

Final Submittal

(Blue Paper)

1. Reactor Operator Written Examination

SURRY EXAM 2002-301

50-280, 281/2002-301

MARCH 18 - 28, 2002

**QUESTIONS REPORT
for SURRY2002**

1. 001A1.01 001/T2G2/T2G1/S/G LEVEL/M 3.8/4.2/N/SR02301/R/RLM

Which one of the following is used as a direct indication of reactor power to the Insertion Limit Computer?

- A. Total Steam Flow.
- B. Median Auctioneered Delta T Control.
- C. Impulse Pressure.
- D. Tave Median Signal Selector.

REF: 1987 Farley exam, Lesson Plans Surry; ND-93-LP-2, ND-93-LP-3

2. 001AA1.01 001/T1G2/T1G1/BANK SELECT/M 3.5/3.2/M/SR02301/C/RLM

The following conditions exist:

- The plant is operating at 80 %, steady state
- The Rod Control Selector Switch is in Automatic
- Control Bank "D" starts to step in continuously

Which one of the following actions must the operator take in response to these conditions?

- A. Place the Rod Control Mode Selector Switch in Bank "D"
- B. Place the Rod Control Mode Selector Switch in Manual
- C. Place the Rod Control Mode Selector Switch in either S/D Bank position
- D. Manually trip the reactor

Ref: SR EB #1858

Surry 0-AP-1.00, Step 2.

Comment from Mike: Too easy?

QUESTIONS REPORT
for SURRY2002

3. 001K3.01 001/T2G1/T2G1/LETDOWN FLOW/C/A 2.9/3.0/N/SR02301/C/RLM

Which one of the following describes the initial response of the unit to a dropped rod at 100% reactor power assuming the unit does not trip?

- A. Pressurizer level increases and letdown flow decreases.
- B. Pressurizer level decreases and letdown flow decreases.
- C. Pressurizer level increases and letdown flow increases.
- D. Pressurizer level decreases and letdown flow increases.

Could find no learning objective that directly supports this KA. Lesson Plan ND-93.1-LP-1 a general objective on flow measuring devices and an example of the effect on flow when d/p is changed.

Answer B is correct because the initial response of the plant to a dropped rod is for pressure, temperature and power to decrease. The decrease in reactor pressure will cause a reduction in d/p across the letdown orifices and hence a decrease in flowrate.

Answers A, C, and D have one component in the AND statement that is incorrect based on plant response described above.

4. 002K6.03 001/T2G2/T2G2/RVLIS/CA 3.1/3.6/N/SR02301/C/SURRY STAFF

The following Unit conditions exist:

- Unit 1 was operating at 100% steady state power.
- The power supply for the Reactor Coolant Pump isolator amplifiers to RVLIS has tripped, resulting in no output.
- SI initiated due to a steam line break in Safeguards.

Which one of the following RVLIS indications should be used for CSFST assessment when implementation of Status Trees is required?

- A. Dynamic Head
- B. Upper Range
- C. Full Range
- D. None, no RVLIS signal is valid

QUESTIONS REPORT
for SURRY2002

Ref: Surry lesson plan ND-93.4-LP-3 rev 9, objectives A and C
Surry lesson plan ND-93.4-LP-3 rev 9, p. 6

Answer A is incorrect because there is not dynamic flow compensating signal to account for effects of running RCP's.

Answer B and C are incorrect, because they are for static conditions with no forced flow.

Answer D is correct, because answers A, B, and C are the only RVLIS inputs.

5. 003A3.02 001/T2G2/T2G1/RCP PUMP AMPS/M 2.6/2.5/M/SR02301/C/RLM

Which ONE of the following completes the statement below?

Reactor coolant pump motor amps will (1) if the rotor is locked, and the motor amps will (2) if the pump shaft shears.

- A. (1) decrease; (2) decrease
- B✓ (1) increase; (2) decrease
- C. (1) increase; (2) increase
- D. (1) decrease; (2) increase

Ref: Surry EB # 1171
ND-80-LP-7 objective D

6. 003AK2.05 001/T1G2/T1G1/POWER SUPPLIES/M 2.5/2.8/N/SR02301/C/SURRY STAFF

The following conditions exist:

- A "C" bank rod dropped due to a failed fuse in the Rod Control System
- The Operating team is in the process of recovering the dropped rod in accordance with AP-1.01.
- During the affected rod's withdrawal, the breaker supplying the backup control power to the rod control cabinets is lost, resulting in a "Rod Control Sys Non-Urgent Failure" annunciator.
- The Operator maintains the In-Hold-Out switch in the OUT position.

Which one of the following identifies the affects on the rod recover task?

- A. Shutdown banks drop into the core.
- B✓ Withdrawal is unaffected.
- C. Rod motion will stop.
- D. All rods drop into the core.

QUESTIONS REPORT
for SURRY2002

Ref: Staff developed question during prep week because original felt to be too hard.
Surry lesson plan ND-93.3-LP-3, Rev. 14 objectives D and F

7. 003K4.07 001/T2G1/T2G1//M 3.2/3.4/B/SR02301/R/GWL

Which one of the following describes the Reactor Coolant Pump#1 seal leak-off flow path at 100% Reactor Power?

- A. Number 2 seal only
- B. Number 2 seal and standpipe
- C. VCT and standpipe
- D. VCT and number 2 seal

Source: HB Robinson. 1992 exam.
Lesson Plan 88.1 LP-6 Objective C.

8. 004K2.04 001/T2G1/T2G1//M 2.6/2.7/B/SR02301/C/GWL

Which one of the following identifies the BAST heating arrangement?

- A. One Station Service bus powered immersion heater with an emergency bus powered immersion heater as backup.
- B. Two station service bus powered immersion heaters.
- C. One emergency bus powered immersion heater with a station service bus powered immersion heater as backup.
- D. Two emergency bus powered immersion heaters.

Surry Exam bank question # 469.
Lesson Plan ND-88.3-LP-9B.

A,B, and C, Incorrect, Power is from two emergency bus powered immersion heaters.

D. Correct, Power is from two emergency bus powered immersion heaters.

QUESTIONS REPORT
for SURRY2002

9. 004K6.17 001/T2G1/T2G1//C/A 4.4/4.6/N/SR02301/R/GWL

- Unit 1 is Shutdown.
- 1H1-2S-7C (1-CH-MOV-1350) is tagged open.
- The Shift Supervisor has directed an emergency boration in accordance with AP-3.00, "Emergency Boration."

Which one of the following describes the correct flow path in accordance with AP-3.00?

- A. Manually open 1-CH-FCV-1113A, Locally open 1-CH-228, and Monitor Boric Acid flow on 1-CH-FI-1110.
- B. Manually open 1-CH-MOV-1350 from the MCB, Monitor Boric Acid flow on FR-1-113 (Red Pen).
- C. Locally open 1-CH-FCV-1113B, Locally open 1-CH-228, and Monitor Boric acid flow on FR-113 (Red Pen).
- D. Locally open 1-CH-MOV-1350, Monitor Boric Acid flow on 1-CH-FI-1110.

ND-88.3-LP-9D; AP-3.00

- A. Incorrect, Boric acid flow would not be seen on 1-CH-FI-1110.
 - B. Incorrect, MOV 1350 will not open from the MCB, and flow would not be monitored on FR-1-113.
 - C. Incorrect, 1-CH-FCV-1113B will not allow boric acid flow with out 1113A being open.
 - D. Correct, this is a flow path described in AP-3.00.
- New question C/A RO only

10. 005AK1.02 001/T1G1/T1G1/FLUX TILT/M 3.1/3.9/B/SR02301/C/RLM

The reactor is operating at 80% power during a load decrease to 60% when a control rod becomes stuck during insertion of the rest of its group.

Which one of the following combinations of parameters will be adversely affected, if group control rod insertion continues? (Assume the stuck control rod is trippable)

- A. Power distribution and shutdown margin
- B. Power defect and critical heat flux
- C. Critical heat flux and power distribution
- D. Shutdown margin and power defect

QUESTIONS REPORT
for SURRY2002

Ref: SR EB # 2444

Surry Lesson Plan ND 86.3-LP-2, objective E

Surry Lesson Plan ND 86.3-LP-3, objective F

11. 005K6.03 001/T2G3/T2G3//M 2.5/2.6/N/SR02301/R/GWL

Which one of the following would prevent the RHR heat exchangers from performing their design function?

- A. A loss of air to Heat Exchanger outlet valve HCV-1758.
- B. Manually closing RH-25, inlet to RHR letdown valve HCV-1142.
- C. A loss of air to Heat Exchanger bypass valve FCV-1605.
- D. Manually closing the Component Cooling outlets from the RHR heat exchangers.

Lesson plan ND-88.2-LP-1 objective C.

Comment from Mike: answer seems obvious.

12. 006K5.10 001/T2G2/T2G2/THERMAL STRESS/C/A 2.5/2.9/N/SR02301/C/RLM

-Unit 1 is at 100% power

-A non-licensed operator, making plant rounds reports that he hears what appears to be an intermittent flow noise from 1-SI-MOV-1867C, "HHSI to Cold Legs," and that the local indicator on the MOV indicates that it is closed.

Which one of the following is a probable consequence if this valve is intermittently leaking by the seat?

- A. The RCS leakrate surveillance will yield non-conservative leakrate calculations.
- B. The leakage will adversely affect the valve stroke time due to thermal binding.
- C. The leakage will cause increased gas accumulation in the ESF system.
- D. The leakage will induce thermal stresses on the SI cold leg injection lines at the RCS loop penetration.

QUESTIONS REPORT
for SURRY2002

Ref: Surry lesson plan ND-91-LP-2, objective E
SOER (later)

Answer A is incorrect because it doesn't matter whether the water goes through the cold leg injection line or the normal charging line (parallel path) as it relates to RCS inventory.

Answer B is incorrect because the water temperature coming out of the charging pump is approximately VCT temperature and then there are ambient losses between the charging pump and the injection valve. Therefore, the valve will remain close to ambient. Back leakage of hot RCS water cannot occur, because charging pressure on the upstream side of the valve is greater than RCS pressure.

Answer C is incorrect because the pressure in the cold leg injection line is much higher than in the suction of the charging pump. Therefore, it is unlikely that any gas will come out of solution in the high pressure side of the piping system.

Answer D is correct based on plant events where cracking of SI injection lines has occurred as noted in SOER (later).

13. 007A2.02 001/T2G3/T2G3/HI PRT PRESSURE/C/A 2.6/3.2/N/SR02301/R/RLM

Unit 1 is at 100 % power.

In leakage to the Pressurizer Relief Tank (PRT), from the excess letdown and RCP return relief valve, 1-DG-RV-100 has caused annunciator 1C-F7, "PZR RELIEF TK HI PRESS," to alarm.

Which one of the following describes the effects on the function of the PRT system and what actions should be taken?

- A. No effect on the function. Reduce pressure per 1-OP-RC-011, "PRESSURIZER RELIEF TANK OPERATION."
- B. Reduced pressure relief capacity. Reduce water level per 1-OP-RC-011, "PRESSURIZER RELIEF TANK OPERATION."
- C. No effect on the function. Reduce water level per 1-OP-RC-011, "PRESSURIZER RELIEF TANK OPERATION."
- D. Reduced pressure relief capacity. Reduce pressure per 1-OP-RC-011, "PRESSURIZER RELIEF TANK OPERATION."

Ref: Surry lesson plan ND-88.1-LP-3, objective E

Answers A and C are incorrect because at a higher PRT initial pressure, the PRT will be more likely to rupture its disks on a design safety valve lift.

Answer D is incorrect because the cause of the problem is liquid in-leakage from the seal return relief valve. If the operators only vent of the pressure, the PRT will eventually go solid which will in turn increase the likely hood of a ruptured tank.

QUESTIONS REPORT
for SURRY2002

14. 007G2.4.47 001/T1G2/T1G2/COOLDOWN/C/A 3.4/3.7/N/SR02301/C/RLM

Unit 1 was at 100% power when a tagging error caused the 1A RCP to trip.

Plant conditions:

- Unit 1 tripped
- All automatic systems functioned as expected.
- ES-0.1, "Reactor Trip Response" has been entered.
- All Steam Generator levels are less than 11% narrow range and trending up
- Tave is at 542 degrees F when the Reactor Operator notes that steam dump 105A is open

Which one of the following is the MOST effective means of stabilizing RCS temperature?

- A. Verifying closed or closing Steam Generator Blowdown TV's
- B. Reducing total AFW flow to no more than 540 gpm
- C✓ Closing the MSTV's
- D. Starting the 1A RCP

Surry lesson plan ND-95.3-LP-4, objective C

Surry lesson plan ND-93.3-LP-9, objective C

Answers A and B are incorrect because even though they are in the RNO column of the procedure, they will not effect stabilization of the RCS because the dump continues to draw energy from the system.

Answer D is not proceduralized, and would be ineffective for the same reasons as A & B.

Answer C is correct, because it is the only action that will isolate the heat loss component.

15. 008A1.04 001/T2G3/T2G3//C/A 3.1/3.2/B/SR02301/R/GWL

- Unit 2 is at Intermediate Shutdown at 300 degrees F.
- Unit 1 is operating at 100% power.

A leak in which one of the following could cause an increase in CC Surge Tank level?

- A. Regenerative heat exchanger.
- B. Seal return heat exchanger.
- C✓ RHR heat exchanger.
- D. RCP bearing lube oil cooler.

Surry Bank question slightly modified.

Ref: ND-88.5-LP-1 objective A.

Comment from Mike incorporated. (A leak in).

**QUESTIONS REPORT
for SURRY2002**

16. 010A2.03 001/T2G2/T2G2//C/A 4.1/4.2/M/SR02301/R/GWL

The following Unit 1 Plant conditions exist.

- PT-1445 has failed full scale HIGH.
- AP-31, "Increasing or Decreasing RCS Pressure," has been entered.

Which one of the following describes actions that would mitigate this event in accordance with AP-31?

- A. Place 1-CH-PC-1444J, PRZR PRESS MASTER CNTRL in MANUAL and increase demand to increase RCS Pressure.
- B. Place 1-CH-PC-1444J, PRZR PRESS MASTER CNTRL in MANUAL and decrease demand to decrease RCS pressure.
- C. Manually adjust spray valves open, and turn Pressurizer heaters off to decrease RCS pressure.
- D. Manually close or verify closed PRZR PORV1456 to increase RCS pressure.

Source: Modified from question in the Surry Exam bank.

Ref: ND-93.3-LP-5. Pressurizer Pressure Control.

Answer: D

- A. Incorrect, Pressure is decreasing due to PT-1445 being failed high. This would raise pressure.
- B. Incorrect, If PT-1444 was failed high this would mitigate this event.
- C. Incorrect, PT- 1445 failing high causes a low RCS pressure condition, these actions would also lower RCS pressure and would not mitigate the event.
- D. Correct, Closing PORV 1456 will stop the pressure decrease caused by 1456 being open due to the PT-1445 transmitter being failed high.

QUESTIONS REPORT
for SURRY2002

17. 011EK3.03 001/T1G2/T1G1/AFW/C/A 4.1/4.3/N/SR02301/C/RLM

- A large break LOCA has occurred.
- The team has just transitioned to 1-E-1, "Loss of Reactor or Secondary Coolant."
- All Steam Generator pressures are stable at 450 psig.
- RCS pressure is stable at 25 psig.
- Steam Generators levels are being maintained at approximately 23% with Aux Feed water flow.

Which one of the following is the reason for maintaining Steam Generator inventories?

- A. To provide the ability to remove heat from the RCS.
- B. To provide the ability to remove heat from the Containment Atmosphere.
- C. To provide the ability to remove heat from the Steam Generators.
- D. To protect the integrity of the U bend region of the tube bundles.

Ref: Surry Lesson Plan ND-95.3-LP-7, Rev. 13, objective C
ND-95.3-LP-7, Rev. 13, p. 31
WOG background document E-1, Rev. 1A, p. 76

18. 011K3.02 001/T2G2/T2G2/PZR PRESSURE CONTROL/C/A 3.2/3.7/M/SR02301/C/RLM

PRZR level transmitter 2-RC-LT-2459 is currently the controlling upper channel and 2-RC-LT-2461 is the controlling lower channel.

If Pressurizer level transmitter 2-RC-LT-2459 fails HIGH, which one of the following represents how pressurizer pressure would react if no operator action is taken?

- A. Pressurizer pressure will increase to a steady state value.
- B. Pressurizer pressure will decrease to a steady state value.
- C. Pressurizer pressure will increase and then decrease and become cyclic.
- D. Pressurizer pressure will decrease then increase and become cyclic.

Ref: SR EB #1633
Lesson Plan ND-93.3-LP-7, objective C
Lesson Plan DN-93.3-LP-7, p. 8

QUESTIONS REPORT
for SURRY2002

19. 012K4.06 003/T2G2/T2G2//C/A 3.2/3.5/B/SR02301/R/GWL

Unit 1 is operating at 30% power when all three "A" loop flows and "A" RCP amps suddenly decrease to minimum. The Breaker for the "A" RCP remains closed.

Which one of the following is the correct reactor protection system response to this event?

- A. No automatic reactor trip will occur due to the "A" RCP breaker remaining closed.
- B. An automatic reactor trip will occur due to reactor power being $> P-10$.
- C✓ No automatic reactor trip will occur due to reactor power being $< P-8$.
- D. A reactor trip will occur due to the Reactor Protection System sensing a loss of flow conditions.

Ref: Surry Exam bank. Lesson plan ND-93.3-LP-10 objective D.

Answer: C

Comment from Mike: A and D are basically the same

20. 013G2.4.4 001/T2G1/T2G1//C/A 4.0/4.3/M/SR02301/C/GWL

- Unit 1 is Shutdown proceeding to CSD.
- Train "A" RHR is in operation.
- Train "B" RHR is in standby.
- Pressurizer level is 65%; and lowering rapidly.
- RCS pressure is 300 psig and lowering.
- RCS temperature is 210 degrees F.
- Accumulators are Isolated.
- Containment Sump Level is rising.

Which one of the following procedures should be implemented for the above conditions?

- A. AP-16.00, "Excessive RCS Leakage"
- B. AP-27.00, "Loss of Decay Heat Removal Capability"
- C. E-0, "Reactor Trip or Safety Injection"
- D✓ AP-16.01, "Shutdown LOCA"

Modified from Surry bank question #838

REF: ND-95.2LP-12 objectives D and E; AP-16.01.

Answer: D

QUESTIONS REPORT
for SURRY2002

21. 013K5.02 001/T2G1/T2G1//M 2.9/3.3/B/SR02301/R/GWL

During performance of testing, the mode selector switch on the "B" train output relay test panel is placed in the "TEST" position.

If a valid plant condition requiring an automatic safety injection (SI) was generated, which one of the following would occur?

- A. No SI actuation or reactor trip will occur on either train.
- B. No SI actuation will occur on either train, but the reactor will trip.
- C. SI actuation will occur on "A" train only, and the reactor will trip.
- D. SI actuation will occur on both "A" and "B" trains, and the reactor will trip.

Answer: C
Farley exam 1994.

22. 014K3.02 001/T2G2/T2G1//C/A 3.4/3.5/N/SR02301/C/GWL

Unit 1 is commencing a Reactor Start Up and is pulling control groups "A" and "B" rods. At 25 steps on the "B" bank an IRPI module for a "B" group rod fails low.

