3. (continued from previous page)

b. IF ..... Main Condenser is desired drain path,
THEN ... **OPEN** 3-FCV-74-62, RHR MAIN CNDR FLUSH VALVE. ____

c. IF ..... Radwaste is desired drain path,
THEN ... **PERFORM** the following:

1) **ESTABLISH** communications with Radwaste. ____

2) **OPEN** 3-FCV-74-63, RHR RADWASTE SYS FLUSH VALVE. ____

d. **NOTIFY** personnel in Unit 3 RB, El 519 ft, Torus Area to start RHR Drain Pump 3A(3B). ____

e. **THROTTLE** 3-FCV-74-108, RHR DR PUMP 3A/B DISCH HDR VALVE, as necessary. ____

4. WHEN ... Suppression Pool level reaches -5.5 in.,
THEN ... **SECURE** RHR Drain System as follows:

a. **DISPATCH** personnel to **STOP** the Drain System as follows (Unit 3 RB, El 519 ft, Torus Area):

1) **STOP** RHR Drain Pump 3A(3B). ____

2) **CLOSE** the following valves:

- 3-SHV-074-0564A(B), RHR DR PUMP A(B) SEAL WTR SPLY ____
- 3-SHV-074-0529A(B), RHR DR PUMP A(B) SHUTOFF VLV. ____

3) **CLOSE** and **LOCK** 3-SHV-074-0765A(B), RHR DR PUMP A(B) DISCH. ____

b. **CLOSE** 3-FCV-74-108, RHR DR PUMP 3A/B DISCH HDR VALVE. ____

c. **VERIFY CLOSED** 3-FCV-74-62, RHR MAIN CNDR FLUSH VALVE. ____

d. **VERIFY CLOSED** 3-FCV-74-63, RHR RADWASTE SYS FLUSH VALVE. ____

e. WHEN ... Suppression Pool level can be maintained between -1 in. and -5.5 in.,
THEN ... **EXIT** this procedure. ____

5. IF ..... Directed by SRO to Emergency Makeup to the Suppression Pool from Standby Coolant,
THEN ... **CONTINUE** in this procedure at Step 9. ____

6. IF ..... Directed by SRO to add water to suppression pool,
THEN ... **MAKEUP** water to Suppression Pool as follows:

   a. **VERIFY OPEN** 3-FCV-73-40, HPCI CST SUCTION VALVE. ____

   b. **OPEN** 3-FCV-73-30, HPCI PUMP MIN FLOW VALVE. ____

   c. IF ..... HPCI is NOT available for Suppression Pool makeup,
   THEN ... **MAKEUP** water to Suppression Pool using RCIC as follows:

      1) **VERIFY OPEN** 3-FCV-71-19, RCIC CST SUCTION VALVE. ____

      2) **OPEN** 3-FCV-71-34, RCIC PUMP MIN FLOW VALVE. ____

   d. IF ..... 3-FCV-71-34, RCIC PUMP MIN FLOW VALVE, CANNOT be opened from control room,
   THEN ... **DISPATCH** personnel to 250V DC RMOV Board 3B, Compartment 5D, to perform the following:

      1) **PLACE** 3-XS-071-0034, RCIC PUMP MIN FLOW VALVE EMER TRANS SWITCH, to EMERG. ____

      2) **OPEN** 3-FCV-71-34, RCIC PUMP MIN FLOW VALVE. ____

7. WHEN ... Suppression Pool level reaches -5.5 in.,
THEN ... **VERIFY CLOSED** the following valves:

   - 3-FCV-73-30, HPCI PUMP MIN FLOW VALVE ____
   - 3-FCV-71-34, RCIC PUMP MIN FLOW VALVE. ____

8. **DISPATCH** personnel to 250V DC RMOV Board 3B, Compartment 5D, to **VERIFY** 3-XS-071-0034, RCIC PUMP MIN FLOW VALVE EMER TRANS SWITCH, in NORMAL. ____

55. RO 295031G2.4.6 001/C/A/T1G1/C1//295031G2.4.6//RO/SRO/NO

Given the following plant conditions:

- Unit 2 was operating at 98% power when an automatic scram occurred due to a Group I isolation.
- All control rods fully insert as reactor water level immediately drops below Level 2.
- The Recirc pumps trip.
- HPCI automatically initiates but immediately isolates due to a blown inner turbine exhaust rupture diaphragm.
- RCIC had been tagged out of service previously to repair an oil leak.
- All other systems are operable.
- EOI-1, RPV Control, is entered.
- Pressure control was established with SRVs.

The remaining high pressure injection systems are unable to maintain reactor water level which is currently at -150 inches and lowering.

Which ONE of the following contingency procedures would be appropriate to execute?

A. ✔ C1, Alternate Level Control

B. C2, Emergency RPV Depressurization

C. C4, RPV Flooding

D. C5, Level/Power Control

K/A Statement:
295031 Reactor Low Water Level / 2
2.4.6 - Emergency Procedures / Plan Knowledge symptom based EOP mitigation strategies

K/A Justification: This question satisfies the K/A statement by requiring the candidate to use specific plant conditions to determine the appropriate Emergency Procedure used to mitigate a low reactor water level condition.

References: 2-EOI-1, EOIPM Sections 0-V-C and 0-V-G

Level of Knowledge Justification: This question is rated as C/A due to the requirement to assemble, sort, and integrate the parts of the question to predict an outcome. This requires mentally using this knowledge and its meaning to predict the correct outcome.

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REFERENCE PROVIDED: None

Plausibility Analysis:

In order to answer this question correctly the candidate must determine the following:

1. Whether the given conditions are indicative of a loss of HP injection.
2. Based on Item #1 above, which EOI Contingency is appropriate to mitigate that condition.

A is correct.

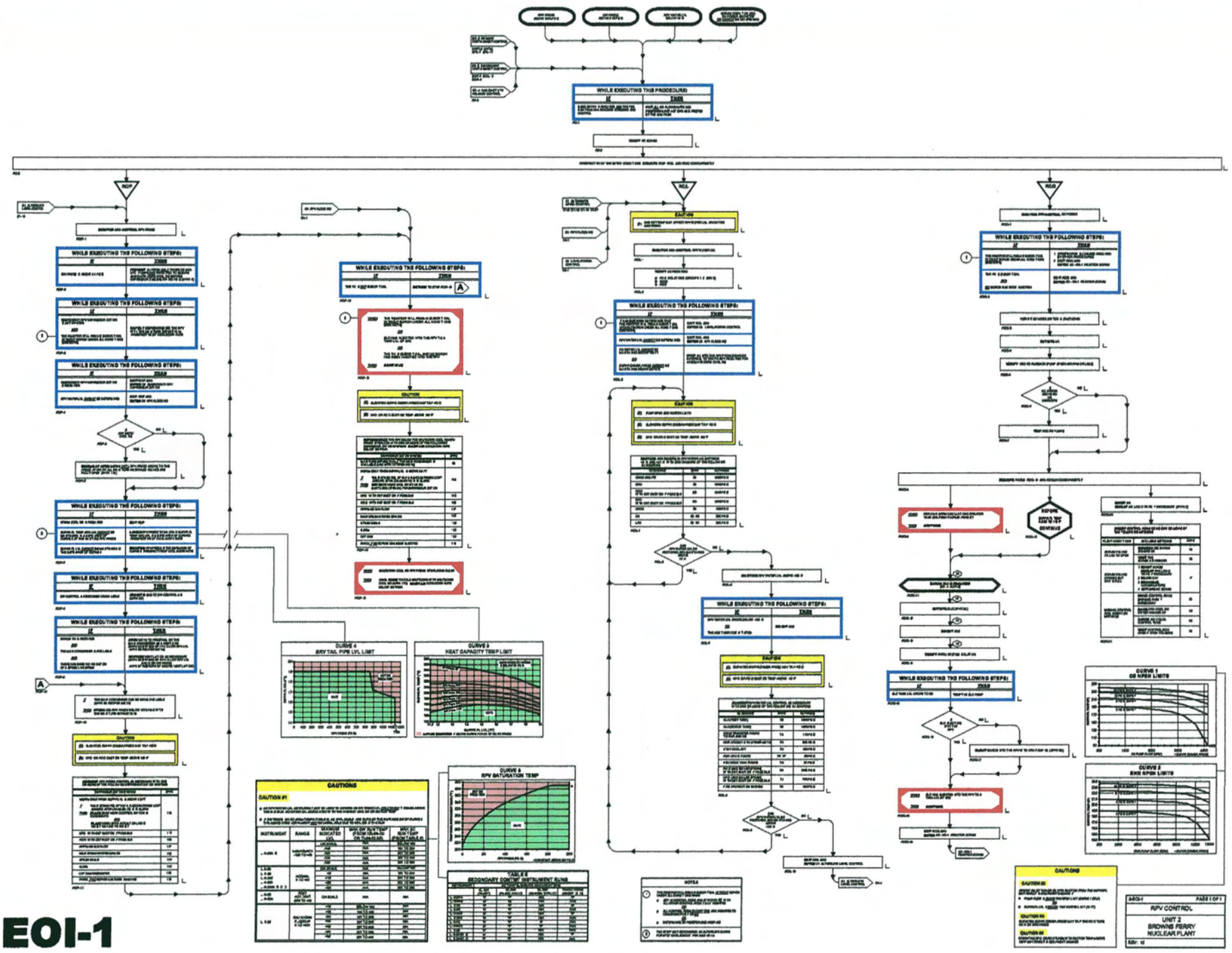
B is incorrect. This is plausible since ED will eventually become necessary following the initial actions of EOI-C1. However, additional actions are required before EOI-C2 is appropriate.

C is incorrect. This is plausible since DW temperature may be high enough following ED to create a condition where RPV level instruments become unavailable. However, additional actions are required before EOI-C4 is appropriate.

D is incorrect. This is plausible since the only given condition which contradicts the use of EOI-C5 is the current rod pattern. However, with all rods inserted, EOI-C5 is not appropriate.

RPV CONTROL

2-EOI-1



56. RO 295037EK2.11 001/C/A/T1G1/RMCS//295037EK2.11//RO/SRO/NO

A hydraulic ATWS has occurred on Unit 2 and the Unit Operator is inserting control rods in accordance with the EOI appendices 1D, 1F, & 2.

With these plant conditions...

A. ✔ all insert blocks are bypassed.

B. rod drift indication is received as soon as rod motion begins.

C. stabilizing valves open to provide increased drive pressure.

D. all RMCS timer functions are bypassed except for the settle bus.

K/A Statement:
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1
EK2.11 - Knowledge of the interrelations between SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN and the following: RMCS: Plant-Specific

K/A Justification: This question satisfies the K/A statement by requiring the candidate to use specific plant conditions to determine the status of the RMCS while executing procedures to mitigate an ATWS condition.

References: 2-EOI Appendicies 1D, 1F, and 2

Level of Knowledge Justification: This question is rated as C/A due to the requirement to assemble, sort, and integrate the parts of the question to predict an outcome. This requires mentally using this knowledge and its meaning to predict the correct outcome.

0610 NRC Exam

REFERENCE PROVIDED: None

Plausibility Analysis:

In order to answer this question correctly the candidate must determine the following:

1. What affect the actions performed by EOI Appendix implementation have on the RMCS system.
2. What affect the RMCS manipulations required by implementation of the EOI Appendicis have on plant indications.

A is correct.

B is incorrect. This is plausible since a Rod Drift indication will occur for each inserted control rod, however the indication does not occur until the rod is fully inserted and the CRD NOTCH OVERRIDE switch is released.

C is incorrect. This is plausible because CRD stabilizing valves DO have an effect on drive water pressure, but the efffect is to prevent oscilations while moving control rods, NOT increase pressure.

D is incorrect. This is plausible since RMCS timers are bypassed by using the CRD NOTCH OVERRIDE switch in accordance with EOI Appendix 1D. However, the Settle Bus timer is also bypassed.

2-EOI APPENDIX-1D

INSERT CONTROL RODS USING REACTOR MANUAL CONTROL SYSTEM

LOCATION: Unit 2 Control Room, Panel 9-5

ATTACHMENTS: 1. Tools and Equipment
2. Core Position Map (√)

NOTE: This EOI Appendix may be executed concurrently with EOI Appendix 1A or 1B at SRO's discretion when time and manpower permit.

1. **VERIFY** at least one CRD pump in service. ____

NOTE: Closing 2-85-586, CHARGING WATER ISOL, valve may reduce the effectiveness of EOI Appendix 1A or 1B.

2. IF ..... Reactor Scram or ARI CANNOT be reset,
THEN ... **DISPATCH** personnel to close 2-SHV-85-586, CHARGING WATER SHUTOFF (RB NE, El 565 ft). ____

3. **VERIFY** REACTOR MODE SWITCH in SHUTDOWN. ____

4. **BYPASS** Rod Worth Minimizer. ____

5. **REFER TO** Attachment 2 and **INSERT** control rods in the area of highest power as follows:

a. **SELECT** control rod. ____

b. **PLACE** CRD NOTCH OVERRIDE switch in EMERG ROD IN position UNTIL control rod is NOT moving inward. ____

c. **REPEAT** Steps 5.a and 5.b for each control rod to be inserted. ____

NOTE: A ladder may be required to perform the following step. REFER TO Tools and Equipment, Attachment 1.

IF necessary, an alternate ladder is available at the HCU Modules, EAST and West banks. It is stored by the CRD Charging Cart.

6. WHEN ... NO further control rod movement is possible or desired,
THEN ... **DISPATCH** personnel to verify open 2-SHV-85-586, CHARGING WATER SHUTOFF (RB NE, El 565 ft). ____

END OF TEXT

2-EOI APPENDIX-1F

MANUAL SCRAM

LOCATION: Unit 2 Control Room

ATTACHMENTS: 1. Tools and Equipment
2. Panel 2-9-15, Rear
3. Panel 2-9-17, Rear

(√)

1. **VERIFY** Reactor Scram and ARI reset. ____

   a. IF ..... ARI CANNOT be reset,
   THEN ... **EXECUTE** EOI Appendix 2 concurrently with Step 1.b of this procedure. ____

   b. IF ..... Reactor Scram CANNOT be reset,
   THEN ... **DISPATCH** personnel to Unit 2 Auxiliary Instrument Room to defeat ALL RPS logic trips as follows:

      1) **REFER** to Attachment 1 and **OBTAIN** four 3-ft banana jack jumpers from EOI Equipment Storage Box. ____

      2) **REFER** to Attachment 2 and **JUMPER** the following relay terminals in Panel 2-9-15, Rear:

         a) Relay 5A-K10A (DQ) Terminal 2 to Relay 5A-K12E (ED) Terminal 4, Bay 1. ____

         b) Relay 5A-K10C (AT) Terminal 2 to Relay 5A-K12G (BH) Terminal 4, Bay 3. ____

      3) **REFER** to Attachment 3 and **JUMPER** the following relay terminals in Panel 2-9-17, Rear:

         a) Relay 5A-K10B (DQ) Terminal 2 to Relay 5A-K12F (ED) Terminal 4, Bay 1. ____

         b) Relay 5A-K10D (AT) Terminal 2 to Relay 5A-K12H (BH) Terminal 4, Bay 3. ____

2. WHEN ... RPS Logic has been defeated,
   THEN ... **RESET** Reactor Scram. ____

3. **VERIFY OPEN** Scram Discharge Volume vent and drain valves. ____

57. RO 295038EK1.01 001/MEM/T1G1/NEW//295038EK1.01//RO/SRO/RWM

Given the following plant conditions:

- Unit 2 has experienced a LOCA with a loss of Primary Containment.
- You have volunteered for a team dispatched from the OSC to enter the Reactor Building and attempt to energize 2D 480v RMOV board.
- Due to environmental and radiological conditions present in the Reactor Building, Radcon provides you with a Sodium Chloride and Potassium Iodine tablet during the prejob briefing.

Which ONE of the following describes the benefit of ingesting Potassium Iodine prior to the Reactor Building entry?

A. It will reduce the risk of dehydration and heat stress.

B. It will reduce the absorption of radioactive Iodine by the lungs.

C✔ It will reduce the absorption of radioactive Iodine by the thyroid.

D. It will reduce the absorption of radioactive Potassium in the blood stream.

K/A Statement:
295038 High Off-site Release Rate / 9
EK1.01 - Knowledge of the operational implications of the following concepts as they apply to HIGH OFF-SITE RELEASE RATE : Biological effects of radioisotope ingestion

K/A Justification: This question satisfies the K/A statement by requiring the candidate to correctly identify the pathway and adverse effect of iodine ingestion.

Reference: EPIP -14 Revision 18, page 4

Level of Knowledge Justification: This question is rated as MEM due to the requirement to recall or recognize discrete bits of information.

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REFERENCE PROVIDED: None

Plausibility Analysis:

A is incorrect. The sodium chloride tablets would be used for this purpose. It is plausible if the candidate is unsure of the purpose of KI tablets.

B is incorrect. Only the thyroid is the organ at risk, but it is plausible if the candidate assumes that airborne ingestion is limited to absorption by the lungs.

C is correct.

D is incorrect. Iodine is the element that is absorbed. Potassium becomes a plausible answer due to recent media coverage regarding health risks related to low potassium levels in the blood stream.

3.6 Issuing Potassium Iodide (KI)

3.6.1 If the TSC RP Manager has reason to believe that a person's projected cumulative dose to the thyroid from inhalation of radioactive iodine might exceed 10 rems (see Appendix A), the exposed person should be started immediately on a dose regimen of KI. This decision shall be immediately communicated to the SED.

3.6.1.1 If the TSC is not staffed or the RP Manager position has not been filled, then the senior onsite RP Supervisor has the authority to issue KI utilizing the bases described in step 3.6.1.

3.6.1.2 The initial dose of KI should be not delayed since thyroid blockage requires 30 to 60 minutes. Anyone authorized to initiate KI shall be familiar with the Food and Drug Administration (FDA) patient package insert and be sure that each recipient is similarly informed.

3.6.1.3 Prior to issuing KI to an individual, the person should be asked if he/she is allergic to iodine. If the person indicates a possible sensitivity to iodine they should not be issued KI.

3.6.2 KI is stored in the plant RP supply cage and the REP Van instrument kits.

3.6.3 RP normally will not dispense a container or package of KI to TVA Personnel involved in activities to support a radiological emergency. RP will however dispense a single individual dose of KI to team members dispatched from the OSC.

3.6.4 Follow the dosage outlined on the FDA patient package insert (Appendix B). A copy of the FDA approved patient package insert shall accompany the issuance of KI. If KI is distributed in individual doses then verbal instructions of the significant information on the patient package insert by a knowledgeable individual is sufficient.

3.6.5 Complete the KI Issue Report (Appendix C) or document on an RWP time sheet as appropriate for issuance of KI. If the RWP time sheet is used to document distribution of the KI, note the time of KI distribution on the back of the time sheet.

58. RO 600000AA1.08 001/MEM/T1G1/RSW//600000AA1.08//RO/SRO/11/20/07 RMS

Which ONE of the following describes the appropriate fire extinguishing agent for the specific class of fire?

A. Water used on Class "B" fires.

B. ✔ Low pressure CO_2 used on Class "C" fires.

C. Dry Chemical (PKP) used on Class "C" fires.

D. Aqueous Film Forming Foam (AFFF) used on Class "A" fires.

K/A Statement:
600000 Plant Fire On-site / 8
AA1.08 - Ability to operate and / or monitor the following as they apply to PLANT FIRE ON SITE: Fire fighting equipment used on each class of fire

K/A Justification: This question satisfies the K/A statement by requiring the candidate to identify the correct fire fighting agent for a specific class of fire.

References: TVA Safety Manual

Level of Knowledge Justification: This question is rated as MEM due to the requirement to recall or recognize discrete bits of information.

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REFERENCE PROVIDED: None

Plausibility Analysis:

In order to answer this question correctly the candidate must determine the following:

1. Which flammable material is of concern based on Fire Class A, B and C.
2. Which extinguishing agent is appropriate for each class of fire.
3. Which extinguishing agent is inappropriate for a given class of fire.

A is incorrect. Class "B" fires are flammable liquids. Using water could cause serious damage by allowing the liquid to splatter and spread.

B is correct.

C is incorrect. Dry chemical agents are extremely corrosive to electrical components and insulation typical of Class "B" electrical fires.

D is incorrect. AFFF is designed as a flooding and diluting agent for Class "B" flammable liquid fires. Application on a Class "A" fire is not effective in extinguishing flammable materials such as wood and paper.

59. RO 295009AK2.01 001/C/A/T1G2/PR.INSTR/13/295009AK2.01/9619/RO/SRO/11/20/07 RMS

Given the following Unit 1 plant conditions:

- Due to multiple high pressure injection system failures, 1-EOI-C1, Alternate Level Control has been entered.
- RHR Pump 1A is running and lined up for LPCI injection.
- Core Spray Pumps 1B and 1D are running and lined up for injection.
- Drywell Temperature is 240 ^{0}F and rising slowly.

Which ONE of the following conditions describes the appropriate point where Emergency Depressurization may be performed in accordance with 1-EOI-C1, Alternate Level Control?

