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Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-25038**

[illegible]

UNIT 1 () UNIT 2 (X)

TASK TITLE: **VERIFY THE CORRECT OVERLAP BETWEEN IRM RANGES 6 AND 7 (STOP POWER ASCENSION)****JPM NUMBER:** LR-JP-25038-05**TASK STANDARD:** This task will be complete when the operator has successfully verified IRM overlap between Ranges 6 and 7 and has determined that overlap for two IRMs is unacceptable, per 34GO-OPS-001-2, "Plant Startup," and power ascension must discontinue.**TASK NUMBER:** 012.010**OBJECTIVE NUMBER:** 012.010.B**PLANT HATCH JTA IMPORTANCE RATING:****RO** 3.40**SRO** 3.07**K/A CATALOG NUMBER:** 215003A407**K/A CATALOG JTA IMPORTANCE RATING:****RO** 3.60**SRO** 3.60**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)

GENERAL REFERENCES:	Unit 2
	34GO-OPS-001-2 (current version)

REQUIRED MATERIALS:	Unit 2
	34GO-OPS-001-2 (current version)

APPROXIMATE COMPLETION TIME: 14.0 Minutes**SIMULATOR SETUP:** REFER TO SIMULATOR SETUP SHEET ON THE FOLLOWING PAGE

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #103** or other startup IC and leave in **FREEZE**.
2. Make sure **RECORDER POWER** is **TURND ON**. Roll Chart Recorders and Process Computer Typers forward. Ensure any information printed on the Process Computer Typers from previous ICs is removed.
3. **INSERT** the following **MALFUNCTIONS**:

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfC51_8F	IRM F Failure (Downscale)			00000
mfC51_155C	IRM C Range 7 Fails High By a Factor of 2			00000
mfC51_155B	IRM B Range 7 Fails High By a Factor of 2			00000

4. Take the Simulator **OUT OF FREEZE** and **PERFORM** the following **MANIPULATIONS**:
 - A. Bypass IRM "F."
 - B. Pull control rods until all IRMs are on Ranges 5 or 6, with a Reactor period of about 150 seconds.
 - B. While pulling control rods, don't forget to increase Dump Flow, withdraw SRMs, and close Head Vents, if required.
 - C. Place simulator in freeze and take a snapshot when IRMs are on Range 5 and/or 6.
5. Complete a markup of 34GO-OPS-001-2 thru step 7.2.23. Have Attachment 9 available (other attachments are not required).
6. **PLACE** the Simulator in **FREEZE** until the **INITIATING CUE** is given.
7. **ESTIMATED Simulator SETUP TIME: 30 Minutes**

NOTE: While the operator is performing this JPM, it will be necessary to withdraw more control rods to maintain a positive period. This should be done until all IRMs are on Range 7 or above.

UNIT 2

READ AND GIVE A COPY TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 2 is in Startup, with 34GO-OPS-001-2 (Plant Startup) in progress.
2. All plant equipment is in normal line-up for this condition. IRM "F" failed downscale last shift. It has been bypassed and I & C is investigating.
3. Each Intermediate Range Monitor (IRM) is on Range 5 or Range 6.
4. 34GO-OPS-001-2, Plant Startup, has been completed thru Step 7.2.23.
5. All Source Range Monitors (SRMs) have been fully withdrawn.
6. Reactor Period is approximately 150 seconds, with the CBO performing required rod movement per 34GO-OPS-065-0.
7. A second operator is monitoring the remainder of the Control Room Panels, including Feedwater Control.

INITIATING CUES:

Range IRMs as power is increased and perform Steps 7.2.24 and 7.2.25 of 34GO-OPS-001-2, Plant Startup, to verify IRM overlap.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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For **INITIAL** Operator Programs:

For OJT/OJE; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.

For License Examinations; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

**START
TIME:** _____

PROMPT: **AS** the Shift Supervisor, **INFORM** the operator that another operator is monitoring the remainder of the Control Room Panels, including Feedwater Control.

NOTE: The Simulator operator, as the CBO, may be required to withdraw Control Rods to maintain Reactor Period, due to the negative reactivity addition encountered at the Point of Adding Heat, such that all IRMs will go to Range 7 or above.

PROMPT: **INFORM** the operator that the CBO will perform any required rod movement to maintain the Reactor critical.

1.	Operator OBTAINS the correct procedure and LOCATES the correct step.	Operator has OBTAINED a copy of 34GO-OPS-001-2 and has LOCATED Step 7.2.24.	SAT / UNSAT
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PROMPT: **WHEN** operator addresses 34GO-OPS-001-2 , **PROVIDE** the operator with the previously markup version of 34GO-OPS-001-2 and a blank Attachment 9.

NOTE: The critical part of Step 2 will be satisfied if the operator ranges the IRMs in such a manner that no half-scrams or full scrams are received.

**2.	Operator RANGES IRMs to maintain IRM indications on recorders between 10 and 80 on the 0 - 125 scale (black scale).	Operator has RANGED IRMs to maintain IRM indications between 10 and 80 on the recorder 0 - 125 scale (black scale).	SAT / UNSAT
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PROMPT: **IF** addressed, **INDICATE** to the operator that all the SRMs are fully withdrawn.

(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**3.	Operator RANGES each IRM from Range 6 to Range 7 and LOGS Range 6 and Range 7 readings on Attachment 9 of 34GO-OPS-001-2.	Operator has RANGED each IRM from Range 6 to Range 7 and has LOGGED Range 6 and Range 7 readings in Column 3 and Column 4, respectively, of Attachment 9 of 34GO-OPS-001-2.	SAT / UNSAT

PROMPT: As the SS, NOTIFY the operator that another operator will monitor the IRMs while Attachment 9 is completed.

NOTE: Instructor is to range the IRMs as necessary to prevent a scram.

**4.	Operator DIVIDES Range 6 (Column 2) readings by 10 and ENTERS the RESULTS in Column 4 of Attachment 9 of 34GO-OPS-001-2.	Operator has DIVIDED Range 6 (Column 2) readings by 10 and has ENTERED the RESULTS in Column 4 of Attachment 9 of 34GO-OPS-001-2.	SAT / UNSAT
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PROMPT: IF addressed, as a second operator, **PERFORM** verification of Column 5 of Attachment 1.

**5.	Operator checks that Column 3 equals Column 4 ± 2 (on the red scale, Column 3) and DETERMINES that IRM "B" and "C" overlap is <u>NOT ACCEPTABLE</u> ($> \pm 2$).	Operator checks that Column 3 equals Column 4 ± 2 (on the red scale, Column 3) and has DETERMINED : <ul style="list-style-type: none"> that IRM "B" <u>NOT ACCEPTABLE</u> ($> \pm 2$). 	SAT / UNSAT
		<ul style="list-style-type: none"> that IRM "C" <u>NOT ACCEPTABLE</u> ($> \pm 2$). 	SAT / UNSAT

PROMPT: IF addressed, as a second operator, **PERFORM** calculation verification.

NOTE: The operator may have the Shift Supervisor notify the I & C Shop.

(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
6.	Operator RECORDS the unacceptable overlap for IRM "B" and "C" in the Operator's log and notifies the Shift Supervisor of the unacceptable overlap for IRM "B" and "C".	Operator has RECORDED the unacceptable overlap for IRM "B" and "C" in the Operator's log and notifies the Shift Supervisor of the unacceptable overlap for IRM "B" and "C."	SAT / UNSAT
**7.	Operator notifies the SS that per the Note of Attachment 9, power accession cannot continue with less than three IRM channels in each RPS trip system.	Operator NOTIFIES the SS that per the Note of Attachment 9, power accession cannot continue with less than three IRM channels in each RPS trip system.	SAT / UNSAT

PROMPT: AS the Shift Supervisor, **INFORM** the operator that another operator will maintain current power while the condition of the IRMs is being evaluated.

END
TIME: _____

NOTE: The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

TERMINATING CUE: We will stop here.

(** Indicates critical step)

ATTACHMENT 1

(EXCERPT FROM 34GO-OPS-001-2 - ATTACHMENT 9)

TITLE: IRM OVERLAP CHECK

1.0 Confirm that there is overlap between IRM ranges 6 and 7 is acceptable as follows:

- 1.1 Record readings from range 6 for each IRM channel.
- 1.2 Record readings from range 7 for each IRM channel.
- 1.3 Divide Range 6 readings (COLUMN 2) by 10 and enter in Column 4.

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5	
IRM CHANNEL	RANGE 6 READING (Black Scale)	RANGE 7 READING (Red Scale)	(COLUMN 2) / 10	SIGN-OFF	
				INITIALS	VERIFIED (LIC OPER)
A					
B					
C					
D					
E					
F					
G					
H					

INITIALS

1.4 Confirm that Column 3 = Column 4 \pm 2 (on the red scale).

1.5 Initial and verify the calculations.

VERIFY

NOTE

Acceptable overlap must be obtained on three IRM channels in each RPS Trip System to continue power ascension

DOCUMENT TITLE:
PLANT STARTUPDOCUMENT NUMBER:
34GO-OPS-001-2VERSION NO:
38.16

7.2 APPROACH TO CRITICALITY

CONTINUOUS

- 7.2.1 Announce on the Public Address system that reactor startup is about to commence and that Primary and Secondary Containment are in effect. AC

- 7.2.2 Obtain Shift Supervisor's and Shift Manager's signatures confirming that all prerequisites necessary to put the Reactor Mode switch in START & HOT STBY for the purpose of plant startup have been met.

<u>Jack Jones</u>	<u>4/20/09</u>	<u>0900</u>
Shift Supervisor	Date	Time
<u>Sam Smith</u>	<u>4/20/09</u>	<u>0900</u>
Shift Manager	Date	Time

- 7.2.3 PLACE the Reactor Mode Switch in START & HOT STBY.

<u>4/20/09</u>	<u>0900</u>
Date	Time

AC

- 7.2.4 Confirm that the "MODE SWITCH SHUTDOWN TRIP BYPASS" annunciator on 2H11-P603 clears. AC

- 7.2.5 Confirm the Scram Group A AND Scram Group B indicating lights (eight white lights) are ILLUMINATED (there is power to the RPS Trip System and all trips are reset), panel 2H11-P603. AC

NOTE:

At certain times in core life, it may be necessary to establish a minimum moderator temperature limit for rod withdrawal in order to prevent startup with a positive moderator coefficient.

- 7.2.6 Contact Rx. Engineering to determine if a minimum moderator temperature limit for rod withdrawal is required.
Record limit here and on Attachment 8, or
record N/A if no limit is required per Rx. Engineering.

N/A °FAC

DOCUMENT TITLE:
PLANT STARTUPDOCUMENT NUMBER:
34GO-OPS-001-2VERSION NO:
38.16**NOTES:**

- With the RWM inoperable BEFORE the first 12 control rods are withdrawn during a startup, provided that these circumstances (RWM inoperable prior to withdrawing the first 12 rods) have not occurred within the previous 12 months, control rod movement is permitted provided that a Peer Checker (licensed Operator or technical staff member) is also present at the reactor control console, with no concurrent duties, and doubly verifies compliance with the prescribed control rod sequence.
- With the RWM inoperable BEFORE the first 12 control rods are withdrawn during a startup, and these circumstances (RWM inoperable prior to withdrawing the first 12 rods) have occurred within the previous 12 months, control rod movement must be suspended immediately except by scram.

7.2.7 CONFIRM no startup in past calendar year has taken place with RWM inoperable, by checking for Required Action Sheets on the RWM.

AC

7.2.8 CONFIRM Rod Worth Minimizer (RWM) is operable per Attachment 5 PRIOR to withdrawal of control rods for the purpose of making the reactor critical.

AC

7.2.9 IF the RWM is inoperable during the withdrawal of the first 12 rods, a Required Action Sheet has been generated ensuring that no further start-ups with the RWM inoperable prior to withdrawal of the first 12 rods shall be initiated UNTIL one calendar year from the RAS's date.

SS Sig. N/A**NOTE:**

The following steps are used to confirm that Reactor Coolant System Temperature and Reactor Vessel Pressure are to the right of the curve in figure 3.4.9-3 and the maximum heatup is $\leq 100^{\circ}\text{F}$ in any one hour period every 30 minutes as required by TS 3.4.9.1.

7.2.10 During heatup and pressurization, perform Attachment 8 at least once every 15 minutes.

AC

DOCUMENT TITLE:
PLANT STARTUPDOCUMENT NUMBER:
34GO-OPS-001-2VERSION NO:
38.16**NOTE:**

Reactor water level must be monitored during heatup and additional water rejected to the hotwell (preferred) OR radwaste per 34SO-G31-003-2, Reactor Water Cleanup System Operating Procedure.

- 7.2.11 WITHIN 15 minutes PRIOR to the withdrawal of control rods to bring the reactor critical, start performing Attachment 8.
Record the time that Attachment 8 is complete for rod pull below and in the Control Room Operator's log.

Time of completion 0930

AC**NOTES:**

- Control rod withdrawal must be performed in a manner that will avoid steady periods of ≤ 50 seconds on the SRM period meters.
- WHEN repositioning control rods, the need for conservative action and for strict compliance with written procedures must be adhered to.
- The Operator at the 2H11-P603 panel may place the SRM/IRM/APRM recorder(s) in the high speed mode at his discretion anytime during the start up process.

- 7.2.12 Notify the STA to initiate 1/m plots.

AC

- 7.2.13 Commence control rod withdrawal in accordance with the sequence specified by the Shift Technical Advisor/RX Eng and 34GO-OPS-065-0, Control Rod Movement.

AC

- 7.2.14 Perform Rod Drift Alarm Test while withdrawing a Group 1 control rod, per Attachment 6.

AC

- 7.2.15 Record time and number of the first control rod withdrawn below:

First control rod withdrawn 30 - 03

Time first control rod withdrawn 0935 / DATE 4/20/09

AC

- 7.2.16 Monitor SRM channels as control rods are being withdrawn and confirm SRM count rates are increasing.

AC

DOCUMENT TITLE:
PLANT STARTUPDOCUMENT NUMBER:
34GO-OPS-001-2VERSION NO:
38.16**NOTE:**

As criticality is approached, an increasingly longer time interval is required for subcritical multiplication to increase the neutron population to a higher level as indicated on the SRMs. Periodic pauses during rod withdrawal are to be utilized to allow stabilization of the neutron level and collection of data for estimating the proximity to criticality using 1/m plots. As it becomes apparent that criticality is impending based upon increased subcritical multiplication, a notch and wait control rod withdrawal scheme must be adopted.

7.2.17 Confirm the green RETRACT PERMIT light ILLUMINATES for each SRM detector WHEN the SRM level exceeds 200 CPS.

SRM A

AC

SRM B

AC

SRM C

AC

SRM D

AC**NOTE:**

The following are indications of criticality:

- SRM period meters indicate a stable, positive period and
- SRM levels are increasing WITHOUT requiring additional control rod withdrawal.

CAUTION:

EXTENDED OPERATION JUST BELOW OR JUST ABOVE THE POINT OF CRITICALITY IS UNDESIRABLE. THE DECISION TO CONTINUE OPERATION IN THIS CONDITION WILL REQUIRE THE APPROVAL OF THE MANAGER OPERATIONS. IF ROD MOVEMENT IS TO BE SUSPENDED FOR AN EXTENDED PERIOD OF TIME, THE CONTROL RODS WILL NORMALLY BE INSERTED TO AN ALL RODS IN CONDITION TO ENSURE SUBCRITICALITY.

DOCUMENT TITLE:
PLANT STARTUPDOCUMENT NUMBER:
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38.16

7.2.18 WHEN criticality is achieved, perform the following:

7.2.18.1 Record the following information in the Operator's log:

- a. Time
- b. Rod Sequence
- c. Rod Group
- d. Control Rod
- e. Notch Position
- f. Period (1.44 x Doubling Time)
- g. Reactor pressure
- h. Recirculation loop A temperature
- i. Recirculation loop B temperature
- j. Operator pulling critical Arthur Clark

AC

7.2.18.2 IF first startup after fuel movement within the RPV or control rod replacement, notify Reactor Engineering that 42CC-ERP-010-0 (Shutdown Margin Demonstration) must be performed within 4 hours of criticality per TS SR 3.1.1.1.

AC

7.2.18.3 Announce the reactor critical over the plant public address system.

AC

7.2.18.4 Notify the on shift Lab Foreman of reactor criticality.

AC

DOCUMENT TITLE:
PLANT STARTUPDOCUMENT NUMBER:
34GO-OPS-001-2VERSION NO:
38.16**NOTE:**

- Today's core loadings require that SRMs be associated to IRMs by proximity.

SRMIRM

A

A and C

B

B and D

C

E and G

D

F and H

- Correct SRM/IRM overlap is demonstrated when both of the IRMs associated with an SRM indicate $\geq 5/125$ of full scale before the SRM reaches 10^5 CPS, while still fully inserted.
- Reference TS SR 3.3.1.1.6 & B 3.3.1.1

CAUTION:

IF CORRECT SRM/IRM OVERLAP IS NOT CONFIRMED, THE STARTUP WILL BE HALTED AND REACTOR POWER MAINTAINED AT ITS PRESENT LEVEL UNTIL AN EVALUATION CAN BE MADE BY THE REACTOR ENGINEER AND THE SHIFT MANAGER.

7.2.19 Confirm correct overlap between SRM and IRM channels.

AC7.2.20 Continue to pull rods to establish a heatup rate $< 100^\circ\text{F/hr}$.AC**NOTE:**

With IRM channels below range 3, the SRM channels will initiate a rod withdrawal block WHEN EITHER of the following conditions exist:

1. An SRM channel indicates less than 5 CPS
2. An SRM channel indicates less than 200 CPS with its detector NOT full-in.

7.2.21 WHEN SRM/IRM overlap has been confirmed, withdraw SRM detectors as required to maintain an indicated level between 200 and 7×10^4 CPS.

AC

DOCUMENT TITLE:
PLANT STARTUP

DOCUMENT NUMBER:
34GO-OPS-001-2

VERSION NO:
38.16

CAUTION:

WHEN POSITIONING THE IRM RANGE SWITCHES, CARE MUST BE EXERCISED TO PREVENT A REACTOR SCRAM FROM OCCURRING. IF POSSIBLE, RANGE IRMS IN ONLY ONE RPS CHANNEL AT A TIME.

7.2.22 As reactor power increases,
range up the IRM Range Switches to maintain IRM indication on recorders
between 10 and 80 on the 0-125 scale.

AC

7.2.23 WHEN all operable IRM channels are above range 3 and
PRIOR to reaching range 7,
fully withdraw all operable SRM detectors.

AC

7.2.24 Confirm there is overlap between IRM ranges 6 and 7,
by completing Attachment 9.

7.2.25 Record any unacceptable IRM overlaps in the Operator's log book and
notify I&C Shop to adjust IRM preamplifiers.
Shift Supervisor approval is required to continue power ascension
with any inoperable IRMs.