Which one of the following describes the alarms and/or indicators which would alert the operator to this condition?

- A. Rod Bottom annunciator, Rod bottom Light, and IRPI MCB indicator.
- B. Rod bottom Light, IRPI MCB indicator, and "COMPUTER PRINTOUT ROD CONT SYS", 1G-B5.
- C. Rod Bottom annunciator, IRPI MCB indicator, and "COMPUTER PRINTOUT ROD CONT SYS", 1G-B5.
- D. Rod bottom Light, Rod Bottom annunciator, and "COMPUTER PRINTOUT ROD CONT SYS", 1G-B5.

QUESTIONS REPORT
for SURRY2002

Surry Lesson Plan ND-93.3-LP-4 objective B.
ARP 1G-B5.

- A. Incorrect, a Rod bottom annunciator will not be received ≤ 35 steps.
- B. Correct, the P-250 computer will annunciate 1G-B5, a rod bottom light will be received, and the MCB indicator will fail low.
- C. Incorrect, a Rod bottom annunciator will not be received ≤ 35 steps.
- D. Incorrect, a Rod bottom annunciator will not be received ≤ 35 steps.

23. 015A3.03 001/T2G1/T2G1//C/A 3.96/3.9/M/SR02301/R/GWL

Given the following conditions:

- Reactor Startup is in progress.
- Source range channel N-31 indicates $9.4 \text{ E}4$ cps.
- Source range channel N-32 indicates $9.6 \text{ E}4$ cps.
- Intermediate range channel N-35 indicates $4 \text{ E}-10$ amps
- Intermediate range channel N-36 indicates $1.5 \text{ E}-11$ amps.

Which one of the following statements describes the condition of the nuclear instruments?

- A. N-35 is undercompensated.
- B. N-36 is undercompensated.
- C. N-35 is overcompensated.
- D. N-36 is overcompensated.

Modified from Farley 1993 exam.
ND-93.2-LP-3 objective C, and page 7 of lesson plan.

- A. Incorrect, N-35 is indicating about the correct level for proper overlap.
- B. Incorrect, N-35 is indicating about the correct level for proper overlap.
- C. Incorrect, N-36 is reading low and if it were undercompensated it would be indicating higher than actual core power.
- D. Correct, N-36 is reading less than actual core power, this is an indication of overcompensation, and is a non- conservative event.

Will provide source range and intermediate indicator drawings from the lesson plan.

QUESTIONS REPORT
for SURRY2002

24. 015AK2.10 001/T1G1/T1G1/RCP INDICATORS/C/A 2.8/2.8/B/SR02301/C/GWL

- Unit 1 is operating at 25% reactor power during a startup.
- RCP 1C Trips.

Which one of the following describes the expected steady state MCB indications that would be available to the operator?

- A. Loop "C" RCS flow will indicate 0%, loops "A" and "B" will indicate 95%.
- B. Loop "C" RCS flow will indicate 20%, loops "A" and "B" will indicate 110%.
- C. Loop "C" RCS flow will indicate 20%, loops "A" and "B" will indicate 95%
- D. Loop "C" RCS flow will indicate 0%, loops "A" and "B" will indicate 110%

From Surry Exam Bank #2775.
Lesson Plan ND-95.1-LP-3 objective A.

25. 015K4.08 001/T2G1/T2G1//C/A 3.4/3.7/B/SR02301/C/GWL

- Unit 1 is at 75% power with Bank D rods at 198 steps.
- Rod Control is in Automatic.
- NI-44 fails high.

Which one of the following describes how control rods would respond to this failure?

- A. Rods will step out until Tave-Tref mismatch causes them to step back in.
- B. Rods will step out and stay out.
- C. Rods will step in until Tave-Tref mismatch causes them to step back out.
- D. Rods will step in and stay in.

Original idea from farley exam bank.
Surry lesson material ND-93.3-LP-3 objective K and ND-93.2-LP-4 objectives H and J

Answer: D.

- A. Incorrect, Rods will not step out as N-44 fails high the power mismatch signal will drive rods in to lower power and match Tave and Tref.
- B. Incorrect, Rods will not step out as N-44 fails high the power mismatch signal will drive rods in to lower power and match Tave and Tref.
- C. Incorrect, Rods will move in to lower power as N-44 fails high but rods will not move out due to a rod stop being present.
- D. Correct, Rods will move in to lower power as N-44 fails high. but will not move out due to the rod stop.

QUESTIONS REPORT
for SURRY2002

26. 016K4.03 001/T2G2/T2G2/AMSAC/M 2.8/2.9/B/SR02301/R/RLM

Which one of the following sets of parameters describes a condition when the Anticipatory Mitigating Systems Actuation Circuitry (AMSAC) would actuate?

- A✓ 2/2 Turbine first stage pressures at 40% turbine load, AND 2/3 S/G narrow range level transmitters on 2/3 S/Gs at 10%.
- B. 1/2 Turbine first stage pressures at 35% turbine load, AND 1/3 S/G narrow range level transmitters on 1/3 S/Gs at 17%.
- C. 2/4 Power Range NI's at 40 %, AND 1/3 S/G narrow range level transmitters on 1/3 S/Gs at 10%.
- D. 2/4 Power Range NI's at 35%, AND 2/3 S/G narrow range level transmitters on 2/3 S/Gs at 17%.

Ref: Source: Robinson EB# 43744
Surry Lesson Plan ND-93.3-LP-17, objective B
Answer: Lesson Plan p. 7

27. 017A3.01 001/T2G1/T2G1//C/A 3.6/3.8/B/SR02301/C/GWL

- A Total loss of off-site power has occurred.
- Core Exit thermocouples read approximately 670 degrees F.
- Steam Generator Pressure is stable at 815 psig.

Which one of the following describes the current plant conditions?

- A. Natural Circulation flow is increasing.
- B. The steam generators have boiled dry.
- C✓ Natural Circulation Cooling has been interrupted.
- D. The reactor core has uncovered and core melt is imminent.

Surry Bank question slightly modified.
Ref: Surry lesson plan ND-86.3-LP-4C,D,G, and AP-39.00.

- A. Incorrect, Natural Circ flow is not increasing, at 815 psig in the S/G temperature in the RCS should be about 525 degrees F.
- B. Incorrect, The S/Gs are not dry as evidenced by 815 psig pressure.
- C. Correct, The indications show that there is no evidence of heat being transfer to the S/Gs.
- D. incorrect, There are no indications that the core has uncovered and that core melt is imminent.

Comment from Mike: we still provide steam tables don't we?

QUESTIONS REPORT
for SURRY2002

28. 017K1.01 001/T2G1/T2G1/COMPUTER/M / 3.2/3.2/N/SR02301/C/SURRY STAFF

One CETC on the ICCM System indicates 2300 degrees F. The I&C Technicians determine that the CETC has failed and disconnects the thermocouple.

Which one of the following describes how this reading will be displayed on the ERF computer after it is disconnected?

- A. The display will read 2300 degrees F.
- B. The display will read 40 degrees F.
- C. The display will read XXXX.
- D. The display will read "Disconnected."

Need to ask actually how this system reacts to off scale high readings XXXBAD?
Surry Lesson Plan ND-93.4-LP-3 objective C.
Surry Staff rewrote question.

29. 022A4.05 001/T2G1/T2G1//M 3.8/3.8/M/SR02301/R/GWL

A Large Steam Line Break has ocured on Unit 1
Containment pressure is 16 psia and rising

Which one of the following conditions describes what should automatically ocured as pressure continues to rise?

- A. At 3.0 psig, all containment recirculation fans have shifted to slow speed.
- B. At 8.3 psig, all containment recirculation fans have tripped off.
- C. At 17.7 psia, only containment recirculation Fan C have tripped off.
- D. At 24.0 psia, containment recirculation Fans A and B have tripped off.

Answer D
ND-88.4-LP-6 modified from Surry 1990 NRC exam question.

QUESTIONS REPORT
for SURRY2002

30. 022K4.05 001/T2G1/T2G1//M 2.6/2.7/N/SR02301/C/GWL

Which one of the following systems directly provides Containment Cooling during the first minute following a design basis LOCA?

- A. Service Water System.
- B. Containment Ventilation System.
- C. Containment Spray System.
- D. Recirc Spray flowing through at least 2 RSHX's.

Source Surry Lesson Plans ND-91-LP-5. A,B,C, and D.

- A. Incorrect, SW cools the RSHX's but containment is cooled by 45 degree RWST water from the Containment Spray System.
- B. Incorrect, containment ventilation cools the containment during normal operations but not during a DBLOCA.
- C. Correct the Containment Spray System cools and depressurizes containment during a DBLOCA.
- D. Incorrect, The Recirc spray system aids in cooling the containment but it is designed to provide for core cooling after a DBLOCA.

Comment from Mike: Does SW cool the RWST?

31. 024AK1.04 001/T1G1/T1G1//C/A 2.8/3.6/N/SR02301/C/GWL

Which one of the following describes the boric acid system requirements for an emergency boration?

- A. The boric acid storage tanks are filled with a 7 - 8.5% solution of boric acid with a maximum temperature of 45 degrees F. to ensure solution solubility.
- B. The boric acid storage tanks are filled with a 2300-2500 ppm solution of boric acid with a minimum temperature of 112 degrees F. to ensure proper cooling of the containment during a LOCA.
- C. The boric acid storage tanks are filled with a 7 - 8.5% solution of boric acid with a minimum temperature of 112 degrees F. to ensure solution solubility
- D. The boric acid storage tanks are filled with a 2300-2500 ppm solution of boric acid with a maximum temperature of 45 degrees F. to ensure proper cooling of the containment during a LOCA.

QUESTIONS REPORT

for SURRY2002

Ref: Surry Lesson Plan ND-88.3-LP-9 objective B.

TS 3.2.1 and Basis TS 3.2.4

A. Incorrect, The solution is correct but the temperature is the temperature for the RWST operability.

B. Incorrect, The solution concentration is for the RWST. and the temperature is much to high to cool the containment after a LOCA.

C Correct, Based on Lesson material and TS.

D. Incorrect, The concentration is wrong.

32. 025AK1.01 001/T1G2/T1G2/VAPOR ENTRAINMENT/M 3.9/4.3/B/SR02301/C/RLM

Which one of the following sets of parameters affects vapor entrainment in the RHR suction piping?

- A. RHR flow rate AND RCS pressure
- B✓ RHR flow rate AND RCS level
- C. Number of RHR pumps running AND RCS pressure
- D. Number of RHR pumps running AND RCS level

Ref: SR EB # 41420

ND-95.2-LP-12, "Loss Of RHR Events", Rev 9 Objective B, page 31

Answers C and D incorrect because each pump has an individual suction line and are therefore independent of each other.

Answer A is incorrect because this phenomena is associated with reduced inventory operations where the RCS is essentially at atmospheric pressure.

33. 026A1.01 002/T2G2/T2G1/CONTAINMENT SPRAY/M 3.9/4.2/B/SR02301/C/RLM

Which one of the following variables does NOT affect the Containment Spray Systems ability to depressurize the containment in the event of a Design Basis Accident (DBA)?

- A. Containment temperature
- B✓ Component Cooling Water temperature
- C. RWST temperature
- D. Containment pressure

QUESTIONS REPORT
for SURRY2002

Ref: Surry EB#72970
Lesson Plan ND-91-LP-5D

34. 027AK3.01 001/T1G1/T1G2//C/A 3.5/3.8/N/SR02301/C/GWL

A RCS cooldown and depressurization is in progress in accordance with ES-0.2, "Natural Circulation Cooldown."

Which one of the following describes the reason for maintaining pressure within the limits of Attachment 2, "Natural Circulation Cooldown with Two or More CRDM Fans in Operation?"

- A. This curve maintains RCS temperature and pressure limits to prevent upper head voiding.
- B. This curve is designed to prevent DNB limits from being exceeded.
- C. This curve maintains RCS pressure at an acceptable value to allow a restart of an RCP.
- D. This curve is designed to maintain the RCS at a temperature and pressure to prevent an SI.

Note: Changed K/A from AK301 to AK303.
Surry Lesson Plan ND-95.3-LP-5 objective B.

- A. Correct, in accordance with the lesson plan This curve represents the RCS pressure/temperature limits to prevent upper head voiding during a NC cooldown.
- B. Incorrect, the curve is designed to limit upper head voiding.
- C. Incorrect, the curve is designed to limit upper head voiding.
- D. Incorrect, the curve is designed to limit upper head voiding.

35. 028AK2.03 001/T1G3/T1G3//C/A 2.6/2.9/M/SR02301/C/GWL

The Pressurizer Backup heaters have automatically energized.

Which one of the following could cause this action?

- A. Pressurizer Level Controller 2-RC-LC-2459 fails to 100%.
- B. Pressurizer Pressure Master Controller output fails to 100%.
- C. Pressurizer Level deviation falling to 5% less than program.
- D. 2-RC-PT-2455 failing low.

QUESTIONS REPORT
for SURRY2002

Modified from Farley Exam bank question.

Ref: Surry Lesson Plans ND-93.3-LP-7 Objectives B and D. and ND-93.3-LP-5.

- A. Correct, If the Pressurizer Level master controller output fails high, charging flow will increase and level will rise to > 5% above program and the pressurizer B/U heaters will energize.
- B. Incorrect, If the pressurizer master controller fails to 0%, the system would react as if pressure was high, this would de-energize the B/U heaters.
- C. Pressurizer level deviation low does not energize the B/U heaters.
- D. PT-455 has no input for controlling the pressurizer B/U heaters.

36. 029A3.01 001/T2G2/T2G2/PURGE ISOLATION/C/A 3.8/4.0/N/SR02301/C/RLM

Unit 1 is in Refueling Shutdown, with fuel movement in progress.

Which one of the following will trip the Containment Purge Supply fans and isolate containment isolation MOV's VS-100A, B, C&D?

- A. Process Vent Particulate and Gas monitor (GW-RI-101/102) alarm
- B. Containment Particulate and Gas monitor (RM-RI-159/160) alarm
- C. Reactor Containment Area (RM-163) alarm
- D. Vent-Vent Particulate and Gas - 1 detector for each (VG-RI-109/110) alarm

Ref: Surry Lesson Plans ND-88.4-LP-6 Rev. 4, Objective D

Answer B is correct based on ND-88.4-LP-6 Rev. 4, p. 8 and ND-93.5-LP-1, Handout ND-93.5-H/T-1.9.

Answers A and D are other rad monitors from ND-93.5-LP-1 that have no interactions with Containment purge.

Answer C is incorrect because the High Flux at S/D does not feed the Containment Purge isolation circuit.

QUESTIONS REPORT
for SURRY2002

37. 029G2.4.49 001/T1G2/T1G1//C/A 4.0/4.0/M/SR02301/R/GWL

- Reactor Power is at 85%.
- A failure in the pressurizer pressure control system has caused pressurizer pressure to lower to 1800 psig.
- The reactor failed to trip, FR-S.1, "Response to Nuclear Power Generation/ATWS" has been entered.
- The Main Turbine failed to trip automatically and from the MCR benchboard.
- Control Rods are in manual.

Which one of the following describes the actions required to be taken in accordance with FR-S.1?

- A. Initiate a Safety Injection based on low Pressurizer pressure.
- B. Place control rods in automatic and place the EHC switches in pull to lock.
- C. Drive control rods in manual and immediately shut the MSTV and direct MSTV bypass closure.
- D. Place control rods in automatic and manually runback the turbine using the valve position limiter.

Ref: Surry Lesson Plan ND-95.3-36 Objective D.
Modified from question # 983.

- A. Incorrect, FR-S.1 does not instruct the team to Initiate an SI. This would trip the Main Feed pumps and potentially make the event worse.
- B. Incorrect, Placing the control rods in automatic is a correct action but placing the EHC switches in pull is not in the procedure.
- C. Incorrect, Manually driving the control rods in would be acceptable if automatic did not work but the procedure directs the operator to remove the turbine by lowering the limiter.
- D. Correct, IAW FR-S.1

QUESTIONS REPORT
for SURRY2002

38. 032AK2.01 001/T1G2/T1G2/SR & IR/C/A 2.7/3.1/M/SR02301/C/GWL

- Unit 2 is stable at the POAH with Physics testing in progress.
- PR channel N-44 is in trip with the reactivity recorder installed .
- A fault occurs that results in a loss of Vital Bus (VB) I.

Which one of the following describes the effect on SR indications and the basis for this?

- A. SR channel N-31 will re-energize and N-32 will remain de-energized due to the loss of VB I.
- B. SR channels N-31 and N-32 will remain de-energized since the 2/2 permissive cannot be met due to the loss of power to N-36.
- C. SR channel N-32 will remain de-energized due to the P-10 interlock, N-31 will have no power due to the loss of VB I.
- D. SR channel N-31 will remain de-energized due to the P-10 interlock, N-32 will re-energize.

Surry Exam Bank question # 1592, Modified

Surry Lesson Plan. ND-90.3-LP-5: ND-93.2-LP-2 Objective D.

A. Incorrect, SR channel N31 will not re-energize.

B. Incorrect, SR channels N-31 and N-32 will remain deenergized but not for the reason listed.

C. Correct, SR channel N-32 will remain deenergized due to P-10, and N31 will remain deenergized due to the loss of the vital bus.

D. Incorrect, SR channel N-31 has no power, and N-32 will not reenergize.

QUESTIONS REPORT
for SURRY2002

39. 033K1.05 001/T2G2/T2G2/RWST/C/A 2.7/2.8/N/SR02301/C/RLM

The following are conditions for Unit 1:

- 100% power
- No abnormal alarms are indicated in the control room
- Maintenance activities are in progress on the Fire Protection System in the Auxiliary Bldg.
- The Spent Fuel Pit purification system has been realigned from RWST purification to Spent Fuel Pit purification
- The Aux Bldg Operator reports that the Spent Fuel Pit level has decreased 2 inches from its previous reading
- A check of the Component Cooling Water Surge Tank level indicates that level has decreased slightly since the previous log reading.

Which one of the following is the cause of the decrease in the Spent Fuel Pit level?

- A. Improper alignment associated with the maintenance activities on the Fire Protection system.
- B. Improper alignment of the Spent Fuel Pit purification system.
- C. Leakage between the Component Cooling Water system and the Spent Fuel Pit Cooling system.
- D. A seal failure on the non-operating Spent Fuel Pit Cooling Water pump.

Ref: Surry lesson plan ND-92.5-LP-6, objective D

Answer A is incorrect because the fire mains system is a makeup source

Answer C is incorrect because spent fuel pit water leaks into the CCW system

Answer D is incorrect because the stem of the question state no abnormal alarms, which includes sump alarms, are illuminated.

Answer B is correct because an improper alignment of the purification system can pump water from the SFP to the RWST.

40. 034G2.1.27 001/T2G3/T2G2/UPENDER/M 2.8/2.9/N/SR02301/C/RLM

Which one of the following represents the purpose of the Micro-Computer Programmable Limit Switch in the fuel handling system?

- A. To control the speed and stopping positions of the New Fuel Elevator.
- B. To control the speed and stopping positions of the Manipulator Crane Hoist.
- C. To control the speed and stopping positions of the Up-ender.
- D. To control the speed and stopping positions of the Spent Fuel Pool Crane Auxiliary Hoist.

