ML21095A313

ES-401	Site Specific SRO Written Examination Cover Sheet	Form ES-401-8

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

Applicant Information	
Name:	
Date:	Facility/Unit - Hatch/ Units 1 & 2
Region: I ☐ II ☒ III ☐ IV ☐	Reactor Type: W ☐ CE ☐ BW ☐ GE ☒
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination, you must achieve a final grade of at least 80 percent overall, with 70 percent or better on the SRO-only items if given in conjunction with the RO exam; SRO-only exams given alone require a final grade of 80 percent to pass. You have 9 hours to complete the combined examination and 3 hours if you are only taking the SRO-only portion.

Applicant Certification

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

_____
Applicant's Signature

Results
RO/SRO-Only/Total Examination Values _____ / _____ / _____ Points
Applicant's Score _____ / _____ / _____ Points
Applicant's Grade _____ / _____ / _____ Percent

1. 212000K1.06 001

Which ONE of the choices below completes the following statement?

The LEAST amount of water accumulated in the **Unit 1** Scram Discharge Volume that will cause a Scram signal is _____ gallons.

A. 19

B. 37

C. 58

D. 64

2. 202001A3.09 001

Unit 2 is operating with both Recirc Pumps operating at 60% speed.

Subsequently, ASD 2A trips.

Based on the above conditions, which ONE of the choices below completes the following statements?

ACTUAL Total Core Flow equals (=) _____ .

ACCURATE Total Core Flow _____ be read directly from the Total Core Flow recorder on 2H11-P603.

A. Jet Pump Loop A flow plus (+) Jet Pump Loop B flow;
can NOT

B. Jet Pump Loop A flow plus (+) Jet Pump Loop B flow;
can

C. Jet Pump Loop B flow minus (-) Jet Pump Loop A flow
can NOT

D. Jet Pump Loop B flow minus (-) Jet Pump Loop A flow;
can

3. 202002K4.05 001

Unit 1 is initially operating at 100% RTP.

Recirc Pump 1A experiences an ASD Power Cell Bypass resulting in the following:

Total Jet pump flows are indicated below:

- o Total Jet pump A flow 35.0 Mlbm/hr
- o Total Jet pump B flow 39.0 Mlbm/hr

Based on the above conditions and IAW 34SO-B31-001-1, Reactor Recirculation System, which ONE of the choices below completes the following statements?

The above Recirc Loop flows _____ EXCEED the mismatch limitations in 34SO-B31-001-1.

If subsequently desired to raise Recirc Pump 1A speed, use of the SPEED HOLD RESET pushbutton _____ REQUIRED.

A. do;
is

B. do;
is NOT

C. do NOT;
is

D. do NOT;
is NOT

4. 203000K6.03 005

Unit 2 is operating at 100% RTP.

Unit 1 is in a LOSP with the following:

o EDG 1A	tripped on overspeed
o EDG 1C	tripped on Emergency Engine Shutdown
o RWL control	All available RHR pumps manually started and injecting

Based on the above conditions, which ONE of the choices below completes the following statements?

To LOWER the RHR Loop A flowrate, _____ will be manipulated.

To LOWER the RHR Loop B flowrate, _____ will be manipulated.

A. 1E11-F015A, RHR Inbd Inj Vlv;
1E11-F015B, RHR Inbd Inj Vlv

B. 1E11-F015A, RHR Inbd Inj Vlv;
1E11-F017B, RHR Outbd Inj Vlv

C. 1E11-F017A, RHR Outbd Inj Vlv;
1E11-F015B, RHR Inbd Inj Vlv

D. 1E11-F017A, RHR Outbd Inj Vlv;
1E11-F017B, RHR Outbd Inj Vlv

5. 205000A4.12 010

Unit 2 is in Mode 4 with RHR Loop A in Shutdown Cooling.

Preparations are in progress to start Recirc pump 2B.

- o RWL is 55 inches and steady
- o SDC flow is 7700 gpm
- o RHR pump 2A is running
- o RHRSW pump 2C is running

At 10:00, 4160VAC 2F de-energizes.

Based on the above conditions, which ONE of the choices below completes the following statements?

At 10:10, Recirc pump 2B Suction temperature will be _____ its' temperature at 10:00.

Recirc pump 2B Suction temperature will be monitored on panel _____ .

A. the same as;
2H11-P602

B. the same as;
2H11-P601

C. higher than;
2H11-P602

D. higher than;
2H11-P601

6. 206000K4.17 001

Unit 2 was operating at 100% RTP when a scram occurred.

HPCI is currently operating in Pressure Control mode.

Subsequently, CST level starts lowering and stabilizes at 20 inches.

Based on the above conditions, which ONE of the choices below completes the following statement?

Five (5) minutes after CST level reaches 20 inches, 2E41-F004, CST Suction valve, will _____ and HPCI will be operating _____ .

A. be closed;
in Pressure Control mode

B. be closed;
on Minimum Flow

C. still be open;
in Pressure Control mode

D. still be open;
on Minimum Flow

7. 209001K3.02 005

Unit 2 has experienced a Loss of Offsite Power (LOSP) AND Onsite AC Power.

At 09:00, the following conditions existed and remain unchanged for 3 minutes:

- Control rods — All rods in
- RPV Pressure — 800 psig
- RWL — -135 inches
- Drywell Pressure — 3 psig
- ADS Inhibit Switches — "Normal" position

At 9:04, an operator injects with HPCI and RWL is stable at -105 inches.

At 9:05, an operator starts the EDG 2A and the following events occur:

- Core Spray pump 2A starts, NO other pumps start
- Core Spray pump 2A discharge pressure is 138 psig (highest achieved)

Based on the above conditions, which ONE of the choices below completes the following statement?

The ADS valves will _____ .

A. automatically open at 09:05

B. automatically open at 09:07

C. automatically open at 09:13

D. NOT automatically open

8. 211000K1.01 005

Which ONE of the choices below completes the following statements?

The Standby Liquid Control (SBLC) System line that is ABOVE the core plate, is used in determining _____ dP.

As core flow is LOWERED from rated to minimum, the indication for the above dP indicator will move in the _____ direction.

A. Jet Pump;
positive

B. Jet Pump;
negative

C. Core Spray Line Break Detection;
positive

D. Core Spray Line Break Detection;
negative

9. 201006A4.05 010

Unit 1 is at 19% RTP shutting down IAW 34GO-OPS-013-1, Normal Plant Shutdown.

The currently latched RWM step is Step 21 with the following conditions:

- Insert limit 08
- Withdraw limit 12
- The last control rod in Step 21 is selected (06-35)
- All step 21 control rods are at the INSERT limit
- The control rods in Step 20 are NOT the same control rods in Step 21

Subsequently, a drive water pressure transient occurred resulting in control rod 06-35 repositioning to position 06.

Based on the above conditions and IAW 34GO-OPS-065-0, Control Rod Movement, which ONE of the choice below completes the following statements?

The RWM Operator Display _____ display an Insert Error (IE).

The RWM Operator Display will indicate "POWER" as _____ .

A. will;
below LPSP

B. will;
above LPAP

C. will NOT;
below LPSP

D. will NOT;
above LPAP

10. 212000K2.01 001

IAW 34SO-C71-001-1, 120 VAC RPS Supply System, which ONE of the choices below completes the following statements?

On **Unit 1**, the NORMAL power supply to RPS Bus 1A is _____ .

If RPS MG Set 1A is tagged out for maintenance, the PREFERRED power supply for RPS Bus 1A will be _____ .

A. 600 VAC 1C;
Essential Cabinet 1B

B. 600 VAC 1C;
Essential Cabinet 1A

C. 600 VAC 1D;
Essential Cabinet 1B

D. 600 VAC 1D;
Essential Cabinet 1A

11. 215001G2.1.31 001

Unit 2 is operating at 100% RTP with the "A" Channel TIP in the core when an event ocurred requiring the TIP system to be isolated.

IAW 34AB-C71-001-2, Scram Procedure, which ONE of the choices below completes the following statements?

After ALL of the TIP Ball valves are closed, the NPO _____ confirm the isolation on 2H11-P601 Vertical Display.

The Shear Valve keylock switches used to fire the Shear Valves are located at Panel _____ .

A. can;
2H11-P601

B. can;
2H11-P607

C. can NOT;
2H11-P601

D. can NOT;
2H11-P607

12. 215003A3.03 001

A **Unit 2** Reactor startup is in progress.

At 10:00, the IRMs indicate as follows:

- o IRMs A, B, C & D 25/125 on Range 6
- o IRMs E, F, G & H 10/40 on Range 5

IRMs A - D are rising 9/125 per minute AND
IRMs E - H are rising 3/40 per minute.

Based on the above conditions, which ONE of the choices below completes the following statement?

The EARLIEST listed time that an IRM will exceed its UPSCALE TRIP setpoint is _____ .

A. 10:06

B. 10:07

C. 10:09

D. 10:10

13. 215003K2.01 001

Which ONE of the choices below completes the following statement?

On **Unit 2**, the power supply to IRM H is _____ .

A. 2R25-S001, 125 VDC Cabinet 2A

B. 2R25-S002, 125 VDC Cabinet 2B

C. 2R25-S015, 24/48 VDC Cabinet 2A

D. 2R25-S016, 24/48 VDC Cabinet 2B

14. 215004K5.03 001

Unit 1 is starting up IAW 34GO-OPS-001-1, Plant Startup.

The reactor has been declared CRITICAL.

- o SRM/IRM overlap has been confirmed
- o All IRMs are on Range 4
- o SRM detectors are being intermittently withdrawn as required by the procedure

As the SRM "A" detector is being withdrawn, SRM "A" indication reaches 190 cps.

Based on the above conditions, which ONE of the choices below completes the following statements?

At the current SRM "A" indication, a control rod block _____ occurred.

If the "DRIVE OUT" pushbutton continues to be depressed, the SRM "A" detector will _____ .

A. has;
continue to withdraw

B. has;
stop withdrawing

C. has NOT;
continue to withdraw

D. has NOT;
stop withdrawing

15. 215005K2.02 001

Unit 1 is operating at 85% RTP.

- o A loss of RPS Bus 1A occurs

Based on the above conditions, which ONE of the choices below completes the following statements?

APRM "C" "2 of 4 Voter Module" will be _____ .

The TOTAL number of APRM NUMACs that will be ENERGIZED is _____ .

A. ENERGIZED;
two (2)

B. ENERGIZED;
four (4)

C. DE-ENERGIZED;
two (2)

D. DE-ENERGIZED;
four (4)

16. 217000A1.08 001

Unit 2 is conducting 34SV-E51-002-2, RCIC Pump Operability, surveillance.

Based on the above conditions, which ONE of the choices below completes the following statements?

IAW 34SO-E51-001-2, RCIC System, during RCIC pump operation, the Torus water temperature will rise at a rate of approximately _____ .

IAW 34SV-E51-002-2, the LOWEST listed Torus water temperature at which the surveillance is REQUIRED to be stopped is _____ .

A. 3°F/hr;
101°F

B. 3°F/hr;
106°F

C. 30°F/hr;
101°F

D. 30°F/hr;
106°F

17. 218000K3.01 001

Unit 2 was at 100% RTP when Loss of Coolant Accident (LOCA) occurred.

At 08:00, the following conditions exist:

- o RWL -102 inches, LOWERING at 2 inches per minute
- o RPV Pressure 900 psig, LOWERING at 25 psig per minute
- o Drywell pressure 4.0 psig, slowly RISING
- o ONLY the RC-1 Placard has been performed
- o ADS Switches are in the INHIBIT position with the associated ADS white lights EXTINGUISHED

The P602-3 annunciator indications are provided.

Based on the above conditions and with NO additional operator actions,

At 08:15, ONLY _____ will be injecting into the RPV.

Reference Provided

A. HPCI

B. Core Spray and RHR

C. HPCI and the Condensate Booster Pumps

D. Core Spray, RHR and the Condensate Booster Pumps

18. 223002K6.03 005

Unit 2 is operating at 85% RTP when an event occurs resulting in Fast Drywell Venting placed in service IAW 34SO-T48-002-2, Containment Atmospheric Control and Dilution Systems.

Drywell pressure is 1.2 psig, slowly lowering.

At 10:00, 2D11-K621A, Wide Range Drywell Radiation Monitor, fails UPSCALE.

Based on the above conditions, which ONE of the choices below completes the following statements?

At 10:02, Drywell pressure will be _____ .

The 2D11-K621A setpoint, which will ILLUMINATE the Amber Lights on Panel 2H11-P602, is _____ .

A. rising;
100 R/hr

B. rising;
138 R/hr

C. lowering;
100 R/hr

D. lowering;
138 R/hr

19. 226001K1.05 001

Unit 2 is operating at 100% RTP when Jockey Pump System A discharge pressure lowers to 40 psig.

Based on the above condition, which ONE of the choices below completes the following statements?

The Standby Core Spray Jockey Pump _____ have automatically started.

If this condition is NOT corrected, the potential exists to drain _____ of RHR Drywell Spray piping.

A. will;
BOTH divisions

B. will;
ONLY one (1) division

C. will NOT;
BOTH divisions

D. will NOT;
ONLY one (1) division

20. 230000K2.02 001

Unit 2 experiences a Loss of Offsite power.

- o 4160 VAC Bus 2G is the ONLY 4160 VAC Bus that is ENERGIZED

Based on the above conditions, which ONE of the choices below completes the following statements?

RHR pump 2B _____ be used for Suppression Pool Spray.

RHR pump 2D _____ be used for Suppression Pool Spray.

A. can;
can

B. can;
can NOT

C. can NOT;
can

D. can NOT;
can NOT

21. 239001K5.05 001

Unit 2 is operating at 5% RTP with the Reactor Mode switch in STARTUP when the following annunciator is received:

- o 603-214, MAIN STEAM LINE FLOW A HIGH

Based on the above conditions, which ONE of the choices below completes the following statements?

The MINIMUM listed value that will cause 603-214, MAIN STEAM LINE FLOW A HIGH, alarm to be received is _____ .

The Main Steam Line High Flow isolation signal _____ bypassed in STARTUP.

A. 137 psid;
is

B. 137 psid;
is NOT

C. 170 psid;
is

D. 170 psid;
is NOT

22. 239002A2.01 001

Unit 2 is in an ATWS condition with the following:

- RTP is 5%
- MSIVs are closed
- RPV Pressure is 1100 psig, slowly rising

An NPO has just completed cycling the control switch for 2B21-F013B, Safety Relief Valve.

When 2B21-F013B closes, its' vacuum breaker fails open.

Based on the above conditions, which ONE of the choices below completes the following statements?

When 2B21-F013B re-opens, _____ pressure will rise due to steam being admitted directly to the atmosphere.

Excluding the 2B21-F013B Mechanical lift setpoint, to PERMANENTLY prevent steam from exiting the stuck open vacuum breaker, the NPO will _____ .

A. Torus;
reset the LLS logic

B. Torus;
pull the fuses for 2B21-F013B

C. Drywell;
reset the LLS logic

D. Drywell;
pull the fuses for 2B21-F013B

23. 239002K5.06 001

Which ONE of the choices below completes the following statements?

Operation of the SRV tailpipe vacuum breakers minimizes SRV discharge line _____ for subsequent SRV operation.

SRV tailpipe vacuum breakers _____ have position indicating lights in the Main Control Room.

A. backpressure;
do

B. backpressure;
do NOT

C. hydraulic loading;
do

D. hydraulic loading;
do NOT

24. 245000K5.03 001

Unit 2 was operating at 100% RTP when the following ocurred:

- o 651-206, GENERATOR PROTECTION CIRCUIT ENERGIZED, ALARMED

Based on the above conditions, which ONE of the choices below completes the following statement?

The Turbine Control Valves will automatically throttle close in order to lower Main Generator amps below a MAXIMUM of _____ within two (2) minutes.

A. 5337 amps

B. 6466 amps

C. 14,000 amps

D. 20,232 amps;

25. 259002A3.04 001

Unit 2 is operating at 100% RTP with the following RWL indications:

- o 2C32-R606A, GEMAC, indication: 37.0 inches
- o 2C32-R606B, GEMAC, indication: 36.6 inches
- o 2C32-R606C, GEMAC, indication: 36.9 inches

Subsequently, a leak occurs on the REFERENCE leg associated with the 2C32-R606A instrument resulting in a 3 inch/minute change in RWL.

Based on the above conditions and with NO operator actions,

INITIALLY, the indication on RWL instrument 2C32-R606B will go _____ and Feedwater flow will _____ .

A. DOWN;
LOWER

B. DOWN;
RAISE

C. UP;
LOWER

D. UP;
RAISE

26. 261000A4.07 001

Unit 1 is operating at 100% RTP.

At 10:00, an event occurs resulting in Unit 1 Drywell pressure increasing to and stabilizing at 2.5 psig.

Which ONE of the choices below completes the following statements?

At 10:05, with NO operator actions, the **Unit 1** SBGT System flow going to the Main Stack will be from _____ .

Unit 1 SBGT flow can be monitored on panel _____ .

A. one (1) SBGT fan;
1H11-P657

B. one (1) SBGT fan
1H11-P700

C. two (2) SBGT fans;
1H11-P657

D. two (2) SBGT fans;
1H11-P700

27. 262001G2.4.1 010

Unit 2 was operating at 70% RTP when a Station Blackout occurred.

Based on the above condition, which ONE of the choices below completes the following statements?

Operator actions are REQUIRED to be performed FIRST IAW _____ .

If entry into 34AB-R22-002-2, Loss of 4160V Emergency Bus, is REQUIRED, the step for ensuring EDGs for the affected buses have auto-started _____ an IMMEDIATE Operator Action.

A. 34AB-C71-001-2, Scram Procedure;
is

B. 34AB-C71-001-2, Scram Procedure;
is NOT

C. 34AB-R22-003-2-100, Station Blackout Abnormal;
is

D. 34AB-R22-003-2-100, Station Blackout Abnormal;
is NOT

28. 262002A3.01 010

Unit 2 is at 100% RTP when a Loss of Off-Site Power occurs and EDG 2C fails to start.

Based on the above conditions, which ONE of the choices below completes the following statements?

The Vital AC Bus will transfer to its Alternate source ONLY after the non-essential loads from _____ have been re-energized.

A. 120/208V AC Essential Cabinet 2A, 2R25-S036

B. 600V Station Serv Swgr 2C, 2R23-S003

C. 600V Station Serv Swgr 2D, 2R23-S004

D. 240V Vital AC Batteries, 2R42-S008

29. 262002G2.1.32 005

Unit 2 is operating at 55% RTP with the RFPT 2B in service when the following occurs:

- o The Vital AC Battery Charger AC Input breaker trips OPEN

Subsequently, operators receive annunciator 240V VITAL AC BATT VOLTS LOW, 651-133.

Based on the above conditions, which ONE of the choices below completes the following statements?

The Vital AC Bus _____ AUTOMATICALLY transfer to ANOTHER power source.

If power is lost to the Vital AC Bus, RWL will be controlled using the RFPT 2B _____ .

A. will;
Speed Setter

B. will;
M/A Station

C. will NOT;
Speed Setter

D. will NOT;
M/A Station

30. 263000A1.01 001

Unit 2 Division 1 125VDC Station Service Battery Chargers are being operated in the EQUALIZE Mode.

Based on the above conditions and IAW 34SO-R42-001-2, 125 VDC, 125/250 VDC and 250 VDC Systems, which ONE of the choices below completes the following statements?

In EQUALIZE Mode, the charger output voltage to the battery will be _____ when the charger is operating in the FLOAT Mode.

Without re-charging, the 125 VDC Station Service batteries are sized to have adequate storage capacity to carry the required load for a MINIMUM of _____ .

A. equal to;
2 hours

B. equal to;
8 hours

C. higher than;
2 hours

D. higher than;
8 hours

31. 263000G2.4.31 001

Unit 2 is operating at 100% RTP when the following annunciator ALARMED:

- HPCI SYSTEM INVERTER CIRCUIT FAILURE, 601-120

Based on the above conditions and IAW 601-120, which ONE of the choices below completes the following statements?

The power supply that has been lost is _____ .

If needed, 2E41-R612, HPCI Flow Controller, _____ control HPCI turbine speed.

A. 125 VDC Cabinet 2B, 2R25-S002;
will still

B. 125 VDC Cabinet 2B, 2R25-S002;
will NOT

C. 125 VDC Cabinet 2F, 2R25-S006;
will still

D. 125 VDC Cabinet 2F, 2R25-S006;
will NOT

32. 264000K5.05 001

34SV-R43-001-2, Diesel Generator 2A Monthly Test, is in progress.

Based on the above conditions, which ONE of the choices below completes the following statements?

When manually synchronizing EDG 2A to an energized bus, the synchroscope is REQUIRED to be rotating in a direction which will REDUCE the probability of causing a _____ trip.

After EDG 2A output breaker is closed, exceeding the Crankcase pressure setpoint _____ automatically trip EDG 2A.

A. differential voltage;
will

B. differential voltage;
will NOT

C. reverse power;
will

D. reverse power;
will NOT

33. 268000K3.04 001

Unit 2 is operating at 100% RTP when a leak occurred on RHR pump 2B suction line.

The following annunciators ALARMED:

- RB S-E DIAGONAL FLOOR DRN SUMP LEVEL HIGH, 657-016
- RB S-E DIAGONAL FLOOR DRN SUMP LEVEL HIGH-HIGH, 657-034

The **Unit 2** Radwaste Operator reports 2G11-C016, Floor Drain Collector Pump, will not operate.

Subsequently, the following annunciator ALARMED:

- FLOOR DRAIN COLLECTOR TANK 2G11-A006 HI LEVEL, G11-201-2

Based on the above conditions, which ONE of the choices below completes the following statements?

When the Floor Drain Collector Tank 2G11-A006 Hi Level annunciator was received, the RB S-E Diagonal Floor Drain Sump Pumps _____ receive an AUTOMATIC trip signal.

