remain closed and control valves throttle closed to raise reactor pressure

Answer D Bypass valves remain closed and control valves throttle open to lower reactor pressure

SRO QUESTION # 57

QUESTION Given the following:

- A plant startup is in progress
- Reactor power is at 2 percent
- Reactor pressure is 110 psig
- The first Secondary Condensate Pump (SCP) is running on min-flow
- The StartUp Level Control is in AUTO at 5 percent Demand
- Reactor level is stable at 35 inches
- The operator opens the SCP discharge valve

Which one of the following describes the initial Reactor water level response, and Start Up Level Control Valve (SULCV) Demand after conditions stabilize?

Answer A Initially RPV level will decrease; stable SULCV demand will be higher

Answer B Initially RPV level will decrease; stable SULCV demand will be lower

Answer C Initially RPV level will increase; stable SULCV demand will be higher

Answer D Initially RPV level will increase; stable SULCV demand will be lower

SRO QUESTION # 58

QUESTION Given the following conditions:

- A plant startup is in progress.
- Reactor power is 60%
- "A" and "B" Primary Condensate Pumps (PCP) are running
- "A" and "C" Secondary Condensate Pumps (SCP) are running
- "B" and "C" Reactor Feed Pumps (RFP) are running

What is the response of the Feedwater System to a trip of the "A" PCP?

(Reference Attachments B-2A & B-2B provided)

Answer A "A" SCP Trips, "B" RFP trips

Answer B "A" SCP Trips, "C" RFP Trips

Answer C "C" SCP Trips, "B" RFP trips

Answer D "C" SCP Trips, "C" RFP Trips

SRO QUESTION # 59

QUESTION Given the following conditions:

- A plant startup is in progress
- Reactor power at 5%
- "B" Reactor Feedwater Pump operating in Differential Pressure (D/P) Control
- SV-1783B, "B" RFP Minimum Flow Recirculation valve solenoid, loses electrical power

Which of the following correctly describes "B" RFP response?

The "B" RFP will \_\_\_\_\_ .

(Reference Attachments B-3A & B-3B provided)

Answer A trip on overspeed

Answer B control at a lower speed

Answer C control at a higher speed

Answer D control at the same speed

SRO QUESTION # 60

QUESTION

Given the following:

- All FRVS Recirculation Fans are in AUTO
- "A" FRVS Vent Fan is in Auto Lead
- "B" FRVS Vent Fan is in Auto
- FRVS automatically initiates on RPV Level 2

Select the total FRVS Recirculation and total Vent flow after the operator has completed HC.OP-SO.GU-0001 "Filtration, Recirculation and Ventilation System Operation" actions for initiation verification.

Answer A 120,000 cfm; 9000 cfm

Answer B 120,000 cfm; 18,000 cfm

Answer C 180,000 cfm; 9000 cfm

Answer D 180,000 cfm; 18,000 cfm

SRO QUESTION # 61

QUESTION

Given the following:

- The plant is operating at 100 percent power
- Energized testing activities are in progress on the 1AD481 1E 20 KVA Uninterruptable Power Supply (UPS).
- The Manual Bypass switch in the BYPASSED TO ALTERNATE position

The Backup AC power input breaker CB301 has tripped open to the 1AD481.

The power supplied to distribution panel 1AJ481 will be \_\_\_\_\_ because the load was on the \_\_\_\_\_.

(Reference Attachment B-4 provided)

Answer A

lost; Backup AC source

Answer B

lost; Static Inverter output

Answer C

maintained; Normal AC source

Answer D

maintained; Static Switch output

SRO QUESTION # 62

QUESTION

Given the following:

- The plant is operating at 100 percent power
- The RCIC 250 VDC battery is being returned to service following maintenance
- Maintenance requests 1BD433 250 VDC battery charger placed in service for testing

Why is it necessary to have Battery Room Exhaust ventilation in-service prior to this testing?

