

# Exam Question Layout

Exam Questions 1 - 50 Common Questions

Exam Questions 51 - 75 RO only Questions

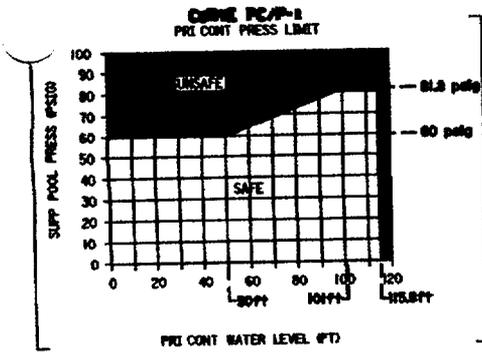
Exam Questions 51 - 75 SRO only Questions

Exam Questions 76 - 100 Common Questions

# RO QUESTION ATTACHMENTS

<u>ATTACHMENT TITLE</u>	<u>QUESTION No.</u>
ATTACHMENT T-102	11
ATTACHMENT Q20	20
ATTACHMENT Q27	27
ATTACHMENT Q32	32
ATTACHMENT T-102	54
ATTACHMENT Q70	70
ATTACHMENT Q89	89
Modified LGS Tech Specs Steam Tables	

# ATTACHMENT T-102



**CONTAINMENT LEVEL IN FEET**

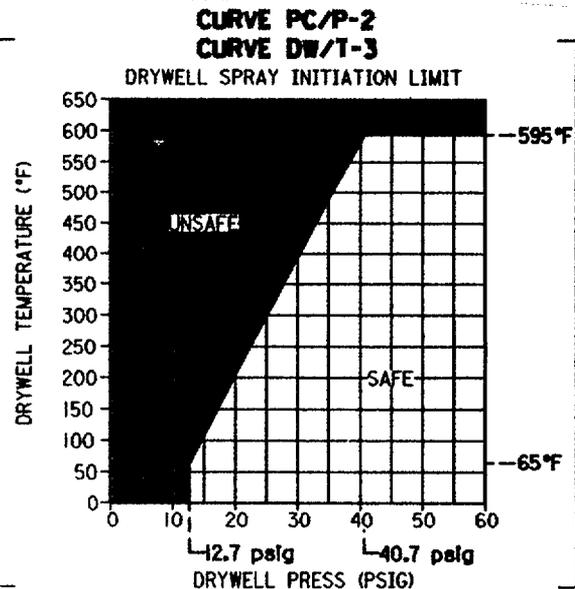
MINUS (-) \_\_\_\_\_ PSIG SUPP POOL PRESS ON PR57-401 (BLUE PEN)  
 EQUALS (=) \_\_\_\_\_ PSIG PRI CONT PRESS ON PR57-401 (RED PEN)  
 TIMES (x) 2.3 FT/PSIG  
 EQUALS (=) \_\_\_\_\_ FT  
 PLUS (+) 26.8 FT  
 EQUALS (=) \_\_\_\_\_ FT CONTAINMENT LEVEL

**TABLE PC/P-1**  
SUPP POOL/DW SPRAY SUCTION SOURCE

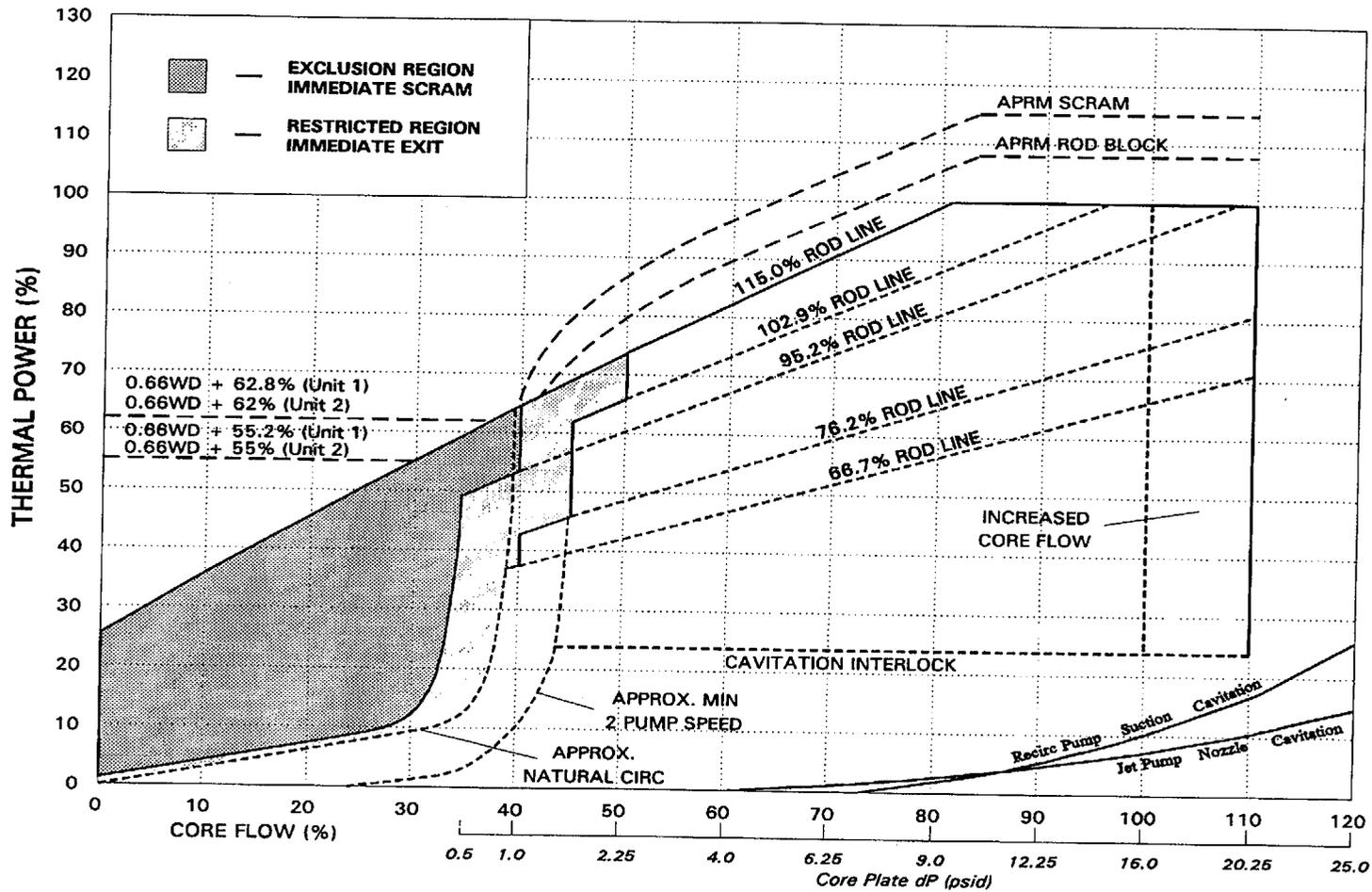
CONDITION	SUCTION SOURCE
On safe side of Curve PC/P-1	• Internal (Supp Pool preferred) • External (RHRSW DB Fire Water)
On unsafe side of Curve PC/P-1	Internal (Supp Pool) <u>ONLY</u>

Determine Supp Pool/DW spray suat source per Table PC/P-1

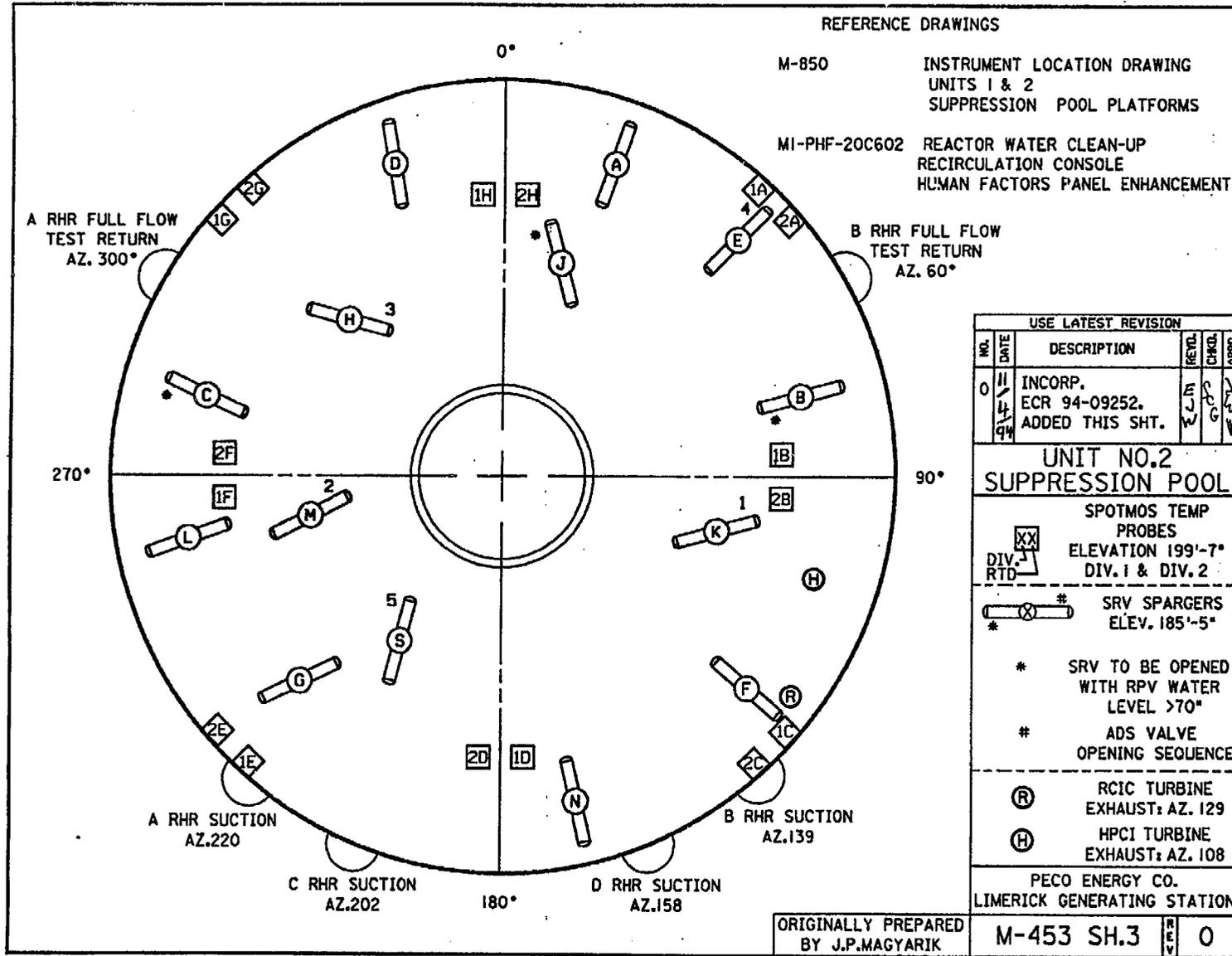
IF on safe side of Curve PC/P-2 AND Supp Pool level is below 38.7 ft, THEN spray DW per T-225 UNLESS required for core cooling



**FIGURE 1**  
**LGS POWER FLOW OPERATION MAP**

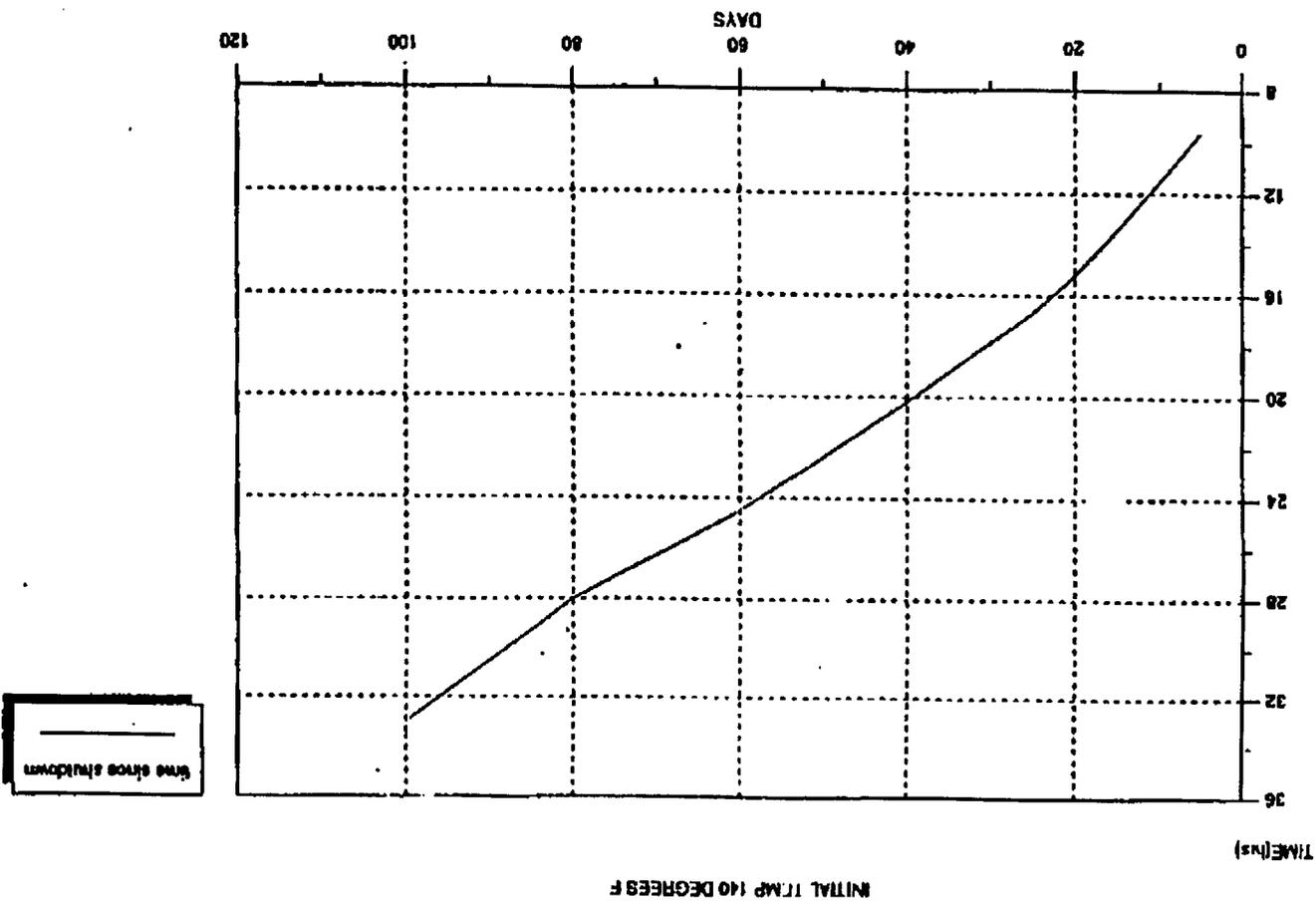


**ATTACHMENT Q20**



# ATTACHMENT Q27

# ATTACHMENT Q32

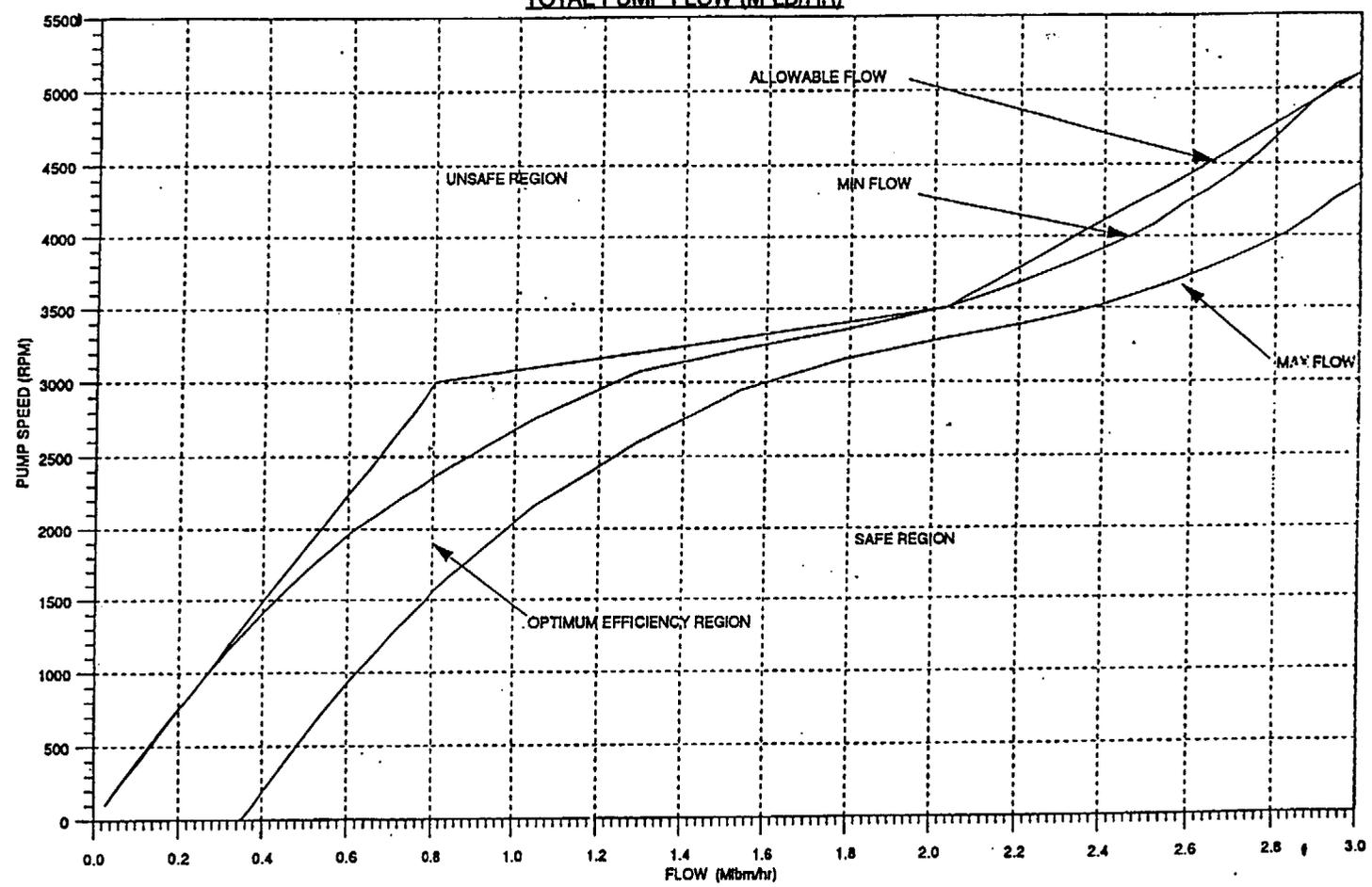


REACTOR WELL TIME TO BOILING

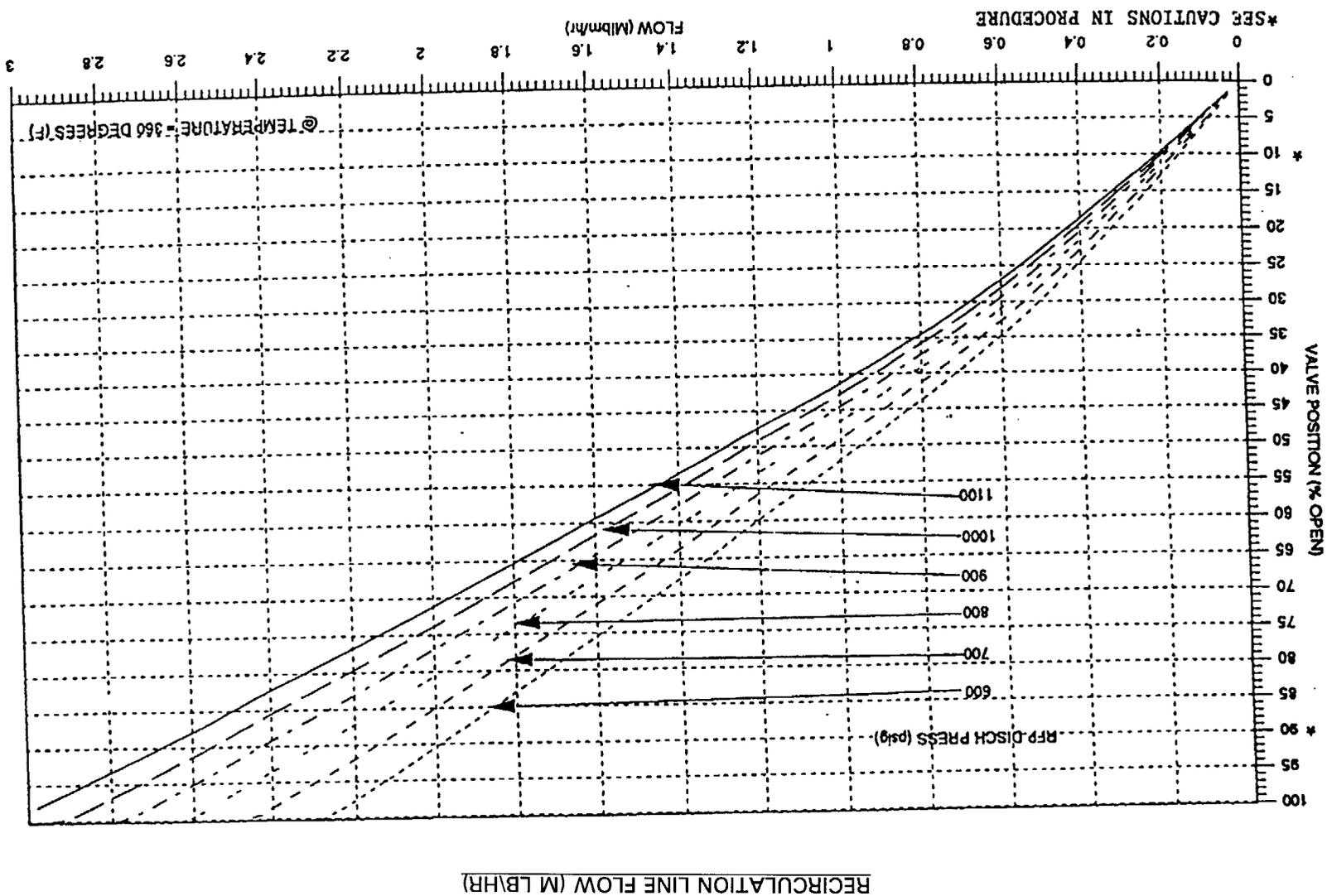
ATTACHMENT 1  
Page 1 of 1

TOTAL PUMP FLOW (M LB\HR)

