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

Applicant Information	
Name:	
Date:	Facility/Unit: Vogtle Nuclear Plant
Region: II	Reactor Type: W
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination you must achieve a final grade of at least 80.00 percent overall, with 70.00 percent or better on the SRO-only items if given in conjunction with the RO exam; SRO-only exams given alone require a final grade of 80.00 percent to pass. You have 8 hours to complete the combined examination, and 3 hours if you are only taking the SRO portion.

Applicant Certification

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

_____
Applicant's Signature

Results	
RO/SRO-Only/Total Examination Values:	____ / ____ / ____ Points
Applicant's Scores:	____ / ____ / ____ Points
Applicant's Grade:	____ / ____ / ____ Percent

1. During a Control Bank D group I dropped rod recovery, you directed the BOP to open all lift coil disconnect switches for control bank D except for the affected rod.

   As soon as the RO started rod withdrawal with the bank select switch in the Control Bank D position, a Rod Control Urgent Failure alarm illuminates.

   You should direct the RO to:

   A. Stop rod withdrawal because the pulser / oscillator is inhibited.

   B. ✔ Continue rod withdrawal, this alarm is expected and is due to a regulation failure in group 2 of Control Bank D.

   C. Stop rod withdrawal since holding currents are being simultaneously applied to the stationary and moveable gripper coils in Control Bank D.

   D. Continue the rod withdrawal, this alarm is expected due to being in the bank select position resulting in a logic cabinet failure.

K/A

001 Control Rod Drive System.

A2.14. Urgent failure alarm, including rod-out-of-sequence and motion-inhibit alarms.

K/A MATCH ANALYSIS

Question gives a plausible scenario with a dropped control rod which is being withdrawn in accordance with the AOP for rod retrieval. During retrieval a Rod Control Urgent Failure annunciator is received. Candidate decide whether to stop or continue rod retrieval and why.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. Plausible, Pulser Oscillator is normally inhibited on an urgent failure.

B. Correct. Regulation failure is reason per ARP for Urgent Failure.

C. Incorrect. Plausible, this action occurs if urgent failure is due to a logic problem.

D. Incorrect. Plausible, this is an expected alarm, but bank select does not cause a logic cabinet urgent failure.

REFERENCES

AOP-18003, Rod Control Malfunction, section A for Dropped Rods in Mode 1

ARP-17010 window B06 for ROD CONTROL URGENT FAILURE

V-LO-LP-60303, page 12

VEGP learning objectives:

V-LO-LP-60303-03, State why an urgent failure alarm will sound during a dropped rod retrieval.

2. A plant cooldown is in progress:

   * RCS temperature is 340 degrees F.

   * RCPs # 1 and # 4 - running

   * All SG levels are approximately 65% on NR.

   * SG ARVs have just been shut and placed in auto.

   * RHR Train "B" placed in service in the shutdown cooling mode.

   * RHR Train "A" is aligned for ECCS injection.

   The RO is controlling the RCS cooldown rate to approximately 50 degrees F per hour when RHR pump "B" unexpectedly trips for reasons unknown.

   In accordance with AOP-18019-C, "Loss of Residual Heat Removal" which **ONE** of the following would be the **CORRECT** actions for you to take and why ?

   A. Align RHR "A" to the shutdown cooling mode of operation, continue the cooldown. The ARVs cannot provide adequate cooldown at lower RCS temperatures.

   B. Leave RHR "A" aligned for ECCS injection and use the ARVs to continue the cooldown. Aligning RHR "A" to the shutdown cooling mode could lead to steam binding and / or water hammer if RHR "A" realigned back to the injection mode.

   C. Align RHR Train "A" to the shutdown cooling mode of operation and continue the cooldown. RHR Train "A" can be manually realigned for the ECCS injection mode.

   D. Leave RHR Train "A" aligned for ECCS injection. Stop one or both RCPs as necessary to lower RCP heat input to within the cooldown capacity of the ARVs.

K/A

006 Emergency Core Cooling System (ECCS).

A2.06 Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations.

Water Hammer

K/A MATCH ANALYSIS

Question places candidate in a Loss of RHR scenario just after entering Mode 4 when an RHR pump trips. Has to decide whether to align the standby train of RHR from the ECCS injection mode to shutdown cooling mode. With other equipment available, he

should not. Doing so would cause steam binding / water hammer to other ECCS components.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. RHR Train "A" should NOT be aligned to shutdown cooling mode as long as RCPs, SG levels, ARVs and / or steam dumps available to prevent steam binding / water hammer of ECCS piping. At lower RCS temperatures it is true that you can not achieve a high cooldown rate. No procedural limitations though.

B. Correct. As long as RCS > 250 degrees F, use ARVs / dumps for cooldown to prevent Wolf Creek Event where ECCS can steam binding / water hammer.

C. Incorrect. Should not be aligned to prevent steam binding / water hammer. Tech Specs would allow realign to the Shutdown Cooling Mode but procedure does not.

D. Incorrect. Train "A" should be left in the ECCS injection mode but there is no procedural guidance for stopping RCPs to be within ARV capacity.

REFERENCES

18019-C, "Loss of Residual Heat Removal", section A.

Technical Specifications 3.5.2, "ECCS - Operating"

Technical Specifications 3.5.3, "ECCS - Shutdown"

Technical Specification Bases for 3.5.2, "ECCS - Operating"

Technical Specification Bases for 3.5.3, "ECCS - Shutdown"

VEGP learning objectives:

V-LO-LP-60315-04, "Given the entire AOP, describe:

a. Purpose of selected steps.

b. How and why the step is being performed.

c. Expected response to plant/parameter(s) for the step".

3. After swapping from 120 gpm letdown to 75 gpm letdown, the RO has adjusted letdown pressure with the letdown pressure controller PIC-0131 and placed in automatic.

   Shortly after the evolution, Letdown Hx temperature element TE-0130 begins to oscillate and fails downscale low with TIC-0130 in automatic.

   In accordance with ALB07 window D03 for LTDN HX OUTLET HI TEMP, which **ONE** of the following **CORRECTLY** describes plant response to this malfunction and the first action(s) you should direct the RO to take ?

   A. Letdown temperature would increase, the bypass valve around the CVCS demins would automatically open, an inadvertent RCS boration could occur.

