

June 5, 2000

Dr. Robert C. Mecredy  
Vice President, Ginna Nuclear Operations  
Rochester Gas and Electric Corporation  
89 East Avenue  
Rochester, New York 14649

SUBJECT: GINNA GENERATING STATION REACTOR OPERATOR AND SENIOR  
REACTOR OPERATOR INITIAL EXAMINATION REPORT 05000244/2000-301

Dear Mr. Mecredy:

This report transmits the results of the subject operator licensing examinations conducted by the NRC during the period of May 8 through 11, 2000. These examinations addressed areas important to public health and safety and were developed and administered using the guidelines of the "Examination Standards for Power Reactors" (NUREG-1021, Revision 8).

Based on the results of the examinations, all applicants (three Senior Reactor Operator (SRO) and two Reactor Operator (RO)) passed all portions of the examinations. Performance insights observed during the examination were discussed between Mr. J. D'Antonio and training department personnel following completion of the examinations on May 11, 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 enclosures will be placed in the NRC Public Document Room.

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. 05000244  
License No. DPR-18

Enclosure: Initial Examination Report No. 05000244/2000-301 w/Attachments 1 and 2

Dr. Robert C. Mecredy

-2-

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Dr. Robert C. Mecredy

Distribution w/encl; w/Attachments 1-2:

DRS Master Exam File

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OFFICE	RI/DRS	RI/DRP	RI/DRS			
NAME	JD'Antonio <i>no</i>	MEvans <i>[Signature]</i>	RConte			
DATE	05/23/00	06/1/00 <i>[Signature]</i>	06/5/00	05/ /00		05/ /00

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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos: 05000244

Report Nos: 05000244/2000-301

License Nos: DPR-18

Licensee: Rochester Gas and Electric Company

Facility: Ginna

Location: Ontario, NY

Dates: May 8-11, 2000 (Operating and Written Test Administration)  
May 15-19, 2000 (Grading)

Chief Examiner: J. D'Antonio, Operations Engineer/Examiner

Examiners: L. Briggs, Senior Operations Engineer/Examiner  
T. Fish, Operations Engineer/Examiner

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

## SUMMARY OF FINDINGS

    Ginna Nuclear Generating Station  
NRC Examination Report No. 05000244/2000-301

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

- There were no findings.

## Report Details

### 4. OTHER ACTIVITIES (OA)

#### 4OA4 Cross Cutting Issues

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

###### a. Scope

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

- Prepared and 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 Ginna facility. Final resolution of comments and incorporation of test revisions was conducted during and following the onsite preparation week.
- 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.
- Examination security requirements met.
- Facility operating procedures can be adequately implemented.

The NRC examiners administered the operating portion of the exam to all applicants from May 9 through 11, 2000. The written examinations were administered by the Ginna training staff on May 8, 2000.

###### b. Observations and Findings

###### Grading and Results

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

The facility did not submit any post-examination comments.

###### Examination Preparation and Quality

No inspection findings were identified.

###### Examination Administration and Performance

No inspection findings were identified.

**40A6 Exit Meeting Summary**

On May 12, 2000, the NRC Chief Examiner discussed preliminary overall observations noted during the examination with the Plant Manager and other members of the plant staff. On May 22, 2000 final observations and license numbers were provided to the training department by telecon.

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

**Attachments:**

1. SRO Written Exam w/Answer Key
2. RO Written Exam w/Answer Key

## PARTIAL LIST OF PERSONS CONTACTED

### FACILITY

Joe Widay, Plant Manager  
Terry White, Manager, Operations  
Bob Popp, Superintendent, Production  
Frank Maciuska, Manager, Operations Training  
Ken Masker, Lead Exam Developer  
Dan Hudnut, Sr. Licensed Instructor

### NRC

J. D'Antonio, Operations Engineer/Examiner  
L. Briggs, Senior Operations Engineer/Examiner  
T. Fish, Operations Engineer/Examiner

**Attachment 1**

**SRO WRITTEN EXAM W/ANSWER KEY**

# *Answer Key Cover Sheet*

**Exam ID:** LOIT00002      **Total Points:** 100.00

**Exam Date:**

**Description:** 2000 License SRO Exam

**Student Name:**

\_\_\_\_\_

**Date:**

\_\_\_\_\_

**Grade:**

\_\_\_\_\_

**Graded By:**

\_\_\_\_\_

**Date:**

\_\_\_\_\_

**Approved By:**

\_\_\_\_\_

**Date:**

\_\_\_\_\_

**Reviewed By**

**Examinee:**

\_\_\_\_\_

Question 1 C000.0265 (1 point(s))

A note in ER-RCC.1, Retrieval of a Dropped Rod, states that "ROD CONTROL URGENT FAILURE ROD STOP, AR-C-30, will annunciate as withdrawal starts."

Which one of the following states the reason for this alarm?

- a. Rods are being withdrawn in a mode other than Auto or Manual.
- b. The group with the dropped rod has some lift coils deenergized and some not causing a regulation failure.
- c. The group without the dropped rod has all lift coils deenergized causing a regulation failure.
- d. The rods are being withdrawn out of proper sequence.

Answer 1

- c. The group without the dropped rod has all lift coils deenergized causing a regulation failure.

Question 2 C003.0018 (1 point(s))

Shortly after a Reactor Trip from full power, the following conditions exist. All parameters are stable at no-load conditions. The MSIV's are closed and the ARV's are set at 1005 psig in auto.

Both RCP's are then tripped. Which of the following is the initial response of the RCS following the RCP trip. Assume no operator actions.

- a. - Przr pressure, Przr level, Tavg increase  
- Tcold, S/G pressure  $\Delta T$  decrease
- b. - Przr pressure, Przr level, Tavg,  $\Delta T$  increase  
- Tcold, S/G pressure stable
- c. - Przr pressure,  $\Delta T$ , Przr level increase  
- Tavg stable  
- Tcold, S/G pressure decrease
- d. - Przr pressure, Przr level, Tavg, Tcold decrease  
- S/G pressure stable

Answer 2

- b. - Przr Pressure, Przr level, Tavg,  $\Delta T$  increase  
- Tcold, S/G pressure stable

Question 3 B003.0008 (1 point(s))

Given the following indications on the "A" RCP, what is the most likely malfunction?

No. 1 seal leakoff flow = .15 gpm

RCP differential pressure > 400 psid

Labyrinth seal dp = 25 inches of water

No. 1 seal outlet temperature steady at 140 degrees F

"A" RCP standpipe high level alarm lit

- a. Loss of No. 1 seal leakoff
- b. No. 1 seal failed
- c. No. 2 seal failed
- d. No. 3 seal failed

Answer 3

- c. No. 2 seal failed

Question 4 C002.0120 (1 point(s))

Which of the following describes the effects of an insurge on the pressurizer resulting from a rapid 8 degree F increase in RCS Tav<sub>g</sub>. (Assuming normal 100% power conditions at the beginning of the transient)

- a. The Tave increase will result in a pressurizer level increase of approximately 8%. Pressurizer Pressure will increase, some steam will condense tending to slow the pressure increase. The Pressurizer Spray Valves will open resulting in more steam being condensed stopping the increase and then decreasing Pressurizer Pressure. The Backup Heaters will energize to heat the insurge water.
- b. The Tave increase will result in a Pressurizer level increase of approximately 4%. Pressurizer Pressure will increase, some steam will condense tending to slow the pressure increase. The Pressurizer Spray Valves will open resulting in more steam being condensed stopping the increase and then decreasing Pressurizer Pressure. The Backup Heaters will energize to heat the insurge water
- c. The Tave increase will result in a Pressurizer level increase of approximately 8%. Pressurizer Pressure will increase some steam will condense tending to slow the pressure increase. Pressurizer Spray Valves will open resulting in more steam being condensed stopping the increase and then decreasing Pressurizer Pressure. The Proportional Heaters will come full on to heat the insurge water to saturation.
- d. The Tave increase will result in a Pressurizer level increase of approximately 4%. Pressurizer Pressure will increase some steam will condense tending to slow the pressure increase. Pressurizer Spray Valves will open resulting in more steam being condensed stopping the increase and then decreasing Pressurizer Pressure. The Proportional Heaters will come full on to heat the insurge water to saturation.

Answer 4

- a. The Tave increase will result in a pressurizer level increase of approximately 8%. Pressurizer Pressure will increase, some steam will condense tending to slow the pressure increase. The Pressurizer Spray Valves will open resulting in more steam being condensed stopping the increase and then decreasing Pressurizer Pressure. The Backup Heaters will energize to heat the insurge water.



Question 5 B194.0006 (1 point(s))

During a Reactor Startup, the HCO allows source range count rates to stabilize after each rod pull, in accordance with O-1.2.1 (1/M Curve). The count rates are then recorded and 1/M is calculated and plotted.

Which of the following describes the result of the 1/M plot if count rates are NOT allowed to stabilize prior to plotting the 1/M?

- a. The plotted 1/M value will predict a critical rod height which will be lower than the actual critical rod height.
- b. The plotted 1/M value will predict the same critical rod height; however, the power level at criticality will be lower.
- c. The plotted 1/M value will predict the same critical rod height; however, the power level at criticality will be higher.
- d. The plotted 1/M value will predict a critical rod height which will be higher than the actual critical rod height.

Answer 5

- d. The plotted 1/M value will predict a critical rod height which will be higher than the actual critical rod height.

Question 6 C013.0002 (1 point(s))

During a small break LOCA, the following conditions exist:

RCS Pressure 1350 psig and stable  
RCS Hot Leg Temp = 540 degrees F  
RCS Cold Leg Temp = 508 degrees F  
Core Exit Thermocouples = 540 degrees F  
3 SI Pumps running  
ARV's set at 715 psig and partly open to control S/G pressure  
No RCP's running

One of the running SI pumps trips and cannot be restarted. Which of the following describes the effect on the RCS.

- a. RCS pressure will remain stable due to increased flow from the remaining two SI pumps. RCS temperatures will also remain stable.
- b. RCS pressure will decrease to a new lower stable value. RCS temperatures will remain stable
- c. RCS pressure will decrease to a new lower stable value. RCS Hot leg and Core Exit Thermocouple temperatures will increase and the ARV will throttle open.
- d. RCS pressure will decrease to a new lower stable value. RCS Cold leg temperatures will decrease and the ARV will throttle closed.

Answer 6

- c. RCS pressure will decrease to a new lower stable value. RCS Hot leg and Core Exit Thermocouple temperatures will increase and the ARV will throttle open.

Question 7 B300.0039 (1 point(s))

With plant on RHR with RCS temperature less than 320 degrees F, for which one of the following conditions must all three SI pumps be incapable of injecting into the RCS?

- a. When both PORVs are required to be operable in LTOP mode.
- b. RCS Vent Path of > 1.1 square inches established.
- c. When steam generator to primary system temperature is > 50 degrees F.
- d. When starting an RCP with RCS temperature higher than S/G temperature.

Answer 7

- a. When both PORVs are required to be operable in LTOP mode.

Question 8 S008.0014 (1 point(s))

AP-RCC.2, RCC/RPI Malfunction, step 1 requires that rods be placed in manual. The reason rods are placed in manual is:

- A. To prevent any flux tilt developing from the deviation of the misaligned rod to its bank from becoming any worse.
- B. To remove the auto rod control unit from service since the rod speed calculation will be adversely affected by any stuck rods.
- C. To minimize any reactivity effects which would affect the bank differential rod worth causing the rods to be worth more than calculated in the core design report.
- D. To ensure that the calculated rod insertion limit is valid to ensure that the plant remains in an analyzed condition.

Answer 8

- A. To prevent any flux tilt developing from the deviation of the misaligned rod to its bank from becoming any worse.

Question 9 C015.0147 (1 point(s))

Which of the following Nuclear Instruments are affected when power is lost from Instrument Bus "B".

- a. Power Range N-42, Source Range N-31, Intermediate Range N-36.
- b. Power Range N-42, Source Range N-32, Comparator and Rate Drawer.
- c. Power Range N-42, Source Range N-32, Intermediate Range N-35.
- d. Power Range N-42, Source Range N-32, Intermediate Range N-36.

Answer 9

- d. Power Range N-42, Source Range N-32, Intermediate Range N-36.

Question 10 B017.0002

(1 point(s))

During routine operations, it is discovered that in a core quadrant, only 2 thermocouples on Train A and 1 thermocouple on Train B remain operable. Which of the following describes the Tech Spec Required Actions:

- a. Restore one thermocouple on Train B to operable status within 30 days. If not restored, be in mode 3 in 6 hours and Mode 4 in 12 hours.
- b. Restore two thermocouples on Train A and three thermocouples on Train B to operable status within 7 days. If not restored, be in Mode 3 in 6 hours and Mode 4 in 12 hours.
- c. Restore one thermocouple on Train B to operable status within 30 days. If not restored then submit a special report.
- d. None: The number of operable thermocouples exceed the minimum required by Tech Specs.

Answer 10

- c. Restore one thermocouple on Train B to operable status within 30 days. If not restored then submit a special report.

Question 11 B000.0950

(1 point(s))

Following auto SI and Containment Spray actuation in which all systems functioned as designed, the below conditions exist:

- Containment Pressure = 30 psig
- SI has not been reset
- RHR pumps are in standby
- Bus 16 NORMAL feeder has just tripped (no fault)
- "B" SI and "B" CS pumps have stopped due to the loss of Bus 16
- "B" EDG output Breaker closes and re-energizes Bus 16

Which one of the following correctly applies to the conditions just described?

- a. CS pump B and SI pump B will both automatically restart.
- b. SI pump B and CS pump B must be restarted by using the individual pump breaker controls.
- c. SI pump B will automatically restart, but CS pumps B must be restarted using the individual pump breaker control.
- d. CS pump B will automatically restart, but SI pump B must be restarted using the individual pump breaker control.

Answer 11

- a. CS pump B and SI pump B will both automatically restart.

Question 12 C026.0003

(1 point(s))

Which one of the following describes the functional dependency that exists between the containment spray system and the charcoal filters?

- a. The spray system precools air to the filters.
- b. Containment spray has NAOH in it which allows the filters to operate more efficiently.
- c. Charcoal filters filter the recirculation water to increase scrubbing efficiency of spray.
- d. Spray system provides fire suppression to filters.

Answer 12

- d. Spray system provides fire suppression to filters.

Question 13 B059.0010

(1 point(s))

The plant is operating at 6% power on the steam dump to the condenser with the turbine rolling up to 1800 rpm. 'C' Condensate pump is 00S and both the 'A' and 'B' Condensate Pumps have just tripped.

Which one of the following combinations would occur if no operator action is taken?

MFP'S	REACTOR TRIP	TURBINE TRIP
a. Immediate Trip	On Lo-Lo SG level	On MFW pump trip
b. Immediate Trip	On turbine trip	On Reactor trip
c. Trip after 60 sec delay	On Lo-Lo SG level	On Reactor trip
d. Trip after 60 sec delay	On turbine trip	On MFW pump trip

Answer 13

MFP'S	REACTOR TRIP	TURBINE TRIP
c. Trip after 60 sec delay	On Lo-Lo SG level	On Reactor trip

Question 14 C059.0024

(1 point(s))

What are (is) the primary function(s) of the Main Feedwater isolation signal(s)?

- a) Prevent overfeeding of the S/G's and pump run out of the Main Feed Pump.
- b) Prevent failure of the Main Condensate Pumps due to low hot well level caused by excessive Main Feed Pump flows.
- c) Prevent the excessive  $\Delta T$  between the RCS and S/G secondary side tube sheet area caused by overfeeding.
- d) Prevent possible carryover of water into the steam lines and excessive cooldown of the primary system.

Answer 14

- d) Prevent possible carryover of water into the steam lines and excessive cooldown of the primary system.

Question 15 B061.0005

(1 point(s))

A plant startup is in progress with the following conditions existing:

- Reactor Power is 25%
- Generator Output Breaker 1G13A72 is Closed
- Main Feedwater Pump 'A' is Running

If a trip of FWP 'A' occurs, what will be the effect on the Auxilliary Feed Water system, assuming both Steam Generator 'A' & 'B' levels decrease to approximately 10%?

- A. Both MDAFW Pumps start when either S/G level drops below 17%. The TDAFW Pump will not start.
- B. Both MDAFW Pumps start after 30 second time delay, TDAFW Pump will not start.
- C. Neither MDAFW Pump starts. The TDAFW Pump will auto start on Low S/G level in either S/G.
- D. Both MDAFW Pumps start immediately. The TDAFW Pump starts when both S/G levels are <17%.

Answer 15

- D. Both MDAFW Pumps start immediately. The TDAFW Pump starts when both S/G levels are < 17%.

Question 16 C064.0568

(1 point(s))

The plant is operating at 100% power when fault develops on DC Bus A causing the bus to deenergize. A short time later off-site power is lost. Which of the following describes the response of the Emergency Diesel Generators (EDG's)?

- a) Both EDG's start, busses 16 and 17 are energized. Busses 14 and 18 will not energize due to the loss of DC control power.
- b) Both EDG's start and load their respective busses. Some EDG-A control and support features swap to the alternate power supply. Operator action will be required on EDG-A within approximately one hour.
- c) Both EDG's start and load their respective busses. All EDG-A control and support features swap to the alternate power supply. Operator action will not be required for at least 8 hours.
- d) EDG-B starts and loads busses 16 and 17. The EDG-A will not start while in "Remote" due to the loss of DC Bus A.

Answer 16

- b) Both EDG's start and load their respective busses. Some EDG-A control and support features swap to the alternate power supply. Operator action will be required on EDG-A within approximately one hour.

Question 17 C068.0031

(1 point(s))

During initiation of a monitor tank release, the Control Room Operator notices that the Liquid Radwaste Monitor R-18 has failed. Which of the following is(are) the required action(s):

- a. Notify the primary auxiliary operator to stop the release. Release cannot continue until R-18 is repaired.
- b. No actions are required. RP sampling and analysis have ensured that no releases in excess of limits will be made.
- c. Close RCV-18 at the Main Control Board. Notify RP to independently sample and continue the release following receiving satisfactory sample results and independent verification of the valve lineup.
- d. Notify the primary auxiliary operator to stop the release. Notify RP to independently sample and analyze, continue the release following satisfactory sample results and independent verification of the valve lineup.

Answer 17

- d. Notify the primary auxiliary operator to stop the release. Notify RP to independently sample and analyze, continue the release following satisfactory sample results and independent verification of the valve lineup.

Question 18 C029.0032

(1 point(s))

Given the following:

- A Gas Decay Tank (GDT) release is in progress
- The Auxiliary Building filter switch is in the OUT position
- The 1A and 1B Auxiliary Building Supply fans trip

Which ONE of the following statements is correct concerning the gas release? The gas release:

- a. May continue with given conditions
- b. Must be manually terminated
- c. Is automatically terminated by RCV-14 closing
- d. Is automatically terminated by the Waste Gas Compressor tripping

Answer 18

- a. May continue with given conditions

Question 19 C034.0068

(1 point(s))

During refueling in CNMT and the SFP area it is discovered that R-5 SFP Area Monitor is inoperable. Which of the following statements is correct.

- a. Refueling may continue without restriction.
- b. Refueling must stop until R-5 is repaired.
- c. Refueling may continue when a Portable Alarming Area monitor is installed in the area.
- d. Refueling may continue provided continuous RP coverage is provided in the SFP area.

Answer 19

- c. Refueling may continue when a Portable Alarming Area monitor is installed in the area.