Surry lesson plan: ND-92.5-LP-4, objective A & B

ND-92.5-LP-4, p.9

QUESTIONS REPORT
for SURRY2002

41. 035A1.01 001/T2G2/T2G2/S/G LEVEL/C/A 3.6/3.8/N/SR02301/C/RLM

With the plant operating at 65% power, a significant leak develops in the reference leg of level transmitter, 1-FW-LT-1486, (Channel 3) for the "B" S/G.

Which one of the following describes the effects on the "B" steam generator, if NO operator action is taken?

- A. Indicated steam generator level will decrease on 1-FW-LT 1486.
- B. Feed regulating valve will close to the "B" S/G.
- C. Level will equalize at some value significantly higher than original for the "B" S/G.
- D. Actual level in "B" SG level will be unchanged.

ND-93.3-LP-8, objective D

42. 038EK3.02 001/T1G2/T1G2/SECONDARY PORV/C/A 4.4/4.5/N/SR02301/C/RLM

A safety injection has occurred on Unit 2 due to a tube rupture in the A Steam Generator (SG). Steam Dumps failed to actuate. Pressure for each SG has stabilized at 980 psig. The B and C SG PORV's have modulated closed, but the A SG PORV appears to be cycling. (Assume all controllers are at the proper setpoints)

In accordance with 2-E-3, "Steam Generator Tube Rupture," which one of the following is the next required action and the reason for the action?

- A. Raise the pressure controller setpoint until the A SG PORV closes, because the PORV is a radioactive release point.
- B. Locally isolate the A SG PORV, because pressure in the ruptured SG should be maintained greater than the pressure in the intact SG's.
- C. Place the pressure controller in MANUAL and close the PORV, because pressure in the ruptured SG should be maintained greater than the pressure in the intact SG's.
- D. Locally isolate the A SG PORV, because the PORV is a radioactive release point.

Ref: Surry procedure 1-E-3, step 3 RNO

Surry lesson plan ND-95.3-LP-13, objective C

Surry lesson plan ND-95.3-LP-13, p.6

WOG background for E-3, p.57

QUESTIONS REPORT
for SURRY2002

43. 039A4.04 001/T2G2/T2G2/TDAFW PUMP/C/A 3.8/3.9/B/SR02301/C/RLM

The following plant conditions exist:

- Unit 1 has tripped from 100% power due to a Hi-Hi CLS event.
- Off-site power was lost following the reactor trip and the #1 Diesel Generator has failed to start.
- Steam Generator levels are 21% narrow range.

Which one of the following is the status of the Auxiliary Feedwater System 60 seconds after loss of off-site power?

- A. The 1-FW-3A, Motor Driven pump is OFF and the 1-FW-3B, Motor Driven and 1-FW-P2, Turbine Driven pumps are supplying Auxiliary Feedwater.
- B. The 1-FW-3A, Motor Driven and the 1-FW-P2, Turbine Driven pumps are OFF and the 1-FW-3B, Motor Driven pump is supplying Auxiliary Feedwater.
- C. BOTH Motor Driven pumps are ON supplying Auxiliary Feedwater and the Turbine Driven pump is OFF.
- D. BOTH Motor Driven pumps are OFF and the Turbine Driven pump is supplying Auxiliary Feedwater.

Ref: SR EB # 167

Surry lesson plan: ND-89.3-LP-4, objective B

44. 040AK2.02 001/T1G1/T1G1/MAIN STEAM BYPASS/M 2.6/2.6/B/SR02301/C/RLM

Operators responding to a Steam Line Rupture are required to check the Main Steam Trip Bypass Valve (MSTBV) closed on the affected steam generator.

Which one of the following describes how this step is accomplished?

- A. The most recent valve alignment procedure is reviewed for MSTBV position.
- B. MCR Operators know that the MSTBV is closed if there are no special procedures or special orders in effect that require the MSTBV to be open.
- C. Annunciator "MSTBV Out of Normal Position" is in alarm when any MSTBV is open.
- D. The Outside Service Building Operator is responsible for checking and reporting the position of the MSTBV whenever the reactor trips.

QUESTIONS REPORT
for SURRY2002

REF: EB# 32049

Surry Lesson Plan ND-95.3-LP-12, Rev 7, p.7.

Lesson plan objective C

Answer B is correct based on operational philosophy as specified in the referenced lesson plan.

Answers A and C are incorrect because there is no remote position indication for these valves.

Answer D is incorrect because it conflicts with operational philosophy as specified in the referenced lesson plan.

45. 041K5.07 001/T2G3/T2G3/REACTIVITY EFFECTS/C/A 3.1/3.6/N/SR02301/C/RLM

Unit 1 is starting up, near end of core life, in accordance with 1-GOP-1.5, "UNIT STARTUP, 2% REACTOR POWER TO MAX ALLOWABLE POWER."

-Rx power = 11%

-Tave = 550 degrees F

-Primary Pressure = 2235 psig

-Steam Dumps are in Pressure Control Mode and dumping steam to the condenser

-Main Turbine at Sync Speed

-Main Generator output breakers are open

As the operator increases dump demand using the Pressure Control Mode controller, the increase demand button sticks.

Which one of the following describes the initial effects on the Steam Dump system, Reactor (Rx) power and Tave?

- A. Steam Dumps open, Rx power increases and Tave decreases
- B. Steam Dumps close, Rx power decreases and Tave decreases
- C. Steam Dumps open, Rx power increases and Tave increases
- D. Steam Dumps close, Rx power decreases and Tave increases

Ref: Surry Lesson Plan ND-93.3-LP-9, objective F

Answer A correct because the dumps open to lower Steam Generator pressure. Steam flow increase causes Tave to decrease, late in core life means negative alpha T, means Rx power increases.

Answers B, C, and D are incorrect combinations of plant effects.

QUESTIONS REPORT
for SURRY2002

46. 045A3.11 001/T2G3/T2G3/EXCITER/M 2.6/2.9/N/SR02301/C/SURRY STAFF

In accordance with E-0, which one of the following describes the actions taken if the Main Generator fails to trip on a reactor trip/turbine trip?

- A. Manually open the generator output breakers only.
- B. Place the excitation control switch in OFF only.
- C✓ Manually open the generator output breakers and place the excitation control switch in OFF.
- D. Manually open the generator output breakers and check that the voltage regulator has automatically tripped.

Facility had to write new question due to out of date lesson plan on this subject.

47. 051AK3.01 001/T1G1/T1G1/STEAM DUMP INTERLOCK/M 2.8/3.1/B/SR02301/C/RLM

Given the following plant conditions:

- Unit 1 is operating at 100%
- Condenser vacuum is decreasing

Which one of the following condenser vacuum conditions will **first** result in the loss of condenser steam dumps?

- A. <25" Hg vacuum on 2 of 2 condenser pressure transmitters
- B. <20" Hg vacuum on 2 of 2 condenser pressure transmitters
- C✓ <25" Hg vacuum on 1 of 2 condenser pressure transmitters
- D. <20" Hg vacuum on 1 of 2 condenser pressure transmitters

Steam Dump Interlock vacuum setpoint >25"Hg on 2 of 2 pressure transmitters Surry Lesson Plan ND-93.3-LP-9, page 13

Main Turbine Low vacuum trip setpoint <20"Hg Surry Lesson Plan ND-89.2-LP-8, detractor Learning objective F of Lesson Plan ND-93.3-LP-9 requires knowledge of interlock setpoints. Original question from FA EB # 47859

QUESTIONS REPORT
for SURRY2002

48. 054AA1.02 001/T1G2/T1G2/AFW/C/A 4.4/4.4/N/SR02301/C/RLM

- Unit 1 is starting up in accordance with 1-GOP-1.5, "Unit Startup, 2% Power to Max Allowable Power" and is currently at 25% reactor power.
- The 1A Main Feed Pump is in service.
- Feedwater control is being transferred from the FW BYP FLOW HCV'S to the FEED REG FCV's and all SG's are overfed with 1A SG reaching 80%.

Which one of the following describes the expected status and required operator actions for the Auxiliary Feedwater system?

- A. No Auxiliary Feedwater pumps auto started, manually start all Auxiliary Feedwater pumps.
- B. Both Motor Driven Auxiliary Feedwater pumps delivering flow, manually start the Turbine Driven Auxiliary Feedwater pump as necessary.
- C. Turbine Driven Auxiliary Feedwater pump delivering flow, manually start Motor Driven Auxiliary Feedwater pumps after time delay times out.
- D. Turbine Driven Auxiliary Feedwater pump delivering flow, immediately manually start the Motor Driven Auxiliary Feedwater pumps.

Ref: Surry lesson plan ND-95.1-LP-4, objective F
Surry 1-AP-21, Loss of Main Feedwater Flow
Surry 1-E-0, Rx Trip or Safety Injection
Surry 1-GOP-1.5, Unit startup

49. 055EK3.02 001/T1G1/T1G1//M 4.3/4.6/B/SR02301/C/RLM

1-ECA-0.0, "Loss Of All AC Power," directs the operator to depressurize all intact SGs to 175 psig. The preceding caution states that the step should be accomplished at the MAXIMUM rate.

Which one of the following correctly describes the BASIS for the step and the caution?

- A. To minimize secondary coolant loss.
- B. To minimize RCS inventory loss.
- C. Prevent loss of pressurizer level.
- D. Prevent voiding in the reactor vessel head area.

QUESTIONS REPORT
for SURRY2002

REFERENCE

Lesson Plan ND-95.3-LP-17, Rev. 10, p.30

LP Objective B

Answer B is correct based on LP reference page 30

Answers C and D conflict with separate note on page 30

Answer A is incorrect because S/G's can't be blowdown to depressurize and maintain S/G inventory.

50. 055G2.1.28 001/T2G2/T2G2/AIR EJECTORS/C/A 3.2/3.3/N/SR02301/C/RLM

- Unit 1 has experienced a Steam Generator Tube Rupture
- The control room operators are currently executing 1-E-3, "Steam Generator Tube Rupture"

Which one of the following describes the operation and purpose of 1-TV-SV-102A, Air Ejector Containment Isolation Valve?

- A. It automatically closes to prevent a release to the environment.
- B. It automatically opens to provide a filtered vent path for continued Air Ejector operation.
- C. It automatically closes to provide Containment Isolation.
- D. It automatically opens to provide a flow path which allows RM-SV-111 to remain available for monitoring a release.

Ref: Surry lesson plan ND-89-LP-2, objective E and p. 13, 14 & 15
Valve normally open, only closes on SI.

51. 056AK3.01 001/T1G3/T1G3/LOAD SEQUENCE/C/A 3.5/3.9/N/SR02301/C/RLM

Unit 1 has suffered a DBA (HI-HI CLS), followed 10 minutes later by a LOOP.

Concerning the operation of the outside and inside recirculation spray pumps, following the loss of offsite power, which one of the following describes the correct plant response and reason?

- A. The outside recirc spray pumps start first because they have larger motors.
- B. The outside recirc spray pumps start first because the check valve keeps the spray header full of water.
- C. The inside recirc spray pumps start first because they have larger motors.
- D. The inside recirc spray pumps start first because of the shorter run of discharge piping to the containment recirc spray ring.

QUESTIONS REPORT

for SURRY2002

REF: Surry Lesson Plans ND-90.3-LP-7 and ND-91-LP-6

Lesson plan ND-90.3-LP-7, page 36 Rev. 14 contains the basis for answer B.

Answers A and C are wrong because the motors are the same size (See pages 5 and 9 of ND-91-LP-6). Answer D is wrong because in conflicts with ND-90.3-LP-7, page 36 Rev. 14

52. 056G2.1.32 001/T2G1/T2G1/CONDENSATE LIMITS/M 3.4/3.8/N/SR02301/C/RLM

-Unit 1 is starting up following a refueling outage.

-1-OP-CN-001, "Condensate System Operation," requires the discharge valve of the first condensate pump to be started to be throttled to 3 turns open.

Which one of the following is the basis for this limitation?

- A. To ensure adequate net positive suction head for the pump.
- B. To minimize the peak starting current.
- C. To minimize thermal shock on the system.
- D. To minimize water hammer on the system.

Ref: Surry lesson plan ND89.3-LP-2, objective E

Surry operating procedure, 1-OP-CN-001, Condensate System Operation, p.14

53. 057AA1.06 001/T1G1/T1G1/RHR FLOW CONTROL/M 3.5/3.5/N/SR02301/C/RLM

Unit 1 is in Cold Shutdown with RHR in service.

Which one of the following describes the response of the RHR discharge flow control valve (1-RH-FCV-1758) to a loss of Vital Bus 1-III, resulting in a loss of power to the control racks and Main Control station?

- A. Automatic and Manual control are lost.
- B. Only Automatic control is lost.
- C. Only Manual control is lost.
- D. The valve shifts to AUTO-HOLD, and Manual control is lost.

Ref: Surry Lesson Plan ND-90.3-LP-5, Objective: F

Surry Lesson Plan ND-90.3-A1A-5.1 Load list

Question rewritten due to facility comments on difficulty

QUESTIONS REPORT
for SURRY2002

54. 059AK3.03 001/T1G2/T1G1/INOPERABLE RM/M 3.0/3.7/N/SR02301/C/RLM

Annunciator 0-RM-P5, "1-SW-RI-107A HIGH," actuates and the control operator determines that 1-SW-RI-107A, CCHX Service Water Outlet, has failed.

Which one of the following is the reason for declaring 1-SW-RI-107A inoperable?

- A. To ensure that the radiation monitor is scheduled for repair.
- B. To ensure the requirement for compensatory sampling is evaluated.
- C. To ensure that radiation monitors 1-SW-RI-107B,C&D are operable.
- D. To ensure that the Component Cooling Water Surge Tank vent is shut.

Ref: Surry ARP 0-RM-P5, 1-SW-RI-107A HIGH
Surry Tech Spec 3.13, CCW
No specific learning objective found.

Assumption: Tech Spec 3.13 applies to rad monitor, RI CC 105/106 and not RI SW 107A,B,C,D

55. 059G2.4.31 001/T2G1/T2G1/FEED PUMP/C/A 3.3/3.4/N/SR02301/C/RLM

-Unit 1 is operating at 100% power
-Annunciator 1H-E8, "FW PP 1B LUBE OIL LO PRESSURE" alarms

In accordance with 1H-E8, which one of the following actions should be taken?

- A. Verify pump tripped by observing feed flow. If pump continuing to operate, trip the pump.
- B. Verify pump tripped by observing pump amps. If pump continuing to operate, trip the pump.
- C. Verify pump tripped by observing feed flow. If pump continuing to operate, locally check oil pressure.
- D. Verify pump tripped by observing pump amps. If pump continuing to operate, locally check oil pressure.

QUESTIONS REPORT
for SURRY2002

56. 059K3.03 001/T2G1/T2G1//C/A 3.5/3.7/M/SR02301/R/GWL

Unit 1 is at 90% power, and the "A" MFW pump trips.

Which one of the following describes the **First** plant response to the MFW pump trip?

- A. The reactor will trip on a loss of feedwater signal.
- B. A reactor trip will occur due to a main steam flow/ main feed flow mismatch and low Steam Generator level.
- C. The Auxiliary Feedwater Pumps automatically start on the trip of the MFW Pump.
- D. A reactor trip will occur due to lo-lo Steam generator level.

K/A 059K3.03

Ref: ND-95.1-LP-4 Modified from a question in Surry Exam bank.

57. 060AK2.02 001/T1G2/T1G2/VENTILLATION/C/A 2.7/3.1/N/SR02301/C/SURRY STAFF

The following Unit conditions exist:

- Both Units are at 100% power, steady state conditions.
- Annunciators RM-P3 and P4, 1-VG-RI-109 and 110 (Vent-Vent) are in high alarm.
- The alarms have been verified to be valid.
- The normal area supply and exhaust fans have been secured IAW 0-AP-5.20, Radiation Monitor System Ventilation Vent High Alarm.

Which one of the following describes the system response during the performance of aligning flow through 1-VS-F-58A, in accordance with IAW 0-AP-5.20, Radiation Monitor System Ventilation Vent High Alarm.

- A. When 1-VS-F-58A is started on the affected area, the Vent-Vent activity will decrease due to flow being filtered by the CAT I filter.
- B. When 1-VS-F-58A is started on the affected area, the Vent-Vent activity will decrease due to flow being filtered by the CAT II filter.
- C. When 1-VS-F-58A is started on the affected area, the Vent-Vent activity will increase due to increased radionuclides in the exhaust stream.
- D. When 1-VS-F-58A is started on the affected area, the Vent-Vent activity will increase due to greater than normal vent stack flow when aligning using 0-AP-5.20, Radiation Monitor System Ventilation Vent High Alarm.

Ref: Rewritten during prep week by facility

Surry lesson plan: ND-93.5-LP-3, objective D

Surry 0-AP-5.21

QUESTIONS REPORT

for SURRY2002

58. 061K2.02 001/T2G1/T2G1/LOSS OF POWER/M3.7/3.7/M/SR02301/C/RLM

Unit 1 "H" bus has just experienced an electrical fault.

Which one of the following identifies the effects on the capability of the Auxiliary Feedwater System?

- A. The 1A MDAFW pump and MOV-FW-151 B, D, F are inoperable.
- B. The 1B MDAFW pump and MOV-FW-151 B, D, F are inoperable.
- C✓ The 1A MDAFW pump and MOV-FW-151 A, C, E are inoperable.
- D. The 1B MDAFW pump and MOV-FW-151 A, B, C are inoperable.

Ref: SR EB # 175

Surry lesson plan ND 89.3-LP-4, objective B and ND-90.3-LP-7

Answer A incorrect due to 151 B, D, F being B train powered valves (J bus)

Answer B incorrect due to B MDAFW and 151 B, D, F being B train powered valves (J bus)

Answer C correct due to A MDAFW and 151 A, C, E being A train powered valves (H bus)

Answer D incorrect due to B MDAFW being B train powered (J bus)

59. 062AA1.05 001/T1G1/T1G1/SURGE TANK/C/A 3.1/3.1/N/SR02301/C/RLM

-Unit 1 is at 100% power.

-The unit is scheduled for a Refueling shutdown at the end of the week.

-Maintenance activities are in progress which cause 1-SW-MOV-102 A and B, "Component Cooling Supply valves" to close.

Which one of the following effects would occur? (Assume no operator actions have been taken)

- A. Reactor power would slightly increase and Component Cooling Surge Tank level will increase.
- B. Reactor power would slightly increase and Component Cooling Surge Tank level will decrease.
- C✓ Reactor power would slightly decrease and Component Cooling Surge Tank level will increase.
- D. Reactor power would slightly decrease and Component Cooling Surge Tank level will decrease.

QUESTIONS REPORT
for SURRY2002

Ref: Surry lesson plans; ND-88.3-LP-2, p.9
ND-89.5-LP-2, objective H
ND-88.5-LP-1, objective G
ARP 0-VSP-D7 (CCW surge tank hi-lo)

Answer C is correct because loss of Service water will cause CCW to heat up and expand, causing the surge tank level to increase. Reactor power will decrease due to the letdown demin beds releasing boron due to temperature rise.

Note to self: Need to check to see if LI-OH resin releases boron on heat up. If so, remove the end of life statement in stem. Surry uses H-OH resin at end of life.