DRAFT

**Southern Nuclear
E. I. Hatch Nuclear Plant**

**Operations Training
ALTERNATE PATH JPM**

SIM 2, RO, SRO-I

TITLE		
SHUT DOWN COOLING ISOLATION		
AUTHOR	MEDIA NUMBER	TIME
D. H. GIDDENS	LR-JP-13.047-00	15 Minutes
RECOMMENDED BY	APPROVED BY	DATE
N/R		



**SOUTHERN NUCLEAR OPERATING COMPANY
PLANT E. I. HATCH**

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FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: OPERATIONS TRAINING

Media Number: LR-JP-13.047-00

[illegible]

UNIT 1 () UNIT 2 (X)

TASK TITLE: SHUT DOWN COOLING ISOLATION**JPM NUMBER:** LR-JP-13.047-00**TASK STANDARD:** The task shall be completed when "B" loop of RHR valves 2E11-F008, F009, and F015B are closed.**TASK NUMBER:** 013.047**OBJECTIVE NUMBER:** 013.047A**TYPE** ALTERNATE PATH**PLANT HATCH JTA IMPORTANCE RATING:****RO** 3.76**SRO** N/A**K/A CATALOG NUMBER:** 223002 K1.08**K/A CATALOG JTA IMPORTANCE RATING:****RO** 3.4**SRO** 3.5**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)

GENERAL REFERENCES:	Unit 2
	34SO-E11-007-2, RHR System Operating Procedure 34AB-C71-001-2, SCRAM PROCEDURE NMP-OS-007, CONDUCT OF OPERATIONS

REQUIRED MATERIALS:	Unit 2
	34AB-C71-001-2, SCRAM PROCEDURE

APPROXIMATE COMPLETION TIME: 15 Minutes**SIMULATOR SETUP:** Refer to simulator setup sheet on the following page

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to an **IC 101**, or other IC with “B” SDC in service, and leave in **FREEZE**.
2. **INSERT** the following **MALFUNCTIONS**:

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mf	NONE			

3. **INSERT** the following **SIMULATOR VALUE OVERRIDES (SVO)**:

SVO #	DESCRIPTION	FINAL VALUE	RAMP RATE	ACT. TIME
svoB21009	LT-N080A RPS LEVEL 3 SCRAM	37	1000	ST 0
SvoB21010	LT-N080B RPS LEVEL 3 SCRAM	37	1000	ST 0
SvoB21011	LT-N080C RPS LEVEL 3 SCRAM	37	1000	ST 0
SvoB31012	LT-N080D RPS LEVEL 3 SCRAM	37	1000	ST 0

4. Take the Simulator **OUT OF FREEZE** and **PERFORM** the following **MANIPULATIONS**:

Lower RWL to 1-3” by securing CRD and increasing dump flow to the surge tank. (do not cause a high drywell pressure signal).

5. **PLACE** the Simulator in **FREEZE** until the INITIATING CUE is given.
6. **ESTIMATED Simulator SETUP TIME:** **10 Minutes**

UNIT 2

READ AND GIVE A COPY TO THE OPERATOR

INITIAL CONDITIONS:

1. The Unit is being shutdown to cold shutdown.
2. "B" loop of RHR is in Shutdown Cooling with the "B" heat exchanger inlet partially open and the heat exchanger bypass valve fully open.
3. Unit 2 RWL has decreased below +3".
3. The CBO will handle RC-1, RC-2, and RC-3.

INITIATING CUES:

For "B" loop of RHR, VERIFY Group 2 and Group 6 Isolations per 34AB-C71-001-2

For **INITIAL** Operator Programs:

For OJT/OJE; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.

For License Examinations; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

NOTE: Action to close isolation valves is required per NMP-OS-007, "Conduct of Operations", step 5.9.3.3 and 5.10.3.3 "Initiate Engineered Safety Systems actuation if indications exceed automatic actuation setpoints and an actuation has not occurred".

**START
TIME:** _____

1.	Operator obtains the procedure needed to perform the task.	Operator has obtained procedure 34AB-C71-001-2, Attachment 1.	SAT / UNSAT
2	Verifies 2E11-F015B has closed IAW Group 2 Isolation requirements of attachment 1.	On panel 2H11-P601, Observes 2E11-F015B has a red (open) light illuminated.	SAT / UNSAT
**3.	Closes 2E11-F015B.	On panel 2E11-H601, places 2E11-F015B control switch to close and allows it to spring return to mid position.	SAT / UNSAT
4.	Verifies 2E11-F015B closed.	On panel 2H11-P601, Observes the green light is illuminated and the red light is extinguished for 2E1-F015B.	SAT / UNSAT
5.	Verifies 2E11-F008 has closed IAW Group 6 Isolation requirements of attachment 1.	On panel 2H11-P601, Observes 2E11-F008 has a red (open) light illuminated.	SAT / UNSAT
**6.	Closes 2E11-F008.	On panel 2E11-H601, places 2E11-F008 control switch to close and allows it to spring return to mid position.	SAT / UNSAT
7.	Verifies 2E11-F008 closed.	On panel 2H11-P601, Observes the green light is illuminated and the red light is extinguished for 2E1-F008.	SAT / UNSAT

8.	Verifies 2E11-F009 has closed IAW Group 6 Isolation requirements of attachment 1.	On panel 2H11-P602, Observes 2E11-F008 has a red (open) light illuminated.	SAT / UNSAT
**9.	Closes 2E11-F009.	On panel 2E11-H602, places 2E11-F009 control switch to close and allows it to spring return to mid position.	SAT / UNSAT
10.	Verifies 2E11-F009 closed.	On panel 2H11-P602, Observes the green light is illuminated and the red light is extinguished for 2E1-F009.	SAT / UNSAT

END
TIME: _____

NOTE: The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

TERMINATING CUE: That completes this JPM.

SOUTHERN NUCLEAR PLANT E.I. HATCH		PAGE 11 OF 28
DOCUMENT TITLE: SCRAM PROCEDURE	DOCUMENT NUMBER: 34AB-C71-001-2	VERSION NO: 9.26
ATTACHMENT <u>1</u>		ATTACHMENT PAGE:
TITLE: PRIMARY CONTAINMENT ISOLATION CONFIRMATION		2 OF 9

2.0 GROUP 2 ISOLATION

NOTE:

EITHER of these conditions can be indicative of a pipe break in the Reactor Building.
Refer to 34AB-T22-001-2 as applicable.

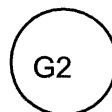
2.1 EITHER of the following conditions cause isolation:
Reactor Water Level Low (Level 3) (+3")
Drywell Pressure High (1.85 PSIG)

2.2 Confirm the following valves have closed:

NOTES:

- Position indication can also be found on SPDS diagnostic and on panel 2H11-P601 vertical display except as noted.
- The Reactor Operator can quickly identify all Control Room Panel Group 2 Isolation Valves by a blue circular tag with white letters (G2) placed in the proximity of each Group 2 Valve control switch on panels 2H11-P601, 2H11-P602, 2H11-P607, 2H11-P654, 2H11-P657, and 2H11-P700.

The tags will appear as the illustration below:



2H11-P602

2G11-F003	Floor Drain Vlv
2G11-F019	Equip Drain Vlv
2E11-F040	RHR to Radwaste Vlv
2T48-F118B	N ₂ Makeup to Torus Vlv
2T48-F309	Torus Air Purge Vlv
2T48-F307	Drywell Air Purge Vlv
2T48-F341	Drwl Vent & Relief Vlv
2T48-F339	Torus Vent & Relief Vlv
2T48-F118A	N ₂ Makeup To Drwl Vlv
2T48-F318	Torus Vent Vlv
2T48-F319	Drywell Vent Vlv

SOUTHERN NUCLEAR PLANT E.I. HATCH		PAGE 12 OF 28
DOCUMENT TITLE: SCRAM PROCEDURE	DOCUMENT NUMBER: 34AB-C71-001-2	VERSION NO: 9.26
ATTACHMENT <u>1</u>		ATTACHMENT PAGE:
TITLE: PRIMARY CONTAINMENT ISOLATION CONFIRMATION		3 OF 9

2H11-P601

2G11-F004	Floor Drain Vlv
2G11-F020	Equip Drain Vlv
2E11-F049	RHR To Radwaste Vlv
2T48-F324	Torus Air Purge Vlv
2T48-F308	Drywell Air Purge Vlv
2T48-F340	Drwl Vent & Relief Vlv
2T48-F338	Torus Vent & Relief Vlv
2T48-F104	Nitrogen Makeup Vlv
2T48-F103	Nitrogen Purge Vlv
2T48-F326	Torus Vent Vlv
2T48-F320	Drywell Vent Vlv
(b) 2E11-F015B*	RHR Inbd Inj Vlv
(b) 2E11-F122B	Check F050B Bypass Vlv
(b) 2E11-F015A*	RHR Inbd Inj Vlv
(b) 2E11-F122A	Check F050A Bypass Vlv

2H11-P700

2D11-F051	Pri Cnmt Fis Prod Mon Inbd Isol
2D11-F050	Pri Cnmt Fis Prod Mon Inbd Isol
(b) 2E41-F122	Post Acc Rx Cool/Cnmt Atmos Smpg Inbd Isol
(b) 2B21-F111	Post Acc Rx Cool/Cnmt Atmos Smpg Inbd Isol
(b) 2P70-F002	Drwl Pneu Inbd Suction Isol
2P33-F002	Pri Cnmt Atmos H202 Anly Inbd Isol Ch B
2P33-F007	Pri Cnmt Atmos H202 Anly Inbd Isol Ch A
2P33-F004	Pri Cnmt Atmos H202 Anly Ch A Rtn Line Inbd Isol
2P33-F003	Pri Cnmt Atmos H202 Anly Inbd Isol Ch A
2P33-F005	Pri Cnmt Atmos H202 Anly Inbd Isol Ch B Return Line
(a)(b) 2D11-F071	Pri Cnmt Atmos Fis Prod Mon Sample Line Isol
2P33-F006	Pri Cnmt Atmos H202 Anly Inbd Isol Ch B
(b) 2G51-F011	Torus Water Cleanup Inbd Isol
(b) 2G51-F017	Torus Water Makeup Outbd Isol
2D11-F052	Pri Cnmt Fis Prod Mon Outbd Isol
2D11-F053	Pri Cnmt Fis Prod Mon Outbd Isol
(b) 2B21-F112	Post Acc Rx Cool/Cnmt Atmos Smpg Outbd Isol
(b) 2E41-F121	Post Acc Rx Cool/Cnmt Atmos Smpg Outbd Isol

(a) No indication on SPDS diagnostic

(b) No indication on 2H11-P601 vertical display

* Will close on Group 2 only IF a RHR loop is in Shutdown Cooling Mode

SOUTHERN NUCLEAR PLANT E.I. HATCH		PAGE 13 OF 28
DOCUMENT TITLE: SCRAM PROCEDURE	DOCUMENT NUMBER: 34AB-C71-001-2	VERSION NO: 9.26
ATTACHMENT <u>1</u>		ATTACHMENT PAGE:
TITLE: PRIMARY CONTAINMENT ISOLATION CONFIRMATION		4 OF 9

2H11-P700 (CONTINUED)

- | | | |
|--------|-----------|--|
| | 2P33-F015 | Pri Cnmt Atmos H202 Anly Outbd Isol Ch A |
| | 2P33-F010 | Pri Cnmt Atmos H202 Anly Outbd Isol Ch B |
| (b) | 2P70-F003 | Drwl Pneu Outbd Suction Isol |
| | 2P33-F013 | Pri Cnmt Atmos H202 Anly Outbd Isol Ch B Return Line |
| | 2P33-F011 | Pri Cnmt Atmos H202 Anly Outbd Isol Ch A |
| | 2P33-F012 | Pri Cnmt Atmos H202 Anly Ch A Rtn Ln Outbd Isol |
| (a)(b) | 2P33-F605 | O ₂ Analyzer Isol Valve |
| (a)(b) | 2D11-F072 | Pri Cnmt Fis Prod Mon Rtn Ln Isol |
| | 2P33-F014 | Pri Cnmt Atmos H202 Anly Outbd Isol Ch B |
| (b) | 2G51-F013 | Torus Drn/Purif Torus Water Makeup Inbd Isol |
| (b) | 2G51-F012 | Torus Drn/Purif Torus Water Cleanup Outbd Isol |

2H11-P607

- | | | |
|-----|--------------|------------------------------|
| (a) | 2C51-J004A-D | Tip Ball Vlvs (See Step 2.3) |
|-----|--------------|------------------------------|

2H11-P657

- | | | |
|-----|------------|--------------------------------|
| (b) | 2T48-F334A | Cad A Drywell Vent Isol Vlv |
| (b) | 2T48-F335A | Cad A Drywell Vent Isol Vlv |
| (b) | 2T48-F332A | Cad A Torus Vent Isol Vlv |
| (b) | 2T48-F333A | Cad A Torus Vent Isol Vlv |
| (a) | 2T48-F209 | Drwl To Torus Dp Sys Inbd Isol |
| (a) | 2T48-F211 | Drwl To Torus Dp Sys Inbd Isol |

2H11-P654

- | | | |
|-----|------------|---------------------------------|
| (b) | 2T48-F334B | Cad B Drywell Vent Isol Vlv |
| (b) | 2T48-F335B | Cad B Drywell Vent Isol Vlv |
| (b) | 2T48-F332B | Cad B Torus Vent Isol Vlv |
| (b) | 2T48-F333B | Cad B Torus Vent Isol Vlv |
| (a) | 2T48-F210 | Drwl To Torus Dp Sys Outbd Isol |
| (a) | 2T48-F212 | Drwl To Torus Dp Sys Outbd Isol |

2H21-P018

(87RLR14)

- | | |
|------------|----------------|
| 2E11-F079A | RHR Sample Vlv |
| 2E11-F080A | RHR Sample Vlv |

2H21-P021

(87RLR24)

- | | |
|------------|----------------|
| 2E11-F079B | RHR Sample Vlv |
| 2E11-F080B | RHR Sample Vlv |

- | | |
|-----|---|
| (a) | No indication on SPDS diagnostic |
| (b) | No indication on 2H11-P601 vertical display |

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ATTACHMENT <u>1</u>		ATTACHMENT PAGE:
TITLE: PRIMARY CONTAINMENT ISOLATION CONFIRMATION		5 OF 9

- 2.3 IF any Tip Ball Vlv fails to close and there is indication that a radioactive release from Primary Containment is occurring via this pathway,
THEN perform the following:
- 2.3.1 At panel 2H11-P607, place the Shear Vlv keylock switch for the failed Tip Ball valve to the FIRE position.
- 2.3.2 Confirm the SHEAR VLV MONITOR and SQUIB MONITOR lights ILLUMINATE for the appropriate Tip.

SOUTHERN NUCLEAR PLANT E.I. HATCH		PAGE 18 OF 28
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6.0 **GROUP 6 ISOLATION**

NOTE:

Some of the following conditions can be indicative of a RHR pipe break in the Reactor Building. Refer to 34AB-T22-001-2 as applicable.

6.1 EITHER of the following conditions cause isolation:

Reactor Water Level Low (level 3) (+3")
Reactor Pressure High (138 PSIG)

6.2 Confirm the following valves have closed:

NOTE:

Position indication can also be found on SPDS diagnostic and on panel 2H11-P601 vertical display except as noted.

2H11-P602

2E11-F009 SDC Suction Vlv

2H11-P601

2E11-F008 SDC Suction Vlv

DRAFT

**Southern Nuclear
E. I. Hatch Nuclear Plant**

**Operations Training
JPM
SIM 3, RO, SRO-I**

TITLE		
PERFORM A DIESEL GENERATOR MANUAL START SURVEILLANCE (TRIP FAILURE)		
AUTHOR	MEDIA NUMBER	TIME
John Pendlebury	LR-JP-25034-06	20 Minutes
RECOMMENDED BY	APPROVED BY	DATE
N/R		



Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-25034**

[illegible]

UNIT 1 () UNIT 2 (X)

TASK TITLE: PERFORM A DIESEL GENERATOR MANUAL
START SURVEILLANCE (TRIP FAILURE)

JPM NUMBER: LR-JP-25034-06

TASK STANDARD: The task shall be completed when the Operator has tied the "2A"
Diesel Generator to the "2E" 4160 VAC Bus per
34SV-R43-004-2. Then following a failure to auto trip,
shutdown the Diesel Generator.

TASK NUMBER: 028.016

OBJECTIVE NUMBER: 028.016.O

PLANT HATCH JTA IMPORTANCE RATING:

RO 3.22

SRO 2.93

K/A CATALOG NUMBER: 264000A404

K/A CATALOG JTA IMPORTANCE RATING:

RO 3.70

SRO 3.70

OPERATOR APPLICABILITY: Nuclear Plant Operator (NPO)

GENERAL REFERENCES:	Unit 2
	34SV-R43-004-2 (current version) 34AR-652-111-2 (current version) 34AR-652-129-2 (current version)

REQUIRED MATERIALS:	Unit 2
	34SV-R43-004-2 (current version) 34AR-652-111-2 (current version) 34AR-652-129-2 (current version) Stopwatch

APPROXIMATE COMPLETION TIME: 20 Minutes

SIMULATOR SETUP: REFER TO SIMULATOR SETUP SHEET ON THE FOLLOWING
PAGE

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #113**, or other full power IC.
2. **INSERT** the following **MALFUNCTIONS**:

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mf65211665	Spur Ann – LUBE OIL PRESS LOW			99999
mf65211683	Spur Ann – EMERGENCY ENGINE SHUTDOWN			99999

3. **INSERT** the following **REMOTE FUNCTIONS**:

REM #	DESCRIPTION	STATUS
rR43294	DG 2A Engine Remote Speed Droop (0 – 100)	0

4. **PLACE** the Diesel Gen 2A Mode Select switch in the **TEST** position.
5. **PLACE** the simulator in **FREEZE**.
6. **ESTIMATED** Simulator **SETUP TIME**: **10 Minutes**

NOTE

To monitor Diesel Generator “A” engine speed, governor setting, frequency, perform the following steps at the instructor station.

1. **Click** on any screen, off of any list.
2. **Type** ALT-P.
3. **Select** OPEN TABLE
4. **Select** DG SPEED_VOLT REG SP.TB1
5. **Select** OPEN

UNIT 2

READ AND GIVE A COPY TO THE OPERATOR

INITIAL CONDITIONS:

1. Diesel Generator “2A” is ready to be run for its semi-annual manual start per 34SV-R43-004-2. The procedure is complete up to and including step 7.2.2.7.
2. No other testing or maintenance is in progress.
3. A SO is standing by at the Diesel Generator.

INITIATING CUES:

Starting at step 7.2.2.8, perform the Diesel Generator 2A Semi-Annual Test per 34SV-R43-004-2. IST is not being performed.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
--------	------------------	----------	----------------------

For **INITIAL** Operator Programs:

For OJT/OJE; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.

For License Examinations; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

PROMPT: **WHEN** the Operator is ready to begin, give him a stopwatch and a copy of 34SV-R43-004-2 which is completed up to and including step 7.2.2.7.

NOTE: The prelube pump may be started from the Main Control Room.
However, standard practice is to contact the SO at the Diesel and have that Operator prelube the Diesel.

START
TIME: _____

1.	Operator reviews the procedure.	Operator reviews precautions, limitations and completed steps.	SAT / UNSAT
**2.	Take the Diesel 2A Prelube Pump to ON.	Contacting the SO at the Diesel Generator 2A Room, the Operator CONFIRMS that the Diesel 2A PRELUBE PUMP to ON, red light illuminated.	SAT / UNSAT
3.	Select Diesel Generator 2A Voltmeter for monitoring phase voltage during the startup.	At panel 2H11-P652, the Operator SELECTS Diesel Generator 2A Voltmeter, 2R43-R904, using the voltmeter select switch.	SAT / UNSAT

NOTE: For the following step, starting the Diesel is the critical portion of this step.