Post Accident Flooding Range level instrument 3-LI-3-52 is reading _____inches with reactor pressure at _____psig.

REFERENCES PROVIDED

A. ✔ -225 inches, 800 psig

B. -210 inches, 500 psig

C. -220 inches, 900 psig

D. -205 inches, 350 psig

K/A Statement:
295009 Low Reactor Water Level / 2
AK2.01 - Knowledge of the interrelations between LOW REACTOR WATER LEVEL and the following: Reactor water level indication

K/A Justification: This question satisfies the K/A statement by requiring the candidate to use specific plant conditions to determine actual reactor water level under conditions of low reactor water level.

References: 1-EOI-C1 Flowchart, PIP-95-64 Rev 12

Level of Knowledge Justification: This question is rated as C/A due to the requirement to assemble, sort, and integrate the parts of the question to predict an outcome. This requires mentally using this knowledge and its meaning to predict the correct outcome.

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REFERENCE PROVIDED: 1-EOI-C1 Flowchart, PIP-95-64 Rev 12.

Plausibility Analysis:

In order to answer this question correctly the candidate must determine the following:

1. Recognize the requirement that RPV level must be less than -162 inches before Emergency Depressurization is appropriate.
2. Recognize that the indicated RPV level must be corrected for pressure using PIP-95-64.
3. Recognize that two or more injection systems must be lined up with pumps running to meet the requirement to Emergency Depressurize.
4. Recognize that only one RHR pump is required to qualify as an injection subsystem since each RHR pump is rated for 100% capacity.

NOTE: Each distractor is plausible because the conditions specified are possible given the current plant conditions.

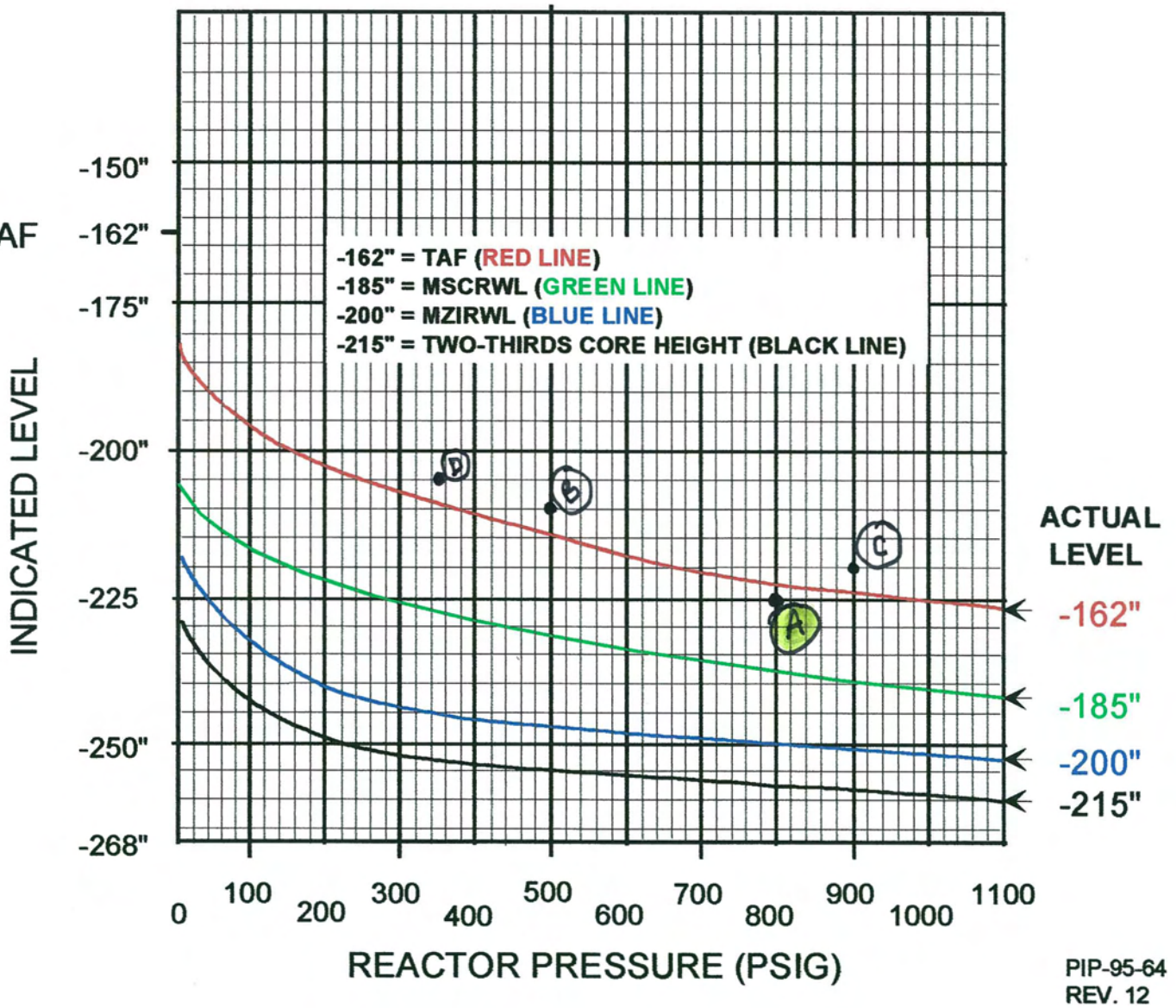
A is correct.

B is incorrect. Level is 5 inches too high or pressure is 100 psig too high.

C is incorrect. Level is ~4 inches too high or pressure is 240 psig too high.

D is incorrect. Level is ~4 inches too high or pressure is 100 psig too high.

3-LI-3-52 & 62 CORRECTION CURVES



PIP-95-64
REV. 12

INSTRUCTOR NOTES

Since no trips or alarms are associated with this range, this level signal is not directed through the Analog Trip System.

(d) One MCR indicator on Panel 9-3 monitors this range of level indication.

(4) Post-accident Flood Range

(a) -268" to +32" range covering active core area and overlapping the lower portion of the Normal Control Range.

(b) Referenced to instrument zero

(c) Intended for use only under accident conditions with reactor at 0 psig and recirculation pumps tripped.

(d) Variable leg tap is from diffuser of jet pumps 1 and 6 (or 11 and 16).

(e) Per Safety Analysis on water level instruments the conclusion is that the accident range instruments adequately indicate water level--provided they are corrected for off-calibration conditions of RPV pressure utilizing the operator aid on Panel 9-3 for level correction.

Injecting with RHR
LI-3-52 and 62
(Accident Range)
Technical Support
letter dated 9/13/95
(See LP Folder)
Use Conservative
Decision Making
Obj. V.B.15.
Obj. V.B.11.

(f) An interlock associated with this range will prevent using the RHR System for containment de pressurization when it is needed to flood the core region.

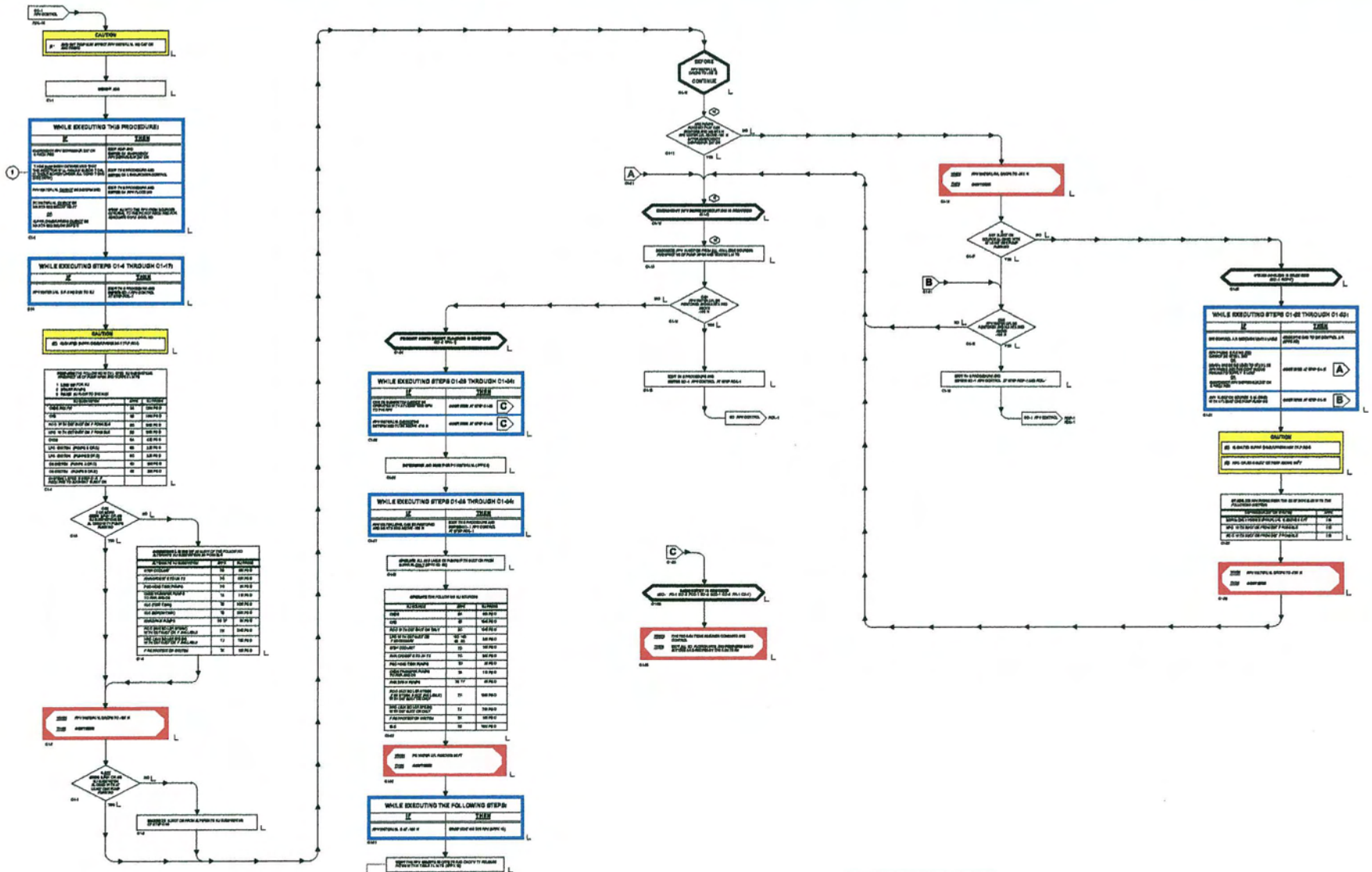
(g) The -68" to -168" portion of this range is recorded in the MCR on 2-LI-3-62 Recorder and two indicators monitor the full range of these instruments.

Unit 3 Recorder displays a scale of +32" to -268"

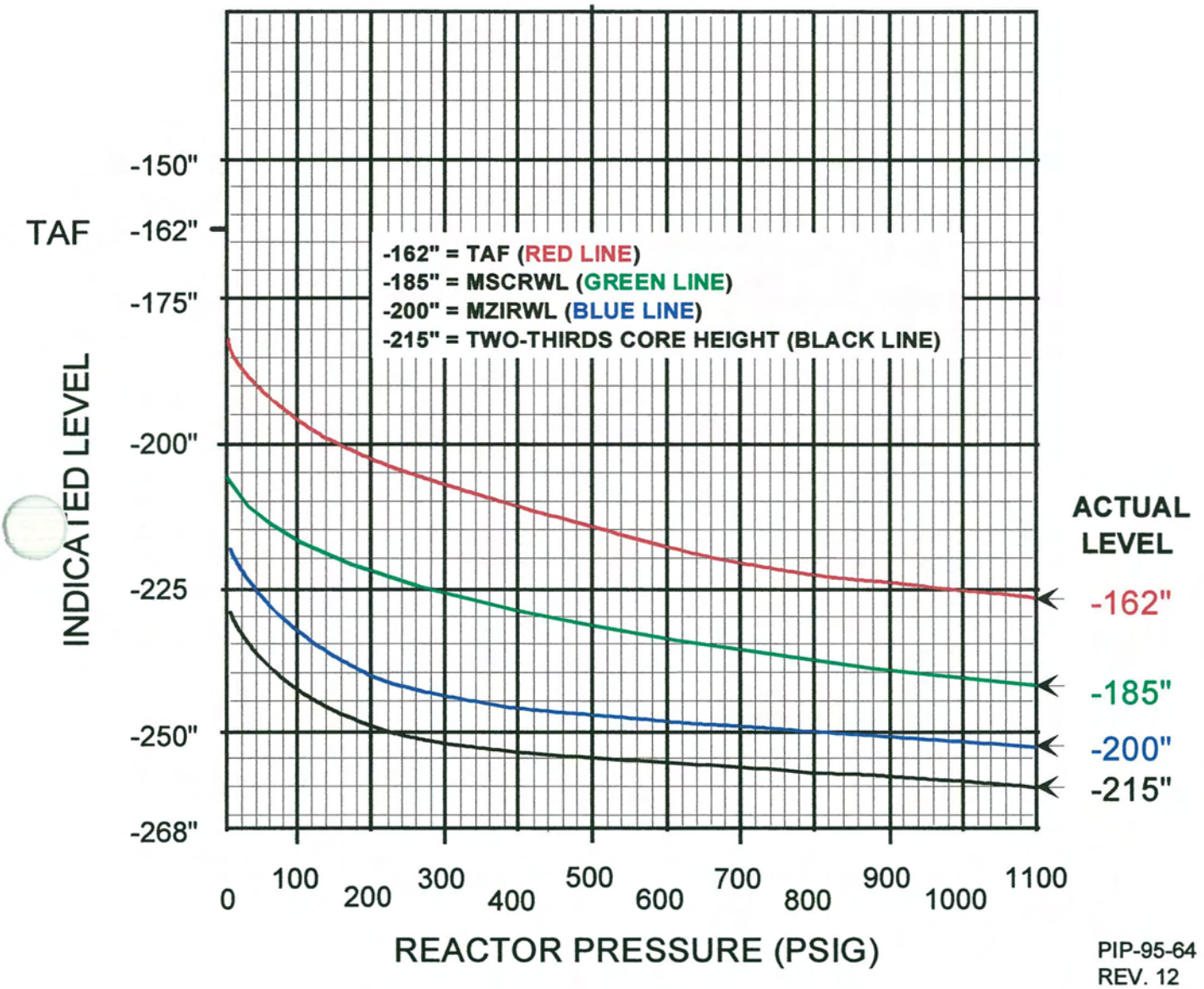
EXAMINATION REFERENCE PROVIDED TO CANDIDATE

ALTERNATE LEVEL CONTROL

1-C-1



3-LI-3-52 & 62 CORRECTION CURVES



PIP-95-64
REV. 12

60. RO 295012G2.2.22 001/C/A/T1G2/64/12/295012G2.2.22//RO/SRO/0606S NEW6/28/2007

Given the following plant conditions:

- You are the oncoming Unit 3 Unit Supervisor.
- During turnover the onshift Unit Supervisor informs you that 2 Drywell Coolers had been secured during his shift while performing ground isolation on 3C 480v RMOV board.
- Drywell Average Temperature is 152°F and stable.

Which ONE of the following describes the appropriate condition and required action?

A. Exceeded 3-SR-2, Instrument Checks and Observations, Drywell temperature limit. Address Tech Spec section 3.6.

B. Exceeded the normal operating Drywell temperature limit. Drywell temperature must be logged hourly until below the limit.

C. Exceeded the normal operating Drywell temperature limit. Restore Drywell average air temperature below the limit in 24 hours.

D. Exceeded 3-EOI-2, Primary Containment Control entry condition. Enter and execute 3-EOI-2, Primary Containment Control.

K/A Statement:
295012 High Drywell Temperature / 5
2.2.22 - Equipment Control Knowledge of limiting conditions for operations and safety limits

K/A Justification: This question satisfies the K/A statement by requiring the candidate to use specific plant conditions to determine that Technical Specification limits have been exceeded.

References: Unit 3 Tech Specs Section 3.6.1.4

Level of Knowledge Justification: This question is rated as C/A due to the requirement to assemble, sort, and integrate the parts of the question to predict an outcome. This requires mentally using this knowledge and its meaning to predict the correct outcome.

0610 NRC Exam

REFERENCE PROVIDED: 1-EOI-C1 Flowchart, PIP-95-64 Rev 12.

Plausibility Analysis:

In order to answer this question correctly the candidate must determine the following:

1. The appropriate entry condition for U3 Tech Spec Section 3.6.1.4.
2. The appropriate entry condition for 3-EOI-2, Primary Containment Control.
3. The appropriate action based on the given condition.

A is correct.

B is incorrect. This is plausible because the Tech Spec limt was exceeded, however the required action is to restore the Drywell Temperature within the limit in 8 hours. There is no requirement for hourly logging of DW temperature.

C is incorrect. This is plausible because the Tech Spec limt was exceeded, however the required action is to restore the Drywell Temperature within the limit in 8 hours. The 24 hour limit is based on performing the surveillance on Drywell Temperature.

D is incorrect. This is plausible because the entry condition for 3-EOI-2 is only 8 °F above the given temperature. However, the entry condition has not been met and DW temperature was reported as "stable".

3.6 CONTAINMENT SYSTEMS

3.6.1.4 Drywell Air Temperature

LCO 3.6.1.4 Drywell average air temperature shall be ≤ 150°F.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell average air temperature not within limit.	A.1 Restore drywell average air temperature to within limit.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.4.1	Verify drywell average air temperature is within limit.	24 hours

61. RO 295015AK1.02 001/MEM/T1G2/BASIS//295015AK1.02///11/21/07 RMS

EOI-1 flowchart path RC/Q directs the operator to inhibit the ADS auto blowdown function once Standby Liquid Control injection has begun.

Which ONE of the following describes why ADS is inhibited under these conditions?

A. ADS actuation would impose a severe pressure and temperature transient on the reactor vessel.

B. The operator can control pressure better than an automatic system like ADS.

C. ✔ Severe core damage from a large power excursion could result, if low pressure systems automatically injected on depressurization.

D. If only steam driven high pressure injection systems are available an ADS actuation could lead to a loss of adequate core cooling.

K/A Statement:
295015 Incomplete SCRAM / 1
AK1.02 - Knowledge of the operational implications of the following concepts as they apply to INCOMPLETE SCRAM : (CFR 41.8 to 41.10) Cooldown effects on reactor power

K/A Justification: This question satisfies the K/A statement by requiring the candidate to use specific plant conditions to determine the effect of a significant cooldown when an incomplete scram has occurred.

References:

Level of Knowledge Justification: This question is rated as MEM due to the requirement to recall or recognize discrete bits of information.

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REFERENCE PROVIDED: None

Plausibility Analysis:

In order to answer this question correctly the candidate must determine the following:

1. The basis for inhibiting ADS under the specific conditions of boron injection.

NOTE: Each of the three distractors are plausible based on their relationship to the bases for inhibiting ADS under circumstances OTHER than boron injection. Specifically, Alternate RPV Level Control actions. Refer to the attached excerpt from EOIPM Section 0-V-G.

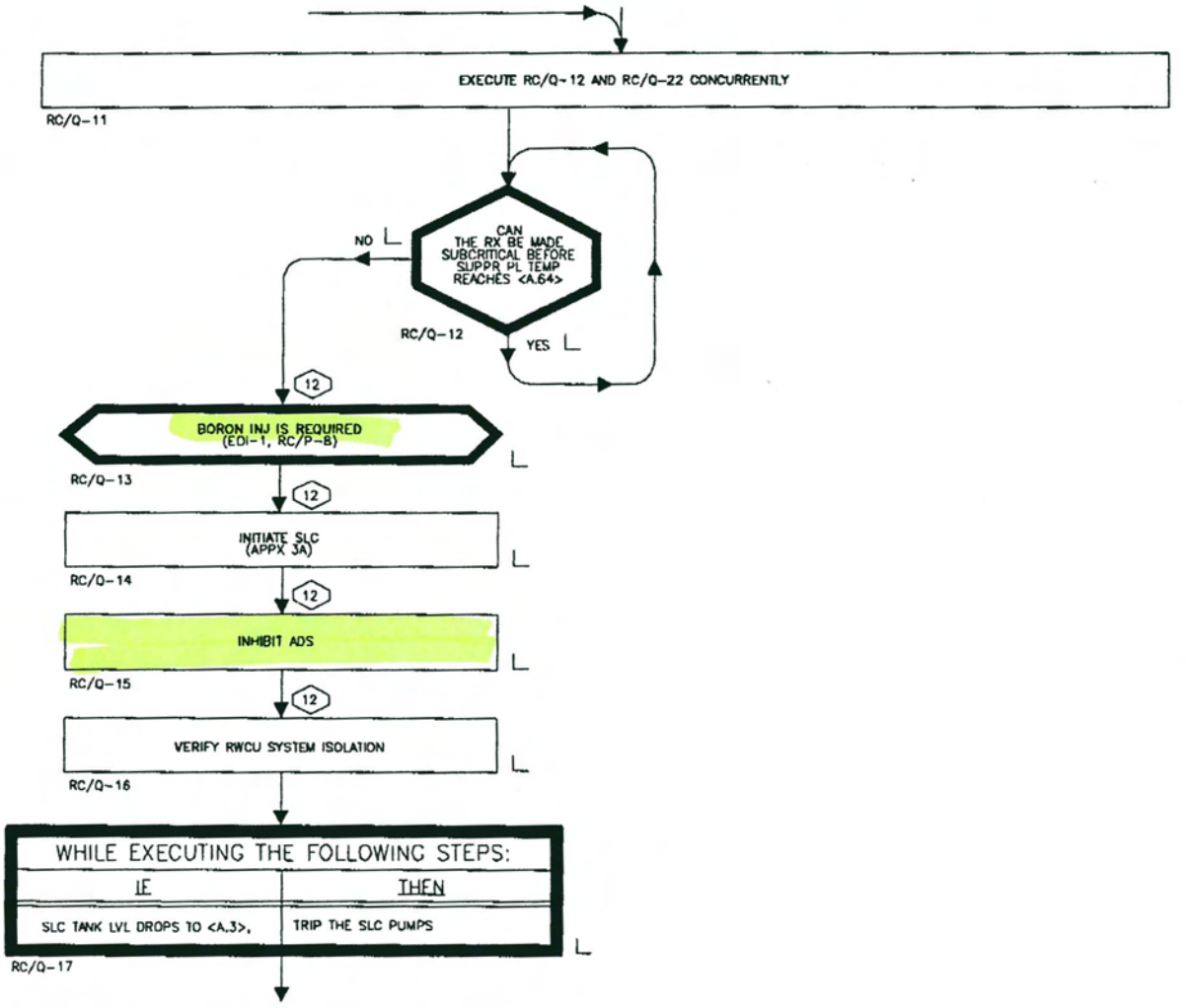
A is incorrect. This applies whenever ADS actuates, but is only the **precursor** to the issue related to boron injection.