Answer A

Permissive to energize battery room duct heater

Answer B

Prevent overheating of the battery charger rectifier stack

Answer C

Prevent accumulation of hydrogen gas in the battery room

Answer D

Maintain battery room temperature above Tech Spec minimum

SRO QUESTION # 63

QUESTION

Given the following:

- The plant is operating at 100% power
- Main Condenser vacuum is being maintained with Steam Jet Air Ejectors
- Feed Gas Recombiner Preheater outlet temperatures are lowering
- Feed Gas Recombiner temperatures are lowering

Which one of the following would cause this change?

Answer A

Feed Gas Pre-heater drain pot low level

Answer B

Feed Gas Cooler Condenser high RACS flow

Answer C

Main Steam Supply Valve HA-HV-5640 is closed

Answer D

Feed Gas Recombiner strip heater power supply is lost

SRO QUESTION # 64

QUESTION

Given the following conditions:

- The plant is operating at 100 percent power
- Offgas Post Treatment Radiation monitor channel RE-6281 fails upscale

What actions would occur as a result of this failure?

Answer A

An isolation of the Offgas Recombiner System

Answer B

An alarm only from the Radiation Monitor System

Answer C

Trip of the Hydrogen Water Injection System (HWCI)

Answer D

Loss of Offgas Post Treatment manual sample capability

SRO QUESTION # 65

QUESTION

Given the following conditions:

- The plant is operating at 100 percent power
- A severe marsh grass intrusion is in progress at the Service Water Intake Structure
- Over the next hour, the operators note that cooling tower basin level is lowering due to insufficient Service Water makeup to the basin
- Radwaste Operators report the Liquid Radwaste Discharge line to the Cooling Tower Blowdown (CTB) just isolated in the middle of a tank release

What caused the Liquid Radwaste discharge isolation?

Answer A

Low Sample Flow to the Liquid Radwaste Radiation Monitor

Answer B

Low Sample Flow to the Cooling Tower Blowdown Radiation Monitor

Answer C

Low CTB Weir Flow to the Liquid Radwaste Radiation Monitor

Answer D

Low CTB Weir Flow to the Cooling Tower Blowdown Radiation Monitor

SRO QUESTION # 66

QUESTION

Given the following:

- The plant is operating at 100 percent power with all systems normal
- A LOCA with a containment breach has occurred
- Control Room HVAC has sensed high radiation in the intake plenum

Which one of the following describes the automatic response?

Answer A

CREF dampers re-position to the OA mode. The Control Room envelope maintains a positive pressure

Answer B

CREF dampers re-position to the OA mode. The Control Room envelope maintains a negative pressure

Answer C

CREF dampers re-position to the RECIRC mode. The Control Room envelope maintains a positive pressure

Answer D

CREF dampers re-position to the RECIRC mode. The Control Room envelope maintains a negative pressure

SRO QUESTION #

67

QUESTION

During a loss of offsite power, the operator is cautioned NOT to acknowledge the flashing "Trip" pushbuttons for the 4.16 KV Vital 1E Bus infeed breakers.

Which of the following will occur if these pushbuttons are pressed?

Answer A

The Diesel Generator associated with that bus will NOT load and its output breaker will NOT close.

Answer B

The Diesel Generator associated with that bus, if running, will trip and its output breaker will open.

Answer C

That bus' alternate feeder breaker will trip open and then immediately reclose when the pushbutton is released.

Answer D

That bus' feeder breaker will attempt to close until the anti-pump feature causes it to trip open and remain open.

SRO QUESTION # 68

QUESTION

Given the following:

- The plant is in a refueling outage.
- Fuel movement is in progress.
- The refueling bridge operator is moving a fuel assembly from the pool to the core when the control room RO reports to the Refuel Floor that the SRM in the destination core quadrant has failed upscale and will not be returned to service for 4 hours.

What action is required by the Refuel bridge operator if the assembly has been raised halfway out of the Fuel Pool storage racks?