**4.	Start the stopwatch, take the Diesel Gen 2A Start switch to the START position, and when the Diesel reaches synchronous speed, stop the stopwatch.	At panel 2H11-P652, the Operator STARTS the stopwatch and TAKES the Diesel Gen 2A START switch to the START position. When the Diesel Generator 2A reaches synchronous speed (≥ 3800 volts and ≥ 59 hertz), STOP the stopwatch.	SAT / UNSAT
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(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
5.	Record the time the diesel starts and comes up to synchronous speed and confirm that the time is less than or equal to 12 seconds.	At panel 2H11-P652, the Operator RECORDS the time the diesel starts and comes up to synchronous speed and CONFIRMS that the time is less than or equal to 12 seconds.	SAT / UNSAT
6.	Confirm that the average diesel generator output voltage is between 3740 V and 4240 V AND that diesel generator frequency is between 59 and 61 Hz.	At panel 2H11-P652, the Operator CONFIRMS that the average diesel generator output voltage is between 3740 V and 4240 V AND that diesel generator frequency is between 59 and 61 Hz.	SAT / UNSAT
7.	Confirm that the Diesel Generator 2A Cooling Water Outlet AOV, 2P41-F339A is OPEN.	Contacting the SO at the Diesel Generator 2A Room, the Operator CONFIRMS that the Diesel Generator 2A COOLING WATER OUTLET AOV, 2P41-F339A, is OPEN.	SAT / UNSAT
8.	Confirm that the Diesel Gen 2A Auto Start Sys Operative clear light is EXTINGUISHED.	At panel 2H11-P652, the Operator CONFIRMS that the Diesel Gen 2A AUTO START SYS OPERATIVE clear light is EXTINGUISHED.	SAT / UNSAT
9.	Confirm that the Diesel Gen 2A Start red light and Diesel Gen 2A Shutdown System Operative light are ILLUMINATED.	At panel 2H11-P652, the Operator CONFIRMS that the Diesel Gen 2A Start red light and Diesel Gen 2A SHUTDOWN SYSTEM OPERATIVE light are ILLUMINATED.	SAT / UNSAT

NOTE: The simulator Operator, when contacted by the Operator, will **TOGGLE REMOTE FUNCTION rR43294**, "DG 2A Engine Remote Speed Droop (0 to 100), to change the speed droop for the following step.

**10.	Place the Speed Droop Control Knob to "50".	Contacting the SO at the Diesel Generator 2A Room, at the Diesel Generator 2A Woodward Governor Control, the Operator has the SPEED DROOP control knob PLACED to "50".	SAT / UNSAT
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(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**11.	Place the Diesel Gen 2A Voltage Reg Transfer switch in MANUAL.	At panel 2H11-P652, the Operator PLACES the Diesel Gen 2A VOLTAGE REG TRANSFER switch in MANUAL, green light illuminated.	SAT / UNSAT
12.	Confirm that the Diesel Gen 2A Voltage Reg Transfer Auto red light is EXTINGUISHED.	At panel 2H11-P652, the Operator CONFIRMS that the Diesel Gen 2A VOLTAGE REG TRANSFER AUTO red light is EXTINGUISHED.	SAT / UNSAT
13.	Confirm that the Diesel Gen 2A Voltage Reg Transfer Manual green light is ILLUMINATED.	At panel 2H11-P652, the Operator CONFIRMS that the Diesel Gen 2A VOLTAGE REG TRANSFER MANUAL green light is ILLUMINATED.	SAT / UNSAT

NOTE: The following step is critical only if an adjustment is required.

**14.	Adjust the Diesel Gen 2A Voltage Adjust Switch until diesel output voltage is equal to 4160 Bus 2E Voltage.	At panel 2H11-P652, the Operator ADJUSTS the Diesel Gen 2A VOLTAGE ADJUST switch until diesel output voltage is equal to 4160 Bus 2E Voltage, as indicated on VOLTMETER, 2R43-R904.	SAT / UNSAT
**15.	Place Diesel Gen 2A Synchroscope switch (SSW) for ACB 135530 to ON.	At panel 2H11-P652, the Operator PLACES Diesel Gen 2A Synchroscope switch (SSW) for ACB 135530 to ON, synchroscope starts rotating and the synchroscope lights cycle through dim to bright.	SAT / UNSAT
16.	Using Diesel Gen 2A Speed Adjust switch, adjust diesel speed to attain a slow synchroscope rotation in the clockwise (fast) direction.	At panel 2H11-P652, the Operator uses the Diesel Gen 2A SPEED ADJUST, to adjust diesel speed to attain a slow synchroscope rotation in the clockwise (fast) direction.	SAT / UNSAT

(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
17.	Observe the voltage on each phase of 4160V Bus 2E and record the highest voltage.	At panel 2H11-P652, the Operator OBSERVES the voltage on each phase of 4160V Bus 2E, as indicated on VOLTMETER, 2R43-R904, and RECORDS the highest voltage.	SAT / UNSAT
18.	Using Diesel Generator 2A Voltage Adjust switch, increase diesel output voltage to match the highest phase voltage on 4160V Bus 2E.	At panel 2H11-P652, the Operator uses Diesel Generator 2A VOLTAGE ADJUST switch, INCREASES diesel output voltage to match the highest phase voltage on 4160V Bus 2E.	SAT / UNSAT
**19.	When the synchroscope indicates 2 minutes to 12 and when the synchroscope lights are at the dimmest point, CLOSE ACB 135530.	At panel 2H11-P652, the Operator, when the synchroscope indicates 2 minutes to 12 and when the synchroscope lights are at the dimmest point, CLOSES EMERGENCY SUPPLY ACB 135530, red light illuminated.	SAT / UNSAT

NOTE: IF during the performance of the following two steps, the Operator trips the diesel, these steps become critical and the JPM is failed.

20.	Using the Diesel Gen 2A Speed Adjust switch, adjust the load on the diesel to 500 to 1000 kW.	At panel 2H11-P652, the Operator uses the Diesel Gen 2A SPEED ADJUST switch, ADJUSTS the load on the diesel to 500 to 1000 kW, as indicated on KILOWATT, 2R43-R615A.	SAT / UNSAT
21.	Using the Diesel Gen 2A Voltage Adjust switch, adjust the reactive load to between 500 and 1000 KVAR	At panel 2H11-P652, the Operator uses the Diesel Gen 2A VOLTAGE ADJUST switch, adjusts reactive load to between 500 and 1000 KVAR.	SAT / UNSAT
22.	Gradually increase load to between 1750 and 2000 KW.	At panel 2H11-P652, the Operator uses the Diesel Gen 2A SPEED ADJUST switch, ADJUSTS the load on the diesel to 1750 and 2000 KW, as indicated on KILOWATT, 2R43-R615A.	SAT / UNSAT

(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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NOTE: **AS** the Operator is increasing the diesel loading to 1750 kW, **ACTIVATE MALFUNCTION mf65213665**, “Spur Ann – LUBE OIL PRESS LOW.”

5 – 10 seconds later, **ACTIVATE MALFUNCTION mf65213683**, “Spur Ann – EMERGENCY ENGINE SHUTDOWN.”

PROMPT: **PAGE** the Operator as the SO in the Diesel Building and **REPORT** that an oil line has split and spewing hot oil. I cannot get to the diesel and it is beginning to smoke.

23.	Opens the Emergency Supply ACB.	At panel 2H11-P652, the Operator, OPENS EMERGENCY SUPPLY ACB 135530 , green light illuminated.	SAT / UNSAT
**24.	Take the Diesel Gen 2A Start switch to the STOP position.	At panel 2H11-P652, the Operator TAKES the Diesel Gen 2A START switch to the STOP position.	SAT / UNSAT

PROMPT: **ONCE** the Operator has stopped the diesel, **INFORM** the Operator that another Operator will complete the shutdown and contact Maintenance.

**END
TIME:** _____

NOTE: The terminating cue shall be given to the Operator when:

- With no reasonable progress, the Operator exceeds double the allotted time.
- Operator states the task is complete.
- Operator has stopped the 2A Diesel Generator.

TERMINATING CUE: We will stop here.

(** Indicates critical step)

DOCUMENT TITLE:
DIESEL GENERATOR 2A SEMI-ANNUAL TESTDOCUMENT NUMBER:
34SV-R43-004-2VERSION NO:
15.23**7.2 DIESEL GENERATOR 2A SEMI-ANNUAL MANUAL START****CONTINUOUS**

7.2.1 At panel 2H11-P652, perform the following:

7.2.1.1 Confirm Diesel Gen 2A Mode Select switch is in NORM. AC7.2.1.2 Confirm Diesel Gen 2A Shutdown System Operative red light is EXTINGUISHED. AC7.2.1.3 Confirm Diesel Gen 2A Start red light is EXTINGUISHED. AC

7.2.1.4 At the Diesel Gen 2A Voltage Reg Transfer switch, confirm the following:

• Voltage Reg Transfer switch is in AUTO AC• AUTO red light is ILLUMINATED AC• MANUAL green light is EXTINGUISHED. AC

7.2.1.5 At Diesel Gen 2A Voltage Adjust switch, confirm the following:

• RAISE red light is EXTINGUISHED AC• LOWER green light is EXTINGUISHED. AC7.2.1.6 Confirm Diesel Gen 2A Auto Start Sys Operative clear light is ILLUMINATED. AC7.2.1.7 IF Diesel Gen 2A Auto Start Sys Operative light is EXTINGUISHED, DEPRESS Diesel Gen 2A Shutdown Relay pushbutton. AC7.2.1.8 Confirm ACB 135530, Diesel Gen 2A Emergency Supply, indicates OPEN. AC**CAUTION:**

IF DIESEL GEN 2A MODE SELECT SWITCH IS IN TEST AND SAT 2D IS LOST, ANY AUTO TRANSFER TIE TO DIESEL 2A OR SAT 2C WILL NOT OCCUR EVEN THOUGH THE ALTERNATE OR EMERGENCY POWER SUPPLIES ARE AVAILABLE. THE DIESEL GEN 2A MODE SELECT SWITCH MUST BE PLACED IN NORM. THIS SITUATION DOES NOT APPLY IN A LOCA CONDITION.

7.2.1.9 PLACE the Diesel Gen 2A Mode Select switch in the TEST position. AC

DOCUMENT TITLE:
DIESEL GENERATOR 2A SEMI-ANNUAL TESTDOCUMENT NUMBER:
34SV-R43-004-2VERSION NO:
15.23

- 7.2.1.10 IF SAT 2C is de-energized,
PLACE the Diesel Gen 2A Test SAT 2C Out Of Svc Interlock switch
to TEST position. AC
- 7.2.1.11 Confirm annunciator DIESEL 2A IN TEST MODE (652-105) is in
the ALARM condition. AC
- 7.2.2 In Diesel Generator 2A Room, perform the following:
- 7.2.2.1 Confirm the At Engine - Remote control switch is in the REMOTE position. AC
- 7.2.2.2 At Diesel Generator 2A Woodward Governor Control,
confirm OR place the Speed Droop control knob to 0
(fully counter clockwise). AC
- 7.2.2.3 At Diesel Generator 2A Woodward Governor Control,
confirm Load Limit control knob is set fully clockwise (approximately 10). AC
- 7.2.2.4 Confirm 2P41-F339A, Diesel Generator 2A Cooling Water Outlet AOV,
is CLOSED by observing local position indication. AC
- 7.2.2.5 Confirm governor oil level is approximately halfway in the sight glass. AC

NOTE:

The mark on the bearing oil sightglass indicates correct oil level for non-operating generator. Oil level should be at OR above the painted mark, but not full.

- 7.2.2.6 Confirm the front and rear generator bearing oil levels are at
OR above the painted mark on the sightglass, but not full. AC
- 7.2.2.7 Confirm the diesel lube oil level is within ½" below the upper FULL
mark on the dipstick. AC

NOTE:

Prelubing will be performed within 15 minutes of starting the diesel engine. Delays between prelubing and engine starting will negate the effects of prelubing due to system drain down. The Prelube Pump, WHEN started, will operate for approximately 3 minutes. Prelubing can be accomplished in the Control Room OR locally.

- 7.2.2.8 TAKE the Diesel 2A Prelube Pump to ON. _____

DOCUMENT TITLE:
DIESEL GENERATOR 2A SEMI-ANNUAL TESTDOCUMENT NUMBER:
34SV-R43-004-2VERSION NO:
15.23

7.2.3 At panel 2H11-P652, perform the following:

7.2.3.1 Using the voltmeter select switch,
SELECT 2R43-R904, Diesel Generator 2A Voltmeter,
for monitoring phase voltage during the diesel startup.**NOTES:**

- The "GEN FIELD GROUND" annunciator is expected to alarm during performance of the following steps.
- The following two steps must be performed simultaneously.

7.2.3.2 START the stopwatches.

7.2.3.3 TAKE the Diesel Gen 2A Start switch to the START position.

7.2.3.4 WHEN Diesel Generator 2A reaches synchronous speed
(≥ 3800 volts and ≥ 59 hertz), STOP the stopwatches.7.2.3.5 Record the time the diesel starts and comes to synchronous speed, and
confirm the time is less than or equal to 12 seconds.

Start time: _____ seconds

7.2.3.6 Confirm the average diesel generator output voltage is
between 3740 V and 4240 V AND
diesel generator frequency is between 59 and 61 Hz.7.2.3.7 At Diesel Generator 2A Room, confirm 2P41-F339A, Diesel Generator 2A
Cooling Water Outlet AOV, OPENS, by observing local position indication.7.2.3.8 Confirm Diesel Gen 2A Auto Start Sys Operative clear light is
EXTINGUISHED.7.2.3.9 Confirm Diesel Gen 2A Start red light is ILLUMINATED.
(810 RPM or 21 PSIG oil pressure).7.2.3.10 Confirm Diesel Gen 2A Shutdown System Operative light is ILLUMINATED.
(approximately 20 second time delay).

DOCUMENT TITLE:
DIESEL GENERATOR 2A SEMI-ANNUAL TEST

DOCUMENT NUMBER:
34SV-R43-004-2

VERSION NO:
15.23

NOTE:

With Speed Droop set to 50, direct local operator action would be required in an emergency to allow Control Room operation of the Diesel Generator.

CAUTION:

IF LOSP AND / OR LOCA OCCURS, THEN SPEED DROOP CONTROL KNOB MUST BE POSITIONED TO ZERO (FULLY COUNTERCLOCKWISE).

- 7.2.3.11 When performing the following step, an Operator must remain in the direct vicinity of the DG skid AND must maintain the capability for conducting prompt communications with Control Room personnel. _____
- 7.2.3.12 At Diesel 2A Woodward Governor Control, position Speed Droop control knob to 50. _____
- 7.2.3.13 PLACE the Diesel Gen 2A Voltage Reg Transfer switch in MANUAL. _____
- 7.2.3.14 Confirm Diesel Gen 2A Voltage Reg Transfer Auto red light is EXTINGUISHED. _____
- 7.2.3.15 Confirm Diesel Gen 2A Voltage Reg Transfer Manual green light is ILLUMINATED. _____

CAUTIONS:

DO NOT EXCEED 4350 VOLTS ON ANY PHASE OF THE DIESEL GENERATOR.

- 7.2.3.16 ADJUST the Diesel Gen 2A Voltage Adjust switch UNTIL diesel output voltage is equal to 4160V Bus 2E voltage. _____
- 7.2.3.17 PLACE Diesel Gen 2A Synchroscope switch (SSW) for ACB 135530, in ON. _____
- 7.2.3.18 Using Diesel Gen 2A Speed Adjust switch, adjust diesel speed to attain a slow synchroscope rotation in the clockwise (fast) direction (1 to 3 RPM). _____
- 7.2.3.19 Observe the voltage on each phase of 4160V Bus 2E and record the highest voltage. _____

_____volts _____

DOCUMENT TITLE:
DIESEL GENERATOR 2A SEMI-ANNUAL TESTDOCUMENT NUMBER:
34SV-R43-004-2VERSION NO:
15.23

- 7.2.3.20 With Diesel Generator 2A Voltage Adjust switch,
adjust diesel output voltage to match the highest phase voltage
on 4160V Bus 2E. _____

Critical

- 7.2.3.21 WHEN the synchroscope indicates 2 minutes to 12 and
WHEN the synchroscope lights are at the dimmest point,
TAKE ACB 135530, Diesel Gen 2A Emergency Supply,
to the CLOSE position. _____
- 7.2.3.22 Using the Diesel Gen 2A Speed Adjust switch,
adjust the load on the diesel to between 500 and 1000 KW. _____
- 7.2.3.23 Using the Diesel Gen 2A Voltage Adjust switch,
adjust the reactive load to between 500 and 1000 KVAR. _____
- 7.2.3.24 Gradually INCREASE load to between 1750 and 2000 KW. _____
- 7.2.3.25 Adjust the reactive load to between 200 and 1000 KVAR. _____
- 7.2.3.26 PLACE Diesel Gen 2A Synchroscope switch (SSW) for ACB 135530
in OFF position. _____
- 7.2.3.27 Subsection 7.4, Diesel Generator 2A Fuel Oil Transfer Test,
can be performed anytime during the Diesel Generator loaded run time. _____
- 7.2.3.28 Subsection 7.5, Diesel Generator 2A Air Compressor Test,
can be performed anytime during the Diesel Generator loaded run time. _____
- 7.2.3.29 After approximately 30 minutes,
gradually increase load to between 2764 and 2825 KW,
while maintaining reactive load between 200 and 1000 KVAR. _____
- 7.2.3.30 After the load has been increased to greater than 2764 KW,
record the time.
Time _____
- 7.2.3.30.1 Verify the local tachometer to be reading between 860 rpm and 940 rpm. _____
- 7.2.3.30.2 If the tachometer indication is not in this band,
initiate a condition report and hang a repair tag on the local tachometer
indication.
The Shift Manager will ensure a "prompt" work order is initiated to
calibrate the tachometer prior to the next monthly Diesel Generator run. _____

DOCUMENT TITLE:
DIESEL GENERATOR 2A SEMI-ANNUAL TEST

DOCUMENT NUMBER:
34SV-R43-004-2

VERSION NO:
15.23

NOTE:

Operating the diesel generator for one hour at 2764 to 2825 KW satisfies the Unit 2 Technical Specification SR 3.8.1.2 requirement to operate the diesel generator between 1710 and 2000 KW for an hour.

7.2.3.31 Maintain Diesel Generator 2A load between 2764 and 2825 KW
for a minimum of one (1) hour. _____

7.2.3.32 Confirm OR place Diesel Generator 2A Amp Select switch in
phase 1, 2, OR 3 position. _____

7.2.4 After Diesel Generator 2A has operated for 30 minutes at
between 2764 and 2825 KW,
record the operating parameters on Table 1 AND Table 2 of Attachment 1,
Diesel Generator 2A Operating Parameters. _____

7.2.5 Record the time upon completion of the one (1) hour run.

TIME _____:_____ _____

NOTE:

WHILE reducing the load on the diesel, the diesel amperage can be monitored to ensure that a reverse power trip will NOT occur.

CAUTION:

IF DIESEL GENERATOR 2A IS OPERATED AT A LOAD OF ZERO (0) KW,
A DIESEL TRIP WILL OCCUR AS A RESULT OF REVERSE POWER.

7.2.6 After at least one (1) hour of loaded run, perform the following:

7.2.6.1 REDUCE load to between 400 and 500 KW _____

AND

7.2.6.2 ADJUST reactive load to between 200 and 500 KVAR. _____

7.2.7 TAKE ACB 135530, Diesel Gen 2A Emergency Supply, to OPEN. _____

7.2.8 Confirm ACB 135530, Diesel Gen 2A Emergency Supply,
OPEN green light is ILLUMINATED. _____

DOCUMENT TITLE:
DIESEL GENERATOR 2A SEMI-ANNUAL TESTDOCUMENT NUMBER:
34SV-R43-004-2VERSION NO:
15.23

7.2.9 At Diesel Generator 2A Woodward Governor, perform the following:

7.2.9.1 POSITION and verify the Speed Droop Control Knob to 0
(fully counter-clockwise).

IV

7.2.9.2 Confirm Load Limit Control Knob is fully clockwise (approximately 10).

7.2.10 At panel 2H11-P652, perform the following:

7.2.10.1 IF necessary, ADJUST frequency of the diesel generator to 60 hertz
with Diesel Gen 2A Speed Adjust switch.7.2.10.2 IF necessary, ADJUST diesel generator voltage to 4160 volts
with Diesel Gen 2A Voltage Adjust switch.7.2.10.3 PLACE and verify the Diesel Gen 2A Voltage Reg Transfer switch
in AUTO position.

