EXAMINATION ANSWER KEY

2007 NRC Reactor Operator Exam

1 **ID: Q10291** **Points: 1.00**

Given the following conditions:

- SPTAs are being performed
- CET temperature is 537°F
- RCS pressure indicates 1300 psia
- Containment temperature is 140°F
- Containment pressure is 1.7 psig
- Pressurizer level is 34% and rising
- Reactor Vessel Outlet Plenum level indicates 73%
- AFN-P01 is feeding both SGs
- Steam Generator 1 level is 50% WR and increasing
- Steam Generator 2 level is 45% WR and increasing
- HPSI Injection flow is adequate

Which one of the following conditions is correct concerning Safety Injection (SI) flow?

A. Throttle SI flow, RCS subcooling is adequate

B. Throttle SI flow to prevent a pressurized thermal shock condition

C. DO NOT throttle SI flow until either SG level is within 45 - 60% NR

D. DO NOT throttle SI flow, conditions indicate inadequate RCS inventory control

Answer: D

2 **ID: Q8658** **Points: 1.00**

The Unit has transitioned to two phase Natural Circulation flow (Reflux boiling) due to a small break LOCA with inadequate HPSI flow.

The Crew can enhance Reflux boiling by increasing ...

A. RCS T-cold to >550°F.

B. PZR level from 15 to 55%.

C. SG level from 10% to 50% N/R.

D. PZR pressure from 1500 to 1600 psia.

Answer: C

3 **ID: Q10365** **Points: 1.00**

Given the following conditions:

- Unit 1 was manually tripped from rated power due to a 10 gpm tube rupture on SG #1
- PBB-S04 tripped due to an 86 lockout on the bus
- Forced Circulation has been lost due to a failure of fast bus transfer
- The CRS is performing steps in 40EP-9EO04, SGTR
- SG #1 has been isolated
- Preparations are being made to cool down the RCS to Mode 5 in Natural Circulation

Based on these conditions, Cooldown rate is limited to ...

A. 30°F/hr due to RCS makeup capability

B. 30°F/hr to prevent asymmetrical steaming condition

C. 100°F/hr Tech Spec limit

D. 100°F/hr due to natural circulation flowrate limitations

Answer: B

4 **ID: Q10375** **Points: 1.00**

Given the following conditions:

- Charging has been secured due to a leak downstream of the Charging Pumps
- 40AO-9ZZ04, RCP Emergencies, has been entered

NOW**:**

- The Unit trips due to a LOCA
- Pressurizer pressure is currently 1500 psia and stable
- Containment pressure is 2.1 psig and slowly increasing
- Pressurizer level is 20% and stable
- RCS T-cold is 560°F
- RCS T-hot is 563°F
- RCP 1A seal 2 outlet temperature is 260°F
- RCP 2A seal 2 outlet temperature is 252°F
- Safety Injection flow is adequate
- RCPs 1A/2A have been secured

Which one of the following actions should be taken?

A. Trip the 1B/2B RCPs to prevent pump cavitation

B. Initiate CIAS, containment pressure is greater than setpoint

C. Isolate Seal bleedoff to the 1A/2A RCPs to prevent seal damage

D. Override and energize the class pressurizer heaters to restore pressurizer pressure

Answer: C

5 **ID: Q10357** **Points: 1.00**

Given the following conditions:

- Unit 1 is in Mode 4
- LPSI pump "B" is providing SDC flow
- RCS temperature 325°F
- Auxiliary Spray valve "B" fails open

NOW

- LPSI pump "B" amps are oscillating
- SIB-FI-307 (SD Cooling B HDR flow to Loops) is fluctuating
- Window 2B06A, SDC TRAIN A/B FLOW LO is alarming

Which one of the following events/conditions is taking place?

A. CHB-HV-530 has closed

B. LPSI pump B is "cavitating"

C. LPSI pump B is in a "runout" condition

D. Inadvertant B train Recirculation Actuation Signal (RAS)

Answer: B

6 **ID: Q10362** **Points: 1.00**

Given the following conditions:

- Unit 1 is at rated power
- Nuclear Cooling Water was lost
- Essential Cooling Water has cross tied to the Priority Loads
- Shutdown Cooling Heat Exchanger A room is posted as a "HIGH RADIATION AREA"
- The Reactor Operator is briefing an Auxiliary Operator (AO) to throttle EWA-HCV-53

To enter this area, the AO must.....

A. obtain a key from RP

B. have continuous RP coverage

C. be on a specific REP authorizing entry.

D. be authorized by a RP Department Leader

Answer: C

7 **ID: Q10315** **Points: 1.00**

Given the following conditions:

- Unit 1 is operating at rated power
- Pzr level control selector (RCN-HS-110) is positioned to "Y"
- Pzr pressure control selector (RCN-HS-100) is positioned to "Y"
- Pzr heater control selector (RCN-HS-100-3) is positioned to "BOTH"
- Letdown control valve selector (CHN-HS-110-1) is positioned to CH-110-P
- Pressurizer is in "Boron Equalization"
- NNN-D12 de-energizes, causing a loss of power to:

➢ RCN-LC-110X, PZR Level Control Channel "X"
➢ RCN-PIC-100, PZR Pressure Master Controller
➢ RCN-PIK-100, PZR Spray Valve Controller

Which of the following conditions is correct?

A. Letdown control valve closes

B. Proportional heaters will de-energize

C. Normally running charging pump will stop

D. Main spray valves can only be operated with manual output

Answer: B

8 **ID: Q10364** **Points: 1.00**

Given the following conditions:

- Unit 1 had been operating at rated power
- Main turbine tripped
- Reactor did not trip from Control Room
- Steam Bypass "Quick Open" failed to actuate
- An Auxiliary Operator successfully opened the RTSG breakers
- Pressurizer safeties lifted, RCE-PSV-200 did not reseat
- Containment pressure is 16 psig and increasing
- Containment temperature is 195°F and increasing

Which CR instruments are rated for use under these conditions?

A. ERFDADS only

B. Channel "B" instruments only

C. White placard instruments only

D. Channel "A" instruments located on Board 2 only

Answer: C

9 **ID: Q10317** **Points: 1.00**

Given the following conditions:

- Unit 1 has tripped from rated power
- CRS has entered 40EP-9EO04, Steam Generator Tube Rupture
- Containment pressure is .3 psig and stable
- PZR pressure is 1800 psia and stable
- All required ESFAS actuation have properly initiated

The Reactor Operator begins his alarm management responsibilities, which one of the following alarms should be addressed first due to a potential transition to the Functional Recovery Procedure?

A. LO PZR PRESS CH TRIP

B. LO RC FLOW SG2 CH TRIP

C. MN STM SAFETY RELIEF VLV TRBL

D. 525KV SWYD VOLT TRBL/WRF TRIP PERM

Answer: C

10 **ID: Q10318** **Points: 1.00**

Given the following conditions:

- Reactor has been manually tripped
- SPTAs are in progress
- No Operator actions have taken place
- PZR press is 1900 psia and DECREASING
- Containment pressure is 2.1 PSIG and INCREASING
- S/G pressures are 980 psia and DECREASING
- S/G #1 level is 30% WR and DECREASING
- S/G #2 level is 23% WR and DECREASING
- SG #1 feedrate is 0 gpm
- SG #2 feedrate is 2000 gpm

Which one of the following signals will cause SG #2 feedwater flow to stop?

A. LO PZR PRESS CH TRIP

B. LO SG 2 PRESS CH TRIP

C. HI CNTMT PRESS CH TRIP

D. SG 1 > SG 2 PRESS CH TRIP

Answer: D

11 **ID: Q10407** **Points: 1.00**

Given the following conditions:

- Unit 1 Reactor has tripped
- The CRS has entered 40EP-9EO09, Blackout
- "A" train sequencer has failed
- Auxiliary Operator reports the following alarms at DG "A" local alarm panel

➢ OVERSPEED ENGINE
➢ LUBE OIL LOW PRESSURE TURBO
➢ FAILURE TURBO THRUST BEARING

From this condition, which one of the following actions will start the "A" DG?

A. Press Reset on DGA-HS-29, Emergency Stop pushbutton

B. Reset the Overspeed Fuel Trip Solenoid and Intake Air Butterfly valves

C. Take CR handswitch DGA-HS-1 to start to pickup Override light, then to start again

D. Press any 2 of the 4 (UV-1 thru 4) test pushbuttons on the BOP ESFAS LOP/LS module

Answer: B

12 **ID: Q10322** **Points: 1.00**

Given the following conditions:

- Unit 1 has tripped due to a Loss Of Offsite Power
- The CRS has entered 40EP-9EO07, LOOP/LOFC
- Class buses are energized by their respective DGs

In accordance with the LOOP procedure, which buses need to be energized to ensure continued switchyard breaker operation?

