

**U.S. Nuclear Regulatory Commission  
Site-Specific  
Written Examination**

**Applicant Information**

Name:

Date: 8/22/03

Facility/Unit: Waterford III

Region: I / II / III / IV

Reactor Type: CE

Start Time:

Finish Time:

**Instructions**

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the exam you must achieve a final grade of at least 80.00 percent overall, with a 70.00 percent or better on the SRO-only items if given in conjunction with the RO exam; SRO-only exams given alone require an 80.00 percent to pass. You have eight hours to complete the combined examination, and three hours if you are only taking the SRO portion.

**Applicant Certification**

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

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

**Results**

RO / SRO-Only / Total Examination Values \_75.00\_ / \_25.00\_ / \_100.00\_ Points

Applicant's Scores \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ Points

Applicant's Grade \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ Percent

1.

The following conditions exist:

- The plant tripped on low Steam Generator Pressure
- SG #1 Pressure is 600 psia and lowering
- SG # 2 Pressure is 770 psia and steady
- All four (4) RCPs are running
- RCS Pressure is 1600 psia and lowering
- RCS Temperature is 530 °F and lowering
- Containment Pressure is 14.8 psia and steady

The proper action for the PNPO to take at this point would be to:

- A. Trip all four (4) Reactor Coolant Pumps
- B. Trip 1A and 1B Reactor Coolant Pumps
- C. Trip 1A and 2A Reactor Coolant Pumps
- D. Trip 2A and 2B Reactor Coolant Pumps

2.

Given the following plant conditions and assumptions:

- A PZR Safety Valve lifts prematurely at 2250 psia and then reseats at 2200 psia
- Quench Tank pressure is 15 psig and steady
- Assume ambient heat losses are negligible and the steam quality in the pressurizer is 100%

Determine the expected temperature downstream of the PZR Safety Valve.

- A. 212°F
- B. 250°F
- C. 636°F
- D. 652°F

3.

Reactor Coolant Pumps were secured following a Small Break LOCA. Which of the following conditions would indicate a problem with single phase natural circulation flow after flow has been established?

- A. Steam Generator pressures are rising
- B. T-hot is 490°F, Representative CET Temp is 498°F
- C. RCS sub cooling margin is 30°F and constant
- D. RCS loop delta temperature is 50°F and lowering

4.

Select the combination of Reactor Coolant System pressure and Low Pressure Safety Injection Train A flow that would be acceptable during the injection phase of a large LOCA.

- A. 175 psia 500 gpm
- B. 125 psia 2600 gpm
- C. 100 psia 2800 gpm
- D. 50 psia 3600 gpm

5.

Which of the following requires tripping the reactor and securing the affected RCP, per OP-901-130, RCP Malfunction?

- A. RCP motor amps indicate 350 amps.
- B. Motor bearing temperature is 250 °F.
- C. RCP seal bleedoff temperature is 195 °F.
- D. RCS seal bleedoff flow is 3 gpm.

6.

The plant status is as follows:

- Reactor power is 100%.
- Charging Pump B is running.
- Charging Pump A and AB control switches are in AUTO.
- Standby Charging Pump Selector Switch is in the AB-A position.
- Charging Pump B trips and no operator actions are taken.

SELECT the statement that describes the response of the Chemical and Volume Control System (CVCS) to this event.

- A. Charging Pump A will be the first pump to start on Pressurizer level deviation.
- B. Charging Pump AB will auto-start due to a detected fault on Charging Pump B
- C. Letdown will divert to the Holdup Tanks due to high temperature downstream of the Letdown Heat Exchanger.
- D. Letdown will isolate due to high temperature downstream of the Regenerative Heat Exchanger.

7.

The plant is in Mode 5 preparing to perform refueling. RCS level is at midloop. The reactor was shutdown 96 hours ago. RCS temperature is 128°F. The running LPSI pump trips. Determine the time to reach Mode 4 conditions. (Round times to the nearest whole minute)

- A. 8 minutes
- B. 10 minutes
- C. 12 minutes
- D. 14 minutes

8.

If Component Cooling Water flow has been lost to the AB Header due to system leakage and can NOT be restored within 3 minutes, then, in accordance with OP-901-510, Component Cooling Water System Malfunction, the following will be performed with the exception of:

- A. tripping the reactor.
- B. securing all Reactor Coolant Pumps.
- C. securing operating boric acid concentrators.
- D. securing operating CEDM fans.

9.

Given the following conditions:

- Pressurizer Pressure Channel Y is failed high at 2500 psia
- Pressurizer Pressure Channel X indicates 2080 psia and steady
- Pressurizer Pressure Channel Selector Switch is in Y
- Pressurizer Low Level Heater Cutout Switch is in BOTH
- Pressurizer Pressure Controller is in MANUAL and output is 100%
- Pressurizer Spray Valve Controller is in MANUAL and output is 0%

Verifying Backup heaters in operation and resetting the Proportional heaters can be accomplished after performing which of the following actions?

- A. The Pressurizer Pressure Channel Selector Switch and Pressurizer Level Channel Selector Switch are both placed in X.
- B. The Pressurizer Pressure Channel Selector Switch and Pressurizer Low Level Heater Cutout Switch are both placed in X.
- C. The Pressurizer Pressure Controller output is manually lowered to < 67%.
- D. The Pressurizer Pressure Controller is returned to the AUTO mode.

10.

Given the following conditions;

- The Reactor was manually tripped using Reactor Trip pushbuttons due to exceeding DNBR low setpoint.
- All CEAs are inserted.
- RCS temp is 530°F and dropping rapidly.
- All Throttle and Governor valves indicate open.
- Depressing Manual Turbine Trip and THINK pushbuttons failed to close Throttle and Governor valves

Which of the following methods is outlined in the Reactor Trip entry procedure for this condition?

- A. Lower Governor Valve limit to 0% using DEH.
- B. Dispatch NAO to locally trip Main Turbine.
- C. Depress Diverse Reactor Trip System pushbuttons.
- D. Close MSIVs on both main steam lines.

11.

A Steam Generator Tube Rupture has occurred in S/G 1 with a concurrent loss of offsite power. S/G 1 has been isolated at a pressure of 600 psia. The CRS orders an RCS pressure reduction to 50 psi above S/G 1 pressure.

Assuming the ruptured S/G remains at 600 psia, what is the highest RCS temperature allowed, in order to maintain 28 °F subcooled margin AND meet the CRS' instructions?

- A. 466 °F using T-hot Loop 1
- B. 466 °F using Representative CET Temperature
- C. 458 °F using T-hot Loop 1
- D. 458 °F using Representative CET Temperature

12.

OP-902-004, Excess Steam Demand Recovery, has a step to verify no more than two RCPs running if T-cold is  $< 500\text{ }^{\circ}\text{F}$  [ $515\text{ }^{\circ}\text{F}$ ]. The bracketed value would only be used when:

- A. Containment Pressure is  $\geq 16.4$  psia
- B. Containment Pressure is  $> 17.7$  psia
- C. Containment Temperature is  $\geq 120\text{ }^{\circ}\text{F}$
- D. Containment Temperature is  $\geq 200\text{ }^{\circ}\text{F}$

13.

