

## NRC Exam 2012

### QUESTION 1

The following conditions exist:

- The plant scrammed due to a Generator Power/Load Unbalance condition
- Both Recirc pumps are tripped
- All scram actions are complete
- A normal RPV depressurization is in progress
- No other actions have been taken
- The crew is planning to restart a Recirc pump

Which ONE of the following systems or actions will minimize the difference between the RPV steam dome saturation temperature and RPV bottom drain temperature?

- A. CRD
- B. RWCU
- C. Drywell cooling
- D. RPV depressurization

Ability to determine and/or interpret the following as they apply to  
PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW  
CIRCULATION: **AA2.06** Nuclear boiler instrumentation

CFR: 41.10/  
43.5 / 45.13

QUESTION 2

A Loss of Normal Power (LNP) has occurred.  
All equipment operated as expected post LNP.  
The reactor building is NOT accessible due to high airborne activity.  
Which ONE of the following identifies the correct action to take concerning the Vital MG Set?

- A. Transfer Vital AC to its alternate source.
- B. Secure the Vital MG.
- C. Restore the Vital MG to AC drive.
- D. Verify Vital MG returns to AC automatically.

QUESTION 3

RHR pumps 'A' and 'C' are running in the LPCI mode of operation when a loss of DC-2 and DC-3 occurs.

Assuming no operator action, which ONE of the following is correct?

- A. The 'A' RHR pump breaker cannot be operated from the control room and will NOT trip given an overcurrent condition.
- B. The 'A' RHR pump breaker cannot be operated from the control room but WILL trip given an overcurrent condition.
- C. The 'C' RHR pump breaker cannot be operated from the control room and will NOT trip given an overcurrent condition.
- D. The 'C' RHR pump breaker cannot be operated from the control room but WILL trip given an overcurrent condition.

**Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER :**

**QUESTION 4**

Given the following conditions:

- Reactor power is 60% and steady
- Main Generator output indicates 330 MWe and steady

An MHC hydraulic failure then occurs resulting in the sequential opening of several Turbine Bypass Valves over a 3 minute period that can not be controlled or stopped.

Plant current conditions now include the following:

- Reactor power is 60% and steady
- Main Generator output indicates 100 MWe and steady

If the Main Generator then experienced a Generator Load Reject, which ONE of the following would be responsible for initiating the reactor scram?

- A. MSIV position.
- B. Turbine acceleration relay.
- C. Turbine stop valve position.
- D. Reactor pressure or neutron monitoring.

QUESTION 5

A plant startup is in progress with the main turbine synched to the grid and loaded.

Reactor power is steady at 300 MWt, when the main turbine trips due to low bearing lube oil pressure.

Which ONE of the following is correct for the above conditions?

- A. A Reactor SCRAM will NOT occur and the EPR WILL maintain control of reactor pressure regulation.
- B. A Reactor SCRAM will NOT occur and the MPR WILL take control of reactor pressure regulation.
- C. A Reactor SCRAM WILL occur when 3 or more Turbine Stop Valves reach the <90% full open position.
- D. A Reactor SCRAM WILL occur when RPV pressure reaches the reactor high pressure trip setpoint.

**Knowledge of the interrelations between SCRAM and the following: Turbine trip logic - Plant-Specific**

**QUESTION 6**

With the plant operating at 100% power, the control room became uninhabitable because of toxic gas.

Evacuation was ordered and only the INITIAL actions of OPOP-ALTSD-3126, SHUTDOWN USING ALTERNATE SHUTDOWN METHODS, were carried out.

At this point reactor water level supply is being maintained by which of the following systems?

- A. Reactor Feed Pumps and CRD.
- B. RCIC and CRD.
- C. HPCI and CRD.
- D. CRD Only

QUESTION 7

The plant is operating at full power.

The following control room annunciators are alarming:

- FUEL POOL CLG SYS TEMP HI (4-H-7)
- DWL EQMT DRN SUMP TEMP HI (4-L-3)
- RX BLDG EQMT DRN SUMP SOUTH TEMP HI (4-L-5)

Which ONE of the following indication(s) would also be expected?

- A. Recirc MG SET A/B BRG/OIL TEMP HI (4-D-4) control room annunciator alarming.
- B. Recirc PUMP A INNER SEAL LKG HI/LO (4-C-2) and PUMP B INNER SEAL LKG HI/LO (4-G-2) control room annunciators alarming.
- C. Drywell temperature increasing.
- D. RRU 10, RRU 11, and RRU 12 tripped.

**Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER and the following:**

**QUESTION     8**

During an Instrument Air system leak the following air system response will occur:

Air compressors that are in LAG position will attempt to maintain air header pressure \_\_\_\_1\_\_\_\_ psig and PCV-1, air header pressure control valve, will reach its full closure position at \_\_\_\_2\_\_\_\_ psig inlet pressure.

	<u>1</u>	<u>2</u>
A.	95 – 100	75
B.	95 – 100	80
C.	90 – 95	75
D.	90 – 95	80



QUESTION 9

VY is in a refueling outage.

Plant conditions are as follows:

- Reactor cavity is flooded
- Reactor pressure vessel head is removed

A loss of Shut Down Cooling occurs.

It is NOT possible to restart the RHR system in SDC mode.

Which ONE of the following is correct IAW ON 3156, 'Loss of Shutdown Cooling'?

- A. Establish a feed and bleed either by raising CRD flow and RCU letdown OR utilizing Condensate Transfer through the Core Spray system.
- B. Reactor Cavity fill should commence utilizing the Condensate Transfer system through the Fuel Pool Cooling system.
- C. Initiate Torus Cooling, per the Torus Cooling section of OPOP-RHR- 2124, 'Residual Heat Removal System'.
- D. Start a recirc pump per OP 2110, 'Reactor Recirculation System'.

QUESTION 10

Refueling operations are in progress.

An irradiated fuel bundle is full up, when the fuel grapple cable breaks and the bundle is dropped onto the core.

125 fuel pins are ruptured.

What radiation monitors will respond to the above conditions?

- A. No Hi trips on the reactor building ventilation radiation monitors.
- B. A Hi trip from the refuel floor radiation monitors only.
- C. A Hi trip from the reactor building ventilation radiation monitors only.
- D. A Hi trip from the refuel floor radiation monitors and the reactor building ventilation radiation monitors.

reactor building ventilation radiation monitor trip is expected.

A Hi trip from the refuel floor radiation monitors is expected with a

A Hi trip from the reactor building ventilation radiation monitors is expected with A Hi trip from the refuel floor radiation monitors.

#### QUESTION 11

Which ONE of the following correctly states the purpose of the Reactor Building to Torus vacuum breakers?

- A. To maintain the suppression chamber to Drywell differential pressure during post accident cooling operations to less than the design limit of 4 psid.
- B. To maintain the Reactor Building to primary containment differential pressure less than the 4 psid Drywell external design pressure limit.
- C. To maintain the suppression chamber to Drywell differential pressure during post accident cooling operations to less than the design limit of 2 psid.
- D. To maintain the Reactor Building to primary containment differential pressure less than the 2 psid Drywell external design pressure limit.

QUESTION 12

The crew has entered EOP-1, RPV Control, following a SCRAM and Loss of Normal Power (LNP) during a reactor startup.

The following conditions exist:

- Reactor pressure is 1045 psig and rising slowly
- Entry conditions for EOP-3 "Primary Containment Control" have NOT been satisfied
- The CRS is in the RPV Pressure Control "leg" of EOP-1 and has indicated that he intends to use SRVs to stabilize RPV pressure control

Control Room Supervisor requests that you confirm that Torus Level is above 5.5 ft.

What is the basis for the 5.5 ft. torus level?

- A. This is the Torus Load Limit above which chugging is avoided.
- B. This is the Heat Capacity Temperature Limit at 1055 psig reactor pressure.
- C. This level is required to provide submergence of the SRV T-quencher.
- D. This level is required to ensure adequate NPSH for the Core Spray pumps.

**Ability to determine and/or interpret the following as they apply to HIGH REACTOR PRESSURE:**

The Heat Capacity Temperature Limit is both a function of Torus level and Reactor pressure.

Operation of the SRVs is limited to torus water levels above 5.5 feet, the elevation of the top of the SRV T-quencher. If torus water level is below 5.5 feet, steam discharged through the SRVs would pass directly into the torus airspace.

Adequate NPSH for the Core Spray Pumps is directly related to Torus Level.

Part 55 Content: 55.41 X

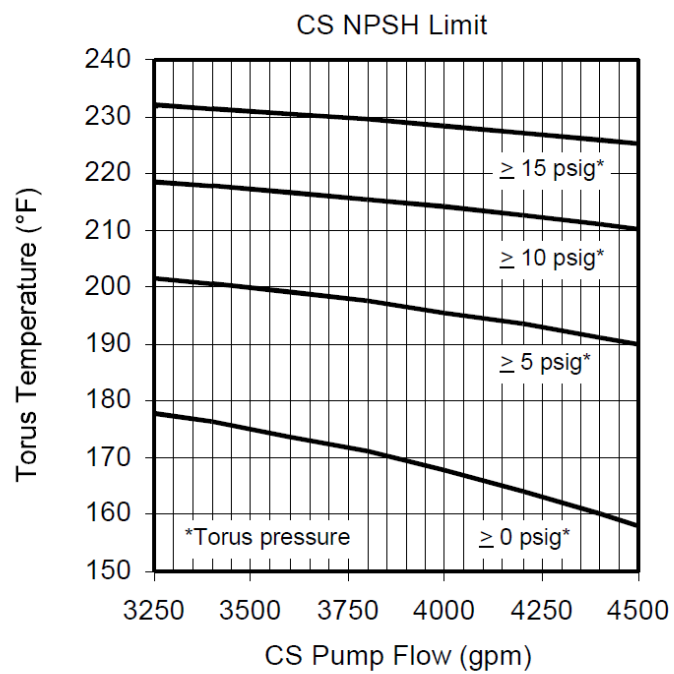
**QUESTION 13**

A loss of coolant accident has occurred, with the following conditions:

- The RPV has been depressurized
- Core spray is injecting and maintaining RPV level
- Torus water temperature is 195 °F
- Torus pressure is 3 psig
- Drywell pressure is 5 psig

Which ONE of the following states the maximum Core Spray flow (gpm) that may be used for RPV injection:

- A. 3400
- B. 3750
- C. 4050
- D. 4350



QUESTION 14

The plant is operating at power when the following occurs:

- A small steam leak occurs in the drywell
- Drywell temperature is 160 °F and rising slowly

EOP-3, Primary Containment Control, directs “When drywell temperature cannot be maintained below 160 °F”, then maximize drywell cooling, defeating interlocks if necessary.

The reason to maximize drywell cooling at this time is to prevent exceeding \_\_\_\_?\_\_\_\_.

- A. Heat Capacity Temperature Limit.
- B. Component Environmental Qualification.
- C. Drywell Design Temperature.
- D. Drywell Spray Initiation Limit.

**Inc**

he maximum normal operating temperature assumed in the drywell environmental qualification program analysis is 160F.

The Drywell Spray Initiation Limit (DWSIL) is the highest drywell temperature at which initiation of drywell sprays will not result in an evaporative cooling pressure drop to below atmospheric pressure, 0 psig. However, the limit is based on a second variable, drywell pressure, and NOT drywell temperature alone.

**QUESTION 15**

An ATWS condition with a Group 1 isolation and SLC failure has occurred with the following current conditions:

- All rods have been inserted
- Torus temperature is 190 °F and rising
- Torus level is 9 ft and lowering
- Reactor pressure is 860 psig and rising slowly

The CRS determines that an RPV-ED is required due to approaching HCTL limits.