B is incorrect. This statement is true, but is not addressed in the basis for boron injection.

C is correct.

D is incorrect. This statement applies particularly to a low RPV level condition.

STEP: RC/Q-14 and RC/Q-15



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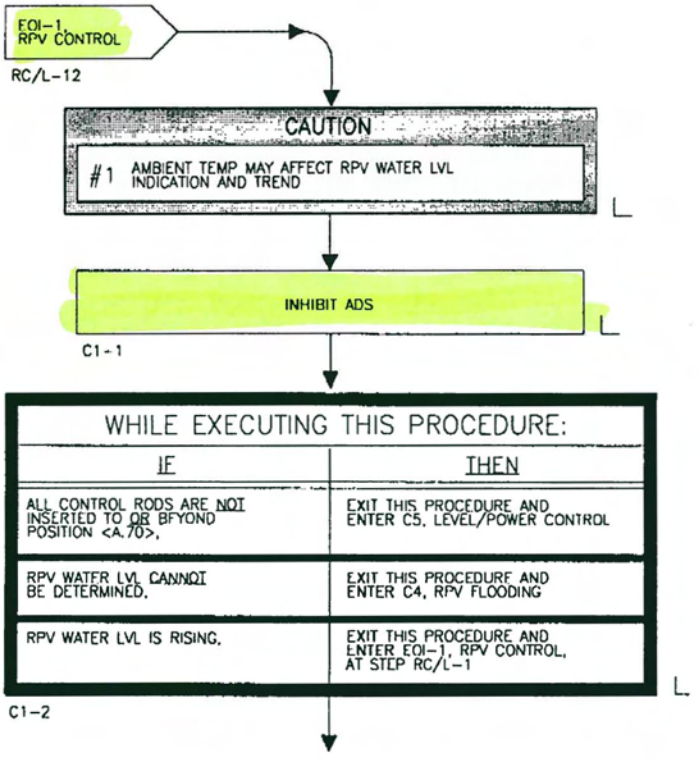
DISCUSSION: STEP RC/Q-14 and RC/Q-15

The **RC/Q-14** action step directs the operator to manually initiate the SLC System. Because this step is prioritized with the miniature before decision step RC/Q-12 symbol, this action should be performed before suppression pool temperature reaches <A.64>, Boron Injection Initiation Temperature. EOI Appendix 3A provides step-by-step guidance for manual initiation of the SLC System. Boron in solution absorbs neutrons, providing negative reactivity to achieve reactor subcriticality, since the reactor is not yet subcritical on control rod insertion alone.

The **RC/Q-15** action step directs the operator to defeat automatic ADS function by placing the ADS inhibit switches in the inhibit position. Because this step is prioritized with the miniature before decision step RC/Q-12 symbol, this action should be performed before suppression pool temperature reaches <A.64>, Boron Injection Initiation Temperature.

ADS initiation may result in the injection of large amounts of relatively cold, unborated water from low pressure injection systems. With the reactor still critical or subcritical on boron, the positive reactivity addition due to boron dilution and temperature reduction from injection of cold water may result in a reactor power excursion large enough to cause substantial core damage. Defeating ADS is, therefore, appropriate whenever boron injection is required. If emergency depressurization of the RPV is subsequently required, explicit direction is provided in the appropriate EOI. Therefore, the ability to maintain automatic initiation capability of ADS is not required.

STEP: C1-1


EOI-1,
RPV CONTROL
RC/L-12
CAUTION
#1 AMBIENT TEMP MAY AFFECT RPV WATER LVL INDICATION AND TREND
INHIBIT ADS
C1-1
WHILE EXECUTING THIS PROCEDURE:
IF
THEN
ALL CONTROL RODS ARE NOT INSERTED TO OR BEYOND POSITION <A,70>,
EXIT THIS PROCEDURE AND ENTER C5, LEVEL/POWER CONTROL
RPV WATER LVL CANNOT BE DETERMINED,
EXIT THIS PROCEDURE AND ENTER C4, RPV FLOODING
RPV WATER LVL IS RISING,
EXIT THIS PROCEDURE AND ENTER EOI-1, RPV CONTROL, AT STEP RC/L-1
C1-2

DISCUSSION: STEP C1-1

This action step directs the operator to defeat automatic ADS function. An ADS actuation with the RPV at pressure imposes a severe thermal transient on the RPV and may significantly complicate efforts to restore and maintain RPV water level as specified in this procedure.

Because ADS initiation logic receives limited input signals, a variety of plant conditions may exist where automatic depressurization of the RPV is not appropriate. In certain cases (e.g., RCIC available but LPCI/CS injection valves closed and control power for their operation not available) ADS actuation may directly lead to loss of adequate core cooling and core damage, conditions that might otherwise have been avoided. Further, conditions assumed in the design of ADS actuation logic (e.g., no operator action for ten minutes) do not exist when actions specified in this procedure are being carried out.

Finally, an operator can draw on much more plant information than is available to ADS logic (e.g., equipment out of service for maintenance, operating experience with certain systems, probability of restoration of offsite power, etc.) and thus can better judge, based on logic specified in this procedure, when and how to depressurize the RPV. For all of these reasons, it is appropriate to prevent automatic initiation of ADS as specified.

62. RO 295020AK3.08 001/MEM/EOI/BASIS//295020AK3.08///11/21/07 RMS

Unit-2 was at 100% rated power when a spurious Group I isolation occurred. The pressure transient caused a small LOCA to occur inside the drywell.

EOI-2, section PC/P requires certain actions before and after reaching 12 psig Suppression Chamber pressure.

Which of the following is the reason that 12 psig in the Suppression Chamber was selected ?

A. Drywell sprays must be initiated prior to this pressure to prevent opening the Suppression Chamber to Reactor Building vacuum breakers and de-inerting the containment.

B. Above this pressure indicates that almost all of the nitrogen and other non-condensible gases in the drywell have been transferred to the torus so initiating Drywell Sprays will not result in containment failure.

C. ✔ Above this pressure indicates that almost all of the nitrogen and other non-condensible gases in the drywell have been transferred to the torus and chugging is possible.

D. Above this pressure indicates that almost all of the nitrogen and other non-condensible gases in the torus have been transferred to the drywell air space and Suppression Chamber Sprays will be ineffective.

K/A Statement:
295020 Inadvertent Cont. Isolation / 5 & 7
AK3.08 - Knowledge of the reasons for the following responses as they apply to INADVERTENT CONTAINMENT ISOLATION: Suppression chamber pressure response

K/A Justification: This question satisfies the K/A statement by requiring the candidate to use specific plant conditions to determine the effect on Suppression Chamber pressure due to an inadvertent containment isolation and the basis for that response.

References: EOIPM Section 0-V-D

Level of Knowledge Justification: This question is rated as MEM due to the requirement to recall or recognize discrete bits of information.

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REFERENCE PROVIDED: None

Plausibility Analysis:

In order to answer this question correctly the candidate must determine the following:

1. The basis for the Pressure Supression Pressure Limit of 12 psig Suppression Chamber pressure.

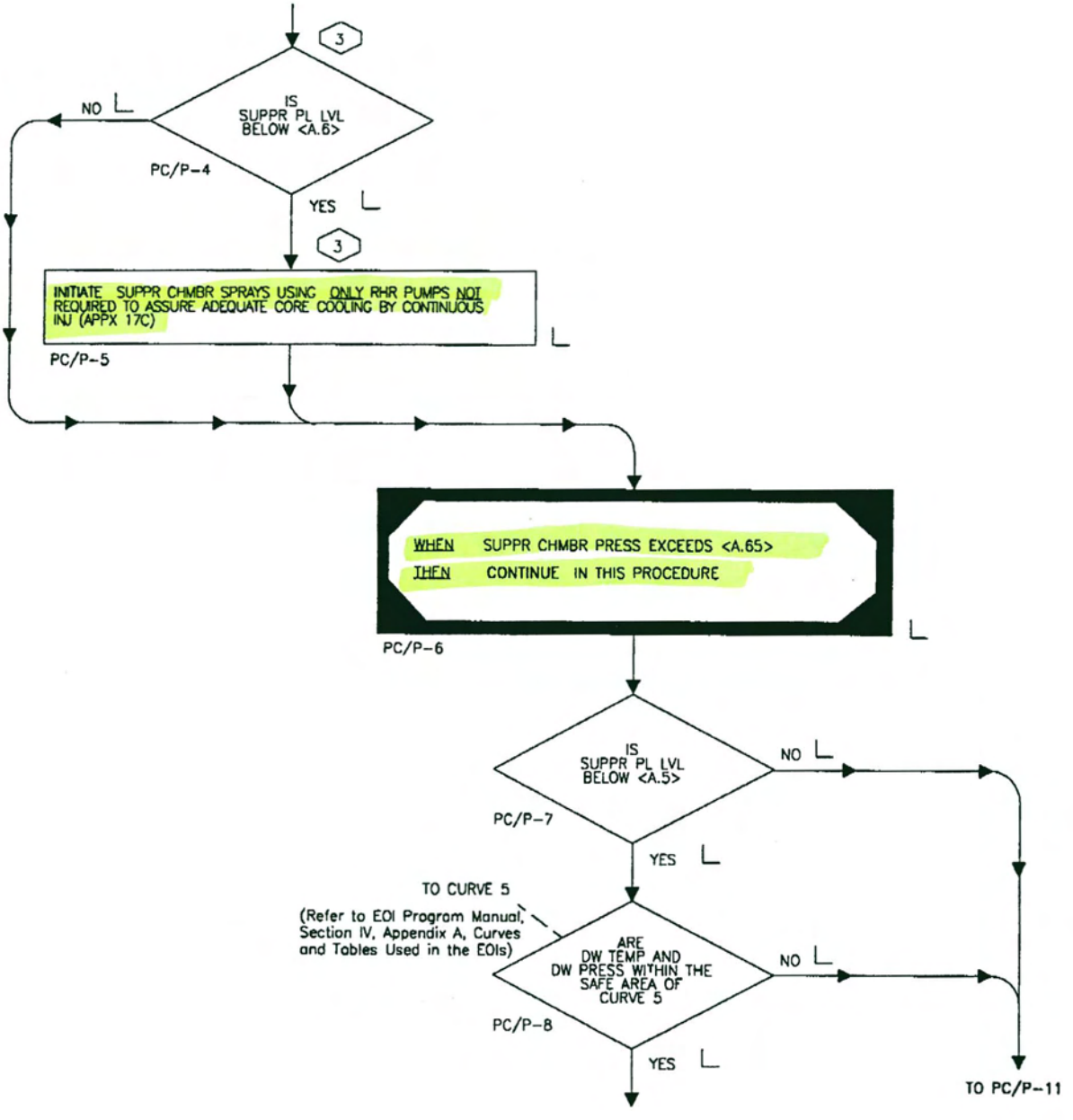
A is incorrect. This is plausible because initiation of DW sprays at high SC pressure could reduce pressure low enough to open the SC to RB vacuum breakers. However, this is part of the bases for the Drywell Spray Initiation Pressure Limit Curve #5.

B is incorrect. This is plausible because initiating SC sprays with high temperature non-condensible gases in the SC will result in evaporative cooling and a rapid pressure drop. However, the SC to DW vacuum relief system is capable of compensating for this pressure drop. This is also part of the bases for the Drywell Spray Initiation Pressure Limit Curve #5.

C is correct.

D is incorrect. This is plausible if the LOCA occurred inside the Suppression Chamber and NOT the Drywell as given in the stem.

STEP: PC/P-6


3
IS SUPPR PL LVL BELOW <A.6>
NO
PC/P-4
YES
3
INITIATE SUPPR CHMBR SPRAYS USING ONLY RHR PUMPS NOT REQUIRED TO ASSURE ADEQUATE CORE COOLING BY CONTINUOUS INJ (APPX 17C)
PC/P-5
WHEN SUPPR CHMBR PRESS EXCEEDS <A.65>
THEN CONTINUE IN THIS PROCEDURE
PC/P-6
IS SUPPR PL LVL BELOW <A.5>
NO
PC/P-7
YES
TO CURVE 5
(Refer to EOI Program Manual, Section IV, Appendix A, Curves and Tables Used in the EOIs)
ARE DW TEMP AND DW PRESS WITHIN THE SAFE AREA OF CURVE 5
NO
PC/P-8
YES
TO PC/P-11

DISCUSSION: STEP PC/P-6

This contingent action step requires the operator to wait until the stated condition has been met before continuing in EOI-2. Performance of subsequent actions in this section of EOI-2 will not be performed until suppression chamber pressure exceeds Suppression Chamber Spray Initiation Pressure.

Engineering calculations have determined that if suppression chamber pressure exceeds <A.65>, Suppression Chamber Spray Initiation Pressure, there is no assurance that chugging will be prevented at downcomer openings of the drywell vents. This value is rounded off in the EOI to use the closest, most conservative value that can be accurately determined on available instrumentation.

Suppression Chamber Spray Initiation Pressure is defined to be the lowest suppression chamber pressure that can occur when 95% of noncondensables in the drywell have been transferred to airspace of the suppression chamber. Scale model tests have demonstrated that chugging will not occur so long as the drywell atmosphere contains at least 1% noncondensables. To prevent the occurrence of conditions under which chugging may happen, Suppression Chamber Spray Initiation Pressure is conservatively defined by specifying 5% noncondensables.

Chugging is the cyclic condensation of steam at downcomer openings of the drywell vents. Chugging occurs when steam bubbles collapse at the exit of downcomers. The rush of water that fills the void (some of which is drawn up into the downcomer pipe) induces a severe stress at the junction of the downcomer and vent header. Repeated application of this stress can cause these joints to experience fatigue failure (cracks), thereby creating a pathway that bypasses the pressure suppression function of primary containment. Subsequent steam that discharges through downcomers would then exit through the fatigued cracks, and directly pressurize suppression chamber air space, rather than discharging to and condensing in the suppression pool.

Although operation of suppression chamber sprays by itself will not prevent chugging, the requirement to wait to initiate drywell sprays until reaching Suppression Chamber Spray Initiation Pressure assures that suppression chamber spray operation is attempted before operation of drywell sprays. Therefore, actions to initiate drywell sprays need to be directed only if suppression chamber sprays were unable to reduce primary containment pressure or they could not be initiated.

DISCUSSION: STEP PC/P-8

This decision step has the operator evaluate the present status of drywell pressure and drywell temperature to determine if conditions are favorable for drywell spray operation.

Drywell spray operation reduces drywell pressure and temperature through the combined effects of evaporative and convective cooling. During evaporative cooling, water spray undergoes a change of state, liquid to vapor, whereas convective cooling involves no change of state.

Evaporative cooling occurs when water is sprayed into a superheated atmosphere. Water at the surface of each droplet is heated and flashes to steam, absorbing heat energy from the drywell atmosphere until the atmosphere reaches saturated conditions. In the drywell, with a typical drywell spray flowrate, the evaporative cooling process results in an immediate, rapid, large reduction in pressure. This pressure reduction occurs at a rate much faster than can be compensated for by the primary containment vacuum relief system. Unrestricted operation of drywell sprays could cause an excessive negative differential pressure to occur between the drywell and suppression chamber, large enough to cause a loss of primary containment integrity.

Convective cooling occurs when water is sprayed into a saturated atmosphere. Sprayed water droplets absorb heat from the surrounding atmosphere through convective heat transfer (sensible heat from the atmosphere is transferred to the water droplets). This effect reduces drywell ambient temperature and pressure until equilibrium conditions are established. The convective cooling process occurs at a rate much slower than the evaporative cooling process. An operator can effectively control the magnitude of a containment temperature/pressure reduction from convective cooling by terminating operation of drywell sprays.

Considering the pressure drop concerns described above, engineering calculations have determined that primary containment integrity is assured when drywell sprays are operated in the safe area of Drywell Spray Initiation Limit Curve (Curve 5). Drywell Spray Initiation Limit is defined to be the highest drywell temperature at which initiation of drywell sprays will not result in an evaporative cooling pressure drop to below either: 1) drywell-below-suppression chamber differential pressure capability, or 2) high drywell pressure scram setpoint.

If drywell temperature and pressure are within the safe area of Curve 5, the operator continues at Step PC/P-9.

If drywell temperature and pressure are not within the safe area of Curve 5, then drywell spray operation is not permitted, and the operator is directed to Step PC/P-11.

63. RO 295032EA1.01 001/C/A/T1G1/EOI-3//295032EA1.01//RO/SRO/11/20/07 RMS

Given the following plant conditions:

- Unit 2 experienced a MSL break from full power.
- Both inboard and outboard MSIVs on the "B" steam line fail to isolate however, the reactor scrams and all rods insert.
- Steam Leak Detection panel 9-21 indications are as follows:
  - 2-TI-1-60A 320°F
  - 2-TI-1-60B 323°F
  - 2-TI-1-60C 337°F
  - 2-TI-1-60D 318°F
- No other temperature indications are alarming at this time.

Which ONE of the following describes the appropriate operator actions and the reasons for those actions?

REFERENCE PROVIDED

A. Emergency depressurize the reactor due to two EOI-3 areas being above Max Safe.

B. Rapidly depressurize the reactor due to one EOI-3 areas above Max Safe and one area approaching Max Safe.

C. ✔ Enter 2-EOI-1, RPV Control and initiate a Reactor Scram due to one EOI-3 area being above Max Safe.

D. Enter 2-GOI-100-12A, Unit Shutdown and commence a normal shutdown and cooldown due to a primary system dscharging outside Primary Containment.

K/A Statement:
295032 High Secondary Containment Area Temperature / 5
EA1.01 - Ability to operate and/or monitor the following as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE : Area temperature monitoring system

K/A Justification: This question satisfies the K/A statement by requiring the candidate to use specific plant conditions to determine the required actions which result from high secondary containment temperatures as indicated by Area Temperature Monitoring instrumentation.

References: 2-EOI-3 Flowchart, EOIPM Section 0-V-E

Level of Knowledge Justification: This question is rated as C/A due to the requirement to assemble, sort, and integrate the parts of the question to predict an outcome. This requires mentally using this knowledge and its meaning to predict the correct outcome.

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REFERENCE PROVIDED: 2-EOI-3 Flowchart

Plausibility Analysis:

In order to answer this question correctly the candidate must determine the following:

1. Which area(s) are above or approaching Max Safe
2. Based on Item #1 above, determine the appropriate action and the basis for that action.

A is incorrect. This is plausible because all four temperatures provided are greater than 315^0F as indicated on Table 3. However, only one indicator applies to an EOI 3 area, therefore only ONE area is above Max Safe.

B is incorrect. This is plausible because one area is above Max Safe and given conditions indicate an un-isolable leak exists which implies conditions are degrading. However, with no other temerature indications in alarm, anticipating the requirement to Emergency Depressurize is NOT ppropriate.

C is correct.

D is incorrect. This is plausible because all four temperatures provided are greater than 315^0F as indicated on Table 3. However, only one indicator applies to an EOI 3 area, therefore only ONE area is above Max Safe. In addition, this step is only addressed if Emergency Depressurization will not reduce the discharge into Secondary Containment. In this case, it would.

