HNP 2014 Licensed Operator Written Exam question #5 Post Exam Comment

Comment for Reactor Operator question #5 is that there is no correct answer. The keyed answer is A. The question asks whether or not a reactor trip would occur based on plant conditions described by Bistable Status on the Bypass Permissive Light Box (BPLB) and the Trip Status Light Boxes (TSLB). The first half of the question asked whether a reactor trip WOULD or WOULD NOT occur. The second half of the question asked which RPS Permissive caused the reactor to trip/not trip. The keyed answer is that a reactor trip would occur because of the status of P-7.

The stem of the question states the BPLP and TSLB indicate both the P-7 and P-10 bistables are lit. This is not possible unless there is a fault since one bistable indicates greater than 10% power and the other indicates less than 10% power. See attached Logic Drawing 1364-000876 to see the "not gate" to change the status of P-7 to not being met when P-10 is met.

Clarification for this question was given during the exam. The Bypass Permissive Light Box window names for each RPS Permissive were written down. The clarification provided by examiners implied that the P-7 BPLB light was being referenced in the question.

The stem of the question and the additional guidance provided in the clarification led candidates to answer the question based on BPLB status. Since the conditions in the stem of the question could not exist in any plant condition using BPLB indications, this is an invalid question without a correct answer.

References:

- Exam Question 5
- HNP Drawing 1364-000867
- HNP Drawing 1364-000868
- Examiner clarifying information provided during the exam

5. Given the following plant conditions:
   - The unit is in Mode 1
   - UAT's are supplying power to the Aux Buses
   - Current MCB permissive status indicating panel indication is as follows:
     - P-7 LIT
     - P-8 EXTINGUISHED
     - P-10 LIT
     - P-13 EXTINGUISHED

   A fault on breaker 108, Unit Aux Xfmr A to Aux Bus A, causes the breaker to open.

   Which ONE of the following completes the statement below concerning the plant response and reason for the current condition?

   An Auto Reactor trip will ___(1)___ because of the status of___(2)___ .

   A. (1) occur

      (2) P-7

   B. (1) occur

      (2) P-13

   C. (1) NOT occur

      (2) P-8

   D. (1) NOT occur

      (2) P-10

Plausibility and Answer Analysis

Reason answer is correct: Automatic Reactor trip:

RCS Low Flow *2/3 RCS flow channels <90.5 % of loop measured flow*
1/3 loops above P-8
2/3 loops when between P-7 ***AND*** *P-8*

With the unit in Mode 1 and a normal 6.9 Kv electrical alignment the Unit Aux Transformers (UAT's) would be supplying the power to the 6.9 Kv Aux Buses. Aux Bus 1A via breaker 108 and to Aux Bus 1B via breaker 128. Power is then supplied to Aux Bus 1C via breaker 109 (normally closed) but can be supplied from Aux Bus 1B (alternate alignment) via breaker 129. Power to the RCPs are from the Aux Buses (1A RCP from Aux Bus 1A, 1B RCP from Aux Bus 1B and 1C RCP from Aux Bus 1C). A loss of breaker 108 will cause the loss of power to Aux Bus 1A and to Aux Bus 1C which subsequently causes the loss of power to both RCP 1A and RCP 1C. With the current plant conditions the Reactor will trip on loss of RCS Loop Flow (setpoint 90.5%) on 2 of 3 loops since P-8 is given as EXTINGUSHED (<49% power) and above P-7 (>10% Reactor/Turbine power) light LIT.

A. Correct.

B. Incorrect. Plausible since a Reactor trip would occur if P-13 were LIT. Having P-13 extingushed could be confused with having Turbine power >10% which would allow a loss of 2 RCS loop flows to trip the Reactor.

C. Incorrect. Plausible if the candiate determines that only one RCP will be lost with the current plant 6.9Kv line up (P-8 condition 1/3 loops low flow with Reactor power >49%). With the given current plant conditions a loss of ONLY one RCP which would not make up the coincidence required to cause a RCS loop low flow Reactor trip setpoint to be exceeded.

D. Incorrect. Plausible since P-10 is lit which blocks and unblocks Reactor trips but does not block or unblock RCS low flow Reactor trips. The P-10 signal is sent to remove P-7 and could be confused to be the permissive that changes the state of Low RCS flow Reactor trips from single to two loop low flows associated with 10% Reactor power

QUESTIONS REPORT

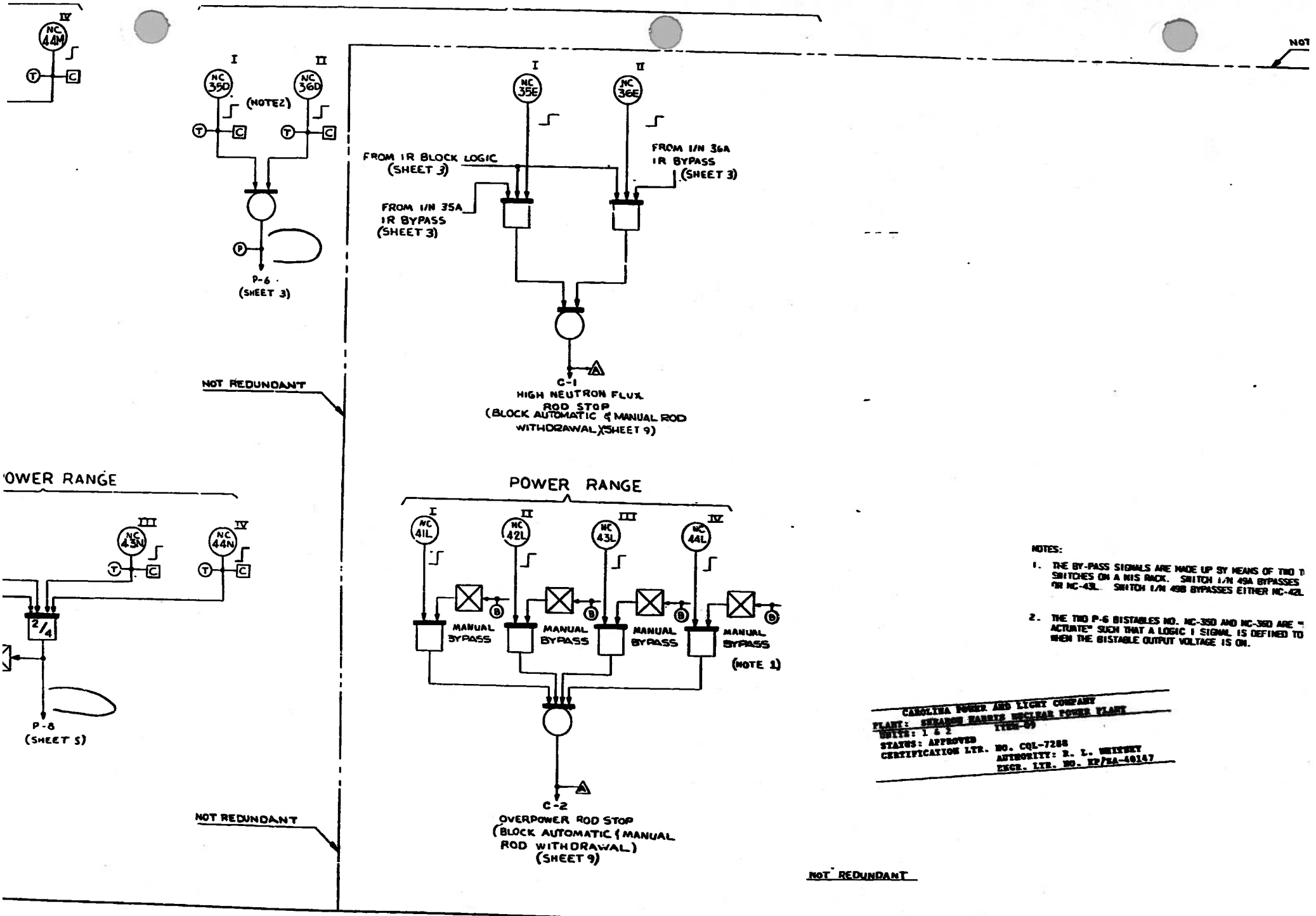
for 2014 NRC RO SRO Written Rev FINAL

000015/17 RCP Malfunctions / 4

015AA1.16 - Ability to operate and / or monitor the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): Low-power reactor trip block status lights

(CFR 41.7 / 45.5 / 45.6)

Importance Rating:	3.2 3.5
Technical Reference:	APP-ALB-011-2-5, Rev. 8
References to be provided:	None
Learning Objective:	RPS Objective 8
Question Origin:	New
Comments:	Original K/A 015AA1.04 was randomly replaced by David Lanyi on 5/27/2014 at the request by HNP because the utility was not able to write a question to the RO level due to the lack of procedural actions or an RO task for the K/A.
Tier/Group:	T1/G1

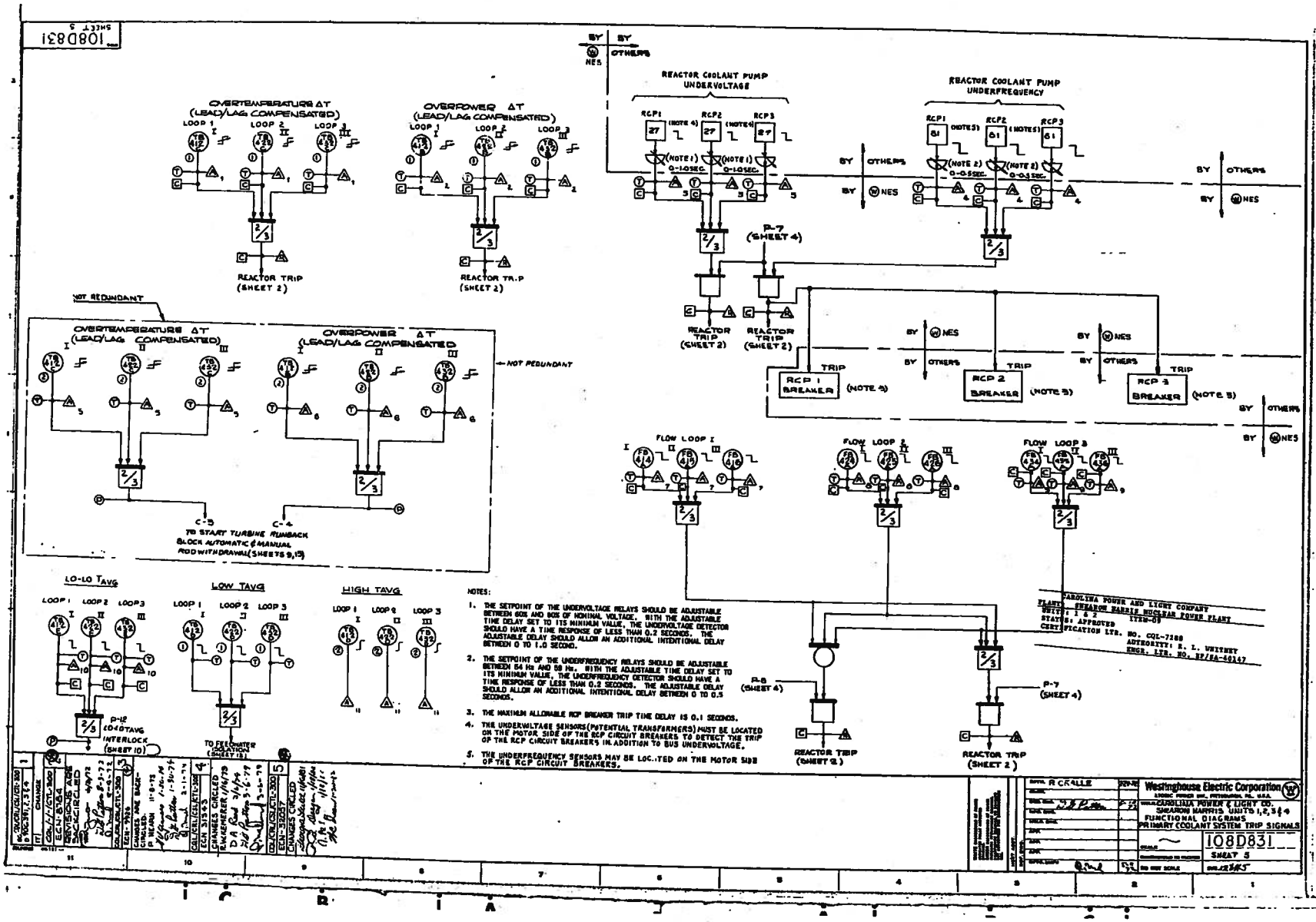


NOTES:

1. THE BY-PASS SIGNALS ARE MADE UP BY MEANS OF TWO T SWITCHES ON A NIS RACK. SWITCH I/N 49A BYPASSES OR NC-43L. SWITCH I/N 49B BYPASSES EITHER NC-42L
2. THE TWO P-6 BISTABLES NO. NC-35D AND NC-36D ARE ACTUATE" SUCH THAT A LOGIC 1 SIGNAL IS DEFINED TO WHEN THE BISTABLE OUTPUT VOLTAGE IS ON.