Answer A

Suspend the move, leave the bundle as-is until the SRM is repaired

Answer B

Suspend the move, insert the fuel assembly to its previous position in the fuel pool

Answer C

Continue the move, it can be completed because of symmetric SRM coverage

Answer D

Continue the move, stopping just short of the core to allow for repair of the SRM

SRO QUESTION # 69

QUESTION Which of the following is the Technical Specification limit value that is changed during single loop operation?

Answer A Linear Heat Generation Rate thermal limit

Answer B Minimum Critical Power Ratio Safety Limit

Answer C The size of the Exit region of the Power/Flow Map

Answer D The Temperature/Pressure limits for heatups and cooldowns

SRO QUESTION # 70

QUESTION Which of the following is the reason why HC.OP-EO.ZZ-0103/4(Q)-FC, "Reactor Building & Rad Release Control", is entered on high Reactor Building HVAC Exhaust radiation levels?

Answer A Provides rapid, initial indications of the size of the off-site releases.

Answer B Required to direct the operator to verify RBVS initiates and FRVS isolates.

Answer C These high radiation conditions are indication that radioactivity is being released and automatic system isolations may not have occurred.

Answer D These high radiation levels can only be caused by the primary containment parameters monitored and controlled by the EOP.

SRO QUESTION # 71

QUESTION

Given the following:

- The plant is operating at 100 percent power
- SACS loop "A" supplying TACS
- SACS pump "B" supplying loop "B" loads
- SACS pump "D" is in AUTO NOT running
- The Loop "A" expansion tank level instrument ( LSLLL-2508A ) fails downscale

Which of the below describes the SACS/TACS alignment as a result of this instrument failure?

ASSUME NO OPERATOR ACTIONS

Answer A

"A" SACS Pump trips because "A" TACS Supply and Return valves close

Answer B

"A" SACS Pump trips because the failed transmitter inputs into the pump trip logic

Answer C

"D" SACS Pump auto starts because "A" TACS Supply and Return valves close

Answer D

"D" SACS Pump auto starts because the failed transmitter inputs into the pump start logic

SRO QUESTION # 72

QUESTION

Given the following:

- A failure to scram has occurred
- HC.OP-EO.ZZ-0302 "De-energization of Scram Solenoids" is being implemented
- The operator is cautioned to pull the SDV Vent and Drain fuses first

Fuse removal in the sequence listed in HC.OP-EO.ZZ-0302 is required to prevent \_\_\_\_\_ .

Answer A

inconsistent rod patterns from occurring

Answer B

manual bypass of the Hi SDV Level Scram

Answer C

damage to the CRD mechanism inner tubes

Answer D

creating a flow path from the RPV to the Reactor Building

SRO QUESTION # 73

QUESTION

Given the following:

- A steam break has occurred in the drywell coincident with a failure to scram.
- Drywell Temperature is 345 DegF
- Emergency depressurization was not initiated at the required drywell temperature.

Which one of the following describes the effect of this condition?

Answer A

The ability to monitor drywell temperature is lost

Answer B

The ability to emergency depressurize cannot be assured

Answer C

Design temperature of SRV tailpipes have been exceeded

Answer D

Drywell spray, if initiated, will rapidly vaporize causing a rapid pressure increase

SRO QUESTION # 74

QUESTION

Given the following conditions:

- Unit is operating at 75% power
- One Safety Relief Valve opened one minute ago and will not close by pressing the associated SRV Open and Close pushbuttons
- Suppression Pool average water temperature is 115 degrees F and rising
- "SV ENRGZ" light is NOT lit

Which one of the following is a required action for these conditions?

Answer A

Reduce pressure set to 840 psig

Answer B

Reduce the Reactor Recirculation Pumps to 45% speed

Answer C

Place the Reactor Mode Switch in the "Shutdown" position

Answer D

Rotate "Max Combined Flow" potentiometer fully counter-clockwise

SRO QUESTION # 75

QUESTION Which one of the following is a temporary modification IAW NC.NA-AP.ZZ-0013(Q)"Control of Temporary Modifications"?