This RPV-ED is performed to avoid which ONE of the following?

- A. Damaging SRV downstream piping during RPV Emergency Depressurization.
- B. Incomplete condensation of steam in the Torus.
- C. Overpressurizing the Primary Containment during RPV Emergency Depressurization.
- D. Excessive hydrodynamic loading on downcomer piping during RPV Emergency Depressurization.



QUESTION 16

With a LOCA signal present and reactor water level being maintained +30 inches rising slowly, which one of the following MUST be performed to open torus spray valves RHR-38A & 38B?

- A. The RHR LOGIC CTMT SPRAY VLV SHROUD LVL OVRD keylock switch must be taken to MANUAL OVERRIDE.
- B. The RHR LOGIC CTMT SPRAY VLV LPCI SIG BYPASS pistol grip switch must be taken to MANUAL.
- C. The LPCI injection valves must be closed.
- D. The injection valve UPS FDR SIG BLOCK switch must be taken to BLOCK.

his is a position on the key-lock switch will not allow the torus spray valves to be opened with a LOCA signal present.

The RHR LOGIC CTMT SPRAY VLV LPCI SIG BYPASS pistol grip switch must be taken to MANUAL to open Torus spray valves RHR-38-A/B with a LOCA signal present.

LPCI injection valves closed the torus spray valves will not be allowed to be opened with a LOCA signal present. The RHR LOGIC CTMT SPRAY VLV LPCI SIG BYPASS pistol grip switch must be taken to MANUAL.

The RHR LOGIC CTMT SPRAY VLV LPCI SIG BYPASS pistol grip switch must be taken to MANUAL.

#### QUESTION 17

The plant is operating at 10% RTP.

Repair of RPS M/G Set B has just been completed and it is being returned to operation.

When the RPS bus 'B' transfer switch is moved from the ALT to NORMAL position, without any additional operator action, which ONE of the following signals will be generated?

- A. MSIV closure
- B. Full reactor SCRAM
- C. Reactor building ventilation trip
- D. RHR shutdown cooling suction valve closure

powered by the respective RPS bus.

QUESTION 18

An automatic closure of the stack isolation valve, FCV-11, has occurred due to excessive off gas radiation levels.

ON 3152, Off Gas High Radiation, directs the operator to:

- A. Scram the reactor.
- B. Scram the reactor and close the MSIVs.
- C. Place the shutdown iodine filter in service.
- D. Reduce recirc flow to 28.5-29.5 Mlbm/hr at 10% CTP/minute.

lace the Shutdown Iodine Filter in service per OP 2150.

QUESTION 19

An electrical fire is burning in MCC-89A.  
The fire brigade wants to use water to fight the fire.

Which ONE of the following is correct IAW OP 2186, 'Fire Suppression Systems'?

- A. MCC-89A MUST be de-energized.  
The Shift Manager's permission is required to use water on an electrical fire.
- B. MCC-89A MUST be de-energized.  
The Fire Brigade Commander's permission is required to use water on an electrical fire.
- C. MCC-89A SHOULD be de-energized.  
The Shift Manager's permission is required to use water on an electrical fire.
- D. MCC-89A SHOULD be de-energized.  
The Fire Brigade Commander's permission is required to use water on an electrical fire.

electrical equipment involved in, or in the vicinity of a fire, should be de-energized if possible, and only when so directed by the Shift Manager.

QUESTION 20

The "A" Emergency Diesel Generator (EDG) has just completed its monthly surveillance test.

While the stopping relay is timing out, a Loss of Normal Power (LNP) occurs.

Which ONE of the following describes the operator actions, if any, for an "A" EDG auto start and loading?

- A. No operator action is required. The EDG will auto start and load WHILE the stopping relay is timing out.
- B. No operator action is required. The EDG will auto start and load AFTER the stopping relay times out.
- C. The EDG will auto start and load after the AT ENGINE/REMOTE switch is placed in AT ENGINE.  
The shutdown relay is reset locally, the stopping relay times out, and the local AT ENGINE/REMOTE switch is returned to REMOTE.
- D. The EDG will auto start and load after the shutdown relay is reset locally, the stopping relay times out.  
The position of the AT ENGINE/REMOTE switch has no affect on EDG auto start capabilities under LNP conditions.

No EDG start occurs when the stopping relay is timing out.

The shutdown relay also needs to be reset and the AT ENGINE/REMOTE switch must be in remote.

The AT ENGINE/REMOTE switch must be in remote for an auto start.

#### QUESTION 21

The plant is operating at 100% power.

The following indications are then observed:

- AOG inlet flow increases
- COND VAC LO (7-H-3) alarm is in
- Steam seal pressure is zero

Which procedure addresses ALL of the above indications?

- A. ON 3151, Off Gas Explosion/Rupture Disc Failure.
- B. OT 3120, Condenser High Back Pressure.
- C. OP 2160, Turbine Generator Support System Operation.
- D. OPOP-AOG-2150, Advanced Off-Gas System and Air Evacuation Equipment.

QUESTION 22

Core Spray Initiation Logic includes an initiation signal of reactor low – low water level with low reactor pressure.

With this initiation signal the Core Spray Injection Valves start to open when reactor pressure drops below   A   psig and injection to the RPV starts when reactor pressure drops below   B   psig.

- |    | <u>  A  </u> | <u>  B  </u> |
|----|--------------|--------------|
| A. | 350          | 268          |
| B. | 350          | 220          |
| C. | 310          | 268          |
| D. | 310          | 220          |

QUESTION 23

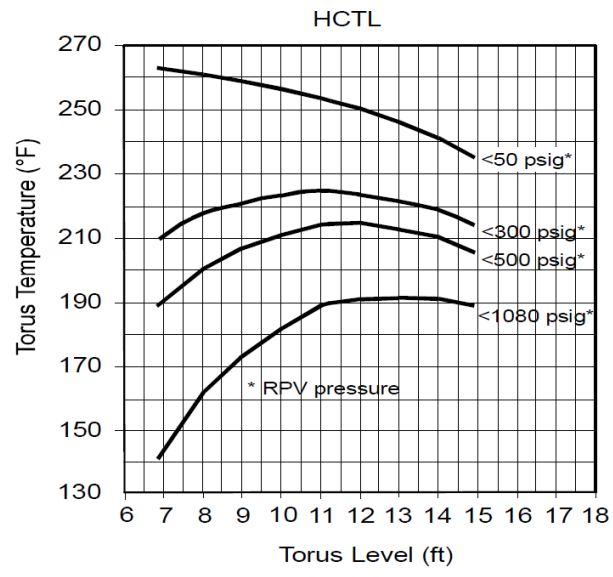
A LOCA occurs from power operation causing a reactor SCRAM and the following conditions:

- Torus level is 12 ft and steady
- Torus temperature is 140 °F and rising
- RPV pressure is 400 psig and steady

For the present RPV pressure and Torus level, what is the LOWEST approximate Torus temperature that will require an EOP-5 Emergency Depressurization?

- A. 192 °F
- B. 215 °F
- C. 225 °F
- D. 250 °F





°F is a plausible answer.

°F

°F is a plausible answer.

°F is a plausible answer.

#### QUESTION 24

A LOCA has occurred and EOP-3, "Primary Containment Control", has been entered. The CRS is about to order you to spray the drywell with RHR but first asks you to verify torus level is below 22.8 ft.

The concern for this is that if torus level is above 22.8 feet, then:

- A. Torus level will cause RHR to cavitate.
- B. Torus capacity is insufficient to accept spray water.
- C. Torus-Drywell vacuum breakers may be submerged.
- D. Torus spray header may be submerged.

High torus water level provides increased NPSH and prevents cavitation.  
No outside source of water is used to spray the drywell so level won't rise.

Torus water level is verified < 23 feet to ensure Torus-to-Drywell vacuum breakers operability

The torus spray header won't be placed in service.

QUESTION 25

Which ONE of the following describes how the Reactor Building is protected from excess positive differential pressure?

- A. Blowout panels installed at various locations.
- B. Only operator action is available to maintain safe Reactor Building differential pressure.
- C. The Reactor Building door seals will leak sufficiently to prevent excess differential pressure.
- D. The Standby Gas Treatment System is not capable of achieving a differential pressure sufficient to damage the Reactor Building.

QUESTION 26

The following plant conditions exist:

- A seismic event has caused the torus suction lines to both Core Spray loops to crack downstream of the Core Spray Suction (CS-7A, B) valves
- The cracks result in the water level in the NE and SE Corner Rooms to reach 2 inches and 4 inches above the floor respectively
- Except for this leak the plant continues to operate normally at full power
- Efforts to lower the water level are only able to maintain Corner Room levels
- Torus water level is 9.5 ft

Which ONE of the following actions is required at this time?

- A. Isolate both Core Spray suction lines from the torus.
- B. Maintain both the Core Spray suction lines aligned to the torus.
- C. Transfer the Core Spray suction for both loops to the CST.
- D. Scram reactor and perform an Emergency RPV Depressurization.

EOP-4 Step SC/-1 requires both Core Spray suction lines to be isolated because they are not required to be operated by the EOPs. Candidate may evaluate that criteria is not met to disable an ECCS system.

Transferring the Core Spray suction lines from the Torus to the CST will just allow the CST to drain into the Corner Rooms.

There is no need to scram the plant and RPV-ED assuming the leaks can be isolated by closing CS-7A/B. Torus water level is 8.5". EOP-3 requires scram & RPV-ED when level cannot be maintained above 7".

#### QUESTION 27

The subsystems of the Containment Atmosphere Dilution (CAD) system include which ONE of the following:

- A. Three defrostable-fan ambient vaporizers for conversion of liquid nitrogen to gas.
- B. A vent path to allow venting of the drywell and/or torus directly to the main plant exhaust stack.
- C. Piping and valves which allow nitrogen from a temporary manifold to flow into the drywell or torus.
- D. A 15,000 gallon liquid nitrogen storage tank which contains sufficient volume for a system purge plus several weeks of make-up operation.

QUESTION 28

A ground has been detected on Bus DC-2.

Ground meter indication is +40 VDC.

Under these conditions, DC-2 loads \_\_\_\_1\_\_\_\_ operate correctly, and the actions of OP 2145, Section B 'DC Ground Response' \_\_\_\_2\_\_\_\_ be performed.

- A.     1  
will                    2  
                          should
- B.   will not            should
- C.    will               should not
- D.   will not           should not

the DC system is designed such that operability is maintained following receipt of a solid ground fault. Any magnitude of ground fault (including a solid fault) can be tolerated without compromising proper operation of the respective 125 VDC circuits, including those associated with relay types most sensitive to the effects of ground faults. Additionally, Precaution 5 of OP 2145 states that Section B, 'DC Ground Response' should be performed when DC-1, DC-2, DC-1AS, or DC-2AS battery ground voltage readings exceed 45VDC..

QUESTION 29

In accordance with ON-3153, Excessive Radiation Levels, which one of the following indications would alert an operator of a possible leak into the Reactor Building Closed Cooling Water (RBCCW) system?

- A. A rise in suction pressure to the RBCCW Pumps and a concurrently lowering of the Fuel Pool water level.
- B. Hi radiation alarm on the RBCCW Process Radiation Monitor and rising level in the RBCCW Surge Tank.
- C. A rise in the radiation levels in the vicinity of RBCCW system piping or components and high temperatures on the operating CRD Pump.
- D. Hi radiation alarm on the Service Water (SW) Process Radiation Monitor with concurrent indication of a RBCCW heat exchanger tube leak.

Knowledge of the physical connections and/or cause-effect relationships between COMPONENT COOLING WATER SYSTEM and the following:

K1.03 Radiation monitoring systems

There is no correlation between a lowering fuel pool level and rising RBCCW suction pressure.