The set point for annunciator 657-034 _____ an EOP entry condition.

A. did;
is

B. did;
is NOT

C. did NOT;
is

D. did NOT;
is NOT

34. 271000A1.01 010

Unit 1 is operating at 30% RTP with SJAE 1A in service.

The following occurs:

- POSTTREATMENT O/G RADIATION HI-HI-HI/INOP, 601-405, ALARMS
- POSTTREATMENT O/G RADIATION HI-HI, 601-411, ALARMS
- POSTTREATMENT O/G RADIATION HI, 601-417, ALARMS
- CONDENSER LEVEL LOOP A HIGH/LOW, N62-028, ALARMS

The following indications are observed:

- 1D11-K601, Pre-Treatment radiation monitor reads 200 mr/hr and slowly rising
- 1D11-K615A & 1D11-K615B, Off Gas Post-Treatment radiation monitors, rises to just above the HI-HI-HI alarm setpoint

Based on the above conditions, which ONE of the choices below completes the following statement?

Main Condenser Vacuum will _____ since _____ has travelled closed.

A. slowly degrade;
1N62-F527, Stack Inlet valve,

B. slowly degrade;
1N62-F003A, Prehtr Inlet valve,

C. rapidly degrade (<5 minutes);
1N62-F527, Stack Inlet valve,

D. rapidly degrade (<5 minutes);
1N62-F003A, Prehtr Inlet valve,

35. 288000A2.05 005

Today's weather forecast for the Plant Hatch area is high winds with anticipated outside ambient temperature in the low teens.

The outside air temperature is currently 36°F and slowly lowering.

Based on the above conditions, which ONE of the choices below completes the following statements?

Currently, DI-OPS-36-0989, Cold Weather Checks, _____ REQUIRED to be entered.

Once DI-OPS-36-0989 is entered, a System Operator will be dispatched to the Diesel Generator Building to _____ .

A. is;
manually close the EDG AND Switchgear room louvers

B. is;
confirm EDG AND Switchgear room louvers have automatically closed

C. is NOT;
manually close the EDG AND Switchgear room louvers

D. is NOT;
confirm EDG AND Switchgear room louvers have automatically closed

36. 290001K6.03 001

Unit 2 is operating at 100% RTP with the following conditions:

- o **Unit 2** Refueling Equipment Hatch installed
- o 2A SBGT Fan is Danger Tagged out for maintenance

Subsequently, the following occurs:

At 10:00, A RWCU System break in the Unit 2 Reactor Building

At 10:05, 2D11-K609A-D, RB POT CONTAMINATED VENT EXH RADN MON rises to 20 mr/hr

At 10:10, The Supply breaker for 2R24-S012, 600/208V MCC, trips OPEN

Based on the above conditions and with NO operator action, which ONE of the choices below completes the following statements?

At 10:08, the Rx. Bldg. Stack release rate will be _____ than at 10:04.

At 10:15, the **Unit 2** Rx. Bldg. dP will be approximately _____ .

A. higher;
the same as at 10:08

B. higher;
0.0 inches water

C. lower;
the same as at 10:08

D. lower;
0.0 inches water

37. 295001AK1.02 001

Unit 1 is operating at 96% RTP with 92% Core Flow when a malfunction occurs resulting in the following conditions:

- Condensate Booster pump 1A trips
- Reactor Feedwater pump 1A trips
- +24 inches is the lowest RWL during the transient

After the plant stabilizes and with NO operator action,

IAW 34SO-B31-001-1, Reactor Recirculation System, the plant will be operating at approximately _____ on the Power To Flow Map provided.

Reference Provided

A. Point A

B. Point B

C. Point C

D. Point D

38. 295003G2.4.6 001

BOTH Units were operating at 100% RTP when a LOSP occurred.

The following conditions exist:

- On **Unit 1**, 4160 VAC Buses 1E & 1G are ENERGIZED from their associated EDGs
- On **Unit 2**, ONLY 4160 VAC Bus 2E is ENERGIZED from its associated EDG

Based on the above conditions,

On **Unit 1**, ENTRY into 34AB-R22-003-1, Station Blackout, _____ REQUIRED.

NORMAL power is available to _____ of the **Unit 1** LPCI Buses (1R24-S018A/B).

A. is;
ONLY one (1)

B. is;
BOTH

C. is NOT;
ONLY one (1)

D. is NOT;
BOTH

39. 295004AK3.02 001

Unit 2 is operating at 100% RTP when the following occurs:

- o 125/250V BATTERY GND FAULT, 651-127, ALARMING
- o 34AB-R42-001-0, Location Of Grounds, is entered
- o A resistance value of 8,000 ohms is indicated

Based on the above conditions, which ONE of the choices below completes the following statements?

This resistance value will require isolation of loads since _____ .

34AB-R42-001-0 _____ be EXITED at this time.

A. personnel or equipment hazards could occur if a second ground develops; can

B. personnel or equipment hazards could occur if a second ground develops; can NOT

C. a single ground could result in spurious equipment operation; can

D. a single ground could result in spurious equipment operation; can NOT

40. 295005AA1.07 001

Unit 1 is operating at 100% RTP with SAT 1D out of service and de-energized.

Subsequently, the **Unit 1** Main Turbine trips.

Based on the above condition and IAW 34AB-R22-002-1, Loss Of 4160V Emergency Bus, which ONE of the choices below completes the following statement?

After the Main Generator trips, the MAXIMUM number of 4160V Buses that will be ENERGIZED is _____ .

A. three (3)

B. five (5)

C. six (6)

D. seven (7)

41. 295006G2.4.4 005

Unit 2 is at 70% RTP when the following occured at the listed time:

At 10:00, RPV pressure	1080 psig
At 10:01, RWL	+8 inches
At 10:02, Drywell pressure	1.2 psig
At 10:03, Torus water level	149.5 inches

Based on the above conditions, which ONE of the choices below completes the following statement?

The EARLIEST listed time that an entry condition to the Emergency Operating Procedure (EOP) flowcharts had been met or exceeded is at _____ .

A. 10:00

B. 10:01

C. 10:02

D. 10:03

42. 295007AK2.06 001

Unit 1 is in Mode 3 with RHR loop "A" operating in Shutdown Cooling (SDC).

The following conditions exist:

- RWL 37 inches
- RPV pressure 85 psig

Subsequently, a malfunction with SDC occurs, resulting in RPV pressure RISING.

Based on the above conditions and IAW 34AB-E11-001-1, Loss of Shutdown Cooling, which ONE of the choices below completes the following statement?

The LOWEST listed RPV pressure that will result in SDC automatically isolating is _____ .

A. 96 psig

B. 109 psig

C. 129 psig

D. 139 psig

43. 295008AK1.01 001

Unit 1 is operating at 100% RTP with the following conditions:

- Reactor Level Mode Select - Manual (Green light EXTINGUISHED)
- Reactor Water Level Select - "B"
- FW Control Mode Select - 3 Element (Green light ILLUMINATED)
- "B" GEMAC level transmitter fails such that "B" GEMAC RWL indicator starts SLOWLY drifting DOWNWARD

Based on the conditions above and IAW 34SO-N21-007-1, Condensate & Feedwater System, which ONE of the choices below completes the following statement?

Initially, the drifting level transmitter causes the steam dryer/separators to allow more _____ and the Recirc pumps will see a _____ in their available NPSH.

A. carryover;
rise

B. carryover;
reduction

C. carryunder;
rise

D. carryunder;
reduction

44. 295013AK2.01 001

Unit 2 is operating at 100% RTP.

- o A Safety Relief Valve (SRV) inadvertently OPENS
- o An operator closes the SRV
- o Torus water temperature stabilizes at 102°F

NOTE: 34AB-T23-003-2, Torus Temperature Above 95°F
34SO-E11-010-2, RHR System

Based on the above conditions, which ONE of the choices below completes the following statements?

IAW 34AB-T23-003-2, _____ RHR loop(s) is(are) REQUIRED to be placed in Torus Cooling.

IAW 34SO-E11-010-2, prior to starting the first RHR pump in any loop, the respective RHR heat exchanger _____ REQUIRED to be ISOLATED.

A. ONLY one (1);
is

B. ONLY one (1);
is NOT

C. ALL available;
is

D. ALL available;
is NOT

45. 295015AA1.08 001

Unit 2 is operating at 100% RTP when a scram occurred.

34AB-C71-001-2, Scram Procedure, is entered.

One (1) Control rod remains at Position 48.

Based on the above conditions and IAW 34SO-X75-002-2, Operation Of SPDS Equipment, which ONE of the choices below completes the following statement?

Thirty (30) seconds later, the SPDS "Primary Display" will have the word "SCRAM" in _____ letters.

A. magenta

B. yellow

C. orange

D. red

46. 295016AA1.06 001

The Main Control Room has been evacuated.

The **Unit 2** reactor was NOT shutdown prior to leaving the Control Room.

- o Local actions have been taken to scram the reactor
- o ALL RSDP transfer switches have been placed in the EMERGENCY position

Based on the above conditions and IAW 31RS-OPS-001-2, Shutdown From Outside Control Room,

From the Remote Shutdown Panel, _____ can be started to control RWL.

RWL can be determined using the indicator on the RSDP located at the 130' elevation Reactor Building _____ .

A. ONLY one CRD pump;
NORTHEAST

B. ONLY one CRD pump;
NORTHWEST

C. BOTH CRD pumps;
NORTHEAST

D. BOTH CRD pumps;
NORTHWEST

47. 295018AA2.05 001

Unit 2 is operating at 5% power with PSW/RBCCW Hx dP adjusted to 12 psid.

Subsequently, two (2) RBCCW pumps fail and will NOT run.

NOTE: 2P41-F491, PSW Outlet Valve From RBCCW Hx
34SO-P42-001-2, Reactor Building Closed Cooling Water (RBCCW) System

Based on the above conditions, which ONE of the choices below completes the following statements?

Annuciator HX PSW/RBCCW DIFF PRESS LOW, (650-238), _____ be ILLUMINATED.

IAW 34SO-P42-001-2, to RETURN the PSW/RBCCW Hx dP to 12 psid, the SO will throttle 2P41-F491 in the _____ direction.

A. will;
CLOSE

B. will;
OPEN

C. will NOT;
CLOSE

D. will NOT;
OPEN

48. 295019AK3.02 001

Unit 1 is operating at 100% RTP with the following conditions:

- 1P51-C001C, Station Service Air Compressor (SSAC), is UNAVAILABLE
- 1P51-C001B, SSAC, is in Standby Auto Operation
- 1P51-C001A, SSAC, is in Service

Subsequently the 1P51-C001A, SSAC, trips.

34AB-P51-001-1, Loss Of Instrument And Service Air System Or Water Intrusion Into The Service Air System, is entered.

Based on the above conditions, which ONE of the choices below completes the following statements?

The setpoint at which 1P51-C001B, SSAC, will Automatically Start & Load is _____ .

IAW 34AB-P51-001-1, one of the reasons 1P51-C001B, SSAC, automatically started is to prevent _____ from failing close.

A. 100 psig;
1T41-F032A/B, Rx Bldg Isol Dmprs To SBGT,

B. 100 psig;
1T41-F011A/B, Rx Bldg Inboard Isol Dmprs,

C. 107 psig;
1T41-F032A/B, Rx Bldg Isol Dmprs To SBGT,

D. 107 psig;
1T41-F011A/B, Rx Bldg Inboard Isol Dmprs,

49. 295021AK3.01 005

Unit 2 is in Mode 4 with RHR loop "B" operating in Shutdown Cooling (SDC).

Subsequently, a leak occurs resulting in a SDC isolation due to low RWL.

Based on the above conditions and IAW 34AB-E11-001-2, Loss of Shutdown Cooling, which ONE of the choices below completes the following statements?

RWL _____ be raised to a MINIMUM of 53 inches.

The desired RWL will be confirmed using RWL instrument _____ .

A. will;
2B21-R605, Floodup Range

B. will;
2C32-R606A, Narrow Range

C. will NOT;
2B21-R605, Floodup Range

D. will NOT;
2C32-R606A, Narrow Range

50. 295022AA2.03 001

Unit 2 is operating at 100% RTP with HPCI Danger tagged out of service.

Subsequently, Drywell pressure rises to 2.2 psig.

Based on the above conditions and NO Operator actions,

FINAL CRDM temperatures are expected to _____ .

A. significantly rise (>100°F)

B. significantly lower (>100°F)

C. slightly rise (<10°F)

D. slightly lower (<10°F)

51. 295023AA2.02 005

Fuel movement is in progress on **Unit 1**.

The following currently exists:

- o A fuel bundle is on the Main Grapple
- o The Main Grapple is in the Normal Up position
- o Spent Fuel Storage Pool Water Level is 22.5 feet

At 12:00,

The **Unit 1** Main Steam line plugs fail causing the Reactor Cavity and Fuel Pool water levels to lower at 6 inches/minute.

Based on the above plant conditions, which ONE of the choices below completes the following statements?

IAW LCO TS 3.7.8, Spent Fuel Storage Pool Water Level, the EARLIEST listed time that entry into a Required Action Statement (RAS) for Spent Fuel Storage Pool Water Level is _____ .

When water level drops to the Main Steam lines, the fuel seated in the Fuel Pool racks will _____ .

A. 12:02;
be uncovered

B. 12:02;
still be covered

C. 12:04;
be uncovered

D. 12:04;
still be covered

52. 295024G2.4.8 001

Unit 1 is being shutdown for a refueling outage.

The following events occur:

Time	**Event**
07:30	4160 VAC 1G de-energizes and can NOT be restored
08:00	The Reactor Mode Switch is placed in SHUTDOWN due to Drywell pressure rising to 3.5 psig
15:00	Reactor Coolant temperature is reduced to 211°F
23:00	The Reactor Mode Switch is placed in REFUEL

Based on the above conditions and IAW 34AB-R23-001-1, Loss of 600 Volt Emergency Bus, which ONE of the choices below completes the following statement?

The EARLIEST time that the 4160/600V 1CD Transformer can be used to supply power to 600 VAC 1D is _____ .

A. 07:30

B. 08:00

C. 15:00

D. 23:00

53. 295025EK2.06 001

31EO-EOP-107-2, Altenate RPV Pressure Control, is in progress.

- o RPV pressure 1060 psig and slowly rising
- o HPCI system is aligned in Pressure Control Mode
- o 2E41-R612, HPCI flow controller is in AUTOMATIC with the setpoint at 2500 gpm

Based on the above conditions and IAW 31EO-EOP-107-2, which ONE of the choices below completes the following statement?

To stabilize RPV pressure, the operator will _____ .

A. throttle 2E41-F011, Test to CST VLV, in the OPEN direction

B. throttle 2E41-F011, Test to CST VLV, in the CLOSE direction

C. LOWER the setpoint on 2E41-R612, HPCI flow controller

D. RAISE the setpoint on 2E41-R612, HPCI flow controller

54. 295026EK1.02 001

Unit 2 is operating at 100% RTP when a leak occurs inside the Drywell (DW).

Based on the above condition, which ONE of the choices below completes the following statements?

Steam condensation from the leak will cause Torus water temperature to heat up _____ .

IAW 31EO-EOP-012-2, PC Primary Containment Control, the LOWEST listed Torus temperature requiring entry into RC Point A of 31EO-EOP-010-2, RC RPV Control (NON-ATWS), is _____ .

A. uniformly throughout the Torus due to the design of the downcomers;
111°F

B. uniformly throughout the Torus due to the design of the downcomers;
101°F

C. directly under the area of the DW leak due to the energy being distributed directly to the Torus water in that area;
111°F

D. directly under the area of the DW leak due to the energy being distributed directly to the Torus water in that area;
101°F

55. 295028EK1.02 001

Unit 2 experienced a loss of Instrument Air.

The following conditions exist:

- o Reactor power 3%
- o RPV Pressure 1110 psig, slowly rising
- o RWL -110 inches, stable
- o ADS Inhibit Switches INHIBIT position
- o RHR pumps ONLY 2A running
- o Drywell (DW) Pressure 3.0 psig, rising at 0.5 psi/minute
- o DW Temperature 370°F, slowly rising

After the above conditions have existed for ten (10) minutes, the NPO places the ADS "INHIBIT" switches to the "NORMAL" position and NONE of the ADS valves OPEN.

Based on the conditions above, the MOST likely listed reason the ADS valves did NOT open is that _____ .

A. Instrument Air to the ADS valves has been lost

B. DW Temperature is above the design criteria

C. only one RHR pump is in operation

D. the required timer is still timing

56. 295030EK2.01 001

An event has occurred on **Unit 1.**

At 10:00, plant parameters are:

- o Torus Water Level ..... 148 inches
- o Torus Water Temperature ..... 228.5°F rising, SPDS trend (0.10 degrees/minute)
- o Torus Pressure ..... 12 psig

The following occurs at the listed times;

At 10:00, HPCI is injecting at 2500 gpm

At 10:10, HPCI flow is RAISED to 3000 gpm

At 10:15, Torus level LOWERS to 144 inches

At 10:20, Torus pressure LOWERS to 1.0 psig due to Drywell Sprays

Based on the above conditions, which ONE of the choices below completes the following statement?

The EARLIEST listed time that entry into the UNSAFE area of the HPCI Pump NPSH Limit Graph is at _____ .

Reference Provided

A. 10:00

B. 10:10

C. 10:15

D. 10:20

57. 295031EK1.01 001

Unit 2 was operating at 100% RTP when a LOCA occurred.

- o An Emergency Depressurization has been completed
- o Core Spray pump 2A is the ONLY pump available for injection
- o Core Spray pump 2A is injecting at 3300 gpm

Based on the above conditions and IAW 31EO-EOP-010-2, RC (Non-ATWS), RC/L Path, which ONE of the choices below completes the following statement?

The LOWEST listed RWL at which Adequate Core Cooling is ASSURED is _____ .

A. -180 inches

B. -190 inches

C. -205 inches

D. -208 inches

58. 295033G2.1.28 001

An emergency has been declared on **Unit 2**.

Radiation levels in the Reactor Building are averaging 100 mr/Hr.

The OSC & the TSC are manned.

Subsequently, one (1) **Unit 2** Turbine Building Exhaust fan is placed on it's alternate power supply.

The crew has restarted the Turbine Building Ventilation System IAW 31EO-EOP-014-2, SC Secondary Containment Control - RR Radioactivity Release Control, using 34SO-U41-001-2, Turbine Building Ventilation System, Section 4.3.10.

Based on the conditions above and IAW 34SO-U41-001-2, which ONE of the choices below completes the following statements?

Alternate power to the Turbine Building Ventilation Exhaust Fans is from _____ .

The reason the Turbine Building Ventilation Exhaust Fans were restarted is to maintain the radiological habitability of the _____ within limits.

A. 2R24-S011, Reactor Building 600/208 VAC MCC 2C; Main Control Room (MCR)

B. 2R24-S011, Reactor Building 600/208 VAC MCC 2C; Operation Support Center (OSC)

C. 2R24-S012, Reactor Building 600/208 VAC MCC 2B; Main Control Room (MCR)

D. 2R24-S012, Reactor Building 600/208 VAC MCC 2B; Operation Support Center (OSC)

59. 295035EK3.02 001

Unit 2 is operating at 100% RTP with the following alignment:

o 2T41-C001A, Rx Bldg Supply Fan	Running
o 2T41-C001B, Rx Bldg Supply Fan	Standby
o 2T41-C007A, Rx Bldg Vent Exhaust Fan	Running
o 2T41-C007B, Rx Bldg Vent Exhaust Fan	Standby

Subsequently, the shaft on the running, 2T41-C007A, Rx Bldg Vent Exhaust Fan, breaks.

Based on the above conditions and IAW 34SO-T41-005-2, Reactor Building Ventilation System, which ONE of the choices below completes the following statement?

The Reactor Building dP will _____ .

A. remain relatively the same since the standby 2T41-C007B automatically started

B. remain relatively the same since 2T41-C001A tripped, 2T41-C001B and 2T41-C007B have automatically started

C. trend towards 0 inches water since the inservice 2T41-C001A automatically tripped

D. trend towards 0 inches water since the standby 2T41-C007B did NOT automatically start

60. 295037EK3.03 001

Unit 2 was operating at 100% RTP when an ATWS occurred.

RC-1 actions are completed.

Reactor power stabilizes at 8% RTP.

Which ONE of the choices below completes the following statements?

Based on the above conditions, the Recirc pumps are _____ .

During performance of 31EO-EOP-017-2, CP-3 ATWS LEVEL Control, a mitigating strategy for RWL control is to ensure _____ .

A. tripped;
core inlet subcooling is LOWERED

B. tripped;
core void fraction is RAISED

C. operating at minimum speed;
core inlet subcooling is LOWERED

D. operating at minimum speed;
core void fraction is RAISED

61. 295038EA2.01 001

The following annunciator on **Unit 1** is in the ALARMED condition:

- o SERVICE WATER EFFLUENT RADIATION HIGH, 601-407

Subsequently, the Offsite release from this flowpath results in an Unusual Event (RU1) being declared.

Based on the above conditions, which ONE of the choices below completes the following statements?

The flowpath containing this alarm _____ AUTOMATICALLY isolate due to this High radiation signal.

Currently, an entry condition into the Radioactivity Release Control (RR) portion of 31EO-EOP-014-1 _____ exist.

A. will;
does NOT

B. will;
does

C. will NOT;
does NOT

D. will NOT;
does

62. 300000A2.01 005

Unit 2 is operating at 100% RTP when the following occurs:

- o INSTR AIR DRYERS MALFUNCTION, 700-205, ILLUMINATED
- o INSTR AIR DRYERS SYS PRESS LOW, 700-219, ILLUMINATED
- o Non-Essential Instrument Air Header pressure is 45 psig

Based on the above conditions,

The Non-Essential Instrument Air Header Isolation Valve, 2P52-F015, is _____ .

