Template NRR-079

January 21, 2000

NOTE TO: NRC Document Control Desk
Mail Stop 0-5-D-24

FROM: Beverly Michael, Licensing Assistant, Operator Licensing and Human Performance Branch, Division of Reactor Safety, Region II

SUBJECT: OPERATOR LICENSING EXAMINATIONS ADMINISTERED AT THE EDWIN I. HATCH NUCLEAR PLANT, DOCKET NOS. 50-321 AND 50-366 -

During the period October 29 and November 1 - 4, 1999, Operator Licensing Examinations were administered at the referenced facility. Attached, you will find the following information for processing through NUDOCS and distribution to the NRC staff, including the NRC PDR:

Item #1 - a) Facility submitted outline and initial exam submittal, designated for distribution under RIDS Code A070.

b) As given operating examination, designated for distribution under RIDS Code A070.

Item #2 - Examination Report with the as given written examination attached, designated for distribution under RIDS Code IE42.

Attachments: As stated

As given operating examination, designated for distribution under RIDS Code A070

DISTRIBUTION CODE
A070

Admin Section

(Section "A")

DISTRIBUTION CODE
A070

Southern Nuclear
E. I. Hatch Nuclear Plant

Operations Training
JPM

TITLE		
DETERMINING OVERTIME AVAILABILITY		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER/R.L. SMITH	LR-JP-25032-00	15.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**
N/A	R. S. GRANTHAM	10/20/99

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DISTRIBUTION CODE
A070

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-25032**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	10/20/99	Initial development	RAB/RLS	RSG

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

TASK TITLE:	**DETERMINING OVERTIME AVAILABILITY**
JPM NUMBER:	LR-JP-25032-00
TASK STANDARD:	The task shall be complete when the operator has determined which operators are available for overtime per 10AC-MGR-020-0S.

TASK NUMBER: 300.001

PLANT HATCH JTA IMPORTANCE RATING:

RO Not Available

SRO Not Available

K/A CATALOG NUMBER: Generis K/A 2.14

K/A CATALOG JTA IMPORTANCE RATING:

RO 2.30

SRO 3.40

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 1 & 2**
	10AC-MGR-020-0S Rev 0 Unit 1 or 2 Tech Specs, Section 5.2.2.e

REQUIRED MATERIALS:	**Unit 1 & 2**
	10AC-MGR-020-0S (current revision) Unit 1 or 2 Tech Specs

APPROXIMATE COMPLETION TIME: 15.0 Minutes

SIMULATOR SETUP: N/A

UNIT 1 & 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 2 is shutdown following a scram.
2. Preparations for startup are in progress.
3. This is THURSDAY NIGHT SHIFT.
4. The SOS has directed you to call in additional operators to work in assisting the crew during the startup.
5. The called in operators will work 12 hours on FRIDAY DAY SHIFT, on 11/05/99.
6. The operator's time sheets are available.

INITIATING CUES:

Identify all the operators that would violate overtime restrictions, if called in to work FRIDAY DAY SHIFT on 11/05/99, and state the overtime restriction(s) that would be violated.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

PROMPT: **AT** this time, **GIVE** the operator the attached operator time sheets.

1.	Operator identifies the procedure needed to perform the task.	Operator has obtained procedure 10AC-MGR-020-0S. (or Unit 1 or 2 Tech Specs	
**2.	Operator determines that Operator #1 WILL violate overtime restrictions.	Referring to Operator #1 time sheet, the operator DETERMINES that Operator #1 WILL violate the overtime limits. (>72 hours during 7 days)	

RESPONSE CUE: N/A

**.3.	Operator determines that Operator #2 WILL NOT violate overtime restrictions.	Referring to Operator #2 time sheet, the operator DETERMINES that Operator #2 WILL NOT violate the overtime limits.	

RESPONSE CUE: N/A

**4.	Operator determines that Operator #3 WILL NOT violate overtime restrictions.	Referring to Operator #3 time sheet, the operator DETERMINES that Operator #3 WILL NOT violate the overtime limits.	

RESPONSE CUE: N/A

**5.	Operator determines that Operator #4 WILL violate overtime restrictions.	Referring to Operator #4 time sheet, the operator DETERMINES that Operator #4 WILL violate the overtime limits. (>24 hours in a 48 hour period)	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**6.	Operator determines that Operator #5 WILL NOT violate overtime restrictions.	Referring to Operator #5 time sheet, the operator DETERMINES that Operator #5 WILL NOTviolate the overtime limits.	

RESPONSE CUE: N/A

**7.	Operator determines that Operator #6 WILL NOT violate overtime restrictions.	Referring to Operator #6 time sheet, the operator DETERMINES that Operator #6 WILL NOT violate the overtime limits.	

RESPONSE CUE: N/A

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)**

PLANT OPERATOR #1

PLANT E. I. HATCH STANDARD TIMESHEET **OPERATIONS DEPARTMENT** **Period Ending** **11/05/99**

	Shift	ST	OT/ EST	Account #/OT Description		Shift	ST	OT/ EST	Account #/OT Description
	N	12				N	12		
SAT	D				SAT	D			
	E					E			
	N	12				N	12		
SUN	D				SUN	D			
	E					E			
	N	12				N	12		
MON	D				MON	D			
	E					E			
	N	4	8			N	4	8	
TUES	D				TUES	D			
	E					E			
	N	R				N			
WEDS	D	O			WEDS	D		12	
	E	D				E			
	N	R				N			
THURS	D	O			THURS	D		12	
	E	D				E			
	N	R				N			
FRI	D	O			FRI	D			
	E	D				E			
TOTAL					TOTAL				

PLANT OPERATOR #2

PLANT E. I. HATCH STANDARD TIMESHEET **OPERATIONS DEPARTMENT** **Period Ending** **11/05/99**

	Shift	ST	OT/ EST	Account #/OT Description		Shift	ST	OT/ EST	Account #/OT Description
	N	R				N			
SAT	D	O			SAT	D		12	
	E	D				E			
	N	R				N	R		
SUN	D	O			SUN	D	O		
	E	D				E	D		
	N	R				N			
MON	D	O			MON	D	8		
	E	D				E			
	N					N			
TUES	D		12		TUES	D	8		
	E					E			
	N					N			
WEDS	D	12			WEDS	D	8		
	E					E			
	N					N			
THURS	D	12			THURS	D	8		
	E					E			
	N					N			
FRI	D	12			FRI	D			
	E					E			
TOTAL					TOTAL				

PLANT OPERATOR #3

PLANT E. I. HATCH STANDARD TIMESHEET **OPERATIONS DEPARTMENT** **Period Ending** **11/05/99**

	Shift	ST	OT/ EST	Account #/OT Description		Shift	ST	OT/ EST	Account #/OT Description
	N	R				N	R		
SAT	D	O			SAT	D	O		
	E	D				E	D		
	N	R				N	R		
SUN	D	O			SUN	D	O		
	E	D				E	D		
	N	R				N	R		
MON	D	O			MON	D	O		
	E	D				E	D		
	N	R				N	12		
TUES	D	O			TUES	D			
	E	D				E			
	N					N	12		
WEDS	D	12			WEDS	D			
	E					E			
	N					N	12		
THURS	D	12			THURS	D			
	E					E			
	N					N			
FRI	D	12			FRI	D			
	E					E			
TOTAL					TOTAL				

PLANT OPERATOR #4

PLANT E. I. HATCH STANDARD TIMESHEET **OPERATIONS DEPARTMENT** **Period Ending** **11/05/99**

	Shift	ST	OT/ EST	Account #/OT Description		Shift	ST	OT/ EST	Account #/OT Description
	N	R				N	R		
SAT	D	O			SAT	D	O		
	E	D				E	D		
	N	R				N	R		
SUN	D	O			SUN	D	O		
	E	D				E	D		
	N	R				N	R		
MON	D	O			MON	D	O		
	E	D				E	D		
	N	R				N			
TUES	D	O			TUES	D	12		
	E	D				E			
	N					N			
WEDS	D	12			WEDS	D	12		
	E					E			
	N					N			
THURS	D	12			THURS	D	12	4	
	E					E			
	N					N			
FRI	D	12			FRI	D			
	E					E			
TOTAL					TOTAL				

PLANT OPERATOR #5

PLANT E. I. HATCH STANDARD TIMESHEET **OPERATIONS DEPARTMENT** **Period Ending** **11/05/99**

	Shift	ST	OT/ EST	Account #/OT Description		Shift	ST	OT/ EST	Account #/OT Description
	N	12				N	12		
SAT	D				SAT	D			
	E					E			
	N	12				N	12		
SUN	D				SUN	D			
	E					E			
	N	12				N	12		
MON	D				MON	D			
	E					E			
	N	4	8			N	4	8	
TUES	D				TUES	D			
	E					E			
	N	R				N	R		
WEDS	D	O			WEDS	D	O		
	E	D				E	D		
	N	R				N	R		
THURS	D	O			THURS	D	O		
	E	D				E	D		
	N	R				N			
FRI	D	O			FRI	D			
	E	D				E			
TOTAL					TOTAL				

PLANT OPERATOR #6

PLANT E. I. HATCH STANDARD TIMESHEET **OPERATIONS DEPARTMENT** **Period Ending** **11/05/99**

	Shift	ST	OT/ EST	Account #/OT Description		Shift	ST	OT/ EST	Account #/OT Description
	N	R				N	R		
SAT	D	O			SAT	D	O		
	E	D				E	D		
	N	R				N	R		
SUN	D	O			SUN	D	O		
	E	D				E	D		
	N	R				N			
MON	D	O			MON	D	12		
	E	D				E			
	N					N			
TUES	D	12			TUES	D	12		
	E					E			
	N					N			
WEDS	D	12			WEDS	D	12		
	E					E			
	N					N			
THURS	D	12			THURS	D	4	8	
	E					E			
	N					N			
FRI	D	4	8		FRI	D			
	E					E			
TOTAL					TOTAL				

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JPM

TITLE		
DETERMINE FIRE PROTECTION REQUIREMENTS		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER/R. L. SMITH	LR-JP-25033-00	15.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**
N/A	R. S. GRANTHAM	10/20/99

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-25033**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	10/20/99	Initial development	RAB/RLS	RSG

UNIT 1 ( ) UNIT 2 (X)

TASK TITLE:	**DETERMINE FIRE PROTECTION REQUIREMENTS**
JPM NUMBER:	LR-JP-25033-00
TASK STANDARD:	The task shall be complete when the operator has properly determined the fire protection requirements per 31GO-OPS-011-0S.

TASK NUMBER: 200.024

PLANT HATCH JTA IMPORTANCE RATING:

RO 3.20

SRO 3.40

K/A CATALOG NUMBER: 286000K301/286000A103

K/A CATALOG JTA IMPORTANCE RATING:

RO 2.80

SRO 3.10

OPERATOR APPLICABILITY: Senior Reactor Operator (SRO)

GENERAL REFERENCES:	**Unit 2**
	31GO-OPS-011-0S Rev 3 Ed 1

REQUIRED MATERIALS:	**Unit 2**
	31GO-OPS-011-0S (current revision)

APPROXIMATE COMPLETION TIME: 15.0 Minutes

SIMULATOR SETUP: N/A

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 1 and Unit 2 are at MOP.
2. Maintenance has requested that Unit 2 Station Battery Room "2A" door, 2C03, be blocked open for the next 12 hours to perform Electrolyte testing of the Batteries.
3. The following Fire Action sheets are in effect:

   2-99-141

   2-99-142

   2-99-143

INITIATING CUES:

Determine the requirements for allowing the Unit 2 Station Battery Room "2A" door to be blocked open.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

PROMPT: **AT** this time, **GIVE** the operator the attached Fire Action Sheets.

1.	Enter the FHA Appendix B of the TRM.	The operator ADDRESSES the FHA Appendix B of the TRM.	

NOTE: The order that the fire actions are addressed is not critical. Steps 2 through 4 may be performed in any order.

2.	Evaluate FAS 2-99-141 per the FHA Appendix B of the TRM for possible effects of opening the Battery Room "2A" door.	The operator ADDRESSES FHA Appendix B of the TRM and DETERMINES that there is NO EFFECT on the request.	
****3.**	Evaluate FAS 2-99-142 per the FHA Appendix B of the TRM for possible effects of opening the Battery Room "2A" door.	The operator ADDRESSES FHA Appendix B of the TRM and DETERMINES that FAS 2-99-142 INOPs the Fire Detection System on one side of the door. THIS HAS AN EFFECT on the request.	

RESPONSE CUE: N/A

PROMPT: If addressed by the operator, inform the operator that there are no other FAS and/or no current Alarms or Troubles on the CXL Fire Computer in the Control Room.

4.	Evaluate FAS 2-99-143 per the FHA Appendix B of the TRM for possible effects of opening the Battery Room "2A" door.	The operator ADDRESSES FHA Appendix B of the TRM and DETERMINES that there is NO EFFECT on the request.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**5.	Determine that a Fire Action Sheet must be completed, with the requirement of an hourly fire watch, within one hour of opening the door.	The operator DETERMINES that a Fire Action Sheet must be completed prior to opening the door. This FAS will require the establishment of an hourly fire watch (previously established on 2-99-142).	

RESPONSE CUE: N/A

NOTE: **ESTABLISHING** a continuous fire watch would meet the requirements of an hourly fire watch. However, the operator should justify this decision.

NOTE: **IF** the operator states that no additional requirements are needed, the evaluator should question the operator as to the exact meaning of this statement.

PROMPT: **IF** the operator addresses completing a Fire Action Sheet for the "2A" Station Battery Room door, **INFORM** the operator that another supervisor will complete the form.

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)**

SEE FILE JP25033A, JP25033B, AND JP25033C FOR ATTACHMENTS

SOUTHERN NUCLEAR
PLANT E.I. HATCH

FORM TITLE:
FIRE PROTECTION ENGINEERING

FOR TRAINING USE ONLY

FIRE ACTION SHEET 2 - 99 - 141

SECTION 1

FIRE ACTION SHEET INITIATION: **DATE :** 10/15/99	**TIME :** 08:00
REQUIRED RESTORATION TIME: **DATE :** N/A	**TIME :** N/A

APPLICABILITY

☐ AT ALL TIMES ☐ WITH FUEL IN VESSEL ☒ WHEN EQUIP. IS REQ. TO BE OPER

INITIATING CONDITION (MPL/DESCRIPTION): DETECTORS 2T43-N406DJ, 2T43-N406DK, 2T43N406DL, AND 2T43-N406DM FOR FIRE ZONE 2T43-164 D02 ARE INOP FOR DRYWELL CHILLER ROOM.

APPLICABLE FHA APPENDIX "B" SECTION

☐ 1.1.1 DOORS/BARRIERS	☐ 1.4.1 SPRAY/SPRINKLERS	☐ 1.7.1 HYDRANTS/HOUSES
☒ 1.2.1 DETECTION	☐ 1.5.1 CO2	☐ 1.8.1 HALON
☐ 1.3.1 TANKS/PUMPS	☐ 1.6.1 HOSE STATIONS	☐ 1.9.1 EMERGENCY LIGHT

NON-FHA APPENDIX "B" FIXED FIRE SUPPRESSION SYSTEMS (NML)

☐

FIRE PROTECTION NOTIFIED WHEN INOPERABLE: ☐ YES: DATE: TIME: ☒ N/A

R.L. SMITH	TAB
SHIFT SUPERVISOR SIGNATURE (FAS ACTIVE)	**SHIFT SUPERINTENDENT INITIALS**

SECTION 2

FIRE ZONE	2205N	**COMMON NAME**	DRYWELL CHILLER ROOM

BACKUP SUPPRESSION EQUIPMENT NEEDED ☐ YES ☐ NO ☒ N/A	**TYPE (IF APPLICABLE)**
DETECTOR SYSTEMS REQUIRED OPERABLE ☐ YES ☐ NO ☒ N/A	**TYPE (IF APPLICABLE)**

TYPE OF FIRE WATCH REQUIRED ☐ CONTINUOUS ☐ HOURLY ☒ NONE	**TYPE AREA** ☐ RAD ☒ NONRAD

R.L. SMITH	10/15/99	1330
ACTIONS MET SIGNATURE	**DATE**	**TIME**

SECTION 3

IF RESTORATION TIME IS EXCEEDED, INITIATE A DEFICIENCY CARD DISPOSITIONED TO NSAC FOR SPECIAL REPORTING	
DEFICIENCY CARD INITIATED DATE/TIME ____/	**DEFICIENCY CARD NUMBER:**

SECTION 4

CORRECTIVE ACTION PERFORMED:		
FIRE ACTION TERMINATED:	DATE: ____	TIME:
FIRE PROT. NOTIFIED WHEN OPERABLE: ☐ YES	DATE: ____	TIME: ____ ☐ N/A
SHIFT SUPERVISOR SIGNATURE (FAS INACTIVE)		**SHIFT SUPERINTENDENT INITIALS**

SOUTHERN NUCLEAR
PLANT E.I. HATCH

FORM TITLE:
FIRE PROTECTION ENGINEERING

FOR TRAINING USE ONLY

FIRE ACTION SHEET 2 - 99 - 12

SECTION 1

FIRE ACTION SHEET INITIATION: **DATE :** 10/16/99 **TIME :** 8:00

REQUIRED RESTORATION TIME: **DATE :** N/A **TIME :** N/A

APPLICABILITY

☐ AT ALL TIMES ☐ WITH FUEL IN VESSEL ☒ WHEN EQUIP. IS REQ. TO BE OPER.

INITIATING CONDITION (MPL/DESCRIPTION): FIRE DETECTION FOR ZONE 2Z43 112 D10 STA. BATTERY ROOM 2A IS INOPERABLE. DETECTORS 2Z43-N406AK, AL, AM AND AN FAILED SURVEILLANCE.

APPLICABLE FHA APPENDIX "B" SECTION

☐ 1.1.1 DOORS/BARRIERS	☐ 1.4.1 SPRAY/SPRINKLERS	☐ 1.7.1 HYDRANTS/HOUSES
☒ 1.2.1 DETECTION	☐ 1.5.1 CO2	☐ 1.8.1 HALON
☐ 1.3.1 TANKS/PUMPS	☐ 1.6.1 HOSE STATIONS	☐ 1.9.1 EMERGENCY LIGHT

NON-FHA APPENDIX "B" FIXED FIRE SUPPRESSION SYSTEMS (NML)

☐

FIRE PROTECTION NOTIFIED WHEN INOPERABLE: ☒ YES: DATE: TIME: ☐ N/A

R.L. SMITH	RAB
SHIFT SUPERVISOR SIGNATURE (FAS ACTIVE)	SHIFT SUPERINTENDENT INITIALS

SECTION 2

FIRE ZONE	2004	**COMMON NAME**	2A STATION BATTERY ROOM

BACKUP SUPPRESSION EQUIPMENT NEEDED ☐ YES ☐ NO ☒ N/A — **TYPE (IF APPLICABLE)**

DETECTOR SYSTEMS REQUIRED OPERABLE ☒ YES ☐ NO ☐ N/A — **TYPE (IF APPLICABLE)**

TYPE OF FIRE WATCH REQUIRED ☐ CONTINUOUS ☒ HOURLY ☐ NONE — **TYPE AREA** ☐ RAD ☒ NONRAD

R.L. SMITH	10/16/99	0830
ACTIONS MET SIGNATURE	DATE	TIME

SECTION 3

IF RESTORATION TIME IS EXCEEDED, INITIATE A DEFICIENCY CARD DISPOSITIONED TO NSAC FOR SPECIAL REPORTING

DEFICIENCY CARD INITIATED DATE/TIME ____/	**DEFICIENCY CARD NUMBER:**

SECTION 4

CORRECTIVE ACTION PERFORMED:

FIRE ACTION TERMINATED: DATE: ____ TIME:

FIRE PROT. NOTIFIED WHEN OPERABLE: ☐ YES DATE: ____ TIME: ____ ☐ N/A

SHIFT SUPERVISOR SIGNATURE (FAS INACTIVE)	SHIFT SUPERINTENDENT INITIALS

SOUTHERN NUCLEAR
PLANT E.I. HATCH

FORM TITLE:
FIRE PROTECTION ENGINEERING

FIRE ACTION SHEET 2 - 99 - 103

SECTION 1

FIRE ACTION SHEET INITIATION: **DATE :** 10/17/99 **TIME :** 9:00

REQUIRED RESTORATION TIME: **DATE :** N/A **TIME :** N/A

APPLICABILITY

☐ AT ALL TIMES ☐ WITH FUEL IN VESSEL ☒ WHEN EQUIP. IS REQ. TO BE OPER.