A. NAN-S05 and NKN-D41

B. NAN-S05 and NKN-M45

C. NAN-S06 and NKN-D41

D. NAN-S06 and NKN-M45

Answer: B

13 **ID: Q10327** **Points: 1.00**

Given the following conditions:

- Unit 1 is operating at rated power
- Class inverter PNA-N11 AC output breaker has tripped open

Which of the following correctly identifies the effects on the "A" channel SG level and pressure indications/transmitters.

A. SG level and pressure indications fail low

B. SG level and pressure indications fail high

C. SG level indications fail low, SG pressure indications fail high

D. SG level indications fail high, SG pressure indications fail low

Answer: A

14 **ID: Q67322** **Points: 1.00**

Given the following conditions:

- Unit 1 is in Mode 5
- Battery Charger "A" (PKA-H11) has tripped
- Battery Charger "AC" (PKA-H15) is connected to the "C" Battery bus (PKC-M43)

Can the "AC" Battery Charger be aligned to both PKA-M41 and PKC-M43 at this time?

A. YES, provided the Unit remains in Mode 5

B. NO, a mechanical interlock prevents this alignment

C. YES, provided that the "A" battery is disconnected from PKA-M41

D. NO, this action may only occur while restoring the MVDC safety functions as implemented by the Lower Mode Functional Recovery Procedure

Answer: B

15 **ID: Q10328** **Points: 1.00**

Given the following conditions:

- All 8 RCP LO NCW FLOW alarms have annunciated

Which of the following conditions could have caused this event?

A. Containment pressure of 8.5 psig

B. Pressurizer pressure of 1837 psia

C. Instrument Air header is isolated to Containment

D. Loss of power to NCB-HV-401, Containment Isolation valve

Answer: A

16 **ID: Q10359** **Points: 1.00**

Which of the following is true regarding an Instrument Air pipe rupture in the Main Steam Support Structure (MSSS)?

A. Service Air will supply all loads

B. Accumulator will provide ADV operation

C. Low Pressure Nitrogen will supply all loads

D. Economizer Feedwater Isolation valves fast closure and slow mode of operation are available via the accumulator

Answer: B

17 **ID: Q4760** **Points: 1.00**

Given the following conditions:

- Unit 1 is at rated power
- RRS is selected to LOOP 1 Tavg.
- The Tcold instrument which supplies this indication fails LOW.
- Before the Operating Crew can address this failure, a Reactor Trip occurs.

Which of the following identifies the response of the Steam Bypass Control Valves (SBCVs) to this transient?

A. No SBCVs quick open.

B. All eight SBCVs quick open.

C. Only the group X SBCVs (1001 ,1003, 1004 and 1006) quick open.

D. Only the group Y SBCVs (1002 ,1005, 1007 and 1008) quick open.

Answer: A

18 **ID: Q10329** **Points: 1.00**

Given the following conditions:

- Unit 1 reactor has tripped
- AFA-P01 has tripped on overspeed
- AFB-P01 has tripped on an 86 lockout
- AFN-P01 is OOS for scheduled maintenance
- Feedwater flow to each SG is 0 gpm

Which of the following conditions is preventing Main Feedwater from feeding in RTO (Reactor Trip Override)?

A. T-cold instrument fails low

B. Steam flow instrument fails low

C. Downcomer flow instrument fails high

D. Feedwater temperature instrument fails high

Answer: A

19 **ID: Q10373** **Points: 1.00**

Given the following conditions:

- Unit 1 had been operating at rated power
- The Main Turbine tripped one hour ago
- Reactor power being held stable at 50%
- Subgroups 4, 5 and 22 are fully inserted
- CRS is taking actions per 40AO-9ZZ08, Load Rejection

Now

- Rx power is INCREASING
- Tcold is stable

Which of the following events could be in Progress?

A. Continuous CEA withdrawl

B. Expected Xenon reactivity effects

C. Steam Bypass Control Valve, SGN-HV-1001 has failed open

D. SGN-PT-1024, Main Steam Header Pressure, has failed low

Answer: A

20 **ID: Q10402** **Points: 1.00**

Given the following conditions:

- Rx has tripped from rated power
- SPTAs are in progress
- T-cold is 555°F and dropping
- SG levels are 20% WR and increasing
- SG pressures are 1100 psia and dropping
- SBCVs are closed
- AFAS 1 and 2 have initiated

Which one of the following requires SRO approval prior to performance?

A. Actuating MSIS

B. Isolation of SG blowdown

C. Tripping the main feed pumps

D. Overriding and throttling auxiliary feedwater valves

Answer: A

21 **ID: Q10370** **Points: 1.00**

Given the following conditions:

- Unit tripped from rated power
- SGTR exists in SG 1
- Pressurizer level is 35%
- RCS pressure is 1200 psia
- RCPs 1A & 2A in service
- HPSI has been throttled
- SG 1 is ISOLATED, pressure is 1100 psia and level is 10% NR
- SG 2 level is 60% WR and increasing
- Thot is 500°F and stable
- Tcold is 497°F and stable
- 2 Full strength CEAs are stuck out, 44 gpm boration in progress

The CRS has reached a step in 40EP-9EO04 (SGTR) to lower RCS pressure. Assuming a constant temperature, what would be the impact of reducing RCS pressure to 1000 pisa?

A. RCPs must be secured

B. Boron dilution of the RCS

C. Upper Head voiding could occur

D. Full HPSI flow would need to be established

Answer: B

22 **ID: Q10027** **Points: 1.00**

Given the following plant conditions:

- The Reactor was tripped due to a degrading condenser vacuum.
- Immediately after the trip, the Secondary Operator became involved with the B01 report.
- When this operator returned to B06, condenser backpressure is 6.0" HgA (highest shell).
- Steam Generator levels are both 65% WR.

Assuming no other Operator actions on B06, which of the following correctly describes the condition of the secondary plant?

A. No feed with SBCS valves 1001 & 1004 maintaining SG pressure until Condenser pressure reaches 7.5 inches HgA.

B. No feed, SBCVs 1001 thru 1006 locked out to prevent Condenser over pressurization and SBCVs 1007 & 1008 maintaining SG pressure.

C. Main Feed Pumps feeding in RTO with SBCS valves 1001 & 1004 maintaining SG pressure until Condenser pressure reaches 7.5 inches HgA.

D. Main Feed Pumps feeding in RTO, SBCVs 1001 thru 1006 locked out to prevent Condenser over pressurization and SBCVs 1007 & 1008 maintaining SG pressure.

Answer: D

23 **ID: Q10330** **Points: 1.00**

Given the following conditions:

- You are making a tour of the Turbine Building
- You discover an Oil leak at Main Feed Pump B
- There is a small amount of smoke coming off the lagging where the oil is dripping
- You have made the required notifications

In accordance with PVNGS plant policies and procedures which type of fire extinguisher is recommended for use on this class of fire?

A. CO_2 extinguisher

B. Pressurized water extinguisher

C. Any type of fire extinguisher is acceptable

D. ABC Multipurpose Dry Chemical extinguisher

Answer: D

24 **ID: Q10371** **Points: 1.00**

Given the following conditions:

- Control Room has been evacuated due to a fire
- CRS is performing actions per 40AO-9ZZ19, Control Room Fire
- You have been asked to verify SG levels

Per guidance found in 40AO-9ZZ19, how will SG levels be monitored?

A. "A" train "isolated" transmitters only

B. "B" train "isolated" transmitters only

C. Both trains of transmitters are "fire" qualified

D. I&C must be contacted to take "local" readings at the QSPDS panels

Answer: B

25 **ID: Q10332** **Points: 1.00**

The Post Accident Radiation Monitors (RU-150/151) are installed for the purpose of detecting (1) as an indication of (2).

A. (1) RCS Activity (2) Fuel Cladding Boundary Failure

B. (1) RCS Activity (2) RCS Pressure Boundary Failure

C. (1) Containment Activity (2) Fuel Cladding Boundary Failure

D. (1) Containment Activity (2) RCS Pressure Boundary Failure

Answer: A

26 **ID: Q9209** **Points: 1.00**

Given the following conditions:

- A loss of coolant accident (LOCA) has occurred.
- Several seconds after the trip, a lockout of PBA-S03 occurs.

As RCS pressure lowers from 500 to 200 psia the Reactor Operator should observe increasing HPSI ...

A. and LPSI flow to all RCS cold legs.

B. and LPSI flow to ONLY the 2A and 2B cold legs.

C. flow to all RCS cold legs and increasing LPSI flow to ONLY 1A and 1B cold legs.

D. flow to all RCS cold legs and increasing LPSI flow to ONLY 2A and 2B cold legs.

Answer: D

27 **ID: Q10333** **Points: 1.00**

Given the following conditions:

- The CRS has entered the Functional Recovery procedure
- RWT level is 7.0%
- You have been directed to verify proper Recirculation Actuation Signal (RAS)

Which of the following actions must be manually preformed given a proper "A" train RAS actuation?