DISCUSSION: ENTRY CONDITIONS: EOI-3

Entry conditions for this procedure are symptomatic of conditions which, if not corrected, could degrade into an emergency. Adverse affects on equipment operability and conditions that directly challenge secondary containment integrity were specifically considered in the selection of these entry conditions. Following is a description of each entry condition:

Area temperature above the maximum normal operating value of Table 3

A secondary containment area temperature above the maximum normal operating value of Table 3, Secondary Containment Area Temperature, is an indication that steam from a primary system may be discharging into secondary containment. As temperatures continue to increase, continued operability of equipment needed to carry out EOI actions may be compromised. High area temperatures also present a danger to personnel since access to secondary containment may be required by actions specified by EOIs.

Maximum normal operating temperature is defined to be the highest value of a secondary containment area temperature expected to occur during normal plant operating conditions with all directly associated support and control systems functioning properly.

Differential pressure at or above <A.38> inches of water

High secondary containment differential pressure is indicative of a potential loss of secondary containment structural integrity, and could result in uncontrolled release of radioactivity to the environment.

Reactor Zone Ventilation exhaust radiation level above <A.39>

High Reactor Zone Ventilation exhaust radiation levels may indicate that radioactivity is being released to the environment when the system should have automatically isolated.

Refuel Zone Ventilation exhaust radiation level above <A.40>

High Refuel Zone Ventilation exhaust radiation levels may indicate radioactivity is being released to the environment when the system should have automatically isolated.

Floor drain sump water level above <A.41>

A secondary containment floor drain sump water level above maximum normal operating level is an indication that steam or water may be discharging into secondary containment.

Maximum normal operating floor drain sump water level is defined to be the highest value of secondary containment floor drain sump water level expected to occur during normal plant operating conditions with all directly associated support and control systems functioning properly.

Area water level above <A.42>

Secondary containment area water level above maximum normal operating level is an indication that steam or water may be discharging into secondary containment.

Maximum normal operating secondary containment area water level is defined to be the highest value of secondary containment area water level expected to occur during normal plant operating conditions with all directly associated support and control systems functioning properly.

DISCUSSION: SC/T-6 and SC/T-7

Step SC/T-6 is a before decision step that has the operator evaluate current and future efforts to lower secondary containment area temperatures, in relation to the current value and trend of secondary containment area temperatures, to determine if a reactor scram is necessary. The before decision step requires that this determination and subsequent actions be performed before any secondary containment area temperature reaches its respective maximum safe operating temperature value provided in Table 3.

Maximum safe operating temperature is defined to be the highest temperature at which neither: 1) equipment necessary for the safe shutdown of the plant will fail, nor 2) personnel access necessary for safe shutdown of the plant will be prevented. The maximum safe operating temperature value for all secondary containment areas is provided in Table 3, Secondary Containment Area Temperature.

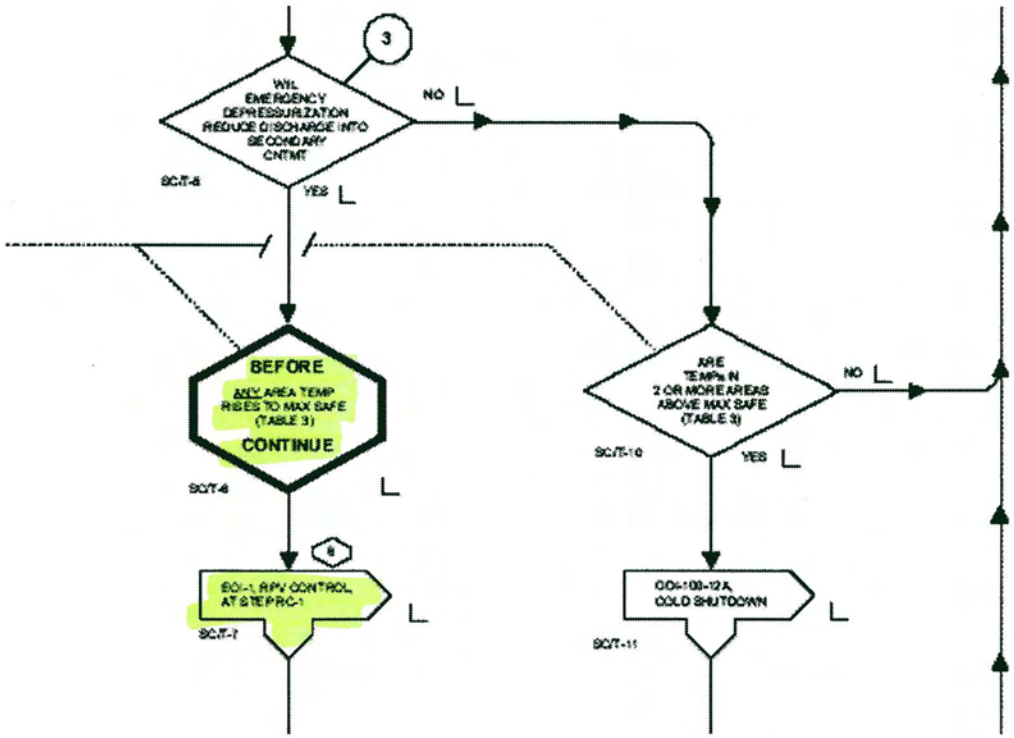
This step is reached only when additional actions have been required to reverse an increasing secondary containment area temperature trend. If all secondary containment area temperatures can be maintained below their respective maximum safe operating values, the operator returns to Step SC/T-1. If it is determined that all secondary containment area temperatures cannot be maintained below their respective maximum safe operating values, the operator continues at Step SC/T-7.

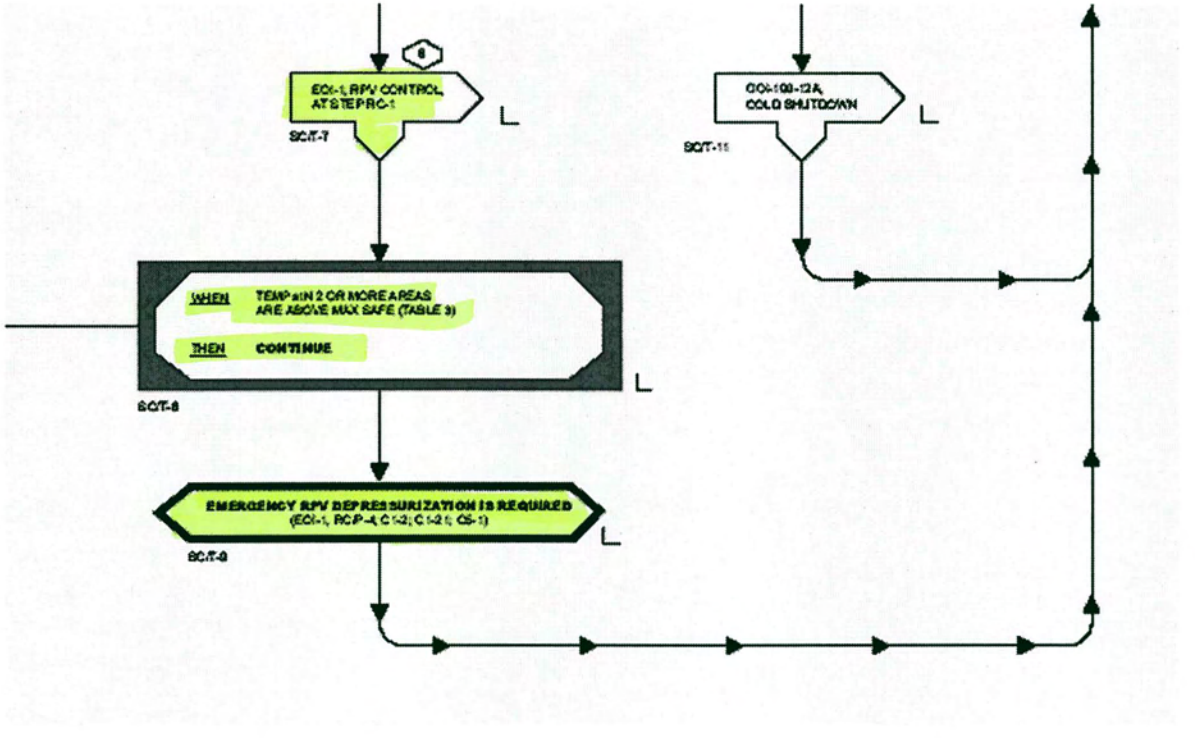
Step SC/T-7 is an enter and execute concurrently step that requires the operator to enter EOI-1, RPV Control, at Step RC-1, and to perform the actions concurrently with this procedure. Because this step is prioritized with the miniature before decision step symbol relating to SC/T-6, this action should be performed before any secondary containment area temperature reaches its respective maximum safe operating value.

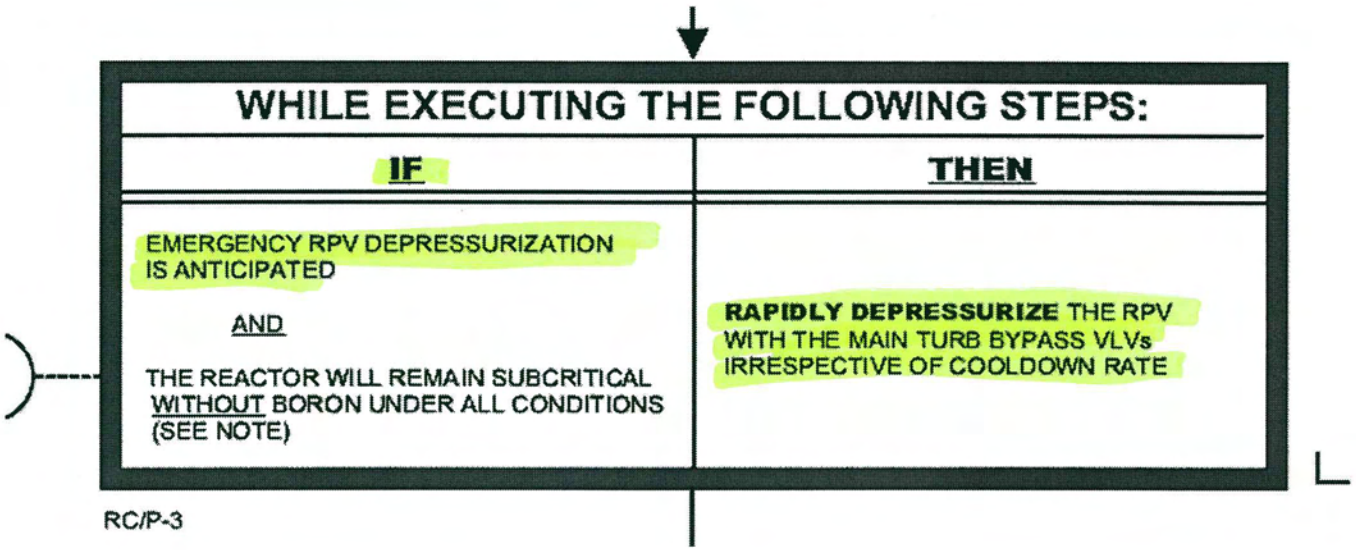
Initiation of reactor scram (Step RC-1) before any secondary containment area temperature reaches its respective maximum safe operating value may halt the increase in secondary containment area temperature(s), since the RPV is the only significant source of heat, other than a fire, that could cause secondary containment area temperatures to exceed their respective maximum safe operating values.

TABLE 3
SECONDARY CNTMT AREA TEMP

AREA	PANEL 9-3 ALARM WINDOW (UNLESS NOTED)	PANEL 9-21 TEMP ELEMENT (UNLESS NOTED)	MAX NORMAL VALUE °F	MAX SAFE VALUE °F	POTENTIAL ISOLATION SOURCES
RHR SYS I PUMPS	XA-55-3E-4	74-95A	ALARMED	150	FCV-74-47, 48
RHR SYS II PUMPS	XA-55-3E-4	74-95B	ALARMED	210	FCV-74-47, 48
HPCI ROOM	XA-55-3F-10	73-55A	ALARMED	270	FCV-73-2, 3, 44, 81
CS SYS I PUMPS RCIC ROOM	XA-55-3D-10	71-41A	ALARMED	190	FCV-71-2, 3, 39
CS SYS II PUMPS	XA-55-3E-29	75-69B (PANEL 9-3)	ALARMED	150	NONE
TOP OF TORUS	XA-55-3D-10 XA-55-3F-10 XA-55-3E-4	71-41B, C, D 73-55B, C, D 74-95G, H	ALARMED ALARMED ALARMED	200 240 240	FCV-71-2, 3 FCV-73-2, 3, 81 FCV-74-47, 48
STEAM TUNNEL (RB)	XA-55-3D-24	1-60A (PANEL 9-3)	ALARMED	315	MSIVs FCV-71-2, 3, FCV-69-1, 2, 12
DW ACCESS	XA-55-3E-4	74-95E	ALARMED	170	FCV-74-47, 48
RB EL 565 W (RWCU PIPE TRENCH)	XA-55-5B-32 (PANEL 9-5) XA-55-5B-33 (PANEL 9-5)	69-835A, B, C, D (AUX INST ROOM)	ALARMED ALARMED	170	FCV-69-1, 2, 12
RWCU H. X. ROOM	XA-55-3D-17	69-29F, G, H	ALARMED	220	FCV-69-1, 2, 12
RWCU PUMP A	XA-55-3D-17	69-29D	ALARMED	215	FCV-69-1, 2, 12
RWCU PUMP B	XA-55-3D-17	69-29E	ALARMED	215	FCV-69-1, 2, 12
RB EL 593	XA-55-3E-4	74-95C, D	ALARMED	195	FCV-74-47, 48
RB EL 621	XA-55-3E-4	74-95F	ALARMED	155	FCV-43-13, 14


3
WIL EMERGENCY DEPRESSURIZATION REDUCE DISCHARGE INTO SECONDARY CNTMT
SCT-6
NO
YES
BEFORE ANY AREA TEMP RISES TO MAX SAFE (TABLE 3) CONTINUE
SCT-8
ARE TEMPs IN 2 OR MORE AREAS ABOVE MAX SAFE (TABLE 3)
SCT-10
NO
YES
8
EOI-1, RPV CONTROL AT STEP RC-1
SCT-7
EOI-100-12A, COLD SHUTDOWN
SCT-11

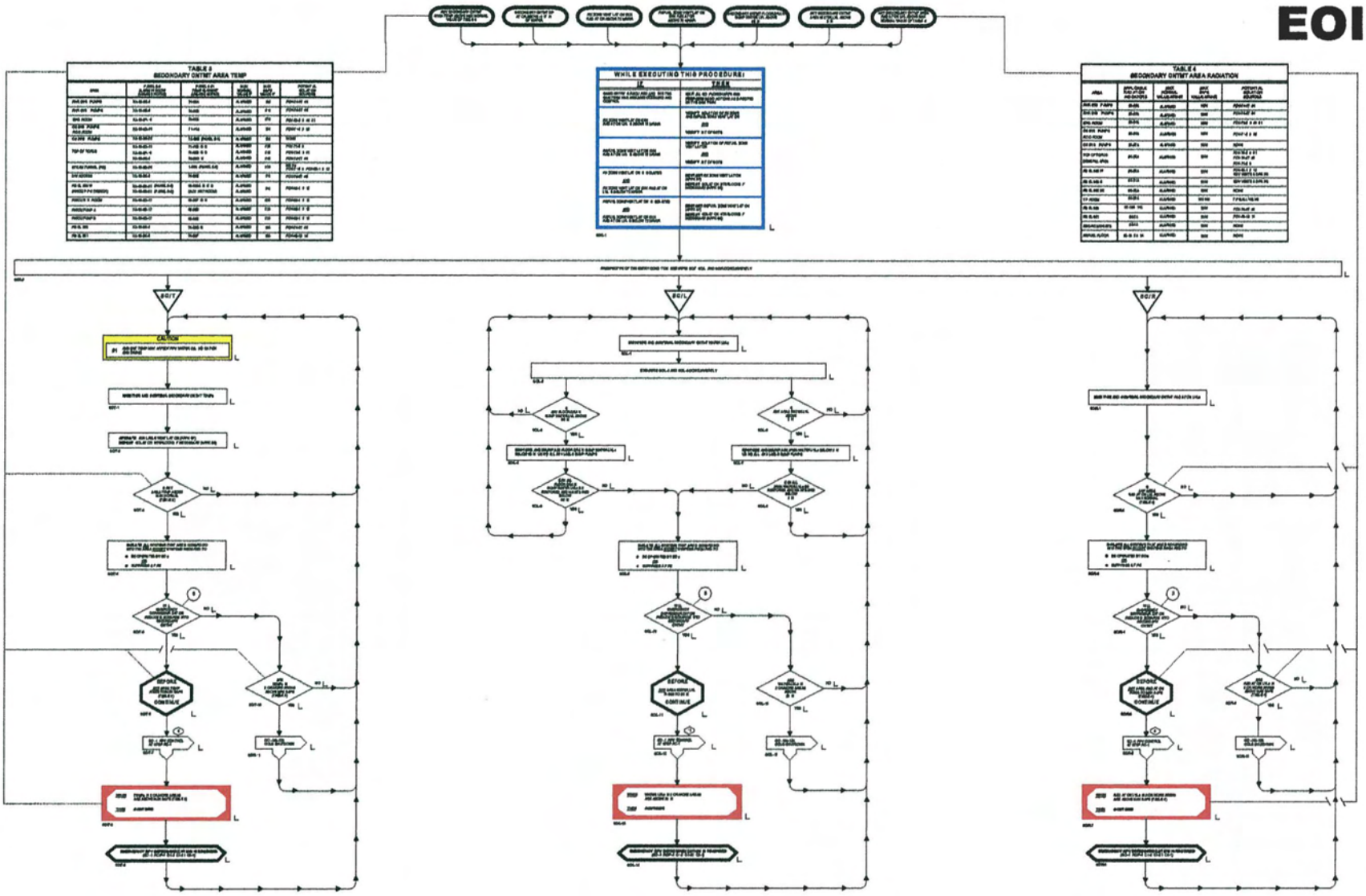

ECA-1, RPV CONTROL AT STEP RC-1
SCIT-7
WHEN TEMP s IN 2 OR MORE AREAS ARE ABOVE MAX SAFE (TABLE 3)
THEN CONTINUE
SCIT-8
EMERGENCY RPV DEPRESSURIZATION IS REQUIRED
(ECA-1, RC/P-4, C 1-2; C 1-2 1; OS-1)
SCIT-9
SCIT-11


WHILE EXECUTING THE FOLLOWING STEPS:
IF
THEN
EMERGENCY RPV DEPRESSURIZATION IS ANTICIPATED
AND
THE REACTOR WILL REMAIN SUBCRITICAL WITHOUT BORON UNDER ALL CONDITIONS (SEE NOTE)
RAPIDLY DEPRESSURIZE THE RPV WITH THE MAIN TURB BYPASS VLVs IRRESPECTIVE OF COOLDOWN RATE
RC/P-3

EXAMINATION REFERENCE PROVIDED TO CANDIDATE

EOI-3
UNIT 2

EOI-3



EOI-3

SECONDARY CONTAINMENT CONTROL
UNIT 2
BROWNS FERRY
NUCLEAR PLANT

64. RO 295033EA2.01 001/C/A/T1G2/SC/R//295033EA2.01//RO/SRO/11/20/07 RMS

Given the following plant conditions:

- Unit-2 is at 100% rated power.
- A RWCU drain line cracked and is spilling into the Reactor Building.
- Area Radiation Monitors in the Reactor Building read as follows:

Reactor Building Elevation 593	1100 mR/hr
Reactor Building Elevation 565 West	800 mR/hr
Reactor Building Elevation 565 East	850 mR/hr
Reactor Building Elevation 565 Northeast	1050 mR/hr
All other Reactor Building areas	NOT ALARMED

RWCU has been successfully isolated

Which ONE of the following describes the required action that MUST be directed by the Unit Supervisor and/or Shift Manager?

REFERENCE PROVIDED

A. Enter 2-EOI-1, RPV Control and initiate a Reactor Scram due to two EOI-3 areas being above Max Safe.

B. ✔ Enter 2-GOI-100-12A, Unit Shutdown and commence a normal shutdown and cooldown due to two areas above Max Safe with the source of the leak isolated.

C. Scram the reactor and Emergency depressurize the reactor due to two EOI-3 areas being above Max Safe.

D. Rapidly depressurize the reactor with Bypass Valves due to Emergency Depressurization being anticipated.

K/A Statement:
295033 High Secondary Containment Area Radiation Levels / 9
EA2.01 - Ability to determine and/or interpret the following as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS : Area radiation levels

K/A Justification: This question satisfies the K/A statement by requiring the candidate to use specific plant conditions to determine the required actions which result from high secondary containment radiation levels as indicated by Area Radiation Monitoring instrumentation.

References: 2-EOI-3 Flowchart

Level of Knowledge Justification: This question is rated as C/A due to the requirement to assemble, sort, and integrate the parts of the question to predict an outcome. This requires mentally using this knowledge and its meaning to predict the correct outcome.