Given the following conditions:

- Main Turbine was tripped due to high vibration
- The reactor was tripped and condenser vacuum was broken per OP-901-210, Turbine Trip
- Standard Post Trip Actions have been completed

Assuming no other malfunctions have occurred and the plant responded as designed, determine which Emergency Operating Procedure needs to be implemented.

- A. OP-902-001, Reactor Trip Recovery
- B. OP-902-003, Loss of Offsite Power/Loss of Forced Circulation Recovery
- C. OP-902-006, Loss of Main Feedwater Recovery
- D. OP-902-008, Functional Recovery

14.

A Station Blackout occurred at 0630. Assuming all systems functioned as designed and all appropriate actions are taken, when would you expect the 125 VDC AB battery to reach its' design limit and which load will most affect the mitigation of a Station Blackout regarding maintaining secondary heat sink?

- A. 0830, EFW AB speed control power.
- B. 0830, EFW FCV DC control power.
- C. 1030, EFW AB speed control power.
- D. 1030, EFW FCV DC control power.

15.

The plant is at 100% power when the ACCW pump B motor shorts phase to phase and the breaker does not trip. The B2 to B3 Tie Breaker opens on undervoltage. EDG B starts and the output breaker closes. The EDG B Sequencer Lockout light illuminates. All of the following are true **EXCEPT**:

- A. The ACCW pump B breaker should be racked out per OP-901-311, Loss of 4160 Safety Bus B.
- B. The Sequencer will stop the automatic loading process after the 17 Second Load Block is reached.
- C. CCW to the Spent Fuel Pool can be restored with only one CCW pump running.
- D. The Sequencer will automatically reset when the Sequencer Lockout condition clears.

16.

Which of the following live bus transfers will be performed locally by an NAO as a result of a loss of the TGB-DC battery and busses, per OP-901-313, Loss of a 125 V DC Bus when the plant is at 100% power?

- A. 1A bus from SUT A to UAT A
- B. 1B bus from UAT B to SUT B
- C. 2A bus from SUT A to UAT A
- D. 2B bus from UAT B to SUT B

17.

Essential Chiller A is running in Wet Tower mode. Which of the following would cause Essential Chiller A to trip?

- A. SIAS, until restarted by Sequencer
- B. ACCW Pump A motor trips on overcurrent
- C. High CCW Heat Exchanger A outlet temperature
- D. Output of controller for ACC-126A fails to 0%

**18.**

The Plant is operating at 54% power. Power escalation to 100% is in progress. An Instrument Air leak has developed and the location has not been identified. Instrument Air pressure continues to lower and a Reactor Trip is initiated by the Crew.

Alarms for Main Feedwater Isol Valves (FW 184A & B) Accumulator Press Lo and Air Reservoir Press Lo are in on CP-8 and plant conditions permit the closure of these valves.

Which of the following best describe why Both MFIVs should be shut?

- A. Control of the Startup Feedwater Regulating valves will be unreliable.
- B. The EFW valves have accumulators which will allow control of Feedwater flow to the Steam Generators.
- C. The Main Feedwater Isolation valves fail As Is on loss of Instrument Air.
- D. The Main Feedwater Regulating Valves fail As Is on loss of Instrument Air.

**19.**

Which of the following is the bases for the minimum temperature limit of Tech Spec 3.5.4 , Refueling Water Storage Pool?

- A. Ensures that boron will not precipitate out of solution and ensures freezing will not occur in the RWSP.
- B. Ensures HPSI Pump minimum NPSH remains satisfied at design flowrates with RWSP level approaching RAS setpoint.
- C. Ensures that containment pressure remains within analyzed conditions under design base accident conditions.
- D. Ensures the integrity of the RCS charging nozzles by preventing thermal shock conditions during a boration event.

**20.**

Given the following:

- Letdown and charging are being restored following a pressurizer level malfunction.
- Regen HX Shell Outlet Temperature is 375 °F
- Regen HX Tube Letdown Tube Outlet Temperature is 235 °F.

Under these conditions, what is the initial letdown flow allowed on restoration and how quickly is flow allowed to be raised per OP-002-005, Chemical and Volume Control?

- A. 16 gpm; 10 gpm/min
- B. 36 gpm; 10 gpm/min
- C. 16 gpm; 15 gpm/min
- D. 36 gpm; 15gpm/min

**21.**

The plant is in mode 3 ( $k_{eff} = .972$ ) with all rods fully inserted in the core. The primary NPO is in the process of filling up the pressurizer to 50% using charging pumps “A” and “B” and VCT auto makeup. The “AB” charging pump is in standby. The secondary NPO has just completed OP-903-101, startup channel functional test, for startup channel 2 and determined that the associated dilution high alarm failed to actuate. WHAT actions, if any, must be taken due to the failure of the dilution alarm.

- A. No actions are required since only the alarm part of the dilution monitor is out of service.
- B. RCS boron should be determined within 1 hour, 1 charging pump needs to be made inoperable, and monitor RCS boron at 0.5 hour intervals.
- C. RCS boron should be determined within 1 hour, 1 charging pump needs to be made inoperable, and monitor RCS boron at 2 hour intervals.
- D. RCS boron should be determined within 1 hour, 2 charging pumps need to be made inoperable, monitor RCS boron at 12 hour intervals.

**22.**

WHICH of the following conditions exceeds the Technical Specification for RCS leakage AND is defined as IDENTIFIED LEAKAGE?

- A. 0.5 gpm verified through both Reactor Vessel Head O-rings.
- B. 0.6 gpm quantified primary to secondary leakage through S/G 2.
- C. 7 gpm Controlled Bleedoff flow from Reactor Coolant Pump.
- D. 9 gpm leakage through a Pressurizer Safety Valve seat.

**23.**

The plant is experiencing a loss of condenser vacuum. Which of the following describe the value and reason when Steam Bypass Control System closes the Steam Bypass valves?

- A. 14 INHG, overpressurization protection for main condenser.
- B. 14 INHG, prevent overheating of last two stages of the LP turbine rotor.
- C. 3.4 INHG, prevent overheating of last two stages of the LP turbine rotor.
- D. 3.4 INHG, overpressurization protection for main condenser.

**24.**

Control Room Outside Air Intake 200.1 alarmed, causing CR EFU A to start and CR Ventilation to go into the recirc mode. After entering the High Airborne Activity in the CR Off-Normal OP-901-401, the CR staff performed Att. 1: Airborne Activity Survey Results.

Which of the following would indicate that an actual radiation release was in progress if the YES block was checked on the survey sheet?

- A. Alarm was due to electrical spike.
- B. Similar monitors indicate same conditions.
- C. Starting or stopping of equipment near Intake Ducts.
- D. Work activity in progress in Intake Ducts.

25.

During a LOCA, Containment Fan Cooler A trips on overcurrent. The CRS directs overriding and closing the CCW Isolation valves CC-808A, CC822A for Containment Fan Cooler A. Why is this done?

- A. To prevent steam formation in the CCW system.
- B. To ensure that CCW flow is maintained to the opposite train.
- C. To provide containment isolation for penetrations not in use.
- D. To maximize CCW flow to running ESF loads.

