

**1 POINT**

**Question 76**

Unit 1 initial conditions:

- Reactor power = 60%
- 1A2 RCP secured
- 1SA9/E-2 RC PUMP VIBRATION EMERG HIGH alarming
- 1A1 RCP vibration reading 24 mils increasing

Current conditions

- AP/16 (Abnormal RCP Operations) actions are complete
- Reactor shut down
- SGTR tab of EOP in progress
- RCS pressure = 1985 psig

Based on the above conditions, which ONE of the following identifies an effective method that will be directed in the EOP SGTR tab to reduce Core SCM and the basis for that action?

- A. Normal Pzr Spray / to reduce primary to secondary leakage
- B. Normal Pzr Spray / to prevent pressurized thermal shock
- C. Cycling the PORV / to reduce primary to secondary leakage
- D. Cycling the PORV / to prevent pressurized thermal shock

**1 POINT**

**Question 77**

Unit 1 initial conditions:

- Time = 0900
- Reactor Power = 100%
- Steam line break occurs inside containment

Current plant conditions:

- Time = 0901
- RCS Temperature 532°F
- RCS pressure 1500 psig increasing
- 1A SG pressure = 40 psig decreasing
- RB pressure 3.6 psig stable
- ES channels 1-4 actuated
- HPI throttled per Rule 5

Based on the current plant conditions, which ONE of the following describes additional actions required per EOP enclosure 5.1 AND a required Technical Specification action?

- A. Manually initiate ES digital channels 5 & 6 at control board UB1  
Declare ONLY ES 5 & 6 components inoperable within 1 hour
- B. Manually initiate ES digital channels 5 & 6 at control board UB1  
Maintain ES 1 - 6 components in ES configuration OR Declare the associated component inoperable within 1 hour
- C. Manually place ES channels 5 & 6 components to their ES position at control board VB2  
Declare ONLY ES 5 & 6 components inoperable within 1 hour
- D. Manually place ES channels 5 & 6 components to their ES position at control board VB2  
Maintain ES 1 - 6 components in ES configuration OR Declare the associated component inoperable within 1 hour

**1 POINT**

**Question 78**

Unit 1 initial conditions:

- TDEFDW pump OOS

Current conditions:

- Blackout in progress
- EFDW cross connect NOT possible
- CETC = 573°F and increasing
- RCS pressure = 2263 psig and increasing
- Attempts are being made to feed the SGs to establish natural circulation

Based on the above conditions, which ONE of the following describes how heat transfer is initially controlled and why?

- A. Throttle SSF ASW flow to stabilize CETCs  $\leq 550^\circ\text{F}$  to ensure that natural circulation is not inhibited due to hot leg voiding.
- B. Fully depressurize the SGs and then throttle SSF ASW to stabilize CETCs  $\leq 550^\circ\text{F}$  to prevent RCS re-pressurization and potential inventory loss thru the PORV.
- C. Throttle SSF ASW flow to stabilize RCS pressure between 2250 psig and 1950 psig to ensure that natural circulation is not inhibited due to hot leg voiding.
- D. Fully depressurize the SGs and then throttle SSF ASW to stabilize RCS pressure between 2250 psig and 1950 psig to prevent RCS re-pressurization and potential inventory loss thru the PORV.

**1 POINT**

**Question 79**

Plant conditions:

Time = 0400

- Unit 1 Reactor power 78% decreasing
  - Unit shutdown in progress due to a 105 gpm tube leak
- Unit 2 Reactor power = 100%
- Unit 3 = Mode 5
  - MFBs being supplied from Central Switchyard
- Turbine Building flood

Time = 0401

- Unit 1 reactor trip per AP/10 (Turbine Building Flood)
- CT-1 Locked out
- Keowee Unit 1 and Unit 2 Emergency Lockout

Time = 0402

- IMAs and Symptom Check complete

Based on the above conditions, which ONE of the following describes the correct set of procedures that will be used to initially stabilize Unit 1 and mitigate this event?