A. Stop SIA-P01, LPSI pump A

B. Close SIA-UV-666, HPSI A pump Recirc valve

C. Open SIA-UV-674, Cntmt Sump to Safety Injection Valve

D. Close CHA-HV-531, RWT to Train A Safety Injection Valve

Answer: D

28 **ID: Q10334** **Points: 1.00**

Given the following conditions:

- Unit 1 has been tripped from rated power
- All 4 RCPs are secured due to an inter-system LOCA that could not be isolated
- SBCS is controlling T-cold at 562°F

Which one of the following represents the operational implications of this condition?

A. Low Tave may require manual control of SBCS due to Quick Open block being generated

B. High Tave may require manual control of the SBCS due to overcooling if left in automatic control

C. Low Tave may require manual Feedwater control due to the low Refill demand while in Reactor Trip Override

D. High Tave may require manual Feedwater control due to the high Refill demand while in Reactor Trip Override

Answer: D

29 **ID: Q10405** **Points: 1.00**

Given the following conditions:

- Unit 1 is operating at rated power
- 73ST-9CH06, Charging Pumps Inservice Test, is in progress
- Charging pump A is in operation and being tested
- Charging pump B is in PTL
- Charging pump E is in PTL

What would be the effect on the CVCS system if the inservice Letdown Control Valve (CHN-LV-110Q) were to fail open?

A. LD TO REGEN HX ISOL VLV (CHB-UV-515) will close, implement Loss of Letdown AOP

B. REGEN HX OUTLET ISOL VLV (CHB-UV-523) will close, implement Loss of Letdown AOP

C. RAD MON & BORON INLET/BYP (CHN-UV-521) will shift to bypass to prevent Boronometer damage

D. PUR IOXS INLET/BYPASS VLV (CHN-UV-520) will shift to bypass to prevent positive reactivity addition

Answer: A

30 **ID: Q8273** **Points: 1.00**

Given the following plant conditions:

- Unit 3 is operating at rated power.
- Pressurizer is in Boron Equalization.
- Charging Pump Mode selector switch is in 1-2-3
- Pressurizer Level Setpoint Control (RCN-LIC-110) is in Remote-Auto.
- The Level Control Selector (CHANNEL X/Y) switch is in CH-Y.
- The Heater Control Selector level Trip (CHANNEL X/Y) switch is in CH-Y
- A leak develops on the reference leg of Level Transmitter 110Y. This leak exceeds the capacity of the condensing chamber's ability to keep the reference leg full.

Because of this, you should expect Level Transmitter 110Y indicated level to**...**

A. increase causing an increase in letdown flow, implement 40AL-9RK4A to restore level control

B. decrease causing a trip of all Pzr heaters, implement 40AL-9RK4A to restore pressure control

C. increase causing a trip of charging pump 1, implement 40OP-9CH01 (CVCS Normal Operations) to restore normal charging pump configuration

D. decrease causing an auto-start of charging pump 3, implement 40OP-9CH01 (CVCS Normal Operations) to restore normal charging pump configuration

Answer: A

31 **ID: Q10376** **Points: 1.00**

Given the following conditions:

- Unit 1 is in Mode 5
- SDC in service using LPSI pump "A"
- SIA-HV-635, LPSI HDR A to RC Loop 1A, is closed
- SIA-HV-645, LPSI HDR A to RC Loop 1B, is full open
- You have been directed to raise RCS flow by 500 gpm while maintaining RCS temperature constant

Per 40OP-9SI01, Shutdown Cooling Initiation, which set of valves would be used to make this adjustment?

A. SIA-HV-691, (SDC A Warmup Bypass) and SIA-HV-657 (SDCHX Outlet to RC Loops)

B. SIA-HV-635 (LPSI HDR A to RC Loop 1A) and SIA-HV-691, (SDC A Warmup Bypass)

C. SIA-HV-635, (LPSI HDR A to RC Loop 1A) and SIA-HV-306 (LPSI SDCHX Bypass)

D. SIA-HV-306 (LPSI SDCHX Bypass) and SIA-HV-657 (SDCHX Outlet to RC Loops)

Answer: D

32 **ID: Q10386** **Points: 1.00**

Given the following conditions:

- Unit 1 is in Mode 5
- RCS pressure is 360 psia
- RCS temperature is 190°F

What automatic action would you expect to happen if RCS pressure were allowed to reach 410 psia?

A. Low Temperature Over Pressure (LTOP) relief lifts

B. Safety Injection Tank outlet valves receive an auto open signal

C. Bypass for Pressurizer pressure low signal (SIAS) is automatically removed

D. SI-UV-653, RC Loop 1 to SDC - LPSI pump A suction receives an auto close signal

Answer: B

33 **ID: Q10367** **Points: 1.00**

The following conditions exist in Unit 1:

- Unit is tripped concurrent with a Loss of Offsite power
- CRS is taking actions in accordance with 40EP-9EO04, SGTR
- An RO is venting the Reactor Head to the Reactor Drain Tank per Standard Appendix 15
- **NO** ESFAS signals are present
- RDT High Pressure alarm has annunciated
- RDT High Temperature alarm has annunciated

Which of the following effects will occur if RDT pressure and temperature continue to increase?

A. RDT vent valve to Containment opens on high RDT pressure

B. Reactor head vent valves to the RDT auto close on high RDT pressure

C. RDT vent valve to Waste Gas System will isolate on high RDT temperature

D. RDT pressurizes until the rupture disk fails, venting energy to Containment

Answer: D

34 **ID: Q10412** **Points: 1.00**

Given the following conditions:

- Unit is a rated power.
- A small SGTR occurs in SG #2.
- RU-142, Main Steam Line radiation monitor is in alarm
- The crew trips the reactor and performs SPTAs.
- SG levels are 50% WR

Which of the following is true in regards to RU-142 response following the trip?

A. Remains in alarm until SG 2 is isolated.

B. Clears due to the drop in N-16 production.

C. Clears due to the reduced primary to secondary D/P.

D. Remains in alarm until SG levels are raised to 45% NR.

Answer: B

35 **ID: Q10368** **Points: 1.00**

Given that Unit 1 is operating at rated power, with all systems aligned normally. Which one of the following conditions would cause Spent Fuel temperature to rise?

A. Spray Pond temperature rising

B. Loss of 480Vac MCC, NHN-M04

C. Loss of a Cooling Tower load center, NGN-L26

D. Closing down 2 turns on the Essential Cooling Water heat exchanger outlet valve

Answer: C

36 **ID: Q10388** **Points: 1.00**

Which of the following conditions maintains Pressurizer spray line temperature above the alarm setpoint at NOP/NOT?

A. A small orifice in the spray valve disc

B. A mechanical stop on the closed seat

C. A bypass line around the main spray valves

D. The spray valve controller maintains the valves slightly open

Answer: C

37 **ID: Q10374** **Points: 1.00**

Given the following conditions:

- Unit 1 is at rated power
- Pressurizer Master Controller, RCN-PIC-100, is in manual with a 33% output

If manual output were now changed to 55%, Proportional Heaters will be at _____ and Main Spray valves will be _____.

A. 0% output, Full open

B. 100% output, Full open

C. 0% output, Partially open

D. 100% output, Partially open

Answer: A

38 **ID: Q10336** **Points: 1.00**

Given the following conditions:

- Unit 1 is operating at rated power
- Channel "A" DNBR and LPD (parameters 3 and 4) are tripped and in bypass during performance of Core Protection Calculator (CPC) calibration

NOW

- CPC "C" trips due to an internal processor fault
- Channel "C" parameters 3 and 4 (DNBR, LPD) trip

From the list below select the condition that describes the Reactor Protection System response to this failure?

A. All Reactor Trip Switchgear breakers open

B. No Reactor Trip Switchgear breakers open

C. Only Reactor Trip Switchgear breaker C opens

D. Only Reactor Trip Switchgear breakers A and C open

Answer: B

39 **ID: Q63943** **Points: 1.00**

Given the following conditions:

- Unit 1 is operating at rated power
- Wide range Pressurizer pressure input (RCD-PT-102D) to the Plant Protection System (PPS) is behaving erratically

If RCD-PT-102D fails __(1)__ then a channel "D" __(2)__ will occur.