IV

7.2.10.4 Confirm:

- Diesel Gen 2A Voltage Reg Transfer AUTO red light is ILLUMINATED
AND
- the MAN green light is EXTINGUISHED.

7.2.11 IF necessary, ADJUST voltage to 4160 volts with Diesel Generator 2A
Auto Voltage Adjust switch inside panel 2R43-P001A.**CAUTION:**OPERATION OF THE DIESEL AT LOW LOADS FOR EXTENDED PERIODS OF
TIME WILL RESULT IN OIL ACCUMULATION IN THE EXHAUST MANIFOLD
DUE TO INSUFFICIENT GAS FLOWS AND TEMPERATURE TO VAPORIZE
THE OIL.

7.2.12 At panel 2H11-P652, perform the following:

7.2.12.1 After allowing the diesel to run for five (5) minutes unloaded
(for even cooling)
PLACE the Diesel Gen 2A Start switch to STOP.7.2.12.2 Confirm Diesel Gen 2A Start and Diesel Gen 2A Shutdown
System Operative red lights are EXTINGUISHED.

G16.030

DOCUMENT TITLE:
DIESEL GENERATOR 2A SEMI-ANNUAL TEST

DOCUMENT NUMBER:
34SV-R43-004-2

VERSION NO:
15.23

NOTES:

There is a 100 second time delay from the time the diesel is shutdown UNTIL Diesel Gen 2A Auto Start Sys Operative light is ILLUMINATED.

7.2.12.3 IF Diesel Gen 2A Auto Start Sys Operative light is EXTINGUISHED, DEPRESS Diesel Gen 2A Shutdown Relay pushbutton. _____

7.2.12.4 Confirm Diesel Gen 2A Auto Start Sys Operative light is ILLUMINATED. _____

7.2.12.5 PLACE and verify the Diesel Gen 2A Mode Select Switch in NORM. _____

IV _____

7.2.12.6 IF Diesel Gen 2A Test SAT 2C Out Of Svc Interlock switch is in TEST, PLACE and verify switch in NORM. _____

IV _____

7.2.12.7 Confirm annunciator DIESEL 2A IN TEST MODE (652-105) has RESET. _____

7.2.13 Confirm 2P41-F339A, Diesel Generator 2A Cooling Water Outlet AOV, has CLOSED by observing local position indication. _____

7.2.14 Proceed to the Diesel Generator Barring After Shutdown subsection of this procedure. _____

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**Southern Nuclear
E. I. Hatch Nuclear Plant**

**Operations Training
JPM**

SIM 4, RO, SRO-I

TITLE		
PERFORM A MANUAL STARTUP OF HPCI, CONTROLLER FAILURE, LOW, ALTERNATE PATH		
AUTHOR	MEDIA NUMBER	TIME
D. H. GIDDENS	LR-JP-05.02A-00	5.0 Minutes
RECOMMENDED BY	APPROVED BY	DATE
N/R		



Page 1 of 1

Program/Course Code: OPERATIONS TRAINING Media Number: LR-JP-05.02A-00

[illegible]

UNIT 1 () **UNIT 2** (X)

TASK TITLE: PERFORM A MANUAL STARTUP OF HPCI, CONTROLLER FAILURE, LOW, ALTERNATE PATH

JPM NUMBER: LR-JP-05.02A-00

TASK STANDARD: The task shall be completed when the HPCI System is injecting to the Reactor with turbine speed greater than 2000 rpm per 34SO-E41-001-2.

TASK NUMBER: 005.002

OBJECTIVE NUMBER: 005.002.A

PLANT HATCH JTA IMPORTANCE RATING:

RO 3.00

SRO 3.00

K/A CATALOG NUMBER: 295031 EA1.02

K/A CATALOG JTA IMPORTANCE RATING:

RO 4.5

SRO 4.5

OPERATOR APPLICABILITY: Nuclear Plant Operator (NPO)

GENERAL REFERENCES:	Unit 2
	34SO-E41-001-2 (current version) 31EO-EOP-010-2 (current version)
REQUIRED MATERIALS:	Unit 2
	34SO-E41-001-2 (current revision) OR HPCI Placard

APPROXIMATE COMPLETION TIME: 5.0 Minutes

SIMULATOR SETUP: REFER TO SIMULATOR SETUP SHEET ON THE FOLLOWING PAGE

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #113**, or other full power IC, and leave in **FREEZE**.
2. **INSERT** the following **MALFUNCTIONS**:

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfE51_109	RCIC Failure to Auto Start			00000
mfR22_180	4KV Bus 2C Fault			00000
mfR22_181	4KV Bus 2D Fault			00000
mfE41_235A	HPCI Fails to Auto Start on Low Level			00000
mfE41_235B	HPCI Fails to Auto Start on Hi Drywell Pressure			00000
mfE41_106	HPCI Flow Control Fails Low			00000

3. Take the Simulator **OUT OF FREEZE** and **PERFORM** the following **MANIPULATIONS**:
 - A. Perform RC-1 and RC-2.
 - B. Allow simulator to run until RWL as indicated on 2B21-R623A and B is <-35 inches.
 - C. **Ensure the flow Controller display show flow and NOT flow rate.**
 - D. Acknowledge annunciators.
4. **PLACE** the Simulator in **FREEZE** until the INITIATING CUE is given.
5. **ESTIMATED Simulator SETUP TIME: 10 Minutes**

UNIT 2

READ AND GIVE A COPY TO THE OPERATOR

INITIAL CONDITIONS:

1. The HPCI System is in Standby.
2. A loss of the normal Feedwater pumps has occurred.
3. 31EO-EOP-010-2 (RC) is in progress.
4. RWL is < -35 inches and decreasing.
5. HPCI failed to autostart.
6. HPCI is required to maintain RWL.

INITIATING CUES:

Start HPCI manually and inject into the Reactor.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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For **INITIAL** Operator Programs:

For OJT/OJE; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.

For License Examinations; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

**START
TIME:** _____

PROMPT: **IF** the operator addresses HPCI suction transfer logic, as the Shift Supervisor, **INFORM** the operator that the HPCI high Torus level suction transfer logic has been overridden.

**1.	Open Lube Oil Cooling Water Valve, 2E41-F059.	At panel 2H11-P601, LUBE OIL CLG WTR VLV, 2E41-F059 is OPEN, red light illuminated.	SAT / UNSAT
2.	Start HPCI Barometric Condenser Vacuum Pump, 2E41-C002-2.	At panel 2H11-P601, HPCI BAROM CNDSR VACUUM PUMP, 2E41-C002-2 is OPERATING, red light illuminated.	SAT / UNSAT

PROMPT: **IF** the operator addresses posting High Radiation Areas, as the Shift Supervisor, **INFORM** the operator as Shift Supervisor that Health Physics is posting the areas.

**3.	Open the HPCI Turbine Steam Supply Valve, 2E41-F001.	At panel 2H11-P601, the TURB STEAM SUPPLY VLV, 2E41-F001 control switch is in the OPEN position, red light illuminated.	SAT / UNSAT
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NOTE: Valve 2E41-F001 is not required to be full open prior to proceeding to following steps.

**4.	Start the Auxiliary Oil Pump.	At panel 2H11-P601, the AUX OIL PUMP, 2E41-C002-3, is OPERATING, red light illuminated.	SAT / UNSAT
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(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**5.	Open the Pump Discharge Valve, 2E41-F006.	At panel 2H11-P601, PUMP DISCHARGE VLV, 2E41-F006 is OPEN, red light illuminated.	SAT / UNSAT
6.	Confirm the following valves are open: Turbine Control Valve Turbine Stop Valve	At panel 2H11-P601, the following valves are OPEN, red light illuminated: TURBINE CONTROL VLV TURBINE STOP VLV	SAT / UNSAT
**7.	Confirm HPCI Turbine comes up to speed as directed by the Turbine Flow Controller, 2E41-R612.	At panel 2H11-P601, operator RECOGNIZES HPCI FLOW CONTROL, 2E41-R612 has failed low. The operator TRANSFERS the controller to manual and ADJUST until HPCI discharge pressure is greater than reactor pressure with level increasing.	SAT / UNSAT
8.	Verify the Minimum Flow Valve, 2E41-F012, closes as flow increases into the reactor.	At panel 2H11-P601, the operator VERIFIES MIN FLOW VLV, 2E41-F012 is CLOSED with green light illuminated.	SAT / UNSAT

NOTE: If HPCI is started PER THE PLACARD, the following steps may be omitted.

9.	Confirm the following valves are closed: 2E41-F028 2E41-F025 2E41-F029 2E41-F026	At panel 2H11-P602, the operator has CONFIRMED the following valves are CLOSED, green light illuminated: 2E41-F028, STEAM LINE DRAIN VLV 2E41-F025, BAROM CNDSR DISCH TO CRW 2E41-F029, STEAM LINE DRAIN VLV 2E41-F026, BAROM CNDSR DISCH TO CRW	SAT / UNSAT
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(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
10.	Confirm Barometric Condenser Condensate Pump, 2E41-C002-1 cycles automatically to maintain barometric condenser water level.	At panel 2H11-P601, the operator has VERIFIED HPCI BAROM CNDSR LEVEL HIGH annunciator (601-129) is CLEAR.	SAT / UNSAT

PROMPT: **IF** the operator addresses shutting down HPCI, as Shift Supervisor,
INFORM the operator that shutdown is not desired at this time.

**END
TIME:** _____

NOTE: The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

TERMINATING CUE: We will stop here.

DOCUMENT TITLE:
HIGH PRESSURE COOLANT INJECTION (HPCI) SYSTEMDOCUMENT NUMBER:
34SO-E41-001-2VERSION NO:
22.107.2.2 CONTROL ROOM MANUAL STARTUP**CONTINUOUS****NOTES:**

- PRIOR to a planned non-emergency HPCI system run, the Health Physics Supervisor OR Foreman will be notified to post the necessary locations as HIGH RADIATION AREAS. These areas will be controlled during HPCI operations.
- This subsection is to be performed with the HPCI System initially in the Standby mode.
- UNLESS indicated otherwise, the following steps will be performed at panels 2H11-P601 and 2H11-P602.
- For a quick reference for starting HPCI, refer to the placard on 2H11-P601 AND in Attachment 5.
- During HPCI operation, increases in iodine and noble gas readings and a decrease in drywell-to-torus dp will occur. Fission product monitoring system alarms may be received.

CAUTION:

IF SUPPRESSION POOL TEMPERATURE REACHES 95°F DURING HPCI OPERATION, ENTER 34AB-T23-003-2, TORUS TEMPERATURE ABOVE 95°F.

7.2.2.1 OPEN 2E41-F059, Lube Oil Clg Wtr Vlv.

7.2.2.2 START 2E41-C002-2, Barom Cndsr Vacuum Pump.

NOTE:The following step is a **CRITICAL** step.

7.2.2.3 Confirm the necessary locations are posted as High Radiation areas, except in an emergency situation.

DOCUMENT TITLE:
HIGH PRESSURE COOLANT INJECTION (HPCI) SYSTEMDOCUMENT NUMBER: 34SO-E41-001-2
VERSION NO: 22.10**NOTES:**

- HPCI Operation at rated flow and pressure results in approx. 300 gpm water discharged to the Torus due to steam flow. This will raise Torus water level at a rate of approx. 3"/hr.
- Frequent checks are to be made as to system flow rates, discharge pressure, reactor vessel level and reactor pressure during manual operations.

CAUTIONS:

- PROLONGED OPERATION OF THE HPCI TURBINE BELOW 2000 RPM OR AT LOW LOADS IS TO BE AVOIDED TO PREVENT TURBINE EXHAUST CHECK VALVE CHATTER.
- PROLONGED OPERATION OF THE HPCI TURBINE BELOW 2000 RPM WITH THE AUXILIARY OIL PUMP TRIPPED IS TO BE AVOIDED TO ENSURE ADEQUATE OIL PRESSURE FOR PROPER TURBINE GOVERNOR OPERATION AND BEARING LUBRICATION.

7.2.2.4 OPEN 2E41-F001, Turb Steam Supply Vlv.

7.2.2.5 TAKE 2E41-C002-3, Aux Oil Pump, control switch to the START position.

7.2.2.6 OPEN 2E41-F006, Pump Discharge Vlv.

7.2.2.7 Confirm the following valves OPENED:

- Turbine Control Vlv
- Turbine Stop Vlv

7.2.2.8 Confirm the turbine comes up to speed as directed by 2E41-R612, Flow Control.

7.2.2.9 WHEN flow increases to 790 GPM, confirm 2E41-F012, Min Flow Vlv, CLOSED.

7.2.2.10 Confirm CLOSED/CLOSE the following valves:

- 2E41-F028, Steam Line Drain Vlv
- 2E41-F025, Barom Cndsr Disch To CRW
- 2E41-F029, Steam Line Drain Vlv
- 2E41-F026, Barom Cndsr Disch To CRW

7.2.2.11 Confirm 2E41-C002-1, Barom Cndsr Cond Pump, cycles automatically to maintain barometric condenser water level.

7.2.2.12 IF necessary, ADJUST 2E41-R612, HPCI Flow Control, to the desired injection rate.

DOCUMENT TITLE:
HIGH PRESSURE COOLANT INJECTION (HPCI) SYSTEMDOCUMENT NUMBER:
34SO-E41-001-2VERSION NO:
22.10

7.2.2.13 IF Condensate Storage Tank level decreases below 2 feet 10 inches OR Suppression Chamber level exceeds 152 inches, confirm the following:

- 2E41-F041 and 2E41-F042, Torus Outbd and Inbd Suct Valves, OPEN;
- 2E41-F004, CST Suction Valve, CLOSES

7.2.2.14 IF necessary to shift from level control to pressure control, perform the following:

NOTE:

IF 2E41-F008 and 2E41-F011 are OPEN at the same time, HPCI is considered inoperable AND the requirements of Technical Specification 3.5.1 must be met.

CAUTION:

WHEN 2E41-F008 AND 2E41-F011, TEST TO CST VLVS, AND 2E41-F006, PUMP DISCHARGE VLV, ARE ALL OPEN SIMULTANEOUSLY, RPV AND CST LEVELS ARE TO BE MONITORED FOR LEAKAGE TO THE CST. RAPID CHANGES OF INJECTION FLOWS ARE ALSO POSSIBLE.

7.2.2.14.1 OPEN 2E41-F011, Test to CST Vlv.

7.2.2.14.2 Slowly THROTTLE OPEN 2E41-F008, Test To CST Vlv.

7.2.2.14.3 Notify Shift Supervisor to declare HPCI INOP AND place under an LCO.

7.2.2.14.4 WHEN HPCI pump discharge pressure is less than reactor pressure, CLOSE 2E41-F006, Pump Discharge Vlv.

7.2.2.14.5 Adjust 2E41-F008 and 2E41-R612, Flow Control for pressure AND flow control.

7.2.2.15 WHEN HPCI is system is no longer necessary for RPV water level OR pressure control, SHUT DOWN the system per Control Room Shutdown subsection of this procedure.

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**Southern Nuclear
E. I. Hatch Nuclear Plant**

**Operations Training
JPM
SIM 5, RO, SRO-I**

TITLE		
OVERRIDE AND REOPEN PLANT SERVICE WATER ISOLATION VALVES		
AUTHOR	MEDIA NUMBER	TIME
R. A. BELCHER	LR-JP-20003-040	3.0 Minutes
RECOMMENDED BY	APPROVED BY	DATE
N/R		



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Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-20003A**

[illegible]

UNIT 1 () UNIT 2 (X)

TASK TITLE: **OVERRIDE AND REOPEN PLANT SERVICE WATER ISOLATION VALVES**

JPM NUMBER: LR-JP-20003-040

TASK STANDARD: The task shall be completed when the Plant Service Water Isolation valves isolation signal has been overridden and the header pressure is controlled greater than 80 psig.

TASK NUMBER: 200.013

OBJECTIVE NUMBER: 200.013.A

PLANT HATCH JTA IMPORTANCE RATING:

RO 4.0

SRO 4.0

K/A CATALOG NUMBER 295018 AA2.05

K/A CATALOG JTA IMPORTANCE RATING:

RO 2.9

SRO 2.9

OPERATOR APPLICABILITY: Nuclear Plant Operator (NPO)

GENERAL REFERENCES:	Unit 1	Unit 2
		34AB-P41-001-2 (current version)

REQUIRED MATERIALS:	Unit 1	Unit 2
		34AB-P41-001-2 (current version) OR PSW Placard Key for Plant Service Water valves Isolation Override.

APPROXIMATE COMPLETION TIME: 3.0 Minutes

SIMULATOR SETUP: REFER TO SIMULATOR SETUP SHEET ON THE FOLLOWING PAGE

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #113**, or other full power IC, and leave in **FREEZE**.
2. **INSERT** the following **MALFUNCTIONS** and **OVERRIDES**:

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfp64_193A	Drywell Chiller Compressor A Failure			00000
mfp64_193B	Drywell Chiller Compressor B Failure			00000
mfp41_264B	PSW Line Break (Div 2 Supply)	10	100	0000
mfp41-67D	Service Water Pump D Trip			

OVERRIDE	TITLE	POSITION
diP41-C001C	PSW Pump C	TRIP
loP41-C001C G1	PSW Pump C	OFF
loP41-C001C R2	PSW Pump C	OFF

3. Take the simulator **OUT OF FREEZE** and **PERFORM** the following **MANIPULATIONS**.

- A. When the plant scrams on high Drywell pressure, perform RC-1 and RC-2.
- B. Stabilize Reactor water level at 10 to 50 inches.

4. **PLACE** the Simulator in **FREEZE** until the INITIATING CUE is given.

5. **ESTIMATED** Simulator **SETUP TIME**: **25 minutes**

NOTE: It takes 10-11 minutes to get a LOCA signal from loss of DW chillers.

(** Indicates critical step)

UNIT 2

READ AND GIVE A COPY TO THE OPERATOR

INITIAL CONDITIONS:

1. PSW Pump 2C is tagged out for maintenance.
2. PSW Pump 2D tripped. Maintenance is investigating.
3. An event has occurred that caused the Unit Two Turbine Building Plant Service Water Isolation valves to isolate.
4. There is no indication of a physical PSW line break.

INITIATING CUES:

Reopen the Turbine Building Service Water Isolation Valves per 34AB-P41-001-2.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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For **INITIAL** Operator Programs:

For OJT/OJE; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.

For License Examinations; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

NOTE: Either Division I OR II may be started first. The completion of either Division will complete the JPM (Step 1, 3 & 13 are common. Div II starts at step 8)

**START
TIME:** _____

1.	Operator obtains the procedure.	Operator obtains a copy of 34AB-P41-001-2.	SAT / UNSAT
2.	Operator verifies PSW Division I Header Pressure is greater than 80 psig.	Operator VERIFIES Division I Plant Service Water Header Pressure as indicated by 2P41-R601A is greater than 80 psig.	SAT / UNSAT

NOTE: Override switches are arranged A/D and B/C so both switches must be in "override" to open either Div I or Div II valves.

**3.	Operator " OVERRIDES " the Plant Service Water Turbine Building Isolation Signal for the 2P41-F316A and D, and for the 2P41-F316 B and C.	At panel 2H11-P652, the operator POSITIONS the Keylock override switch for valves 2P41-F316A/D and 2P41-F316B/C to the " OVERRIDE " position.	SAT / UNSAT
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NOTE: The operator may elect to open the 2P41-F316C(D) valve before the 2P41-F316A(B) valve.