- A. The SRO will use the Parallel Actions page to transfer to the Blackout tab  
An RO will perform Enclosure 5.38 (Restoration of Power)
- B. The SRO will use the Parallel Actions page to transfer to the Blackout tab  
An RO will perform AP/11 (Recovery From a Loss of Power)
- C. The SRO will use the Parallel Actions page to transfer to the SGTR tab  
An RO will complete AP/10 (Turbine Building Flood)
- D. The SRO will use the Parallel Actions page to transfer to the TBF tab  
An RO will complete AP/10 (Turbine Building Flood)

**1 POINT**

**Question 80**

Unit 2 initial conditions:

- Reactor power = 100%

Current conditions:

- 1A SG pressure = 0 psig stable
- 1B SG pressure = 485 psig decreasing slowly
- RCS temperature = 526 °F decreasing slowly
- RCS pressure = 1020 psig decreasing slowly
- Reactor Building pressure = 26 psig increasing
- BOTH channels of AFIS bypassed
- IMAs and Symptom Check complete

Based on the current conditions, which one of the following describes the design limits that immediate actions (contained in rules) prevent exceeding, which EOP tab the SRO will enter and how the SG(s) will be fed?

- A. Reactor building design pressure  
Excessive Heat Transfer  
Select one SG for trickle feed
- B. Reactor building design pressure  
Loss of Heat Transfer  
Feed and steam the intact SG per Rule 7
- C. Reactor vessel NDT  
Loss of Heat Transfer  
Select one SG for trickle feed
- D. Reactor vessel NDT  
Excessive Heat Transfer  
Feed and steam the intact SG per Rule 7

**1 POINT**

**Question 81**

Unit 1 initial conditions:

- Reactor power = 100%

Current conditions:

- Loss of all Main and Emergency feedwater
- 1A CBP operating
- Rule 3 in progress
- TBVs throttled OPEN
- 1A & 1B SG pressure = 620 psig decreasing
- RCS pressure = 2305 psig increasing
- IMAs and Symptom Check complete

Based on the above conditions, which ONE of the following describes the correct procedure path and an immediate action?

- A. Perform Rule 4 and then enter the LOHT tab / Secure all but one RCP
- B. Perform Rule 4 and then enter HPI CD tab / Reduce operating RCPs to one pump per loop
- C. Enter the LOHT tab, do NOT perform Rule 4 / Reduce operating RCPs to one pump per loop
- D. Enter the LOHT tab and then perform Rule 4 / Secure all but one RCP

**1 POINT**

**Question 82**

Unit 3 plant conditions:

- Time = 0400:00
- Startup in progress
- WR NI = 0.01% stable
- RO begins withdrawing CRs to increase power to the “point of adding heat”
  
- Time = 0400:05
- RO stops manual rod withdrawal
- Diamond Panel “CRD TRAVEL” OUT light is LIT
- WR NI = 0.02% increasing
- WR SUR = 0.5 dpm increasing

Based on the above conditions, which ONE of the following states the RPS trip that is credited in TS bases to mitigate this event and what this trip is preventing?

- A. High RCS pressure / exceeding the DNB safety limit
- B. High RCS pressure / exceeding the RCS pressure safety limit
- C. RCS High Outlet Temperature / exceeding the RCS pressure safety limit
- D. RCS High Outlet Temperature / exceeding the DNB safety limit

**1 POINT**

**Question 83**

Unit 1 initial conditions:

- Reactor power = 100%
- 1A RBS pump OOS

Current conditions:

- Seismic event
- RCS pressure = 40 psig decreasing
- Reactor Building pressure = 38 psig increasing
- ES channels 1 - 8 actuated
- 1SA09/B9 (RBCU A Cooler Rupture) actuated (valid)
- LPSW Header pressure = 105 psig

Based on the above conditions, with no operator actions taken, which ONE of the following describes the status of containment and the effects of isolating the RBCU?

- A. Containment is operable and, after 1A RBCU is isolated, RB cooling design basis will be satisfied.
- B. Containment is operable and, after 1A RBCU is isolated, RB cooling design basis will NOT be satisfied.
- C. Containment is NOT operable and, after 1A RBCU is isolated, RB cooling design basis will be satisfied.
- D. Containment is NOT operable and, after 1A RBCU is isolated, RB cooling design basis will NOT be satisfied.



**1 POINT**

**Question 84**

Unit 1 initial conditions:

- Time = 0300
- 1A SG Tube leak rate = 46 gpm
- SGTR tab of the EOP in progress
- Reactor power = 76% decreasing

Current conditions:

- Time = 0303
- 1A SG pressure = 1000 psig decreasing
- 1B SG pressure = 98 psig decreasing
- RCS temperature = 520°F decreasing
- RCS Pressure = 797 psig decreasing
- IMAs and a Symptoms Check have been completed

Based on the current conditions, which ONE of the following describes the EOP tab and the RULE that should be performed first?