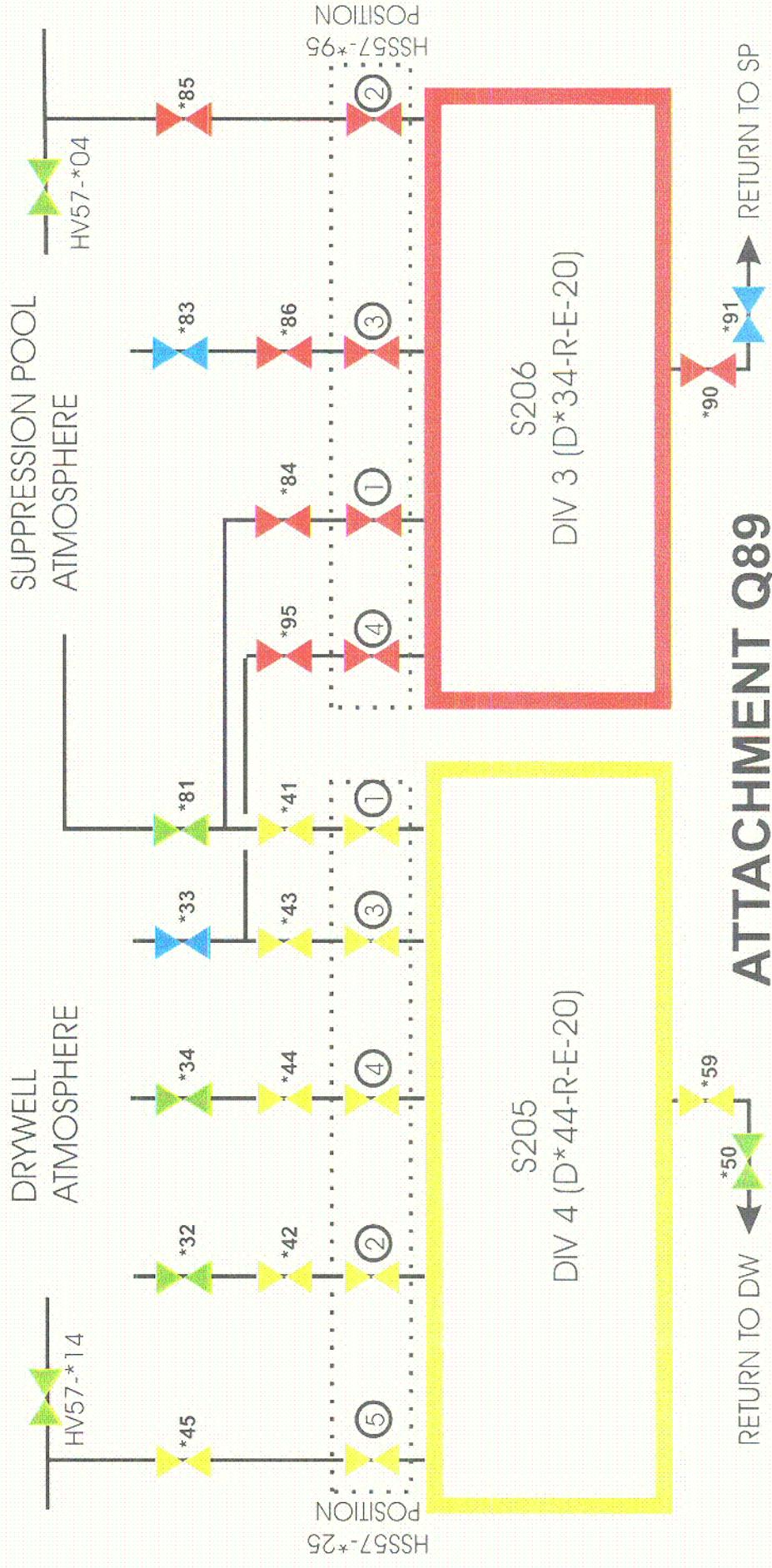
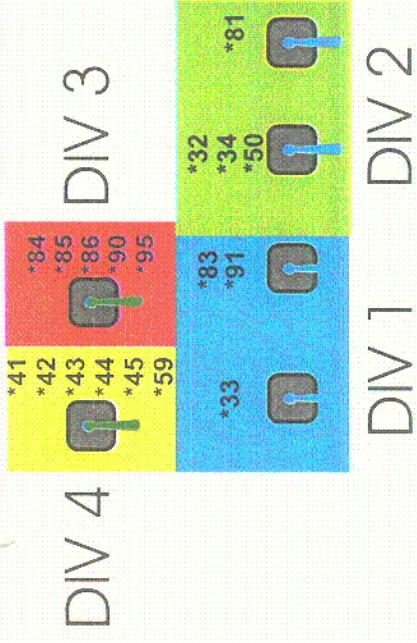
TOTAL PUMP FLOW (M LB\HR)



# ATTACHMENT Q70 (Sheet 2 of 2)



# H<sub>2</sub>O<sub>2</sub> ANALYZER PATHS

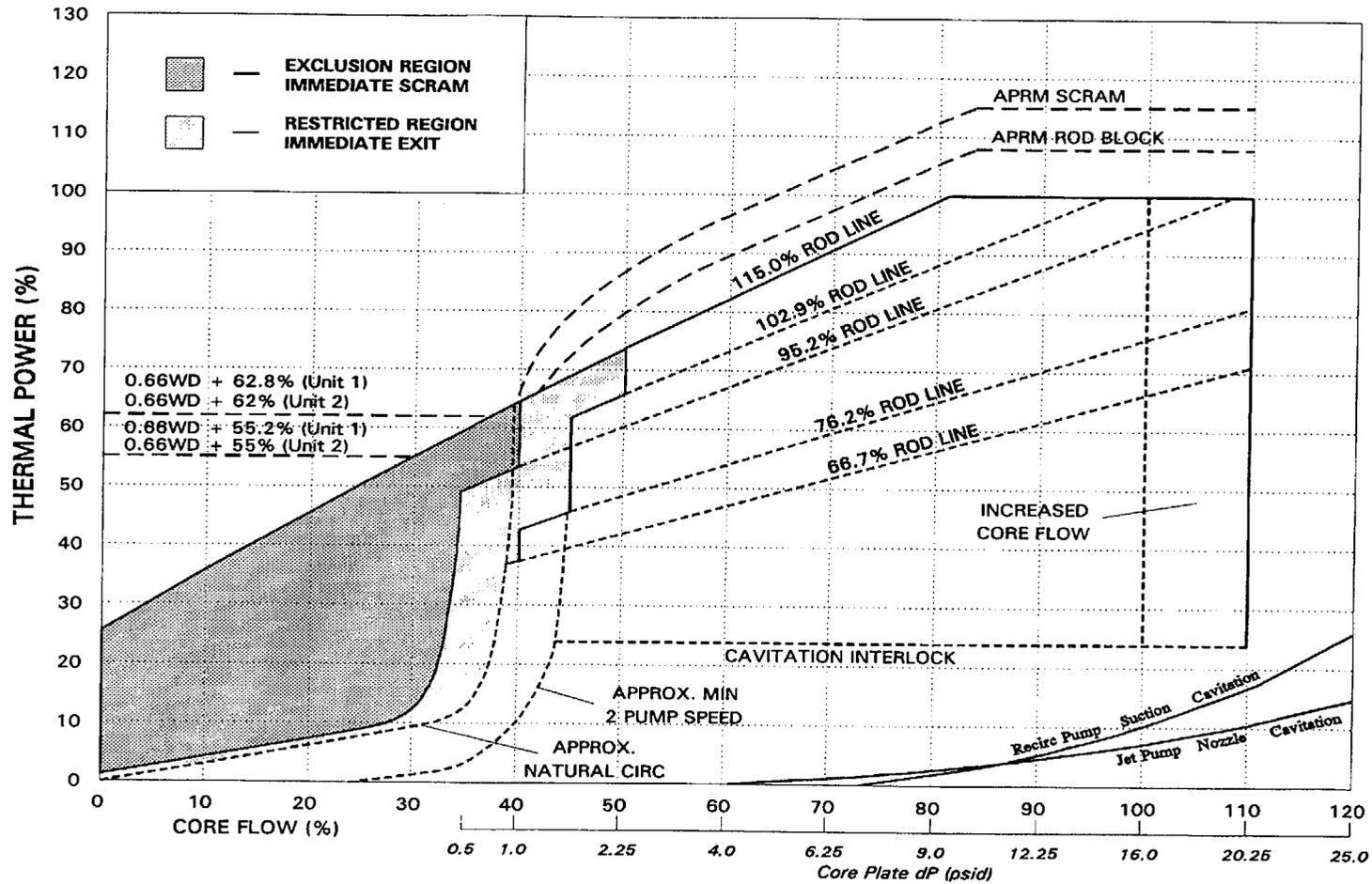


# SRO QUESTION ATTACHMENTS

<u>ATTACHMENT TITLE</u>	<u>QUESTION No.</u>
ATTACHMENT Q20	20
ATTACHMENT Q27	27
ATTACHMENT Q32	32
ATTACHMENT Q51	51
ATTACHMENT T-102	52
ATTACHMENT T-102	54
ATTACHMENT T-102	55
ATTACHMENT Q-56	56
ATTACHMENT T-102	57
ATTACHMENT T-102	60
ATTACHMENT Q61	61
ATTACHMENT Q89	89

Modified LGS Tech Specs  
Steam Tables

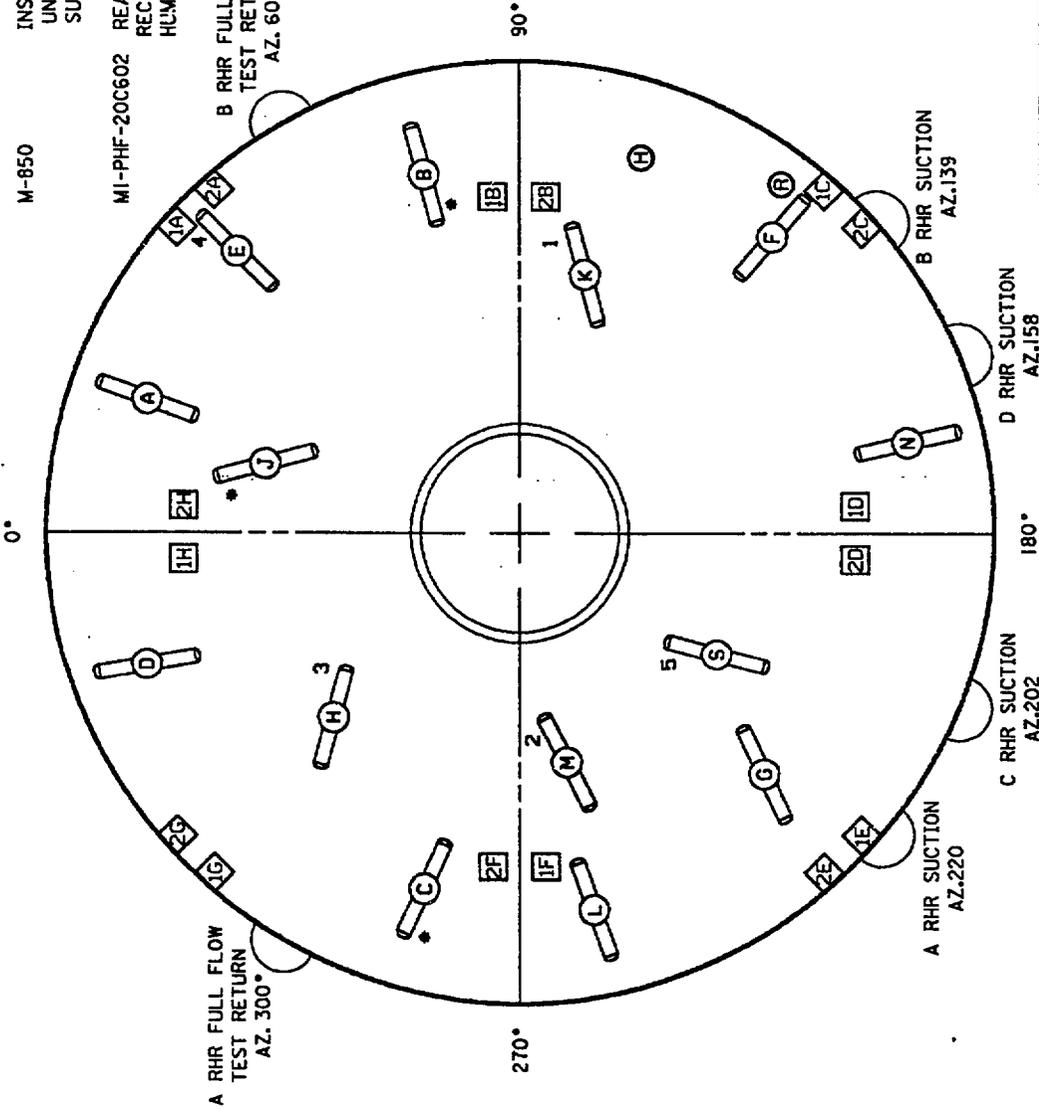
**FIGURE 1**  
**LGS POWER FLOW OPERATION MAP**



**ATTACHMENT Q20**

REFERENCE DRAWINGS

- M-850 INSTRUMENT LOCATION DRAWING UNITS 1 & 2 SUPPRESSION POOL PLATFORMS
- MI-PHF-20C602 REACTOR WATER CLEAN-UP RECIRCULATION CONSOLE HUMAN FACTORS PANEL ENHANCEMENT



USE LATEST REVISION		DESCRIPTION	DATE	BY
0	II	INCCORP. ECR 94-09252. ADDED THIS SHT.	8/2	JG
1	IV		8/6	W
2	IV		8/6	W

UNIT NO.2 SUPPRESSION POOL

SPOTMOS TEMP PROBES  
ELEVATION 199'-7"  
DIV. 1 & DIV. 2

SRV SPARGERS  
ELEV. 185'-5"

\* SRV TO BE OPENED WITH RPV WATER LEVEL >70\*

\* ADS VALVE OPENING SEQUENCE

(R) RCIC TURBINE EXHAUST: AZ. 129  
(H) HPCI TURBINE EXHAUST: AZ. 108

PECO ENERGY CO.  
LIMERICK GENERATING STATION

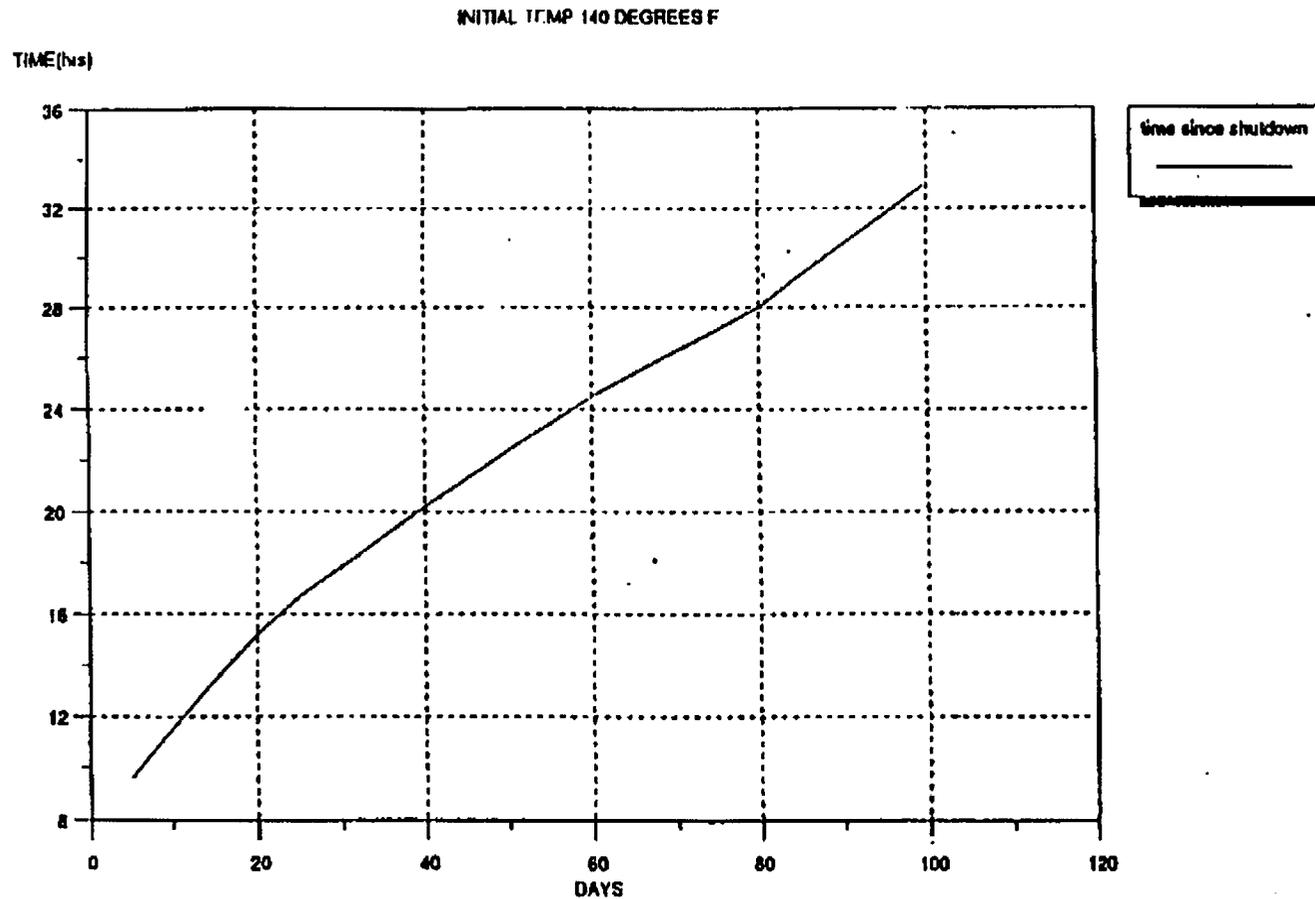
ORIGINALLY PREPARED BY J.P. MAGYARIK

M-453 SH.3 E O

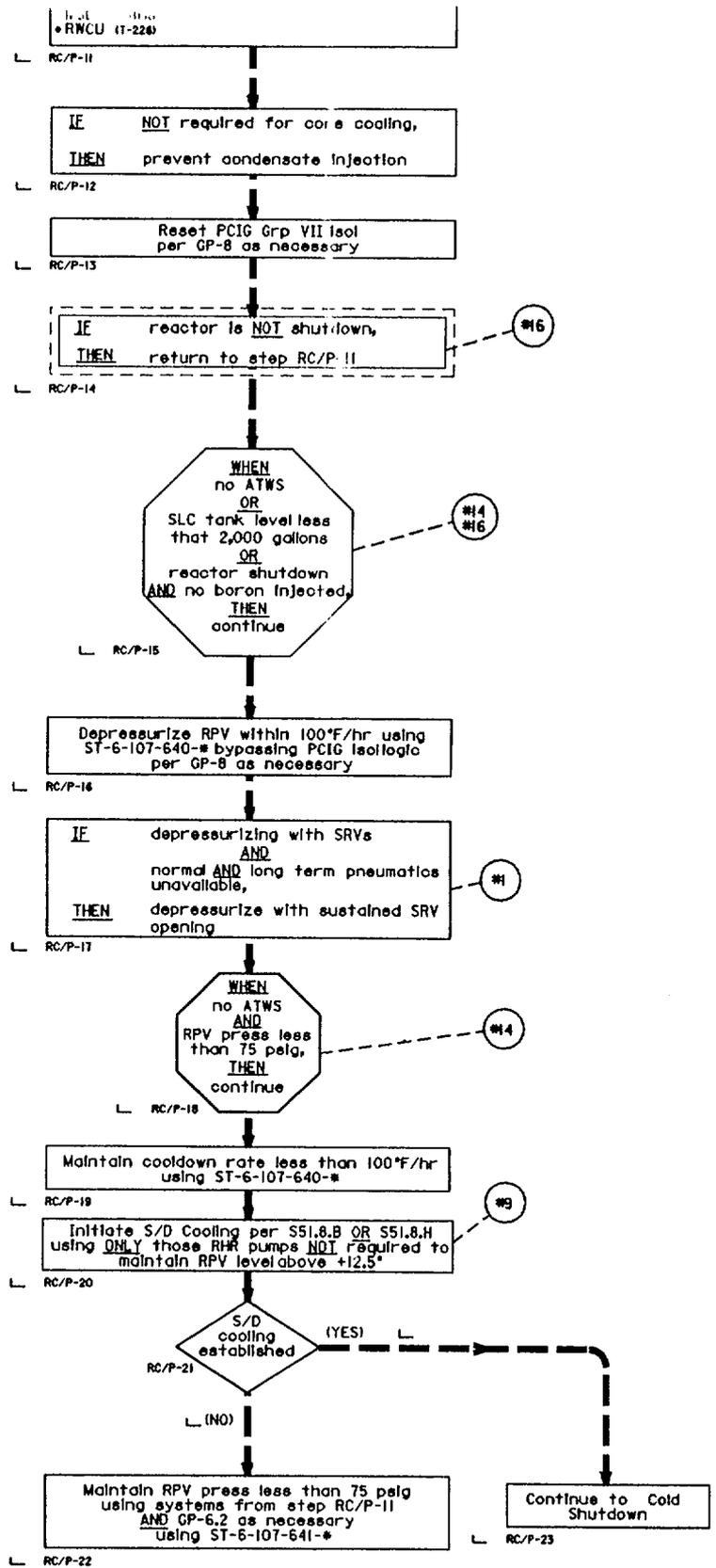
ATTACHMENT Q27

ATTACHMENT 1  
Page 1 of 1

REACTOR WELL TIME TO BOILING



**ATTACHMENT Q32**



ATTACHMENT Q51

# ATTACHMENT Q56

## 4.0 Secondary Containment Bypass

### 4.1 Main Steam Line

CLASSIFICATION	EMERGENCY ACTION LEVEL
UNUSUAL EVENT	<p>IC Fuel Clad Degradation</p> <p>4.1.1 Applicable Opcons: 1, 2, 3 Main Steam Line HiHi Radiation (3xNFPB)</p>
ALERT	<p>IC RCS Leak Rate</p> <p>4.1.2 Applicable Opcons: 1, 2, 3</p> <p>Indication of a Main Steam Line Break: Hi Steam Flow Annunciator <b>AND</b> Hi Steam Tunnel Temperature Annunciator <b>OR</b> Direct report of steam release</p>
SITE AREA EMERGENCY	<i>None</i>
GENERAL EMERGENCY	<i>None</i>