**4.	Operator fully opens valve 2P41-F316A(C)	At panel 2H11-P652, the operator POSITIONS Control Switch for 2P41-F316A(C) to the "OPEN" position, red light illuminated, green light extinguished.	SAT / UNSAT
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(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**5.	Operator THROTTLES open valve 2P41-F316C(A).	At panel 2H11-P652, the operator THROTTLES open valve 2P41-F316(C)A, red light illuminated, while periodically monitoring Division I Header Pressure .	SAT / UNSAT
6.	Operator determines that PSW Division I Header Pressure is decreasing.	Operator VERIFIES Division I Plant Service Water Header Pressure is decreasing as indicated by 2P41-R601A.	SAT / UNSAT
**7.	Operator continues to maintain OR returns header pressure to greater than 80 psig.	At panel 2H11-P652, the operator THROTTLES OR CLOSES 2P41-F316C(A) to maintain Division I Header Pressure greater than 80 psig.	SAT / UNSAT

NOTE: IF 2P41-F316 C(A) switch is placed to CLOSE, the valve will travel to the full closed position.

8.	Operator verifies PSW Division II Header Pressure is greater that 80 psig.	Operator VERIFIES Division II Plant Service Water Header Pressure as indicated by 2P41-R601B Is greater that 80 psig.	SAT / UNSAT
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NOTE: The operator may elect to open the 2P41-F316D valve before the 2P41-F316B valve.

**9.	Operator fully opens valve 2P41-F316B(D).	At panel 2H11-P652, the operator POSITIONS Control Switch for 2P41-F316B(D) to the "OPEN" position, red light illuminated, green light extinguished.	SAT / UNSAT
**10.	Operator THROTTLES open valve 2P41-F316D(B).	At panel 2H11-P652, the operator THROTTLES open valve 2P41-F316D(B), red light illuminated, while periodically monitoring Division II Header Pressure .	SAT / UNSAT

(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
11.	Operator determines that PSW Division II Header Pressure is decreasing.	Operator VERIFIES Division II Plant Service Water Header Pressure is decreasing as indicated by 2P41-R601B.	SAT / UNSAT
**12.	Operator continues to maintain OR returns header pressure to greater than 80 psig.	At panel 2H11-P652, the operator THROTTLES OR CLOSES 2P41-F316D(B) to maintain Division II Header Pressure greater than 80 psig.	SAT / UNSAT

NOTE: IF 2P41-F316 D(B) switch is placed to CLOSE, the valve will travel to the full closed position.

13.	Operator notifies Shift Supervisor.	Operator informs the Shift Supervisor that a 2P41-F316 (A-D) valve must remain throttled to maintain Division header pressure greater than 80 psig.	SAT / UNSAT
-----	-------------------------------------	---	-------------

**END
TIME:** _____

NOTE: The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.
- Operator is maintaining Division I & II header pressures greater than 80 psig.

TERMINATING CUE: We will stop here.

(** Indicates critical step)

DOCUMENT TITLE:
LOSS OF PLANT SERVICE WATERDOCUMENT NUMBER:
34AB-P41-001-2VERSION NO:
9.104.18 Re-opening Turbine Bldg. Isolation Valves

4.18.1 IF 2P41-F316A, 2P41-F316B, 2P41-F316C, 2P41-F316D, PSW To Turb Bldg, are closed AND there is no physical indication of a PSW Line Break DOWNSTREAM of 2P41-F316A, 2P41-F316B, 2P41-F316C, 2P41-F316D, OR when directed by the EOPs to maintain 2P41-F316A, 2P41-F316B, 2P41-F316C, 2P41-F316D open with no physical indication of a PSW Line Break, THEN perform the following:

4.18.1.1 IF PSW Division 1 Header Pressure is above 80 PSIG, THEN:

4.18.1.1.1 PLACE the following keylock switches to OVERRIDE:

- OVERRIDE FOR 2P41-F316A & 2P41-F316D
- OVERRIDE FOR 2P41-F316B & 2P41-F316C.

4.18.1.1.2 OPEN 2P41-F316A or 2P41-F316 C.

Critical

4.18.1.1.3 THROTTLE OPEN 2P41-F316C or 2P41-F316A maintaining Division 1 Header Pressure above 80 PSIG.

4.18.1.2 IF PSW Division 2 Header Pressure is above 80 PSIG, THEN:

4.18.1.2.1 PLACE the following keylock switches to OVERRIDE:

- OVERRIDE FOR 2P41-F316A & 2P41-F316D
- OVERRIDE FOR 2P41-F316B & 2P41-F316C.

4.18.1.2.2 OPEN 2P41-F316B or 2P41-F316D

Critical

4.18.1.2.3 THROTTLE OPEN 2P41-F316D or 2P41-F316 B maintaining Division 2 Header Pressure above 80 PSIG.

4.18.1.3 IF 2P41-F316A, 2P41-F316B, 2P41-F316C, or 2P41-F316D must be left partially closed, THEN continue in this procedure.

4.18.1.4 IF all valves 2P41-F316A, 2P41-F316B, 2P41-F316C, 2P41-F316D can be fully opened AND PSW Division 1 AND 2 Header Pressures maintained above 80 PSIG, THEN exit this procedure.

POSTED at 2H11-P652

Ref. 34AB-P41-001-2

DOCUMENT TITLE:
LOSS OF PLANT SERVICE WATER

DOCUMENT NUMBER:
34AB-P41-001-2

VERSION NO:
9.10

- 4.18.2 IF 2P41-F316A, 2P41-F316B, 2P41-F316C, 2P41-F316D, PSW To Turb Bldg, are OPEN
AND
there is no physical indication of a PSW Line Break DOWNSTREAM of 2P41-F316A,
2P41-F316B, 2P41-F316C, 2P41-F316D, and it is desired to maintain the valves OPEN,
THEN perform the following:
- 4.18.2.1 IF PSW Division 1 Header Pressure is above 80 PSIG,
THEN PLACE OVERRIDE FOR 2P41-F316A & 2P41-F316D keylock switch to
OVERRIDE AND
confirm 2P41-F316A & 2P41-F316D remain open.
- 4.18.2.2 IF PSW Division 2 Header Pressure is above 80 PSIG,
THEN PLACE OVERRIDE FOR 2P41-F316B & 2P41-F316C to OVERRIDE
AND confirm 2P41-F316B & 2P41-F316C remain open.

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**Southern Nuclear
E. I. Hatch Nuclear Plant**

**Operations Training
JPM**

SIM 6, RO, SRO-I

TITLE		
REACTOR PRESSURE CONTROL WITH SRVs		
AUTHOR	MEDIA NUMBER	TIME
ED JONES	LR-JP-25040-03	10 Minutes
RECOMMENDED BY	APPROVED BY	DATE
N/R		



SOUTHERN NUCLEAR OPERATING COMPANY PLANT E. I. HATCH	Page 1 of 1
FORM TITLE: TRAINING MATERIAL REVISION SHEET	

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Program/Course Code: OPERATIONS TRAINING Media Number: LR-JP-25040

Program/Course Code: OPERATIONS TRAINING Media Number: LR-JP-25040

[illegible]

UNIT 1 () UNIT 2 (X)

TASK TITLE: REACTOR PRESSURE CONTROL WITH SRVs**JPM NUMBER:** LR-JP-25040-03**TASK STANDARD:** The task will be completed when the operator is controlling Reactor pressure in a band using SRVs per 34AB-N71-001-2.**TASK NUMBER:** 200.034**OBJECTIVE NUMBER:** 200.034.C**PLANT HATCH JTA IMPORTANCE RATING:****RO** 3.76**SRO** 3.55**K/A CATALOG NUMBER:** 295025 EA1.03**K/A CATALOG JTA IMPORTANCE RATING:****RO** 4.4**SRO** 4.4**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)

GENERAL REFERENCES:	Unit 2
	34AB-N71-001-2 (current version) 34SO-B21-001-2 (current version)

REQUIRED MATERIALS:	Unit 2
	34AB-N71-001-2 (current version) 34SO-B21-001-2 (current version)

APPROXIMATE COMPLETION TIME: 10 Minutes**SIMULATOR SETUP:** REFER TO SIMULATOR SETUP SHEET ON THE FOLLOWING PAGE

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #113**, or other full power IC, and leave in **FREEZE**.
2. **PLACE** clearance tag on HPCI Aux Oil Pump PTL.
3. **INSERT** the following **MALFUNCTIONS & OVERRIDES**:

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfN71_68A	Circulation Pump A Trip			00000
mfN71_68B	Circulation Pump B Trip			99999
mfB21_129M	Main Steam Relief Valve M Fails Stuck			00000
mfB21-226A	Low-Low- Set A Fails Inop			00000
mfB21-226B	Low-Low- Set B Fails Inop			00000

OVERRIDE	TITLE	FINAL VALUE
loE41A-S20G1	HPCI Aux Oil Pump	OFF
loE41A-S20R2	HPCI Aux Oil Pump	OFF

4. Take the Simulator **OUT OF FREEZE** and **PERFORM** the following **MANIPULATIONS**:
 - A. Insert Malfunction mfN71_68B.
 - B. Immediately close MISIVs (to maintain Rx Pressure)
 - C. Perform RC-1 and RC-2 actions.
 - D. Ensure Rx Press (B025) is in computer window on P603
 - E. Let simulator run until SRVs cycle on the electric open signal.
5. **PLACE** the Simulator in **FREEZE** until the INITIATING CUE is given.
6. **ESTIMATED** Simulator **SETUP TIME**: **15 minutes**

UNIT 2

READ AND GIVE A COPY TO THE OPERATOR

INITIAL CONDITIONS:

1. HPCI is tagged out for maintenance.
2. A total loss of Circ water has occurred.
3. The Reactor has been scrammed.
4. The Main Condenser has been isolated from the Reactor.
5. Other operators are performing scram actions.

INITIATING CUES:

MAINTAIN Reactor pressure at 700 to 850 psig using SRVs, IAW 34AB-N71-001-2, Step 4.5.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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For **INITIAL** Operator Programs:

For OJT/OJE; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.

For License Examinations; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

**START
TIME:** _____

1.	Operator identifies the procedure needed to perform the task.	Operator has IDENTIFIED the correct procedure as 34AB-N71-001-2.	SAT / UNSAT
----	---	--	-------------

PROMPT: **IF** the operator addresses using other systems to control Reactor pressure, **INFORM** the operator to use SRVs.

2.	Operator identifies applicable system operating procedures to perform the task.	Operator has IDENTIFIED the correct procedure as 34SO-B21-001-2.	SAT / UNSAT
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PROMPT: **IF** the operator addresses using the Placard sequence for opening the SRVs, **DIRECT** the operator to follow the procedure.

NOTE: The 2B21-F013M fails to open with the switch.

3.	Attempts to OPEN SRV 2B21-F013M.	At Panel 2H11-P602, the operator attempts to OPEN 2B21-F013M.	SAT / UNSAT
4.	The failure of the 2B21-F013M to open is recognized.	At 2H11-P602 the operator RECOGNIZES the failure of the 2B31-F013M to open.	SAT / UNSAT

PROMPT: **IF** the operator reports the failure of the 2B21-F013M to open, **INFORM** the operator that you will get Maintenance to investigate, and to continue control Reactor pressure in the band.

**5.	OPEN SRV 2B21-F013B	At Panel 2H11-P602, the operator OPENS 2B21-F013B.	SAT / UNSAT
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(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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PROMPT: **IF** the operator addresses checking SRV tailpipe temperature on recorder 2B21-R614, at Panel 2H11-P614, **INFORM** the operator that another operator will check the recorder for proper SRV operation.

6.	Reactor pressure in band: 700 to 850 psig	The operator CONTROLS pressure in band: 700 to 850 psig (± 50 psig)	SAT / UNSAT
**7.	Before Reactor decreases below 400 psig, CLOSE SRV 2B21-F013B <i>1108/1w</i>	At panel 2H11-P602 the operator CLOSES 2B21-F013B by taking the switch to the CLOSE position prior to Reactor pressure decreasing below its band (-50 psig).	SAT / UNSAT

NOTE: **AFTER** the operator has demonstrated proper control of Reactor pressure, **INFORM** the operator that another operator will continue maintaining Reactor pressure in band.

END
TIME: _____

NOTE: The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.
- Operator has controlled pressure between 700-800 psig.

TERMINATING CUE: We will stop here.

(** Indicates critical step)

DOCUMENT TITLE:
AUTOMATIC DEPRESSURIZATION (ADS) AND
LOW-LOW SET (LLS) SYSTEMS

DOCUMENT NUMBER:
34SO-B21-001-2

VERSION NO:
13.10

7.4 INFREQUENT OPERATIONS

7.4.1 Manual Operation of Safety Relief Valves

CONTINUOUS

NOTES:

- Unless otherwise noted, all steps will be performed at panel 2H11-P602.
- IF possible, operate the safety valves in the following sequence to control suppression pool heat distribution: M, B, G, F, D, L, K, C, A, E, H. (Posted @ 2H11-P602)
- The RED indicator light for SRV shows ONLY that the actuating solenoid is energized. It is NOT positive indication of valve position. The RED light will be illuminated only when the electrical signal is present to open the SRV.
- The YELLOW indicator light for SRV indicates the Tailpipe Pressure switch has reached its setpoint.
- The GREEN indicator light for SRV will extinguish with the Control Switch in OPEN.
- In the event of a reactor vessel flooding incident, the temperature/pressure associated with a water environment may not actuate the 85 psig pressure switches as normally expected with an SRV open demand present. Operator action for failure OR apparent failure of SRV's should be to enter 34AB-B21-003-2, Failure Of Safety/Relief Valves.

7.4.1.1 OPEN any safety relief valve by placing its control switch to the OPEN position. ☐

7.4.1.2 Confirm the RED indicator light for SRV is ILLUMINATED. ☐

7.4.1.3 Confirm the SRV is OPEN by using the following methods:

- RPV pressure decreasing as indicated on multiple indications ☐
- Annunciator SAFETY / BLOWDOWN VALVE PRESS HIGH (602-311) is ILLUMINATED.
However, annunciator may be EXTINGUISHED if low RPV pressure exists or the SRV is passing water. ☐
- YELLOW indicator light ILLUMINATED for applicable SRV.
However, light may be EXTINGUISHED if low RPV pressure exists or the SRV is passing water. ☐
- Temperature increasing on 2B21-R614 Auto Blowdown / Safety Valve Temps recorder at panel 2H11-P614 for applicable SRV ☐

DOCUMENT TITLE:
AUTOMATIC DEPRESSURIZATION (ADS) AND
LOW-LOW SET (LLS) SYSTEMS

DOCUMENT NUMBER:
34SO-B21-001-2

VERSION NO:
13.10

NOTE:

Safety relief valves 2B21-F013A, C, E, H, K, L, M are ADS Relief Valves.

7.4.1.4 IF an ADS valve has been manually opened AND
the desired pressure reduction is achieved,
perform the following:

7.4.1.4.1 CLOSE the ADS valve by placing its control switch to the AUTO position. ☐

7.4.1.4.2 Confirm GREEN indicator light for SRV is ILLUMINATED. ☐

7.4.1.4.3 Confirm RED indicator light for SRV is EXTINGUISHED. ☐

NOTE:

Safety relief valves 2B21-F013B, D, F, G are LLS / Manual Relief Valves.

7.4.1.5 IF a LLS valve has been manually opened AND
the desired reactor pressure reduction is achieved,
perform the following:

7.4.1.5.1 CLOSE the LLS valve by placing its control switch to the CLOSE position. ☐

7.4.1.5.2 Confirm GREEN indicator light for SRV is ILLUMINATED. ☐

7.4.1.5.3 Confirm RED indicator light for SRV is EXTINGUISHED. ☐

7.4.1.6 RESET the safety relief valve leak detection logic as follows:

- PLACE Leak Detection Logic A Reset keylock switch (2B21-S5A) to
RESET position and back to NORMAL position. ☐
- PLACE Leak Detection Logic B Reset keylock switch (2B21-S5B) to
RESET position and back to NORMAL position. ☐

7.4.1.7 Confirm YELLOW indicator light for SRV is EXTINGUISHED. ☐

7.4.1.8 Confirm temperature decreasing on 2B21-R614 Auto Blowdown / Safety Valve
Temps recorder at panel 2H11-P614 for applicable SRV. ☐

7.4.1.9 Confirm the system is in STANDBY per the STANDBY subsection of this procedure. ☐

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**Southern Nuclear
E. I. Hatch Nuclear Plant**

**Operations Training
JPM**

SIM 7, RO, SRO-I

TITLE		
USING THE OVERRIDE SWITCHES, VENT THE TORUS WITH THE CAD SYSTEM		
AUTHOR	MEDIA NUMBER	TIME
R. A. BELCHER	LR-JP-13.63-10	9.0 Minutes
RECOMMENDED BY	APPROVED BY	DATE
N/R		



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PLANT E. I. HATCH**

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FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING**

Media Number: **LR-JP-13.63**[illegible]

UNIT 1 0 UNIT 2 (X)

TASK TITLE: USING THE OVERRIDE SWITCHES, VENT THE TORUS WITH THE CAD SYSTEM

JPM NUMBER: LR-JP-13.63-10

TASK STANDARD: The task shall be completed when the Torus is being vented via the CAD System, per 31EO-EOP-101.

TASK NUMBER: 013.063

OBJECTIVE NUMBER: 013.063.A

PLANT HATCH JTA IMPORTANCE RATING:

RO 3.56

SRO 3.16

K/A CATALOG NUMBER: 295038 EK1.02

K/A CATALOG JTA IMPORTANCE RATING:

RO 4.2

SRO 4.4

OPERATOR APPLICABILITY: Nuclear Plant Operator (NPO)

GENERAL REFERENCES:	Unit 1	Unit 2
	NA	31EO-EOP-101-2 (current version)

REQUIRED MATERIALS:	Unit 1	Unit 2
	NA	31EO-EOP-101-2 (current version)

APPROXIMATE COMPLETION TIME: 9.0 Minutes

SIMULATOR SETUP: REFER TO SIMULATOR SETUP SHEET ON THE FOLLOWING PAGE

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #113**, or other full power IC, and leave in **FREEZE**.
2. **INSERT** the following **MALFUNCTIONS & DIGITAL POINTS (SVO)**:

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfP64_193A	Drywell Chiller Compressor A Failure			00000
mfP64_193B	Drywell Chiller Compressor B Failure			00000
mfB21_123A	Steam Line A Break (Before Restrictor) (Var)	25	1000	00000
MFd11_282A	Fuel Gas Gap Release	.05		See Step 3.E

DIGITAL POINTS	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
svoP33080	DW O2 O2 Concentration in Drywell	.063	1000	
svoP33081	DW H2 H2 Concentration in Drywell	.069	1000	
svoP33082	SP O2 O2 Concentration in Torus	.066	1000	
svoP33083	SP H2 H2 Concentration in Torus	.071	1000	

3. Take the Simulator **OUT OF FREEZE** and **PERFORM** the following **MANIPULATIONS**:
 - A. Place H2/O2 analyzers in service.
 - B. Start SBT System "A" with a suction from the Reactor Building
 - C. Perform EO-EOP-114-2 to control RHR and CS injection flow rate.
 - D. Allow the simulator to run until the plant is in the UNSAFE Region of the DSIL Curve.
 - E. When in the UNSAFE Region of the DSIL Curve, close the MSIVs and open the ADS valves.
 - F. Maintain RWL around "0" inches with Condensate.
 - G. Activate Fuel Gap Release malfunction and wait for rad alarms to come in.
4. **PLACE** the Simulator in **FREEZE** until the INITIATING CUE is given.
5. **ESTIMATED Simulator SETUP TIME:** **10 Minutes**

UNIT 2

READ AND GIVE A COPY TO THE OPERATOR

INITIAL CONDITIONS:

1. A steam line broke in the Drywell.
2. Fuel failure exists based on Lab grab samples.
3. Standby Gas Treatment is in operation.
4. Normal AC Power is available.
5. A Group II isolation has occurred.

INITIATING CUES:

Vent the Torus with the "A" loop CAD valves, per 31EO-EOP-101-2, irrespective of offsite radiological release rate, defeating isolation interlocks.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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For **INITIAL** Operator Programs:

For OJT/OJE; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.