Per ON-3153, If the RBCCW radiation monitor indicates a high radiation level: Isolate the RCU system and check surge tank level indication to determine if the leak has been isolated, If the RBCCW surge tank level continues to increase, shift to the standby fuel pool cooling heat exchanger and continue to monitor surge tank level.

-Rising rad levels around RBCCW piping is a valid indication of a leak per OP-2182, P&L #1 Be aware of normal radiation levels in the vicinity of the system. Any appreciable rise in these radiation levels can indicate a possible leak into the RBCCW system. RBCCW supplies bearing and oil coolers on the CRD Pump, therefore, high CRD pump temperatures could indicate a lower RBCCW flow and not a leak into the RBCCW system.

Incorrect - A high radiation level in the SW system would indicate a leak into the SW system however by OP 2181 App B the SW system is maintained at a higher pressure than the RBCCW system, so leakage would be into the RBCCW system.

CFR 41.2 to 41.9 /  
45.7 to 45.8

QUESTION 30

An ADS blowdown is in progress with all RHR and Core Spray pumps running when the pump discharge pressure switches for RHR pumps 'A' & 'C', and Core Spray pump 'A' fail to the low discharge pressure condition.

Which ONE of the following describes how the ADS system will respond?

- A. The blowdown will continue with SRVs RV2-71A, and C only.
- B. The blowdown will continue with SRVs RV2-71B, and D only.
- C. The blowdown will continue with SRVs RV2-71A, B, C, and D.
- D. SRVs RV2-71A, B, C, and D will close and the blowdown will stop.



QUESTION 31

The Mode switch is in "RUN" and the plant is at full power.

APRM downscale alarm has come in and APRM "E" indicates downscale on the CRP 9-5 bench board.

The BOP is sent to the APRM cabinet to investigate.

While attempting to check LPRM inputs, the BOP inadvertently positions the APRM "E" Mode Switch from the "OPERATE" to the "POWER" position.

This action will cause which ONE of the following?

- A. Alarm only.
- B. Alarms and rod block only.
- C. Alarms, rod block and  $\frac{1}{2}$  scram on RPS "A".
- D. Alarms, rod block and  $\frac{1}{2}$  scram on RPS "B".

rod block (withdrawal) and 1/2 scram received also.

1/2 scram received also.

unction switch out of "OPERATE" causes alarms, rod block (withdrawal) and 1/2 scram on RPS system "A".

APRM "E" is assigned to RPS system "A".

## QUESTION 32

The reactor was scrammed at 1200, EOPs were entered, and plant conditions were as follows:

- Reactor pressure is 430 psig and lowering linearly at 10 psig/minute
- Reactor level is +75 inches and lowering
- Drywell pressure is 1.6 psig and stable
- UPS FDR TRIP keylock switches are in BLOCK

At 1215, which ONE of the following describes the status of the RHR system?

- A. All RHR pumps are running, LPCI is not injecting.
- B. No RHR pumps are running, LPCI injection valves are open.
- C. RHR is injecting in the LPCI mode, OUTBD INJECTION RHR-27A/B CAN be throttled by the operator to maintain RPV level.
- D. RHR is injecting in the LPCI mode, OUTBD INJECTION RHR-27A/B CANNOT be throttled by the operator to maintain RPV level.

QUESTION 33

Following a transient the following plant conditions exist:

- RHR Pumps 'A' and 'C' are injecting to the vessel maintaining RPV level above 127 inches

with the RHR-27A, Outboard Injection Valve, throttled.

- RHR Pump 'B' is in torus cooling.

The operators then determine that the suction strainer for RHR pumps 'A' and 'C' are becoming plugged by debris.

In accordance with the EOPs the operators should:

- A. Secure either RHR Pump 'A' or 'C' and leave the idle pump's discharge valve open so that the running pump flow can backwash the filter.  
RHR Pump 'B' should be left in Torus cooling.
- B. Secure either RHR Pump 'A' or 'C' and commence injection to the RPV with RHR Pump 'B'.
- C. Secure either RHR Pump 'A' or 'C', if not required to maintain adequate core cooling.
- D. If possible, place RHR Loop 'A' in Torus cooling and use RHR Pumps 'B' and 'D' to maintain RPV level.

The sequence/steps are not in accordance with procedural direction

The sequence/steps are not in accordance with procedural direction

Correct per the procedure. OPPP-0718, Attachment 9, EOP-1, Section 6, Rev. 15, page 18 & 19 The flowcharts, to ensure compliance with VY's design basis, prohibit exceeding NPSH limits in any procedure steps that would be used during a design basis accident. Both RHR A & C are not required to maintain adequate core cooling. if RHR-27A is throttled.

The sequence/steps are not in accordance with procedural direction.

OPPP-0718, Attachment 9, EOP-1,  
Section 6, Rev. 15, page 18 & 19

#### QUESTION 34

Shutdown cooling is being placed in service IAW OPOP-RHR-2124, Section 7.7.

The simultaneous opening of RHR-56, LOOP B FLUSHING CONN FROM CONDENSATE TRANSFER, and RHR-75, LOOP A FLUSHING CONN FROM CONDENSATE TRANSFER, can cause which ONE of the following to occur?

- A. A cross-tie of the RHR loops.
- B. Reactor water temperature stratification.
- C. A greater than expected reactor water cooldown rate.
- D. A Group 4 PCIS isolation due to a pressure spike caused by steam voids at high points collapsing.

QUESTION 35

HPCI is injecting to the reactor vessel with the flow controller in MANUAL at 1000 GPM.

Reactor pressure rises from 850 psig to 950 psig.

Which ONE of the following describes the effect on HPCI, steady state to steady state?

- A. RPM will rise, pump flow will rise.
- B. RPM will rise, pump flow will remain constant.
- C. RPM will remain constant, pump flow will remain constant.
- D. RPM will remain constant, pump flow will lower.

manual control maintains a constant speed

manual control maintains a constant speed

Flow will decrease as pressure rises with speed constant

With the controller in manual it maintains a constant RPM. As RPV pressure rises, with the pump at the same RPM, pump flow drops since the higher RPV pressure offers more resistance.

#### QUESTION 36

The following occurs due to a LOCA:

- Loss of Normal Power (345kv and 115 kV yards lost)
- 'B' EDG fails to start

Two minutes later, the following conditions are present:

- Drywell pressure is 4 psig
- Reactor pressure vessel is 250 psig
- Reactor water level is +80.0 inches
- The 4 kV Bus 3 is re-energized from the Vernon tie

Which ONE of the following describes expected events upon Bus 3 re-energization?

- A. Core Spray Pump 'B' starts immediately.  
CS-12B PUMP DISCHARGE opens immediately.
- B. Core Spray Pump 'B' starts immediately.  
CS-12B PUMP DISCHARGE opens after a 10 second time delay.
- C. Core Spray Pump 'B' starts after a 10 second time delay.  
CS-12B PUMP DISCHARGE opens immediately.
- D. Core Spray Pump 'B' starts after a 10 second time delay.  
CS-12B PUMP DISCHARGE opens after a 10 second time delay.





QUESTION 37

The CRO notices that one of the squib continuity lights is out on CRP 9-5. Which one of the following is available to verify the continuity of power to the squib valves?

- A. CRP 9-5 annunciator
- B. ERFIS computer point.
- C. Indicating lights near the local control switches.
- D. Two ammeters behind CRP 9-5.

Two ammeters behind CRP 9-5 will verify squib valve continuity if meter reads > 0.1 milliamp

QUESTION 38

The SCRAM Discharge Volume (SDV) Water Level Bypass keylock switch was placed in BYPASS to reset a SCRAM, and remains in the BYPASS position.

Which ONE of the following ensures that a SCRAM will still occur on SCRAM DISCH VOL WTR LEVEL HI during the ensuing startup?

- A. The SDV Water Level Bypass switch is active only after a valid RPS SCRAM signal is received.
- B. The SDV high level SCRAM is automatically re-enabled when RPS sub-channels 'A3' and 'B3' are re-energized.
- C. The SDV high level SCRAM is automatically re-enabled when the SDV is drained below the high level SCRAM setpoint.
- D. The SDV Water Level Bypass switch is bypassed when the Reactor Mode Switch is placed in STARTUP/HOT STANDBY.

The SDV Water Level Bypass switch is bypassed when the Reactor Mode Switch is placed in STARTUP/HOT STANDBY.

QUESTION 39

Given the following conditions:

- The Mode Switch is in STARTUP
- A 1/2 scram has been inserted on RPS 'B' due to a recirc flow comparator malfunction
- APRM "C" IS BYPASSED

IRM 'C' fails such that annunciator IRM 'A', 'C', or 'E' UPSCALE TRIP OR INOP is received.

Which of the below describes the plant condition after the IRM 'C' malfunction?

- A. A rod block is generated by the Rod Block circuitry but a full Scram is NOT received.
- B. A rod block is generated by the Rod Block circuitry and a full Scram is received.
- C. A rod block is NOT generated by the Rod Block circuitry AND a full Scram is NOT received.
- D. A rod block is NOT generated by the Rod Block circuitry but a full Scram is received.

Knowledge of the effect that a loss or malfunction of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM will have on following: (CFR 41.7 / 45.4): Reactor manual control

QUESTION 40

Plant conditions are as follows:

- Reactor startup in progress
- Source Range Monitor (SRM) detectors are being withdrawn from the core with the following Intermediate Range Monitor (IRM) system conditions:

IRM	/	Range
A	/	3
B	/	4
C	/	2
D	/	Channel is bypassed
E	/	3
F	/	5

While being withdrawn, the indication for the 'B' SRM Channel drops to 30 CPS.

Which ONE of the following identifies the alarm that will be received and the status of control rod withdrawal block?

<u>Alarm</u>	<u>Control Rod Withdrawal Block</u>
A. 5-P-4, 'SRM DWNSCL'	Active
B. 5-P-4, 'SRM DWNSCL'	Not active
C. 5-P-6, 'SRM RETRACT NOT PERMITTED'	Active
D. 5-P-6, 'SRM RETRACT NOT PERMITTED'	Not Active

QUESTION 41

The reactor is operating at 80% power and APRM C is bypassed on CRP 9-5. Which ONE of the following sets of conditions will initiate a full reactor SCRAM with the above condition?

(Assume no operator action taken)

- A. APRM A INOP trip AND APRM E- High-High.
- B. APRM B High-High AND APRM D- High-High.
- C. APRM A INOP AND APRM B- INOP.
- D. APRM B High-High AND APRM F- INOP.

Knowledge of AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM design feature(s) and/or interlocks which provide for the following: (CFR 41.7): Reactor SCRAM signals

These conditions only result in a half scram on RPS Channel "A".

These conditions only result in a half scram on RPS Channel "B".

This will result in a full scram.

These conditions only result in a half scram on RPS Channel "B".

QUESTION 42

Due to a security event, the Control Room has been abandoned and RCIC is being used to control RPV level from the Alternate Shutdown Panel IAW OPOP-ALTSD-3126.

RPV level is raised to 180 inches.

Which ONE of the following is correct for these conditions?

- A. An automatic RCIC Shutdown will NOT occur.
- B. RCIC-1 TRIP THROTTLE VALVE, and RCIC-27 MINIMUM FLOW will close.
- C. RCIC-1 TRIP THROTTLE VALVE, RCIC-131 STEAM SUPPLY, and RCIC-132 COOLING WATER will close.
- D. RCIC-1 TRIP THROTTLE VALVE, RCIC-15 STEAM ISOLATION, RCIC-16 STEAM ISOLATION, and RCIC-39 PUMP SUCTION will close.