Question 20 C016.0137

(1 point(s))

During a large break LOCA, with all systems operating normally, which of the following is true regarding RVLIS instrumentation?

- a. The Tcold signal is used to calculate specific gravity and density compensation.
- b. The RCP delta pressure signal is removed from RVLIS calculations.
- c. The CET's signal is used to calculate specific gravity and density compensation.
- d. The RCS pressure signal and the Tcold signal used to calculate the degrees super heat signal.

Answer 20

- c. The CET's signal is used to calculate specific gravity and density compensation.

Question 21 B012.0029

(1 point(s))

The SI sequencer has started. Sequencing timer 2/SIP1C2 fails to operate. Which one of the following is correct regarding sequencer operation? (Reference Drawing #33013-1353, Sht 8)

"C" SIP will

- a) not start
- b) start at 7 seconds on bus 16
- c) start at 30 seconds on bus 14
- d) start at 37 seconds on bus 16

Answer 21

- b) start at 7 seconds on bus 16

Question 22 C010.0054

(1 point(s))

The plant has experienced a failed open ARV which is now isolated. When checking conditions in the pressurizer the operator finds the following:

Pzr pressure 2180 and decreasing

Pzr level 12% and decreasing

What would be the expected positions of the Pressurizer Heaters with the pressurizer pressure and level controllers in auto and operating normally.

- a. Proportional heaters at minimum, B/U heaters on
- b. Proportional heaters off, B/U heaters off
- c. Proportional heaters on full, B/U heaters off
- d. Proportional heaters on full, B/U heaters on

Answer 22

- b. Proportional heaters off, B/U heaters off

Question 23 C004.0113

(1 point(s))

A failure of the Temperature Control Valve TCV-130 caused a high letdown temperature and TCV-145 to divert. The operators have taken manual control of TCV-130 and are reducing temperature. Letdown temperature is currently 155 degrees Fahrenheit.

Which one of the following actions will be necessary to shift TCV 145 back to normal?

- a) reduce non regen Hx outlet temp to less than setpoint and valve will auto swap
- b) reduce non regen Hx outlet temp to less than setpoint and then take valve to DI position then back to auto
- c) reduce regen Hx outlet temp to less than setpoint and valve will auto swap
- d) manually swap TCV-145 back to the DI position since temperature is below that maximum temperature for the DI's.

Answer 23

- a) reduce non regen Hx outlet temp to less than setpoint and valve will auto swap

Question 24 C015.0142

(1 point(s))

There have been numerous events in the industry concerning mis-adjustment of NIS trip bistables as core conditions change (e.g., from BOL-EOL, or after a refueling outage).

Which ONE of the following would be the required adjustment of the Power Range high flux trip bistable for the stated condition? (meaning that the reactor would trip at the required condition/setpoint.)

The bistable adjustment should be:

- a. Left at the EOL setpoint after new fuel was loaded in the core.
- b. Lowered from the EOL setpoint after new fuel was loaded in the core.
- c. Increased from the EOL setpoint after new fuel was loaded in the core.
- d. Lowered from the BOL setpoint as the cycle progressed.

Answer 24

- b. Lowered from the EOL setpoint after new fuel was loaded in the core.

Question 25 C001.0072

(1 point(s))

During operation at 100% power, the following indications appear on the Microprocessor Rod Position Indication (MRPI) System CRT, System Status Page:

- Check System Status Pages      ACTUATED
- HDLC Protocol Status              NORMAL
- Data Reception Status              FAILED
- Fixed Field Reception Status      NORMAL

All other information appears valid on this and other screens. Which ONE of the following actions should be taken?

- a. Since all other MRPI information appears valid, continue operation and notify I&C of the system status.
- b. Only MRPI data is suspect, notify I&C of the system status and monitor the Plant Process Computer System (PPCS) for reliable information.
- c. Both MRPI and PPCS data is suspect, notify I&C of the system status and commence shutdown.
- d. Step rods in the controlling bank IN for two steps then OUT for two steps to verify positive control, and notify I&C.

Answer 25

- c. Both MRPI and PPCS data is suspect, notify I&C of the system status and commence shutdown.

Question 26 C028.0026

(1 point(s))

Which of the following describes the design usage of the Hydrogen Recombiners following a LOCA Accident.

- a. The Recombiners are designed to rapidly remove the Hydrogen generated by the Zirconium-Water reaction during Inadequate Core Cooling Conditions. They can be safely operated at all CNMT Hydrogen concentrations.
- b. The Recombiners are designed to rapidly remove the Hydrogen generated by the Zirconium-Water Reaction during Inadequate Core Cooling. They can safely be operated only when CNMT Hydrogen concentration is less than 4.1%.
- c. The Recombiners are designed to remove the Hydrogen released into containment from all sources following a DBA LOCA. They can be safely operated at all CNMT Hydrogen concentrations.
- d. The Recombiners are designed to remove Hydrogen released in containment from all sources following a DBA LOCA. They can be safely operated only when CNMT Hydrogen concentrations are less than 4.1%.

Answer 26

- d. The Recombiners are designed to remove Hydrogen released in containment from all sources following a DBA LOCA. They can be safely operated only when CNMT Hydrogen concentrations are less than 4.1%.

Question 27 B029.0002

(1 point(s))

Select the signal which will automatically close the Containment Purge Supply and Exhaust Butterfly Valves.

- a. Containment Vent Monitor Alarm (R-10A)
- b. Plant Vent Monitor Alarm (R-13, 14)
- c. Containment Area Radiation Alarm (R-2, 7)
- d. High Containment Pressure 4.0 psig

Answer 27

- d. High Containment Pressure 4.0 psig

Question 28 C033.0034

(1 point(s))

The attachment in the Emergency Operating Procedures (EOPs) for transferring water from the Spent Fuel Pit (SFP) to the Refueling Water Storage Tank (RWST) on loss of recirculation capability only uses one SFP pump.

Which pump is used, and why?

- a. The 'A' pump is used because of its lower D/G power requirements.
- b. The 'A' pump is used because it does not trip on low level.
- c. The 'B' pump because the 'A' pump is locked off on an SI signal.
- d. The 'B' pump because the 'A' pump cannot be lined up to the RWST.

Answer 28

- b. The 'A' pump is used because it does not trip on low level.

Question 29 C059.0020

(1 point(s))

WHICH one of the following will cause the "A" S/G Feedwater bypass valve (FCV 480) to CLOSE when both the main FRV and bypass are in MANUAL? Assume initially at 100% power.

- A. "B" S/G pressure of less than 514 psig.
- B. Reactor trip with Tavg less than 554 degrees F
- C. Trip of both main feed pumps
- D. High level (85%) in "B" S/G.

Answer 29

- a. "B" S/G pressure of less than 514 psig.

Question 30 C041.0016

(1 point(s))

Consider the following two cases: Rods in manual for both cases, no operator action.

- I) A turbine runback from 45% power to no load conditions at 200% per minute (no reactor trip / no turbine trip)
- II) A turbine trip from 45% power (no reactor trip)

Regarding these cases, which of the following statements is correct?

- a. Control systems will maintain the same final steady state value of  $T_{avg}$  in both cases
- b. Case I will have a higher final steady state value of  $T_{avg}$  because of a higher reference  $T_{ref}$  signal.
- c. Case I will have a higher final steady state value of  $T_{avg}$  because it takes a higher  $\Delta T$  ( $T_{avg}-T_{ref}$ ) to operate steam dumps
- d. Case I will have a lower final steady state value of  $T_{avg}$  because it takes a smaller  $\Delta T$  ( $T_{avg}-T_{ref}$ ) to operate steam dumps

Answer 30

- c. Case I will have a higher final steady state value of  $T_{avg}$  because it takes a higher  $\Delta T$  ( $T_{avg}-T_{ref}$ ) to operate steam dumps

Question 31 C045.0083

(1 point(s))

Which one of the following statements describes the concern with operating with condenser backpressure in the Do Not Operate Range of Figure Back Pressure.

- a. Decreased plant efficiency.
- b. Condenser not designed for high pressure and could blow the rupture disks.
- c. Reduced margin to trip setpoint.
- d. Last row of turbine blades could experience severe vibration.

Answer 31

- d. Last row of turbine blades could experience severe vibration.

Question 32 C062.0057

(1 point(s))

Which of the following describes the major steps that the operators take to swap the 4160V Electrical System from 50/50 Normal Lineup to 50/50 Alterate Lineup?

- a.
  - 1) Turn on Synch Switch for Bus 12A Feed from 751
  - 2) Close 12A Feed from 751, 52/12AY
  - 3) Verify open 12A Feed from 767, 52/12BY
  - 4) Turn off Synch Switch
  - 5) Turn on Synch Switch for 12B Feed from 767
  - 6) Close 12B Feed from 767, 52/12BX
  - 7) Verify open 12B Feed from 751, 52/12AX
  - 8) Turn off Synch Switch
  
- b.
  - 1) Turn on Synch Switch for Bus 12A Feed from 767
  - 2) Close 12A Feed from 767, 52/12BY
  - 3) Verify open Bus 12A Feed from 751, 52/12AY
  - 4) Turn off Synch Switch
  - 5) Turn on Synch Switch for Bus 12B Feed from 751
  - 6) Close Bus 12B Feed from 751, 52/12AX
  - 7) Verify open Bus 12B Feed from 767, 52/12BX
  - 8) Turn off Sync Switch
  
- c.
  - 1) Turn on Synch Switch for 12B Feed from 767
  - 2) Close 12B Feed from 767, 52/12BX
  - 3) Verify open 12B Feed from 751, 52/12AX
  - 4) Turn off Synch Switch
  - 5) Turn on Synch Switch for Bus 12A Feed from 767
  - 6) Close 12A Feed from 767, 52/12BY
  - 7) Verify open 12A Feed from 751, 52/12AY
  - 8) Turn off Synch Switch
  
- d.
  - 1) Turn on Synch Switch for Bus 12A Feed from 751
  - 2) Close 12A Feed from 751, 52/12AY
  - 3) Verify open 12A Feed from 767, 52/12BY
  - 4) Turn off Synch Switch
  - 5) Turn on Synch Switch for Bus 12B Feed from 751
  - 6) Close Bus 12B Feed from 751, 52/12AX
  - 7) Verify open 12B Feed from 767, 52/12BX
  - 8) Turn off Synch Switch

Answer 32

- b. ) Turn on Synch Switch for Bus 12A Feed from 767

- 2) Close 12A Feed from 767, 52/12BY
- 3) Verify open Bus 12A Feed from 751, 52/12AY
- 4) Turn off Synch Switch
- 5) Turn on Synch Switch for Bus 12B Feed from 751
- 6) Close Bus 12B Feed from 751, 52/12AX
- 7) Verify open Bus 12B Feed from 767, 52/12BX
- 8) Turn off Sync Switch

Question 33 B300.0041

(1 point(s))

Which one of the following is a design basis for requiring a minimum of 5,000 gallons of fuel for each D/G?

- a. Allows each D/G to carry its design rating loads for 12 hours.
- b. Allows each D/G to carry its design rating loads for 24 hours.
- c. Allows each D/G to carry its design rating loads for 48 hours.
- d. Allows each D/G to carry its design rating loads for 72 hours.

Answer 33

- b. Allows each D/G to carry its design rating loads for 24 hours.

Question 34 C072.0027

(1 point(s))

While removing a source, RP personnel drop it on the floor 10 ft. from Area Monitor R-9. If R-9 is reading 2 R/hr, what is the approximate dose rate 1 ft. from the dropped source?

- a. 20 R/hr
- b. 200 R/hr
- c. 2000 R/hr
- d. 20,000 R/hr

Answer 34

b. 200 R/hr

Question 35 C075.0054

(1 point(s))

The plant is operating at 45% power with both Circulating Water Pumps running. The "A" Circulating Water Pump trips. Which of the following states the effect on the plant and the required operator actions?

- a. Condenser vacuum will decrease to < 20" Hg. Trip the reactor and turbine. Control RCS temperature using the ARV's.
- b. Circulating Water Flow to the condensers will be unbalanced. This may require balancing the flows by isolating flow to the "A" condenser.
- c. Circulating Water Flow to the condenser will be unbalanced. This may require balancing the flow by throttling the outlet valves on the "B" condenser.
- d. Circulating Water Flow to the condenser will be unbalanced. This may require balancing flow by throttling the outlet valves on the "A" condenser.

Answer 35

- c. Circulating Water Flow to the condenser will be unbalanced. This may require balancing the flow by throttling the outlet valves on the "B" condenser.

Question 36 C103.0015

(1 point(s))

The plant is operating at 100% with leak rate surveillance testing being performed on the Containment Penetrations. Results of the testing shows that acceptance criteria for total containment leakage has been exceeded. What impact does this have on plant operation?

- a) Restore Containment Leakage to below Acceptance Criteria within 1 hour or Mode 3 in 6 hours and Mode 5 in 36 hours.
- b) Restore Containment Leakage to below Acceptance Criteria within 4 hours or Mode 3 in 6 hours and Mode 5 in 36 hours.
- c) Enter Tech Spec 3.0.3 Mode 3 in 6 hours, Mode 4 in 12 hours and Mode 5 in 36 hours.
- d) Isolate leaking flow path within 4 hours or Mode 3 in 6 hours and Mode 5 in 36 hours.

Answer 36

- a) Restore Containment Leakage to below Acceptance Criteria within 1 hour or Mode 3 in 6 hours and Mode 5 in 36 hours.

Question 37 C005.0029

(1 point(s))

Which of the following explains the basis for establishing Low Temperature Overpressure Protection prior to aligning RHR for cooldown of the RCS.

- a. To limit the potential pressure stress on the Reactor Vessel since RHR will cool down the RCS to a temperature at which brittle fracture becomes a major concern.
- b. To protect the RHR System from overpressurization resulting from the process of filling the RCS water solid.
- c. To prevent thermal shock to the Reactor Vessel resulting from placing RHR in service with a temperature lower than the RCS cold leg temperatures.
- d. To limit the pressure increase that results when the RHR system is placed in service and Steam Generator cooling is secured.

Answer 37

- a. To limit the potential pressure stress on the Reactor Vessel since RHR will cool down the RCS to a temperature at which brittle fracture becomes a major concern.

Question 38 C002.0116

(1 point(s))

At 1100 the PRT level began to increase given the following information:

Time	1100	1130
Tavg	561°F	561°F
PRZR Level	50%	50%
PRT Level	70%	72%
PRT Temp.	77°F	83°F
PRT Press	0.7 psig	2.5 psig
VCT Level	35%	27%

Charging pump speed stable for the last 8 hours.

Which one of the following sources is the cause of the PRT parameter changes?

- a. Letdown Relief Valve (PCV-203)
- b. PRT Makeup Valve (AOV-508)
- c. Seal Return Relief (PCV-314)
- d. PORV (PCV 430 and/or 431C)

Answer 38

- a. Letdown Relief Valve (PCV-203)

Question 39 C008.0048

(1 point(s))

During normal 100% power operations, the operator notices that CCW Surge Tank level is decreasing. Which of the following could be the leak path out of the CCW System.

- a. Thermal Barrier Heat Exchanger
- b. Non Regenerative Heat Exchanger
- c. CCW Surge Tank Makeup Valve MOV 823
- d. CCW Heat Exchangers

Answer 39

- d. CCW Heat Exchangers

Question 40 B320.0029

(1 point(s))

Turbine generator roll to synchronous speed is in progress per the O-1.2, Plant Startup from Hot Shutdown to Full Load. The initial first stage metal temperature is 125 degrees F. What is the maximum acceleration rate that can be selected?

- a. 25 rpm/min
- b. 50 rpm/min
- c. 100 rpm/min
- d. 200 rpm/min

Answer 40

- b. 50 rpm/min

Question 41 C000.0188

(1 point(s))

A caution in AP-RCC.2, RCC/RPI malfunction, states "until the MRPI System is known to be at fault ... the rod should be considered misaligned." Which one of the following indications or alarms would be an indication of a misaligned rod but not of an RPI malfunction?

- a. QPTR 1.005.
- b. Annunciator C-5 PPCS ROD SEQUENCE OR ROD DEVIATION alarm lit.
- c. Annunciator F-29, PPCS AXIAL OR QUADRANT POWER TILT alarm lit.
- d. Annunciator C-14 ROD BOTTOM ROD STOP alarm lit.

Answer 41

- c. Annunciator F-29, PPCS AXIAL OR QUADRANT POWER TILT alarm lit.

Question 42 B003.0022

(1 point(s))

During a cooldown, the following conditions exist:

- 'B' RCP is running with:
  - #1 Seal leak rate = 0.15 gpm
  - Indicated # 1 Seal delta P is 240 psi (RCS-VCT Press)
- RCS pressure is 270 psig
- VCT pressure is 30 psig

Which one of the following is correct concerning operation of 'B' RCP?  
(Reference: Figure 4.0, RCP Seal Leakoff)

- a. All parameters are within normal operating limits.
- b. Pump is operating outside the RCP Seal leakoff curve. Consult with plant staff.
- c. RCS Pressure is less than the required. Secure the RCP.
- d. #1 Seal Delta P is less than required. Immediately trip the RCP.

Answer 42

- b. Pump is operating outside the RCP Seal leakoff curve. Consult with plant staff.

Question 43 B000.0040

(1 point(s))

Following a loss of all AC power, the following conditions exist:

- S/G A pressure is 615 psig and decreasing
- S/G B pressure is 623 psig and decreasing
- Core exit TCs are 551 degrees F and increasing
- RCS Loop A Cold Leg is 517 degrees F
- RCS Loop B Cold Leg is 519 degrees F
- RCS pressure is 1200 psig
- Containment pressure is 1.0 psig
- Containment radiation is 3.61 mR/hr
- RCS Loop A Hot Leg is 545 degrees F and steady
- RCS Loop B Hot Leg is 546 degrees F and steady

Which one of the following states why natural circulation is/is not indicated? (Reference: Steam Tables, ATT-13.0 NC, Figure 1.0, Min Subcooling)

- A. Natural Circulation is not indicated. RCS cold leg temperatures are greater than saturation temperatures for SG pressures.
- B. Natural circulation is not indicated. The RCS is not subcooled.
- C. Natural circulation is not indicated. Hot leg temperatures are higher than cold leg temperatures.
- D. Natural circulation is indicated. All conditions for natural circulation are satisfactory.

Answer 43

- A. Natural circulation is not indicated. RCS cold leg temperatures are greater than saturation temperatures for SG pressures.

Question 44 C004.0107

(1 point(s))

Which one of the following conditions describes when "Emergency Boration" is required at Ginna?

- a. Uncontrolled cooldown due to a main steam safety valve stuck open
- b. Intermediate Range SUR is positive following a Reactor Trip
- c. Source Range SUR is positive following a Reactor Trip
- d. An operator error causes inadvertent dilution vs. boration while adjusting RCS boron concentration.

Answer 44

- b. Intermediate Range SUR is positive following a Reactor Trip

Question 45 C006.0071

(1 point(s))

Which one of the following statements lists the setpoint and coincidence for the low steam line pressure SI?

- a. 514 psig on 2/3 channels on 2/2 steam lines.
- b. 514 psig on 2/3 channels on 1/2 steam lines.
- c. 350 psig on 2/3 channels on 1/2 steam lines.
- d. 350 psig on 2/3 channels on 2/2 steam lines.

Answer 45

- b. 514 psig on 2/3 channels on 1/2 steam lines.