- A. Loss of Subcooling Margin / Rule 2
- B. Loss of Subcooling Margin / Rule 5
- C. Steam Generator Tube Rupture / Rule 2
- D. Excessive Heat Transfer / Rule 5

**1 POINT**

**Question 85**

Unit 1 initial conditions:

- SG tube leak 1A SG = 15 gpm
- AP/31 (Primary to Secondary Leak) in progress

Current Conditions:

- CT-1 transformer fire
- Natural Circulation Cooldown per Forced Cooldown Tab in progress
- Tube leak in the 1A SG increases to 250 gpm

Based on the above conditions, which EOP tab should the SRO direct and why?

- A. Remain in the Forced Cooldown tab because it provides guidance for establishing DHR entry conditions.
- B. Remain in the Forced Cooldown tab because RCPs cannot be restarted
- C. Transfer to LOCA CD tab because makeup has exceeded normal makeup capability
- D. Transfer to the SGTR tab since this is directed by the Forced Cooldown tab parallel action page

**1 POINT**

**Question 86**

Unit 1 initial condition:

- Time = 0400
- LBLOCA from 100% power
- SCM = 0 °F

Current conditions

- Time = 0403
- Reactor power = 0.5% decreasing
- SCM = (-) 14 °F
- 1A1 RCP amps cycling
- 1SA-9/E-2 (RCP Vibration Emerg High)
- Rule 2 in progress

Based on the above conditions, which ONE of the following describes the bases for how RCPs are operated under these conditions and the method used for RCS cooldown?

- A. RCPs are left running since tripping the RCPs at this time could cause fuel damage.  
A rapid RCS cooldown will be commenced while feeding the SGs to the LOSCM setpoint.
- B. RCPs are left running since tripping the RCPs at this time could cause fuel damage.  
Establish a cooldown rate within TS limits while feeding the SGs to the LOSCM setpoint.
- C. RCPs are tripped since RCS inventory loss out of the break will be maximized if they are kept running.  
A rapid RCS cooldown will be commenced while feeding the SGs to the LOSCM setpoint.
- D. RCPs are tripped since RCS inventory loss out of the break will be maximized if they are kept running.  
Establish a cooldown rate within TS limits while feeding the SGs to the LOSCM setpoint.

**1 POINT**

**Question 87**

Unit 1 initial conditions:

- Reactor power = 100%

Current conditions:

- Loss of offsite power
- 1A Main Steam Line Break inside containment

Which ONE of the following describes a design bases for the Main Feedwater System and, based on the current conditions, an additional system that must be operational to prevent exceeding a design limit?

- A. Isolation of feedwater to SGs following a MSLB  
Diesel Air compressors must be available to prevent exceeding RB design pressure
- B. Isolation of feedwater to SGs following a MSLB  
Auxiliary Instrument Air must be available to prevent exceeding RCS cooldown limits
- C. Containment isolation of feedwater lines during a LOOP  
Diesel Air compressors must be available to prevent exceeding RB design pressure
- D. Containment isolation of feedwater lines during a LOOP  
Auxiliary Instrument Air must be available to prevent exceeding RCS cooldown limits

**1 POINT**

**Question 88**

Plant initial conditions:

- Keowee Unit 1 output = 27 MWe
- ACB-3 is CLOSED

Current conditions:

- PCB-9 Red Bus disconnect is inadvertently opened

Based on the current conditions, which ONE of the following describes consequences of opening this disconnect and the TS required action?

- A. Overhead power path is inoperable / suspend Keowee generation to the grid immediately.
- B. Overhead power path is inoperable / verify the underground power path operable within 1 hour.
- C. Keowee Unit 2 is inoperable / suspend Keowee generation to the grid immediately.
- D. Keowee Unit 2 is inoperable / verify the underground power path operable within 1 hour.

**1 POINT**

**Question 89**

Plant initial conditions:

- Ground detected on 250 VDC power battery 1PB
- Maintenance has removed the 1PB battery from service for repairs

Which ONE of the following describes the required actions per SLC 16.8.3 (Power Battery Parameters) and the effect on unit operations?