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REFERENCE PROVIDED: 2-EOI-3 Flowchart

Plausibility Analysis:

In order to answer this question correctly the candidate must determine the following:

1. Which area(s) are above or approaching Max Safe
2. Based on Item #1 above, determine the appropriate action.

A is incorrect. This is plausible because this action requires at least one area greater than Max Safe. However, this is not appropriate since the source of the leak is isolated.

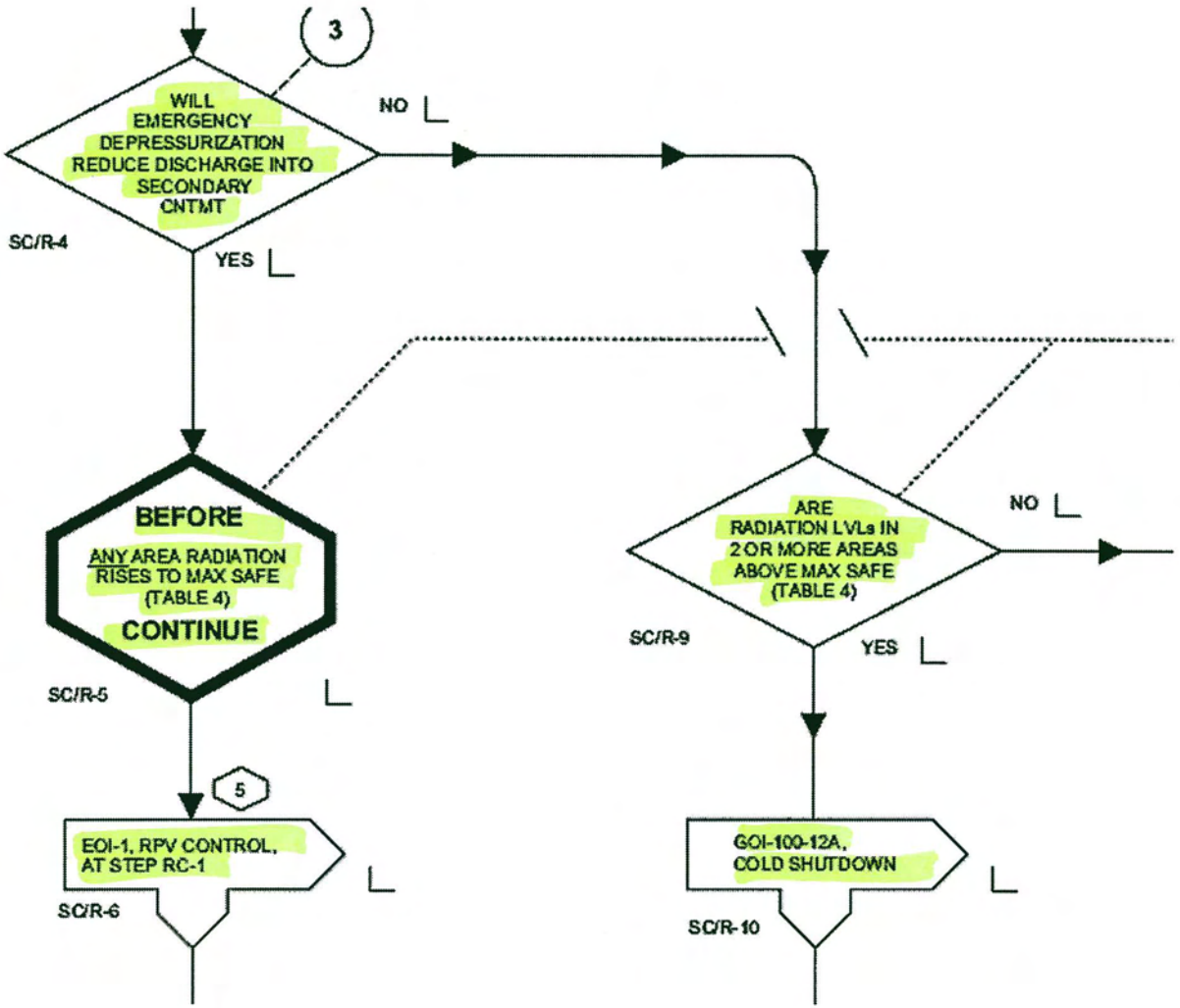
B is correct.

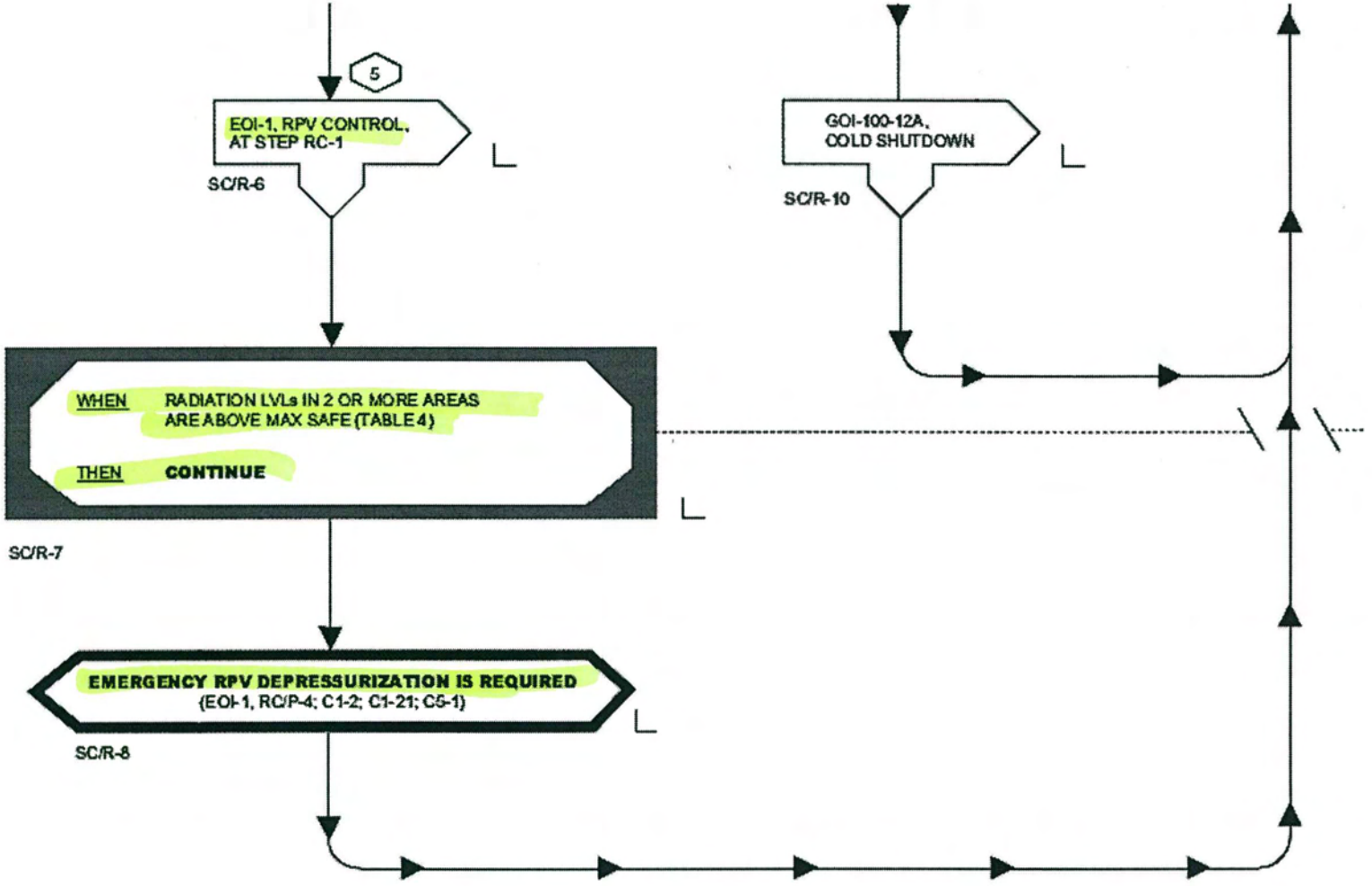
C is incorrect. This is plausible because this action requires two areas greater than Max Safe. However, this is not appropriate since the source of the leak is isolated.

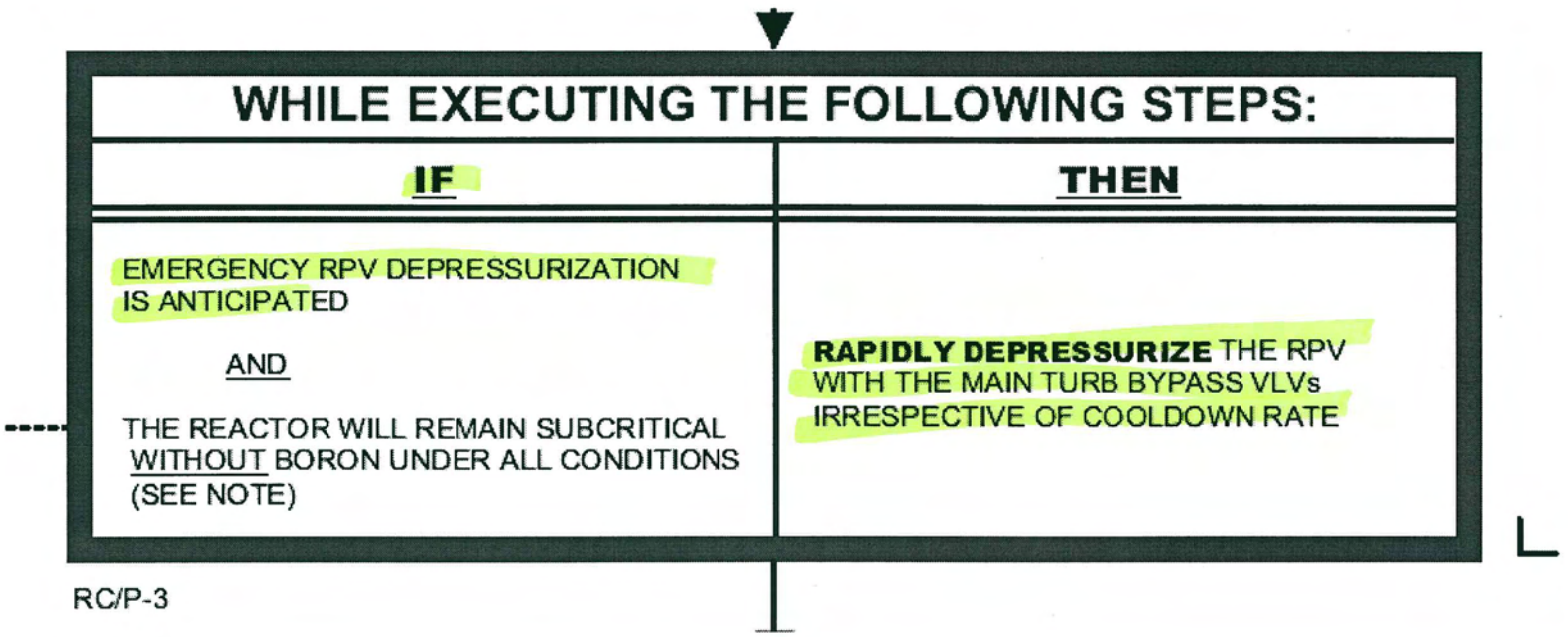
D is incorrect. This is plausible because this action requires at least one area greater than Max Safe and another area approaching Max Safe. However, this is not appropriate since the source of the leak is isolated.

TABLE 4
SECONDARY CNTMT AREA RADIATION

AREA	APPLICABLE RADIATION INDICATORS	MAX NORMAL VALUE MR/HR	MAX SAFE VALUE MR/HR	POTENTIAL ISOLATION SOURCES
RHR SYS I PUMPS	90-25A	ALARMED	1000	FCV-74-47, 48
RHR SYS II PUMPS	90-28A	ALARMED	1000	FCV-74-47, 48
HPCI ROOM	90-24A	ALARMED	1000	FCV-73-2, 3, 44, 81
CS SYS I PUMPS RCIC ROOM	90-26A	ALARMED	1000	FCV-71-2, 3, 39
CS SYS II PUMPS	90-27A	ALARMED	1000	NONE
TOP OF TORUS GENERAL AREA	90-29A	ALARMED	1000	FCV-73-2, 3, 81 FCV-74-47, 48 FCV-71-2, 3
RB EL 565 W	90-20A	ALARMED	1000	FCV-69-1, 2, 12 SDV VENTS & DRAINS
RB EL 565 E	90-21A	ALARMED	1000	SDV VENTS & DRAINS
RB EL 565 NE	90-23A	ALARMED	1000	NONE
TIP ROOM	90-22A	ALARMED	100,000	TIP BALL VALVE
RB EL 593	90-13A, 14A	ALARMED	1000	FCV-74-47, 48
RB EL 621	90-9A	ALARMED	1000	FCV-43-13, 14
RECIRC MG SETS	90-4A	ALARMED	1000	NONE
REFUEL FLOOR	90-1A, 2A, 3A	ALARMED	1000	NONE


3
WILL EMERGENCY DEPRESSURIZATION REDUCE DISCHARGE INTO SECONDARY CNTMT
NO
SC/R-4
YES
BEFORE ANY AREA RADIATION RISES TO MAX SAFE (TABLE 4) CONTINUE
SC/R-5
5
EOI-1, RPV CONTROL, AT STEP RC-1
SC/R-6
ARE RADIATION LVLs IN 2 OR MORE AREAS ABOVE MAX SAFE (TABLE 4)
NO
SC/R-9
YES
GOI-100-12A, COLD SHUTDOWN
SC/R-10

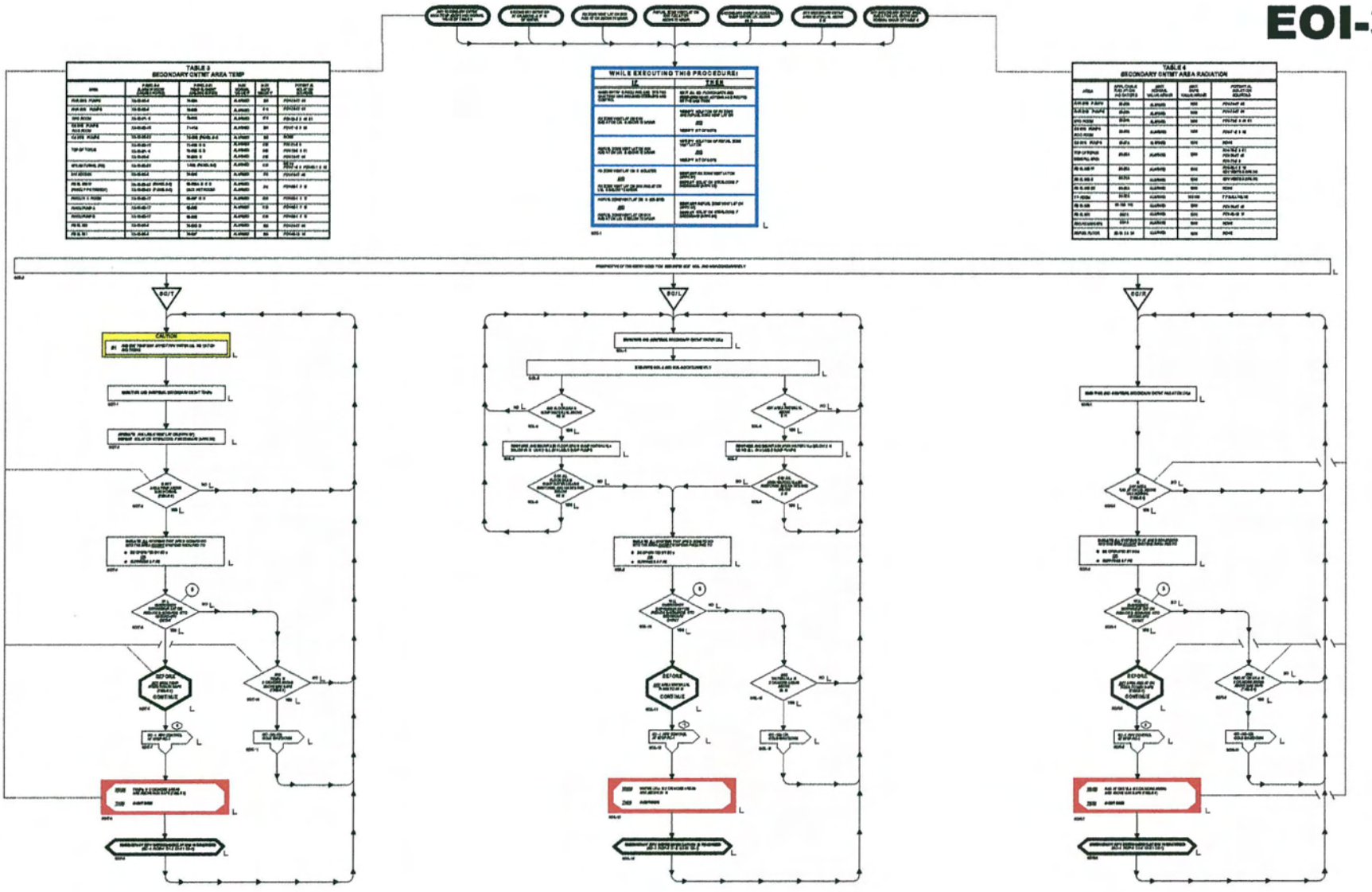

5
EOI-1, RPV CONTROL, AT STEP RC-1
SC/R-6
GOI-100-12A, COLD SHUTDOWN
SC/R-10
WHEN RADIATION LVLs IN 2 OR MORE AREAS ARE ABOVE MAX SAFE (TABLE 4)
THEN CONTINUE
SC/R-7
EMERGENCY RPV DEPRESSURIZATION IS REQUIRED
(EOI-1, RC/P-4; C1-2; C1-21; C5-1)
SC/R-8

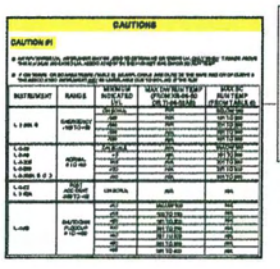

WHILE EXECUTING THE FOLLOWING STEPS:
IF
THEN
EMERGENCY RPV DEPRESSURIZATION IS ANTICIPATED
AND
THE REACTOR WILL REMAIN SUBCRITICAL WITHOUT BORON UNDER ALL CONDITIONS (SEE NOTE)
RAPIDLY DEPRESSURIZE THE RPV WITH THE MAIN TURB BYPASS VLVs IRRESPECTIVE OF COOLDOWN RATE
RC/P-3

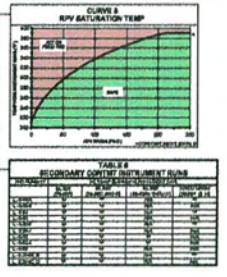
EXAMINATION REFERENCE PROVIDED TO CANDIDATE

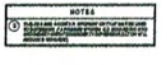
EOI-3
UNIT 2

EOI-3









EOI-3

65. RO 295035EA2.02 001/C/A/EOI/EOI-3/S85/295035EA2.02//RO/SRO/

Given the following plant conditions:

- Unit 2 is at 100% power.
- During the backwash of a RWCU demineralizer the backwash receiving tank ruptured.
- The RWCU system has been isolated.
- Secondary containment conditions are as follows:

  - All Reactor and Refuel Zone radiation monitors trip on high radiation.

  - ONLY SGT train "C" can be started.

  - It is operating at 10000 scfm and taking suction on the refuel and reactor zones.

    - Refuel zone pressure: -0.12 inches of water.
    - Reactor zone pressure: +0.02 inches of water.

  - AREA RADIATION LEVELS

RB EL 565 W, 565 E, 565 NE:	250 mr/hr
RB EL 593	upscale
RB EL 621	upscale

Which ONE of the following describes the required action and the type of radioactive release in progress?

REFERENCE PROVIDED

A. Initiate a shutdown per 2-GOI-100-12A. Elevated radiation release.

B. Initiate a shutdown per 2-GOI-100-12A Ground level radiation release.

C. Scram the reactor, emergency depressurize the RPV. Elevated radiation release.

D. Scram the reactor, emergency depressurize the RPV. Ground level radiation release.

K/A Statement:
295035 Secondary Containment High Differential Pressure
EA2.02 - Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE: Off-site release rate: Plant-Specific

K/A Justification: This question satisfies the K/A statement by requiring the candidate to correctly identify the type of off-site release and required actions due to high differential pressure in the secondary containment.

References: 2-EOI-3 Flowchart

Level of Knowledge Justification: This question is rated as C/A due to the requirement to assemble, sort, and integrate the parts of the question to solve a problem. This requires mentally using this knowledge and its meaning to resolve the problem.

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REFERENCE PROVIDED: 2-EOI-3 flowchart

Plausibility Analysis:

In order to answer this question correctly the candidate must determine the following:

1. Which area(s) are above or approaching Max Safe
2. Based on Item #1 above, determine the appropriate action.
3. Whether plant conditions indicate an elevated or ground level release.