INITIATING CONDITION (MPL/DESCRIPTION): DIESEL GENERATOR BUILDING CO2 SYSTEM FOR DIESEL GENERATOR ROOM 2C TAGGED ON CLEARENCE 2-99-605 FOR NOZZLE REPLACEMENT.

APPLICABLE FHA APPENDIX "B" SECTION

☐ 1.1.1 DOORS/BARRIERS	☐ 1.4.1 SPRAY/SPRINKLERS	☐ 1.7.1 HYDRANTS/HOUSES
☐ 1.2.1 DETECTION	☒ 1.5.1 CO2	☐ 1.8.1 HALON
☐ 1.3.1 TANKS/PUMPS	☐ 1.6.1 HOSE STATIONS	☐ 1.9.1 EMERGENCY LIGHT

NON-FHA APPENDIX "B" FIXED FIRE SUPPRESSION SYSTEMS (NML)

☐

FIRE PROTECTION NOTIFIED WHEN INOPERABLE: ☒ YES: DATE: TIME: ☐ N/A

R. L. SMITH	TAB
SHIFT SUPERVISOR SIGNATURE (FAS ACTIVE)	SHIFT SUPERINTENDENT INITIALS

SECTION 2

FIRE ZONE	2407	**COMMON NAME**	CO2 SYSTEM FOR DG 2C

BACKUP SUPPRESSION EQUIPMENT NEEDED
☒ YES ☐ NO ☐ N/A

TYPE (IF APPLICABLE)
Charged firehose from hydrant prestaged to DG room

DETECTOR SYSTEMS REQUIRED OPERABLE
☐ YES ☐ NO ☒ N/A

TYPE (IF APPLICABLE)

TYPE OF FIRE WATCH REQUIRED
☒ CONTINUOUS ☐ HOURLY ☐ NONE

TYPE AREA
☐ RAD ☐ NONRAD

R. L. SMITH	10/17/99	0945
ACTIONS MET SIGNATURE	DATE	TIME

SECTION 3

IF RESTORATION TIME IS EXCEEDED, INITIATE A DEFICIENCY CARD DISPOSITIONED TO NSAC FOR SPECIAL REPORTING

DEFICIENCY CARD INITIATED DATE/TIME ____/	**DEFICIENCY CARD NUMBER:**

SECTION 4

CORRECTIVE ACTION PERFORMED:

FIRE ACTION TERMINATED: DATE: ____ TIME:

FIRE PROT. NOTIFIED WHEN OPERABLE: ☐ YES DATE: ____ TIME: ____ ☐ N/A

SHIFT SUPERVISOR SIGNATURE (FAS INACTIVE)	SHIFT SUPERINTENDENT INITIALS

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TITLE REVIEW OF CORE SPRAY VALVE OPERABILITY SURVEILLANCE		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER/R. L. SMITH	LR-JP-25034-00	20.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**
N/A	R. S. GRANTHAM	10/20/99

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

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

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	10/20/99	Initial development	RAB/RLS	RSG

UNIT 1 ( ) UNIT 2 (X)

TASK TITLE:	**REVIEW OF CORE SPRAY VALVE OPERABILITY SURVEILLANCE**
JPM NUMBER:	LR-JP-25034-00
TASK STANDARD:	The task shall be complete when the operator reviews the completed surveillance procedure, 34SV-E21-002-2S, and determines if the test is satisfactory or unsatisfactory.

TASK NUMBER: 300.011

PLANT HATCH JTA IMPORTANCE RATING:

RO Not Available

SRO Not Available

K/A CATALOG NUMBER: 209001G2.2.12

K/A CATALOG JTA IMPORTANCE RATING:

RO 3.0

SRO 3.4

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 2**
	34SV-E21-002-2S Rev 8

REQUIRED MATERIALS:	**Unit 2**
	Completed surveillance package: 34SV-E21-002-2S. (Copy available in JPM filing cabinet)

APPROXIMATE COMPLETION TIME: 20.0 Minutes

SIMULATOR SETUP: N/A

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 2 is at MOP.
2. 34SV-E21-002-2S, "Core Spray Valve Operability," has just been completed.

INITIATING CUES:

Review the procedure data and determine the acceptability of the test.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

PROMPT: **AT** this time, **GIVE** the operator the completed copy of 34SV-E21-002-2S, "Core Spray Valve Operability."

PROMPT: **IF** the operator addresses the IST Book, **ALLOW** the operator to locate the book, then **INFORM** the operator that another supervisor has verified the reference data.

1.	The operator reviews the procedure.	The operator REVIEWS 34SV-E21-002-2S, "Core Spray Valve Operability."	
2.	The operator evaluates the stroke time data for 2E21-F004A.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F004A and DETERMINES that the valve data is SATISFACTORY.	
****3.**	The operator evaluates the stroke time data for 2E21-F005A.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F005A and DETERMINES that the valve data is UNSATISFACTORY in the open direction. The valve must be declared INOP or retested.	

RESPONSE CUE: N/A

4.	The operator evaluates the stroke time data for 2E21-F015A.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F015A and DETERMINES that the valve data is SATISFACTORY.	
5.	The operator evaluates the stroke time data for 2E21-F001A.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F001A and DETERMINES that the valve data is SATISFACTORY.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**6.	The operator evaluates the stroke time data for 2E21-F031A.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F031A and DETERMINES that the valve data is UNSATISFACTORY in the close direction. The valve must be declared INOP or retested.	

RESPONSE CUE: N/A

7.	The operator evaluates the stroke time data for 2E21-F004B.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F004B and DETERMINES that the valve data is SATISFACTORY.	
**8.	The operator evaluates the stroke time data for 2E21-F005B.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F005B and DETERMINES that the valve data is UNSATISFACTORY due to exceeding the maximum time to close. The valve must be declared INOP.	

RESPONSE CUE: N/A

PROMPT: **IF** the operator addresses Tech Spec actions for 2E21-F005B, **INFORM** the operator that another supervisor will evaluate the LCO.

9.	The operator evaluates the stroke time data for 2E21-F015B.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F015B and DETERMINES that the valve data is SATISFACTORY.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
10.	The operator evaluates the stroke time data for 2E21-F001B.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F001B and DETERMINES that the valve data is SATISFACTORY.	
****11.**	The operator evaluates the stroke time data for 2E21-F031B.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F031B and DETERMINES that the valve data is UNSATISFACTORY in the close direction. The valve must be declared INOP or retested.	

RESPONSE CUE: N/A

PROMPT: **IF** the operator addresses retesting the failed valves, **INFORM** the operator that another operator will perform the retest.

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)**

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DOCUMENT TITLE: CORE SPRAY VALVE OPERABILITY	DOCUMENT NUMBER: 34SV-E2[illegible]-002-2S	REVISION NO: 8

EXPIRATION DATE:	APPROVALS:			EFFECTIVE DATE:
N/A	DEPARTMENT MANAGER	JAB	DATE 6-20-97	
	NPGM/POAGM/PSAGM	N/A	DATE	6/27/97

1.0 OBJECTIVE

This procedure provides instructions for performing the Core Spray System Valve Operability as required by Unit 2 Technical Specifications, TS 5.5.6, TS 3.6.1.3.5, Bases 3.0.1 and ASME OM Code, Subsection ISTC.

This procedure in conjunction with the following procedures meet Unit 2 Technical Specifications, TS SR 3.3.3.1.2 for 3.3.3.1-1(6.), TS SR 3.5.1.13

34SV-R43-001-2S
57SV-MNT-001-2S
57SV-MNT-002-2S
57SV-MNT-003-2S
57SV-MNT-004-2S

This procedure also collects data for evaluating the reliability of the Emergency Response Data System (ERDS).

2.0 APPLICABILITY

2.1 This procedure applies to the Unit 2 Core Spray System motor operated and air operated valves on a frequency of:

Once per 92 days
Once per 18 months
After valve maintenance (affected valve(s))

2.2 Valve stem verification is performed each refueling outage, not to exceed 2 years, AND, IF necessary, following maintenance where position indication is affected.

3.0 REFERENCES

3.1 90AC-OAP-001-0S, Test and Surveillance Control

3.2 42EN-INS-001-0S, Inservice Testing Program

3.3 Technical Specifications, Unit 2, TS 3.5.1, TS 3.5.2, Bases SR 3.0.1, TS 3.5.1.13, TS 3.6.1.3

3.4 31GO-INS-001-0S, ISI Pump and Valve Operability Tests

3.5 Edwin I. Hatch Nuclear Plant Unit 2 Valve Inservice Testing Plan

3.6 S-43483, Emergency Response Data System (ERDS) User's Manual

3.7 H-26018, Core Spray System, P&ID

3.8 H-27658, Core Spray System 2E21A Elementary Diagram, Sheets 1-6 through H-27663

4.0 REQUIREMENTS

4.1 PERSONNEL REQUIREMENTS

The number and qualification level of Operations personnel performing this procedure will be determined by the Shift Supervisor.

4.2 MATERIAL AND EQUIPMENT

4.2.1 Material

N/A - Not applicable to this procedure

4.2.2 Equipment

4.2.2.1 Calibrated stopwatch

4.2.2.2 5/16 inch nutdriver

4.3 SPECIAL REQUIREMENTS

4.3.1 Independent verification, as described in 10AC-MGR-019-0S, Procedure Use and Adherence, will be required for portions of this procedure.

4.3.2 The VERIFIED part of any step requiring independent verification may be performed out of sequence any time after completion of the first sign-off.

4.3.3 Emergency Response Data System (ERDS) data is confirmed in this procedure. The purpose of this data is to ensure ERDS reliability. Data is recorded in appropriate spaces in this procedure. Results of ERDS testing are NOT within the acceptance criteria of this surveillance. All ERDS data is recorded from the Safety Parameter Display System (SPDS) console displays in the Main Control Room. IF the ERDS is NOT operable, the appropriate engineer must be notified.

4.3.4 Full-stroke time is that time interval from initiation of the actuating signal to the end of the actuation cycle. Valves will be timed from WHEN the switch is positioned to either the green light EXTINGUISHED (open) or the red light EXTINGUISHED (close).

4.3.5 An RWP will be required IF activities require personnel to enter a contaminated AND/OR high radiation area.

4.3.6 Performance of this procedure will place valves of the Core Spray system in positions other than normally required for the standby lineup. The operator performing this procedure must be aware of his responsibility to confirm that all automatic actions associated with these valves occur in the event of an isolation signal.

5.0 PRECAUTIONS/LIMITATIONS

5.1 PRECAUTIONS

5.1.1 Observe safety rules outlined in the Southern Nuclear Safety and Health Manual.

5.1.2 Observe proper radiation protection procedures to maintain personnel exposure to ALARA and to limit the spread of contamination.

5.1.3 Avoid excessive cycling of MOVs to prevent overheating and possible damage to valve motor.

5.2 LIMITATIONS

IF CORE SPRAY SUCTION is from the CST, Valves 2E21-F015A AND 2E21-F015B must NOT be tested to avoid draining the CST to the Suppression Pool.

6.0 PREREQUISITES

N/A - Not applicable to this procedure

7.0 PROCEDURE

INITIALS

7.1 PRETEST

7.1.1 Obtain Shift Supervisor's permission to perform this test. RJS

7.1.2 IF being performed during a refueling outage, establish communications between valve locations and the Control Room. N/A

7.1.3 Record stopwatch number: LT503 RJS

> NOTE
>
> Per ASME OM Code, paragraph ISTC 3.4, WHEN a valve OR its control system has been repaired, replaced OR has undergone maintenance that could affect the valves performance, THEN a new reference value shall be determined OR the previous value reconfirmed, by an inservice test performed before the valve is returned to service OR immediately IF not removed from service. Consult the IST Engineer OR 31GO-INS-001-0S for additional information.

> NOTE
>
> IF it is unclear whether new reference values are required to be established, contact the IST Engineer.

7.1.4 Determine IF new reference values are required to be established for any of the valves included in this surveillance procedure. N/A

7.1.5 IF new reference values are being established, skip the actions required by step 7.1.6 for the affected valves AND document the reason for establishing new reference values at step 7.5.6. N/A

INITIALS

7.1.6 Complete Attachment 1 as follows:

> NOTE
>
> WHEN calculating OR recording valve stroke times, round off to the nearest tenth second.

7.1.6.1 RECORD the REFERENCE times from the IST Log in the Control Room. RW

7.1.6.2 For MOV's with REFERENCE times of > 10 seconds, multiply the REFERENCE times by 0.85 and 1.15 AND RECORD as the CALCULATED ALLOWABLE times, IF less than the MAXIMUM TIME LIMIT. RW

7.1.6.3 For MOV's with REFERENCE times of ≤ 10 seconds perform the following applicable step:

7.1.6.3.1 For MOVs with REFERENCE times > 4 seconds and ≤ 10 seconds, multiply the REFERENCE times by 0.75 and 1.25. RW

7.1.6.3.2 For REFERENCE times ≤ 4 seconds, add and subtract 1 second to/from the REFERENCE time. N/A

7.1.6.3.3 RECORD the CALCULATED ALLOWABLE time from the previous steps, IF less than the MAXIMUM TIME LIMIT. RW

7.1.6.4 IF the CALCULATED ALLOWABLE time is greater than the MAXIMUM TIME LIMIT, THEN record the MAXIMUM TIME LIMIT as the CALCULATED ALLOWABLE time. RW

7.1.7 Confirm or PLACE the Core Spray System Loop to be tested in standby per 34SO-E21-001-2S, Core Spray System. RW

INITIALS

7.2 LOOP A MOTOR AND AIR OPERATED VALVE TEST

7.2.1 Valves 2E21-F004A and 2E21-F005A

7.2.1.1 TAKE Outbd Discharge Vlv, 2E21-F004A Control Switch to CLOSE, and record stroke time on Attachment 1. RW

7.2.1.2 IF during a refueling outage, perform the following:

7.2.1.2.1 Confirm that valve stem position for 2E21-F004A indicates CLOSED. N/A

7.2.1.2.2 Confirm that the ERDS Valve Status for 2E21-F004A indicates CLOSED [MISC/VALVE STATUS (E21-E41)]. N/A

7.2.1.3 TAKE and HOLD OPEN Inbd Discharge Vlv, 2E21-F005A Control Switch to OPEN UNTIL valve is fully OPEN, and record stroke time on Attachment 1. RW

7.2.1.4 IF during a refueling outage, perform the following:

7.2.1.4.1 Confirm that valve stem position for 2E21-F005A indicates OPEN. N/A

7.2.1.4.2 Confirm that the ERDS Valve Status for 2E21-F005A indicates OPEN [MISC/VALVE STATUS (E21-E41)]. N/A

7.2.1.5 TAKE and HOLD Inbd Discharge Vlv, 2E21-F005A control switch to CLOSE UNTIL valve is fully CLOSED, and record stroke time on Attachment 1. RW

7.2.1.6 IF during a refueling outage, perform the following:

7.2.1.6.1 Confirm that valve stem position for 2E21-F005A indicates CLOSED. N/A

7.2.1.6.2 Confirm that the ERDS Valve Status for 2E21-F005A, indicates CLOSED [MISC/VALVE STATUS (E21-E41)]. N/A

7.2.1.7 TAKE Outbd Discharge Vlv, 2E21-F004A Control Switch to OPEN, and record Stroke time on Attachment 1. RW

7.2.1.8 IF during a refueling outage, perform the following:

7.2.1.8.1 Confirm that valve stem position for 2E21-F004A indicates OPEN. N/A

7.2.1.8.2 Confirm that the ERDS Valve Status for 2E21-F004A indicates OPEN [MISC/VALVE STATUS (E21-E41)]. N/A

NOTE

IF Core Spray suction is from the CST refer to 5.2, LIMITATIONS.

7.2.2 Valve 2E21-F015A

7.2.2.1 TAKE and HOLD Test Vlv, 2E21-F015A control switch to OPEN UNTIL valve is fully OPEN, and record stroke time on Attachment 1. R18

7.2.2.2 IF during a refueling outage, perform the following:

7.2.2.2.1 Confirm that valve stem position for 2E21-F015A indicates OPEN. N/A

7.2.2.2.2 Confirm that the ERDS Valve Status for 2E21-F015A indicates OPEN [DIAG/PCIS GROUP 2B]. N/A

7.2.2.3 TAKE and HOLD Test Vlv, 2E21-F015A control switch to CLOSE UNTIL valve is fully CLOSED, and record stroke time on Attachment 1. R18

7.2.2.4 IF during a refueling outage, perform the following:

7.2.2.4.1 Confirm that valve stem position for 2E21-F015A indicates CLOSED. N/A

7.2.2.4.2 Confirm that the ERDS Valve Status for 2E21-F015A indicates CLOSED [DIAG/PCIS GROUP 2B]. N/A

INITIALS

7.2.3 Valve 2E21-F001A

NOTE

IF Core Spray A is in STANDBY with suction from the CST Steps 7.2.3.3 & 7.2.3.4 are to be performed before Steps 7.2.3.1 AND 7.2.3.2

CAUTION

IF CORE SPRAY A IS IN STANDBY WITH SUCTION FROM THE CST, DO NOT OPEN 2E21-F001A UNLESS 2E21-F019A IS CLOSED.