Answer A Temporary shielding installed in accordance with an approved rad pro procedure

Answer B Connection of a sample tube to a sampling connection to obtain an RHR system sample

Answer C Installation of a pressure gauge on an instrument tap during the conduct of a system pressure test

Answer D Bypassing a malfunctioning local alarm panel annunciator which cannot be immediately cleared by corrective maintenance

SRO QUESTION # 76

QUESTION

Given the following:

- The plant is operating at 100 percent power with all systems normal
- Over a one hour period, several overhead annunciators come into alarm
- Assume all of the alarms are UNRELATED

Which one of the following has the most limiting LCO?

Answer A

Battery charger 1AD413 trips causing "125 VDC System Trouble" (D3 - E3)

Answer B

RCIC Jockey Pump trips causing "RCIC Inj Header Pressure Lo" (B1 - D1)

Answer C

Level 8 trip unit "C" failed causing "Feedwater 2/3 Logic Sensor Fail" (B1 - F5)

Answer D

Breaker for Seal Gas Sply Header Sply Shutoff MOV HV-5829A tripped causing "Inbd MSIV Sealing Sys Trouble" (A4 - A1)

SRO QUESTION #

77

QUESTION

Given the following:

- The plant is operating at 100% reactor power
- HPCI is being retested following an on-line maintenance outage
- HPCI Pump IST test is in progress at rated flow and pressure
- HPCI Full Flow Test return valve BJ-HV-F008 has tripped its breaker with the valve in the partially open position
- The Equipment Operator at the valve reports that the valve has seized and its motor has a burnt smell

What effect does this have on HPCI Operability?

Answer A

HPCI is operable because it has only lost testing capability

Answer B

HPCI is "operable but degraded" because it has lost testing capability

Answer C

HPCI is inoperable because it is NOT capable of meeting all surveillance requirements

Answer D

HPCI is "operable but non-conforming" because it is NOT capable of meeting all surveillance requirements

SRO QUESTION # 78

QUESTION Given the following:

- The plant is in Operational Condition 4 - Cold Shutdown making preparations for refueling
- Maintenance activities are in progress on the "A" RHR System
- "A" RHR Loop is Cleared & Tagged (C/T) and completely drained
- "B" RHR is in Shutdown Cooling

Which one of the following is an Operation with Potential to Drain the Reactor pressure Vessel (OPDRV)?

(Reference Attachments S-5A & S-5B provided)

Answer A Disassembly of the "A" LPCI Pump for inspection

Answer B Disassembly of the BC-HV-F041A LPCI Injection Testable Check Valve for inspection

Answer C Temporary Tag Release of Drywell Spray Isolation BC-HV-F016A for stroke time testing

Answer D Temporary Tag Release of Shutdown Cooling Suction BC-HV-F006A for stroke time testing

SRO QUESTION # 79

QUESTION

Given the following conditions:

- The plant is operating at 100% rated power
- The following overhead annunciator alarms are received:
  - MANUAL SCRAM
  - DRYWELL PRESSURE HI-HI
  - REACTOR SCRAM TRIP LOGIC A1
  - REACTOR SCRAM TRIP LOGIC A2
  - NSSSS MSIV LOGIC A INITIATED
  - NSSSS MSIV LOGIC C INITIATED
- Control rod positions and Main Generator output have not changed.

Which procedure shall be immediately entered?