60. 062K1.02 001/T2G2/T2G2//C/A 4.1/4.4/B/SR02301/R/GWL

A complete loss of off-site power has occurred and the following conditions exist:

- #1 EDG is supplying 1H bus.
- #2 EDG is inoperable.
- #3 EDG is supplying 2J bus.
- The AAC Diesel has auto-started and functioned normally.

Which one of the following would restore power to all Unit 1 and Unit 2 emergency busses without a procedure change?

- A. Crosstie 2H and 2J busses; supply 1J bus with the AAC Diesel.
- B. Supply 1J bus with #3 EDG; supply 2H and 2J with the AAC Diesel.
- C. Crosstie 1H and 1J busses; supply 2J bus with the AAC Diesel.
- D. Supply both 1J and 2H busses with the AAC Diesel.

From Surry Exam Bank Question # 756
Lesson Plan ND-90.3-LP-9 OBJ. D and E.
Answer: D

**QUESTIONS REPORT
for SURRY2002**

61. 063A2.01 001/T2G2/T2G1/D C/C/A 2.5/3.2/N/SR02301/C/SURRY STAFF

The following Unit conditions exist:

- Unit 1 is at 100% power, steady state conditions.
- The operator notices the DC Ground Detection light is dim.
- During a Main Control Board walkdown, the operator observes that the white light for 1-FW-P-3A, "A" AFW pump, is out.

Which one of the following could cause the white light to be out?

- A. "1H" bus is de-energized.
- B. A hard ground exists on the "A" DC bus.
- C. The "B" DC bus indicates <75 volts DC.
- D. Operation from the Auxiliary Shutdown Panel has been selected.

Ref: Surry lesson plans: ND-90.3-LP-6, obj A & D, and ND-88.1-LP-9, obj H & I

Surry staff rewrote question during prep-week due to perceived difficulty with original.

62. 063A4.02 001/T2G2/T2G1//M 2.8/2.9/B/SR02301/C/GWL

Which one of the following is an indication of a "10K positive ground" on a 125 VDC Bus?

- A. Bus Voltage indication is HIGH, current indication is LOW, and BOTH the control board ground indicating lights go BRIGHT.
- B. Bus Voltage indication is LOW, current indication is NORMAL, and BOTH the control board ground indicating lights go DIM.
- C. Bus Voltage indication is NORMAL, current indication is NORMAL, and one control board ground indicating light goes BRIGHT and the other goes DIM.
- D. Bus Voltage indication is HIGH, current indication is LOW, and BOTH the control board ground indicating lights go OFF.

QUESTIONS REPORT
for SURRY2002

Ref: Surry Exam Bank question # 723.

Surry lesson Plan ND-90.3-LP-6 objective C; ND-90.3-LP-7 objective F.

- A. Incorrect, One ground indicating light should be bright and one should go dim.
- B. Incorrect, One ground indicating light should be bright and one should go dim.
- C. Correct, The ground indication light should be off if a ground is present, and the voltage and current should be normal.
- D. Incorrect, The ground indication lights, one should be dim and one should be bright if a ground was present, however the voltage would not be high and the current should not be low.

63. 064A2.06 001/T2G2/T2G2//C/A 2.9/3.3/N/SR02301/C/SURRY STAFF

- A LOOP has occurred on Unit 1.
- AP-10.07 "Loss of Unit 1 Power" is in progress.
- The #1 EDG is the only source of power to the 1H Bus.

Which one of the following describes the limitations and basis for running the "A" CC pump in this condition?

- A. The "A" CC pump should not be run because the # 1 EDG is not sized to handle the starting current.
- B. The "A" CC pump can not be started because 15H9, Stub bus supply breaker, is interlocked to prevent closure when the #1 EDG is the only source of power to the 1H Bus.
- C. The "A" CC pump should not be started because the # 1 EDG could become overloaded if a HI-HI CLS signal was in progress.
- D. The "A" CC pump can not be started because the pump breaker 15H10 is interlocked and will not close when # 1 EDG is the sole source of power to the 1H Bus.

Surry Lesson Plan: ND-90.3-LP-1. Objective I.

- A. Incorrect, The EDG is sized to start the CC pump.
- B. Incorrect, The A CC pump can be started, and 15H9 is not interlocked to prevent closure.
- C. Correct, According to the note in AP-10.07 " Loss of Unit 1 Power": When the EDG is the only source of power to an Emergency Bus, the associated Component Cooling pump should not be in service if a Hi-Hi CLS is in progress.
- D. Incorrect, The A CC pump breaker does not have this interlock.

QUESTIONS REPORT
for SURRY2002

64. 067AK1.02 001/T1G1/T1G1//M 3.1/3.2/B/SR02301/C/GWL

A fire has been reported in a small oil-cooled transformer in the switch yard. The transformer may be energized.

Which one of the following indicates the fire class rating of the portable fire extinguisher that MUST be used in this situation?

- A. A and B
- B. C and D
- C. A and D
- D. B and C

Surry Exam bank question # 288.
AP- 48.00.

65. 068AK2.03 001/T1G1/T1G1//M 2.9/3.1/B/SR02301/C/GWL

- Both Units are being shutdown due to a fire in the Main Control Room.
- The main turbine has failed to trip using the MANUAL push-buttons.
- The main steam trip valves (MSTVs) will not close from the Main Control Room.

Which one of the following alternate methods should be used to minimize RCS cooldown per 0-FCA-1.00, "Limiting MCR Fire?"

- A. Manually ramp the main turbine down prior to leaving the Main Control Room.
- B. Close the MSTVs using the FIRE EMERG CLOSE switch on APP R Panel in ESGR.
- C. Dispatch an operator to trip the auto stop oil pump locally at the pump.
- D. Open the main generator output breakers.

Ref: Surry Exam bank question #885.
Lesson Plan ND-95.6-LP-3 Objective B.

A, C, D, Incorrect, The procedure has the operator Close the MSTVs using the FIRE EMERG CLOSE switch on APP R Panel in ESGR.

B. Correct. Based on procedure.

QUESTIONS REPORT
for SURRY2002

66. 068K6.10 001/T2G1/T2G1//C/A 2.5/2.9/B/SR02301/C/GWL

The Unit is operating at 100% power when the following alarms annunciate on the Radiation Monitoring (RM) Alarm Panel.

- Discharge Tunnel Alert.
- Discharge Tunnel High.

The Third Control Room RO notes the following:

Red and Yellow alarm Lights are lit.
The Green light is out.
Meter indication is 100,000 cpm.

Which one of the following actions shall be taken in response to these indications?

- A. No Actions are required since the RM is inoperable.
- B. Continue any LW releases as long as HP is obtaining grab samples.
- C. Verify all automatic actions have occurred, then direct HP to obtain grab samples.
- D. Secure all LW releases. If RS is in service, ensure RS SW radiation monitors are operable.

Surry Exam bank question # 1977.
Lesson plan ND-93.5-LP-1 Objective A.

67. 069AA2.01 001/T1G1/T1G1/CONTAINMENT INTEGRIT/M 3.7/4.3/B/SR02301/R/RLM

Which one of the following conditions is a loss of containment integrity as defined in Technical Specifications?

- A. The emergency air lock inner door is found with strong backs installed at intermediate shutdown.
- B. The fuel transfer tube blind flange is not installed with the fuel building transfer tube valve shut while in intermediate shutdown.
- C. The leakage rate of a containment penetration exceeds the limits of Technical Specifications while in COLD SHUTDOWN.
- D. An inner airlock door seal is leaking and the outer door is opened for 2 minutes to allow access for repairs during power operation.

SR EB #TS00001
Lesson Plan ND-88.4-LP-2, objective E
Technical Specifications

QUESTIONS REPORT
for SURRY2002

68. 071A2.09 001/T2G1/T2G1//C/A 3.0/3.5/B/SR02301/R/GWL

The "A" WGDT is in service when the relief valve on that tank lifts and fails to reseal.

Which one of the following describes the effects of this event?

- A. The release will not be automatically isolated but will be monitored by the Vent-Vent radiation monitor.
- B. The discharge will be automatically isolated when the Process Vent radiation monitor reaches the high alarm setpoint.
- C. The discharge will be automatically isolated when the Vent-Vent radiation monitor reaches the high alarm setpoint.
- D✓ The release will not be automatically isolated but will be monitored by the Process Vent radiation monitor.

Surry Exam bank question.

Ref: ND-93.5-LP-1 and ND-93.5-LP-3 and ND-92.4-LP-1

Answer: D

69. 071A4.07 001/T2G1/T2G1/FLOW CONTROLLER/C/A 3.0/3.0/N/SR02301/C/RLM

- A Waste Gas Decay Tank release is in progress on Unit 1
- FI-GW-101 indicates 2.0 CFM
- FCV-GW-101 is in manual and being controlled by an operator

Which one of the following will cause the flow rate to decrease?

- A. A containment vacuum pump trips.
- B. Aux Bldg Supply Fan HV-1A trips.
- C✓ A process vent blower trips.
- D. Waste gas pressure control valve 1-PCV-GW-103 fails open.

QUESTIONS REPORT for SURRY2002

Ref: Surry Lesson Plan ND-92.4-LP-1, obj E

Answer A is incorrect because tripping the containment vacuum pump will decrease the exhaust into the common header shared by the Waste Gas FCV. This will cause the pressure in the header to decrease, which will in turn cause d/p across the FCV increase thus causing the flow across the fixed position WGDT discharge valve to increase.

Answer B is incorrect because tripping the supply fan in Aux Bldg will cause Aux Bldg pressure to decrease, causing less flow to enter the common header. This will cause the pressure in the header to decrease, which will in turn cause d/p across the FCV increase thus causing the flow across the fixed position WGDT discharge valve to increase.

Answer C is correct because the process vent blower tripping causes the header pressure upstream of the fan to increase. This will cause the pressure in the header to increase, which will in turn cause d/p across the FCV decrease thus causing the flow across the fixed position WGDT discharge valve to decrease.

Answer D is incorrect, because the PCV is upstream of the FCV and failing open causes the d/p across the FCV to increase and thus flow to increase.

70. 072A2.02 001/T2G1/T2G1/DETECTOR FAILURE/C/A 2.8/2.9/N/SR02301/C/RLM

Unit 1 is in a Refueling Outage with Containment Purge in operation.

The FAIL' alarm actuates on Area Radiation Monitor 1-RM-RI-161, Containment High Range Gamma.

Which one of the following indicates a detector failure and what action should be taken?

- A. Main Processor Unit (MPU) FAILURE, verify Containment Purge valves close and the supply fans trip.
- B. NO COUNT FAILURE, initiate a work request.
- C. Main Processor Unit (MPU) FAILURE, verify containment instrument air is swapped to outside suction.
- D. NO COUNT FAILURE, verify Containment Purge valves close and the supply fans trip.

Ref: Surry lesson plan: ND-93.5-LP-1, obj A

Answers A & D incorrect because this rad monitor does not affect purge operation (RM-159,160 or 162)

Answer C incorrect because it relates to a 'watch dog circuit' internal to the panel

Answer B correct because a detector or high voltage failure actuates this alarm and in the absence of other guidance, ARP 1-RM-K7 for this instrument indicates writing a work request if instrument has failed.

QUESTIONS REPORT
for SURRY2002

71. 072K5.02 001/T2G1/T2G1/AREA RAD MONITOR/C/A 2.5/3.2/N/SR02301/C/RLM

- Area Radiation Monitor 1-RM-RI-156, "Aux Bldg Sample," is being returned to service following routine maintenance.
- The control room operator is performing a test in accordance with 0-OPT-RM-001, "Operations Periodic Test" using the CHECK SOURCE push-button.
- The Alert/Failure and High Alarms DO NOT actuate.

Which one of the following could be the cause of the alarm response?

- A. The operator failed to hold the CHECK SOURCE push-button for a sufficient length of time.
- B. The radioactive source was inadequately exposed to the detector.
- C✓ The CHECK SOURCE source signal failed to insert into the detector circuit.
- D. The radioactive source has decayed beyond its useful life.

Ref: Surry Lesson Plan: ND-93.5-LP-01, obj. A
0-OPT-RM-001, Rad Monitor Equipment Check
0-OP-RM-001, Rad Monitoring System

Note: There is a discrepancy between the lesson plan and the ARMS procedures. The lesson plan indicates that the check source is a radioactive source. The Operating and Periodic Test procedures indicate that they are electronic signals fed into the detector circuit.

Answer C is correct in that these monitors do not have a physical radioactive source.

72. 073G2.1.32 001/T2G2/T2G2/PRECAUTIONS/M 3.4/3.8/N/SR02301/C/RLM

A radiation monitor, which causes automatic actuations, is being de-energized for routine maintenance.

Which one of the following is NOT required PRIOR to removing power?

- A✓ Review applicable section(s) of the Offsite Dose Calculation Manual
- B. Review applicable Abnormal Procedure(s)
- C. Review applicable section(s) of the Tech Specs
- D. Review applicable annunciator Response Procedure(s)

Ref: Surry Operating Procedure, 0-OP-RM-001, Radiation Monitoring System, p. 10

No specific learning objective found.

**QUESTIONS REPORT
for SURRY2002**

73. 074EA2.01 001/T1G1/T1G1/SUBCOOLING/C/A 4.6/4.9/B/SR02301/R/RLM

Unit 1 has tripped from 100% power due to a Loss of Coolant Accident

- Pressurizer pressure is 450 psig
- Thot is 430 degrees F
- Tcold is 400 degrees F
- Tave is 415 degrees F
- CETCs indicate 435 degrees F

Which one of the following is the RCS Subcooling Margin?

- A. 15 degrees F
- B. 25 degrees F
- C. 30 degrees F
- D. 45 degrees F

REF: Source SR EB #43926
F-2, "Core Cooling", Dwg # CB380
Steam Tables
Lesson Plan ND-83-LP-3-DRR, p.9.
Learning objective: F

74. 075K1.08 001/T2G2/T2G2/SWS TO CW/M 3.2/3.2/N/SR02301/C/RLM

Which one of the following describes where the Emergency Service Water lines connect to Circulating Water?

- A. Discharges immediately downstream of the Circulating Water pumps.
- B. To each high level intake structure.
- C. To the vacuum priming house.
- D. Discharges directly into the intake canal.

Ref: Surry Lesson Plan ND-89.5-LP-2, obj H

QUESTIONS REPORT
for SURRY2002

75. 076AA1.04 001/T1G1/T1G1//M 3.2/3.4/M/SR02301/C/GWL

Which one of the following describes the function of 1-CH-RI-118, "Reactor Coolant Letdown Alert" monitor?

- A. Provides indication of failed fuel at power, Isolates letdown on a High Radiation Alarm.
- B. Provides indication of failed fuel at power, No automatic actions.
- C. Provides indication of failed fuel only while shutdown, Diverts letdown on a High Radiation Alarm.
- D. Provides indication of ion exchanger efficiency, Diverts letdown on High Radiation Alarm.

Modified from question on Summer (2000) Exam.
Surry Lesson Plan ND-93.5-LP-1 Objective B.

- A. Incorrect, while this radiation monitor does monitor for failed fuel, it does not isolate anything.
- B. Correct, provides indication of fuel failure at power, has not automatic interlocks.
- C. Incorrect, provides indication of fuel failure at power and has no automatic actions.
- D. Incorrect, does not give an indication of ion exchanger efficiency, and has no automatic actions.

76. 076K3.01 001/T2G3/T2G3/SERVICE WATER FOULIN/C/A 3.4/3.6/N/SR02301/R/RLM

-Unit 1 is at 100% power
-1-VS-S-1B, "Self Cleaning Strainer" supply to #3 MER has failed due to a broken shaft and has been bypassed to allow repairs to be made to the strainer.
-Annunciator 0-VSP-D5 MER-3, "Chiller Trouble" illuminates.
-The Inside Service Building Operator reports the in service chiller unit, 1-VS-E-4C has tripped on High Pressure Cutout.
-The 1-VS-E-4B chiller is started and trips on High Pressure Cutout after about 20 minutes of operation.

Which one of the following is the most probable cause of the chiller tripping?

- A. The bypass valve for 1-VS-S-1B Self Cleaning Strainer is not fully open.
- B. The heat load on the chiller is above the design capacity.
- C. Excessive system backpressure downstream of the chillers.
- D. The chiller Service Water pump strainers are clogged.

QUESTIONS REPORT
for SURRY2002

Ref: Surry Lesson Plan ND-89.5-LP-2, obj E and I
Surry ARP 0-VSP-D5

Allowed the use of a drawing of system to be used on test.

Answer A is incorrect because the other train of Service Water remains in service and has 100% capability.

Answer B is incorrect because the design capacity of the chiller does not change

Answer C is incorrect because three separate PCV's would have to have a common mode failure to affect all chillers

Answer D is correct based on the most recent change to the system (bypassing the strainer) has been the placing in service of a stagnant service water line.

Note: Need to verify Procedure 0-OP-VS-006. Also, if high oil temp on charging pump gives direct control room alarm, would prefer to use it vice 2nd chiller.

77. 079G2.4.49 001/T2G2/T2G2/SERVICE AIR/C/A 4.0/4.0/B/SR02301/C/RLM

- Unit 1 is operating at 100% power.
- The team is responding to a loss of instrument air pressure in accordance with ARP B-E6 "IA Low Pressure/IA Compressor #1 Trouble."
- The RO notes the following:
 - letdown has isolated
 - a MSTV closed annunciator has alarmed, and
 - an intermediate indication of the "A" MSTV exists

Which one of the following describes the teams response to these conditions?

- A. Continue actions of ARP B-E6 and secure non-vital service air loads.
- B. Continue actions of ARP B-E6 and direct start of Sullair Diesel Driven Air compressor.
- C✓ Perform AP-40.00 actions, trip the reactor, perform the immediate actions of E-0 and concurrently perform actions of EOP's and AP-40.00.
- D. Perform AP-40.00 actions and concurrently perform actions of ARP B-E6.

Ref: SR EB # 356

Lesson Plan: ND-95.1-9, obj A & B

QUESTIONS REPORT
for SURRY2002

78. 103A4.09 001/T2G3/T2G2//M 3.1/3.7/B/SR02301/R/GWL

A High Alarm Trip of Process Vent Radiation Monitor R1-GW-101/102 occurs.

Which one of the following is the required operator action and reason for that action?

- A. Stop Containment Vacuum (CV) pumps to prevent blowing off discharge hose.
- B. Place filter selector switches for areas tripped to close to isolate all release paths.
- C. Stop Containment Vacuum (CV) pumps to prevent collapsing suction hoses.
- D. Place filter selector switches for areas tripped to filter position to provide filtered release.

Ref: Surry exam bank question 1980.
Lesson Plan ND-88.4-LP-5 Objective C.

79. G2.1.1 001/T3/T3/SHIFT TURNOVER/M 3.7/3.8/B/SR02301/C/GWL

A Unit 1 Control Room Operator (CRO) is preparing to relieve the on-shift CRO for a lunch break during a normal shift.

Which one of the following describes their required actions when this occurs?

- A. A log review, A shift relief checklist, and a Control Board Walkdown.
- B. A Control Board Walkdown, A shift relief checklist, informing the Unit SRO of the change.
- C. A log Review, A shift relief checklist, and informing the Unit SRO of the change.
- D. A Control Board Walkdown, A log review, and informing the Unit SRO of the change.

Surry Exam Bank Question # 24.
Virginia Power OPAP-0005, "Shift Relief and Turnover."