7.2.3.1 PLACE Torus Suction Vlv, 2E21-F001A, Control Switch in CLOSE and record stroke time on Attachment 1. RW

7.2.3.2 IF during a refueling outage, perform the following:

7.2.3.2.1 Confirm that valve stem position for 2E21-F001A indicates CLOSED. N/A

7.2.3.2.2 Confirm that the ERDS Valve Status for 2E21-F001A indicates CLOSED [MISC/VALVE STATUS (E21-E41)]. N/A

7.2.3.2.3 Place torus suction valve, 2E21-F019A, control switch in CLOSED. N/A

7.2.3.2.4 Confirm that valve stem position for 2E21-F019A indicates CLOSED. N/A

7.2.3.2.5 Confirm that the ERDS Valve Status for 2E21-F019A indicates CLOSED [MISC/VALVE STATUS (E21-E41)]. N/A

7.2.3.2.6 Place torus suction valve, 2E21-F019A, control switch in OPEN. N/A

7.2.3.2.7 Confirm that valve stem position for 2E21-F019A indicates OPEN. N/A

INITIALS

7.2.3.2.8 Confirm that the ERDS Valve Status for 2E21-F019A indicates OPEN [MISC/VALVE STATUS (E21-E41)]. N/A

7.2.3.3 PLACE Torus Suction Vlv, 2E21-F001A, Control Switch in OPEN and record stroke time on Attachment 1. RW

7.2.3.4 IF during a refueling outage, perform the following:

7.2.3.4.1 Confirm that valve stem position for 2E21-F001A indicates OPEN. N/A

7.2.3.4.2 Confirm that the ERDS Valve Status for 2E21-F001A indicates OPEN [MISC/VALVE STATUS (E21-E41)]. N/A

NOTE

IF Core Spray suction is from the CST, Min Flow Vlv 2E21-F031A may be cycled provided the Minimum Flow Line Manual Isolation Valve, 2E21-F010A is closed.

7.2.4 Valve 2E21-F031A

7.2.4.1 OPEN Link JJ-25 in Panel 2H11-P927 (removes low flow valve opening contact). RW

7.2.4.2 TAKE Core Spray Min Flow Vlv, 2E21-F031A Control Switch to CLOSE, and record stroke time on Attachment 1. RW

7.2.4.3 IF during a refueling outage, confirm that valve stem position for 2E21-F031A indicates CLOSED. N/A

7.2.4.4 TAKE Core Spray Min Flow Vlv, 2E21-F031A Control Switch to OPEN, and record stroke time on Attachment 1. RW

7.2.4.5 IF during a refueling outage, confirm that valve stem position for 2E21-F031A indicates OPEN. N/A

7.2.4.6 CLOSE and independently verify Link JJ-25 in Panel 2H11-P927. RW

VERIFIED RAB

INITIALS

7.3 LOOP B MOTOR AND AIR OPERATED VALVE TEST

7.3.1 Valves 2E21-F004B and 2E21-F005B

7.3.1.1 TAKE Outbd Discharge Vlv, 2E21-F004B Control Switch to CLOSE, and record stroke time on Attachment 1. RM

7.3.1.2 IF during a refueling outage, perform the following:

7.3.1.2.1 Confirm that valve stem position for 2E21-F004B indicates CLOSED. N/A

7.3.1.2.2 Confirm that the ERDS Valve Status for 2E21-F004B indicates CLOSED [MISC/VALVE STATUS (E21-E41)]. N/A

7.3.1.3 TAKE and HOLD Inbd Discharge Vlv, 2E21-F005B Control Switch to OPEN until the valve is fully OPEN, and record stroke time on Attachment 1. RM

7.3.1.4 IF during a refueling outage, perform the following:

7.3.1.4.1 Confirm that valve stem position for 2E21-F005B indicates OPEN. N/A

7.3.1.4.2 Confirm that the ERDS Valve Status for 2E21-F005B indicates OPEN [MISC/VALVE STATUS (E21-E41)]. N/A

7.3.1.5 TAKE and HOLD Inbd Discharge Vlv, 2E21-F005B Control Switch to CLOSE UNTIL the valve is fully CLOSED, and record stroke time on Attachment 1. RM

7.3.1.6 IF during a refueling outage, perform the following:

7.3.1.6.1 Confirm that valve stem position for 2E21-F005B indicates CLOSED. N/A

7.3.1.6.2 Confirm that the ERDS Valve Status for 2E21-F005B, indicates CLOSED [MISC/VALVE STATUS (E21-E41)]. N/A

7.3.1.7 TAKE Outbd Discharge Vlv, 2E21-F004B Control Switch to OPEN, and record Stroke time on Attachment 1. RM

7.3.1.8 IF during a refueling outage, perform the following:

7.3.1.8.1 Confirm that valve stem position for 2E21-F004B indicates OPEN. N/A

7.3.1.8.2 Confirm that the ERDS Valve Status for 2E21-F004B indicates OPEN [MISC/VALVE STATUS (E21-E41)]. N/A

INITIALS

NOTE

IF Core Spray suction is from the CST refer to 5.2, LIMITATIONS.

7.3.2 Valve 2E21-F015B

7.3.2.1. TAKE and HOLD Test Vlv, 2E21-F015B control switch to OPEN UNTIL valve is fully OPEN, and record stroke time on Attachment 1. RM

7.3.2.2 IF during a refueling outage, perform the following:

7.3.2.2.1 Confirm that valve stem position for 2E21-F015B indicates OPEN. N/A

7.3.2.2.2 Confirm that the ERDS Valve Status for 2E21-F015B indicates OPEN [DIAG/PCIS GROUP 2B]. N/A

7.3.2.3. TAKE and HOLD Test Vlv, 2E21-F015B control switch to CLOSE UNTIL valve is fully CLOSED, and record stroke time on Attachment 1. RM

7.3.2.4 IF during a refueling outage, perform the following:

7.3.2.4.1 Confirm that valve stem position for 2E21-F015B indicates CLOSED. N/A

7.3.2.4.2 Confirm that the ERDS Valve Status for 2E21-F015B indicates CLOSED [DIAG/PCIS GROUP 2B]. N/A

INITIALS

7.3.3 Valve 2E21-F001B

> CAUTION
>
> IF CORE SPRAY B IS IN STANDBY WITH SUCTION FROM THE CST, DO NOT OPEN 2E21-F001B UNLESS 2E11-F019B IS CLOSED.

> NOTE
>
> IF Core Spray B is in STANDBY with suction from the CST, Steps 7.3.3.3 AND 7.3.3.4 are to be performed before 7.3.3.1 AND 7.3.3.2.

7.3.3.1 PLACE Torus Suction Vlv, 2E21-F001B, Control Switch in CLOSE and record stroke time on Attachment 1. RW

7.3.3.2 IF during a refueling outage, perform the following:

7.3.3.2.1 Confirm that valve stem position for 2E21-F001B indicates CLOSED. N/A

7.3.3.2.2 Confirm that the ERDS Valve Status for 2E21-F001B indicates CLOSED [MISC/VALVE STATUS (E21-E41)]. N/A

7.3.3.2.3 Place torus suction valve, 2E21-F019B, control switch in CLOSED. N/A

7.3.3.2.4 Confirm that valve stem position for 2E21-F019B indicates CLOSED. N/A

7.3.3.2.5 Confirm that the ERDS Valve Status for 2E21-F019B indicates CLOSED [MISC/VALVE STATUS (E21-E41)]. N/A

7.3.3.2.6 Place torus suction valve, 2E21-F019B, control switch in OPEN. N/A

INITIAL

7.3.3.2.7 Confirm that valve stem position for 2E21-F019B indicates OPEN. N/A

7.3.3.2.8 Confirm that the ERDS Valve Status for 2E21-F019B indicates OPEN [MISC/VALVE STATUS (E21-E41)]. N/A

7.3.3.3 OPEN Torus Suction Vlv, 2E21-F001B, and record stroke time on Attachment 1. RN

7.3.3.4 IF during a refueling outage, perform the following:

7.3.3.4.1 Confirm that valve stem position for 2E21-F001B indicates OPEN. N/A

7.3.3.4.2 Confirm that the ERDS Valve Status for 2E21-F001B indicates OPEN [MISC/VALVE STATUS (E21-E41)]. N/A

NOTE

IF Core Spray suction is from the CST, Min Flow Vlv 2E21-F031B may be cycled provided the Minimum Flow Line Manual Isolation Valve, 2E21-F010B is closed.

7.3.4 Valve 2E21-F031B

7.3.4.1 OPEN Link JJ-25 in Panel 2H11-P928 (removes low flow valve opening contact). RN

7.3.4.2 TAKE Core Spray Min Flow Vlv, 2E21-F031B Control Switch to CLOSE, and record stroke time on Attachment 1. RN

7.3.4.3 IF during a refueling outage, confirm that valve stem position for 2E21-F031B indicates CLOSED. N/A

7.3.4.4 TAKE Core Spray Min Flow Vlv, 2E21-F031B Control Switch to OPEN, and record stroke time on Attachment 1. RN

7.3.4.5 IF during a refueling outage, confirm that valve stem position for 2E21-F031B indicates OPEN. N/A

7.3.4.6 CLOSE and independently verify Link JJ-25 in Panel 2H11-P928. RN

VERIFIED RAB

INITIALS

7.4 POSTTEST

7.4.1 Perform the Restoration to Standby, Attachment 1, of 34SO-E21-001-2S, Core Spray System. RAB

7.4.2 Confirm that valve stroke times are less than the MAXIMUM TIME LIMIT on Attachment 1. RAB

7.4.3 IF IST was performed, perform the following:

7.4.3.1 Confirm that the stroke times for each valve are within the allowable range specified on Attachment 1. RAB

7.4.3.2 Independently verify that the stroke times for each valve on Attachment 1, are within the allowable range. RAB
LIC OPER

7.4.3.3 IF new reference values were established, log the results in the Control Room IST Log Book. N/A

7.5 TEST RESULTS

7.5.1 Reason for test: (✓) Norm. Surv. ( ) MWO # _____
( ) Other _____

7.5.2 Acceptance Criteria

7.5.2.1 The stroke times for each valve are less than the MAXIMUM TIME LIMIT on Attachment 1.

7.5.2.2 The stroke times for each valve are within the CALCULATED ALLOWABLE TIME range on Attachment 1.

7.5.2.3 During a refueling outage, valve stem position agrees with remote position indication.

7.5.3 Corrective Action - All power Operated Valves

7.5.3.1 IF a valve fails to exhibit the required change of valve stem or disk position OR exceeds the MAXIMUM TIME LIMIT, the valve will be immediately declared inoperable.

7.5.3.2 Valves with OPERATING times that do NOT meet the CALCULATED ALLOWABLE time, will be immediately retested OR declared inoperable.

7.5.3.2.1 IF retested, and IF the second set of data meets the CALCULATED ALLOWABLE times, the cause of the initial deviation will be analyzed by the IST Engineer and the results will be documented in the surveillance procedure data package.

7.5.3.2.2 IF retested, and IF the second set of data does NOT meet the CALCULATED ALLOWABLE times, but meets the MAXIMUM TIME LIMIT, initiate a TRACKING RAS. This will ensure the data will be analyzed within 96 hours by the IST engineer to determine if the measured stroke time represents acceptable operation. Otherwise, the valve will be declared inoperable.

7.5.3.3 In all cases, IF a valve is required to be stroked a second time, record MPL number along with both sets of times on a deficiency card and in the comments section of the procedure.

7.5.4 Test Result:

(✓) Satisfactory
( ) Unsatisfactory

7.5.5 Unsatisfactory Conditions: None

7.5.6 Comments/Corrective Actions: None

7.5.7 Test completed and/or verified by:

Print Name	Initial	Date
R.L. Smith	RLS	10/15/98
R A. Belcher	RAB	10/15/98

7.6 TEST REVIEW

7.6.1 The Shift Supervisor will review the procedure data for completeness and indicate concurrence with the test satisfactory/unsatisfactory determination by signing below.

Results Reviewed By: _____ _____
Shift Supervisor Date

7.6.2 IF new reference times were established, CONFIRM the results for the affected valves are logged in the Control Room IST Valve Log Book.

_____ _____
Shift Supervisor Date

7.6.3 The Shift Supervisor will forward this procedure, with all sign-offs through step 7.6.2, complete, to the IST Engineer for IST and ANII review.

_____ _____ _____ _____
IST Engineer Date ANII Date

7.6.4 The IST Engineer will forward this procedure, with all sign-offs complete, to Document Control for retention in accordance with 20AC-ADM-002-0S, Plant Records Management.

NOTE

WHEN calculating OR recording valve stroke times, round off to the nearest tenth second.

COLUMN 1 MPL (TYPE)	COLUMN 2 REFERENCE TIME (SEC)		COLUMN 3 CALCULATED ALLOWABLE TIME (SEC)				COLUMN 4 OPERATING TIME (SEC)		COLUMN 5 MAXIMUM TIME LIMIT (SEC)		TIMED BY:
	OPEN	CLOSE	OPEN MIN	OPEN MAX	CLOSE MIN	CLOSE MAX	OPEN	CLOSE	OPEN	CLOSE	INIT
2E21-F004A MOV	8.5	N/A	6.4	10.6	N/A	N/A	8.7	N/A	≤11	N/A	RW
2E21-F005A MOV	8.3	8.6	6.2	10.4	6.5	10.8	10.5	9.0	≤11	≤11	RW
2E21-F015A MOV	N/A	55.7	N/A	N/A	47.3	57.0	N/A	55.8	N/A	≤57	RW
2E21-F001A MOV	95.8	94.3	81.4	105.0	80.2	105.0	96.1	94.5	≤105	≤105	RW
2E21-F031A MOV	11.9	11.7	10.1	13.7	9.9	13.5	13.6	13.6	≤22	≤22	RW
2E21-F004B MOV	7.4	N/A	5.6	9.3	N/A	N/A	7.5	N/A	≤11	N/A	RW
2E21-F005B MOV	8.0	8.0	6.0	10.0	6.0	10.0	9.9	11.1	≤11	≤11	RW
2E21-F015B MOV	N/A	53.3	N/A	N/A	45.3	57.0	N/A	54.0	N/A	<57	RW
2E21-F001B MOV	96.3	93.8	81.9	105.0	79.7	105.0	96.5	94.2	≤105	≤105	RW
2E21-F031B MOV	19.1	18.7	16.2	22.0	15.9	21.5	21.9	21.7	≤22	≤22	RW

CALCULATIONS PERFORMED BY: R. L. Smith DATE: 10/15/99

CALCULATIONS VERIFIED BY: R. A. Belcher DATE: 10/15/99

VERIFY STROKE TIMES ACCEPTABLE: R. A. Belcher DATE: 10/15/99

A.3
(Cand. version)

Question 1

A RWCU pump room has an 11 Rem/hr field.

a. What type of radiation area is this room?

b. How is this area physically distinguished from other radiation areas and how is access controlled?

c. What administrative requirements must be met for personnel to enter this room?

NO REFERENCES ALLOWED

Question 2

Two Mechanics, a PEO, and a HP Tech are to locate and isolate a water leak in the Unit 1 RWCU heat exchanger room. Current HP Survey for the Unit 1 RWCU heat exchanger room has a general Dose rate field at 6 Rem/hr. The following doses have been received for the current year:

Mechanic #1	300 mRem
Mechanic #2	450 mRem
PEO	1500 mRem
HP Tech	2600 mRem

a. Calculate the dose they would receive if their stay time in the room is 15 minutes.

b. For each individual, determine the minimum level of authority required to authorize entry into the room for projected dose?

A. 3
(Ans. Key)

Question 1

A RWCU pump room has an 11 Rem/hr field.

a. What type of radiation area is this room?

High Radiation Area (0.4 pt)

b. How is this area physically distinguished from other radiation areas and how is access controlled?

High Radiation Area (0.1 pt.)
Door RED (0.1 pt)
Door Locked (0.1pt)

c. What administrative requirements must be met for personnel to enter this room?

RWP (0.1 pt.)
Rad Monitoring device – Digital alarming Dosimetry (DAD) (0.1pt)
HP Tech accompanies the individual (0.1 pt.)

NO REFERENCES ALLOWED

A.3
(Ans. Key)

Question 2

Two Mechanics, a PEO, and a HP Tech are to locate and isolate a water leak in the Unit 1 RWCU heat exchanger room. Current HP Survey for the Unit 1 RWCU heat exchanger room has a general Dose rate field at 6 Rem/hr. The following doses have been received for the current year:

Mechanic #1	300 mRem
Mechanic #2	450 mRem
PEO	1500 mRem
HP Tech	2600 mRem

a. Calculate the dose they would receive if their stay time in the room is 15 minutes.

1500 mRem (0.2 pt)

b. For each individual, determine the minimum level of authority required to authorize entry into the room for projected dose?

Mechanic #1 1800 mRem (Dose not required for credit) None additional, initial exposure limit not exceeded. (0.2 pt)
Mechanic #2 1950 mRem (Dose not required for credit) None additional, initial exposure limit not exceeded. (0.2 pt)
PEO 3000 mRem (Dose not required for credit) HP Supervisor, initial exposure limit are exceeded. (0.2 pt)
HP Tech 4100 mRem (Dose not required for credit) AGM or higher, exposure limits are exceeded. (0.2 pt)

A.4
(Cand. Versi

Question 1

Time	
1305	While investigating a steam leak in the Unit 2 HPCI room, a worker receives a severe steam burn when the leak worsens.
1320	The SOS is notified that the worker is contaminated to a level of 600 cpm per probe area above background and that he must be transported to a hospital.

For this situation, state:

a. The emergency classification

b. The criteria for the classification

c. What reports are required

d. When the reports are required to be made

e. If a site evacuation is required

A.4
(Cand. Version)

Question 2

1325 Unit 2 is operating at 75% power when HPCI isolation alarms are received. The HPCI isolation valves do not shut and cannot be shut manually. Leak detection alarms are received and area temperatures are 200F and increasing. Area radiation levels are 30 mR/hr and increasing.

For this change in conditions, state:

a. The emergency classification

b. The criteria for the classification

c. What reports are required

d. When the reports are required to be made

e. If a site evacuation is required

A.4
(Ans. Key)

Question 1

Time		
1305	While investigating a steam leak in the Unit 2 HPCI room, a worker receives a severe steam burn when the leak worsens.	
1320	The SOS is notified that the worker is contaminated to a level of 600 cpm per probe area above background and that he must be transported to a hospital.	
	For this situation, state:	
	a. The emergency classification	
.2 pts		NUE
	b. The criteria for the classification	
.2 pts		Contaminated Injured Victim (section 12)
	c. What reports are required	
.2 pts		ENN (state & locals) and ENS (NRC)
	d. When the reports are required to be made	
.2 pts		Within 15 min (or 1335) for ENN and within 1 hour (or 1420)
	e. If a site evacuation is required	
.2 pts		Not required

A.4
(Ans. Key)

Question 2

1325 Unit 2 is operating at 75% power when HPCI isolation alarms are received. The HPCI isolation valves do not shut and cannot be shut manually. Leak detection alarms are received and area temperatures are 200F and increasing. Area radiation levels are 30 mR/hr and increasing.

For this change in conditions, state:

a. The emergency classification

.2 pts Site Area Emergency

b. The criteria for the classification

.2 pts Steam Line Break (section 4)

c. What reports are required

.2 pts ENN (state & locals) and ENS (NRC)

d. When the reports are required to be made

.2 pts Within 15 min (or 1340) for ENN and within 1 hour (or 1425). Also accept, communications may already be established if continuous communications.

e. If a site evacuation is required

.2 pts Required

JPMs Section 'B'

DISTRIBUTION CODE
A070

Southern Nuclear
E. I. Hatch Nuclear Plant

Operations Training
JPM

TITLE		
VERIFY THE CORRECT OVERLAP BETWEEN IRM RANGES 6 AND 7		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER	LR-JP-12.01-04	14.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**
N/A	R. S. GRANTHAM	10/20/99

DISTRIBUTION CODE
A070

SOUTHERN NUCLEAR OPERATING COMPANY
PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-12.01**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	02/25/93	Initial development	CME	RSG
01	08/25/94	Change initiating cue to a command, modify simulator setup, modify initial conditions	RAB	SMC
02	06/17/96	Format change, change time allotment, procedure step changes, modification to attachment 9, modify simulator setup and JPM to allow any IRM to be the failure	RAB	RSG
03	03/02/99	Revised due to new simulator computer.	SCB	DHG
04	10/20/99	Format upgrade, increase number of IRMs that fail the overlap requirement, add the initial IRM failure	RAB	RSG

UNIT 1 ( ) UNIT 2 (X)

TASK TITLE:	**VERIFY THE CORRECT OVERLAP BETWEEN IRM RANGES 6 AND 7**
JPM NUMBER:	LR-JP-12.01-04
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-001-2S, Plant Startup.