A. (1) Low (2) SIAS, CIAS and Low Pressure RPS Trip

B. (1) Low (2) CPC Auxiliary Trip and Low Pressure RPS Trip

C. (1) High (2) CPC Auxiliary Trip and High Pressure RPS Trip

D. (1) High (2) Supplemental Protection System Trip and High Pressure RPS Trip

Answer: A

40 **ID: Q10389** **Points: 1.00**

Given the following conditions:

- Unit 1 is operating at rated power
- The CRS directs an RO to initiate a SIAS from the Aux Relay Cabinets
- The RO performs the following actions:
- Depresses the 1-3 and 2-4 SIAS trip pushbuttons simultaneously on the "A" train
- Depresses the 1-3 and 2-4 SIAS trip pushbuttons sequentially (push then release) on the "B" train

Assuming that RCS pressure remains above the SIAS setpoint, you would expect an "A" train SIAS full initiation with ...

A. no initiation of the "B" train, "A" SIAS can be reset by depressing either reset pushbutton

B. a half leg initiation of the "B" train, "A" SIAS can be reset by depressing either reset pushbutton

C. no initiation of the "B" train, "A" SIAS can only be reset by depressing both reset pushbuttons simultaneously

D. a half leg initiation of the "B" train, "A" SIAS can only be reset by depressing both reset pushbuttons simultaneously

Answer: A

41 **ID: Q5254** **Points: 1.00**

With respect to the Containment HVAC system:

The Containment Normal ACUs are cooled by __(1)__ and the Control Element Drive Mechanism ACUs are cooled by __(2)__.

A. (1) Normal Chilled Water (2) Normal Chilled Water

B. (1) Normal Chilled Water (2) Nuclear Cooling Water

C. (1) Nuclear Cooling Water (2) Normal Chilled Water

D. (1) Nuclear Cooling Water (2) Nuclear Cooling Water

Answer: B

42 **ID: Q10399** **Points: 1.00**

Given the following conditions:

- Unit 1 has tripped due a LOCA inside Containment
- SIAS/CIAS/MSIS/CSAS have initiated
- Both Containment Spray trains have failed to actuate
- The CRS has entered the Functional Recovery procedure
- CTPC-2 is being implemented to supply CS flow using LPSI pump A

Which one of the below listed sets of parameters will be monitored to satisfy CPTC-2?

A. containment press and CS flow

B. containment humidity and CS flow

C. containment press and LPSI pump amps

D. containment humidity and LPSI pump amps

Answer: C

43 **ID: Q10340** **Points: 1.00**

Given the following conditions:

- Unit 1 is operating at 80% power
- Both Main Feedpumps are in service

There has been a malfunction of the steam admission poppet valve assembly to the A Main Feedpump Turbine. Assuming a loss of Hot Reheat Steam the "A" Main Feedpump Turbine will ...

A. trip, causing a RPCB

B. shift to Main Steam for it's steam source

C. shift to Cold Reheat Steam for it's steam source.

D. have no change, Hot Reheat Steam is the alternate steam source under the given conditions

Answer: B

44 **ID: Q10369** **Points: 1.00**

The Main Steam Safety Valves lift set points are established to ...

A. prevent the SGs from exceeding design pressure

B. protect the Main Steam piping from overpressurization

C. prevent the RCS Pressure Safety Limit from being exceeded

D. augment the Steam Bypass system during a Large Load Reject

Answer: C

45 **ID: Q15884** **Points: 1.00**

Assume that all Digital Feedwater Control System (DFWCS) input transmitters are in service and selected to AVERAGE.

- The plant is at 15.5% power.
- Power is being increased to 20%.
- Steam Generator #1 downcomer valve position is 80% and is opening slowly.
- Steam Generator #2 downcomer valve position is 70% and is opening slowly.

Concerning the DFWCS, which (if any) of the following automatic actions will occur?

A. Only Steam Generator #1 will go through swapover.

B. No DFWCS automatic action will occur until 16.5% power is reached.

C. Both Steam Generator #1 and Steam Generator #2 will go through swapover.

D. No DFWCS automatic action will occur until both Steam Generator downcomer valves are 80% open.

Answer: C

46 **ID: Q10342** **Points: 1.00**

Which of the below listed buses provides control power to AFB-P01, Auxiliary Feedwater Pump "B"?

A. PKB-D22

B. PKD-D24

C. PNB-D26

D. PND-D28

Answer: A

47 **ID: Q10396** **Points: 1.00**

Given the following conditions:

- Unit 1 tripped due to a FWCS malfunction
- AFA-P01 is OOS
- SPTAs are in progress
- SGs are being fed at 500 gpm with the AFB-P01
- AFAS-1 initiates
- The RO positions the "B" Aux Feed isolation valves AFB-UV-34/35 to open then closed

Which one of the following conditions is correct?

A. AFB-UV-34 is in override, 0 feed to SG #1, 500 gpm feedrate to SG #2

B. Both Aux Feed valves are in override, full feed to SG #1, 0 gpm to SG #2

C. No Aux Feed valves are in override, full feed to SG #1, 0 gpm feedrate to SG #2

D. Both Aux Feed valves are in override, 0 gpm feedrate to SG #1, 0 gpm feedrate to SG #2

Answer: C

48 **ID: Q66163** **Points: 1.00**

Given the following conditions:

- Unit 2 is operating at rated power.
- All Startup Transformers are initially in a normal lineup.
- Startup Transformer #1, NAN-X01, experiences a fault causing it to lockout.

30 seconds later, which of the following describes the condition of Unit 2?

A. PBA-S03 is energized by its respective DG.

B. PBB-S04 is energized by its respective DG.

C. PBA-S03 and PBB-S04 are both energized by offsite power.

D. Both PBA-S03 and PBB-S04 are both energized by their respective DGs.

Answer: A

49 **ID: Q10343** **Points: 1.00**

Given the following conditions:

- A 4160 V breaker was in the open position when a loss of breaker control power occurred.
- An Operator has been directed to operate this 4160 V breaker locally.

Which of the following is true of local manual operation of this 4160 V breaker if no breaker control power becomes available?

A. Both the closing and tripping springs must be manually charged prior to any local breaker manipulations being performed.

B. The breaker can be locally closed once without manually charging the closing springs, the tripping springs will charge as the breaker closes.

C. The breaker can be locally closed only after manually charging the closing springs, the tripping springs must be manually charged after the breaker closes.

D. The breaker can be locally closed once without manually charging the closing springs, the tripping springs must be manually charged after the breaker closes.

Answer: B

50 **ID: Q10400** **Points: 1.00**

Given the following conditions:

- Unit 1 is in Mode 6
- Refueling operations are in progress
- SDC train A is in Standby
- SDC train B is in Service
- Refueling LSRO reports lowering level in the Refueling Pool
- Auxiliary Operator reports that the A train LTOP has developed a leak
- SI-HV-653 is de-energized in the open position
- SI-HV-651 WILL NOT stroke closed

In order to isolate the LTOP from the Control Room, the RO must have the Auxiliary Operator energize SI-HV-653 from ...

A. PHA-M31

B. PGA-L33

C. PNC-D27

D. PKC-M43

Answer: D

51 **ID: Q10344** **Points: 1.00**

40OP-9DG01, section 7 (Unloading DG "A") contains a note and caution stating that the DG output breaker should be opened immediately once DG load is reduced below .5 MW.

What is the possible impact of continuing to lower load?

A. A Diesel Generator Differential trip may be activated

B. A Diesel Generator Undervoltage trip may be activated

C. A Reverse Power trip of the DG output breaker may be activated

D. A Negative Sequence trip of the DG output breaker may be activated

Answer: C

52 **ID: Q10345** **Points: 1.00**

Given the following plant conditions:

- Unit 2 is in mode 6.
- Containment Refueling Purge is in progress.
- All Containment Refueling Mode Isolation Valves have just closed

A failure of which of the following Radiation Monitors could have caused this condition?

A. RU-37, Power Access Purge

B. RU-33, Refueling Machine Area

C. RU-148, High Range in Containment Area

D. RU-34, Containment Building Refueling Purge

Answer: A

53 **ID: Q22406** **Points: 1.00**

Given the following conditions:

- Unit 1 is operating at rated power.
- NCN-P01A is in operation with NCN-P01B in standby.
- The Train A Emergency Diesel Generator is tagged out for maintenance.
- ESF Service Transformer NBN-X03 fails.
- This loss does NOT result in a Reactor Trip.

Based on these conditions, the Nuclear Cooling Water system will...

A. have no pumps running.

B. be unaffected (no change in pump operation).

C. remain in operation, however NCN-P01B is now running.

D. remain in operation, with both NCN-P01A and NCN-P01B in operation.

Answer: B

54 **ID: Q20772** **Points: 1.00**

Which of the following is the correct order of plant responses to lowering IA header pressure?