CAROLINA POWER AND LIGHT COMPANY
PLANT: SHEARON HARRIS NUCLEAR POWER PLANT
UNITS: 1 & 2 ITEM-09
STATUS: APPROVED
CERTIFICATION LTR. NO. CQL-7288
AUTHORITY: R. L. WHITNEY
ENGR. LTR. NO. RP/SA-40147

APPL. P CRALLE	12-9-82	Westinghouse Electric
CHKD.		ATOMIC POWER DIV., PITTSBU
ENGR. SUPV.	5-12-83	TITLE CAROLINA POWER &
APPR. ENGR.		SHEARON HARRIS
APPR. SUPV.		FUNCTIONAL DI
		NUCLEAR INSTR. PERMISSI


OVERTEMPERATURE ΔT (LEAD/LAG COMPENSATED)
OVERPOWER ΔT (LEAD/LAG COMPENSATED)
REACTOR COOLANT PUMP UNDERVOLTAGE
REACTOR COOLANT PUMP UNDERFREQUENCY
BY OTHERS
BY W NES
REACTOR TRIP (SHEET 2)
P-7 (SHEET 4)
RCP 1 BREAKER (NOTE 4)
RCP 2 BREAKER (NOTE 5)
RCP 3 BREAKER (NOTE 5)
TRIP
NOT REDUNDANT
C-5 TO START TURBINE RUNBACK
C-4 BLOCK AUTOMATIC & MANUAL ROD WITHDRAWAL (SHEETS 9,13)
FLOW LOOP 1
FLOW LOOP 2
FLOW LOOP 3
LO-LO TAVG
LOW TAVG
HIGH TAVG
P-12 (LO-LO TAVG INTERLOCK (SHEET 10)
TO FEEDWATER ISOLATION (SHEET 13)
P-8 (SHEET 4)
NOTES:
1. THE SETPOINT OF THE UNDERVOLTAGE RELAYS SHOULD BE ADJUSTABLE BETWEEN 60% AND 80% OF NOMINAL VOLTAGE. WITH THE ADJUSTABLE TIME DELAY SET TO ITS MINIMUM VALUE, THE UNDERVOLTAGE DETECTOR SHOULD HAVE A TIME RESPONSE OF LESS THAN 0.2 SECONDS. THE ADJUSTABLE DELAY SHOULD ALLOW AN ADDITIONAL INTENTIONAL DELAY BETWEEN 0 TO 1.0 SECOND.
2. THE SETPOINT OF THE UNDERFREQUENCY RELAYS SHOULD BE ADJUSTABLE BETWEEN 54 Hz AND 59 Hz. WITH THE ADJUSTABLE TIME DELAY SET TO ITS MINIMUM VALUE, THE UNDERFREQUENCY DETECTOR SHOULD HAVE A TIME RESPONSE OF LESS THAN 0.2 SECONDS. THE ADJUSTABLE DELAY SHOULD ALLOW AN ADDITIONAL INTENTIONAL DELAY BETWEEN 0 TO 0.5 SECONDS.
3. THE MAXIMUM ALLOWABLE RCP BREAKER TRIP TIME DELAY IS 0.1 SECONDS.
4. THE UNDERVOLTAGE SENSORS (POTENTIAL TRANSFORMERS) MUST BE LOCATED ON THE MOTOR SIDE OF THE RCP CIRCUIT BREAKERS TO DETECT THE TRIP OF THE RCP CIRCUIT BREAKER'S IN ADDITION TO BUS UNDERVOLTAGE.
5. THE UNDERFREQUENCY SENSORS MAY BE LOCATED ON THE MOTOR SIDE OF THE RCP CIRCUIT BREAKERS.
CAROLINA POWER AND LIGHT COMPANY
PLANT: BRUNSWICK NUCLEAR POWER PLANT
UNITS: 1 & 2
STATUS: APPROVED
CERTIFICATION LTR. NO. COL-7288
AUTHORITY: R. L. WHITNEY
ENGR. LTR. NO. BP/BA-80147
Westinghouse Electric Corporation
CAROLINA POWER & LIGHT CO.
SHEARON HARRIS UNITS 1,2,3 & 4
FUNCTIONAL DIAGRAMS
PRIMARY COOLANT SYSTEM TRIP SIGNALS
108D831
SHEET 5
DISCIPLINE COMMENTS
DUE BY 9-26
1364-868 R5
CAROLINA POWER & LIGHT COMPANY
SHEARON HARRIS NUCLEAR POWER PLANT
PD S130000
ERASCO SERVICES INCORPORATED
2 WORLD TRADE CENTER, NEW YORK, NY 10048

HNP 2014 Licensed Operator Written Exam Question #73 Post Exam Comment

Comment for Reactor Operator question #73 is that the correct answer to this question is A and not B as keyed.

The question required the candidate to evaluate the condition of RCS pressure during an operator controlled cooldown following a small break LOCA and the basis for that decision.

The EOP USERS GUIDE section 6.5 states "The operator is frequently asked to check RCS and SG pressures and temperature as STABLE (or RISING). STABLE does not necessarily imply constant. RCS and/or SG pressure may be dropping slowly due to an operator-controlled cooldown and still be considered stable. If the operator can control the rate and magnitude of the pressure change, then pressure should be considered stable."

Therefore RCS pressure should be considered STABLE due to the pressure drop seen being a direct result of an operator controlled cooldown, which makes answer "A" correct and answers "C" and "D" incorrect.

Answer "B" provides a basis for calling RCS pressure stable as RCS subcooling is rising. While a rising subcooling is a diverse indication of a stable/rising pressure it is not an indication that is referenced in the EOP users guide revision that was used to write this exam question or by the students as they prepared for the exam. It has been discovered the HNP Revision 43 of the EOP Users Guide is incorrect in stating, "Note that when evaluating RCS pressure response for reducing or terminating SI with an RCS cooldown in progress, RCS pressure may be considered STABLE if subcooling is lowering". Obviously a lowering subcooling value is not an indication of stable pressure.

Based on the information provided in the EOP Users Guide answer A is the more correct answer to this question.

References:

- HNP 2014 Written exam Question #73
- EOP-Users Guide section 6.5

73. Given the following plant conditions:
    - Due to a small break LOCA the crew is implementing EOP-ES-1.2, Post LOCA Cooldown and Depressurization
    - A cooldown to Cold Shutdown has been initiated
    - The first CSIP was just secured

    - RCS parameter response is as follows:

Time	RCS Temperature (°F)	RCS Pressure (psig)	Subcooling (°F)
1400	435	462	27
1402	433	460	29
1404	431	458	30
1406	429	456	32

In accordance with guidance provided by the EOP User's Guide, which ONE of the following completes the statement below concerning the RCS evaluation?

RCS pressure should be considered _____ .

A. STABLE because the RCS pressure drop is being controlled

B. STABLE because RCS subcooling is rising

C. LOWERING even though RCS subcooling is rising

D. LOWERING because the RCS pressure drop cannot be controlled

Plausibility and Answer Analysis

Reason answer is correct: *RCS Pressure should be considered STABLE because RCS subcooling is increasing with an operator controlled cooldown in progress.*

A. Incorrect. RCS Pressure should be considered STABLE because RCS subcooling is rising with an operator controlled cooldown in progress. No attempt to control RCS Pressure is made. Just because a controlled cooldown is in progress doesn't mean RCS Pressure is controlled.

B. Correct.

C. Incorrect. RCS Pressure is lowering but with an operator controlled cooldown in progress and subcooling increasing RCS Pressure should be considered stable.

D. Incorrect. RCS Pressure is lowering but with an operator controlled cooldown in progress and subcooling increasing RCS Pressure should be considered stable. No attempt has been made to control RCS Pressure. Just because RCS pressure is lowering during a controlled cooldown doesn't mean it is uncontrolled.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev FINAL

2.4 Emergency Procedures / Plant

G2.4.17 Knowledge of EOP terms and definitions.

(CFR 41.10 / 45.13)

Importance Rating:	3.9 4.3
Technical Reference:	EOP-Users Guide, Page 34 (Stable Pressure/Temperture), Rev. 41, steam tables
References to be provided:	None
Learning Objective:	LP-EOP-3.19, Obj. 4d
Question Origin:	Bank OIT Exam Bank, 2009A NRC RO 73
Comments:	None
Tier/Group:	T3

6.4 Sequencer Operation

Any time the sequencer is actuated by an SI or loss of off-site power signal, the operator should monitor the Emergency Safeguards Sequencer for proper equipment loading. Monitoring the sequencer ensures immediate attention is given to major equipment including that which is not verified in the EOPs (e.g., E-6 fans, WC-2 chiller), but would be checked by OMM-004. The operator should allow the sequencer to complete its cycle prior to attempting to start any large electrical loads including loads the sequencer may have failed to start. If any safeguards component has failed to auto start, a manual start attempt should be made when the component status is checked during implementation of the E-0, "Safeguards Verification" attachment. This includes the case where the sequencer itself has failed. This restriction prevents overloading a diesel generator and/or its associated emergency bus. It also provides an orderly methodology to address and correct failures of safeguards equipment. (Reference 2.2.3.15)

6.5 Stable Pressure/Temperature

The operator is frequently asked to check RCS and SG pressures and temperature as STABLE (or RISING). STABLE does not necessarily imply constant. RCS and/or SG pressure may be dropping slowly due to an operator-controlled cooldown and still be considered stable. If the operator can control the rate and magnitude of the pressure change, then pressure should be considered stable. The same conventions apply to temperature. Note that when evaluating RCS pressure response for reducing or terminating SI with an RCS cooldown in progress, RCS pressure may be considered STABLE if subcooling is lowering. (References 2.2.2.11, 2.2.2.19 and 2.2.3.25)

SG pressure may also trend downward during a LOCA if RCS temperature (as measured by core exit thermocouples or T-hot) drops below that of the water in the secondary side of the SGs. This response is caused by the cooling of the secondary water by the circulating RCS fluid.

In evaluating this response for a potential UNCONTROLLED secondary depressurization, the SG pressure should be compared to the saturation pressure for the RCS fluid. As long as the SG pressure remains above the saturation pressure of the RCS fluid, the SG should NOT be considered faulted. (References 2.2.2.24 and 2.2.3.35)

6.6 Realignment of Plant Equipment Following SI Termination

An attachment to ES-1.1 is provided as a guide to aid the operator in realigning plant systems after SI termination. The attachment assumes the SI is spurious, therefore, the operator must evaluate the recommended realignments based on actual plant conditions. The appropriate system operating procedures should be referenced for any applicable precautions and limitations.

The reactor trip breakers are not reclosed in ES-1.1. This action is performed when directed in GP-004 or GP-007, after the operator exits ES-1.1. Until the trip breakers are reclosed, automatic SI actuation (T.S. 3.3.2) is inoperable. This information is related to the operator by a NOTE in ES-1.1.

Other systems may have become inoperable during implementation of EOPs. The status of Tech Spec components and systems must, therefore, be evaluated when exiting the EOPs. Also, implementation of EOPs does not suspend Tech Spec surveillance requirements (Reference 2.2.2.10).

HNP 2014 Licensed Operator Written Exam question #51 Post Exam Comment

Comment for Reactor Operator question #51 is that there is no correct answer based on the information provided in the stem of the question. The first part of the question requires the candidate to evaluate the time required to shut down the EDG from 35% load. The second part of the question asks for the impact of taking the action per the first part of the question.

There is no comment on the second part of the question. The basis for the timely shutdown of the EDG is to minimize carbon buildup which is both 'B' and 'D' answers.

The comment on the first part of the question is there was not enough information provided in the stem of the question to provide an operationally accurate response. The shutdown of the EDG is based on exhaust stack temperatures as stated in section 7.1.2 step 9 of OP-155, "At the MCB, **WHEN** stack exhaust temperatures are less than 500°F,**THEN POSITION** DIESEL GENERATOR A-SA (B-SB) control switch to STOP". Since these temperatures were not provided there was not enough information provided for the candidate to determine if the note that states "The EDG should be shutdown from 35% load in less than 5 minutes to minimize carbon buildup" was applicable.

The previous 2 EDG runs at the plant on 11/6/14 and 11/24/14 show that when that there are instances when the 5 minutes is achievable and when additional time is required based on stack temperatures. On 11/6/14 the B EDG was secured within 4 minutes of reaching 35% load while on 11/24/14 the A EDG was secured 12 minutes after reaching 35% load while stack temperatures lowered to less than 500°F.

Without the stack temperatures it is not possible to determine the time the EDG should be shutdown.

References:

- HNP 2014 Written Exam question #51
- OP-155 section 7.1, Unloading and Shutdown of Emergency Diesel Generators From the MCB.
- 11/6/14 HNP Operator Logs
- 11/24/14 HNP Operator Logs

51. Given the following plant conditions:
    - The EDG 1A-SA is loaded to 6.3 MW from the MCR in accordance OP-155, Diesel Generator Emergency Power System
    - The crew is preparing to shutdown the EDG

    Which ONE of the following completes the statement below concerning the continued shutdown of the EDG in accordance with OP-155?

    The EDG should be shutdown from 35% load in a maximum of ___(1)___ minutes AND the impact of this action is it will ___(2)___ .