TASK NUMBER: 012.010

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: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 2**
	34GO-OPS-001-2S Rev 34 Ed 3

REQUIRED MATERIALS:	**Unit 2**
	34GO-OPS-001-2S (current revision)

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 #102** and leave in **FREEZE**.

2. Make sure RECORDER POWER is TURNED ON. Roll Chart Recorders and Process Computer Typers forward. Ensure any information printed on the Process Computer Typer from previous ICs is removed.

3. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfC51_8F	IRM F Failure (Downscale)			000
mfC51_155C	IRM C Range 7 Fails High By a Factor of 2			000
mfC51_155B	IRM B Range 7 Fails High By a Factor of 2			000

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

6. **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 TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 2 is in Startup, with 34GO-OPS-001-2S (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-001-2S, Plant Startup, has been completed up to 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-065-0S.
7. A second operator is monitoring the remainder of the Control Room Panels, including Feedwater Control.

INITIATING CUES:

Perform Steps 7.2.24 and 7.2.25 of 34GO-OPS-001-2S, Plant Startup, to verify IRM overlap.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

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-001-2S and has LOCATED Step 7.2.24.	

PROMPT: **WHEN** operator addresses Attachment 9 of 34GO-OPS-001-2S, **PROVIDE** the operator a copy of Attachment 1 of this JPM.

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 5 and 80 on the 0 - 125 scale (black scale).	Operator has RANGED IRMs to maintain IRM indications between 5 and 80 on the recorder 0 - 125 scale (black scale).	

RESPONSE CUE: N/A

PROMPT: **IF** addressed, **INDICATE** to the operator that all the SRMs are fully withdrawn.

****3.**	Operator RANGES each IRM from Range 6 to Range 7 and LOGS Range 6 and Range 7 readings on Attachment 1 of this JPM.	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 1 of this JPM.	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**4.	Operator DIVIDES Range 6 (Column 2) readings by 10 and ENTERS the RESULTS in Column 4 of Attachment 1 of this JPM.	Operator has DIVIDED Range 6 (Column 2) readings by 10 and has ENTERED the RESULTS in Column 4 of Attachment 1 of this JPM.	

RESPONSE CUE: N/A

PROMPT: **IF** addressed, as a second operator, **PERFORM** verification of Column 5 of Attachment 1.

**5.	Operator CONFIRMS that Column 3 equals Column 4 ± 2 (on the red scale, Column 3) and DETERMINES that IRM "B" and "C" overlap is NOT ACCEPTABLE (> ± 2).	Operator has CONFIRMED that Column 3 equals Column 4 ± 2 (on the red scale, Column 3) and has DETERMINED that IRM "B" and "C" overlap is NOT ACCEPTABLE (> ± 2).	

RESPONSE CUE: N/A

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

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

6.	Operator RECORDS the unacceptable overlap for IRM "B" and "C" in the Operator's log and NOTIFIES I&C Shop and 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 has NOTIFIED I&C Shop and the Shift Supervisor of the unacceptable overlap for IRM "B" and "C."	

(Indicates critical step)**

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

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-001-2S - 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 ± 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

Southern Nuclear
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Operations Training
JPM

TITLE PURGE THE TORUS WITH AIR FOR HYDROGEN CONTROL		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER	LR-JP-13.58-02	9.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**
N/A	R. S. GRANTHAM	10/20/99

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-13.58**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	06/22/95	Initial development	RAB	SMC
01	06/21/96	Format change, modify time allowance	RAB	DHG
02	10/20/99	Format upgrade, modify terminology and title per the new EOP/SAGs	RAB	RSG

UNIT 1 (X) UNIT 2 (X)

TASK TITLE:	**PURGE THE TORUS WITH AIR FOR HYDROGEN CONTROL**
JPM NUMBER:	LR-JP-13.58-02
TASK STANDARD:	This task shall be completed when the Torus is being purged with air per 31EO-EOP-104.

TASK NUMBER: 013.058

PLANT HATCH JTA IMPORTANCE RATING:

RO 4.07

SRO 3.83

K/A CATALOG NUMBER: 223001A204

K/A CATALOG JTA IMPORTANCE RATING:

RO 3.70

SRO 3.80

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 1**	**Unit 2**
	31EO-EOP-104-1S Rev 5 31EO-EOP-013-1S Rev 4	31EO-EOP-104-2S Rev 4 31EO-EOP-013-2S Rev 4

REQUIRED MATERIALS:	**Unit 1**	**Unit 2**
	31EO-EOP-104-1S (current revision) Designated jumpers (6) found in EOP jumper book	31EO-EOP-104-2S (current revision) Designated jumpers (6) found in EOP jumper book

APPROXIMATE COMPLETION TIME: 9.0 Minutes

SIMULATOR SETUP: N/A

UNIT 1

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Flowchart 31EO-EOP-013-1S (PC-2) is in progress.
2. Drywell Hydrogen and Oxygen concentrations are 4% and 6%, respectively.
3. Drywell is venting through the Torus and is being purged with air.
4. Offsite radioactivity release rate is less than 0.057 mR/hr and is expected to remain at its present level.
5. Normal AC Power is available.
6. A Group II isolation has occurred on the Primary Containment Isolation System.

INITIATING CUES:

Initiate Torus air purge flow per 31EO-EOP-104-1S.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the materials that are required.	Operator IDENTIFIES the jumpers from the EOP jumper book by the operator's desk.	

PROMPT: **WHEN** the operator addresses the procedure, **REQUIRE** the operator to make a copy of the Control Room procedure.

PROMPT: **IF** the operator addresses Drywell purging, **INFORM** the operator that Drywell purge with air is in progress.

NOTE: The following prompt can be used after the operator indicates where he would obtain the indications.

PROMPT: **WHEN** the operator addresses Torus pressure, **INDICATE** for the operator that Torus pressure is <1.00 psig.

NOTE: The order of installing the jumpers is not critical. Steps 2 and 3 may be performed in any order.

PROMPT: **WHEN** the operator addresses defeating isolation interlocks, as the Shift Supervisor, **INFORM** the operator that isolation interlocks for vent and purge valves must be defeated.

****2.**	Install the following jumper: From UU-44 to UU-53, for valve 1T48-F324.	At panel 1H11-P601D, jumper is INSTALLED at the following: From UU-44 to UU-53, for valve 2T48-F324.	

RESPONSE CUE: N/A

****3.**	Install the following jumper: From AA-66 to AA-74, for valve 1T48-F309.	At panel 1H11-P602A, jumper is INSTALLED at the following: From AA-66 to AA-74, for valve 1T48-F309.	

RESPONSE CUE: N/A

PROMPT: **IF** the operator addresses Drywell purging, **INFORM** the operator that Drywell purge with air is in progress.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

NOTE: The following prompt can be used after the operator indicates where he would obtain the indications.

PROMPT: **WHEN** the operator addresses Torus water level, **INDICATE** for the operator that Torus water level is less than 152 inches.

PROMPT: **IF** the operator connects the jumpers to the incorrect points, when an attempt is made to open the respective Torus Air Purge Valve, **INDICATE** that the valve does not open.

**4.	Open Torus Air Purge Vlv, 1T48-F324.	At panel 1H11-P601, TORUS AIR PURGE VLV, 1T48-F324 is OPEN, red light illuminated.	

RESPONSE CUE: Valve 1T48-F324, green light illuminated.

**5.	Open Torus Air Purge Vlv, 1T48-F309.	At panel 1H11-P602, TORUS AIR PURGE VLV, 1T48-F309 is OPEN, red light illuminated.	

RESPONSE CUE: Valve 1T48-F309, green light illuminated.

PROMPT: **IF** the operator addresses System Restoration, as the Shift Supervisor, **INFORM** the operator that it 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.

(Indicates critical step)**

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Flowchart 31EO-EOP-013-2S (PC-2) is in progress.
2. Drywell Hydrogen and Oxygen concentrations are 4% and 6%, respectively.
3. Drywell is venting through the Torus and is being purged with air.
4. Offsite radioactivity release rate is less than 0.057 mR/hr and is expected to remain at its present level.
5. Normal AC Power is available.
6. A Group II isolation has occurred on the Primary Containment Isolation System.

INITIATING CUES:

Initiate Torus air purge flow per 31EO-EOP-104-2S.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the materials that are required.	Operator IDENTIFIES the jumpers from the EOP jumper book by the operator's desk.	

PROMPT: **WHEN** the operator addresses the procedure, **REQUIRE** the operator to make a copy of the Control Room procedure.

PROMPT: **IF** the operator addresses Drywell purging, **INFORM** the operator that Drywell purge with air is in progress.

NOTE: The following prompt can be used after the operator indicates where he would obtain the indications.

PROMPT: **WHEN** the operator addresses Torus pressure, **INDICATE** for the operator that Torus pressure is <0.35 psig.

NOTE: The order of installing the jumpers is not critical. Steps 2 and 3 may be performed in any order.

PROMPT: **WHEN** the operator addresses defeating isolation interlocks, as the Shift Supervisor, **INFORM** the operator that isolation interlocks for vent and purge valves must be defeated.

**2.	Install the following jumper: From UU-53 to UU-40, for valve 2T48-F324.	At panel 2H11-P601D, jumper is INSTALLED at the following: From UU-53 to UU-40, for valve 2T48-F324.	

RESPONSE CUE: N/A

**3.	Install the following jumper: From AA-66 to AA-22, for valve 2T48-F309.	At panel 2H11-P602A, jumper is INSTALLED at the following: From AA-66 to AA-22, for valve 2T48-F309.	

RESPONSE CUE: N/A

PROMPT: **IF** the operator addresses Drywell purging, **INFORM** the operator that Drywell purge with air is in progress.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

NOTE: The following prompt can be used after the operator indicates where he would obtain the indications.

PROMPT: **WHEN** the operator addresses Torus water level, **INDICATE** for the operator that Torus water level is less than 152 inches.

PROMPT: **IF** the operator connects the jumpers to the incorrect points, when an attempt is made to open the respective Torus Air Purge Valve, **INDICATE** that the valve does not open.

**4.	Open Torus Air Purge Vlv, 2T48-F324.	At panel 2H11-P601, TORUS AIR PURGE VLV, 2T48-F324 is OPEN, red light illuminated.	

RESPONSE CUE: Valve 2T48-F324, green light illuminated.

**5.	Open Torus Air Purge Vlv, 2T48-F309.	At panel 2H11-P602, TORUS AIR PURGE VLV, 2T48-F309 is OPEN, red light illuminated.	

RESPONSE CUE: Valve 2T48-F309, green light illuminated.

PROMPT: **IF** the operator addresses System Restoration, as the Shift Supervisor, **INFORM** the operator that it 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.

(Indicates critical step)**

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Operations Training
JPM

TITLE PERFORM AN MSIV TRIP TEST		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER	LT-JP-14.01-02	10.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**
N/A	R. S. GRANTHAM	10/20/99

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LT-JP-14.01**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	01/06/93	Initial development	RAB	RSG
01	11/04/94	Change initiating cue to a command, modify simulator setup, change valve naming to match the plant	RAB	SMC
02	10/20/99	Format modification, procedure changes	RAB	RSG

FACILITY: **PLANT E. I. HATCH** **UNIT 1 ( )** **UNIT 2 (X)**

TASK TITLE:	**PERFORM AN MSIV TRIP TEST**
JPM NUMBER:	LT-JP-14.01-02
TASK STANDARD:	The task shall be completed when the MSIV Trip Test has been completed on one Inboard and one Outboard MSIV per 34SV-B21-002-2S. NOTE: This JPM is written for the "A" valves. Other MSIVs may be used.

TASK NUMBER: 014.001

PLANT HATCH JTA IMPORTANCE RATING:

RO 3.70

SRO 3.31

K/A CATALOG NUMBER: 2390001A401

K/A CATALOG JTA IMPORTANCE RATING:

RO 4.20

SRO 4.00

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 2**
	Procedure: 34SV-B21-002-2S Rev 4

REQUIRED MATERIALS:	**Unit 2**
	Procedure: 34SV-B21-002-2S (current revision) Stop watch

APPROXIMATE COMPLETION TIME: 10.0 Minutes

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

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #106** and leave in **FREEZE**.

2. Make sure RECORDER POWER is TURNED ON. Roll Chart Recorders and Process Computer Typers forward. Ensure any information printed on the Process Computer Typer from previous ICs is removed.

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

   A. Take the simulator out of FREEZE, place the Mode Switch to SHUTDOWN.
   B. Perform RC-1 and RC-2, RWL to the normal band.
   C. Reset the Scram.
   D. Reset the Rod Drifts and all annunciators and ensure the SDV Drains open.
   E. Allow the simulator to run until the Scram Disch Vol High Level Trip Annunciator clears.

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

5. **ESTIMATED** Simulator **SETUP TIME**: **15 Minutes**

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. The Reactor is SHUTDOWN and progressing towards Cold Shutdown for Refueling.

INITIATING CUES:

Perform the MSIV Trip Test for MSIVs 2B21-F028A and 2B21-F022A, per procedure 34SV-B21-002-2S.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

PROMPT: **IF** addressed by the operator, as the Shift Supervisor **INFORM** the operator that permission to perform the surveillance is granted.

1.	Confirm that NO Group 1 or RPS trips are in.	At panel 2H11-P603, the operator VERIFIES that NO Scram or Group 1 Isolation annunciators are ILLUMINATED.	

RESPONSE CUE: N/A

2.	Record Stopwatch number.	The operator RECORDS the number of stopwatch in the data package.	
3.	Confirm MSIV 2B21-F028A is OPEN and that red OPEN indicating light is ILLUMINATED.	At panel 2H11-P601, the operator VERIFIES that MSIV 2B21-F028A is OPEN and the red OPEN indicating light is ILLUMINATED.	

NOTE: Timing of the MSIV will be from when the switch is positioned, to the red light EXTINGUISHED.

****4.**	Close MSIV 2B21-F028A and record stroke time.	At panel 2H11-P601, the operator CLOSES MSIV 2B21-F028A, and TIMES the closure of the MSIV. Stroke time RECORDED.	

RESPONSE CUE: MSIV 2B21-F028A, red light illuminated.

5.	Confirm the green CLOSE light is illuminated and the red OPEN light is extinguished.	At panel 2H11-P601, the operator VERIFIES that for MSIV 2B21-F028A, the green CLOSE indicating light is ILLUMINATED and the red OPEN indicating light is EXTINGUISHED.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**6.	Confirm MSIV stroke time is within limits.	The operator VERIFIES that MSIV stroke time is greater than or equal to 3 seconds, but less than or equal to 5 seconds.	

RESPONSE CUE: MSIV stroke time <3 seconds or >5 seconds.

PROMPT: **WHEN** addressed by the operator, as the Shift Supervisor **INFORM** the operator that it is desired to OPEN 2B21-F028A.

7.	Open MSIV 2B21-F028A.	At panel 2H11-P601, the operator OPENS MSIV 2B21-F028A, red light illuminated.	

RESPONSE CUE: MSIV 2B21-F028A, green light illuminated.

8.	Confirm MSIV 2B21-F022A is OPEN and that red indicating light is ILLUMINATED.	At panel 2H11-P602, the operator VERIFIES that MSIV 2B21-F022A is OPEN and the red indicating light is ILLUMINATED.	

NOTE: Timing of the MSIV will be from when the switch is positioned, to the red light EXTINGUISHED.

**9.	Close MSIV 2B21-F022A and record stroke time.	At panel 2H11-P602, the operator CLOSES MSIV 2B21-F022A, and TIMES the closure of the MSIV. Stroke time is RECORDED.	

RESPONSE CUE: MSIV 2B21-F022A, red light illuminated.

10.	Confirm the green CLOSE light is illuminated and the red OPEN light is extinguished.	At panel 2H11-P601, the operator VERIFIES that for MSIV 2B21-F022A, the green CLOSE indicating light is ILLUMINATED and the red OPEN indicating light is EXTINGUISHED.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**11.	Confirm MSIV stroke time is within limits.	The operator VERIFIES that MSIV stroke time is greater than or equal to 3 seconds, but less than or equal to 5 seconds.	

RESPONSE CUE: MSIV stroke time <3 seconds or >5 seconds.

PROMPT: **WHEN** addressed by the operator, as the Shift Supervisor, **INFORM** the operator that it is desired to OPEN 2B21-F022A.

12.	Open MSIV 2B21-F022A.	At panel 2H11-P602, the operator OPENS MSIV 2B21-F022A, red light illuminated.	

RESPONSE CUE: MSIV 2B21-F022A, green light illuminated.

PROMPT: **WHEN** addressed by the operator, as the Shift Supervisor, **INFORM** the operator that another operator will complete the rest of the surveillance.

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)**

Southern Nuclear
E. I. Hatch Nuclear Plant

Operations Training
JPM

TITLE PERFORM A DIESEL GENERATOR MANUAL START SURVEILLANCE		
AUTHOR R. A. BELCHER	**MEDIA NUMBER** LT-JP-28.16-02	**TIME** 30.0 Minutes
RECOMMENDED BY N/A	**APPROVED BY** R. S. GRANTHAM	**DATE** 10/20/99

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LT-JP-28.16**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	03/10/95	Initial development	RAB	SMC
01	08/01/96	Format change, added procedure change steps	RAB	SMC
02	10/20/99	Format upgrade, added procedure change steps, added malfunction and actions to shutdown the diesel and changed the time allowance accordingly	RAB	RSG

UNIT 1 ( ) UNIT 2 (X)

TASK TITLE:	**PERFORM A DIESEL GENERATOR MANUAL START SURVEILLANCE**
JPM NUMBER:	LT-JP-28.16-02
TASK STANDARD:	The task shall be completed when the operator has tied the "2A" Diesel Generator to the "2E" 4160 VAC Bus per 34SV-R43-004-2S. Then following a failure to auto trip, shutdown the Diesel Generator.

TASK NUMBER: 028.016

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: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 2**
	34SV-R43-004-2S Rev 15 34AR-652-111-2S Rev 4 34AR-652-129-2S Rev 2

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

APPROXIMATE COMPLETION TIME: 30.0 Minutes

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

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #121** and leave in **FREEZE**.

2. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mf65211665	Spur Ann – LUBE OIL PRESS LOW			999
mf65211683	Spur Ann – EMERGENCY ENGINE SHUTDOWN			999

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

REM #	DESCRIPTION	STATUS
rfR43294	DG 2A Engine Remote Speed Droop (0 – 100)	0

4. **ESTIMATED** Simulator **SETUP TIME:** **10 Minutes**

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Diesel Generator "2A" and its associated equipment are in Standby. The Diesel is at ambient conditions.
2. No other testing or maintenance is in progress.
3. A PEO is standing by at the Diesel Generator.