- A. Incorrect, a shift relief turnover is not required for short term turnover.
- B. Incorrect, a shift relief turnover is not required for short term turnover.
- C. Incorrect, a shift relief turnover is not required for short term turnover.
- D. Correct, these items are required IAW OPAP-0005.

QUESTIONS REPORT
for SURRY2002

80. G2.1.4 001/T3/T3/STAFFING/M 2.5/3.3/B/SR02301/C/RLM

The following plant conditions exist:

- Unit 1 is in HOT SHUTDOWN.
- Unit 2 is in COLD SHUTDOWN.

Which one of the following is the MINIMUM Shift Manning requirement for the Station for the conditions shown above in accordance with Tech Spec 6.1, Table 6-1-1, "Minimum Shift Crew Composition?"

	SS	SRO	RO	AOs	STAs
A.	1	1	2	4	0
B.✓	1	1	3	4	1
C.	1	0	3	3	1
D.	1	0	2	4	1

Ref: SR EB # TS00126

ND-88.1-LP-9, obj. F

Tech Spec 6.1, Table 6-1-1, "Minimum Shift Crew Composition"

81. G2.2.12 001/T3/T3/SURVEILLANCE USAGE/M 3.0/3.4/N/SR02301/C/RLM

Unit 1 is at 100% power

The Auxiliary Feedwater system engineer has called the control room and has requested that 1-OPT-FW-003, "Turbine Driven Auxiliary Feedwater Pump, 1-FW-P-2," be performed due to an emergent industry issue. The TDAFW pump test is **NOT** on the plan of the day.

Which one of the following is the correct action for the control room crew?

- A. Ensure that the Motor Driven Auxiliary Feedwater pumps are operable and perform the TDAFW test.
- B. Perform the TDAFW test AND request a Probabilistic Safety Analysis, PSA, evaluation be performed prior to the end of shift.
- C.✓ Request a PSA evaluation, then perform the TDAFW test based on the satisfactory outcome of the evaluation.
- D. Only approval from the OMOC prior to performing the TDAFW test is required.

QUESTIONS REPORT
for SURRY2002

Ref: Surry procedure: 1-OPT-FW-003, Turbine Driven Auxiliary Feedwater Pump 1-FW-P-2, p.9.

No specific object found.

The above concept will apply to any risk significant equipment.

82. G2.2.13 001/T3/T3/TAGGING/M 3.6/3.8/B/SR02301/C/RLM

Which one of the following is correct when Operator Standby is used, in accordance with OPAP-0010, "Tagouts?"

- A. A tagging record shall be generated and approved but no tags are hung.
- B. A tagging record is only required when Operator Standby is used on rotating equipment.
- C. A tagging record is not necessary for Operator Standby when used for less than 1 shift.
- D. A tagging record shall be generated, approved, and tags hung on the equipment.

Ref: SR EB # ADM0086

No lesson plan is available

83. G2.2.30 001/T3/T3/COMMUNICATIONS/M 3.5/3.3/N/SR02301/C/RLM

The operating crew is performing 1-OP-FH-001, "Controlling Procedure For Refueling."

Which one of the following describes an activity that requires communications to be established with the Control Room?

- A. Loading a spent fuel cask
- B. Insert shuffle
- C. Detentioning the reactor vessel head
- D. Upper internals lift

Ref: Surry lesson plan: ND-92.5-LP-1, objective E.

1-OP-FH-001, CONTROLLING PROCEDURE FOR REFUELING.

NOTE: Precautions and limitations require direct communications with manipulator crane any time evolutions are in progress which may affect reactivity. The procedure then cautions that rod latching/unlatching is a reactivity manipulation. Therefore, the procedure implicitly requires that communications to be established while latching/unlatching control rods.

QUESTIONS REPORT
for SURRY2002

84. G2.3.1 002/T3/T3/DOSE COMPONENTS/M / 2.6/3.0/N/SR02301/C/RLM

Which one of the following dose components are included in a Radiation Worker's Occupational Dose?

- A. Total Effective Dose Equivalent and Planned Special Exposures.
- B. Committed Effective Dose Equivalent and Planned Special Exposures.
- C. Total Effective Dose Equivalent and Committed Effective Dose Equivalent
- D. Deep Dose Equivalent and Committed Effective Dose Equivalent.

New question

Surry lesson plan ND-81.2-LP-3, Objective C, pp. 10

85. G2.3.2 001/T3/T3//C/A 2.5/2.9/M/SR02301/C/GWL

Operations has a task to be performed in the Auxiliary Building near a 20 foot line source that reads 300 mr/hr at (2) feet. Two options exist to complete the assignment:

Option 1: Operator A can perform the assignment in 1 hour, working at a distance of (4) feet from the line source.

Option 2: Operators B and C can perform the same task, using special extension tooling, in 90 minutes working at a distance of (9) feet from the source.

Which one of the following options should be selected according to the facility ALARA plan, and the resultant personnel exposure?

- A. Option 1 with a total dose of 75 mrem.
- B. Option 2 with a total dose of 45 mrem.
- C. Option 1 with a total dose of 150 mrem.
- D. Option 2 with a total dose of 200 mrem.

QUESTIONS REPORT
for SURRY2002

Modified From Surry Exam Bank Question # 1336.
Surry Lesson Plan ND-81.2-LP-3 objective F and L.
Changed to a line source question.

- A. Incorrect, This is the correct option, however the dose was determined by the point source method.
- B. Incorrect, This is not the correct method, and the dose was calculated using the point source method.
- C. Correct, this is the correct option and dose as determined by the line source method.
- D. Incorrect, this is not the correct option, but is the correct dose figured by the line source method.

86. G2.3.4 001/T3/T3//M 2.5/3.1/M/SR02301/C/GWL

Which one of the following is the MINIMUM Annual Total Effective Dose Equivalent (TEDE) dose above which a Radiation Worker will be excluded from the Radiologically Controlled Areas (RCA) until an extension is approved?

- A. 3.6 REM
- B. 3.8 REM
- C. 4.0 REM
- D. 4.5 REM.

ND-100-LP-22 Objective B.

Old Surry Exam Question 03/20/95, modified for yearly dose.

VPAP-2101 Page 33 of 101 Section 6.3.4.

- A. Incorrect, This dose is 400mr < the yearly admin limit.
- B. Correct, This dose is 200 mr < the yearly admin limit as outlined in VPAP-2101.
- C. Incorrect, This is the yearly admin limit.
- D. Incorrect, This is not the yearly limit - 200 mr.

QUESTIONS REPORT
for SURRY2002

87. G2.4.12 001/T3/T3/EMERG STAFFING/M 3.4/3.9/N/SR02301/C/RLM

- An ATWS occurred at 0100 and the operating crew manually tripped the reactor.
- The Shift Supervisor classified the event as an ALERT at 0110.
- The time is currently 0115.

Which one of the following personnel should perform the function(s) of the NRC Emergency Communicator?

- A. The Shift Technical Advisor
- B. A Step 7 operator
- C. A Step 4 operator
- D. An Operations Training instructor

Ref: Surry lesson plan ND-95.5-LP-1, obj C, pp. 5, 6 & 7

Answer A & C are incorrect in any situation.

Answer D is correct only after staff augmentation, which in this case would come from offsite.

88. G2.4.14 001/T3/T3/GO TO/M 3.3/3.9/N/SR02301/C/GWL

While in the Emergency Response procedures the team is directed to "Go To" another procedure, which one of the following is the correct implementation of this action?

- A. The "GO TO" implies the procedure in use is no longer applicable, and any tasks in progress need not be completed.
- B. Tasks still in progress must be completed prior to the transition directed by the "GO TO" step.
- C. The "GO TO" implies the procedure in use is no longer applicable, but any tasks in progress should be completed.
- D. Tasks still in progress need not be completed prior to the transition directed by the "GO TO" step, unless preceded by a bullet.

QUESTIONS REPORT
for SURRY2002

Surry Lesson Plan ND-95.3-LP-2 objectives # D and F.

- A. Incorrect, The tasks should be completed.
- B. Incorrect, Tasks in progress do not have to be completed prior to the transition.
- C. Correct, The previous procedure is no longer applicable and the tasks that were in progress should be completed.
- D. Incorrect. Tasks in progress need not be completed prior to the transition, a bulleted step can be performed in any order, and does not have to be performed prior to transition.

89. G2.4.20 001/T3/T3//C/A 4.0/4.3/M/SR02301/C/GWL

-The Plant is experiencing a Large Break LOCA.
-ES-1.3 "Transfer to Cold Leg Recirculation" has been entered.
-The SI has been Reset.
-The STA announces that Containment Pressure has increased to 25 psia.
-At step 2: "Verify SI Recirc Phase Heat Sink," the operators determine SW flow can only be verified to one RS HX.

Which one of the following describes the correct action(s) that should be taken?

- A. Immediately transfer to FR-Z.1 "Response to Containment High Pressure."
- B. Immediately transfer to ECA-1.1 "Loss of Emergency Coolant Recirculation."
- C. Hold at this step until SW has been established to at least two RS HXs.
- D. Continue with the alignment of the SI System for recirculation, then proceed to FR-Z.1.

Farley Exam Bank Question modified for Surry.
ND-95.3-LP-10 Objective C.

- A. Incorrect, Note prior to step 1 in ES-1.3 states that FRs should not be implemented.
- B. Incorrect, If at least one flow path from the sump to the RCS cannot be established or maintained then this would be the correct transition.
- C. Incorrect, SW must be established to at least 2 RS HXs and actions should be taken to do this but rules of usage and the note for the steps to be performed as quickly as possible , therefore the crew should continue through the first 4 steps and complete the alignment.
- D. This is the correct actions to perform upon completion of ES-1.3 the crew should implement FR-Z.1.

QUESTIONS REPORT
for SURRY2002

90. G2.4.39 001/T3/T3//M 3.3/3.1/B/SR02301/C/GWL

- An Emergency Event has been declared.
- You are an extra operator on shift.
- You are directed to serve as an Emergency Communicator.

Which one of the following statements describes the proper method of communication to the State and Local Governments and the DES when making Notifications in accordance with EPIP-2.01, "Notification of State and Local Governments?"

- A. Use the Automatic Ringdown Phone (ARD-DES) for making notifications to the State and Local Governments and the INSTAPHONE for notifying the DES.
- B. Use the Automatic Ringdown Phone (ARD-DES) for making all notifications to the State and Local Governments and the DES.
- C. Use the INSTAPHONE for making notifications to the State and Local Governments and the Automatic Ringdown Phone (ARD-DES) for notifying the DES.
- D. Use the INSTAPHONE for making all notifications to the State and Local Governments and all notifications to the DES.

Ref: Surry Exam Bank Question # 1110.
Surry Lesson Plan ND-95.5-LP-3 Objective D.

Check to see if C is still the correct answer the lesson plan and the Procedure seem to deviate some from each other.

91. G2.4.5 001/T3/T3//M 2.9/3.6/B/SR02301/C/GWL

Which one of the following describes when Critical Safety Function Status Trees (CSFTs) should be implemented/monitored in accordance with the rules of usage in the ERG Network?

- A. Functional Restoration Procedures are only monitored when two trains of safeguards equipment are available.
- B. CSFTs must be implemented initially upon entering E-0, "Reactor Trip or Safety Injection" to ensure barrier protection.
- C. When exiting from ECA 0.0, "Loss of All AC," CSFTs should be implemented immediately.
- D. When ECA 0.0, "Loss of All AC" is in effect, CSFTs should be monitored for information only.

QUESTIONS REPORT
for SURRY2002

Surry Lesson Plan ND-95.3-LP-2 objective F.
Question modified from Farley Exam Bank Question.

- A. Incorrect, FRPs assume at least one train of electrical power available.
- B. Incorrect, CSFs are not implemented until directed in E-0, or if E-0 is exited.
- C. Incorrect, CSFs should not be entered when leaving ECA-0.0, The ECA 0.1 or 0.2 procedures will direct when to implement CSFs.
- D. Correct, during a Loss of all AC the CSFs should only be monitored for information only the CSFs assume at least one train of electrical power is available.

92. WE01G2.4.5 001/T1G2/T1G1//M 2.9/3.6/B/SR02301/R/GWL

Which one of the following correctly describes the conditions that allow implementation of ES-0.0, "Re-Diagnosis?"

- A. Entry is based solely on operator judgement and ES-0.0 may be entered at any time.
- B. ES-0.0, may be entered anytime that an SI has been actuated, and an ERG is in effect.
- C. Entry is based on an SI being in service and E-0, "Reactor Trip/Safety Injection" has been completed.
- D. ES-0.0 may be entered anytime that the EOP's have been entered.

Surry Exam Bank Question # 903.
Surry Lesson Plan ND-95.3-LP-33 objectives A and B.

- A. Incorrect, ES-0.0 entry requires an SI to be in service and E-0 to be completed.
- B. Incorrect, E-0 must be completed.
- C. Correct, an SI must be in service, and E-0 has been completed.
- D. Incorrect, an SI must be present, and E-0 completed.

QUESTIONS REPORT
for SURRY2002

93. WE03G2.4.4 002/T1G2/T1G2//C/A 4.0/4.3/B/SR02301/R/GWL

-The team has transitioned to ES-1.1, "SI Termination" from E-1 "Loss of Reactor or Secondary Coolant."

-At step 4 of ES-1.1, the team secures all but one charging pump as directed.

Which one of the following describes the required operator actions in accordance with ES1.1 if RCS Pressure begins to decrease after the pump is secured?

- A. Restart the last charging pump secured and transition back to E-1, "Loss of Reactor or Secondary Coolant."
- B. Start another Charging pump to stabilize RCS pressure and continue with ES-1.1, "SI Termination."
- C. Manually re-initiate SI and Transition to E-0, "Reactor Trip or Safety Injection" step 4.
- D. Monitor RCS Pressure, if it continues to fall, then transition to ES-1.2, "Post LOCA Cooldown and Depressurization."

Surry Exam Bank Question # 1005, slightly modified.
Surry Lesson Plan ND-95.3-LP-8 and 9. Objective A.

- A. Incorrect, the procedure step directs a transition to ES-1.2 if RCS pressure continues to fall.
- B. Incorrect, the procedure does not direct another charging pump to be started in ES-1.1.
- C. Incorrect, SI re-initiation is not directed and the team would not transition to step 4 of E-0.
- D. Correct, If RCS pressure continues to fall the team is directed to transition to ES-1.2.

QUESTIONS REPORT
for SURRY2002

94. WE04G2.4.9 001/T1G2/T1G1//C/A 3.3/3.9/B/SR02301/R/GWL

- Unit 1 has experienced a SBLOCA.
- The team has entered and is performing actions in ECA-1.2, "LOCA Outside Containment."
- The operators are directed to close/verify closed SI-MOV-1890A, SI-MOV-1890B, and SI-MOV-1890C.
- RCS pressure continues to fall.

Which one of the following describes what actions should be performed next?

- A. Re-open SI-MOV-1890A and B, then transition to E-1, "Loss of Reactor or Secondary Coolant."
- B. Re-open SI-MOV-1890C, then transition to ECA-1.1, "Loss of Emergency Coolant Recirculation."
- C. Re-open SI-MOV-1890A and B, then transition to ECA-1.1, "Loss of Emergency Coolant Recirculation."
- D. Re-open SI-MOV-1890C, then transition to E-1, "Loss of Reactor or Secondary Coolant."

Surry Exam Bank, question #1007 slightly modified.

Surry lesson Plan ND-95.3-LP-21 objective A.

- A. Incorrect, SI-MOV 1890A and B are not reopend, and with pressure still decreasing the correct transition is to ECA 1.1.
- B. Correct, the procedure directs the operator to open SI-MOV 1890C to provide a flow path, and the correct transition is to ECA-1.1.
- C. Incorrect, SI-MOV 1890A and B are not reopend.
- D. Incorrect, the procedure directs the operator to open SI-MOV 1890C to provide a flow path, but the correct transition is to ECA-1.1.

QUESTIONS REPORT
for SURRY2002

95. WE05EK2.1 002/T1G2/T1G2//M 3.7/3.9/N/SR02301/R/GWL

- Unit 1 has experienced a Reactor Trip.
- E-0, "Reactor Trip or Safety Injection," has been completed and the team transitioned to ES-0.1, "Reactor Trip Response."
- Subsequently all AFW pumps were lost and the team entered FR-H.1, "Response to a Loss of Secondary Heat Sink."
- The operators have started a MFW pump and are beginning to open FRV bypasses to control flow.

Which one of the following describes the response of the FRV bypass valves if plant conditions met the coincidence for an SI?

- A. The FRV bypasses would remain open, all SI signals are blocked.
- B. The FRV bypasses would remain open, because they are controlled manually.
- C. The FRV bypasses would close, and could not be re-opened.
- D. The FRV bypasses would close, and could be re-opened by depressing the S/G level reset pushbuttons.

Surry Lesson Plan ND-89-3-LP-3 Condensate and Main Feed. Objectives B and D.
ND-95.3-LP-41 Response to Loss of Heat Sink. Objectives C and D.

- A. Incorrect, all SI signals are not blocked.
- B. ? Need help form utility, this is not covered in lesson material, do they have a manual operator and would this override the SI and FWI signal.
- C. Incorrect, the SI and FWI should be able to be reset, and the valves opened.
- D. Correct, ? Need more information.

QUESTIONS REPORT
for SURRY2002

96. WE08EK3.3 001/T1G1/T1G1//M 3.4/3.9/B/SR02301/R/GWL

- Unit 2 has experienced a main steam line break.
- All systems operated as designed.
- The Crew responded in accordance with the emergency operating procedures, and is currently in 2-FR-P.1, "Response to Imminent Pressurized Thermal Shock Condition."
- The crew has been directed by the procedure to perform a "SOAK."

Which one of the following evolutions can be performed during the "SOAK?"

- A. Warm up the Residual Heat Removal System and place it in service.
- B. Un-isolate the charging pump recirculation line.
- C. Raise steam generator water levels to 50% and secure auxiliary feedwater pumps.
- D. Energize the pressurizer heaters.

Ref: Question taken from North Anna Exam bank.
Surry Lesson Plan ND-95.3-LP-46 Objectives C and D.

- A. Incorrect, Warming up the RHR system could cooldown the RCS even more, and placing it in service would cooldown the RCS.
- B. Correct, un-isolating the charging pump recirculation line would tend to lower pressure, and would not raise pressure or cause a cooldown.
- C. Incorrect, raising steam generator water levels would cause an RCS cooldown.
- D. Incorrect, Energizing the pressurizer heaters would raise RCS pressure resulting in increased thermal stresses.

QUESTIONS REPORT
for SURRY2002

97. WE09G2.4.4 001/T1G1/T1G1//C/A 4.0/4.3/M/SR02301/C/GWL

- A Natural Circulation cooldown is in progress in accordance with ES-0.3, "Natural Circulation Cooldown" with steam Void in Reactor Vessel."
- Pressurizer level begins to rise rapidly.
- RVLIS indication lowers to < 78%.

Which one of the following courses of action is appropriate?

- A. Initiate SI, a pressurizer steam break is in progress.
- B. Transition to FR-I.3, "Response to voids in Reactor Vessel," due to voids in the reactor vessel.
- C. Stop the Natural Circulation Cooldown, pressurized thermal shock is imminent.
- D. Repressurize the RCS to maintain RVLIS full range greater than 78%, to force water back into the reactor vessel.