    A. (1) 5

       (2) prevent stator winding overheating

    B. (1) 5

       (2) minimize carbon buildup

    C. (1) 20

       (2) prevent stator winding overheating

    D. (1) 20

       (2) minimize carbon buildup

Plausibility and Answer Analysis

Reason answer is correct: *In accordance with OP-155 note during EDG shutdown the EDG should be shutdown from 35% load in < 5 minutes to minimize carbon buildup.*

A. Incorrect. *The first part is correct. The second part is plausible since the procedure has the EDG load held at 2.2 to 2.4 MW and 1 MVAR or less until stator winding temperature is < 135°C. Additionally precaution and limition #29.b warns that if generator winding temperatures reach 155°C the EDG should be secured per normal shutdown procedure unless operating in response to an actual emergency ESF signal (non-test). A visual winding inspection and stator insulation resistance check should be performed after the EDG has been secured.*

B. *Correct.*

C. Incorrect. *The first part is plausible since load has to verified to be < 5.2 to 6.4 MW for at least 20 minutes prior to reducing load to 0.5 MW and then securing the EDG. The second part is plausible since the procedure has the EDG load held at 2.2 to 2.4 MW and 1 MVAR or less until stator winding temperature is < 135°C. Additionally precaution and limition #29.b warns that if generator winding temperatures reach 155°C the EDG should be secured per normal shutdown procedure unless operating in response to an actual emergency ESF signal (non-test). A visual winding inspection and stator insulation resistance check should be performed after the EDG has been secured.*

D. Incorrect. *The first part is plausible since load has to verified to be < 5.2 to 6.4 MW for at least 20 minutes prior to reducing load to 0.5 MW and then securing the EDG. The second part is correct.*

064 Emergency Diesel Generator

064A2.04; Ability to (a) predict the impacts of Unloading prior to securing an ED/G on the ED/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences.

(CFR 41.5 / 43.5 / 45.3 / 45.13)

Importance Rating:	2.7 3.0
Technical Reference:	OP-155, Note on Page 39, Rev. 75
References to be provided:	None
Learning Objective:	Lesson Plan DE, Objective 6
Question Origin:	NEW
Comments:	None
Tier/Group:	T2/G1

7.0 SHUTDOWN

7.1. Unloading and Shutdown of Emergency Diesel Generators From the MCB

7.1.1. Initial Conditions

NOTE: If the EDG has been started for testing and has **NOT** been loaded, then the initial conditions and the Steps which do not apply may be marked N/A.

NOTE: B component equipment nomenclature is in parenthesis.

1. EDG 1A-SA (1B-SB) is running with output breaker closed. _____

2. The Emergency Bus 1A-SA (1B-SB) is being supplied by both the EDG and Auxiliary Bus 1D (1E). _____

7.1.2. Procedural Steps

1. **NOTIFY** Load Dispatcher EDG 1A-SA (1B-SB) will be unloaded. _____

2. Over a twenty minute period, **REDUCE** EDG load to 2.2 to 2.4 MW, while maintaining the ratio of MW to MVARs per Attachment 9. _____

3. **CHECK** TEE6951A (B), Emer DG A (B) Stator Winding Temp, and if temperature exceeds 135°C load should be held at 2.2 to 2.4 MW and 1 MVAR or less until stator winding temperature is less than 135°C. _____

NOTE: The EDG should be shutdown from 35% load in less than 5 minutes to minimize carbon buildup.

4. **PEFORM** the following:

   a. **VERIFY** load has been less than 6.2 to 6.4 MW for at least 20 minutes _____

   b. **VERIFY** Generator Winding Temperature is less than 135°C _____

   c. **REDUCE** load to 0.5 MW _____

   d. **PLACE** DIESEL GEN A-SA (B-SB) BREAKER 106 SA (126 SB) to TRIP. _____

7.1.2 Procedural Steps (continued)

5. **VERIFY** the following:

   a. DIESEL GEN A-SA (B-SB) BREAKER 106 SA (126 SB) indicates open. _____

   b. EI-6957A1 SA (B1 SB), A (B) POWER, indicates zero. _____

   c. EI-6951A SA (B SB), A (B) AMPS, indicates zero. _____

6. **RECORD** time DIESEL GEN A-SA (B-SB) BREAKER 106 SA (126 SB) is opened on Attachment 7. _____

7. **IF** performing monthly EDG test,
   THEN PERFORM the following:

   a. **MARK** the remainder of this section "N/A." _____

   b. **CONTINUE** EDG shutdown per OST-1013 (OST-1073). _____

NOTE: To determine that cylinder temperatures are less than 450°F, the stack exhaust temperature will be monitored until temperature is less than 500°F.

8. At the ECP, **POSITION** temperature selector switch to positions 17 and 18 to monitor stack exhaust temperatures. _____

9. At the MCB, **WHEN** stack exhaust temperatures are less than 500°F, **THEN POSITION** DIESEL GENERATOR A-SA (B-SB) control switch to STOP. _____

R 10. At the MCB, **CHECK** the following: (Reference 2.7.4, 2.7.7, 2.8.11)

   a. EI-6955A SA (B SB), A (B) VOLTS, voltage is decreasing. _____

   b. EI-6954A SA (B SB), A (B) FLD VOLTS, voltage is decreasing. _____

R 11. **IF** voltage is NOT decreasing,
   THEN EMERGENCY STOP the EDG to prevent the voltage regulator from catching fire. _____

7.1.2 Procedural Steps (continued)

12. At the ECP, **VERIFY** the following occurs:

> **NOTE:** The Auxiliary Lube Oil Pump starts when pressure at engine driven pump discharge drops to 40 to 42 psig. Pressure at the ECP is Pump Discharge minus filter and strainer D/P. When filter D/P is clean (10 psi or less), the expected pressure at PI-2476 is 25 to 35 psig.
>
> NOTE: The Jacket Water Circulating Pump auto start verification in Step 7.1.2.12.b(2) may not be applicable if the pump was manually secured in Step 5.1.2.20.

a. At LUBE OIL PRESS of 25 to 35 psig, AUXILIARY LUBE OIL PUMP starts. _____

b. At speed of 170 to 200 rpm, the following occurs:

(1) Auxiliary Lube Oil Pump stops. _____

(2) Jacket Water Circulating Pump auto starts. _____

(3) Lube Oil Circulating Pump auto starts. _____

(4) Fuel Oil Transfer Pump auto starts _____

c. Starting Air Compressors maintain air start receivers greater than or equal to 200 psig. _____

d. CONTROL AIR PRESS indicates 55 to 65 psig. _____

> **NOTE:** The Jacket Water Circulating Pump is expected to start in the following step.

13. **IF** the Jacket Water Circulating Pump was manually secured in Step 5.1.2.20,
THEN PLACE the Jacket Water Circulating Pump control switch to AUTO. _____

14. **RECORD** Time EDG Shutdown on Attachment 7. _____

15. **VERIFY** the following:

a. NO non-emergency trips are active. _____

b. At the GCP, **VERIFY** UNIT-PARALLEL switch in PARALLEL. _____

16. **WHEN** EDG has stopped rolling, at GCP,
THEN RESET D/G 1A-SA (1B-SB) LOCK OUT RELAY 86 DG. _____

_____
Verify

7.1.2 Procedural Steps (continued)

17. **COMPLETE** Section 7.1.3. _____

18. **COMPLETE** Attachment 7, Emergency Diesel Generator Post Run Checklist. _____

HNP Log Entries

	Department	Date\Time	Entry	Position User Id
99	HNP Operations	November 5, 2014 20:30	Secured Nitrogen Addition to the DWST iaw OP-143.03 Section 8.36	RWCR PANART
100	HNP Operations	November 5, 2014 20:34	SSC 'B' EDG is OPERABLE following overspeed trip testing per OST-1073. The local dedicated operator is no longer required.	OATC POWERM
101	HNP Operations	November 5, 2014 20:35	During clearance lift of 307932 the static display unit of breaker 1D2-5C was observed to read "short circuit". Per Electrical Maintenance recommendation an alarm reset was made at the breaker. The reset was unsuccessful and "short circuit" is still displayed. The clearance lift is on hold until the issue with the Siemens breaker is resolved.	TB HERSHM
102	HNP Health Physics	November 5, 2014 20:47	Shiftly Tech Spec trend checks complete	MISC BRANTC
103	HNP Operations	November 5, 2014 20:48	Removed the Cation bed from service per OP-107.02 section 5.2. Total in-service time was 42 minutes. Cation bed effluent boron concentration is 809 ppm based on the last RCS sample.	OATC POWERM
104	HNP Operations	November 5, 2014 20:48	Declared UR-01FW-0488SW OPERABLE and completed EIR 20140739.	CRS STEPHR
105	HNP Operations	November 5, 2014 20:48	Started 'B' EDG per OP-155, Section 5.1 to support monthly testing per OST-1073, Section 7.2.	OATC POWERM
106	HNP Operations	November 5, 2014 21:00	Per OP-156.06 section 9.2 the ground and bus voltage will be logged every 4 hours while alarm ALB-15/2-4 is locked in. Bus voltage is at 135 VDC. Ground is at -127.5 VDC.	TB HERSHM
107	HNP Operations	November 5, 2014 21:19	WPB Compensatory Action with 1-4A3 and 1-4B3 crosstied completed SAT. 1-4B3 Bus voltages: A-B: 485volts, B-C: 485volts, C-A: 485volts. 1-4B3 Transformer temperature is 90°C. Ground fault relay(59) on 1-4B3-5A is not actuated. All ground fault alarms on 1-4B3 and 1-4A3 are clear. 6.9kv GSB 1-4A cubicle 1Y indicates less than 50 amps(minimum reading).	WPB HAYESC
108	HNP Operations	November 5, 2014 21:22	Completed compensatory action (1 of 2) to monitor and log WNB A and B levels and log in eSOMs. WNB A: 9 ft WNB B: 7 ft	WPB HAYESC
109	HNP Operations	November 5, 2014 21:22	Paralleled and synchronized the 'B' EDG to the grid (Breaker 126 closed) IAW OP-155, Section 5.3 to support testing per OST-1073, Section 7.2. Achieved 2.2 - 2.4 MW / 1.0 MVAR load on the 'B' EDG and holding until exhaust temperatures stabilize.	OATC POWERM
110	HNP Operations	November 5, 2014 21:28	Secured E-6BSB in accordance with OP-172 Section 8.6.	OATC POWERM

HNP Log Entries

	Department	Date\Time	Entry	Position User Id
111	HNP Operations	November 5, 2014 21:31	Started E-17 in accordance with OP-172 Section 5.1 for radon removal.	OATC POWERM
112	HNP Operations	November 5, 2014 21:46	'B' EDG load is 5.4 - 5.6 MW / 2.8 MVAR and holding for 45 minutes IAW OP-155, Section 5.3 to support monthly testing per OST-1073, Section 7.2.	OATC POWERM
113	HNP Operations	November 5, 2014 22:00	Completed compensatory action to monitor for active leakage from the B ESW screen wash piping at the screening structure. No active leakage observed.	OUT BOYDST
114	HNP Health Physics	November 5, 2014 22:10	Adjusted flow at GFFD per RAB Op M. White.	MISC KNIGHR01
115	HNP Operations	November 5, 2014 22:10	Completed compensatory action (1 of 2) to monitor ERFIS UPS Inverter for unexpected alarms twice per shift and log in ESOMS with ALB 26/5-5 locked in. No unexpected alarms are in.	TB HERSHM
116	HNP Operations	November 5, 2014 22:34	'B' EDG load is 6.2 - 6.4 MW / 3.4 MVAR load (full load conditions) and holding for 1 hour IAW OP-155, Section 5.3 to support testing per OST-1073, Section 7.2.	OATC POWERM
117	HNP Operations	November 5, 2014 22:40	Placed 'B' SWIF in service and removed 'A' SWIF from service in accordance OP-120.02.39 Section 5.7.	OATC POWERM
118	HNP Operations	November 5, 2014 22:40	Completed compensatory action to blowdown 'A' Breathing Air Receiver using 1IA-3.	TB HERSHM
119	HNP Operations	November 5, 2014 22:47	Started 1&4A FPC Pump per OP-116, section 5.1 for FP temperature control. Started 2&3A FPC Pump per OP-116, section 5.2 for FP temperature control.	OATC POWERM
120	HNP Operations	November 5, 2014 23:00	Completed OST-2044, Radwaste Daily Operations Surveillance Test, Modes: At All Times, satisfactorily.	RWCR PANART
121	HNP Operations	November 5, 2014 23:27	Completed backflush of Seal Water Injection Filter 1A-SN iaw OP-120.02.39 Section 5.7 and 8.1. Seal Water Injection Filter 1A-SN remains isolated, and Seal Water Injection Filter 1B-SN is in service.	RWCR PANART
122	HNP Operations	November 5, 2014 23:32	Alternate diluted 45 gallons per OP-107.01, section 5.4 for reactivity control.	OATC POWERM