NOTE: EOI-3 steps SC/R-8 and SC/R-9 apply, requiring shutdown per 2-GOI-100-12A because 2 or more areas are above max safe rad levels but a primary system is not discharging to the RB. Insufficient RB to atmosphere dp (greater than -0.25 inches of water) indicates loss of secondary containment integrity. The positive reactor zone pressure is causing an unmonitored and uncontrolled ground level release of radioactive contaminants.

A is incorrect. The release from the Reactor Building is not elevated. This is plausible because the required actions are correct except the differential pressure results in a ground level release.

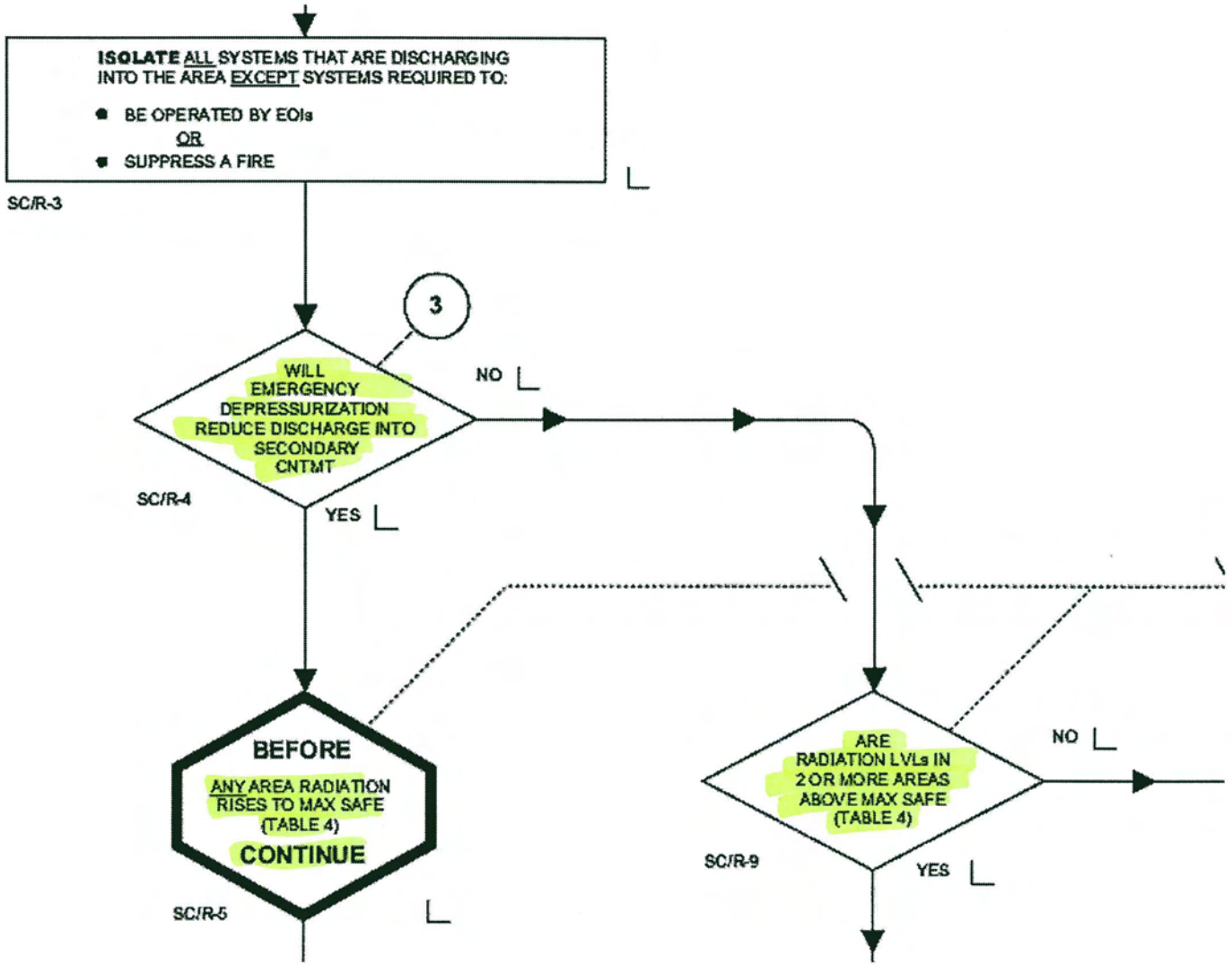
B is correct.

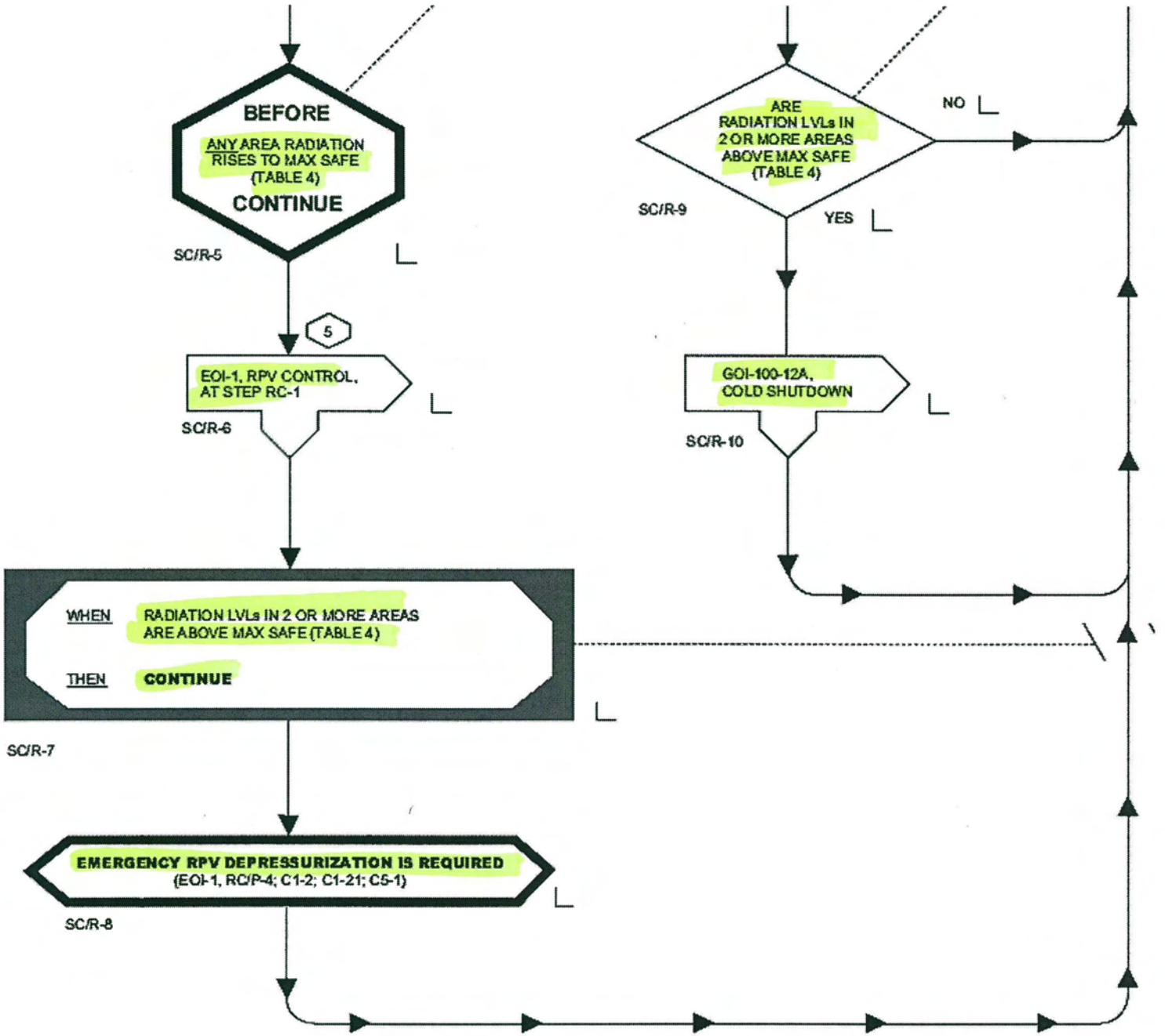
C is incorrect. Conditions do not warrant a scram at this point. In addition, the release from the Reactor Building is not elevated. This is plausible if the candidate fails to recognize that a primary system is not discharging to the Reactor Building.

D is incorrect. Conditions do not warrant a scram at this point. This is plausible if the candidate fails to recognize that a primary system is not discharging to the Reactor Building.

TABLE 4
SECONDARY CNTMT AREA RADIATION

AREA	APPLICABLE RADIATION INDICATORS	MAX NORMAL VALUE MR/HR	MAX SAFE VALUE MR/HR	POTENTIAL ISOLATION SOURCES
RHR SYS I PUMPS	90-25A	ALARMED	1000	FCV-74-47, 48
RHR SYS II PUMPS	90-28A	ALARMED	1000	FCV-74-47, 48
HPCI ROOM	90-24A	ALARMED	1000	FCV-73-2, 3, 44, 81
CS SYS I PUMPS RCIC ROOM	90-26A	ALARMED	1000	FCV-71-2, 3, 39
CS SYS II PUMPS	90-27A	ALARMED	1000	NONE
TOP OF TORUS GENERAL AREA	90-29A	ALARMED	1000	FCV-73-2, 3, 81 FCV-74-47, 48 FCV-71-2, 3
RB EL 565 W	90-20A	ALARMED	1000	FCV-69-1, 2, 12 SDV VENTS & DRAINS
RB EL 565 E	90-21A	ALARMED	1000	SDV VENTS & DRAINS
RB EL 565 NE	90-23A	ALARMED	1000	NONE
TIP ROOM	90-22A	ALARMED	100,000	TIP BALL VALVE
RB EL 593	90-13A, 14A	ALARMED	1000	FCV-74-47, 48
RB EL 621	90-9A	ALARMED	1000	FCV-43-13, 14
RECIRC MG SETS	90-4A	ALARMED	1000	NONE
REFUEL FLOOR	90-1A, 2A, 3A	ALARMED	1000	NONE

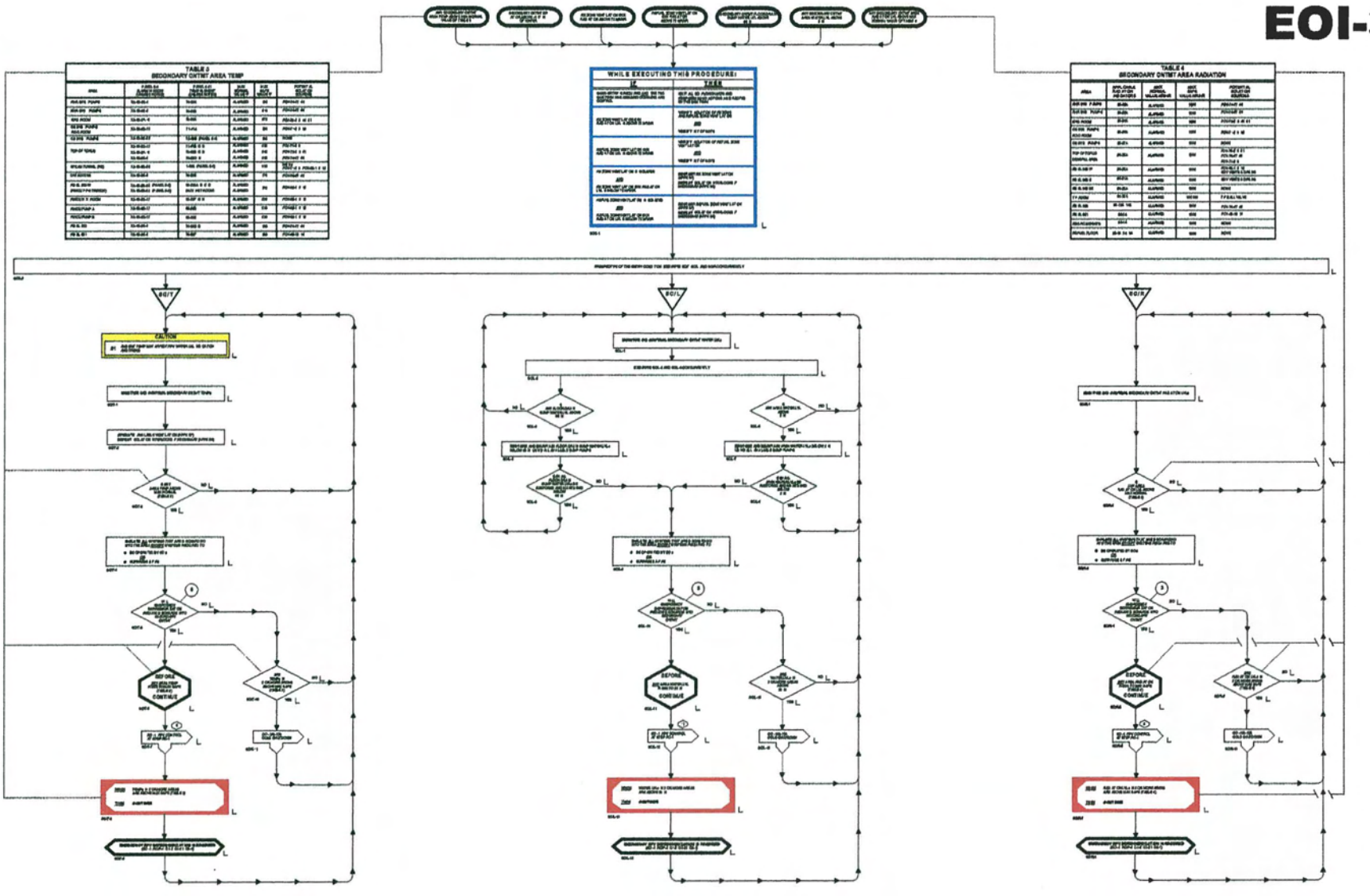

ISOLATE ALL SYSTEMS THAT ARE DISCHARGING INTO THE AREA EXCEPT SYSTEMS REQUIRED TO:
BE OPERATED BY EOIs
OR
SUPPRESS A FIRE
SC/R-3
3
WILL EMERGENCY DEPRESSURIZATION REDUCE DISCHARGE INTO SECONDARY CNTMT
SC/R-4
NO
YES
BEFORE ANY AREA RADIATION RISES TO MAX SAFE (TABLE 4) CONTINUE
SC/R-5
ARE RADIATION LVLs IN 2 OR MORE AREAS ABOVE MAX SAFE (TABLE 4)
SC/R-9
NO
YES

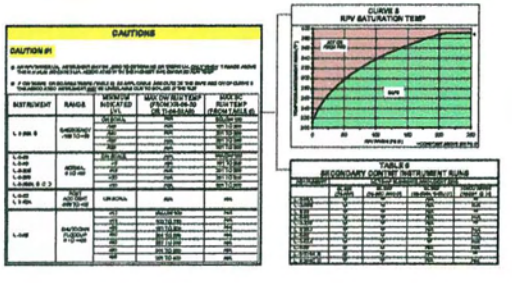

BEFORE
ANY AREA RADIATION RISES TO MAX SAFE (TABLE 4)
CONTINUE
SC/R-5
5
EOI-1, RPV CONTROL, AT STEP RC-1
SC/R-6
ARE RADIATION LVLs IN 2 OR MORE AREAS ABOVE MAX SAFE (TABLE 4)
NO
SC/R-9
YES
GOI-100-12A, COLD SHUTDOWN
SC/R-10
WHEN RADIATION LVLs IN 2 OR MORE AREAS ARE ABOVE MAX SAFE (TABLE 4)
THEN CONTINUE
SC/R-7
EMERGENCY RPV DEPRESSURIZATION IS REQUIRED
(EOI-1, RC/P-4; C1-2; C1-21; C5-1)
SC/R-8

EXAMINATION REFERENCE PROVIDED TO CANDIDATE

EOI-3
UNIT 2

EOI-3





EOI-3

66. RO GENERIC 2.1.33 001/C/A/T3///GENERIC 2.1.33//RO/SRO/11/25/07 RMS

Which ONE of the following describes the protective function(s) required to be Operable for the specified mode and/or condition?

A. Starting up in Mode 2 with IRM's on range 1 to 2:
IRM Hi Scram function
BPWS
RBM
APRM Hi (setdown - 15%).

B. Starting up in Mode 2 with APRM downscales clear:
APRM Hi (setdown - 15%)
APRM Hi (120%)
Mode switch - Shutdown position
RWM.

C. Shutting down in Mode 2 with IRM's on range 1 to 2:
IRM Hi Scram function
BPWS
Manual Scram pushbuttons
RWM.

D. Shutting down in Mode 2 with average SRM readings at ~5×10^4 cps:
IRM Hi Scram function
APRM Hi (setdown - 15%)
OPRM upscale trip
RWM.

K/A Statement:
Conduct of Operations
2.1.33 Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications

K/A Justification: This question satisfies the K/A statement by requiring the candidate to use specific plant conditions to determine when entry into Technical Specifications is required.

References: Technical Specifications

Level of Knowledge Justification: This question is rated as C/A due to the requirement to assemble, sort, and integrate the parts of the question to predict an outcome. This requires mentally using this knowledge and its meaning to predict the correct outcome.

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REFERENCE PROVIDED: None

Plausibility Analysis:

In order to answer this question correctly the candidate must determine the following:

1. Tech Spec applicability for the listed systems with the given plant condition.

NOTE: The distractors are all plausibe since only one system or function is incorrect in each distractor.

A is incorrect. The RBM is not required until >27% rated power.

B is incorrect. The APRM Hi (120%) is not required until Mode 1

C is correct.

D is incorrect. the OPRMs are not required until Mode 1 and >25% rated power.

Table 3.3.2.1-1 (page 1 of 1)
Control Rod Block Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Rod Block Monitor				
a. Low Power Range - Upscale	(a)	2	SR 3.3.2.1.1 SR 3.3.2.1.4 SR 3.3.2.1.8	(e)
b. Intermediate Power Range - Upscale	(b)	2	SR 3.3.2.1.1 SR 3.3.2.1.4 SR 3.3.2.1.8	(e)
c. High Power Range - Upscale	(f),(g)	2	SR 3.3.2.1.1 SR 3.3.2.1.4 SR 3.3.2.1.8	(e)
d. Inop	(g),(h)	2	SR 3.3.2.1.1	NA
e. Downscale	(g),(h)	2	SR 3.3.2.1.1 SR 3.3.2.1.4	(i)
2. Rod Worth Minimizer	$_1$(c),$_2$(c)	1	SR 3.3.2.1.2 SR 3.3.2.1.3 SR 3.3.2.1.5 SR 3.3.2.1.7	NA
3. Reactor Mode Switch — Shutdown Position	(d)	2	SR 3.3.2.1.6	NA

(a) THERMAL POWER ≥ 27% and ≤ 62% RTP and MCPR less than the value specified in the COLR.

(b) THERMAL POWER > 62% and ≤ 82% RTP and MCPR less than the value specified in the COLR.

(c) With THERMAL POWER ≤ 10% RTP.

(d) Reactor mode switch in the shutdown position.

(e) Less than or equal to the Allowable Value specified in the COLR.

(f) THERMAL POWER > 82% and < 90% RTP and MCPR less than the value specified in the COLR.

(g) THERMAL POWER ≥ 90% RTP and MCPR less than the value specified in the COLR.

(h) THERMAL POWER ≥ 27% and < 90% RTP and MCPR less than the value specified in the COLR.

(i) Greater than or equal to the Allowable Value specified in the COLR.

Table 3.3.1.1-1 (page 1 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Intermediate Range Monitors					
a. Neutron Flux - High	2	3	G	SR 3.3.1.1.1 SR 3.3.1.1.3 SR 3.3.1.1.5 SR 3.3.1.1.6 SR 3.3.1.1.9 SR 3.3.1.1.14	≤ 120/125 divisions of full scale
	5(a)	3	H	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.9 SR 3.3.1.1.14	≤ 120/125 divisions of full scale
b. Inop	2	3	G	SR 3.3.1.1.3 SR 3.3.1.1.14	NA
	5(a)	3	H	SR 3.3.1.1.4 SR 3.3.1.1.14	NA
2. Average Power Range Monitors					
a. Neutron Flux - High, Setdown	2	3(b)	G	SR 3.3.1.1.1 SR 3.3.1.1.6 SR 3.3.1.1.7 SR 3.3.1.1.13 SR 3.3.1.1.16	≤ 15% RTP
b. Flow Biased Simulated Thermal Power - High	1	3(b)	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.7 SR 3.3.1.1.13 SR 3.3.1.1.16	≤ 0.66 W + 66% RTP and ≤ 120% RTP(c)
c. Neutron Flux - High	1	3(b)	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.7 SR 3.3.1.1.13 SR 3.3.1.1.16	≤ 120% RTP

(continued)

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

(b) Each APRM channel provides inputs to both trip systems.

(c) [0.66 W + 66% - 0.66 Δ W] RTP when reset for single loop operation per LCO 3.4.1, "Recirculation Loops Operating."