Question 46 B000.0064

(1 point(s))

While performing a plant heatup, a steamline rupture occurred and could not be isolated. The conditions at the beginning of the steamline rupture were:

- Time is 1507
- RCS Pressure is 715 psig
- RCS Hot Leg Temperature is 349 degrees F
- RCS Cold Leg Temperature is 347 degrees F

During the event safety injection was actuated. The plant conditions are now:

- Time is 1607
- RCS Pressure is 1185 psig
- RCS Hot Leg Temperature is 251 degrees F
- RCS Cold Leg Temperature is 240 degrees F

To help ensure RCS integrity, the procedure which should be used is:  
(Reference: Figure 10.0, Limit A)

- a. FR-P.1 (Red path condition exists)
- b. FR-P.1 (Orange path condition exists)
- c. FR-P.2 (Yellow path condition exists)
- d. None - CSF SAT

Answer 46

- a. FR-P.1 (Red path condition exists)

Question 47 C051.0002

(1 point(s))

Following a short maintenance outage, procedure O-1.2, Plant from Hot Shutdown to Full Load, is in progress. Based on the following conditions and using AP-TURB.4, Loss of Condenser Vacuum, determine what actions are required.

Power is 100 MW (electric)

Alarm H-7, Condenser High Pressure 25.5" Hg

Condenser Vacuum is 25" Hg and decreasing slowly

Condenser Backpressure has been greater than 4.5" Hg for 7 minutes and is increasing slowly

- a) Increase turbine load to return back pressure to the Satisfactory Operating region.
- b) Trip the turbine and go to E-0, Reactor Trip or Safety Injection.
- c) Trip the turbine and go to AP-TURB.1, Turbine Trip without Reactor Trip Required.
- d) Reduce turbine load to return back pressure to the Satisfactory Operating Region.

Answer 47

- c) Trip the turbine and go to AP-TURB.1, Turbine Trip without Reactor Trip Required.

Question 48 C055.0004

(1 point(s))

Following a load ascension to full power at 1630, June 2, the plant experiences a Reactor Trip followed immediately by a loss of all AC power. Until what time will the batteries be able to supply adequate voltage to expected shutdown DC loads in accordance with ITS and UFSAR assumptions.

- a) 2030, June 2
- b) 0030, June 3
- c) 0230, June 3
- d) 1630, June 3

Answer 48

- a) 2030, June 2

Question 49 C057.0001

(1 point(s))

The plant is operating at 100% power with the following electrical system operability:

- Circuits 751 and 767 operable
- All 4160 volt buses energized
- All 480 volt buses energized
- Both A and B EDG's operable
- Both batteries available
- Both Trains of Battery Charges operable
- Instrument Buses A, C and D operable
- Instrument Bus B is inoperable

Which one of the following describes any restrictions on continued operations?  
(Reference: ITS 3.8.9)

- a) Continue operation for 2 hours, then HSD in 6, and CSD in 36 hours.
- b) Continue operation for 8 hours, then HSD in 6, and CSD in 36 hours.
- c) Continue unrestricted operation.
- d) Commence actions to be in HSD in 6 hours, and CSD in 36 hours.

Answer 49

- a) Continue operation for 2 hours, then HSD in 6, and CSD in 36 hours.

Question 50 C000.0140

(1 point(s))

Which one of the following is a possible symptom of a Service Water leak during normal operations?

- a. Chromates detected in sump sample.
- b. CNMT Sump A pump down frequency increases
- c. Annunciator A-5 CCW Surge Tank Hi Level 58.8%, Alarm
- d. CNMT Sump B Hi Level

Answer 50

- b. CNMT Sump A pump down frequency increases

Question 51 C067.0001

(1 point(s))

EDG-B has just been started for the performance of PT-12.2, Emergency Diesel Generator B. An unrelated Main Control Board (MCB) relay catches fire, effecting multiple indications and controls. The Shift Supervisor directs implementation of ER-FIRE.1, Alternate Shutdown for Control Complex Fire, and tells the STA to check the status of EDG-B. The STA reports that EDG-B has tripped, then goes to EDG-A Room to attempt to start EDG-A.

Which of the following describes the ability to restart the EDG-B and start the EDG-A?

- a. Neither EDG will be able to start due to failure of its MCB circuitry.
- b. EDG-A will be capable of a local start when taken to Emergency Mode, EDG-B will not be able to be restarted due to the failure of its MCB circuitry.
- c. By taking both EDG's to Emergency, both EDG's will be able to be restarted.
- d. EDG-A will be capable of a local or remote start when taken to Emergency Mode, EDG-B cannot be restarted.

Answer 51

- b. EDG-A will be capable of a local start when taken to Emergency mode, EDG-B will not be able to be restarted due to the failure of its MCB circuitry.

Question 52 C068.0032

(1 point(s))

Noxious fumes have filled the Control Room, the Shift Supervisor deems it necessary to evacuate. The Reactor has been verified tripped and the Turbine Stop Valves are closed. The operators have been directed to report to their local operating stations. Which of the following statements are correct?

- a) The Secondary AO will go to the AFW pump area to transfer equipment to local control and assist the CRF.
- b) The HCO will go to the Screen House to ensure one SW pump is running in each SW loop.
- c) The Primary AO will go to the Charging Pump Room to turn on the ABELIP and assist the CO.
- d) The CO will go to the Charging Pump Room Local Operating Station and await direction.

Answer 52

- d) The CO will go to the Charging Pump Local Operating Station and await direction.

Question 53 B000.0132

(1 point(s))

What is the major mitigation strategy of the Containment Functional Restoration Procedure FR-Z.1, Response to High Containment Pressure?

- a. Vent CNMT using the mini-purge system to reduce CNMT pressure.
- b. Use CNMT Spray and Recirc Fan Coolers to cool the containment atmosphere.
- c. Place hydrogen recombiners in service to lower CNMT hydrogen concentration to prevent an explosive burn which would further raise pressure.
- d. Cool down the RCS to minimize the heat loss to the CNMT atmosphere.

Answer 53

- b. Use CNMT Spray and Recirc Fan Coolers to cool the containment atmosphere.

Question 54 S009.0015

(1 point(s))

Which one of the following is an indication of voiding in the Reactor Vessel Head?

- A. Core Exit T/Cs > 700 degrees F with RVLIS > 95%.
- B. Upper Head Thermocouples > 550 degrees F with PRZR Level > 50%.
- C. PRZR Level level increase and RVLIS Level > 95%.
- D. PRZR Level level increase or RVLIS Level < 95%.

Answer 54

- D. PRZR Level level increase or RVLIS Level < 95%.

Question 55 C000.0960

(1 point(s))

Given the following information:

- Reactor power is 45%
- The main turbine is on-line supplying 215 MWe
- A severe ice storm has caused the trip of both Circ Water pumps within 30 seconds of each other

Which ONE of the following actions is required?

- a. Trip the reactor and go to E-0, Rx Trip or SI.
- b. Reduce turbine load to maintain condenser vacuum.
- c. Place the priming set of air ejectors on-line.
- d. Trip the Turbine and go to AP-TURB.1, Turbine Trip without Rx Trip.

Answer 55

- a. Trip the reactor and go to E-0, Rx Trip or SI.

Question 56 C008.0047

(1 point(s))

The HCO, by directions from the CRF, has just successfully completed procedure E-1 Step 9, Establish IA to CNMT. Given the following plant parameters, what action should be performed next? (Reference: E-1, Loss of Reactor or Secondary Coolant)

- RCS Pressure is 1600 #s and decreasing
  - RCS Thermocouples are 490 degrees Fahrenheit and decreasing
  - CNMT Pressure is 5 psig
  - PCV - 431C indicates open
  - PCV - 430 indicates closed
  - Pressurizer level is 7%
  - No charging pumps are in service
  - 'A' CCW Pump in service
- a) Check RCP Thermal Barrier, RCP #1 seal outlet temperature, charging suction aligned to VCT and start charging pumps as necessary
- b) Attempt to close PCV-431C, if it doesn't, close its block valve, MOV-515
- c) Due to pressurizer level greater than 5% and subcooling greater than 0 degrees Fahrenheit, transition to ES-1.1 SI termination would be appropriate
- d) Reinitiate SI and CI to close AOV-5392, IA to CNMT in an attempt to close PCV-431C

Answer 56

- b) Attempt to close PCV-431C, if it doesn't, close its block valve, MOV-515

Question 57 B000.0170

(1 point(s))

A LOCA has occurred inside containment. All systems responded as required. The staff is presently at step 19 of E-1 "Loss of Reactor or Secondary Coolant". RCS pressure has never decreased low enough to allow RHR pumps to inject. Given the following conditions, and assuming all appropriate actions are taken, which one of the below listed procedures will be used to place the plant in cold shutdown? (Reference: E-1)

- CNMT pressure is 4.6 psig and decreasing slowly
- SI flow equals 400 gpm and is steady
- RCS pressure is stable at 1380 psig
- CETs stable at 420 degrees F
- SG levels both 45% and stable
- SG pressures both at 675 psig and stable
- Electrical bus alignment normal for unit post-trip conditions
- RWST level 80% and decreasing slowly
- CNMT Sump Level < 113 inches

- A. ES-1.1, SI Termination
- B. ES-1.2, Post LOCA Cooldown and Depressurization
- C. ES-1.3, Transfer to Cold Leg Recirculation
- D. ECA-1.1 Loss of Emergency Coolant Recirculation

Answer 57

- B. ES-1.2, Post LOCA Cooldown and Depressurization

Question 58 B000.0941

(1 point(s))

Following a large break LOCA with the RHR pumps inoperable, the operators transition to ECA-1.1, Loss of Emergency Coolant Recirculation. The following plant conditions exist: (Reference: ECA-1.1, pages 7 and 8)

RCS Pressure is 150 psig

CNMT Pressure is 55 psig

RWST Level is 26%

Which of the following is the correct combination of CNMT Recirculation Fans and Containment Spray Pumps to operate under these conditions:

- a) 2 Recirc Fans, 2 Spray Pumps
- b) 1 Recirc Fan, no Spray Pumps
- c) 3 Recirc Fans, 1 Spray Pump
- d) 4 Recirc Fans, 1 Spray Pump

Answer 58

c) 3 Recirc Fans, 1 Spray Pump

Question 59 C000.0187

(1 point(s))

PRZR pressure controller 431K is in manual at 50% demand while I&C troubleshoots a PRZR pressure channel deviation. Control rods suddenly start to move outward, and the HCO notes PT-485, Turbine First Stage Pressure, failed high and places control rods in manual, stopping rod motion. Control rods are inserted to restore Tavg to normal, however, PRZR pressure is 2185 psig and decreasing slowly. What action should the operator take in accordance with the applicable AP procedure:

- a. Increase demand on PRZR pressure controller 431K to restore PRZR pressure to normal.
- b. Take manual control of sprays and set demand to 0%.
- c. Decrease demand on PRZR pressure controller 431K to restore PRZR pressure to normal.
- d. Check proportional heaters on, or manually turn on.

Answer 59

- c. Decrease demand on PRZR pressure controller 431K to restore PRZR pressure to normal.

Question 60 C032.0006

(1 point(s))

A reactor startup is in progress, the HCO completes a 50 step rod withdrawal on Control Bank B. As he waits for counts to stabilize, source range N32 Instrument Power Fuse blows. Which of the below statements explains plant response.

- a) N32 meter indication goes to full scale and the reactor will trip.
- b) N32 meter indication goes to zero and the reactor will trip.
- c) N32 meter indication goes mid scale and the reactor will trip.
- d) N32 meter indication goes to zero and the reactor does not trip.

Answer 60

- b) N32 meter indication goes to zero and the reactor will trip.

Question 61 B000.0163

(1 point(s))

E-3, Steam Generator Tube Rupture, is being performed. SI has been terminated and charging and letdown are in service. The following conditions exist:

- S/G B is ruptured
- RCS Pressure is 650 psig stable
- Containment Pressure is 0.3 psig
- Containment Radiation is 1.2 mRem/hr
- Pressurizer Level is 30% and slowly decreasing
- RCPs operating
- Instrument air supplied to containment
- S/G A Level is 22% and slowly increasing
- S/G B Level is 72% and slowly increasing
- CET's are 460 degrees F

What action(s) are required to control RCS pressure and minimize RCS-to-Secondary leakage?  
(Reference: E-3 page 33)

- a. Energize pressurizer heaters
- b. Increase RCS charging flow and Depressurize RCS
- c. Decrease RCS charging flow and energize PRZR Heaters
- d. Depressurize RCS using normal spray

Answer 61

- d. Depressurize RCS using normal spray

Question 62 B000.0381

(1 point(s))

While operating at 80% power with condensate booster pumps not yet in service, the following annunciators alarm:

- G-3 S/G A Level Deviation, +/- 7%
- G-5 S/G B Level Deviation, +/- 7%
- G-19 S/G A Flow Mismatch
- G-21 S/G B Flow Mismatch

MFP suction pressure indicates 240 psig. The CO reports the "B" MFP has tripped. The required actions are:

- A. Start all three AFW pumps, verify flow, and decrease power rapidly to < 50%.
- B. Verify standby condensate pump running, condensate bypass valve open and close the trim valves.
- C. Take manual control of both MFW regulating valves and open fully to increase  $FF > SF$ .
- D. Verify both heater drain tank pumps are running, and isolate steam generator blowdown and sample lines.

Answer 62

- A. Start all three AFW pumps, verify flow, and decrease power rapidly to < 50%.

Question 63 C000.1067

(1 point(s))

Which of the following is correct regarding Critical Safety Function Status Trees for current plant conditions?

- Core exit thermocouples are 545 degrees Fahrenheit
- A-S/G level is 15%
- B-S/G level is 10%
- RCP's are not running
- RVLIS LVL 85%
- TDAFW Pump is held
- A & B MDFW pumps will not start
- RCS cold leg temperatures are approximately 450 degrees Fahrenheit
- Containment Pressure is 8 psig

- a) All conditions SAT
- b) FR-H.1 should be entered
- c) FR-P.1 should be entered
- d) FR-C.1 should be entered

Answer 63

- b) FR-H.1 should be entered

Question 64 B310.0067

(1 point(s))

The Keys to Locked High Radiation Areas are maintained and issued by the:

- a. Radiation Protection Foreman
- b. Radiation Protection and Chemistry Manager
- c. Supervisor of Nuclear Security
- d. Shift Supervisor

Answer 64

- a. Radiation Protection Foreman

Question 65 C000.1068

(1 point(s))

Adverse CNMT valves are being used due to the CNMT pressure and radiation while implementing EOP's. Which of the below statements describes when normal CNMT values may be used?

- a) When CNMT Press < 4 psig and radiation levels < 1E 5R/hr.
- b) When CNMT Press < 4 psig, if radiation levels have not been > 1E 5 R/hr for more than 30 minutes.
- c) When CNMT Press < 4 psig and TSC has assessed the integrated dose to be < 10E6 rads.
- d) When TSC evaluates CNMT Press impact on instrumentation and the integrated dose is < 10E6 rads.

Answer 65

- c) When CNMT Press < 4 psig and TSC has assessed the integrated dose to be < 10E6 rads.

Question 66 B078.0012

(1 point(s))

The plant is operating at 100% power. Instrument Air Compressors 'A' and 'B' are in constant speed. 'C' Instrument Air Compressor is held for maintenance and is unavailable. Bus 13 supply breaker trips on bus fault. Instrument air pressure is 100 psig and slowly decreasing. Which one of the following would mitigate the loss of air event?

- a. Crosstie bus 13 to 16, restart the 1B Instrument Air Compressor
- b. Crosstie available portable air compressors, per T-2F.
- c. Verify AOV-5251 automatic service air to instrument air crosstie is open.
- d. Verify running or start the service air compressor.

Answer 66

- b. Crosstie available portable air compressors, per T-2F.

Question 67 C011.0006

(1 point(s))

Which one of the following describes the expected plant response to a low failure of PRZR Level Channel LT 427 with 427/428 selected to control (normal)? Assume no operator actions and one charging pump in auto.

- a. Charging pump speed will increase, Przr level will increase until it reaches the Reactor Trip Setpoint.
- b. Charging pump speed will increase and level off at a level above the program setpoint but below the Reactor Trip Setpoint.
- c. Przr level will increase, the charging pump in auto will slow but the Reactor Trip Setpoint will still be reached.
- d. LT-427 is a non-controlling channel. Przr level will remain constant at program. The Charging Pump in auto will not be affected.

Answer 67

- c. Przr level will increase, the charging pump in auto will slow but the Reactor Trip Setpoint will still be reached.

Question 68 B000.0047

(1 point(s))

During a loss of all AC power, entry was made into ECA-0.0, Loss of All AC Power. The following conditions existed when AC power was restored:

- SI signal occurred during depressurization and was reset
- PRZR level is 15%
- RCS subcooling is satisfied
- Containment pressure is 0.2 psig
- Containment radiation is 2.3 mRem/hr

Which of the following is the correct recovery procedure to be used and why?

- a. ECA-0.2, Loss of all AC Power Recovery with SI Required. Based on Stable Plant Conditions, as long as RCS subcooling and pressurizer level exists.
- b. ECA-0.2, Loss of all AC Power Recovery with SI Required. Based on the fact that SI actuated and pressurizer level is low.
- c. ECA-0.1, Loss of all AC Power Recovery without SI Required. Based on RCS subcooling pressurizer level and stable plant conditions.
- d. ECA-0.1, Loss of all AC Power Recovery without SI Required. Based on the fact that even though SI actuated, it was reset satisfactorily.

Answer 68

- c. ECA-0.1, Loss of all AC Power Recovery without SI Required. Based on RCS subcooling pressurizer level and stable plant conditions.

Question 69 C000.1004

(1 point(s))

One of the major action categories of ES-1.3, Transfer to Cold Leg Recirculation, is to align the containment spray system for recirculation if necessary. A caution prior to the step that accomplishes this major action reads:

"If a CNMT spray pump is started, then CNMT pressure should be closely monitored. CNMT pressure should not be reduced to less than 32 psig."

Which one of the following is the basis for this caution?

An elevated CNMT pressure-

- A) reduces RCS break flow.
- B) reduces RCS hydrolysis, and thereby limits CNMT hydrogen concentration.
- C) reduces the amount of Iodine in the CNMT atmosphere.
- D) improves RHR pump NPSH.

Answer 69

- D) improves RHR pump NPSH.

Question 70 B000.0880

(1 point(s))

The plant is operating at 100% power. The "B" RCP Seal Leakoff Hi Flow annunciator B-18 and the "B" RCP Labyrinth Seal Lo delta P annunciator B-10 are received. The No. 1 seal leakoff flow for "B" RCP is observed to be 8.0 gpm and increasing.

Based on these indications, the required action is:

- a. Close the "B" RCP No. 1 seal leakoff isolation valve and have the reactor shutdown with "B" RCP secured within the following 30 minutes.
- b. Trip the reactor and stop "B" RCP
- c. Monitor "B" RCP seal temperatures to determine if the RCP should be stopped.
- d. Increase seal injection flow to above seal leakoff flow and shutdown the unit when convenient.

Answer 70

- b. Trip the reactor and stop "B" RCP

Question 71 S020.0024

(1 point(s))

Select which set of control board annunciators provide confirmation that an actual dropped rod condition exists?