26.

All of the following represent operational characteristics important to single and/or two phase natural circulation **EXCEPT**:

- A. initiating SG heat removal  $\geq$  decay heat input to RCS
- B. maintaining RCS pressure IAW 28 deg subcooled curve
- C. maintaining Safety Injection flow IAW flow curves
- D. initiating hot and cold leg injection 2-4 hours post LOCA

27.

The crew is performing Standard Post Trip Actions during an Excess Steam Demand on SG 1 and are in the process of performing step 7 Verify Containment Isolation when the following is noted:

- RCS pressure is 1500 psia and rising.
- CET temperature is 450°F and slowly rising.

Determine the appropriate procedure to implement given these conditions.

- A. OP-902-009, Standard Appendices, Appendix 13, RCS Temperature Stabilization.
- B. OP-902-008, Safety Functional Recovery HR-1, RCS and Core Heat Removal via SG with SI not in operation.
- C. OP-902-008, Safety Functional Recovery HR-2, RCS and Core Heat Removal via SG with SI in operation.
- D. OP-902-004, Excess Steam Demand Recovery guidance for stabilizing RCS pressure and temperature.

**28.**

Which of the following is an automatic interlock associated with a Reactor Coolant Pump (RCP) Oil Lift Pump?

- A. The RCP will not start unless Oil Lift Pump has been running for two minutes.
- B. The RCP Oil Lift Pump will de-energize when the RCP reaches 90% speed.
- C. The RCP will not start unless oil lift pressure is greater than 400 psig.
- D. The RCP Oil Lift Pump will stop when the RCP control switch is placed in STOP.

**29.**

Given the following conditions:

- CEDM Fan C tripped and troubleshooting is in progress to determine the cause
- Electricians inadvertently actuate the Containment Penetration Secondary Protection feature associated with CEDM Fan C
- The AB buses are powered from the A side
- Charging Pump B is out of service with the breaker racked out and danger tagged

Determine the number of remaining available charging pumps.

- A. 0
- B. 1
- C. 2
- D. 3

30.

Given the following;

- The plant is in mode 5.
- Shutdown cooling is in service.
- The plant has been shutdown for 160 hours.
- RCS temperature is currently 150°F

Which of the following is the lowest value of flow(s) that meets or exceeds the requirements for heat removal and boron stratification prevention, per OP-009-005, Shutdown Cooling?

- A. A train SDC flow is 2600 gpm, B train SDC is in standby.
- B. A train SDC flow is 1500 gpm, B train SDC flow is 1400 gpm.
- C. A train SDC is in standby, B train SDC flow is 3600 gpm.
- D. A train SDC flow is 2000 gpm, B train SDC flow is 2100 gpm.

31.

All of the following will be met during design basis accidents, if Emergency Core Cooling Systems operate as designed, **EXCEPT**:

- A. Peak Cladding Temperature will be  $< 2200^{\circ}\text{F}$ .
- B. Hydrogen generation from clad interaction will be  $\leq 0.01$  of maximum.
- C. Long Term decay heat removal capability will be maintained.
- D. Clad oxidation thickness will be  $\leq 0.1$  of initial clad thickness.

32.

A Steam Generator Tube Rupture has occurred that resulted in an automatic SIAS/CIAS. Which of the following could result in a Quench Tank Rupture Disc failure and rising containment pressure, due to automatic alignment to the Quench Tank?

- A. RCP Control Bleedoff
- B. RCP Vapor Seal Leak Off
- C. Reactor Head Vent Header
- D. Pressurizer Vent Header

33.

- CCW pumps B and AB are operating
- CCW pump AB is replacing A with AB assignment switch in the “A” position
- AB bus is powered from the B train
- SIAS occurs concurrently with a Loss of Offsite Power
- EDG A and B start and the sequencer is timed out
- All equipment responded per design

Which of the following describes the status of the CCW pumps?

- A. CCW Pumps B & AB are running
- B. CCW Pumps A & B are running
- C. Only CCW pump B is running
- D. All CCW pumps are running

34.

A large insurge of water occurred in the pressurizer due to a load rejection from 69% power. Which of the following conditions, if present after the insurge, would cause the greatest pressure drop if a reactor trip occurs?

- A. Waterspace Temperature = 640 °F; PZR Pressure = 2060 psia
- B. Waterspace Temperature = 644 °F; PZR Pressure = 2180 psia
- C. Waterspace Temperature = 652 °F; PZR Pressure = 2240 psia
- D. Waterspace Temperature = 656 °F; PZR Pressure = 2300 psia

35.

The pressurizer pressure controller is in the MANUAL mode. RCS pressure is 2225 psia and slowly lowering. To raise RCS pressure to 2250 psia you MUST,

- A. Adjust pressure setpoint lower.
- B. Adjust pressure setpoint higher.
- C. Lower the controller output.
- D. Raise the controller output.

**36.**

The plant is at 100%. CPC A LPD and DNBR bistables are in bypass for I&C Maintenance. I&C will be causing these bistables to trip and reset. While this is going on, CPC B fails and trips its LPD and DNBR bistables. What actions should the crew take as a result of this event? Assume I&C cannot restore CPC A within the next 2 hours.

- A. Bypass CPC B LPD and DNBR bistables within 1 hour.
- B. Remove CPC A bistable bypasses and bypass CPC B bistables within 1 hour.
- C. Perform a warm restart of CPC B within 1 hour.
- D. Force CPC B LPD and DNBR bistables to remain in trip within 1 hour.

**37.**

Given the following:

- Containment Pressure is 17.5 psia on 8 of 8 digital indicators on CP-7
- The following red actuation lights are illuminated on the PPS ROMs on CP-7:
  - Channel A – MSIS, CSAS
  - Channel B – CIAS, SIAS, CSAS
  - Channel C – CIAS, CSAS
  - Channel D – CIAS, MSIS, CSAS

Which of the following must be actuated manually:

- A. SIAS
- B. MSIS
- C. CIAS
- D. CSAS

**38.**

The plant is at 100% power. The Channel A PZR Press Lo trip bistable is in bypass due to Safety Channel A pressure transmitter failing low. Subsequently, Channel D PPS Functional Test is performed as scheduled. The SNPO depresses the trip channel bypass pushbutton for the Channel D PZR Press Lo trip bistable. What is the result of this action if the SNPO stops at this point?

- A. Channel A and D are bypassed and trip logic is 1 out of 2.
- B. Channel A and D are bypassed and trip logic is 2 out of 2.
- C. Channel D does **NOT** bypass, Channel A is removed from bypass, a reactor trip and SIAS occur.
- D. Channel D does **NOT** bypass, Channel A is removed from bypass, a reactor trip and SIAS do **NOT** occur.

**39.**

A LOCA has occurred, RCS pressure is 1650 psia. OP-902-000 contingency actions are in progress. All of the following must be verified per OI-038-000 with the **EXCEPTION** of:

- A. HPSI pump A and B running.
- B. HPSI Train A and B Flow Control Valves open.
- C. SIAS Trip Path lights are not illuminated on CP-7
- D. SI 106A and B RWSP Outlet valves open.