# ATTACHMENT Q56

## 5.0 Radioactivity Release

### 5.1 Effluent Release and Dose

CLASSIFICATION	EMERGENCY ACTION LEVEL
UNUSUAL EVENT	<p><b>IC</b> Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two Times the Radiological Technical Specifications for 60 Minutes or Longer</p> <p><b>5.1.1.a</b> Applicable Opcons: ALL A valid reading on one or more of the following radiation monitors that exceeds <b>TWO TIMES</b> the HiHi alarm setpoint value for <b>&gt; 60 minutes</b>: North Stack, South Stack, Radwaste Discharge, Service Water, RHRSW <b>AND</b> Calculated maximum offsite dose rate using computer dose model exceeds <b>0.114 mRem/hr TPARD OR 0.342 mRem/hr child thyroid CDE</b> based on a 60 minute average Note: If the required dose projections cannot be completed within the 60 minute period, then the declaration must be made based on the valid sustained monitor reading.</p> <p><b>5.1.1.b</b> Applicable Opcons: ALL Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates exceeding <b>TWO TIMES</b> Tech Specs (ODCM 3.2.2 and 3.2.3) for <b>&gt; 60 minutes</b></p>
ALERT	<p><b>IC</b> Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds 200 Times Radiological Technical Specifications for 15 Minutes or Longer</p> <p><b>5.1.2.a</b> Applicable Opcons: ALL A valid reading on one or more of the following radiation monitors that exceeds <b>TWO HUNDRED TIMES</b> the HiHi alarm setpoint value for <b>&gt; 15 minutes</b>: North Stack, South Stack, Radwaste Discharge, Service Water, RHRSW <b>AND</b> Calculated maximum offsite dose rate exceeds <b>11.4 mRem/hr TPARD OR 34.2 mRem/hr child thyroid CDE</b> based on a 15 minute average Note: If the required dose projections cannot be completed within the 15 minute period, then the declaration must be made based on the valid sustained monitor reading.</p> <p><b>5.1.2.b</b> Applicable Opcons: ALL Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates exceeding <b>TWO HUNDRED TIMES</b> Tech Specs (ODCM 3.2.2 and 3.2.3) for <b>&gt; 15 minutes</b></p>

# ATTACHMENT Q56

<p><b>SITE AREA EMERGENCY</b></p>	<p><b>IC</b> Boundary Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mR Whole Body or 500 mR Child Thyroid for the Actual or Projected Duration of the Release</p> <p><b>5.1.3</b> Applicable Opcons: ALL</p> <p>A valid reading on one or more of the following radiation monitors that exceeds or is expected to exceed the value shown for <b>&gt; 15 minutes AND</b> Dose Projections are not available:</p> <table style="margin-left: 40px; border: none;"> <tr> <td style="padding-right: 20px;">North Stack</td> <td>4.16E+6 <math>\mu</math>Ci/second</td> </tr> <tr> <td>South Stack</td> <td>2.25E-3 <math>\mu</math>Ci/cc</td> </tr> </table> <p>Note: If the required dose projections cannot be completed within the 15 minute period, then the declaration must be made based on the valid sustained monitor reading.</p> <p><b>OR</b> Projected offsite dose using computer dose model exceeds <b>100 mRem TPARD OR 500 mRem child thyroid CDE</b></p> <p><b>OR</b> Analysis of Field Survey results indicate site boundary whole body dose rate exceeds <b>100 mRem/hr</b> expected to continue for more than one hour, <b>OR</b> Analysis of Field Survey results indicate child thyroid dose commitment of <b>500 mRem</b> for one hour of inhalation</p>	North Stack	4.16E+6 $\mu$ Ci/second	South Stack	2.25E-3 $\mu$ Ci/cc
North Stack	4.16E+6 $\mu$ Ci/second				
South Stack	2.25E-3 $\mu$ Ci/cc				
<p><b>GENERAL EMERGENCY</b></p>	<p><b>IC</b> Boundary Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity that Exceeds 1000 mR Whole Body or 5000 mR Child Thyroid for the Actual or Projected Duration of the Release Using Actual Meteorology</p> <p><b>5.1.4</b> Applicable Opcons: ALL</p> <p>A valid reading on one or more of the following radiation monitors that exceeds or is expected to exceed the value shown for <b>&gt; 15 minutes AND</b> Dose Projections are not available:</p> <table style="margin-left: 40px; border: none;"> <tr> <td style="padding-right: 20px;">North Stack</td> <td>4.16E+7 <math>\mu</math>Ci/second</td> </tr> <tr> <td>South Stack</td> <td>2.25E-2 <math>\mu</math>Ci/cc</td> </tr> </table> <p>Note: If the required dose projections cannot be completed within the 15 minute period, then the declaration must be made based on the valid sustained monitor reading.</p> <p><b>OR</b> Projected offsite dose using computer dose model exceeds <b>1000 mRem TPARD OR 5000 mRem child thyroid CDE</b></p> <p><b>OR</b> Analysis of Field Survey results indicate site boundary whole body dose rate exceeds <b>1000 mRem/hr</b> expected to continue for more than one hour, <b>OR</b> Analysis of Field Survey results indicate child thyroid dose commitment of <b>5000 mRem</b> for one hour of inhalation</p> <p style="text-align: center;"><b>***PAR***</b></p> <p>Evacuate 2 mile radius, evacuate affected sector(s) and 2 adjacent sectors for 2-5 miles.</p>	North Stack	4.16E+7 $\mu$ Ci/second	South Stack	2.25E-2 $\mu$ Ci/cc
North Stack	4.16E+7 $\mu$ Ci/second				
South Stack	2.25E-2 $\mu$ Ci/cc				

**NOTE:** CDE = Committed Dose Equivalent, TPARD = Total Protective Action Recommendation Dose

# ATTACHMENT Q56

## 5.0 Radioactivity Release

### 5.2 In-Plant Radiation

CLASSIFICATION	EMERGENCY ACTION LEVEL
UNUSUAL EVENT	<p>IC Unexpected Increase in Plant Radiation or Airborne Concentration</p> <p><b>5.2.1</b> Applicable Opcons: ALL</p> <p>Valid Direct Area Radiation Monitor readings increase by a factor of 1000 over normal* levels</p> <p>* Normal levels can be considered as the highest reading in the past twenty-four hours excluding the current peak value.</p>
ALERT	<p>IC Release of Radioactive Material or Increases in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown</p> <p><b>5.2.2.a</b> Applicable Opcons: ALL</p> <p>Valid radiation level readings <b>&gt; 5000 mR/hr</b> in areas requiring infrequent access to maintain plant safety functions as identified in procedure SE-1, SE-6, or FSSG.</p> <p><b>AND</b></p> <p>Access is required for safe plant operation, but is impeded, due to radiation dose rates</p> <p><b>5.2.2.b</b> Applicable Opcons: ALL</p> <p>Valid Control Room <b>OR</b> Central Alarm Station radiation reading <b>&gt; 15 mR/hr</b></p>
SITE AREA EMERGENCY	<i>None</i>
GENERAL EMERGENCY	<i>None</i>

# ATTACHMENT Q56

## 6.0 Loss of Power

### 6.1 Loss of AC or DC Power

CLASSIFICATION	EMERGENCY ACTION LEVEL
UNUSUAL EVENT	<p><b>IC</b> Loss of All Offsite Power to Essential Busses for Greater Than 15 Minutes</p> <p><b>6.1.1.a</b> Applicable Opcons: ALL</p> <p>The following conditions exist:</p> <p>Loss of Power to 101 and 201 Safeguard Transformers for <b>&gt;15 minutes</b></p> <p><b>AND</b></p> <p>At least <b>Two</b> Diesel Generators are supplying power to their respective 4 KV emergency busses</p> <p><b>IC</b> Unplanned Loss of Required DC Power During Cold Shutdown or Refueling Mode for Greater than 15 Minutes</p> <p><b>6.1.1.b</b> Applicable Opcons: 4, 5</p> <p>The following conditions exist:</p> <p>Unplanned Loss of ALL safety related DC Power indicated by <b>&lt; 105 VDC</b> bus voltage indications for DC Panels 1(2)FA, B, C, D</p> <p><b>AND</b></p> <p>Failure to restore power to at least one required DC bus within <b>15 minutes</b> from the time of the loss</p>
ALERT	<p><b>IC</b> AC power capability to essential busses reduced to a single power source for greater than 15 minutes such that any additional single failure would result in station blackout</p> <p><b>6.1.2.a</b> Applicable Opcons: 1, 2, 3</p> <p>The following conditions exist:</p> <p>Loss of Power to 101 and 201 Safeguard Transformers for <b>&gt;15 minutes</b></p> <p><b>AND</b></p> <p>Only <b>One</b> 4 KV emergency bus powered from a Single Onsite Power Source due to the Loss of: Three of Four Division Diesel Generators, D/G Output Breakers, or 4 KV Emergency Busses as indicated by bus voltage</p> <p><b>IC</b> Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses During Cold Shutdown Or Refueling Mode</p> <p><b>6.1.2.b</b> Applicable Opcons: 4, 5, D</p> <p>The following conditions exist:</p> <p>Loss of Power to 101 and 201 Safeguard Transformers</p> <p><b>AND</b></p> <p>Failure to restore power to at least <b>One</b> 4 KV emergency bus <b>within 15 minutes</b> from the time of loss of both offsite and onsite AC power</p>

# ATTACHMENT Q56

<p><b>SITE AREA EMERGENCY</b></p>	<p><b>IC</b>    Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses</p> <p><b>6.1.3.a</b>    Applicable Opcons: 1, 2, 3  The following conditions exist:  Loss of Power to 101 and 201 Safeguard Transformers  <u><b>AND</b></u>  Failure to restore power to at least <b>One</b> 4 KV emergency bus <b>within 15 minutes</b> from the time of loss of both offsite and onsite AC</p> <p><b>IC</b>    Loss of All Vital DC Power</p> <p><b>6.1.3.b</b>    Applicable Opcons: 1, 2, 3  Loss of ALL Safety Related DC Power indicated by <b>&lt; 105 VDC</b> on DC Panels 1(2)FA, B, C, D for <b>&gt; 15 minutes</b></p>
<p><b>GENERAL EMERGENCY</b></p>	<p><b>IC</b>    Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power</p> <p><b>6.1.4</b>    Applicable Opcons: 1, 2, 3  Prolonged loss of all offsite and onsite AC power as indicated by:  Loss of Power to 101 and 201 Safeguard Transformers  <u><b>AND</b></u>  Failure of ALL Emergency Diesel Generators to supply power to 4 KV emergency busses  <u><b>AND</b></u>  At least one of the following conditions exist:</p> <ul style="list-style-type: none"> <li>• Restoration of at least <b>One</b> emergency bus within <b>2 hours</b> is <b>NOT</b> likely</li> </ul> <p style="text-align: center;"><u><b>OR</b></u></p> <ul style="list-style-type: none"> <li>• Reactor Water Level cannot be maintained <b>&gt; -161 "</b></li> </ul> <p style="text-align: center;"><u><b>OR</b></u></p> <ul style="list-style-type: none"> <li>• Suppression Pool temperature is on the <b>"UNSAFE"</b> side of the Heat Capacity Temperature Limit (HCTL) curve (T-102, SP/T-1)</li> </ul> <p style="text-align: center;"><b>***PAR***</b></p> <p>Evacuate 2 mile radius, evacuate affected sector(s) and 2 adjacent sectors for 2-5 miles.</p>

**TABLE SCC-1**  
Max Norm Op (MNO) Values

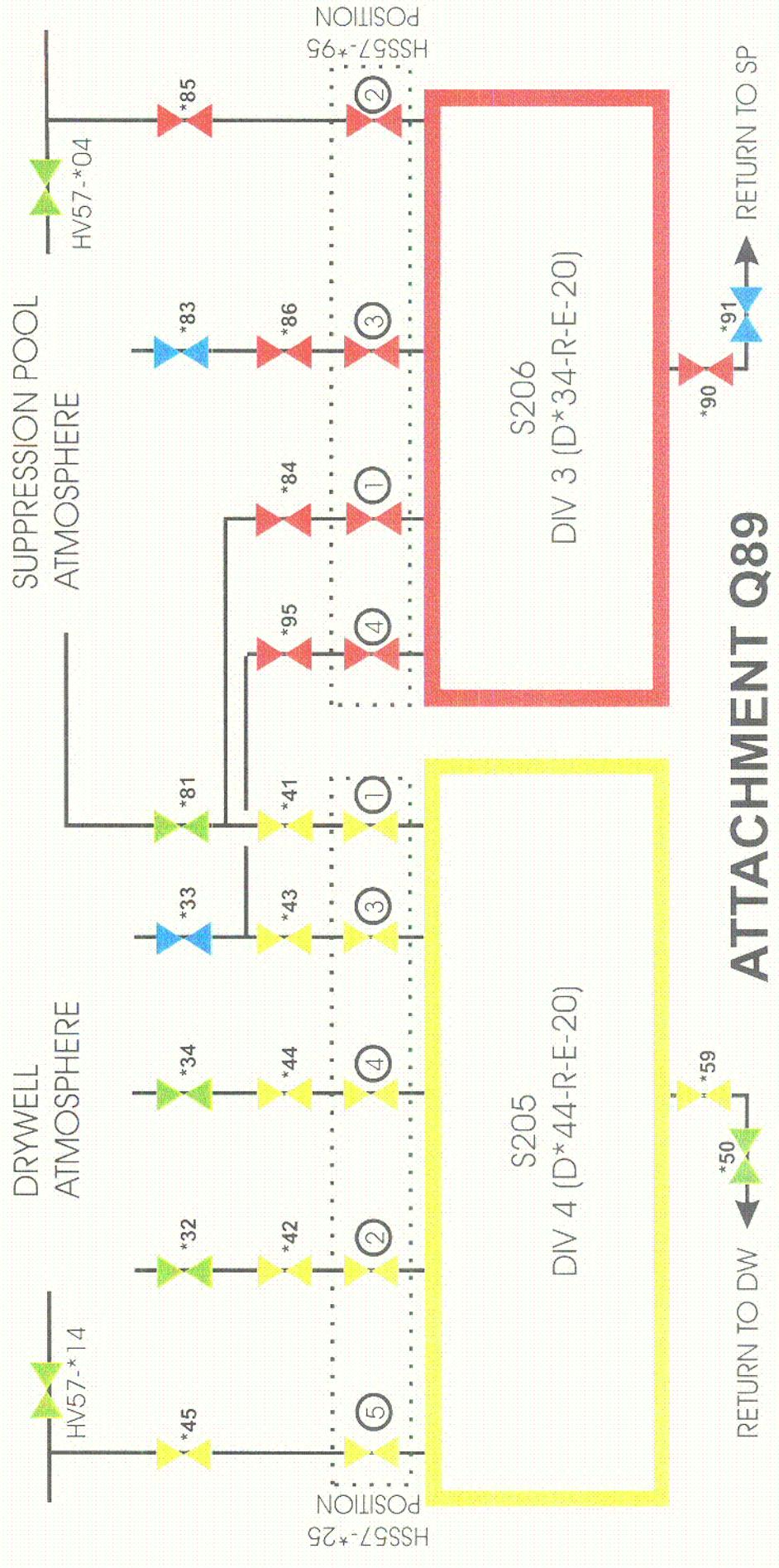
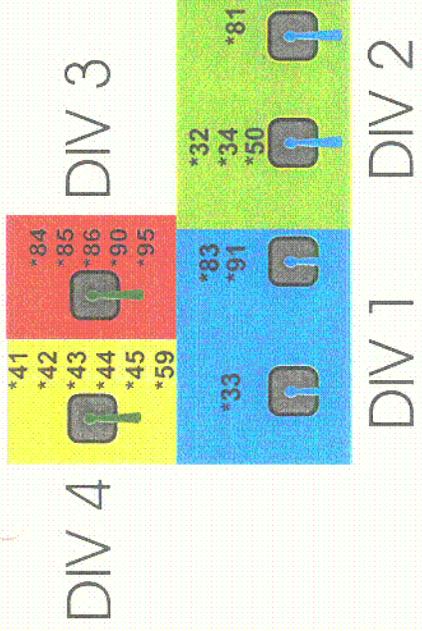
AREA	MAX NORM OP VALUE		
	TEMP(*F)	RAD(mr/hr)	WATER LEVEL (IN.)
HPCI	120	HI Alarm	3.25
RCIC	114	HI Alarm	3.25
A & C RHR	114	HI Alarm	3.25
B & D RHR	114	HI Alarm	3.25
A & C Core Spray	114	-----	3.25
B & D Core Spray	114	-----	3.25
HPCI/RCIC Pipeway Rm 309/376	120	HI Alarm	3.25
Safeguard sys Access Rm 304/370	-----	HI Alarm	U1:3.00 U2:3.25
RWCU regen htx room	114	HI Alarm	-----
A & B nonregen htx room	110	HI Alarm	-----
A,B,& C RWCU pump room	114	HI Alarm	-----
Isolation valve compartment Rm 510 & 522/ 589 & 589M	114	-----	-----
Outboard MSIV room	143	1.5 x NFPB	-----

**TABLE SCC-2**  
Max Safe Op (MSO) Values

AREA	MAX SAFE OP VALUE			
	TEMP(*F)	RAD(mr/hr)	WATER LEVEL (IN.)	
			UNIT 1	UNIT 2
HPCI	176	10,000	15	40
RCIC	155	10,000	42	40
A & C RHR	140	10,000	18	18
B & D RHR	140	10,000	18	18
A & C Core Spray	140	-----	(A) 12 (C) 19	(A) 12 (C) 17
B & D Core Spray	140	-----	(B) 12 (D) 19	(B) 12 (D) 19
HPCI/RCIC Pipeway Rm 309/376	145	10,000	17	18
Safeguard sys Access Rm 304/370	-----	10,000	11	11
RWCU regen htx room	135	10,000	-----	-----
A & B nonregen htx room	135	10,000	-----	-----
A,B,& C RWCU pump room	135	10,000	-----	-----
Isolation valve compartment Rm 510 & 522/ 589 & 589M	135	-----	-----	-----
Outboard MSIV room	145	3 X NFPB	-----	-----

# ATTACHMENT Q61

# H<sub>2</sub>O<sub>2</sub> ANALYZER PATHS



ATTACHMENT

T - 102

BELOWGS HERE

OVER SIZE CHART

1) \*PV:1.0 Q#:1 RT:0.0 DF:1 LP:LOT0330.08 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- A reactor SCRAM has occurred
- Division 1 DC is deenergized
- All MSIVs are closed
- RPV pressure is 1096 psig and rising slowly

WHICH ONE of the following describes the available method for manual control of RPV pressure?

- a. ADS SRVs individually from the MCR
- b. Non-ADS SRVs individually from the MCR
- c. ADS SRVs individually from the Aux. Equipment Room
- d. Non-ADS SRVs individually from the Remote Shutdown Panel

CORRECT RESPONSE :C

REFERENCE:

E-1FA

A and B incorrect - All MCR SRV handswitches need Div 1 DC to operate

C correct - ADS SRV handswitches in AER use Div 3 DC

D incorrect - Remote Shutdown Panel SRV handswitches need Div 1 DC to operate

2) PV:1.0 Q#:2 RT:0.0 DF:2 LP:LOT0040.03 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- Reactor power 75% following a trip of "1A" Reactor Feed Pump and Recirc Runback
- "1A" Condensate Pump was shut down due to excess vibration following the power reduction
- RPV level is 35 inches

The Operator has depressed "1B" runback reset HI LIMIT pushbutton.

WHICH ONE of the following describes the expected status of the "1A" and "1B" Recirc Pump Hi Limit Runback lamps 10 seconds later

	<u>"1A" Hi Limit Lamp</u>	<u>"1B Hi Limit Lamp</u>
a.	LIT	LIT
b.	LIT	NOT LIT
c.	NOT LIT	LIT
d.	NOT LIT	NOT LIT

CORRECT RESPONSE :B  
REFERENCE:

- a. Incorrect, 1A and 1B P.B. must be pressed to reset both runbacks
- b. Correct, The runback conditions are clear and 1B will reset
- c. Incorrect, 1B runback will reset
- d. Incorrect, 1B runback will reset

3) PV:1.0 Q#:3 RT:0.0 DF:1 LP:LOT0550.7A CT:01, C, W, N

Unit 1 plant conditions are as follows:

- Reactor shutdown is in progress
- Reactor power 25%
- Reactor level 35 inches
- Per direction in GP-3, NORMAL PLANT SHUTDOWN, the feedwater master level controller is taken to SINGLE element

WHICH ONE of the following describes the reason for using SINGLE element control?

- a. Ensures inaccurate steam flow/feed flow signals do not effect reactor level
- b. Ensures only one steam flow/feed flow signal is sent to FWLC for accurate control of RPV level
- c. Ensures only "C" Narrow Range instrument inputs to the startup level control valve LV-C-138A
- d. Ensures only "D" Narrow Range instrument inputs to the startup level control valve LV-C-120

CORRECT RESPONSE :A

REFERENCE:

a. Correct

b

c,d Incorrect - these instruments always control the associated valves and are independent of switch position.

At low powers <25% Steam Flow/Feed Flow signals may be inaccurate. Level control using single element is a more accurate method of level control.

4) \*PV:1.0 Q#:4 RT:0.0 DF:2 LP:LOT0670.02 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- D21 Diesel Generator (DG) operability test is being performed
- DG load is 2850 kw and 2250 KVAR
- DG frequency is 60.0 Hz
- 201-D21 Breaker is closed

WHICH ONE of the following describes the required actions?

- a. Place SPEED control to RAISE to raise KW load
- b. Place SPEED control to LOWER to raise bus voltage
- c. Place VOLTAGE control to RAISE to raise KVAR load
- d. Place VOLTAGE control to LOWER to raise power factor

CORRECT RESPONSE :D

REFERENCE:

S92.1.0

a is incorrect - RAISE will increase load above 2850 rated

b is incorrect - speed control will not affect the bus voltage in parallel

c is incorrect - KVAR load is already above the limit

d is correct - KVAR loads needs to be reduced to below 75% of KW to meet 0.8 pf limit

5) \*PV:1.0 Q#:5 RT:0.0 DF:1 LP:LOT0200.05 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- Reactor Enclosure and Refuel HVAC were in a normal alignment
- Both seals have failed on the "2A" reactor recirculation pump
- The pump suction isolation valve HV-43-2F023 cannot be closed
- Drywell pressure is 1.8 psig and rising slowly
- Reactor SCRAMMED with RPV pressure 900 psig

WHICH ONE of the following describes the expected status of Refuel Floor and Reactor Enclosure HVAC systems?

	<u>REFUEL FLOOR</u>	<u>REACTOR ENCLOSURE</u>
a.	ISOLATED	ISOLATED
b.	OPERATING	ISOLATED
c.	ISOLATED	OPERATING
d.	OPERATING	OPERATING

CORRECT RESPONSE :B  
REFERENCE:

- a. incorrect - High Drywell pressure is not a refuel floor isolation
- b. correct - only RE HVAC will be isolated
- c. incorrect - 1.68 psig in Drywell will provide a RE HVAC isolation signal, but not a Refuel Floor HVAC isolation signal.
- d. incorrect - RE HVAC will isolate

6) PV:1.0 Q#:6 RT:0.0 DF:2 LP:LOT0315.06 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- ATWS in progress with reactor power stable at 30%
- RPV water level +35 inches

The main turbine trips and all bypass valves fail to respond. RPV pressure rises until SRVs automatically open.

WHICH ONE of the following describes the expected status of RPV water level and feedwater control one minute later (consider only automatic actions)?

- a. Rising above +35 inches with all feed pumps in manual
- b. Stable at +17.5 inches and being maintained automatically
- c. Stable at +35 inches and being maintained automatically
- d. Dropping below +35 inches with all feed pumps in manual

CORRECT RESPONSE :D

REFERENCE:

- a is incorrect - pressure transient causes level drop
- b is incorrect - pressure transient causes level drop
- c is incorrect - RFPs will be in manual and level will be dropping
- d is correct - RPV pressure will trigger RFP runback from RRCS

7) PV:1.0 Q#:7 RT:0.0 DF:2 LP:LOT0550.10 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- Reactor power 90%
- Feedwater control is in 3-element control

RPV water level has risen and stabilized at +40 inches without operator action.