- A. Unit 1 and 2 PB batteries must be cross-tied immediately and the units can operate this way indefinitely because the power battery system is operable.
- B. ALL units' PB batteries must be cross-tied immediately and the units can operate this way indefinitely because the power battery system is operable.
- C. Declare the TDEFDW pump and ATWS inoperable on Unit 1 within 1 hour due to inadequate battery capacity.
- D. Declare the TDEFDW pump and ATWS inoperable on Unit 1 within 1 hour due to inadequate bus capacity.

**1 POINT**

**Question 90**

Unit 1 plant conditions:

- MODE 5
- LT-5 level = 43 inches
- OP/1/A/1502/009 (Containment Closure Control) in progress
- Maintenance requests permission to work on BOTH sides of penetration #54 at the same time

Based on the above conditions, which ONE of the following states whether permission should be granted and why?

- A. Permission should NOT be granted because LT-5 level is too low.
- B. Permission should NOT be granted because Containment Integrity is required.
- C. Permission should be granted ONLY if a complex evolution per Work Guide 6.8 is performed.
- D. Permission should be granted ONLY if Containment Closure can be established within 30 minutes.

**1 POINT**

**Question 91**

Unit 3 plant conditions:

- Reactor power = 100%
- 3DIA supply breaker to RPS channel "A" CRD Breaker tripped OPEN

Which ONE of the following describes the operational status of RPS channel "A" and the required administrative actions?

- A. RPS Channel A is NOT operable / TS 3.3.1 (RPS Instrumentation) entry is required because the required number of RPS channels are NOT OPERABLE
- B. RPS Channel A is operable / Enter TS 3.3.4 (Control Rod Drive Trip Devices) due to one required CRD diverse trip function INOPERABLE
- C. RPS Channel A is NOT operable / TS 3.3.1 (RPS Instrumentation) entry is NOT required because the required number of RPS channels are OPERABLE
- D. RPS Channel A is operable / TS 3.3.4 (Control Rod Drive Trip Devices) entry is NOT required because the required number of CRD diverse trip functions are OPERABLE



**1 POINT**

**Question 92**

Unit 1 initial conditions:

- Time: 10:00
- Reactor power = 100%

Current conditions:

- Time = 10:05
- Reactor power = 85%
- Group 7 = 46% withdrawn

**SEE ATTACHMENT**

Based on the current conditions, which ONE of the following describes the operational implications, if any, of continued operation in this configuration?

- A. Operation may continue indefinitely due to the low probability of an event while in this configuration.
- B. Operation may continue indefinitely since assumptions in the safety analysis are met.
- C. Operation in this region is limited to 15 minutes due to the potential for exceeding axial imbalance limits in the future.
- D. Operation in this region is limited to two hours due to the potential for exceeding axial imbalance limits in the future.

**1 POINT**

**Question 93**

Unit 1 plant conditions:

- Reactor power = 100%
- SASS in MANUAL
- Pzr level 2 selected
- Pzr Temperature A (RTD) Wheatstone bridge loses power

Based on the above conditions, which ONE of the following describes a required action and a reason PZR level is a PAM instrument?

- A. TS 3.3.8 (PAM Instrumentation) entrance is required / Pzr level is required to determine HPI injection termination criteria during a MSLB
- B. TS 3.3.8 (PAM Instrumentation) entrance is NOT required / Pzr level is required to determine HPI injection termination criteria during a MSLB
- C. TS 3.3.8 (PAM Instrumentation) entrance is required / Pzr level is required to provide accurate RCS Leak rate determination during a SGTR
- D. TS 3.3.8 (PAM Instrumentation) entrance is NOT required / Pzr level is required to provide accurate RCS Leak rate determination during a SGTR

**1 POINT**

**Question 94**

Plant conditions:

- Unit 1 = 100% Power
- Unit 2 = Mode 3
- Unit 3 = 100% Power
- Each unit is staffed with 2 Reactor Operators (ROs)
- The Unit 2 BOP becomes ill and must be transported offsite

Based on the above conditions, which ONE of the following correctly describes whether minimum RO staffing requirements are met and the ability of the station to satisfy SSF manning during a Station Blackout?

- A. RO requirements are met and the station can still properly staff the SSF since only Units 1 and 3 are required to man the SSF.
- B. RO requirements are met but the station can NOT properly staff the SSF since Units 1, 2 and 3 are required to man the SSF.
- C. RO requirements are NOT met and the station can NOT properly staff the SSF since Units 1, 2 and 3 are required to man the SSF.
- D. RO requirements are NOT met but the station can properly staff the SSF since only Units 1 and 3 are required to man the SSF.