      Manually control ACCW flow to the Letdown Hx using TIC-0130 to control cooling.

   B. Letdown temperature would decrease, the bypass valve around the CVCS demins would remain shut, an inadvertent RCS dilution could occur.

      Open bypass valve around CVCS demins, divert to RHUT to minimize the dilution.

   C. Letdown temperature would increase, the bypass valve around the CVCS demins would automatically open, an inadvertent RCS dilution could occur.

      Manually control ACCW flow to the Letdown Hx using TIC-0130 to control cooling.

   D. Letdown temperature would decrease, the automatic bypass around the CVCS demins would remain shut, an inadvertent RCS boration could occur.

      Open bypass valve around CVCS demins, divert to RHUT to minimize the boration.

K/A

008 Component Cooling Water (ACCW cools Letdown Hx at Vogtle)

A2.09 Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations.

Results of excessive exit temperatures from the letdown cooler, including the temperature effects on ion-exchange resins.

K/A MATCH ANALYSIS

Question gives a plausible failure of ACCW temperature controller to the Letdown Hx. CVCS demins would bypass on high temperature. Higher temperature at demins would result in a possible boration of the RCS.

ANSWER / DISTRACTOR ANALYSIS

A. Correct. As described above.

B. Incorrect. Ltdn temp would increase. Demin would bypass releasing boron.

C. Incorrect. Ltdn temp would increase. Demin would bypass releasing boron.

D. Incorrect. Ltdn temp would increase. Demin would bypass releasing boron.

REFERENCES

ARP-17007, ALB07 window D03 for LTDN HX OUT HI TEMP

ARP-17007, ALB07 window F04 for LTDN HX HI TEMP DEMIN DIVERT

VEGP learning objectives:

LO-PP-09100-02, "Describe how the following systems interact with the Chemical Volume Control System (CVCS):

c. Aux. Closed Cooling Water System

g. Reactor Coolant System"

LO-PP-09100-03, State the purpose and describe the control signals, setpoints, and any interlocks for the following:

e. Letdown heat exchanger temperature divert valve, TV-130.

g. Demineralizer divert valve, TV-129".

LO-PP-09100-05, "State how letdown temperature is controlled, relative to the following:

b. Demineralizer performance".

4. A small break LOCA has occurred.

   EOP-19012-C, "ES-1.2, Post LOCA Cooldown and Depressurization" is being implemented.

   The crew is at the step to determine if an SI pump may be secured as the RCS cooldown continues.

   What determines if you may stop the SI pump and why ?

   A. RCS subcooling. This ensures the RCS will remain subcooled after stopping the SI pump.

   B. PRZR level and RCP status. This ensures PRZR level remains above the top of the heaters.

   C. RCS subcooling. This minimizes the loss of RWST inventory to the containment floor.

   D. RCS cold leg temperatures. This ensures the RCS remains subcooled if the RCPs trip due to a loss of off site power.

K/A

009 Small Break LOCA

G2.4.7 Emergency Procedures Plan

Knowledge of event based EOP mitigation strategies.

K/A MATCH ANALYSIS

Question gives a condition during a small break LOCA and asks the methods and bases for securing ECCS pumps.

ANSWER / DISTRACTOR ANALYSIS

A. Correct. Subcooling has to be adequate to allow stopping pumps.

B. Incorrect. Bases is to maintain adequate subcooling after stopping pumps. RCPs and PRZR level are checked in the procedure.

C. Incorrect. RCS subcooling is the correct parameter but the bases is to maintain adequate subcooling after stopping pumps.

D. Incorrect. Bases is to maintain adequate subcooling after stopping pumps.

REFERENCES

1. 190012-C, "Post LOCA Cooldown and Depressurization"

2. WOG background documents

VEGP learning objectives:

1. LO-LP-37112-01, Using EOP 19012 as a guide, briefly describe how each step is accomplished.

5. While at 100% power the following occurs:

   * Loop 4 PRZR spray valve is discovered fully open.

   * Both PRZR PORVS have remained shut.

   * Both PORV block valves automatically shut and have remained shut.

   * Both PRZR sprays are now fully closed after RO actions taken.

   Which **ONE** of the following is the cause of the problem and the corrective actions you should take to mitigate the event ?

   A. PT-456 failed high while in the 457/456 position. Enter 18001, "Primary Systems Instrumentation Malfunction". Enter Tech Spec LCO for RCS Trip Instrumentation.

   B. PRZR spray for loop 4 has failed open. Enter 18000 for PRZR Spray, Safety, or Relief Valve Malfunction. Enter Tech Spec LCO for RCS DNB parameters.

   C. PT-455 failed high while in the 455/456 position. Enter 18001 "Primary Systems Instrumentation Malfunction". Enter Tech Spec LCO for RCS Trip Instrumentation.

   D. PRZR spray for loop 4 has failed open. Enter AOP-18000 for PRZR Spray, Safety, or Relief Valve Malfunction. No Tech Spec LCO entry would be required.

K/A

010 Pressurizer Pressure Control System (PZR PCS).

A2.03 Ability to (a) predict the impacts of the following malfunctions or operations on the PZR PCS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:

Spray valve failures.

K/A MATCH ANALYSIS

Question gives plant conditions with a stuck open PRZR spray and asks why it is open and actions to take to mitigate event.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. If PT-456 failure, PORV 456 should have opened and neither spray valve should have opened. Everthing is correct except for the diagnosis.

B. Correct. Spray valve has failed open and 18000 for PRZR Spray, PORV, or Relief Failure is appropriate and the RCS DNB Parameters would be the correct Tech

Specification to enter.

C. Incorrect. If PT-455 failure, PORV 455 and both sprays should have opened. Everthing is correct except for the diagnosis.

D. Incorrect. Spray valve has failed open. However Tech Spec LCO 3.4.1 for RCS DNB Parameters should be entered.

REFERENCES

AOP-18000, "Pressurizer Spray, Safety, or Relief Valve Malfunction"

AOP-18001, "Pressurizer Pressure Instrument Malfunction"

Technical Specification 3.4.1 for RCS DNB Parameters.

VEGP learning objectives:

V-LO-PP-16303-02 Describe the response of the pressurizer control system to the following failures:

a. controlling channel fails low

b. controlling channel fails high

c. controller high or low failure

V-LO-PP-16303-05 State the setpoint, coincidence, and protective actuations with the low pressurizer PORV interlock.