HNP Log Entries

	Department	Date\Time	Entry	Position User Id
123	HNP Operations	November 5, 2014 23:39	'B' EDG has been at full load for greater than 60 minutes. Reduced 'B' EDG load below 6.2 MW IAW OP-155, Section 7.1 to support testing per OST-1073, Section 7.2.	OATC POWERM
124	HNP Operations	November 5, 2014 23:41	Completed blowing down compressed air system drains and traps IAW OP-151.01 Sec. 8.3.	TB HERSHM
125	HNP Health Physics	November 5, 2014 23:55	Daily surveys complete, friskers source checked, LHRA doors checked, SOP's surveyed, Spent Fuel Pool locks checked, and ladder seals verified on RAB 190 N and FHB 236 N.	MISC KNIGHR01
126	HNP Operations	November 6, 2014 00:00	Reduced 'B' EDG load to 2.2 - 2.4 MW / 1.0 MVAR and holding until stator winding temperatures are less than 135C IAW OP-155, section 7.1 to support testing per OST-1073, Section 7.2.	BOP BRANNA
127	HNP Operations	November 6, 2014 00:01	Reduced 'B' EDG load to .5 MW and opened Breaker 126 IAW OP-155, Section 7.1 to support testing per OST-1073, Section 7.2.	BOP BRANNA
128	HNP Operations	November 6, 2014 00:04	Secured 'B' EDG IAW OP-155, Section 7.1 to support testing per OST-1073, Section 7.2.	BOP BRANNA
129	HNP Operations	November 6, 2014 00:06	Completed procedure OST-1021 DAILY SURVEILLANCE REQUIREMENTS DAILY INTERVAL MODE 1, 2 satisfactorily.	OATC POWERM
130	HNP Operations	November 6, 2014 00:17	The expected reactivity effect of the last alternate dilution has been observed.	OATC POWERM
131	HNP Operations	November 6, 2014 01:00	Per OP-156.06 section 9.2 the ground and bus voltage will be logged every 4 hours while alarm ALB-15/2-4 is locked in. Bus voltage is at 135 VDC. Ground is at -127.5 VDC.	TB HERSHM
132	HNP Health Physics	November 6, 2014 01:09	Per Hpp-063 Attachment 4 surveys completed for Filter backwash of Seal Water Injection Filter completed.	MISC KNIGHR01
133	HNP Operations	November 6, 2014 01:24	Completed procedure OST-1115, NSW Return from Containment/RAB/TB to Circulating Water Radiation Monitor Souce Check Monthly Interval at all times satisfactorily	BOP BRANNA
134	HNP Operations	November 6, 2014 01:50	Lifted C/O 310527: C-CSIP OUTAGE	TB HERSHM

HNP Log Entries

	Department	Date\Time	Entry	Position User Id
310	HNP Operations	November 24, 2014 22:37	Completed compensatory action to blowdown 'A' Breathing Air Receiver using 1IA-3.	TB MANFRT
311	HNP Operations	November 24, 2014 22:45	Completed blowing down compressed air system drains and traps IAW OP-151.01 Sec. 8.3.	TB MANFRT
312	HNP Operations	November 24, 2014 22:50	During the performance of OST-1013 Step 7.1.25 to test the EDG Overspeed Trip Device, the A EDG will be inoperable. Aaron Tubb is stationed locally with procedural guidance to restore A EDG operability.	BOP SYLVER
313	HNP Operations	November 24, 2014 22:58	During performance of OST-1013, the following Tech Spec actions will be entered: T/S 3.8.1.1 action b for the A EDG. With one diesel generator of 3.8.1.1.b inoperable: 1. Perform Surveillance Requirement 4.8.1.1.1.a within 1 hour and once per 8 hours thereafter; and 2. Within 24 hours, determine the OPERABLE diesel generator is not inoperable due to a common cause failure or perform Surveillance Requirement 4.8.1.1.2.a4#; and 3. Restore the diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; and 4. Verify required features(s) powered from the OPERABLE diesel generator are OPERABLE. If required feature(s) powered from the OPERABLE diesel generator are discovered to be inoperable at any time while in this condition, restore the required feature(s) to OPERABLE status within 4 hours from discovery of inoperable required feature(s) or declare the redundant required feature(s) powered from the inoperable A.C. source as inoperable. SRO: Ray Moore OST-1013 Rev 38	CRS PARENL
314	HNP Operations	November 24, 2014 23:04	Completed Backflushing the Seal Water Return Filter 1X-SN IAW OP-120.02.39, section 5.6 and section 8.1.	RWCR MAVERET
315	HNP Operations	November 24, 2014 23:09	Contacted Energy Control Center due to being outside of Max Grid Voltage of 237 KV (238.0KV South Bus and 237.6KV North Bus) due to maintaining Generator Vars within limits 75 MVARS to 175 MVARS (current vars 78MVARS). VAR Log entry has been initiated.	OATC WILLIB05
316	HNP Operations	November 24, 2014 23:15	Started A-SA EDG IAW OST-1013	OATC WILLIB05
317	HNP Operations	November 24, 2014 23:23	Completed OST-2044, Radwaste Daily Operations Surveillance Test, Modes: At All Times, satisfactorily.	RWCR MAVERET
318	HNP Operations	November 24, 2014 23:28	Grid Voltage and Generator Vars are back in their required bands. VAR Log entry has been closed.	OATC WILLIB05

HNP Log Entries

	Department	Date\Time	Entry	Position User Id
319	HNP Operations	November 24, 2014 23:30	Completed compensatory action to monitor for active leakage from the B ESW screen wash piping at the screening structure. No active leakage observed.	MISC BLANKE
320	HNP Operations	November 24, 2014 23:43	Closed Breaker 106 and increased load on A-SA EDG to a band of 2.2-2.4MW	OATC WILLIB05
321	HNP Operations	November 25, 2014 00:05	Raised A-SA EDG Load to a band of 5.4-5.6 MW	OATC WILLIB05
322	HNP Operations	November 25, 2014 00:37	Completed PMT on 1CZ-5 and 1CZ-7 satisfactorily.	OATC WILLIB05
323	HNP Operations	November 25, 2014 00:40	(Chemistry) Sampled Waste Neut Basin "B" per Ops request. Results: pH (7.46), hydrazine (10 ppb), total suspended solids (TSS) (7.0 ppm).	MISC TYSIND
324	HNP Operations	November 25, 2014 00:41	Prior to placing the Electrical Equipment Protection Room Ventilation in Smoke Purge Mode to perform PMT on 1CZ-32. Admin Controls have been established designating B. Williams with responsibility to Stop ES-3 and verify shut 1CZ-32 and 1CZ-33 should a Control Room Isolation signal occur.	OATC WILLIB05
325	HNP Operations	November 25, 2014 00:47	Started Electrical Equipment Protection Room Ventilation System in Smoke Purge Operation IAW OP-172 section 8.2 to perform PMT of 1CZ-32.	OATC WILLIB05
326	HNP Operations	November 25, 2014 00:49	Restored Electrical Equipment Protection Room Ventialtion to normal IAW OP-172 section 8.1 following sucessfull PMT of 1CZ-32. Admin Controls have been relaxed.	OATC WILLIB05
327	HNP Health Physics	November 25, 2014 01:10	3502A rad monitor (containment RCS leak detector) declared inoperable by Brian Williams to advance filter.	MISC KRAJAE
328	HNP Operations	November 25, 2014 01:11	Completed compensatory action to monitor B Recombiner Phase Seperator Level and drain as needed.	RWCR MAVERET
329	HNP Operations	November 25, 2014 01:12	Declared RM-3502A inoperable due to advancing filter paper. OWP-RM-03 in effect.	OATC WILLIB05
330	HNP Operations	November 25, 2014 01:13	Completed compensatory action to monitor and drain RAB Aux Condensate tank and WPB Aux Cond Tank 1-4A as necessary per OP-130.01 section 8.13. RAB tank level is 40%, WPB tank level is 30%.	RWCR MAVERET

HNP Log Entries

	Department	Date\Time	Entry	Position User Id
331	HNP Operations	November 25, 2014 01:30	Completed compensatory action (2 of 2) to monitor ERFIS UPS Inverter for unexpected alarms twice per shift and log in ESOMS with ALB 26/5-5 locked in. No unexpected alarms are in.	MISC BLANKE
332	HNP Operations	November 25, 2014 01:41	Completing hanging Clearance 311370-001, Secondary Isophase Bus Duct Cooling Fan.	RAB LEEMAR
333	HNP Operations	November 25, 2014 01:45	Per OP-156.06 section 9.2 the ground and bus voltage will be logged every 4 hours while alarm ALB-15/2-4 is locked in. 125VDC NNS Bus voltage is at 135 VDC. Ground is at -112.5 VDC	TB MANFRT
334	HNP Operations	November 25, 2014 01:48	Completed advancing filter paper on RM-3502A IAW OP-118 section 6.2	OATC WILLIB05
335	HNP Operations	November 25, 2014 01:56	Reduced A-SA EDG Load to less than 6.2 MW	OATC WILLIB05
336	HNP Health Physics	November 25, 2014 02:01	Instruments taken to Cal Lab and source checked for the upcoming week. Source checked and ready.	MISC HUMBEJ
337	HNP Health Physics	November 25, 2014 02:02	Survey's reviewed and survey inbox emptied.	MISC HUMBEJ
338	HNP Operations	November 25, 2014 02:04	As required by OST-1026, URE9001 is 0.00 gpm and URE9002 is 0.00 gpm.	OATC WILLIB05
339	HNP Operations	November 25, 2014 02:05	Completed MCB and MCR backpanels walkdown with the OATC.	CRS PARENL
340	HNP Health Physics	November 25, 2014 02:15	3502A rad monitor operable per Brian Williams. Database review not needed per HPP-780.	MISC KRAJAE
341	HNP Operations	November 25, 2014 02:15	Declared RM-3502A operable following filter paper advancement. Completed OWP-RM-03.	OATC WILLIB05
342	HNP Operations	November 25, 2014 02:15	Reduced A-SA EDG Load to 2.2-2.4 MW	OATC WILLIB05

HNP Log Entries

	Department	Date\Time	Entry	Position User Id
343	HNP Operations	November 25, 2014 02:18	Reduced A-SA EDG Load to 0.5 MW and Opened Breaker 106	OATC WILLIB05
344	HNP Operations	November 25, 2014 02:27	Secured A-SA EDG	OATC WILLIB05
345	HNP Operations	November 25, 2014 02:45	Removed Containment Cooling from Max Cooling Mode IAW OP-169 Section 8.2 due to lowering containment pressure with containment purge out of service for LLRT on M-58. Monitoring RCP parameters due lowering the cooling capacity in containment with service water isolated to containment fan coil units.	BOP SYLVER
346	HNP Operations	November 25, 2014 03:15	Completed OST-1026, REACTOR COOLANT SYSTEM LEAKAGE EVALUATION, COMPUTER CALCULATION, DAILY INTERVAL, MODES 1-2-3-4, satisfactorily. Identified leakage = 0.043 gpm, Unidentified leakage = -0.001 gpm.	STA KANGMY
347	HNP Operations	November 25, 2014 03:17	Alternate diluted 60 gallons per OP-107.01, section 5.4 for reactivity control.	OATC WILLIB05
348	HNP Operations	November 25, 2014 03:30	Completed FPT-3500, Fire Door Check Daily Interval, satisfactorily.	RAB LEEMAR
349	HNP Health Physics	November 25, 2014 04:05	Out of Service Equipment [_Mens Argos, BAM, Chemistry__], PCE's [_n/a__], Posting Changes [__n/a_____], Significant OST's [_n/a_____], New/Revised Procedures [___n/a____], New/Revised RWP's [_n/a__].	MISC HUMBEJ
350	HNP Health Physics	November 25, 2014 04:07	Turnover: Waste Gas Inputs are secured and initial survey's have been complete. Shiftly survey's are now required. NCR wrote for the missed surveillance from the previous days.	MISC HUMBEJ
351	HNP Operations	November 25, 2014 04:14	Placed Rod Control in Manual for NI gain adjustment iaw OP-105 Attachment 2. Maintaining RCS temperature iaw OMM-001 Attachment 13.	OATC WILLIB05
352	HNP Operations	November 25, 2014 04:15	Completed hanging Clearance 311376-001, Change Isokinetic Pump Gearbox Oil.	RAB LEEMAR
353	HNP Operations	November 25, 2014 04:34	Opened 1CS-326 to raise VCT Pressure. VCT Pressure had drifted low due to 1CS-326 isolated due to leaking regualtor. 1CS-326 has been restored to an Off Normal Postion of Closed.	OATC WILLIB05
354	HNP Operations	November 25, 2014 04:35	Completed compensatory action to blowdown 'A' Breathing Air Receiver using 1IA-3.	TB MANFRT

HNP 2014 Licensed Operator Written Exam Question #27 Post Exam Comment

Comment for Reactor Operator question #27 is that there is no correct answer. The keyed answer is C.

The first part of the question requires the candidate to evaluate Containment parameters and choose the appropriate Function Restoration Procedure to implement. The current construction of the Containment status tree as adopted by HNP evaluates Containment pressure before Containment sump level or radiation levels. CSFST rules of usage as described in EOP USERS GUIDE section 5.2 states "At any given time, a Critical Safety Function status is represented by a single path through its tree. Since each path is unique, it is uniquely labeled at its end point, or terminus. This labeling consists of color-coding and/or line-pattern-coding of the terminus and last branch line, plus a transition to an appropriate FR if required by that safety status." Since Containment pressure is evaluated before evaluation of sump levels, the Containment Status Tree would result in a YELLOW terminus requiring transition to FR-Z.1. This YELLOW path effectively blocks evaluation of the ORANGE path terminus for Containment flooding. This is recognized in Rev. 2 of the Westinghouse ERG Background Document for F-0.5. Section 2 of this document states "When the status tree "rules of usage" are applied to F-0.5, CONTAINMENT, with a spray pump running and containment pressure between the spray actuation pressure (T.02) and the design pressure (T.03), then a YELLOW priority will result. The operator should be aware that this YELLOW priority can be reached without evaluating the ORANGE priority for entry into FR-Z.2, RESPONSE TO CONTAINMENT FLOODING, based on high containment sump level. This priority scheme should not present conflicts for plants with a large, dry containment(like the reference plant) due to the containment pressure behavior following an event that releases sufficient mass and energy into the containment atmosphere to actuate containment spray, and the value of footnote (T.06) for entry into FR-Z.2, RESPONSE TO CONTAINMENT FLOODING." The background document goes on to provide options for how to change the Containment Status Tree if it were determined that Containment flooding should be evaluated before pressure were reduced less than the Containment Spray actuation setpoint. HNP has not adopted any of these changes and currently uses the ERG version of the Containment Status Tree as is. This results in an entry into EOP-FR-Z.1 Response to High Containment Pressure, eliminating answers "C" and "D" from being correct.