Entry into 34AB-P51-001-2, Loss of Instrument and Service Air System or Water Intrusion into the Service Air System, _____ REQUIRED.

A. open;
is

B. open;
is NOT

C. closed;
is

D. closed;
is NOT

63. 400000K4.01 001

Unit 2 is operating at 50% RTP.

Subsequently, one (1) RBCCW pump trips.

Based on the above conditions and IAW 34AB-P42-001-2, Loss Of Reactor Building Closed Cooling Water, the Standby RBCCW pump will receive an automatic start signal on RBCCW System _____ low.

A Standby RBCCW pump automatic start signal _____ when the condition clears.

A. flow;
will automatically reset

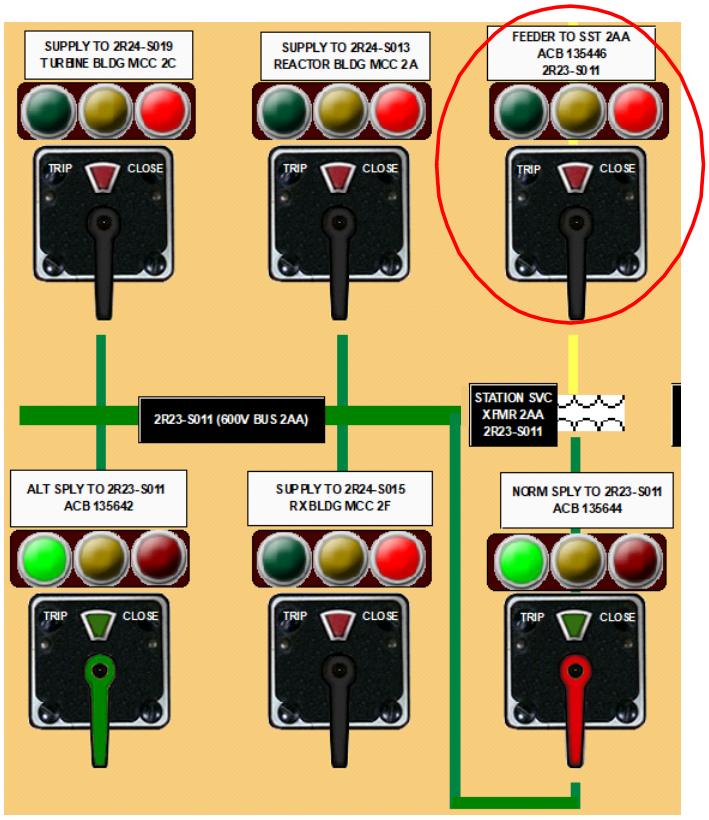
B. flow;
must be manually reset

C. pressure;
will automatically reset

D. pressure;
must be manually reset

64. 600000AK2.04 010

Unit 2 is operating at 100% RTP when 2R23-S011, 600V Bus 2AA, is involved in a fire.



Based on the above conditions, which ONE of the choices below completes both statements?

IAW 34AB-X43-001-2, Fire Procedure, the breaker indicated above (ACB 135446) _____ REQUIRED to be OPEN.

After 600V Bus 2AA is de-energized, the fire brigade will suppress the fire at the **Unit 2** _____ elevation.

A. is;
Control Building 130 foot

B. is;
Turbine Building 147 foot

C. is NOT;
Control Building 130 foot

D. is NOT;
Turbine Building 147 foot

65. 700000AA1.03 001

BOTH UNITS are operating at 100% RTP.

Following a grid disturbance, the following **Unit 1** conditions exist:

- o Generator Megavars + 400 MVARs
- o 230 KV switchyard voltage 231 KV and LOWERING

The crew enters 34AB-S11-001-0, Operation with Degraded System Voltage.

Based on the above conditions and IAW 34AB-S11-001-0, Operation With Degraded Voltage, which ONE of the choices below completes the following statements?

To adjust Reactive load (VARS) to + 300 MVARS, the operator will select from the HMI Screen _____ and depress LOWER.

If the 230 KV switchyard voltage trend continues, 4160 VAC Bus 1E _____ to its associated EDG.

A. PSI-LOAD then LOAD SET;
will AUTOMATICALLY transfer

B. PSI-LOAD then LOAD SET;
must be MANUALLY transferred

C. EX2100 then REGULATOR ADJUST;
will AUTOMATICALLY transfer

D. EX2100 then REGULATOR ADJUST;
must be MANUALLY transferred

66. G2.1.41 001

IAW 34FH-OPS-001-0, Fuel Movement Operation, which ONE of the choices below completes the following statements?

IF, during fuel movement, it is found that conditions have changed such that any of the prerequisites of this procedure are no longer satisfied, _____ has the authority to halt fuel movement.

Prior to halting fuel movement, the bundle will be placed in the Spent Fuel Pool or, if possible, placed in _____ .

A. ONLY the Refueling SRO;
its proper "in-core" location

B. ONLY the Refueling SRO;
any possible location in the RPV

C. ANY MEMBER of the refueling team;
its proper "in-core" location

D. ANY MEMBER of the refueling team;
any possible location in the RPV

67. G2.1.8 005

Unit 2 is operating at 25% RTP with the need to change Recirc Pump 2A speed LOCALLY.

Which ONE of the choices below describes the MINIMUM qualification and the coordination requirements for changing Recirc Pump "A" speed locally?

IAW NMP-OS-007-001, Conduct of Operations Standards and Expectations, a _____ can perform the LOCAL speed adjustment while under the direction and in the presence of an ACTIVE Licensed Operator.

At the current power level and IAW 34SO-B31-001-2, Reactor Recirculation, while local speed adjustments are being made, communication with the Control Room _____ REQUIRED.

A. System Operator In Training (SOIT);
is

B. System Operator In Training (SOIT);
is NOT

C. Nuclear Plant Operator In Training (NPOIT);
is

D. Nuclear Plant Operator In Training (NPOIT);
is NOT

68. G2.2.22 001

A LOCA has occurred on **Unit 2**.

- o RWL -15 inches and LOWERING

At 11:00, RWL lowers to -156 inches.

At 11:15, RWL lowers to -181 inches.

At 11:20, RWL lowers to -196 inches.

At 11:25, RWL lowers to -208 inches.

Based on the above conditions and IAW Tech Specs,

The EARLIEST listed time a SAFETY LIMIT violation FIRST occurred is _____ .

A. 11:00

B. 11:15

C. 11:20

D. 11:25

69. G2.2.35 001

Unit 1 is in a refueling outage making preparations for startup.

- The Reactor Mode Switch is in the SHUTDOWN position
- Reactor Coolant temperature is 170°F
- ALL, except for one (1), of the reactor vessel head bolts are FULLY tensioned

Based on the above conditions and IAW Technical Specifications, which ONE of the choices below completes the following statements?

Currently, the unit is in _____ .

With ALL of the reactor vessel head bolts fully tensioned AND the Reactor Mode Switch in REFUEL, the unit will be in _____.

A. Mode 4;
Mode 2

B. Mode 4;
Mode 5

C. Mode 5;
Mode 2

D. Mode 5;
Mode 5

70. G2.2.42 001

IAW **Unit 1** Tech Specs, which ONE of the choices below completes the following statement?

A **Unit 1** Tech Spec LCO condition that will REQUIRE entry into a Required Action Statement (RAS) (NOT A TRACKING RAS) is _____ .

A. RCIC is inop in Mode 3 with reactor steam dome pressure at 100 psig

B. Suppression Pool water level is 149.5 inches in Mode 1

C. Reactor steam dome pressure is 1052 psig in Mode 1

D. Drywell pressure is 1.80 psig in Mode 2

71. G2.3.11 001

Unit 2 Radwaste is discharging Waste Sample Tank A to the canal.

Subsequently, the following indication is received:

- 2G11-R045, Total Plant Dilution Flow, recorder indicates 9500 gpm

Based on the above conditions, which ONE of the choices below completes the following statements?

The Radwaste discharge to the canal _____ .

With the existing Specific Release Permit, _____ permitted to restart the discharge of Waste Sample Tank A to the canal.

A. will automatically terminate;
ONLY one (1) restart is

B. will automatically terminate;
NO restarts are

C. must be manually terminated;
ONLY one (1) restart is

D. must be manually terminated;
NO restarts are

72. G2.3.12 001

IAW 31GO-OPS-005-0, Primary Containment Entry,

The MAXIMUM reactor power at which radiological conditions will allow a NORMAL Primary Containment Entry to occur is _____ .

A. IRM Range 5

B. 7% RTP

C. 10% RTP

D. 13% RTP

73. G2.3.4 001

Unit 2 was operating at 100% RTP when an event occurred that resulted in minor fuel failure.

RCIC and HPCI have tripped..

A NPO is being dispatched to maximize CRD flow and monitor CRD operation locally.

The NPO has a current annual TEDE dose exposure of 1500 mrem.

The following general area radiation levels exist:

- o U2 NE Diagonal 800 mrem/hr
- o U2 NW Diagonal 1000 mrem/hr
- o U2 SE Diagonal 1200 mrem/hr
- o U2 SW Diagonal 1400 mrem/hr

Based on the above conditions and IAW NMP-HP-001, Radiation Protection Standard Practices,

Assuming NO extensions are approved and WITHOUT exceeding the Hatch TEDE Adminstrative limit, the MAXIMUM listed STAY time for the NPO in the CRD Diagonal, is _____ .

A. 36 minutes

B. 29 minutes

C. 24 minutes

D. 20 minutes

74. G2.4.16 010

Unit 2 has experienced a complete Loss Of Offsite Power (LOSP).

The following conditions exist on Unit 2:

- ONLY 4160 VAC bus 2E is energized
- Drywell pressure is currently 2.0 psig and rising 0.1 psig per minute
- RWL is -5 inches slowly rising
- RC-1, RC-2, & RC-3 are complete

Based on the above conditions, which ONE of the choices below completes the following statement?

Actions in _____ takes precedence over actions in any other procedure.

A. 34AB-R22-003-2, Station Blackout

B. 34AB-R22-002-2, Loss of 4160V Emergency Bus

C. 31EO-EOP-010-2, RC (Non-ATWS) flowchart

D. 31EO-EOP-012-2, Primary Containment (PC) flowcart

75. G2.4.3 001

Which ONE of the choices below completes the following statement concerning the **Unit 2** SRV control switches?

A _____ dot has been placed above the SRV control switches to indicate that _____ .

A. yellow;
this valve is on the Post-Accident Monitoring (PAM) Instrumentation list

B. yellow;
this valve is on the Technical Requirements Manual (TRM) Master Equipment Cross Reference list

C. blue;
this valve is on the Post-Accident Monitoring (PAM) Instrumentation list

D. blue;
this valve is on the Technical Requirements Manual (TRM) Master Equipment Cross Reference list

76. 211000G2.1.25 005

Unit 2 is starting up with the Reactor Mode Switch in the Startup / Hot Standby position.

The following Standby Liquid Control (SLC) System parameters currently exist:

- SLC Tank level 3800 gallons
- SLC Tank temperature 70°F
- SLC Concentration 6.0%

Based ONLY on the above conditions and IAW Technical Specifications, which ONE of the choices below completes the following statement?

Without performing a Risk Assessment, placing the Reactor Mode Switch to RUN _____ ALLOWED, IAW TS LCO _____ .

Reference Provided

A. is;
3.0.4

B. is;
3.0.2

C. is NOT;
3.0.4

D. is NOT;
3.0.2

77. 234000A2.01 001

Unit 2 is in a refueling outage with control rod 26-27 previously declared inoperable and disarmed at position 00.

- o The refueling crew is currently transferring a grappled fuel bundle from core location 09-10 to core location 25-08.
- o Control rod 26-27's Full-In rod position channel fails such that the Full-In position indication to the refueling permissive logic is lost

Based on the above conditions, which ONE of the choices below completes following statements?

The Refueling Permissive Logic _____ ALLOW the fuel bundle currently on the grapple to be lowered.

IAW Tech Spec Bases 3.9.4, the crew _____ ALLOWED to bypass the inoperable position channel on rod 26-27.

A. will NOT;
is

B. will NOT;
is NOT

C. will;
is

D. will;
is NOT

78. 241000A2.08 001

On 3/10, 34SV-N30-004-2, Turbine Off-Line Overspeed & ETD Trip Testing, surveillance was completed satisfactory for the **Unit 2** Main Turbine.

At 11:00 on 6/10, I&C and Engineering notifies the Control Room of the following Main Turbine Overspeed Protection System speed signal inputs:

- o One Primary speed signal input indicating zero (0) RPM
- o Two Emergency speed signal inputs indicating zero (0) RPM

NOTE: TLCO 3.3.10 Turbine Overspeed Protection

Based on the above conditions, which ONE of the choices below completes the following statements?

On 3/11, if the Main Turbine speed rises to 1850 rpm, the Main Turbine Stop valves _____ travel CLOSE.

At 11:00 on 6/10, and IAW TLCO 3.3.10, the Turbine Overspeed Protection System _____ FUNCTIONAL.

A. will;
is

B. will;
is NOT

C. will NOT;
is

D. will NOT;
is NOT

79. 259002G2.2.38 005

Unit 2 was operating at 29% RTP when a failure results in MAXIMUM feedwater flow and rising RWL.

Which ONE of the choices below completes the following statements?

Based on the conditions above, TS 3.3.2.2, Feedwater and Main Turbine High Water Level Trip Instrumentation, _____ currently APPLICABLE.

IAW TS Bases 3.3.2.2, Feedwater and Main Turbine High Water Level Trip Instrumentation, the bases for indirectly initiating a REACTOR SCRAM is to _____ .

A. is;
mitigate the reduction in MCPR resulting from the turbine trip

B. is;
protect the main turbine from damage due to water entering the turbine

C. is NOT;
mitigate the reduction in MCPR resulting from the turbine trip

D. is NOT;
protect the main turbine from damage due to water entering the turbine

80. 261000A2.11 001

Unit 1 is operating End-Of-Cycle at 80% RTP (prior to a refueling outage).

Which ONE of the choices below completes the following statement?

Based on the condition above, the applicable basis for TS 3.6.4.3, Standby Gas Treatment (SGT), is to mitigate the consequences of a fission product leak following a _____ .

A. Loss of Offsite Power

B. Fuel Handling Accident

C. Loss of Coolant Accident

D. Failure of Secondary Containment Integrity

81. 264000A2.02 005

Unit 2 is operating at 100% RTP with Core Spray pump 2B inoperable.

34SV-R43-001-2, Diesel Generator 2A Monthly Test, is in progress (last day to perform).

The following occurs at the listed times:

At 10:00,

- The required loaded run time has been completed

At 10:04,

- The NPO continuously lowers 2A EDG load from 1800 KW to 0 KW with Output amps lowering to zero (0) amps

At 10:05,

- 2A EDG automatically TRIPS
- The SS declares 2A EDG INOPERABLE
- Maintenance reports that 2A EDG will remain out of service for 12 hours

Based on the above conditions, which ONE of the choices below completes the following statements?

At 10:05, the 2A EDG _____ trip on Reverse Power.

At 16:05, the plant _____ REQUIRED to have entered Tech Spec LCO 3.0.3.

Reference Provided

A. did;
is

B. did;
is NOT

C. did NOT;
is

D. did NOT;
is NOT

82. 272000G2.1.25 005

Unit 2 was operating at 100% RTP when an unisolable leak developed in the Spent Fuel Pool resulting in the following:

- o Spent Fuel Pool Level is currently 10.0 ft and slowly dropping
- o Area radiation monitors alarming on the 2D21-P600 with the following indications:

- 2D21-K601A, Reactor Head Laydown	550 mr/hr
- 2D21-K601E, Dryer/ Separator Pool	700 mr/hr
- 2D21-K601M, Spent Fuel/ Fuel Pool	1500 mr/hr

Based on the conditions above and IAW NMP-EP-141-002, Hatch Emergency Action Levels and Bases, which ONE of the below choices completes the following statements?

A Loss or Potential Loss of a Fission Product Barrier _____ occurred.

IAW NMP-EP-141, Event Classification, the HIGHEST required emergency classification is _____ .

Reference Provided

A. has;
an Alert

B. has;
a Site Area

C. has NOT;
an Alert

D. has NOT;
a Site Area

83. 295001AA2.05 001

Unit 2 is at operating at 59% RTP when a transient occurs resulting in the following indications:

- o Recirc Pump 2A & 2B Speed 48%
- o 2B21-R611A, TOTAL A FLOW 24 Mlbm/hr
- o 2B21-R611B, TOTAL B FLOW 12 Mlbm/hr

The crew performs 34SV-SUV-023-2, Jet Pump and Recirculation Flow Mismatch Operability.

The diffuser-to-lower plenum differential pressure for Jet Pumps 5 & 6 differs by 50% from established patterns.

Based on the above conditons and IAW Tech Specs/Bases, which ONE of the choices below completes the following statements?

The TOTAL number of recirculation loops considered in operation is _____ .

The indicated differential pressure mismatch _____ REQUIRE entry into a Tech Spec LCO 3.4.2, Jet Pumps, Required Action Statement (RAS).

Reference Provided

A. one (1);
does

B. one (1);
does NOT

C. two (2);
does

D. two (2);
does NOT

84. 295002G2.4.35 010

Unit 1 is operating at 100% RTP when Main Condenser vacuum starts DEGRADING due to lowering Circ Water flume level.

The following procedures are entered:

- 34AB-N71-001-1, Circulating Water System Failure
- 34AB-N61-002-1, Main Condenser Vacuum Low
- 34AB-C71-001-1, Scram Procedure

Circ Water flume level lowers to the point where venting is required.

The Shift Supervisor dispatches a SO to perform the required venting and directs a NPO to place the Main Condenser Low Vacuum Trip Bypass switches in BYPASS.

Subsequently, the Circ Water flume level returns to its normal value with both Circulating pumps in service.

Based on the above conditions, which ONE of the choices below completes the following statements?

IAW 34AB-N61-002-1, local venting of BOTH the Waterboxes and Circ Water pumps _____ REQUIRED.

The Main Condenser Low Vacuum Trip Bypass switches will be placed in BYPASS IAW _____ .

A. is;
34AB-N61-002-1

B. is;
34AB-C71-001-1

C. is NOT;
34AB-N61-001-1

D. is NOT;
34AB-C71-001-1

85. 295004G2.2.4 001

Unit 2 is operating at 100% RTP.

- o 2R22-S016, 125/250VDC Switchgear 2A, de-energizes and can NOT be restored
- o 34AB-R22-001-2, Loss of DC Buses, is entered by the crew

Based on the above conditions and IAW 34AB-R22-001-2, which ONE of the choices below completes the following statements?

A 34GO-OPS-014-2, Fast Reactor Shutdown, _____ REQUIRED.

When procedurally directed to modify RFPT alignment, local trip pushbuttons are to be used to trip _____ RFPT(s).

A. is;
BOTH

B. is;
ONLY one (1)

C. is NOT;
BOTH

D. is NOT;
ONLY one (1)

86. 295005AA2.08 001

Unit 2 is operating at 85% of RTP.

The EDG 2C status is as follows:

- o EDG is in the TEST mode
- o EDG is NOT running

Subsequently, the following occurs:

- o SAT 2D & 2E DE-ENERGIZE
- o Reactor Scram

Two minutes later, the Main Turbine trips

Based on the above conditions and with NO operator action, which ONE of the choices below completes the following statements?

Four (4) minutes after the loss of SATs 2D & 2E, EDG 2C _____ in the TEST mode.

34AB-R22-004-2, Loss of 4160V BUS 2A, 2B, 2C, or 2D, _____ contain the actual steps that will be performed to re-energize a 4160 VAC bus.

A. is STILL;
does

B. is STILL;
does NOT

C. is NOT;
does

D. is NOT;
does NOT

87. 295019AA2.02 005

Unit 2 is operating at 100% RTP when the following occurs:

- o Loss of ALL Unit 2 Station Service Air Compressors
- o 34AB-P51-001-2, Loss of Instrument and Service Air System or Water Intrusion Into The Service Air System, is entered
- o Instrument and Service Air pressure drops to zero (0) psig

The following alarms are ALARMING:

- o INSTR AIR DRYER MALFUNCTION, 700-205
- o INSTR AIR ESSENTIAL SPLY PRESS LOW, 700-215
- o INSTR AIR DRYERS SYS PRESS LOW, 700-219

Based on the above conditons, which ONE of the choices below completes the following statements?

Valve _____ will be CONTINUOUSLY cycling full open to full closed.

The actual steps for turning off the supply breaker, or opening links, to stop this valve from cycling are contained in _____ .

A. 2P52-F565, Rx Bldg Inst N_2 To Non-Int Air El 185 Isol Vlv,
INSTR AIR ESSENTIAL SPLY PRESS LOW, 700-215

B. 2P52-F565, Rx Bldg Inst N_2 To Non-Int Air El 185 Isol Vlv,
34AB-P51-001-2

C. 2P51-F017, Turbine Building Service Air Isolation Valve;
INSTR AIR ESSENTIAL SPLY PRESS LOW, 700-215

D. 2P51-F017, Turbine Building Service Air Isolation Valve;
34AB-P51-001-2

88. 295030G2.2.4 005

Unit 1 was operating at 100% RTP when an event occurred causing Torus Water level to begin lowering.

At 10:00, the following condition exists:

- o Torus water level 130 inches lowering 2 inches/minute

Based on the above conditions and IAW 31EO-EOP-012-1, PC Primary Containment Control, which ONE of the choices below completes the following statements?

At 10:00, Torus water level is REQUIRED to be controlled using _____ .

The EARLIEST listed time that an EAL threshold value for Torus Water Level will be EXCEEDED is _____ .

REFERENCE PROVIDED

A. 34SO-E21-001-1, Core Spray System;
10:15

B. 34SO-E21-001-1, Core Spray System;
10:17

C. 34SO-E11-010-1, Residual Heat Removal System;
10:15

D. 34SO-E11-010-1, Residual Heat Removal System;
10:17

89. 295031G2.4.9 001

Unit 1 is operating at 25% RTP, shutting down due to HPCI being INOP, when the following occurs.