**40.**

Which of the following provide electrical power to the Containment Fan Coolers.

- A. MCC 311A and MCC 311B
- B. MCC 312A and MCC 312B
- C. MCC 313A and MCC 313B
- D. MCC 317A and MCC 317B

**41.**

Given the following:

- A LOCA is in progress.
- Containment pressure is 17.4 psia.
- An Operator is verifying ESFAS automatic actions per OP-902-009, Standard Appendices.

What is the expected position of the Containment Cooling System Safety Dampers and which ESFAS signal causes them to reposition?

- A. Closed, SIAS
- B. Closed, CSAS
- C. Open, SIAS
- D. Open, CSAS

**42.**

Given the following:

- A small break LOCA has occurred, SIAS has actuated.
- Containment pressure is 17.2 psig and slowly rising.
- All equipment operates as designed.
- The PNPO inadvertently takes each Containment Spray Pump hand switch to OFF even though the pumps are NOT running.

How will the Containment Spray System respond if Containment Pressure rises to 18 psia?

- A. CS 125A and B automatically OPEN, but the pumps must be manually started.
- B. CS 125A and B automatically OPEN and the pumps will automatically start.
- C. CS 125A and B remain CLOSED, and the pumps remain OFF. CS 125A and B must be manually opened and the CS pumps automatically start.
- D. CS 125A and B remain CLOSED, and the pumps remain OFF. CS 125A and B must be manually opened and the CS pumps must be manually started.

43.

The plant is operating at 90% when the PNPO notices  $T_{\text{COLD}}$  dropping and Power rising. Which of the following would give these indications?

- A. Governor Valve 1 DEH valve position limit fails to 150%.
- B. Main Steam crossover header pressure transmitter MS-IPT-1010 fails high.
- C. EH-118, EH Emergency Trip Header Interface, fails open.
- D. Atmospheric Dump Valve #1 setpoint failed to 800 psig.

44.

A Steam Generator Tube Rupture SGTR has occurred. OP-902-007 is in progress. The following conditions exist:

- SG1 level 81% WR, SG1 Pressure 1000 psia.
- SG2 level 80% WR, SG2 Pressure 1000 psia.
- PRM-ERE-5500A Main Steam Line 1 reads  $2.3 \times 10^2$  mR/hr.
- PRM-ERE-5500B Main Steam Line 2 reads  $8.9 \times 10^{-1}$  mR/hr.

Which of the following actions would be appropriate per OP-902-007?

- A. Cool down RCS to 520 °F  $T_{\text{H}}$ , Isolate SG1
- B. Cool down RCS to 520 °F  $T_{\text{H}}$ , Isolate SG2
- C. Cool down RCS to 500 °F  $T_{\text{H}}$ , Isolate SG1
- D. Cool down RCS to 500 °F  $T_{\text{H}}$ , Isolate SG2

45.

Plant conditions are as follow:

- Reactor power is 18% following a Reactor Power Cutback due to a loss of the Main Turbine
- Both Steam Generator Feed Pumps are running
- All 3 Condensate Pumps are running

What would be the expected configuration of the Feedwater Pumps if SUT A feeder breaker to bus A1 were to trip and what procedure would be applicable as a result of this malfunction?

- A. Both FWPTs would be operating; OP-901-101, Reactor Power Cutback.
- B. Neither FWPT would be operating; OP-902-000, Standard Post Trip Actions.
- C. FWPT A would be operating; OP-901-101, Reactor Power Cutback.
- D. FWPT B would be operating; OP-902-000, Standard Post Trip Actions.

46.

Given the following:

- The plant is at 1% power and holding
- The Auxiliary Feedwater Pump is running and supplying both S/Gs
- Both Startup Feed Regulating Valves are 50% open
- Feedwater pressure downstream of the HP heaters is 1330 psig
- AFW Flow to each S/G is 150E+03 lbm/hr
- AFW temperature is 70 °F
- Condensate Storage Tank Level is 90%
- Auxiliary Feedwater Controller on CP-1 is in Manual

Startup Feed Regulating Valve 1 fails closed. What would be the response of the AFW system?

- A. The AFW flow control and pressure control valves reposition to prevent an AFW pump trip.
- B. The AFW pump would trip on low suction pressure after a 2 second time delay.
- C. The AFW pump would trip on recirc/discharge flow low after a 5 second time delay.
- D. The AFW pump would trip on high discharge pressure after a 0.75 second time delay.

**47.**

Emergency Feedwater System water hammer protection is provided by maintaining the discharge lines full of water directly from which of the following systems:

- A. Main Feedwater
- B. Blowdown System
- C. Condensate Makeup
- D. Component Cooling Water Makeup

**48.**

Emergency Diesel Generator A is being loaded to 4.4 MW for governor troubleshooting. Load is currently 2.2 MW and has been there for 4 minutes. What is the minimum amount of time it should take before the next plateau is reached if the loading sequence load rate recommendations of OP-009-002, Emergency Diesel Generator are followed and what is the reason for these limitations?

- A. 3 minutes to limit thermal stresses on the generator end.
- B. 3 minutes to limit thermal stresses on the diesel engine.
- C. 8 minutes to limit thermal stresses on the generator end.
- D. 8 minutes to limit thermal stresses on the diesel engine.

**49.**

During 100% power operations, a routine inspection of battery 3A-S revealed that one the battery cells voltage was out of its' category A limits. Further troubleshooting indicates that another cell's voltage is 2.05 volts. Electrical maintenance has informed you that it will take 36 hours to correct the cell voltages. You should:

- A. Verify All Category B values for Battery 3A-S are within allowable limits within 24 hours.
- B. Demonstrate either the 3A1-S or 3A2-s Battery charger operable within one hour and every 8 hours thereafter.
- C. Declare the battery inoperable and go to Mode 3 within 2 hours, Mode 5 in the following 30 hours.
- D. Declare the battery inoperable and go to Mode 3 within 8 hours, Mode 5 in the following 30 hours.

**50.**

A post maintenance break-in run for EDG B has been drafted by the System Engineer following major engine maintenance. You are assigned to review the proposed break-in run and resolve conflicts with the the normal operating procedure.

EDG B Break-in run:

1. Manually start EDG B and run for 5 minutes unloaded.
2. Synch, and load EDG B to 1.1 MW/1MVAR over 2 minutes and maintain this load for 2 hours.
3. Load EDG B to 2.2 MW/1 MVAR over 2 min and maintain this load for 4 hours.
4. Load EDG B to 3.3 MW/1MVAR over 2 min and maintain this load for 5 minutes.
5. Unload EDG B to 0.5 MW/1 MVAR and maintain this load for 15 minutes.
6. Unload EDG B to 0.1 MW/0.1 MVARs and open EDG B output breaker.
7. Place EDG B C/S to STOP and verify EDG B stops after 5 minutes.

Based on the above break-in run instructions and guidelines contained in OP-009-002, what change, if any, would you request prior to implementing.