QUESTION 43

The normal power supply to ADS Logic "A" is \_\_\_\_\_.  
The normal power supply to SRV solenoids is \_\_\_\_\_.

- A. DC-1C; DC-1C
- B. DC-1C; DC-2C
- C. DC-2C; DC-1C
- D. DC-2C; DC-2C

Knowledge of electrical power supplies to the following: (CFR 41.7): ADS logic

The normal power supply for ADS logic "A" is DC-2C; The normal power supply for the SRVs is DC-2C.

The normal power supply for ADS logic "A" is DC-2C

The normal power supply for the SRVs is DC-2C.

DC-2C; DC-2C The normal power supply for ADS logic "A" is DC-2C; The normal power supply for the SRVs is DC-2C.

QUESTION 44

During normal full power operation, a recirculation system line rupture results in reactor water level dropping to +80 inches above the Top of Active Fuel.

Which ONE of the following lists all of the expected PCIS Group isolations?

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



QUESTION 45

Analyze the following:

- Torus temperature is 78°F and rising 1°F/5 min
- RPV level has dropped 1 inch
- Generator MWe load has dropped 15 MWe
- Steam flow is 2% LOWER than indicated feed flow
- 'C' SRV tailpipe temperature reads 235°F and rising slowly
- "RX RELIEF VLV OPEN" alarm (CRP 3-A-1) is not illuminated
- "RX RELIEF/SAFETY VLV TEMP HI" alarm (CRP 3-B-4) is illuminated

Your required actions are to:

- A. Place torus cooling in service as required to maintain temperature.
- B. Cycle the 'C' SRV control switch from AUTO to OPEN to AUTO.
- C. Place the ADS APPENDIX R BYPASS Switch in BYPASS.
- D. Pull the associated control power fuses for the 'C' SRV.

: As "C" SRV is leaking, actions are required to place torus cooling in service to maintain torus temperature.

s these actions are required for an OPEN SRV.

s these actions are performed if cycling the switch for the SRV fails to close the OPEN valve.

his is performed if actions listed in answers B and C fail to work

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#### QUESTION 46

A loss of Vital AC occurs with HPCI in its normal standby lineup.

Which ONE of the following will occur?

- A. HPCI line break auto-isolation will be non-functional.
- B. The HPCI turbine will NOT start on a subsequent valid actuation signal.
- C. HPCI will remain fully functional in its normal standby lineup.
- D. HPCI-17 CST SUCTION will close, HPCI-57 & HPCI-58 TORUS SUCTION will open.

QUESTION 47

Which one of the following describes the operation of the SBGT system 9 KW Heater?

The heater is on when the ...

- A. SBGT fan is off with high humidity sensed.
- B. SBGT fan is running with high humidity sensed.
- C. SBGT fan is running with normal flow and a low inlet temperature.
- D. SBGT fan is running regardless of flow or inlet temperature.

QUESTION 48

The following alarm is the result of an electrical grid transient:

- 8-C-6, TIE LINE K1 LOSS

Based on this indication, which ONE of the following has been lost?

- A. T-1 Auto Transformer.
- B. T-4 Auto Transformer.
- C. T-1 AND T-4 Auto Transformers.
- D. T-3A AND T-3B Startup Transformers.

QUESTION 49

While operating at 100% power, an electrical transient results in a sustained loss of DC-1.

With no operator action, which ONE of the following is true?

- A. The outboard MSIVs will lose position indication and will close.
- B. The outboard MSIVs will lose position indication and remain open.
- C. The inboard MSIVs will lose position indication and will close.
- D. The inboard MSIVs will lose position indication and remain open.

The outboard MSIVs are not affected by a loss of DC-1.  
The outboard MSIVs are not affected by a loss of DC-1.  
The valves will not shut since the solenoids still have power from Vital AC.  
An indication is lost and the valves remain open since Vital AC power is still available to the solenoids..

QUESTION 50

An electrical transient has occurred resulting in the following:

- VITAL MG SET DC LOSS/DC RUN (8-P-8)
- BUS 8 MCC TROUBLE (8-J-8)
- Bus 8 voltage is 480VAC
- Bus 9 voltage is 480VAC
- FWLC and FRVs remain in automatic

Which ONE of the following electrical power supplies is supplying power to the Vital AC MG?

- A. DC-1 is currently supplying power.
- B. DC-3 is currently supplying power.
- C. MCC-8B is currently supplying power.
- D. MCC-9A is currently supplying power.

During startup of the EDG, the static excitation system provides for automatic field flash when the engine has reached \_\_\_\_\_1\_\_\_\_\_ and is automatically discontinued when the generator output voltage reaches about \_\_\_\_\_2\_\_\_\_\_ of nominal voltage.

Which of the following answer combinations is correct for the above statement?

	<u>1</u>	<u>2</u>
A.	150 – 200 rpm	80%
B.	150 – 200 rpm	70%
C.	250 – 300 rpm	80%
D.	250 – 300 rpm	70%

**Knowledge of EMERGENCY GENERATORS (DIESEL/JET) design feature(s) and/or interlocks which provide for the following:**  
**K4.04: Field flashing**

The 80% value is incorrect.  
Both 150 – 200 rpm and 70% values are correct.  
Both 250 – 300 rpm and 80% values are wrong  
The 250 – 300 rpm value is incorrect.

**QUESTION 52**

The 'C' station air compressor is in service in the LEAD mode of operation, with the following conditions present:

- Header air pressure is 100 psig
- Low pressure stage outlet temperature is 456 °F
- Oil pressure is 21 psig

Which ONE of the following correctly describes the status of the 'C' station air compressor?

- A. The compressor tripped on low oil pressure.
- B. The compressor has continued normal operations.
- C. Pressure switch PS-105-39C has actuated to unload the compressor.
- D. The compressor tripped on high low pressure stage outlet temperature.



°F. Therefore, a Low Pressure Stage outlet temperature of 456 °F will trip the 'C' Station Air Compressor.

QUESTION 53

The plant is operating at 100% RTP with the "A" RBCCW pump running and the "B" RBCCW pump in standby.

An electrical transient results in the sustained loss of Bus 9.

Prior to cross connecting buses 8 and 9, which ONE of the following describes the effect on the RBCCW system?

- A. The Standby RBCCW pump will auto start AND power is lost to RCW-117, Drywell RRU Cooling Water Return.
- B. The Standby RBCCW pump will auto start.  
RCW-117, Drywell RRU Cooling Water Return, continues to have power.
- C. Power is lost to the RBCCW pump in standby AND power is lost to RCW-117, Drywell RRU Cooling Water Return.
- D. Power is lost to the RBCCW pump in standby.  
RCW-117, Drywell RRU Cooling Water Return, continues to have power.

Knowledge of electrical power supplies to the following: (CFR 41.7):  
CCW valves

RCW-117 is powered from MCC-8B and remains energized.

RCW-117 is powered from MCC-8B and remains energized.

RCW-117 is powered from MCC-8B and remains energized.; The "B" RBCCW pump is powered from Bus 8 and remains energized.

The "B" RBCCW pump is powered from Bus 8 and remains energized.

QUESTION 54

Which ONE of the following events requires the Operator to place the NOTCH OVERRIDE switch to the EMERGENCY IN position?

- A. Simultaneous multiple drifting control rods.
- B. Sustained SRM period shorter than 30 seconds.
- C. An outward drifting control rod when there is an RMCS timer malfunction.
- D. A control rod is to be inserted following a double-notching event on a rod withdrawal.

QUESTION 55

Given the following conditions:

- The plant is operating at 90% power
- The Feed Flow Summer has just failed downscale as indicated on the Steam Flow /Feed Flow Recorder (FR 6-97)
- Indicated reactor water level on the selected Narrow Range GEMAC is 164 inches and rising
- Assume no Operator actions are taken

Which of the following describes the expected response of the Recirc Pumps for these conditions?

The Recirc Pumps...

- A. will runback to 20% speed.
- B. scoop tubes will lockup.
- C. will runback to 30% speed.
- D. will be unaffected

Recirc Pump auto runback will occur when the selected feed flow control channel is less than 20% flow with a 15 sec. Time delay.

No condition for scoop tube lock-up has been met. Scoop Tubes will reposition to allow runback to 20% speed

Runback to 20% speed will occur (not 30%)

Unless operators switch the FWLC to single-element control the Recirc Pumps will runback.

#### QUESTION 56

A full core Local Power Range Monitor (LPRM) calibration is in progress with the Traversing In-Core Probe (TIP) system when the following occurs:

- A fault in the feedwater control system results in the tripping of all feedwater pumps
- RPV level lowers to 75 inches before Reactor Core Isolation Cooling (RCIC) and High Pressure Coolant Injection (HPCI) inject and restore RPV level

Given these conditions, what (if any) AUTOMATIC actions associated with the TIP System will occur?

- A. No automatic actions occur.
- B. The Shear Valve fires when RPV level lowers to 82.5 inches.
- C. The TIP drive retracts the TIP detector when RPV level lowers to 127 inches.
- D. The TIP drive retracts the TIP detector when RPV level lowers to 127 inches AND the Shear Valve fires when RPV level lowers to 82.5 inches.

QUESTION 57

Given the following conditions:

- The plant experienced a small LOCA in which level initially dropped below 82.5 inches
- The reactor is currently shutdown
- The drywell temperature is 300 °F
- The reference leg temperature is 290 °F
- Reactor pressure is 35 psig
- Shroud (LT-2-3-73 A(B)) level is 10 inches and rising
- Wide Range (LT-2-3-70) level is 60 inches and rising

Which of the below describes the reactor vessel water level indication?

- A. Reactor vessel water level is undetermined because of degraded containment parameters.
- B. Reactor vessel water level is 10 inches because the Shroud Level instrument is calibrated for these conditions.
- C. Reactor vessel water level is 60 inches because the Wide Range Level instrument is calibrated for these conditions.
- D. Reactor vessel water level is 20 inches because containment parameters and the maximum run temperature calculation requires 40 inches to be subtracted from the Wide Range Refuel indicated level.

**Knowledge of the operational implications of the following concepts as they apply to NUCLEAR BOILER INSTRUMENTATION:**

**Reference leg flashing: Design-Specific**

From the steam tables the saturation temperature for 35 psig (50 psia) is 281 °F since the Drywell and the reference legs are both hotter than that it must be concluded that the reference legs could be boiling off and therefore the level instrumentation is unreliable. The EOPs should be entered at the entry condition of LEVEL UNKNOWN.

**QUESTION 58**

The plant was at power with the breaker for RHR Pump 'A' tagged out for maintenance when the following occurs:

- A Reactor coolant leak resulted in a Drywell pressure of 6 psig
- RHR pump 'D' was started
- RHR-39B, TORUS SPRAY/CLG was opened, for Torus Spray

No other actions were taken.

Following these actions, a loss of power of Bus 3 occurs (DG fails to supply the bus and NO buses are cross-tied).

Based on the above information which of the following is correct?

One RHR Pump is available for LPCI injection on the 1 RHR Loop(s).

Torus sprays are 2.

- |    |                 |                                              |
|----|-----------------|----------------------------------------------|
| A. | <u>1</u><br>'A' | <u>2</u><br>NOT available on either RHR Loop |
| B. | 'B'             | NOT available on either RHR Loop             |
| C. | 'A' and 'B'     | available ONLY on 'A' RHR Loop               |
| D. | 'A' and 'B'     | available ONLY on 'B' RHR Loop               |

QUESTION 59

Which ONE of the following is in place to eliminate component or system thermal stress damage?

- A. Suppression Chamber Spray Initiation Pressure (SCSIP) limit.
- B. Primary Containment Main Steam Line pipe penetration bellows assembly.
- C. Safety Relief Valve Tail Pipe Level Limit (STPLL).
- D. Reactor Vessel Fuel Assembly Blade Guides.