At 10:00, a LOSP occurs with failure of ALL Unit 1 Emergency Diesel Generators.

At 10:15, the following conditions exist:

- RWL -120 inches and stable being controlled by RCIC
- RPV pressure is being controlled by LLS
- Unit 1 EDGs cannot be manually started
- Maintenance reports that 15:00 is the earliest time an EDG can be returned to service

At 10:20, conditions exist in Secondary Containment that require an Emergency Depress.

Based on the above conditions, which ONE of the choices below completes the following statements?

At 10:16, IAW NMP-EP-141, Event Classification, the HIGHEST required emergency classification is a _____ Emergency.

At 10:25, IAW 31EO-EOP-015-1, CP-1 Alternate Level Control, Steam Cooling, & Emergency RPV Depressurization Flowchart, RPV pressure will be maintained _____ .

Reference Provided

A. Site Area;
between 150 psig and 300 psig

B. Site Area;
less than 50 psig above torus pressure

C. General;
between 150 psig and 300 psig

D. General;
less than 50 psig above torus pressure

90. 295034EA2.02 005

Unit 2 is operating at 100% RTP with irradiated fuel movement in progress on Unit 1.

Subsequently, the following alarms are received:
(These are the ONLY radiation alarms received)

601-420, Rx Bldg Pot Contam Area Vent Radn Hi-Hi
601-426, Rx Bldg Pot Contam Area Radiation High
601-306, Rx Bldg Radiation High

34AB-T22-003-2, Secondary Containment Control, is entered.

Based on the above conditions, which ONE of the choices below completes the following statement?

The cause for these radiation alarms is due to a _____ in Secondary Containment and _____ .

A. RWCU line leak;

34AB-T22-003-2 is performed CONCURRENTLY with 31EO-EOP-014-2, SC/RR

B. RWCU line leak;

34AB-T22-003-2 is exited and 31EO-EOP-014-2, SC/RR is entered

C. dropped irradiated fuel bundle;

34AB-T22-003-2 is performed CONCURRENTLY with 31EO-EOP-014-2, SC/RR

D. dropped irradiated fuel bundle;

34AB-T22-003-2 is exited and 31EO-EOP-014-2, SC/RR is entered

91. 295036EA2.03 001

Unit 1 is operating at 100% RTP, when an unisolable steam leak occurs in the plant.

- o Main Control Room indications and alarms indicate rapidly increasing temperatures in the Southwest Diagonal
- o A NPO reports the temperature in the Southwest Diagonal is above Maximum Safe Operating Temperature

Based on the above conditions, which ONE of the choices below completes the following statements?

This rising temperature is a result of a steam leak on the _____ system.

IAW 31EO-EOP-014-1, SC/RR, EOP flowchart, the SS is REQUIRED to perform _____ .

A. HPCI;
34GO-OPS-014-1, Fast Reactor Shutdown

B. HPCI;
point A of the RC EOP flowchart

C. RCIC:
34GO-OPS-014-1, Fast Reactor Shutdown

D. RCIC;
point A of the RC EOP flowchart

92. 400000A2.01 001

Unit 2 is operating at 50% RTP with RBCCW pump 2A Danger Tagged out of service for pump and motor replacement.

Subsequently, RBCCW pump 2B trips.

Investigation reveals the breaker must be repaired.

Emergency Maintenance is declared and the breaker will be repaired by the Fix It Now (FIN) team.

Based on the above conditions, which ONE of the choices below completes the following statements?

IAW 34AB-P42-001-2, Loss of Reactor Building Closed Cooling Water, entry into 34AB-C71-001-2, Scram Procedure, _____ REQUIRED.

IAW NMP-GM-006, Work Management, the LOWEST level of authority REQUIRED to declare Emergency Maintenance on the pump breaker is the _____ .

A. is;
Operations Services Manager

B. is;
Shift Manager

C. is NOT;
Operations Services Manager

D. is NOT;
Shift Manager

93. 700000AA2.2.10 001

Unit 2 is operating at 92% RTP.

Following a grid disturbance, the MAIN GENERATOR TEMPERATURE TROUBLE, 651-161, is ALARMED on Unit 2.

The alarm was confirmed to be a Main Generator alarm on panel 2H11-P703.

Based on the above conditions and the operating point depicted on the provided reference, IAW 651-161, which ONE of the choices below completes the following statements?

Reducing Main Generator MVARS to zero (0) _____ REQUIRED.

Main Generator MWe will be reduced IAW _____ .

Reference Provided

A. is;
34GO-OPS-005-2, Power Changes

B. is;
34SO-N40-001-2, Main Generator Operation

C. is NOT;
34GO-OPS-005-2, Power Changes

D. is NOT;
34SO-N40-001-2, Main Generator Operation

94. G2.1.26 010

Unit 1 is operating in Mode 2 preparing for a maintenance walkdown in the Drywell.

Based on the above conditions and IAW 31GO-OPS-005-0, Primary Containment Entry,

The Operations Department _____ REQUIRED to establish a clearance to isolate Nitrogen makeup to the Drywell Pneumatics.

A clearance to prevent withdrawal of control rods _____ REQUIRED.

A. is;
is also

B. is ;
is NOT

C. is NOT;
is also

D. is NOT;
is NOT

95. G2.1.3 001

The following Modes exist for both units at the given time:

Time	Unit 1	Unit 2
10:00	Mode 4	Mode 3
11:00	Mode 4	Mode 4
17:00	Mode 5	Mode 4
20:00	Mode 5	Mode 5

Based on the above conditions and IAW Tech Specs,

The EARLIEST listed time that an extra (Licensed) Reactor Operator (RO) can assume the Control Room Command Function is _____ .

A. 10:05

B. 11:05

C. 17:05

D. 20:05

96. G2.2.40 001

Which ONE of the following describes the surveillance requirements for the 2A Diesel Generator?

IAW TS SR 3.0.2, the specified Frequency for 34SV-R43-001-2, Diesel Generator 2A Monthly Surveillance is MET if the surveillance is performed within _____ the interval specified in TS.

IAW TS SR 3.0.3, if it is discovered that 34SV-R43-001-2 has been MISSED, then entry into the required action statement for the 2A Diesel Generator being inoperable _____ .

A. 1.25 times;
is required IMMEDIATELY

B. 1.25 times;
can be DELAYED

C. 2.0 times;
is required IMMEDIATELY

D. 2.0 times;
can be DELAYED

97. G2.2.43 001

Annunciator XYZ-101 is alarming repeatedly and creating a distraction to the operating crew.

IAW 31GO-OPS-014-0, Annunciator & Plant Component Control, Compensatory Actions are developed and annunciator XYZ-101 is to be de-activated.

Based on the above condition and IAW 31GO-OPS-014-0, which ONE of the choices below completes the following statements?

Following approval of the Compensatory Action, the Manager responsible for approving the de-activation of Annunciator XYZ-101 is the _____ .

Once XYZ-101 is de-activated, a _____ will be placed beside the annunciator number label under the annunciator window to identify XYZ-101 is de-activated.

A. Shift Manager;
YELLOW magnetic "P" tile

B. Shift Manager;
blank YELLOW magnetic tile

C. Operations Support Manager;
YELLOW magnetic "P" tile

D. Operations Support Manager;
blank YELLOW magnetic tile

98. G2.3.13 001

Unit 2 is operating at 100% RTP.

The RB 130' N-E working area radiation levels UNEXPECTEDLY begin to rise from 2 mR/hr to the following:

Time	**Rad Level**
11:00	7 mR/hr
11:30	25 mR/hr
12:00	70 mR/hr
12:30	125 mR/hr

Based on the above conditions and IAW 73EP-RAD-001-0, Radiological Event,

The EARLIEST listed time that a Radiological Event will be declared is _____ .

A. 11:00

B. 11:30

C. 12:00

D. 12:30

99. G2.4.18 010

IAW 31EO-EOP-001-0, EOP General Information and EOP flowchart requirements, which ONE of the choices below completes the following statements?

The Minimum Steam Cooling RWL is the lowest RWL at which the covered portion of the Reactor core will generate sufficient steam to preclude any clad temperature in the uncovered portion of the core from exceeding a MAXIMUM of _____ .

INITIALLY when the Minimum Steam Cooling RWL is reached, then flowchart, _____ will be used for RWL and RPV pressure control.

NOTE:
- o SAG-1: 31EO-SAG-001, Reactor Vessel and Primary Containment Flooding
- o CP-1: 31EO-EOP-015, CP-1 Alternate Level Control, Steam Cooling, & Emergency RPV Depressurization Flowchart

A. 1500°F;
SAG-1

B. 1500°F;
CP-1

C. 1800°F;
SAG-1

D. 1800°F;
CP-1

100. G2.4.28 001

Security just notified the control room that armed intruders penetrated the Protected Area (PA) five minutes ago and are headed towards the Service Building.

- o An Emergency has been declared IAW NMP-EP-141, Event Classification

IAW 34AB-Y22-004-0, Credible Imminent Threat Of Attack On The Plant, which ONE of the choices below completes the following statements?

A page announcement will be made to direct all TSC Emergency Responders to _____ .

The Shift Supervisors will direct entry into _____ for their respective Unit.

A. report to their Emergency Response Facility immediately;
34GO-OPS-014-1/2, Fast Reactor Shutdown

B. report to their Emergency Response Facility immediately;
34AB-C71-001-1/2, Scram Procedure

C. cease all activities and take cover in their immediate vicinity;
34GO-OPS-014-1/2, Fast Reactor Shutdown

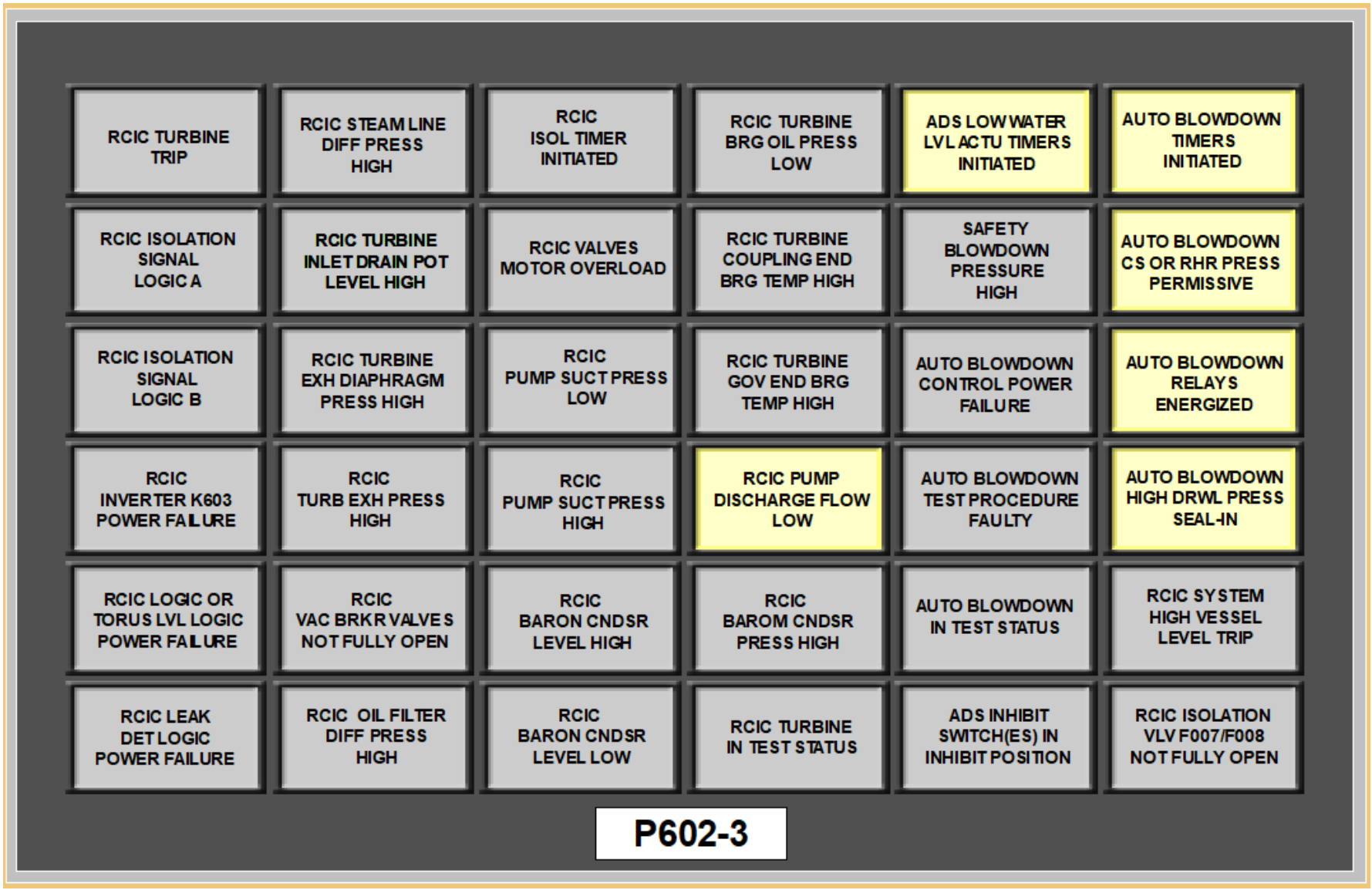
D. cease all activities and take cover in their immediate vicinity;
34AB-C71-001-1/2, Scram Procedure

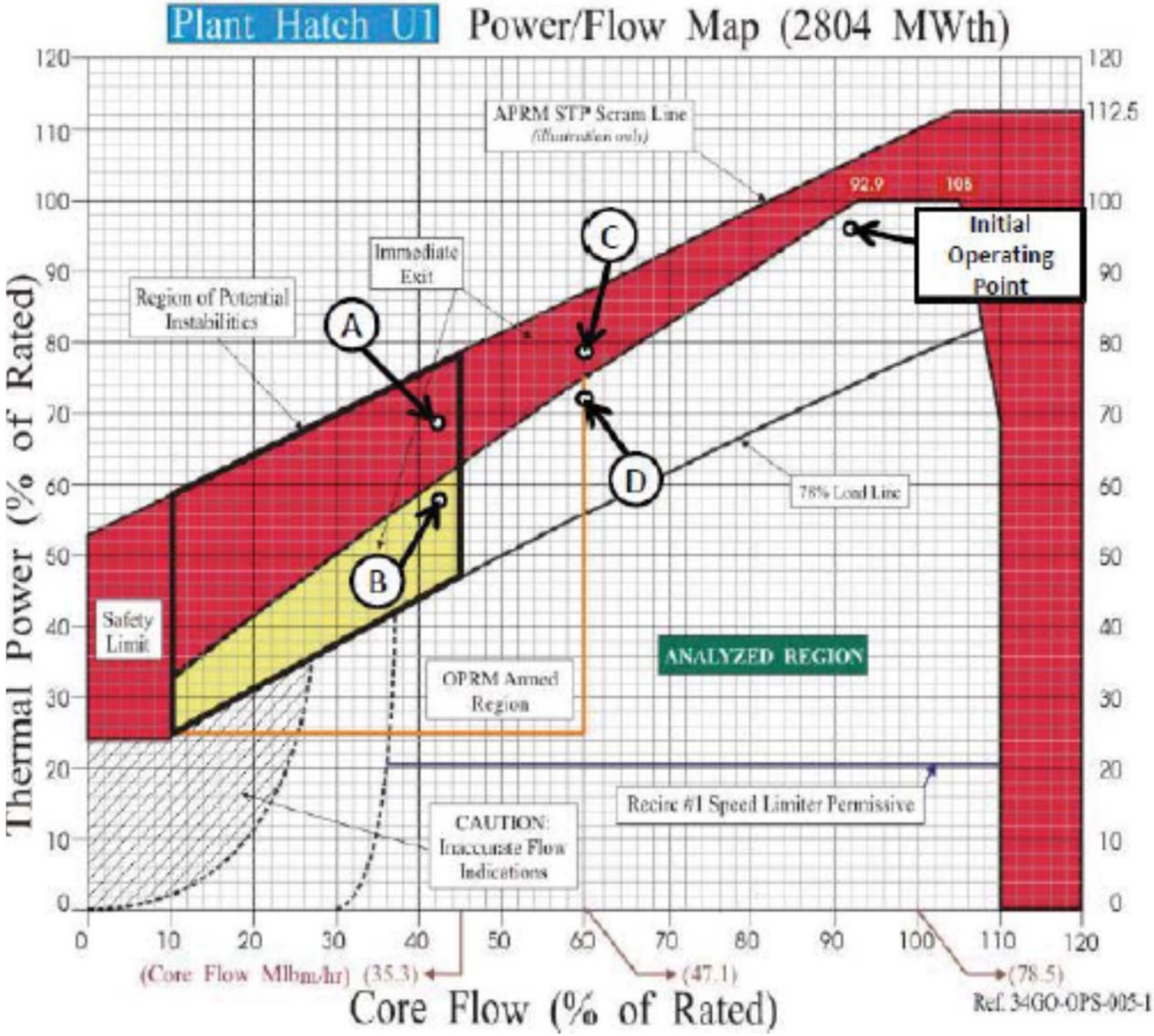
You have completed the test!

NRC SRO REFERENCES

SRO EXAM

1. 2H11-P602, Annunciator Indications, Graphic
2. 34GO-OPS-005-1, Power Changes, Att. 1 Power to Flow Map
3. Unit 1 EOP Graphs 17A & 17B
4. Unit 2 TS 3.1.7 Standby Liquid Control (SLC) System & Tables
5. NMP-EP-141-002-F01, Hatch - Hot Initiating Condition Matrix& Table SC-1.4 Secondary Containment Operating Radiation Levels
6. Unit 2 TS 3.8.1 AC Sources – Operating without SRs
7. Unit TS 3.4.2 Jet Pumps
8. Unit 2 Mark VI Graphic

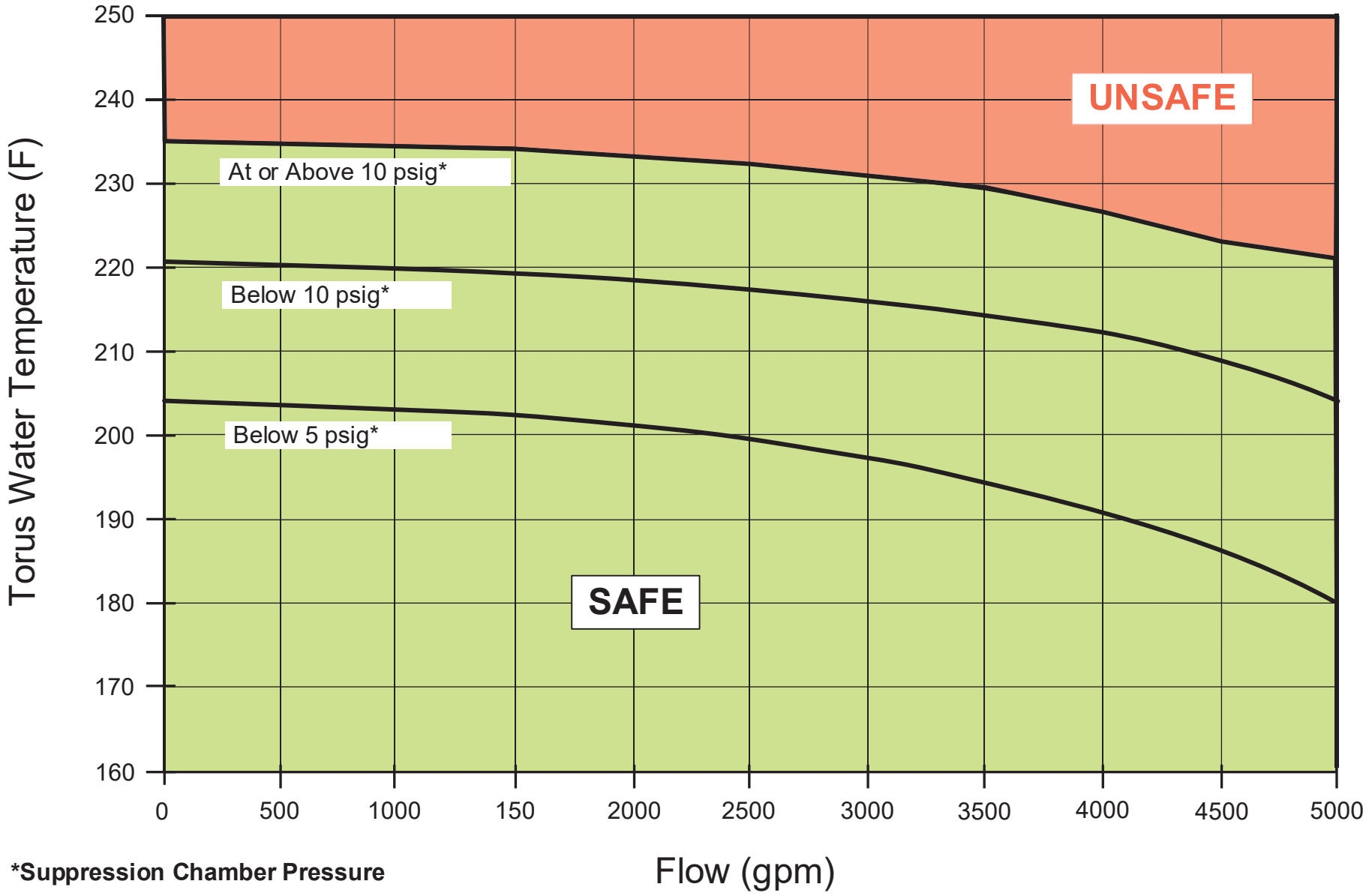

RCIC TURBINE TRIP
RCIC STEAM LINE DIFF PRESS HIGH
RCIC ISOL TIMER INITIATED
RCIC TURBINE BRG OIL PRESS LOW
ADS LOW WATER LVL ACTU TIMERS INITIATED
AUTO BLOWDOWN TIMERS INITIATED
RCIC ISOLATION SIGNAL LOGIC A
RCIC TURBINE INLET DRAIN POT LEVEL HIGH
RCIC VALVES MOTOR OVERLOAD
RCIC TURBINE COUPLING END BRG TEMP HIGH
SAFETY BLOWDOWN PRESSURE HIGH
AUTO BLOWDOWN CS OR RHR PRESS PERMISSIVE
RCIC ISOLATION SIGNAL LOGIC B
RCIC TURBINE EXH DIAPHRAGM PRESS HIGH
RCIC PUMP SUCT PRESS LOW
RCIC TURBINE GOV END BRG TEMP HIGH
AUTO BLOWDOWN CONTROL POWER FAILURE
AUTO BLOWDOWN RELAYS ENERGIZED
RCIC INVERTER K603 POWER FAILURE
RCIC TURB EXH PRESS HIGH
RCIC PUMP SUCT PRESS HIGH
RCIC PUMP DISCHARGE FLOW LOW
AUTO BLOWDOWN TEST PROCEDURE FAULTY
AUTO BLOWDOWN HIGH DRWL PRESS SEAL-IN
RCIC LOGIC OR TORUS LVL LOGIC POWER FAILURE
RCIC VAC BRKR VALVES NOT FULLY OPEN
RCIC BARON CNDSR LEVEL HIGH
RCIC BAROM CNDSR PRESS HIGH
AUTO BLOWDOWN IN TEST STATUS
RCIC SYSTEM HIGH VESSEL LEVEL TRIP
RCIC LEAK DET LOGIC POWER FAILURE
RCIC OIL FILTER DIFF PRESS HIGH
RCIC BARON CNDSR LEVEL LOW
RCIC TURBINE IN TEST STATUS
ADS INHIBIT SWITCH(ES) IN INHIBIT POSITION
RCIC ISOLATION VLV F007/F008 NOT FULLY OPEN
P602-3