- A. No changes are necessary to the break-in run, all requirements of OP-009-002 are met.
- B. Delete step 5 for unloading to 0.5 MW/1 MVAR and go directly to step 6 for unloading to 0.1 MW/1 MVAR.
- C. Replace step 4 with a step to load EDG B in 0.5 MW increments every 20 minutes to between 4.0 and 4.4 MW/1 MVAR and hold for 4 hours.
- D. Request a change to step 7 to delete the requirement to verify that EDG B runs for an additional 5 minutes after taking the C/S to stop.

**51.**

Control room intake monitors ARM-IRE-0200.1(Control room North isol. rad mon), and ARM-IRE-0200.2 (Control room North isol. rad mon) have been declared inoperable.

Which of the following actions are required for this condition?

- A. Initiate control room emergency ventilation in recirc mode within 1 hour.
- B. Manually close Emergency outside air intake dampers .
- C. Initiate preplanned alternate method of sampling intake air within 8 hours.
- D. Restore to operable status within 72 hours.

**52.**

Which of the following Process Radiation Monitors will isolate an effluent release if a malfunction causing a spike above the high setpoint occurs?

- A. SG Blowdown PRM-IRE-0100B
- B. Component Cooling Water AB PRM-IRE-5700
- C. FHB exhaust PIG PRM-IRE-5107A
- D. Industrial Waste Sump PRM-IRE-6778

**53.**

Which of the following events/conditions will result in an automatic start of an ACCW pump?

- A. Loss of power to MCC 313A
- B. WCT Basin temperature exceeds 95°F
- C. Sequencer test switch taken to the TEST position
- D. Manual start of an Emergency Diesel Generator

**54.**

An Instrument Air leak has occurred in the Turbine Building. The CRS notes that instrument air receiver pressure IA-IPI-9700 indicates 60 psig on CP-1 and the PMC. What course of action should the CRS order?

- A. Align Essential Air nitrogen banks 1, 2, 3, and 4 to their associated Instrument Air valves.
- B. Commence a plant shutdown in accordance with OP-010-005, Plant Shutdown.
- C. Commence a plant shutdown in accordance with OP-901-212, Rapid Plant Power Reduction.
- D. Perform a manual reactor trip and go to OP-902-000, Standard Post Trip Actions.

**55.**

CVR-3033B, Containment/Annulus B DP Instrument Equalizing Valve was left open during the last calibration of Containment to Annulus D/P instruments CVR-IDPIS-5221A and B and CVR-IDPIS-5220A and B. Determine the effect of leaving this valve open.

- A. CVR-101 would open at 8.5 inches of water differential pressure and CVR-201 would open at 10 inches of water differential pressure.
- B. CVR-201 would open at 8.5 inches of water differential pressure and CVR-101 would open at 10 inches of water differential pressure.
- C. Both CVR-101 and CVR-201 would open at 8.5 inches of water differential pressure.
- D. Both CVR-101 and CVR-201 would open at 10 inches of water differential pressure.

**56.**

OP-010-003 requires the operator to emergency borate and fully insert all CEAs if criticality is anticipated at or below 60 inches on Group 5.

This ensures adequate protection against the effects of \_\_\_\_\_ event.

- A. a continuous CEA group withdrawal
- B. a CEA Subgroup misalignment
- C. an ejected CEA
- D. an Individual CEA misalignment

**57.**

Which of the following is the power supply to the Proportional Heater Bank 2?

- A. 480 VAC Bus 32A.
- B. 480 VAC Bus 32B
- C. 480VAC emergency bus 31A
- D. 480VAC emergency bus 31B

**58.**

Given the following conditions;

- The Plant is in mode 3
- Shutdown Bank A is being withdrawn.
- CEA Pulse Counter for CEA 28 reads 22 inches
- Reed Switch Position Transmitter 1 (RSPT 1) for CEA 28 is OOS
- Reed Switch Position Transmitter 2 (RSPT 2) for CEA 28 reads 22 inches

Which of the following is the appropriate action if RSPT 2 were to fail for CEA 28?

- A. Restore one channel within 1 hour.
- B. Immediately open the Reactor Trip Breakers.
- C. Position CEA 28 to its' fully withdrawn position.
- D. Stop withdrawing CEAs and verify Shutdown margin within 1 hour.

**59.**

WHICH ONE (1) of the following is the initiating parameter for a Reactor Power Cutback when a main feed pump trips?

- A. Feedwater pump discharge pressure.
- B. Feedwater pump control oil pressure.
- C. Feedwater pump speed.
- D. Feedwater pump flow.

**60.**

A LOCA has occurred. Both Hydrogen Recombiners have been placed in service per OP-902-002. Hydrogen Recombiner Heater output is 100%. Hydrogen Recombiner B temp cannot be raised above 800°F.

Which of the following limits will not be exceeded for the duration of the event?

- A. 1% Containment Hydrogen Concentration
- B. 2% Containment Hydrogen Concentration
- C. 3% Containment Hydrogen Concentration
- D. 4% Containment Hydrogen Concentration

**61.**

Given the following:

- The plant is at 100% power.
- A containment purge is in progress per OP-002-010, RAB HVAC and Containment Purge.
- RAB Vent Mode selector switch is in CNTMT PURGE position.

WHICH one of the following automatically CLOSES CAP-203, Containment Purge Exhaust Inside Containment Damper?

- A. CAP-203, Containment Purge Exhaust Inside Containment Damper, travels past the 52° OPEN position.
- B. Containment to Ambient differential pressure is -8.5 inches water.
- C. Outside air makeup flow rate drops below a predetermined limit.
- D. A Hi-Hi alarm actuates on PRM-IRe-0100 (Containment Atmos. PIG Radiation Monitor).

**62.**

Which of the following would occur as a DIRECT result of LO-LO spent fuel pool level (41.6 ft)?

- A. Spent Fuel Pool Cooling Pumps trip
- B. CMU to Spent Fuel Pool Makeup Valve opens
- C. SFHM Hoist Up movement is disabled
- D. Fuel Handling Building Isolation Actuation occurs

**63.**

Given the following:

- All four LOSS OF TURB BYPASS keyswitches are in OFF.
- The LOSS OF LOAD keyswitch is in the TURBINE TRIP position.
- The LOSS OF TURBINE TRIP keyswitch is in ENABLE.
- REACTOR POWER CUTBACK DEMAND 1 and 2 signals have been generated.

Which of the following describe the status of the Reactor and the Main Turbine.

- A. Main Turbine tripped, Reactor tripped.
- B. Main Turbine tripped, Reactor not tripped.
- C. Main Turbine not tripped, Reactor not tripped.
- D. Main Turbine not tripped, Reactor tripped.

64.

Given the following:

- GDT A release is in progress.
- Containment purge in progress under continuous release permit.
- CONTAINMENT PURGE INTERRUPTED Annunciator is in alarm.

Which of the following is correct?

- A. GDT A release must be manually secured due to Plant Stack flow change.
- B. GDT A releases must be manually secured due to low Waste Gas Header flow.
- C. GDT A release will be automatically isolated due to low Plant Stack flow.
- D. GDT A release will be automatically isolated due to high Plant Stack activity

65.

