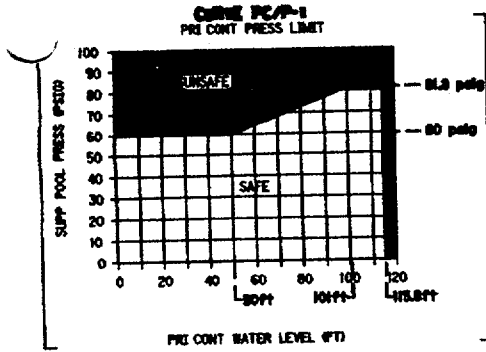


RO QUESTION ATTACHMENTS

<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

MODULS (-) _____ PSIG SUPP POOL PRESS ON PR57-401 (BLUE PEN)
 EQUALS (+) _____ PSIG PRI CONT PRESS ON PR57-401 (RED PEN)
 TIMES (x) _____ FT/PSIG
 EQUALS (=) _____ FT
 PLUS (+) _____ 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 (RHSW OR 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

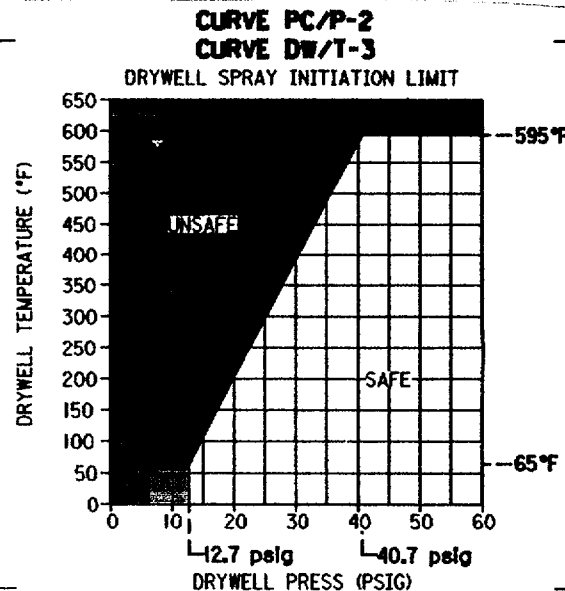
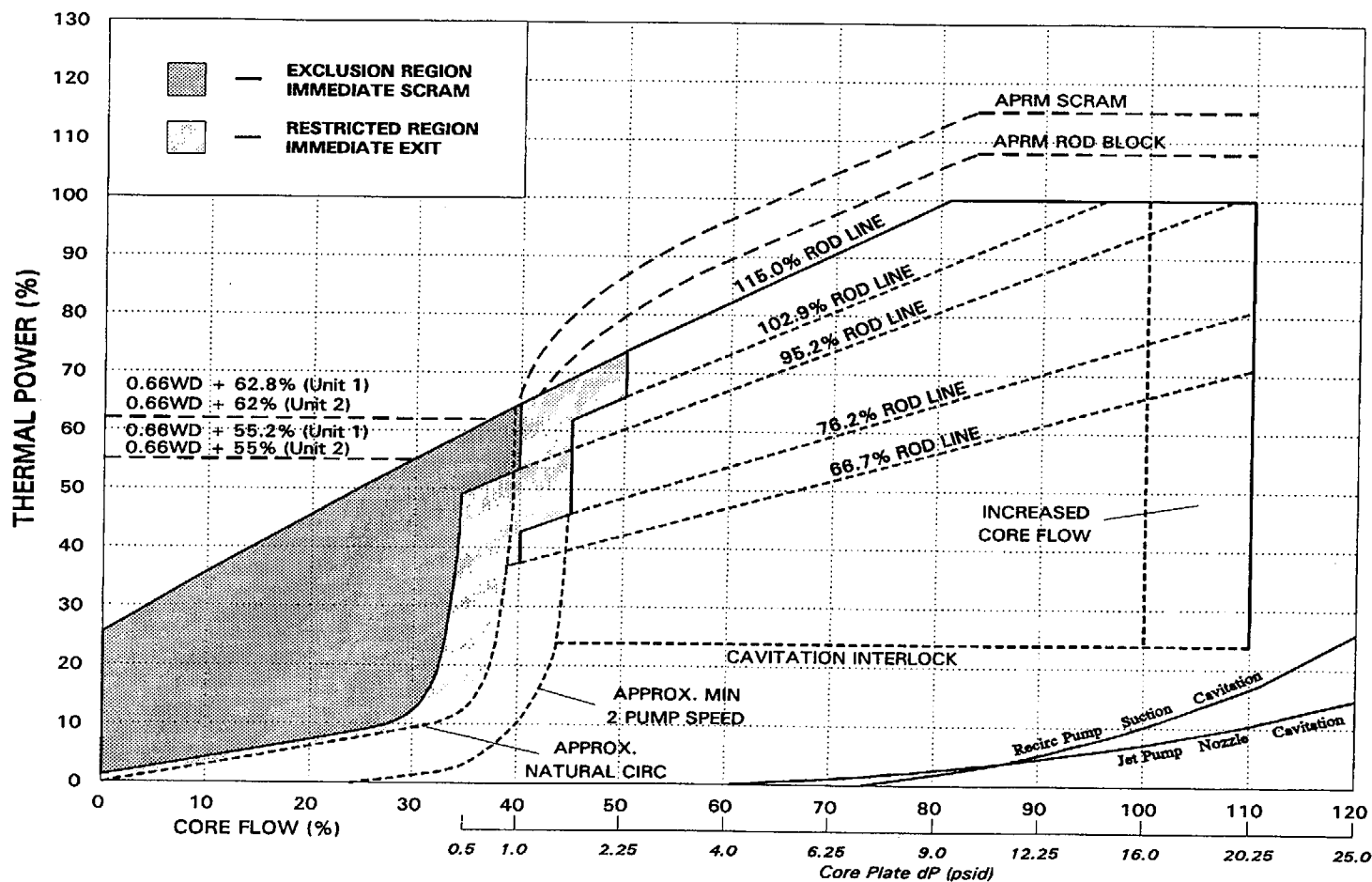
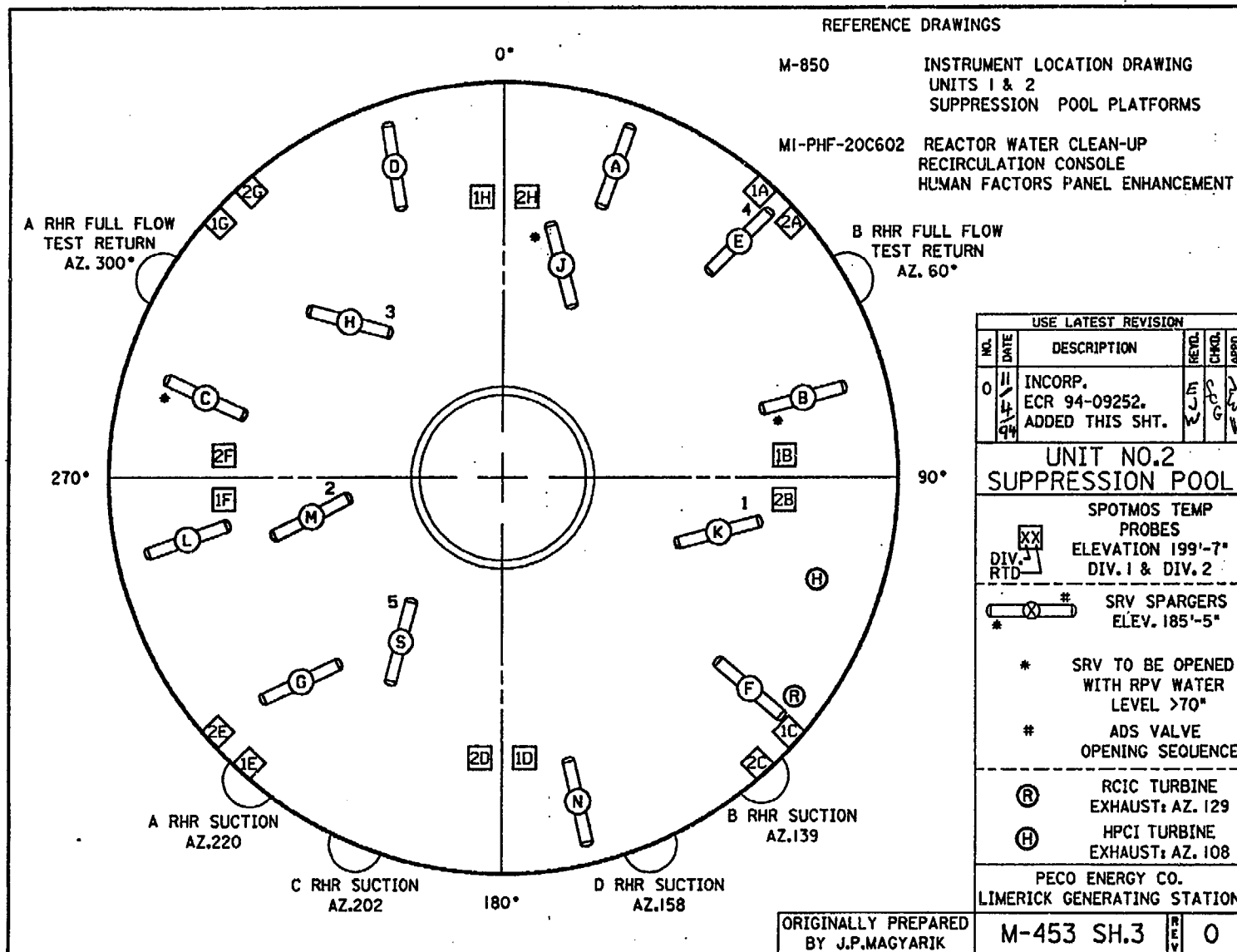