Plant Hatch U1 Power/Flow Map (2804 MWth)
APRM STP Scram Line
(Illustration only)
92.9
105
Initial Operating Point
Immediate Exit
Region of Potential Instabilities
A
B
C
D
78% Load Line
Safety Limit
ANALYZED REGION
OPRM Armed Region
Recirc #1 Speed Limiter Permissive
CAUTION: Inaccurate Flow Indications
Thermal Power (% of Rated)
Core Flow (% of Rated)
(Core Flow Mlbm/hr) (35.3)
(47.1)
(78.5)
Ref. 34GO-OPS-005-1

GRAPH 17A

HPCI Pump NPSH Limit
(Torus Water level at or Above 146")

UNIT 1



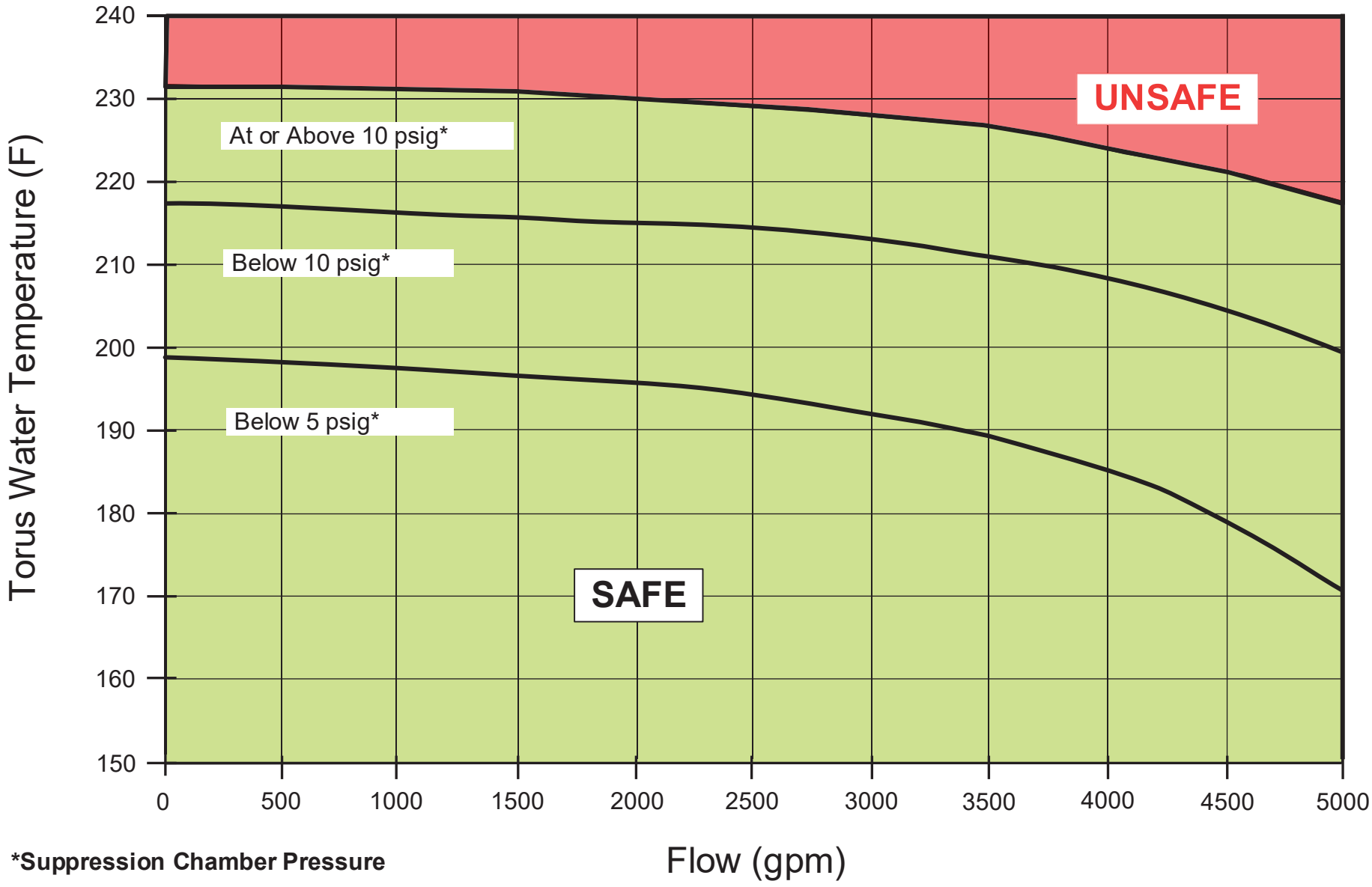
***Suppression Chamber Pressure**

Note: May use SPDS in place of this Graph

GRAPH 17B

HPCI Pump NPSH Limit
(Torus Water level Below 146")

UNIT 1



***Suppression Chamber Pressure**

Note: May use SPDS in place of this Graph

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Standby Liquid Control (SLC) System

LCO 3.1.7 Two SLC subsystems shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Sodium pentaborate solution not within Region A limits of Figure 3.1.7-1 or 3.1.7-2, but within the Region B limits.	A.1 Restore sodium pentaborate solution to within Region A limits.	72 hours
B. One SLC subsystem inoperable for reasons other than Condition A.	B.1 Restore SLC subsystem to OPERABLE status.	7 days
C. Two SLC subsystems inoperable for reasons other than Condition A.	C.1 Restore one SLC subsystem to OPERABLE status.	8 hours
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	12 hours

SPB Solution Volume vs. Concentration Requirements

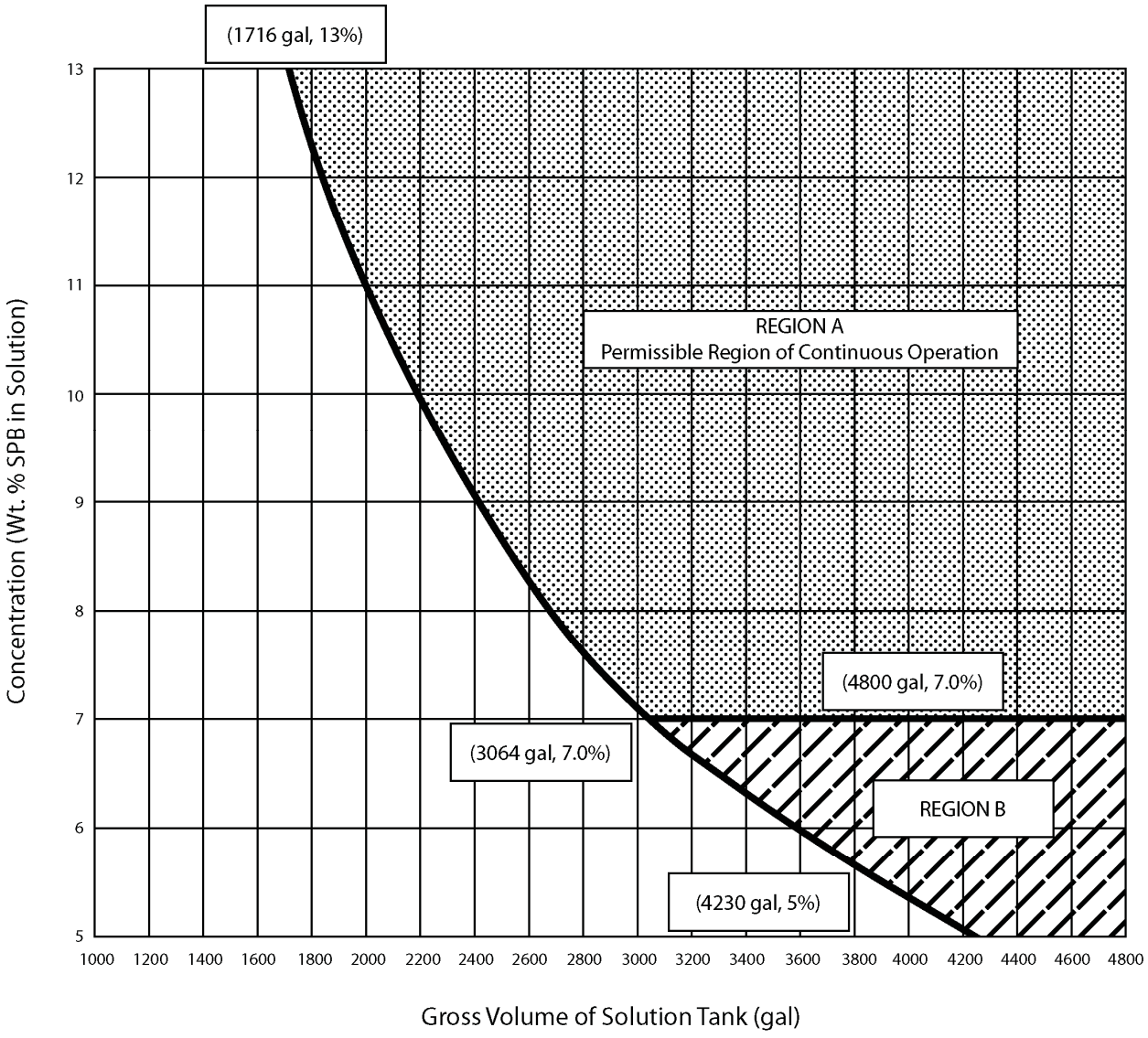


Figure 3.1.7-1 (page 1 of 1)
Sodium Pentaborate Solution Volume
Versus Concentration Requirements

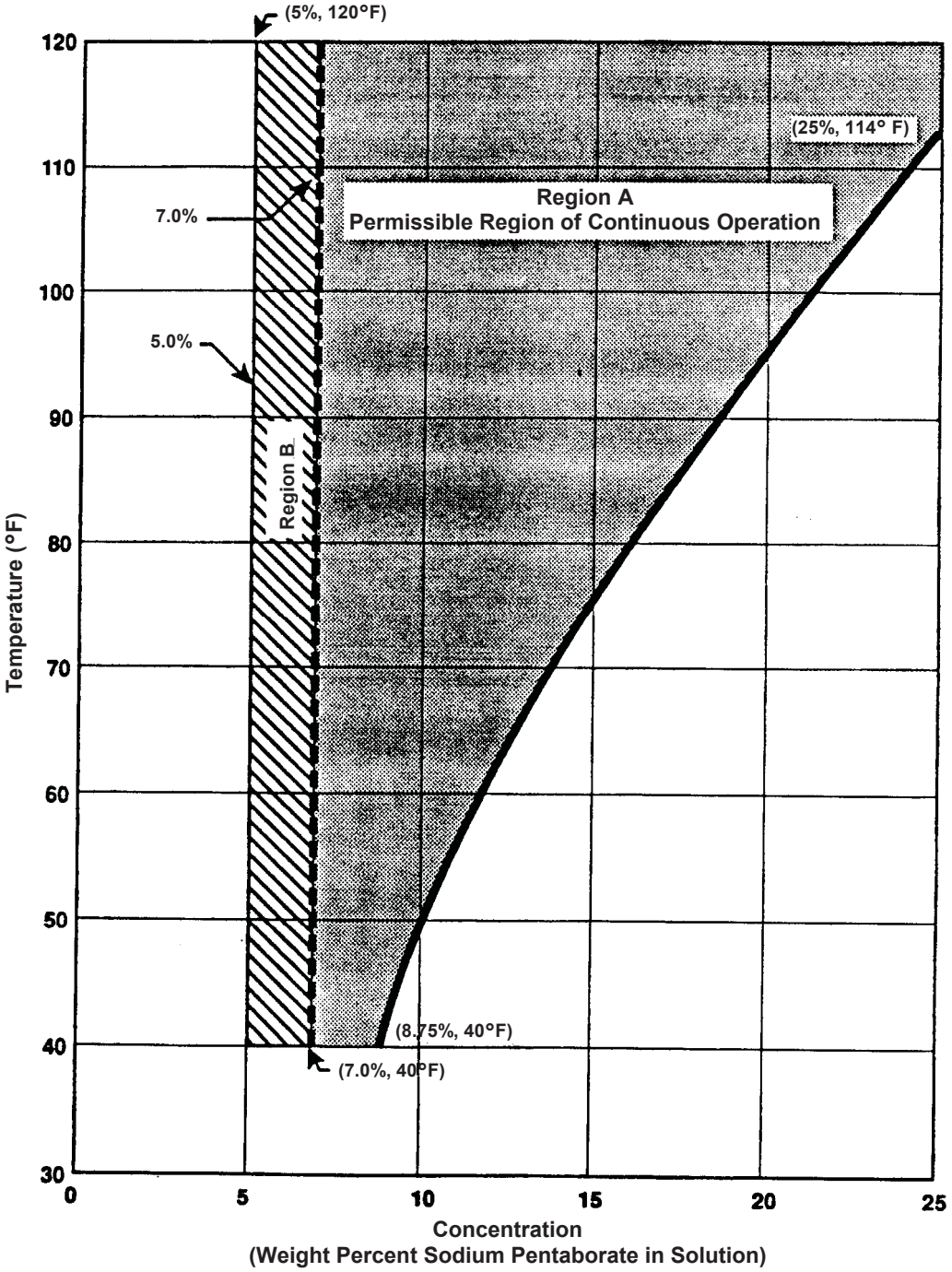


Figure 3.1.7-2 (page 1 of 1)
Sodium Pentaborate Solution Temperature
Versus Concentration Requirements

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources - Operating

LCO 3.8.1 The following AC electrical power sources shall be OPERABLE:

a. Two qualified circuits between the offsite transmission network and the Unit 2 onsite Class 1E AC Electrical Power Distribution System;

b. Two Unit 2 diesel generators (DGs);

c. The swing DG;

d. One Unit 1 DG;

e. One qualified circuit between the offsite transmission network and the Unit 1 onsite Class 1E AC Electrical Power Distribution subsystem(s) needed to support the Unit 1 equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System"; LCO 3.7.4, "Main Control Room Environmental Control (MCREC) System"; and LCO 3.7.5, "Control Room Air Conditioning (AC) System";

f. Two DGs (any combination of Unit 1 DGs and the swing DG), each capable of supplying power to one Unit 2 low pressure coolant injection (LPCI) valve load center; and

g. One qualified circuit between the offsite transmission network and the applicable onsite Class 1E AC electrical power distribution subsystems needed to support each Unit 2 LPCI valve load center required by LCO 3.5.1, "ECCS - Operating."

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTE----------
LCO 3.0.4.b is not applicable to DGs.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required offsite circuit inoperable.	A.1 Perform SR 3.8.1.1 for OPERABLE required offsite circuits. AND	1 hour AND Once per 8 hours thereafter
	A.2 Declare required feature(s) with no offsite power available inoperable when the redundant required feature(s) are inoperable. AND	24 hours from discovery of no offsite power to one 4160 V ESF bus concurrent with inoperability of redundant required feature(s)
	A.3 Restore required offsite circuit to OPERABLE status.	72 hours
B. One Unit 2 or the swing DG inoperable.	B.1 Perform SR 3.8.1.1 for OPERABLE required offsite circuit(s). AND	1 hour AND Once per 8 hours thereafter (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 Declare required feature(s), supported by the inoperable DG, inoperable when the redundant required feature(s) are inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)
	AND	
	B.3.1 Determine OPERABLE DG(s) are not inoperable due to common cause failure.	24 hours
	OR	
	B.3.2 Perform SR 3.8.1.2.a for OPERABLE DG(s)	24 hours
	AND	
	B.4.1 Restore DG to OPERABLE status.	72 hours for a Unit 2 DG with the swing DG not inhibited or maintenance restrictions not met AND 14 days for a Unit 2 DG with the swing DG inhibited from automatically aligning to Unit 1 and maintenance restrictions met AND 72 hours for the swing diesel with maintenance restrictions not met

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.4.1 (continued)	AND 14 days for the swing diesel with maintenance restrictions met
	OR ----------NOTES---------- 1. Only applicable during diesel engine cylinder liner replacement outage of Unit 1 DGs (i.e., DGs 1A and 1C) or swing DG (i.e., DG 1B). 2. Only applicable to swing DG. 3. Only applicable until June 30, 2021. ---------- B.4.2.1 Establish compensatory and risk management controls for extended DG outage as specified in Attachment 5 of SNC letter NL-20-1000, dated August 23, 2020.	72 hours AND 24 hours thereafter from discovery of compensatory or risk management control not met
	AND B.4.2.2 Restore DG to OPERABLE status.	19 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One required Unit 1 DG inoperable.	C.1 Perform SR 3.8.1.1 for OPERABLE required offsite circuit(s). AND	1 hour AND Once per 8 hours thereafter
	C.2 Declare required feature(s), supported by the inoperable DG, inoperable when the redundant required feature(s) are inoperable. AND	4 hours from discovery of Condition C concurrent with inoperability of redundant required feature(s)
	C.3.1 Determine OPERABLE DG(s) are not inoperable due to common cause failure. OR	24 hours
	C.3.2 Perform SR 3.8.1.2.a for OPERABLE DG(s).	24 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	AND	
	C.4.1 Restore required DG to OPERABLE status.	7 days with the swing DG not inhibited or maintenance restrictions not met AND 14 days with the swing DG inhibited from automatically aligning to Unit 2 and maintenance restrictions met
	OR	
	----------NOTES---------- 1. Only applicable during diesel engine cylinder liner replacement outage. 2. Only applicable once per DG. 3. Only applicable until June 30, 2021. ----------	
	C.4.2.1 Establish compensatory and risk management controls for extended DG outage as specified in Attachment 5 of SNC letter NL-20-1000, dated August 23, 2020.	7 days AND 24 hours thereafter from discovery of compensatory or risk management control not met
	AND	
	C.4.2.2 Inhibit swing DG from automatically aligning to Unit 2.	7 days
	AND	
	C.4.2.3 Restore DG to OPERABLE status.	19 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Two or more required offsite circuits inoperable.	D.1 Declare required feature(s) with no offsite power available inoperable when the redundant required feature(s) are inoperable. AND D.2 Restore all but one required offsite circuit to OPERABLE status.	12 hours from discovery of Condition D concurrent with inoperability of redundant required feature(s) 24 hours
E. One required offsite circuit inoperable. AND One required DG inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.7, "Distribution Systems - Operating," when Condition E is entered with no AC power source to one 4160 V ESF bus. ---------- E.1 Restore required offsite circuit to OPERABLE status.	 12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. (continued)	OR E.2 Restore required DG to OPERABLE status.	12 hours
F. Two or more (Unit 2 and swing) DGs inoperable.	F.1 Restore all but one Unit 2 and swing DGs to OPERABLE status.	2 hours
G. No DGs capable of supplying power to any Unit 2 LPCI valve load center.	G.1 Restore one DG capable of supplying power to Unit 2 LPCI valve load center to OPERABLE status.	2 hours
H. Required Action and Associated Completion Time of Condition A, B, C, D, E, F, or G not met.	H.1 ----------NOTE--------- LCO 3.0.4.a is not applicable when entering MODE 3. ---------- Be in MODE 3.	12 hours
I. One or more required offsite circuits and two or more required DGs inoperable. OR Two or more required offsite circuits and one required DG inoperable.	I.1 Enter LCO 3.0.3.	Immediately

UNITS 1 & 2

R — Abnormal Rad Levels / Rad Effluent

1 — Rad Effluent

GENERAL EMERGENCY — RG1 — Release of gaseous radioactivity resulting in offsite dose greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE

1 2 3 4 5 DEF

(1) Reading on **ANY** of the following radiation monitors greater than the reading shown for 15 minutes or longer: (Notes 1, 2, 3, 4)

Main Stack Accident Range Monitor: 1D11-P007 (feeding 1D11-R631, Main Stack Wide Range)	8.1 x 10⁵ µCi/cc
Reactor Building Vent Accident Range Monitor: 1D11-P601 (feeding 1D11-R631, Rx Bldg Vent Wide Range)	2.6 µCi/cc
2D11-P601 (feeding 2D11-R631, Rx Bldg Vent Wide Range)	2.6 µCi/cc

(2) Dose assessment using actual meteorology indicates doses greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE at or beyond the site boundary (Note 4)

(3) Field survey results indicate **EITHER** of the following at or beyond the site boundary (Notes 1, 2):
- Closed window dose rates greater than 1,000 mR/hr expected to continue for 60 minutes or longer
- Analyses of field survey samples indicate thyroid CDE greater than 5,000 mrem for one hour of inhalation.