The second part of this question requires the candidate to know what needs to be sampled as required by the implementing procedure. The stem of the question stated that bus 1A2-SA was de-energized due to a fault. This fault results in a loss of one train of CT pumps and ESW booster Pumps. Since one train of ESW booster pumps remain in service (B train), service water for the de-energized train is simply isolated per step 9.a RNO, not sampled. Since nothing is sampled in EOP-FR-Z.1 with the current plant conditions, "A" and "B" are also incorrect leaving no correct answer for this question.

References:

- HNP 2014 Written Exam Question #27
- F-0.5 BACKGROUND, Background Information for Westinghouse Owners Group Emergency Response Guidelines Critical Safety Function Status Tree F-0.5 Containment, section 2 Description.
- EOP-USERS GUIDE section 5.2.1.
- EOP-FR-Z.1, Response to High Containment Pressure, step 9.
- SPDS ERFIS Displays

27. Given the following plant conditions:
    - A LOCA has occurred
    - 480V Emergency Bus 1A2-SA de-energized due to a ground fault
    - The crew is performing EOP-E-1, Loss Of Reactor Or Secondary Coolant

    The following conditions exist in Containment:
    - Containment Pressure is 10.3 psig and rising slowly
    - Containment Sump Level is 210 inches and rising slowly
    - High Range Containment Post LOCA Radiation Monitors are in alarm

    Which ONE of the following completes the statement below?

    Enter __(1)__ AND sample the __(2)__ .

    A. (1) EOP-FR-Z.1, Response to High Containment Pressure

       (2) Containment Sumps

    B. (1) EOP-FR-Z.1, Response to High Containment Pressure

       (2) 'A' ESW Return Header

    C. (1) EOP-FR-Z.2, Response to Containment Flooding

       (2) Containment Sumps

    D. (1) EOP-FR-Z.2, Response to Containment Flooding

       (2) 'A' ESW Return Header

Plausibility and Answer Analysis

Reason answer is correct: *With the Containment sump level greater than 196" the EOP-CSFST terminus is ORANGE for Containment flooding and requires the crew to implement EOP-FR-Z.2. Once in EOP-FR-Z.2 the crew first attempts to identify the source of additional water inside Containment and second sample the Containment sump water to determine if the water maybe transfered to a tank outside of Containment to reduce the sump water level.*

A. Incorrect. *The first part is plausible since the 1A2-SA 480V Emergency Bus is de-energized. The A train of Containment Spray pump has no power, however the B train of equipment is available and the CSFST will remain YELLOW for Containment pressure. The second part is correct.*

B. Incorrect. *The first part is plausible since the 1A2-SA 480V Emergency Bus is de-energized. The A train of Containment Spray pump has no power, however the B train of equipment is available and the CSFST will remain yellow for Containment pressure. The second part is plausible since the actions of EOP-FR-Z.1 require the operator to sample the ESW return header if a Containment spray and ESW booster pump are not running, however entry into EOP-FR-Z.1 is not required since the B train of equipment is available and the CSFST will remain yellow for Containment pressure.*

C. *Correct.*

D. Incorrect. *The first part is correct. The second part is plausible since the actions of EOP-FR-Z.2 require the operator to monitor the ESW system for unexpected sources of water to the sump and the Containment sump is sampled by the procedure, however the ESW system is not a direct source of the Containment sump activity and is not one of the recommended sampling locations.*

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev FINAL

W/E15 Containment Flooding / 5

WE15EA1.3; Ability to operate and / or monitor desired operating results during abnormal and emergency situations as they apply to the (Containment Flooding).

(CFR 41.7 / 45.5 / 45.6)

Importance Rating:	2.8 3.0
Technical Reference:	EOP-CSFST-5, Rev. 11, pg 5 EOP-FR-Z.2 Rev. 0, pg 4
References to be provided:	None
Learning Objective:	EOP-LP-3.13 Obj 4.e
Question Origin:	New
Comments:	None
Tier/Group:	T2/G1

2. DESCRIPTION

The intent of the Containment Safety Function is to maintain containment integrity, since this represents the third and final barrier against radioactivity release. In order to evaluate the status of this Critical Safety Function, the tree evaluates several possible challenges to containment integrity or essential equipment inside containment and directs the operator to an appropriate guideline for function restoration. For the reference plant, only containment overpressure conditions were incorporated into the containment critical safety function because the external design pressure load exceeds the maximum achievable reduction in containment pressure resulting from an inadvertent actuation of the containment spray system. Thus the negative pressure concern does not apply to the reference plant containment (See Reference Plant Description in the Executive Volume). The function is satisfied if containment pressure is below the Hi-3 set pressure, containment level is less than flood level and containment radiation level is below the post-accident radiation alarm setpoint.

When the status tree "rules of usage" are applied to F-0.5, CONTAINMENT, with a spray pump running and containment pressure between the spray actuation pressure (T.02) and the design pressure (T.03), then a YELLOW priority will result. The operator should be aware that this YELLOW priority can be reached without evaluating the ORANGE priority for entry into FR-Z.2, RESPONSE TO CONTAINMENT FLOODING, based on high containment sump level. This priority scheme should not present conflicts for plants with a large, dry containment (like the reference plant) due to the containment pressure behavior following an event that releases sufficient mass and energy into the containment atmosphere to actuate containment spray, and the value of footnote (T.06) for entry into FR-Z.2, RESPONSE TO CONTAINMENT FLOODING.

Plants with ice condenser containments are more likely to require prolonged spray pump operation from the RWST following a LOCA. Thus, it is more likely that the containment design flood level may be approached with containment pressure still above footnote (T.02), and the potential for conflicting priorities when addressing CSF challenges using Status Tree F-0.5,

5.2 Control Room Usage of Status Trees

5.2.1 Description

Status Trees are used to evaluate the current state of predefined Critical Safety Functions. Status Trees ask a series of questions about plant conditions, and in general, each question asked depends on the answer to the previous question. This dependency results in a branching pattern, which is referred to as a "tree".

There are six different trees, each one evaluating a separate safety aspect (Critical Safety Function) of the plant. A hard copy of the Status Trees is contained in procedure EOP-CSFST. Electronic equivalents are displayed on ERFIS using the SPDS functions. At any given time, a Critical Safety Function status is represented by a single path through its tree. Since each path is unique, it is uniquely labeled at its end point, or terminus. This labeling consists of color-coding and/or line-pattern-coding of the terminus and last branch line, plus a transition to an appropriate FR if required by that safety status. If the status is normal for a particular Critical Safety Function, no transition is specified, and the condition is clarified by the words CSF SAT.

Color-coding can be either RED, ORANGE, YELLOW, or GREEN, with GREEN representing a "satisfied" safety status. Each non-green color represents an action level that should be addressed according to the rules of implementation as discussed in Section 5.2.3.

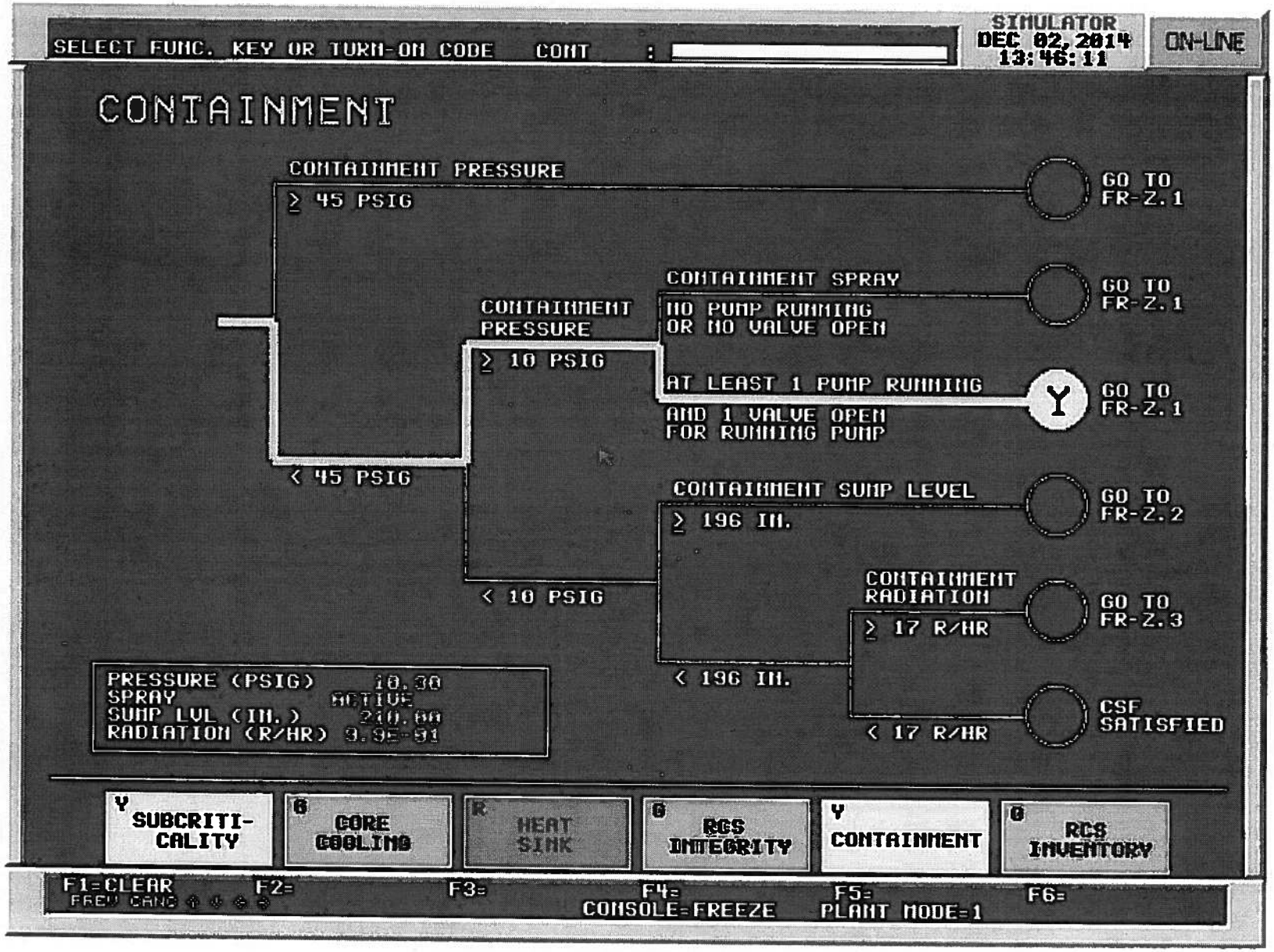
5.2.2 Priority of Status Trees

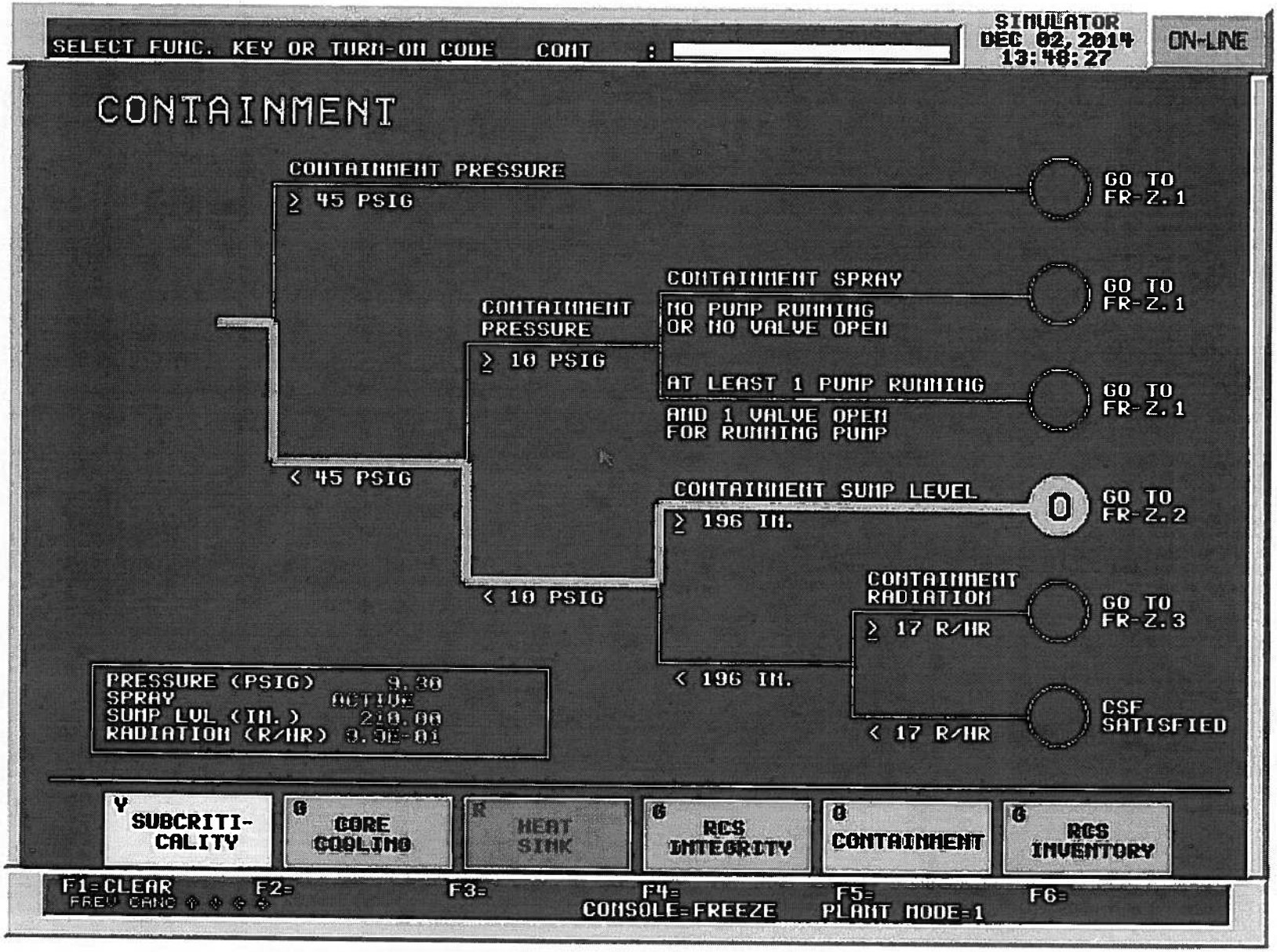
The six Critical Safety Functions and their associated Status Trees are prioritized as follows:

1. Subcriticality (S)
2. Core Cooling (C)
3. Heat Sink (H)
4. Integrity (P)
5. Containment (Z)
6. Inventory (I)

The Status Trees are arranged in EOP-CSFST and on SPDS consistent with their priority to facilitate monitoring and proper implementation. When pronouncing the status tree name or the FR procedures to which it is linked, the letter designating the function protected should be pronounced. For example, FR-C.2 should be pronounced "FR-C-Two".