A. Standby compressor starts, Nitrogen backup, IA Header low pressure alarm.

B. IA Header low pressure alarm, Nitrogen backup, Standby compressor starts.

C. Standby compressor starts, IA Header low pressure alarm, Nitrogen backup.

D. IA Header low pressure alarm, Standby compressor starts, Nitrogen backup.

Answer: C

55 **ID: Q10347** **Points: 1.00**

Given the following conditions:

- Unit 1 has tripped from rated power
- SIAS/CIAS/MSIS have initiated
- WCA-UV-62 (CHW RETURN HDR OUTSIDE CNTMT ISOL VLV) thermals trip while the valve is 50% open and going closed

Which one of the following combination of conditions is correct, WCA-UV-62 is ...

A. closed, Blue SEAS light illuminated

B. closed, Blue SEAS light extinguished

C. 50% open, Blue SEAS light illuminated

D. 50% open, Blue SEAS light extinguished

Answer: B

56 **ID: Q10348** **Points: 1.00**

The #1 CEDM motor generator receives power directly from ...

A. NHN-M03

B. NHN-M10

C. NGN-L03

D. NGN-L10

Answer: C

57 **ID: Q10377** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is operating at rated power.
- Group 5 CEAs are currently at 130 inches for ASI control
- Tcold instrument (RCN-TT-111Y) fails low
- All RRS parameters are selected to average.

Which of the following is the correct response to this condition?

A. Low T-ave signal causes group 5 CEAs to withdrawal, CEDMCS must be taken out of AS

B. Maximum refill demand sent to Reactor Trip Override, requires manual feed control if Reactor trips

C. Prevents a Turbine Runback demand, would require manual Main Turbine Load control following a Reactor Power Cutback

D. Minimum level setpoint signal sent to the Pressurizer Level Control System, requires manual or local automatic control of Pressurizer level

Answer: D

58 **ID: Q10404** **Points: 1.00**

Which one of the following sets of parameters would be indicative of normal RCS flow and temperature at rated power in Unit 1?

A. Core DP = 50 psid, RCP DP = 70 psid, T-hot = 616°F

B. Core DP = 50 psid, RCP DP = 70 psid, T-hot = 621°F

C. Core DP = 70 psid, RCP DP = 110 psid, T-hot = 616°F

D. Core DP = 70 psid, RCP DP = 110 psid, T-hot = 621°F

Answer: C

59 **ID: Q10445** **Points: 1.00**

Unit 1 is operating at rated power when the following alarms occur:

- FWCS Process Trouble
- SG 1 in Single Element Control

Which one of the following conditions caused these alarms?

A. 4% deviation in SG 1 Control Channel signals

B. 10% deviation in SG 1 NR level signals

C. 8% deviation in SG 1 Feedwater Flow signals

D. 40% deviation in SG 1 Steam Flow signals

Answer: C

60 **ID: Q10352** **Points: 1.00**

What is the effect on the A train Reactor Vessel Level Monitoring System (RVLMS) if the level 1 heated thermocouple loses power?

A. Levels 1, 3, 5 and 7 will not function. A train RVLMS is Inoperable

B. The loss of the # 1 heated thermocouple disables the entire RVLMS channel. A train RVLMS is Inoperable

C. Voids can only be detected at level 1 if the unheated thermocouple reaches 700°F. A train RVLMS remains Operable

D. All levels will function normally, the heated thermocouple is only used to verify functionality during testing. A train RVLMS remains Operable

Answer: C

61 **ID: Q10353** **Points: 1.00**

Given the following conditions:

- Unit 1 has tripped from rated power
- CRS has entered 40EP-9EO03, Loss of Coolant Accident EOP
- Containment pressure is 15 psig and stable
- Containment Hydrogen levels are 3% and slowly increasing

The Crew should ...

A. place Hydrogen Recombiners in service immediately

B. place Hydrogen Recombiners in service only when directed by the TSC.

C. reduce containment pressure, place Hydrogen Recombiners in service at 8.5 psig

D. place Hydrogen Recombiners in service when Containment hydrogen exceeds 4%.

Answer: C

62 **ID: Q10126** **Points: 1.00**

Given the following conditions:

- Unit 1 is operating at rated power.
- PCA-P01 (Pool Cooling pump A) is operating.
- A LOP occurs on PBA-S03.
- All equipment operates as expected.

Assuming NO Operations actions, Spent Fuel Pool temperature will be ....

A. stable, with PCB-P01 running.

B. stable, with PCA-P01 running.

C. decreasing, with both PCA-P01 and PCB-P01 running.

D. increasing, with neither PCA-P01 or PCB-P01 running.

Answer: D

63 **ID: Q10354** **Points: 1.00**

Given the following conditions:

- Unit 1 is operating at rated power
- A small tube leak (SGTL) has been verified in SG #2

A "HIGH" alarm on which of the following monitors will cause the Post Filter Blower to shift to the "Thru Filter Mode"?

A. RU-140, Main Steam Line SG #2

B. RU-141 (channel 1), Condenser Vacuum/Gland Seal Exhaust

C. RU-142 (channel 3/4), Main Steam Line N-16

D. RU-143, Particulate & Iodine Channels

Answer: B

64 **ID: Q10410** **Points: 1.00**

Given the following conditions:

- Fuel Building Normal supply and exhaust fans have stopped
- Fuel Building Essential AFUs have started
- Control Room Essential AHU fans F04 A & B have started
- Essential Cooling Water Pumps A & B have started
- Essential Chillers A & B have started
- Essential Spray Pond Pumps A & B have started
- This is not an all inclusive list

Which one of the following conditions or actions could have caused these actuations?

A. Spent Fuel Pool area monitor RU-31 has tripped

B. Control Room Ventilation monitor RU-29 has tripped

C. Fuel Building Essential Ventilation System A (FBEVAS) has been actuated from B05

D. Control Room Essential Ventilation Actuation System A (CREFAS) has been actuated from B05

Answer: A

65 **ID: Q6820** **Points: 1.00**

Given the following conditions:

- Unit 1 is operating a rated power
- I&C is performing a calibration on Circ Water Pump A " Motor Cooling Water flow transmitter"
- Window 7A03A "CIRC WTR SYS TRBL" has alarmed several times due to this calibration

In accordance with the Conduct of Shift procedure which of the following statements correctly identifies Alarm Response Expectations to this alarm? This alarm may be placed in Fast Flash ...

A. with CRS concurrence

B. with CRS concurrence and periodic monitoring

C. by the Reactor Operator with a "Peer" check and periodic monitoring

D. by the Reactor Operator due to this transmitter being considered "Out of Service"

Answer: B

66 **ID: Q10409** **Points: 1.00**

Which one of the below listed groups of events each require the notification of Plant Personnel?

A. Reactor is at the Point of Adding Heat, Nitrogen is supplying the IA system, Main Condenser vacuum is being broken

B. Venting SITs to containment while in Mode 4, Reactor is at the Point of Adding Heat, Nitrogen is supplying the IA system

C. Nitrogen is supplying the IA system, Main Condenser vacuum is being broken, Venting SITs to containment while in Mode 4

D. Main Condenser vacuum is being broken, Venting SITs to containment while in Mode 4, Reactor is at the Point of Adding Heat

Answer: C

67 **ID: Q10411** **Points: 1.00**

Given the following conditions:

- You are performing a surveillance test on HPSI pump A
- An obvious typographical error exists in the procedure
- You stop the the activity, and contact your supervisor

Per 01DP-0AP09, Procedure Use and Adherence, you ...

A. must complete an ACT before you continue

B. must complete an TAPA before you continue

C. may continue on with the procedure and must generate an ACT after ST completion

D. may continue on with the procedure and must generate a TAPA after ST completion

Answer: C

68 **ID: Q10270** **Points: 1.00**

Given the following conditions:

- Unit 2 is in Mode 5
- Electrical Maintenance has requested that a procedurally controlled T-Mod be installed

Operations shall place a caution tag on all of the following EXCEPT the:

A. T-mod identifying the controlling document

B. Temporary power source identifying the load it is supplying

C. Normal power source indicating that it is not supplying the affected load

D. Affected component's handswitch identifying the source of temporary power

Answer: A

69 **ID: Q10392** **Points: 1.00**

Which one of the actions/conditions is correct per 73DP-9ZZ14, Surveillance Testing procedure?

A. No acceptance review is required for an "aborted" ST

B. Cycling a motor operated valve prior to ST performance is a good operational practice

C. Failed steps in an "partially completed ST" shall not be used in the determination of Operability

D. Reperforming steps of an ST is permitted provided this action is documented using replacement pages or ST log entries.

Answer: D

70 **ID: Q10356** **Points: 1.00**

The process of determining the Critical Rod position considers numerous conditions. Which one of the following conditions if changed would cause the critical rod position to be lower than calculated?