INITIATING CUES:

Perform the Diesel Generator 2A Semi-Annual Test per 34SV-R43-004-2S. IST is not being performed.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the procedure needed to perform the task.	Operator has obtained procedure 34SV-R43-004-2S.	
2.	Operator identifies the materials that are required.	Operator obtains a stopwatch.	
3.	Operator reviews the procedure's precautions and limitations.	Operator has reviewed the precautions and limitations.	

PROMPT: **WHEN** the operator addresses obtaining permission from the Shift Supervisor, **INFORM** the operator that permission has been granted.

PROMPT: **WHEN** the operator addresses Subsection 7.6, Pre-Test Subsection, as a PEO, **INFORM** the operator at the Diesel Building, that this subsection is complete and satisfactory.

NOTE: The operator should establish communications with the Diesel Generator "2A" Room. The simulator operator will perform this function.

PROMPT: **WHEN** the operator addresses the Eng Lube Oil Inlet Temp from 2R43-R012A, the PEO at the Diesel (simulator operator) should **REPORT** a temperature of 110°F.

4.	Confirm that the Diesel Gen 2A Mode Select Switch is in NORM.	At panel 2H11-P652, the operator CONFIRMS that Diesel Gen 2A MODE SELECT switch is in NORM.	
5.	Confirm that the Diesel Gen 2A Shutdown System Operative red light is EXTINGUISHED.	At panel 2H11-P652, the operator CONFIRMS that the Diesel Gen 2A SHUTDOWN SYSTEM OPERATIVE red light is EXTINGUISHED.	
6.	Confirm that the Diesel Gen 2A Start red light is EXTINGUISHED.	At panel 2H11-P652, the operator CONFIRMS that the Diesel Gen 2A START red light is EXTINGUISHED.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
7.	At the Diesel Gen 2A Voltage Reg Transfer Switch, confirm the following: Voltage Reg Transfer switch is in AUTO. AUTO red light is ILLUMINATED. MANUAL green light is EXTINGUISHED.	At panel 2H11-P652, at the Diesel Gen 2A VOLTAGE REG TRANSFER switch, the operator CONFIRMS: VOLTAGE REG TRANSFER switch is in AUTO. AUTO red light is ILLUMINATED. MANUAL green light is EXTINGUISHED.	
8.	At the Diesel Gen 2A Voltage Adjust Switch, confirm the following: RAISE red light is EXTINGUISHED. LOWER green light is EXTINGUISHED.	At panel 2H11-P652, at the Diesel Gen 2A VOLTAGE ADJUST switch, the operator CONFIRMS: RAISE red light is EXTINGUISHED. LOWER green light is EXTINGUISHED.	
9.	Confirm that the Diesel Gen 2A Auto Start Sys Operative clear light is ILLUMINATED.	At panel 2H11-P652, the operator CONFIRMS that the Diesel Gen 2A AUTO START SYS OPERATIVE clear light is ILLUMINATED.	

NOTE: Since the Auto Start Sys Operative clear light is illuminated, it is not necessary to depress the Shutdown Relay pushbutton.

10.	Confirm that the annunciator, GOVERNOR NOT AT SYNCHRONOUS SPEED SETTING (652-108) is **NOT** in the ALARMED condition.	At panel 2H11-P652, the operator CONFIRMS that the annunciator, GOVERNOR NOT AT SYNCHRONOUS SPEED SETTING (652-108) is **NOT** in the ALARMED condition.	
11.	Confirm that Diesel Gen 2A Emergency Supply ACB 135530 indicates OPEN.	At panel 2H11-P652, the operator CONFIRMS that Diesel Gen 2A EMERGENCY SUPPLY ACB 135530 indicates OPEN, green light ILLUMINATED.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**12.	Place the Diesel Gen 2A Mode Select switch in the TEST position.	At panel 2H11-P652, the operator PLACES the Diesel Gen 2A MODE SELECT switch in the TEST position.	

RESPONSE CUE: Mode Select Switch, in the NORM position, or Annunciator, DIESEL 2A IN TEST MODE, is not in the alarm condition.

NOTE: The operator should recognize that SAT 2C is energized, by observing the Pot lights or checking the SAT 2C breaker condition. Therefore, the step using the SAT 2C Out Of Svc Interlock Switch is not required.

13.	Confirm that annunciator DIESEL 2A IN TEST MODE (652-105) is in the ALARM condition.	At panel 2H11-P652, the operator CONFIRMS that annunciator DIESEL 2A IN TEST MODE (652-105) is in the ALARM condition.	

NOTE: For steps 14 through 21, the simulator operator will confirm the actions and indications for the operator.

14.	Confirm that the AT ENGINE - REMOTE control switch is in the REMOTE position.	Contacting the PEO at the Diesel Generator 2A Room, the operator CONFIRMS that the AT ENGINE - REMOTE control switch is in the REMOTE position.	
15.	Confirm that the Diesel Generator 2A Woodward Governor Control, the Speed Droop control knob is at "0".	Contacting the PEO at the Diesel Generator 2A Room, at the Diesel Generator 2A Woodward Governor Control, the operator CONFIRMS that the SPEED DROOP control knob is at "0".	
16.	Confirm that the Diesel Generator 2A Woodward Governor Control, the Load Limit control knob is set at "10".	Contacting the PEO at the Diesel Generator 2A Room, at the Diesel Generator 2A Woodward Governor Control, the operator CONFIRMS that the LOAD LIMIT control knob is set at "10".	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
17.	Confirm that the Diesel Generator 2A Cooling Water Outlet AOV, 2P41-F339A, is CLOSED.	Contacting the PEO at the Diesel Generator 2A Room, the operator CONFIRMS that Diesel Generator 2A COOLING WATER OUTLET AOV, 2P41-F339A, is CLOSED.	
18.	Confirm that the governor oil level is between the two (2) FULL marks.	Contacting the PEO at the Diesel Generator 2A Room, the operator CONFIRMS that the governor oil level is between the two (2) FULL marks.	
19.	Confirm that the front and rear generator bearing oil levels are between the two (2) FULL marks.	Contacting the PEO at the Diesel Generator 2A Room, the operator CONFIRMS that the front and rear generator bearing oil levels are between the two (2) FULL marks.	
20.	Confirm that the diesel lube oil level indicates between the two (2) FULL marks on the dipstick.	Contacting the PEO at the Diesel Generator 2A Room, the operator CONFIRMS that the diesel lube oil level indicates between the two (2) FULL marks on the dipstick.	

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

****21.**	Take the Diesel 2A Prelube Pump to ON.	Contacting the PEO at the Diesel Generator 2A Room, the operator CONFIRMS that the Diesel 2A PRELUBE PUMP to ON, red light illuminated.	

RESPONSE CUE: N/A

22.	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.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

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

**23.	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.	

RESPONSE CUE: N/A

24.	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.	
25.	Confirm that the average diesel generator output voltage is between 3740 V and 4240 V AND that diesel generator frequency is between 59 and 60 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 60 Hz.	
26.	Confirm that the Diesel Generator 2A Cooling Water Outlet AOV, 2P41-F339A is OPEN.	Contacting the PEO at the Diesel Generator 2A Room, the operator CONFIRMS that the Diesel Generator 2A COOLING WATER OUTLET AOV, 2P41-F339A, is OPEN.	

NOTE: The simulator operator, when contacted by the operator, will **TOGGLE REMOTE FUNCTION rfR43294**, "DG 2A Engine Remote Speed Droop (0 to 100), to change the speed droop for the following step.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**27.	Place the Speed Droop Control Knob to "50".	Contacting the PEO 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".	

RESPONSE CUE: N/A

28.	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.	
29.	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.	
**30.	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.	

RESPONSE CUE: Diesel Gen 2A Voltage Reg Transfer switch, red light illuminated.

31.	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.	
32.	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.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

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

**33.	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.	

RESPONSE CUE: N/A

**34.	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.	

RESPONSE CUE: Synchroscope, not rotating and/or Synchroscope lights, not illuminated.

35.	Using Diesel Gen 2A Speed Adjust, adjust synchroscope rotation to approximately 3 to 5 revolutions per minutes in the clockwise (fast) direction.	At panel 2H11-P652, the operator uses the Diesel Gen 2A SPEED ADJUST, to ADJUST synchroscope rotation to approximately 3 to 5 revolutions per minutes in the clockwise (fast) direction.	
36.	Observe the voltage on each phase of 4160V Bus 2E and records 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.	
37.	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.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**38.	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.	

RESPONSE CUE: ACB 135530, green light illuminated.

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

39.	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.	
40.	Using the Diesel Gen 2A Voltage Adjust switch, adjust the reactive load to 500 to 1000 kVar.	At panel 2H11-P652, the operator uses the Diesel Gen 2A VOLTAGE ADJUST switch, ADJUSTS the reactive load to 500 to 1000 kVar, as indicated on KILOVAR, 2R43-R616A.	
41.	Gradually increase load to between 2764 and 2825 kW.	At panel 2H11-P652, the operator uses the Diesel Gen 2A SPEED ADJUST switch, ADJUSTS the load on the diesel to 2764 and 2825 kW, as indicated on KILOWATT, 2R43-R615A.	

NOTE: **AS** the operator is increasing the diesel loading to 2764 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 PEO 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.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
42.	Opens the Emergency Supply ACB.	At panel 2H11-P652, the operator, OPENS EMERGENCY SUPPLY ACB 135530, green light illuminated.	

RESPONSE CUE: EMERGENCY SUPPLY ACB 135530, red light illuminated.

**43.	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.	

RESPONSE CUE: Diesel Generator 2A is at 60 Hz.

PROMPT: **ONCE** the operator has stopped the diesel, **INFORM** the operator that another operator will complete the shutdown, contact maintenance, and place the diesel into Standby configuration.

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)**

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Operations Training
JPM

TITLE		
FROM OUTSIDE THE CONTROL ROOM, DURING A CONTROL ROOM EVACUATION, LOCALLY START THE SBGT SYSTEM		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER	LR-JP-30.07-10	25.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**
N/A	R. S. GRANTHAM	10/20/99

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FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-30.07**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
01	06/13/89	General revision and format change	JEM	SMC
02	08/07/89	Add LR lesson plan references	JEM	DHG
03	07/11/90	Procedure, format, and question revision	JEM	DHG
04	05/10/91	General, procedure, and format change	CME	DHG
05	09/04/92	General revision and format change	WMM	SMC
06	02/03/95	General revision, incorporate instructor and NRC comments, word processor change, incorporate DCR and procedure revision, change initiating cue to a direct command and include phonetics, change time allowance	RAB	DHG
07	07/23/96	Format change	RAB	DHG
08	04/10/97	Revised due to procedure change.	SCB	RSG
09	02/13/98	Added note to allow opening RFF damper.	SCB	DHG
10	10/20/99	Format upgrade	RAB	RSG

UNIT 1 (X) UNIT 2 (X)

TASK TITLE:	**FROM OUTSIDE THE CONTROL ROOM, DURING A CONTROL ROOM EVACUATION, LOCALLY START THE SBGT SYSTEM**
JPM NUMBER:	LR-JP-30.07-10
TASK STANDARD:	The task shall be completed when the operator has locally started one of the SBGT System filter trains per 31RS-T46-001, Section 4.1.2.

TASK NUMBER: 030.007

PLANT HATCH JTA IMPORTANCE RATING:

RO 3.79

SRO Not Available

K/A CATALOG NUMBER: 261000G009

K/A CATALOG JTA IMPORTANCE RATING:

RO 3.70

SRO 3.50

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	Unit 1	Unit 2
	31RS-OPS-001-1S Rev 5 Ed 1 31RS-T46-001-1S Rev 4 Ed 2	31RS-OPS-001-2S Rev 6 31RS-T46-001-2S Rev 1 Ed 2

REQUIRED MATERIALS:	Unit 1	Unit 2
	31RS-T46-001-1S (current revision) Jumpers for SBGT from EOP cabinet on 130 ft elevation Screwdriver or Nutdriver Ladder	31RS-T46-001-2S (current revision) Jumpers for SBGT from EOP cabinet on 130 ft elevation Screwdriver or Nutdriver Ladder

APPROXIMATE COMPLETION TIME: 25.0 Minutes

SIMULATOR SETUP: N/A

UNIT 1

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. The plant has experienced an event that required the Control Room to be evacuated. At the same time Unit 1 SBGT received a valid start signal, caused by Unit 1 low RWL.
2. The "A" SBGT System fan has been placed under clearance for maintenance and the "B" SBGT System fan has failed to Auto Start.
3. Normal AC Power and Instrument Air are available.
4. Procedure 31RS-OPS-001-1S is in progress.
5. SPDS is NOT available.

INITIATING CUES:

Start the Bravo SBGT System with a suction on the Reactor Building, per 31RS-T46-001-1S.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
			START TIME:_____
1.	Operator identifies the materials that are required.	Operator identifies the jumpers for SBGT from EOP cabinet on 130 ft elevation, Screwdriver or Nutdriver, and Ladder.	
**2.	Open damper 1T41-F032B by opening link TB-1 (wire SV1) in the damper junction box.	At location 164RBR05 (10 feet off the floor north of the Reactor Building Exhaust Filter Train 1T41-D005): Link TB-1 (wire SV1) is OPEN in the junction box for damper 1T41-F032B. 1T41-F032B REACTOR BUILDING INBOARD ISOLATION TO SBGT damper is OPEN.	

RESPONSE CUE: N/A

PROMPT: **WHEN** the operator identifies the junction box, **INFORM** the operator that link TB-1 (wire SV1) is open and **INDICATE** that the damper is open.

NOTE: **The operator may also open 1T41-F040B. This is allowed per procedure.**

**3.	Open damper 1T46-F005 by opening link TB-1 (wire SV1) in the damper junction box.	At location 164RBR02 (on east wall near the ceiling): Link TB-1 (wire SV1) is OPEN in the junction box for damper 1T46-F005. 1T46-F005 STANDBY GAS TRT SYS DISCHARGE TO STACK damper is OPEN.	

RESPONSE CUE: N/A

PROMPT: **WHEN** the operator identifies the junction box, **INFORM** the operator that link TB-1 (wire SV1) is open and **INDICATE** that the damper is open.

NOTE: The operator should not address disconnecting the air supply lines since dampers 1T41-F032B and 1T46-F005 are open.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
4.	Confirm the following dampers are open: 1T46-F003B 1T46-F004B	At location 164RAR02 (west end of the B Filter Train), the operator VERIFIES the following dampers are OPEN: 1T46-F003B STANDBY GAS TRT SYS FAN C001B INLET AOV 1T46-F004B STANDBY GAS TRT SYS FILTER TRAIN "B" OUTLET AOV.	

PROMPT: **WHEN** the operator addresses 1T46-F003B and 1T46-F004B, **INDICATE** for the operator that the dampers are open.

NOTE: The operator should not address closing 1T46-F015B since dampers 1T46-F003B and 1T46-F004B are open.

5.	Open the breaker for SBGT Train 1B.	At location 130RER03, on MCC 1R24-S012 (Frame 3C), the breaker for STANDBY GAS TREATMENT FAN 1T46-C001B is OPEN.	
**6.	Install jumper wire from point 3C1 to 3C2 at panel 1R24-S012.	At panel 1R24-S012, jumper wire is INSTALLED from point 3C1 to 3C2 in the top compartment of Frame 3.	

RESPONSE CUE: N/A

**7.	Close the breaker for SBGT Train 1B.	At location 130RER02, on MCC 1R24-S012 (Frame 3C), the breaker for STANDBY GAS TREATMENT FAN 1T46-C001B is CLOSED.	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
8.	Depress the Reset push-buttons for SBGT Train 1B panels.	At location 164RAR03 (on side of SBGT Train 1B), the RESET push-buttons have been DEPRESSED on the following panels: OVERHEAT CNTRL PNL FOR 1T46-D001B TRIP UNIT #1 OVERHEAT CNTRL PNL FOR 1T46-D001B TRIP UNIT #2	
9.	Confirm the following dampers open after SBGT Fan 1B starts: 1T46-F001B 1T46-F002B	At location 164RAR03, the operator VERIFIES the following dampers are OPEN after SBGT Fan 1B starts: 1T46-F0)1B STANDBY GAS TRT SYS FILTER TRAIN "B" INLET AOV 1T46-F002B STANDBY GAS TRT SYS FAN C001B OUTLET AOV	

PROMPT: **WHEN** the operator addresses 1T46-F001B and 1T46-F002B, **INDICATE** for the operator that the dampers are open.

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)**

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. The plant has experienced an event that required the Control Room to be evacuated. At the same time Unit 2 SBGT received a valid start signal, caused by Unit 2 low RWL.
2. The "B" SBGT System fan has been placed under clearance for maintenance and the "A" SBGT System fan has failed to Auto Start.
3. Normal AC Power and Instrument Air are available.
4. Procedure 31RS-OPS-001-2S is in progress.
5. SPDS is NOT available.

INITIATING CUES:

Start the Alpha SBGT System with suction from the Reactor Building and Refuel Floor, per 31RS-T46-001-2S.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

NOTE: Step 4.1.1 is NOT APPLICABLE due to SBGT "2A' not running. The should go to Step 4.1.2 to startup SBGT "2A."

1.	Operator identifies the materials that are required.	Operator identifies the jumpers for SBGT from EOP cabinet on 130 ft elevation, Screwdriver or Nutdriver, and Ladder.	

NOTE: Steps 2, 3, & 4 may be performed in any order.

****2.**	Open damper 2T46-F001A, by opening link SV-1 in the damper junction box.	At location 185RBR19 (outside the door to "B" SBGT): Link SV-1 is OPEN in the junction box for damper 2T46-F001A. SBGT A FLTR INLET FROM RX BLDG 2T46-F001A damper is OPEN.	

RESPONSE CUE: N/A

PROMPT: **WHEN** the operator identifies the junction box, **INFORM** the operator that link SV-1 is open and indicate that the damper is open.

****3.**	Open damper 2T46-F003A, by opening link SV-1 in the damper junction box.	At location 203RBR21 (above Refuel Floor exhaust fan 2T41-C005A): Link SV-1 is OPEN in the junction box for damper 2T46-F003A. SBGT A FLTR INLET FROM REFUEL FLOOR 2T46-F003A damper is OPEN.	

RESPONSE CUE: N/A

PROMPT: **WHEN** the operator identifies the junction box, **INFORM** the operator that link SV-1 is open and indicate that the damper is open.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**4.	Open damper 2T46-F002A, by opening link SV-1 in the damper junction box.	At location 164RAR24 (behind the Drywell Chiller): Link SV-1 is OPEN in the junction box for damper 2T46-F002A. SBGT A FLTR DISCH 2T46-F002A damper is OPEN.	

RESPONSE CUE: N/A

PROMPT: **WHEN** the operator identifies the junction box, **INFORM** the operator that link SV-1 is open and **INDICATE** that the damper is open.

5.	Open the breaker for SBGT Train 2A.	At location 130RFR14, on MCC 2R24-S011 (Frame 4DR), the breaker for STBY GAS FILTER TRAIN 2T46-D001A, is OPEN.	
**6.	Install jumper wire from point TB3-15 to TB3-16 at cabinet 2T46-D001A.	At location 185RAR23, inside control cabinet 2T46-D001A STANDBY GAS FILTER TRAIN, jumper wire is INSTALLED from point TB3-15 to TB3-16.	