- The plant is in Mode 5
- Main Condenser Waterboxes B1, B2, C1 and C2 are out of service to clean condenser tubes
- The LWM discharge flow instrument is inoperable.
- The LWM Rad Monitor is inoperable.
- The Low Level Trip of WCT Pump A is out of service

A Release Permit has been issued by the Shift Chemist to discharge WCT A to Circ Water. Which of the following must be done to approve release of WCT A?

- A. Return one of the required Waterboxes to service.
- B. Restore the LWM discharge flow instrument to operable.
- C. Restore the Low Level Trip for WCT Pump A to service.
- D. Restore the LWM radiation Monitor to operable.

66.

Which of the following is prohibited by OP-100-001, Operations Standards and Expectations?

- A. A makeup to the VCT performed by a non-licensed Level A NAO currently standing on the job training watches for Reactor Operator Class and supervised by the PNPO.
- B. A Shutdown Cooling Purification valve lineup verified by a Level B NAO who has successfully completed Level A NAO classroom training.
- C. An Essential Chiller A tagout performed by a Level A NAO trainee and supervised by a Level A NAO who also verifies the clearance.
- D. Moving CEAs for ASI control performed by a Reactor Operator, whose license is inactive per the requirements of 10 CFR 55, under the supervision of an operator with an active license.

67.

The plant is currently in mode 1 at 100% power. The following values are noted for the 1A and 1B Safety Injection Tanks (SIT).

	<u>Pressure</u>	<u>level</u>
1A	605 psig	38%
1B	665 psig	82%

Which of the following would be required to comply with operability requirements for both tanks?

- A. Lower 1B SIT pressure to 575 psig.
- B. Raise 1A SIT pressure to 675 psig.
- C. Raise 1A SIT level to 50%.
- D. Lower 1B SIT level to 50%.

68.

Given the following conditions:

- Letdown and charging in service.
- VCT oxygen concentration 3.15 % and steady.

Which of the following actions **AND** their reasons would be appropriate?

- A. Reduce VCT oxygen concentration to = 3% to prevent an explosive mixture.
- B. Reduce VCT oxygen concentration to = 3% to minimize corrosion.
- C. Reduce VCT oxygen concentration to = 2% to prevent an explosive mixture.
- D. Reduce VCT oxygen concentration to = 2% to minimize corrosion.

69.

All of the following apply to the administrative control of Temporary Alterations, with the EXCEPTION of:

- A. The Shift Manager is responsible for authorizing the installation and removal of Temporary Alterations.
- B. Jumpers, controlled per the Operating Procedure, to discharge Waste Condensate Tank A with the LWM Rad Monitor inoperable require a Temporary Alteration.
- C. Caution Tags should be placed on any remote or local control switches affected by the Temporary Alteration.
- D. Jumpers installed for troubleshooting a pump controller in accordance with specific work instructions and verifications do not require a Temporary Alteration.

70.

Which of the following evolutions would be classified as a CORE ALTERATION?

- A. De-tensioning and removing the reactor vessel head bolts.
- B. Reactor vessel head removal/installation.
- C. Engaging the Upper Guide Structure (UGS) lifting rig to the UGS.
- D. Raising the Upper Guide Structure (UGS) thimble support plate.

**71.**

Which of the following activities would require double valve isolation, if available, during 100 % power operation?

- A. Replacing a drain valve on a Heater Drain Pump Discharge.
- B. Packing replacement on a Station Air header Isolation valve.
- C. Installation of a vent valve on TCW return piping.
- D. Replacement of Oil Separator Sump Pump.

**72.**

Given the following conditions:

- SG 1 is in wet layup following a Steam Generator Tube Rupture in SG 1
- SG 2 is being discharged to Circ Water through the Blowdown system
- SG 1 will be discharged to Circ Water following completion of SG 2 discharge
- SG 1 discharge permit has not been prepared and samples have not been taken of SG 1 contents

During the release of SG 2, the PNPO notices that SG 1 level is lowering and Blowdown Containment Isolation Valves, BD-102A and BD-103A are open. What action should be taken for these conditions?

- A. Close BD-303, BD to CW or Waste Pond Isolation.
- B. Close BD-102A and BD-103A, S/G 1 Blowdown Containment Isolations.
- C. Verify BD-109A, S/G 1 Blowdown Flow Control Vlv.
- D. Sample S/G 1 and release both S/Gs simultaneously.

**73.**

The plant is in Mode 4, with Containment Purge in progress. Annual accumulated Containment Purge time for Tech Spec tracking is 65.2 hours. Which of the following conditions, requires you to secure Containment Purge?

- A. The Containment Purge duration is 25.0 hours.
- B. Ambient barometric pressure indicates 30.4 INHG.
- C. Loss of the data link from Met Towers to PMC > 1 hour.
- D. The plant changes modes from Mode 4 to Mode 3.

**74.**

aken separately, which of the following conditions could indicate a need to enter OP-901-102, Section E2, Immovable CEA?

- A. CEA GROUP MINOR DEVIATION ALARM.
- B. CEA AUTO MOTION INHIBIT ALARM.
- C. CEA WITHDRAWAL PROHIBIT ALARM.
- D. CEA DISABLED ALARM.

**75.**

Which of the following are correct concerning emergency notifications and communications?

- A. Waterford 1 and 2 shall be notified within 90 minutes of downgrading a classification via PABX.
- B. Louisiana Department of Environmental Quality (LDEQ) shall be notified within 60 minutes of changing a classification via the industrial Hotline.
- C. Waterford 1 and 2 shall be notified within 15 minutes of upgrading a classification via ENS.
- D. Louisiana Department of Environmental Quality (LDEQ) shall be notified within 15 minutes of downgrading a classification via the Operational Hotline.

76.

The reactor was at 100% power. Two CEAs fell into the core and the reactor was manually tripped. During Standard Post Trip Actions, the following items were reported:

- Feedwater Pump A tripped on low lube oil pressure.
- Startup Feedwater Regulating Valve B had to be manually placed to 20% open.
- Startup Transformer A differential current trip was detected and EDG A failed to start.
- Pressurizer Pressure dropped to a low value of 1950 psia and all Pressurizer Backup Heaters had to be manually started.

Assuming all other indications responded as expected for an uncomplicated trip. As CRS, which Emergency Operating Procedure would you transition to and why?

- A. OP-902-001, Reactor Trip Recovery, because procedure supports loss of power to one train of offsite power.
- B. OP-902-003, Loss of Offsite Power/Loss of Forced Circulation Recovery, due to loss of electrical busses.
- C. OP-902-006, Loss of Main Feedwater Recovery, due to loss of the feedwater pump.
- D. OP-902-008, Functional Recovery, due to not meeting all safety functions in OP-902-000.

77.

The following conditions exist:

- RCS Pressure is currently 1050 psia and stable.
- 100 gpm HPSI flow to each cold leg loop indicated on CP-8.
- Containment pressure and Quench Tank pressure are 25 psia and rising together.
- T-cold, T-hot, and Representative CET temperatures indicate 545 °F.
- QSPDS levels 1 through 6 indicate voided on QSPDS 1 and 2
- Vessel Plenum level on CP-7 reads 40%
- SG 1 level is cycling between 68 and 71% WR
- SG 2 level is 57% WR and dropping slowly
- Pressurizer level is 100%.

Which course of action should you order?