6. The following sequence of events has occurred:

   * Reactor trip from 100% RTP
   * All RCPs lose seal injection and ACCW cooling
   * Engineering recommends not re-starting the RCPs
   * Natural Circulation cooldown started due to possible damage to RCP seals
   * Small break LOCA through RCP seals develops
   * Red path on Core Cooling occurs and the crew has implemented 19221-C, FR-C.1, "Response to Inadequate Core Cooling"
   * Steam generators have been depressurized, with no ECCS flow established
   * CETs currently 879 degrees F and slowly rising

   Which **ONE** of the following would be **CORRECT** regarding starting the RCPs while in 19221-C, "Response to Inadequate Core Cooling" ?

   A. Do not start the RCPs due to the previous loss of ACCW and Seal Injection until evaluated by engineering.

   B. Initiate starting RCPs one at a time regardless of SG levels until CETs begin to lower. Support conditions are desired but not required to start.

   C. Do not start RCPs until CETs > 1200 degrees F. and SG levels are > 10% NR for the loops desired to start. Support conditions are desired but not required to start.

   D. Initiate starting RCPs one at a time regardless of SG levels until CETs begin to lower. Support conditions are required to start until CETs exceed 1200 degrees.

K/A

015 Reactor Coolant Pump (RCP) Malfunctions

AA2.11 Ability to determine and interpret the following as they apply to the Reactor Coolant Pump Malfunctions.

When to jog RCPs during ICC.

K/A MATCH ANALYSIS

Question gives a scenario requiring RCPs to be stopped due to loss ACCW and Seal Injection. Engineering recommends not starting. Then a LOCA with ICC conditions follows. Candidate has to determine if RCP start would be allowed or not and why.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. Engineering evaluation can not over rule the Red Path for ICC. RCPs should be started if proper conditions met.

B. Incorrect. RCPs not sacrificed until CETs > 1200 degrees F by procedure.

C. Correct. RCPs should be started with CETs > 1200 degrees F and adequate SG NR level (10%) in loop desired to start. 10% NR SG level prevents clad creep failure.

D. Incorrect. RCPs should not be sacrificed until CETs > 1200 degrees F by procedure.

REFERENCES

19002-C, "Natural Circulation Cooldown" note prior to step # 1.

19221-C, "Response to Inadequate Core Cooling" step # 2

VEGP learning objectives:

LO-LP-37061-02, "Using EOP 19221-C as a guide, briefly describe how each step is accomplished".

7. Which **ONE** of the following would require a Technical Specification LCO entry and what is the bases ?

   A. Containment pressure is +1.6 psig. This exceeds the CNMT initial pressure conditions assumed in the design basis accident analysis.

   B. Containment air temperature is 122 degrees F. This exceeds the CNMT initial temperature assumed in the design basis accident analysis.

   C. Containment pressure is -0.22 psig. This exceeds the allowable initial pressure condition assumed for an inadvertent CNMT spray actuation.

   D. Containment air temperature is 88 degress F. This exceeds the minimum CNMT initial temperature assumed for an inadvertent CNMT spray actuation.

K/A

022 Containment Cooling.

G2.1.33 Conduct of Operations.

Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

K/A MATCH ANALYSIS

Question gives 4 plausible scenarios for containment parameters and candidate must choose the one that requires entry into Technical Specifications and appropriate bases.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. Containment pressure limit is + 1.8 psig. Plausible, correct bases.

B. Correct. Containment air temperature limit is 120 degrees F.

C. Incorrect. Containment pressure limit is - 0.3 psig. Plausbile, correct bases.

D. Incorrect. Containment does not have a low temperature limit. Plausible since there is a bases for minimum pressure.

REFERENCES

Technical Specification 3.6.4 "Containment Pressure" and bases.

Technical Specification 3.6.5 "Containment Air Temperature" and bases.

VEGP learning objectives:

LO-LP-39210-01, "For any given item in section 3.6 of Tech Specs, be able to:

a. State the LCO

8. Following an RCS Large Break LOCA, containment Hydrogen concentration has been discovered to be 6.8 %.

   In accordance with 13130, "Post Accident Hydrogen Control", which **ONE** of the following would be **CORRECT** regarding the containment Hydrogen concentration and the actions you should take ?

   A. The explosive concentration threshold has been exceeded. No actions would be necessary at this concentration but periodic monitoring is required.

   B. The flammable concentration threshold has been exceeded. Place the Post LOCA Containment Hydrogen Purge system in service.

   C. The explosive concentration threshold has been exceeded. Place the Post LOCA Hydrogen Recombiners in service.

   D. The flammable concentration threshold has been exceeded. Dilute the Containment Using the Service Air System.

K/A

028 Hydrogen Recombiner and Purge Control System.

A2.03 Ability to (a) predict the impacts of the following malfunctions or operations on the HRPS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations.

The hydrogen air concentration in excess of limit flame propagation or detonation with resulting equipment damage in containment.

K/A MATCH ANALYSIS

Question gives a Hydrogen concentration in containment following a LOCA. Candidate must discriminate whether this is above or below the flammable/explosive limits and actions he would direct as SS.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. Concentration is in the flammable range. We would continue to monitor.

B. Incorrect. In flammable range. However, Post LOCA Hydrogen Purge is a last resort.

C. Incorrect. Concentration is in the flammable range. Hydrogen Recombiners deleted.

D. Correct. In flammable range. Dilution with service air is the method per procedure.

REFERENCES

13130-1/2, "Post Accident Hydrogen Control".

19010-C, "Response to Loss of Reactor or Secondary Coolant"

VEGP learning objectives:

LO-LP-37111-08, "Using EOP-19010-C as a guide, briefly describe how each step is accomplished".

LO-PP-29101-03, "List the systems that are designed to control and mitigate hydrogen gas buildup in containment".

LO-LP-36107-02, "State the hazardous concentration ranges of explosive and flammable mixtures of hydrogen in air.

9. Fuel reload is in progress when the trolley drive motor for the refueling machine burns out. A new fuel assembly is in the mast suspended above the core.

   The refueling machine operator proposes manual operation in accordance with procedure 93500-C, "Manual Operation of Fuel Handling Equipment".