RESPONSE CUE: N/A

**7.	Close the breaker for SBGT Train 2A.	At location 130RFR14, on MCC 2R24-S011 (Frame 4DR), the breaker for SBGT 2A is CLOSED.	

RESPONSE CUE: N/A

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)**

Southern Nuclear
E. I. Hatch Nuclear Plant

Operations Training
JPM

TITLE RESTORE AND MAINTAIN RWL WITHIN A SPECIFIED RANGE USING RHRSW		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER	LR-JP-34.12-05	15.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**
N/A	R. S.GRANTHAM	10/20/99

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-34.12**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
01	05/14/91	General/procedure revision	JLA	DHG
02	08/25/92	General revision and format change	WMM	SCB
03	08/01/96	General revision, format change, correct simulator setup, word processor change, change initiating cue to a direct command including phonetics	RAB	DHG
04	01/18/99	Revised malfunction numbers for the new simulator computer.	SCB	DHG
05	10/20/99	Upgrade format	RAB	RSG

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

TASK TITLE:	**RESTORE AND MAINTAIN RWL WITHIN A SPECIFIED RANGE USING RHRSW**
JPM NUMBER:	LR-JP-34.12-05
TASK STANDARD:	The task shall be completed when the operator has successfully started one loop of RHRSW with at least one RHRSW pump injecting into the Reactor per 31EO-EOP-110.

TASK NUMBER: 034.012

PLANT HATCH JTA IMPORTANCE RATING:

RO 3.86

SRO Not Available

K/A CATALOG NUMBER: 295031EA108

K/A CATALOG JTA IMPORTANCE RATING:

RO 3.80

SRO 3.90

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	Unit 1	Unit 2
	31EO-EOP-110-1S Rev 2 31EO-EOP-015-1S Rev 4	31EO-EOP-110-2S Rev 2 Ed 1 31EO-EOP-015-2S Rev 6

REQUIRED MATERIALS:	Unit 1	Unit 2
	31EO-EOP-110-1S (current revision) Key for RHRSW Manual Override	31EO-EOP-110-2S (current revision) Key for RHRSW Manual Override

APPROXIMATE COMPLETION TIME: 15.0 Minutes

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

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #121** and leave in **FREEZE**.

2. Make sure RECORDER POWER is TURNED ON. Roll Chart Recorders and Process Computer Typers forward. Ensure any information printed on the Process Computer Typer from previous ICs is removed.

3. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfB21_48A	Steam Line A Break (After Restrictor) (Var)	100	1000	000
mfG31_242	RWCU Non-Isol Leak (0-10000 gpm)	7	1000	000
mfE41_107	HPCI Failure to Start (F001 Stuck)			000
mfE51_110	RCIC Turbine Trip			000
mfS11_227B	SUT 2D Failure			000
mfE11_115A	RHR Pump A Trip			000
mfE11_115B	RHR Pump B Trip			000
mfE11_115C	RHR Pump C Trip			000
mfE11_115D	RHR Pump D Trip			000
mfE21_102A	Core Spray Pump A Trip			000
mfE21_102B	Core Spray Pump B Trip			000
mfC11_30A	Control Rod Drive Pump A Trip			000
mfC11_30B	Control Rod Drive Pump B Trip			000

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

REM #	DESCRIPTION	STATUS
rfE11167	2E11-F017A&B Override 5 Min Timer	ORIDE
rfP64195	Drywell Chillers B006A&B Lockout Reset	RESET

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

   A. Take the simulator out of FREEZE and allow simulator to run until RWL is at the Top of Active Fuel.
   B. Restart the Drywell Chillers and Coolers.
   C. Reopen the 316s.

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

7. **ESTIMATED** Simulator **SETUP TIME**: **20 Minutes**

UNIT 1

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 1 has had a LOCA.
2. RWL is below the Top of Active Fuel and decreasing.
3. HPCI and RCIC have isolated on low steam supply pressure.
4. SUT "1D" is de-energized.
5. RHR pumps "2A," "2B," "2C," & "2D" have tripped.
6. Core Spray pumps "1A" and "1B" have tripped.
7. The EOP jumpers to override the 5 minute timer have been installed for 1E11-F017A & B.

INITIATING CUES:

Inject the Alpha (Bravo) loop of RHRSW to the Reactor using 31EO-EOP-110-1S.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
			START TIME:_____
1.	Operator identifies the materials that are required.	Operator identifies and obtained Key for RHRSW Manual Override.	
2.	Confirm that RHR loop A(B) is not operating in the LPCI mode.	At panel 1H11-P601, the operator has VERIFIED that RHR loop A(B) is not operating in the LPCI mode.	
3.	Confirm or stop RHR Pumps 1E11-C002A and C (B and D).	At panel 1H11-P601, RHR PUMPS, 1E11-C002A and C (B and D) are STOPPED, green lights illuminated.	

NOTE: In the following step, only the valves with the ** are critical.

**4.	Confirm or close the following valves: 1E11-F010 **1E11-F003A(B) **1E11-F048A(B) 1E11-F016A(B) 1E11-F028A(B) 1E11-F017A(B) 1E11-F068A(B)	At panel 2H11-P601, the following valves are CLOSED, green light illuminated: RHR CROSSTIE VLV, 1E11-F010 **HX OUTLET VLV, 1E11-F003A(B) **HX BYPASS VLV, 1E11-F048A(B) CNMT SPRAY OUTBD VLV, 1E11-F016A(B) TORUS SPRAY OR TEST VLV, 1E11-F028A(B) RHR OUTBD INJ VLV, 1E11-F017A(B) HX DISCH VLV, 1E11-F068A(B)	

RESPONSE CUE: Valve(s), red light illuminated.

PROMPT: 1E11-F010 is normally de-energized in the closed position. If the operator indicates that this is the condition of the valve, that portion of Step 4 is acceptable. **IF** the operator requests the PEO to verify the valve position, as PEO, **INFORM** the operator that valve 1E11-F010 has been verified closed locally.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**5.	Open the following valves: 1E11-F015A(B) 1E11-F073A(B) 1E11-F075A(B)	At panel 1H11-P601, the following valves are OPEN, red light illuminated: RHR INBD INJ VLV, 1E11-F015A(B) RHRSW CROSSTIE VLV, 1E11-F073A(B) RHRSW VLV, 1E11-F075A(B)	

RESPONSE CUE: Valve(s), green light illuminated.

6.	Prelube RHRSW Pumps 1E11-C001A and C (B and D).	At panel 1H11-P650, the PSW PRELUBE SOLENOID VLVS push-button has been DEPRESSED.	
**7.	Place RHR Service Water Pump Control switch in MANUAL OVERRD position.	At panel 1H11-P601, the Division I (II) SERVICE WATER PUMP CONTROL switch 1E11-S19A(B) is in MANUAL OVERRD.	

RESPONSE CUE: On panel 1H11-P601, RHR CNMT SPRAY OR SERV WTR PMP SEL IN OVERRIDE is extinguished.

**8.	Start RHRSW Pumps 1E11-C001A and C (B and D).	At panel 1H11-P601, SERVICE WATER PUMPs, 1E11-C001A and C (B and D) are RUNNING, red light illuminated.	

RESPONSE CUE: RHRSW Pumps 1E11-C001A and C (B and D), green light illuminated.

9.	Open Service Water Crosstie Valves 1E11-F119A and B, if required.	The operator has IDENTIFIED that SERV WTR CROSSTIE VLV 1E11-F119A(B) does not need to be opened.	

NOTE: RHRSW System has no inoperable components and is capable of injecting to the vessel without the crosstie valve being opened. Only the A(B) loop of RHRSW is needed.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**10.	Throttle RHR Outbd Injection Valve, 1E11-F017A(B), to control RWL	At panel 1H11-P601, RHR OUTBD INJ VLV, 1E11-F017A(B) is THROTTLED OPEN, flow increasing on RHR FLOW, 1E11-R603A(B).	

RESPONSE CUE: Valve 1E11-F017A(B), green light illuminated, flow indicates 0 gpm on 1E11-R603A(B).

PROMPT: **IF** the operator addresses RWL band, as the Shift Supervisor, **INFORM** the operator that another operator has been directed to control flow/RWL.

PROMPT: **IF** the operator addresses system restoration, as the Shift Supervisor, **INFORM** the operator that it 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.

(Indicates critical step)**

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 2 has had a LOCA.
2. RWL is below the Top of Active Fuel and decreasing.
3. HPCI and RCIC have isolated on low steam supply pressure.
4. SUT "2D" is de-energized.
5. RHR pumps "2A," "2B," "2C," & "2D" have tripped.
6. Core Spray pumps "2A" and "2B" have tripped.
7. The EOP jumpers to override the 5 minute timer have been installed for 2E11-F017A & B.

INITIATING CUES:

Inject the Alpha (Bravo) loop of RHRSW to the Reactor using 31EO-EOP-110-2S.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
			START TIME:_____
1.	Operator identifies the materials that are required.	Operator identifies the required materials and where to obtain them.	
2.	Confirm that RHR Loop A(B) is not operating in the LPCI mode.	At panel 2H11-P601, the operator has VERIFIED that RHR Loop A(B) is not operating in the LPCI mode.	
3.	Confirm or stop RHR Pumps 2E11-C002A and C (B and D).	At panel 2H11-P601, RHR PUMPs 2E11-C002A and C (B and D) are STOPPED, green lights illuminated.	

NOTE: In the following step, only the valves with the ** are critical.

**4.	Confirm or close the following valves: 2E11-F010 **2E11-F003A(B) **2E11-F048A(B) 2E11-F016A(B) 2E11-F028A(B) 2E11-F017A(B) 2E11-F068A(B)	At panel 2H11-P601, the following valves are CLOSED, green light illuminated: RHR CROSSTIE VLV, 2E11-F010 **HX OUTLET VLV, 2E11-F003A(B) **HX BYPASS VLV, 2E11-F048A(B) CNMT SPRAY OUTBD VLV, 2E11-F016A(B) TORUS SPRAY OR TEST VLV, 2E11-F028A(B) RHR OUTBD INJ VLV, 2E11-F017A(B) HX DISCH VLV, 2E11-F068A(B)	

RESPONSE CUE: Valve(s), red light illuminated.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

PROMPT: 2E11-F010 is normally de-energized in the closed position. If the operator indicates that this is the condition of the valve, that portion of Step 4 is acceptable.

IF the operator requests the PEO to verify the valve position, as PEO, **INFORM** the operator that valve 2E11-F010 has been verified closed locally.

IF the operator wants the valve energized, the simulator operator should **TOGGLE REMOTE FUNCTION rfE11135**, "E11-F010 Breaker Rackout," to **ON.**

****5.**	Open the following valves: 2E11-F015A(B) 2E11-F073A(B) 2E11-F075A(B)	At panel 2H11-P601, the following valves are OPEN, red light illuminated: RHR INBD INJ VLV, 2E11-F015A(B) RHRSW CROSSTIE VLV, 2E11-F073A(B) RHRSW VLV, 2E11-F075A(B)	

RESPONSE CUE: Valve(s) green light illuminated.

6.	Prelube RHRSW Pumps 2E11-C001A and C (B and D).	At panel 2H11-P601, the RHR SERVICE WATER LUBE VALVES push-button has been DEPRESSED for RHRSW Loop A(B) pumps.	
****7.**	Place RHR Service Water Pump Control switch in MANUAL OVERRD position.	At panel 2H11-P601, the Division I (II) SERVICE WATER PUMP CONTROL switch 2E11-S19A(B) is in MANUAL OVERRD.	

RESPONSE CUE: On panel 2H11-P601, RHR CNMT SPRAY OR SERV WTR PMP SEL IN OVERRIDE is extinguished.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**8.	Start RHRSW Pumps 2E11-C001A and C (B and D).	At panel 2H11-P601, SERVICE WATER PUMP 2E11-C001A and C (B and D) are RUNNING, red light illuminated.	

RESPONSE CUE: RHRSW Pumps 2E11-C001A and C (B and D), green light illuminated.

9.	Open Service Water Crosstie Valves 2E11-F119A and B, if required.	The operator has identified that SERV WTR CROSSTIE VLV 2E11-F119A(B) does not need to be opened.	

NOTE: RHRSW System has no inoperable components and is capable of injecting to the vessel without the crosstie valve being opened. Only the A(B) loop of RHRSW is needed.

**10.	Throttle RHR Outbd Injection Valve, 2E11-F017A(B), to control RWL	At panel 2H11-P601, RHR OUTBD INJ VLV, 2E11-F017A(B) is THROTTLED OPEN, flow increasing on RHR FLOW, 2E11-R603A(B).	

RESPONSE CUE: Valve 2E11-F017A(B), green light illuminated, flow indicates 0 gpm on 2E11-R603A(B).

PROMPT: **IF** the operator addresses RWL band, as the Shift Supervisor, **INFORM** the operator that another operator has been directed to control flow/RWL.

PROMPT: **IF** the operator addresses system restoration, as the Shift Supervisor, **INFORM** the operator that it 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.

(Indicates critical step)**

Southern Nuclear
E. I. Hatch Nuclear Plant

Operations Training
JPM

TITLE START AN IDLE STATION SERVICE AIR COMPRESSOR		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER/R. L. SMITH	LR-JP-35.02-00	15.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**
N/A	R. S. GRANTHAM	10/20/99

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-35.02**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	10/20/99	Initial development	RAB/RLS	RSG

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

TASK TITLE:	**START AN IDLE STATION SERVICE AIR COMPRESSOR**
JPM NUMBER:	LR-JP-35.02-00
TASK STANDARD:	The task shall be complete when the operator has started the idle station service air compressor per 34SO-P51-002.

TASK NUMBER: 035.002

PLANT HATCH JTA IMPORTANCE RATING:

RO 2.5

SRO 2.5

K/A CATALOG NUMBER: 300000K501

K/A CATALOG JTA IMPORTANCE RATING:

RO 2.5

SRO 2.5

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 1**	**Unit 2**
	34SO-P51-002-1S Rev 9 Ed 4	34SO-P51-002-2S Rev 15 Ed 6

REQUIRED MATERIALS:	**Unit 1**	**Unit 2**
	34SO-P51-002-1S (current revision)	34SO-P51-002-2S (current revision)

APPROXIMATE COMPLETION TIME: 15.0 Minutes

SIMULATOR SETUP: N/A

UNIT 1

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 1 is at MOP.
2. The "1B" SSAC is scheduled for PM.
3. The Unit 1 Closed Cooling Water System is in service.
4. Another operator has begun the start process and is currently at Step 7.1.11 of 34SO-P51-002-1S.

INITIATING CUES:

Start the idle, Alpha Station Service Air Compressor per 34SO-P51-002-1S, Step 7.2.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the procedure needed to perform the task.	Operator has obtained 34SO-P51-002-1S.	
2.	Operator reviews the procedure's precautions and limitations.	Operator has reviewed the precautions and limitations.	

PROMPT: **WHEN** the operator addresses the position of the remote hand switch for the "1B" SSAC, **INFORM** the operator that the hand switch is in the STOP PULL TO LOCK position.

3.	Confirm, for the "1A" SSAC, that the Programmed Stop LED is illuminated.	At the "1A" SSAC, 1P51-C001A, the operator CONFIRMS that the Programmed Stop LED is ILLUMINATED.	

PROMPT: **WHEN** the operator addresses Step 7.1.1, as the Support Shift Supervisor, **INFORM** the operator that another operator has successfully completed the steps through 7.1.10. The next step to be addressed is 7.1.11.

NOTE: Only the aftercooler and intercooler manual drain valves for the "A" SSAC are required. If the operator drains the other SSACs, there will be no detrimental effects.

4.	Open the manual aftercooler and intercooler drain valves and drains any Condensate present. Reclose the valves. 1P51-F1017A 1P51-F1021A	At the "A" SSAC, 1P51-C001A, the operator OPENS the manual aftercooler and intercooler drain valves and drains any Condensate present. RECLOSE the valves. 1P51-F1017A, AFTERCOOLER DRAIN 1P51-F1021A, INTERCOOLER DRAIN	

PROMPT: **WHEN** the operator addresses the remote control switch for the "A" SSAC, as the Unit 1 CBO, **INFORM** the operator that the switch has been placed in the NORMAL position.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**5.	Place the remote control switch to the NORMAL position.	The operator CONTACTS the main control room and DIRECTS the control room operator to PLACE the Remote Control Switch for the "A" SSAC 1P51-C001A, to the NORMAL position.	

RESPONSE CUE: N/A

**6.	Start the "A" SSAC.	At the "A" SSAC, 1P51-C001A, the operator starts the "A" SSAC by depressing the Start Push Button.	

RESPONSE CUE: "A" SSAC is not running.

7.	Confirms that the Automatic Operation LED is illuminated.	At the "A" SSAC, 1P51-C001A, the operator CONFIRMS that the Automatic Operation LED is ILLUMINATED.	

RESPONSE CUE: Automatic Operation LED is not illuminated.

PROMPT: **IF** the operator addresses the Closed Cooling Water System, **INFORM** the operator that the Closed Cooling Water System is in operation.

PROMPT: **WHEN** addressed by the operator, **INDICATE** the following values:
CCW Pump Discharge Pressure 90 psig
CCW Pump Suction Pressure 3 psig

8.	Confirm the CCW System is performing properly.	At the CCW skid, the operator confirms that: On 1P51-R037, CCW PUMP DISCHARGE PRESSUE is 88 psig ±7 psig, and 1P51-R038, CCW PUMP SUCTION PRESSUE is –4 inches Hg Vac to 7 psig.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

PROMPT: **IF** the operator addresses the availability of Instrument air pressure, as a Control Room operator, **INFORM** the operator that Instrument Air pressure is 100 psig.

PROMPT: **WHEN** the operator addresses oil pressure, **INDICATE** that oil pressure is 35 psig.

9.	Confirms the oil pressure is available for the "A" SSAC.	At the "A" SSAC, 1P51-C001A, the operator DEPRESSES the oil pushbutton in the pressure column and CONFIRMS that the oil pressure is 26 – 41 psig.	

PROMPT: **WHEN** the operator addresses monitoring the continued operation of the SSAC, **INFORM** the operator that another operator will monitor the SSACs.

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)**

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 2 is at MOP.
2. The "2B" SSAC is scheduled for PM.
3. The "2B" SSAC is in STOP PULL TO LOCK.
4. The Unit 2 Closed Cooling Water System is in service.

INITIATING CUES:

Start the idle, Alpha Station Service Air Compressor per 34SO-P51-002-2S, Step 7.2.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
			START TIME:_____
1.	Operator identifies the procedure needed to perform the task.	Operator has obtained 34SO-P51-002-2S.	
2.	Operator reviews the procedure's precautions and limitations.	Operator has reviewed the precautions and limitations.	

PROMPT: **WHEN** the operator addresses the position of the remote hand switch for the "2B" SSAC, **INFORM** the operator that the hand switch is in the STOP PULL TO LOCK position.

PROMPT: **WHEN** the operator addresses the position of the remote hand switch for the "2A" SSAC, **INFORM** the operator that the hand switch is in the STOP PULL TO LOCK position.

3.	Confirm, for the "2A" SSAC, that the Programmed Stop LED (Green) is illuminated.	At the "2A" SSAC, 2P51-C001A, the operator CONFIRMS that the Programmed Stop LED is ILLUMINATED.	