- A. C-14, Rod Bottom Rod Stop  
E-4, Power Range Upper Detector Flux Dev or Auto Defeat  
E-26, Power Range Channel Dev  
E-28, Power Range Rod Drop Rod Stop  
F-29, PPCS Axial or Quadrant Power Tilts
- B. C-14, Rod Bottom Rod Stop  
E-28, Power Range Rod Drop Rod Stop  
F-27, Pressurizer Lo Press Channel Alert  
F-29, PPCS Axial or Quadrant Power Tilt  
G-9, RCS Loop A High Tavg
- C. C-14, Rod Bottom Rod Stop  
F-16, Tavg - Tref Deviation  
F-23, RCS OT Delta T Channel Alert  
F-29, PPCS Axial or Quadrant Power Tilt  
G-22, ADFCS System Trouble
- D. C-14, Rod Bottom Rod Stop  
E-4, Power Range Upper Detector Flux Dev or Auto Defeat  
E-28, Power Range Rod Drop Rod Stop  
F-15, Average Tavg to RCS Tavg Deviation  
F-29, PPCS Axial or Quadrant Power Tilt

Answer 71

- A. C-14, Rod Bottom Rod Stop  
E-4, Power Range Upper Detector Flux Dev or Auto Defeat  
E-26, Power Range Channel Dev  
E-28, Power Range Rod Drop Rod Stop  
F-29, PPCS Axial or Quadrant Power Tilts

Question 72 C000.1092

(1 point(s))

Procedure ECA-1.2, "LOCA Outside CNMT", gives actions that when completed, isolate SI and RHR flowpaths to the Reactor Coolant System. Which of the following states an action taken in ECA-1.2 and the reason for taking the action.

- a. MOV 852A(B) Core Deluge is closed to mitigate the failure of check valve 853A(B) RHR to Core Deluge Check Valve which could result in overpressurizing and failure of the RHR System.
- b. MOV 878B(D) SI Injection to the RCS Cold Legs are closed to prevent back flow of RCS Coolant to the RWST. SI piping is capable of handling full RCS pressure.
- c. MOV(s) 825A and 825B "RWST to SI Pump Suction" are closed to isolate the RCS from the Low Pressure Piping of the SI Pump Suction.
- d. HCV's 624 and 625 RHR Hx Outlet Valves are closed to isolate the RCS from the low pressure piping of the RHR system.

Answer 72

- a. MOV 852A(B) Core Deluge is closed to mitigate the failure of check valve 853A(B) RHR to Core Deluge Check Valve which could result in overpressurizing and failure of the RHR System.

Question 73 C000.1076

(1 point(s))

During implementation of E-3, Steam Generator Tube Rupture, Step 18, establishment of charging flow, no charging pumps are running and CCW has been lost. What is the basis for closing V-300A and V-300B prior to establishment of charging flow?

- a) It is assumed that the seals have heated up and that the establishment of charging flow could possibly warp the shaft or increase seal damage, causing increased leakage.
- b) It is assumed that the thermal barrier has heated up and that the establishment of charging flow could cause flashing in thermal barrier heat exchanger, causing a tube rupture.
- c) It is assumed that the seals have heated up, however, at this point in the procedure, the RCS has been cooled down enough that seal injection cooling is no longer needed.
- d) The establishment of charging is required prior to proceeding. Charging is isolated to the seals to prevent damage to the seals and seal injection filter from the high charging flows required by E-3.

Answer 73

- a) It is assumed that the seals have heated up and that the establishment of charging flow could possibly warp the shaft or increase seal damage, causing increased leakage.

Question 74 C000.1077

(1 point(s))

Procedure FR-S.1 requires that the operators trip the turbine as an immediate action. Which of the following describes the basis for tripping the turbine:

- a) The Turbine is Tripped to reduce Reactor Power by increasing  $T_{avg}$  for those events in which DNB is limiting.
- b) The Turbine is Tripped to slow depletion of S/G(s) water inventory which limits RCS peak pressure for Loss of Feedwater events.
- c) The Turbine is Tripped to prevent the S/G(s) from depressurizing potentially causing a Steam Generator Tube Rupture.
- d) The Turbine is Tripped to initiate a diverse trip signal to the Reactor (Reactor Trip from Turbine Trip).

Answer 74

- b) The Turbine is Tripped to slow depletion of S/G(s) water inventory which limits RCS peak pressure for Loss of Feedwater events.

Question 75 C000.1078

(1 point(s))

Release of A - Monitor Tank is in progress for greater than 90 minutes when the CO notices that the R-18 is reading  $3.7 \text{ E}5$  cpm with no alarm condition. A check of the recorder trend shows that the release has been in progress for over an hour at this reading. What is the correct EPIP classification?

- a) Unusual Event
- b) Alert
- c) Site Area
- d) Release below EPIP entry condition

Answer 75

- a) Unusual Event

Question 76 B000.0177

(1 point(s))

A cooldown is being conducted using ES-3.1, Post-SGTR Cooldown Using Backfill. The following conditions exist:

- Containment Pressure is 0.5 psig
- Containment Radiation is 1.2 mRem/hr
- Pressurizer Level is 75%

Which one of the following is the correct action to maintain pressurizer level?

- a. Increase the RCS depressurization rate.
- b. Stop RCS cooldown.
- c. Refill the ruptured S/G to 80%.
- d. Decrease charging flow.

Answer 76

- d. Decrease RCS charging flow.

Question 77 C060.0001

(1 point(s))

A General Emergency has been declared with the following environmental conditions:

- Wind Speed is 10 mph
- Wind Direction from 305 degrees
- 33' temperature is 35 degrees F
- 105' temperature is 34.5 degrees F
- 250' temperature is 33.5 degrees F

What are the Initial Protective Action Recommendations (PAR's), if any?

- a) Evacuate: W (1,2), Shelter: Remainder of EPZ
- b) Evacuate: W (1,2,3), Shelter: Remainder of EPZ
- c) Evacuate: W (1,3), Shelter: Remainder of EPZ
- d) No Evacuation or Sheltering required

Answer 77

- b) Evacuate: W (1,2,3), Shelter: Remainder of EPZ

Question 78 C036.0001

(1 point(s))

The plant is in Mode 6. Fuel movement has started between the core and the Spent Fuel Pool. The Source Range Count Drawer is selected to N31 and audible counts are heard as appropriate. The HCO notices that N32 has failed low. What actions are required by Technical Specifications?

- a) Suspend operations involving positive reactivity additions immediately and perform SR 3.1.1.1, SDM verification, within 12 hours.
- b) Suspend Core Alterations immediately and suspend positive reactivity additions immediately.
- c) Defeat the failed channels within 6 hours and restore the channel to operable within 24 hours.
- d) As long as Audible Count Rate is operable, defeat the failed channel and continue fuel movement.

Answer 78

- b) Suspend Core Alterations immediately and suspend positive reactivity additions immediately.

Question 79 C000.1082

(1 point(s))

Which of the following statements below is correct regarding changes to the Control Room copy of the weekly surveillance schedule?

- a) Any changes to the Control Room copy of the weekly surveillance schedule shall be approved by the Work Week Coordinator or his designee.
- b) Any changes to the Control Room copy of the weekly surveillance schedule shall be made by the Shift Technical Advisor, with pen and ink, and initialed.
- c) Any changes to the Control Room copy of the weekly surveillance schedule shall be made by the Work Week Planner, with pen and ink, and initialed.
- d) Any changes to the Control Room copy of the weekly surveillance schedule shall be made by the Shift Supervisor, with pen and ink, and initialed.

Answer 79

- a) Any changes to the Control Room copy of the weekly surveillance schedule shall be approved by the Work Week Coordinator or his designee.

Question 80 C000.1085

(1 point(s))

Which of the following lists gives conditions that meet the minimum requirements for entrance into CNMT Sump 'A'?

- a) RWP allowing access  
Incore Detector Drive Controls held  
Incore Thimbles are fully inserted  
Radiation Protection Manager approval  
If water not in cavity then Confined Space Entry Permit not required
- b) Incore Detector Drive Controls held  
Incore Thimbles fully inserted  
Confined Space Entry Permit  
Radiation Protection Manager approval  
CNMT RWP covers work in Sump 'A' no special RWP required
- c) Reactor Head removed and on head stand  
Incore Detector Drive Controls held  
Confined Space Entry Permit  
RWP allowing access  
Incore fully Thimbles inserted
- d) Incore Thimbles withdrawn  
Confined Space Entry Permit  
Plant Superintendent approval  
RWP allowing access  
Incore Detector Drive Controls held

Answer 80

- c) Reactor Head removed and on head stand  
Incore Detector Drive Controls held  
Confined Space Entry Permit  
RWP allowing access  
Incore Thimbles inserted

Question 81 C000.0881

(1 point(s))

In FR-C.1, "Response to Inadequate Core Cooling", major mitigating strategy calls for two major SG depressurizations. The first one is to inject the accumulators. After the accumulators are isolated a second rapid SG depressurization is done to atmospheric pressure.

Which one of the following is the basis for the second rapid SG depressurization.

- a. Reduce RCS pressure to below the shutoff head for the RHR pumps
- b. Cool the RCS to delay time to core damage
- c. Ensure adequate secondary heat sink by reducing pressure below condensate pressure
- d. Establish conditions for the restart of the RCPs

Answer 81

- a. Reduce RCS pressure to below the shutoff head for the RHR pumps

Question 82 B320.0045

(1 point(s))

The plant is in CSD during a refueling outage. Loop level has been lowered to 18" for S/G nozzle dam installation. MCB Annunciator A-20 (RHR Loop Low-Flow is 400 gpm) alarms. The RHR Flow Indicator (FI-626) is fluctuating from 100 gpm to 400 gpm with the "A" RHR pump running. Which action is required:

- a. Place FCV-626 in manual and reduce RHR flowrate to reduce vortexing.
- b. Stop "A" RHR pump, raise loop level using a charging pump to loop "A" cold leg, vent then restart "A" RHR pump.
- c. Stop "A" RHR pump, raise loop level via gravity feed thru MOV 856, vent then restart "A" RHR pump.
- d. Stop "A" RHR pump, vent RHR suction piping, then restart A RHR pump.

Answer 82

- c. Stop "A" RHR pump, raise loop level via gravity feed thru MOV 856, vent then restart "A" RHR pump. (1.0 pts)

Question 83 C000.1080

(1 point(s))

From the below listed items, select the statement that is a responsibility of the Shift Supervisor regarding shift relief and turnover.

- a) The off-going SS shall review recent new equipment out of service by holds, recent temporary changes in Ops procedures, and recent temporary mods installed or removed.
- b) The oncoming Shift Supervisor must perform a control board walkdown prior to relieving the off-going shift. Verification of annunciator status meets this intent, but immediately following shift turnover a complete board walkdown is required.
- c) The off-going Shift Supervisor will review any significant items in the Read and Acknowledge book with the oncoming Shift Supervisor.
- d) The oncoming Shift Supervisor, prior to assuming the watch, must assign the Fire Brigade member, Fire Brigade Captain and Communicator. He will also review the SS log since the last time he was on shift to update his knowledge with recent activities.

Answer 83

- a) The off-going SS shall review recent new equipment out of service by holds, recent temporary changes in Ops procedures, and recent temporary mods installed or removed.

Question 84 C000.1083

(1 point(s))

Refueling operations are in progress with all conditions satisfied. A problem arises at the SFP Control Cabinet that slows down the refueling process, but doesn't stop it. The refueling SRO in containment leaves to assist the personnel at the SFP. Which of the following statements is correct?

- a) During the period the refueling SRO is transiting from CNMT to the SFP, no core component movement may take place. This activity can recommence when he arrives at the SFP.
- b) During the period the refueling SRO is out of containment, no core component movement may take place.
- c) The Senior Containment Refueling person may relieve the Refueling SRO for the time period he transits to the SFP.
- d) During the time frame the Refueling SRO is out of containment, either the CRF or SS becomes the Refueling SRO. No component movement occurs without their permission.

Answer 84

- b) During the period the refueling SRO is out of containment, no core component movement may take place.

Question 85 C000.1086

(1 point(s))

Of the following procedures, which one describes the operability requirements of the Radiation Monitors required for liquid waste releases.

- a) CH-RETS-LIQ-REL, Liquid Waste Release
- b) CHA-RETS-ODCM, Offsite Dose Calculation Manual
- c) CH-RETS-LIQ-COMP, Liquid Radwaste Compositing and Analysis
- d) CHA-SPEDES, SPEDES Permit Requirements

Answer 85

- b) CHA-RETS-ODCM, Offsite Dose Calculation Manual

Question 86 B000.0143

(1 point(s))

While performing ECA-3.1, "SGTR with Loss of Reactor Coolant - Subcooled Recovery Desired", it has you depressurize the RCS to refill the pressurizer. If subcooling is maintained throughout the RCS, which one of the following explains what causes the level in the pressurizer to increase when the RCS is depressurized?

- a. Actual level does not increase, level indication shows an increase due to the delta P change between the reference leg on the level channels and the actual level in the pressurizer.
- b. Level increase occurs because spray actuation will fill the pressurizer until pressure is equalized in the RCS.
- c. Level increase occurs due to increasing secondary to primary flow as RCS pressure approaches ruptured SG pressure.
- d. Level increase occurs because as the pressure decreases, SI injection flow will exceed break flow.

Answer 86

- d. Level increase occurs because as the pressure decreases, SI injection flow will exceed break flow.

Question 87 C000.1074

(1 point(s))

A fire alarm has been received on Fire Control Panel 1. What are the duties of a Control Room Operator?

- a) Determine whether the fire system is a "S" or "Z". For a "S" system, make an appropriate announcement to activate the Fire Brigade. For a "Z" system, notify the Fire Brigade Captain and Security to investigate.
- b) Determine whether the fire system is a "S" or "Z". For a "Z" system, make an appropriate announcement to activate the Fire Brigade. For a "S" system, notify the Fire Brigade Captain and Security to investigate.
- c) For either a "S" or "Z" system, make an appropriate announcement. This is performed using three short bursts of the "attention getter", announce twice over the Public Address System, then sounding the "Fire Alarm" for a minimum of 15 seconds.
- d) For either a "Z" or "S" system, make an appropriate announcement. This is performed by using five short bursts of the "attention getter", announce twice over the Public Address System, then sounding the "Fire Alarm" for a minimum of 5 seconds.

Answer 87

- c) For either a "S" or "Z" system, make an appropriate announcement. This is performed using three short bursts of the "attention getter", announce twice over the Public Address System, then sounding the "Fire Alarm" for a minimum of 15 seconds.

Question 88 C310.0276

(1 point(s))

Which ONE of the following is the radiation exposure guideline limit above which the Shift Supervisor has authority to waive the independent verification requirement?

- A. 2 mRem per component
- B. 5 mRem per component
- C. 10 mRem per component
- D. 50 mRem per component

Answer 88

- C. 10 mRem per component

Question 89 C000.1081

(1 point(s))

During use of a procedure, it is determined a Temporary PCN that is currently in effect is no longer appropriate. How can the Temporary PCN guidance be removed?

- a) Temporary PCN's may be discarded when no longer needed, but the originator should be notified.
- b) Temporary PCN's can only be terminated by the originator, then discarded.
- c) Temporary PCN's shall be terminated in full or in part by a second Temporary PCN. Originator must be notified prior to termination.
- d) Temporary PCN's shall be terminated in full or in part by a second Temporary PCN. This must be submitted by the originator of the original PCN.

Answer 89

- c) Temporary PCN's shall be terminated in full or in part by a second Temporary PCN. Originator must be notified prior to termination.

Question 90 C000.1084

(1 point(s))

During off-normal working hours, the operators determine that emergency work needs to be performed. Which of the following states the Shift Supervisor responsibilities for the work control process.

- a) The SS contacts the planner and shop foremen when WO's require planning and/or execution during off-normal hours.
- b) To facilitate faster response time, some electrical and most mechanical WO's, as long as a procedure exists, may be initiated. Compilation of the package may occur after the maintenance is complete.
- c) Once an Emergency Maintenance Director/Coordinator is assigned by the SS, the SS is no longer responsible for WO implementation, execution and completion.
- d) The Planning Coordinator is intended to have been or is an SRO. If emergency work is required, the Planning Coordinator relieves the SS in implementation of the WO process. SS notifications only are required.

Answer 90

- a) The SS contacts the planner and shop foremen when WO's require planning and/or execution during off-normal hours.

Question 91 C000.1071

(1 point(s))

The Survey Center has been directed to provide immediate entry for Operations personnel in accordance with EPIP 3-3, Immediate Entry. Enroute to the TSC, radiation levels are higher than initially thought. What radiation level should not be traveled through, and who must grant permission for you to proceed?

- a) 2 Rem/hr, permission granted by Emergency Coordinator
- b) 5 Rem/hr, permission granted by Emergency Coordinator
- c) 2 Rem/hr, permission granted by Radiation Protection/Chemistry Manager
- d) 5 Rem/hr, permission granted by Radiation Protection/Chemistry Manager

Answer 91

- a) 2 Rem/hr, permission granted by Emergency Coordinator

Question 92 C000.1087

(1 point(s))

In FR-C.2, "Response to Degrade Core Cooling", prior to the "Depressurization of all intact S/G's to 200 psig" step, there is a caution that states that the depressurization will cause SI Accumulator Injection which may result in a red path in F-O.4, Integrity Status Tree. FR-C.2 steps should be completed before transition to FR-P.1, Response to Imminent Pressurized Thermal Shock. What is the basis for this caution?

- a) Continuing in FR-C.2 will address the integrity problem by controlling RCS Pressure and Temperature; therefore, transition to FR-P.1 is unnecessary.
- b) FR-C procedures (FR-C.1, FR-C.2 and FR-C.3) have priorities higher than all other FR procedures. The caution is intended as a reminder of this.
- c) Performing the actions of FR-P.1 (Stabilize Temperature and Soak) may result in a Degraded Core Cooling situation deteriorating into Inadequate Core Cooling.
- d) Transitioning to FR-P.1 may require restarting the RCP's. This conflicts with the guidance of FR-C.1 which requires that the RCP be secured.

Answer 92

- c) Performing the actions of FR-P.1 (Stabilize Temperature and Soak) may result in a Degraded Core Cooling situation deteriorating into Inadequate Core Cooling.

Question 93 B000.0333

(1 point(s))

ES-1.1, "SI Termination", is being performed. Normal letdown has just been established. The following conditions exist:

- Containment Pressure is 5 psig
- Containment Radiation is 72 mRem/hr
- RCS Pressure is 1240 psig and decreasing slowly
- Core Exit TCs are 540 degrees F
- Pressurizer Level is 42% and decreasing slowly

Which one of the following is required next? (Reference: ES-1.1, Fig. 1.0, Min Subcooling)

- a. Adjust charging pump speed as necessary.
- b. Control PRZR heaters and spray to stabilize RCS pressure.
- c. Control steam dump and total feed flow as necessary to stabilize RCS temperature.
- d. Manually operate SI pumps as necessary and go to E-1, Loss of Reactor or Secondary Coolant, step 1.

Answer 93

- d. Manually operate SI pumps as necessary and go to E-1, Loss of Reactor or Secondary Coolant, step 1.

Question 94 C000.1089

(1 point(s))

Which of the following statements describes why the Reactor Coolant System Pressure Boundary Leakage Detection System must be capable of detecting RCS unidentified leakage in excess of 1 gpm.

- a) Unidentified leakage over 1 gpm result in a significant buildup of radioactive gases in containment. This could potentially lead to a release in excess of 10CFR20 limits from normal containment leakage.
- b) Unidentified leakage over 1 gpm could indicate a degradation of the large RCS (> 10 inch) piping which could result in a catastrophic failure of the piping.
- c) Unidentified leakage over 1 gpm indicates degradation of RCS system valve packings and seals and is used to trigger an investigation into the source of the leakage.
- d) Unidentified leakage over 1 gpm could indicate a degradation of the RCS Pressure Isolation Valves (PIV) ability to properly isolate the RCS, resulting in a potential for releases that bypass the Containment Fission Product Barrier

Answer 94

- b) Unidentified leakage over 1 gpm could indicate a degradation of the large RCS (> 10 inch) piping which could result in a catastrophic failure of the piping.