   Which **ONE** of the following is the **CORRECT** actions for this condition ?

   A. Manual operation of the refueling machine is allowed. The Fuel Handling Supervisor must approve and be present. Refueling may continue in the manual mode of operation.

   B. Manual operation of the refueling machine is NOT allowed. The Fuel Handling Supervisor must be present while repairs are made to the drive motor.

   C. Manual operation of the refueling machine is allowed. The Fuel Handling Supervisor must approve and be present. Fuel movement is restricted to placing in a safe location.

   D. Manual operation of the refueling machine is NOT allowed. The Fuel Handling Supervisor does not have to be present while repairs are made to the drive motor.

K/A

034 Fuel Handling Equipment.

K6.01 Knowledge of the effect of a loss or malfunction of the following will have on the Fuel Handling System:

Fuel Handling Equipment.

K/A MATCH ANALYSIS

Question gives scenario where refueling machine fails requiring manual operation.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. Continued manual operation is not allowed.

B. Incorrect. Manual operation is permitted. FHS would not have to be present to repair.

C. Correct. Manual operation to place in a safe location would be allowed.

D. Incorrect. Manual operation is allowed to place in a safe location.

REFERENCES

93500-C, Manaul Operation Fuel Handling Equipment

VEGP learning objectives:

LO-PP-25101-21 Explain what operations are covered by the "Manual Operation of Fuel Handling Equipment" procedure (93500-C).

10. PORV 455A has developed excessive seat leakage and the appropriate Tech Spec actions were taken. The PORV is capable of being manually cycled.

    PORV 456A & block valve are in their normal alignments.

    Subsequently a SGTR has occurred and 19030-C, Steam Generator Tube Rupture" is in progress. You are at the step to check PORV and Block Valve status

    In accordance with Technical Specifications and 19030, which ONE of the following would be CORRECT for the Train A PORV and Block Valve ?

    A. The block valve should have been closed within 1 hour with power maintained. WHEN PRZR pressure > 2185 psig, THEN open block valve.

    B. The block valve should have been closed within 1 hour with power removed. Restore power to block valve, WHEN PRZR pressure > 2185 psig, do not open block valve.

    C. The block valve should have been closed within 1 hour with power maintained. WHEN PRZR pressure > 2185 psig, do not open block valve.

    D. The block valve should have been closed within 1 hour with power removed. Restore power to block valve, WHEN PRZR pressure > 2185 psig, THEN open block valve.

K/A

038 Steam Generator Tube Rupture

EG2.1.11 Conduct of Operations

Knowledge of less than one hour technical specification action statements for systems.

K/A MATCH ANALYSIS

Question gives a PORV with excessive seat leakage and requires the candidate to know the correct choice of 1 hour or less Tech Spec actions from memory. A SGTR develops and the candidate must choose the correct action from 19030-C.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. Block valve should remain shut to isolate the PORV seat leakage.

B. Incorrect. The block valve should have remained energized per Tech Specs.

C. Correct. Do not open the block valve since Train B PORV & Block still operable.

D. Incorrect. The block valve should have remained energized per Tech Specs.

REFERENCES

19030-C, "Steam Generator Tube Rupture", step 23.

Tech Spec 3.4.11 for PORVs and Block valves.

Tech Spec Bases 3.4.11 for PORVs and Block valves.

VEGP learning objectives:

LO-LP-37311-07, "Using EOP 19030-C as a guide, briefly describe how each step is accomplished".

LO-LP-39208-01, "For any given item in section 3.4 of Tech Specs, be able to:

a. State the LCO

b. State any one hour or less required actions"

11. The following occurs with Unit 1 at 100% power.

    MDAFW pump "A" discharge valves red lights go out and remain out.

    MDAFW pump "B" discharge valves red lights go out and then come back on.

    TDAFW pump discharge valves red lights remain illuminated.

    What has happened and what are the correct actions ?

    A. Loss of power to both RATs, manually trip the reactor.

    B. Loss of power to 1AD1, verify reactor trip.

    C. Loss of power to both RATs, emergency trip DG1A.

    D. Loss of power to 1AD1, locally emergency trip DG1A.

K/A

056 Loss of Off-site Power

AA2.69 Ability to determine and interpret the following as they apply to the Loss of Offsite Power.

Valve position.

K/A MATCH ANALYSIS

Question poses a scenario where an LOSP occurs to both of the RATs. Question requires diagnosis of LOSP and appropriate corrective actions.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. A loss of power exists to both RATs, correct action is to Emergency trip the DG.

B. Incorrect. A loss of power exists to both RATs, action is correct for loss of 1AD1.

C. Correct. LOSP exists, DG1A should be emergency tripped. DG1B has re-energized 1BA03.

D. Incorrect. A loss of power exists to both RATs, action is correct for loss of 1AD1.

REFERENCES

V-LO-TX-20101, Auxiliary Feedwater System page # 25

VEGP learning objectives:

V-LO-PP-20101-09, Determine the impact to AFW system operation and the overall integrated plant operations to the following types of power supply failures:

a. U/V condition on either AA02 or BA03 with the bus being re-energized from the EDG while at 100% power.

b. U/V condition on either AA02 or BA03 with the bus remaining de-energized while at 100% power.

12. Unit 1 is in mode 3 with the reactor trip breakers open:

    * Trouble alarms are recieved for 1AY1A / 1AY2A and 1AD1
    * Indicating lights for the train A MSIVs and the RCP #1 1E breaker are off

    Which **ONE** of the following procedures will provide actions to mitigate the event that has occurred ?

    A. 18032-C, "Loss of 120 V AC Intrument Power" due to a loss of 1AY1A.

    B. 18032-C, "Loss of 120 VAC Instrument Panel" due to a loss of 1AY2A.

    C. 18034-C, "Loss of 125 of Class 1E 125V DC power" due to a loss of 1AD1.

    D. 18031-C, "Loss of Class 1E Electrical Systems" due to a loss of 1AA02.

K/A

058 Loss of DC Power

AA2.02 Ability to determine and interpret the following as they apply to the Loss of DC Power.

125V dc bus voltage, low/critical low, alarm

K/A MATCH ANALYSIS

Question tests candidates knowledge of actions to take when a bus problem is indicated with Train A 125V DC bus and 120V AC bus AY1A and AY2A.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. Annunciators are indicative of loss of 1AD1 125V DC 1E bus.