Ref: Surry Lesson Plan ND-95.3-LP-6 objective C.
Surry Exam bank question #3355 modified.

- A. Incorrect, the rising pressurizer level can be an indication of a Pressurizer steam break, but RVLIS level would not be lowering.
- B. Incorrect, FR-I.3 should not be entered while in ES-0.3 void growth is expected to occur.
- C. Incorrect, The cooldown does not need to be stopped, void growth has occurred and PTS is not imminent.
- D. Correct, the procedure has the operator raise RCS pressure to collapse the void in the vessel and regain RVLIS indication.

QUESTIONS REPORT
for SURRY2002

98. WE11EA1.1 001/T1G2/T1G2//C/A 3.9/4.0/N/SR02301/C/GWL

- A LOCA has occurred on Unit 1.
- The 1H 480 Emergency bus has tripped due to a fault on the bus, and cannot be re-energized.
- The Crew has progressed through E-1, "Loss of Reactor or Secondary Coolant," the crew is currently at Step 17, INITIATE EVALUATION OF PLANT STATUS.
- RCS pressure is 1000 psig and slowly lowering.
- CTMT Radiation monitors are elevated.
- Annunciator 1A-H4 "LHSI PP 1B LOCKOUT OR OL TRIP" has just illuminated.

Which one of the following describes the correct operator action for the listed conditions?

- A. Transition to ES-1.2, "Post LOCA Cooldown and Depressurization"
- B. Transition to ES-1.3, "Transfer To Cold Leg Recirculation"
- C. Transition to ECA-1.1, "Loss Of Emergency Coolant Recirculation"
- D. Transition to ECA-1.2, "LOCA Outside Containment"

Ref: Surry Lesson Plans. ND-95.3-LP-20 Objective A.

- A. Incorrect, if cold leg recirc capability was available this would be the correct transition.
- B. Incorrect, if this had been a large break LOCA and RWST level was <16 feet, this would be the correct transition.
- C. This is the correct transition with no LHSI pumps available.
- D. Incorrect, This would be the correct transition if the radiation alarms were in the aux. bldg.

NOTE: To help the question have more validity we may want to get the actual MCB annunciators for containment high radiation.

QUESTIONS REPORT
for SURRY2002

99. WE13G2.4.4 001/T1G3/T1G3//M 4.0/4.3/N/SR02301/C/SURRY STAFF

The following conditions exist on Unit 1:

- Trip from 100% power
- All SG NR levels are 36%
- All SG WR levels are 81%
- 1A&1C SG PORV's are cycling to maintain SG pressure.
- The 1B SG PORV is inoperable
- The first 1B SG safety is cycling 5 psig above ist design setpoint
- AFW flow indicates: 135 gpm on 1A SG, 140 gpm on 1B SG, and 130 gpm on 1C SG
- Containment conditions are normal

Which one of the following identifies the applicable yellow path?

- A. H.2
- B. H.3
- C✓ H.4
- D. H.5

Generated during prep week by Surry Staff

Surry Lesson Plan ND-95.3-LP-42A; ND-95.3-LP-43A; FR-H.4.

100. WE16EK1.3 001/T1G2/T1G2//M 3.0/3.3/B/SR02301/C/GWL

Which one of the following describes an entry criteria for FR-Z.3, "Response to Containment High Radiation Level?"

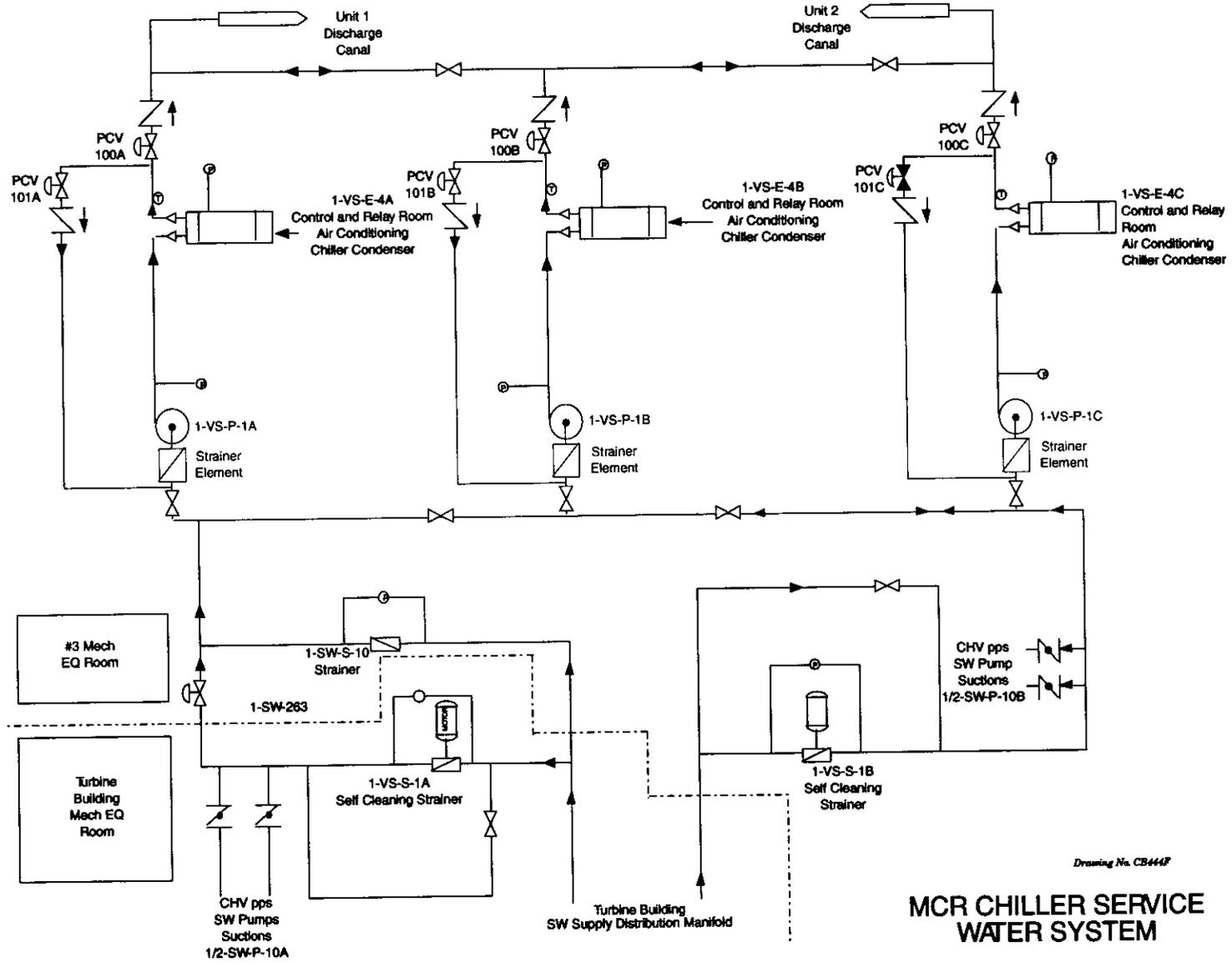
- A. High alarm reading on the Manipulator Crane radiation monitor.
- B. High alarm reading on the Reactor Containment Area radiation monitor.
- C✓ Greater than 3.0×10^2 on the CHRRMS radiation monitor.
- D. Greater than 50 uCi/cc on the Kaman Radiation High Range High Monitor.

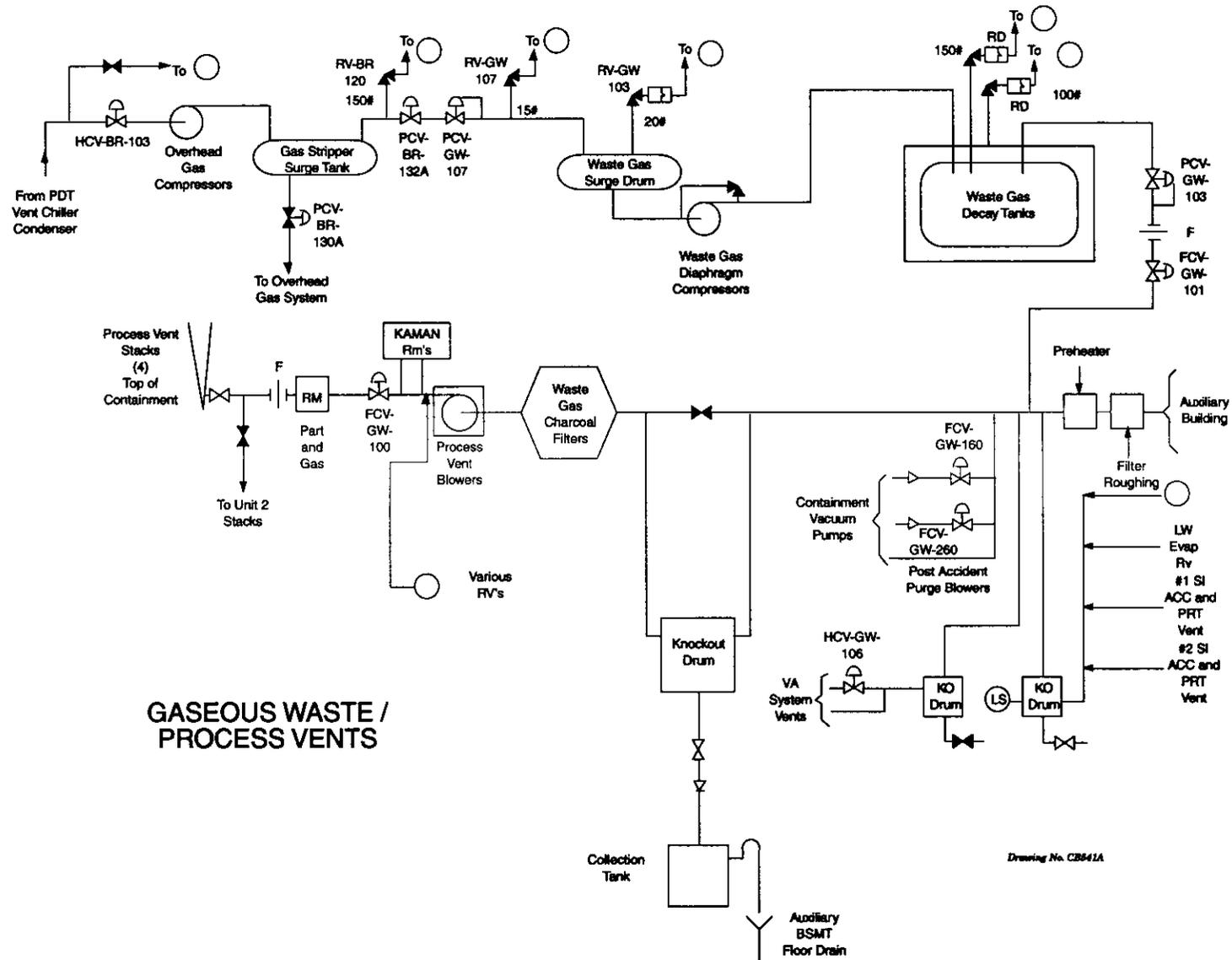
Surry Exam bank Question # 1032 slightly modified.

Surry Lesson Plans ND-95.3-LP-50A. ND-93.5-LP-1; and ND-L93.5-LP-3.

A,B, and D incorrect, FR-Z.3 is not entered based on any of these readings.

C, Correct, this is the value that will initiate entry in to FR-Z.3.





SURREY LORP EQUATION SHEETS

Reactor Physics/Health Physics

$$\Delta E = 931 \Delta m$$

$$\frac{1}{M} = \frac{CR_1}{CR_2}$$

$$P = P_0 e^{\left(\frac{1}{\tau}\right)}$$

$$P = P_0 10^{SUR(1)}$$

$$SUR = \frac{26.06}{\tau}$$

$$SUR = \frac{26\rho}{1 + (\beta - \rho)T}$$

$$SUR = \frac{26.06(\lambda_{eff}\rho)}{(\bar{\beta} - \rho)}$$

$$\tau = \frac{\bar{\beta} - \rho}{\lambda_{eff} - \rho}$$

$$\tau = \frac{l'}{\rho} + \left[\frac{(\bar{\beta} - \rho)}{\lambda_{eff}\rho} \right]$$

$$\lambda_{eff} = 0.1 \text{ sec}^{-1}$$

$$\rho^* = 2 \times 10^{-5} \text{ sec}$$

$$\tau = \frac{l'}{(\rho - \bar{\beta})}$$

$$\rho = \frac{\rho^*}{\tau} + \frac{\bar{\beta}}{1 + \lambda_{eff}\tau}$$

$$\rho = \frac{(K_{eff} - 1)}{K_{eff}}$$

$$K_{eff} = \frac{1}{(1 - \rho)}$$

$$CR_{SID} = \frac{S}{(1 - K_{eff})}$$

$$CR_1(1 - K_{eff1}) = CR_2(1 - K_{eff2})$$

$$DRW \propto \frac{\phi_{inp}^2}{\phi_{avg}^2}$$

$$SDM = \frac{(1 - K_{eff})}{K_{eff}}$$

$$A = A_0 e^{-\lambda t}$$

$$\lambda = \frac{\ln 2}{T_{1/2}}$$

$$E = mc^2$$

$$\frac{R}{hr} = \frac{6CE}{d^2(\text{feet})}$$

$$\frac{R}{hr} = \frac{(0.5CE)}{d^2(\text{meters})}$$

$$I_1 d_1 = I_2 d_2$$

$$I_1 d_1^2 = I_2 d_2^2$$

$$1 \text{ Curie} = 3.7 \times 10^{10} \text{ dps}$$

SURRY LORP EQUATION SHEETS
Thermodynamics/Fluid Dynamics

$$\dot{Q} = \dot{m} c_p \Delta T$$

$$\dot{Q} = \dot{m} \Delta h$$

$$\dot{Q} = UA \Delta T$$

$$\dot{Q} \propto \dot{m}^3 \text{ NatCirc}$$

$$\Delta T \propto \dot{m}^2 \text{ NatCirc}$$

$$KE = \frac{1}{2} m v^2$$

$$w = v \Delta P$$

$$\dot{W}_{\text{pump}} = \dot{m} \Delta P v$$

$$P_{wr} = W_f \dot{m}$$

$$P_{wr} = W_f \Delta h$$

$$\text{Cycle Efficiency} = \frac{\text{Net Work Out}}{\text{Energy In}}$$

$$s = v_0 t + \frac{1}{2} a t^2$$

$$v = s/t$$

$$V_f = V_0 + at$$

$$a = \frac{(V_f - V_0)}{t}$$

$$w = \frac{\theta}{t}$$

$$f = ma$$

$$w = mg$$

$$PE = mgn$$

$$F = PA$$

$$\dot{m} = v_{av} A \rho$$

$$\dot{m} = \rho A v$$

$$v(P_e - P_1) + \frac{1}{2}(v_e^{-2} - v_1^{-2}) + g(z_e - z_1) = 0$$

$$Z_1 + P_1 v_1 + \frac{v_1^{-2}}{2g} + h_p = Z_2 + P_2 v_2 + \frac{v_2^{-2}}{2g} +$$

$$g_c = \frac{32.2 \text{ lbf} \cdot \text{ft}}{\text{lbf} \cdot \text{sec}^2}$$

$$\dot{V} \propto N$$

$$H_p \propto N^2$$

$$BHP \propto N^3$$

$$H_L = K \frac{\dot{V}^2}{2}$$

$$H_L = f \frac{LV^2}{2D}$$

$$1 \text{ Mw} = 3.41 \times 10^6 \text{ Btu/hr}$$

$$1 \text{ hp} = 2.54 \times 10^3 \text{ Btu/hr}$$

$$1 \text{ Btu} = 778 \text{ ft} \cdot \text{lbf}$$

$$^\circ\text{C} = (5/9)(^\circ\text{F} - 32)$$

$$^\circ\text{F} = (9/5)(^\circ\text{C}) + 32$$

$$1 \text{ kg} = 2.21 \text{ lbf}$$

$$1 \text{ ft}^3 = 7.48 \text{ gal}$$

SURRY LORP EQUATION SHEETS

Electrical Theory

$$E = IR$$

$$R_T = R_1 + R_2 + R_3 + \dots$$

$$L_T = L_1 + L_2 + L_3 + \dots$$

$$C_T = \frac{1}{\frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3} + \dots}$$

$$I = \frac{E}{Z}$$

$$Z = \sqrt{R^2 + (X_L - X_C)^2}$$

$$Z = \frac{E}{\sqrt{I_R^2 + (I_L - I_C)^2}}$$

$$\theta = \tan^{-1} \frac{X_L - X_C}{R}$$

$$R_T = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \dots}$$

$$L_T = \frac{1}{\frac{1}{L_1} + \frac{1}{L_2} + \frac{1}{L_3} + \dots}$$

$$C_T = C_1 + C_2 + C_3 + \dots$$

$$\theta = \tan^{-1} \frac{I_L - I_C}{I_R}$$

$$I_R = \frac{E}{R}; \quad I_C = \frac{E}{X_C}; \quad I_L = \frac{E}{X_L}$$

$$F = k \frac{q_1 q_2}{r^2}$$

$$k = 9 \times 10^9 \frac{Nm^2}{C^2}$$

$$E = k \frac{q_1}{r^2}$$

$$P_n = 120 f$$

$$\text{Period}(T) = \frac{1}{f}$$

$$X_L = 2\pi f L; \quad X_C = \frac{1}{2\pi f C}$$

$$\text{Power} = EI \quad \text{or} \quad \text{Power} = VI$$

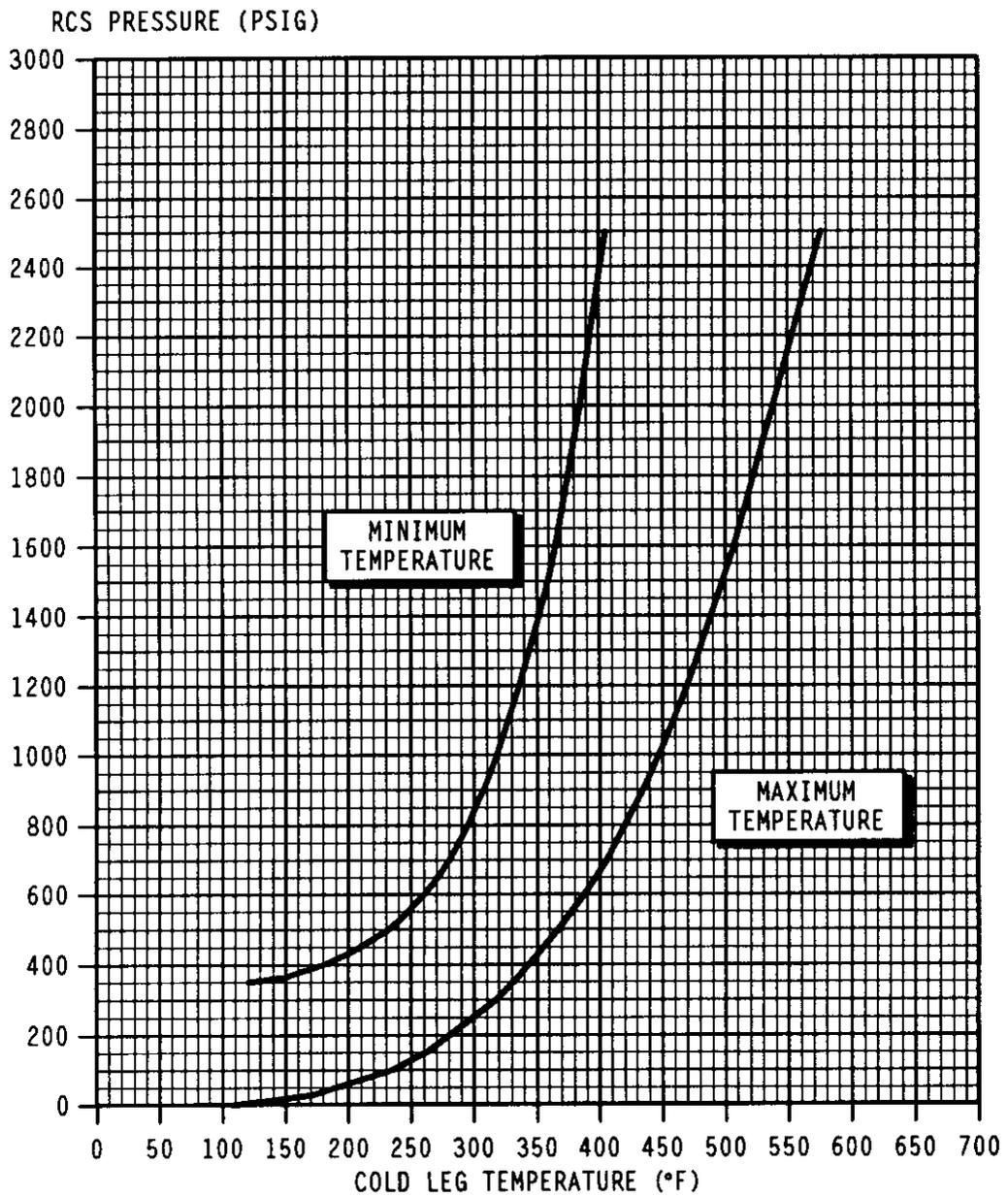
$$\text{Power Factor} = pf = \cos \theta$$