FIGURE 1
LGS POWER FLOW OPERATION MAP

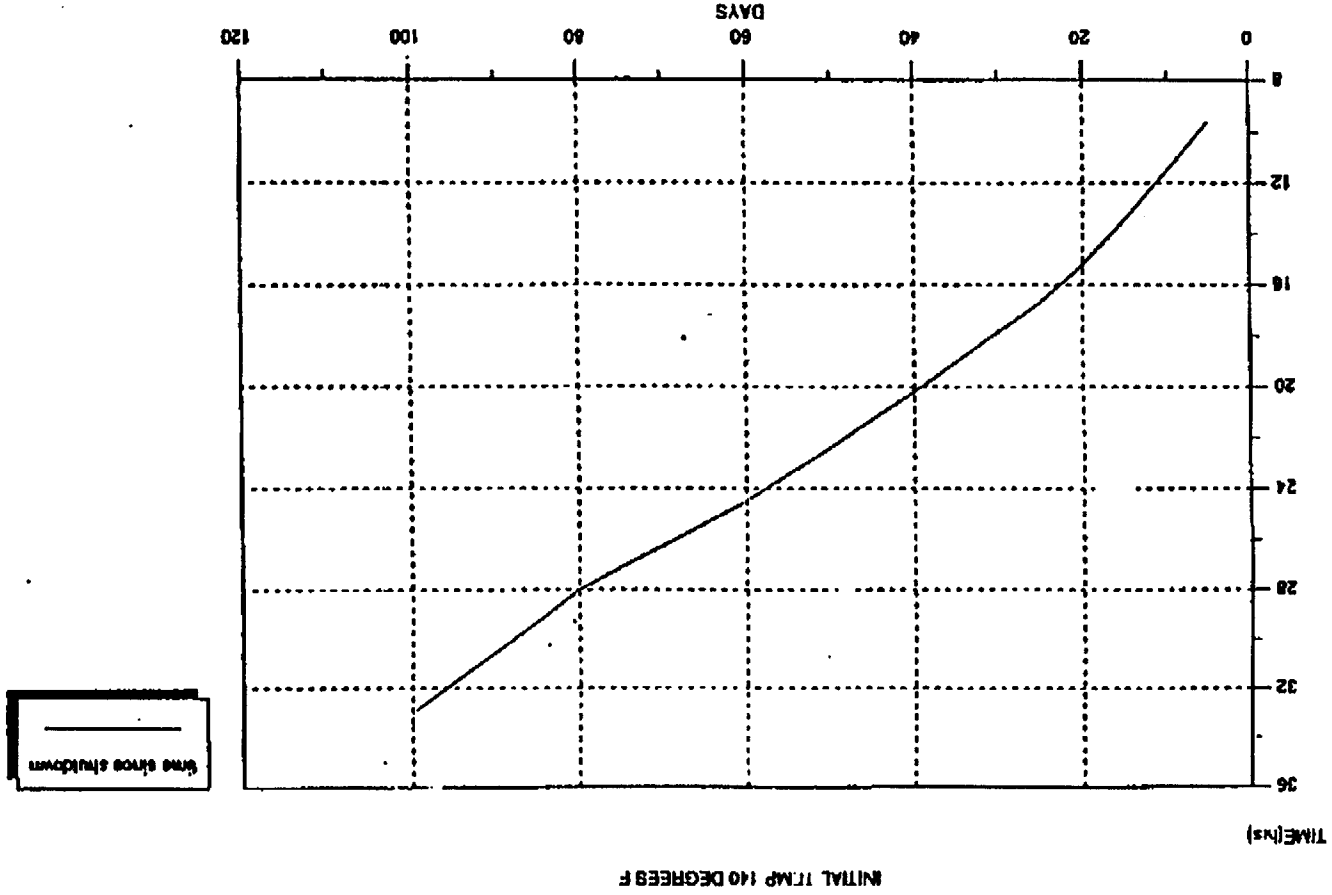


ATTACHMENT Q20