WHICH ONE of the following describes the potential cause of the rise in RPV level?

- a. "A" Narrow Range level instrument is indicating higher than actual
- b. "B" Main Steam Line flow instrument is indicating higher than actual
- c. "C" Feed Pump flow instrument is indicating higher than actual
- d. "D" Narrow Range level indicator is indicating higher than actual

CORRECT RESPONSE :B

REFERENCE:

- a. Incorrect - Level would drop
- b. Correct
- c. Incorrect - Level would drop
- d. Incorrect - Provides input to LV-C-120, which is used only at low power

8) \*PV:1.0 Q#:8 RT:0.0 DF:2 LP:LOT0550.5A CT:01, C, W, N

Unit 2 plant conditions are as follows:

- Feedwater control is in startup level control per S06.1.D, POST SCRAM LEVEL CONTROL following an automatic reactor scram
- "2A" RFP is in operation with the Motor Gear Unit in MANUAL
- The Master Level Controller is in MANUAL with the indicated setpoint 40 inches
- LV-C-238A, STARTUP LVL CNTRL is in AUTO and controlling RPV level at +25 inches and steady

With the SETPOINT SETDOWN lamp lit on 20C603, the Operator depresses the SETPOINT SETDOWN RESET pushbutton.

WHICH ONE of the following describes the status of RPV level 1 minute later?

- a. Steady at +25 inches
- b. Rising toward a new setpoint of +35 inches
- c. Rising toward a new setpoint of +40 inches
- d. Lowering toward a new setpoint of +17.5 inches

CORRECT RESPONSE :A

REFERENCE:

A - correct: Setpoint setdown reset effects the master level controller, not the startup level controller

B,C,D: Incorrect: +35"-Normal band in auto

+40"- Current auto setpoint, but not in effect in the current mode

+17.5"- Setpoint setdown control level, but not in effect on SU LVL controller

\*

9) \*PV:1.0 Q#:9 RT:0.0 DF:1 LP:LOT1540.05 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- Reactor power has dropped from 100% to 95% and stabilized with no operator actions

WHICH ONE of the following is likely to have caused the drop in power?

- a. 2A SLC pump is injecting
- b. HiHi Level on #2C Feedwater Heater
- c. Main Turbine Control Valves are closing
- d. A control rod has drifted in

CORRECT RESPONSE :D

REFERENCE:

- a. Incorrect - SLC injection would cause a continued power drop
- b. Incorrect - A feedwater heater isolation would cause a positive delta k/k
- c. Incorrect - Positive delta k/k
- d. Correct - Step decrease in delta k/k

10) \*PV:1.0 Q#:10 RT:0.0 DF:1 LP:LOT0730.10 CT:01, C, W, N

WHICH ONE of the following describes the status of instrument air headers and service air compressor output after instrument air header pressure has dropped to below 65 psig (Instrument Air lineup was in a normal configuration prior to the loss of Instrument Air)?

- a. One instrument air header is pressurized from service air and service air compressor output is directed to instrument air loads only
- b. One instrument air header is pressurized from service air and service air compressor output is directed to both service air and instrument air loads
- c. Both instrument air headers are pressurized from service air, and service air compressor output is directed to instrument loads only
- d. Both instrument air headers are pressurized from service air, and service air compressor output is directed to both service air and instrument air loads

CORRECT RESPONSE :A  
REFERENCE:

- a. Correct
- b. Incorrect - Service air isolation valve directs all output to instrument air
- c. Incorrect - Service air is only aligned to one instrument air header
- d. Incorrect - Service air is only aligned to one instrument air header and all service air output is directed to instrument air

11) \*PV:1.0 Q#:11 RT:0.0 DF:2 LP:LOT1560.04 CT:01, C, W, N

\*\*\*ATTACHMENT T-102 is provided\*\*\*

Unit 1 plant conditions are as follows:

- LOCA is in progress
- Drywell pressure 18 psig
- Drywell temperature 350°F
- Suppression pool level 23.5 ft

Drywell spray has been initiated under the conditions above.

WHICH ONE of the following describes the response of Primary Containment pressure and the reason for the expected change?

Drywell pressure will initially drop:

- a. Slowly due to convective cooling
- b. Rapidly due to convective cooling
- c. Slowly due to evaporative cooling
- d. Rapidly due to evaporative cooling

CORRECT RESPONSE :D  
REFERENCE:

d is correct - Drywell parameters place containment on unsafe side of DW spray initiation limit curve. DW atmosphere is superheated. If sprays are initiated, a phase change of the sprayed water droplets will result in removing a large amount of heat and mass transfer. This cooling process results in an immediate, rapid, and large reduction in DW pressure.

a, b, c are incorrect - Spraying in a superheated environment will result in evaporative cooling occurring

12) \*PV:1.0 Q#:12 RT:0.0 DF:1 LP:LOT0750.05 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- OPCON 5
- Fuel shuffle part 1 is in progress
- "2A" RHR loop is in shutdown cooling
- Two fuel pool cooling pumps are in service

A rupture on the "A" RHR pump discharge piping causes spent fuel pool/reactor cavity level to slowly lower.

WHICH ONE of the following would be the first MCR indication of this problem?

- a. "A" RHR pump trip
- b. RPV HI/LO LEVEL Alarm
- c. FUEL POOL COOLING PUMP TROUBLE alarm
- d. Group IIA Shutdown Cooling isolation signal

CORRECT RESPONSE :C

REFERENCE:

c is correct - as spent fuel pool level drops, weirs are uncovered, no more water to skimmer surge tank, fuel pool cooling pumps trip on low SST level before water level drops into the vessel.

a is incorrect - RHR pump trip will not occur until 12.5"

b is incorrect - RPV Alarm will occur at 30"

d is incorrect - Group IIA isolation won't occur until +12.5"

13) PV:1.0 Q#:13 RT:0.0 DF:2 LP:LOT0760.07 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- OPCON 5
- Control rod stroke timing is in progress in the MCR
- A fuel bundle is being moved from one spent fuel pool location to another
- The refueling platform "HOIST LOADED" light is lit

A failure of both refueling platform track switches occurs, providing input to the Rod Drive Control System that the refuel platform is over the core.

WHICH ONE of the following describes the ability of the Rod Drive Control System to move control rods?

	<u>Can Insert Rods</u>	<u>Can Withdraw Rods</u>
a.	Yes	No
b.	Yes	Yes
c.	No	No
d.	No	Yes

CORRECT RESPONSE :A  
REFERENCE:

a is correct - with bridge seen as over core, with a hoist loaded, RDCS generates a rod withdrawal block, insert is still permitted

b and d are incorrect - rod withdrawal not permitted

c is incorrect - rod insertion is permitted

14) \*PV:1.0 Q#:14 RT:0.0 DF:2 LP:LOT0590 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- 1AY160 has been lost due to an electrical fault
- Reactor high level resulted in a main turbine trip and reactor SCRAM
- Reactor level is +64 inches and stable
- Main turbine speed is 1400 RPM and lowering

WHICH ONE of the following can be used for long term pressure control under the conditions listed above?

- a. SRV using the MCR hand switches
- b. BPV using pressure set
- c. HPCI in full flow test
- d. BPV using jack

CORRECT RESPONSE :A  
REFERENCE:

Reference: 1AY160

a is correct - with loss of 1AY160 and turbine speed approximately 1650 cpm, EHC logic loses power. With no power to EHC logic, BPV cannot be operated. HPCI cannot run with RPV level >54".

15) \*PV:1.0 Q#:15 RT:0.0 DF:2 LP:LOT0590.04 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- Reactor power 100%
- "A" EHC pressure regulator is in service
- "A" EHC pressure transmitter fails upscale

WHICH ONE of the following describes plant response to the above event?

- a. "A" Pressure Regulator will remain in control but maintain a 3 psi higher chest pressure
- b. "A" Pressure Regulator will remain in control, control valves/BPV will open to the maximum allowed by load set, load limit, and max combined flow
- c. "B" Pressure Regulator will take control and maintain a 3 psi higher chest pressure
- d. "B" Pressure Regulator will take control, control valves/BPV will open to the maximum allowed by load set, load limit and max combined flow

CORRECT RESPONSE :B

REFERENCE:

b is correct - with "A" pressure transmitter failure, high pressure signal is passed to to high valve gate. The gate sends the high pressure signal to the pressure/gain unit. The signal is passed to a low valve gate which will limit turbine load to 103# (control valves). The remaining signal will be limited by maximum combined flow and will open BPV 12%.

c, d are incorrect - because the "B" pressure regulator will not be in control (controls on a down-scale transmitter failure)

a is incorrect - because the regulator will respond per answer b description

16) \*PV:1.0 Q#:16 RT:0.0 DF:1 LP:LOT0200.05 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- Fuel pool cleanout in progress using a portable vacuum
- Refuel floor secondary containment integrity is set
- Unit 1 refuel floor HVAC is in service

The vacuum cleaner filter breaks open during movement, resulting in a refuel floor high airborne contamination condition and 3.0 mR/hr on all Unit 1 Refuel Floor Exhaust rad monitors.

WHICH ONE of the following monitoring points is expected to show a valid measure of the offsite release 5 minutes later?

- a. Unit 2 Refuel Floor Exhaust rad monitors
- b. Unit 1 Refuel Floor Exhaust rad monitors
- c. North Stack Wide Range Accident monitor
- d. Unit 2 South Stack monitor

CORRECT RESPONSE :C  
REFERENCE:

- a. Incorrect - no flow during isolation, SGTS draws from Unit 1 supply
- b. Incorrect - no flow during isolation, SGTS draws from Unit 1 supply
- c. Correct - SGTS discharges to common North Stack
- d. Incorrect - Refuel Floor HVAC is isolated, not discharging to South Stack

17) \*PV:1.0 Q#:17 RT:0.0 DF:2 LP:LOT0300.02 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- Division 2 DC is de-energized
- 1B RPS UPS is supplied from SECONDARY ALTERNATE

A loss of the 12 AUX bus occurs due to an electrical fault.

WHICH ONE of the following describes the resulting source of power to "1B" RPS distribution panel 1BY160, if any, with no operator action taken?

- a. 1B APRM Inverter (1BD185)
- b. TSC Inverter (144D-C-F)
- c. 480V Non Safeguard MCC 114A-G-F
- d. No source, 1BY160 is deenergized

CORRECT RESPONSE :D

REFERENCE:

- a. Incorrect - 1B APRM inverter will also lose power
- b. Incorrect - Transfer of RPS to TSC Inverter is manual
- c. Incorrect - 114A-G-F is backup to 1AY160
- d. Correct

18) \*PV:1.0 Q#:18 RT:0.0 DF:2 LP:LOT0510.07 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- PIC-07-241B RECIRC TO COND is inoperable
- PIC-07-241A RECIRC TO COND is in service and has been spiking upscale
- A Troubleshooting, Rework, and Testing, (TRT) was written to troubleshoot PIC-07-241A
- As directed by TRT, the PRO reduced the setpoint of PIC-07-241A to 0% in AUTO

WHICH ONE of the following describes the long-term effect of this action on main condenser vacuum and main generator output?

	<u>Main Condenser Vacuum</u>	<u>Main Generator Output</u>
a.	Increase (more Vacuum)	Increase
b.	Increase (more Vacuum)	Decrease
c.	Decrease (less Vacuum)	Increase
d.	Decrease (less Vacuum)	Decrease

CORRECT RESPONSE :D  
REFERENCE:

d is correct Vacuum descreases due to recirculation of non-condensibles back to the condenser. Main generator output decreases due to the reduced delta P across the turbine, resulting in a decrease in torque, and therefore, a decrease in output.

19) \*PV:1.0 Q#:19 RT:0.0 DF:1 LP:LOT0200.03 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- Reactor Enclosure (RE) Secondary Containment integrity is established
- "2A" and "2C" RE supply and exhaust fans are running
- A loss of 480V load center 124A occurs, de-energizing 2A RE exhaust fan

WHICH ONE of the following describes the resulting status of Reactor Enclosure Supply and Exhaust Fans one minute later?

<u>Supply Fans</u>	<u>Exhaust Fans</u>
a. 2A, 2C running	2B, 2C running
b. 2A, 2B running	2B, 2C running
c. 2C running	2C running
d. Tripped	2C running

CORRECT RESPONSE :A  
REFERENCE:

a is correct - the standby fan (2B) will start

b is incorrect - 2B supply will not auto start unless 2A or 2C trips

c is incorrect - supply fans will not trip if exhaust swap works

d is incorrect - supply fans will not trip if exhaust swap works

20) \*PV:1.0 Q#:20 RT:0.0 DF:2 LP:LOT0040.07 CT:01, C, W, N

\*\*\*ATTACHMENT Q20 is provided\*\*\*

Unit 1 plant conditions are as follows:

- Reactor Power is 70%
- The plant is operating on the 95.2% rod line on the Power-Flow map
- 2 reactor recirculation pumps are running with total core flow approximately  $64 \times 10^6$  lbm/hr.

An inadvertent low speed recirc MG runback signal occurs for each reactor recirculation pump, resulting in a total core flow reduction to approximately  $46 \times 10^6$  lbm/hr.

WHICH ONE of the following reflects the expected reactor power in this condition?

- a. 46%
- b. 57%
- c. 63%
- d. 69%

CORRECT RESPONSE :B

REFERENCE:

B is correct - See Power-Flow map - stay on 95.2% rod line - move left to 46% flow, read reactor power.

21) \*PV:1.0 Q#:21 RT:0.0 DF:2 LP:LOT0640.08 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- A ground fault occurs on the "B" EHC pump motor windings (powered from 124C-T-G MCC)
- "B" EHC pump breaker failed to open
- 124C-T-G MCC feeder breaker opened
- 124C Bus breaker remained closed
- 124C XFMR breaker remained closed

WHICH ONE of the following describes the reason for the observed plant response?

- a. 124C Bus breaker should have opened, but failed
- b. 124C Bus breaker remained closed, since it has no tripping function
- c. 124C-T-G MCC feeder breaker opened due to undervoltage on the 124C Bus
- d. 124C-T-G MCC feeder breaker opened to isolate other equipment from the fault

CORRECT RESPONSE :D  
REFERENCE:

d is correct due to selective tripping

22) PV:1.0 Q#:22 RT:0.0 DF:2 LP:LOT0735.04 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- The Main Control Room has been evacuated
- Division 1 DC is de-energized
- The Remote Shutdown Panel (RSP) is manned

WHICH ONE of the following lists the systems that will be used to perform the Safe Shutdown and the method of operation?

- a. RCIC from the RSP  
RHR Loop "B" from the Reactor Enclosure and Control Enclosure
- b. HPCI in Automatic  
RHR Loop "A" from the RSP
- c. RCIC from the Reactor Enclosure  
RHR Loop "B" from the Reactor Enclosure
- d. HPCI in Automatic  
RHR Loop "B" from the Reactor Enclosure

CORRECT RESPONSE :D

REFERENCE:

a is incorrect - RCIC inop w/o Div 1.

b is incorrect - RHR A is INOP from RSP

c is incorrect - RCIC INOP w/o Div 1

d is correct - All systems are alternate remote shutdown systems per SE-6

23) \*PV:1.0 Q#:23 RT:0.0 DF:2 LP:LOT0550.07 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- 60% power during GP-3, NORMAL PLANT SHUTDOWN
- "2C" Reactor feed pump (RFP) has been placed in MANUAL MGU operation
- "2A", "2B", and "2C" RFP flows are 3.0 MLB/Hr each
- "2A" Narrow Range Reactor Water Level instrument is selected for control

A turbine trip and reactor scram occurs, followed immediately by a failure of "2A" Narrow Range Level instrument low.

WHICH ONE of the following describes the automatic response of the RFPs?

- a. Speed for all RFPs increases and remains at the new higher speed until tripped on RPV high level
- b. Speed for "2A" and "2B" RFPs only increases and remains at the new higher speed until tripped on RPV high level
- c. Speed for all RFPs increases and remains at the new higher speed until level is restored to the setpoint setdown level
- d. Speed for "2A" and "2B" RFPs only increases and remains at the new higher speed until level is restored to the setpoint setdown level

CORRECT RESPONSE :B

REFERENCE:

a is incorrect - 2C pump is in manual and will not respond

b is correct

c is incorrect - Level will continue to increase because A narrow range is indicating low level and is controlling. C RFP is in manual and will not respond

d is incorrect - Level will continue to increase because A narrow range is indicating low level

24) \*PV:1.0 Q#:24 RT:0.0 DF:1 LP:LOT0735 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- The Main Control Room has been evacuated due to a fire per SE-1, REMOTE SHUTDOWN
- D244 load center is de-energized
- All Remote Shutdown Transfer Switches are in EMERGENCY
- RPV level is +5 inches
- RPV pressure is 110 psig and dropping

The operator places the handswitch for HV51-2F008, "SDC OUTBD ISOL" to open and notes that the valve remained closed.

WHICH ONE of the following describes the additional action that will permit HV51-2F008 to be opened?

- a. Reset Group II isolations
- b. Depressurize to 70 psig
- c. Raise RPV level to 15 inches
- d. Restore power to D244 load center

CORRECT RESPONSE :B  
REFERENCE:

SE-1

- a is incorrect - SDV isolations are defeated at the RSP
- b is correct - Per SE-1, PSL-42-101 will be clear when <75 psi
- c is incorrect - L3 isolation bypassed at RSP
- d is incorrect - HV-2F008 is Div 2 load, not Div 4

25) PV:1.0 Q#:25 RT:0.0 DF:1 LP:LOT1560.05 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- Reactor is SCRAMMED
- Drywell pressure is 25 psig and steady
- Suppression Pool level is 11.9 feet and dropping and cannot be restored

The CRS has directed T-112, EMERGENCY BLOWDOWN to be entered and executed per T-102 PRIMARY CONTAINMENT CONTROL.

WHICH ONE of the following is the reason for conducting the blowdown?

- a. RHR and Core Spray pump NPSH is NOT sufficient
- b. HPCI exhaust discharge is NOT submerged
- c. SRV tailpipe quenchers are NOT submerged
- d. Containment downcomers are NOT submerged

CORRECT RESPONSE :D

REFERENCE:

a is incorrect - Not the basis for the blowdown

b is incorrect - HPCI manually isolated at 18 ft., not basis for blowdown

c is incorrect - SRV tailpipes at 4 ft.

d is correct - Downcomers uncovered at 12 ft.

26) \*PV:1.0 Q#:26 RT:0.0 DF:1 LP:LOT1560.05 CT:01, C, W, N

WHICH ONE of the following describes the reason for maintaining drywell temperature less than 340°F per T-102 PRIMARY CONTAINMENT CONTROL?

- a. ADS SRVs will be available for emergency blowdown
- b. Instrument Gas compressors will continue to supply SRV pneumatics
- c. RPV level instruments will be available after depressurization
- d. Drywell spray initiation pressure drop will not be excessive

CORRECT RESPONSE :A

REFERENCE:

- a is correct - 340°F Drywell design temperature based on ADS solenoids
- b is incorrect - Isolated and trips at 160°F suction temperature
- c is incorrect - Depressurization could result in flash
- d is incorrect - Current conditions unsafe to spray

27) PV:1.0 Q#:27 RT:0.0 DF:2 LP:LOT1560.05 CT:01, C, W, N

\*\*\*ATTACHMENT Q27 is provided\*\*\*

Unit 2 plant conditions are as follows:

- A steam leak in the outboard MSIV room has caused a MSIV isolation and reactor scram
- To control reactor pressure, SRVs have been opened in the following sequence: K-M-H-E

A feedwater malfunction resulted in flooding of the main steam lines.

Reactor pressure is 1097 and rising.

WHICH ONE of the following SRVs should be opened next, with the above conditions, to evenly distribute suppression pool heating?

- a. S
- b. B
- c. C
- d. J

CORRECT RESPONSE :C

REFERENCE:

c is correct with MS lines flooded only C, B, J SRV can be used. Per pool loading sequence, S SRV was the next to be operated, C SRV is in the same quadrant as S SRV.

a is incorrect - cannot be used for high level

b, d are incorrect - SRV are in wrong quadrant (same as E)

28) \*PV:1.0 Q#:28 RT:0.0 DF:2 LP:LOT0070.02 CT:01, C, W, N

Plant conditions are as follows:

- The main turbine tripped from 100% power
- RPS failed to deenergize
- Four SRVs opened automatically to control RPV pressure
- Six control rods failed to fully insert
- RPV pressure is 960 psig
- CRD system flow indicates greater than 100 gpm

WHICH ONE of the following procedures will be effective for inserting the withdrawn control rods?

- a. T-216, MANUAL ISOLATION AND VENT OF SCRAM AIR HEADER
- b. T-213, INDIVIDUAL CONTROL ROD SCRAM/SOLENOID DE-ENERGIZATION
- c. T-218, CONTROL ROD INSERTION BY WITHDRAW LINE VENTING
- d. T-215, DE-ENERGIZATION OF SCRAM SOLENOIDS

CORRECT RESPONSE :C

REFERENCE:

C is correct - this is the only answer that provides a D/P across the CRD drive piston to insert the rod

29) \*PV:1.0 Q#:29 RT:0.0 DF:1 LP:LOT1540.02 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- A feedwater line break inside containment causes drywell pressure to rise to 15 psig
- The reactor fails to SCRAM due to hydraulic lock in the scram discharge volume
- The reactor mode switch has been placed to SHUTDOWN
- Suppression pool temperature is 93°F

WHICH ONE of the following is an immediate operator action?

- a. Isolate HPCI
- b. Maximize drywell cooling
- c. Manually drain the scram discharge volume
- d. Place two loops of suppression pool cooling in service

CORRECT RESPONSE :B

REFERENCE:

b is correct - immediate operation action per OT-101, High Drywell Pressure.

All others are not immediate operator actions for the existing conditions.

30) PV:1.0 Q#:30 RT:0.0 DF:2 LP:LOT0735.03 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- Heavy smoke entered the Main Control Room
- Main Control Room has been evacuated after all immediate actions were taken per SE-1, REMOTE SHUTDOWN
- RPV water level dropped to -50 inches and began rising

All Remote Shutdown Transfer Switches are in EMERGENCY.

WHICH ONE of the following describes the expected status of HPCI and RCIC after RPV level rises above +54 inches with no operator action?

	<u>HPCI</u>	<u>RCIC</u>
a.	Automatically tripped	Automatically tripped
b.	Automatically tripped	Injecting
c.	Injecting	Automatically tripped
d.	Injecting	Injecting

CORRECT RESPONSE :B

REFERENCE:

b is correct

a, c, and d are incorrect - Transfer switches cause RCIC to continue injecting requiring operators to monitor level and manually control.

31) \*PV:1.0 Q#:31 RT:0.0 DF:1 LP:LOT0720.03 CT:01, C, W, N

WHICH ONE of the following combinations of radiation monitors in an alarm condition indicates an activity release originating from multiple sources?