**1 POINT**

**Question 95**

Unit 3 initial conditions:

- 10/01 at 12:00
- 5 EFPD
- Reactor shutdown to repair a leaking RV head O-ring

Current conditions:

- Time - 10/22 at 15:00
- Station Blackout occurs
- LT-5A/B indicate 70" and stable
- RV head NOT installed

Based on the above conditions and assuming no operator actions, which ONE of the following indicates the time remaining before core uncover occurs?

**SEE ATTACHMENT**

- A. 8 hours, 27 minutes
- B. 8 hours, 38 minutes
- C. 8 hours, 48 minutes
- D. 10 hours, 28 minutes

**1 POINT**

**Question 96**

Per Site Directive 1.3.5 (Shutdown Protection Plan), which ONE of the following describes when a Risk Management plan must be developed?

- A. An unplanned entry into condition YELLOW for a Key Safety Function that is expected to last for greater than 8 hours.
- B. Any time a Keowee Hydro unit is removed from service for unplanned reasons.
- C. An unplanned entry into condition RED for a Key Safety Function that is expected to last for greater than 1 hour.
- D. ANY unplanned entry into an ORANGE or RED condition for a Key Safety Function.

**1 POINT**

**Question 97**

Plant conditions:

- Makeup to the 1&2 SFP from 2A BHUT is desired

For the above evolution, which ONE of the following correctly describes who is responsible for "Print Mark-up During Active Evolutions" per OMP 1-02 (Rules Of Practice) and from where this evolution will be controlled?

- A. The WCC/OCC will ensure prints are marked up in both locations but the Control Room must control the water transfer.
- B. The Control Room SRO will ensure prints are marked up in both locations and the Control Room must control the water transfer.
- C. Either the WCC/OCC or the Control room SRO will ensure prints are marked up in both locations and either the WCC or the Control Room may control the water transfer.
- D. The WCC/OCC or the Control room SRO will ensure prints are marked up in both locations but the Control Room must control the water transfer.

**1 POINT**

**Question 98**

Initial Conditions:

- Unit 2 in MODE 6
- Vent Header "split"
- Unit 2 RB Purge in progress at 1/3 station limit

Current Conditions:

- 1A GWD tank needs to be released at 1/3 Station Limit
- During this release 1RIA-37/38 will be removed from service for 45 minutes for routine maintenance

Based on the above conditions, which ONE of the following describes the minimum level of approval and what additional action(s), if any, would be required for the release to continue during the maintenance?

- A. approved by a Senior Reactor Operator / (2) two independent samples must be taken
- B. approved by the Operations Shift Manager / (2) two independent samples must be taken
- C. approved by a Senior Reactor Operator / no additional action is required
- D. approved by the Operations Shift Manager / no additional action is required

**1 POINT**

**Question 99**

Unit 1 initial conditions:

- Reactor power = 100%

Current conditions:

- 1RIA-40 in alarm
- 1RIA-16 in alarm
- 1RIA-59 reading 20 gpm stable
- RC makeup = 60 gpm stable
- PZR level = 214 inches stable

Based on the above conditions, which ONE of the following procedures will the SRO use to direct the plant shutdown?

- A. OP/1/A/1102/004 (Operation at Power)
- B. OP/1/A/1102/010 (Controlling Procedure for Unit Shutdown)
- C. AP/1/A/1700/031(Primary to Secondary Leakage)
- D. EP/1/A/1800/001 (Emergency Operating Procedure)



**1 POINT**

**Question 100**

Unit 1 plant conditions:

- General Emergency has been declared
- Initial Emergency Notification Form is being completed

Per Enclosure 4.1 (General Emergency) of RP/0/B/1000/002 (Control Room Emergency Coordinator Procedure), which one of the following correctly describes the protective action recommendations to the public?

- A. Evacuate 2 mile radius only. Shelter any sectors not evacuated.
- B. Evacuate 5 mile radius only. Shelter any sectors not evacuated.
- C. Evacuate 2 mile radius and 5 miles downwind unless conditions make evacuation dangerous. Shelter any sectors not evacuated.
- D. Evacuate 5 mile radius and 10 miles downwind unless conditions make evacuation dangerous. Shelter any sectors not evacuated.