B. Incorrect. Annunciators are indicative of loss of 1AD1 125V DC 1E bus.

C. Correct. Symptoms for loss of 125V DC bus 1AD1.

D. Incorrect. Annunciators are indicative of loss of 1AD1 125V DC bus.

REFERENCES

AOP-18034, Loss of 1E DC Bus

VEGP learning objectives:

V-LO-LP-60329-04 Given conditions and/or indications, determine the required AOP to enter (including subsections, as applicable).

13. A trip of a running Train A NSCW pump with failure of the standby pump to auto start has resulted in entrance of 18021-C, "Loss of Nuclear Service Cooling Water". Attempts to manually start the standby pump were not successful and Train A NSCW was eventually shutdown.

    Due to CCP "B" repairs in progress, a Tech Spec shutdown is required within the next 7 hours.

    You desire "Emergency Maintenance" work authorization to attempt to restore Train A NSCW to operable status.

    In acordance with 00350-C, "Work Request Program", which **ONE** of the following is **CORRECT** regarding if "Emergency Maintenance" is required and who makes this determination ?

    A. Conditions justify Emergency Maintenance. Shift Supervisor determines.

    B. Conditions do not justify Emergency Maintenance. Shift Superintendent determines.

    C. Conditions justify Emergency Maintenance. Shift Superintendent determines.

    D. Conditions do not justify Emergency Maintenance. Shift Supervisor determines.

K/A

062 Loss Nuclear Service Water

EG2.2.19 Equipment Control

Knowledge of Maintenance work order requirements.

K/A MATCH ANALYSIS

Question gives situation where NSCW has placed plant in motherhood and requires shutdown within 7 hours. Asks what conditions emergency maintenance could be authorized and who can authorize.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. Tech Spec shutdown within 7 hours allows, SM (Superintendent) authorization required.

B. Incorrect. Tech Spec shutdown within 7 hours allows, SM (Superintendent) authorization required.

C. Correct. Tech Spec shutdown within 7 hours allows, SM (Superintendent) authorization required.

D. Incorrect. Tech Spec shutdown within 7 hours allows, SM (Superintendent) authorization required.

REFERENCES

00350-C, "Maintenance Work Program". Definition 2.8 for "Emergency Maintenance" and step 3.11.1.1 for who determines if work is Emergency Maintenance.

VEGP learning objectives:

LO-LP-63350-04, "Describe the requirements for emergency maintenance and when emergency maintenance can be performed".

14. With the unit at 100% power a loss of 4.16 kV bus 2BA03 occurs. EDG-2B starts and re-energizes 2BA03. Automatic load sequencing is in progress when the following occur:

    * ALB38, Window C04 "DG2B HIGH TEMP JACKET WATER OUT" alarms

    * The BOP reports only NSCW pump # 6 has auto started

    Which **ONE** of the following is a **CORRECT** action(s) to mitigate the event in accordance with 18031-C, Loss of Class 1E Electrical Systems ?

    A. Enter section A "DG Failure To Tie". Emergency trip DG2B which should have automatically tripped.

    B. Enter section B "DG Tying". Emergency trip DG2B if a second NSCW pump cannot be started. Then go to section A "DG Failure To Tie".

    C. Enter section B "DG Tying", Then go to section A "DG Failure To Tie" if DG2B trips on high jacket water temperature.

    D. Enter section B "DG Tying", align NSCW for single pump operation to provide cooling to DG2B.

K/A

064 Emergency Diesel Generator (ED/G) System.

G2.4.4 Emergency Procedures / Plan

Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

K/A MATCH ANALYSIS

This question test the knowledge of AOP entry conditions for malfunctions with the emergency diesel generators.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect - Plausible since this is the section of AOP you would enter. However, DG will not auto trip on high JW during Emergency starts.

B. Correct - step B3a RNO of 18031-C, directs the crew to start 2 NSCW pumps on the affected train. If 2 NSCW pumps cannot be started, then emergency trip the DG and go to section A. Step 1 RNO of 18021 "Loss of NSCW also directs to trip DG if 2 NSCW pumps can't be started.

C. Incorrect - Plausible since 18031-C section B would be entered if DG left running, however DG will not auto trip on high JW temperature.

D. Incorrect - Plausible since there is direction for single pump operations for NSCW, but only if both NSCW trains not available or in lower modes of operation.

REFERENCES

1. AOP 18031-C, "Loss of Class 1E Electrical Systems"

2. AOP 18021-C, "Loss of Nuclear Service Cooling Water"

VEGP learning objectives:

LO-LP-60323-04, "Given conditions and/or indications, determine the required AOP to enter (including subsections, as applicable).

15. A plant event has resulted in the crew entering 19221-C, FR-C.1 "Response to Inadequate Core Cooling".

    CCP "A" was tagged out and CCP "B" unexpectedly tripped during the event. Neither pump will be available in the near future.The crew has just checked the CCP flow indicators for BIT flow which shows none.

    Which **ONE** of the following **CORRECTLY** describes the priority of actions the procedure will have you perform to mitigate the event ?

    A. Reset Safety Injection and start the NCP.
       Check for SI flow and start SI Pumps and align valves if necessary.
       Check for RHR flow and start RHR pumps and align valves if necessary.

    B. Rapidly depressurize the Steam Generators to depressurize the RCS.
       Check for SI flow and start SI pumps and align valves if necessary.
       Check for RHR flow and start RHR pumps and align valves if necessary.

    C. Check for SI flow and start SI pumps and align valves if necessary.
       Rapidly depressurize the Steam Generators to depressurize the RCS.
       Check for RHR flow and start RHR pumps and align valves if necessary.

    D. Rapidly depressurize the Steam Generators to depressurize the RCS.
       Start all RCPs one at a time and open all RCS vent paths to containment.
       Isolate the SI accumulators.

K/A

074 Inadequate Core Cooling

EG2.4.6 Emergency Procedures / Plan

Knowledge of symptom based EOP mitigation strategies.

K/A MATCH ANALYSIS

Question gives scenario in 19221-C, "FR-C.1 "Response to Inadequate Core Cooling" and candidate must determine proper response with symptoms / conditions given.