- a. SJAE Discharge Monitor and North Stack Normal Range Monitor
- b. SJAE Discharge Monitor and Wide Range Accident Monitor
- c. South Stack Monitor and Charcoal Treatment Effluent Monitor
- d. South Stack Monitor and Reactor Enclosure HVAC Exhaust Monitor

CORRECT RESPONSE :C

REFERENCE:

a is incorrect - SJAE discharge to North Stack

b is incorrect - WRAM monitors North Stack

c is correct - Charcoal Treatment Exhaust discharges to North Stack

d is incorrect - RE exhausts to South Stack

32) \*PV:1.0 Q#:32 RT:0.0 DF:2 LP:LOT0370.13C CT:01, C, W, N

\*\*\*ATTACHMENT Q32 is provided\*\*\*

Unit 1 plant conditions are as follows:

- OPCON 5
- Day 15 of 22 day outage
- RPV water temp 140°F
- 1A RHR in shutdown cooling with "OA" RHRSW pump in service
- Fuel pool gates are installed

"A" loop RHRSW rad monitor fails upscale causing the "OA" RHRSW pump to trip.

WHICH ONE of the following describes the earliest time that boiling will occur in the reactor well?

- a. 10 hours
- b. 12 hours
- c. 14 hours
- d. 16 hours

CORRECT RESPONSE :C  
REFERENCE:

c is correct - loss of "0A" RHRSW pump is a loss of shutdown cooling. ON-121 Attachment 1 shows a graph of time since shutdown vs. time to boil. 15 days after shutdown time to boil (starting from 140°F is 14 hours.

33) \*PV:1.0 Q#:33 RT:0.0 DF:1 LP:LOT0760.07 CT:01, C, W, N

Unit 1 is in OPCON 5 with fuel handling in progress.

While raising a fuel bundle from the core, the hoist automatically stops, with the following indications:

- Hoist position is +470 inches (approximately half withdrawn from the core)
- Hoist load is 1200 pounds
- "HOIST LOADED" light is lit
- "HOIST JAM" light is lit
- "FUEL HOIST INTERLOCK" light is NOT lit

WHICH ONE of the following describes the reason hoist motion stopped?

- a. Prevent inadvertent criticality
- b. Prevent excessive radiation exposures to refuel floor personnel
- c. Prevent a fuel bundle from inadvertently dropping
- d. Prevent damage to reactor vessel internal components

CORRECT RESPONSE :D  
REFERENCE:

TS 3.9.6 Bases

d is correct - Hoist jam prevents excessive upward force, which prevents damage to vessel internals

34) PV:1.0 Q#:34 RT:0.0 DF:2 LP:LOT1560.04 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- Loss of coolant accident in progress
- Steam exists in the suppression chamber air space due to bypass steam flow
- Drywell and suppression pool pressure are 70 psig and steady
- Suppression pool level indicates 24.5 feet
- "2A" and "2B" RHR loops are unavailable for sprays due to pump trips
- PCIG long term supply pressure is 85 psig

WHICH ONE of the following describes the result of the delayed drywell spray and accompanying high drywell pressure?

- a. Manual ADS operation is not assured
- b. SRV Tailpipe Vacuum relief operation is not assured
- c. Actual suppression pool level is lower than indicated
- d. Suppression pool spray using fire water will not be possible

CORRECT RESPONSE :A

REFERENCE:

a is correct - Primary Containment Pressure Limit (60 psig) based on ADS N2 actuators using gas pressure 85 psig

b is incorrect - Not affected by the given conditions

c is incorrect - Pressure corrected and wrong direction for heated water

d is incorrect - Fire water pressure exceeds 100 psig

35) PV:1.0 Q#:35 RT:0.0 DF:2 LP:LOT0370 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- Reactor shutdown
- 2 loops of suppression pool cooling are in service with the following indications:
  - 2A RHR Flow 7800 gpm
  - 2B RHR Flow 8600 gpm
- Suppression pool temperature is 94°F and lowering

WHICH ONE of the following describes the required action and reason?

- a. Raise "2A" RHR flow to greater than 8000 gpm to prevent condensate transfer from entering the suppression pool
- b. Raise "2A" RHR flow to greater than 8000 gpm to reduce cavitation across the "2A" RHR pump
- c. Reduce "2B" RHR flow to less than 8500 gpm to prevent condensate transfer from entering the suppression pool
- d. Reduce "2B" RHR flow to less than 8500 gpm to reduce cavitation across HV-51-2F024B "TEST RETURN"

CORRECT RESPONSE :C

REFERENCE:

c is correct - Flow Rate >8500 allows condensate transfer to enter the suppression pool. Flow Rate <8000 may induce cavitation to HV-51-2F024A/B

36) PV:1.0 Q#:36 RT:0.0 DF:1 LP:LOT0140.07 CT:01, C, W, N

Plant conditions are as follows:

- A small steam leak exists in the drywell
- Drywell temperature is 136°F and slowly rising
- The following drywell unit cooler fans are operating:  
A2, B2, C1, D1, G1, H2

The CRS has directed drywell cooling to be maximized.

WHICH ONE of the following combinations of drywell unit cooler fans should be placed into service?

- a. B1, E2
- b. C2, F1
- c. F2, G2
- d. E1, F2

CORRECT RESPONSE :D

REFERENCE:

d is correct because there are not "E" or "F" fans running.

All others are incorrect since they would result in both fans running in at least one unit cooler, which is not allowed.

37) \*PV:1.0 Q#:37 RT:0.0 DF:2 LP:LOT1560.05 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- RPV water level is -190 inches and slowly lowering
- Thirty control rods failed to insert
- RPV pressure is 950 psig and rising slowly
- RPV pressure is being maintained using SRVs
- RCIC is injecting at 600 gpm

WHICH ONE of the following describes the status of core cooling based on the above conditions and the reason?

- a. Adequate because level is above the Minimum Zero Injection RPV Water Level
- b. Adequate because steam flow through 1 SRV will remove all decay heat
- c. Inadequate because level is below the Minimum Steam Cooling RPV Water Level
- d. Inadequate because all control rods are not inserted to or beyond position 02

CORRECT RESPONSE :C  
REFERENCE:

T-117

a is incorrect - MZIRPVWL applies during non-ATWS and with zero injection

b is incorrect - Steam cooling below -186" requires zero injection

c is correct - MSCRPVWL = -186"

d is incorrect - 100 psig controlled reduction is for zero injection, non-ATWS steam cooling

38) PV:1.0 Q#:38 RT:0.0 DF:2 LP:LOT0200.05 CT:01, C, W, N

Plant conditions are as follows:

- New fuel receipt is in progress in the Unit 1 Spent Fuel Pool
- Secondary Containment has been established on the refuel floor
- Unit 2 refuel floor HVAC is in service

A new fuel bundle is dropped onto irradiated fuel seated in the spent fuel pool.

- Unit 1 refuel floor HVAC exhaust radiation monitors rise to 2.5 mR/hr
- Unit 2 refuel floor HVAC exhaust radiation monitors are a 0.3 mR/hr and steady

WHICH ONE of the following describes the status of the Unit 2 refuel floor HVAC and Standby Gas Treatment systems?

	<u>Unit 2 Refuel Floor HVAC</u>	<u>Standby Gas Treatment</u>
a.	Isolated	Running
b.	Isolated	Secured
c.	Running	Running
d.	Running	Secured

CORRECT RESPONSE :A  
REFERENCE:

"a" is correct because either unit's RF HVAC exhaust rad monitors sensing greater than 2.0 mR/hr will cause isolation of BOTH RF HVAC systems, and SGTS initiation.

39) PV:1.0 Q#:39 RT:0.0 DF:1 LP:LOT0705 CT:01, C, W, N

Reactor Enclosure sump pump switches are aligned as follows:

- Rx Encl. equipment drain pump lead selector switch is in "1B"
- "A" and "B" Rx Encl. equipment drain sump pump control switches are in AUTO

WHICH ONE of the following describes the response of the Reactor Enclosure equipment drain sump pumps to the conditions listed below?

	<u>Sump Hi Level</u>	<u>Sump Hi-Hi Level</u>
a.	A pump will start	A pump remains running/ B pump remains off
b.	A pump will start	A pump remains running/ B pump starts
c.	B pump will start	B pump remains running/ A pump remains off
d.	B pump will start	B pump remains running/ A pump starts

CORRECT RESPONSE :D  
REFERENCE:

d is correct - with 1B selected to lead, it will start on sump high level. The lag pump (A) will start on sump High-High level.

40) PV:1.0 Q#:40 RT:0.0 DF:1 LP:LOT1560.05 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- ATWS in progress
- Reactor power is 60%
- Suppression pool temperature is 109°F
- The CRS has directed SLC to be injected prior to 110°F suppression pool temperature

WHICH ONE of the following describes the reason for injecting SLC at this time?

- a. Ensures the reactor will be subcritical prior to exceeding containment temperature limits
- b. Ensures the reactor will be shut down under all conditions, prior to RHR and Core Spray NPSH falling below the limits
- c. Allows RPV water level to be maintained above the level of the feed spargers while inserting control rods
- d. Allows the use of suppression pool water as an injection source to the RPV

CORRECT RESPONSE :A

REFERENCE:

a is correct - Basis for Boron Inj. Init. Temp  
b is incorrect - SLC does not result in shutdown under all conditions. RHR/CS HPSH independent of power  
c is incorrect - Conditions require lowering level with or without boron  
d is incorrect - Suppression pool water is an alternate source of injection with or without boron

41) \*PV:1.0 Q#:41 RT:0.0 DF:2 LP:LOT1561.02 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- T-103, SECONDARY CONTAINMENT CONTROL is being executed due to a steam leak
- "A" and "B" Reactor Enclosure Exhaust Radiation monitors indicate 2.1 mR/hr
- "C" and "D" Reactor Enclosure Exhaust Radiation monitors indicate 1.1 mR/hr

WHICH ONE of the following describes the expected status of A RE ISOL SIGNAL INITIATED and B RE ISOL SIGNAL INITIATED alarms on 004 VENT, based on the conditions above?

	<u>A RE ISOL SIGNAL INITIATED</u>	<u>B RE ISOL SIGNAL INITIATED</u>
a.	Not Lit	Not Lit
b.	Not Lit	Lit
c.	Lit	Not Lit
d.	Lit	Lit

CORRECT RESPONSE :C  
REFERENCE:

Ch "A" and "B" complete 2 of 2 once Div 1 ISOL SIGNAL at 1.35 mR/hr  
Ch "C" and "D" do not trip, and "B" trip system stays reset

42) \*PV:1.0 Q#:42 RT:0.0 DF:1 LP:LOT0730.16 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- Loss of offsite power while in OPCON 4
- ESW is providing cooling to TECW

WHICH ONE of the following describes the ability to restore Instrument Air/Service Air for long-term operation per E-10/20, LOSS OF OFFSITE POWER?

- a. No compressors can be restored
- b. Instrument Air compressors can be restored, Service Air compressor cannot be restored
- c. Service Air compressor can be restored, Instrument Air compressors cannot be restored
- d. Instrument Air compressors and Service Air compressor can be restored

CORRECT RESPONSE :B

REFERENCE:

a, c, and d are incorrect - service air compressor needs power from non-safeguard power. instrument air compressors can operate since they use safeguard power, and are cooled by tecw.

b is correct - instrument air compressors are available - powered from safeguard 480 vac, and have TECW backed up by ESW for cooling water

43) \*PV:1.0 Q#:43 RT:0.0 DF:1 LP:LOT0460 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- Reactor level -135 inches
- Drywell pressure 24 psig
- Reactor pressure 410 psig
- No isolations have been bypassed

Control Room instrument busses have been reset per SE-10 three minutes ago. No other operator actions have been taken per SE-10.

WHICH ONE of the following components has cooling water flow?

- a. "1A" Recirc Pump Motor Oil Coolers
- b. "1A" Recirc Pump Motor Windings
- c. "1B" Condensate Pump Motor Oil Coolers
- d. "1B" Instrument Gas Compressor

CORRECT RESPONSE :C

REFERENCE:

c is correct - After LOCA load shed of all 4kv breakers, 3.5 seconds later 440V loads are reenergized (RECW pumps powered from 440V load center). The LOCA signal prevents auto reclosure of D114G-D. This breaker is reclosed when the RO/PRO manually reshuts the breaker in the MCR. TECW will automatically restart when the MCR breaker is closed. TECW will supply cooling water flow to condensate pumps.

b is incorrect - 1A Recirc Pump motor windings are cooled by DWCW. DWCW isolates at -129" until bypassed.

a, d are incorrect - Those components are cooled by RECW. RECW pumps trip on a LOCA and must be manually restarted per SE-10

44) \*PV:1.0 Q#:44 RT:0.0 DF:2 LP:LOT1560.05 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- Loss of coolant accident
- Core damage occurred
- Drywell H2 = 8%
- Drywell O2 = 8%

WHICH ONE of the following describes the combustibility of the H2 and O2 mixture, and the method of removal?

<u>H2/O2 Mixture</u>	<u>Removal Method</u>
a. Combustible	"C", "D", "E", and "F" Unit Coolers and "A" and "B" Recombiners
b. Combustible	Containment Venting and Purging
c. Not Combustible	"C", "D", "E", and "F" Unit Coolers and "A" and "B" Recombiners
d. Not Combustible	Containment Venting and Purging

CORRECT RESPONSE :B  
REFERENCE:

a, c, and d are incorrect - The mixture is combustible (>6% H2, 5% O2), requiring ignition sources to be secured

b is correct

45) \*PV:1.0 Q#:45 RT:0.0 DF:1 LP:LOT1574.10 CT:01, C, W, N

Plant conditions are as follows:

- "1A" Instrument Air Compressor is inoperable
- "1B" Instrument Air Compressor is running

The "1B" Instrument Air Compressor breaker trips due to magnetic trip.

WHICH ONE of the following describes the ability to reset the magnetic trip on the "1B" Instrument Air Compressor breaker?

- a. Permitted if this is the first trip
- b. Permitted since the pump will not auto start
- c. Not permitted without appropriate investigation
- d. Not permitted until pump discharge valve is closed

CORRECT RESPONSE :C

REFERENCE:

"C" is correct per NOM-C-5.2, Step 3.3

46) \*PV:1.0 Q#:46 RT:0.0 DF:1 LP:LOT1530.02 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- RPV cooldown is in progress, with RPV coolant temperature 130°F
- Preparations are in progress to disassemble the RPV

WHICH ONE of the following states the point at which the plant will go to OPCON 5?

- a. First RPV head stud is not fully tensioned
- b. Last RPV head stud is not fully tensioned
- c. RPV head vent line is removed
- d. RPV head is lifted off the flange

CORRECT RESPONSE :A

REFERENCE:

"a" is correct - OPCON 5 is defined as RPV temperature less than 140°F and the first head stud detensioned.

47) PV:1.0 Q#:47 RT:0.0 DF:1 LP:LOT1800.04 CT:01, C, W, N

WHICH ONE of the following sets of conditions requires NRC approval prior to resuming critical operation of the plant?

- a. Reactor vessel level lowers to -137 inches
- b. Reactor steam dome pressure rises to 1340 psig
- c. MCPR is equal to 1.13, two reactor recirculation loops are in service, reactor steam dome pressure is 900 psig, core flow is 40%
- d. Thermal power is 27%, reactor steam dome pressure is 830 psig, core flow is 21%

CORRECT RESPONSE :B

REFERENCE:

Only "b" exceeds a Safety Limit, requiring NRC approval to operate critical again.

48) \*PV:1.0 Q#:48 RT:0.0 DF:1 LP:LOT1760.4C CT:01, C, W, B

Plant conditions are as follows:

- An Equipment Operator must enter a High Radiation Area to stabilize plant conditions during a transient.
- No Radiation Work Permit (RWP) exists for the area

WHICH ONE of the following will meet the MINIMUM requirements for an Equipment Operator to enter the area?

- a. Must be accompanied by an Advanced Rad Worker (ARW) qualified individual
- b. Entry into the area is not permitted without the Radiation Protection Manager (RPM) permission
- c. Must be accompanied by a qualified Radiation Protection Technician
- d. Entry into the area is not permitted until activation of the Emergency Plan

CORRECT RESPONSE :C

REFERENCE:

HP-C-310 in an effort to return the plant to a stable condition a Level II (ANSI 3.1) RP technician may act in lieu of a formal RWP to assist workers

49) \*PV:1.0 Q#:49 RT:0.0 DF:2 LP:LOT1560.02 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- Reactor SCRAM and MSIV closure
- HPCI started automatically
- RPV pressure was maintained between 900 and 1050 psig with SRVs
- RPV level dropped to +15 inches and was restored to +35 inches
- 1BC208 HVAC PANEL TROUBLE due to HPCI unit cooler fan trip
- An Unusual Event is declared due to offsite rad release

Given the following TRIP procedures:

- T-100, "Scram"
- T-101, "RPV Control"
- T-102, "Primary Containment Control"
- T-103, "Secondary Containment Control"
- T-104, "Radioactivity Release Control"

WHICH ONE of the following lists all TRIP procedures required to be executed based on the above conditions?

- a. T-102, T-104
- b. T-100, T-103
- c. T-101, T-102
- d. T-101, T-103

CORRECT RESPONSE :C

REFERENCE:

a, b, and d are incorrect - HPCI auto start without low level indicates High DW/P and T-101 and T-102 entry. T-104 not required until Alert level. T-103 required only if HVAC trouble due to high temp. Nothing in the information given prevents second fan from auto starting.

c is correct

50) \*PV:1.0 Q#:50 RT:0.0 DF:2 LP:LOT0540.02 CT:01, C, W, N

Plant conditions are as follows:

- A reactor SCRAM occurs due to high drywell pressure
- Drywell pressure is 15 psig and rising
- Reactor pressure is 980 psig
- Reactor level is -20 inches and lowering
- All three reactor feedwater pump discharge pressures indicate 150 psig
- All three feedwater flow instruments indicate  $4 \times 10^6$  lbm/hr
- HPCI is running, with discharge pressure of 1100 psig

WHICH ONE of the following actions should be taken to mitigate the transient?

- a. Isolate HPCI
- b. Secure HPCI injection to "A" feedwater line
- c. Raise RFP speed to increase RFP discharge pressure
- d. Close all three reactor feedwater pump discharge valves

CORRECT RESPONSE :D

REFERENCE:

D is correct - Indications given are for a feedwater line break on "B" feedwater line. Only "d" will stop the leak into the drywell.

51) PV:1.0 Q#:51 RT:0.0 DF:2 LP:LOT1540.05 CT:01, RO, W, N

Unit 2 plant conditions are as follows:

- GP-4, RAPID PLANT SHUTDOWN TO HOT SHUTDOWN has been executed due to loss of Main Condenser vacuum
- Main condenser vacuum has stabilized at 10.0 inches Hg after locating and isolating an air in-leak
- RPV pressure is 900 psig, and rising slowly

WHICH ONE of the following describes the availability for Reactor Feed Pumps and Turbine Bypass Valves for level and pressure control based on the above conditions?

<u>Reactor Feed Pumps</u>	<u>Turbine Bypass Valves</u>
a. Available	Available
b. Available	NOT Available
c. NOT Available	Available
d. NOT Available	NOT Available

CORRECT RESPONSE :C

REFERENCE:

a, b, and d are incorrect - RFPs trip at 15" Hg. MTBVs trip at 7", MSIVs close at 8.54"

c is correct

52) PV:1.0 Q#:52 RT:0.0 DF:1 LP:LOT0430.03 CT:01, RO, W, N

The running Turbine Enclosure Cooling Water (TECW) pump trips, and the standby pump fails to start.

WHICH ONE of the following would be an expected plant response?

- a. Isophase Bus Cooler High Temperature
- b. Main Turbine Lube Oil from Cooler High Temperature
- c. CRD Pump Bearing High Temperature
- d. Service Air Compressor Aftercooler High Temperature

CORRECT RESPONSE :D

REFERENCE:

P&ID M-14

Only d is correct - Since it is the only one of the choices cooled by TECW

53) PV:1.0 Q#:53 RT:0.0 DF:1 LP:LOT0150.60 CT:01, RO, W, N

Unit 2 plant conditions are as follows:

- 100% power
- 2AY160 has been deenergized due to electrical malfunction

WHICH ONE of the following describes the effect, if any, on the DWCW system due to the conditions above?

- a. DWCW will continue to cool all loads
- b. DWCW will only cool loads outside containment
- c. Cooling to all DWCW components is lost
- d. DWCW will cool all "B" loop loads only

CORRECT RESPONSE :B

REFERENCE:

E-2AY160

B is correct - a loss of 2BY160 will result in an outboard isolation signal. This signal will isolate cooling water flow to the components located in the Drywell. The DW chiller and circulating pump will continue to run and supply cooling to loads outside the DW

54) \*PV:1.0 Q#:54 RT:0.0 DF:2 LP:LOT1560 CT:01, RO, W, N

\*\*\*ATTACHMENT T-102 is provided\*\*\*

Unit 1 plant conditions are as follows:

- All suppression pool water level instruments indicate upscale
- Drywell pressure 27 psig
- Suppression pool pressure 40 psig

WHICH ONE of the following is actual containment level?

- a. 32.5 ft.
- b. 39.8 ft.
- c. 56.7 ft.
- d. 62.8 ft.

CORRECT RESPONSE :C

REFERENCE:

T-102 Bases

C is correct - with SP level >48 ft., containment level must be calculated. T-102 provides guidance for calculating containment level with the following formula:

SP Pressure (40) minus DW Pressure (27) times 2.3 ft./psig plus 26.8 ft. equals 56.7 ft.

Need Curve PC/P-1/SP/L-2

55) PV:1.0 Q#:55 RT:0.0 DF:3 LP:LOT0200.05 CT:01, RO, W, N

Unit 2 plant conditions are as follows:

- OPCON 5
- Slide Gate Damper SGD76-506-2 (Unit 2 Rx Encl to SGTS) is closed with Unit 2 RE HVAC in service
- Movement of irradiated components in the Reactor Enclosure results in a trip of all Unit 2 RE HVAC Exhaust Rad monitors

The PRO observes that Instrument Gas and Containment Atmosphere Sample System H2O2 Analyzer isolation valves have automatically isolated, and that RE HVAC is still in service.

WHICH ONE of the following lists the information that should be included in the notification to the CRS for isolation response?

- a. RE HVAC, PCIG, and H2O2 analyzers responded as expected
- b. RE HVAC and H2O2 analyzers responded as expected  
PCIG did NOT respond as expected
- c. PCIG and H2O2 analyzers responded as expected  
RE HVAC did NOT respond as expected
- d. PCIG and RE HVAC responded as expected  
H2O2 analyzers did NOT respond as expected

CORRECT RESPONSE :A

REFERENCE:

a is correct - Hi Rad signal will isolate H2O2 analyzers and PCIG  
Slide Gate damper bypass disables RE HVAC isolation only

b, c, and d are incorrect

56) \*PV:1.0 Q#:56 RT:0.0 DF:2 LP:LOT0200.08 CT:01, RO, W, N

Unit 2 plant conditions are as follows:

- Division 1 DC power is de-energized
- A steam leak has developed in the RWCU REGEN HEAT EXCHANGER room
- RWCU REGEN HEAT EXCHANGER room differential pressure has risen to a value above the setpoint for the steam flooding dampers

WHICH ONE of the following describes the status of RWCU REGEN HEAT EXCHANGER room ventilation supply and exhaust ducts and associated steam flooding dampers?