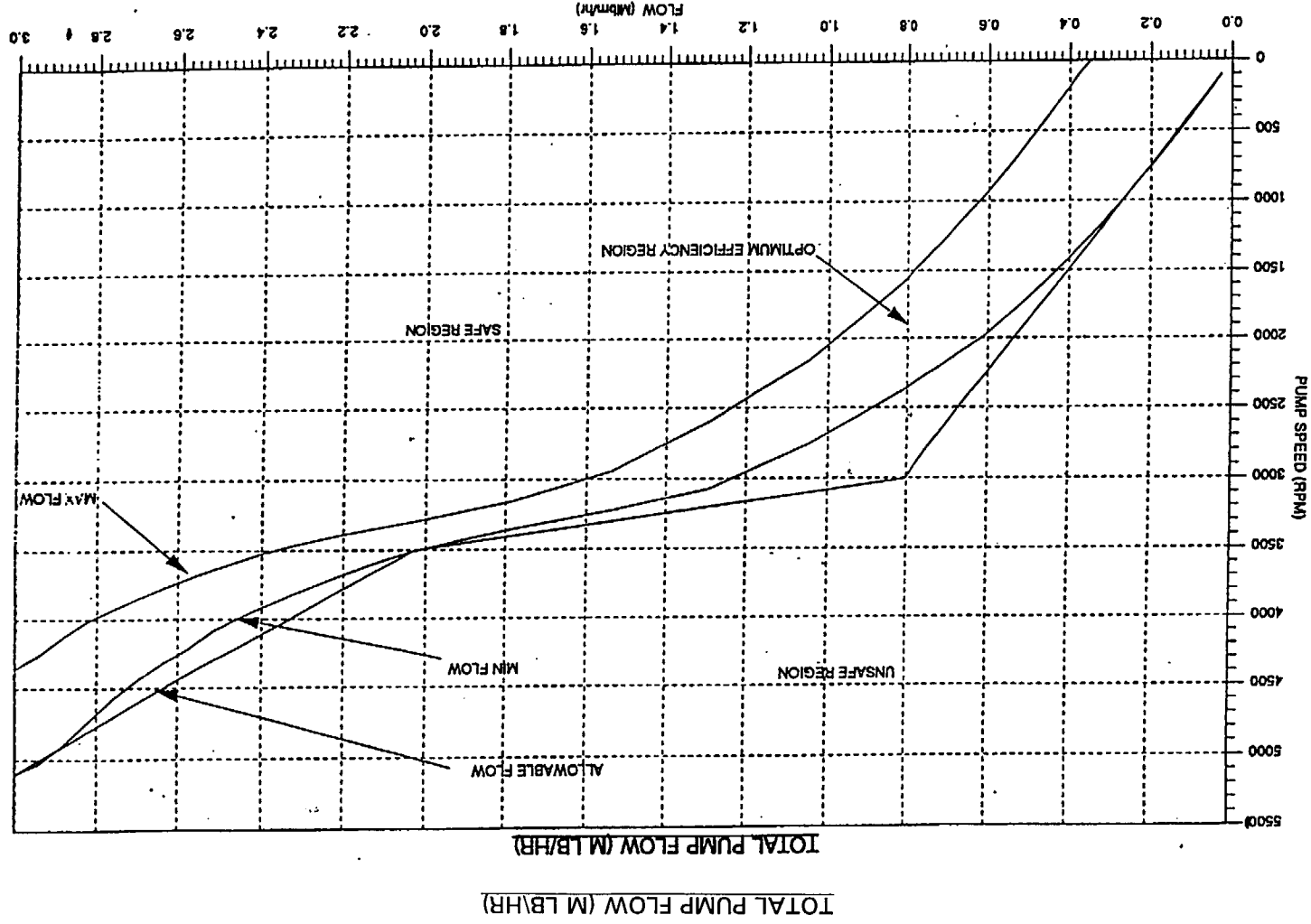
ATTACHMENT Q27

ATTACHMENT 032

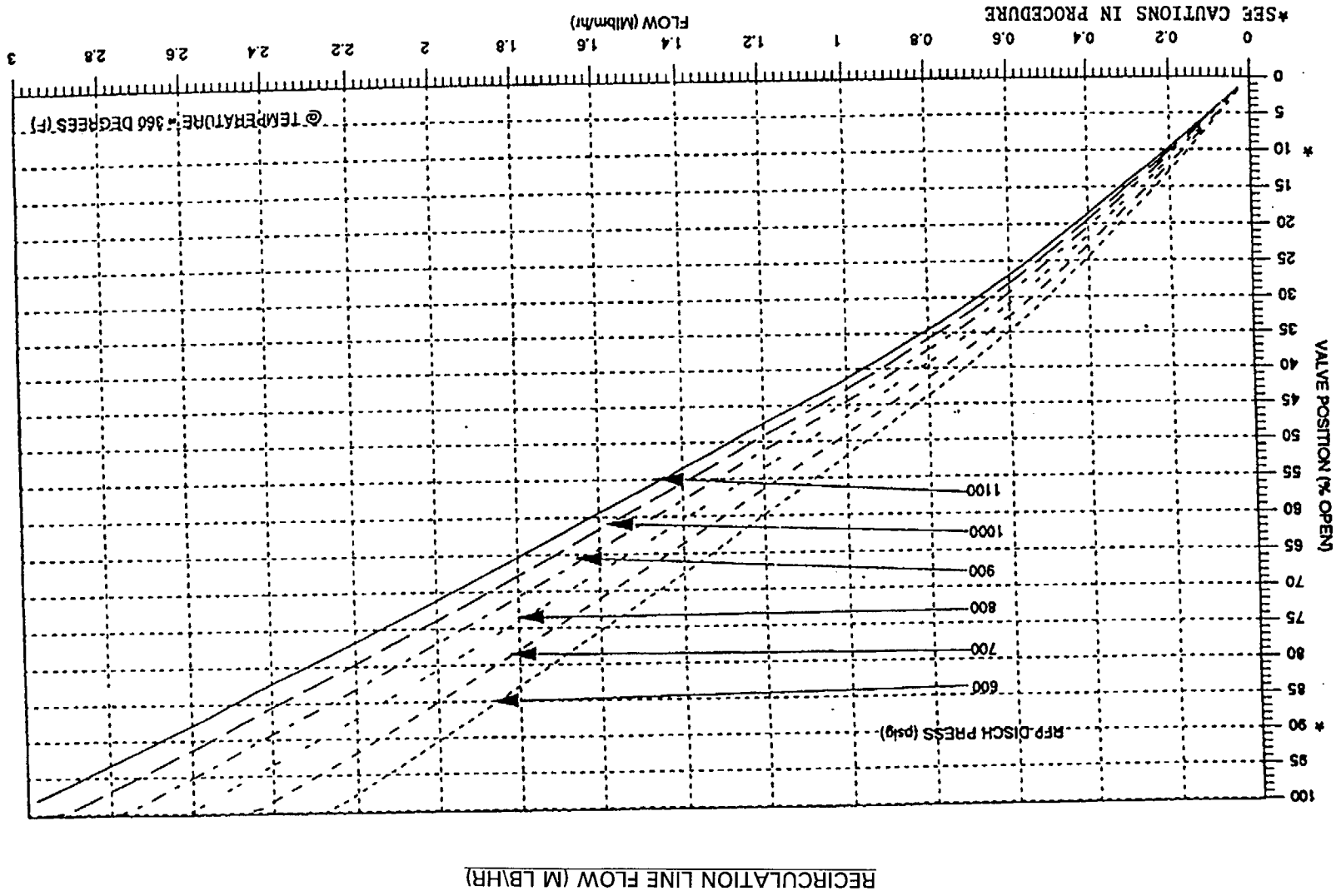


ATTACHMENT 1
Page 1 of 1

ATTACHMENT Q70 (Sheet 1 of 2)



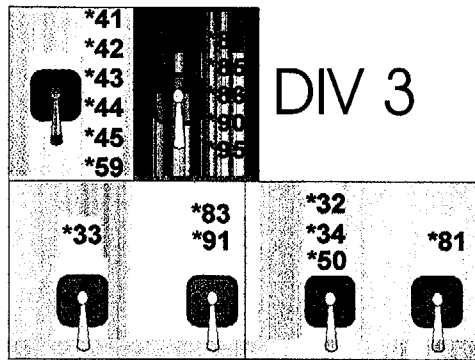
ATTACHMENT Q70 (Sheet 2 of 2)