SCSIP precludes chugging, the cyclic condensation of steam at the downcomer openings of the drywell vents. When a steam bubble collapses at the exit of the downcomers, the rush of water drawn into the downcomers to fill the void induces stresses at the junction of the downcomers and the vent header in Mark I containments. Repeated application of such stresses could cause **fatigue failure** of these joints.

The Main Steam Lines which pass through the primary containment penetration is free to move axially, and a bellows expansion joint is provided to alleviate **thermal stress** levels that would otherwise exceed the allowable design limits. The pipe penetration bellows supports the accommodation of **thermal stresses** which may be encountered during all modes of operation, without failure.

SRV operation with torus water level above the STPLL could damage the SRV discharge lines. The tail **pipe load** which results from opening an SRV increases with steam flow and the length of flooded tail pipe.

In-core instrumentation must be protected on all four sides by installing blade guides when fuel cells have been removed prior to operating recirc pumps. Due to their long, thin geometry they are sensitive to **flow induced vibration fatigue**. If the local flow rates are high enough, the level of flow induced vibration could damage the in-core instrumentation in the form of fatigue to the sheath tube. (LOT-00-300).



QUESTION 60

The plant is operating at 30% RTP when a manual Reactor SCRAM is inserted.

Which ONE of the following correctly describes the response of the Main Turbine?

- A. The turbine will not automatically trip.
- B. The turbine acceleration relay will trip the turbine.
- C. The turbine will trip when Reactor water level reaches the high level setpoint.
- D. The turbine will trip when SCRAM air header pressure reaches the low pressure setpoint.

**Ability to monitor automatic operations of the MAIN  
TURBINE GENERATOR AND AUXILIARY SYSTEMS including**

**QUESTION 61**

The station is at 100% power during summer operations.  
The plant is operating with elevated condensate temperatures.  
The backpressure in the main condenser starts to degrade to > 5 inches Hg.  
The Shift Manager orders a power reduction.

Which ONE of the following is the cause of the degraded vacuum?

- A. The AOG recombiner has isolated on high condensate temperature.
- B. The air ejectors are not working adequately due to high condenser backpressure.
- C. The OG 516 valve isolated due to high condenser backpressure.
- D. The air ejectors are not working efficiently due to insufficient cooling of the inter condensers.

The recombiner would only shift on condensate flow or bypass valve position. Inadequate cooling causing "stalling" of first stage air ejector.

Backpressure is an effect, not a cause.

516 isolates on OG-100 line pressure of 7.5 psig which is an indication of hydrogen combustion.

Inadequate cooling causing "stalling" of first stage air ejector

#### QUESTION 62

While operating at 45% RTP, a reactor coolant leak develops in the drywell. The following Control Room Panel alarm is observed as a result:

- 4-M-2, DWL FLOOR DRN SUMP LVL HI

Immediately after 4-M-2 annunciated, there will be \_\_\_\_\_ drywell floor drain pump(s) operating.

Five minutes later, the Shift Technical Advisor reports that Drywell Pressure is 2.7 psig and rising.

Six minutes after 4-M-2 annunciated, the level in the drywell Floor Drain Sump will be \_\_\_\_\_.

- A. one; rising
- B. two; rising
- C. one; lowering
- D. two; lowering

QUESTION 63

After a Group III PCIS isolation has occurred, the operator should verify that the reactor building supply and exhaust valves (HVAC 9, 10, 11, & 12) are closed. Which one of the following describes expected operator action: \_\_\_\_1\_\_\_\_?

AND

Where are the reactor building supply and exhaust valves (HVAC 9, 10, 11, & 12) PCIS signal reset to support fan motor operation: \_\_\_\_2\_\_\_\_?

- A. 1). Verify using the PCIS valve position indication status board on CRP 9-3  
2). CRP 9-5
- B. 1). Verify using the PCIS valve position indication status board on CRP 9-3  
2). CRP 9-3
- C. 1). Verify using the valve position indication on CRP 9-26.  
2). CRP 9-5
- D. 1). Verify using the valve position indication on CRP 9-26.  
2). CRP 9-3

these valves are not on this status board.

these valves are not on this status board

these valves are not on this status board

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QUESTION 64

A toxic gas is reported to be accumulating outside of the control room.

The Control Room Supervisor subsequently orders Control Room ventilation placed in the EMERGENCY mode.

After this action has been performed, Control Room pressure will \_\_\_\_\_, and all Control Room air will be \_\_\_\_\_.

- A. rise; exhausted
- B. lower; exhausted
- C. rise; recirculated
- D. lower; recirculated

QUESTION 65

The CRS has entered EOP-1 and EOP-3.

The CRO is directed to initiate Drywell Spray with RHR Loop B 20 minutes after a LOCA with LPCI initiation.

The following conditions are present:

- Drywell and Suppression Chamber pressures are 10 psig
- RPV level is -54 inches on LT-2-3-91A/B (Shroud Level) and slowly rising
- Both RHR Pumps A and B are injecting through the heat exchangers
- RHR Pumps C and D have been secured
- Both loops of Core Spray are injecting

Which one of the following conditions is required to open RHR Containment Spray outboard injection, MOV-26B?

- A. The LPCI initiation signal must be reset.
- B. Thermal expansion accumulator pressure greater than 50 psig.
- C. RHR Heat Exchanger Bypass, MOV-65B must be closed.
- D. S-18B (Keylock) must be placed in Manual Override.

## RHR/LPCI: CTMT Spray Mode

### QUESTION 66

The control room must be evacuated.

Other than scrambling the reactor, which ONE of the following are REQUIRED to be executed in accordance with OPOP-ALTSD-3126, 'Shutdown Using Alternate Shutdown Methods', prior to leaving the control room?

- A. Manually trip the main turbine, place the HPCI aux oil pump control switch in pull-to-lock, and place the Reactor Feed pump control switches in Pull-to-Lock.
- B. Place HPCI in Inhibit, place the ADS App. R bypass switch to BYPASS, and trip both Recirc pumps.
- C. Place the Reactor Feed pump control switches in Pull-to-Lock, place the ADS App. R bypass switch to BYPASS, and place the HPCI aux oil pump control switch in pull-to-lock.
- D. Place the ADS App. R bypass switch to BYPASS, manually trip the main turbine, and trip both Recirc pumps.

QUESTION 67

The \_\_\_\_\_ 1 \_\_\_\_\_ or his/her designee is responsible for approving all Operations Department Standing Orders.

The \_\_\_\_\_ 2 \_\_\_\_\_ or his/her designee is responsible for approving all Operations Department Night Orders.

\_\_\_\_\_ 3 \_\_\_\_\_ deal with Day to Day operational requirements of the station, or convey information to the operations crew from Operations Management.

Which ONE of the following correctly fills in the above blanks?

- |    | <u>1</u>              | <u>2</u>              | <u>3</u>        |
|----|-----------------------|-----------------------|-----------------|
| A. | Ops Manager           | Assistant Ops Manager | Night Orders    |
| B. | Assistant Ops Manager | Ops Manager           | Standing Orders |
| C. | Assistant Ops Manager | Ops Manager           | Night Orders    |
| D. | Ops Manager           | Assistant Ops Manager | Standing Orders |



**Knowledge of administrative requirements for temporary management directives, such as standing orders, night orders, operations memos, etc.**

QUESTION 68

In accordance with procedure AP 0157, Identification of Inoperative Instrumentation and Control of Status Lights, complete the following.

Notify the \_\_\_\_\_ 1 \_\_\_\_\_ if a control room instrument is found to be questionable, defective or out of calibration and attach a \_\_\_\_\_ 2 \_\_\_\_\_ sticker containing the WR/WO number to the instrument.

- |    | _____ 1 _____ | _____ 2 _____ |
|----|---------------|---------------|
| A. | CRS           | Yellow        |
| B. | Shift Manager | Yellow        |
| C. | Shift Manager | Red           |
| D. | CRS           | Red           |

if a control room instrument  
is found to be questionable, defective or out of calibration and to attach a yellow sticker  
containing the WR/WO number to the instrument.  
yellow sticker not red  
a yellow sticker not red.

QUESTION 69

OP 4100, 'ECCS Integrated Automatic Initiation Test' will be performed today and will  
take place over two shifts.

IPTE controls \_\_\_\_\_ required.

A Pre-job brief \_\_\_\_\_ required for the second shift.

- A. are, is
- B. are not, is
- C. are, is not
- D. are not, is not

**Knowledge of the process for conducting special or infrequent tests.**

**QUESTION 70**

In accordance with procedure EN-WM-107, Post Maintenance Testing, select the correct definition of an "Operability Test".

- A. An appropriate test, inspection, or check performed following any type of maintenance activity to ensure a component deficiency has been corrected and no new deficiency has been introduced.
- B. An appropriate test, inspection, or check to ensure a component or system meets its intended design function based on its Technical Specifications requirements or the Technical Requirements Manual (TRM).
- C. An appropriate test performed following maintenance or design change activities to demonstrate and document the capability of a system, device or component. Post maintenance testing further verifies that the original deficiency has been corrected without the introduction of any new deficiencies.
- D. An appropriate test, inspection, or check to ensure component or system meets its In-Service Testing ASME and Technical Requirements Manual (TRM).

Maintenance Testing (PMT) not Operability Test.  
Operability Test in accordance with EN-WM-107.  
Post Maintenance Testing (PMT) not Operability Test.  
ensure a component or system meets its intended design function based on its  
Technical Specifications requirements.

QUESTION 71

A 40 year old radiation worker at VY with a lifetime exposure of 1,000 mr requires a dose extension for work at VY.  
The individual has all quarters documented for the current year.

In accordance with EN-RP-201, "Dosimetry Administration", a dose extension to between \_\_\_\_ (1) \_\_\_\_ is required to be approved by \_\_\_\_ (2) \_\_\_\_.

- A. (1) 100 mr and 1R  
(2) ONLY the Radiation Protection Manager
- B. (1) 3R and 4R  
(2) the Radiation Protection Manager and Plant General Manager
- C. (1) 2R and 3R  
(2) ONLY the Plant General Manager
- D. (1) 3R and 4R  
(2) the Plant General Manager and the Site Vice President

QUESTION 72

While operating at 100% power, a valid off gas Hi-Hi radiation alarm is received on RAN-OG-3127 and 3128 (AOG Inlet to final delay pipe monitors). The alarm remains in for 35 minutes.

In accordance with ON 3152, 'MSL and Off Gas High Radiation', which ONE of the following closures will automatically occur?

- A. OG-101 A & B (Recombiner Lines).
- B. OG-516 A & B (Steam Jet Air Ejector Suction).
- C. OG-FCV-11 and OG-3 (Inlet to Stack and Drain).
- D. OG-FCV-36, OG-FCV-36A, and OG-FCV-37 (Steam Jet Air Ejector Supply).

### QUESTION 73

A fire was reported in the East Switchgear Room at 1426 at which time the Automatic Fire Suppression System began discharging.

Which ONE of the following is correct and meets the requirements of OP 2186, 'Fire Suppression Systems'?

- A. Following the discharge of Halon, the earliest that ventilation of the East Switchgear room may commence is 1456, unless directed by the Fire Brigade leader.
- B. Following the discharge of CO<sub>2</sub>, the earliest that ventilation of the East Switchgear room may commence is 1456, unless directed by the Fire Brigade leader.
- C. Following the discharge of Halon, the earliest that ventilation of the East Switchgear room may commence is 1511, unless directed by the Fire Brigade leader.
- D. Following the discharge of CO<sub>2</sub>, the earliest that ventilation of the East Switchgear room may commence is 1511, unless directed by the Fire Brigade leader.