Answer A HC.OP-AB.ZZ-0000 "Scram"

Answer B HC.OP-EO.ZZ-101A "ATWS RPV Control"

Answer C HC.OP-AB.ZZ-0110 "Loss of an RPS Bus"

Answer D HC.OP-EO.ZZ-102 "Primary Containment Control"

SRO QUESTION #

80

QUESTION

Given the following:

- A large break LOCA is in progress.
- Multiple ECCS subsystems/trains have failed.
- RPV Water level is -240 inches and steady
- Drywell pressure is at 20 psig and slowly rising
- You estimate Containment venting will need to be performed in 4 hours
- There is NO radiological release in progress at this time
- The weather is warm and sunny with wind direction FROM 182 Degrees at 5 MPH
- The other ERO facilities HAVE NOT yet activated

Which one of the following is the correct Predetermined Protective Action Recommendation?

Answer A

Shelter ALL Sectors 0 to 5 miles

Answer B

Evacuate ALL Sectors 0 to 5 miles

Answer C

Evacuate ALL Sectors 0 to 5 miles, Evacuate Sectors NNW - N - NNE 5 to 10 miles,  
AND Shelter ALL remaining Sectors 5 to 10 miles

Answer D

Evacuate ALL Sectors 0 to 5 miles, Shelter Sectors NNW - N - NNE 5 to 10 miles,  
AND Shelter ALL remaining Sectors 5 to 10 miles

SRO QUESTION # 81

QUESTION

Upon reviewing an I&C calibration surveillance, an Isolation Actuation Instrumentation Trip unit is found to have the following data:

- Desired Trip setpoint = 1.68 psig
- As Left value = 1.81 psig

Which one of the following describes the status of the trip unit?

The trip unit is \_\_\_\_\_ .

Answer A

Operable because it is within the allowable values of the safety analysis

Answer B

Operable because it is within the allowable values of the vender recommendations

Answer C

Inoperable because it is outside the allowable values of the Technical Specifications

Answer D

Inoperable because it is outside the allowable values of the ASME Boiler and Pressure Vessel Code

SRO QUESTION # 82

QUESTION

Given the following:

- The plant was operating at 50% power when a resin intrusion occurred from Condensate Demineralizer operations.
- Main Steam Line RMS only reached 1.5X NFPB.
- 20 minutes later Chemistry reports:

--Chlorides = 0.18 ppm

--Conductivity = 14.2 umho/cm@25C

--pH = 5.8

Which one of the following is the required Technical Specification action?

Be in \_\_\_\_\_.

Answer A

Startup within the next 6 hours

Answer B

Startup within the next 12 hours

Answer C

Hot Shutdown within the next 6 hours

Answer D

Hot Shutdown within the next 12 hours

SRO QUESTION # 83

QUESTION Given the following:

- A transient that damaged fuel has occurred.
- A release is in progress from an unknown source
- An ALERT has been declared.
- The OSC is manned
- Field survey teams have been dispatched

Which one of the following reports would require escalation to a SITE AREA EMERGENCY?

Answer A Field Measured Dose Rates are 25 mRem/hr at the MEA

Answer B Field Measured Dose Rates are 76 mRem/hr at the Protected Area Boundary

Answer C A Dose Assessment indicates a TEDE 4 Day Dose of 126 mRem at the MEA

Answer D A Dose Assessment indicates a TEDE 4 Day Dose of 33 mRem at the Protected Area Boundary

SRO QUESTION # 84

QUESTION Given the following:

- A plant startup is in progress.
- You just took shift turnover as the CRS.
- Reactor power is 10%
- Mode Switch is in Startup/Hot Standby
- While reviewing the required paperwork prior to taking the Mode Switch to Run, you note that 2 Main Turbine Bypass Valves are inoperable.
- No other problems are found.
- The valves will NOT be repaired for at least 24 hours.

Which one of the following actions would be required / permitted by Technical Specifications at this time?

Answer A may be placed in Run

Answer B must remain in Startup/Hot Standby

Answer C must be placed in Shutdown within the next 4 hours

Answer D may be placed in Run, but a thermal power increase is NOT permitted

SRO QUESTION # 85

QUESTION The plant is in a refueling outage. The Reactor Mode Switch is locked in Refuel position. Which one of the following is the Technical Specification bases for locking the Reactor Mode Switch in Refuel position?