$$AP = VI; \quad TP = VI \cos \theta; \quad RP = VI \sin \theta$$

$$AP = \sqrt{3} VI$$

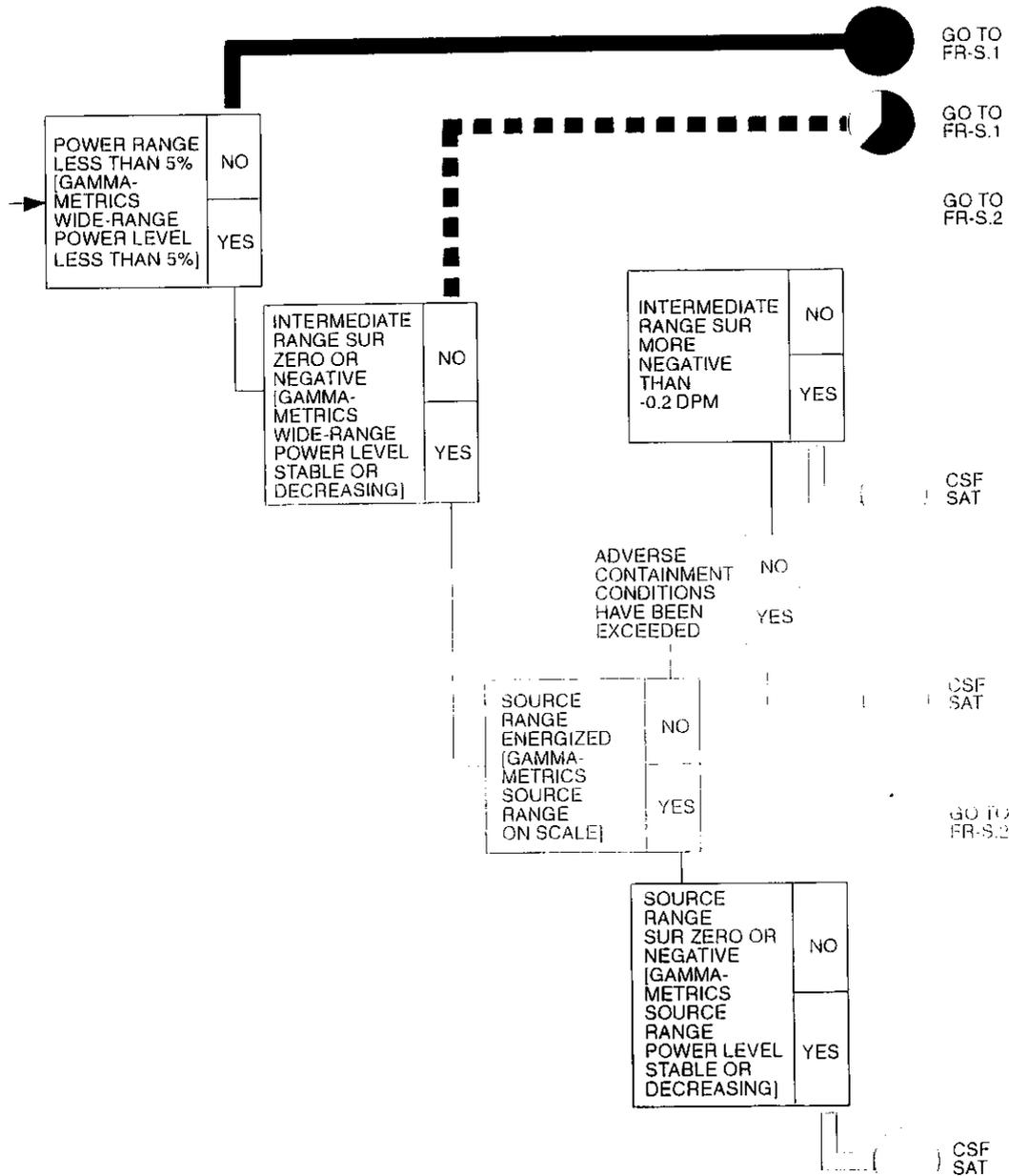
$$TP = \sqrt{3} VI \cos \theta; \quad RP = \sqrt{3} VI \sin \theta$$

NUMBER 1-ES-0.2	ATTACHMENT TITLE NATURAL CIRCULATION COOLDOWN WITH TWO OR MORE CRDM FANS IN OPERATION	REVISION 13
ATTACHMENT 2		PAGE 1 of 1



Number:	Title:	Revision:
F-1	SUBCRITICALITY	2

NOTE: IF adverse Containment conditions have been exceeded, THEN the Gamma-Metrics Excure Neutron Monitor system (Source and Wide Ranges) should be used to monitor neutron flux for the duration of the event.

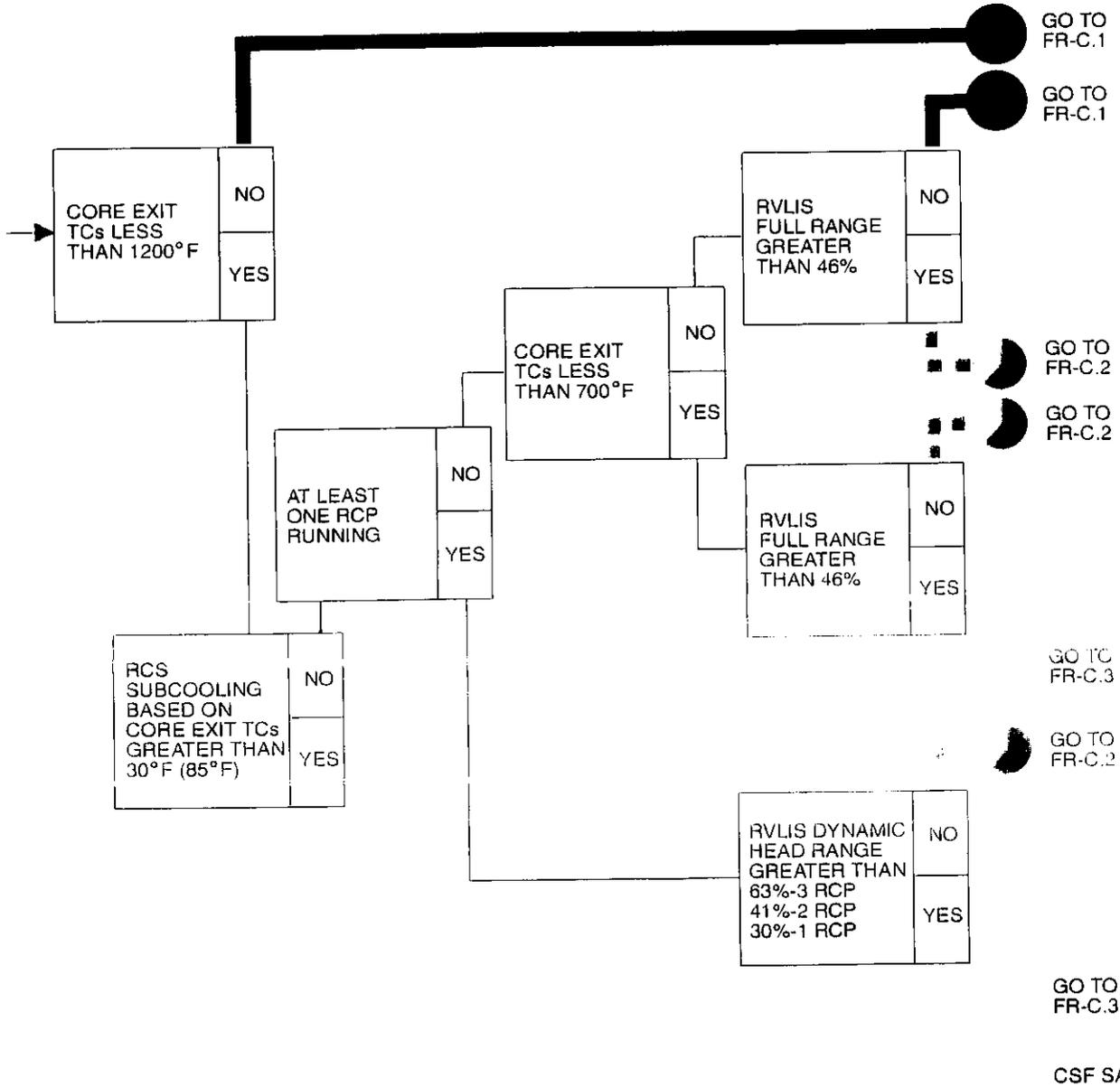


Drawing No. CH379B

SNSOC CHAIRMAN

DATE

Number:	Title:	Revision:
F-2	CORE COOLING	Rev-1A



APPROVAL ON FILE

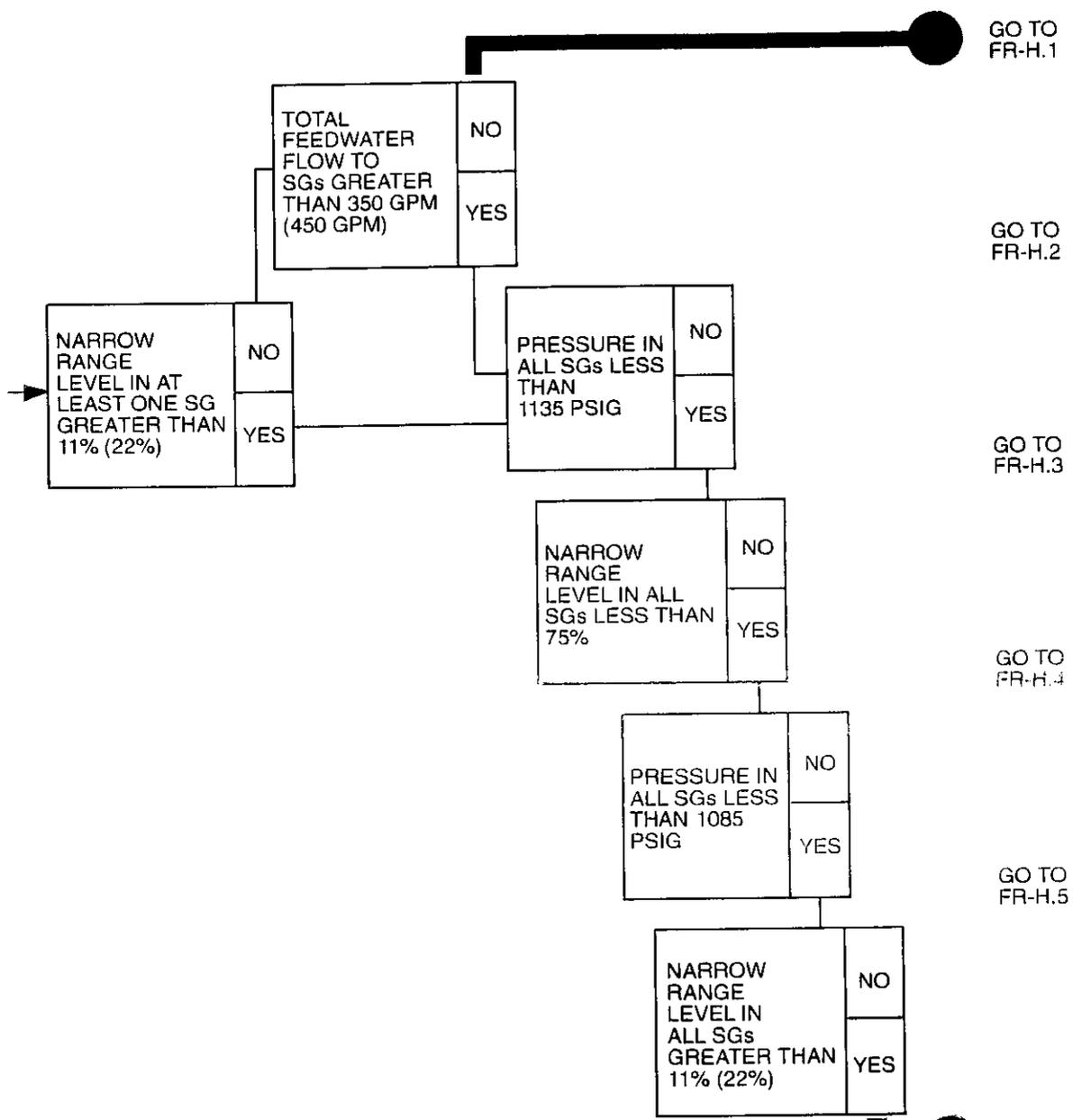
SNSOC CHAIRMAN

DATE

Drawing No. CB:80

CSF SAT

Number: F-3	Title: HEAT SINK	Revision: 4
-----------------------	----------------------------	-----------------------



APPROVAL ON FILE

SNSOC CHAIRMAN

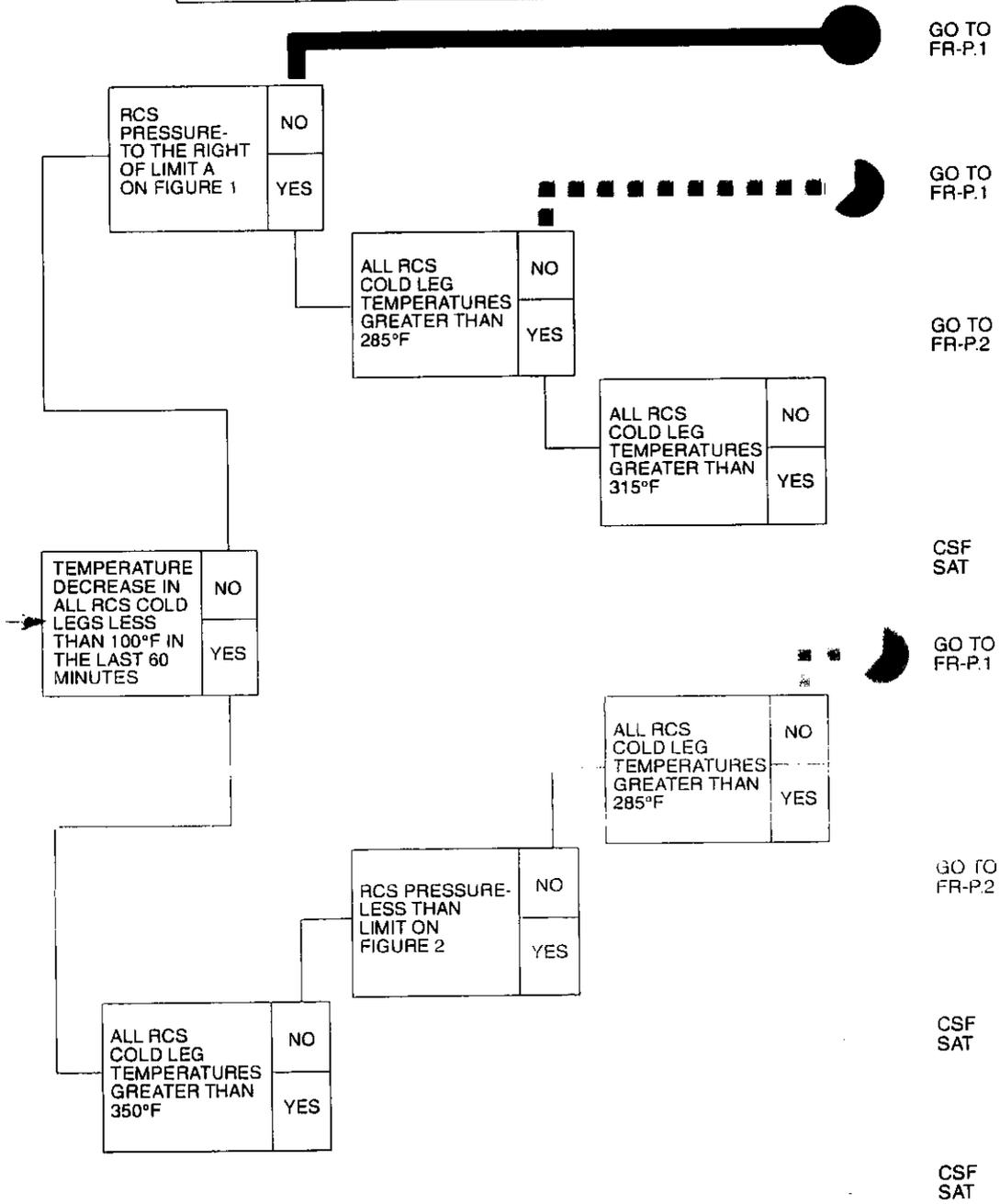
DATE



CSF SAT

Graphics No. CB381

Number: F-4	Title: INTEGRITY	Revision: 2
----------------	---------------------	----------------