DIV 4

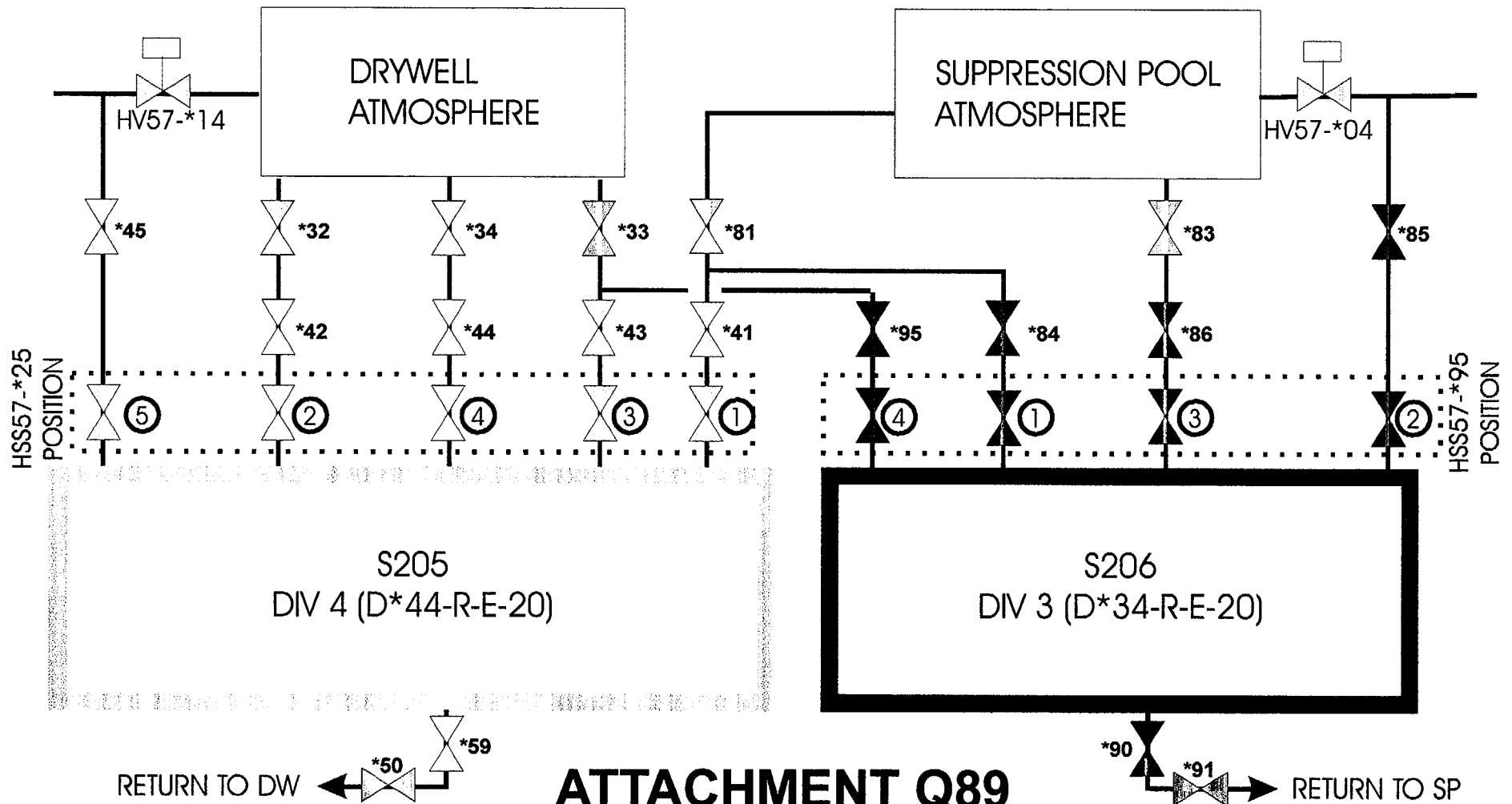
DIV 3

H₂O₂ ANALYZER PATHS



DIV 1

DIV 2



ATTACHMENT Q89

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 (lagging power factor)
- 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
- Control rod 06-39 is partially withdrawn
- 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 resulting in "refuel platform over the core" indication being sent to the Rod Drive Control System and the Refuel platform.

WHICH ONE of the following describes the ability to lower the fuel bundle and withdraw control rods?

	<u>Can Lower Fuel Bundle</u>	<u>Can Withdraw Rods</u>
a.	Yes	No
b.	Yes	Yes
c.	No	No
d.	No	Yes

CORRECT RESPONSE :C

REFERENCE:

C is correct - with bridge seen as over core, with a hoist loaded, RDCS generates a rod withdrawal block. The refuel platform receives a hoist interlock that prevent hoist operation

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 steam pressure transmitter is blocked out of service (0 PSIG output)
- "B" EHC steam pressure transmitter failure has caused the transmitter output to decrease slowly.

WHICH ONE of the following describes the response of the Main Turbine Control and Bypass Valves and required actions?

- a. Control Valves will close; Bypass Valves will remain closed. Reduce reactor power per OT-102, REACTOR HIGH PRESSURE by using Reactor Maneuvering Shutdown Instructions
- b. Control Valves will open; Bypass Valves will open. Reduce reactor power per OT-102, REACTOR HIGH PRESSURE by using Reactor Maneuvering Shutdown Instructions