<u>Room Supply</u>	<u>Room Exhaust</u>
a. Unisolated	Unisolated
b. Isolated by one series damper	Isolated by one series damper
c. Unisolated	Isolated by one series damper
d. Isolated by two series dampers	Isolated by two series dampers

CORRECT RESPONSE :B  
REFERENCE:

a, c, and d are incorrect - Loss Div 1 will prevent one damper from closing in each line.

b is correct - DP is above setpoint of 5". Div 2 damper in each line closes.

57) \*PV:1.0 Q#:57 RT:0.0 DF:2 LP:LOT0070.08 CT:01, RO, W, N

Unit 2 plant conditions are as follows:

- Reactor manually SCRAMMED for planned shutdown 20 seconds ago
- SCRAM pilot solenoid valves for fully withdrawn control rod 06-39 fail to re-position
- ARI has NOT been initiated
- RPS Backup SCRAM Valves operate as designed

WHICH ONE of the following describes the expected status of rod 06-39 and the status of the full core display blue HCU SCRAM lamp for rod 06-39 based on the conditions above?

<u>Control Rod Status</u>	<u>Blue Scram Lamp Status</u>
a. Fully Inserted	Lit
b. Fully Inserted	Not lit
c. Fully Withdrawn	Lit
d. Fully Withdrawn	Not lit

CORRECT RESPONSE :A

REFERENCE:

a is correct - B/U scram valves will vent air header and scram rods. Scram valves will open and give blue scram lamp.

b, c, and d are incorrect

58) \*PV:1.0 Q#:58 RT:0.0 DF:2 LP:LOT0370 CT:01, RO, W, N

Unit 1 plant conditions are as follows:

- 100% power
- "1A" RHR pump running in suppression pool cooling with "0A" RHRSW pump in service
- "1A" RHR pump trips on "C" phase overcurrent
- "1A" RHR overcurrent trip has been investigated and reset
- Loop "A" RHR Line HIGH POINT VENT LO Level alarm annunciates

WHICH ONE of the following describes the consequences of restarting the "1A" RHR pump under the conditions above?

- a. "1A" RHR pump runout
- b. "1A" RHR pump cavitation
- c. RHR piping water hammer
- d. RHR heat exchanger thermal shock

CORRECT RESPONSE :C

REFERENCE:

c is correct - with 1F024 valve open, a path exists from RHR piping to the suppression pool. Starting RHR pump under these conditions could result in water hammer and potential piping damage

59) \*PV:1.0 Q#:59 RT:0.0 DF:2 LP:LOT0350.09 CT:01, RO, W, N

Unit 1 plant conditions are as follows:

- ATWS in progress
- All Core Spray Pumps were manually secured after automatic initiation
- T-270, "TERMINATE AND PREVENT INJECTION INTO THE RPV" has been performed in the Main Control Room and Aux. Equipment Room
- RPV injection with Core Spray has been directed per T-117, "LEVEL/POWER CONTROL"

The following valve names are provided:

HV52-1F004A, CS LOOP A DISCH VALVE  
HV52-1F005, CS LOOP A SHUTOFF PCIV  
E21A-S22A(C), CS DIV 1(3) MANUAL INITIATION

WHICH ONE of the following describes the steps necessary to inject with "A" Core Spray loop?

- a. Arm and depress E21A-S22A and C, open HV52-1F005
- b. Arm and depress E21A-S22A and C, close HV52-1F004A, open HV52-1F005, re-open HV52-1F004A
- c. Manually start "A" and "C" CS pumps, open HV52-1F005
- d. Manually start "A" and "C" CS pumps, close HV52-1F004A, open HV52-1F005, re-open HV52-1F004A

CORRECT RESPONSE :D

REFERENCE:

a, b, c are incorrect - Pump start overridden in stem. Pumps will not start from PB. Must close F004 to open F005 without INJ signal (overridden by T-270) T-270 Removes 4KV bus power monitoring from the logic.

d is correct

60) \*PV:1.0 Q#:60 RT:0.0 DF:2 LP:LOT0350.06 CT:01, RO, W, N

Unit 1 plant conditions are as follows:

- Reactor power 75%
- Annunciator 113 B-3 LOOP A CORE SPRAY INJECTION LINE HI/LO PRESS has lit
- PI-52-1R600A on 10C601 CORE SPRAY PX reads 480 psig

WHICH ONE of the following caused the indications above?

- a. HPCI has inadvertently started and is injecting
- b. "A" Safeguard piping fill pump is running
- c. Both condensate transfer pumps are running
- d. Leakage past Inboard Isolation Valve HV-52-1F005

CORRECT RESPONSE :D

REFERENCE:

GP-8

D is correct. The pressure instrument is designed to detect this leak.

A, b, C-incorrect: HPCI injects to the A loop of core spray, and the condensate transfer and keep full pumps cannot provide greater than approx 150 psig of disch. pressure.

61) PV:1.0 Q#:61 RT:0.0 DF:2 LP:LOT1560 CT:01, RO, W, N

Plant conditions are as follows:

- Unit 1 HPCI is isolated for maintenance
- A station blackout has occurred
- All Unit 1 and Unit 2 Diesel Generators have failed to start
- Unit 1 and Unit 2 are shutdown
- Unit 1 reactor level is -40" and rising
- Unit 1 RCIC is running and injecting

WHICH ONE of the following instruments can be used to determine Unit 1 reactor pressure?

- a. Wide Range Pressure Indicator, PI-42-1R605
- b. "A" PAMS, XR-42-1R623A
- c. HPCI Steam Pressure, PI-55-1R606
- d. RCIC Steam Pressure, PI-49-1R602

CORRECT RESPONSE :D

REFERENCE:

d is correct - RCIC steam pressure is DC powered instrument

b is incorrect - PAMS recorder has no power

c is incorrect - HPCI is isolated indicated steam pressure is incorrect

a is incorrect - WR pressure indicator has no power

62) \*PV:1.0 Q#:62 RT:0.0 DF:1 LP:LOT0120.11I CT:01, RO, W, N

Unit 2 plant conditions are as follows:

- 100% power
- "2M" SRV has been modified so the pilot valve sensing port is blocked

A Group 1 isolation has occurred. RPV pressure 1060 psig and rising.

WHICH ONE of the following describes the available method(s) of operation for the "2M" SRV?

	<u>Self Actuation</u>	<u>Manual</u>
a.	Yes	Yes
b.	Yes	No
c.	No	Yes
d.	No	No

CORRECT RESPONSE :C  
REFERENCE:

C is correct - with the pilot valve sensing port blocked, self actuation cannot occur. This condition was planned (03/01) for LGS Unit 2

63) \*PV:1.0 Q#:63 RT:0.0 DF:2 LP:LOT0095.3C CT:01, RO, W, N

Unit 1 plant conditions are as follows:

- Reactor startup is in progress
- Reactor power is 8%

The control rods are to be positioned as follows:

<u>CR</u>	<u>Position</u>	<u>Insert Limit</u>	<u>Withdrawal Limit</u>
26-35	04	04	06
26-27	04	04	06
34-35	04	04	06
34-27	04	04	06

WHICH ONE of the following rod patterns can be corrected without bypassing the RWM?

	<u>Actual Control Rod Position</u>			
	<u>26-35</u>	<u>26-27</u>	<u>34-35</u>	<u>34-27</u>
a.	08	02	04	04
b.	04	04	12	04
c.	08	08	06	06
d.	02	04	04	06

CORRECT RESPONSE :D  
REFERENCE:

- a is incorrect - more than 2 errors will result in RWM not latched in
- b is incorrect - >2 notch error
- c is incorrect - more than 1 error will result in RWM not latched in
- d is correct

64) \*PV:1.0 Q#:64 RT:0.0 DF:1 LP:LOT0080. CT:01, RO, W, N

Unit 2 plant conditions are as follows:

- Reactor power 88%
- Control rod 26-27 is being inserted one notch from position 48 for control rod exercise test
- The reed switch for position 46 fails to close resulting in no reed switches being closed.

WHICH ONE of the following describes the rod indication displayed on the 4 Rod Display?

4-Rod Display Indication

- a. "XX"
- b. "--"
- c. " " (blank-blank)
- d. "\*\*\*"

CORRECT RESPONSE :A  
REFERENCE:

a is correct - more than one, or no reed switches made up will cause and RPIS data fault light and XX - RPIS INOP. Control rod motion is not permitted with rod position unknown.

65) \*PV:1.0 Q#:65 RT:0.0 DF:2 LP:LOT0120.08 CT:01, RO, W, N

Unit 1 was at 100% power when a break caused "D" Main Steam Line flow to rise to 150%.

WHICH ONE of the following describes system status one minute later?

- a. All MSIVs are open
- b. Only "D" MSL is isolated
- c. All MSIVs are isolated
- d. Only "B" and "D" MSLs are isolated

CORRECT RESPONSE :C  
REFERENCE:

c is correct - With "A" MSL flow >140% all four divisions of MSL leak detection will actuate

66) \*PV:1.0 Q#:66 RT:0.0 DF:1 LP:LOT0340 CT:01, RO, W, N

Unit 2 plant conditions are as follows:

- Reactor level -140 inches
- Reactor pressure 910 psig
- HPCI and RCIC have automatically started
- CST level is 10 feet
- Suppression Pool Level 25 feet

WHICH ONE of the following describes the expected HPCI/RCIC suction alignment for the above conditions with no operator actions?

	<u>HPCI SUCTION</u>	<u>RCIC SUCTION</u>
a.	CST	CST
b.	CST	Supp. Pool
c.	Supp. Pool	CST
d.	Supp. Pool	Supp. Pool

CORRECT RESPONSE :C  
REFERENCE:

c is correct - HPCI will swap to the suppression pool on high pool level  
RCIC will not.

67) PV:1.0 Q#:67 RT:0.0 DF:1 LP:LOT0450.12 CT:01, RO, W, N

Plant conditions are as follows:

- OPCON 4
- "A" and "B" battery room exhaust fans are inoperable

WHICH ONE of the following actions is required to prevent buildup of hydrogen in the safeguard battery rooms?

- a. De-energize all safeguard battery chargers
- b. Prevent battery discharge by securing all safeguard DC loads
- c. Ensure battery room ventilation exhaust automatically aligned to the suction of the Emergency Switchgear and Battery Room Supply fans
- d. Provide emergency ventilation to the safeguard battery rooms using the Appendix R Diesel Generator and associated fans.

CORRECT RESPONSE :C

REFERENCE:

TS 3.8.2.2

a is incorrect - TS 3.8.2.2 requires at least 2 DC safeguard sources in OPCON 4

b is incorrect - This would remove DC from all safeguard loads, including "B" RHR (in SDC)

c is correct - This alignment will automatically occur

d is incorrect - No direction to use Appendix R equipment in this situation

68) \*PV:1.0 Q#:68 RT:0.0 DF:1 LP:LOT0720K5E CT:01, RO, W, N

Unit 1 plant conditions are as follows:

- 100% power
- Shift is performing GP-5 Step 3.1.13, Average Offgas Release Rate
- Before the rad readings are taken, an electrical fault has de-energized MCR recorder RR-26-1R601 A and B, Coarse Air Ejector Rad Discharge

WHICH ONE of the following instruments should be used to complete the average offgas release calculation?

- a. RR-26-1R602, Air Ejector Discharge Rad Fine Recorder
- b. RR-26-1R611, Charcoal Exhaust Rad Discharge Recorder
- c. RR-26-1R601 A and B, Air Ejector Discharge Rad Recorder Aux Equipment Room
- d. Computer Point C1088, "A" Air Ejector Rad Course Reading

CORRECT RESPONSE :C

REFERENCE:

- a is incorrect - Wrong rad unit and valve used on fine reading (unitless)
- b is incorrect - Post treatment rad uses wrong point and wrong unit (GP-5)
- c is correct - Same instrument in AER
- d is incorrect - Only provides a point both A & B to compute calculation

69) \*PV:1.0 Q#:69 RT:0.0 DF:2 LP:LOT0450.05 CT:01, RO, W, N

Plant conditions are as follows:

- A chlorine spill occurs on site
- "A" CREFAS fan is in AUTO
- "B" CREFAS fan is in STBY
- The MCR HVAC Chlorine monitors indicate as follows:
  - "A" - 0.6 ppm
  - "B" - 0.7 ppm
  - "C" - 0.1 ppm
  - "D" - 0.9 ppm

WHICH ONE of the following describes the status of the Control Room Emergency Fresh Air Supply (CREFAS) fans three minutes later?

	<u>"A" CREFAS Fan</u>	<u>"B" CREFAS Fan</u>
a.	Running	Off
b.	Running	Running
c.	Off	Off
d.	Off	Running

CORRECT RESPONSE :D  
REFERENCE:

TS 3.3.7.8.1  
E-495, 496

d is correct - only "B" fan will be running. "A" fan will not auto start because the "C" detector is not above chlorine isolation setpoint of 0.42 ppm (0.5 TS)

70) \*PV:1.0 Q#:70 RT:0.0 DF:2 LP:LOT0540.5E CT:01, RO, W, N

\*\*\*ATTACHMENT Q70 is provided\*\*\*

Unit 1 plant conditions are as follows:

- Reactor power 60% during a shutdown
- Reactor level 35"
- "1C" RFP MGU Controller is in manual
- "1C" RFP Min Flow Controller (HIC-006-106C) in manual, set to 0%
- "1C" RFP speed is reduce to 3000 rpm
- "1C" RFP Pressure 1000 psig
- "1C" RFP discharge check valve closes

WHICH ONE of the following describe the lowest min. flow valve setting that will maintain total pump flow in the optimum efficiency region?

- a. 32%
- b. 55%
- c. 70%
- d. 75%

CORRECT RESPONSE :B

REFERENCE:

S06.0.A  
S06.2.C

a is incorrect - Places you in the unsafe region of the total pump flow curve

b is correct - Places you in the optimum efficiency region

c is incorrect - Places you in the safe region outside the optimum efficiency region

d is incorrect - Places you in the safe region outside the optimum efficiency region

71) \*PV:1.0 Q#:71 RT:0.0 DF:1 LP:LOT1530.02 CT:01, RO, W, N

WHICH ONE of the following conditions is an allowable combination of APRM indicated power and core thermal power (12 hour shift average) at the end of the 12 hour shift?

	<u>APRM INDICATED POWER</u>	<u>CORE THERMAL POWER (12 HOUR SHIFT AVERAGE)</u>
a.	100.2%	3461 MWth
b.	99.8%	3463 MWth
c.	100%	3459 MWth
d.	100.4%	3457 MWth

CORRECT RESPONSE :D  
REFERENCE:

d is correct - operating license states the plant can be operated at power levels "not in excess of 3458 megawatts thermal"

a, b, c are all incorrect, since they have power exceeding 3458 MWth

72) \*PV:1.0 Q#:72 RT:0.0 DF:2 LP:LOT0760.07 CT:01, RO, W, N

Plant conditons are as follows:

- OPCON 5
- Reactor Mode Switch is in REFUEL
- Fuel Shuffle part 2 is in progress
- RWM is bypassed

The Fuel Handling Director notifies the Reactor Operator that a fuel bundle is about to be removed from the core.

The Reactor Operator then notices the selected control rod indicates position 02.

WHICH ONE of the following describe the ability to move the contol rod and the fuel bundle with the above conditions?

	<u>CONTROL ROD</u>	<u>FUEL BUNDLE</u>
a.	Can be inserted	Can be raised
b.	Cannot be inserted	Cannot be raised
c.	Can be inserted	Cannot be raised
d.	Cannot be inserted	Can be raised

CORRECT RESPONSE :C

REFERENCE:

C is correct - any rod not fully inserted will bive fuel hoist interlock to refuel platform - bundle cannot be raised. The Control rod at 02 can be inserted, since RWM is bypassed, and will not block rod insertion.

73) \*PV:1.0 Q#:73 RT:0.0 DF:2 LP:LOT0240.06 CT:01, RO, W, N

Plant conditions are as follows:

- OPCON 2, with a reactor startup in progress
- SRM shorting links are installed
- SRM count rates are as follows:
  - "A" -  $1.6 \times 10^5$  cps
  - "B" -  $9.5 \times 10^4$  cps
  - "C" -  $2.3 \times 10^5$  cps
  - "D" -  $2.7 \times 10^5$  cps
- All IRMs are reading 12 on range 2
- SRM/IRM overlap surveillance has been completed

WHICH ONE of the following actions is required?

- a. Manually scram the reactor
- b. Enter and perform OT-117, RPS Failures
- c. Range all IRMs to range 3
- d. Withdraw SRMs to maintain 100 to 100,000 cps, then continue the startup

CORRECT RESPONSE :D

REFERENCE:

a and b are incorrect - No scram signal present, no scram required  
c is incorrect - Ranging IRMs up will cause a rod block  
d is correct - Must withdraw SRMs to maintain 100 - 100,000 cps to keep rod block clear

74) PV:1.0 Q#:74 RT:0.0 DF:1 LP:LOT0160.03 CT:01, RO, W, N

Primary Containment purging is in progress using the Reactor Enclosure Air Supply fans.

WHICH ONE of the following describes the exhaust fans and filters that are used to process the Containment atmosphere in this flowpath?

- | <u>Exhaust Fans</u>   | <u>Filters</u> |
|-----------------------|----------------|
| a. Drywell Purge Fans | RERS filters   |
| b. SGTS Fans          | RERS filters   |
| c. Drywell Purge Fans | SGTS filters   |
| d. SGTS Fans          | SGTS filters   |

CORRECT RESPONSE :C  
REFERENCE:

M-57, sh. 2

c is correct - Only DW Purge fans are high enough in capacity, and high volume flow can only go through SGTS filters

75) PV:1.0 Q#:75 RT:0.0 DF:1 LP:LOT1760.04 CT:01, RO, W, N

Plant conditions are as follows:

- OPCON 5
- Individual control rod scrams are in progress for testing

After scramming rod 38-59 at the HCU, the RADOS dosimeter alarms for the reactor operator at the HCU, indicating 102 mR/hr. The operator immediately exited the area.

WHICH ONE of the following describes the operator's responsibility per HP-C-310, RADIATION WORK PERMIT PROGRAM?

- a. Notify Radiation Protection of a possible change in dose rate near HCU 38-59
- b. Obtain a RO-2A radiation monitor and survey the area around HCU 38-59
- c. Obtain and install lead shielding around HCU 38-59
- d. Request Radiation Protection post the area as a RADIATION AREA prior to continuing work near HCU 38-59

CORRECT RESPONSE :A  
REFERENCE:

HP-C-310

a is correct per HP-C-310, step 5.6.5  
d- incorrect..dose rate meets high rad area

51) \*PV:1.0 Q#:76 RT:0.0 DF:2 LP:LOT1560.6 CT:01, SRO, W, N

\*\*\*ATTACHMENT Q51 is provided\*\*\*

Unit 1 plant conditions are as follows:

- 70% reactor power
- A loss of generator cooling has resulted in a rapid plant shutdown per GP-4, RAPID PLANT SHUTDOWN
- All RO scram actions are completed

After the GP-4 was completed, the following indications were observed:

- All RPS "A" indicating lights are lit
- All RPS "B" indicating lights are extinguished
- PMS scram event indicator displays "NO SCRAM" with a dark blue border
- All fully inserted IRMs indicate on Range 1 and decreasing
- FWLC SETPOINT SETDOWN lamp on 10C603 is lit
- Boron has NOT been injected

WHICH ONE of the following describes reactor status and whether a reactor cooldown is permitted?

	<u>Reactor Status</u>	<u>Cooldown Permitted</u>
a.	Shutdown	Yes
b.	Not shutdown	Yes
c.	Shutdown	No
d.	Not shutdown	No

CORRECT RESPONSE :A

REFERENCE:

a is correct - Cooldown permitted per T-101. Reactor is shutdown without boron per NOTE 16 of T-101

52) \*PV:1.0 Q#:77 RT:0.0 DF:3 LP:LOT1560.06 CT:01, SRO, W, N

\*\*\*ATTACHMENT T-102 is provided\*\*\*

Unit 1 plant conditions are as follows:

- Loss of Coolant Accident
- Drywell pressure is 31 psig
- Drywell temperature is 350°F
- Suppression Pool level is 39 feet

WHICH ONE of the following describes the ability to spray the drywell and required RPV cooldown strategy?

<u>Drywell Spray</u>	<u>RPV Cooldown</u>
a. Permitted	Normal Rates
b. Permitted	Emergency Blowdown
c. NOT Permitted	Normal Rates
d. NOT Permitted	Emergency Blowdown

CORRECT RESPONSE :D

REFERENCE:

a, b, and c are incorrect - Plant conditions require a blowdown >340°F and sprays are prohibited with suppression pool level >38.7 ft., despite being on safe side of spray initiation limit curve.

d is correct

Provide attachment with following T-102 portions:

PC/P leg below PC/P-6  
DW/T leg below DW/T-6  
Curves DW/T-2, DW/T-3, Table DW/T-1

53) \*PV:1.0 Q#:78 RT:0.0 DF:2 LP:LOT0735.07 CT:01, SRO, W, N

Plant conditions are as follows:

- Unit 1 is in OPCON 1
- Unit 2 is maintaining OPCON 3 for an expected 2 day outage
- HSS-11-091 ESW CONTROL TRANSFER SWITCH and "OA" ESW Pump handswitch on Unit 1 Remote Shutdown Panel have failed  
Operability checks

WHICH ONE of the following is the HIGHEST OPCON permitted after expiration of all allowable action time if the equipment is not restored to operable?

	<u>UNIT 1</u>	<u>UNIT 2</u>
a.	OPCON 3	OPCON 1
b.	OPCON 3	OPCON 3
c.	OPCON 4	OPCON 3
d.	OPCON 4	OPCON 4

CORRECT RESPONSE :B  
REFERENCE:

B is correct - common control on Unit 1 RSP LCO applies in OPCON 1 and 2  
Need full U1/U2 Tech Spec for RSP inst. 3.3.7.4 and tables

54) \*PV:1.0 Q#:79 RT:0.0 DF:2 LP:LOT1560.07 CT:01, SRO, W, N

\*\*\*ATTACHMENT T-102 is provided\*\*\*

Unit 2 plant conditions are as follows:

- ATWS is in progress
- "2K" SRV is stuck open
- RPV pressure is 880 psig and stable
- Suppression Pool level is 25 ft. and stable
- Suppression Pool water temperature is 150°F and rising

WHICH ONE of the following is the lowest Suppression Pool water temperature at which an emergency blowdown is required for the conditions listed above?