SITE AREA EMERGENCY — RS1 — Release of gaseous radioactivity resulting in offsite dose greater than 100 mrem TEDE or 500 mrem thyroid CDE

1 2 3 4 5 DEF

(1) Reading on **ANY** of the following radiation monitors greater than the reading shown for 15 minutes or longer: (Notes 1, 2, 3, 4)

Main Stack Accident Range Monitor: 1D11-P007 (feeding 1D11-R631, Main Stack Wide Range)	8.1 x 10⁴ µCi/cc
Reactor Building Vent Accident Range Monitor: 1D11-P601 (feeding 1D11-R631, Rx Bldg Vent Wide Range)	2.6 x 10³ µCi/cc
2D11-P601 (feeding 2D11-R631, Rx Bldg Vent Wide Range)	2.6 x 10³ µCi/cc

(2) Dose assessment using actual meteorology indicates doses greater than 100 mrem TEDE or 500 mrem thyroid CDE at or beyond the site boundary (Note 4)

(3) Field survey results indicate **EITHER** of the following at or beyond the site boundary (Notes 1, 2):
- Closed window dose rates greater than 100 mR/hr expected to continue for 60 minutes or longer
- Analyses of field survey samples indicate thyroid CDE greater than 500 mrem for one hour of inhalation.

ALERT — RA1 — Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mrem TEDE or 50 mrem thyroid CDE

1 2 3 4 5 DEF

(1) Reading on **ANY** of the following radiation monitors greater than the reading shown for 15 minutes or longer: (Notes 1, 2, 3, 4)

Main Stack Accident Range Monitor: 1D11-P007 (feeding 1D11-R631, Main Stack Wide Range)	8.1 x 10² µCi/cc
Reactor Building Vent Accident Range Monitor: 1D11-P601 (feeding 1D11-R631, Rx Bldg Vent Wide Range)	2.6 x 10¹ µCi/cc
2D11-P601 (feeding 2D11-R631, Rx Bldg Vent Wide Range)	2.6 x 10¹ µCi/cc

(2) Dose assessment using actual meteorology indicates doses greater than 10 mrem TEDE or 50 mrem thyroid CDE at or beyond the site boundary (Note 4)

(3) Analysis of a liquid effluent sample indicates a concentration or release rate that would result in doses greater than 10 mrem TEDE or 50 mrem thyroid CDE at or beyond the site boundary for one hour of exposure

Field survey results indicate **EITHER** of the following at or beyond the site boundary (Notes 1, 2):
- Closed window dose rates greater than 10 mR/hr expected to continue for 60 minutes or longer
- Analyses of field survey samples indicate thyroid CDE greater than 50 mrem for one hour of inhalation.

UNUSUAL EVENT — RU1 — Release of gaseous or liquid radioactivity greater than 2 times the ODCM limits for 60 minutes or longer

1 2 3 4 5 DEF

(1) Reading on **ANY** effluent radiation monitor greater than 2 times the ODCM limits for 60 minutes or longer: (Notes 1, 2, 3)

Gaseous Effluent Radiation Monitors
Main Stack Normal Range Monitor: 1D11-R600 A(R)
Reactor Building Vent Normal Range Monitor: 1D11-R619 A(R) / 2D11-R628 A(R)

Liquid Effluent Radiation Monitors
Liquid Radwaste Effluent Line Monitor: 1D11-R604 / 2D11-R604
Service Water System Effluent Line Monitor: 1D11-R605 / 2D11-R605

(2) Reading on **ANY** effluent radiation monitor greater than 2 times the alarm setpoint established by a current radioactivity discharge permit for 60 minutes or longer (Note 1)

(3) Sample analyses for a gaseous or liquid release indicates concentrations or release rate greater than 2 times the ODCM limits for 60 minutes or longer (Notes 1, 2)

2 — Irradiated Fuel Event

GENERAL EMERGENCY — RG2 — Spent fuel pool level cannot be restored to at least 1.4 feet for 60 minutes or longer

1 2 3 4 5 DEF

(1) Spent fuel pool level cannot be restored to at least 1.4 feet for 60 minutes or longer. (Note 1)

SITE AREA EMERGENCY — RS2 — Spent fuel pool level at 1.4 feet

1 2 3 4 5 DEF

(1) Lowering of spent fuel pool level to 1.4 feet.

ALERT — RA2 — Significant lowering of water level above, or damage to, irradiated fuel

1 2 3 4 5 DEF

(1) Uncovery of irradiated fuel in the REFUELING PATHWAY

(2) Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by alarms on **ANY** Table R1 radiation monitors

(3) Lowering of spent fuel pool level to 11.0 ft.

UNUSUAL EVENT — RU2 — UNPLANNED loss of water level above irradiated fuel

1 2 3 4 5 DEF

(1) a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by **ANY** of the following:
- Resourced report of low water level
- SFP low level alarm annunciator – Spent Fuel Storage Pool Level Low 654-523-1/2

AND

b. UNPLANNED rise in area radiation levels as indicated by **ANY** of the following radiation monitors:

1D21-R607 A – Rx Head Laydown Area
1D21-R607 D – Refuel Floor
1D21-R607 C – Drywell Shield Plug
1D21-R607 I – Drywell/Separator Pool
2D21-R607 M – Spent Fuel Pool and New Fuel Storage Area
2D21-R607 A – Rx Head Laydown Area
2D21-R607 E – Drywell/Separator Pool
2D21-R607 M – Spent Fuel/Fuel Pool Area
2D21-R611 K – RPV Refuel Floor 23ft
2D21-R611 L – RPV Refuel Floor 23ft

Table R1

Refuel Floor Area Radiation Monitors	
Unit 1	**Unit 2**
1D21-R607 A – Rx Head Laydown Area	2D21-R607 A – Rx Head Laydown Area
1D21-R607 B – Refueling Floor	2D21-R607 E – Drywell/Separator Pool
1D21-R607 D – Refuel Floor	2D21-R611 K – RPV Refuel Floor 23ft
1D21-R607 C – Drywell Shield Plug	2D21-R611 L – RPV Refuel Floor 23ft
1D21-R607 M – Spent Fuel Pool and New Fuel Storage Area	2D21-R607 M – Spent Fuel Pool Area
Refuel Floor Ventilation Monitors	
Unit 1	**Unit 2**
1D11-K609 A/C – Rx Bldg. Potential Contaminated Area Vent Exhaust Rad Monitor	2D11-K609 A/C – Rx Bldg. Potential Contaminated Area Vent Exhaust Rad Monitor
1D11-K611 A/C – Refuel Floor Vent Exhaust	2D11-K611 A/C – Refuel Floor Vent Exhaust 2D11-K630 A/C – Refuel Floor Rx Well Vent. Exhaust 2D11-K633 A/C – Refuel Floor Drill/Seg. Vent. Exhaust

3 — Area Radiation Levels

Not applicable

Not applicable

ALERT — RA3 — Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown

1 2 3 4 5 DEF

(1) Dose rate greater than 15 mR/hr in **ANY** of the following areas:

1D21-R600 B or C – Control Room area radiation monitor
Central Alarm Station (by survey)

(2) An UNPLANNED event results in radiation levels that prohibit or impede access to **ANY** Table R2 plant rooms or areas (Note 5).

Table R2

Building	Room Number	Applicable Mode
Diesel generator building	All	All
Reactor building	Unit 1/2 130	All
	Unit 1/2 SE Diagonals (RHR)	All
	Unit 1/2 NE Diagonals (RHR)	All

UNUSUAL EVENT

Not applicable

H — Hazards

1 — Security

GENERAL EMERGENCY — HG1 — HOSTILE ACTION resulting in loss of physical control of the facility

1 2 3 4 5 DEF

(1) a. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the on shift Security Captain or designee
AND
b. **EITHER** of the following has occurred:
1. **ANY** of the following safety functions cannot be controlled or maintained:
- Reactivity control
- RPV water level
- RCS heat removal

OR
2. Damage to spent fuel has occurred or is IMMINENT

SITE AREA EMERGENCY — HS1 — HOSTILE ACTION within the PROTECTED AREA

1 2 3 4 5 DEF

(1) A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the on shift Security Captain or designee

ALERT — HA1 — HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes

1 2 3 4 5 DEF

(1) A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the on shift Security Captain or designee

(2) A validated notification from NRC of an aircraft attack threat within 30 minutes of the site

(3) A validated notification from the NRC providing information of an aircraft threat

UNUSUAL EVENT — HU1 — Confirmed SECURITY CONDITION or threat

1 2 3 4 5 DEF

(1) A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the on shift Security Captain or designee

(2) Notification of a credible security threat directed at HNP

(3) A validated notification from the NRC providing information of an aircraft threat

2 — Seismic Event

Not applicable

Not applicable

Refer to SA9 or CA6 for emergency escalation based on a seismic event.

UNUSUAL EVENT — HU2 — Seismic event greater than OBE levels

1 2 3 4 5 DEF

(1) Seismic event greater than Operating Basis Earthquake (OBE) as indicated by **ANY** of the following:
- Unit One "Seismic Peak Shock Recorder High G Level" (657-046) alarm
- Unit Two "Seismic Instrumentation Triggered" (657-048) alarm
- A 12.7 Hz amber light illuminated in the N/S **OR** E/W column on panel 1(2)H1-P701
- A 12.7 Hz red light illuminated in the N/S **OR** E/W column on panel 1(2)H1-P701

3 — Natural or Tech. Hazard

Not applicable

Not applicable

Refer to SA9 or CA6 for emergency escalation based on a hazardous event.

Table H1

Building	Rooms	Applicable Modes
Diesel generator building	All	All
Reactor building	Unit 1/2 130	All
	Unit 1/2 SE Diagonals (RHR)	All
	Unit 1/2 NE Diagonals (RHR)	All

Table H2

Control Building	CB 147' Cable Spreading Room U 1/2 CB 112' Station Battery Rooms A, B
Diesel generator building	All
Primary containment	All
Reactor building	Unit 1/2 130 Unit 1/2 SE Diagonals (RHR) Unit 1/2 NE Diagonals (RHR) Unit 1 SW Diagonals (RCIC) Unit 2 NW Diagonals (RCIC) Unit 1/2 HPCI Rooms
Intake structure	All

Notes

Note 1: The emergency director will declare the event promptly upon determining that the applicable time limit has been exceeded, or will likely be exceeded.

Note 2: If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded the specified time limit.

Note 3: If the effluent flow past an effluent monitor is known to have stopped, indicating that the release path is isolated, the effluent monitor reading is no longer VALID for classification purposes.

Note 4: The pre-calculated effluent monitor values presented in EALs RA1(1), RS1(1) and RG1(1) will be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.

Note 5: If the equipment in the listed room or area was already inoperable or out-of-service before the event occurred, then no emergency classification is warranted.

Note 6: If Secondary CONTAINMENT INTEGRITY is re-established prior to exceeding the 30 minute time limit, declaration of a General Emergency is not required.

Note 7: EAL #4 does not apply to routine traffic impediments such as fog, snow, ice, or vehicle breakdowns or accidents.

Note 8: A manual action is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core, and does not include manually driving in control rods or implementation of boron injection strategies.

Note 9: Use the Unit 1 or Unit 2 Pretreatment (Flow vs. mR/hr) Graphs to determine if the Pretreatment Radiation Monitor exceeds the TV of 240,000 µCi/sec.

4 — Fire

Not applicable

Not applicable

Refer to SA9 or CA6 for emergency escalation based on a fire.

UNUSUAL EVENT — HU4 — FIRE potentially degrading the level of safety of the plant

1 2 3 4 5 DEF

(1) a. A FIRE is NOT extinguished within 15-minutes of **ANY** of the following FIRE detection indications (Note 1):
- Report from the field (i.e., visual observation)
- Receipt of multiple (more than 1) fire alarms or indications
- Field verification of a single fire alarm

AND
b. The FIRE is located within **ANY** Table H2 rooms or areas

(2) a. Receipt of a single fire alarm (i.e., no other indications of a FIRE)
AND
b. The FIRE is located within **ANY** Table H2 rooms or areas
AND
c. The existence of a FIRE is not verified within 30-minutes of alarm receipt (Note 1)

(3) A FIRE within the plant PROTECTED AREA or ISFSI protected area not extinguished within 60-minutes of the initial report, alarm, or indication (Note 1)

(4) A FIRE within the plant PROTECTED AREA or ISFSI protected area that requires firefighting support by an offsite fire response agency to extinguish

5 — Hazardous Gases

Not applicable

Not applicable

ALERT — HA5 — Gaseous release impeding access to equipment necessary for normal plant operations, cooldown or shutdown

1 2 3 4 5 DEF

(1) a. Release of a toxic, corrosive, asphyxiant or flammable gas into **ANY** Table H1 plant rooms or areas
AND
b. Entry into the room area is prohibited or impeded (Note 5)

Not applicable

6 — Main Control Room Evacuation

Not applicable

SITE AREA EMERGENCY — HS6 — Inability to control a key safety function from outside the Control Room

1 2 3 4 5 DEF

(1) a. An event has resulted in plant control being transferred from the control room to the remote shutdown panels
AND
b. Control of **ANY** of the following key safety functions is not reestablished within 15 minutes (Note 1):
- Reactivity control
- RPV water level
- RCS heat removal

ALERT — HA6 — Control Room evacuation resulting in transfer of plant control to alternate locations

1 2 3 4 5 DEF

(1) An event has resulted in plant control being transferred from the control room to the remote shutdown panels

Not applicable

7 — Judgment

GENERAL EMERGENCY — HG7 — Other conditions existing which in the judgment of the emergency director warrant declaration of a General Emergency

1 2 3 4 5 DEF

(1) Other conditions exist which in the judgment of the emergency director indicate that events are in progress or have occurred which involve actual or IMMINENT substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

SITE AREA EMERGENCY — HS7 — Other conditions existing which in the judgment of the emergency director warrant declaration of a Site Area Emergency

1 2 3 4 5 DEF

(1) Other conditions exist which in the judgment of the emergency director indicate that events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts, (1) toward site personnel or equipment that could lead to the likely failure of or, (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

ALERT — HA7 — Other conditions existing which in the judgment of the emergency director warrant declaration of an Alert

1 2 3 4 5 DEF

(1) Other conditions exist which, in the judgment of the emergency director, indicate that events are in progress or have occurred which involve a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

UNUSUAL EVENT — HU7 — Other conditions existing which in the judgment of the emergency director warrant declaration of a NOUE

1 2 3 4 5 DEF

(1) Other conditions exist which in the judgment of the emergency director indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

E — ISFSI

1 — Loss of Conf. Boundary

Not applicable

Not applicable

Table E1

Location of Dose Rate	Total Dose Rate (Neutron + Gamma mR/hr)
HI-TRAC 125	
Side – Mid-height	450
Top	110
HI-STAR 180 or HI-STORM 100	
Side – 60 inches below mid-height	80
Side – Mid-height	80
Side – 60 inches above mid-height	30
Center of lid	10
Middle of top lid	20
Top (outlet duct)	40
Bottom (inlet) duct	140

UNUSUAL EVENT — E-HU1 — Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by an on-contact radiation reading greater than **ANY** of the values listed in Table E1.

1 2 3 4 5 DEF

(1) Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by an on-contact radiation reading greater than **ANY** of the values listed in Table E1.

UNITS 1 & 2

S — System Malfunct.

1 — Loss of AC Power

GENERAL EMERGENCY — SG1 — Prolonged loss of all offsite and all onsite AC power to emergency buses

1 2 3

(1) a. Loss of **ALL** offsite and **ALL** onsite AC power to 4160 VAC Emergency Buses 1/2E, 1/2F and 1/2G
AND
b. **EITHER** of the following:
- Restoration of at least one AC emergency bus in less than 4 hours is not likely (Note 1)
- Reactor vessel water level cannot be restored and maintained above Minimum Steam Cooling RPV Water Level

SITE AREA EMERGENCY — SS1 — Loss of all offsite and all onsite AC power to emergency buses for 15 minutes or longer

1 2 3

(1) Loss of **ALL** offsite and **ALL** onsite AC power to 4160 VAC Emergency Buses 1/2E, 1/2F and 1/2G for 15 minutes or longer (Note 1)

ALERT — SA1 — Loss of all but one AC power source to emergency buses for 15 minutes or longer

1 2 3

(1) a. AC power capability to 4160 VAC Emergency Buses 1/2E, 1/2F **AND** 1/2G is reduced to a single power source (Table S1) for 15 minutes or longer (Note 1)
AND
b. **ANY** additional single power source failure will result in loss of all AC power to SAFETY SYSTEMS

UNUSUAL EVENT — SU1 — Loss of all offsite AC power capability to emergency buses for 15 minutes or longer

1 2 3

(1) Loss of **ALL** offsite AC power capability (Table S2) to 4160 VAC Emergency Buses 1/2E, 1/2F and 1/2G for 15 minutes or longer (Note 1)

2 — Loss of Control Room Ind.

Not applicable

Not applicable

ALERT — SA2 — UNPLANNED loss of Control Room indications for 15 minutes or longer with a significant transient in progress

1 2 3

(1) a. An UNPLANNED event results in the inability to monitor one or more of the following parameters from within the Control Room for 15 minutes or longer (Note 1)
- Reactor Power
- RPV Water Level
- RPV Pressure
- Primary Containment Pressure
- Suppression Pool Level
- Suppression Pool Temperature

AND
b. **ANY** of the following transient events in progress:
- Automatic or manual runback greater than 25% thermal reactor power
- Electrical load rejection greater than 25% full electrical load
- Reactor scram
- ECCS actuation
- Thermal power oscillations greater than 10%

Table S1

Unit 1	Unit 2
Start-up Aux XFMR 1C	Start-up Aux XFMR 2C
Start-up Aux XFMR 1D	Start-up Aux XFMR 2D
Diesel Generator 1A	Diesel Generator 2A
Diesel Generator 1B	Diesel Generator 2B
Diesel Generator 1C	Diesel Generator 2C

Table S2

Unit 1	Unit 2
Start-up Aux XFMR 1C	Start-up Aux XFMR 2C
Start-up Aux XFMR 1D	Start-up Aux XFMR 2D

UNUSUAL EVENT — SU2 — UNPLANNED loss of Control Room indications for 15 minutes or longer

1 2 3

(1) An UNPLANNED event results in the inability to monitor one or more of the following parameters from within the Control Room for 15 minutes or longer (Note 1)
- Reactor Power
- RPV Water Level
- RPV Pressure
- Primary Containment Pressure
- Suppression Pool Level
- Suppression Pool Temperature

3 — RCS Activity

Not applicable

Not applicable

UNUSUAL EVENT — SU3 — Reactor coolant activity greater than Technical Specification allowable limits

1 2 3

(1) **ANY** Pretreatment Radiation Monitor 1(2)D11-K601 1(2)D11-K602 Reading greater than 240,000 µCi/sec for greater than 60 minutes. (Note 9)

(2) Sample analysis indicates that the reactor coolant specific activity is **EITHER**:
- Greater than 0.2 µCi/gm and less than or equal to 2.0 µCi/gm dose equivalent I_{131} for greater than 48 hours
- Greater than 2.0 µCi/gm dose equivalent I_{131}

4 — RCS Leakage

Not applicable

Not applicable

UNUSUAL EVENT — SU4 — RCS leakage for 15 minutes or longer

1 2 3

(1) RCS unidentified or pressure boundary leakage greater than 10 gpm for 15 minutes or longer. (Note 1)

(2) RCS identified leakage greater than 25 gpm for 15 minutes or longer. (Note 1)

(3) Leakage from the RCS to a location outside containment greater than 25 gpm for 15 minutes or longer (Note 1)

5 — RPS Failure

Not applicable

GENERAL EMERGENCY — SG5 — Inability to shut down the reactor causing a challenge to RPV level or RCS heat removal

1

(1) a. An automatic or manual scram did not shutdown the reactor
AND
b. **ALL** manual actions to shut down the reactor have been unsuccessful
AND
c. **EITHER** of the following conditions exist:
- Reactor vessel water level cannot be restored and maintained above Minimum Steam Cooling RPV Water Level
- Exceeding the Heat Capacity Temperature Limit (HCTL) Curve (EOP Graph 2)

ALERT — SA5 — Automatic or manual scram fails to shut down the reactor, and subsequent manual actions taken at the reactor control consoles are not successful in shutting down the reactor

1

(1) a. An automatic or manual scram did not shut down the reactor
AND
b. Manual actions taken at the reactor control consoles are not successful in shutting down the reactor (Note 8)

UNUSUAL EVENT — SU5 — Automatic or manual scram fails to shut down the reactor

1

(1) a. An automatic scram did not shutdown the reactor
AND
b. A subsequent manual action taken at the reactor control consoles is successful in shutting down the reactor (Note 8)

(2) a. A manual scram did not shutdown the reactor
AND
b. **EITHER** of the following:
- A subsequent manual action taken at the reactor control consoles is successful in shutting down the reactor (Note 8)
- A subsequent automatic action is successful in shutting down the reactor

6 — Loss of Comm.

Not applicable

Notes

Note 1: The emergency director will declare the event promptly upon determining that the applicable time limit has been exceeded, or will likely be exceeded.

Note 8: A manual action is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core, and does not include manually driving in control rods or implementation of boron injection strategies.