**Knowledge of fire protection procedures. |**  
(CFR: 41.10 / 43.5 / 45.13)

CO<sub>2</sub>

QUESTION 74

Which one of the following provides the bases for inhibiting the automatic initiation of ADS as a priority during an ATWS?

To prevent \_\_\_\_\_ ? \_\_\_\_\_.

- A. power excursion due to low pressure ECCS injection
- B. causing a brittle fracture of the Reactor Vessel
- C. large irregular neutron flux oscillations
- D. exceeding 140°F Suppression Pool temperature before boron injection

Further, rapid and uncontrolled injection of large amounts of relatively cold, unborated water from low pressure injection systems may occur as RPV pressure decreases to and below the shutoff heads of these pumps. Such an occurrence would quickly dilute in-core boron concentration and reduce reactor coolant temperature. When the reactor is not shutdown, or when the shutdown margin is small, sufficient positive reactivity might be added in this way to cause a reactor power excursion large enough to severely damage the core.

ADS initiation would NOT cause flux oscillation but rather a rapid reduction in core power due to voids

may or may NOT be true but it is NOT the reason for inhibiting ADS

#### QUESTION 75

A LOCA with an ATWS occurred.

One hour later the CRS determined that an RPV Emergency Depressurization is required per EOP-2 and EOP-5.

Which ONE of the following actions must now be performed to prevent a power excursion large enough to damage the core and the RPV?

- A. Inhibit ADS.
- B. Wait until RPV pressure is below the value in Table K.
- C. Terminate and prevent Condensate/Feedwater, Core Spray, HPCI, and LPCI injection.
- D. Prevent injection from those Core Spray and RHR pumps not required to assure adequate core cooling.



**Knowledge of low power/shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies.**

**QUESTION 76**

During a plant startup, the turbine is being brought up to speed using OP 0105, Phase 3 Turbine Startup and Synchronization.

The following conditions exist:

- This is a Cold Startup
- Turbine speed is being raised at 90 rpm/minute
- Turbine speed is 1000 rpm and slowly rising
- 7-E-9, TURBINE SUPERVISORY CABINETS TROUBLE is in alarm
- 7-F-2, TURB EXCESSIVE VIBRATION has just alarmed
- ERFIS indicates the low pressure turbine and generator vibrations are below the turbine trip setpoints

Which ONE of the following actions is required for these conditions?

- A. Continue using OP 0105 to raise turbine speed through the critical speeds, and then verify turbine vibration lowers.
- B. Continue using OP 0105 to raise the rate of speed until above 1200 rpm, then hold speed to allow turbine shell warming and the vibration alarm to clear.
- C. IAW the ARS for 7-F-2, lower turbine speed below 800 rpm and then hold speed steady until the turbine vibration alarm clears.
- D. IAW the ARS for 7-E-9, trip the turbine and if vibrations do not lower below supervisory limits, break vacuum on the main condenser.



While operating at 60% Reactor power, a Reactor Scram on low reactor water level occurs but all rods remain at their pre-trip conditions.

Plant conditions thirty minutes after the transient:

- SLC tank level 2600 gal
- Rx power <4 %
- RPV pressure 900 psig being controlled using SRVs
- RPV level Intentionally lowered to -19 inches and rising slowly
- Suppression pool level 10.5 ft.
- Suppression pool temp 182°F and rising at 1°F/3 min
- Drywell pressure 4.5 psig
- Main steam tunnel temperature 170°F and rising at 1°F/2 min

Which one of the following is required for the conditions above?  
(see graphs behind question #78)

- A. Maintain RPV water level between -19 inches and +95 inches.
- B. Bypass interlocks to open the MSIV's and reduce RPV pressure.
- C. Reduce RPV pressure to prevent exceeding the Heat Capacity Temperature Limit curve.
- D. Emergency Depressurize to prevent exceeding the Pressure Suppression Pressure curve.

Wrong level band. Upper end of band limited to 90 inches with an ATWS.

Incorrect action based on evidence of leak in the Main Steam Tunnel.

HCTL limit is being approached and will reach Action Required line within 15 minutes.

RPV pressure must be reduced to move away from limit.

Action to be taken if RPV pressure cannot be lowered.

SRO

55997

#### QUESTION 78

A plant transient occurs resulting in a successful Reactor SCRAM and appropriate PCIS isolations.

The crew is currently implementing EOP-3.

The following conditions exist:

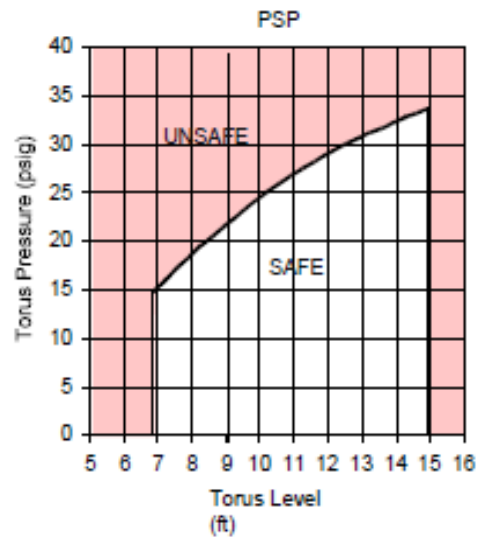
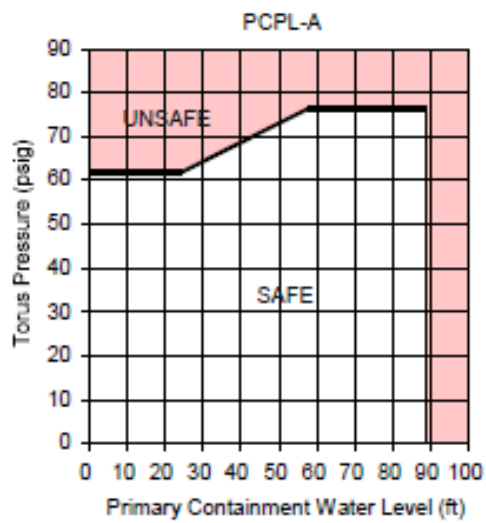
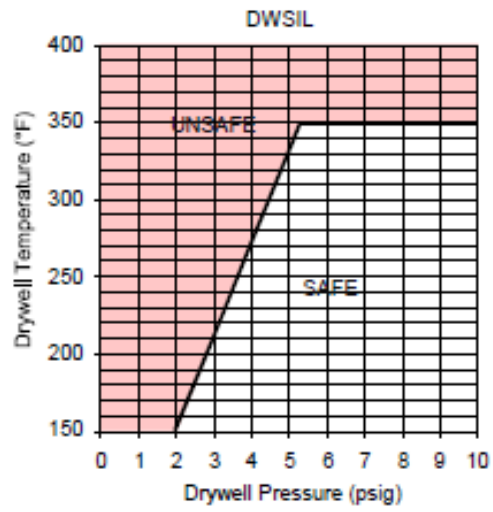
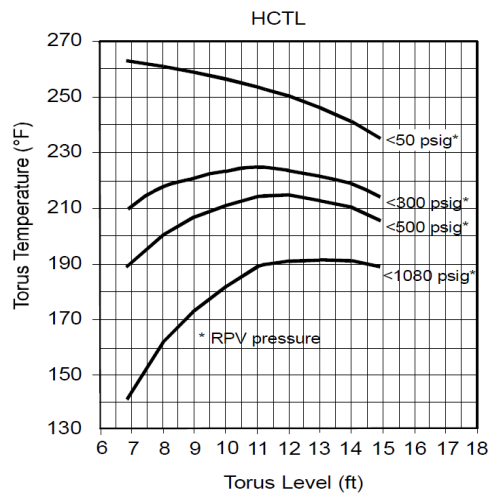
- Reactor pressure is 750 psig
- Reactor water level is being maintained above TAF
- Drywell pressure is 28.0 psig and rising slowly
- Drywell temperature is 250 °F and rising slowly
- Torus pressure is 28.0 psig and rising slowly
- Torus level is 11.0 ft and steady
- Torus water temperature is 183 °F and steady
- Drywell and Torus H<sub>2</sub> is 0.6% and steady
- Drywell and Torus O<sub>2</sub> is 2% and steady

Given the above conditions, the CRS is required to direct which ONE of the following:

- A. Enter EOP-5, RPV-ED and blowdown.
- B. Remain in EOP-3 and direct the initiation of drywell sprays.

- C. Perform post-accident containment nitrogen purge per OP 2125.
- D. Enter SAGs App E, Section 4 to re-assess containment conditions.

(See attached page for EOP-3 DWSIL, HCTL, PCPL-A, and PSP curves.)





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

- I&C has just discovered that both torus temperature indicating channels have a calibration error
- Both Torus temperature channels are indicating 82°F
- Actual Torus temperature has just been confirmed as 112°F

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

- A. Restore Torus temperature within 12 hours.
- B. Commence a normal plant shutdown with the reactor in cold shutdown within 36 hours of initial discovery.
- C. Restore the Torus temperature within 6 hours or a shutdown shall be initiated with the reactor in cold shutdown within 24 hours of initial discovery.
- D. Scram the reactor.



110F, initiate an immediate scram of the reactor.”

#### QUESTION 80

The plant is operating at rated conditions when an unisolable primary rupture occurs inside the drywell. EOP-1 RPV Control has been entered. Primary containment conditions subsequently degrade such that the CRS directs entry into EOP-3 Primary Containment Control.

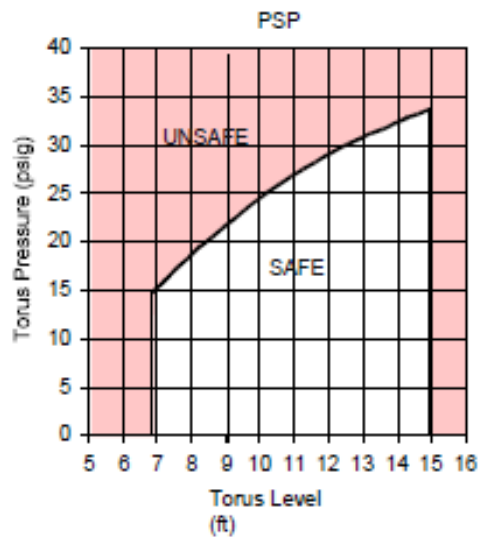
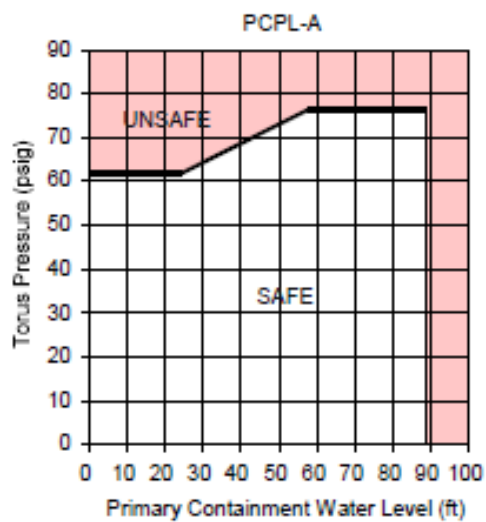
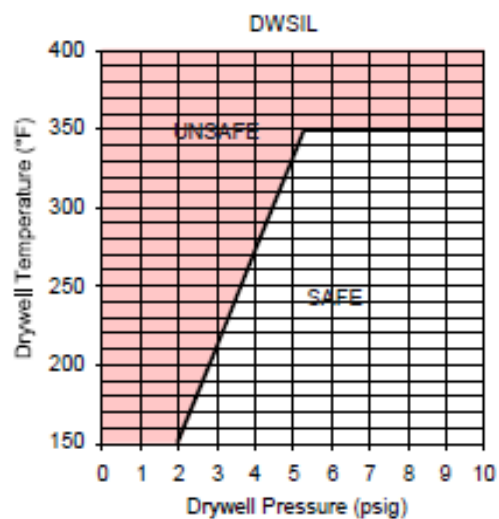
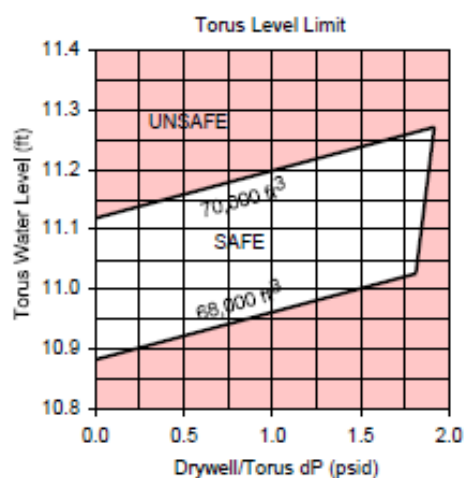
The following indications are observed:

- Torus pressure is 11.0 psig and slowly rising
- Torus level is 11.0 ft and slowly rising
- Drywell pressure is 12.25 psig and slowly rising
- Drywell temperature is 215 °F and steady
- RPV level is 8 inches and steady

Given the above conditions, the CRS is required to direct which ONE of the following:

- A. Enter EOP-5 and RPV-ED.
- B. Line up as many Alternate Injection subsystems as possible and bypass high temperature isolations as necessary.
- C. Shutdown the recirc pumps and drywell RRUs AND spray the drywell using only those pumps not required to maintain adequate core cooling.
- D. Terminate injection into the primary containment from sources external to the primary containment except from sources required to shut down the reactor.

(See attached page for EOP-3 PCPL-A, DWSIL, Torus Level Limit, and PSP curves)



## QUESTION 81

The plant was at rated power when an event occurred.

Present plant conditions include the following:

- All control rods indicate full-in
- RPV water level indicates 25 inches and lowering an inch per minute
- RPV pressure indicates 465 psig and lowering slowly
- Drywell pressure indicates 18 psig and is being controlled with Drywell sprays
- Both Startup Transformers have failed to energize their respective busses
- HPCI, RCIC, RHR systems are not available for core injection
- All Core Spray pumps have failed
- Both Standby Liquid Control System squib valves have failed to fire
- Fire water alternate subsystem is lined-up to RHR Loop 'A' and Condensate Transfer alternate subsystem is lined-up to RHR Loop 'B'

Which of the following shall the SRO direct NEXT?

- A. Rapidly depressurize the RPV using the turbine bypass valves to allow condensate water to inject into RPV.
- B. When RPV water level lowers to +6 inches, direct entry into EOP-5 RPV Emergency Depressurization.
- C. When RPV water level lowers to -19 inches, direct entry into EOP-5 RPV Emergency Depressurization.
- D. When RPV water level lowers to -19 inches, direct entry into SAMG, Primary Containment Flooding

Not only are the Condensate Pumps not available due to the failure of the Startup Transformers, but Depressurization of the RPV is not allowed until RPV level of -19" is reached with only Alternate Injection Subsystem use anticipated.

Emergency Depressurization at +6" is not authorized unless an Injection Subsystem (from Table E) is lined up with a running pump. Core Spray, RHR and Condensate Systems do not meet this criterion.

Emergency Depressurization of the RPV is required when RPV level of -19" is reached with only Alternate Injection Subsystem(s) use anticipated.

If RPV level cannot be restored and maintained above -19", THEN: an order to direct SAG entry would be appropriate. However, once the RPV is ED'd, both condensate transfer and Fire water will be able to make up an initial inch per minute drop in RPV water level.

## QUESTION 82

The plant is operating at rated power with the following conditions present:

- The 3340 Tie Line has been declared inoperable due to a line fault
- During routine electrical maintenance, the Bus 3 Degraded Voltage trip setting was found to be 3800 VAC and reported to the control room 3 hours ago.
- NO additional action was taken.

The following indications are subsequently received in the control room:

- 8-L-4, S/U XFMR T3 DIFF TRIP
- Startup transformer lockout 87/STA is tripped

Assuming no additional actions, which ONE of the following is applicable given the above conditions?

- A. The plant must be in cold shutdown within 24 hours.
- B. The plant may continue operations at power indefinitely.
- C. The plant may continue operations at power for 24 hours and then must be in cold shutdown within 24 hours.
- D. The plant may continue operations at power for 7 days and then must be in cold shutdown within 24 hours.

QUESTION 83

The EOP-3 has been entered:

- Drywell O<sub>2</sub> is unavailable
- Drywell H<sub>2</sub> is 0.7%
- Torus O<sub>2</sub> is 5%
- Torus H<sub>2</sub> is 0.4%

Under which of the following steady state conditions is containment purge with nitrogen required?

- A. Immediately, based upon current conditions. After sampling results for Drywell O<sub>2</sub> are obtained. After Torus H<sub>2</sub> exceeds 0.5%. Before Torus H<sub>2</sub> exceeds 0.5%.

EOP-3 Step PC/H-3 Perform post accident containment nitrogen purge per OP 2125 when drywell OR Torus hydrogen exceed 0.5% AND drywell OR Torus Oxygen exceed 4.0%.

EOP-3 Step PC/H-3 Perform post accident containment nitrogen purge per OP 2125 when drywell OR Torus hydrogen exceed 0.5% AND drywell OR Torus Oxygen exceed 4.0%.

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#### QUESTION 84

Given the following:

- The main generator has just been synched to the grid during a plant startup
- Reactor power is 15%
- With these initial conditions, main condenser vacuum begins to degrade
- Main condenser backpressure is now 5.0 inches HgA and rising slowly

Which ONE of the following is required IAW VY procedures?

- A. Enter OT 3120, Condenser High Back Pressure, and direct the reduction of reactor power as necessary to maintain condenser back pressure < 4.0 inches HgA to prevent possible turbine damage.
- B. Enter OT 3120, Condenser High Back Pressure, and direct that the turbine be manually tripped.  
If time permits, then direct the transfer of station loads to the Start-Up Transformer per OP 2142, 4KV Electrical system.
- C. Enter OT 3100, Reactor SCRAM, and direct the reactor be manually scrammed.  
Enter OT 3120, Condenser High Back Pressure and following the SCRAM, direct that vacuum be manually broken to prevent possible turbine damage.
- D. Enter OT 3100, Reactor SCRAM, and direct the reactor be manually scrammed.

Enter OT 3120, Condenser High Back Pressure, and direct that the turbine be manually tripped.

If time permits, then direct the transfer of station loads to the Start-Up Transformer per OP 2142, 4KV Electrical system.



annunciator STOP/CTRL VLV FAST CLOSURE BYP (5-K-8) is alarmed, then when backpressure exceeds 5.0 inches HgA, direct that the turbine be manually tripped. If time permits, then direct the transfer of station loads to the Start-Up Transformer per OP 2142, 4KV Electrical system. The question stem states that condenser backpressure IS greater than 5.0 inches HgA and increasing rapidly, and that RTP is <25% RTP. At 15% RTP, 5-K-8 is assumed to be in.

QUESTION 85

The plant is at 100% power.

During shift turnover operators were making up to the drywell.

Later in the shift the "TORUS TROUBLE" alarm comes in.

Control Room Torus indications are as follows:

- Torus pressure 0.2 psig
- Torus level 11.28 ft.
- Torus temperature 86 deg F
- Torus air space temp 142 deg F
- Drywell/Torus DP 1.8 psid

What action is required for the above conditions?

- A. Commence lowering DW/Torus DP.
- B. Perform the RHR pump discharge check valve test.
- C. Commence cooling down of the Torus pool water.
- D. Initiate an orderly shutdown and place the reactor in cold shutdown within 24 hours.

A

#### QUESTION 86

While operating at 100% power, a main generator load reject occurred requiring a manual reactor SCRAM.

- HPCI and RCIC received an auto start signal during the transient
- EOP-1, RPV Control has been entered
- The reactor is confirmed shutdown
- All RPV parameters are now stable

Regarding the ventilation systems in the reactor building, after verifying RB Ventilation isolation and SBTG Auto Initiation, which ONE of the following actions is correct IAW VY procedures?

- A. Monitor drywell/torus differential pressure IAW OP 2115, Primary Containment.
- B. Secure both 'A' and 'B' SBTG vent fans per OPOP-SGT 2117, Standby Gas Treatment.
- C. Secure one train of SBTG IAW OPOP-SGT 2117, Standby Gas Treatment to ensure its later availability.
- D. Reset PCIS Signal and OPEN HVAC-9,10,11 and 12 IAW OP 2192, Heating, Ventilating, and Air Conditioning System.

QUESTION 87

The Plant is at 100% power and Electrical Maintenance activities are progress on MCC-8B.

The Control Room receives a phone call from a maintenance technician who states that he just accidentally shorted out a number of wires in a breaker that he should not have been in.

At the same time the BOP operator observed V70-117, Drywell RBCCW return valve go closed.

The BOP operator gave V70-117 an open signal but it did not respond.

Select the appropriate combination of expected Control Room alarms received within the first two minutes of V70-117 closure, and select the first two abnormal procedures to be executed.

A. Recirc Pump & Motor cooling water low flow Alarms

DRYWELL EQMT DR SUMP TE HI

CRD HYD TEMP

OT 3100, Reactor Scram

OPOT-3118-01, Recirculation Pump Trip

OPON-3147-01

B. Recirc Pump & Motor cooling water low flow Alarms

DRYWELL TROUBLE

Recirc Pump Motor vibration high Alarm

OPON-3147-01, Loss of RBCCW

OT 3100, Reactor Scram

OPOT-3118-01

C. Recirc Pump & Motor cooling water low flow Alarms

RBCCW HDR PRESS LO

DRYWELL PRESS HI

OPON-3147-01, Loss of RBCCW

OT 3100, Reactor Scram

D. Recirc Pump & Motor cooling water low flow Alarms

Recirc Pump Motor vibration high Alarm

DRYWELL TROUBLE

OT 3100, Reactor Scram

OPOT-3118-01, Recirculation Pump Trip

**2.4.46: Ability to verify that the alarms are consistent with the plant conditions.**

OPOT-3118-01,

OPOT-3118-01,

OPON-3147-01, Rev.00, page 2

OT 3100, Reactor Scram

41.10 and 43.5

45.3 / 45.12

**QUESTION 88**

A reactor startup is in progress with the following conditions:

- The 'B' IRM channel was declared inoperable yesterday and is currently bypassed
- Reactor power is in IRM Range 3

The OATC subsequently reports that the 'F' IRM is behaving erratically and

recommends that it be declared inoperable.

IAW Technical Specifications, the 'F' IRM channel must be placed in trip within \_\_\_\_\_ hours or the reactor must be placed in HOT SHUTDOWN within \_\_\_\_\_ hours.