Answer A Ensures restrictions on control rod withdrawal are enforced

Answer B Ensures restrictions on fuel movement sequence are enforced

Answer C Ensures reactor internals are protected from excessive lifting operations

Answer D Ensures the Control Rod Drive Mechanism is protected from damage due to inadvertent scram

SRO QUESTION # 86

QUESTION

Given the following:

- Hope Creek is operating at 100% power
- Technical Specification LCO 3.0.3 was entered at 1400, May 25, 2000
- Preparations for Unit shutdown are in progress

What are the HCGS administrative time guidelines for commencing the power reduction?

Power reduction shall begin NOT later than \_\_\_\_\_ hours.

Answer A 1430

Answer B 1500

Answer C 1600

Answer D 1800

SRO QUESTION # 87

QUESTION

Given the following:

- The plant is operating at 100% power
- Following the performance of both Standby Liquid Control (SLC) Pump Inservice tests, results from Chemistry analysis of the SLC Storage Tank are as follows:

--- Sodium Pentaborate Weight - 5670 pounds

--- Concentration - 13.7 weight %

--- Volume - 4705 gallons

Which one of the following describes the Technical Specification actions (if any) required?

Answer A No actions required

Answer B Take actions of 3.0.3

Answer C Take actions of 3.1.5.a.1

Answer D Take actions of 3.1.5.a.2

SRO QUESTION # 88

QUESTION According to Technical Specifications, which one of the following identifies the only shift complement position that CANNOT be reduced temporarily by one less than the minimum to accommodate unexpected absence of on-duty shift crew members?

Answer A Shift Technical Advisor

Answer B Control Room Supervisor

Answer C Operations Superintendent

Answer D Radiation Protection Technician

SRO QUESTION # 89

QUESTION Given the following:

- A transient has occurred
- Reactor power is 95% and steady
- Drywell pressure is 1.4 psig and steady
- Reactor water level is +15 inches and slowly recovering
- Reactor pressure is 1023 psig and steady
- Drywell oxygen concentration is 3.7 percent
- CMFLPD is .936
- CMAPR is .819
- CMFCP is .821

Which one of the following actions is required by Technical Specifications?

Answer A Restore Drywell pressure to within the limit within 1 hour

Answer B Restore reactor pressure to within the limit within 15 minutes

Answer C Restore Drywell oxygen concentration to within the limit within 1 hour

Answer D Restore the Linear Heat Generation Rate to within the limit within 15 minutes

SRO QUESTION # 90

QUESTION Given the following:

- The plant is operating at 100 percent power
- LPCI Pump "C" became Inoperable 14 days ago at 0800
- LPCI Pump "D" became Inoperable yesterday at 0800
- LPCI Pump "C" was restored to Operable status today at 0800

Which one of the following correctly describes the required Technical Specification actions?

LPCI Pump "D" must be restored to Operable status by 0800 \_\_\_\_\_ day(s) from today, or be in Hot Shutdown within the next 12 hours and Cold Shutdown within the following 24 hours.

Answer A Two

Answer B Three

Answer C Sixteen

Answer D Twenty nine

SRO QUESTION # 91

QUESTION Given the following:

- The "A" Emergency Diesel Generator Starting Air Compressor has broken its drive belts.
- The Shift Maintenance Supervisor has estimated time for repair at 3 hours
- "A" EDG Starting Air Receiver pressures are A - 305 psig and B - 310 psig, dropping at 40 psig per hour
- All other receiver pressures are normal
- Field operators report the "A" EDG Starting Air Receivers have been cross tied to the "C" EDG Starting Air Compressor
- Starting Air Receiver pressures are currently A - 330 psig and B - 335 psig, and rising.