Note 9: Use the Unit 1 or Unit 2 Pretreatment (Flow vs. mR/hr) Graphs to determine if the Pretreatment Radiation Monitor exceeds the TV of 240,000 µCi/sec.

Not applicable

UNUSUAL EVENT — SU6 — Loss of all onsite or offsite communications capabilities

1 2 3

(1) Loss of **ALL** of the following onsite communication methods:
- In plant telephones (includes handsets and wireless)
- Plant Page
- Plant radio systems

(2) Loss of **ALL** of the following CRO communication methods:
- EMN (Emergency Notification Network)
- Commercial phones

(3) Loss of **ALL** of the following NRC communication methods
- DNS or Federal Telecommunications (FTS) System
- Commercial phones

8 — Loss of DC Power

GENERAL EMERGENCY — SG8 — Loss of all AC and vital DC power sources for 15 minutes or longer

1 2 3

(1) a. Loss of **ALL** offsite and **ALL** onsite AC power to 4160 VAC Emergency Buses 1/2E, 1/2F and 1/2G for 15 minutes or longer. (Note 1)
AND
b. Indicated voltage is less than 105/210 VDC on **ALL** 125/250 VDC Bus 1/2R22-S016 **AND** 1/2R22-S017 for 15 minutes or longer (Note 1)

SITE AREA EMERGENCY — SS8 — Loss of all vital DC power for 15 minutes or longer

1 2 3

(1) Indicated voltage is less than 105/210 VDC on **ALL** 125/250 VDC Bus 1/2R22-S016 **AND** 1/2R22-S017 for 15 minutes or longer (Note 1)

Not applicable

Not applicable

9 — Hazardous Event Affecting Safety System

Not applicable

Not applicable

ALERT — SA9 — Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode

1 2 3

(1) a. The occurrence of **ANY** of the following hazardous events:
- Seismic event (earthquake)
- Internal or external flooding event
- High winds (> 35 mph sustained) or tornado strike
- FIRE
- EXPLOSION
- Other events with similar hazard characteristics as determined by the Shift Manager

AND
b. **EITHER** of the following:
- Event damage has caused indications of degraded performance in at least one train of a SAFETY SYSTEM needed for the current operating mode
- The event has caused VISIBLE DAMAGE to a SAFETY SYSTEM component or structure needed for the current operating mode

Not applicable

F — Fission Product Barrier Degradation

GENERAL EMERGENCY — FG1 — Loss of **ANY** two barriers and loss or potential loss of the third barrier

1 2 3

(1) Loss of **ANY** two barriers and loss or potential loss of the third barrier (Table F-1)

SITE AREA EMERGENCY — FS1 — Loss or potential loss of **ANY** two barriers

1 2 3

(1) Loss or potential loss of **ANY** two barriers (Table F-1)

ALERT — FA1 — **ANY** loss or **ANY** potential loss of either the Fuel Clad or RCS barrier

1 2 3

(1) **ANY** loss or **ANY** potential loss of either Fuel Clad or RCS barrier (Table F-1)

Not applicable

Table F-1 Fission Product Barrier Matrix

Fuel Clad Barrier		RCS Barrier		Containment Barrier	
Loss	**Potential Loss**	**Loss**	**Potential Loss**	**Loss**	**Potential Loss**
1. RCS Activity		**1. Primary Containment Pressure**		**1. Primary Containment Conditions**	
A. Activity of 300 µCi/gm DEI_{131}	Not applicable	A. Primary containment pressure greater than 1.85 psig due to RCS leakage	Not applicable	A. UNPLANNED rapid drop in primary containment pressure following primary containment pressure rise **OR** B. Primary containment pressure response not consistent with LOCA conditions	A. Primary containment pressure greater than 56 psig **OR** B. Greater than or equal to 6% H_2 AND 5% O_2 exists inside primary containment **OR** C. HCTL exceeded
2. RPV Water Level		**2. RPV Water Level**		**2. RPV Water Level**	
A. SAG entry is required	A. RPV water level cannot be restored and maintained above -155 inches or cannot be determined	A. RPV water level cannot be restored and maintained above -155 inches or cannot be determined	Not applicable	Not applicable	A. SAG entry is required
3. Not Applicable		**3. RCS Leak Rate**		**3. Primary Containment Isolation Failure**	
Not applicable	Not applicable	A. UNISOLABLE break in Main Steamline, HPCI, Feedwater, RWCU, or RCIC **OR** B. Emergency RPV Depressurization	A. UNISOLABLE primary system leakage that results in exceeding **EITHER** of the following: 1. Max Normal Operating Temperature **OR** 2. Max Normal Operating Area Radiation Level	A. UNISOLABLE direct downstream pathway to the environment exists after primary containment isolation signal **OR** B. Intentional primary containment venting per EOPs **OR** C. UNISOLABLE primary system leakage that results in exceeding the following: 1. Max Safe Operating Temperature **OR** 2. Max Safe Operating Area Radiation Level	Not applicable
4. Primary Containment Radiation		**4. Primary Containment Radiation**		**4. Primary Containment Radiation**	
A. DWRRM greater than 1,400 R/hr	Not applicable	A. DWRRM greater than 40 R/hr	Not applicable	Not applicable	A. DWRRM greater than 26,000 R/hr
5. Other Indications		**5. Other Indications**		**5. Other Indications**	
Not applicable	Not applicable	A. Drywell Fission Product Monitor reading 5.0 x 10⁶ cpm	Not applicable	Not applicable	Not applicable
6. Emergency Director Judgment		**6. Emergency Director Judgment**		**6. Emergency Director Judgment**	
A. **ANY** condition in the opinion of the emergency director that indicates loss of the fuel clad barrier	A. **ANY** condition in the opinion of the emergency director that indicates potential loss of the fuel clad barrier	A. **ANY** condition in the opinion of the emergency director that indicates loss of the RCS Barrier	A. **ANY** condition in the opinion of the emergency director that indicates potential loss of the RCS Barrier	A. **ANY** condition in the opinion of the emergency director that indicates loss of the Containment Barrier	A. **ANY** condition in the opinion of the emergency director that indicates potential loss of the Containment Barrier

Modes: 1 Power Operation; 2 Startup/Hot Standby; 3 Hot Shutdown; 4 Cold Shutdown; 5 Refueling; DEF Defueled

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EAL Classification Matrix
Page 1 of 2
HOT CONDITIONS
(RCS > 212°F)

Table SC-1.4

SECONDARY CONTAINMENT
OPERATING RADIATION LEVELS

AREA RADIATION MONITORS on 2H11-P600, 2D21-P600	Max Normal Operating Value mR/hr	Max Safe Operating Value mR/hr
REFUEL FLOOR AREA		
1 Reactor head laydown area (2D21-K601A)	50	1000
2 Dryer Seperator pool (2D21-K601E)	50	1000
3 Spent Fuel Pool & New Fuel Storage (2D21-K601M)	50	1000
4 Reactor Vessel Refueling Floor (2D21-K611K)	50	1000
5 Reactor Vessel Refueling Floor (2D21-K611L)	50	1000

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 Jet Pumps

LCO 3.4.2 All jet pumps shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more jet pumps inoperable.	A.1 Be in MODE 3.	12 hours

UNITS 1 & 2

R — Abnormal Rad Levels / Rad Effluent

1 — Rad Effluent

GENERAL EMERGENCY — RG1 — Release of gaseous radioactivity resulting in offsite dose greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE

1 2 3 4 5 DEF

(1) Reading on **ANY** of the following radiation monitors greater than the reading shown for 15 minutes or longer: (Notes 1, 2, 3, 4)

Main Stack Accident Range Monitor: 1D11-P007 (feeding 1D11-R631, Main Stack Wide Range)	8.1 x 10⁵ µCi/cc
Reactor Building Vent Accident Range Monitor: 1D11-P601 (feeding 1D11-R631, Rx Bldg Vent Wide Range)	2.6 µCi/cc
2D11-P601 (feeding 2D11-R631, Rx Bldg Vent Wide Range)	2.6 µCi/cc

(2) Dose assessment using actual meteorology indicates doses greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE at or beyond the site boundary (Note 4)

(3) Field survey results indicate **EITHER** of the following at or beyond the site boundary (Notes 1, 2):
- Closed window dose rates greater than 1,000 mR/hr expected to continue for 60 minutes or longer
- Analyses of field survey samples indicate thyroid CDE greater than 5,000 mrem for one hour of inhalation.

SITE AREA EMERGENCY — RS1 — Release of gaseous radioactivity resulting in offsite dose greater than 100 mrem TEDE or 500 mrem thyroid CDE

1 2 3 4 5 DEF

(1) Reading on **ANY** of the following radiation monitors greater than the reading shown for 15 minutes or longer: (Notes 1, 2, 3, 4)

Main Stack Accident Range Monitor: 1D11-P007 (feeding 1D11-R631, Main Stack Wide Range)	8.1 x 10⁴ µCi/cc
Reactor Building Vent Accident Range Monitor: 1D11-P601 (feeding 1D11-R631, Rx Bldg Vent Wide Range)	2.6 x 10³ µCi/cc
2D11-P601 (feeding 2D11-R631, Rx Bldg Vent Wide Range)	2.6 x 10³ µCi/cc

(2) Dose assessment using actual meteorology indicates doses greater than 100 mrem TEDE or 500 mrem thyroid CDE at or beyond the site boundary (Note 4)

(3) Field survey results indicate **EITHER** of the following at or beyond the site boundary (Notes 1, 2):
- Closed window dose rates greater than 100 mR/hr expected to continue for 60 minutes or longer
- Analyses of field survey samples indicate thyroid CDE greater than 500 mrem for one hour of inhalation.

ALERT — RA1 — Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mrem TEDE or 50 mrem thyroid CDE

1 2 3 4 5 DEF

(1) Reading on **ANY** of the following radiation monitors greater than the reading shown for 15 minutes or longer: (Notes 1, 2, 3, 4)

Main Stack Accident Range Monitor: 1D11-P007 (feeding 1D11-R631, Main Stack Wide Range)	8.1 x 10² µCi/cc
Reactor Building Vent Accident Range Monitor: 1D11-P601 (feeding 1D11-R631, Rx Bldg Vent Wide Range)	2.6 x 10¹ µCi/cc
2D11-P601 (feeding 2D11-R631, Rx Bldg Vent Wide Range)	2.6 x 10¹ µCi/cc

(2) Dose assessment using actual meteorology indicates doses greater than 10 mrem TEDE or 50 mrem thyroid CDE at or beyond the site boundary (Note 4)

(3) Analysis of a liquid effluent sample indicates a concentration or release rate that would result in doses greater than 10 mrem TEDE or 50 mrem thyroid CDE at or beyond the site boundary for one hour of exposure

Field survey results indicate **EITHER** of the following at or beyond the site boundary (Notes 1, 2):
- Closed window dose rates greater than 10 mR/hr expected to continue for 60 minutes or longer
- Analyses of field survey samples indicate thyroid CDE greater than 50 mrem for one hour of inhalation.

UNUSUAL EVENT — RU1 — Release of gaseous or liquid radioactivity greater than 2 times the ODCM limits for 60 minutes or longer

1 2 3 4 5 DEF

(1) Reading on **ANY** effluent radiation monitor greater than 2 times the ODCM limits for 60 minutes or longer: (Notes 1, 2, 3)

Gaseous Effluent Radiation Monitors
Main Stack Normal Range Monitor: 1D11-R600 A(R)
Reactor Building Vent Normal Range Monitor: 1D11-R619 A(R) / 2D11-R628 A(R)

Liquid Effluent Radiation Monitors
Liquid Radwaste Effluent Line Monitor: 1D11-R604 / 2D11-R604
Service Water System Effluent Line Monitor: 1D11-R605 / 2D11-R605

(2) Reading on **ANY** effluent radiation monitor greater than 2 times the alarm setpoint established by a current radioactivity discharge permit for 60 minutes or longer (Note 1)

(3) Sample analyses for a gaseous or liquid release indicates concentrations or release rate greater than 2 times the ODCM limits for 60 minutes or longer (Notes 1, 2)

2 — Irradiated Fuel Event

GENERAL EMERGENCY — RG2 — Spent fuel pool level cannot be restored to at least 1.4 feet for 60 minutes or longer

1 2 3 4 5 DEF

(1) Spent fuel pool level cannot be restored to at least 1.4 feet for 60 minutes or longer. (Note 1)

SITE AREA EMERGENCY — RS2 — Spent fuel pool level at 1.4 feet

1 2 3 4 5 DEF

(1) Lowering of spent fuel pool level to 1.4 feet.

ALERT — RA2 — Significant lowering of water level above, or damage to, irradiated fuel

1 2 3 4 5 DEF

(1) Uncovery of irradiated fuel in the REFUELING PATHWAY

(2) Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by alarms on **ANY** Table R1 radiation monitors

(3) Lowering of spent fuel pool level to 11.0 ft.

UNUSUAL EVENT — RU2 — UNPLANNED loss of water level above irradiated fuel

1 2 3 4 5 DEF

(1) a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by **ANY** of the following:
- Resourced report of low water level
- SFP low level alarm annunciator – Spent Fuel Storage Pool Level Low 654-523-1/2

AND

b. UNPLANNED rise in area radiation levels as indicated by **ANY** of the following radiation monitors:

1D21-R607 A – Rx Head Laydown Area
1D21-R607 D – Refuel Floor
1D21-R607 C – Drywell Shield Plug
1D21-R607 I – Drywell/Separator Pool
2D21-R607 M – Spent Fuel Pool and New Fuel Storage Area
2D21-R607 A – Rx Head Laydown Area
2D21-R607 E – Drywell/Separator Pool
2D21-R607 M – Spent Fuel/Fuel Pool Area
2D21-R611 K – RPV Refuel Floor 23ft
2D21-R611 L – RPV Refuel Floor 23ft

Table R1

Refuel Floor Area Radiation Monitors	
Unit 1	**Unit 2**
1D21-R607 A – Rx Head Laydown Area	2D21-R607 A – Rx Head Laydown Area
1D21-R607 B – Refueling Floor	2D21-R607 E – Drywell/Separator Pool
1D21-R607 D – Refuel Floor	2D21-R611 K – RPV Refuel Floor 23ft
1D21-R607 C – Drywell Shield Plug	2D21-R611 L – RPV Refuel Floor 23ft
1D21-R607 M – Spent Fuel Pool and New Fuel Storage Area	2D21-R607 M – Spent Fuel Pool Area
Refuel Floor Ventilation Monitors	
Unit 1	**Unit 2**
1D11-K609 A/C – Rx Bldg. Potential Contaminated Area Vent Exhaust Rad Monitor	2D11-K609 A/C – Rx Bldg. Potential Contaminated Area Vent Exhaust Rad Monitor
1D11-K611 A/C – Refuel Floor Vent Exhaust	2D11-K611 A/C – Refuel Floor Vent Exhaust 2D11-K630 A/C – Refuel Floor Rx Well Vent. Exhaust 2D11-K633 A/C – Refuel Floor Drill/Seg. Vent. Exhaust

3 — Area Radiation Levels

Not applicable

Not applicable

ALERT — RA3 — Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown

1 2 3 4 5 DEF

(1) Dose rate greater than 15 mR/hr in **ANY** of the following areas:

1D21-R600 B or C – Control Room area radiation monitor
Central Alarm Station (by survey)

(2) An UNPLANNED event results in radiation levels that prohibit or impede access to **ANY** Table R2 plant rooms or areas (Note 5).

Table R2

Building	Room Number	Applicable Mode
Diesel generator building	All	All
Reactor building	Unit 1/2 130	All
	Unit 1/2 SE Diagonals (RHR)	All
	Unit 1/2 NE Diagonals (RHR)	All

UNUSUAL EVENT

Not applicable

H — Hazards

1 — Security

GENERAL EMERGENCY — HG1 — HOSTILE ACTION resulting in loss of physical control of the facility

1 2 3 4 5 DEF

(1) a. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the on shift Security Captain or designee
AND
b. **EITHER** of the following has occurred:
1. **ANY** of the following safety functions cannot be controlled or maintained:
- Reactivity control
- RPV water level
- RCS heat removal

OR
2. Damage to spent fuel has occurred or is IMMINENT

SITE AREA EMERGENCY — HS1 — HOSTILE ACTION within the PROTECTED AREA

1 2 3 4 5 DEF

(1) A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the on shift Security Captain or designee

ALERT — HA1 — HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes

1 2 3 4 5 DEF

(1) A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the on shift Security Captain or designee

(2) A validated notification from NRC of an aircraft attack threat within 30 minutes of the site

(3) A validated notification from the NRC providing information of an aircraft threat

UNUSUAL EVENT — HU1 — Confirmed SECURITY CONDITION or threat

1 2 3 4 5 DEF

(1) A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the on shift Security Captain or designee

(2) Notification of a credible security threat directed at HNP

(3) A validated notification from the NRC providing information of an aircraft threat

2 — Seismic Event

Not applicable

Not applicable

Refer to SA9 or CA6 for emergency escalation based on a seismic event.

UNUSUAL EVENT — HU2 — Seismic event greater than OBE levels

1 2 3 4 5 DEF

(1) Seismic event greater than Operating Basis Earthquake (OBE) as indicated by **ANY** of the following:
- Unit One "Seismic Peak Shock Recorder High G Level" (657-046) alarm
- Unit Two "Seismic Instrumentation Triggered" (657-048) alarm
- A 12.7 Hz amber light illuminated in the N/S **OR** E/W column on panel 1(2)H1-P701
- A 12.7 Hz red light illuminated in the N/S **OR** E/W column on panel 1(2)H1-P701

3 — Natural or Tech. Hazard

Not applicable

Not applicable

Refer to SA9 or CA6 for emergency escalation based on a hazardous event.

Table H1

Building	Rooms	Applicable Modes
Diesel generator building	All	All
Reactor building	Unit 1/2 130	All
	Unit 1/2 SE Diagonals (RHR)	All
	Unit 1/2 NE Diagonals (RHR)	All

Table H2

Control Building	CB 147' Cable Spreading Room U 1/2 CB 112' Station Battery Rooms A, B
Diesel generator building	All
Primary containment	All
Reactor building	Unit 1/2 130 Unit 1/2 SE Diagonals (RHR) Unit 1/2 NE Diagonals (RHR) Unit 1 SW Diagonals (RCIC) Unit 2 NW Diagonals (RCIC) Unit 1/2 HPCI Rooms
Intake structure	All

Notes

Note 1: The emergency director will declare the event promptly upon determining that the applicable time limit has been exceeded, or will likely be exceeded.

Note 2: If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded the specified time limit.

Note 3: If the effluent flow past an effluent monitor is known to have stopped, indicating that the release path is isolated, the effluent monitor reading is no longer VALID for classification purposes.

Note 4: The pre-calculated effluent monitor values presented in EALs RA1(1), RS1(1) and RG1(1) will be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.

Note 5: If the equipment in the listed room or area was already inoperable or out-of-service before the event occurred, then no emergency classification is warranted.

Note 6: If Secondary CONTAINMENT INTEGRITY is re-established prior to exceeding the 30 minute time limit, declaration of a General Emergency is not required.

Note 7: EAL #4 does not apply to routine traffic impediments such as fog, snow, ice, or vehicle breakdowns or accidents.

Note 8: A manual action is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core, and does not include manually driving in control rods or implementation of boron injection strategies.

Note 9: Use the Unit 1 or Unit 2 Pretreatment (Flow vs. mR/hr) Graphs to determine if the Pretreatment Radiation Monitor exceeds the TV of 240,000 µCi/sec.

4 — Fire

Not applicable

Not applicable

Refer to SA9 or CA6 for emergency escalation based on a fire.

UNUSUAL EVENT — HU4 — FIRE potentially degrading the level of safety of the plant

1 2 3 4 5 DEF

(1) a. A FIRE is NOT extinguished within 15-minutes of **ANY** of the following FIRE detection indications (Note 1):
- Report from the field (i.e., visual observation)
- Receipt of multiple (more than 1) fire alarms or indications
- Field verification of a single fire alarm

AND
b. The FIRE is located within **ANY** Table H2 rooms or areas

(2) a. Receipt of a single fire alarm (i.e., no other indications of a FIRE)
AND
b. The FIRE is located within **ANY** Table H2 rooms or areas
AND
c. The existence of a FIRE is not verified within 30-minutes of alarm receipt (Note 1)

(3) A FIRE within the plant PROTECTED AREA or ISFSI protected area not extinguished within 60-minutes of the initial report, alarm, or indication (Note 1)

(4) A FIRE within the plant PROTECTED AREA or ISFSI protected area that requires firefighting support by an offsite fire response agency to extinguish

5 — Hazardous Gases

Not applicable

Not applicable

ALERT — HA5 — Gaseous release impeding access to equipment necessary for normal plant operations, cooldown or shutdown

1 2 3 4 5 DEF

(1) a. Release of a toxic, corrosive, asphyxiant or flammable gas into **ANY** Table H1 plant rooms or areas
AND
b. Entry into the room area is prohibited or impeded (Note 5)

Not applicable

6 — Main Control Room Evacuation

Not applicable

SITE AREA EMERGENCY — HS6 — Inability to control a key safety function from outside the Control Room

1 2 3 4 5 DEF

(1) a. An event has resulted in plant control being transferred from the control room to the remote shutdown panels
AND
b. Control of **ANY** of the following key safety functions is not reestablished within 15 minutes (Note 1):
- Reactivity control
- RPV water level
- RCS heat removal

ALERT — HA6 — Control Room evacuation resulting in transfer of plant control to alternate locations

1 2 3 4 5 DEF

(1) An event has resulted in plant control being transferred from the control room to the remote shutdown panels

Not applicable

7 — Judgment

GENERAL EMERGENCY — HG7 — Other conditions existing which in the judgment of the emergency director warrant declaration of a General Emergency

1 2 3 4 5 DEF

(1) Other conditions exist which in the judgment of the emergency director indicate that events are in progress or have occurred which involve actual or IMMINENT substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

SITE AREA EMERGENCY — HS7 — Other conditions existing which in the judgment of the emergency director warrant declaration of a Site Area Emergency

1 2 3 4 5 DEF

(1) Other conditions exist which in the judgment of the emergency director indicate that events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts, (1) toward site personnel or equipment that could lead to the likely failure of or, (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

ALERT — HA7 — Other conditions existing which in the judgment of the emergency director warrant declaration of an Alert

1 2 3 4 5 DEF

(1) Other conditions exist which, in the judgment of the emergency director, indicate that events are in progress or have occurred which involve a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

UNUSUAL EVENT — HU7 — Other conditions existing which in the judgment of the emergency director warrant declaration of a NOUE

1 2 3 4 5 DEF

(1) Other conditions exist which in the judgment of the emergency director indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

E — ISFSI

1 — Loss of Conf. Boundary

Not applicable

Not applicable

Table E1

Location of Dose Rate	Total Dose Rate (Neutron + Gamma mR/hr)
HI-TRAC 125	
Side – Mid-height	450
Top	110
HI-STAR 180 or HI-STORM 100	
Side – 60 inches below mid-height	80
Side – Mid-height	80
Side – 60 inches above mid-height	30
Center of lid	10
Middle of top lid	20
Top (outlet duct)	40
Bottom (inlet) duct	140

UNUSUAL EVENT — E-HU1 — Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by an on-contact radiation reading greater than **ANY** of the values listed in Table E1.