For License Examinations; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

**START
TIME:** _____

1.	Operator obtains the procedure.	Operator obtains 31EO-EOP-101-2.	SAT / UNSAT
**2.	Defeat the High Drywell Pressure Isolation signal.	At panel 2H11-P657, the operator PLACES the keylock PCIS Override Switches to OVERRIDE for: • High Drywell Press, 2T48-F332A	SAT / UNSAT
		• High Drywell Press, 2T48-F333A	SAT / UNSAT
**3.	Defeat the Low RPV Level Isolation signal.	At panel 2H11-P657, the operator PLACES the keylock PCIS Override Switches to OVERRIDE for: • Low RPV Level, 2T48-F332A	SAT / UNSAT
		• Low RPV Level, 2T48-F333A	SAT / UNSAT

(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**4.	Defeat the Reactor Building High Radiation Isolation signal.	At panel 2H11-P657, the operator PLACES the keylock PCIS Override Switches to OVERRIDE for: <ul style="list-style-type: none"> Rx Bldg High Radn, 2T48-F332A 	SAT / UNSAT
		<ul style="list-style-type: none"> Rx Bldg High Radn, 2T48-F333A 	SAT / UNSAT
**5.	Defeat the Refuel Floor High Radiation Isolation signal.	At panel 2H11-P657, the operator PLACES the keylock PCIS Override Switches to OVERRIDE for: <ul style="list-style-type: none"> Refuel Flr High Radn, 2T48-F332A 	SAT / UNSAT
		<ul style="list-style-type: none"> Refuel Flr High Radn, 2T48-F333A 	SAT / UNSAT
**6.	Open Torus 2" Vent valve, 2T48-F332A.	At panel 2H11-P657: TORUS VENT ISOL VLV, 2T48-F332A is OPEN, red light illuminated.	SAT / UNSAT
**7.	Open Torus 2" Vent valve, 2T48-F333A.	At panel 2H11-P657: TORUS VENT ISOL VLV, 2T48-F333A is OPEN, red light illuminated.	SAT / UNSAT
**8.	Using Torus Flow Controller, 2T48-R616A, Open Torus Vent Flow Control Valve, 2T48-F337A.	At panel 2H11-P657, the operator OPENS FLOW CNTL FOR F337A, 2T48-R616A: TORUS VENT FLOW CNTRL VLV, 2T48-F337A is OPEN, red light illuminated. OR Flow indicated on recorder TORUS VENT EXH FLOW A, 2T48-R620.	SAT / UNSAT

(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
9.	Monitor Torus Pressure indication on recorder 2T48-R608.	At panel 2H11-P657, recorder "MIDRANGE PRESS DRWL/TORUS," 2T48-R608, has been IDENTIFIED by operator.	SAT / UNSAT

PROMPT: **WHEN** the operator addresses Torus pressure, **INDICATE** for the operator that Torus pressure is less than 56 psig and slowly decreasing.

END
TIME: _____

NOTE: The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.
- Operator has started venting and is monitoring pressure.

TERMINATING CUE: We will stop here.

DOCUMENT TITLE:
EMERGENCY CONTAINMENT VENTINGDOCUMENT NUMBER:
31EO-EOP-101-2VERSION NO:
4.1**3.0 OPERATOR ACTIONS****3.1 SUPPRESSION CHAMBER VENTING**

- 3.1.1 Confirm STARTED/START Standby Gas Treatment taking suction from the Reactor Building per 34SO-T46-001-2.

NOTE:

EITHER OR both CAD vent trains may be used as required However:

- IF 2R25-S064, Instrument Bus 2A, is de-energized, only the 'B' Loop CAD valves can be used.
- IF 2R25-S065, Instrument Bus 2B, is de-energized, only the 'A' Loop CAD valves can be used.
- IF both 2R25-S064 AND 2R25-S065 are de-energized, Suppression Chamber Venting is NOT possible.

- 3.1.2 Place keylock PCIS Override Switches to OVERRIDE:

DESCRIPTIONLOCATION

2T48-F332A(B), High Drywell Press	2H11-P657(P654)
2T48-F333A(B), High Drywell Press	2H11-P657(P654)
2T48-F332A(B), Low RPV Level	2H11-P657(P654)
2T48-F333A(B), Low RPV Level	2H11-P657(P654)
2T48-F332A(B), Rx Bldg High Radn	2H11-P657(P654)
2T48-F333A(B), Rx Bldg High Radn	2H11-P657(P654)
2T48-F332A(B), Refuel Flr High Radn	2H11-P657(P654)
2T48-F333A(B), Refuel Flr High Radn	2H11-P657(P654)

- 3.1.3 OPEN:

VALVEDESCRIPTIONLOCATION

2T48-F332A(B)	Torus Vent Isol Vlv	2H11-P657(P654)
2T48-F333A(B)	Torus Vent Isol Vlv	2H11-P657(P654)

- 3.1.4 Operate 2T48-R616A(B), Torus Vent Flow Cntl Vlv 2T48-F337A(B), as required to maintain Suppression Chamber pressure below 56 psig, at 2H11-P657(P654).

- 3.1.5 IF Suppression Chamber pressure can NOT be maintained below 56 psig, THEN perform 3.1.6.

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**Southern Nuclear
E. I. Hatch Nuclear Plant**

**Operations Training
JPM
SIM 8, RO Only**

TITLE		
MOVE CONTROL RODS AFTER A CRD PUMP TRIP		
AUTHOR	MEDIA NUMBER	TIME
A. D. Yawn	LR-JP-25012-12	13.0 Minutes
RECOMMENDED BY	APPROVED BY	DATE
N/R		



**SOUTHERN NUCLEAR OPERATING COMPANY
PLANT E. I. HATCH**

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FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: OPERATIONS TRAINING

Media Number: **LR-JP-25012**[illegible]

UNIT 1 () UNIT 2 (X)

TASK TITLE: MOVE CONTROL RODS AFTER A CRD PUMP TRIP**JPM NUMBER:** LR-JP-25012-12**TASK STANDARD:** The task shall be completed when two control rods in the specified step have been moved to the specified position per 34GO-OPS-065-0.**TASK NUMBER:** 001.010**OBJECTIVE NUMBER:** 001.010.A**PLANT HATCH JTA IMPORTANCE RATING:****RO** 3.57**SRO** 3.52**K/A CATALOG NUMBER:** 201001A201**K/A CATALOG JTA IMPORTANCE RATING:****RO** 3.20**SRO** 3.30**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)

GENERAL REFERENCES:	Unit 2
	34GO-OPS-065-0 (current version) 34AR-603-128-2 (current version) 34AB-C11-001-2 (current version)

REQUIRED MATERIALS:	Unit 2
	34GO-OPS-065-0 (current version) 34AR-603-128-2 (current version) 34AB-C11-001-2 (current version) Control Rod Movement Sequence Sheet (Step 50)

APPROXIMATE COMPLETION TIME: 13.0 Minutes**SIMULATOR SETUP:** REFER TO SIMULATOR SETUP SHEET ON THE FOLLOWING PAGE

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC 110**, or other IC at approximately 60% RTP, and leave in **FREEZE**.
2. **INSERT** the following **MALFUNCTIONS**:

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfC11_30A	CRD Pump A Trip			99999

3. Take the Simulator **OUT OF FREEZE** and **PERFORM** the following **MANIPULATIONS**:
 - A. Insert Control Rods in Step 50 to Position 18.
 - B. Ensure that CRD Pump 2A is operating.
 - C. Flag annunciators:
 - o 603-211 RBM DOWNSCALE
 - o 603-238 ROD OUT BLOCK
4. **PLACE** the Simulator in **FREEZE** until the INITIATING CUE is given.
5. **ESTIMATED** Simulator **SETUP TIME**: **15 Minutes**

UNIT 2

READ AND GIVE A COPY TO THE OPERATOR

INITIAL CONDITIONS:

1. A normal plant shutdown is in progress per 34GO-OPS-013-2.
2. Rod insertion per the prescribed sequence is in progress.
3. Rod insertion has begun in Step 50, with all control rods in the STEP presently at position "18".
4. The STA has recommended inserting Rods in Step 50 to its insert limit at position "12."
5. Rod Worth Minimizer is operable and has been loaded with the correct movement sequence, which has been approved by the Reactor Engineering Supervisor.
6. Due to the rod movements, the following reoccurring annunciators have been flagged:
 - o 603-211 RBM DOWNSCALE
 - o 603-238 ROD OUT BLOCK
7. All Pre Job Brief evolutions have taken place.

INITIATING CUES:

Follow the STA's recommendation to insert Rods, in reverse order, at Step 50, to position "12."

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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For **INITIAL** Operator Programs:

For OJT/OJE; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.

For License Examinations; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

**START
TIME:** _____

1.	Operator identifies the procedure needed to perform the task.	Operator has identified the correct procedure as 34GO-OPS-065-0.	SAT / UNSAT
2.	Operator reviews the procedure's precautions and limitations.	Operator has reviewed the precautions and limitations.	SAT / UNSAT
3.	Operator identifies correct procedure section.	Operator refers to section 7.2.1, Use of Rod Movement Sequences.	SAT / UNSAT

PROMPT: **WHEN** the Operator addresses an approved copy of the Control Rod Movement Sequence Sheet, **GIVE** the Operator Control Rod Movement Sequence Sheet for Step 50. (You may use the Simulator move sequence book premarked for intermediate position 18).

PROMPT: **IF** the Operator asked if continuous rod movement is allowed, as SS **INFORM** the Operator that continuous may be used. *No*

NOTE: These steps are written for rods 34-27 and 18-27. Rods 26-35 and 26-19 are the other two rods in step 50. The Operator may select any control rod in Step 50, although the Operator should proceed in reverse consecutive order.

4.	Select a control rod 34-27.	At panel 2H11-P603, push-button is DEPRESSED on CONTROL ROD SELECT Matrix for control rod 34-27	SAT / UNSAT
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STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
5.	Continues rod insertion by notch to position 12 or Continues rod insertion "continuous" to position 14. (one step prior to insert limit)	At panel 2H11-P603, ROD MOVEMENT CONTROL switch is momentarily PLACED to "IN" position and RELEASED. or MOVEMENT CONTROL switch is PLACED to "IN" position and RELEASED one step prior to insert limit.	SAT / UNSAT
**6.	Insert the control rod to position 12.	At panel 2H11-P603, ROD MOVEMENT CONTROL switch is momentarily PLACED to "IN" position and RELEASED.	SAT / UNSAT
7.	Confirm the proper control rod movement.	At panel 2H11-P603, the Operator VERIFIES: Rod position indicator indicates "12" for rod moved in previous step on Four-Rod Display and/or RWM. APRM/LPRM readings decrease.	SAT / UNSAT
8.	Complete the line, for rod 34-27, on the Control Rod Movement Sequence sheet.	On the Control Rod Movement Sequence sheet, on the line for the selected rod (Inserted side of sheet), the Operator has: Filled in INIT block. Filled in DATE block.	SAT / UNSAT

NOTE: **AFTER** the first control rod has been inserted to Position 12,
ACTIVATE MALFUNCTION mfC11_30A, "CRD Pump A Trip."

9.	The Operator acknowledges the alarm and addresses procedure 34AR-603-128-2.	At panel 2H11-P603, the Operator: ACKNOWLEDGES CRD PUMP A BREAKER TRIP annunciator. OBTAINS procedure 34AR-603-128-2.	SAT / UNSAT
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(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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PROMPT: **IF** the Operator addresses sending personnel to investigate pump trip, as the Shift Supervisor, **INFORM** the Operator that personnel have been dispatched and to continue with the Annunciator Response Procedure.

10.	Check the indications to determine validity of the alarm.	At panel 2H11-P603, the following indications are VERIFIED by the Operator: CRD PUMP, 2C11-C001A, indicating light is extinguished. CRD FLOW, 2C11-R606, indicates zero flow. CLG WTR FLOW, 2C11-R605, indicates zero flow. CHG WTR PRESS, 2C11-R601, is decreasing. DR WTR dP, 2C11-R602, is decreasing. CLG WTR dP, 2C11-R603, is decreasing.	SAT / UNSAT
11.	The Operator addresses 34AB-C11-001-2.	The Operator OBTAINS/ENTERS 34AB-C11-001-2S.	SAT / UNSAT
12.	Place CRD Flow Control in Manual and decrease the output to zero.	At panel 2H11-P603, CRD FLOW CONTROL controller 2C11-R600: MANUAL (M) push-button is DEPRESSED, yellow push-button illuminated. Close arrow push button is DEPRESSED until output indicates zero (accept 5% to off scale low).	SAT / UNSAT
**13.	Start CRD Pump 2B.	At panel 2H11-P603, place CRD PUMP 2B control switch to START and verify pump is running with red light illuminated.	SAT / UNSAT

(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**14.	Increase system flow to 50 gpm.	At panel 2H11-P603, CRD FLOW CONTROL 2C11-R600, Open arrow push-button is DEPRESSED until CRD FLOW 2C11-R606 increases to 50 gpm	SAT / UNSAT

PROMPT: **IF** the Operator asked position of the CRD return line isolation valve, as the Shift Supervisor, **INFORM** the Operator that the return line is isolated.

15.	Adjust controller setpoint (SV) to the established flow value (50 gpm).	At panel 2H11-P603, CRD FLOW CONTROL 2C11-R600: Adjust controller setpoint (SV) to the established flow value (50 gpm). AUTO (A) push-button is DEPRESSED, green push-button illuminated.	SAT / UNSAT
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PROMPT: **IF** the Operator addresses locally monitoring CRD temperatures, as the Shift Supervisor, **INFORM** the Operator that a Operator has been dispatched to monitor CRD temperatures on 2C11-R018.

PROMPT: **AT** this time, as the Shift Supervisor, **INFORM** the Operator to continue inserting Rods in Step 50 to position 12.

16.	Select control rod 18-27	At panel 2H11-P603, push-button is DEPRESSED on CONTROL ROD SELECT Matrix for next control rod 18-27.	SAT / UNSAT
17.	Continues rod insertion by notch to position 12 or Continues rod insertion "continuous" to position 14. (one step prior to insert limit)	At panel 2H11-P603, ROD MOVEMENT CONTROL switch is momentarily PLACED to "IN" position and RELEASED. or MOVEMENT CONTROL switch is PLACED to "IN" position and RELEASED one step prior to insert limit.	SAT / UNSAT

(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**18.	Insert the control rod to position 12.	At panel 2H11-P603, ROD MOVEMENT CONTROL switch is momentarily PLACED to "IN" position and RELEASED.	SAT / UNSAT
19.	Confirm the proper control rod movement.	At panel 2H11-P603, the Operator VERIFIES: Rod position indicator indicates "12" for rod moved in previous step on Four-Rod Display and/or RWM. Process Computer acknowledgment. APRM/LPRM readings decrease.	SAT / UNSAT
20.	Complete the line, for control rod 18-27, on the Control Rod Movement Sequence sheet.	On the Control Rod Movement Sequence sheet, on the line for the selected rod (Inserted side of sheet), the Operator has: Filled in INIT block. Filled in DATE block.	SAT / UNSAT

PROMPT: INFORM the operator that another operator will continue inserting control rods.

**END
TIME:** _____

NOTE: The terminating cue shall be given to the Operator when:

- Operator has correctly moved one rod after the CRD Pump Trip
- With no reasonable progress, the Operator exceeds double the allotted time.
- Operator states the task is complete.

TERMINATING CUE: We will stop here.

(Indicates critical step)**

SEQUENCE	A2
STEP	50

* Use Single Notch Mode

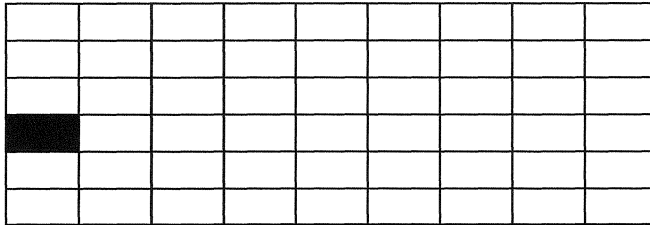
RWM Status	OPER	BYPASS		INIT
		MAN	AUTO	
Withdrawal				
Insertion				

[illegible]

Step Notch Limits		
LO	HI	CHANGE APPROVED DATE
12	**	

**HI limit to be supplied by Reactor Engineer

[illegible]

1.0 IDENTIFICATION:**ALARM PANEL 603-1****CRD PUMP A****BREAKER****TRIP****DEVICE:**

2R22-S005 FRAME 8

SETPOINT:

N/A

2.0 CONDITION:

This annunciator alarms when 2C11-C001A, CRD Pump breaker, opens and the Control Room hand switch is in the AUTO AFTER START position.

3.0 CLASSIFICATION:

AUXILIARY

4.0 LOCATION:

2H11-P603 Panel 603-1

5.0 OPERATOR ACTIONS:

5.1 Check the following indications on 2H11-P603 to determine validity of the alarming condition.

5.1.1 Pump indicating lights.

5.1.2 2C11-R600, CRD Flow controller, indicates zero flow.

5.1.3 2C11-R605, Clg Wtr Flow indicator, indicates zero flow.

5.1.4 2C11-R601, Chg Wtr Press indicator, decreasing.

5.1.5 2C11-R602, Dr Wtr dp indicator, decreasing.

5.1.6 2C11-R603, Clg Wtr dp indicator, decreasing.

5.2 Enter 34AB-C11-001-2, Loss of CRD System.

6.0 CAUSES:

6.1 Low pump suction pressure 12 in. Hg Vacuum

6.2 Reactor level one -101 inches

6.3 Drywell high pressure 1.85 PSIG

6.4 Electrical fault 340 amps inst./50 amps time

6.5 Load Shedding

7.0 REFERENCES:

7.1 H-27516, CRD System Elem. Diag.

7.2 H-27517, Sheets 1 and 2

8.0 TECH. SPECS./TRM/ODCM/FHA:

8.1 TS 3.1.3, Control Rod Operability

8.2 TS 3.1.5, Control Rod Scram Accumulators

34AR-603-128-2
VER. 4.2

DOCUMENT TITLE:
LOSS OF CRD SYSTEMDOCUMENT NUMBER:
34AB-C11-001-2VERSION NO:
3.4**4.0 SUBSEQUENT OPERATOR ACTIONS**CRITICAL

- 4.1 IF both CRD pumps are tripped,
PLACE 2C11-R600, CRD Flow Control, in MANUAL and
DECREASE the output to zero. ☐
- 4.2 IF CRD pump has tripped due to LOCA signal (-101" RWL or 1.85 PSIG DW pressure),
perform the following:
- 4.2.1 PLACE control switch for the previously running pump to trip position, on 2H11-P603
panel. ☐
- 4.2.2 DEPRESS Pump A and Pump B LOCA Trip Reset pushbuttons, on 2H11-P603 panel. ☐
- 4.3 Attempt to start either CRD pump. ☐

NOTE:

A control rod scram accumulator is to be considered INOPERABLE if it's accumulator
pressure is <940 PSIG.