Emergency Diesel Generator "A" is \_\_\_\_\_ . Surveillance

Answer A operable; 4.8.1.1.1.a only

Answer B operable; 4.8.1.1.1.a; 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 for "A" diesel only

Answer C inoperable; 4.8.1.1.1.a; 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 for all diesels

Answer D inoperable; 4.8.1.1.1.a; 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 for "B", "C" and "D" diesels

SRO QUESTION # 92

QUESTION

Given the following conditions:

- A General Emergency has been declared at Hope Creek
- It has been determined that immediate action is required to operate specific plant equipment in order to stop an in-progress radiological release
- A team of 2 operators and 2 technicians have been dispatched
- The TSC has NOT yet activated
- The Operations Superintendent (OS) is the Emergency Coordinator (EC)

What is the MAXIMUM Total Effective Dose Equivalent (TEDE) radiation exposure that the OS can authorize those emergency personnel to receive?

Answer A 2000 mRem

Answer B 4500 mRem

Answer C 25 Rem

Answer D 75 Rem

SRO QUESTION # 93

QUESTION 10 CFR 50.54(X) and NC.NA-AP.ZZ-0005, "Station Operating Practices," state, in part, "reasonable action that departs from a license condition or a Technical Specification in an emergency when this action is immediately needed to protect the public health and safety is permitted..."

These actions shall be \_\_\_\_\_.

Answer A approved by any member of the plant who holds an SRO license

Answer B reported to the NRC within 15 minutes of the action being taken

Answer C approved by the Operations Manager prior to the action taking place

Answer D approved by a licensed SRO on the operating shift prior to the action taking place

SRO QUESTION #

94

QUESTION

Given the following:

- The plant is operating at 60% power for planned HCU maintenance
- "A" Reactor Feedwater Pump is out of service for Lube Oil System repairs
- Power level has been reduced to 45% due to "B" Reactor Feedwater Pump trip
- Main Turbine vibrations have increased from the load reduction to 9.8 mils on bearing # 7 and are continuing to increase at 0.2 mils/minute
- The shift electrician reports a blown fuse may have caused the "B" Reactor Feed Pump trip with a 15 minute estimated replacement time

IAW SH.OP-AP.ZZ-0101 "Post Transient Response Requirements" and HC.OP-AB.ZZ-0138 "Main Turbine Trip/Malfunction", which one of the following actions shall be taken for the given conditions?

Answer A

Reduce power sufficiently to offset power rise caused by lack of feedwater heating

Answer B

Reduce Reactor Recirc to minimum, then scram the reactor and trip the Main Turbine

Answer C

Immediately trip the Main Turbine, then scram the reactor when vibrations reach 14 mils

Answer D

Replace the fuse, then begin a power increase with Reactor Recirc when Main Turbine vibrations have stabilized

SRO QUESTION # 95

QUESTION Using the attached transient analysis plots of a reactor scram, which one of the following failures caused the scram?

(Reference Attachment S-6 provided)

Answer A EHC Pressure Regulator Failure to 0%

Answer B EHC Pressure Regulator Failure to 130%

Answer C Master Level Control Setpoint Failure to +60 inches

Answer D Master Level Control Setpoint Failure to zero inches

SRO QUESTION # 96

QUESTION Which one of the following conditions has the greatest potential for exceeding the MCPR Safety Limit?

\_\_\_\_\_ Reactor Recirc Pump(s) running at \_\_\_\_\_ speed on the 100 percent Rod Line?

Answer A One; minimum

Answer B One; maximum

Answer C Two; minimum

Answer D Two; maximum

SRO QUESTION # 97

QUESTION

Given the following:

- The plant is at 100 % power
- "B" Station Service Water Pump was just secured 5 minutes ago due to a failed upper motor bearing
- Delaware River Water Temperature has spiked from 84.3 DegF to 87.5 DegF

Which of the following actions will allow continued operation?