INSTRUCTIONS	RESPONSE NOT OBTAINED
9. Check ESW Booster Pumps:	
a. Check both of the following:	a. Shut CNMT fan cooler ESW isolation valves:
☐ • ESW booster pump A-SA - RUNNING	☐ 1SW-91 ☐ 1SW-92 ☐ 1SW-97 ☐ 1SW-109
☐ • Orifice bypass isolation valve 1SW-116 - SHUT	
b. Check both of the following:	b. Shut CNMT fan cooler ESW isolation valves:
☐ • Check ESW booster pump B-SB - RUNNING	☐ 1SW-225 ☐ 1SW-227 ☐ 1SW-110 ☐ 1SW-98
☐ • Orifice bypass isolation valve 1SW-118 - SHUT	
10. Monitor Conditions To Restore ESW To Isolated Fan Coolers:	
☐ a. Check ESW - ISOLATED TO ANY FAN COOLERS IN STEPS 8 **OR** 9	☐ a. Observe **NOTE** prior to Step 11 **AND** GO TO Step 11.
b. Check for any of the following:	☐ b. **WHEN** any of the conditions occurs, **THEN** do Step 10c.
☐ • Check CNMT pressure - LESS THAN 10 PSIG	☐ Observe **NOTE** prior to Step 11 **AND** Continue with Step 11.
• Check ESW header isolated to fan coolers for both of the following:	
☐ • Associated ESW booster pump - RUNNING	
☐ • Associated orifice bypass isolation valve - SHUT	
☐ c. Restore ESW to isolated fan coolers.	


SELECT FUNC. KEY OR TURN-ON CODE CONT :
SIMULATOR
DEC 02, 2014
13:46:11
ON-LINE
CONTAINMENT
CONTAINMENT PRESSURE
≥ 45 PSIG
GO TO FR-Z.1
CONTAINMENT SPRAY
NO PUMP RUNNING OR NO VALVE OPEN
GO TO FR-Z.1
CONTAINMENT PRESSURE
≥ 10 PSIG
AT LEAST 1 PUMP RUNNING AND 1 VALVE OPEN FOR RUNNING PUMP
Y
GO TO FR-Z.1
< 45 PSIG
CONTAINMENT SUMP LEVEL
≥ 196 IN.
GO TO FR-Z.2
< 10 PSIG
CONTAINMENT RADIATION
≥ 17 R/HR
GO TO FR-Z.3
< 196 IN.
CSF SATISFIED
< 17 R/HR
PRESSURE (PSIG) 10.30
SPRAY ACTIVE
SUMP LVL (IN.) 210.00
RADIATION (R/HR) 9.9E-01
Y SUBCRITI-CALITY
G CORE COOLING
R HEAT SINK
G RCS INTEGRITY
Y CONTAINMENT
G RCS INVENTORY
F1=CLEAR
PREV CMND
F2=
F3=
F4=
CONSOLE=FREEZE
F5=
PLANT MODE=1
F6=


SELECT FUNC. KEY OR TURN-ON CODE CONT :
SIMULATOR
DEC 02, 2014
13:48:27
ON-LINE
CONTAINMENT
CONTAINMENT PRESSURE
≥ 45 PSIG
GO TO FR-Z.1
CONTAINMENT SPRAY
NO PUMP RUNNING OR NO VALVE OPEN
GO TO FR-Z.1
CONTAINMENT PRESSURE
≥ 10 PSIG
AT LEAST 1 PUMP RUNNING AND 1 VALVE OPEN FOR RUNNING PUMP
GO TO FR-Z.1
< 45 PSIG
CONTAINMENT SUMP LEVEL
≥ 196 IN.
GO TO FR-Z.2
< 10 PSIG
CONTAINMENT RADIATION
≥ 17 R/HR
GO TO FR-Z.3
< 196 IN.
< 17 R/HR
CSF SATISFIED
PRESSURE (PSIG) 9.30
SPRAY ACTIVE
SUMP LVL (IN.) 210.00
RADIATION (R/HR) 9.9E-01
Y SUBCRITI-CALITY
G CORE COOLING
R HEAT SINK
G RCS INTEGRITY
G CONTAINMENT
G RCS INVENTORY
F1=CLEAR
F2=
F3=
F4=
CONSOLE=FREEZE
F5=
PLANT MODE=1
F6=

HNP 2014 Licensed Operator Written Exam question #51 Post Exam Comment

Comment for Reactor Operator question #51 is that there is no correct answer based on the information provided in the stem of the question. The first part of the question requires the candidate to evaluate the time required to shut down the EDG from 35% load. The second part of the question asks for the impact of taking the action per the first part of the question.

There is no comment on the second part of the question. The basis for the timely shutdown of the EDG is to minimize carbon buildup which is both 'B' and 'D' answers.

The comment on the first part of the question is there was not enough information provided in the stem of the question to provide an operationally accurate response. The shutdown of the EDG is based on exhaust stack temperatures as stated in section 7.1.2 step 9 of OP-155, "At the MCB, **WHEN** stack exhaust temperatures are less than 500°F,**THEN POSITION** DIESEL GENERATOR A-SA (B-SB) control switch to STOP". Since these temperatures were not provided there was not enough information provided for the candidate to determine if the note that states "The EDG should be shutdown from 35% load in less than 5 minutes to minimize carbon buildup" was applicable.

The previous 2 EDG runs at the plant on 11/6/14 and 11/24/14 show that when that there are instances when the 5 minutes is achievable and when additional time is required based on stack temperatures. On 11/6/14 the B EDG was secured within 4 minutes of reaching 35% load while on 11/24/14 the A EDG was secured 12 minutes after reaching 35% load while stack temperatures lowered to less than 500°F.

Without the stack temperatures it is not possible to determine the time the EDG should be shutdown.

References:

- HNP 2014 Written Exam question #51
- OP-155 section 7.1, Unloading and Shutdown of Emergency Diesel Generators From the MCB.
- 11/6/14 HNP Operator Logs
- 11/24/14 HNP Operator Logs

51. Given the following plant conditions:
    - The EDG 1A-SA is loaded to 6.3 MW from the MCR in accordance OP-155, Diesel Generator Emergency Power System
    - The crew is preparing to shutdown the EDG

    Which ONE of the following completes the statement below concerning the continued shutdown of the EDG in accordance with OP-155?

    The EDG should be shutdown from 35% load in a maximum of ___(1)___ minutes AND the impact of this action is it will ___(2)___ .

    A. (1) 5

       (2) prevent stator winding overheating

    B✔ (1) 5

       (2) minimize carbon buildup

    C. (1) 20

       (2) prevent stator winding overheating

    D. (1) 20

       (2) minimize carbon buildup

Plausibility and Answer Analysis

Reason answer is correct: *In accordance with OP-155 note during EDG shutdown the EDG should be shutdown from 35% load in < 5 minutes to minimize carbon buildup.*

A. Incorrect. *The first part is correct. The second part is plausible since the procedure has the EDG load held at 2.2 to 2.4 MW and 1 MVAR or less until stator winding temperature is < 135°C. Additionally precaution and limition #29.b warns that if generator winding temperatures reach 155°C the EDG should be secured per normal shutdown procedure unless operating in response to an actual emergency ESF signal (non-test). A visual winding inspection and stator insulation resistance check should be performed after the EDG has been secured.*

B. *Correct.*

C. Incorrect. *The first part is plausible since load has to verified to be < 5.2 to 6.4 MW for at least 20 minutes prior to reducing load to 0.5 MW and then securing the EDG. The second part is plausible since the procedure has the EDG load held at 2.2 to 2.4 MW and 1 MVAR or less until stator winding temperature is < 135°C. Additionally precaution and limition #29.b warns that if generator winding temperatures reach 155°C the EDG should be secured per normal shutdown procedure unless operating in response to an actual emergency ESF signal (non-test). A visual winding inspection and stator insulation resistance check should be performed after the EDG has been secured.*

D. Incorrect. *The first part is plausible since load has to verified to be < 5.2 to 6.4 MW for at least 20 minutes prior to reducing load to 0.5 MW and then securing the EDG. The second part is correct.*

064 Emergency Diesel Generator

064A2.04; Ability to (a) predict the impacts of Unloading prior to securing an ED/G on the ED/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences.

(CFR 41.5 / 43.5 / 45.3 / 45.13)

Importance Rating:	2.7 3.0
Technical Reference:	OP-155, Note on Page 39, Rev. 75
References to be provided:	None
Learning Objective:	Lesson Plan DE, Objective 6
Question Origin:	NEW
Comments:	None
Tier/Group:	T2/G1

7.0 SHUTDOWN

7.1. Unloading and Shutdown of Emergency Diesel Generators From the MCB

7.1.1. Initial Conditions

NOTE: If the EDG has been started for testing and has **NOT** been loaded, then the initial conditions and the Steps which do not apply may be marked N/A.

NOTE: B component equipment nomenclature is in parenthesis.

1. EDG 1A-SA (1B-SB) is running with output breaker closed. _____

2. The Emergency Bus 1A-SA (1B-SB) is being supplied by both the EDG and Auxiliary Bus 1D (1E). _____

7.1.2. Procedural Steps

1. **NOTIFY** Load Dispatcher EDG 1A-SA (1B-SB) will be unloaded. _____

2. Over a twenty minute period, **REDUCE** EDG load to 2.2 to 2.4 MW, while maintaining the ratio of MW to MVARs per Attachment 9. _____

3. **CHECK** TEE6951A (B), Emer DG A (B) Stator Winding Temp, and if temperature exceeds 135°C load should be held at 2.2 to 2.4 MW and 1 MVAR or less until stator winding temperature is less than 135°C. _____

NOTE: The EDG should be shutdown from 35% load in less than 5 minutes to minimize carbon buildup.

4. **PEFORM** the following:

   a. **VERIFY** load has been less than 6.2 to 6.4 MW for at least 20 minutes _____

   b. **VERIFY** Generator Winding Temperature is less than 135°C _____

   c. **REDUCE** load to 0.5 MW _____

   d. **PLACE** DIESEL GEN A-SA (B-SB) BREAKER 106 SA (126 SB) to TRIP. _____

7.1.2 Procedural Steps (continued)

5. **VERIFY** the following:

   a. DIESEL GEN A-SA (B-SB) BREAKER 106 SA (126 SB) indicates open. _____

   b. EI-6957A1 SA (B1 SB), A (B) POWER, indicates zero. _____

   c. EI-6951A SA (B SB), A (B) AMPS, indicates zero. _____

6. **RECORD** time DIESEL GEN A-SA (B-SB) BREAKER 106 SA (126 SB) is opened on Attachment 7. _____

7. **IF** performing monthly EDG test,
   THEN PERFORM the following:

   a. **MARK** the remainder of this section "N/A." _____

   b. **CONTINUE** EDG shutdown per OST-1013 (OST-1073). _____

> **NOTE:** To determine that cylinder temperatures are less than 450°F, the stack exhaust temperature will be monitored until temperature is less than 500°F.

8. At the ECP, **POSITION** temperature selector switch to positions 17 and 18 to monitor stack exhaust temperatures. _____

9. At the MCB, **WHEN** stack exhaust temperatures are less than 500°F, **THEN POSITION** DIESEL GENERATOR A-SA (B-SB) control switch to STOP. _____

R 10. At the MCB, **CHECK** the following: (Reference 2.7.4, 2.7.7, 2.8.11)

   a. EI-6955A SA (B SB), A (B) VOLTS, voltage is decreasing. _____

   b. EI-6954A SA (B SB), A (B) FLD VOLTS, voltage is decreasing. _____

R 11. **IF** voltage is NOT decreasing,
   THEN EMERGENCY STOP the EDG to prevent the voltage regulator from catching fire. _____

7.1.2 Procedural Steps (continued)

12. At the ECP, **VERIFY** the following occurs:

NOTE: The Auxiliary Lube Oil Pump starts when pressure at engine driven pump discharge drops to 40 to 42 psig. Pressure at the ECP is Pump Discharge minus filter and strainer D/P. When filter D/P is clean (10 psi or less), the expected pressure at PI-2476 is 25 to 35 psig.