ANSWER / DISTRACTOR ANALYSIS

A. Correct. Reset SI and start NCP and other ECCS pumps is the first major action of this EOP.

B. Incorrect. Starting ECCS pumps is the first major action and should be performed prior to rapid depressurization.

C. Incorrect. Starting ECCS pumps is the first major action and should be performed prior to rapid depressuriztion.

D. Incorrect. Starting ECCS pumps is the first major action and should be performed ahead of all the actions listed in this choice.

REFERENCES

19221-C, FR-C.1 "Response to Inadequate Core Cooling", step # 2

VEGP learning objectives:

LO-LP-37061-02, "Using EOP 19221-C as a guide, briefly describe how each step is performed".

16. A Containment entry is planned with the following conditions:

    * reactor at 100% power

    * RCS Unidentified Leakage is 1.0 gpm

    Which **ONE** of the following are the **CORRECT** actions for this entry in accordance with 00303-C, "Containment Entry" ?

    A. Shift Manager must authorize entry. Shift Supervisor verifies Containment conditions normal (green CSFST)

    B. HP Manager must authorize entry. Shift Supervisor verifies Containment conditions normal (green CSFST)

    C✓ Shift Manager must authorize entry. Shift Supervisor verifies flux mapping is not in progress.

    D. HP Manager must authorize entry. Shift Supervisor verifies flux mapping is not in progress.

K/A

G2.1.13 Knowledge of facility requirements for controlling vital / controlled areas.

K/A MATCH ANALYSIS

Question gives scenarios regarding access of containment to search for a leak. Candidate must determine who can authorize entry and verifcations SS must make.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. SS must verify flux mapping not in progress.

B. Incorrect. SM must authorize entry and SS must verify flux mapping not in progress.

C. Correct.

D. Incorrect. SM must authorize entry.

REFERENCES

00303-C, Containment Entry

VEGP learning objectives:

LO-LP-63303-02 With regards to containment entry, describe the responsibility of the Shift Manager and the Unit Shift Supervisor. (SRO ONLY)

17. Given the following plant conditions:

    * Unit 2 at 100% power for the past three weeks.

    * Chemistry has just provided the following results from RCS chemistry samples that were taken within the last hour.

      - RCS Chloride = 0.15 ppm
      - RCS Oxygen = 0.15 ppm

    Which **ONE** of the following describes the above conditions and appropriate actions to be taken ?

    A. Chloride concentration is above the TRM steady state limit. Corrective action must be taken to bring Chloride concentration within limits. The plant must be taken to Cold Shutdown if outside of limits after 24 hours.

    B. Oxgen concentration is above the TRM transient limit. Corrective action must be taken to bring the plant to Mode 3 in the next 6 hours.

    C. Chloride concentration is above the TRM transient limit. Corrective action must be taken to bring the plant to Mode 3 in the next 6 hours.

    D. Oxygen concentration is above the TRM steady state limit. Corrective action must be taken to bring Oxygen concentration within limits. The plant must be taken to Cold Shutdown if outside of limits after 24 hours.

K/A

G2.1.34 Ability to maintain primary and secondary plant chemistry within allowable limits.

K/A MATCH ANALYSIS

Question tests the correct knowledge of TRM actions for RCS chlorides, flourides, and dissolved oxygen being out of limits.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. RCS Chloride is within the steady state limit.

B. Incorrect. RCS oxygen is within the transient limit.

C. Incorrect. RCS Chloride is within the transient limit.

D. Correct. RCS oxygen is above the steady state limit. TRM actions are correct.

REFERENCES

1. Surry 2004 NRC Exam question # 88

2. TRM 13.4.1 for RCS Chemistry

VEGP learning objectives:

LO-LP-39208-03, "For any given item in section 13.4 of the TRM:

a. State the TR for operaton"

b. State any one hour or less actions.

LO-LP-39208-01, "Given the TRM, determine for a specific set of plant condition, equipment availability, and operational mode:

a. Whether any TR of section 13.4 has been exceeded.

b. The required actions for all sections of 13.4 TRs.

18. Given the following:

* A TCP has been written for the IST surveillance procedure for CCP "A" to test whether the discharge MOV will stroke against full pump dP and to collect MOV and pump motor data during the surveillance.

* The plant conditions required for the evolution are NOT described in current procedures or the Final Safety Analysis Report.

* The author of the TCP is the responsible system engineer who has brought the TCP to the Shift Manager for review and approval.

the Shift Manager should.....

A. approve the TCP for 14 days after the the engineering manager has reviewed and approved the TCP.

B. disapprove the TCP. A 50.59 screening / evaluation would need to be performed. A special test procedure approved by the PRB and General Manager is required .

C. approve the TCP for 14 days after the responsible supevisor has reviewed and approved the TCP.

D. disapprove the TCP. A 50.59 screening / evaluation is not required. A special test procedure approved by the PRB and General Manager is required for this test.

K/A

G2.2.10 Knowledge of the process for determining if the margin of safety, as defined in the basis of any technical specification is reduced by a proposed change, test or experiment.

K/A MATCH ANALYSIS

Question gives a condition where system engineer has written a temporary change to a CCP IST procedure to determine if the discharge valve will stroke against full pump dP. Condition is not described in FSAR or Tech Spec Bases. Candidate must choose whether or not to allow procedure to be performed.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. A 50.59 evaluation is required and requires higher approval.

B. Correct.

C. Incorrect. A 50.59 evaluation is required and requires higher approval.

D. Incorrect. A 50.59 evaluation is required and requires higher approval.

REFERENCES

Prairie Island 2004 NRC Exam SRO Question # 21

00052-C, "Temporary Changes to Procedures"

00056-C, "10CFR50.59 Screening and Evaluations"

00053-C, "Temporary Procedures and Special Tests"

VEGP learning objectives:

LO-LP-63052-02, "In application of temporary changes to procedures, describe the following:

a. Review/approval responsiblity

b. Time period a TCP is valid and processing of expired of disapproved TCPs.

c. Interim approval process.

19. EOP 19030, E-3, "Steam Generator Tube Rupture" is in progress.

    You are at the step which contains the table for controlling RCS pressure and charging flow to minimize RCS-to-Secondary leakage.

    The ruptured SG ARV is lifting at 1160 psig.