Question 95 C022.0031

(1 point(s))

What is the basis for minimizing the time that a RCP is operated without seal injection?

- a) Component Cooling Water does not provide enough cooling capability and seal warping may occur.
- b) Ensure seal damage from unfiltered water does not occur.
- c) Prevent labyrinth seal damage due to reverse flow on a loss of seal injection.
- d) Operation should be minimized due to reduced cooling to the lower radial bearing.

Answer 95

- b) Ensure seal damage from unfiltered water does not occur.

Question 96 C000.1090

(1 point(s))

Which of the following describe who may grant permission for initiating maintenance work on a plant system in accordance with ND-OPS.

- a) The Plant Operating Review Committee.
- b) The Shift Supervisor with the concurrence of the Operations Manager/ Supervisor.
- c) The Shift Supervisor or the Control Room Foreman.
- d) The Control Board Operators.

Answer 96

- c) The Shift Supervisor or the Control Room Foreman.

Question 97 C002.0119

(1 point(s))

Core Exit Thermocouples are used for indication of subcooling along with other parameters for determination of SI termination criteria. What is the reason for using CET's?

- a) Only indication of accurate temperature indication during Natural Circulation.
- b) Only indication still operable during loss of coolant accidents.
- c) Only indication of temperature using environmentally qualified indication.
- d) Only indication of conditions of hottest point in RCS that is not as susceptible to single loop effects.

Answer 97

- d) Only indication of conditions of hottest point in RCS that is not as susceptible to single loop effects.

Question 98 C001.0076

(1 point(s))

Which one of the following explains why Control Rod operability is important?

- a) To prevent unacceptable power peaking functions and inadequate shutdown margins.
- b) To prevent unacceptable Quadrant Power tilts and inadequate shutdown margins.
- c) To maintain delta I within the envelope as assumed in the safety analysis.
- d) To prevent reaching DNBR limits during normal operations as assumed in the safety analysis.

Answer 98

- a) To prevent unacceptable power peaking functions and inadequate shutdown margins.

Question 99 C000.1091

(1 point(s))

Technical Specification 3.4.2 requires that the RCS Tavg be  $\geq 540^\circ$

For the RCS to be Critical (Minimum Temperature for Criticality), which of the following is correct regarding the basis for this requirement:

- a) To maintain Moderator Temperature Coefficient within the required operating range and to ensure that the excore NIS detectors are within their nominal operating conditions.
- b) To ensure excore NIS detectors are within their nominal operating basis and to ensure that control rods are not binding due to rodlet/guide tube interference.
- c) To maintain Moderator Temperature coefficient within the required operating range and to ensure that control rods are not binding due to rodlet/guide tube interference.
- d) To ensure that the Pressurizer Operating characteristics are within normal operating range and the fuel rod internal pressure is high enough to prevent clad creep when the fuel temperature increases.

Answer 99

- a) To maintain Moderator Temperature Coefficient within the required operating range and to ensure that the excore NIS detectors are within their nominal operating conditions.

Question 100 C000.1088

(1 point(s))

During Normal 100% Power Operation, R-9 Letdown Line Monitor Alarms rapidly increases to 5 R/hr. Containment and Auxiliary Building Radiation Monitors also show an upward trend. The on-shift RP Technician reports that radiation levels in the Auxiliary Building are significantly elevated. Which of the following states the actions that should be taken. (Reference: EPIP 1-0)

- a) Enter AP-RCS.3 High Reactor Coolant Activity, Declare an Alert, and Declare a Local Radiation Emergency.
- b) Enter AP-RCS.3 High Reactor Coolant Activity, wait for a Primary Sample to determine RCS Activity before classifying, and Declare a Local Radiation Emergency.
- c) Enter AP-RCS.3 High Reactor Coolant Activity, Declare an Unusual Event, and Declare a Local Radiation Emergency.
- d) Direct RP to sample the RCS. Based on sample results being elevated determine if AP-RCS.3 High Reactor Coolant Activity needs to be entered, declare a Local Radiation Emergency.

Answer 100

- c) Enter AP-RCS.3 High Reactor Coolant Activity, Declare an Unusual Event, and Declare a Local Radiation Emergency.

**Attachment 2**

**RO WRITTEN EXAM W/ANSWER KEY**

# *Answer Key Cover Sheet*

**Exam ID:** LOIT00001      **Total Points:** 100.00

**Exam Date:**

**Description:** 2000 License RO Exam

**Student Name:**

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**Date:** \_\_\_\_\_

**Grade:** \_\_\_\_\_

**Graded By:**

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**Date:** \_\_\_\_\_

**Approved By:**

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**Date:** \_\_\_\_\_

**Reviewed By**

**Examinee:**

\_\_\_\_\_

Question 1 C000.0188 (1 point(s))

A caution in AP-RCC.2, RCC/RPI malfunction, states "until the MRPI System is known to be at fault ... the rod should be considered misaligned." Which one of the following indications or alarms would be an indication of a misaligned rod but not of an RPI malfunction?

- a. QPTR 1.005.
- b. Annunciator C-5 PPCS ROD SEQUENCE OR ROD DEVIATION alarm lit.
- c. Annunciator F-29, PPCS AXIAL OR QUADRANT POWER TILT alarm lit.
- d. Annunciator C-14 ROD BOTTOM ROD STOP alarm lit.

Answer 1

- c. Annunciator F-29, PPCS AXIAL OR QUADRANT POWER TILT alarm lit.

Question 2 C055.0004 (1 point(s))

Following a load ascension to full power at 1630, June 2, the plant experiences a Reactor Trip followed immediately by a loss of all AC power. Until what time will the batteries be able to supply adequate voltage to expected shutdown DC loads in accordance with ITS and UFSAR assumptions.

- a) 2030, June 2
- b) 0030, June 3
- c) 0230, June 3
- d) 1630, June 3

Answer 2

- a) 2030, June 2

Question 3 C000.1075 (1 point(s))

During the performance of the ER-FIRE and AP-CR.1, Control Room Evacuation procedures, HCO and CO take local control of miscellaneous equipment. What equipment has local control switches in the Intermediate Cold Side Basement?

- a) TDAFW DC oil pump, CNMT Recirc Fans and MDAFW pumps
- b) Przr Heater Backup Group, V-200A/B and 202, and MDAFW pumps
- c) MDAFW pumps, CNMT Recirc Fans, V-200A/B and 202
- d) TDAFW DC oil pump, TDAFW MOV's - 3504A and 3505A, MDAFW pumps

Answer 3

- a) TDAFW DC oil pump, CNMT Recirc Fans and MDAFW pumps

Question 4 C057.0001 (1 point(s))

The plant is operating at 100% power with the following electrical system operability:

- Circuits 751 and 767 operable
- All 4160 volt buses energized
- All 480 volt buses energized
- Both A and B EDG's operable
- Both batteries available
- Both Trains of Battery Charges operable
- Instrument Buses A, C and D operable
- Instrument Bus B is inoperable

Which one of the following describes any restrictions on continued operations?  
(Reference: ITS 3.8.9)

- a) Continue operation for 2 hours, then HSD in 6, and CSD in 36 hours.
- b) Continue operation for 8 hours, then HSD in 6, and CSD in 36 hours.
- c) Continue unrestricted operation.
- d) Commence actions to be in HSD in 6 hours, and CSD in 36 hours.

Answer 4

- a) Continue operation for 2 hours, then HSD in 6, and CSD in 36 hours.

Question 5 C000.0140 (1 point(s))

Which one of the following is a possible symptom of a Service Water leak during normal operations?

- a. Chromates detected in sump sample.
- b. CNMT Sump A pump down frequency increases
- c. Annunciator A-5 CCW Surge Tank Hi Level 58.8%, Alarm
- d. CNMT Sump B Hi Level

Answer 5

- b. CNMT Sump A pump down frequency increases

Question 6 C067.0001 (1 point(s))

EDG-B has just been started for the performance of PT-12.2, Emergency Diesel Generator B. An unrelated Main Control Board (MCB) relay catches fire, effecting multiple indications and controls. The Shift Supervisor directs implementation of ER-FIRE.1, Alternate Shutdown for Control Complex Fire, and tells the STA to check the status of EDG-B. The STA reports that EDG-B has tripped, then goes to EDG-A Room to attempt to start EDG-A.

Which of the following describes the ability to restart the EDG-B and start the EDG-A?

- a. Neither EDG will be able to start due to failure of its MCB circuitry.
- b. EDG-A will be capable of a local start when taken to Emergency Mode, EDG-B will not be able to be restarted due to the failure of its MCB circuitry.
- c. By taking both EDG's to Emergency, both EDG's will be able to be restarted.
- d. EDG-A will be capable of a local or remote start when taken to Emergency Mode, EDG-B cannot be restarted.

Answer 6

- b. EDG-A will be capable of a local start when taken to Emergency mode, EDG-B will not be able to be restarted due to the failure of its MCB circuitry.

Question 7 C068.0032 (1 point(s))

Noxious fumes have filled the Control Room, the Shift Supervisor deems it necessary to evacuate. The Reactor has been verified tripped and the Turbine Stop Valves are closed. The operators have been directed to report to their local operating stations. Which of the following statements are correct?

- a) The Secondary AO will go to the AFW pump area to transfer equipment to local control and assist the CRF.
- b) The HCO will go to the Screen House to ensure one SW pump is running in each SW loop.
- c) The Primary AO will go to the Charging Pump Room to turn on the ABELIP and assist the CO.
- d) The CO will go to the Charging Pump Room Local Operating Station and await direction.

Answer 7

- d) The CO will go to the Charging Pump Local Operating Station and await direction.

Question 8 B000.0132 (1 point(s))

What is the major mitigation strategy of the Containment Functional Restoration Procedure FR-Z.1, Response to High Containment Pressure?

- a. Vent CNMT using the mini-purge system to reduce CNMT pressure.
- b. Use CNMT Spray and Recirc Fan Coolers to cool the containment atmosphere.
- c. Place hydrogen recombiners in service to lower CNMT hydrogen concentration to prevent an explosive burn which would further raise pressure.
- d. Cool down the RCS to minimize the heat loss to the CNMT atmosphere.

Answer 8

- b. Use CNMT Spray and Recirc Fan Coolers to cool the containment atmosphere.

Question 9 S009.0015 (1 point(s))

Which one of the following is an indication of voiding in the Reactor Vessel Head?

- A. Core Exit T/Cs > 700 degrees F with RVLIS > 95%.
- B. Upper Head Thermocouples > 550 degrees F with PRZR Level > 50%.
- C. PRZR Level level increase and RVLIS Level > 95%.
- D. PRZR Level level increase or RVLIS Level < 95%.

Answer 9

- D. PRZR Level level increase or RVLIS Level < 95%.

Question 10 C000.0960

(1 point(s))

Given the following information:

- Reactor power is 45%
- The main turbine is on-line supplying 215 MWe
- A severe ice storm has caused the trip of both Circ Water pumps within 30 seconds of each other

Which ONE of the following actions is required?

- a. Trip the reactor and go to E-0, Rx Trip or SI.
- b. Reduce turbine load to maintain condenser vacuum.
- c. Place the priming set of air ejectors on-line.
- d. Trip the Turbine and go to AP-TURB.1, Turbine Trip without Rx Trip.

Answer 10

- a. Trip the reactor and go to E-0, Rx Trip or SI.

Question 11 C008.0047

(1 point(s))

The HCO, by directions from the CRF, has just successfully completed procedure E-1 Step 9, Establish IA to CNMT. Given the following plant parameters, what action should be performed next? (Reference: E-1, Loss of Reactor or Secondary Coolant)

- RCS Pressure is 1600 #s and decreasing
  - RCS Thermocouples are 490 degrees Fahrenheit and decreasing
  - CNMT Pressure is 5 psig
  - PCV - 431C indicates open
  - PCV - 430 indicates closed
  - Pressurizer level is 7%
  - No charging pumps are in service
  - 'A' CCW Pump in service
- a) Check RCP Thermal Barrier, RCP #1 seal outlet temperature, charging suction aligned to VCT and start charging pumps as necessary
- b) Attempt to close PCV-431C, if it doesn't, close its block valve, MOV-515
- c) Due to pressurizer level greater than 5% and subcooling greater than 0 degrees Fahrenheit, transition to ES-1.1 SI termination would be appropriate
- d) Reinitiate SI and CI to close AOV-5392, IA to CNMT in an attempt to close PCV-431C

Answer 11

- b) Attempt to close PCV-431C, if it doesn't, close its block valve, MOV-515

Question 12 C000.0538

(1 point(s))

A small LOCA resulted in a Reactor Trip and SI. During recovery operations the following conditions exist. (Reference: E-1 foldout page, Figure 1.0 Min Subcooling)

RCS core exit T/Cs are 560 degrees F (average)

RCS wide range pressure is 1480 psig

PRZ level is 2%

S/G NR levels are 28%

Containment pressure is 8.0 psig

Which one of the following describes the status of SI termination criteria:

- A. all criteria satisfied
- B. all criteria satisfied except RCS pressure and Przr level
- C. all criteria satisfied except subcooling and RCS pressure
- D. all criteria satisfied except heat sink

Answer 12

- B. all criteria satisfied except RCS pressure and Przr level

Question 13 B003.0022

(1 point(s))

During a cooldown, the following conditions exist:

- 'B' RCP is running with:
  - #1 Seal leak rate = 0.15 gpm
  - Indicated # 1 Seal delta P is 240 psi (RCS-VCT Press)
- RCS pressure is 270 psig
- VCT pressure is 30 psig

Which one of the following is correct concerning operation of 'B' RCP?  
(Reference: Figure 4.0, RCP Seal Leakoff)

- a. All parameters are within normal operating limits.
- b. Pump is operating outside the RCP Seal leakoff curve. Consult with plant staff.
- c. RCS Pressure is less than the required. Secure the RCP.
- d. #1 Seal Delta P is less than required. Immediately trip the RCP.

Answer 13

- b. Pump is operating outside the RCP Seal leakoff curve. Consult with plant staff.

Question 14 B000.0068

(1 point(s))

What is the basis for the RCP trip criteria of the E procedures?

- A. Since continuous operation of the RCP's during a LOCA cannot be guaranteed, tripping RCP's prior to the hotleg saturation temperature being met will ensure natural circulation can be achieved during the LOCA cooldown and depressurization.
- B. Running RCP's under accident conditions with SI signal can lead to RCP seal failure due charging pump trip and loss of seal injection flow.
- C. Since continuous operation of the RCP's during a LOCA cannot be guaranteed, tripping the RCP's during accident conditions is to prevent excessive depletion of RCS water inventory in which it could lead to a severe core uncover if the RCP's were tripped some reason later in the accident.
- D. RCP forced flow can lead to further erosion of the break location resulting in beyond UFSAR analyzed conditions, specifically for SGTR.

Answer 14

- C. Since continuous operation of the RCP's during a LOCA cannot be guaranteed, tripping the RCP's during accident conditions is to prevent excessive depletion of RCS water inventory in which it could lead to a severe core uncover if the RCP's were tripped some reason later in the accident.

Question 15 C000.1092

(1 point(s))

Procedure ECA-1.2, "LOCA Outside CNMT", gives actions that when completed, isolate SI and RHR flowpaths to the Reactor Coolant System. Which of the following states an action taken in ECA-1.2 and the reason for taking the action.

- a. MOV 852A(B) Core Deluge is closed to mitigate the failure of check valve 853A(B) RHR to Core Deluge Check Valve which could result in overpressurizing and failure of the RHR System.
- b. MOV 878B(D) SI Injection to the RCS Cold Legs are closed to prevent back flow of RCS Coolant to the RWST. SI piping is capable of handling full RCS pressure.
- c. MOV(s) 825A and 825B "RWST to SI Pump Suction" are closed to isolate the RCS from the Low Pressure Piping of the SI Pump Suction.
- d. HCV's 624 and 625 RHR Hx Outlet Valves are closed to isolate the RCS from the low pressure piping of the RHR system.

Answer 15

- a. MOV 852A(B) Core Deluge is closed to mitigate the failure of check valve 853A(B) RHR to Core Deluge Check Valve which could result in overpressurizing and failure of the RHR System.

Question 16 B000.0170

(1 point(s))

A LOCA has occurred inside containment. All systems responded as required. The staff is presently at step 19 of E-1 "Loss of Reactor or Secondary Coolant". RCS pressure has never decreased low enough to allow RHR pumps to inject. Given the following conditions, and assuming all appropriate actions are taken, which one of the below listed procedures will be used to place the plant in cold shutdown? (Reference: E-1)

- CNMT pressure is 4.6 psig and decreasing slowly
- SI flow equals 400 gpm and is steady
- RCS pressure is stable at 1380 psig
- CETs stable at 420 degrees F
- SG levels both 45% and stable
- SG pressures both at 675 psig and stable
- Electrical bus alignment normal for unit post-trip conditions
- RWST level 80% and decreasing slowly
- CNMT Sump Level < 113 inches

- A. ES-1.1, SI Termination
- B. ES-1.2, Post LOCA Cooldown and Depressurization
- C. ES-1.3, Transfer to Cold Leg Recirculation
- D. ECA-1.1 Loss of Emergency Coolant Recirculation

Answer 16

- B. ES-1.2, Post LOCA Cooldown and Depressurization

Question 17 B000.0941

(1 point(s))

Following a large break LOCA with the RHR pumps inoperable, the operators transition to ECA-1.1, Loss of Emergency Coolant Recirculation. The following plant conditions exist: (Reference: ECA-1.1, pages 7 and 8)

RCS Pressure is 150 psig

CNMT Pressure is 55 psig

RWST Level is 26%

Which of the following is the correct combination of CNMT Recirculation Fans and Containment Spray Pumps to operate under these conditions:

- a) 2 Recirc Fans, 2 Spray Pumps
- b) 1 Recirc Fan, no Spray Pumps
- c) 3 Recirc Fans, 1 Spray Pump
- d) 4 Recirc Fans, 1 Spray Pump

Answer 17

- c) 3 Recirc Fans, 1 Spray Pump

Question 18 C000.0533

(1 point(s))

A small RCS leak resulted in a Trip and SI. Leak was small enough that charging pumps could keep up with it and SI was terminated (E-0 to E-1 to ES-1.1) in ES-1.1, SI Termination.

Which one of the following gives the set of conditions that would require manual operation of SI pumps and returning to E-1 Loss of Reactor or Secondary coolant, Step 1: (Reference: ES-1.1)

- A. Less than 20 degrees subcooling and charging cannot control PRZR level greater than 13%
- B. Reaching any auto SI setpoint.
- C. PRZR pressure less than 1625 psig (1825) and charging cannot control PRZR level greater than 5% (30%)
- D. Less than zero degrees subcooling or charging cannot control PRZR level greater than 5% (30%)

Answer 18

- D. Less than zero degrees subcooling or charging cannot control PRZR level greater than 5% (30%)

Question 19 B003.0015

(1 point(s))

Given the following indications on the "A" RCP, what is the malfunction?