NOTE: The Jacket Water Circulating Pump auto start verification in Step 7.1.2.12.b(2) may not be applicable if the pump was manually secured in Step 5.1.2.20.

a. At LUBE OIL PRESS of 25 to 35 psig, AUXILIARY LUBE OIL PUMP starts. _____

b. At speed of 170 to 200 rpm, the following occurs:

(1) Auxiliary Lube Oil Pump stops. _____

(2) Jacket Water Circulating Pump auto starts. _____

(3) Lube Oil Circulating Pump auto starts. _____

(4) Fuel Oil Transfer Pump auto starts _____

c. Starting Air Compressors maintain air start receivers greater than or equal to 200 psig. _____

d. CONTROL AIR PRESS indicates 55 to 65 psig. _____

NOTE: The Jacket Water Circulating Pump is expected to start in the following step.

13. **IF** the Jacket Water Circulating Pump was manually secured in Step 5.1.2.20,
THEN PLACE the Jacket Water Circulating Pump control switch to AUTO. _____

14. **RECORD** Time EDG Shutdown on Attachment 7. _____

15. **VERIFY** the following:

a. NO non-emergency trips are active. _____

b. At the GCP, **VERIFY** UNIT-PARALLEL switch in PARALLEL. _____

16. **WHEN** EDG has stopped rolling, at GCP,
THEN RESET D/G 1A-SA (1B-SB) LOCK OUT RELAY 86 DG. _____

_____
Verify

7.1.2 Procedural Steps (continued)

17. **COMPLETE** Section 7.1.3. _____

18. **COMPLETE** Attachment 7, Emergency Diesel Generator Post Run Checklist. _____

HNP Log Entries

	Department	Date\Time	Entry	Position User Id
99	HNP Operations	November 5, 2014 20:30	Secured Nitrogen Addition to the DWST iaw OP-143.03 Section 8.36	RWCR PANART
100	HNP Operations	November 5, 2014 20:34	SSC 'B' EDG is OPERABLE following overspeed trip testing per OST-1073. The local dedicated operator is no longer required.	OATC POWERM
101	HNP Operations	November 5, 2014 20:35	During clearance lift of 307932 the static display unit of breaker 1D2-5C was observed to read "short circuit". Per Electrical Maintenance recommendation an alarm reset was made at the breaker. The reset was unsuccessful and "short circuit" is still displayed. The clearance lift is on hold until the issue with the Siemens breaker is resolved.	TB HERSHM
102	HNP Health Physics	November 5, 2014 20:47	Shiftly Tech Spec trend checks complete	MISC BRANTC
103	HNP Operations	November 5, 2014 20:48	Removed the Cation bed from service per OP-107.02 section 5.2. Total in-service time was 42 minutes. Cation bed effluent boron concentration is 809 ppm based on the last RCS sample.	OATC POWERM
104	HNP Operations	November 5, 2014 20:48	Declared UR-01FW-0488SW OPERABLE and completed EIR 20140739.	CRS STEPHR
105	HNP Operations	November 5, 2014 20:48	Started 'B' EDG per OP-155, Section 5.1 to support monthly testing per OST-1073, Section 7.2.	OATC POWERM
106	HNP Operations	November 5, 2014 21:00	Per OP-156.06 section 9.2 the ground and bus voltage will be logged every 4 hours while alarm ALB-15/2-4 is locked in. Bus voltage is at 135 VDC. Ground is at -127.5 VDC.	TB HERSHM
107	HNP Operations	November 5, 2014 21:19	WPB Compensatory Action with 1-4A3 and 1-4B3 crosstied completed SAT. 1-4B3 Bus voltages: A-B: 485volts, B-C: 485volts, C-A: 485volts. 1-4B3 Transformer temperature is 90°C. Ground fault relay(59) on 1-4B3-5A is not actuated. All ground fault alarms on 1-4B3 and 1-4A3 are clear. 6.9kv GSB 1-4A cubicle 1Y indicates less than 50 amps(minimum reading).	WPB HAYESC
108	HNP Operations	November 5, 2014 21:22	Completed compensatory action (1 of 2) to monitor and log WNB A and B levels and log in eSOMs. WNB A: 9 ft WNB B: 7 ft	WPB HAYESC
109	HNP Operations	November 5, 2014 21:22	Paralleled and synchronized the 'B' EDG to the grid (Breaker 126 closed) IAW OP-155, Section 5.3 to support testing per OST-1073, Section 7.2. Achieved 2.2 - 2.4 MW / 1.0 MVAR load on the 'B' EDG and holding until exhaust temperatures stabilize.	OATC POWERM
110	HNP Operations	November 5, 2014 21:28	Secured E-6BSB in accordance with OP-172 Section 8.6.	OATC POWERM

HNP Log Entries

	Department	Date\Time	Entry	Position User Id
111	HNP Operations	November 5, 2014 21:31	Started E-17 in accordance with OP-172 Section 5.1 for radon removal.	OATC POWERM
112	HNP Operations	November 5, 2014 21:46	'B' EDG load is 5.4 - 5.6 MW / 2.8 MVAR and holding for 45 minutes IAW OP-155, Section 5.3 to support monthly testing per OST-1073, Section 7.2.	OATC POWERM
113	HNP Operations	November 5, 2014 22:00	Completed compensatory action to monitor for active leakage from the B ESW screen wash piping at the screening structure. No active leakage observed.	OUT BOYDST
114	HNP Health Physics	November 5, 2014 22:10	Adjusted flow at GFFD per RAB Op M. White.	MISC KNIGHR01
115	HNP Operations	November 5, 2014 22:10	Completed compensatory action (1 of 2) to monitor ERFIS UPS Inverter for unexpected alarms twice per shift and log in ESOMS with ALB 26/5-5 locked in. No unexpected alarms are in.	TB HERSHM
116	HNP Operations	November 5, 2014 22:34	'B' EDG load is 6.2 - 6.4 MW / 3.4 MVAR load (full load conditions) and holding for 1 hour IAW OP-155, Section 5.3 to support testing per OST-1073, Section 7.2.	OATC POWERM
117	HNP Operations	November 5, 2014 22:40	Placed 'B' SWIF in service and removed 'A' SWIF from service in accordance OP-120.02.39 Section 5.7.	OATC POWERM
118	HNP Operations	November 5, 2014 22:40	Completed compensatory action to blowdown 'A' Breathing Air Receiver using 1IA-3.	TB HERSHM
119	HNP Operations	November 5, 2014 22:47	Started 1&4A FPC Pump per OP-116, section 5.1 for FP temperature control. Started 2&3A FPC Pump per OP-116, section 5.2 for FP temperature control.	OATC POWERM
120	HNP Operations	November 5, 2014 23:00	Completed OST-2044, Radwaste Daily Operations Surveillance Test, Modes: At All Times, satisfactorily.	RWCR PANART
121	HNP Operations	November 5, 2014 23:27	Completed backflush of Seal Water Injection Filter 1A-SN iaw OP-120.02.39 Section 5.7 and 8.1. Seal Water Injection Filter 1A-SN remains isolated, and Seal Water Injection Filter 1B-SN is in service.	RWCR PANART
122	HNP Operations	November 5, 2014 23:32	Alternate diluted 45 gallons per OP-107.01, section 5.4 for reactivity control.	OATC POWERM

HNP Log Entries

	Department	Date\Time	Entry	Position User Id
123	HNP Operations	November 5, 2014 23:39	'B' EDG has been at full load for greater than 60 minutes. Reduced 'B' EDG load below 6.2 MW IAW OP-155, Section 7.1 to support testing per OST-1073, Section 7.2.	OATC POWERM
124	HNP Operations	November 5, 2014 23:41	Completed blowing down compressed air system drains and traps IAW OP-151.01 Sec. 8.3.	TB HERSHM
125	HNP Health Physics	November 5, 2014 23:55	Daily surveys complete, friskers source checked, LHRA doors checked, SOP's surveyed, Spent Fuel Pool locks checked, and ladder seals verified on RAB 190 N and FHB 236 N.	MISC KNIGHR01
126	HNP Operations	November 6, 2014 00:00	Reduced 'B' EDG load to 2.2 - 2.4 MW / 1.0 MVAR and holding until stator winding temperatures are less than 135C IAW OP-155, section 7.1 to support testing per OST-1073, Section 7.2.	BOP BRANNA
127	HNP Operations	November 6, 2014 00:01	Reduced 'B' EDG load to .5 MW and opened Breaker 126 IAW OP-155, Section 7.1 to support testing per OST-1073, Section 7.2.	BOP BRANNA
128	HNP Operations	November 6, 2014 00:04	Secured 'B' EDG IAW OP-155, Section 7.1 to support testing per OST-1073, Section 7.2.	BOP BRANNA
129	HNP Operations	November 6, 2014 00:06	Completed procedure OST-1021 DAILY SURVEILLANCE REQUIREMENTS DAILY INTERVAL MODE 1, 2 satisfactorily.	OATC POWERM
130	HNP Operations	November 6, 2014 00:17	The expected reactivity effect of the last alternate dilution has been observed.	OATC POWERM
131	HNP Operations	November 6, 2014 01:00	Per OP-156.06 section 9.2 the ground and bus voltage will be logged every 4 hours while alarm ALB-15/2-4 is locked in. Bus voltage is at 135 VDC. Ground is at -127.5 VDC.	TB HERSHM
132	HNP Health Physics	November 6, 2014 01:09	Per Hpp-063 Attachment 4 surveys completed for Filter backwash of Seal Water Injection Filter completed.	MISC KNIGHR01
133	HNP Operations	November 6, 2014 01:24	Completed procedure OST-1115, NSW Return from Containment/RAB/TB to Circulating Water Radiation Monitor Souce Check Monthly Interval at all times satisfactorily	BOP BRANNA
134	HNP Operations	November 6, 2014 01:50	Lifted C/O 310527: C-CSIP OUTAGE	TB HERSHM

HNP Log Entries

	Department	Date\Time	Entry	Position User Id
310	HNP Operations	November 24, 2014 22:37	Completed compensatory action to blowdown 'A' Breathing Air Receiver using 1IA-3.	TB MANFRT
311	HNP Operations	November 24, 2014 22:45	Completed blowing down compressed air system drains and traps IAW OP-151.01 Sec. 8.3.	TB MANFRT
312	HNP Operations	November 24, 2014 22:50	During the performance of OST-1013 Step 7.1.25 to test the EDG Overspeed Trip Device, the A EDG will be inoperable. Aaron Tubb is stationed locally with procedural guidance to restore A EDG operability.	BOP SYLVER
313	HNP Operations	November 24, 2014 22:58	During performance of OST-1013, the following Tech Spec actions will be entered: T/S 3.8.1.1 action b for the A EDG. With one diesel generator of 3.8.1.1.b inoperable: 1. Perform Surveillance Requirement 4.8.1.1.1.a within 1 hour and once per 8 hours thereafter; and 2. Within 24 hours, determine the OPERABLE diesel generator is not inoperable due to a common cause failure or perform Surveillance Requirement 4.8.1.1.2.a4#; and 3. Restore the diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; and 4. Verify required features(s) powered from the OPERABLE diesel generator are OPERABLE. If required feature(s) powered from the OPERABLE diesel generator are discovered to be inoperable at any time while in this condition, restore the required feature(s) to OPERABLE status within 4 hours from discovery of inoperable required feature(s) or declare the redundant required feature(s) powered from the inoperable A.C. source as inoperable. SRO: Ray Moore OST-1013 Rev 38	CRS PARENL
314	HNP Operations	November 24, 2014 23:04	Completed Backflushing the Seal Water Return Filter 1X-SN IAW OP-120.02.39, section 5.6 and section 8.1.	RWCR MAVERET
315	HNP Operations	November 24, 2014 23:09	Contacted Energy Control Center due to being outside of Max Grid Voltage of 237 KV (238.0KV South Bus and 237.6KV North Bus) due to maintaining Generator Vars within limits 75 MVARS to 175 MVARS (current vars 78MVARS). VAR Log entry has been initiated.	OATC WILLIB05
316	HNP Operations	November 24, 2014 23:15	Started A-SA EDG IAW OST-1013	OATC WILLIB05
317	HNP Operations	November 24, 2014 23:23	Completed OST-2044, Radwaste Daily Operations Surveillance Test, Modes: At All Times, satisfactorily.	RWCR MAVERET
318	HNP Operations	November 24, 2014 23:28	Grid Voltage and Generator Vars are back in their required bands. VAR Log entry has been closed.	OATC WILLIB05