- c. Control Valves will close; Bypass Valves remain closed. Increase EHC Load Set and enter OT-104, UNEXPECTED/UNEXPLAINED POSITIVE OR NEGATIVE REACTIVITY INSERTION
- d. Control Valves will open; Bypass Valves will open. Reduce bypass jack setting and enter OT-104, UNEXPECTED/UNEXPLAINED POSITIVE OR NEGATIVE REACTIVITY INSERTION

CORRECT RESPONSE :A
REFERENCE:

A is correct - The failure will cause slow closure of control valves. Actual RPV pressure will rise, requiring entry into OT-102, High Reactor Pressure, which requires an immediate power reduction

B is incorrect - Control valves will not open

C is incorrect - Increasing load set will be ineffective for this failure

D is incorrect - Control valves will not open

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 decreases 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?

Supply Fans

Exhaust Fans

- | | |
|-------------------|----------------|
| 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 64×10^6 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 46×10^6 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:LOT06907.07, E-92, ARC/MCR 120G-1 CT:01,

Unit 1 plant conditions are as follows:

- Unit 1 DIV 1 SFGD BATTERY CHARGERS TROUBLE alarm has annunciated
- Investigation shows the 1A2 battery charger has tripped and cannot be restored
- The 1A1 battery charger is energized

WHICH ONE of the following is the expected trend in the DIV 1 250 volt bus voltage and 1A2 battery voltage as it is monitored over the next several hours if 1A2 battery charger is not restored?