- 4.4 IF Reactor Pressure is ≥ 900 PSIG and the following conditions exist:
- Two or more WITHDRAWN control rod scram accumulators INOPERABLE ☐
- AND
- Charging water header pressure <940 PSIG ☐
- THEN: WITHIN 20 minutes restore charging water header pressure ≥ 940 PSIG ☐
- OR
- IF charging water header pressure CAN NOT be restored within 20 minutes, enter
34AB-C71-001-2, Scram Procedure, AND SCRAM the reactor. ☐
- 4.5 IF Reactor Pressure is <900 PSIG with the following conditions:
- One or more WITHDRAWN control rod scram accumulators INOPERABLE ☐
- AND
- Charging water header pressure <940 PSIG ☐
- THEN: Enter 34AB-C71-001-2, Scram Procedure, AND SCRAM the reactor. ☐

DOCUMENT TITLE:
LOSS OF CRD SYSTEMDOCUMENT NUMBER:
34AB-C11-001-2VERSION NO:
3.4

- 4.6 IF the CRD system cannot be restarted and Reactor coolant temp. is $>212^{\circ}\text{F}$, THEN review 34SO-G31-003-2, RWCU System, for RWCU pump requirements without CRD seal purge. ☐
- 4.7 INCREASE system flow to 50 GPM (59 GPM IF return line is open). ☐
- 4.8 IF CRD pump 2C11-C001A OR 2C11-C001B is operating AND the in-service flow control valve is NOT controlling flow properly, THEN shift flow control valves per 34SO-C11-005-2 CRD System AND continue this procedure at 4.10. ☐
- 4.9 IF CRD pump 2C11-C001A OR 2C11-C001B is operating AND the in-service flow control valve is controlling flow properly, THEN perform the following:
- 4.9.1 Adjust controller setpoint (SV) to the established flow value. ☐
- 4.9.2 Place 2C11-R600, CRD Flow Control, in AUTO. ☐

NOTES:

- By depressing the DISPLAY / ENTER key and then selecting OVERVIEW with the up / down arrow keys and then depressing the DISPLAY / ENTER key again on the CRD Temperature Recorder 2C11-R018, all 137 CRD temperatures will be displayed on the screen at the same time. If any CRD temperature is above its alarm setpoint then that CRD's indication will be red.
- By depressing the DISPLAY / ENTER key and then selecting TREND with the up / down arrow keys and then depressing the DISPLAY / ENTER key again on the CRD Temperature Recorder 2C11-R018, a historical trend of CRD temperatures can be observed.

POSTED @ 2H21-P007

- 4.10 Dispatch an Operator to locally monitor CRD temperatures on CRD Temperature Recorder, 2C11-R018, at Panel 2H21-P007, located on Rx. Bldg. 130' elevation Southeast corner. ☐
- 4.11 IF any CRD temperature exceeds 350°F , notify E ngineering for analysis. ☐

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**Southern Nuclear
E. I. Hatch Nuclear Plant**

**Operations Training
JPM
Plant 1, RO, SRO-I**

TITLE		
FROM OUTSIDE THE CONTROL ROOM, INJECT BORON USING THE SBLC SYSTEM		
AUTHOR	MEDIA NUMBER	TIME
R. A. BELCHER	LR-JP-11.12-16	21.0 Minutes
RECOMMENDED BY	APPROVED BY	DATE
N/R		



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**SOUTHERN NUCLEAR OPERATING COMPANY
PLANT E. I. HATCH**

Page 1 of 1

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING**

Media Number: **LR-JP-11.12**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
01	06/13/89	General revision and format change	JEM	SMC
02	08/09/89	Procedure revision & add LR lesson plans	JEM	DHG
03	09/08/89	Revision of questions	JEM	SMC
04	03/01/90	Procedure, format, & question revision	JEM	DHG
05	03/26/91	Procedure revision	JEM	DHG
06	07/21/92	General revision and format change	WMM	DHG
07	08/13/93	General revision, incorporate instructor comments, word processor change	RAB	RSG
08	08/05/94	Adjust format, change time allowance	RAB	MMG
09	08/17/95	Format change, incorporate student comments, change time allowance	RAB	SMC
10	06/17/96	Format change	RAB	RSG
11	01/18/00	Format modification, change time allowance based on running average, incorporate new K/A numbers and values, clarify initial conditions	RAB	DHG
12	10/30/00	Change operator applicability to Systems Operator, include objective number, change time allowance based on running average	RAB	DHG
13	02/27/02	Include initial operator statement	RAB	RAB
14	03/17/05	Deleted "S" from procedure numbers, changed Revision and Rev. numbers to "Current Version".	ARB	DHG
15	06/02/05	Revised Initial License statement for successful completion	RAB	RAB
16	04/06/06	Remove Response Cues	RAB	RAB

UNIT 1 (X) UNIT 2 ()

TASK TITLE: FROM OUTSIDE THE CONTROL ROOM, INJECT BORON USING THE SBLC SYSTEM

JPM NUMBER: LR-JP-11.12-16

TASK STANDARD: The task shall be completed when one Standby Liquid Control Squib Valve has been fired and one System pump has been started locally and the Standby Liquid Control System is injecting to the Reactor, per 34SO-C41-003.

TASK NUMBER: 011.012

OBJECTIVE NUMBER: 011.012.B

PLANT HATCH JTA IMPORTANCE RATING:

RO 4.20

SRO 4.20

K/A CATALOG NUMBER: 295037 EA1.04

K/A CATALOG JTA IMPORTANCE RATING:

RO 4.5

SRO 4.5

OPERATOR APPLICABILITY: System Operator (SO)

GENERAL REFERENCES:	Unit 1	Unit 2
	31EO-EOP-011-1 34SO-C41-003-1 (Current Versions)	

REQUIRED MATERIALS:	Unit 1	Unit 2
	34SO-C41-003-1 (current version) Four (4) SBLC Squib Valve jumper wires, from EOP file next to Remote Shutdown Panel 1H21-P173 Flathead screwdriver	

APPROXIMATE COMPLETION TIME: 21.0 Minutes

SIMULATOR SETUP: N/A

UNIT 1

READ AND GIVE A COPY TO THE OPERATOR

INITIAL CONDITIONS:

1. The Reactor has failed to Scram either manually or automatically, and the Torus temperature is approaching the BIIT curve.
2. 31EO-EOP-011-1 (RCA) is in progress.
3. SBLC has failed to initiate from the Control Room.
4. RWCU is isolated.

INITIATING CUES:

Manually initiate SBLC locally per 34SO-C41-003-1.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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For **INITIAL** Operator Programs:

For OJT/OJE; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.

For License Examinations; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

START
TIME: _____

1.	Operator identifies the materials that are required.	Operator has identified the required materials and where to obtain them.	SAT / UNSAT
2.	Operator reviews the procedure's precautions and limitations.	Operator has reviewed the precautions and limitations.	SAT / UNSAT
**3.	Detonate Squib Valve 1C41-F004A. AND Detonate Squib Valve 1C41-F004B.	At Panel 1H21-P011, the following jumpers are INSTALLED for 1C41-F004A: Terminal point BB-1 to Squib Valve, 1C41-F004A, Junction Box terminal C1 (white wire) and terminal C (green wire). Terminal point BB-4 to Squib Valve, 1C41-F004A, Junction Box terminal C2 (black wire) and terminal C3 (red wire). At Panel 1H21-P011, the following jumpers are INSTALLED for 1C41-F004B: Terminal point BB-8 to Squib Valve, 1C41-F004B, Junction Box terminal C1 (white wire) and terminal C (green wire). Terminal point BB-11 to Squib Valve, 1C41-F004B, Junction Box terminal C2 (black wire) and terminal C3 (red wire).	SAT / UNSAT

PROMPT: **WHEN** all terminals for a Squib Valve are correctly installed, **INDICATE** an explosive noise from the vicinity of that Squib Valve.

NOTE: Detonation of one Squib Valve will satisfactorily meet the standard.

(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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NOTE: The jumpers used to fire the Squib Valves are a jumper with 3 connections to connect all three terminal points.

PROMPT: **IF** the operator addresses isolation of RWCU, as the Control Room operator **REPORT** that RWCU is isolated.

4.	Start SBLC Pump 1C41-C001A.	At panel 1H21-P011, SBLC PUMP, 1C41-C001A, control switch is in RUN.	SAT / UNSAT
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PROMPT: WHEN the operator starts the pump, INFORM the operator that there is no change in noise levels.

NOTE: If the operator looks at other pump indications, report negative indications for a running pump.

**5.	Place 1C41-C001A, SBLC Pump 1A, control switch in STOP position.	At panel 1H21-P011, SBLC PUMP, 1C41-C001A, control switch is in STOP.	SAT / UNSAT
**6.	Place 1C41-C001B, SBLC Pump 1B, control switch in RUN position	At panel 1H21-P011, SBLC PUMP, 1C41-C001B, control switch is in RUN.	SAT / UNSAT
7.	CONFIRM start of 1C41-C001B, SBLC Pump 1B.	Operator listens for the sound of a running pump or looks at other pump indications.	SAT / UNSAT

PROMPT: WHEN the operator starts the pump, INFORM the operator that there is the sound of a running pump.

NOTE: If the operator looks at other pump indications, report positive indications for a running pump.

8.	Verify the SBLC solution is being injected into the Reactor.	At panel 1H21-P011, the operator has VERIFIED SBLC Tank level is DECREASING as indicated by SBLC STORAGE TANK LEVEL INDICATOR, 1C41-R001.	SAT / UNSAT
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(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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PROMPT: **WHEN** the operator addresses SBLC tank level, **INDICATE** for the operator that level is decreasing slowly, but is greater than 1300 gallons.

NOTE: It will take between 30 and 70 minutes to completely empty the SBLC Storage Tank.

**END
TIME:** _____

NOTE: The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.
- Operator has started the “B” pump and checked on tank level.

TERMINATING CUE: We will stop here.

DOCUMENT TITLE:
STANDBY LIQUID CONTROL SYSTEMDOCUMENT NUMBER:
34SO-C41-003-1VERSION NO:
10.13**7.2.2 Manual Initiation - Local****CONTINUOUS****CAUTION:**THIS SUBSECTION IS PERFORMED ONLY AS DIRECTED BY PLANT HATCH
REMOTE SHUTDOWN AND/OR EMERGENCY OPERATING PROCEDURES.**NOTES:**

- Equipment required for local SBLC operation is stored at 1H21-P173, Remote Shutdown Panel OR in the EOP gang box on the 185' elevation working floor.
- 1C41-F004A, Squib Valve, will detonate when the last jumper connection is made, preferably at 1H21-P011, terminal point BB-4. IF jumper is connected to 1H21-P011 terminal point FIRST, THEN the other end of the jumper is energized.

7.2.2.1 DETONATE 1C41-F004A, Squib Valve, by INSTALLING the following jumpers:

- 7.2.2.1.1** 1C41-F004A, Squib Valve Junction Box, terminal C1 (white wire) AND terminal C (green wire) to 1H21-P011, Standby Liquid Control Rack, terminal point BB-1.
- 7.2.2.1.2** 1C41-F004A, Squib Valve Junction Box, terminal C2 (black wire) AND terminal C3 (red wire) to 1H21-P011, Standby Liquid Control Rack, terminal point BB-4.

NOTE:1C41-F004B, Squib Valve, will detonate when the last jumper connection is made, preferably at 1H21-P011, terminal point BB-11. IF jumper is connected to 1H21-P011 terminal point FIRST, THEN the other end of the jumper is energized.**7.2.2.2 DETONATE 1C41-F004B, Squib Valve, by INSTALLING the following jumpers:**

- 7.2.2.2.1** 1C41-F004B, Squib Valve, Junction Box terminal C1 (white wire) AND terminal C (green wire) to 1H21-P011, Standby Liquid Control Rack, terminal point BB-8.
- 7.2.2.2.2** 1C41-F004B, Squib Valve, Junction Box terminal C2 (black wire) AND terminal C3 (red wire) to 1H21-P011, Standby Liquid Control Rack, terminal point BB-11.

DOCUMENT TITLE:
STANDBY LIQUID CONTROL SYSTEMDOCUMENT NUMBER:
34SO-C41-003-1VERSION NO:
10.13

7.2.2.3 IF RWCU is NOT isolated, perform the following to close 1G31-F004,
at 1R24-S022, located 130 Reactor Building - North side:

7.2.2.3.1 OPEN breaker in Frame 10A.

7.2.2.3.2 OPEN the following links located in the top compartment of breaker frame 10:

☐ 10A4

☐ 10A6

NOTE: The "internal" side of the link is the side that the possum tail is hung on.

7.2.2.3.3 INSTALL a jumper:
from the "internal" side of link 10A5
to the "internal" side of link 10A6.

7.2.2.3.4 CLOSE breaker in Frame 10A to close 1G31-F004 valve.

7.2.2.4 At 1H21-P011, Standby Liquid Control Rack, perform the following:

7.2.2.4.1 Place 1C41-C001A, SBLC Pump 1A, control switch in RUN position.

7.2.2.4.2 IF 1C41-C001A, SBLC Pump 1A, does NOT start,
THEN perform the following:

7.2.2.4.2.1 Place 1C41-C001A, SBLC Pump 1A, control switch in STOP position.

7.2.2.4.2.2 Place 1C41-C001B, SBLC Pump 1B, control switch in RUN position.

7.2.2.4.2.3 CONFIRM start of 1C41-C001B, SBLC Pump 1B.

NOTE: It will take between 30 AND 70 minutes to completely empty the SBLC Storage Tank

7.2.2.4.3 CONFIRM SBLC solution is being injected into the RPV,
as indicated by C41-R001, Level Indicator.

DOCUMENT TITLE:
STANDBY LIQUID CONTROL SYSTEM

DOCUMENT NUMBER:
34SO-C41-003-1

VERSION NO:
10.13

CAUTION:

FAILURE TO DEENERGIZE THE SBLC TANK HEATERS ON LOW SBLC TANK LEVEL
MAY CAUSE HEATER DAMAGE.

7.2.2.5 WHEN SBLC Storage Tank level decreases below 1300 gallons,
OPEN the following breakers:

☐ Standby Liquid Cntl Tank Heater 1C41-A001B, 1R24-S011, Frame 1B

☐ Standby Liquid Cntl Tank Heater 1C41-A001A, 1R24-S012, Frame 3A

CAUTION:

THE SBLC PUMPS WILL LOSE SUCTION WHEN INDICATED LEVEL IN THE SBLC
STORAGE TANK IS 250 GALLONS (5%). FAILURE TO STOP THE SBLC PUMP
WHEN THE SBLC STORAGE TANK INDICATION IS LESS THAN 250 GALLONS (5%)
MAY RESULT IN PUMP DAMAGE

7.2.2.6 WHEN all of the solution has been injected, as indicated by a reading of less than 400
gallons on SBLC Tank Indicator, 1C41-R001, OR as directed by the Plant Hatch Remote
Shutdown OR Emergency Operating Procedures, SHUT DOWN the SBLC System per
the Local Shutdown subsection of this procedure.

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**Southern Nuclear
E. I. Hatch Nuclear Plant**

**Operations Training
JPM**

Plant 2, RO, SRO-I

TITLE		
FROM THE REMOTE SHUTDOWN PANEL, START RHR IN TORUS COOLING		
AUTHOR	MEDIA NUMBER	TIME
Greg Crosby	LR-JP-07.20-16	22.0 Minutes
RECOMMENDED BY	APPROVED BY	DATE
N/R		



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**SOUTHERN NUCLEAR OPERATING COMPANY
PLANT E. I. HATCH**

Page 1 of 1

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING**

Media Number: **LR-JP-07.20**[illegible]

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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UNIT 1 () UNIT 2 (X)

TASK TITLE: FROM THE REMOTE SHUTDOWN PANEL, START RHR IN TORUS COOLING

JPM NUMBER: LR-JP-07.20-16

TASK STANDARD: The task shall be completed when the operator has successfully placed the "B" loop of RHR into Torus Cooling from the Remote Shutdown Panel per 31RS-OPS-001.

TASK NUMBER: 007.020

OBJECTIVE NUMBER: 007.020.O

PLANT HATCH JTA IMPORTANCE RATING:

RO 3.40

SRO 3.80

K/A CATALOG NUMBER: 295013 AA1.01

K/A CATALOG JTA IMPORTANCE RATING:

RO 3.9

SRO 3.9

OPERATOR APPLICABILITY: Nuclear Plant Operator (NPO)

GENERAL REFERENCES:	Unit 1	Unit 2
		31RS-OPS-001-2 (current version)

REQUIRED MATERIALS:	Unit 1	Unit 2
		31RS-OPS-001-2 (current version) Key for Remote Shutdown Panel (if performed in plant)

APPROXIMATE COMPLETION TIME: 22.0 Minutes

SIMULATOR SETUP: N/A

UNIT 2

READ AND GIVE A COPY TO THE OPERATOR

INITIAL CONDITIONS:

1. An event has occurred which required the control room to be evacuated.
2. RHR is in Standby.
3. Normal AC power is available.
4. RHRSW Pump "2B" is running at 4400 gpm.
5. 31RS-OPS-001-2 is in progress.
6. All RSDP transfer switches have been placed in the "EMERG" position.

INITIATING CUES:

Place RHR Loop "B," in Torus Cooling at the Remote Shutdown Panel per 31RS-OPS-001-2.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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For **INITIAL** Operator Programs:

For OJT/OJE; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.

For License Examinations; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

START TIME: _____

1.	Operator obtains the procedure.	Operator obtains a copy of 31RS-OPS-001-2.	SAT / UNSAT
----	---------------------------------	--	-------------

PROMPT: **WHEN** the operator addresses transfer switch positions, **INDICATE** for the operator that ALL transfer switches are in the EMERG position.

PROMPT: **IF** the operator addresses RHRSW operation, as the Shift Supervisor, **INFORM** the operator that RHRSW Pump "2B" is running with 4400 gpm flow.

PROMPT: **IF** the operator addresses Torus temperature, **INDICATE** for the operator that Torus temperature is <100°F.

2.	Close valve 2E11-F047B.	At panel 2C82-P001, the following valve is CLOSED, green light illuminated: HX INLET VLV, 2E11-F047B	SAT / UNSAT
3.	Confirm 2E11-F003B is open.	At panel 2C82-P001, the following valve is OPEN, red light illuminated: HX OUTLET VLV, 2E11-F003B	SAT / UNSAT
4.	Confirm 2E11-F048B is open.	At panel 2C82-P001, HX BYPASS VLV, 2E11-F048B, is OPEN, red light illuminated.	SAT / UNSAT
**5.	Open valve 2E11-F028B.	At panel 2C82-P001, RHR TORUS SPRAY OR TEST VLV, 2E11-F028B, is OPEN, red light illuminated.	SAT / UNSAT

(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
6.	Confirm that 2E11-F007B is open.	At panel 2C82-P001, MIN FLOW VLV, 2E11-F007B, is OPEN, red light illuminated.	SAT / UNSAT
**7.	Start RHR Pump 2E11-C002B.	At panel 2C82-P001, RHR PUMP, 2E11-C002B, is RUNNING, red light illuminated.	SAT / UNSAT
**8.	Throttle open 2E11-F024B and establish flow rate of less than or equal to 7700 gpm.	At panel 2C82-P001, the following has been performed: FULL FLOW TEST LINE VLV, 2E11-F024B, is THROTTLED OPEN, red and green lights illuminated. RHR FLOW 2C82-R004, indicates less than or equal to 7700 gpm. (accept 6700-7700 gpm)	SAT / UNSAT
9.	Confirm valve 2E11-F007B closes.	At panel 2C82-P001, MIN FLOW VLV, 2E11-F007B, is CLOSED, green light illuminated.	SAT / UNSAT
**10.	Confirm Open/Open valves 2E11-F047B and 2E11-F003B.	At panel 2C82-P001, the following valves are OPEN, red light illuminated: HX INLET VLV, 2E11-F047B HX OUTLET VLV, 2E11-F003B	SAT / UNSAT
**11.	Close valve 2E11-F048B.	At panel 2C82-P001, HX BYPASS VLV, 2E11-F048B, is CLOSED, green light illuminated.	SAT / UNSAT

(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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PROMPT: **IF** the operator addresses RHRSW to RHR dP, as a System Operator, **INFORM** the operator that RHRSW to RHR dP is >20 psid.

PROMPT: **IF** the operator addresses Torus Spray, as the Shift Supervisor, **INFORM** the operator that Torus Spray is not required at this time.

PROMPT: **IF** the operator addresses securing Torus Cooling, as the Shift Supervisor, **INFORM** the operator that this is not desired at this time.