HNP Log Entries

	Department	Date\Time	Entry	Position User Id
319	HNP Operations	November 24, 2014 23:30	Completed compensatory action to monitor for active leakage from the B ESW screen wash piping at the screening structure. No active leakage observed.	MISC BLANKE
320	HNP Operations	November 24, 2014 23:43	Closed Breaker 106 and increased load on A-SA EDG to a band of 2.2-2.4MW	OATC WILLIB05
321	HNP Operations	November 25, 2014 00:05	Raised A-SA EDG Load to a band of 5.4-5.6 MW	OATC WILLIB05
322	HNP Operations	November 25, 2014 00:37	Completed PMT on 1CZ-5 and 1CZ-7 satisfactorily.	OATC WILLIB05
323	HNP Operations	November 25, 2014 00:40	(Chemistry) Sampled Waste Neut Basin "B" per Ops request. Results: pH (7.46), hydrazine (10 ppb), total suspended solids (TSS) (7.0 ppm).	MISC TYSIND
324	HNP Operations	November 25, 2014 00:41	Prior to placing the Electrical Equipment Protection Room Ventilation in Smoke Purge Mode to perform PMT on 1CZ-32. Admin Controls have been established designating B. Williams with responsibility to Stop ES-3 and verify shut 1CZ-32 and 1CZ-33 should a Control Room Isolation signal occur.	OATC WILLIB05
325	HNP Operations	November 25, 2014 00:47	Started Electrical Equipment Protection Room Ventilation System in Smoke Purge Operation IAW OP-172 section 8.2 to perform PMT of 1CZ-32.	OATC WILLIB05
326	HNP Operations	November 25, 2014 00:49	Restored Electrical Equipment Protection Room Ventialtion to normal IAW OP-172 section 8.1 following sucessfull PMT of 1CZ-32. Admin Controls have been relaxed.	OATC WILLIB05
327	HNP Health Physics	November 25, 2014 01:10	3502A rad monitor (containment RCS leak detector) declared inoperable by Brian Williams to advance filter.	MISC KRAJAE
328	HNP Operations	November 25, 2014 01:11	Completed compensatory action to monitor B Recombiner Phase Seperator Level and drain as needed.	RWCR MAVERET
329	HNP Operations	November 25, 2014 01:12	Declared RM-3502A inoperable due to advancing filter paper. OWP-RM-03 in effect.	OATC WILLIB05
330	HNP Operations	November 25, 2014 01:13	Completed compensatory action to monitor and drain RAB Aux Condensate tank and WPB Aux Cond Tank 1-4A as necessary per OP-130.01 section 8.13. RAB tank level is 40%, WPB tank level is 30%.	RWCR MAVERET

HNP Log Entries

	Department	Date\Time	Entry	Position User Id
331	HNP Operations	November 25, 2014 01:30	Completed compensatory action (2 of 2) to monitor ERFIS UPS Inverter for unexpected alarms twice per shift and log in ESOMS with ALB 26/5-5 locked in. No unexpected alarms are in.	MISC BLANKE
332	HNP Operations	November 25, 2014 01:41	Completing hanging Clearance 311370-001, Secondary Isophase Bus Duct Cooling Fan.	RAB LEEMAR
333	HNP Operations	November 25, 2014 01:45	Per OP-156.06 section 9.2 the ground and bus voltage will be logged every 4 hours while alarm ALB-15/2-4 is locked in. 125VDC NNS Bus voltage is at 135 VDC. Ground is at -112.5 VDC	TB MANFRT
334	HNP Operations	November 25, 2014 01:48	Completed advancing filter paper on RM-3502A IAW OP-118 section 6.2	OATC WILLIB05
335	HNP Operations	November 25, 2014 01:56	Reduced A-SA EDG Load to less than 6.2 MW	OATC WILLIB05
336	HNP Health Physics	November 25, 2014 02:01	Instruments taken to Cal Lab and source checked for the upcoming week. Source checked and ready.	MISC HUMBEJ
337	HNP Health Physics	November 25, 2014 02:02	Survey's reviewed and survey inbox emptied.	MISC HUMBEJ
338	HNP Operations	November 25, 2014 02:04	As required by OST-1026, URE9001 is 0.00 gpm and URE9002 is 0.00 gpm.	OATC WILLIB05
339	HNP Operations	November 25, 2014 02:05	Completed MCB and MCR backpanels walkdown with the OATC.	CRS PARENL
340	HNP Health Physics	November 25, 2014 02:15	3502A rad monitor operable per Brian Williams. Database review not needed per HPP-780.	MISC KRAJAE
341	HNP Operations	November 25, 2014 02:15	Declared RM-3502A operable following filter paper advancement. Completed OWP-RM-03.	OATC WILLIB05
342	HNP Operations	November 25, 2014 02:15	Reduced A-SA EDG Load to 2.2-2.4 MW	OATC WILLIB05

HNP Log Entries

	Department	Date\Time	Entry	Position User Id
343	HNP Operations	November 25, 2014 02:18	Reduced A-SA EDG Load to 0.5 MW and Opened Breaker 106	OATC WILLIB05
344	HNP Operations	November 25, 2014 02:27	Secured A-SA EDG	OATC WILLIB05
345	HNP Operations	November 25, 2014 02:45	Removed Containment Cooling from Max Cooling Mode IAW OP-169 Section 8.2 due to lowering containment pressure with containment purge out of service for LLRT on M-58. Monitoring RCP parameters due lowering the cooling capacity in containment with service water isolated to containment fan coil units.	BOP SYLVER
346	HNP Operations	November 25, 2014 03:15	Completed OST-1026, REACTOR COOLANT SYSTEM LEAKAGE EVALUATION, COMPUTER CALCULATION, DAILY INTERVAL, MODES 1-2-3-4, satisfactorily. Identified leakage = 0.043 gpm, Unidentified leakage = -0.001 gpm.	STA KANGMY
347	HNP Operations	November 25, 2014 03:17	Alternate diluted 60 gallons per OP-107.01, section 5.4 for reactivity control.	OATC WILLIB05
348	HNP Operations	November 25, 2014 03:30	Completed FPT-3500, Fire Door Check Daily Interval, satisfactorily.	RAB LEEMAR
349	HNP Health Physics	November 25, 2014 04:05	Out of Service Equipment [_Mens Argos, BAM, Chemistry__], PCE's [_n/a__], Posting Changes [__n/a_____], Significant OST's [_n/a_____], New/Revised Procedures [___n/a____], New/Revised RWP's [_n/a__].	MISC HUMBEJ
350	HNP Health Physics	November 25, 2014 04:07	Turnover: Waste Gas Inputs are secured and initial survey's have been complete. Shiftly survey's are now required. NCR wrote for the missed surveillance from the previous days.	MISC HUMBEJ
351	HNP Operations	November 25, 2014 04:14	Placed Rod Control in Manual for NI gain adjustment iaw OP-105 Attachment 2. Maintaining RCS temperature iaw OMM-001 Attachment 13.	OATC WILLIB05
352	HNP Operations	November 25, 2014 04:15	Completed hanging Clearance 311376-001, Change Isokinetic Pump Gearbox Oil.	RAB LEEMAR
353	HNP Operations	November 25, 2014 04:34	Opened 1CS-326 to raise VCT Pressure. VCT Pressure had drifted low due to 1CS-326 isolated due to leaking regualtor. 1CS-326 has been restored to an Off Normal Postion of Closed.	OATC WILLIB05
354	HNP Operations	November 25, 2014 04:35	Completed compensatory action to blowdown 'A' Breathing Air Receiver using 1IA-3.	TB MANFRT

HNP 2014 Licensed Operator Written Exam Question #73 Post Exam Comment

Comment for Reactor Operator question #73 is that the correct answer to this question is A and not B as keyed.

The question required the candidate to evaluate the condition of RCS pressure during an operator controlled cooldown following a small break LOCA and the basis for that decision.

The EOP USERS GUIDE section 6.5 states "The operator is frequently asked to check RCS and SG pressures and temperature as STABLE (or RISING). STABLE does not necessarily imply constant. RCS and/or SG pressure may be dropping slowly due to an operator-controlled cooldown and still be considered stable. If the operator can control the rate and magnitude of the pressure change, then pressure should be considered stable."

Therefore RCS pressure should be considered STABLE due to the pressure drop seen being a direct result of an operator controlled cooldown, which makes answer "A" correct and answers "C" and "D" incorrect.

Answer "B" provides a basis for calling RCS pressure stable as RCS subcooling is rising. While a rising subcooling is a diverse indication of a stable/rising pressure it is not an indication that is referenced in the EOP users guide revision that was used to write this exam question or by the students as they prepared for the exam. It has been discovered the HNP Revision 43 of the EOP Users Guide is incorrect in stating, "Note that when evaluating RCS pressure response for reducing or terminating SI with an RCS cooldown in progress, RCS pressure may be considered STABLE if subcooling is lowering". Obviously a lowering subcooling value is not an indication of stable pressure.

Based on the information provided in the EOP Users Guide answer A is the more correct answer to this question.

References:

- HNP 2014 Written exam Question #73
- EOP-Users Guide section 6.5

73. Given the following plant conditions:
    - Due to a small break LOCA the crew is implementing EOP-ES-1.2, Post LOCA Cooldown and Depressurization
    - A cooldown to Cold Shutdown has been initiated
    - The first CSIP was just secured

    - RCS parameter response is as follows:

Time	RCS Temperature (°F)	RCS Pressure (psig)	Subcooling (°F)
1400	435	462	27
1402	433	460	29
1404	431	458	30
1406	429	456	32

In accordance with guidance provided by the EOP User's Guide, which ONE of the following completes the statement below concerning the RCS evaluation?

RCS pressure should be considered _____ .

A. STABLE because the RCS pressure drop is being controlled

B. STABLE because RCS subcooling is rising

C. LOWERING even though RCS subcooling is rising

D. LOWERING because the RCS pressure drop cannot be controlled

Plausibility and Answer Analysis

Reason answer is correct: *RCS Pressure should be considered STABLE because RCS subcooling is increasing with an operator controlled cooldown in progress.*

A. *Incorrect. RCS Pressure should be considered STABLE because RCS subcooling is rising with an operator controlled cooldown in progress. No attempt to control RCS Pressure is made. Just because a controlled cooldown is in progress doesn't mean RCS Pressure is controlled.*

B. *Correct.*

C. *Incorrect. RCS Pressure is lowering but with an operator controlled cooldown in progress and subcooling increasing RCS Pressure should be considered stable.*

D. *Incorrect. RCS Pressure is lowering but with an operator controlled cooldown in progress and subcooling increasing RCS Pressure should be considered stable. No attempt has been made to control RCS Pressure. Just because RCS pressure is lowering during a controlled cooldown doesn't mean it is uncontrolled.*

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev FINAL

2.4 Emergency Procedures / Plant

G2.4.17 Knowledge of EOP terms and definitions.

(CFR 41.10 / 45.13)

Importance Rating:	3.9 4.3
Technical Reference:	EOP-Users Guide, Page 34 (Stable Pressure/Temperture), Rev. 41, steam tables
References to be provided:	None
Learning Objective:	LP-EOP-3.19, Obj. 4d
Question Origin:	Bank OIT Exam Bank, 2009A NRC RO 73
Comments:	None
Tier/Group:	T3

6.4 Sequencer Operation

Any time the sequencer is actuated by an SI or loss of off-site power signal, the operator should monitor the Emergency Safeguards Sequencer for proper equipment loading. Monitoring the sequencer ensures immediate attention is given to major equipment including that which is not verified in the EOPs (e.g., E-6 fans, WC-2 chiller), but would be checked by OMM-004. The operator should allow the sequencer to complete its cycle prior to attempting to start any large electrical loads including loads the sequencer may have failed to start. If any safeguards component has failed to auto start, a manual start attempt should be made when the component status is checked during implementation of the E-0, "Safeguards Verification" attachment. This includes the case where the sequencer itself has failed. This restriction prevents overloading a diesel generator and/or its associated emergency bus. It also provides an orderly methodology to address and correct failures of safeguards equipment. (Reference 2.2.3.15)

6.5 Stable Pressure/Temperature

The operator is frequently asked to check RCS and SG pressures and temperature as STABLE (or RISING). STABLE does not necessarily imply constant. RCS and/or SG pressure may be dropping slowly due to an operator-controlled cooldown and still be considered stable. If the operator can control the rate and magnitude of the pressure change, then pressure should be considered stable. The same conventions apply to temperature. Note that when evaluating RCS pressure response for reducing or terminating SI with an RCS cooldown in progress, RCS pressure may be considered STABLE if subcooling is lowering. (References 2.2.2.11, 2.2.2.19 and 2.2.3.25)

SG pressure may also trend downward during a LOCA if RCS temperature (as measured by core exit thermocouples or T-hot) drops below that of the water in the secondary side of the SGs. This response is caused by the cooling of the secondary water by the circulating RCS fluid.

In evaluating this response for a potential UNCONTROLLED secondary depressurization, the SG pressure should be compared to the saturation pressure for the RCS fluid. As long as the SG pressure remains above the saturation pressure of the RCS fluid, the SG should NOT be considered faulted. (References 2.2.2.24 and 2.2.3.35)

6.6 Realignment of Plant Equipment Following SI Termination

An attachment to ES-1.1 is provided as a guide to aid the operator in realigning plant systems after SI termination. The attachment assumes the SI is spurious, therefore, the operator must evaluate the recommended realignments based on actual plant conditions. The appropriate system operating procedures should be referenced for any applicable precautions and limitations.

The reactor trip breakers are not reclosed in ES-1.1. This action is performed when directed in GP-004 or GP-007, after the operator exits ES-1.1. Until the trip breakers are reclosed, automatic SI actuation (T.S. 3.3.2) is inoperable. This information is related to the operator by a NOTE in ES-1.1.

Other systems may have become inoperable during implementation of EOPs. The status of Tech Spec components and systems must, therefore, be evaluated when exiting the EOPs. Also, implementation of EOPs does not suspend Tech Spec surveillance requirements (Reference 2.2.2.10).