Table 3.3.1.1-1 (page 2 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Average Power Range Monitors (continued)					
d. Inop	1,2	3(b)	G	SR 3.3.1.1.16	NA
e. 2-Out-Of-4 Voter	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.14 SR 3.3.1.1.16	NA
f. OPRM Upscale	1	3(b)	I	SR 3.3.1.1.1 SR 3.3.1.1.7 SR 3.3.1.1.13 SR 3.3.1.1.16 SR 3.3.1.1.17	NA
3. Reactor Vessel Steam Dome Pressure - High(d)	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14	≤ 1090 psig
4. Reactor Vessel Water Level - Low, Level 3(d)	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.8 SR 3.3.1.1.13 SR 3.3.1.1.14	≥ 528 inches above vessel zero
5. Main Steam Isolation Valve - Closure	1	8	F	SR 3.3.1.1.8 SR 3.3.1.1.13 SR 3.3.1.1.14	≤ 10% closed
6. Drywell Pressure - High	1,2	2	G	SR 3.3.1.1.8 SR 3.3.1.1.13 SR 3.3.1.1.14	≤ 2.5 psig
7. Scram Discharge Volume Water Level - High					
a. Resistance Temperature Detector	1,2	2	G	SR 3.3.1.1.8 SR 3.3.1.1.13 SR 3.3.1.1.14	≤ 50 gallons
	5(a)	2	H	SR 3.3.1.1.8 SR 3.3.1.1.13 SR 3.3.1.1.14	≤ 50 gallons

(continued)

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

(b) Each APRM channel provides inputs to both trip systems.

(d) During instrument calibrations, if the As Found channel setpoint is conservative with respect to the Allowable Value but outside its acceptable As Found band as defined by its associated Surveillance Requirement procedure, then there shall be an initial determination to ensure confidence that the channel can perform as required before returning the channel to service in accordance with the Surveillance. If the As Found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.

Prior to returning a channel to service, the instrument channel setpoint shall be calibrated to a value that is within the acceptable As Left tolerance of the setpoint; otherwise, the channel shall be declared inoperable.

The nominal Trip Setpoint shall be specified on design output documentation which is incorporated by reference in the Updated Final Safety Analysis Report. The methodology used to determine the nominal Trip Setpoint, the predefined As Found Tolerance, and the As Left Tolerance band, and a listing of the setpoint design output documentation shall be specified in Chapter 7 of the Updated Final Safety Analysis Report.

67. RO GENERIC 2.1.16 001/MEM/T3//B17/G2.1.16///

Which ONE of the following announcements is an INAPPROPRIATE use of the Plant Paging System in accordance with OPDP-1, Conduct of Operations?

A. There is a fire in the Unit-2 Shutdown Board Room. I repeat. There is a fire in the Unit-2 Shutdown Board Room.

B. Operations will be starting the 2 Alpha RHR pump.

C. Shift Manager dial 2391. Shift Manager dial 2391

D. ✔ This is a drill. All personnel evacuate the Unit 2 Reactor Building due to high radiation.

K/A Statement:
Conduct of Operations
2.1.16 Ability to operate plant phone, paging system, and two-way radio

K/A Justification: This question satisfies the K/A statement by requiring the candidate to demonstrate specific knowledge of the use of the Plant Paging System while communicating with plant personnel.

References: OPDP-1

Level of Knowledge Justification: This question is rated as MEM due to the requirement to recall or recognize discrete bits of information.

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REFERENCE PROVIDED: None

Plausibility Analysis:

In order to answer this question correctly the candidate must determine the following:

1. The requirements associated with making Page Announcements per OPDP-1.
2. Whether the announcement meets those requirements

A is incorrect. This is plausible because it is an expected announcement during a fire.

B is incorrect. This is plausible since the page is not repeated. However, repeating pages for a normal operation is not required.

C is incorrect. This is plausible since the page is repeated. However, there may not be a requirement t repeat the announcement, but it is not an inappropriate action.

D is correct. The line "This is a drill" is required at the beginning and END of each communication during drills or exercises. In addition, an announcement of such urgency should be repeated.

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(Page 3 of 5)

Communications

b. Use equipment noun names and/or identification (ID) numbers to describe a component.

c. The use of sign language is undesired but maybe used when verbal communications is not practical.

d. Take time when reporting abnormal conditions. Speak deliberately, distinctly and calmly. Identify yourself and watch station or your location. Describe the nature and severity of the problem. State the location of the problem if appropriate. Keep the communication line open if possible or until directed otherwise.

e. The completion of directed actions should be reported to the governing station, normally the control room.

f. Require other plant personnel (including contractors) conducting operational communication to do so in accordance with this procedure.

g. If there is any doubt concerning any portion of the communication or task assigned, resolve it before taking any action.

h. When making announcements for drills or exercises begin and end the announcement with "This is a Drill."

4. Emergency Communications Systems

When personnel are working in areas where the public address (PA) system or emergency signals cannot be heard, alternate methods for alerting these persons should be devised. Flashing lights, personal pagers that vibrate and can be felt, and persons dedicated to notifications are examples of alternate methods.

5. PA System

a. Use of the plant PA system shall be limited to ensure it retains its effectiveness in contacting plant personnel. Excessive use of the PA system should be avoided. Plant telephones and other point-to-point communications channels should be used in lieu of the PA system whenever practical.

b. The announcement of planned starting or stopping large equipment should be made to alert personnel working in that area.

c. The plant PA system may be used in abnormal or emergency conditions, to announce change of plant status, or give notification of major plant events either in progress or anticipated.

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(Page 4 of 5)

Communications

d. When using the plant PA system:

(1) Speak slowly and deliberately in a normal tone of voice.

(2) When announcements of abnormal or emergency conditions are made, they shall be made at least twice.

(3) When making announcements for drills or exercises begin and end the announcement with "This is a Drill."

6. Plant Telephones

When using Plant telephones:

a. Identify yourself and watch station.

b. When trying to make contact with the main Control Room, if the message is of a routine nature, the sender should hang up when the main Control Room fails to answer after the fifth ring to avoid unnecessary Control Room noise. The phone shall be allowed to ring until answered if the information is important to Operations.

c. During times when the DO NOT DISTRUB (DND) function has been used by MCR personnel, follow the directions on the recording as appropriate.

d. When making announcements for drills or exercises begin and end the announcement with "This is a Drill."

7. Radio/phone Communication

Radio/phone usage shall not be allowed in areas where electronic interference with plant equipment may result.

a. When making announcements for drills or exercises, begin and end the announcement with "This is a Drill."

b. Sender should identify themselves by watch station.

c. Three way communications should be used.

d. Clear concise language should be used since radio/phone contact does not have the advantage of face to face communication.

68. RO GENERIC 2.1.18 001/MEM/T3/12.1//GENERIC 2.1.18//RO/SRO/11/27/07 RMS

Which ONE of the following is an INEFFECTIVE use of the phonetic alphabet in accordance with OPDP-1, Conduct of Operations?

A. Place Gulf IRM in Bypass per 1-OI-92-Bravo.

B. Start 2-Alpha RHR pump per 3-OI-74.

C. ✔ Place Romeo-Papa-Sierra 2-Alpha on Alternate per 2-Oscar-India-99.

D. Transfer 2-Alpha 480 volt shutdown board to Alternate.

K/A Statement:
Conduct of Operations
2.1.18 Ability to make accurate, clear and concise logs, records, status boards, and reports

K/A Justification: This question satisfies the K/A statement by requiring the candidate to demonstrate knowledge of the requirements related to verbal communications or reports during shift operations.

References: OPDP-1

Level of Knowledge Justification: This question is rated as MEM due to the requirement to recall or recognize discrete bits of information.

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REFERENCE PROVIDED: None

Plausibility Analysis:

In order to answer this question correctly the candidate must determine the requirements for use of the phonetic alphabet and apply that knowledge to the given communications.

NOTE: Each distractor is plausible because they all contain at least one use of th phonetic alphabet.

A is incorrect. This communication is appropriate.

B is incorrect. This communication is appropriate.

C is correct. The use of the phonetic alphabet for common acronyms, such as RPS, is not required and could reduce the effectiveness of the communication.

D is incorrect. This communication is appropriate.

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Communications

b. The receiver repeats back the message to the sender. The repeat back can be verbatim or functional. In many cases a functional repeat back best communicates the receivers understanding of the message. This can be done in several ways to accomplish the desired goals. For example the sender might say, "Bob, report RCS pressure and trend." The receiver could respond in either of two ways.

(1) The receiver could respond with, "Report RCS pressure and trend. RCS pressure is 2250 psig and stable."

Or

(2) The receiver could respond with, "RCS pressure is 2250 psig and stable."

c. The sender verbally acknowledges that the receiver correctly understood the message. The verbal acknowledgement can be simple such as, "That is correct". If the sender has requested and received information then the sender shall provide either verbatim or functional repeat back to demonstrate his understanding of the receiver's message. For the example above the sender could respond with, "I understand 2250 and stable."

2. Phonetic Alphabet

The phonetic alphabet is a tool to improve communications. In general, operations communication should use the phonetic alphabet except when well established acronyms describe the subject. If use of phonetic alphabet will reduce effectiveness of communications then it should not be used. The following are examples of when the phonetic alphabet should not be used:

a. It is not desirable to use Romeo-Charlie-Sierra to describe the RCS (Reactor Coolant System).

b. If a procedural step is written using acronyms, it may be read and ordered as such.

c. If a component tag or label is written using acronyms then the acronyms may be used.

3. General Standards

a. All communications shall be clear, concise, and precise. All operational communications shall be conducted in a formal and professional manner. In all communications, the sender and intended receiver should be readily identifiable.

69. RO GENERIC 2.2.13 001/MEM/T3/10.2/7/18/GENERIC 2.2.13/3.6/3.8/RO/SRO/11/26/07 RMS

Which ONE of the following describes the requirements when placing a clearance on air operated valves?

A. An air operated valve that fails closed on loss of air SHALL NOT be considered closed for blocking purposes unless it is held closed with a gagging device.

B. An air operated valve that fails open on loss of air SHALL NOT be used for blocking purposes.

C. ✔ An air operated valve that fails open on loss of air, will be held closed with a gagging device that is tagged as a clearance boundary.

D. An air operated valve that fails 'as-is' on loss of air SHALL NOT be used for blocking purposes until it is verified closed and a gagging device installed.

K/A Statement:
Equipment Control
2.2.13 Knowledge of tagging and clearance procedures

K/A Justification: This question satisfies the K/A statement by requiring the candidate to demonstrate knowledge of the Clearance and Tagging requirements.

References: SPP 10.2

Level of Knowledge Justification: This question is rated as MEM due to the requirement to recall or recognize discrete bits of information.

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REFERENCE PROVIDED: None

Plausibility Analysis:

In order to answer this question correctly the candidate must determine the requirements for Clearance and tagging procedure, SPP 10-2 and apply that knowledge to the given conditions.

A is incorrect. This is plausible since a locking device would ensure the valve does not open, however SPP 10-2 requires the air supply to actuate the valve be mechanically or electrically isolated.

B is incorrect. This is plausible since using a "Fail-Open" valve presents a difficult problem, however SPP 10-2 provides specific guidance to allow their use as a clearance boundry.

C is correct.

D is incorrect. This is plausible because in most cases it is true. However, SPP 10-2 provides specific guidance and controls to allow using them as a clearance boundry under condition that the clearance be considered "working on energized equipment".

Appendix E
(Page 1 of 2)

Special Requirements for Mechanical Clearances

1.0 REQUIREMENTS

A. An air-operated valve that fails open on a loss of air is not be considered closed for blocking purposes unless it is held closed with an installed jacking device or device used to secure the valve in the required position. A clearance tag will be issued and attached to the jacking or other device.

B. An air-operated valve that fails closed must have its air supply electrically or mechanically isolated, depressurized, and the valve visually checked-to-be-closed by local or remote indication. The air supply energy-isolating devices must be tagged.

C. An air-operated valve that fails "as is" shall be closed and mechanically restrained. Its air supply should be electrically or mechanically isolated, depressurized, and the valve visually checked to be closed by local or remote indication. The air supply energy-isolating devices and mechanical restraint must be tagged.

D. In cases where it is not possible to physically secure an air operated valve that fails "as-is" in the closed position, the valve will be tagged closed by applying closing air to the valve diaphragm by the use of the solenoid valve air overrides and tagging both the hand-switch in the closed position and the solenoid valve air overrides. Prior to allowing work to begin, the equipment will be drained and de-pressurized to ensure the boundary valves are holding. This condition will be noted in the remarks section of the clearance sheet to inform PAE/Authorized Employee(s) that pressurized air is required to ensure the valve remains closed. This work is considered "working on energized equipment" and must be approved by the management official in charge.

E. Pressure controlled valves, relief valves, and check valves will not be used as isolation boundary valves under normal conditions. Where such a valve does not have an external means of physical restraint, the work is considered "working on energized equipment" and must be approved by the management official in charge.

F. The following instructions govern the use of freeze plugs

1. The clearance should be in place, but not issued, before establishing the freeze plug.

2. The need for the freeze plug should be identified on the Remarks Section of the clearance sheet. The freeze plug should not be listed as a device held on the clearance sheet. The establishment and maintenance of the freeze plug shall be in accordance with approved procedures or work documents.

3. The freeze plug must be attended by qualified personnel to ensure that it is maintained intact until all work is complete and the proper Post Maintenance Tests (PMTs) are performed.

4. If the clearance must be released to allow performance of a PMT, the equipment must be retagged before allowing the freeze plug to thaw. This will prevent migration of a portion of the plug.

70. RO GENERIC 2.2.33 001/C/A/SYS/RWM//G2.2.33/RO 2.5//10/22/07

Given the following plant conditions:

- A reactor startup is in progress
- Reactor Power: 3%
- RWM latched into Group 8 (12 control rods)
- Group 9 rods are the same rods as Group 8.
- Sequence Control: ON
- Group 8 Limits: 08-12
- Group 9 Limits: 12-16

Which ONE of following describes when the RWM will automatically latch up to Group 9?

A. ✔ all rods in group 8 have been withdrawn to the group 8 withdraw limit and a rod in group 9 has been selected.

B. all rods EXCEPT 3 in group 8 are withdrawn to the group withdraw limit, and a rod in group 9 is selected.

C. all rods EXCEPT 1 in group 8 are withdrawn to the group withdraw limit and a rod in group 9 has to be selected and moved.

D. the last rod in group 8 is withdrawn to the group 8 withdraw limit and the in-sequence rod in group 9 has NOT been selected.

K/A Statement:
Equipment Control
2.2.33 Knowledge of control rod programming.

K/A Justification: This question satisfies the K/A statement by requiring the candidate to recognize and apply limitations on control rod programming enforced by the Rod Worth Minimizer program.

Level of Knowledge Justification: This question is rated as C/A due to the requirement to assemble, sort, and integrate the parts of the question to solve a problem. This requires mentally using this knowledge and its meaning to resolve the problem.

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REFERENCE: Lesson Plan OPL171.024 Rev. 13 pages 13 - 15

Plausibility Analysis:

Answer A is the correct answer.

Answer B is incorrect. This is plausible because the RWM normally allows three insert errors without generating a rod block, however it will not latch up to a higher group under this condition because the three rods are more than one notch from the withdraw limit.

Answer C is incorrect. The selected control rod does not have to be moved to latch to Group 9. This is plausible because the RWM will latch to the highest group with one rod past the insert limit if the RWM is latching to a group from an unknown condition. Since this is a known condition, the RWM will latch to Group 9 without moving the selected rod.

Answer D is incorrect. The RWM will not latch to the next group until the correct rod is selected in Group 9 because Sequence Control is ON. This is plausible if Sequence Control is OFF. Under that condition, the RWM only looks for rods within the Group and not within a specific sequence. With Sequence Control in OFF, the RWM will latch up to Group 9 as soon as the last rod reaches the withdraw limit.

INSTRUCTOR NOTES

(8) Upon demand by the operator via the Scan/Latch request function.

(9) Following correction of Insert or Withdraw Errors.

d. The latched group is the highest group which can be achieved without producing an active insert block condition.

(1) The RWM system will latch to the highest group in the sequence with:

(a) At least one rod withdrawn past the group insert limit and

(b) No other groups <u>below</u> have three insert errors

(2) Example: Relatch at an intermediate power level

(a) Assume that RWM has been out of service and rods have been moved out of sequence. The following rod distribution exists:

(1) All rods in Group 1 thru 7 are at their withdraw limit, except rods 30-35, 38-43 and 38-27 (GP. 7) which are at position 02.

These 3 rods would cause an insert block if GP 8 were latched.

(2) All rods in Groups 8 and above are at their insert limit (04) except for rod 30-03 (GP 8) which is at position 06.

(3) No rod is selected

INSTRUCTOR NOTES

(b) After returning the RWM to service:

(1) Group 7 will be the latched group

(2) Rod 30-03 will be displayed as a withdraw error.

(3) The withdraw block status indicators will indicate a withdrawal block condition on the RWM system displays and RWM switch panel.

(4) No other control rod may be inserted or withdrawn until the withdraw error rod from Group 8 (30-03) is corrected. It can only be inserted.

(c) The proper way to correct the out of sequence condition is to insert the withdraw error rod (30-03) to position "04".

This removes the withdraw error; leaves group 7 as the latched group, and removes the withdraw block indications on the RWM system displays and RWM switch panel.

NOTE: Upon select of rod 30-03, an RWM system message will be generated indicating a target position of notch "04" for this control rod

11. Automatic Latching Up/Down

Obj. V.B.10

a. The automatic latching process depends on whether or not RWM Sequence Control is ON or OFF. Sequence Control is normally selected (ON) and enforces a specific order to pull rods within a latched group.

b. When operating below the LPSP with sequence control "ON", latching to the next higher or next lower rod group is done internally by the RWM program only after a rod in the next group is selected.

NOTE: Latching within Transistion Zone will be discussed later.

INSTRUCTOR NOTES

(1) The program will latch down (latch the next lower group) when all the rods in the presently latched group have been inserted to the group insert limit and a rod in the next group is selected.

NOTE: Will latch down if insert errors in GP is lower than latch GP.

(2) The program will latch up (latch the next higher group) upon selection of a rod within the next higher group provided that only 2 insert errors or less result from within the current latched group and/or any lower groups.

Will latch up provided that the number of insert errors produced will not give an insert block.

c. When sequence control is NOT selected, (OFF), latching automatically occurs based on rod movement within repeating BPWS banked groups (ex: 2/3/4/5/6 and 7/8/9/10/11/12).

(1) For example, if the rods in a group (GP. 4) are the same rods as in the next higher group (GP. 5), the RWM will NOT latch up based solely upon control rod selection. Latch up to Group 5 will automatically occur when any of the rods Group 4 are moved to a position defined for Group 5 provided that <3 insert errors would result.

(2) If the rods in a group (GP. 5) are the same rods as the next lower group (GP. 4), the RWM will not latch down based solely upon control rod selection. Latch down to the next lower RWM group will generally occur in this case based upon movement of any of the rods within the group to a position defined for the next lower RWM group.

With rods at both a GP 4 and GP 5 defined position, the latched GP after a movement will be the GP moved into.

(3) If the next rod group is NOT repeating, then latching occurs when the next rod is selected.

71. RO GENERIC 2.3.10 001/C/A/GFES/GENERIC/C/A/G2.3.10/BF00301/2.9/3.3/GEN 2.3

Given the following conditions at a work site.

Airborne activity:	3 DAC
Radiation level:	40 mr/hr
Radiation level with shielding:	10 mr/hr
Time to place shielding:	15 minutes
Time to conduct task with respirator:	1 hour
Time to conduct task without respirator:	30 minutes

Assume the following:

- the airborne dose with a respirator will be zero.
- a dose rate of 40 mr/hr will be received while placing the shielding.
- all tasks will be performed by one worker.
- shielding can be placed in 15 minutes with or without a respirator.

Which ONE of the following would result in the lowest whole body dose?

A. Place the shielding while wearing a respirator and conduct the task with a respirator.

B. ✔ Place the shielding while wearing a respirator and conduct the task without a respirator.

C. Conduct the task with a respirator and without shielding.

D. Conduct the task without a respirator or shielding.

K/A Statement:
Radiation Control
2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

K/A Justification: This question satisfies the K/A statement by requiring the candidate to calculate the expected exposure for a job and determine the correct precautions and radiological controls required to minimize exposure.

Level of Knowledge Justification: This question is rated as C/A due to the requirement to assemble, sort, and integrate the parts of the question to predict an outcome. This requires mentally using this knowledge and its meaning to predict the correct outcome.

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Plausibility Analysis:

This question requires the candidate to calculate the exposure recevied for each of the four options in the distractors. Although this question does not specifically contain incorrect but plausible possibilities, it is based entirely on the type of decision which must be made while performing duties as a Licensed Operator. Using the calculation below, the candidate must correctly perform the analysis and apply ALARA principles to select the correct answer.