A. RCS pressure is lowered by 25 psia.

B. The boron concentration is raised by 15 ppm

C. The startup is delayed from 30 to 34 hours post trip.

D. The steam bypass pressure control setpoint is raised by 100 psig.

Answer: C

71 **ID: Q10403** **Points: 1.00**

Which one of the following conditions **IS NOT** required prior to placing the Containment Power Access Purge system in service?

A. Current release permit with start/stop times

B. Containment air grab sample has been obtained

C. Containment pressure must be less than .03 psig

D. Containment Building Refueling Purge monitor RU-34 must be in service

Answer: D

72 **ID: Q10358** **Points: 1.00**

Given the following conditions:

- The Unit has tripped from rated power
- The CRS has entered 40EP-9EO04, SGTR procedure

Which one of the following actions would cause an increase in the release to atmosphere?

A. Selecting OFF on SGN-HS-1007

B. Feeding the faulted SG using AFA-P01

C. Reducing RCS pressure to within 50 psia of the faulted SG

D. Commencing an RCS Cooldown to a T-hot of less than 540°F

Answer: B

73 **ID: Q10398** **Points: 1.00**

Given the following conditions:

- Unit 1 is at rated power
- RCP 1A has indications of Seal Failure
- CRS has implemented 40AO-9ZZ04, RCP Emergencies
- The CRS determines that RCP 1A has exceeded Trip Setpoints
- The CRS holds a brief, discussing tripping the 1A RCP

Which one of the following is the correct process to be followed?

A. Trip the 1A RCP, concurrently perform the SPTAs and RCP Emergencies AOP

B. Trip the 1A RCP, address reactivity safety function, concurrently perform the remaining SPTAs and RCP Emergencies AOP

C. Trip the Reactor, trip 1A RCP, address reactivity safety function, concurrently perform the remaining SPTAs and RCP Emergencies AOP

D. Trip the Reactor, address reactivity safety function, trip the 1A RCP, concurrently perform the remaining SPTAs and RCP Emergencies AOP

Answer: D

74 **ID: Q9586** **Points: 1.00**

Given the following conditions:

- Unit 1 has tripped from rated power due to a LOCA
- Pressurizer level is 20% and recovering
- RCS pressure is 1800 psia and dropping slowly
- RCS temperature is 563°F and stable
- HPSI flow is adequate

The Crew should stop ...

A. NO RCPs, NPSH and subcooling requirements are being met

B. 1B & 2B RCPs minimizing the chances of a "double sequencing" event

C. 1A & 2A RCPs to reduce the potential for RCS inventory loss should the LOCA event degrade

D. 2A & 2B RCPs leaving the loop 1 RCPs available in the event main spray is needed to support HPSI flow

Answer: C

75 **ID: Q60605** **Points: 1.00**

Given the following plant conditions:

- Unit 1 has experienced a LOCA
- Pressurizer level is 30% and increasing
- Pressurizer pressure is 1320 psia
- REP CET temperature is 520°F
- RCS T-hot is 516°F
- Containment temperature is 220°F and increasing slowly
- Containment pressure is 9 psig and increasing slowly
- PBB-S04 is locked out and on fire.
- Containment Spray 'A' flow is 4190 gpm
- HPSI pump 'A' injecting at 150 gpm per cold leg
- RCPs have been secured
- RVLMS indicates 73% in the upper head
- SG levels are 70% WR and increasing

Which one of the following Safety Functions is jeopardized?

A. Inventory Control

B. Pressure Control

C. Maintenance of Vital Auxiliaries

D. Containment Temperature and Pressure Control.

Answer: D

EXAMINATION ANSWER KEY

2007 NRC Senior Reactor Operator Exam

1 **ID: Q10379** **Points: 1.00**

Given the following conditions:

- RCP 1A trips.
- The Reactor fails to automatically trip.
- Reactivity Control contingency actions taken from the Control Room are NOT successful in inserting the CEAs.
- Boration has been commenced.
- Plant is operating at 95%.
- SPTAs have been completed with no other complications.

Based on these conditions, the Operating Crew should...

A. De-energize NAN-S01 and NAN-S02 then enter LOFC/LOOP EOP

B. Enter the Reactor Trip EOP and perform the Reactivity contingency actions

C. Enter the Functional Recovery EOP then cooldown and depressurize the RCS to commence HPSI injection flow

D. Enter the Functional Recovery EOP then direct an Area Operator to open the Reactor Trip Switchgear Breakers

Answer: D

2 **ID: Q6777** **Points: 1.00**

The following plant conditions exist:

- Pressurizer pressure is 1790 psia and decreasing.
- RCP 1A has a brighter than normal green light.
- Containment pressure is 0.8 psig and increasing.
- SG #1 pressure is 1040 psia and stable.
- SG #2 pressure is1100 psia and stable.
- SG #1 level is 50% WR.
- SG #2 level is 70% WR.
- T-cold being maintained at 564°F.
- PZR level is 42% and increasing.
- Core delta T is 4°F
- Containment temperature is 112°F and increasing.
- Containment humidity is 42% and increasing.
- Containment radiation alarms present on the Radiation Monitoring System.

Based on these conditions the CRS should enter ...

A. 40EP-9EO02, Reactor Trip and stop the 2A RCP.

B. 40EP-9EO05, Excessive Steam Demand and initiate MSIS.

C. 40EP-9EO04, SGTR and maintain SG #1 level above 45% NR.

D. 40EP-9EO03, Loss of Coolant Accident, and verify adequate Safety Injection flow.

Answer: D

3 **ID: Q10324** **Points: 1.00**

Standard Appendix 2 requires that at least 1 Steam Generator be available for RCS heat removal to meet HPSI throttle Criteria. From the list below identify which combination of conditions would make a SG available for Heat Removal.

A. SG pressure is steady at 1250 psia and SG level is 25% NR INCREASING being fed by the "A" Main Feed Pump

B. SG pressure 1150 psia controlled by ADVs and SG level is 55% WR INCREASING being fed by AFB-P01

C. SG pressure 1100 psia controlled by SBCVs and SG level is 40% NR DECREASING being fed by AFB-P01

D. SG pressure 400 psia controlled by ADVs and SG level is 10% NR INCREASING being fed by the only available feed source Condensate pumps

Answer: B

4 **ID: Q6653** **Points: 1.00**

Given the following conditions:

- Unit-1 is in Mode 5
- Tcold is 140°F
- Shutdown cooling is in service using LPSI "A"
- SIA-UV-651, SIC-UV-653, SIB-UV-652 and SID-UV-654 are open
- RCS pressure is 185 psia
- SDC flow was being maintained at 3780 gpm
- SDC flow is now oscillating

The following alarms annunciate:

- CNTMT SUMP TRBL
- CNTMT SUMPS EXCESS LEAKAGE
- SDC TRAIN A/B FLOW LO

Based on these conditions, the CRS should utilize the _____ procedure and _____.

A. Functional Recovery. Start CS pump "A"

B. Lower Mode Functional Recovery. Stop LPSI pump "A"

C. Shutdown Cooling Initiation. Place SDC train "B" in service

D. Panel B02 Alarm response. Raise SDC flow to greater than 3615 gpm

Answer: B

5 **ID: Q10275** **Points: 1.00**

The following conditions are reported during the performance of SPTAs

- 525 kV switchyard voltmeters East and West indicate 000 volts
- Both DGs have powered their respective class buses
- CDN-PI-47, indicates Main Condenser pressure is 12 inches Hga and continuing to rise
- AFAS 1 has initiated
- SG levels are being restored by AFB-P01
- RCS Tcold is controlling at 562^0F
- Spray Pond pump "B" has tripped due to an 86 lockout
- RO attempted to start AFN-P01, but all attempts to open CTA-HV-1 have failed
- AFA-P01 is running with a discharge pressure of 900 psia

Based on current conditions and trends the CRS should enter ....

A. Reactor Trip (40EP-9EO02) and feed using AFB-P01

B. Functional Recovery (40EP-9EO09) and feed using AFB-P01

C. Functional Recovery, (40EP-9EO09) and feed using condensate pumps

D. Loss of Offsite Power/Loss of Forced Circulation (40EP-9EO07) and feed using AFA-P01

Answer: B

6 **ID: Q67246** **Points: 1.00**

Given the following conditions:

- Unit 1 has tripped from rated power
- SG 1 pressure 200 psia and slowly dropping
- SG 2 pressure 980 psia and stable
- Loop 1 T-cold 515°F and slowly increasing
- Loop 1 T-hot 527°F and stable
- Loop 2 T-cold 530°F and stable
- Loop 2 T-hot 529°F and slowly increasing

Which one of the following describes the correct EOP mitigating actions to be or should have been taken?