    In accordance with 19030-C, which **ONE** of the following is **CORRECT** regarding the operation of the ARV and actions to take ?

    A. The ARV is controlling pressure too high, the SG code safeties may lift resulting in an uncontrolled release. Adjust the ARV potentiometer to automatically control at 1120 psig.

    B. ✓ The ARV is functioning properly to prevent lifting the SG code safeties. Reduce RCS and ruptured SG pressures < 1160 psig to prevent the ARV from lifting.

    C. The ARV is controlling pressure too high, the SG code safeties may lift resulting in an uncontrolled release. Manually control SG pressure at 1120 psig using the QMCB M/A station.

    D. The ARV is functioning properly to prevent lifting the SG code safeties. Maintain RCS and ruptured SG pressures at 1160 psig with the ARV in automatic.

K/A

G2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel radiation exposure.

K/A MATCH ANALYSIS

Question gives a plausible scenario where a SGTR is in progress and 19030 is in progress. Candidate must pick whether the ARV to control release is functioning properly and correct action to take.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. ARV is lifting at proper setpoint. Caution at procedure step would have RCS and SG pressures lowered to less than 1160 psig to prevent ARV lifting.

B. Correct. ARV is lifing at proper setpoint. RCS and SG pressure should be lowered to less than 1160 psig per procedure.

C. Incorrect. ARV is lifting at proper setpoint. See A & B above.

D. Incorrect. ARV is lifting at proper setpoint. See A & B above.

REFERENCES

19030-C, "Steam Generator Tube Rupture"

VEGP learning objectives:

LO-LP-373111-07, Using EOP 19030 as a guide, briefly describe how each step is accomplished.

LO-LP-37311-11 Given a NOTE or CAUTION statement from the EOP, state the bases for that NOTE or CAUTION statement

20. Given the following:

* The Shift Supervisor has declared 2-RE-0018 Inoperable.

* The radiation monitor will not come off the low end of scale.

Which **ONE** of the following statements is **CORRECT** regarding approving a permit for the release of Waste Monitor Tank # 9 ?

A. Approve. As long as independent samples of tank contents are analyzed and the discharge valve alignment and release rate calculations are independently verified.

B. Disapprove. The release CANNOT proceed until 2-RE-0018 has been returned to Operable status in accordance with ODCM requirements.

C. Approve. As long as 1-RE-0018 remains Operable tank contents shall be routed through the opposite units radiation monitor.

D. Disapprove. The release CANNOT proceed because the discharge flow path cannot be aligned with 2-RE-0018 failed offscale low.

K/A

G2.3.6 Knowledge of the requirements for reviewing and approving release permits.

K/A MATCH ANALYSIS

Question gives conditions for a waste monitor tank release with RE-0018 inoperable and candidate will have to determine correct choices to approve the release.

ANSWER / DISTRACTOR ANALYSIS

A. Correct. ODCM action 37 allows with independent samples, discharge path IV, and release rate calculation IV.

B. Incorrect. Release could occure per ODCM Table 1 for Liquid Radwaste.

C. Incorrect. No provisions in SOP for cross unit release operations.

D. Incorrect. Valves could be aligned for Waste Montitor Release since interlock to shut valve is rad monitor failing high.

REFERENCES

1. 13216-1, "Liquid releases"
2. ODCM Section 2.1, Table 2.1 section 1 for LIQUID RADWASTE TREATMENT SYSTEM.
3. Arkansas Nuclear One 2005 NRC Exam question # 98

VEGP learning objectives:

LO-PP-47101-10, "State the ODCM, TR, applicabilities, and any one hour or less actions required for the Liquid Waste Processing System."

21. Given the following conditions:

The plant is operating at 100% power.

* DG "A" is tagged out for an AOT.

* A sudden thunderstorm sweeps through the area causing a Loss of Offsite Power to both RATs.

* An SI has actuated due to a stuck open PRZR safety valve.

* The crew has transitioned to 19010-C, "Response to Primary or Secondary Loss of Coolant"

* A valid red path CSFST for Heat Sink has been identified.

Subsequently, DG "B" output breaker trips due to a bus fault.

Which **ONE** of the following actions is the **CORRECT** action to take ?

A. Transition to 19231-C and remain there until exit criteria are met or a higher priority red path procedure is identified.

B. Transition to 19100-C, Loss of All AC Power and remain there until power restored. Then immediately transiton to 19231-C.

C. Transition to 19231-C and remain there unless RCS pressure is lower than steam generator pressure which would require a return to 19010-C.

D. Transition to 19100-C, Loss of All AC Power and remain there until power restored. Transition to 19231-C only when FRP implementation is procedurally directed.

K/A

G2.4.4 Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures..

K/A MATCH ANALYSIS

Question gives plant conditions which would result in a Loss of All AC power and candidate has to determine appropriate procedure implementation.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. Loss of All AC Power procedure would be implemented.

B. Incorrect. Loss of All AC is correct procedure. However, you remain in this series of procedures until directed to implement the FRPs

C. Incorrect. Loss of All AC Power procedure would be implemented.

D. Correct. Loss of All AC Power is correct procedure and a transition to FR-H.1 not made until procedures direct FRP implementation again.

REFERENCES

19231-C, FR-H.1 "Loss of Secondary Heat Sink"

19100-C, ECA-0.0, "Loss of All AC Power"

19102-C, ECA-0.2, "Loss of All AC Power SI Recovery Required"

Beaver Valley 2004 NRC Exam Question # 100

VEGP learning objectives:

LO-LP-37031-07, "State the bases for "Loss of All AC Power" procedure".

LO-LP-37031-08, "Using EOP 19100-C as a guide, describe how each step is accomplished."

22. The following conditions exist:

* 19231-C, FR-H.1 "Loss of Secondary Heat Sink" is being implemented.

* All SG levels at 29% WR and lowering

Which **ONE** of the following actions should be performed and why ?

A. Actuate SI and verify both PORVs automatically cycling at their setpoints to provide temporary core cooling.

B. Actuate SI, manually open both PORVs and arm both trains of COPS to prevent core uncovery.

C. Rapidly depressurize all SGs to < 550 psig in order to inject accumulators.

D. Rapidly depressurize all SGs to < 550 psig to allow condensate flow to the SGs.

K/A

G2.4.6 Knowledge of symptom based EOP mitigation strategies.