1 2 3 4 5 DEF

(1) Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by an on-contact radiation reading greater than **ANY** of the values listed in Table E1.

UNITS 1 & 2

S — System Malfunct.

1 — Loss of AC Power

GENERAL EMERGENCY — SG1 — Prolonged loss of all offsite and all onsite AC power to emergency buses

1 2 3

(1) a. Loss of **ALL** offsite and **ALL** onsite AC power to 4160 VAC Emergency Buses 1/2E, 1/2F and 1/2G
AND
b. **EITHER** of the following:
- Restoration of at least one AC emergency bus in less than 4 hours is not likely (Note 1)
- Reactor vessel water level cannot be restored and maintained above Minimum Steam Cooling RPV Water Level

SITE AREA EMERGENCY — SS1 — Loss of all offsite and all onsite AC power to emergency buses for 15 minutes or longer

1 2 3

(1) Loss of **ALL** offsite and **ALL** onsite AC power to 4160 VAC Emergency Buses 1/2E, 1/2F and 1/2G for 15 minutes or longer (Note 1)

ALERT — SA1 — Loss of all but one AC power source to emergency buses for 15 minutes or longer

1 2 3

(1) a. AC power capability to 4160 VAC Emergency Buses 1/2E, 1/2F **AND** 1/2G is reduced to a single power source (Table S1) for 15 minutes or longer (Note 1)
AND
b. **ANY** additional single power source failure will result in loss of all AC power to SAFETY SYSTEMS

UNUSUAL EVENT — SU1 — Loss of all offsite AC power capability to emergency buses for 15 minutes or longer

1 2 3

(1) Loss of **ALL** offsite AC power capability (Table S2) to 4160 VAC Emergency Buses 1/2E, 1/2F and 1/2G for 15 minutes or longer (Note 1)

2 — Loss of Control Room Ind.

Not applicable

Not applicable

ALERT — SA2 — UNPLANNED loss of Control Room indications for 15 minutes or longer with a significant transient in progress

1 2 3

(1) a. An UNPLANNED event results in the inability to monitor one or more of the following parameters from within the Control Room for 15 minutes or longer (Note 1)
- Reactor Power
- RPV Water Level
- RPV Pressure
- Primary Containment Pressure
- Suppression Pool Level
- Suppression Pool Temperature

AND
b. **ANY** of the following transient events in progress:
- Automatic or manual runback greater than 25% thermal reactor power
- Electrical load rejection greater than 25% full electrical load
- Reactor scram
- ECCS actuation
- Thermal power oscillations greater than 10%

Table S1

Unit 1	Unit 2
Start-up Aux XFMR 1C	Start-up Aux XFMR 2C
Start-up Aux XFMR 1D	Start-up Aux XFMR 2D
Diesel Generator 1A	Diesel Generator 2A
Diesel Generator 1B	Diesel Generator 2B
Diesel Generator 1C	Diesel Generator 2C

Table S2

Unit 1	Unit 2
Start-up Aux XFMR 1C	Start-up Aux XFMR 2C
Start-up Aux XFMR 1D	Start-up Aux XFMR 2D

UNUSUAL EVENT — SU2 — UNPLANNED loss of Control Room indications for 15 minutes or longer

1 2 3

(1) An UNPLANNED event results in the inability to monitor one or more of the following parameters from within the Control Room for 15 minutes or longer (Note 1)
- Reactor Power
- RPV Water Level
- RPV Pressure
- Primary Containment Pressure
- Suppression Pool Level
- Suppression Pool Temperature

3 — RCS Activity

Not applicable

Not applicable

UNUSUAL EVENT — SU3 — Reactor coolant activity greater than Technical Specification allowable limits

1 2 3

(1) **ANY** Pretreatment Radiation Monitor 1(2)D11-K601 1(2)D11-K602 Reading greater than 240,000 µCi/sec for greater than 60 minutes. (Note 9)

(2) Sample analysis indicates that the reactor coolant specific activity is **EITHER**:
- Greater than 0.2 µCi/gm and less than or equal to 2.0 µCi/gm dose equivalent I_{131} for greater than 48 hours
- Greater than 2.0 µCi/gm dose equivalent I_{131}

4 — RCS Leakage

Not applicable

Not applicable

UNUSUAL EVENT — SU4 — RCS leakage for 15 minutes or longer

1 2 3

(1) RCS unidentified or pressure boundary leakage greater than 10 gpm for 15 minutes or longer. (Note 1)

(2) RCS identified leakage greater than 25 gpm for 15 minutes or longer. (Note 1)

(3) Leakage from the RCS to a location outside containment greater than 25 gpm for 15 minutes or longer (Note 1)

5 — RPS Failure

Not applicable

GENERAL EMERGENCY — SG5 — Inability to shut down the reactor causing a challenge to RPV level or RCS heat removal

1

(1) a. An automatic or manual scram did not shutdown the reactor
AND
b. **ALL** manual actions to shut down the reactor have been unsuccessful
AND
c. **EITHER** of the following conditions exist:
- Reactor vessel water level cannot be restored and maintained above Minimum Steam Cooling RPV Water Level
- Exceeding the Heat Capacity Temperature Limit (HCTL) Curve (EOP Graph 2)

ALERT — SA5 — Automatic or manual scram fails to shut down the reactor, and subsequent manual actions taken at the reactor control consoles are not successful in shutting down the reactor

1

(1) a. An automatic or manual scram did not shut down the reactor
AND
b. Manual actions taken at the reactor control consoles are not successful in shutting down the reactor (Note 8)

UNUSUAL EVENT — SU5 — Automatic or manual scram fails to shut down the reactor

1

(1) a. An automatic scram did not shutdown the reactor
AND
b. A subsequent manual action taken at the reactor control consoles is successful in shutting down the reactor (Note 8)

(2) a. A manual scram did not shutdown the reactor
AND
b. **EITHER** of the following:
- A subsequent manual action taken at the reactor control consoles is successful in shutting down the reactor (Note 8)
- A subsequent automatic action is successful in shutting down the reactor

6 — Loss of Comm.

Not applicable

Notes

Note 1: The emergency director will declare the event promptly upon determining that the applicable time limit has been exceeded, or will likely be exceeded.

Note 8: A manual action is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core, and does not include manually driving in control rods or implementation of boron injection strategies.

Note 9: Use the Unit 1 or Unit 2 Pretreatment (Flow vs. mR/hr) Graphs to determine if the Pretreatment Radiation Monitor exceeds the TV of 240,000 µCi/sec.

Not applicable

UNUSUAL EVENT — SU6 — Loss of all onsite or offsite communications capabilities

1 2 3

(1) Loss of **ALL** of the following onsite communication methods:
- In plant telephones (includes handsets and wireless)
- Plant Page
- Plant radio systems

(2) Loss of **ALL** of the following CRO communication methods:
- EMN (Emergency Notification Network)
- Commercial phones

(3) Loss of **ALL** of the following NRC communication methods
- DNS or Federal Telecommunications (FTS) System
- Commercial phones

8 — Loss of DC Power

GENERAL EMERGENCY — SG8 — Loss of all AC and vital DC power sources for 15 minutes or longer

1 2 3

(1) a. Loss of **ALL** offsite and **ALL** onsite AC power to 4160 VAC Emergency Buses 1/2E, 1/2F and 1/2G for 15 minutes or longer. (Note 1)
AND
b. Indicated voltage is less than 105/210 VDC on **ALL** 125/250 VDC Bus 1/2R22-S016 **AND** 1/2R22-S017 for 15 minutes or longer (Note 1)

SITE AREA EMERGENCY — SS8 — Loss of all vital DC power for 15 minutes or longer

1 2 3

(1) Indicated voltage is less than 105/210 VDC on **ALL** 125/250 VDC Bus 1/2R22-S016 **AND** 1/2R22-S017 for 15 minutes or longer (Note 1)

Not applicable

Not applicable

9 — Hazardous Event Affecting Safety System

Not applicable

Not applicable

ALERT — SA9 — Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode

1 2 3

(1) a. The occurrence of **ANY** of the following hazardous events:
- Seismic event (earthquake)
- Internal or external flooding event
- High winds (> 35 mph sustained) or tornado strike
- FIRE
- EXPLOSION
- Other events with similar hazard characteristics as determined by the Shift Manager

AND
b. **EITHER** of the following:
- Event damage has caused indications of degraded performance in at least one train of a SAFETY SYSTEM needed for the current operating mode
- The event has caused VISIBLE DAMAGE to a SAFETY SYSTEM component or structure needed for the current operating mode

Not applicable

F — Fission Product Barrier Degradation

GENERAL EMERGENCY — FG1 — Loss of **ANY** two barriers and loss or potential loss of the third barrier

1 2 3

(1) Loss of **ANY** two barriers and loss or potential loss of the third barrier (Table F-1)

SITE AREA EMERGENCY — FS1 — Loss or potential loss of **ANY** two barriers

1 2 3

(1) Loss or potential loss of **ANY** two barriers (Table F-1)

ALERT — FA1 — **ANY** loss or **ANY** potential loss of either the Fuel Clad or RCS barrier

1 2 3

(1) **ANY** loss or **ANY** potential loss of either Fuel Clad or RCS barrier (Table F-1)

Not applicable

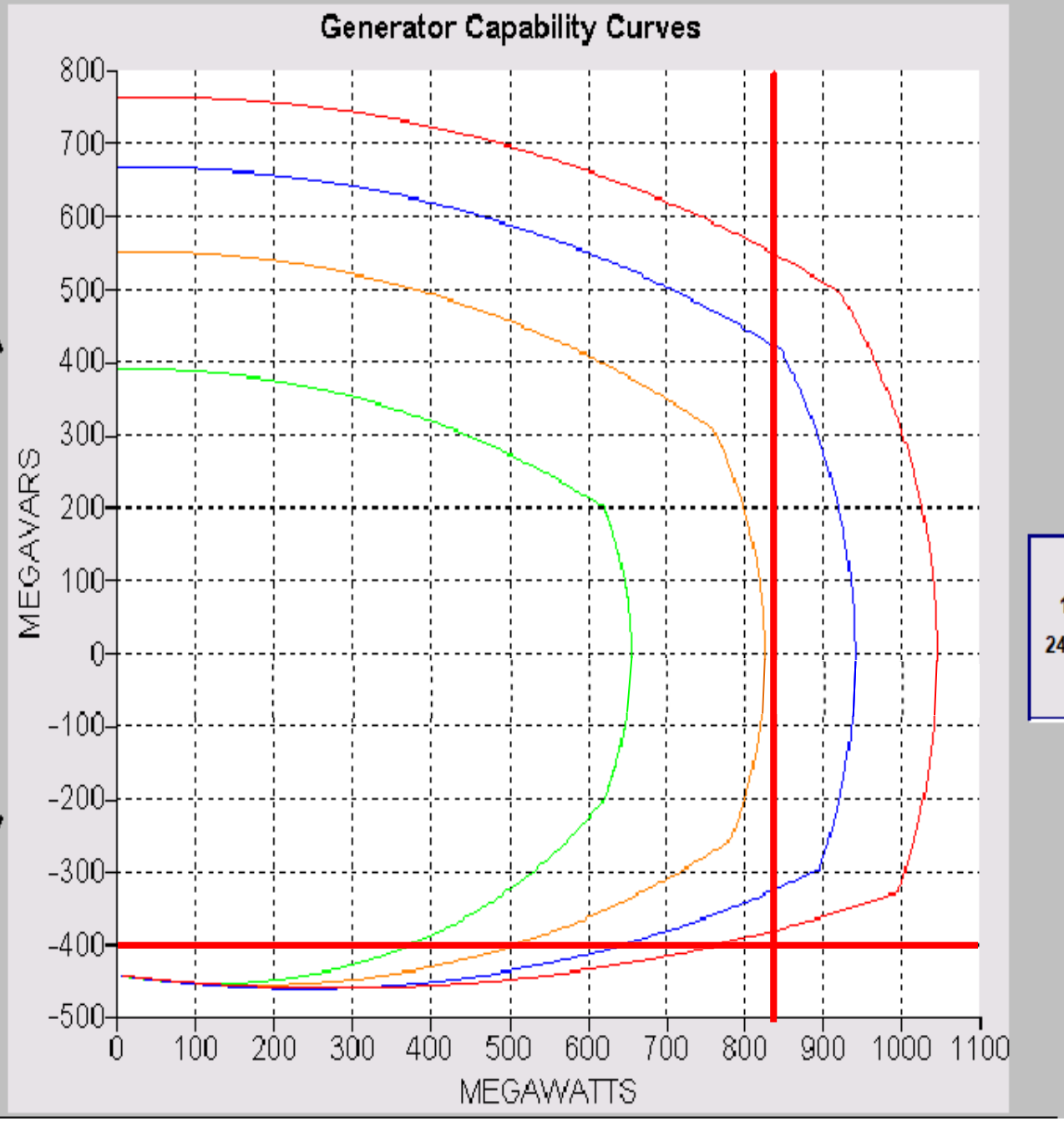
Table F-1 Fission Product Barrier Matrix

Fuel Clad Barrier		RCS Barrier		Containment Barrier	
Loss	**Potential Loss**	**Loss**	**Potential Loss**	**Loss**	**Potential Loss**
1. RCS Activity		**1. Primary Containment Pressure**		**1. Primary Containment Conditions**	
A. Activity of 300 µCi/gm DEI_{131}	Not applicable	A. Primary containment pressure greater than 1.85 psig due to RCS leakage	Not applicable	A. UNPLANNED rapid drop in primary containment pressure following primary containment pressure rise **OR** B. Primary containment pressure response not consistent with LOCA conditions	A. Primary containment pressure greater than 56 psig **OR** B. Greater than or equal to 6% H_2 AND 5% O_2 exists inside primary containment **OR** C. HCTL exceeded
2. RPV Water Level		**2. RPV Water Level**		**2. RPV Water Level**	
A. SAG entry is required	A. RPV water level cannot be restored and maintained above -155 inches or cannot be determined	A. RPV water level cannot be restored and maintained above -155 inches or cannot be determined	Not applicable	Not applicable	A. SAG entry is required
3. Not Applicable		**3. RCS Leak Rate**		**3. Primary Containment Isolation Failure**	
Not applicable	Not applicable	A. UNISOLABLE break in Main Steamline, HPCI, Feedwater, RWCU, or RCIC **OR** B. Emergency RPV Depressurization	A. UNISOLABLE primary system leakage that results in exceeding **EITHER** of the following: 1. Max Normal Operating Temperature **OR** 2. Max Normal Operating Area Radiation Level	A. UNISOLABLE direct downstream pathway to the environment exists after primary containment isolation signal **OR** B. Intentional primary containment venting per EOPs **OR** C. UNISOLABLE primary system leakage that results in exceeding the following: 1. Max Safe Operating Temperature **OR** 2. Max Safe Operating Area Radiation Level	Not applicable
4. Primary Containment Radiation		**4. Primary Containment Radiation**		**4. Primary Containment Radiation**	
A. DWRRM greater than 1,400 R/hr	Not applicable	A. DWRRM greater than 40 R/hr	Not applicable	Not applicable	A. DWRRM greater than 26,000 R/hr
5. Other Indications		**5. Other Indications**		**5. Other Indications**	
Not applicable	Not applicable	A. Drywell Fission Product Monitor reading 5.0 x 10⁶ cpm	Not applicable	Not applicable	Not applicable
6. Emergency Director Judgment		**6. Emergency Director Judgment**		**6. Emergency Director Judgment**	
A. **ANY** condition in the opinion of the emergency director that indicates loss of the fuel clad barrier	A. **ANY** condition in the opinion of the emergency director that indicates potential loss of the fuel clad barrier	A. **ANY** condition in the opinion of the emergency director that indicates loss of the RCS Barrier	A. **ANY** condition in the opinion of the emergency director that indicates potential loss of the RCS Barrier	A. **ANY** condition in the opinion of the emergency director that indicates loss of the Containment Barrier	A. **ANY** condition in the opinion of the emergency director that indicates potential loss of the Containment Barrier

Modes: 1 Power Operation; 2 Startup/Hot Standby; 3 Hot Shutdown; 4 Cold Shutdown; 5 Refueling; DEF Defueled

Southern Nuclear
HNP Units 1 & 2
NMP-EP-141-002-F01 Version 1.1

EAL Classification Matrix
Page 1 of 2
HOT CONDITIONS
(RCS > 212°F)



For Generator Rated

1000000	KVA	1800	RPM
24.000 K Volts		60.0000	Hz
0.85	PF	0.58	SCR

15.0 psi
30.0 psi
45.0 psi
60.0 psi

Status
Control
Monitor
Aux
Tests
LP hoods
lube oil
hydraulics
valve overview
steam pressure
prox
shaft voltage
gen capability
vibration
RFP vibration
Master Reset S1
Master Reset P1
Diag Reset S1
Diag Reset P1

ANSWER KEY REPORT

for ILT-13 NRC Exam (SRO) Test Form: 0

#	ID	Answers 0
1	212000K1.06 1	D
2	202001A3.09 1	D
3	202002K4.05 1	A
4	203000K6.03 5	A
5	205000A4.12 10	C
6	206000K4.17 1	B
7	209001K3.02 5	D
8	211000K1.01 5	C
9	201006A4.05 10	A
10	212000K2.01 1	B
11	215001G2.1.31 1	B
12	215003A3.03 1	C
13	215003K2.01 1	D
14	215004K5.03 1	C
15	215005K2.02 1	D
16	217000A1.08 1	B
17	218000K3.01 1	D
18	223002K6.03 5	B
19	226001K1.05 1	B
20	230000K2.02 1	B
21	239001K5.05 1	D
22	239002A2.01 1	D
23	239002K5.06 1	D
24	245000K5.03 1	D
25	259002A3.04 1	A
26	261000A4.07 1	A
27	262001G2.4.1 10	A
28	262002A3.01 10	B
29	262002G2.1.32 5	A
30	263000A1.01 1	C
31	263000G2.4.31 1	B
32	264000K5.05 1	C
33	268000K3.04 1	D
34	271000A1.01 10	A
35	288000A2.05 5	B
36	290001K6.03 1	D
37	295001AK1.02 1	A
38	295003G2.4.6 1	C
39	295004AK3.02 1	B
40	295005AA1.07 1	C
41	295006G2.4.4 5	A
42	295007AK2.06 1	D
43	295008AK1.01 1	A
44	295013AK2.01 1	D
45	295015AA1.08 1	D
46	295016AA1.06 1	B
47	295018AA2.05 1	D

ANSWER KEY REPORT

for ILT-13 NRC Exam (SRO) Test Form: 0

		Answers
#	ID	0
48	295019AK3.02 1	B
49	295021AK3.01 5	A
50	295022AA2.03 1	A
51	295023AA2.02 5	D
52	295024G2.4.8 1	B
53	295025EK2.06 1	D
54	295026EK1.02 1	A
55	295028EK1.02 1	B
56	295030EK2.01 1	C
57	295031EK1.01 1	A
58	295033G2.1.28 1	A
59	295035EK3.02 1	D
60	295037EK3.03 1	A
61	295038EA2.01 1	C
62	300000A2.01 5	C
63	400000K4.01 1	C
64	600000AK2.04 10	B
65	700000AA1.03 1	C
66	G2.1.41 1	C
67	G2.1.8 5	C
68	G2.2.22 1	A
69	G2.2.35 1	C
70	G2.2.42 1	D
71	G2.3.11 1	A
72	G2.3.12 1	C
73	G2.3.4 1	D
74	G2.4.16 10	A
75	G2.4.3 1	A
76	211000G2.1.25 5	C
77	234000A2.01 1	A
78	241000A2.08 1	D
79	259002G2.2.38 5	A
80	261000A2.11 1	C
81	264000A2.02 5	A
82	272000G2.1.25 5	C
83	295001AA2.05 1	A
84	295002G2.4.35 10	B
85	295004G2.2.4 1	A
86	295005AA2.08 1	B
87	295019AA2.02 5	B
88	295030G2.2.4 5	A
89	295031G2.4.9 1	C
90	295034EA2.02 5	A
91	295036EA2.03 1	D
92	400000A2.01 1	B
93	700000AA2.2.10 1	A
94	G2.1.26 10	A

ANSWER KEY REPORT

for ILT-13 NRC Exam (SRO) Test Form: 0

		Answers
#	ID	0
95	G2.1.3 1	B
96	G2.2.40 1	B
97	G2.2.43 1	A
98	G2.3.13 1	B
99	G2.4.18 10	B
100	G2.4.28 1	D