\_\_\_\_\_ the Yard Dump Valves HV-2356A/B and restore the inoperable Station Service Water Pump to Operable status within \_\_\_\_\_ or Hot Shutdown within 12 hours and Cold Shutdown within the following 24 hours.

Answer A Open; 72 hours

Answer B Open; 30 days

Answer C Close; 72 hours

Answer D Close; 30 days

SRO QUESTION # 98

QUESTION

Given the following:

- A prolonged Station Blackout has occurred
- Suppression Pool water level is at 0 inches
- Suppression Pool Water Temp is 230 DegF
- Drywell Pressure is 5 psig
- Suppression Chamber Pressure is 5 psig
- RPV level is +35 inches
- Power has been restored to "A" RHR Pump

Which one of the following is the limit on RHR Pump flow?

(EOP Caution 2 and Reference Attachment S-7 provided)

Answer A 6,000 gpm

Answer B 8,000 gpm

Answer C 10,000 gpm

Answer D 12,000 gpm

SRO QUESTION # 99

QUESTION

Given the following:

- A LOCA has occurred
- RPV Pressure is 15 psig
- Drywell Pressure is 15 psig and steady
- Drywell Sprays are in service
- Adequate core cooling is assured
- HPCI Suction is lined up to the Suppression Pool
- HPCI Min Flow isolation valve has been cycled
- HPCI suction pressure is 21 psig and steady
- Suppression Pool water level instruments are not working
- Instrument Zero = 94 inches Containment level

Which one of the following operator actions is required IAW EOP's?

Answer A

Vent the Drywell

Answer B

Vent the Suppression Chamber

Answer C

Continue Drywell Sprays

Answer D

Terminate Drywell Sprays

SRO QUESTION # 100

QUESTION

Given the following:

- The plant is operating at 100 percent power with all systems normal
- An armed, violent intruder has gained access to the reactor building
- An explosive device has detonated causing a 6 inch hole in the bottom of the torus
- Suppression pool water level is 48 inches and lowering at 2 inches per minute
- Emergency Make-Up efforts are hindered by the intruder threat
- The reactor is manually scrammed
- Control rod 14-31 is stuck at position 48
- Control rod 42-27 is stuck at position 02

Assuming a constant inventory loss rate, which one of the following actions must you direct IAW EOPs?

Answer A

Emergency Depressurize with 5 ADS SRV's

Answer B

Immediately open all Turbine Bypass Valves

Answer C

Wait for SP Level to drop below 38.5 inches then open 5 ADS SRV's

Answer D

Wait for SP Level to drop below 38.5 inches then open all Turbine Bypass Valves

Hope Creek NRC Exam Key  
Original 6/7/00

SRO	SRO
QUESTION	KEY
<del>1</del>	<del>b</del>
2	b
3	a
4	c
5	c
6	a
7	a
8	c
9	a
10	a
11	a
12	c
13	b
14	a
15	d
16	c
17	c
18	c
19	a
20	d
21	d
22	d
23	b
24	d
25	b

DELETE

Hopa Creek NRC Exam Key  
Original 6/7/00

26	b
27	c
28	d
29	c
30	d
31	b
32	d
33	c
34	a
35	a
36	a
37	d
38	a
39	a
40	c OR b
41	b
42	c
43	b
44	b
45	d
46	c
47	b
48	b
49	c
50	d

Hope Creek NRC Exam Key  
Original 6/7/00

51	b
52	b
53	<del>A</del> C
54	b
55	b
56	a
57	d
58	a
59	d
60	a OR c
61	a
62	c
63	c
64	b
65	c OR a
66	a
67	a
68	b
69	b
70	c
71	c
72	d
73	b
74	c
75	d

Hope Creek NRC Exam Key  
Original 6/7/00

76	c
77	c
78	d
79	c
80	b
81	a
82	d
83	c
84	a
85	a
86	b
87	d
88	c
89	b
90	c
91	a
92	c
93	d
94	b
95	d
96	a
97	b
98	a
99	c
100	a