K/A MATCH ANALYSIS

Question directly tied to the K/A.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. PORVs and Block valves would be placed in hard open position.

B. Correct.

C. Incorrect. Bleed and feed criteria are met.

D. Incorrect. Bleed and feed criteria are met.

REFERENCES

1. 19200-C, Critical Safety Function Status Trees
2. 19231-C, FR-H.1, Response to Loss of Secondary Heat Sink

VEGP learning objectives:

LO-LP-37051-07, "State the intent of 19231-C, "Response to Loss of Secondary Heat Sink".

23. Which **ONE** of the following could operators have been performing that would allow the use of Rediagnosis ?

A. 19010-C, "Response to RCS LOCA" in effect. A Loss of Offsite Power (LOSP) occurs and the Train "A" DG re-energizes AA02.

B. 19000-C, "Reactor Trip or Safety Injection" in effect. The SS has reached the steps for transition diagnostics and is not sure which procedure to implement.

C. 19231-C, "Loss of Secondary Heat Sink" in effect. The crew has successfully established condensate flow and SG WR levels are 25% and rising.

D. 19002-C, "Natural Circulation Cooldown" is in effect. An RCP has just been started and the SS is not sure which procedure to implement.

K/A

WE01 Rediagnosis

EA2.2 Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

K/A MATCH ANALYSIS

Question gives several different scenarios which do not allow use of Rediagnosis. Candidate has to pick the condition which would allow use of 19005-C.

ANSWER / DISTRACTOR ANALYSIS

A. Correct. Rediagnosis may be entered from 19010-C.

B. Incorrect. E-0 must be completed and a transtition made to allow use of Rediagnosis.

C. Incorrect. Rediagnosis cannot be entered from a Red Path.

D. Incorrect. ECCS must be in service or required to allow use of Rediagnosis.

REFERENCES

19005-C, "Rediagnosis", step # 1.

VEGP learning objectives:

LO-LP-37002-12, State the intent and entry conditions for EOP 19005-C, Rediagnosis.

24. The crew is implementing EOP 19012-C, "ES-1.2 Post-LOCA Cooldown and Depressurization", in response to the following sequence of events:

    * Unit at 100% RTP
    * RCS cold leg temps 557 degrees F
    * Reactor trip and SI due to small break LOCA
    * RCS cold leg temperatures stabilize at 511 degrees F.
    * Both trains of ECCS are in service
    * 15 minutes have elapsed since the reactor trip

    The crew is cooling down and depressuring the RCS in accordance with 19012-C. Which of the following describes the **maximum** RCS cooldown allowed?

    A. The RCS cold leg temps could be lowered to 411 deg F in the next 45 minutes to comply with technical specification requirements.

    B. The RCS cold leg temps could be lowered to 411 deg F over the next 60 minutes once cooldown is initiated per 19012-C.

    C. The RCS cold leg temps could be lowered to 457 deg F over the next 45 minutes to comply with technical specification requirements.

    D. The RCS cold leg temps could be lowered to 457 deg F over the next 60 minutes once cooldown is initiated per 19012-C.

K/A

WE03 LOCA Cooldown - Depressurization.

EA2.2 Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

K/A MATCH ANALYSIS

Question deals with RCS cooldown as directed in the Post LOCA Cooldown EOP ES-1.2. The limit on the cooldown rate is to comply with technical specification requirements.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. Cold leg temps initially at 557 degrees F means you can only lower to 457 degrees F.

B. Incorrect. Cold leg temps initally at 557 degrees F means you can only lower to 457 degrees F.

C. Correct. Cold leg temps initially at 557 degrees F means you can lower to 457 degrees F in the 45 minutes.

D. Incorrect. Cold leg temps initially at 557 degrees F means you can lower to 457 degrees F in the next 60 minutes but is not the maximum rate.

REFERENCES

1. 19012-C, "ES-1.2 Post-LOCA Cooldown and Depressurization" step 13b, page 8.
2. VEGP LCO 3.4.3, RCS Pressure and Temperature Limits
3. WOG ERG background document, ES-12.doc, page 98
4. Operations Instructor Handbook page 28.

VEGP learning objectives:

LO-LP-37112-01, "Using EOP 19012-C as a guide, describe how each step is accomplished".

25. The crew is responding to a red path on the Integrity CSFST using 19241-C, "Response to Pressurized Thermal Shock".

    * A temperature soak was completed.

    * RCS pressure is being maintained within the requirements of the POST SOAK COOLDOWN LIMIT CURVE.

    Which **ONE** of the following **CORRECTLY** describes the allowed cooldown rate and the bases for the cooldown rate ?

    A. 50 degree F rate minimizes tensile stresses in the reactor vessel upper head to reduce the likelihood of plastic deformation.

    B. 100 degree F rate minimizes the compressive stresses in the reactor vessel hot leg nozzles to reduce the likelihood of rapid propagation of an existing flaw.

    C. 50 degree F rate minimizes tensile stresses in the reactor vessel downcomer beltline area to reduce the likelihood of rapid propagation of an existing flaw.

    D. 100 degree F rate minimizes compressive stresses in the reactor vessel cold leg nozzles to reduce the likelihood of plastic deformation.

K/A

WE08 RCS Overcooling - PTS.

EG2.2.25. Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.

K/A MATCH ANALYSIS

Question tests the knowledges contained in the tech spec bases for LCO on RCS pressure temperature limits applied to use in a PTS condition.

ANSWER / DISTRACTOR ANALYSIS

A. Incorrect. Plausible since your are minimize tensile stresses but the upper head is not the most limiting component and you must know the difference between plastic and brittle deformation.

B. Incorrect. Plausible since rapid propagation is correct, you must know that the most limiting stress is tensile versus compressive. Cooldown limit is also 50 degrees F.

C. Correct.

D. Incorrect. Plausible because you must know the limiting component, type of failure of concern and the type of stresses that are more limiting. Cooldown limit is also 50 degrees F.

REFERENCES

1. LCO bases 3.4.3 pages 1 & 2.

2. 19241-C, "Response to Pressurized Thermal Shock (PTS), pages 22, 28, and 29.

VEGP learning objectives:

LO-LP-39208-04, "Describe the bases for any given Tech Spec in section 3.4"