- A. Stop one HPSI pump and throttle flow on the other train.
- B. Stop Both HPSI pumps one pump at a time.
- C. Continue to allow full HPSI flow into the RCS.
- D. Restore Letdown to service and attain Pzr level 33 - 60%.

78.

Given the following:

- Containment Pressure = 18.0 psia
- S/G 1 pressure = 800 psia; S/G 2 pressure = 780 psia
- S/G 1 level = 70% WR; S/G 2 Level = 68% WR
- EFAS-1 and 2 were manually initiated and controllers are in Auto
- Representative CET temperature is 380°F
- RCS pressure = 250 psia
- RVLMS indicates 0% head level and 100% plenum level
- RAS has occurred
- LOCA occurred at 1520; Current time is 1800

Which of the following actions would be appropriate at this time?

- A. Reset Containment Spray Actuation Signal to minimize corrosion of containment components and H<sub>2</sub> generation.
- B. Align one train of Shutdown Cooling for operation and commence RCS cooldown.
- C. Restart one Reactor Coolant Pump in each loop to maximize heat removal capability.
- D. Depressurize the S/Gs to restore them as a heat sink and cool the RCS to restore subcooled margin.

79.

Given the following;

- The plant is in Mode 5.
- Shutdown cooling is in operation.
- RCS level currently at 15 feet 1 inch and lowering.
- Containment Sump and Safety Injection Sump levels rising.

Which of the following procedures would be fully implemented at this time?

- A. OP-901-111, Reactor Coolant System Leak.
- B. OP-901-131, Shutdown Cooling Malfunction.
- C. OP-902-002, Loss of Coolant Accident Recovery.
- D. OP-902-008, Functional Recovery Procedure.

**80.**

Which one of the following events requires a notification to the NRC via ENS within ONE hour?

- A. Exposure of .5 REM to the hands of a Radiation Technician while handling special nuclear material.
- B. The reactor failed to trip automatically when TWO RC pressure instruments exceeded their reactor trip setpoint.
- C. An unplanned reactor trip occurs from 100% power, due to failure of a main feedwater pump turbine.
- D. One train of HPSI is inoperable for two hours due to inadvertently isolating a train while hanging clearance tags.

**81.**

Given the following conditions;

- A tube rupture has occurred in S/G 1
- The main condenser is not available.
- A cooldown using the Atmospheric Dump Valves is required.
- MSL 1 Radiation Monitor reads 20 mR/hr.
- Met. Tower data;
  - Wind Speed = 1.8 m/sec
  - Differential Temp = -0.75 °C

Using the Nomogram, determine the projected TEDE dose at the exclusion area boundary for a 2 hour event duration.

- A. 50 mrem
- B. 100 mrem
- C. 160 mrem
- D. 200 mrem

**82.**

Given the following Conditions:

- At 0800 a Station Blackout occurred
- Restoration of AC power is not anticipated until 1130.

Which of the following describe when you as the CRS must instruct the NPO to have the steps for reducing unnecessary station Battery loads completed?

- A. 0815
- B. 0830
- C. 0845
- D. 0900

**83.**

While at 80% power, a shutdown bank CEA drops into the core. In accordance with the Tech Spec COLR, a downpower must be completed within \_\_\_\_\_ minutes to a maximum power level of \_\_\_\_\_, to ensure \_\_\_\_\_.

- A. 60,50%, the potential effect of CEA misalignment limited to acceptable levels.
- B. 45,60%, the potential effect of CEA misalignment limited to acceptable levels.
- C. 60, 50%, values used in CPCs for azimuthal power tilt remain valid.
- D. 45, 60%, values used in CPCs for azimuthal power tilt remain valid.

**84.**

The reactor is at 90% power. While performing OP-903-005, Control Element Assembly Operability Check, the following indications are noted while inserting CEA 41:

- CEAC 1 PID 041 = 144.25”
- CEAC 2 PID 041 = 143.5”
- CEA 41 Pulse Counter indication = 148.5”

All other CEA PIDs indicate 150.0” on CEAC 1 and CEAC 2 and Pulse Counter indication. Attempts to withdraw CEA 41 with I&C personnel monitoring CEA 41 at the CEDMCS panel results in the following indication:

- CEAC 1 PID 041 = 144.25”
- CEAC 2 PID 041 = 143.5”
- CEA 41 Pulse Counter indication = 150.75”
- I&C reports CEA 41 ACTM card is malfunctioning

Based on these indications, what actions are required?

- A. Enter 3.1.3.1 action a only
- B. Enter 3.1.3.1 action a and 3.1.3.1 action d
- C. Enter 3.1.3.5 only
- D. Enter 3.1.3.5 and 3.1.3.1 action d

**85.**

A liquid radioactive release of the Boric Acid Condensate Tank is to be performed.

Given the attached Liquid Radioactive Waste Release permit for your review, determine which of the following would give you grounds for not approving the release?

- A. CWPs available are less than CWPs required.
- B. Dilution Flow is less than minimum required.
- C. Max waste flow exceeds maximum limit allowed by procedure.
- D. Sample collected prior to minimum required recirculation time.

86.

Given the following;

- EDG B is out service for preventive maintenance
- HPSI pump B is out service for preventive maintenance
- LPSI pump B is out service for preventive maintenance
- Charging pump AB is out service for seal water replacement
- A cable spreading room fire is in progress.
- You have ordered a control room evacuation.

Which of the following components would you make the highest priority for returning to service?

- A. HPSI pump B
- B. EDG B
- C. LPSI pump B
- D. Charging pump AB

87.

Given the following:

- You are the SRO in charge of fuel handling.
- A core reload is in progress
- The phone talker informs you that the control room is being evacuated due to a fire in CP 8 and communications will be secured.
- Currently a new fuel bundle is being moved from the Spent Fuel Pool to the core and is inserted two feet into its core location.

Which of the following is the appropriate action?

- A. Secure all movement of the fuel bundle and suspend core alterations.
- B. Seat the fuel bundle in the core location, ungrapple the fuel bundle and reestablish communications prior to continuing.
- C. Return the fuel bundle to the Rx Bldg Upender and suspend core alterations.
- D. Raise the fuel bundle into the fuel mast and de-energize the Refueling Machine, reestablish communications prior to continuing.

88.

During calibrations of the Narrow Range (0-750 psia) Pressurizer Pressure loops, the following as-found values were obtained for the pressure interlocks that affect the following valves:

- SI-401 A, SDCS Loop 2 Inside Containment Upstream Isolation - 410 psia
- SI-401 B, SDCS Loop 1 Inside Containment Upstream Isolation - 425 psia
- SI-331 A, Safety Injection Tank 1A Isolation - 515 psia
- SI-332 A, Safety Injection Tank 2A Isolation - 518 psia

Which of the valves is inoperable?

- A. SI-401 A
- B. SI-401 B
- C. SI-331 A
- D. SI-332 A

89.

Given the following conditions:

- LETDOWN HX OUTLET TEMP HI (G-B1), annunciator in alarm.
- Letdown heat exchanger Temperature control CC-636 has failed closed due to a broken instrument air line.
- LD HX Tube Outlet Temperature CVC-ITI-0224, currently reads 200 °F and steady.