- a. 157°F and rising
- b. 172°F and rising
- c. 186°F and rising
- d. 192°F and rising

CORRECT RESPONSE :B  
REFERENCE:

T-102

b is correct - Per T-102 SP/T-1 Heat Capacity Temp Limit Curve

55) \*PV:1.0 Q#:80 RT:0.0 DF:2 LP:LOT1560.06 CT:01, SRO, W, N

\*\*\*ATTACHMENT T-102 is provided\*\*\*

Unit 2 plant conditions are as follows:

- Emergency blowdown in progress
- Suppression pool level 14 feet and lowering
- RHR Loops "A" and "B" in suppression pool cooling with suction temperature 115°F
- Core Spray loops "A" and "B" are injecting
- Division 1 SPOTMOS indicates 131°F
- Division 2 SPOTMOS is de-energized

WHICH ONE of the following is the actual value of suppression pool temperature and the status of ECCS NPSH Limits?

	<u>Suppression Pool Temperature</u>	<u>ECCS NPSH Limits</u>
a.	131°F	Met
b.	131°F	Not Met
c.	115°F	Met
d.	115°F	Not Met

CORRECT RESPONSE :C

REFERENCE:

c is correct - ECCS NPSH Limit = 13.5 ft. valid suppression pool temperature is from operating RHR suction suppression pool level below SPOTMOS probes at 17.8 ft.

56) PV:1.0 Q#:81 RT:0.0 DF:2 LP:LEPP-0120.01 CT:01, SRO, W, N

\*\*\*ATTACHMEMENT Q56 is provided\*\*\*

Unit 2 plant conditions are as follows:

- 90% power
- A resin spill has occurred while backwashing RWCU Demin resulting in a South Stack Hi-Hi Alarm
- Site boundary whole body dose rate has been 118 mRem/hr for the last hour

WHICH ONE of the following describes the Emergency Action Level (EAL) and ability to maintain power operation?

<u>EAL</u>	<u>PLANT STATUS</u>
a. General Emergency	Plant must be shutdown and perform emergency blowdown per T-112
b. Site Area Emergency	Plant must be shutdown and perform emergency blowdown per T-112
c. Site Area Emergency	Continued operation at power permitted
d. General Emergency	Plant must be shutdown and MSIVs closed

CORRECT RESPONSE :C

REFERENCE:

c is correct - Whole body >100 mRem/hr will result in Site Area Emergency, no primary leak exists so reactor shutdown is not required

57) \*PV:1.0 Q#:82 RT:0.0 DF:2 LP:LOR1560.06 CT:01, SRO, W, N

\*\*\*ATTACHMENT T-102 is provided\*\*\*

Unit 1 plant conditions are as follows:

- Loss of Coolant Accident
- H2O2 Analyzers 10S205 and 10S206 have isolated
- Drywell pressure has been reduced from 6.2 psig to 1.5 psig
- RPV water level is -110 inches

WHICH ONE of the following describes the method for restoring H2O2 analyzers and the areas where monitoring is required?

- a. Bypass analyzer isolations per GP-8.5, ISOLATION BYPASS OF CRUCIAL SYSTEMS and sample the drywell only
- b. Bypass analyzer isolations per GP-8.5, ISOLATION BYPASS OF CRUCIAL SYSTEMS and sample the drywell and suppression pool
- c. Reset analyzer isolations per GP-8.3, ISOLATION RESETS and sample the drywell only
- d. Reset analyzer isolations per GP-8.3, ISOLATION RESETS and sample the drywell and suppression pool

CORRECT RESPONSE :B

REFERENCE:

Bypass is required per T-102, and the isolation cannot be reset with RPV water level below -38 inches. T-102 requires sampling of the drywell and suppression pool to adequately evaluate the entire containment.

Provide T-102 attachment with entry conditions removed.

58) \*PV:1.0 Q#:83 RT:0.0 DF:2 LP:LOT0460.07 CT:01, SRO, W, N

Unit 1 plant conditions are as follows:

- "A" RECW pump is running (handswitch in AUTO)
- "B" RECW pump is not running (handswitch in AUTO)
- Annunciator 118 SERVICES, H-3, REAC ENCL COOLING WATER HTX OUT LO PRESS is in alarm

RECW heat exchanger outlet pressure indicates 80 psig on 10C655.

WHICH ONE of the following actions is required?

- a. Direct placing alternate RECW Heat Exchanger in service per S13.6.B, PLACING ALTERNATE RECW HEAT EXCHANGER IN SERVICE
- b. Enter ON-113, LOSS OF RECW, and direct the start of the "1B" RECW pump
- c. Direct and equipment operator to raise RECW Heat Exchange outlet pressure using S13.9.A, ROUTINE INSPECTION OF THE RECW SYSTEM
- d. Immediately trip both reactor recirc. pumps and enter OT-112, RECIRCULATION PUMP TRIP

CORRECT RESPONSE :B

REFERENCE:

B is correct - Symptoms given are entry conditions for ON-113. ON-113 will required ensuring AUTO start of the standby RECW pump. This is an auto function which did not occur.

59) \*PV:1.0 Q#:84 RT:0.0 DF:2 LP:LOT0180.02 CT:01, SRO, W, N

Unit 2 plant conditions are as follows:

- OPCON 1
- PCIG, RECW and Drywell Chilled Water Division 1 isolation valves have inadvertently isolated due to single spurious signal
- All valves have had their Division 1 isolation signals bypassed and the systems have been returned to service

WHICH ONE of the following lists the spurious isolation signal and the TECH SPEC time limit for beginning a controlled shutdown?

	<u>ISOLATION SIGNAL</u>	<u>TECH SPEC ACTION</u>
a.	RE Exhaust Hi Rad	1 hour
b.	RE Exhaust Hi Rad	4 hours
c.	LO-LO-LO RPV Level	1 hour
d.	LO-LO-LO RPV Level	4 hours

CORRECT RESPONSE :D

REFERENCE:

A, B, C incorrect - One common signal is -129" RPV Level. LCO action is 4 hours for a single division bypass.

60) \*PV:1.0 Q#:85 RT:0.0 DF:2 LP:LOT1560. CT:01, SRO, W, N

\*\*\*ATTACHMENT T-102 is provided\*\*\*

Unit 2 plant conditions are as follows:

- Reactor shutdown
- RPV level is 18 inches
- Suppression Pool temperature 85°F
- Suppression Pool level is 30 ft and slowly rising
- RPV pressure 900 psig and rising
- Bypass Valves are available

WHICH ONE of the following describes the required actions and the reasons for those actions?

	<u>Required Action</u>	<u>Reason</u>
a.	Emergency blowdown	Ensure vacuum breakers function
b.	Emergency blowdown	Prevent tailpipe failure
c.	Reduce RPV pressure	Prevent tailpipe failure
d.	Reduce RPV pressure	Ensure vacuum breakers function

CORRECT RESPONSE :C

REFERENCE:

c is correct - Trip Bases allow RPV pressure reduction. Pressure should be reduced (attempted) prior to RPV blowdown SP/1-1 Tail Pipe Level Limit Curve.

61) PV:1.0 Q#:86 RT:0.0 DF:2 LP:LOT1560 CT:01, SRO, W, N

\*\*\*ATTACHMENT Q61 is provided\*\*\*

Unit 2 plant conditions are as follows:

- 100% power
- A break in the "A" RWCU Pump Discharge piping has occurred
- All attempts to isolate RWCU have been unsuccessful
- "A" RWCU pump room temperature is 160°F and rising

WHICH ONE of the following additional conditions will require an RPV emergency blowdown?

- a. RWCU Regen Htx Room 150°F and rising
- b. "A" RWCU Pump Room rad 10,500 mR/hr and rising
- c. Outboard MSIV Room temperature 150°F and rising
- d. RCIC Room temperature 150°F and stable

CORRECT RESPONSE :C

REFERENCE:

T-102

c is correct - Emergency blowdown when steam leak is unisolable and 2 areas exceed max safe ops

62) \*PV:1.0 Q#:87 RT:0.0 DF:1 LP:LOT1560.05 CT:01, SRO, W, N

Unit 2 plant conditions are as follows:

- Loss of Coolant Accident
- Reactor Enclosure HVAC has isolated
- "2B" RERS and "2B" SGTS fans are running
- Access to the Reactor Enclosure is required

Per T-103 SECONDARY CONTAINMENT CONTROL, the CRS is assessing whether defeating isolations and restoring RE HVAC will result in acceptable offsite dose.

WHICH ONE of the following readings should be used as the basis for this decision?

- a. Unit 2 South Stack Monitor
- b. Wide Range Accident Monitor
- c. North Stack Normal Range Monitor
- d. Reactor Enclosure Exhaust Rad Monitors

CORRECT RESPONSE :D

REFERENCE:

a,b,c are incorrect - These instruments currently do not indicate RE Exh Rad levels

d is correct - Per T-103, ability to defeat isolation is based on HVAC rad which currently has flow

63) \*PV:1.0 Q#:88 RT:0.0 DF:2 LP:LOT0510.07 CT:01, SRO, W, N

Unit 1 plant conditions are as follows:

- Reactor power is 100%
- Generator output is 1210 MWe

Twenty minutes later, plant conditions are as follows:

- Reactor power is 100%
- Generator output is 1170 MWe

WHICH ONE of the following describes the required actions for the above conditions, and the cause of the load reduction?

- a. Enter OT-104, UNEXPECTED/UNEXPLAINED POSITIVE OR NEGATIVE REACTIVITY INSERTION, due to a scrammed control rod
- b. Enter OT-104, UNEXPECTED/UNEXPLAINED POSITIVE OR NEGATIVE REACTIVITY INSERTION, due to 6A Feedwater Heater isolation
- c. Enter OT-116, LOSS OF CONDENSER VACUUM, due to SJAE discharge recirc controller failed closed
- d. Enter OT-116, LOSS OF CONDENSER VACUUM, due to blockage in the offgas piping

CORRECT RESPONSE :D

REFERENCE:

OT-116, Step 3.4

d is correct - Only "d" will make MWe decrease (due to vacuum drop), with power unaffected

a is incorrect - Will make MWe and power drop

b is incorrect - Will make MWe and power rise

c is incorrect - Will have no effect - this valve is normally closed

64) \*PV:1.0 Q#:89 RT:0.0 DF:2 LP:LOT0350.07 CT:01, SRO, W, N

Plant conditions are as follows:

- OPCON 3
- Plant cooldown in progress with RPV pressure of 45 psig
- MSIVs are open
- "1B" RHR is in Shutdown Cooling Mode
- RPV level is being maintained at +80 inches on UPSET range

Both Division 2 drywell pressure instruments have failed upscale

"DIV 2 CORE SPRAY AUTO START" annunciator has alarmed  
"DIV 2 RHR AUTO START" annunciator has alarmed

WHICH ONE of the following describes the ability to maintain RPV level below the Main Steam lines?

- a. Per OT-110, REACTOR HIGH LEVEL, must secure "B" RHR pump and "B" Core Spray pump to maintain level below the Main Steam lines
- b. Per OT-110, REACTOR HIGH LEVEL, must secure only "B" RHR pump to maintain level below the Main Steam lines
- c. Per SE-10, LOCA, must secure only "B" Core Spray pump to maintain level below the Main Steam lines
- d. Per SE-10, LOCA, must secure "B" RHR pump and "B" Core Spray pump to maintain level below the Main Steam lines

CORRECT RESPONSE :C

REFERENCE:

c is correct - Div 2 LOCA signal will start "B" RHR and CS pumps - only "B" CS will inject since "B" RHR is aligned in SDC (suction from the RPV). Securing "B" RHR pump will inappropriately initiate a loss of shutdown cooling. Action to secure ECCS after auto initiation is directed by the CRS per SE-10, LOCA.

65) \*PV:1.0 Q#:90 RT:0.0 DF:2 LP:LOT0120.15 CT:01, SRO, W, N

Unit 2 plant conditions are as follows:

- Reactor startup is in progress at 95% power
- SRV OPEN alarm on 110 STEAM is annunciated
- Red and amber lamps above "C" SRV switch are lit
- "C" SRV tail pipe temperature is 100°F and steady
- The acoustic monitor for "C" SRV is determined to have a failed sensor

WHICH ONE of the following describes the ability to resume the power ascension and the restrictions, if any, on continued power operation?

- a. Power ascension may resume; power operation may continue provided the pre-planned alternate position indication at the remote shutdown panel is operable
- b. Power ascension may resume; "C" acoustic monitor must be restored to operable within 48 hours or Unit 2 must be in Hot Shutdown in the next 12 hours
- c. Power ascension may NOT resume; power operation may continue provided the pre-planned alternate position indication at the remote shutdown panel is operable
- d. Power ascension may NOT resume; "C" acoustic monitor must be restored to operable within 48 hours or Unit 2 must be in Hot Shutdown in the next 12 hours

CORRECT RESPONSE :B

REFERENCE:

B correct already in OPCON1, so no OPCON change is involved for power ascension so 3.04 permits 100% power. Accident monitoring instrumentation LCO 3.3.7.5 Allowed Outage Time is 48 hours

A,C,D are incorrect Wrong answers are plausible if candidate misapplies 3.04 or improperly considers RSP SRV indication as redundant to MCR (RSP indication is power applies to solenoid)

66) \*PV:1.0 Q#:91 RT:0.0 DF:2 LP:LOT0370.24A CT:01, SRO, W, N

Unit 1 plant conditions are as follows:

- "1A" RHR is in suppression pool cooling to support HPCI pump valve and flow test
- The "1A" RHR pump trips on "C" phase overcurrent. The overcurrent trip cannot be reset

WHICH ONE of the following is the maximum allowable period that "1A" RHR can remain inoperable before the commencement of a plant shutdown is required based on the above conditions?

- a. 1 hour
- b. 72 hours
- c. 7 days
- d. 30 days

CORRECT RESPONSE :B  
REFERENCE:

b is correct - T.S. 36.2.3 is most limiting L.C.O. containment cooling

67) PV:1.0 Q#:92 RT:0.0 DF:2 LP:LOT1800 CT:01, SRO, W, N

Unit 1 plant conditions are as follows:

- OPCON 2, at 9% power
- Reactor startup in progress
- There have been no occurrences of exceeding reactor water chemistry limits for the past 14 months

Chemistry has taken a reactor coolant sample one hour ago, and reports the following results:

- Conductivity - 1.6  $\mu$ mhos/cm
- pH - 7.2
- Chlorides - 0.27 ppm

WHICH ONE of the following describes the ability to place the unit in OPCON 1?

- a. Under these conditions, change to OPCON 1 is permitted
- b. Must reduce chlorides to less than 0.1 ppm before changing to OPCON 1
- c. Must reduce chlorides to less than 0.2 ppm before changing to OPCON 1
- d. Must reduce conductivity to less than 1.0  $\mu$ mhos/cm before changing to OPCON 1

CORRECT RESPONSE :A

REFERENCE:

A- Correct. Relief from LCO 3.0.4 is provided, allowing the change to OPCON 1 and correcting the excessive conductivity while in OPCON 1. Chloride limit in OPCON 1 is higher than the limit in OPCON 2, and the chloride limit for OPCON 1 is already met.

68) \*PV:1.0 Q#:93 RT:0.0 DF:1 LP:LOT1574.26 CT:01, SRO, W, N

Unit 1 plant conditions are as follows:

- Reactor power 100%

During the performance of ST-6-048-230-1 SLC pump, valve, and flow; it is determined the "1A" SLC pump does not meet the Tech Spec minimum for flow.

"B" and "C" pumps meet all Tech Spec requirements

WHICH ONE of the following actions should be taken?

- a. Document in Regulatory Action Log only
- b. Document performance in ST/RT Status Log only
- c. Document in Regulatory Action Log and ST/RT Status Log
- d. Document in Equipment Deficiency/Potential Action Log and ST/RT Status Log

CORRECT RESPONSE :D

REFERENCE:

d is correct - NOM-L-6.4 requires ED/PLCO Log entry and ST/RT Status Log

c is incorrect - One SLC pump inop is only PLCO Log entry

a is incorrect - Regulatory Log entry is not required

b is incorrect - PLCO Log must be entered

69) \*PV:1.0 Q#:94 RT:0.0 DF:2 LP:LOT2001.03 CT:01, SRO, W, N

Unit 1 plant conditions are as follows:

- OPCON 1 at 16% power
- Plant shutdown is in progress
- Preparations are being made to de-inert the primary containment

In order to facilitate de-inerting the suppression chamber airspace, outage planning wants to block open two pairs of suppression chamber-drywell vacuum breakers from the Reactor Enclosure vacuum breaker test panel.

WHICH ONE of the following describes the earliest plant conditions which would permit this plant configuration change without entering a Tech. Spec. action?

	<u>Reactor Coolant Temperature</u>	<u>Reactor Mode Switch Position</u>
a.	530°F	RUN
b.	395°F	STARTUP/HOT STANDBY
c.	195°F	SHUTDOWN
d.	135°F	REFUEL

CORRECT RESPONSE :C

REFERENCE:

c is correct - T.S. 3.6.4.1 only requires vacuum breaker operability in OPCONS 1, 2, 3. "c" is the earliest point we could enter OPCON 4

70) PV:1.0 Q#:95 RT:0.0 DF:1 LP:LOT1570.6B CT:01, SRO, W, N

Unit 1 plant conditions are as follows:

- 90% power
- DIV 3 ADS OUT OF SERVICE alarm is lit
- An approved troubleshooting method is being performed which required a safety determination

The ADS System Manager recommends revising the troubleshooting method to troubleshoot a different portion of the system.

WHICH ONE of the following describes who is required to determine if a new or revised safety determination should be generated?

- a. Station Qualified Reviewer and Director of Engineering
- b. Station Qualified Reviewer and Control Room Supervisor
- c. Plant Operations Review Committee (PORC)
- d. Plant Manager and Director of Engineering

CORRECT RESPONSE :B

REFERENCE:

b is correct - A-C-41 requires SQR and Shift Management

71) PV:1.0 Q#:96 RT:0.0 DF:1 LP:LOT1570.6B, PB 2001 EXAM CT:01, SRO, W, B

Plant conditions are as follows:

- HPCI inadvertently isolated due to a failure of the high steam flow isolation logic
- The HPCI System Manager has requested permission to investigate the failure by performing electrical continuity checks and tightening electrical connections

WHICH ONE of the following procedures is required to control this activity?

- a. A-C-023, "Plant Evolution/Special Test (PEST) Program"
- b. A-C-041, "Troubleshooting, Rework and Testing (TRT) Control Process"
- c. A-C-025, "Fix It Now (FIN) Process"
- d. MOD-C-7, "Temporary Plant Alteration (TPA)"

CORRECT RESPONSE :B

REFERENCE:

A is incorrect - Activity is not infrequently performed complex test or evolution which may place the plant equipment and operation outside bound of normal proedures.

B is correct - A-C-41 and AG-CG-41, 4.4.1 addresses all the listed activities.

C is incorrect - FIN process does not include troubleshooting

D is incorrect - This activity does not involve a temporary alteration to the plant

72) \*PV:1.0 Q#:97 RT:0.0 DF:1 LP:LOT1800.4A CT:01, SRO, W, N

WHICH ONE of the following setpoints is required to be maintained in order to prevent the possibility of exceeding a Safety Limit?

- a. APRM gain adjustment factor less than 1.0
- b. Maximum Average Planar Ratio less than 1.0
- c. APRM scram setting of less than 15% power during startup
- d. Linear Heat Generation Rate less than the value in the Core Operating Limits Report

CORRECT RESPONSE :C

REFERENCE:

C: Correct- Maintaining less than 15% ensures the Safety Limit of 25% during low pressure and low flow conditions is met

73) \*PV:1.0 Q#:98 RT:0.0 DF:2 LP:LOT0160.10 CT:01, SRO, W, N

Plant conditions are as follows:

- Both Containment H2O2 analyzers are in operation for the weekly surveillance
- Drywell O2 is 2.7% and steady
- Suppression Pool O2 is 4.1% and steady
- Drywell pressure 0.5 psig and steady
- Suppression Pool pressure is 0.2 psig and steady
- Suppression Pool Water Temperature is 86°F and steady

WHICH ONE of the following describes the required actions?

- a. Reduce drywell pressure per OT-101, HIGH DRYWELL PRESSURE
- b. Vent the drywell per T-200, PRIMARY CONTAINMENT EMERGENCY VENT PROCEDURE
- c. Reduce suppression pool O2 concentration per S57.3.B, PRIMARY CONTAINMENT PRESSURE CONTROL AND NITROGEN MAKE-UP
- d. Place one loop of RHR in Suppression Pool cooling per S51.8.A, SUPPRESSION POOL COOLING OPERATING (STARTUP AND SHUTDOWN) AND LEVEL CONTROL

CORRECT RESPONSE :C

REFERENCE:

T.S. 3.6.6.3  
S57.3.B

c is correct - Suppression Pool O2 concentration must be reduced to <4% to comply with TS 3.6.6.3

74) PV:1.0 Q#:99 RT:0.0 DF:1 LP:LOT0120.03 CT:01, SRO, W, N

Plant conditions are as follows:

- A LOCA occurs, with a significant fuel failure
- The crew has aligned the MSIV Leakage Alternate Drain Pathway

WHICH ONE of the following areas should the CRS direct HP to monitor for elevated radiation levels as a result of the MSIV Leakage Alternate Drain Pathway alignment?

- a. Reactor Enclosure, elevation 177
- b. Radwaste Enclosure, elevation 165
- c. Offgas Enclosure, elevation 195
- d. Turbine Enclosure, elevation 269

CORRECT RESPONSE :D

REFERENCE:

d is correct - MSIV Leakage Alternate Drain Pathway discharges to the condenser hotwell. Radioactive gases will migrate up through the water, and out through the turbine seals onto the turbine deck area

75) PV:1.0 Q#:100 RT:0.0 DF:2 LP:LOT0350.05 CT:01, SRO, W, N

Unit 1 plant conditions are as follows:

- OPCON 5, Fuel Shuffle part 1 is in progress
- RPV level is +495 inches on SHUTDOWN Range
- A and C RHR pumps are inoperable
- A and C Core Spray pumps are inoperable
- B RHR is operating in shutdown cooling mode

A Loss of Coolant Accident occurs, causing RPV cavity water to leak at a rate of 2000 gallons per minute. ON-120, FUEL HANDLING PROBLEMS, has been entered.

WHICH ONE of the following directions will result in a level rise within 5 minutes?

- a. Arm and depress the Division 2 Core Spray Initiation Pushbutton (INITIATION 2)
- b. Arm and depress the Division 4 Core Spray Initiation Pushbutton (INITIATION 4)
- c. Open "1B" RHR LPCI injection valve (HV51-1F017B)
- d. Open "1D" RHR LPCI injection valve (HV51-1F017D)

CORRECT RESPONSE :A

REFERENCE:

a is correct - Div 2 pushbutton will start the "B" CS pump and open the injection valve

b is incorrect - Div 4 pushbutton will not open the injection valve

c is incorrect - Condensate transfer is not aligned to "B" RHR when it is in SDC

d is incorrect - Condensate transfer will inject, but cannot stop level decrease (Cond. Transfer pump is only 600 gpm)

76) \*PV:1.0 Q#:101 RT:0.0 DF:1 LP:LOT1562.01 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- Reactor shutdown
- Level is unknown, T-116, RPV FLOODING, is entered
- 5 ADS/SRVs cannot be opened
- Entry into the SAMP procedures is directed

WHICH ONE of the following procedure(s) should be concurrently executed based on the conditions listed above?