No. 1 Seal Leakoff Flow is 3.0 gpm  
RCP Labyrinth Seal dp is 25 inches of water  
RCP Differential Pressure is > 400 psid  
All Containment Radiation trending up  
No. 1 Seal Outlet Temperature is 105 degrees F  
Seal Water Inlet Temperature is 75 degrees F  
Stand Pipe Level Low Alarm

- a. Loss of seal injection
- b. #1 seal failed open
- c. #2 seal failed open
- d. #3 seal failed open

Answer 19

- d. #3 seal failed open

Question 20 C000.1066

(1 point(s))

From the list of parameters below and associated reason, select the most limiting during a Loss of Feedwater ATWS event.

- a) Reactor Power; due to probability of restart.
- b) Pressurizer Level; due to potential for PORV not reseating once it has lifted.
- c) Tav<sub>g</sub>; due to exceeding design clad temperature.
- d) Pressurizer Pressure; due to probability of exceeding the design limit for RCS integrity.

Answer 20

- d) Pressurizer Pressure; due to probability of exceeding the design limit for RCS integrity.

Question 21 C032.0006

(1 point(s))

A reactor startup is in progress, the HCO completes a 50 step rod withdrawal on Control Bank B. As he waits for counts to stabilize, source range N32 Instrument Power Fuse blows. Which of the below statements explains plant response.

- a) N32 meter indication goes to full scale and the reactor will trip.
- b) N32 meter indication goes to zero and the reactor will trip.
- c) N32 meter indication goes mid scale and the reactor will trip.
- d) N32 meter indication goes to zero and the reactor does not trip.

Answer 21

- b) N32 meter indication goes to zero and the reactor will trip.

Question 22 B000.0163

(1 point(s))

E-3, Steam Generator Tube Rupture, is being performed. SI has been terminated and charging and letdown are in service. The following conditions exist:

- S/G B is ruptured
- RCS Pressure is 650 psig stable
- Containment Pressure is 0.3 psig
- Containment Radiation is 1.2 mRem/hr
- Pressurizer Level is 30% and slowly decreasing
- RCPs operating
- Instrument air supplied to containment
- S/G A Level is 22% and slowly increasing
- S/G B Level is 72% and slowly increasing
- CET's are 460 degrees F

What action(s) are required to control RCS pressure and minimize RCS-to-Secondary leakage?  
(Reference: E-3 page 33)

- a. Energize pressurizer heaters
- b. Increase RCS charging flow and Depressurize RCS
- c. Decrease RCS charging flow and energize PRZR Heaters
- d. Depressurize RCS using normal spray

Answer 22

- d. Depressurize RCS using normal spray

Question 23 B000.0381

(1 point(s))

While operating at 80% power with condensate booster pumps not yet in service, the following annunciators alarm:

- G-3 S/G A Level Deviation, +/- 7%
- G-5 S/G B Level Deviation, +/- 7%
- G-19 S/G A Flow Mismatch
- G-21 S/G B Flow Mismatch

MFP suction pressure indicates 240 psig. The CO reports the "B" MFP has tripped. The required actions are:

- A. Start all three AFW pumps, verify flow, and decrease power rapidly to < 50%.
- B. Verify standby condensate pump running, condensate bypass valve open and close the trim valves.
- C. Take manual control of both MFW regulating valves and open fully to increase  $FF > SF$ .
- D. Verify both heater drain tank pumps are running, and isolate steam generator blowdown and sample lines.

Answer 23

- A. Start all three AFW pumps, verify flow, and decrease power rapidly to < 50%.

Question 24 B000.0040

(1 point(s))

Following a loss of all AC power, the following conditions exist:

- S/G A pressure is 615 psig and decreasing
- S/G B pressure is 623 psig and decreasing
- Core exit TCs are 551 degrees F and increasing
- RCS Loop A Cold Leg is 517 degrees F
- RCS Loop B Cold Leg is 519 degrees F
- RCS pressure is 1200 psig
- Containment pressure is 1.0 psig
- Containment radiation is 3.61 mR/hr
- RCS Loop A Hot Leg is 545 degrees F and steady
- RCS Loop B Hot Leg is 546 degrees F and steady

Which one of the following states why natural circulation is/is not indicated? (Reference: Steam Tables, ATT-13.0 NC, Figure 1.0, Min Subcooling)

- A. Natural Circulation is not indicated. RCS cold leg temperatures are greater than saturation temperatures for SG pressures.
- B. Natural circulation is not indicated. The RCS is not subcooled.
- C. Natural circulation is not indicated. Hot leg temperatures are higher than cold leg temperatures.
- D. Natural circulation is indicated. All conditions for natural circulation are satisfactory.

Answer 24

- A. Natural circulation is not indicated. RCS cold leg temperatures are greater than saturation temperatures for SG pressures.

Question 25 C000.1067

(1 point(s))

Which of the following is correct regarding Critical Safety Function Status Trees for current plant conditions?

- Core exit thermocouples are 545 degrees Fahrenheit
- A-S/G level is 15%
- B-S/G level is 10%
- RCP's are not running
- RVLIS LVL 85%
- TDAFW Pump is held
- A & B MDFW pumps will not start
- RCS cold leg temperatures are approximately 450 degrees Fahrenheit
- Containment Pressure is 8 psig

- a) All conditions SAT
- b) FR-H.1 should be entered
- c) FR-P.1 should be entered
- d) FR-C.1 should be entered

Answer 25

- b) FR-H.1 should be entered

Question 26 B310.0067

(1 point(s))

The Keys to Locked High Radiation Areas are maintained and issued by the:

- a. Radiation Protection Foreman
- b. Radiation Protection and Chemistry Manager
- c. Supervisor of Nuclear Security
- d. Shift Supervisor

Answer 26

- a. Radiation Protection Foreman

Question 27 C000.1068

(1 point(s))

Adverse CNMT valves are being used due to the CNMT pressure and radiation while implementing EOP's. Which of the below statements describes when normal CNMT values may be used?

- a) When CNMT Press < 4 psig and radiation levels < 1E 5R/hr.
- b) When CNMT Press < 4 psig, if radiation levels have not been > 1E 5 R/hr for more than 30 minutes.
- c) When CNMT Press < 4 psig and TSC has assessed the integrated dose to be < 10E6 rads.
- d) When TSC evaluates CNMT Press impact on instrumentation and the integrated dose is < 10E6 rads.

Answer 27

- c) When CNMT Press < 4 psig and TSC has assessed the integrated dose to be < 10E6 rads.

Question 28 C011.0006

(1 point(s))

Which one of the following describes the expected plant response to a low failure of PRZR Level Channel LT 427 with 427/428 selected to control (normal)? Assume no operator actions and one charging pump in auto.

- a. Charging pump speed will increase, Przr level will increase until it reaches the Reactor Trip Setpoint.
- b. Charging pump speed will increase and level off at a level above the program setpoint but below the Reactor Trip Setpoint.
- c. Przr level will increase, the charging pump in auto will slow but the Reactor Trip Setpoint will still be reached.
- d. LT-427 is a non-controlling channel. Przr level will remain constant at program. The Charging Pump in auto will not be affected.

Answer 28

- c. Przr level will increase, the charging pump in auto will slow but the Reactor Trip Setpoint will still be reached.

Question 29 C036.0001

(1 point(s))

The plant is in Mode 6. Fuel movement has started between the core and the Spent Fuel Pool. The Source Range Count Drawer is selected to N31 and audible counts are heard as appropriate. The HCO notices that N32 has failed low. What actions are required by Technical Specifications?

- a) Suspend operations involving positive reactivity additions immediately and perform SR 3.1.1.1, SDM verification, within 12 hours.
- b) Suspend Core Alterations immediately and suspend positive reactivity additions immediately.
- c) Defeat the failed channels within 6 hours and restore the channel to operable within 24 hours.
- d) As long as Audible Count Rate is operable, defeat the failed channel and continue fuel movement.

Answer 29

- b) Suspend Core Alterations immediately and suspend positive reactivity additions immediately.

Question 30 B078.0012

(1 point(s))

The plant is operating at 100% power. Instrument Air Compressors 'A' and 'B' are in constant speed. 'C' Instrument Air Compressor is held for maintenance and is unavailable. Bus 13 supply breaker trips on bus fault. Instrument air pressure is 100 psig and slowly decreasing. Which one of the following would mitigate the loss of air event?

- a. Crosstie bus 13 to 16, restart the 1B Instrument Air Compressor
- b. Crosstie available portable air compressors, per T-2F.
- c. Verify AOV-5251 automatic service air to instrument air crosstie is open.
- d. Verify running or start the service air compressor.

Answer 30

- b. Crosstie available portable air compressors, per T-2F.

Question 31 C000.0265

(1 point(s))

A note in ER-RCC.1, Retrieval of a Dropped Rod, states that "ROD CONTROL URGENT FAILURE ROD STOP, AR-C-30, will annunciate as withdrawal starts."

Which one of the following states the reason for this alarm?

- a. Rods are being withdrawn in a mode other than Auto or Manual.
- b. The group with the dropped rod has some lift coils deenergized and some not causing a regulation failure.
- c. The group without the dropped rod has all lift coils deenergized causing a regulation failure.
- d. The rods are being withdrawn out of proper sequence.

Answer 31

- c. The group without the dropped rod has all lift coils deenergized causing a regulation failure.

Question 32 G194.0169

(1 point(s))

The magnitude of differential boron worth increases (becomes more negative) as

- A. boron concentration increases
- B. Xenon concentration increases
- C. moderator temperature decreases
- D. control rods are inserted

Answer 32

C. moderator temperature decreases

Question 33 C004.0112

(1 point(s))

If the VCT Vent Valve were inadvertently opened causing VCT pressure to decrease to the vent header pressure, which of the following would be the effect on plant operations.

- a. Inadequate RCP #2 Seal Flow
- b. Introduction of oxygen into the Waste Gas Tanks
- c. Flashing of letdown downstream of PCV-135
- d. Increase of dissolved H<sub>2</sub> in the Reactor Coolant System

Answer 33

- a. Inadequate RCP #2 Seal Flow

Question 34 C004.0107

(1 point(s))

Which one of the following conditions describes when "Emergency Boration" is required at Ginna?

- a. Uncontrolled cooldown due to a main steam safety valve stuck open
- b. Intermediate Range SUR is positive following a Reactor Trip
- c. Source Range SUR is positive following a Reactor Trip
- d. An operator error causes inadvertent dilution vs. boration while adjusting RCS boron concentration.

Answer 34

- b. Intermediate Range SUR is positive following a Reactor Trip

Question 35 C003.0018

(1 point(s))

Shortly after a Reactor Trip from full power, the following conditions exist. All parameters are stable at no-load conditions. The MSIV's are closed and the ARV's are set at 1005 psig in auto.

Both RCP's are then tripped. Which of the following is the initial response of the RCS following the RCP trip. Assume no operator actions.

- a. - Przr pressure, Przr level, Tavg increase  
- Tcold, S/G pressure  $\Delta T$  decrease
- b. - Przr pressure, Przr level, Tavg,  $\Delta T$  increase  
- Tcold, S/G pressure stable
- c. - Przr pressure,  $\Delta T$ , Przr level increase  
- Tavg stable  
- Tcold, S/G pressure decrease
- d. - Przr pressure, Przr level, Tavg, Tcold decrease  
- S/G pressure stable

Answer 35

- b. - Przr Pressure, Przr level, Tavg,  $\Delta T$  increase  
- Tcold, S/G pressure stable

Question 36 C004.0018

(1 point(s))

Which one of the following statements describes the automatic operation of the Letdown Orifice Valves, AOV 200A, B, and AOV 202?

- a. Close on a CNMT Vent Isolation Signal.
- b. Close on a manual Safety Injection Signal.
- c. Close on a closed signal from AOV 371 Letdown Isolation Valve.
- d. Close on a closed signal from AOV 427 Letdown from Loop B Valve.

Answer 36

- d. Close on a closed signal from AOV 427 Letdown from Loop B Valve.

Question 37 C002.0120

(1 point(s))

Which of the following describes the effects of an insurge on the pressurizer resulting from a rapid 8 degree F increase in RCS Tavg. (Assuming normal 100% power conditions at the beginning of the transient)

- a. The Tave increase will result in a pressurizer level increase of approximately 8%. Pressurizer Pressure will increase, some steam will condense tending to slow the pressure increase. The Pressurizer Spray Valves will open resulting in more steam being condensed stopping the increase and then decreasing Pressurizer Pressure. The Backup Heaters will energize to heat the insurge water.
- b. The Tave increase will result in a Pressurizer level increase of approximately 4%. Pressurizer Pressure will increase, some steam will condense tending to slow the pressure increase. The Pressurizer Spray Valves will open resulting in more steam being condensed stopping the increase and then decreasing Pressurizer Pressure. The Backup Heaters will energize to heat the insurge water
- c. The Tave increase will result in a Pressurizer level increase of approximately 8%. Pressurizer Pressure will increase some steam will condense tending to slow the pressure increase. Pressurizer Spray Valves will open resulting in more steam being condensed stopping the increase and then decreasing Pressurizer Pressure. The Proportional Heaters will come full on to heat the insurge water to saturation.
- d. The Tave increase will result in a Pressurizer level increase of approximately 4%. Pressurizer Pressure will increase some steam will condense tending to slow the pressure increase. Pressurizer Spray Valves will open resulting in more steam being condensed stopping the increase and then decreasing Pressurizer Pressure. The Proportional Heaters will come full on to heat the insurge water to saturation.

Answer 37

- a. The Tave increase will result in a pressurizer level increase of approximately 8%. Pressurizer Pressure will increase, some steam will condense tending to slow the pressure increase. The Pressurizer Spray Valves will open resulting in more steam being condensed stopping the increase and then decreasing Pressurizer Pressure. The Backup Heaters will energize to heat the insurge water.



Question 38 C013.0002

(1 point(s))

During a small break LOCA, the following conditions exist:

RCS Pressure 1350 psig and stable

RCS Hot Leg Temp = 540 degrees F

RCS Cold Leg Temp = 508 degrees F

Core Exit Thermocouples = 540 degrees F

3 SI Pumps running

ARV's set at 715 psig and partly open to control S/G pressure

No RCP's running

One of the running SI pumps trips and cannot be restarted. Which of the following describes the effect on the RCS.

- a. RCS pressure will remain stable due to increased flow from the remaining two SI pumps. RCS temperatures will also remain stable.
- b. RCS pressure will decrease to a new lower stable value. RCS temperatures will remain stable
- c. RCS pressure will decrease to a new lower stable value. RCS Hot leg and Core Exit Thermocouple temperatures will increase and the ARV will throttle open.
- d. RCS pressure will decrease to a new lower stable value. RCS Cold leg temperatures will decrease and the ARV will throttle closed.

Answer 38

- c. RCS pressure will decrease to a new lower stable value. RCS Hot leg and Core Exit Thermocouple temperatures will increase and the ARV will throttle open.

Question 39 B300.0039

(1 point(s))

With plant on RHR with RCS temperature less than 320 degrees F, for which one of the following conditions must all three SI pumps be incapable of injecting into the RCS?

- a. When both PORVs are required to be operable in LTOP mode.
- b. RCS Vent Path of > 1.1 square inches established.
- c. When steam generator to primary system temperature is > 50 degrees F.
- d. When starting an RCP with RCS temperature higher than S/G temperature.

Answer 39

- a. When both PORVs are required to be operable in LTOP mode.

Question 40 C015.0147

(1 point(s))

Which of the following Nuclear Instruments are affected when power is lost from Instrument Bus "B".

- a. Power Range N-42, Source Range N-31, Intermediate Range N-36.
- b. Power Range N-42, Source Range N-32, Comparator and Rate Drawer.
- c. Power Range N-42, Source Range N-32, Intermediate Range N-35.
- d. Power Range N-42, Source Range N-32, Intermediate Range N-36.

Answer 40

- d. Power Range N-42, Source Range N-32, Intermediate Range N-36.

Question 41 C015.0148

(1 point(s))

During the withdrawal of Control Rods to bring the Reactor Critical, a caution in procedure O-1.2 "Plant From Hot Shutdown to Steady Load" states "When either Source Range reaches  $1 \times 10^4$  CPS THEN the rate of increase should be adjusted so it is increasing very slowly ( $< 0.5$  DPM)". Which of the following explains the basis for this caution.

- a. 0.5 DPM start up rate is the limiting initial condition for the subcritical continuous rod withdraw accident.
- b. Above  $1 \times 10^4$  CPS on the Source Ranges, the SUR is slowed to allow the operator time to block the Source Range trip prior to a Reactor Trip.
- c. Above  $1 \times 10^4$  CPS the Reactor is nearly critical. SUR is limited to prevent a power increase that could potentially exceed the capacity of the AFW System.
- d. A SUR  $> 0.5$  DPM in a critical reactor indicates that too much positive reactivity has been added and the operator will have difficulty stopping the power increase.

Answer 41

- b. Above  $1 \times 10^4$  CPS on the Source Ranges, the SUR is slowed to allow the operator time to block the Source Range trip prior to a Reactor Trip.

Question 42 C017.0007

(1 point(s))

The Incore Thermocouple System provides output to indication panels and to the PPCS.

Which of the following statements describes what will happen if power is lost to one or both readouts?

- a. If power is lost to the PPCS, the indication panel will continue to provide indication for the affected thermocouples.
- b. If power is lost to either an indication panel or the PPCS, the other readout will continue to provide indication for the affected thermocouples.
- c. If power is lost to an indication panel, the PPCS will continue to provide indication for the affected thermocouples.
- d. If power is lost to either an indication panel or the PPCS, the other readout will be disabled and the affected thermocouples cannot be monitored.

Answer 42

- a. If power is lost to the PPCS, the indication panel will continue to provide indication for the affected thermocouples.

Question 43 B017.0002

(1 point(s))

During routine operations, it is discovered that in a core quadrant, only 2 thermocouples on Train A and 1 thermocouple on Train B remain operable. Which of the following describes the Tech Spec Required Actions:

- a. Restore one thermocouple on Train B to operable status within 30 days. If not restored, be in mode 3 in 6 hours and Mode 4 in 12 hours.
- b. Restore two thermocouples on Train A and three thermocouples on Train B to operable status within 7 days. If not restored, be in Mode 3 in 6 hours and Mode 4 in 12 hours.
- c. Restore one thermocouple on Train B to operable status within 30 days. If not restored then submit a special report.
- d. None: The number of operable thermocouples exceed the minimum required by Tech Specs.

Answer 43

- c. Restore one thermocouple on Train B to operable status within 30 days. If not restored then submit a special report.

Question 44 B000.0950

(1 point(s))

Following auto SI and Containment Spray actuation in which all systems functioned as designed, the below conditions exist:

- Containment Pressure = 30 psig
- SI has not been reset
- RHR pumps are in standby
- Bus 16 NORMAL feeder has just tripped (no fault)
- "B" SI and "B" CS pumps have stopped due to the loss of Bus 16
- "B" EDG output Breaker closes and re-energizes Bus 16

Which one of the following correctly applies to the conditions just described?

- a. CS pump B and SI pump B will both automatically restart.
- b. SI pump B and CS pump B must be restarted by using the individual pump breaker controls.
- c. SI pump B will automatically restart, but CS pumps B must be restarted using the individual pump breaker control.
- d. CS pump B will automatically restart, but SI pump B must be restarted using the individual pump breaker control.

Answer 44

- a. CS pump B and SI pump B will both automatically restart.

Question 45 C103.0011

(1 point(s))

Which one of the following will actuate a containment isolation signal.