- A. six, eight
- B. twelve, eight
- C. six, twelve
- D. twelve, twelve

QUESTION 89

Plant Conditions are as follows:

- Reactor Power is at 50% in preparation for conducting MSIV testing
- At 12:53, while NO MSIV testing had commenced, several Control Room indications extinguish
- The Control Room Operators performs an initial Control Room panel walk down and at 12:54 reported the following to the CRS:

Loss of breaker position indication for:

- 4KV Buses 2, 4, and 5
- 480V Bus 6, 7, 9, 10 and 11

Loss of position indication for the following valves:

- V2-77
- V10-17
- V10-57
- V12-18
- V13-1
- V13-16
- V13-18
- V13-20
- V13-21
- V13-27
- V13-30
- V13-39
- V13-41
- V13-131
- V13-132
- Outboard MSIVs
- Loss of power to EPR/MPR control "white" lights
- Reactor Feed Pump suction pressure has dropped by approximately 25 psig
- The RWCU pump has tripped
- ERFIS is available and unaffected
- The Shift Manager orders DC-3A transferred to its Alternate power supply
- At 13:09 DC-3A is transferred to its Alternate power supply
- At 13:10 all Reactor critical parameters are generally steady and unchanged

Determine from the list below the correct emergency plan classification, if any, for the above situation?

- A. No EAL is appropriate
- B. Unusual Event
- C. Alert
- D. Site Area Emergency



QUESTION 90

The plant is operating at rated conditions when both trains of Core Spray are declared inoperable due to a common cause failure.

The CRS determines that a plant shutdown is required IAW Technical Specifications.

IAW AP 0156, Notification of Significant Events, the NRC must be notified of the Technical Specification required plant shutdown within \_\_\_\_\_.

- A. one hour of entry into the Tech Spec action statement.
- B. one hour of commencement of the Tech Spec required plant shutdown.
- C. four hours of entry into the Tech Spec action statement.
- D. four hours of commencement of the Tech Spec required plant shutdown.

#### QUESTION 91

The plant is operating at rated conditions when the 121A and 121C steam tunnel temperature switches fail high due to a common cause failure related to previously

performed maintenance.

As a result of these failures, a PCIS Group 1 isolation \_\_\_\_\_ occur.  
IAW VY Technical Specifications, you must \_\_\_\_\_.

- A. will; restore isolation capability within 1 hour
- B. will not; restore isolation capability within 1 hour
- C. will; place the inoperable channels in trip within 24 hours
- D. will not; place the inoperable channels in trip within 24 hours

## QUESTION 92

The plant is operating at rated power when, during performance of OP 4111, Section A 'Operable Control Rod Check', the following indications are received:

- 5-D-5, Rod Drift alarm
- 5-D-4, Rod Over Travel alarm
- Rod display window is not lit

IAW applicable VY procedural guidance, the CRS shall direct which ONE of the following actions?

- A. Contact I&C to have the power supplies to the full core display determined to be operable.
- B. Manual SCRAM of the affected control rod by placing the individual rod SCRAM switch to the FULL DOWN position.
- C. Continuously insert the affected control rod to position 06 by holding the ROD MOVEMENT CONTROL switch to IN.
- D. Immediately reduce Reactor power by reducing recirc flow and verify plant operation is below the MELLLA boundary on the power to flow map.

### QUESTION 93

A single fire protection detector actuation has caused both a local Cable Vault fire panel alarm and an alarm on the Control Room panel zone #37, Cable Vault Fire Panel Trouble.

If a second fire protection detector actuation were to occur in the zone, what are examples of the CP-30 module generated output: 1?

### **AND**

What procedure contains a checklist of actions to consider if there were an actual CO2 discharge within the Cable Vault: 2?

1. The CO2 discharge timer starts
2. A Control Room Zone 38 alarm of CO2 timing to discharge is generated
3. Battery Room exhaust damper closure timer starts
4. The Cable Vault air supply damper is closed
5. The Cable Vault West Wall air supply fire damper is closed
6. The Computer Room air supply damper is closed
7. Battery Room exhaust fan is stopped

1

2

- |                                      |                                            |
|--------------------------------------|--------------------------------------------|
| A. 1 through 7                       | OP 2186, Fire Suppression Systems          |
| B. 1 through 7                       | OP 3020, Fire Emergency Response Procedure |
| C. 1 through 5 and <u>not</u> 6 or 7 | OP 3020, Fire Emergency Response Procedure |
| D. 1 through 5 and <u>not</u> 6 or 7 | OP 2186, Fire Suppression Systems          |

The Control Room HVAC System as depicted on Drwg G-191237 Sht#2, Rev. 10, distributes conditioned air to the Control Room, cable vault, battery room, and the computer room.

### QUESTION 94

It is 0200 during normal full power operation.

The Control Room Supervisor (CRS) needs to leave the site due to a personal emergency.

- At 0205 the CRS departs as directed by the Shift Manager (SM)
- At 0210 the SM calls the Operations Manager to inform him of the reduction in crew composition

- At 0220 the SM reaches a relief for the CRS and directs him to come to work
- At 0415 the CRS relief arrives and completes a turnover with the SM

IAW Technical Specification 6.2, which ONE of the following is correct?

- A. The operating crew has complied fully with shift manning requirements.
- B. The CRS position should have been manned by a relief by 0405.
- C. The CRS should not have left until the Operation Manager gave him permission.
- D. The CRS should not have left until his relief had arrived and turnover was completed.

**Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, “no-solo” operation, maintenance of active license status, 10CFR55, etc.**

(CFR: 41.10 / 43.2)

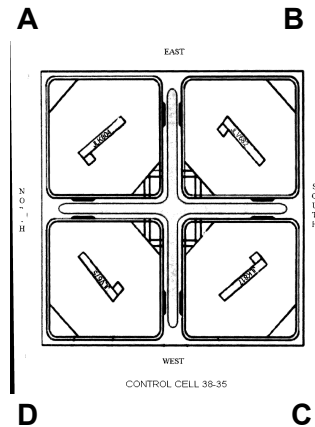


# QUESTION 95

The plant is shutdown for a refuel outage.

Control rod 38-35 is to be replaced.

Which ONE of the following lists, in the correct order, the steps to prepare the cell to remove the control rod from the core?



A.

1. Remove fuel bundles A and B
2. Insert double blade guide
3. Remove fuel bundles C and D
4. Uncouple control rod
5. Withdraw control rod to position 48

B.

1. Remove fuel bundles A and C
2. Insert double blade guide
3. Remove fuel bundles B and D
4. Withdraw control rod to position 48
5. Uncouple control rod

C.

1. Remove fuel bundles A and B
2. Remove fuel bundles C and D
3. Insert double blade guide
4. Uncouple control rod
5. Withdraw control

D.

1. Remove fuel bundles A and C
2. Insert double blade guide
3. Remove fuel bundles B and D
4. Uncouple control rod
5. Withdraw control rod to position 48

Conduct of Operations 2.1.36 (3.0/4.1)

2.1.36 Knowledge of procedures and limitations involved in core alterations.

All distractors are Incorrect but plausible if the applicant is not familiar with the control rod removal process during refuel activities.

**Correct:** 1. remove two opposite bundles; 2. insert blade guide 3. remove last 2 bundles 4. withdraw rod to 48 5. Uncouple.

All distractors are Incorrect but plausible if the applicant is not familiar with the control rod removal process during refuel activities.

All distractors are Incorrect but plausible if the applicant is not familiar with the control rod removal process during refuel activities.

41.10 / 43.6 / 45.7

QUESTION 96

Troubleshooting the lack of #2 Turbine Bypass Valve indication is planned at the end of your shift.

To assess the affects of planned troubleshooting activities on Core Damage Frequency and determination of mitigation actions, what procedure should be used?

- A. EN-WM-101, On-Line Work Management Process.
- B. EN-WM-104, On-Line Risk Assessment.
- C. EN-OP-114, Operations interface with the Work Management Process – On-Line.

D. EN-OP-116, Infrequently Performed Tests or Evolutions.

Core Damage Frequency or list mitigation actions.  
Core Damage Frequency and mitigation actions.  
Core Damage Frequency or list mitigation actions.  
Core Damage Frequency or list mitigation actions.

#### QUESTION 97

During the performance of OPST-CS-4123-03B, 'Core Spray Pump B Quarterly Operability Test', the system engineer wants to perform a One-Time Only Temporary Change to test the minimum flow valve, CS-5B.

The test will involve cycling MINIMUM FLOW CS-5B with FULL FLOW TEST CS-26B OPEN, and taking readings on discharge pressure and flow.

The surveillance is scheduled seven days from today.

Which ONE of the following is correct IAW AP-0096, 'Control of Procedures':

- A. The test is NOT allowed to be conducted as a One-Time Only Temporary Change to OPST-CS-4123-03B.  
The procedure changes should be processed as a Limited Revision IAW AP-0096.
- B. The test may be conducted as One-Time Only Temporary Change to OPST-CS-4123-03B AND a 10CFR50.59 review must be conducted prior to implementation of the change.
- C. The test is NOT allowed to be conducted as a One-Time Only Temporary Change to OPST-CS-4123-03B.  
The procedure changes should be processed as an Editorial Revision IAW AP-0096.
- D. The test may be conducted as a One-Time Only Temporary Change to OPST-CS-4123-03B AND a 10CFR50.59 review must be conducted within 14 days of implementation of the change.



## QUESTION 98

Procedure OP 1101, Management of Refueling Activities and Fuel Assembly Movement, states that the refueling floor shall be evacuated if a fuel assembly is dropped.

What is the basis for evacuating?

- A. The direct radiation from the dropped fuel bundle could cause unplanned radiation exposure.
- B. The dropped fuel bundle may breach the cavity seal and drain the cavity.
- C. The dropped bundle may release radioactive gasses that will cause unplanned radiation exposure.
- D. The dropped bundle may create a criticality event in the reactor.

The approximately 25 feet of water provide adequate shielding from direct radiation and allow time for action to restore level.

The approximately 25 feet of water provide adequate shielding from direct radiation and allow time for action to restore level.

This is the “classic” fuel handling accident in which the fission product gasses contained within the fuel cladding are released and “bubble up” through the water. Personnel remaining over the cavity can be exposed to doses approximating 10CFR100 limits.

Criticality is avoided by refueling interlocks and refueling patterns. This answer could be considered plausible distractor for someone unfamiliar with refueling interlocks and core design. (Ref: UFSAR 1.6.4.1.4).

## QUESTION 99

The plant is operating at 60% power when a Loss of Offsite Power causes a turbine trip. Auto Scram Channel ‘A’ Trips, Channel ‘B’ does not.

The OATC initiates a scram with the manual scram pushbuttons, but 23 control rods do not fully insert.

ARI/RPT is ineffective.

Reactor power is ~ 13%.

Due to a stuck open relief valve, the CRS determines that the Torus temperature and RPV pressure **cannot** be maintained below the Heat Capacity Temperature Limit (HCTL).

For this situation, the correct AP 3125 classification of this event is \_\_\_\_\_.  
(EAL as a reference)

- A. Unusual Event
- B. Alert
- C. Site Area Emergency
- D. General Emergency

Torus temperature and RPV pressure **cannot** be maintained below the Heat Capacity Temperature Limit (HCTL). This alone is an Unusual Event as FU1.1 due to the potential loss of Primary Containment. However, a failure to Scram also occurred. Torus temperature and RPV pressure **cannot** be maintained below the Heat Capacity Temperature Limit (HCTL) a General Emergency must be classified.. Torus temperature and RPV pressure **cannot** be maintained below the Heat Capacity Temperature Limit (HCTL) and the automatic scram (turbine trip at 60% power) and all manual scrams were not successful in reducing reactor power to less than 2% THEN the criteria for a General Emergency SG2.1 is met. .

#### QUESTION 100

An event occurred at the plant.  
The TSC and EOF are manned but NOT yet activated.

IAW OP 3540 'Control Room Actions During an Emergency', which ONE of the following correctly identifies the individual responsible for escalating an emergency event level from a Site Area Emergency to a General Emergency?

- A. The Shift Manager
- B. The Duty On Call Officer
- C. The Emergency Plant Manager
- D. The Site Vice President



**Knowledge of SRO responsibilities in emergency plan implementation.**