	<u>250 Volt bus voltage</u>	<u>1A2 Battery Voltage</u>
a.	Constant	Constant
b.	Constant	Decrease
c.	Decrease	Constant
d.	Decrease	Decrease

CORRECT RESPONSE :D
REFERENCE:

d is correct - Battery chargers 1A1/1A2 are not redundant (Common misconception). With loss of one battery charger both the 250 V bus voltage and 1A2 battery voltage will drop.

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 2 plant conditions are as follows:

- OPCON 5 with fuel handling in progress
- All control rods are fully inserted
- A Double Blade Guide is being transferred from the core to the spent fuel pool
- HOIST OVERRIDE pushbutton is depressed

WHICH ONE of the following interlocks will activate to prevent the Double Blade Guide from being lifted out of the water during the transfer to the Unit 2 Spent Fuel Pool?

- a. Normal Grapple Up Hoist Limit
- b. Backup Hoist Limit
- c. Fuel Hoist Interlock
- d. Hoist Jam

CORRECT RESPONSE :B
REFERENCE:

B is correct - with the hoist override bypass pushbutton depressed, the backup hoist limit is in effect.

A is incorrect - Normal Grapple Up limit is bypassed with the hoist override pushbutton depressed.

C is incorrect - With all rods in the fuel hoist limit is not in effect

D is incorrect - Will only activate after if the backup hoist limit fails

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 for the action per S51.8.A, SUPPRESSION POOL COOLING OPERATION (STARTUP AND SHUTDOWN) and level control?

- 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 per T-101, HIGH DRYWELL PRESSURE.

WHICH ONE of the following combinations of drywell unit cooler fans are required to 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 controls 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 in accordance with the Nuclear Operations Manual?

- 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 4×10^6 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 will be included in the notification to the CRS for isolation response per the Nuclear Operations Manual?

- 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?

Room Supply

Room Exhaust

- | | |
|-----------------------------------|--------------------------------|
| 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 potential consequences of restarting the "1A" RHR pump under the conditions above?

- a. "1A" RHR pump overheating
- 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 in accordance with S52.2A, CORE SPRAY SYSTEM SHUTDOWN AFTER AUTOMATIC OR MANUAL INITIATION?

- 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 in accordance with E-1, Station Blackout?

- 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

Matches A2 K/A requires student to assess plant conditions and use procedure E-1 from memory to determine what effects/actions can be done to monitor reactor pressure.

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?

Actual Control Rod Position

	<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%
- ROD DRIFT ALARM has annunciated
- The Full Core Display for Control Rod 26-27 indicates the following:
 - Blue Scram Indicator - ON
 - Red Rod Drift Indicator - ON
 - Green Full-In Indicator - ON
- Four Rod Display for 26-27 indicates XX

WHICH ONE of the following describes the status of Control Rod 26-27 and the section of ON-104, CONTROL ROD PROBLEMS required to be executed?

- a. Scrammed and full in with a failed RPIS reed switch
Execute the "ROD SCRAM" section
- b. Scrammed and partially inserted
Execute the "ROD STUCK" section
- c. Scrammed and full in with a failed RPIS reed switch
Execute the "ROD(S) DRIFT IN" section
- d. Scrammed and partially inserted
Execute the "ROD SCRAM" section

CORRECT RESPONSE :A

REFERENCE:

A is correct - indications show rod is full in (green lamp). "XX" on 4-rod display indicates failed RPIS Reed Switch (either none actuated or two even switches actuated). This failure indicates the position 48 switch failed to release.

C is incorrect - Rod Drift section will inappropriately direct a continuous insert signal with scram valve open

B, D incorrect - green "full in" lamp operates from redundant reed switch and confirms rod is full in

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

) 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:

- OPGON 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 OPGON 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 will 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 at the end of the 12 hour shift?

<u>APRM INDICATED POWER</u>		<u>CORE THERMAL POWER</u> <u>(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" - 1.6×10^5 cps
 - "B" - 9.5×10^4 cps
 - "C" - 2.3×10^5 cps
 - "D" - 2.7×10^5 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

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) must 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 - ≥ 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 1×10^6 cps and steady
SRMs "B", "D" indicate 4×10^5 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 1×10^5 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 ^{SRM}~~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 for the HV-C-51-1F048A 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 is required per ON-107, CONTROL ROD DRIVE PROBLEMS, 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
- 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 must 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