	<u>T-116</u>	<u>SAMP I</u>	<u>SAMP II</u>
a.	Yes	No	Yes
b.	Yes	Yes	Yes
c.	No	Yes	Yes
d.	No	Yes	No

CORRECT RESPONSE :C  
REFERENCE:

c is correct - Both SAMPs entered, TRIPs must be exited

77) \*PV:1.0 Q#:102 RT:0.0 DF:1 LP:LOT0080.06 CT:01, C, W, N

WHICH ONE of the following conditions will result in a Control Rod Insert Block?

- a. RBM INOP with power at 95%
- b. IRM downscale during startup with IRMs on Range 3
- c. RWM not latched at 12% power
- d. Refueling platform over the core with the reactor mode switch in start up

CORRECT RESPONSE :C  
REFERENCE:

a, b, and d are incorrect - W/D blocks only

c is correct - Both an insert and W/D block

78) PV:1.0 Q#:103 RT:0.0 DF:1 LP:LOT0040.12 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- Power is 70%, with power ascension in progress
- A fire in inverter cabinet E/S-XX-119 causes a loss of AC control power for the "1B" Reactor Recirculation pump MG set speed control circuit

WHICH ONE of the following describes the effect on the "1B" Reactor Recirculation pump/MG set?

- a. 28% speed runback
- b. 42% speed runback
- c. Recirculation pump trip
- d. MG set scoop tube lock

CORRECT RESPONSE :D

REFERENCE:

d is correct - Loss of AC to the scoop tube positioner causes a scoop tube lock

79) PV:1.0 Q#:104 RT:0.0 DF:1 LP:LOT0110.4B CT:01, C, W, N

Unit 2 plant conditions are as follows:

- Reactor power 3%
- Reactor startup is in progress
- RWCU is rejecting to the Main Condenser

The downstream pressure switch for HV-C-44-2F033 (DUMP) fails high.

WHICH ONE of the following describes the response of the HV-C-44-2F033 valve and the purpose for this action?

	<u>HV-C-44-2F033 Position</u>	<u>Purpose</u>
a.	Closed	Prevents excessive draining to the Condenser
b.	Closed	Prevents over pressurization of LP piping
c.	Full Open	Prevents excessive draining to the Condenser
d.	Full Open	Prevents over pressurization of LP piping

CORRECT RESPONSE :B

REFERENCE:

b is correct -  $\geq 140$  psig downstream pressure F033 dump valve will auto close. Failure of the pressure switch will result in high pressure. The auto closure is designed to protect lower pressure rated down stream piping.

80) \*PV:1.0 Q#:105 RT:0.0 DF:2 LP:LOT0340.15A CT:01, C, W, N

Unit 1 plant conditions are as follows:

- 100% reactor power
- Reactor level 35 and stable
- HPCI is being run for post maintenance test (PMT) per S55.1.D, HPCI system full flow functional test
- HPCI flow controller is in AUTO, and set for flow of 5600 gpm

The following alarms are received in the MCR, with HPCI continuing to operate:

- 117 HPCI A-3, CONDENSATE STORAGE TANK LO LEVEL/SUCTION TRANSFER
- 117 HPCI B-1, HPCI PUMP SUCT LO PRESS

WHICH ONE of the following describes the status of the alarm, and required actions based on the above conditions?

- a. Alarms are expected; Continue HPCI operation at rated flow
- b. Alarms are expected; Operate HPCI at reduced flow until suction valve transfer is complete
- c. Alarms are unexpected; Trip HPCI
- d. Alarms are unexpected; Operate HPCI at reduced flow until suction valve transfer is complete

CORRECT RESPONSE :C

REFERENCE:

c is correct - HPCI low suction pressure annunciator indicates a HPCI trip condition. Since HPCI did not trip, a trip is required to be performed. The alarms received would not be normal for the conditions given.

81) \*PV:1.0 Q#:106 RT:0.0 DF:1 LP:LOT0180.08 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- OPCON 1
- The "1A" RPS/UPS inverter 120 VAC output breakers both trip on undervoltage

WHICH ONE of the following describes the expected status of the Main Steam Lines and the Drywell Chilled Water system based on the conditions above?

	<u>Main Steam Lines</u>	<u>Drywell Chilled Water Flow to Drywell</u>
a.	Not Isolated	Isolated
b.	Not Isolated	Not Isolated
c.	Isolated	Isolated
d.	Isolated	Not Isolated

CORRECT RESPONSE :A  
REFERENCE:

"a" is correct- loss of 1AY160 will de-energize Div. 1 NSSSS, MSIV Div. 2 solenoids will maintain the MSIVs open. Drywell chilled water Div. 1 series isolation valves will close.

82) \*PV:1.0 Q#:107 RT:0.0 DF:1 LP:LOT0275.06 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- OPCON 1
- 1BY185 is de-energized due to loss of output from "1B" APRM Inverter

WHICH ONE of the following is the expected status of APRMs and RPS?

	<u>APRMs</u>	<u>RPS Half Scram Generated</u>
a.	All energized	NO
b.	All energized	YES
c.	"2" and "4" de-energized	NO
d.	"2" and "4" de-energized	YES

CORRECT RESPONSE :B

REFERENCE:

b is correct - APRMs are supplied auctioneered power from 1AY185 and 1BY185. 2 of 4 voter units are not. "B" RPS trip units will trip

83) \*PV:1.0 Q#:108 RT:0.0 DF:2 LP:LOT0250.09 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- Startup in progress with reactor critical
- All IRMs are on Range 1 with "A" IRM bypassed
- SRMs and IRMs are fully inserted

The SRM/IRM overlap verification is commenced with the following indications and trends:

SRMs "A", "C" indicate  $1 \times 10^6$  cps and steady  
SRMs "B", "D" indicate  $4 \times 10^5$  cps and rising  
IRMs "C", "E" indicate 2 and rising  
IRM "G" indicates 0  
IRMs "B", "D", "F", "H" indicate 3 and rising

WHICH ONE of the following describes the status of SRM/IRM overlap and the status of control rod blocks?

<u>SRM/IRM Overlap</u>	<u>Control Rod Blocks Active</u>
a. Verified	SRM upscale block
b. Verified	IRM downscale block
c. NOT verified	SRM upscale block
d. NOT verified	IRM downscale block

CORRECT RESPONSE :C

REFERENCE:

ST-6-107-884-2

c is correct - A/C SRMs are upscale and cannot possibly be observed to track up the required 1/2 decade with IRMs rising. SRM rod block at  $1 \times 10^5$  cps. IRM downscale rod block bypassed on Range 1

84) \*PV:1.0 Q#:109 RT:0.0 DF:2 LP:LOT0240.07 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- A reactor startup is in progress with control rods being withdrawn
- All SRMs are fully inserted
- All SRMs are indicating between 400 and 600 cps
- A malfunction in the SRM pulse height discriminator circuitry causes the "A" SRM count rate to drop to 85 cps

WHICH ONE of the following describes the expected status for rod withdrawal capability and the "A" SRM detector retract permit light?

SRMs will withdraw on demand

"A" SRM RETRACT  
PERMIT LIGHT

- |    |     |         |
|----|-----|---------|
| a. | Yes | Lit     |
| b. | Yes | NOT Lit |
| c. | No  | Lit     |
| d. | No  | NOT Lit |

CORRECT RESPONSE :B  
REFERENCE:

B is correct - SRM downscale rod block does not occur until 3 cps. Retract permit light goes out at less than 100 cps. The rod block for SRM retracted when not permitted is bypassed with the SRMs full in.

85) PV:1.0 Q#:110 RT:0.0 DF:1 LP:LOT0270.08 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- 100% power
- Core thermal power will be constant for the next 30 days

WHICH ONE of the following describes the expected effect on the "APRM READING" and "APRM GAIN ADJUSTMENT FACTOR" (AGAF) data on a 3-D Monicore periodic log (P-1), over the next 30 days due to LPRM aging?

	<u>APRM Reading</u>	<u>AGAF</u>
a.	Increase	Increase
b.	Increase	Decrease
c.	Decrease	Increase
d.	Decrease	Decrease

CORRECT RESPONSE :C  
REFERENCE:

c is correct - LPRM aging reduces output  $AGAF = \text{Heat Bal \%} / \text{APRM \%}$  (APRM indication will lower due to depletion of the uranium coating in the LPRMs)

86) \*PV:1.0 Q#:111 RT:0.0 DF:2 LP:LOT0050.02 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- Loss of high pressure injection and small break LOCA
- RPV pressure has been reduced to 575 psig
- RPV water level is being maintained using condensate
- Drywell temperature is 212°F
- XR42-1R623A Wide Range Level on 10C601 indicates -110 inches
- LI42-1R610 Fuel Zone Level on 10C601 indicates -190 inches

WHICH ONE of the following describes how Wide Range and Fuel Zone Level indicators compare to actual level based on the conditions above?

	<u>Wide Range Indication</u>	<u>Fuel Zone Indication</u>
a.	Higher than Actual	Indicates Actual Level
b.	Higher than Actual	Lower than Actual
c.	Lower than Actual	Indicates Actual Level
d.	Indicates Actual Level	Lower than Actual

CORRECT RESPONSE :A

REFERENCE:

a is correct - Wide Range is calibrated hot. Reads high when cooled down. Fuel Zone indication is pressure compensated and will continue to provide accurate indication.

87) \*PV:1.0 Q#:112 RT:0.0 DF:2 LP:LOT0330.06 CT:01, C, W, N

Unit 2 conditions are as follows:

- Loss of Coolant Accident and Reactor SCRAM
- Division 1 DC is de-energized
- Drywell pressure is 4.5 psig and rising
- RHR pumps "B", "C", "D" and Core Spray pumps "B", "C", and "D" have started automatically
- RPV pressure is 800 psig
- ADS has not been inhibited

WHICH ONE of the following describes the response of the Automatic Depressurization System SRVs based on the conditions above?

- a. Open immediately upon receipt of LOCA signal
- b. Open 105 seconds after receipt of LOCA signal
- c. Open 525 seconds after receipt of LOCA signal
- d. Remain closed unless manually initiated

CORRECT RESPONSE :B

REFERENCE:

b is correct - Div 3 ADS will initiate per design because B and D RHR pumps are running

88) \*PV:1.0 Q#:113 RT:0.0 DF:2 LP:LOT0370.07 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- "1A" RHR Loop is in Suppression Pool Cooling

The following events occur:

- A Loss of Coolant Accident occurs
- RPV level drops to the LPCI auto initiation setpoint
- RPV level has been restored to -75 inches with condensate
- Offsite power remains available
- RPV pressure is 475 psig

The CRS has directed suppression pool cooling be placed in service with the "1A" RHR pump.

WHICH ONE of the following describes the expected position of HV-51-1F017A, ("1A" RHR LPCI INJ PCIV), and the response of HV-C-51-1F048A (HEAT EXCH BYPASS) if the handswitch is taken to CLOSE one minute after the LPCI initiation?

	<u>HV-51-1F017A</u>	<u>HV-C-51-1F048A Response</u>
a.	Open	Closes and Remains Closed
b.	Open	Closes and Re-Opens
c.	Closed	Closes and Remains Closed
d.	Closed	Closes and Re-Opens

CORRECT RESPONSE :D

REFERENCE:

d is correct - "A" LPCI injection valve will not open without less than 78 psig d/p, which will not be achieved until RPV pressure drops to about 400 psig. The heat exchanger bypass valve (F048A), has an open signal for three minutes following the receipt of a LOCA signal. While the valve can be closed during this time, it will immediately reopen if the three minutes has not elapsed. Operators need to be especially aware since the valve will initially close.

89) \*PV:1.0 Q#:114 RT:0.0 DF:2 LP:LOT0160.05 CT:01, C, W, N

\*\*\*ATTACHMENT Q89 is provided\*\*\*

Unit 1 plant conditions are as follows:

- Loss of Coolant Accident in progress
- Loss of 10Y101 has caused loss of power to Div. 1 H2O2 Analyzer Sample Isolation Valves
- Div 2, 3, and 4 H2O2 Analyzer Sample Isolation valves have been re-opened

WHICH ONE of the following describes the H2O2 Analyzer and associated sample selector positions to be monitored to obtain valid H2 and O2 values for the drywell and suppression pool?

	<u>Analyzer</u>	<u>Sample Selector Positions</u>
a.	10S205	HSS57-125 Positions 3 and 4
b.	10S205	HSS57-125 Positions 1 and 2
c.	10S206	HSS57-195 Positions 3 and 4
d.	10S206	HSS57-195 Positions 1 and 2

CORRECT RESPONSE :B

REFERENCE:

Loss of the listed sample valves leaves 10S205 as the remaining operable analyzer. Sample selector position 1 provides SP sample, and points 1 or 2 will provide drywell sample.

90) PV:1.0 Q#:115 RT:0.0 DF:2 LP:LOT0180.02 CT:01, C, W, N

Unit 1 is in OPCON 1, when the following occurs:

- A steam leak exists in the outboard MSIV room
- DIV 1 NSSSS MSIV INITIATED (114 ISOL, A-1) has alarmed
- DIV 3 NSSSS MSIV INITIATED (114 ISOL, B-1) has alarmed
- Channel A and C MSIV isolation status lamps on 10C603 are OFF
- Channel B and D MSIV isolation status lamps on 10C603 are ON

WHICH ONE of the following describes the expected status of the MSIVs based on the above conditions with no operator action?

- a. All MSIVs are open
- b. Only "A" and "C" inboard MSIVs are closed
- c. Only "A" and "C" inboard and outboard MSIVs are closed
- d. All inboard and outboard MSIVs are closed

CORRECT RESPONSE :A  
REFERENCE:

a is correct

b, c, and d are incorrect - closure of any MSIVs requires at least one channel a/c and one b/d isolation signal.

91) \*PV:1.0 Q#:116 RT:0.0 DF:1 LP:LOT1550 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- Reactor startup is in progress
- Reactor pressure 890 psig
- "2A" CRD pump is blocked for maintenance
- Control rod 24-17 is inoperable due to a failed accumulator seal
- Control rod 24-17 is at position 08

At 1300, an electrical fault results in the 2B CRD pump tripping

At 1310, the amber accumulator trouble light illuminates for control rod 30-31, which is at position 12.

WHICH ONE of the following actions are required, based on the conditions above?

- a. CRD pump must be started before 1320
- b. CRD pump must be started before 1330
- c. Reactor must be immediately scrammed
- d. Reactor must be scrammed at 1330

CORRECT RESPONSE :C

REFERENCE:

c is correct - ON-107 with 2 Accum. trouble alarms present no CRD reactor pressure <900 psig an immediate scram is required

92) \*PV:1.0 Q#:117 RT:0.0 DF:1 LP:LOT1540.02 CT:01, C, W, N

Unit 1 plant conditions are as follows:

- 95% power during startup
- Red REACTOR HI PRESS TRIP alarm is received
- White RPS scram status lamps "A1", "A2", "A3", and "A4" on 10C603 are NOT lit
- White RPS scram status lamps "B1", "B2", "B3", and "B4" on 10C603 are lit
- AUTO SCRAM CHANNEL A1 and B2 alarms are received
- RPV pressure indicates 1098 psig and rising slowly

WHICH ONE of the following describes the required actions?

- a. Perform an immediate manual scram
- b. Reduce power per the REACTOR MANEUVERING SHUTDOWN INSTRUCTIONS until RPV pressure stops rising
- c. Stabilize pressure using the Bypass Valve Jack and commence shutdown per GP-3, NORMAL PLANT SHUTDOWN
- d. Return pressure to below 1053 psig using EHC Pressure Set and perform a shutdown per GP-4, RAPID PLANT SHUTDOWN

CORRECT RESPONSE :A

REFERENCE:

OT-117

a is correct - Per OT-117, "RPS Failure" manual scram required if a parameter is exceeding scram setpoint (1096)

b is incorrect - Action is appropriate per OT-102, "High Reactor Pressure" but only until scram failure occurred

c and d are incorrect - Bypass valve jack/press set are options offered by OT-102, and GP-4 is called for in OT-117, but not after scram failure

93) PV:1.0 Q#:118 RT:0.0 DF:1 LP:LOT0070.08 CT:01, C, W, N

Plant conditions are as follows:

- OPCON 1
- DIVISION 2 DC is de-energized
- 1BY160 is de-energized

The reactor has been manually scrammed

WHICH ONE of the following describes the operation of the Backup Scram Valves following the manual scram based on the above conditions?

- a. DC power is applied to one backup scram valve
- b. DC power is applied to two backup scram valves
- c. AC power is applied to one backup scram valve
- d. AC power is applied to two backup scram valves

CORRECT RESPONSE :A  
REFERENCE:

a is correct - DC is applied to one backup scram valve (from Div 1 DC) The other backup scram valve receives power from Div 2 DC, which is de-energized.

94) PV:1.0 Q#:119 RT:0.0 DF:1 LP:LOT1550.02 CT:01, C, W, N

Unit 2 plant conditions are as follows

- Reactor Power 8%
- Reactor Startup is in progress
- Control Rod 24-39 is being withdrawn to position 12 when both RPS fuses blow and cause the control rod to SCRAM

WHICH ONE of the following actions should be taken based on the above conditions?

- a. Manually scram the reactor
- b. Obtain P-1 and check thermal limits
- c. Hydraulically isolate control rod 24-39
- d. Replace fuses and withdraw 24-39 to position 12

CORRECT RESPONSE :A

REFERENCE:

A is correct - <10% with a scrambled rod is an unanalyzed rod pattern, a manual SCRAM is required

Reference:

95) \*PV:1.0 Q#:120 RT:0.0 DF:1 LP:LOT0030.06 CT:01, C, W, N

Unit 2 is at 85% power when the following occurs:

- "2A" Reactor recirculation MG set received an inadvertent 28% runback signal
- Reactor power dropped to 68%
- Reactor pressure is 1010 psig
- "2A" Recirc pump seal #1 pressure indicates 1000 psig
- "2A" Recirc pump seal #2 pressure indicates 60 psig

WHICH ONE of the following describes the status of the "2A" Recirc pump seals?

	<u>Seal #1</u>	<u>Seal #2</u>
a.	Not failed	Not failed
b.	Failed	Not failed
c.	Not failed	Failed
d.	Failed	Failed

CORRECT RESPONSE :C

REFERENCE:

MCR ARC 211, Windows A-1, A-2

c is correct - Indications are of reduced pressure in #2 seal chamber (should be 500# if seal #2 is normal)

96) PV:1.0 Q#:121 RT:0.0 DF:2 LP:LOT0370.07 CT:01, C, W, N

Unit 2 plant conditions are as follows:

- 91% power
- "2A" RHR Loop in Suppression Pool cooling

A Reactor SCRAM occurs due to a Loss of Coolant Accident, with the following indications:

- RPV water level is 0 inches and steady
- Drywell pressure is 20 psig and rising
- RPV pressure is 400 psig and lowering at 100 psig per minute
- All divisions of RHR have received LPCI initiation signals

WHICH ONE of the following describes the response of "2A" RHR Loop during the next 5 minutes?

- a. Operates in Suppression Pool Cooling mode until RPV Lo-Lo-Lo level signal is received
- b. Operates on min flow until RPV Lo-Lo-Lo level signal is received
- c. Injects at lower RPV pressure than the other LPCI loops and injects at less than design flow
- d. Injects at approximately the same time as the other LPCI loops and injects at design flow

CORRECT RESPONSE :D

REFERENCE:

d is correct - HV-C-51-2F048A, Suppression Pool Cooling valve immediately closes upon receipt of LOCA signal, "A" loop is ready to inject like the other loops

97) PV:1.0 Q#:122 RT:0.0 DF:1 LP:LOT0370.11 CT:01, C, W, N

Unit 2 plant conditions are as follows

- OPCON 3
- GP-3 Appendix 1, REACTOR SHUTDOWN TO HOT SHUTDOWN is in progress
- Reactor coolant temperature 390°F and lowering

WHICH ONE of the following describes the highest temperature that shutdown cooling can be placed in service?

- a. 325°F
- b. 300°F
- c. 240°F
- d. 212°F

CORRECT RESPONSE :B

REFERENCE:

d is incorrect 212°F is 0 psig which is not the highest temp  
c is incorrect 240°F is 10 psig less than SDC isolation (75 psig) not highest temp  
b is correct 300°F is 52 psig which is below the SDC isolation  
a is incorrect 325°F is 82 psig which is above the SDC isolation

98) \*PV:1.0 Q#:123 RT:0.0 DF:2 LP:LOT0310.03 CT:01, C, W, N

Unit 2 initial plant conditions are as follows:

- Reactor at 100% power
- D23 4KV safeguard bus is de-energized due to a bus lockout

The following events occur:

- Main turbine trip
- RPS failed to scram the reactor
- An RRCS Feedwater runback caused level reduction to -70 inches
- After five minutes, power has dropped from 100% to 18%
- No operator actions have been taken

WHICH ONE of the following describes the status of the three Standby Liquid Control System pumps based on the above conditions?

	<u>"A" SLC Pump</u>	<u>"B" SLC Pump</u>	<u>"C" SLC Pump</u>
a.	Running	Running	Not running
b.	Running	Not running	Running
c.	Not running	Running	Running
d.	Not running	Not running	Not running

CORRECT RESPONSE :A

REFERENCE:

a is correct - RRCS will initiate SLC based on -38 with greater than 4% for greater than 118 seconds, "C" SLC pump will not start due to loss of D13 ("C" SLC pump power supply)

99) PV:1.0 Q#:124 RT:0.0 DF:2 LP:LOT0290.06 CT:01, C, W, N

Plant conditions are as follows:

- Reactor power is 95%
- Traversing In-Core Probe (TIP) scans are in progress using only Drive "A"

A Main Turbine trip occurred, resulting in the following:

- RCIC and HPCI automatically started on a valid signal

WHICH ONE of the following describes the expected position of the TIP shear and ball valves for the "A" TIP Drive 2 minutes later?

	<u>Shear Valve</u>	<u>Ball Valve</u>
a.	Open	Open
b.	Open	Closed
c.	Closed	Open
d.	Closed	Closed

CORRECT RESPONSE :B  
REFERENCE:

GP-8

b is correct - HPCI and RCIC autostart indicates -38" was reached. This will cause a TIP isolation, causing detector to retract, and ball valve to close. Shear valve will not automatically fire on an isolation signal.

100) \*PV:1.0 Q#:125 RT:0.0 DF:1 LP:LOT0380.8B CT:01, C, W, N

Unit 1 plant conditions are as follows:

- Reactor shutdown
- MSIVs closed
- T-100 has been exited, GP-3 APPENDIX-1, ESTABLISHING COLD SHUTDOWN is in progress
- Reactor level is +20 inches and stable
- Reactor pressure is 250 psig and lowering
- RCIC is in Manual and injecting 200 gpm

Reactor is being depressurized to a pressure of 40 psig.

WHICH ONE of the following describes RCIC flow rate for the duration of the cooldown with no operator action?

- a. Increase continuously
- b. Increase then decrease
- c. Decrease then increase
- d. Decrease continuously

CORRECT RESPONSE :B

REFERENCE:

B is correct - RCIC will flow will increase in manual when RPV pressure drops until the governor valve is full open or the auto isolation occurs at 64.5 psig after which RCIC flow will drop.