**END
TIME:** _____

NOTE: The terminating cue shall be given to the operator when:

- With no reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

TERMINATING CUE: We will stop here.

DOCUMENT TITLE:
SHUTDOWN FROM OUTSIDE CONTROL ROOMDOCUMENT NUMBER:
31RS-OPS-001-2Version No:
6.11ATTACHMENT 6

TITLE: TORUS COOLING FROM THE REMOTE SHUTDOWN PANEL

Attachment Page
1 of 5

DIESEL GENERATOR LOADING MUST NOT EXCEED THE FOLLOWING RATINGS FOLLOWING A LOSS OF OFFSITE POWER TO AVOID DIESEL OVERLOAD. AMPERAGE INDICATIONS ARE LOCATED ON PANEL 2R43-P001 IN EACH DIESEL GENERATOR ROOM.

RATINGS (AMPERES)**CAUTION****DIESEL****1000 HOUR****7 DAY (168 HOUR)***

1B

430

490

CONTINUOUS**12.5 DAY (300 HOUR)****

2A

440

500

2C

440

500

* THE HIGHER 7 DAY RATING IS BASED UPON A YEARLY ACCUMULATION OF ENGINE OPERATING HOURS ABOVE THE CONTINUOUS RATING. A TOTAL OF 168 HOURS PER YEAR WITH A LOAD OF 430 TO 490 AMPERES IS ALLOWED.

** THE HIGHER 12.5 DAY RATING IS BASED UPON A YEARLY ACCUMULATION OF ENGINE OPERATING HOURS ABOVE THE CONTINUOUS RATING. A TOTAL OF 300 HOURS PER YEAR WITH A LOAD OF 440 TO 500 AMPERES IS ALLOWED.

CAUTIONS:

- BEFORE STARTING AN RHR PUMP ON THE DIESEL GENERATOR, DIESEL LOAD MUST BE BELOW 360 AMPS (2A AND 2B RHR PUMPS) 340 AMPS (2C AND 2D RHR PUMPS). REFER TO 34SO-R43-001-2 TO REDUCE DIESEL LOADS IF REQUIRED.
- BEFORE STARTING AN RHRSW PUMP ON THE DIESEL GENERATOR, DIESEL LOAD MUST BE BELOW 330 AMPS (2A, 2B, 2D RHRSW PUMPS), OR 320 AMPS (2C RHRSW PUMP). REFER TO 34SO-R43-001-2 TO REDUCE DIESEL LOADS, IF REQUIRED.
- THE AMPERE VALUES ARE BASED UPON AN ASSUMED TOTAL POWER FACTOR OF 0.91 (1B DG) AND 0.9 (2A AND 2C DG). LOADING OF THE DIESEL GENERATORS ABOVE 430 AMPERES (1B DG) AND 440 AMPERES (2A AND 2C DG) ON THE LOCAL INDICATORS MUST BE ACCOMPANIED BY CLOSE MONITORING OF OTHER DIESEL PARAMETERS FOR SIGNS OF OVERLOADING.

SNC PLANT E. I. HATCH		Pg 32 of 46
DOCUMENT TITLE: SHUTDOWN FROM OUTSIDE CONTROL ROOM	DOCUMENT NUMBER: 31RS-OPS-001-2	Version No: 6.11
ATTACHMENT <u>6</u>		Attachment Page
TITLE: TORUS COOLING FROM THE REMOTE SHUTDOWN PANEL		2 of 5

Placing the Remote Shutdown Panel Transfer for RHR in Emergency has the following effects on RHR system operation:

1. The A, C, and D RHR pumps will automatically initiate in the LPCI mode on the following signals:
 - 1.1 Reactor level greater than or equal to -113 inches (actual setpoint = -101 inches)
 - 1.2 High Drywell pressure less than or equal to 1.92 PSIG (actual setpoint = 1.85 PSIG). With transfer switch 2C82-S9 in the EMERG position, the 'B' RHR pump will NOT auto start on any of the above signals

2. Load shed AND overcurrent are still valid trip signals.
3. 2E11-F006A, 2E11-F006B, 2E11-F006C, 2E11-F006D, Pump suction valves, are still interlocked with their respective 2E11-F004 valve.
4. 2E11-F004B, Pump suction from the Torus, AND 2E11-F024B, Torus cooling, must be closed to open 2E11-F006B, SDC suction.

However, once 2E11-F006B is open, 2E11-F024B may be reopened.

5. The loss of suction valve alignment trip is defeated for the 2B RHR pump.
6. 2E11-F008 AND 2E11-F009, SDC Isol Vlvs, closure on high RX pressure (138 PSIG) AND low rx level (+3") is defeated.
7. 2E11-F007B, Min Flow Vlv, operates automatically.
8. 2E11-F048B, 3 minute LOCA interlock is defeated.
9. The LOCA interlock for closing the following valves is defeated: 2E11-F011B, 2E11-F016B, 2E11-F028B, 2E11-F027B.
10. Interlock to prevent opening both 2E11-F015B AND 2E11-F017B, Inbd AND Outbd Inj Vlvs, with rx. pressure \geq 425 PSIG is defeated.
11. Interlock to automatically open 2E11-F015B AND 2E11-F017B, Inbd AND Outbd Inj Vlvs, on a LOCA signal (-101 RWL AND 1.85 PSIG drywell pressure) with rx. pressure \leq 425 PSIG is defeated.
12. Interlock to automatically close 2E11-F015B, Inbd Inj Vlv, IF in Shutdown Cooling AND receive a PCIS Group II signal (+3 RWL OR 1.85 PSIG Drywell pressure) OR Rx pressure \geq 138 PSIG is defeated.
13. Interlock to automatically trip 2E11-C001B AND 2E11-C001D, RHRSW pumps, on a LOCA signal is defeated.
14. LOSP and breaker trips for 2E11-C001B AND 2E11-C001D, RHRSW pumps, are still in effect.
15. 2E11-F017B, RHR Outbd Inj Vlv, 5 minute LOCA interlock is defeated.

NOTE

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NOTE

An RHR pump discharge pressure of greater than or equal to 112 PSIG (127 PSIG, actual setpoint) OR a Core Spray pump discharge pressure of greater than or equal to 137 PSIG (152 PSIG, actual setpoint) is the final permissive for an automatic depressurization initiation IF the ADS two minute delay has elapsed.

1.0 At panel 2C82-P001, PLACE the following transfer switches in the EMERG position:

- 2C82-S18, Nuc Blr Instrumentation _____
- 2C82-S8, RHR & RCIC Indications _____
- 2C82-S53, 2E51-F007, Steam Supply Inbd Isol Vlv. _____
2E11-F009, SDC Suction Vlv. _____
- 2C82-S52, 2E11-F006C, S/D Clg Vlv. _____
2E11-F006A, S/D Clg Vlv. _____
- 2C82-S80, 2E11-F007B, Min Flow Vlv. _____
- 2C82-S9, 2E11-C002B, RHR Pump _____
- 2C82-S13, 2E11-F017B, Outbd Inj Vlv. _____
2E11-C001B, Serv Wtr Pump _____
2E11-F015B, Inbd Inj Vlv. _____
- 2C82-S10, 2E11-F004B, Torus Suction Vlv. _____
2E11-F006B, Shutdown Clg Vlv. _____
2E11-F006D, Shutdown Clg Vlv. _____
- 2C82-S1, 2E11-F008, SDC Suction Vlv. _____
2E11-F023, Rx Head Spray Isol Vlv. _____
- 2C82-S12, 2E11-F003B, Hx Outlet Vlv. _____
2E11-F027B, Torus Spray Vlv. _____
2E11-F048B, Hx Bypass Vlv. _____
- 2C82-S17, 2E11-F047B, Hx Inlet Vlv. _____
- 2C82-S14, 2E11-F028B, RHR Torus Spray Or Test Vlv. _____
2E11-F073B, Serv Wtr crosstie Vlv. _____
2E11-C001D, Serv Wtr Pump _____
- 2C82-S11, 2E11-F024B, Full Flow Test Line _____
2E11-F011B, Hx to Torus Vlv. _____
2E11-F016B, Cnmt Spray Outbd Vlv. _____

SNC PLANT E. I. HATCH		Pg 34 of 46
DOCUMENT TITLE: SHUTDOWN FROM OUTSIDE CONTROL ROOM	DOCUMENT NUMBER: 31RS-OPS-001-2	Version No: 6.11
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2.0 PLACE RHR Service Water in operation by performing the following steps:

- 2.1 At 600/208V MCC 2B ESS Div 2 2R24-S012, Frame 11C,
OPEN the breaker for 2E11-F068B, RHRSW Control Valve. _____
- 2.2 At 106RJR24, manually OPEN 2E11-F068B to approximately 40% OPEN. _____
- 2.3 At panel 2C82-P001, START 2E11-C001B OR 2E11-C001D,
RHR Serv Wtr Pump. _____
- 2.4 At 106RJR24 WHILE in communication with an operator at panel 2H21-P173,
ADJUST 2E11-F068B, RHRSW Control Valve,
to obtain a flow rate of 4400 GPM as indicated on 2E11-R071,
RHR Heat Exchanger Service Water Flow. _____

NOTES:

- The RHR Hx is initially isolated to prevent damage to the Hx from the hydraulic shock created by starting the RHR Pump.

CAUTION

IF THE ONLY OPERATING PUMP IN AN RHR LOOP IN SUPPRESSION POOL COOLING WATER TRIPS, IT IS POSSIBLE THAT THE LPCI INJECTION LINE AND THE DRYWELL SPRAY LINE MAY DRAIN TO THE TORUS.

3.0 At panel 2C82-P001, Perform the following:

- IF Suppression Pool temperature is < 100°F, Confirm CLOSED/CLOSE 2E11-F047B, Hx Inlet Vlv. _____
- Confirm OPEN/OPEN 2E11-F003B, Hx Outlet Vlv. _____

4.0 At panel 2C82-P001, confirm 2E11-F048B, Hx Bypass Vlv, is OPEN. _____

5.0 At panel 2C82-P001, OPEN 2E11-F028B, RHR Torus Spray or Test Vlv. _____

6.0 Confirm 2E11-F007B, Min Flow Vlv, is OPEN. _____

7.0 At panel 2C82-P001, START 2E11-C002B, RHR Pump 2B. _____

8.0 At panel 2C82-P001, THROTTLE OPEN 2E11-F024B, Full Flow Test Line,
to obtain a flow rate of less than or equal to 7700 GPM as indicated on
2C82-R004, RHR Flow, on panel 2C82-P001. _____

8.1 Confirm 2E11-F007B, Min Flow Vlv, CLOSES. _____

SNC PLANT E. I. HATCH		Pg 35 of 46
DOCUMENT TITLE: SHUTDOWN FROM OUTSIDE CONTROL ROOM	DOCUMENT NUMBER: 31RS-OPS-001-2	Version No: 6.11
ATTACHMENT <u>6</u> TITLE: TORUS COOLING FROM THE REMOTE SHUTDOWN PANEL		Attachment Page 5 of 5

NOTE:	RHR Service Water flow must be maintained at less than 4400 GPM with one RHR Service Water Pump operating, <u>OR</u> less than 8800 GPM with two RHR Service Water Pumps operating in a single RHR Service Water Loop.
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9.0 At panel 2C82-P001, Confirm OPEN/OPEN the following valves:

- 2E11-F047B, Hx Inlet Vlv. _____
- 2E11-F003B, Hx Outlet Vlv. _____

10.0 At panel 2C82-P001, CLOSE 2E11-F048B, Hx Bypass Vlv. _____

11.0 At 106RJR24, ADJUST 2E11-F068B, RHRSW Control Valve, to maintain greater then or equal to 20 PSID as indicated on 2E11-DPIS-N003B, at 87RLR24, on panel 2H21-P021. _____

12.0 IF Torus Spray is desired,
THEN at panel 2C82-P001, OPEN 2E11-F027B, Torus Spray Vlv. _____

13.0 WHEN Suppression Pool Cooling is no longer required,
SHUT DOWN RHR from Suppression Pool Cooling by performing the following steps:

13.1 At panel 2C82-P001, CLOSE 2E11-F027B, Torus Spray Vlv. _____

13.2 At panel 2C82-P001, CLOSE 2E11-F024B Full Flow Test Line. _____

13.3 At panel 2C82-P001, SHUT DOWN 2E11-C002B, RHR Pump 2B. _____

13.4 At panel 2C82-P001, CLOSE 2E11-F028B, RHR Torus Spray or Test Vlv. _____

13.5 At panel 2C82-P001, OPEN 2E11-F048B, Hx Bypass Vlv. _____

NOTE:	RHR Service Water may be left in operation to support Shutdown Cooling.
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DRAFT

**Southern Nuclear
E. I. Hatch Nuclear Plant**

**Operations Training
JPM**

Plant 3, RO, SRO-I

TITLE		
TRANSFER 600 VAC ESSENTIAL (LPCI BUS) FROM NORMAL TO ALTERNATE		
AUTHOR	MEDIA NUMBER	TIME
R. A. BELCHER	LR-JP-27.18-06	23.0 Minutes
RECOMMENDED BY	APPROVED BY	DATE
N/R		



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**SOUTHERN NUCLEAR OPERATING COMPANY
PLANT E. I. HATCH**

Page 1 of 1

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: OPERATIONS TRAINING

Media Number: **LR-JP-27.18**[illegible]

UNIT 1 (X) UNIT 2 ()

TASK TITLE: TRANSFER 600 VAC ESSENTIAL (LPCI BUS) FROM NORMAL TO ALTERNATE**JPM NUMBER:** LR-JP-27.18-06**TASK STANDARD:** The task shall be completed when the operator has transferred a LPCI Bus (1R24-S018A) from its Normal to Alternate source per 34SO-R24-003-1.**TASK NUMBER:** 027.018**OBJECTIVE NUMBER:** 027.018.O**PLANT HATCH JTA IMPORTANCE RATING:****RO** 3.43**SRO** 3.53**K/A CATALOG NUMBER:** 203000K1.08**K/A CATALOG JTA IMPORTANCE RATING:****RO** 3.5**SRO** 3.5**OPERATOR APPLICABILITY:** Nuclear Plant Operator (NPO)

GENERAL REFERENCES:	Unit 1	Unit 2
	34SO-R24-003-1 (current version)	

REQUIRED MATERIALS:	Unit 1	Unit 2
	34SO-R24-003-1 (current version)	

APPROXIMATE COMPLETION TIME: 23.0 Minutes**SIMULATOR SETUP:** N/A

UNIT 1

READ AND GIVE A COPY TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 1 and Unit 2 are operating at 95% power.
2. The Normal Supply Breaker for the 1A LPCI Bus, 1R24-S018A, must be replaced by maintenance.
3. Electrical power distribution for both units is aligned in a normal full power lineup.
4. 1R24-S048 is energized
5. 1R24-S018 A/B Alt. Supply Breaker is closed

INITIATING CUES:

Transfer 1R24-S018A from its Normal to its Alternate supply per 34SO-R24-003-1.

600V Bus C/D → C-11 Bldg

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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For **INITIAL** Operator Programs:

For OJT/OJE; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.

For License Examinations; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

**START
TIME:** _____

1	Operator obtains the procedure.	Operator obtains a copy of 34SO-R24-003-1.	SAT / UNSAT
2.	Operator reviews the procedure's precautions and limitations.	Operator has reviewed the precautions and limitations.	SAT / UNSAT

PROMPT: IF the operator asks if 1R24-S018A has been de-energized, **INFORM** the operator that 1R24-S018A has NOT been de-energized.

**3	Open/Confirm open 1R24-S018A normal supply breaker.	The operator CALLS the Control Room and REQUESTS that a Control Room Operator OPEN the 1R24-S018A normal supply breaker on 1H11-P601.	SAT / UNSAT
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PROMPT: AS the Control Room Operator, **INFORM** the operator that 1R24-S018A normal supply breaker is open.

4	Confirm OFF/Place to OFF 1R26-M108 Disconnect switch. <i>U1 130 inside RCA</i>	In the 600V 1CD Transformer Room, the operator CONFIRMS the 1R26-M108 disconnect switch is in the OFF position.	SAT / UNSAT
**5	Confirm OFF/Place to OFF 1R26-M077 Disconnect switch. <i>W2 outside RCA</i>	In the 600 VAC 2C Bus Room, the operator PLACES the 1R26-M077 disconnect switch to the OFF position.	SAT / UNSAT

(** Indicates critical step)

DOCUMENT TITLE:
1R24-S018A/B 600 VOLT MCC OPERATIONDOCUMENT NUMBER:
34SO-R24-003-1VERSION NO:
5.9

7.2 SHUTDOWN

7.2.1 De-energizing 1R24-S018A 600 VAC MCC

CONTINUOUS

7.2.1.1 On 1H11-P601, CONFIRM OPEN OR OPEN 1R24-S018A Norm Supply Bkr.

7.2.1.2 Locally, CONFIRM OFF/PLACE to OFF 1R26-M108 Manual Disconnect Switch (1R24-S018A Alt supp). (600V 1CD Transformer room)

7.2.1.3 CONFIRM OFF/PLACE to OFF 1R26-M077 Manual Disconnect Switch (1R24-S018A Normal Supp). (600 VAC 2C Bus room)

already done
U1
U2

7.2.2 De-energizing 1R24-S018B 600 VAC MCC

CONTINUOUS

7.2.2.1 On 1H11-P601, CONFIRM OPEN/OPEN 1R24-S018B Norm Supply Bkr.

7.2.2.2 Locally, CONFIRM OFF/place to OFF 1R26-M109, Manual Disconnect Switch (1R24-S018B Alt Supp). (600V 1CD Transformer room)

7.2.2.3 CONFIRM OFF/PLACE to OFF 1R26-M078, Manual Disconnect Switch (1R24-S018B Normal Supply). (600 VAC 2D Bus room)

DOCUMENT TITLE:
1R24-S018A/B 600 VOLT MCC OPERATIONDOCUMENT NUMBER:
34SO-R24-003-1VERSION NO:
5.97.1.2 Energizing 1R24-S018A From Alternate Source (1R24-S048)**CONTINUOUS****NOTE**1R24-S018A 600 VAC MCC MUST NOT be powered simultaneously from its Normal AND Alternate sources.7.1.2.1 DE-ENERGIZE 1R24-S018A per the De-energizing 1R24-S018A 600 VAC MCC subsection (7.2.1) of this procedure.

7.1.2.2 CONFIRM 1R24-S048 is energized via the 1R22-S006 1F 4160 VAC Bus.

NOTE

Breaker position can be determined EITHER at 1H11-P601 panel OR locally at breaker. However, breaker must be positioned locally.

7.1.2.3 CONFIRM CLOSED/CLOSE 1R24-S018A/B Alt Supply Bkr. (1R24-S048 Fr 1A).

NOTE1R24-S048 MCC can NOT power 1R24-S018A AND 1R24-S018B simultaneously.**CAUTION**

THE HANDLE WEIGHT OF 1R26-M107 TRANSFER SWITCH WILL TAKE SWITCH TO 1R24-S018B POSITION.

7.1.2.4 In 600V 1CD Transformer room, perform the following:

- CONFIRM OFF 1R26-M108, Manual Disconnect Switch (1R24-S018A Alt Supp)
- CONFIRM OFF 1R26-M109, Manual Disconnect Switch (1R24-S018B Alt supp)
- At 1R26-M107, Transfer Switch (1R24-S018A/B Alt Supp), CONFIRM 1R24-S048 "POWER AVAILABLE" light ILLUMINATED
- PLACE 1R26-M107 Transfer Switch to 1R24-S018A position
- SECURE 1R26-M107 Transfer Switch in the 1R24-S018A position
- PLACE to ON 1R26-M108 Manual Disconnect Switch

7.1.2.5 CONFIRM 1R24-S018A is energized by observing an ILLUMINATED position indication lights (red or green) for 1E11-F015A AND/OR 1E11-F007A.