A. Immediately depressurize SG 2 to 775 psia.

B. Immediately depressurize SG 2 to 880 psia.

C. Depressurize SG 2 when SG 1 drops below 20 psia in order to stabilize RCS temperature.

D. SG 2 should have been depressurized within 50 psia of SG 1 pressure while it was blowing down.

Answer: A

7 **ID: Q10303** **Points: 1.00**

Given the following conditions:

- You are the Unit 1 CRS during a weekend nightshift
- The Effluent Tech has requested a procedure change to 74RM-9EF41, Radiation Monitoring System Alarm Response
- The change effects the Radiological Monitoring Group Response to an Alert/High alarm on RU-2/3

As a minimum this change requires a Temporary Approved Procedure Action (TAPA) be generated with ....

A. approval by two SROs with valid licenses on the affected Unit

B. approval by two members of the plant supervisory staff one of whom holds a valid SRO license on the affected Unit

C. a completed 50.59 review and approval by two members of the plant supervisory staff each within the affected discipline

D. a completed 50.59 review and approval by two members of the plant supervisory staff one of whom holds a valid SRO license on the affected Unit

Answer: D

8 **ID: Q10293** **Points: 1.00**

Given the following conditions:

- The Unit-2 Control Room is being evacuated due to an accidental toxic gas release
- Manual Reactor trip from Control Room has been initiated
- Power is lowering
- 3 full strength CEAs failed to insert
- CHA-LI-200 indicates 90% RWT level
- All other actions are progressing as expected

How does the AOP in use direct the CRS to ensure adequate boration flow?

A. The RCS will be depressurized to allow HPSI injection flow, HPSI flow will be monitored at the Remote Shutdown Panel

B. Charging pump suction will be aligned to the RWT from NHN-M72, charging flow will be monitored at the Remote Shutdown Panel

C. Reactor Operator will complete Reactivity contingency actions per the SPTAs, boration flow will be verified prior to Control Room evacuation

D. Charging pump suction will be aligned to the Spent Fuel Pool, boration flow will be verified by the local flow instrument located outside the charging pump rooms

Answer: B

9 **ID: Q0978** **Points: 1.00**

Given the following conditions:

- Excore power decreases to 98%.
- T_{avg}/T_{ref} Hi-Lo Alarm Window 4A08B on B04
- RCS temperatures decrease
- Pressurizer level and pressure decrease.
- COLSS, CPC, & PDIL alarms
- Letdown flow is decreasing

10 minutes later the following conditions are observed:

- Excore power has recovered to ~ 100%
- T_{avg} has stabilized, but 2°F off program low
- Pressurizer level and pressure have recovered
- COLSS, CPC, & PDIL alarms are still active
- Letdown flow is increasing

Which ONE of the following events has probably occured?

A. Letdown leak, perform recovery actions per Loss of Letdown AOP

B. RCS leak, perform recovery action per Excessive RCS Leakrate AOP

C. CEA misalignment, perform recovery actions per CEA Malfunctions AOP

D. Instrument malfunction, perform recovery actions per RRS Malfunctions AOP

Answer: C

10 **ID: Q10294** **Points: 1.00**

Given the following conditions:

Rad Monitor status just prior to Reactor trip are as follows:

- RU-139, Main Steam Line Monitor, is in alert
- RU-140, Main Steam Line Monitor, is in high alarm
- RU-142, Main Steam Line N-16 Monitor, channels 1/2 are alert alarm
- RU-142, Main Steam Line Monitor, channels 3/4 are in high alarm

Current plant conditions

- SG #1level is 51% WR and increasing
- SG #1 pressure is 1200 psi and stable
- SG #2 level is 28% WR and decreasing
- SG #2 pressure 1070 psi and decreasing
- Containment temperature is 195°F
- Containment pressure 9 psig
- RCPs have been tripped
- All expected ESFAS actuations have initiated
- RU-16, Containment Operating Level Monitor, is in alert

Which of the following mitigation strategies would the CRS direct?

A. Feed #1 SG to 45% NR, Secure feed to #2 SG

B. Feed #2 SG to 45% NR, Secure feed to #1 SG

C. Feed #1 SG at 1360 - 1600 gpm to 45% NR

D. Feed #2 SG at 1360 - 1600 gpm to 45% NR

Answer: A

11 **ID: Q10290** **Points: 1.00**

Given the following conditions:

- Unit 1 is operating at rated power
- RK window 2B09B (SI CHK LEAK PRESS HI) is alarming
- CRS has entered 40AO-9ZZ02 (Excessive RCS Leakrate)
- Leakage is indicated into the 2A Safety Injection Tank

The following conditions are noted:

- RCS leakrate 2 gpm
- SIT 2A level is 56% NR
- SIT 2A press is 620
- SIT 2A LN PRESS PI-319 reads 1950 psig

Based on these conditions the CRS is required to ....

A. Declare SIT 2A INOPERABLE and lower level to within limits per 40OP-9SI03

B. RCS Operational Leakage is beyond identified LEAKAGE limits, enter condition A of LCO 3.4.14

C. No LCO entry required but must perform SIT Check Valve Bleed Down per 40AO-9ZZ02

D. Declare LPSI pump "B" INOPERABLE and lower line press in accordance with Alarm Response

Answer: D

12 **ID: Q10279** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is operating at rated power
- Alarm window 4A01B, PZR PRES HI-LO has annunciated
- PZR pressure was reported as 2150 psia and lowering
- Main spray valves 100E & 100F indicate full open
- All attempts to close Main Spray valves have failed
- PZR pressure continues to lower, currently 2050 psia

Which of the following actions is appropriate for the given conditions?

A. Close IAA-UV-2, Main Spray valves will close immediately.

B. Trip the Reactor, trip two RCPs when SIAS/CIAS initiates.

C. Trip the Reactor, stop the Loop 1 RCPs only and enter the Reactor Trip procedure.

D. Trip the Reactor, stop all 4 RCPs and enter Loss of Offsite Power/Loss of Forced Circulation procedure.

Answer: D

13 **ID: Q10280** **Points: 1.00**

Given the following conditions:

- Unit 1 is operating at rated power
- 120 VAC 1E PNL D27 INVERTER C TRBL is alarming
- Auxiliary Operator reports fluctuating output on PNC-N13, "C" class inverter

Assuming that the inverter's performance continues to degrade, which of the following actions would be appropriate?

A. Enter 40EP-9EO01, (Standard Post Trip Actions) after automatic Reactor Trip

B. Verify that PNC-D27 has transferred to the "C" voltage regulator (PNC-V27), remain in the current GOP.

C. Enter 40AO-9ZZ13, (Loss of Class Instrument or Control Power) and bypass all PPS Channel "C" bistables not bypassed in other channels.

D. Verify that only the RTSG breaker "C" opened, enter Tech Spec 3.3.4 (RPS Logic and Trip Initiation) for any other RTSG breakers that opened due to this failure.

Answer: C

14 **ID: Q10380** **Points: 1.00**

Given the following conditions:

- Unit 1 is in a Midloop condition
- Maintenance requests permission to re-lug ESFAS jumper leads

Prior to this Work Order being released to the field, who (by title) is responsible to verify the proper RCS perturbation code?

A. Releasing Organization and Outage Coordinator

B. Outage Coordinator and Midloop Operations Coordinator

C. Releasing Organization and Operations Shift Manager

D. Midloop Operations Coordinator and Operations Shift Manager

Answer: D

15 **ID: Q10281** **Points: 1.00**

Given the following conditions:

- Unit 3 is operating at rated power
- The "A" train CEDM cooling fans (A02A/A02C) are running

THEN

- Alarm window 7A9B, CEDM ACU COOLS SYS TRBL alarms
- The Operator observes that both CEDM cooling fans A02A/A02C have brighter than normal green lights

Which of the following correctly describes the condition of CEDM cooling fans, "B" train CEDM fans should

A. start immediately, if not Reactor must be tripped within 40 minutes of loss of cooling

B. start immediately, if no cooling restored plant cooldown must be commenced within 40 minutes of loss of cooling

C. start within 2 minutes, if no cooling restored plant cooldown must be commenced within 40 minutes of loss of cooling

D. start within 2 minutes, if no cooling restored Reactor must be tripped within 40 minutes of loss of cooling

Answer: D

16 **ID: Q10381** **Points: 1.00**

Given the following conditions:

- Unit 1 tripped on Lo SG pressure caused by a steam line break
- SG 1 pressure is currently 1170 psia being controlled by ADVs
- SG 2 pressure is currently 1180 psia being controlled by ADVs
- 4160 bus PBA-S03 has faulted and is de-energized
- Both SG levels are 20% WR and slowly lowering
- AFA-P01 has tripped on overspeed
- AFB-P01 has tripped due to an 86 lock-out
- Feed rate to both SGs is 0 gpm.
- All appropriate ESFAS actuations have initiated

Which one of the following would be a procedurally directed action to restore the RCS Heat Removal Safety Function?