- A. 1/2 manual containment vent isolation push buttons.
- B. Any SI signal.
- C. Automatic SI signal.
- D. Manual SI signal

Answer 45

C. Automatic SI signal.

Question 46 B059.0010

(1 point(s))

The plant is operating at 6% power on the steam dump to the condenser with the turbine rolling up to 1800 rpm. 'C' Condensate pump is 00S and both the 'A' and 'B' Condensate Pumps have just tripped.

Which one of the following combinations would occur if no operator action is taken?

MFP'S	REACTOR TRIP	TURBINE TRIP
a. Immediate Trip	On Lo-Lo SG level	On MFW pump trip
b. Immediate Trip	On turbine trip	On Reactor trip
c. Trip after 60 sec delay	On Lo-Lo SG level	On Reactor trip
d. Trip after 60 sec delay	On turbine trip	On MFW pump trip

Answer 46

MFP'S	REACTOR TRIP	TURBINE TRIP
c. Trip after 60 sec delay	On Lo-Lo SG level	On Reactor trip

Question 47 C059.0024

(1 point(s))

What are (is) the primary function(s) of the Main Feedwater isolation signal(s)?

- a) Prevent overfeeding of the S/G's and pump run out of the Main Feed Pump.
- b) Prevent failure of the Main Condensate Pumps due to low hot well level caused by excessive Main Feed Pump flows.
- c) Prevent the excessive  $\Delta T$  between the RCS and S/G secondary side tube sheet area caused by overfeeding.
- d) Prevent possible carryover of water into the steam lines and excessive cooldown of the primary system.

Answer 47

- d) Prevent possible carryover of water into the steam lines and excessive cooldown of the primary system.

Question 48 B061.0005

(1 point(s))

A plant startup is in progress with the following conditions existing:

- Reactor Power is 25%
- Generator Output Breaker 1G13A72 is Closed
- Main Feedwater Pump 'A' is Running

If a trip of FWP 'A' occurs, what will be the effect on the Auxilliary Feed Water system, assuming both Steam Generator 'A' & 'B' levels decrease to approximately 10%?

- A. Both MDAFW Pumps start when either S/G level drops below 17%. The TDAFW Pump will not start.
- B. Both MDAFW Pumps start after 30 second time delay, TDAFW Pump will not start.
- C. Neither MDAFW Pump starts. The TDAFW Pump will auto start on Low S/G level in either S/G.
- D. Both MDAFW Pumps start immediately. The TDAFW Pump starts when both S/G levels are <17%.

Answer 48

- D. Both MDAFW Pumps start immediately. The TDAFW Pump starts when both S/G levels are < 17%.

Question 49 B000.0901 (1 point(s))

Immediately after transitioning to FR-H.1, Response to Loss of Heat Sink, Condensate Storage Tank level decreased to less than five feet.

Which one of the following is a procedurally directed method for alternate water supply to the AFW pumps?

Utilize a hose to connect-

- A) The Service Water System to the Standby AFW Test Tank
- B) The City or Domestic Supply to the discharge of the Condensate Transfer Pump.
- C) The Service Water System to the suction of the AFW pumps.
- D) The City or Domestic Supply to the Condensate Storage Tank

Answer 49

- D) The City or Domestic Supply to the Condensate Storage Tank

Question 50 C068.0030

(1 point(s))

Which of the following are normally sources of water to the Waste Holdup Tanks (WHUT)?

- a. Reactor Coolant Drain Tank
- b. Charging Pump Leakoff
- c. Auxiliary Building Sump Tank
- d. Pressurizer Relief Tank Drain

Answer 50

- c. Auxiliary Building Sump Tank

Question 51 C068.0031

(1 point(s))

During initiation of a monitor tank release, the Control Room Operator notices that the Liquid Radwaste Monitor R-18 has failed. Which of the following is(are) the required action(s):

- a. Notify the primary auxiliary operator to stop the release. Release cannot continue until R-18 is repaired.
- b. No actions are required. RP sampling and analysis have ensured that no releases in excess of limits will be made.
- c. Close RCV-18 at the Main Control Board. Notify RP to independently sample and continue the release following receiving satisfactory sample results and independent verification of the valve lineup.
- d. Notify the primary auxiliary operator to stop the release. Notify RP to independently sample and analyze, continue the release following satisfactory sample results and independent verification of the valve lineup.

Answer 51

- d. Notify the primary auxiliary operator to stop the release. Notify RP to independently sample and analyze, continue the release following satisfactory sample results and independent verification of the valve lineup.

Question 52 C029.0032

(1 point(s))

Given the following:

- A Gas Decay Tank (GDT) release is in progress
- The Auxiliary Building filter switch is in the OUT position
- The 1A and 1B Auxiliary Building Supply fans trip

Which ONE of the following statements is correct concerning the gas release? The gas release:

- a. May continue with given conditions
- b. Must be manually terminated
- c. Is automatically terminated by RCV-14 closing
- d. Is automatically terminated by the Waste Gas Compressor tripping

Answer 52

- a. May continue with given conditions

Question 53 B073.0001

(1 point(s))

The Control Room Iodine Monitor, R-38, has gone into its alarm state and is verified to be reading above its alarm setpoint.

Which of the following describes the correct equipment alignment for this condition?

- a. - Outside Air Inlet Damper open (red)
  - Exhaust Relief Damper open (red)
  - Toilet Exhaust Damper open (red)
  - Control Room Charcoal Filter Fan stopped (green)
  - Control Room Return Air Fan running (red)
  - Control Room Air Handling Unit running (red)
  
- b. - Outside Air Inlet Damper closed (green)
  - Exhaust Relief Damper open (red)
  - Toilet Exhaust Damper closed (green)
  - Control Room Charcoal Filter Fan running (red)
  - Control Room Return Air Fan running (red)
  - Control Room Air Handling Unit running (red)
  
- c. - Outside Air Inlet Damper open (red)
  - Exhaust Relief Damper open (red)
  - Toilet Exhaust Damper closed (green)
  - Control Room Charcoal Filter Fan running (red)
  - Control Room Return Air Fan running (red)
  - Control Room Air Handling Unit running (red)
  
- d. - Outside Air Inlet Damper closed (green)
  - Exhaust Relief Damper closed (green)
  - Toilet Exhaust Damper closed (green)
  - Control Room Charcoal Filter Fan running (red)
  - Control Room Return Air Fan running (red)
  - Control Room Air Handling Unit running (red)

Answer 53

- d. - Outside Air Inlet Damper closed (green)
  - Exhaust Relief Damper closed (green)
  - Toilet Exhaust Damper closed (green)
  - Control Room Charcoal Filter Fan running (red)
  - Control Room Return Air Fan running (red)
  - Control Room Air Handling Unit running (red)



Question 54 C034.0068

(1 point(s))

During refueling in CNMT and the SFP area it is discovered that R-5 SFP Area Monitor is inoperable. Which of the following statements is correct.

- a. Refueling may continue without restriction.
- b. Refueling must stop until R-5 is repaired.
- c. Refueling may continue when a Portable Alarming Area monitor is installed in the area.
- d. Refueling may continue provided continuous RP coverage is provided in the SFP area.

Answer 54

- c. Refueling may continue when a Portable Alarming Area monitor is installed in the area.

Question 55 C000.0920

(1 point(s))

Assume the following conditions:

The reactor is at 100% power (steady state) and the following alarms occur simultaneously:

F-2 PRESSURIZER HI PRESS 2310 PSI

F-26 PZR HI PRESS CHANNEL ALERT 2377 PSI

Immediately followed by: F-10 PRESSURIZER LO PRESS 2205 PSI

Which one of the following is the first action that should be performed?

- a. Reduce turbine load to raise  $T_{avg}$  to restore actual pressurizer pressure (by insurge).
- b. Take controller 431K to manual at 50% (to close the spray valves).
- c. Trip the bistables for the failed pressurizer pressure channel (to comply with Tech Specs).
- d. Trip the reactor and go to E-0 (Low pressurizer pressure ATWS has occurred).

Answer 55

- b. Take controller PCV 431 K to manual at 50% (to close the spray valves).

Question 56 C016.0137

(1 point(s))

During a large break LOCA, with all systems operating normally, which of the following is true regarding RVLIS instrumentation?

- a. The Tcold signal is used to calculate specific gravity and density compensation.
- b. The RCP delta pressure signal is removed from RVLIS calculations.
- c. The CET's signal is used to calculate specific gravity and density compensation.
- d. The RCS pressure signal and the Tcold signal used to calculate the degrees super heat signal.

Answer 56

- c. The CET's signal is used to calculate specific gravity and density compensation.

Question 57 B012.0029

(1 point(s))

The SI sequencer has started. Sequencing timer 2/SIP1C2 fails to operate. Which one of the following is correct regarding sequencer operation? (Reference Drawing #33013-1353, Sht 8)

"C" SIP will

- a) not start
- b) start at 7 seconds on bus 16
- c) start at 30 seconds on bus 14
- d) start at 37 seconds on bus 16

Answer 57

- b) start at 7 seconds on bus 16

Question 58 C010.0054

(1 point(s))

The plant has experienced a failed open ARV which is now isolated. When checking conditions in the pressurizer the operator finds the following:

Pzr pressure 2180 and decreasing

Pzr level 12% and decreasing

What would be the expected positions of the Pressurizer Heaters with the pressurizer pressure and level controllers in auto and operating normally.

- a. Proportional heaters at minimum, B/U heaters on
- b. Proportional heaters off, B/U heaters off
- c. Proportional heaters on full, B/U heaters off
- d. Proportional heaters on full, B/U heaters on

Answer 58

- b. Proportional heaters off, B/U heaters off

Question 59 C004.0113

(1 point(s))

A failure of the Temperature Control Valve TCV-130 caused a high letdown temperature and TCV-145 to divert. The operators have taken manual control of TCV-130 and are reducing temperature. Letdown temperature is currently 155 degrees Fahrenheit.

Which one of the following actions will be necessary to shift TCV 145 back to normal?

- a) reduce non regen Hx outlet temp to less than setpoint and valve will auto swap
- b) reduce non regen Hx outlet temp to less than setpoint and then take valve to DI position then back to auto
- c) reduce regen Hx outlet temp to less than setpoint and valve will auto swap
- d) manually swap TCV-145 back to the DI position since temperature is below that maximum temperature for the DI's.

Answer 59

- a) reduce non regen Hx outlet temp to less than setpoint and valve will auto swap

Question 60 C015.0142

(1 point(s))

There have been numerous events in the industry concerning mis-adjustment of NIS trip bistables as core conditions change (e.g., from BOL-EOL, or after a refueling outage).

Which ONE of the following would be the required adjustment of the Power Range high flux trip bistable for the stated condition? (meaning that the reactor would trip at the required condition/setpoint.)

The bistable adjustment should be:

- a. Left at the EOL setpoint after new fuel was loaded in the core.
- b. Lowered from the EOL setpoint after new fuel was loaded in the core.
- c. Increased from the EOL setpoint after new fuel was loaded in the core.
- d. Lowered from the BOL setpoint as the cycle progressed.

Answer 60

- b. Lowered from the EOL setpoint after new fuel was loaded in the core.

Question 61 C001.0072

(1 point(s))

During operation at 100% power, the following indications appear on the Microprocessor Rod Position Indication (MRPI) System CRT, System Status Page:

- Check System Status Pages      ACTUATED
- HDLC Protocol Status              NORMAL
- Data Reception Status              FAILED
- Fixed Field Reception Status      NORMAL

All other information appears valid on this and other screens. Which ONE of the following actions should be taken?

- a. Since all other MRPI information appears valid, continue operation and notify I&C of the system status.
- b. Only MRPI data is suspect, notify I&C of the system status and monitor the Plant Process Computer System (PPCS) for reliable information.
- c. Both MRPI and PPCS data is suspect, notify I&C of the system status and commence shutdown.
- d. Step rods in the controlling bank IN for two steps then OUT for two steps to verify positive control, and notify I&C.

Answer 61

- c. Both MRPI and PPCS data is suspect, notify I&C of the system status and commence shutdown.

Question 62 C000.0271

(1 point(s))

A precaution in ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure, states "Careful considerations should be given prior to defeating two (2) failed instrument channels to prevent an inadvertent reactor trip or safety injection."

With RCS Tavg channel 403, defeated which one of the following channel defeats would result in a Reactor trip?

- a. PRZR Press PI-431
- b. PRZR Press PI-449
- c. Steam Line Pressure PI-468
- d. Power Range Channel N-43

Answer 62

- b. PRZR Press PI-449

Question 63 C026.0032

(1 point(s))

Following a DBA LOCA, the Containment Spray System fails to actuate and cannot be manually started. Which of the following statements describes the effects of this failure?

- a. CNMT Pressure will remain higher for a longer period of time and the CNMT Atmosphere will contain more iodine. However, this will not have a significant effect on offsite dose.
- b. CNMT Pressure will remain higher for a longer period of time, but the CNMT Atmosphere Iodine levels will not be affected. Offsite doses will be slightly higher.
- c. CNMT Pressure will be largely unaffected, CNMT atmosphere iodine will be lower since recirculated sump water will not be sprayed into the CNMT. Offsite doses will be slightly lower.
- d. CNMT Pressure will remain higher for a longer period of time and the CNMT atmosphere will contain more iodine. Both will cause offsite doses to be higher.

Answer 63

- d. CNMT Pressure will remain higher for a longer period of time and the CNMT atmosphere will contain more iodine. Both will cause offsite doses to be higher.

Question 64 B029.0002

(1 point(s))

Select the signal which will automatically close the Containment Purge Supply and Exhaust Butterfly Valves.

- a. Containment Vent Monitor Alarm (R-10A)
- b. Plant Vent Monitor Alarm (R-13, 14)
- c. Containment Area Radiation Alarm (R-2, 7)
- d. High Containment Pressure 4.0 psig

Answer 64

- d. High Containment Pressure 4.0 psig

Question 65 C033.0034

(1 point(s))

The attachment in the Emergency Operating Procedures (EOPs) for transferring water from the Spent Fuel Pit (SFP) to the Refueling Water Storage Tank (RWST) on loss of recirculation capability only uses one SFP pump.

Which pump is used, and why?

- a. The 'A' pump is used because of its lower D/G power requirements.
- b. The 'A' pump is used because it does not trip on low level.
- c. The 'B' pump because the 'A' pump is locked off on an SI signal.
- d. The 'B' pump because the 'A' pump cannot be lined up to the RWST.

Answer 65

- b. The 'A' pump is used because it does not trip on low level.

Question 66 C006.0071

(1 point(s))

Which one of the following statements lists the setpoint and coincidence for the low steam line pressure SI?

- a. 514 psig on 2/3 channels on 2/2 steam lines.
- b. 514 psig on 2/3 channels on 1/2 steam lines.
- c. 350 psig on 2/3 channels on 1/2 steam lines.
- d. 350 psig on 2/3 channels on 2/2 steam lines.

Answer 66

- b. 514 psig on 2/3 channels on 1/2 steam lines.

Question 67 C059.0020

(1 point(s))

WHICH one of the following will cause the "A" S/G Feedwater bypass valve (FCV 480) to CLOSE when both the main FRV and bypass are in MANUAL? Assume initially at 100% power.

- A. "B" S/G pressure of less than 514 psig.
- B. Reactor trip with Tavg less than 554 degrees F
- C. Trip of both main feed pumps
- D. High level (85%) in "B" S/G.

Answer 67

- a. "B" S/G pressure of less than 514 psig.

Question 68 C041.0016

(1 point(s))

Consider the following two cases: Rods in manual for both cases, no operator action.

- I) A turbine runback from 45% power to no load conditions at 200% per minute (no reactor trip / no turbine trip)
- II) A turbine trip from 45% power (no reactor trip)

Regarding these cases, which of the following statements is correct?

- a. Control systems will maintain the same final steady state value of  $T_{avg}$  in both cases
- b. Case I will have a higher final steady state value of  $T_{avg}$  because of a higher reference  $T_{ref}$  signal.
- c. Case I will have a higher final steady state value of  $T_{avg}$  because it takes a higher  $\Delta T$  ( $T_{avg}-T_{ref}$ ) to operate steam dumps
- d. Case I will have a lower final steady state value of  $T_{avg}$  because it takes a smaller  $\Delta T$  ( $T_{avg}-T_{ref}$ ) to operate steam dumps

Answer 68

- c. Case I will have a higher final steady state value of  $T_{avg}$  because it takes a higher  $\Delta T$  ( $T_{avg}-T_{ref}$ ) to operate steam dumps

Question 69 C045.0083

(1 point(s))

Which one of the following statements describes the concern with operating with condenser backpressure in the Do Not Operate Range of Figure Back Pressure.

- a. Decreased plant efficiency.
- b. Condenser not designed for high pressure and could blow the rupture disks.
- c. Reduced margin to trip setpoint.
- d. Last row of turbine blades could experience severe vibration.

Answer 69

- d. Last row of turbine blades could experience severe vibration.

Question 70 C062.0057

(1 point(s))

Which of the following describes the major steps that the operators take to swap the 4160V Electrical System from 50/50 Normal Lineup to 50/50 Alterate Lineup?

- a.
  - 1) Turn on Synch Switch for Bus 12A Feed from 751
  - 2) Close 12A Feed from 751, 52/12AY
  - 3) Verify open 12A Feed from 767, 52/12BY
  - 4) Turn off Synch Switch
  - 5) Turn on Synch Switch for 12B Feed from 767
  - 6) Close 12B Feed from 767, 52/12BX
  - 7) Verify open 12B Feed from 751, 52/12AX
  - 8) Turn off Synch Switch
  
- b.
  - 1) Turn on Synch Switch for Bus 12A Feed from 767
  - 2) Close 12A Feed from 767, 52/12BY
  - 3) Verify open Bus 12A Feed from 751, 52/12AY
  - 4) Turn off Synch Switch
  - 5) Turn on Synch Switch for Bus 12B Feed from 751
  - 6) Close Bus 12B Feed from 751, 52/12AX
  - 7) Verify open Bus 12B Feed from 767, 52/12BX
  - 8) Turn off Sync Switch
  
- c.
  - 1) Turn on Synch Switch for 12B Feed from 767
  - 2) Close 12B Feed from 767, 52/12BX
  - 3) Verify open 12B Feed from 751, 52/12AX
  - 4) Turn off Synch Switch
  - 5) Turn on Synch Switch for Bus 12A Feed from 767
  - 6) Close 12A Feed from 767, 52/12BY
  - 7) Verify open 12A Feed from 751, 52/12AY
  - 8) Turn off Synch Switch
  
- d.
  - 1) Turn on Synch Switch for Bus 12A Feed from 751
  - 2) Close 12A Feed from 751, 52/12AY
  - 3) Verify open 12A Feed from 767, 52/12BY
  - 4) Turn off Synch Switch
  - 5) Turn on Synch Switch for Bus 12B Feed from 751
  - 6) Close Bus 12B Feed from 751, 52/12AX
  - 7) Verify open 12B Feed from 767, 52/12BX
  - 8) Turn off Synch Switch

Answer 70

- b. ) Turn on Synch Switch for Bus 12A Feed from 767

- 2) Close 12A Feed from 767, 52/12BY
- 3) Verify open Bus 12A Feed from 751, 52/12AY
- 4) Turn off Synch Switch
- 5) Turn on Synch Switch for Bus 12B Feed from 751
- 6) Close Bus 12B Feed from 751, 52/12AX
- 7) Verify open Bus 12B Feed from 767, 52/12BX
- 8) Turn off Sync Switch

Question 71 C063.0036

(1 point(s))

Which one of the following lists the possible power sources to the 1B DC Fuse Cabinet?