NOTE: Only the aftercooler and intercooler manual drain valves for the "A" SSAC are required. If the operator drains the other SSACs, there will be no detrimental effects.

4.	Open the manual aftercooler and intercooler drain valves and drains any Condensate present. Reclose the valves. 2P51-F986 2P51-F985	At the "A" SSAC, 2P51-C001A, the operator OPENS the manual aftercooler and intercooler drain valves and drains any Condensate present. RECLOSE the valves. 2P51-F986, AFTERCOOLER DRAIN 2P51-F985, INTERCOOLER DRAIN	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

PROMPT: **WHEN** the operator addresses the remote control switch for the "A" SSAC, as the Unit 2 CBO, **INFORM** the operator that the switch has been placed in the NORMAL position.

**5.	Place the remote control switch to the NORMAL position.	The operator CONTACTS the main control room and DIRECTS the control room operator to PLACE the Remote Control Switch for the "A" SSAC 2P51-C001A, to the NORMAL position.	

RESPONSE CUE: N/A

**6.	Start the "A" SSAC.	At the "A" SSAC, 2P51-C001A, the operator starts the "A" SSAC by depressing the Start Push Button.	

RESPONSE CUE: "A" SSAC is not running.

7.	Confirms that the Automatic Operation LED (Green) is illuminated.	At the "A" SSAC, 2P51-C001A, the operator CONFIRMS that the Automatic Operation LED is ILLUMINATED.	

RESPONSE CUE: Automatic Operation LED is not illuminated.

PROMPT: **IF** the operator addresses the Closed Cooling Water System, **INFORM** the operator that the Closed Cooling Water System is in operation.

PROMPT: **WHEN** addressed by the operator, **INDICATE** the following values:
CCW Pump Discharge Pressure 90 psig
CCW Pump Suction Pressure 3 psig

8.	Confirm the CCW System is performing properly.	At the CCW skid, the operator confirms that: On 2P51-R030, CCW PUMP DISCHARGE PRESSUE is 87 psig ±7 psig, and 2P51-R029, CCW PUMP SUCTION PRESSUE is –4 inches Hg Vac to 7 psig.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

PROMPT: **IF** the operator addresses the availability of Instrument air pressure, as a Control Room operator, **INFORM** the operator that Instrument Air pressure is 100 psig.

PROMPT: **WHEN** the operator addresses oil pressure, **INDICATE** that oil pressure is 35 psig.

9.	Confirms the oil pressure is available for the "A" SSAC.	At the "A" SSAC, 2P51-C001A, the operator DEPRESSES the oil pushbutton in the pressure column and CONFIRMS that the oil pressure is 26 – 41 psig.	

PROMPT: **WHEN** the operator addresses monitoring the continued operation of the SSAC, **INFORM** the operator that another operator will monitor the SSACs.

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)**

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Operations Training
JPM

TITLE		
LINEUP AND OPERATE THE FIRE SYSTEM VIA CONDENSATE TRANSFER/SHUTDOWN COOLING FOR INJECTION INTO THE REACTOR		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER	LR-JP-36.23-04	30.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**
N/A	R. S. GRANTHAM	10/20/99

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-36.23**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	10/25/93	Initial development	GSG	SMC
01	08/31/94	Incorporate student feedback, remove unneeded prompts.	RAB	SMC
02	08/01/96	Format change	RAB	DHG
03	09/14/98	Changed initiating cue to make it clearer.	SCB	DHG
04	10/20/99	Upgrade format	RAB	RSG

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

TASK TITLE:	**LINEUP AND OPERATE THE FIRE SYSTEM VIA CONDENSATE TRANSFER/SHUTDOWN COOLING FOR INJECTION INTO THE REACTOR**
JPM NUMBER:	LR-JP-36.23-04
TASK STANDARD:	This task shall be completed when the Fire System water is injected into the Reactor per 31EO-EOP-110.

TASK NUMBER: 036.023

PLANT HATCH JTA IMPORTANCE RATING:

RO 4.07

SRO 3.50

K/A CATALOG NUMBER: 295031EA108

K/A CATALOG JTA IMPORTANCE RATING:

RO 3.80

SRO 3.90

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	Unit 1	Unit 2
	31EO-EOP-110-1S Rev 2 31EO-EOP-015-1S Rev 4	31EO-EOP-110-2S Rev 2 Ed 1 31EO-EOP-015-2S Rev 6

REQUIRED MATERIALS:	Unit 1	Unit 2
	31EO-EOP-110-1S (current revision) Designated fire hose adapter flange, wrenches and rope in EOP box in Unit 2 CTP enclosure. Designated 2 1/2 inch fire hose at Hydrant 11. Keys for 2P11-F026B and 2P11-F091 and 1P11-F091.	31EO-EOP-110-2S (current revision) Designated fire hose adapter flange, wrenches and rope in EOP box in CTP enclosure. Designated 2 1/2 inch fire hose at Hydrant 11 Keys for 2P11-F023 and 2P11-F026B.

APPROXIMATE COMPLETION TIME: 30.0 Minutes

SIMULATOR SETUP: N/A

UNIT 1

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. The Alternate Level Control portion of CP-1 (31EO-EOP-015-1S) is being performed.
2. The Reactor has been emergency depressed and RWL cannot be maintained above -160 inches.
3. No alternate injection systems are lined up.
4. No fire deluge systems have actuated.
5. No injection subsystems are operating.
6. Operators are stationed in the Unit 1 Reactor Building to performed the required actions.

INITIATING CUES:

Coordinate the Reactor Building and Control Room operators to lineup and inject with the Fire System to the Reactor per 31EO-EOP-110-1S, Section 3.2.2, Fire System Via Condensate Transfer Crosstie.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
			START TIME:_____
1.	Operator identifies the materials that are required.	Operator has identified the designated fire hose adapter flange, wrenches and rope in EOP box in Unit 2 CTP enclosure, designated 2 1/2 inch fire hose at Hydrant 11, keys for 2P11-F026B, 2P11-F091, and 1P11-F091.	

PROMPT: **WHEN** the operator addresses stopping the Condensate Transfer Pumps, as the Shift Supervisor, **INFORM** the operator that Condensate Transfer Pumps 1P11-C001A and B and 2P11-C001A and B have been stopped.

**2.	Close the following valves at the Condensate Transfer Pump enclosure: 2P11-F024A 2P11-F024B 2P11-F025B	At the Unit 2 Condensate Transfer Pump (CTP) enclosure, the following valves are CLOSED: 2P11-F024A, PUMP 2P11-C001A DISCHARGE Valve 2P11-F024B, PUMP 2P11-C001B DISCHARGE Valve 2P11-F025B, PUMP 2P11-C001B SUCTION Valve	

RESPONSE CUE: N/A

**3.	Unlock and close Valve 2P11-F026B.	At the Unit 2 CTP enclosure, 2P11-F026B MINIMUM FLOW B Valve is CLOSED.	

RESPONSE CUE: N/A

NOTE: **IF** the operator addresses HP concerns about breaking the flange, **INFORM** the operator that this is an emergency and contamination concerns will be addressed after injection is obtained.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**4.	Remove the flanged cover of the CTP Discharge Check Valve 2P11-F027B.	At the Unit 2 CTP enclosure, cover is REMOVED from CTP DISCHARGE CHECK VALVE 2P11-F027B.	

RESPONSE CUE: N/A

**5.	Install fire hose adapter flange in place of removed cover at CTP Discharge Check Valve 2P11-F027B.	At the Unit 2 CTP enclosure, fire hose adapter flange is INSTALLED at CTP DISCHARGE CHECK VALVE 2P11-F027B.	

RESPONSE CUE: N/A

PROMPT: **IF** the operator addresses use of a fire pumper truck, as the Shift Supervisor, **INFORM** the operator that a fire pumper truck will not be used.

**6.	Connect 2 1/2 inch fire hose from Hydrant 11 (1Y43-F314K) to the adapter flange.	At Hydrant 11, 2 1/2 inch fire hose CONNECTED from Hydrant 11 (1Y43-F314K) to the adapter flange.	

RESPONSE CUE: N/A

PROMPT: **WHEN** the operator addresses the valves listed in Step 7, as the Control Room operator, **INFORM** the operator that the requested valves are closed.

7.	Confirm the following valves are closed: (Control Room Operator) 1E11-F006A 1E11-F006B 1E11-F006C 1E11-F006D 1E11-F009	The operator has called the Control Room to have the following valves CLOSED on panel 1H11-P601: 1E11-F006A, SHUTDOWN COOLING VALVE 1E11-F006B, SHUTDOWN COOLING VALVE 1E11-F006C, SHUTDOWN COOLING VALVE 1E11-F006D, SHUTDOWN COOLING VALVE 1E11-F009, SDC SUCTION VALVE	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

NOTE: In the following step, only the designated valves are critical.

**8.	Confirm or close the following valves: *2P11-F020A (Rx Bldg Operator) *1P11-F021 2P11-F090 1P11-F090 *1P11-F024A *1P11-F024B *1P11-F020A (Rx Bldg Operator) *1P11-F022 (Rx Bldg Operator) 2P11-F020B (Rx Bldg Operator)	The following valves are CLOSED: 2P11-F020A, HDR TO RX BLDG ISOLATION, at location 130RLR17 1P11-F021, HEADER TO RADWASTE ISOL VLV, at U-1 CTP enclosure 2P11-F090, CROSS-TIE ISOLATION VALVE, at U-2 CST enclosure 1P11-F090, CROSS-TIE ISOLATION VALVE, at U-1 CST enclosure 1P11-F024A, PUMP 1P11-C001A DISCHARGE, at U-1 CTP enclosure 1P11-F024B, PUMP 1P11-C001B DISCHARGE, at U-1 CTP enclosure 1P11-F020A, HDR TO RX BLDG ISOLATION, at location 130RLR06 1P11-F022, HDR CROSS-TIE, at location 130RLR06 2P11-F020B, HDR TO RHR SYSTEM ISOLATION, at location 130RLR17.	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

NOTE: In the following step, only the designated valves are critical.

**9.	Open the following valves: *1E11-F084 (Rx Bldg Operator) *1E11-F083 (Rx Bldg Operator) *2P11-F023 *2P11-F094 1P11-F023 1P11-F020B (Rx Bldg Operator)	The following valves are OPEN: 1E11-F081A, RHR S/D COOLING SUCT FLUSH SUPPLY, at location 130RLR08. 1E11-F083, RHR S/D COOLING SUCT FLUSH SUPPLY, at location 130RLR08. 2P11-F023, HDR CROSS-TIE, at U-2 CTP enclosure. 2P11-F094, U1/U2 CROSS-TIE THROTTLE VALVE, at U-2 CST enclosure. 1P11-F023, PUMP DISCHARGE HDR CROSS-TIE, at U-1 CTP enclosure. 1P11-F020B, HDR TO RHR SYSTEM ISOLATION, at location 130RLR06.	

RESPONSE CUE: N/A

**10.	Unlock and open 2P11-F091 and 1P11-F091.	The following valves are OPEN: 2P11-F091, U1/U2 CROSS-TIE ISOLATION, at U-2 CTP enclosure. 1P11-F091, U2/U1 CROSS-TIE ISOLATION, at U-1 CTP enclosure.	

RESPONSE CUE: N/A

**11.	Charge the fire hose at Hydrant 11.	At Hydrant 11, the fire hose has been CHARGED.	

RESPONSE CUE: N/A

**12.	Slowly open 2P11-F024B.	At the Unit 2 CTP enclosure, PUMP 2P11-C001B DISCHARGE valve 2P11-F024B is OPEN.	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**13.	Install jumpers from: (Control Room Operator) EE-31 to EE-32 AA-40 to AA-41	At panel 1H11-P611C, the operator has INSTALL a jumper from EE-31 to EE-32. At panel 1H11-P611A, the operator has INSTALL a jumper from AA-40 to AA-41.	

RESPONSE CUE: N/A

**14.	Reset the Group II Isolations. (Control Room Operator)	At panels 1H11-P601 and 1H11-P602, the operator has RESET the Group 2 Isolations.	

RESPONSE CUE: N/A

**15.	Open 1E11-F008. (Control Room Operator)	At panel 1H11-P601, the operator has OPENED 1E11-F008, SDC SUCTION VALVE, red light illuminated.	

RESPONSE CUE: Valve, 1E11-F008, green light illuminated.

**16.	Open 1E11-F009. (Control Room Operator)	At panel 1H11-P602, the operator has OPENED 1E11-F009, SDC SUCTION VALVE, red light illuminated.	

RESPONSE CUE: Valve, 1E11-F009, green light illuminated.

PROMPT: **IF** the operator addresses additional injection paths, as the Shift Supervisor, **INFORM** the operator that none are desired.

PROMPT: **IF** the operator addresses system restoration, as the Shift Supervisor, **INFORM** the operator that system restoration 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.

(Indicates critical step)**

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. The Alternate Level Control portion of CP-1 (31EO-EOP-015-2S) is being performed.
2. The Reactor has been emergency depressed and RWL cannot be maintained above -160 inches.
3. No alternate injection systems are lined up.
4. No fire deluge systems have actuated.
5. No injection subsystems are operating.

INITIATING CUES:

Lineup and inject with the Fire System to the RPV per 31EO-EOP-110-2S, Section 3.2.2, Fire System Via Condensate Transfer Piping.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the materials that are required.	Operator has identified the required materials and where to obtain them.	

PROMPT: **WHEN** the operator addresses stopping the Condensate Transfer Pumps, as the Shift Supervisor, **INFORM** the operator that Condensate Transfer Pumps, 2P11-C001A and B, have been stopped.

**2.	Close the following valves at the Condensate Transfer Pump enclosure: 2P11-F024B 2P11-F025B	At the Condensate Transfer Pump (CTP) enclosure, the following valves are CLOSED: 2P11-F024B, PUMP 2P11-C001B DISCHARGE Valve 2P11-F025B, PUMP 2P11-C001B SUCTION Valve	

RESPONSE CUE: N/A

**3.	Unlock and close the following valves: 2P11-F026B 2P11-F023	At the CTP enclosure, the following valves are CLOSED: 2P11-F026B, MINIMUM FLOW B Valve 2P11-F023 HEADER CROSTIE ISOLATION Valve.	

RESPONSE CUE: N/A

**4.	Remove the flanged cover of the CTP Discharge Check Valve 2P11-F027B.	At CTP enclosure, cover is REMOVED from CTP DISCHARGE CHECK VALVE, 2P11-F027B.	

RESPONSE CUE: N/A

**5.	Install fire hose adapter flange in place of removed cover at DISCHARGE CHECK VALVE 2P11-F027B.	At CTP enclosure, fire hose adapter flange is INSTALLED at CTP DISCHARGE CHECK VALVE, 2P11-F027B.	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

PROMPT: **IF** the operator addresses use of a fire pumper truck, as the Shift Supervisor, **INFORM** the operator that a fire pumper truck will not be used.

****6.**	Connect a 2 1/2 inch fire hose from Hydrant 11 (1Y43-F314K) to the adapter flange.	At Hydrant 11, 2 1/2 inch fire hose is CONNECTED from Hydrant 11 (1Y43-F314K) to the adapter flange.	

RESPONSE CUE: N/A

7.	Confirm the following valves are closed: 2E11-F006A 2E11-F006B 2E11-F006C 2E11-F006D 2E11-F009	The operator has called the Control Room to have the following valves CLOSED on panel 2H11-P601: 2E11-F006A, SHUTDOWN COOLING VALVE 2E11-F006B, SHUTDOWN COOLING VALVE 2E11-F006C, SHUTDOWN COOLING VALVE 2E11-F006D, SHUTDOWN COOLING VALVE 2E11-F009, SDC SUCTION VALVE	

RESPONSE CUE: N/A

PROMPT: **WHEN** the operator addresses the preceding valves, as the Control Room operator, **INFORM** the operator that these valves are closed.

****8.**	Close the following valves: 2P11-F022 2P11-F021	The following valves are CLOSED: 2P11-F022 HDR CROSS-TIE Valve, at location 130RLR17. 2P11-F021 HDR TO RADWASTE BLDG Valve, at the CTP enclosure.	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**9.	Open the following valves: 2E11-F084 2E11-F083 2P11-F020B	The following valves are OPEN: 2E11-F084, SDC COND FLUSH SUPPLY, at location 130RJR19. 2E11-F083, SDC COND FLUSH SUPPLY, at location 130RJR19. 2E11-F020B, HDR TO RHR SYSTEM ISOL, at location 130RLR17.	

RESPONSE CUE: N/A

**10.	Charge the fire hose at Hydrant 11.	At Hydrant 11, the fire hose has been CHARGED.	

RESPONSE CUE: N/A

**11.	Slowly open 2P11-F024B.	At the CTP enclosure, 2P11-F024B, PUMP 2P11-C001B DISCHARGE valve is OPEN.	

RESPONSE CUE: N/A

**12.	Install jumpers from: AA-17 to AA-18 EE-5 to EE-11	At panel 2H11-P609A, the operator has INSTALL a jumper from AA-17 to AA-18. At panel 2H11-P609C, the operator has INSTALL a jumper from EE-5 to EE-11.	

RESPONSE CUE: N/A

**13.	Reset the Group II Isolations.	At panels 2H11-P601 and 2H11-P602, the operator has RESET the Group II Isolations.	

RESPONSE CUE: N/A

**14.	Open 2E11-F008.	At panel 2H11-P601, the operator has OPENED 2E11-F008, SDC SUCTION VALVE, red light illuminated.	

RESPONSE CUE: Valve, 2E11-F008, green light illuminated.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**15.	Open 2E11-F009.	At panel 2H11-P602, the operator has OPENED 2E11-F009, SDC SUCTION VALVE, red light illuminated.	

RESPONSE CUE: Valve, 2E11-F009, green light illuminated.

PROMPT: **IF** the operator addresses additional injection paths, as the Shift Supervisor, **INFORM** the operator that none are desired.

PROMPT: **IF** the operator addresses system restoration, as the Shift Supervisor, **INFORM** the operator that system restoration 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.

(Indicates critical step)**

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E. I. Hatch Nuclear Plant

Operations Training
JPM

TITLE SHUTDOWN HPCI (NORMAL) (MINIMUM FLOW VALVE FAILURE)		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER	LR-JP-25018-07	8.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**
N/A	R. S. GRANTHAM	10/20/99

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FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-25018**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
01	09/24/92	General revision and format change	WMM	RSG
02	08/25/93	General revision, word processor change	RAB	RSG
03	08/19/94	Modify simulator setup, adjust format, incorporate student comments	RAB	SMC
04	08/30/95	Change simulator setup, change format	RAB	SMC
05	05/08/96	Format change	RAB	DHG
06	03/05/99	Revised due to new simulator computer.	SCB	DHG
07	10/20/99	Format modification	RAB	RSG

UNIT 1 ( ) UNIT 2 (X)

TASK TITLE:	**SHUTDOWN HPCI (NORMAL) (MINIMUM FLOW VALVE FAILURE)**
JPM NUMBER:	LR-JP-25018-07
TASK STANDARD:	The task shall be completed when HPCI has been shutdown and is ready to be placed in the Standby lineup, per 34SO-E41-001-2S.