A. Establish feed using a Main Feedwater pump after 40EP-9EO06 (LOAF) is entered

B. Reset AFA-P01 overspeed trip and establish feed prior to exiting Standard Post Trip Actions

C. Depressurize a SG and establish feedflow with a Condensate pump after 40EP-9EO09 (FRP) is entered

D. Override the Downcomer isolation valves and establish feed using AFN-P01 prior to exiting the Standard Post Trip Actions

Answer: C

17 **ID: Q10309** **Points: 1.00**

Given the following conditions:

- Unit 1 is in Mode 6
- Core off-load is in progress
- Refueling pool level is 137 feet 10 inches
- Refueling boron concentration is 3250 ppm
- LPSI "A" is in service providing SDC flow at 4100 gpm
- Reactor Operator reports RU 37 & 38, Power Access Purge monitors, are slowly trending up
- LSRO informs the CRS that a Fuel Assembly has been dropped in the Refueling Pool

Which one of the following actions is appropriate?

A. Increase SDC flow per 40OP-9SI01, SDC initiation

B. Initiate containment evacuation per 40A0-9ZZ22, Fuel Damage

C. Increase Refueling Pool boron concentration per 40EP-9EO11, LMFRP

D. Initiate/verify CPIAS/FBEVAS per 74RM-9EF41, Radiation Monitoring System Alarm Response

Answer: B

18 **ID: Q10311** **Points: 1.00**

Given the following conditions:

- Unit 3 is operating at rated power
- Nuclear Cooling Water Pump A is in service
- Turbine Cooling Water Pump A is in service
- Plant Cooling Water Pump B is in service
- House electrical loads are on the Aux transformer

Outage preparations are in progress. While moving scaffolding in the non-class switchgear room, a piece of scaffolding hits the handswitch to breaker NBN-S02A (bus feeder breaker) causing the breaker to open.

Assuming all systems operate as designed, which of the following best describes the initial mitigating actions?

A. Take actions per 40AO-9ZZ03, Loss of Cooling Water

B. Take actions per 40OP-9ED01, Section 8 (Single Heater Drain Pump Operations)

C. Take actions per 40AO-9ZZ09, Reactor Power Cutback (Loss of Feedpump)

D. Take actions to verify that NBN-S02 loads have transferred to NBN-S01 by the auto closure of breaker NBN-S01C

Answer: C

19 **ID: Q10382** **Points: 1.00**

Given the following conditions:

- Unit 1 is operating at rated power
- CEAs begin driving inward
- CR megawatt meter MAN-JIW-G01 indicates 1240 MW
- Tave is 587°F
- Tref is 583°F
- Window 4A12B, TURB BYP DEMAND, is alarming
- SGN-PT-1001 is coming open with a full open demand
- CDN-PT-47 indicates 2.0 inches mercury, A shell
- CDN-PT-48 indicates 1.9 inches mercury, B shell
- CDN-PT-49 indicates 2.4 inches mercury, C shell

The Crew should take actions in accordance with ...

A. 40AO-9ZZ08, Load Rejection

B. 40AO-9ZZ11, CEA Malfunctions

C. 40AO-9ZZ16, RRS Malfunctions

D. 40AO-9ZZ07, Loss of Condenser Vacuum

Answer: A

20 **ID: Q10283** **Points: 1.00**

Given the following conditions:

- Unit 2 is currently at 85% power with both Circulating Water (CW) trains in service.
- A Condenser tube leak in the A Circulating Water train has been confirmed.
- A normal downpower is in progress in order to remove the ruptured CW train from service.
- The ability to stabilize power at 40% has been verified.
- At the present rate 40% power will be achieved in approximately 50 minutes.

THEN

- Chemistry reports that Steam Generator sodium (Na) and chloride (Cl)are increasing rapidly
- It is determined that Rx trip limits will be reached within 20 minutes.

Based on this report, the CRS should direct which of the following actions...

A. Trip the Reactor, Perform SPTAs, trip both Main Feedwater pumps

B. Trip the Reactor, Perform SPTAs, align high rate blowdown to the Blowdown Flash Tank (BFT)

C. Initiate Reactor Power Cutback (Loss of Feedpump), align high rate blowdown to the Blowdown Flash Tank (BFT)

D. Initiate Reactor Power Cutback (Loss of Feedpump), place all available Condensate Demin beds in service

Answer: A

21 **ID: Q27796** **Points: 1.00**

Given the following conditions:

- Unit 1 is in Mode 6
- Fuel movement is in progress
- It is discovered that both CPIAS actuation logics are Inoperable.

Which of the following actions is the **MINIMUM** required to comply with Tech Spec 3.3.8, Containment Purge Isolation Actuation Isolation Signal?

A. Close containment purge and exhaust valves within 15 minutes.

B. Suspend core alterations and movement of irradiated fuel within 15 minutes.

C. Immediately close the containment purge and exhaust valves **OR** suspend core alterations and movement of irradiated assemblies in Containment.

D. Immediately close the containment purge and exhaust valves **AND** suspend core alterations and movement of irradiated fuel in Containment.

Answer: C

22 **ID: Q10286** **Points: 1.00**

Given the following conditions:

- Unit 1 is operating at rated power
- Unit 3 is operating at rated power
- CEACs 1A & 2B have failed in Unit 1
- CEACs 1 & 2 have failed in Unit 3

Which of the following represents a correct response to the failed CEACs?

Unit 1 enters inop code "1" (1)
Unit 3 enters inop code "3" (2)

A. (1) in CPC "A" and inop code 2 in CPC "B", verify CEA positions every 4 hours
(2) in all 4 CPCs, no further action required if CEACs restored within 7 days

B. (1) in CPCs "A" & "B", no further action required if CEACs restored within 7 days
(2) in all 4 CPCs, no further action required if CEACs restored within 7 days

C. (1) in CPC "A" and inop code 2 in CPC "B", verify CEA positions every 4 hours
(2) in all 4 CPCs and must place CEDMCS in standby and disable the RPCB system within 4 hours

D. (1) in CPCs "A" & "B", no further action required if CEACs restored within 7 days
(2) in all 4 CPCs and must place CEDMCS in standby and disable the RPCB system within 4 hours

Answer: C

23 **ID: Q10289** **Points: 1.00**

Given the following conditions:

- A VCC (vertical concrete cask) is being transported from Unit 3 to the ISFSI
- As the LOADED VCC is passing behind Unit 2, the transporter derails
- The VCC mispositions, causing possible damage to the Confinement Boundry
- RP is performing surveys at this time

Who is required to make any applicable Unit Log entries _(1)_ and/or E-plan classifications _(2)_ ?

A. (1) Unit 1 Shift Manager, (2) Unit 1 Shift Manager

B. (1) Unit 1 Shift Manager, (2) Unit 3 Shift Manager

C. (1) Unit 3 Shift Manager, (2) Unit 1 Shift Manager

D. (1) Unit 3 Shift Manager, (2) Unit 3 Shift Manager

Answer: D

24 **ID: Q10442** **Points: 1.00**

Given the following conditions:

- Unit 1 has tripped from rated power
- The Shift Manager has been relieved as the Emergency Coordinator (EC)
- The Functional Recovery procedure has been implemented
- An emergency worker will enter the Auxiliary Building to perform a life saving function

What is the EPA guidance for "life saving" exposure limits and who must authorize exceeding this limit?

A. 10 Rem, Emergency Coordinator

B. 10 Rem, Radiation Protection Coordinator

C. 25 Rem, Emergency Coordinator

D. 25 Rem, Radiation Protection Coordinator

Answer: C

25 **ID: Q10383** **Points: 1.00**

Given the following conditions:

- Unit 1 has tripped from rated power
- Pressurizer pressure is 2000 psia and lowering
- Pressurizer level is 19% and lowering
- Containment pressure is 6.5 psig and rising
- RCS subcooling is 50°F and increasing
- SG 1 pressure is 1170 psia and stable
- SG 1 level is 20% NR and recovering
- SG 2 pressure is 950 psia and lowering
- SG 2 level is 40% WR and lowering

In addition to SIAS/CIAS which one of the following sets of alarms is consistent with **CURRENT** plant conditions?

A. MSIS and AFAS-2, enter Functional Recovery procedure

B. CSAS and AFAS-2, enter Excess Steam Demand procedure

C. CSAS and SG 1 > SG 2 CH TRIP, enter Functional Recovery procedure

D. MSIS and SG 1 > SG 2 CH TRIP, enter Excess Steam Demand procedure

Answer: D