- A) 1B Battery Charger, 1B Main DC Distribution Panel, 1B Battery, TSC Battery
- B) 1B Battery Charger, 1B1 Battery Charger, 1B Battery, TSC Battery
- C) 1B Inverter, 1B1 Battery Charger, TSC Battery Charger
- D) 1B Inverter, 1A Inverter, TSC Battery Charger

Answer 71

- B) 1B Battery Charger, 1B1 Battery Charger, 1B Battery, TSC Battery

Question 72 B300.0041

(1 point(s))

Which one of the following is a design basis for requiring a minimum of 5,000 gallons of fuel for each D/G?

- a. Allows each D/G to carry its design rating loads for 12 hours.
- b. Allows each D/G to carry its design rating loads for 24 hours.
- c. Allows each D/G to carry its design rating loads for 48 hours.
- d. Allows each D/G to carry its design rating loads for 72 hours.

Answer 72

- b. Allows each D/G to carry its design rating loads for 24 hours.

Question 73 C072.0027

(1 point(s))

While removing a source, RP personnel drop it on the floor 10 ft. from Area Monitor R-9. If R-9 is reading 2 R/hr, what is the approximate dose rate 1 ft. from the dropped source?

- a. 20 R/hr
- b. 200 R/hr
- c. 2000 R/hr
- d. 20,000 R/hr

Answer 73

b. 200 R/hr

Question 74 C075.0054

(1 point(s))

The plant is operating at 45% power with both Circulating Water Pumps running. The "A" Circulating Water Pump trips. Which of the following states the effect on the plant and the required operator actions?

- a. Condenser vacuum will decrease to  $< 20$ " Hg. Trip the reactor and turbine. Control RCS temperature using the ARV's.
- b. Circulating Water Flow to the condensers will be unbalanced. This may require balancing the flows by isolating flow to the "A" condenser.
- c. Circulating Water Flow to the condenser will be unbalanced. This may require balancing the flow by throttling the outlet valves on the "B" condenser.
- d. Circulating Water Flow to the condenser will be unbalanced. This may require balancing flow by throttling the outlet valves on the "A" condenser.

Answer 74

- c. Circulating Water Flow to the condenser will be unbalanced. This may require balancing the flow by throttling the outlet valves on the "B" condenser.

Question 75 B078.0013

(1 point(s))

The unit is at cold shutdown for maintenance on an RCP. The following conditions exist:

- 'A' RCP is held for seal repair
- The 'C' Inst. and Sta. Service Air Compressors are both OOS.
- Inst. Air Compressors 'A' and 'B' are running with local control in 'constant run'
- The Breathing Air Compressor is aligned to service air per T-2F 'Backup Air Supply'

Subsequently annunciator H-16 "Instrument Air Comp" alarms shortly followed by H-8 'Instrument Air Lo Press 100 psi. MCB check reveals that the 'B' Inst. Air Compressor has tripped and Inst. Air header pressure is at 95 psig and slowly decreasing. Assuming no operator action and header pressure continues to slowly decrease, which one of the following describes the Inst. and Service Air System response.

- A. The 'A' Inst. Air Compressor will load at 90 psig and should return Inst. Air header pressure to normal.
- B. The 'B' Inst. Air Compressor will restart as soon as compressor temperatures return to normal and Inst. Air pressure should return to normal.
- C. The Service Air Crosstie Valve AOV-5251 should open and supply the Inst. Air header with backup air.
- D. Inst. Air header pressure will continue to decrease until the Containment Inst. Air Isolation Valve AOV-5392 automatically closes.

Answer 75

- C. The Service Air Crosstie Valve AOV-5251 should open and supply the Inst. Air header with backup air.

Question 76 C086.0025

(1 point(s))

Which of the following states the entry requirements for entering the Relay Room following a fire alarm which results in the Discharge of the Halon Fire Suppression System?

- a. Fire Brigade should enter immediately to assess the damage. SCBA's are required for the entry.
- b. Fire Brigade should enter to assess the damage 15 minutes following the discharge. No SCBA's are required unless smoke is present.
- c. Fire Brigade should enter to assess damage 15 minutes following the discharge. SCBA's are required for the entry.
- d. Fire Brigade should enter immediately to assess damage. No SCBA's are required unless smoke is present.

Answer 76

- c. Fire Brigade should enter to assess damage 15 minutes following the discharge. SCBA's are required for the entry.

Question 77 B000.0064

(1 point(s))

While performing a plant heatup, a steamline rupture occurred and could not be isolated. The conditions at the beginning of the steamline rupture were:

- Time is 1507
- RCS Pressure is 715 psig
- RCS Hot Leg Temperature is 349 degrees F
- RCS Cold Leg Temperature is 347 degrees F

During the event safety injection was actuated. The plant conditions are now:

- Time is 1607
- RCS Pressure is 1185 psig
- RCS Hot Leg Temperature is 251 degrees F
- RCS Cold Leg Temperature is 240 degrees F

To help ensure RCS integrity, the procedure which should be used is:  
(Reference: Figure 10.0, Limit A)

- a. FR-P.1 (Red path condition exists)
- b. FR-P.1 (Orange path condition exists)
- c. FR-P.2 (Yellow path condition exists)
- d. None - CSF SAT

Answer 77

- a. FR-P.1 (Red path condition exists)

Question 78 C002.0116

(1 point(s))

At 1100 the PRT level began to increase given the following information:

Time	1100	1130
Tavg	561°F	561°F
PRZR Level	50%	50%
PRT Level	70%	72%
PRT Temp.	77°F	83°F
PRT Press	0.7 psig	2.5 psig
VCT Level	35%	27%

Charging pump speed stable for the last 8 hours.

Which one of the following sources is the cause of the PRT parameter changes?

- a. Letdown Relief Valve (PCV-203)
- b. PRT Makeup Valve (AOV-508)
- c. Seal Return Relief (PCV-314)
- d. PORV (PCV 430 and/or 431C)

Answer 78

- a. Letdown Relief Valve (PCV-203)

Question 79 C008.0048

(1 point(s))

During normal 100% power operations, the operator notices that CCW Surge Tank level is decreasing. Which of the following could be the leak path out of the CCW System.

- a. Thermal Barrier Heat Exchanger
- b. Non Regenerative Heat Exchanger
- c. CCW Surge Tank Makeup Valve MOV 823
- d. CCW Heat Exchangers

Answer 79

- d. CCW Heat Exchangers

Question 80 C000.0861

(1 point(s))

Which one of the following statements describes the major mitigating strategy of FR-Z.3, Response to High CNMT Radiation Level?

- a. The post accident charcoal filters are checked to be in service (or placed in service) to reduce radiation levels.
- b. CNMT mini purge (or purge) is initiated to reduce radiation levels.
- c. The CNMT auxiliary charcoal filter system is placed in service to reduce radiation levels.
- d. CNMT spray is checked to be in service (or initiated) to reduce CNMT iodine.

Answer 80

- a. The post accident charcoal filters are checked to be in service (or placed in service) to reduce radiation levels.

Question 81 C000.0681

(1 point(s))

The plant has experienced a severe LOCA accident sequence resulting in containment hydrogen concentration reaching 8.0% with a containment pressure of 20 PSIG. Which of the following is true:

- a. Containment critical safety function orange path entry conditions are met, requiring transition from the procedure in effect to FR-Z.1.
- b. Emergency procedures require that the recombiners be used to lower the high hydrogen concentration present.
- c. Emergency procedures prohibit energizing the hydrogen recombiners to lower hydrogen concentration above the 4% flammability limit.
- d. The hydrogen recombiners are ineffective at removing such high concentrations of hydrogen.

Answer 81

- c. Emergency procedures prohibit energizing the hydrogen recombiners to lower hydrogen concentration above the 4% flammability limit.

Question 82 B320.0029

(1 point(s))

Turbine generator roll to synchronous speed is in progress per the O-1.2, Plant Startup from Hot Shutdown to Full Load. The initial first stage metal temperature is 125 degrees F. What is the maximum acceleration rate that can be selected?

- a. 25 rpm/min
- b. 50 rpm/min
- c. 100 rpm/min
- d. 200 rpm/min

Answer 82

- b. 50 rpm/min

Question 83 C039.0043

(1 point(s))

Which one of the following describes the motive force for opening the MSIVs?

- a. Spring Pressure
- b. Air Pressure
- c. Nitrogen Pressure
- d. Hydraulic Pressure

Answer 83

- b. Air Pressure

Question 84 C300.0117

(1 point(s))

MOV 3996 TDAFW discharge valve is failed and held closed at 100% power.

Which one of the following states the time limitations on continued power operation for this case:

A. immediate 3.0.3 entry

B. 4 hours

C. 72 hours

D. 7 days

Answer 84

C. 72 hours

Question 85 B062.0002

(1 point(s))

While operating at 100% steady state reactor power, (508 MW gross generator output), the load dispatcher calls the control room to have them adjust generator output voltage to 19.5 KV. Given the following generator ratings:

608 MVA

520 MW

.85 pf

What is the maximum MVAR output the operators can allow?

- a. 150 MVARs
- b. 200 MVARs
- c. 230 MVARs
- d. 315 MVARs

Answer 85

- b. 200 MVARs

Question 86 C051.0002

(1 point(s))

Following a short maintenance outage, procedure O-1.2, Plant from Hot Shutdown to Full Load, is in progress. Based on the following conditions and using AP-TURB.4, Loss of Condenser Vacuum, determine what actions are required.

Power is 100 MW (electric)

Alarm H-7, Condenser High Pressure 25.5" Hg

Condenser Vacuum is 25" Hg and decreasing slowly

Condenser Backpressure has been greater than 4.5" Hg for 7 minutes and is increasing slowly

- a) Increase turbine load to return back pressure to the Satisfactory Operating region.
- b) Trip the turbine and go to E-0, Reactor Trip or Safety Injection.
- c) Trip the turbine and go to AP-TURB.1, Turbine Trip without Reactor Trip Required.
- d) Reduce turbine load to return back pressure to the Satisfactory Operating Region.

Answer 86

- c) Trip the turbine and go to AP-TURB.1, Turbine Trip without Reactor Trip Required.

Question 87 C000.0709

(1 point(s))

The plant had been operating at 50% power for several days. ("A" MFP O.O.S. for maintenance)  
A severe plant transient occurs. The result is several automatic trip signals being generated without the reactor trip breakers opening; however, a manual trip WAS successfully performed. While stabilizing the plant at Hot Shutdown a review of control room instrumentation indicated the following simultaneous peak readings occurred during the transient:

- RCS pressure is 2385 psig
- Reactor power is 52%
- RCS Th is 670 degrees F
- RCS Tc is 640 degrees F
- RCS Tavg is 655 degrees F
- Both RCP's are running

Which of the following statements is correct:

- a. The Reactor Core Safety Limit was exceeded.
- b. The RCS Pressure Safety Limit was exceeded.
- c. Both the Reactor Core and RCS Pressure Safety Limit were exceeded.
- d. No safety limits were exceeded.

Answer 87

- a. The Reactor Core Safety Limit was exceeded.

Question 88 C000.1069

(1 point(s))

During operation at 100% power steady state, an inadvertent dilution caused rods to insert and delta I to go outside the target band. Which one of the following states the required actions.

- a. Reduce power to < 90% RTP within 15 minutes.
- b. Restore delta I to the band within 15 minutes or reduce power to < 90% RTP within an additional 15 minutes.
- c. Restore delta I to within the band with 30 minutes or reduce power to < 90% RTP within an additional 30 minutes.
- d. Restore delta I to within band within one hour or reduce power to < 50% within an additional 30 minutes.

Answer 88

- b. Restore delta I to the band within 15 minutes or reduce power to < 90% RTP within an additional 15 minutes.

Question 89 C310.0271

(1 point(s))

Maintenance is scheduled to be performed on Boric Acid Transfer Pump 1A due to a leaking seal. Which ONE of the following actions should be performed FIRST to ensure the work area is properly isolated in accordance with station hold rules?

- A. Place a BLOCK tag on the control board switch for the pump.
- B. Place a HOLD tag on the breaker for the pump casing heaters.
- C. Place a HOLD tag on the pump suction valve.
- D. Place a HOLD tag on the control power switch for the pump breaker.

Answer 89

- A. Place a BLOCK tag on the control board switch for the pump.

Question 90 C000.1070

(1 point(s))

The operators monitor four parameters to ensure that the safety analysis assumptions for SDM, ejected rod worth and power distribution peaking factors are preserved.

Which of the following list these parameters:

- a) Rod Insertion Limits, AFD, QPTR, and Rod Alignment Limits
- b) Rod Alignment Limits, Critical Heat Flux, AFD, and QPTR
- c) QPTR, DNBR, AFD and Rod Insertion Limits
- d) RCS Pressure, Rod Insertion Limits, Critical Boron Concentration, Critical Heat Flux

Answer 90

- a) Rod Insertion Limits, AFD, QPTR, and Rod Alignment Limits

Question 91 C034.0053

(1 point(s))

During movement of a recently (< 60 days) irradiated fuel assembly from the SFP side upender to the pit, the cable holding the spent fuel pit handling tool breaks. The fuel assembly drops to the fuel transfer canal floor. Gas bubbles are seen rising from the fuel assembly. SFP radiation monitor R-05 and the local cam is on alarm. All this information is reported to you in the control room via sound powered phone.

Which one of the following actions would be required for these conditions?

- A. Sound the Containment Evacuation Alarm
- B. Place the Plant Vent System in "Filters In" mode
- C. Order Auxiliary Building immediate evacuation
- D. Close the Fuel Transfer Tube Gate Valve

Answer 91

- C. Order Auxiliary Building immediate evacuation

Question 92 C000.1071

(1 point(s))

The Survey Center has been directed to provide immediate entry for Operations personnel in accordance with EPIP 3-3, Immediate Entry. Enroute to the TSC, radiation levels are higher than initially thought. What radiation level should not be traveled through, and who must grant permission for you to proceed?

- a) 2 Rem/hr, permission granted by Emergency Coordinator
- b) 5 Rem/hr, permission granted by Emergency Coordinator
- c) 2 Rem/hr, permission granted by Radiation Protection/Chemistry Manager
- d) 5 Rem/hr, permission granted by Radiation Protection/Chemistry Manager

Answer 92

- a) 2 Rem/hr, permission granted by Emergency Coordinator

Question 93 C000.1072

(1 point(s))

A Local Radiation Emergency has been declared and the SS directs you to perform EPIP 1-13. As Control Room Operator, which statement below describes some of those actions?

- a) If plant is at power, make an appropriate announcement, trip the reactor, and perform the immediate actions or E-0.
- b) For fuel handling accident in SFP, direct all personnel to exit through door leading to IB hot side and report to the Hop Shop.
- c) For evacuation of Containment Building, sound the Plant Evacuation Alarm.
- d) Take appropriate action to limit, contain and correct the condition. Referring to appropriate procedures as required.

Answer 93

- d) Take appropriate action to limit, contain and correct the condition. Referring to appropriate procedures as required.

Question 94 C000.1073

(1 point(s))

The RP Technician has issued a release for the A-Gas Decay Tank. He has advised you that the activity in the tank is elevated. What precautions, if any, are taken to release the A-Gas Decay Tank?

- a) Increase the setpoint of R-14 prior to releasing and initially throttle RCV 14 open to 50%
- b) Initiate release slowly, make small adjustments to RCV 14 allowing time for R-14 to stabilize.
- c) Initiate release by first opening RCV-14 to approximately 50%, R-14 reading should monitor the release in less than 1 minute
- d) Open RCV-14 fully to release as much of the tank as possible, record R-14 reading every 5 minutes for the RP's to calculate release dose rates.

Answer 94

- b) Initiate release slowly, make small adjustments to RCV 14 allowing time for R-14 to stabilize

Question 95 C000.0564

(1 point(s))

Which one of the following describe what operator actions are required when a YELLOW terminus is identified in the CSFSTs and assuming no higher CSF is indicated.

- A. Immediately proceed to yellow terminus procedure.
- B. Yellow path only applicable if in ES 0 series of procedures (ie no SI) or in E-0 if in post diagnostic loop (ie SI with cause unknown). If in these procedures immediately transition to yellow terminus procedure. If in any other EOP, increase monitoring of that CSF.
- C. Complete current step of EOP in affect then transition to yellow path terminus.
- D. Transition is at operator discretion based on evaluation of yellow path.

Answer 95

D) Transition is at operator discretion based on evaluation of yellow path.

Question 96 C000.1074

(1 point(s))

A fire alarm has been received on Fire Control Panel 1. What are the duties of a Control Room Operator?

- a) Determine whether the fire system is a "S" or "Z". For a "S" system, make an appropriate announcement to activate the Fire Brigade. For a "Z" system, notify the Fire Brigade Captain and Security to investigate.
- b) Determine whether the fire system is a "S" or "Z". For a "Z" system, make an appropriate announcement to activate the Fire Brigade. For a "S" system, notify the Fire Brigade Captain and Security to investigate.
- c) For either a "S" or "Z" system, make an appropriate announcement. This is performed using three short bursts of the "attention getter", announce twice over the Public Address System, then sounding the "Fire Alarm" for a minimum of 15 seconds.
- d) For either a "Z" or "S" system, make an appropriate announcement. This is performed by using five short bursts of the "attention getter", announce twice over the Public Address System, then sounding the "Fire Alarm" for a minimum of 5 seconds.

Answer 96

- c) For either a "S" or "Z" system, make an appropriate announcement. This is performed using three short bursts of the "attention getter", announce twice over the Public Address System, then sounding the "Fire Alarm" for a minimum of 15 seconds.

Question 97 C072.0028

(1 point(s))

During fuel handling operations, the operator observes bubbles coming from a spent fuel assembly. All Auxiliary Building ventilation is in a normal lineup.

Which one of the following RMS detectors will respond first to the leak?

- a. R5 (Spent Fuel Pit Area Monitor)
- b. R14 (Plant Vent Gas Monitor)
- c. R10B (Plant Vent Iodine Monitor)
- d. R13 (Plant Vent Particulate Monitor)

Answer 97

- b. R14 (Plant Vent Gas Monitor)

Question 98 G330.0269

(1 point(s))

Which of the following statements best describes the relationship between brittle fracture and nil ductility temperature?

- A. Below the nil ductility temperature, the probability of brittle fracture increases significantly.
- B. The probability of brittle fracture at high temperature decreases as the nil ductility temperature increases.
- C. Brittle fracture is more likely to occur above the nil ductility temperature.
- D. The probability of brittle fracture is not significantly affected by the nil ductility temperature.

Answer 98

- A. Below the nil ductility temperature, the probability of brittle fracture increases significantly.

Question 99 C003.0004

(1 point(s))

Which of the following statements is true when AOV-754A (CCW from RCP 1A Thermal Barrier) is closed.

- a. All CCW flow to both RCPs is stopped.
- b. All CCW flow to the A RCP is stopped.
- c. Flow to the A RCP oil coolers is stopped.
- d. Flow to the A RCP thermal barrier is stopped.

Answer 99

- d. Flow to the A RCP thermal barrier is stopped.

Question 100 B004.0004

(1 point(s))

During a recent performance of PT-2.9, Check Valve Exercising Quarterly Requirement, it was determined that the Containment CCW inlet to excess letdown Hx check valve (V-743) was not seating properly and was leaking. The leak was in excess of the design limits. If the leak could not be fixed and could not be isolated, what would be the maximum time before the plant needs to be in hot shutdown?

- a. 6 hours
- b. 72 hours
- c. 10 hours
- d. 78 hours

Answer 100

d. 78 hours