All of the following actions are applicable for the conditions given **EXCEPT**:

- A. Remove purification filter from service within 1 hour.
- B. Verify ion exchangers bypassed.
- C. Dispatch NAO to slowly open CC-636 Letdown HX TCV.
- D. Isolate charging and letdown.

90.

A Main Steam Line Break has occurred. A cooldown is desired. The following conditions exist:

- The reactor tripped one hour ago
- Two RCPs are operating
- $T_h$  is 450°F
- Condensate Storage Pool level is 72.7%
- DWST level is 45%
- EFW is supplying the intact Steam Generator

Evaluate Condensate inventory and determine the maximum time remaining to place Shutdown Cooling in service.

- A. 8 hrs
- B. 11 hrs
- C. 15 hrs
- D. 22 hrs

91.

Given the following;

- EDG A is being taken out of service for preplanned PMs to replace fuel oil and lube oil filters and replace lube oil.
- A temporary EDG is aligned for backup of EDG A.

Which of the following is **NOT** required to be performed at any time during the EDG A outage?

- A. OP-903-066, Electrical Breaker Alignment Check within one (1) hour of declaring EDG A inoperable.
- B. A manual start of EDG B within eight (8) hours of declaring EDG A inoperable.
- C. OP-903-068, Emergency Diesel Generator and Subgroup Relay Operability Verification.
- D. Restore EDG A to operable status within 10 days of taking the diesel out of service.

**92.**

Given the following initial conditions:

- The plant is in MODE 5 preparing for entry into MODE 6.
- An RCS drain down is in progress to install nozzle dams in each steam generator.
- PZR level is currently at 30% Cold Cal.
- Jumpers have been installed on 1 CET for QSPDS 1 and 1 CET for QSPDS 2 to facilitate the drain down, all other CETs are currently disconnected.
- The CRS notes that the dedicated CET from QSPDS 1 is no longer providing valid readings.

Which of the following would be required?

- A. Stop the RCS drain down immediately and refill to = 75% Cold Cal PZR level and restore at least two CETs from either QSPDS before continuing.
- B. Stop the RCS drain down before lowering RCS level < 5% Cold Cal PZR level and restore at least two CETs from either QSPDS before continuing.
- C. Stop the RCS drain down prior to lowering RCS level < 18 ft MSL and restore 1 CET from QSPDS channel 1 before continuing.
- D. Stop drain RCS down immediately and restore 1 CET from QSPDS channel 1 before continuing.

**93.**

ANP 102 goes closed due to Safety Injection actuation relay circuit failure, causing Annulus Negative Pressure (ANP) fans to secure.

Which of the following describe the compensatory measures required to be implemented.

- A. Establish a fire watch within 1 hour.
- B. Return a ANP fan to service within 8 hours
- C. After 14 days establish a fire watch within 1 hour.
- D. Verify annulus temperature less than 120°F once per hour.

**94.**

The plant is operating at 100% power. The Shift Manager on shift plans to observe the TB Watchstander perform a task in the plant.

What minimum requirement has to be met prior to the Shift Manager leaving the Control Room for the observation?

- A. Assign the STA (on shift) the Control Room Command function.
- B. Assign an SRO (other than the STA) the Control Room Command function.
- C. Log his beeper number and expected location in the Station Log.
- D. Perform a shift turnover to another qualified Shift Manager.

**95.**

The plant is operating at 100% power with Dry Cooling Tower Fans 2B, 6B, 7B, and 15A out of service. The control room is monitoring dry bulb temperatures every two hours. The last set of readings were taken 5 minutes ago and indicate as follows:

Dry Bulb Temperature = 84.3°F

You are informed via the Civil Defense Radio that National Weather has issued a Severe Thunderstorm Warning and a Tornado Watch for Tangipahoa, St. Tammany, Jefferson, Orleans, St. Charles and St. John parishes. Assuming no other equipment is out of service, which of the following describes the required actions to be taken?

- A. Enter TS LCO 3.7.4 Action a and perform actions within the required time frames.
- B. Enter TS LCO 3.7.4 Action b and perform actions within the required time frames.
- C. Enter TS LCO 3.7.4 Action c and perform actions within the required time frames.
- D. Remain in TS LCO 3.7.4 Action d and continue actions within the required time frames.

96.

The plant is in Mode 6 preparing to commence core alterations. Core alterations are scheduled to start on 8/22/03 at 1400. Refueling activities are currently on schedule. TS Boration flowpath is BAM Tank A and gravity feed valves via Charging Pump A. The following surveillances were last performed at the following times:

- OP-903-002, Boration Flowpath Valve Lineup Verification – 1800, 7/23/03
- OP-903-003, Charging Pump Operability Check, Charging Pump A – 1400, 5/10/03
- OP-903-101, Startup Channel Functional Test, Startup Channel 1 – 0500, 8/22/03
- OP-903-101, Startup Channel Functional Test, Startup Channel 2 – 0700, 8/22/03

Which surveillance must be performed prior to commencing core alterations, if refueling activities remain on schedule?

- A. OP-903-002
- B. OP-903-003
- C. OP-903-101, Channel 1
- D. OP-903-101, Channel 2

97.

Which of the following personnel are authorized to suspend core alterations?

- A. Shift Manager and Refueling Director
- B. Refueling Director and Refueling Controller
- C. Refueling Controller and Fuel Handling Supervisor
- D. Fuel Handling Supervisor and Shift Manager

98.

Given the following:

- A Large Break LOCA has occurred
- HPSI Pump A has developed a 40 gpm leak on the pump suction
- Attempts to isolate HPSI Pump A from the Safeguards Valve Gallery failed due to a broken reach rod on the suction isolation valve
- All ESF Pumps are taking a suction from the SI Sump
- An Emergency Team member has volunteered to enter Safeguards Pump Room A to close HPSI Pump A suction valve locally

The maximum allowed TEDE exposure that the Emergency Coordinator can authorize the Emergency Team member to receive while performing this evolution is:

- A. 10 REM
- B. 25 REM
- C. 75 REM
- D. 100 REM

99.

Given the following conditions:

- A pipe that carried Vinyl Chloride failed at Dow Chemical
- The leak has not been isolated
- Failure time was 09:50
- Current time is 09:56
- The plume travel time is 25 minutes, based on current wind speed
- Wind direction is from 135°

What emergency classification should you declare and which Tab of EP-004-010 should be implemented?

- A. Declare an Unusual Event and implement Tab A, Standby
- B. Declare an Alert and implement Tab B, Site Evacuation
- C. Declare an Alert and implement Tab C, Shelter
- D. Declare a Site Area Emergency and implement Tab C, Shelter

**100.**

OP-902-008, Safety Function Recovery Procedure has been implemented. Refer to the attached Safety Function Tracking Sheet and determine the priority for addressing the safety functions.

- A. 1, 2, 3, 4, 5, 6, 7, 8, 9
- B. 1, 7, 5, 2, 8, 3, 4, 6, 9
- C. 1, 7, 2, 3, 8, 4, 5, 6, 9
- D. 1, 5, 6, 2, 7, 3, 4, 8, 9