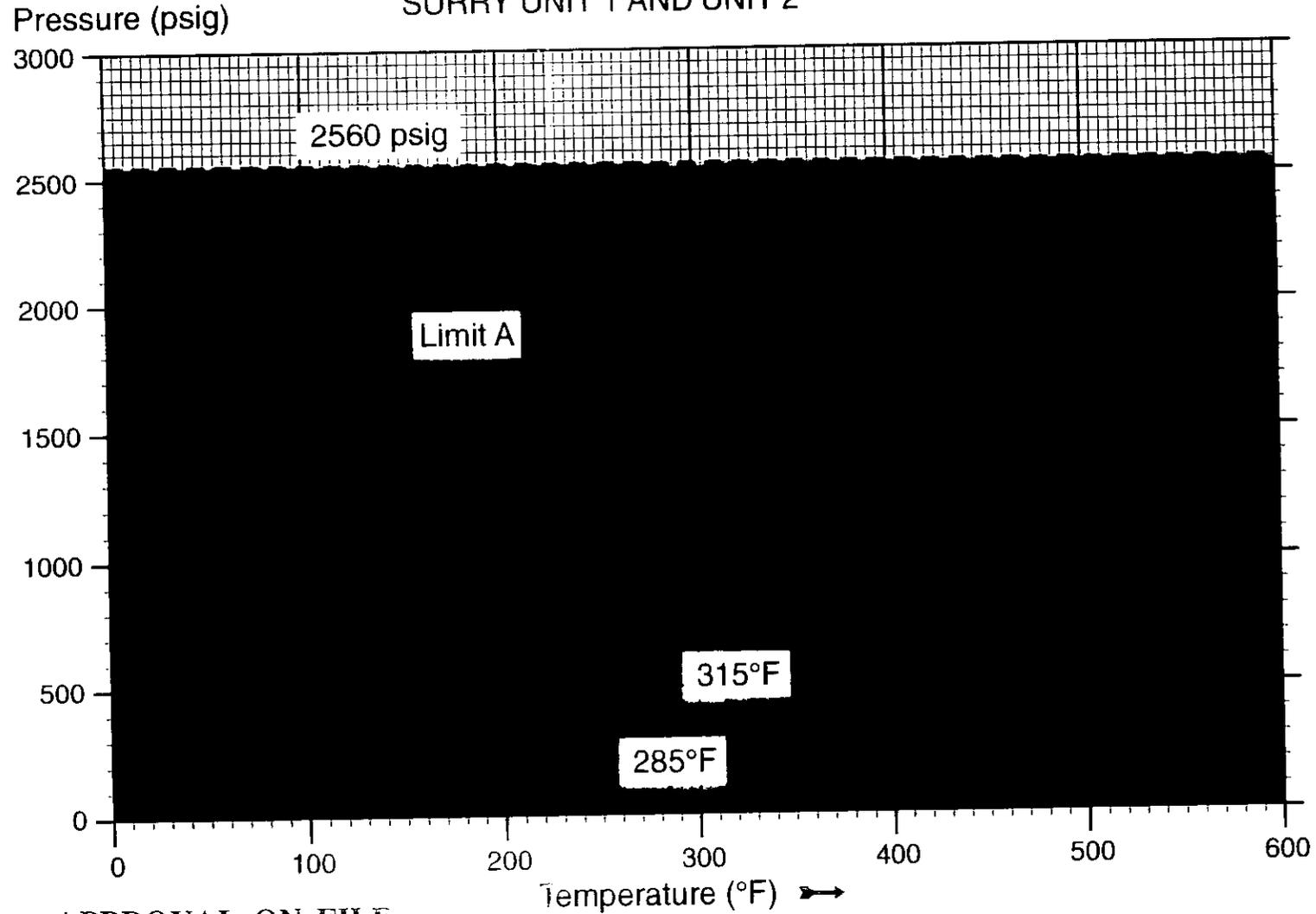
APPROVAL ON FILE

SNSOC CHAIRMAN

DATE

Number: F-4	Title: INTEGRITY	Revision: 2
-----------------------	----------------------------	-----------------------

FIGURE 1 - OPERATIONAL LIMITS CURVE
SURRY UNIT 1 AND UNIT 2



APPROVAL ON FILE

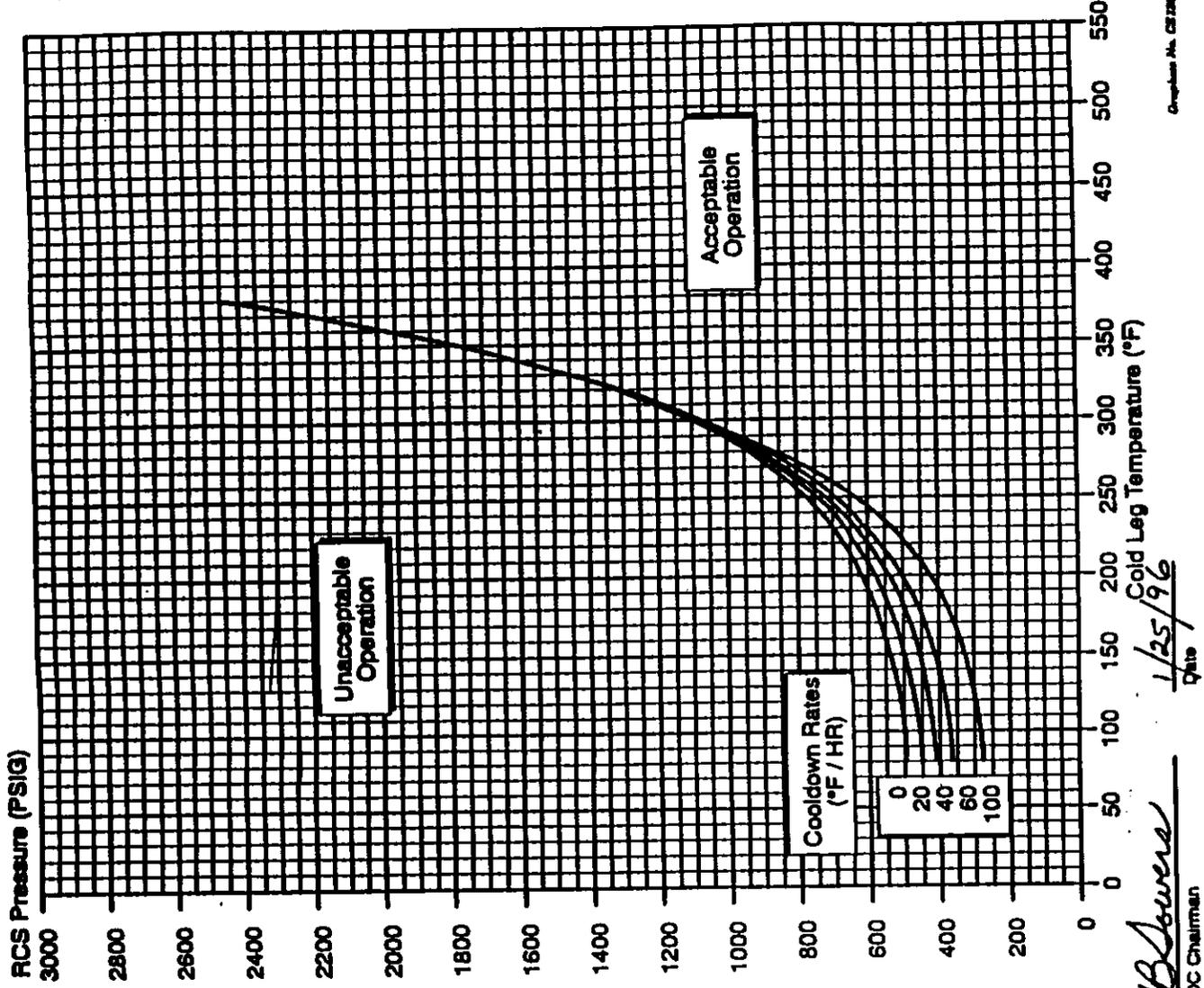
SNSOC Chairman

Date

Drawing No. WT316

Number: F-4	Title: INTEGRITY	Revision: 2
-----------------------	----------------------------	-----------------------

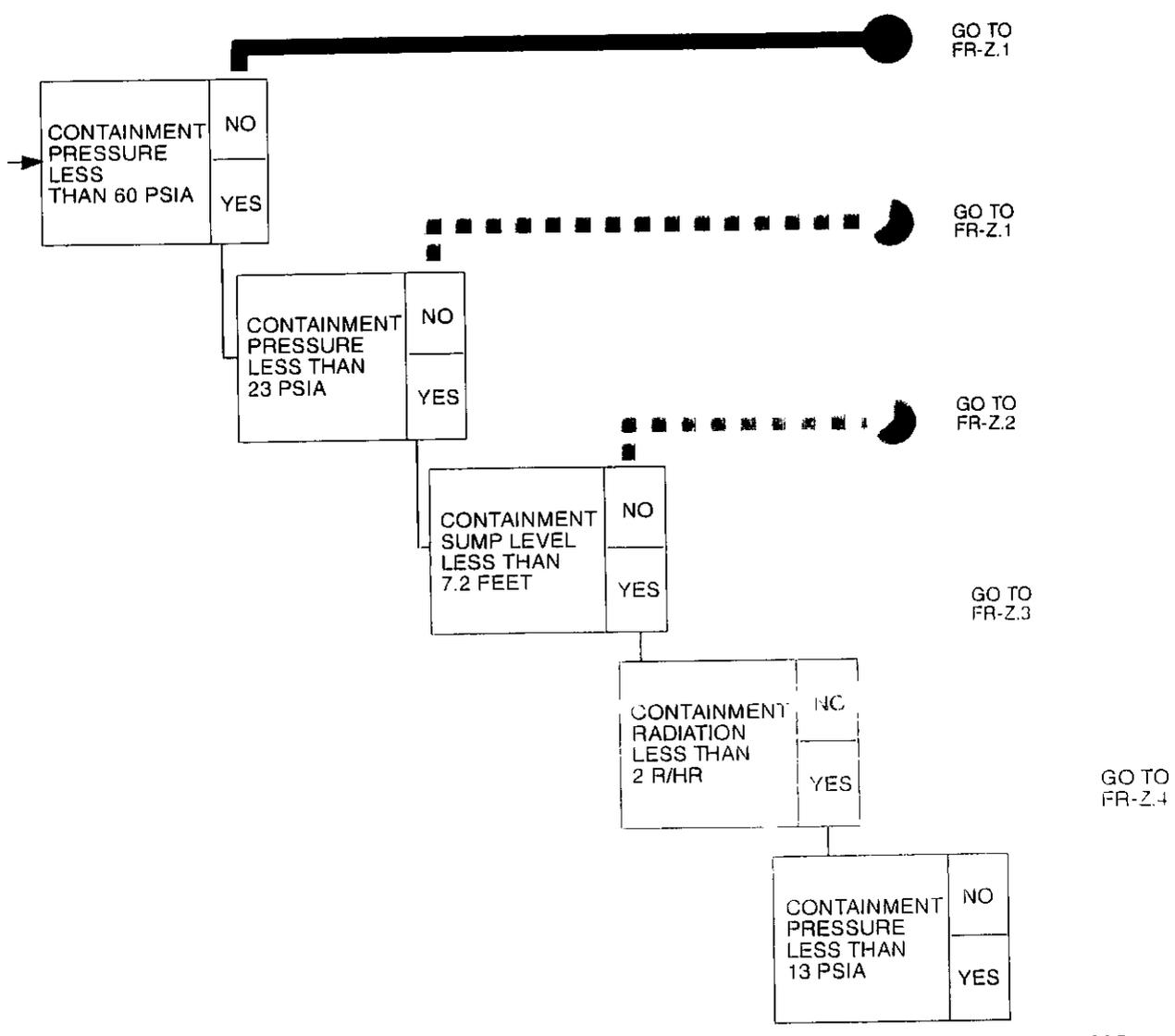
**Figure 2
RCS COOLDOWN RESTRICTIONS**



B. Bowers
SNSOC Chairman

1/25/96
Date

Number: F-5	Title: CONTAINMENT	Revision: Rev-1A
----------------	-----------------------	---------------------



APPROVAL ON FILE

SNSOC CHAIRMAN

DATE _____

Drawing No. CB382

CSF
SAT

TABLE 6.1-1
MINIMUM SHIFT CREW COMPOSITION

POSITION	NUMBER OF INDIVIDUALS REQUIRED TO FILL POSITION		
	ONE UNIT OPERATING	TWO UNITS OPERATING	TWO UNITS IN COLD SHUTDOWN OR REFUELING
SS	1	1	1
SRO	1	1	None
RO	3	3	2
AO	4	4	4
STA	1	1	None

This page was published electronically for use on the MIND system. Differences between this page and a page from the hardcopy version of the Technical Specifications are differences in appearance only. Such differences are intentional and are the result of managing an electronic master of the station's Technical Specifications. The accuracy of the content of the MIND version of the Technical Specifications has been confirmed by Configuration Management.

TABLE 6.1-1 (Continued)

- SS - Shift Supervisor with a Senior Reactor Operators License.
- SRO - Individual with a Senior Reactor Operators License.
- RO - Individual with a Reactors Operators License.
- AO - Auxiliary Operator
- STA - Shift Technical Advisor

Except for the Shift Supervisor, the Shift Crew Composition may be one less than the minimum requirements of Table 6.1-1 for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the Shift Crew Composition to within the minimum requirements of Table 6.1-1. This provision does not permit any shift crew position to be unmanned upon shift change due to an oncoming shift crewman being late or absent.

During any absence of the Shift Supervisor from the Control Room while the unit is in operation, an individual (other than the Shift Technical Advisor) with a valid SRO license shall be designated to assume the Control Room command function. During any absence of the Shift Supervisor from the Control Room while the unit is shutdown or refueling, an individual with a valid RO license (other than the Shift Technical Advisor) shall be designated to assume the Control Room command functions.

77

This page was published electronically for use on the MIND system. Differences between this page and a page from the hardcopy version of the Technical Specifications are differences in appearance only. Such differences are not intended to affect the accuracy of the electronic master of the Station's Control Specifications. The accuracy of the content of the MIND version of the Technical Specifications has been confirmed by Configuration Management.

CASA 3.11.1

3 combined

In accordance with E-0, which ONE of the following describes the actions taken if the Main Generator fails to trip on a reactor trip/turbine trip?

- a. Manually open the generator output breakers only.
- b. Place the excitation control switch in off only.
- c. Manually open the generator output breakers and place the excitation control switch in off.
- d. Manually open the generator output breakers and check that the voltage regulator has automatically tripped.

ANSWER: c

526-415
~~6226~~
62310

Unit 2 is in a Refueling Shutdown. Operations is performing a special test near the Pressurizer Surge Line. It has been determined that placing lead blankets around the surge line has significantly reduced the total dose for the special test.

Which ONE of the following procedures governs placement of the lead blankets?

- a. VPAP-2102, Station ALARA.
- b. VPAP-1403, Temporary Modifications.
- c. VPAP-1901, Industrial Safety and Health.
- d. VPAP-2105, Temporary Shielding.

ANSWER: d

SRU #17
C2.2.6

It has been determined that a procedure change is necessary to an Operation's Procedure. The change is needed to change an Initial condition of the procedure.

Which ONE of the following describes the type of procedure change and required approval authority?

- a. This is considered a NON-INTENT change. It must be approved by the Shift Supervisor and both a Cognizant Management A designee and Cognizant Management B designee.
- b. This is considered an INTENT change. It must be approved by the Shift Supervisor and a Cognizant Management B designee.
- c. This is considered a NON-INTENT change. It must be approved by the Shift Supervisor and a Cognizant Management B designee.
- d. This is considered an INTENT change.

ANSWER: b

065AAR.01

SRO #13

The following conditions exist:

- Unit 2 is in Refueling shutdown.
- Reactor vessel head is removed.
- RCS is at flange level.
- Containment instrument air is being supplied by station instrument air.
- A sustained loss of the instrument air system is in progress.

Which ONE of the following identifies the RCS response?

- a. RCS level is constant; RCS temperature is increasing.
- b. RCS level is constant; RCS temperature is decreasing.
- c. RCS level is decreasing; RHR vortexing is imminent.
- d. RCS level is decreasing; cavity fill is imminent.

ANSWER: d

06371201
Combined M.A.

The following Unit conditions exist:

- Unit 1 is at 100% power, steady state conditions.
- The operator notices the DC Ground Detection light is dim.
- During a Main Control Board walkdown, the operator observes that the white light for 1-FW-P-3A, "A" AFW pump, is out.

Which ONE of the following could cause the white light to be out?

- a. "1H" bus is de-energized.
- b. A hard ground exists on the "A" DC bus.
- c. The "B" DC bus indicates < 75V DC.
- d. Operation from the Auxiliary Shutdown Panel has been selected.

ANSWER: b

060AK2.0
#43 (continued)

The following Unit conditions exist:

- Both Units are at 100% power, steady state conditions.
- Annunciators RM-P3 and P4, 1-VG-RI-109 and 110 (Vent-Vent) are in high alarm.
- The alarms have been verified to be valid.
- The normal area supply and exhaust fans have been secured IAW 0-AP-5.20, Radiation Monitor System Ventilation Vent High Alarm.

Which ONE of the following describes the system response during the performance of aligning flow through 1-VS-F-58A IAW 0-AP-5.20?

- a. When 1-VS-F-58A is started on the affected area, the Vent-Vent activity will decrease due to flow being filtered by the CAT I filter.
- b. When 1-VS-F-58A is started on the affected area, the Vent-Vent activity will decrease due to flow being filtered by the CAT II filter.
- c. When 1-VS-F-58A is started on the affected area, the Vent-Vent activity will increase due to increased radionuclides in the exhaust stream.
- d. When 1-VS-F-58A is started on the affected area, the Vent-Vent activity will increase due to greater than normal vent stack flow when aligning using 0-AP-5.20.

ANSWER: c

#3 Combined

045A3.11 1

Which ONE of the following describes the actions taken if the Main Generator fails to trip on a reactor trip/turbine trip?

- a. Manually open the generator output breaker only.
- b. Place the excitation control switch in off only.
- c. Manually open the generator output breakers and place the excitation control switch in off.
- d. Manually open the generator output breakers and check that the voltage regulator has automatically tripped.

ANSWER: c

17
Combined

017K1.01 1

One CETC on the ICCM indicates 2300°F. The I&C Technicians determine that the CETC has failed and disconnect the thermocouple.

Which ONE of the following describes how this reading will be displayed on the ERF computer after it is disconnected?

- a. The display will read 2300 degrees.
- b. The display will read 40 degrees.
- c. The display will read XXXX.
- d. The display will read "Disconnected".

ANSWER: b

0039K 2.05
5
Combined

The following conditions exist:

- A "C" bank rod dropped due to a failed fuse in the Rod Control System.
- The Operating team is in the process of recovering the dropped rod in accordance with AP-1.01.
- During the affected rod's withdrawal, the breaker supplying the backup control power to the rod control cabinets is lost, resulting in a "Rod Control Sys Non-Urgent Failure" annunciator.
- The Operator maintains the In-Hold-Out switch in the OUT position.

Which ONE of the following identifies the affects on the rod recovery task?

- a. Shutdown banks drop into the core.
- b. Withdrawal is unaffected.
- c. Rod motion will stop.
- d. All rods drop in.

ANSWER: b

002-K6-03
3 Combined

The following Unit conditions exist:

- Unit 1 was operating at 100% steady state power.
- The power supply for the Reactor Coolant Pump isolator amplifiers to RVLIS has tripped, resulting in no output.
- SI initiated due to a steam line break in Safeguards.

Which ONE of the following RVLIS indications should be used for CSFST assessment when implementation of the Status Trees is required?

- a. Dynamic Head
- b. Upper Range
- c. Full Range
- d. None, no RVLIS signal is valid.

ANSWER: d