Calculations required:

3 DAC x 2.5 mr/DAC X 0.5 hours = 3.75 mr

a. 10 mr placing shielding, 10 mr conducting task, zero airborne = **20 mr**

b. 10 mr placing shielding, 5 mr conducting task, 3.75 mr airborne = **18.75 mr (lowest dose = Correct)**

c. 40 mr conducting task, zero airborne = **40 mr**

d. 20 mr conducting task, 3.75 mr airborne = **23.75 mr**

72. RO GENERIC 2.3.9 001/C/A/T3/PR.CMPTR//RO GENERIC 2.3.9//RO/SRO/11/27/07 RMS

Unit 2 reactor shutdown is in progress and primary containment de-inerting has been authorized.

Which ONE of the following is the basis for **NOT** allowing both 2-FCV-64-19 (SUPPR CHBR ATM SPLY INBD ISOLATION VLV) and 2-FCV-64-18 (DRYWELL ATM SUPPLY INBD ISOLATION VLV) to be open simultaneously during the performance of this evolution?

A. To prevent the high flow rate from damaging the non-hardened ventilation ducts.

B. To prevent creating a high dP between the primary containment and the Reactor Building.

C. ✔ To prevent the possibility of overpressurizing the primary containment during a LOCA.

D. To prevent release of the drywell atmosphere through an unmonitored ventilation flow path.

K/A Statement:
Radiation Control
2.3.9 Knowledge of the process for performing a containment purge.

K/A Justification: This question satisfies the K/A statement by requiring the candidate to use specific plant conditions and times to correctly determine the process for performing a containment purge.

References: 2-OI-64, Rev.106, section 8.1

Level of Knowledge Justification: This question is rated as C/A due to the requirement to assemble, sort, and integrate the parts of the question to predict an outcome. This requires mentally using this knowledge and its meaning to predict the correct outcome.

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REFERENCE PROVIDED: None

Plausibility Analysis:

In order to answer this question correctly the candidate must determine the requirements for de-inerting the Primary Containment and their bases.

A is incorrect. This is plausible becaue high flowrates would result from both valves being open, however the vent ducts are designed to accomodate such flowrates.

B is incorrect. This is plausible because the de-inerting lineup raises the dP between the Drywell and Reactor Building, however the rise is relatively insignificant and well within the design limits.

C is correct.

D is incorrect. This is plausible since the vent path is unmonitored, however, having both valves open simultaneously provides no additional path for a release.

8.0 INFREQUENT OPERATIONS

8.1 Purging the Drywell and Suppression Chamber with Primary Containment Purge Filter Fan

NOTES

1) TOE 970823 identified a potential for a bypass flow path to exist between the Drywell and Suppression Chamber when purging the Drywell and Suppression Chamber at the same time (both FCV-64-18 and 64-19 opened concurrently). Should a design basis LOCA occur with these two valves opened at the same time with the Reactor **NOT** in Cold Shutdown (Mode 4 or 5), a potential exists for overpressurizing primary containment due to the pressure suppression function being bypassed. Therefore, when Primary Containment purging is required with the Reactor **NOT** in Cold Shutdown (Mode 4 or 5), the Suppression Chamber and the Drywell are purged separately.
2) This section is used when purging both the Drywell and Suppression Chamber concurrently with the Reactor in Cold Shutdown (Mode 4 or 5).
3) When the Reactor is **NOT** in Cold Shutdown (Mode 4 or 5), the Suppression Chamber and the Drywell are purged separately.

[1] **REVIEW** all Precautions and Limitations in Section 3.0. ☐

[2] **VERIFY** all Prestartup/Standby Readiness requirements in Section 4.0 are satisfied. ☐

[3] **VERIFY** the following initial conditions are satisfied:

- Drywell vented to less than 0.25 psig. **REFER TO** Section 6.1. ☐
- H_2O_2 analyzers are in service **REFER TO** 2-OI-76 ☐
- Suppression Chamber vented to less than 0.25 psig. **REFER TO** Section 6.2. ☐
- Reactor Zone Fans in operation with Reactor Zone Supply and Exhaust Fan in fast speed. **REFER TO** 2-OI-30B. ☐

[4] **REQUEST** Chemistry to obtain a Drywell sample. **REFER TO** 2-SI-4.8.B.2-6. ☐

[5] **IF** sample is within limits of 2-SI-4.8.B.2-6, **THEN**

NOTIFY Shift Manager. ☐

73. RO GENERIC 2.4.47 001/C/A/T3/C4/6/G2.4.47//RO/SRO/10/25/07 RMS

Given the following plant conditions:

- Reactor pressure is being maintained at 50 psig.
- Temperature near the water level instrument run in the drywell is 220°F.
- The Shutdown Vessel Flooding Range Instrument (LI-3-55) is reading +35".

Which ONE of the following describes the highest Drywell Run Temperature at which the LI-3-55 reading (+35") is considered valid?

REFERENCE PROVIDED

A. 200°F

B. ✔ 250°F

C. 270°F

D. 300°F

K/A Statement:
Emergency Procedures /Plan
2.4.47 Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material

K/A Justification: This question satisfies the K/A statement by requiring the candidate to use specific plant conditions to determine the correct reactor water level under emergency conditions.

References: 2-EOI-3 Flowchart

Level of Knowledge Justification: This question is rated as C/A due to the requirement to assemble, sort, and integrate the parts of the question to predict an outcome. This requires mentally using this knowledge and its meaning to predict the correct outcome.

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REFERENCE PROVIDED: 2-EOI-1 flowchart

Plausibility Analysis:

In order to answer this question correctly the candidate must use EOI Caution #1 to determine operable RPV water level instruments.

A is incorrect. This is plausible since 200°F is a valid indication, however the question calls for the HIGHEST temperature.

B is correct.

C is incorrect. This is plausible if the candidate interpolates the Caution #1 table, however this is not permissible.

D is incorrect. This is plausible if the candidate interpolates the Caution #1 table, however this is not permissible.

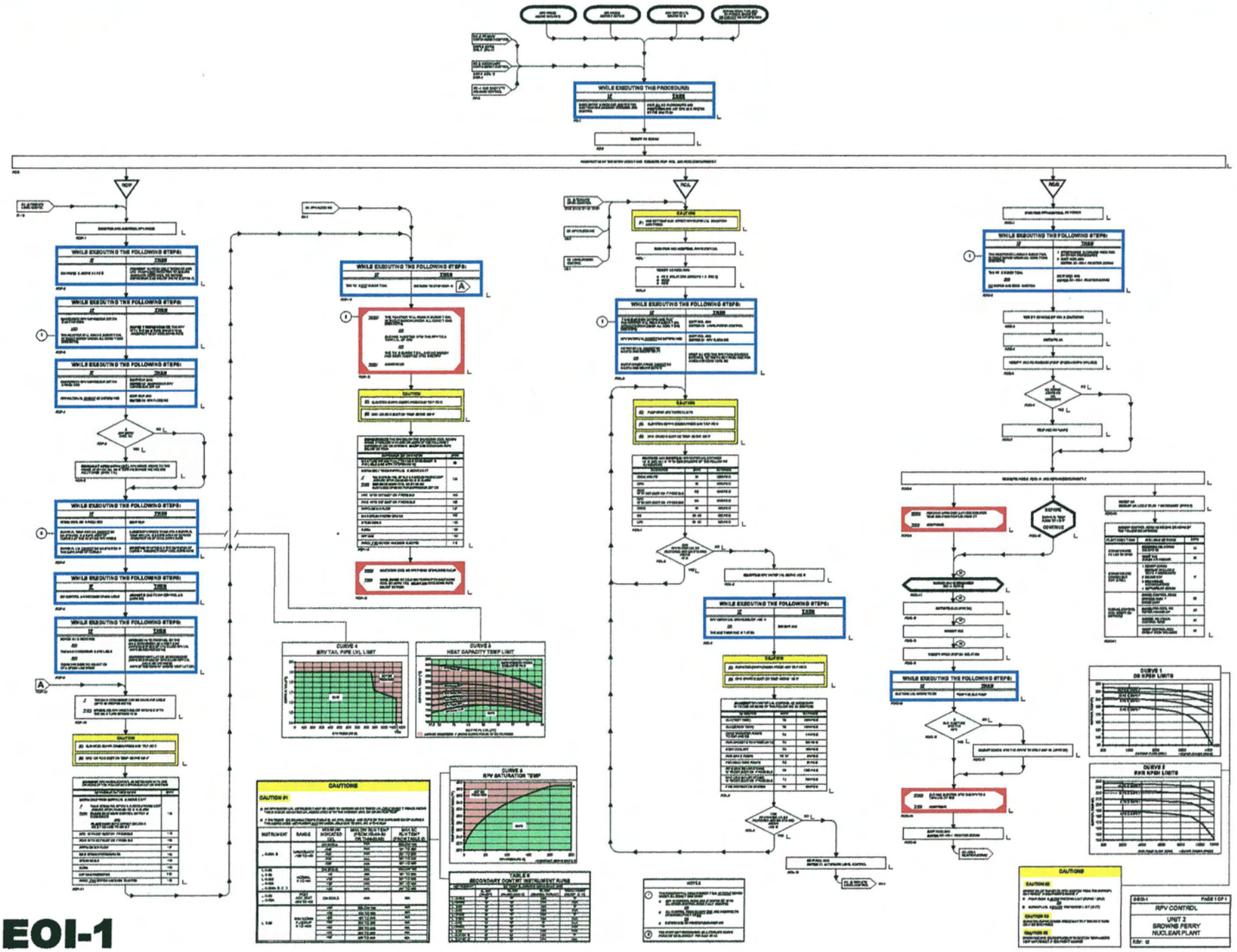
CAUTIONS

CAUTION #1

- AN RPV WATER LVL INSTRUMENT MAY BE USED TO DETERMINE OR TREND LVL ONLY WHEN IT READS ABOVE THE MINIMUM INDICATED LVL ASSOCIATED WITH THE HIGHEST MAX DW OR SC RUN TEMP.
- IF DW TEMPS, OR SC AREA TEMPS (TABLE 6), AS APPLICABLE, ARE OUTSIDE THE SAFE REGION OF CURVE 8, THE ASSOCIATED INSTRUMENT MAY BE UNRELIABLE DUE TO BOILING IN THE RUN.

INSTRUMENT	RANGE	MINIMUM INDICATED LVL	MAX DW RUN TEMP (FROM XR-64-50 OR TI-64-52AB)	MAX SC RUN TEMP (FROM TABLE 6)
LI-3-58A, B	EMERGENCY -155 TO +60	ON SCALE	N/A	BELOW 150
		-145	N/A	151 TO 200
		-140	N/A	201 TO 250
		-130	N/A	251 TO 300
		-120	N/A	301 TO 350
LI-3-53 LI-3-60 LI-3-206 LI-3-253 LI-3-208A, B, C, D	NORMAL 0 TO +60	ON SCALE	N/A	BELOW 150
		+5	N/A	151 TO 200
		+15	N/A	201 TO 250
		+20	N/A	251 TO 300
		+30	N/A	301 TO 350
LI-3-52 LI-3-62A	POST ACCIDENT -268 TO +32	ON SCALE	N/A	N/A
LI-3-55	SHUTDOWN FLOODUP 0 TO +400	+10	BELOW 100	N/A
		+15	100 TO 150	N/A
		+20	151 TO 200	N/A
		+30	201 TO 250	N/A
		+40	251 TO 300	N/A
		+50	301 TO 350	N/A
		+65	351 TO 400	N/A

EXAMINATION REFERENCE PROVIDED TO CANDIDATE


WHILE EXECUTING THIS PROCEDURE
WHILE EXECUTING THE FOLLOWING STEPS:
CAUTIONS
CAUTION #1
CURVE 4
CURVE 5
CURVE 6
TABLE 6
NOTES
RPV CONTROL
UNIT 2
BROWNS FERRY
NUCLEAR PLANT

74. RO GENERIC 2.4.15 001/MEM/T3///GENERIC 2.4.15//RO/SRO/11/27/07 RMS

Given the following plant conditions:

- Unit-2 has scrammed and multiple control rods have failed to insert.
- The Unit Supervisor has entered EOI-1, RPV Control, and C-5, Level/Power Control.
- You have been designated to assist the crew by performing EOI Appendicies as they are assigned.

Which ONE of the following precludes the use of a hand held radio to communicate with Control Room personnel?

A. EOI Appendix 2 in the 2A Electrical Board Room.

B. EOI Appendix 1C in the U-2 Aux Instrument Room.

C. EOI Appendix 16H at the 2C 250V RMOV Board.

D. EOI Appendix 1B in the Reactor Building 565 elevation.

K/A Statement:
Emergency Procedures /Plan
2.4.15 Knowledge of communications procedures associated with EOP implementation

K/A Justification: This question satisfies the K/A statement by requiring the candidate to demonstrate knowledge of communication requirements that apply during execution of Emergency Operating Instructions.

References: OPDP-1

Level of Knowledge Justification: This question is rated as MEM due to the requirement to recall or recognize discrete bits of information.

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REFERENCE PROVIDED: None

Plausibility Analysis:

In order to answer this question correctly the candidate must determine which of the given locations violates the requirements of OPDP-1, Conduct of Operation.

A is incorrect. This is plausible bacuse of the safety related equiment powered from 2A Electric Board Room, however radio communication is authorized.

B is correct.

C is incorrect. This is plausible because of the safety related equipment fed from 2C 250V RMOV Board, however radio communication is authorized.

D is incorrect. This is plausible because of the proximity of the RPV level instrumentation, however radio communication is authorized.

L. Exiting the EOIs

The operators remain in the EOIs until either directed out by the EOI or when the SM/US concludes that an emergency condition no longer exists. Exit from EOI-1 and associated contingency procedures always requires SM/US determination, since these procedures have no explicit exit to other plant procedures except from RC/Q to AOI-100-1. Appendix 100-1 should be reviewed prior to EOI exit to determine, restore, and document abnormal alterations that were established during EOI execution.

After exiting the EOIs the operator surveys the present plant conditions to ensure no reason for re-entry to the EOIs exist.

During EOI execution, a SAMG ENTRY IS REQUIRED condition may arise. Entry into and execution of Severe Accident Management Guidelines (SAMGs) are the responsibility of the SED in the TSC. Significant time may be required to man the TSC with the appropriate SAM Team members and turn over plant conditions between the control room and the TSC. The control room staff terminate execution of ALL EOI flowcharts ONLY when the SED declares that the SAM Team has assumed command and control. EOI appendices may continue in use as directed by the SAMGs.

During the time between the development of the SAMG ENTRY IS REQUIRED condition and the time of assumption of command and control by the TSC, the control room staff shall continue use of available EOI guidance to mitigate the event. Development of a SAMG ENTRY IS REQUIRED condition always requires entry into the SAMGs when the TSC SAM Team assumes command and control, even if plant conditions subsequently develop which seem to no longer satisfy a requirement to enter SAMGs.

3.5 Duties of the Control Room Team Members While Executing EOIs

The specific duties of the Control Room Team Members are outlined in Conduct of Operations.

3.6 Shift Communications During Execution of EOIs

The methodology associated with communications during execution of the EOIs is outlined in Conduct of Operations

3.7 Use of Instrumentation and ICS/Safety Parameter Display System (SPDS)

Various instruments in the control room are qualified for Post Accident Monitoring. These instruments are identified with black labels. During the performance of the EOIs, these instruments are required to be utilized as much as practical. For parameters that have multiple readouts in the control room, the operator should observe as many of the multiple readouts as practical for a verification of the values being observed.

Most instruments in the control room are provided with what may be considered standard scale divisions (increments of 1, 5, 10, etc.), although there are some that may be considered off-normal (increments of 2, 3, 4, etc.). Some pressure instruments may read out in PSIA rather than the more common value of PSIG.

The operator is required to remain aware of these possible differences when reading the values from the instruments. For pressure instruments, the pressure should be called out in values of PSIA or PSIG, as applicable. When the operator reading the flowchart asks for the value of a pressure parameter, it should be assumed that the value be given as PSIG unless he/she solicits the value in PSIA.

Appendix I
(Page 4 of 5)

Communications

d. When using the plant PA system:

(1) Speak slowly and deliberately in a normal tone of voice.

(2) When announcements of abnormal or emergency conditions are made, they shall be made at least twice.

(3) When making announcements for drills or exercises begin and end the announcement with "This is a Drill."

6. Plant Telephones

When using Plant telephones:

a. Identify yourself and watch station.

b. When trying to make contact with the main Control Room, if the message is of a routine nature, the sender should hang up when the main Control Room fails to answer after the fifth ring to avoid unnecessary Control Room noise. The phone shall be allowed to ring until answered if the information is important to Operations.

c. During times when the DO NOT DISTRUB (DND) function has been used by MCR personnel, follow the directions on the recording as appropriate.

d. When making announcements for drills or exercises begin and end the announcement with "This is a Drill."

7. Radio/phone Communication

Radio/phone usage shall not be allowed in areas where electronic interference with plant equipment may result.

a. When making announcements for drills or exercises, begin and end the announcement with "This is a Drill."

b. Sender should identify themselves by watch station.

c. Three way communications should be used.

d. Clear concise language should be used since radio/phone contact does not have the advantage of face to face communication.

75. RO GENERIC 2.4.8 001/MEM/T3///GENERIC 2.4.8//RO/SRO/11/27/07 RMS

Which ONE of the following describes the use of Event Based procedures during Symptom Based Emergency Operating Instructions (EOI) execution?

Event Based procedures are _____.

A. NOT used during Symptom Based EOI execution.

B. ALWAYS used if equipment or plant status require their implementation.

C. used ONLY if they do not interfere with EOI implementation.

D. used ONLY if specifically directed by an EOI flowchart step.

K/A Statement:
Emergency Procedures /Plan
2.4.8 Knowledge of how the event-based emergency/abnormal operating procedures are used in conjunction with the symptom-based EOPs

K/A Justification: This question satisfies the K/A statement by requiring the candidate to demonstrate knowledge of procedure hiearchy during execution of Emergency Operating Instructions.

References: EOIPM Section 0-VIII-A

Level of Knowledge Justification: This question is rated as MEM due to the requirement to recall or recognize discrete bits of information.

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REFERENCE PROVIDED: None

Plausibility Analysis:

In order to answer this question correctly the candidate must deterine the rules for using Event Based procedures during EOI execution.

A is incorrect. This is plausible based on the contradiction often found between Event based and Symptom based guidance. However, their use is permitted under controls circumstances.

B is incorrect. This is plausible because no specific Event Based procedure is expressly prohibited from use, however if a conflict exists between the Event based procedure and the EOI, the EOI takes precedence.

C is correct.

D is incorrect. This is plausible because several EOI steps direct actions in accordance with Event Based procedures, however it is not a prerequisite to their use.

I. EOI Flowchart Use With Other Plant Procedures

The EOIs are entered, based upon specific conditions symptomatic of emergencies, or conditions that could degrade into emergencies. Therefore the operator actions, provided within the EOIs, allow the operator to mitigate the consequences of a broad range of accidents and multiple equipment failures.

Other procedures, such as AOIs, ARPs, EPIPs, etc., have event specific entry conditions and may be used to supplement EOIs. In some instances the EOIs will direct the operators to the unit operating procedures (OIs, GOIs, and AOIs) for completion of specific tasks. Usually, the EOIs direct the operators to specific EOI Appendices. The Appendices are specific task related procedures written to satisfy directives given within the EOIs.

Actions that contradict any direction given by the EOIs, or reduce the effectiveness of any directions given by the EOIs, WILL NOT be implemented for any reason.

The exception to this rule are the SSIs and AOI-100-2. The conditions which cause entry into the SSIs are such that the reliability of the information systems required to execute the EOIs are no longer at a confidence level that would make the EOIs effective. Any time that the operators must leave the control room, as directed by AOI-100-2, the EOIs shall be exited and AOI-100-2 shall be used to shut down and cool down the reactor. The EOIs are not designed, or written, to support their use outside of the main control room.

Conditions may arise under Station Blackout (SBO) conditions in which the rate of RPV cooldown is reduced, or alternate Heat Capacity Temperature Limit or Pressure Suppression Pressure curves are appropriate to avoid an unnecessary emergency depressurization, in order to maintain RCIC injection capability. The TSC staff or an associated abnormal operating instruction may recommend use of these alternate curves, which have been calculated as part of EOIPM section 2- or 3-VI-F and -H. These alternate curves meet the assumptions used within the EOIs.

It is recognized that during execution of the EOIs the control room will receive assistance from various support groups. This is especially the case under conditions in the EPIPs that result in the Technical Support Center (TSC) being staffed. For example, the TSC may make recommendations regarding when it is best to vent primary containment, based upon present or predicted meteorological conditions. This would not contradict the directions provided by the EOIs, but help to meet the intent of minimizing radiological releases to the general public.

J. Execution of EOI Appendixes

The EOIs rely heavily upon the EOI Appendices to implement EPG and PSTG actions and tasks that are too involved to outline on the flowchart procedure. These tasks include the defeating of various interlocks and logic systems. The steps within the Appendices involve the removing of fuses, placing jumpers across terminals, and placing boots on relay contacts, as well as some of the more common functions such as opening and closing valves and operation of systems to support the EOI flowchart procedure steps.