TASK NUMBER: 005.003

PLANT HATCH JTA IMPORTANCE RATING:

RO 2.79

SRO 2.81

K/A CATALOG NUMBER: 20600A217

K/A CATALOG JTA IMPORTANCE RATING:

RO 3.90

SRO 4.30

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 2**
	34SO-E41-001-2S Rev 20 Ed 1 34AB-E10-001-2S Rev 0 Ed 2

REQUIRED MATERIALS:	**Unit 2**
	34SO-E41-001-2S (current revision)

APPROXIMATE COMPLETION TIME: 8.0 Minutes

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

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #127** and leave in **FREEZE**.

2. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfE41_125	HPCI Minimum Flow Fails to Auto Close			999
mfE41_103	HPCI Inadvertent Start-Up			000

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

   A. Take the simulator out of FREEZE and allow HPCI to start and come up to rated conditions, and then delete malfunction mfE41_103.
   B. Reset the HPCI initiation signal.
   C. Acknowledge annunciators.

4. **PLACE** the Simulator in **FREEZE** until the crew assumes the shift.

5. **ESTIMATED** Simulator **SETUP TIME:** **5.0 Minutes**

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. The HPCI System has automatically started due to a spurious initiation signal.
2. The spurious initiation signal has been reset; it has been determined that HPCI is not needed for vessel level or pressure control.

INITIATING CUES:

Shutdown the HPCI System per 34SO-E41-001-2S.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator reviews the procedure's precautions and limitations.	Operator has reviewed the precautions and limitations.	
2.	Confirm the HPCI initiation signal is reset.	At panel 2H11-P601, the operator has verified the HPCI INITIATION SIGNAL white light is EXTINGUISHED.	
3.	Reduce Turbine speed to about 2000 RPM.	At panel 2H11-P601, the HPCI FLOW CONTROL, 2E41-R612 has been used to REDUCE HPCI speed to about 2000 rpm as indicated on TURBINE SPEED, 2E41-R610.	

NOTE: HPCI speed should not be reduced below 2000 rpm.

****4.**	Depress and hold the HPCI Turbine Trip pushbutton.	At panel 2H11-P601, the HPCI REMOTE TURB TRIP pushbutton is DEPRESSED.	

RESPONSE CUE: HPCI TURBINE TRIPPED and HPCI TURBINE TRIP SOLENOID ENERGIZED annunciators have not alarmed.

NOTE: The HPCI Turbine Trip pushbutton must be depressed and held until the Turbine Steam Supply Valve, 2E41-F001, is fully closed.

NOTE: **WHEN THE MINIMUM FLOW VALVE OPENS, INSERT MALFUNCTION mfE41_125.**

5.	Confirm the Auxiliary Oil Pump Auto Starts prior to turbine decreasing below 1500 rpm.	At panel 2H11-P601, operator verifies AUX OIL PUMP, 2E41-C002-3 is RUNNING, red light illuminated.	
****6.**	Close the Turbine Steam Supply Valve, 2E41-F001.	At panel 2H11-P601, the TURB STEAM SUPPLY VLV, 2E41-F001 is CLOSED, green light illuminated.	

RESPONSE CUE: Valve, 2E41-F001, red light illuminated.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
7.	Release the Turbine Trip pushbutton when 2E41-F001 is closed.	At panel 2H11-P601, the REMOTE TURB TRIP pushbutton has been RELEASED.	

NOTE: While performing the following step, the operator should recognize the failure of the Minimum Flow Valve to close as required. Upon recognition of the failure, the operator should take action in Step 10 to correct the failure. Step 10 may be performed at any point in the JPM.

8.	Confirm the following: Pump Discharge Vlv, 2E41-F006, closes. Minimum Flow Vlv, 2E41-F012 closes. Steam Line Drain Vlv, 2E41-F028 opens. Steam Line Drain Vlv, 2E41-F029 opens.	The operator VERIFIES the following: At panel 2H11-P601: HPCI PUMP DISCHARGE VLV, 2E41-F006 is CLOSED, green light illuminated. HPCI MIN FLOW VLV, 2E41-F012 is OPEN, red light illuminated. STEAM LINE DRAIN VLV, 2E41-F028 is OPEN, red light illuminated. At panel 2H11-P602: STEAM LINE DRAIN VLV, 2E41-F029 is OPEN, red light illuminated.	

PROMPT: **IF** the operator notifies the Shift Supervisor of the Min Flow Valve failure, **DIRECT** the operator as the Shift Supervisor to align the Min Flow Valve as required by the system operating procedure.

**9.	Close the Minimum Flow Valve, 2E41-F012.	At panel 2H11-P601, HPCI MIN FLOW VLV, 2E41-F012 is CLOSED, green light illuminated.	

RESPONSE CUE: Valve, 2E41-F012, red light illuminated.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
10.	Confirm the Test to CST Valves, 2E41-F008 and 2E41-F011 are closed.	At panel 2H11-P601, the following valves are CLOSED, green lights illuminated: TEST TO CST VLV, 2E41-F008 TEST TO CST VLV, 2E41-F011.	
11.	Close the Lube Oil Cooling Water Valve, 2E41-F059.	At panel 2H11-P601, the LUBE OIL CLG WTR VLV, 2E41-F059 is CLOSED, green light illuminated.	
12.	Place the HPCI Flow Controller, 2E41-R612, in AUTO and set for 4250 gpm.	At panel 2H11-P601, HPCI FLOW CONTROL, 2E41-R612 is: Set for 4250 gpm (accept $\pm$ 100 gpm). In AUTO, (A) green light illuminated.	

PROMPT: **AT** this time, **INFORM** the operator that valve 2E41-F001 has been closed for 15 minutes.

13.	Stop the Vacuum Pump.	At panel 2H11-P601, VACUUM PUMP control switch has been taken to STOP and released to AUTO, green light illuminated.	
14.	Stop the Auxiliary Oil Pump.	At panel 2H11-P601, AUX OIL PUMP control switch has been taken to STOP and released to AUTO, green light illuminated.	
15.	Depress the Safeguard Equip Cooling System B Fans Reset pushbutton.	At panel 2H11-P654, SAFEGUARD EQUIP COOLING SYS B FAN Reset pushbutton has been DEPRESSED, green light illuminated for the HPCI Room Fans.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
16.	Depress the Safeguard Equip Cooling System A Fans Reset pushbutton.	At panel 2H11-P657, SAFEGUARD EQUIP COOLING SYS A FAN Reset pushbutton has been DEPRESSED, green light illuminated for the HPCI Room Fans.	

PROMPT: **WHEN** the operator addresses placing HPCI in standby, as the Shift Supervisor, **INFORM** the operator that another operator will perform that section of procedure.

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)**

Southern Nuclear
E. I. Hatch Nuclear Plant

Operations Training
JPM

TITLE MOVE CONTROL RODS USING SINGLE NOTCH (ROD DRIFT)		
AUTHOR R. A. BELCHER	**MEDIA NUMBER** LR-JP-25031-02	**TIME** 15.0 Minutes
RECOMMENDED BY N/A	**APPROVED BY** R. S. GRANTHAM	**DATE** 10/20/99

SOUTHERN COMPANY

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SOUTHERN NUCLEAR OPERATING COMPANY
PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-25031**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	09/16/98	Initial development	SCB	DHG
01	03/05/99	Revised to correct inaccurate procedure number.	SCB	DHG
02	10/20/99	Upgrade format, procedure revision	RAB	RSG

UNIT 1 ( ) UNIT 2 (X)

TASK TITLE:	**MOVE CONTROL RODS USING SINGLE NOTCH (ROD DRIFT)**
JPM NUMBER:	LR-JP-25031-02
TASK STANDARD:	The task shall be completed when the Reactor has been manually scrammed per 34AB-C11-004-2S.

TASK NUMBER: 001.010

PLANT HATCH JTA IMPORTANCE RATING:

RO 3.57

SRO 3.52

K/A CATALOG NUMBER: 201003A201

K/A CATALOG JTA IMPORTANCE RATING:

RO 3.40

SRO 3.60

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 2**
	34GO-OPS-065-0S Rev 4 Ed 5 34AB-C11-004-2S Rev 2 Ed 1

REQUIRED MATERIALS:	**Unit 2**
	34GO-OPS-065-0S (current revision) 34AB-C11-004-2S (current revision) Control Rod Movement Sequence Sheet (Step 20)

APPROXIMATE COMPLETION TIME: 15.0 Minutes

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

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #105** and leave in **FREEZE**.

2. Make sure RECORDER POWER is TURNED ON. Roll Chart Recorders and Process Computer Typers forward. Ensure any information printed on the Process Computer Typer from previous ICs is removed.

3. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfC11_24A	Control Rod Failure (Drift Out)	38.15		000
mf60323370	Ann Fail – APRM DOWNSCALE			000

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

   A. Take the simulator out of Freeze and verify/withdraw Control Rods of Step 19 to their withdraw limit.
   B. Ensure that drive water dP is 260 psid and stable.

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

6. **ESTIMATED** Simulator **SETUP TIME:** **15 Minutes**

NOTE: The simulator operator will act as ***second verifier*** for rod movement and read the pre-job brief to the operator.

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. A normal plant startup is in progress per 34GO-OPS-001-2S, "Plant Startup," and is currently at Step 7.4.2.
2. Rod withdrawal to achieve 6-7% on the APRMs is in progress.
3. Rods in Step 19 of the Pull Sequence has just been completed.
4. Rod Worth Minimizer is operable and has been loaded with the correct movement sequence, which has been approved by the Reactor Engineering Supervisor.
5. The pre-job brief has been completed.

INITIATING CUES:

Withdraw Controls Rods in Step 20 to their withdraw limit.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the procedure needed to perform the task.	Operator has identified the correct procedure as 34GO-OPS-065-0S.	
2.	Operator reviews the procedure's precautions and limitations.	Operator has reviewed the precautions and limitations.	

PROMPT: **WHEN** the operator addresses an approved copy of the Control Rod Movement Sequence Sheet, **GIVE** the operator the Control Rod Movement Sequence Sheet.

3.	Operator identifies the materials that are required.	Operator has identified and obtained Control Rod Movement Sequence Sheet.	

NOTE: The operator may select any control rod in Rod Step 20, although the operator should proceed in consecutive order.

4.	Select a control rod in Rod Step 20. (Rod 14-39)	At panel 2H11-P603, the push-button is DEPRESSED on CONTROL ROD SELECT Matrix for selected control rod in Rod Step 20.	

RESPONSE CUE: Backlight for selected Control Rod not illuminated.

5.	Withdraw the control rod to Position 08.	At panel 2H11-P603, ROD MOVEMENT CONTROL switch is momentarily PLACED to "OUT" position and RELEASED.	

RESPONSE CUE: Selected Rod is at Position 06.

6.	Confirm the proper control rod movement.	At panel 2H11-P603, the operator VERIFIES that rod position indicator indicates "08" for rod moved in previous step on Four-Rod Display and/or RWM.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
7.	Complete the line, for the selected rod, on the Control Rod Movement Sequence sheet.	On the Control Rod Movement Sequence sheet, on the line for the selected rod (Withdrawn side of sheet), the operator has: Filled in INIT block. Filled in DATE block.	
**8.	Select the next control rod in Rod Step 20. (Rod 38-15)	At panel 2H11-P603, the push-button is DEPRESSED on CONTROL ROD SELECT Matrix for selected control rod in Rod Step 20.	

RESPONSE CUE: Backlight for selected Control Rod not illuminated.

**9.	Withdraw the control rod to Position 08.	At panel 2H11-P603, ROD MOVEMENT CONTROL switch is momentarily PLACED to "OUT" position and RELEASED.	

RESPONSE CUE: Selected Rod is at Position 06.

NOTE: 38-15 is the control rod that will drift. If the operator selects another rod in Step 20 to move, evaluate using steps 4 and 5.

10.	Confirm the proper control rod movement.	At panel 2H11-P603, the operator VERIFIES that rod position indicator indicates drifts past "08" and the ROD DRIFT alarm illuminates.	

NOTE: The operator may drive the control rod in using the EMERGENCY IN switch. To allow the operator to address 34AB-C11-004-2S, the ***simulator operator*** may hold the rod in with the EMERGENCY IN switch.

**13.	Manually scram the Reactor.	At panel 2H11-P603, REACTOR SCRAM PUSHBUTTONS are depressed or the REACTOR MODE SWITCH in placed in shutdown.	

RESPONSE CUE: Pushbutton lights extinguished or Mode Switch in Startup/Hot Standby.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

NOTE: The task is to scram the Reactor. If the operator scrams the Reactor and continues with scram actions, the evaluator may stop the JPM by stating that another operator will take care of scram actions.

PROMPT: **IF** the operator asks whether or not to scram the Reactor, **DIRECT** the operator to respond as the procedure directs.

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)**

Simulator Scenarios
(Section "C")

DISTRIBUTION CODE
A070

Facility: Plant E. I. Hatch Scenario No.: **LT-NRC-00001** Op-Test No.: _____

Examiners: _____ Operators: _____

Event No.	Malf/Ovr Number	Event Type	Event Description
Setup	G31_C001_A	C	Setup – RWCU Pump A tagged out
Setup	R23-S014_A	C	Setup – Lighting Transformer 2M tagged out
Setup	T47-C001B_A	C	Setup – Drywell Return Air Fan tagged out
Setup		I	Setup – IRM F bypassed
Setup	mfB21_129A	C	Setup – SRV A fails stuck closed
Setup	mfB21_129K	C	Setup – SRV K fails stuck closed
Setup	mfB21_129L	C	Setup – SRV L fails stuck closed
Setup	mfB21_129M	C	Setup – SRV M fails stuck closed
1		N/R	2nd RFPT Startup & Power increase
2	mf60111063	I	HPCI Torus Level Instrument Failure
3	mf65602136	C	Circ Water Pump Overload alarm
3	mfN71_68B	C	Circ Water Pump trip
3	mfN61_73	C	Air In-Leakage/Loss of Vacuum
4	svoT48140	M	Torus Level decreasing/Emergency depress
4	svoT48142	M	Torus Area Sump Level increasing
4	svoT48143	M	Torus Area Sump Level increasing
4	svoT48147	M	Torus Area Sump Level increasing
4	svoT48148	M	Torus Area Sump Level increasing

Southern Nuclear
E. I. Hatch Nuclear Plant

Operations Training
Simulator Evaluation

TITLE		
CIRC WATER PUMP TRIP/LOSS OF CONDENSER VACUUM/LOSS OF TORUS LEVEL		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. L. SMITH/R. A. BELCHER	**LT-NRC-00001-00**	1.0 HOUR
RECOMMENDED BY:	**APPROVED BY:**	**DATE**
NR	RL Smith	10/21/99

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LT-NRC-00001**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	10/21/99	Initial development	RLS/RAB	[illegible]

CRITICAL ITEMS

CREW CRITICAL TASKS

1. When Torus level cannot be maintained above HPCI exhaust level of 110 inches, **TRIP AND PREVENT** HPCI, prior to operation, irrespective of adequate core cooling. Task #005.004

2. When Torus water level cannot be maintained in the safe region of the HCTL, **INITIATE** an emergency depress. Task #201.085

SCENARIO DESCRIPTION

The crew will assume the shift with the second RFPT in the standby configuration. The crew will place the second Reactor feed pump in service. ***(normal evolution)***

After the feed pump is in service, Reactor power will be increased. ***(reactivity manipulation)***

A HPCI Torus water level transmitter will fail upscale; however, HPCI suctions will fail to swap ***(instrument malfunction).*** The crew will address Tech Specs and align the HPCI suction to the Torus.

When the actions are complete for the HPCI Torus suction swap, the "A" Circ Water pump will trip. The plant will experience a slow loss of vacuum due to the pump trip and air in-leakage. ***(component malfunction)*** The crew will reduce power in an attempt to maintain vacuum. ***(reactivity manipulation)*** The crew may decide to shutdown prior to the to the main turbine and feedwater pumps trip on low vacuum. If the crew doesn't manually shutdown the plant, the Reactor will scram as a result of the main turbine trip. ***(major transient)***

When the SRVs begin to lift, a crack will develop in the Torus and Torus level will begin to decrease ***(major transient)*** The crew will not be able to maintain the plant within the safe region of the HCTL Graph. If the MSIVs are open, the crew may anticipate the emergency depress and open the turbine bypass valves. Prior to decreasing below 98 inches in the Torus, the crew will emergency depress the Reactor with SRVs. Only three ADS valves will open (four are bound/stuck) and the crew will open four LLS valves to depress. ***(component failure)***

The following is a list of malfunctions/evolutions contained in the scenario:

		QUANTITATIVE ATTRIBUTES	
Reactivity:	Increase Reactor power following a RFPT start.	Total malfunctions	14
Normal:	Starting the second RFPT.	Malfunctions after EOP entry	2
Instrument:	HPCI Torus level instrument failure	Abnormal Events	1
Component:	ADS fail to open Crack in Torus Circ Water Pump trip	Major Transients	2
Major Evolutions	Loss of vacuum/scram Torus level decrease	EOPs entered	3
		EOP Contingencies	1
		Critical Tasks	2

NOTE: The major evolution (loss of vacuum) was picked because, per the PRA, it has been identified as an event likely to cause fuel damage at Plant Hatch.

The major evolution (Torus level loss) was picked in order to broaden EOP coverage.

OBJECTIVES

1. STARTUP a second Reactor feed pump per 34SO-N21-007-2S. (002.004)
2. RECOGNIZE and RESPOND to a total loss of Main Condenser vacuum. (200.087)
3. RECOGNIZE and RESPOND to a low Torus water level condition per PC-1 & PC-2. (201.075)
4. When it is determined that Torus level cannot be maintained above 110 inches, prior to operation, TRIP and PREVENT HPCI. (005.004)
5. When it is determined that Torus level cannot be maintained within the HCTL, EMERGENCY DEPRESS the Reactor. (201.085)

NOTE: Objectives 4 and 5 are considered critical tasks for this scenario.

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #127** and leave in **FREEZE**.

2. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mf60111063	Spur Ann – TORUS LEVEL HIGH			999
mf65602136	Spur Ann – CIRC WTR PUMP 2N71-C001B OVERLOAD			T1
mfN71_68B	Circulation Water Pump B Trip			999
mfN61_73	Main Condenser Air Inleakage	100	25	999
mfN37_134	All Bypass Valves Fail Closed			999
mfB21_129A	Main Steam Relief Valve A Fails Stuck			000
mfB21_129K	Main Steam Relief Valve K Fails Stuck			000
mfB21_129L	Main Steam Relief Valve L Fails Stuck			000
mfB21_129M	Main Steam Relief Valve M Fails Stuck			000

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

SVO #	DESCRIPTION	FINAL VALUE	RAMP RATE	ACT. TIME
svoT48140	Water Level in Torus	90	4.0	999
svoT48142	Level in Torus Area NE Sump	200	1000	999
svoT48143	Level in Torus Area SE Sump	200	1000	999
svoT48147	Level in Torus Area NW Sump	200	1000	999
svoT48148	Level in Torus Area SW Sump	200	1000	999

SIMULATOR SETUP

4. **INSERT** the following **ORS OVERRIDES:**

TAG #	P/L	DESCRIPTION	STATUS	ACT. TIME
G31-C001A_A	L	RWCU Pmp A	OFF	000
R23-S014_A	L	Lighting Xformr 2M	OFF	000
T47-C001B_A	L	Drywell Return Air Fan	OFF	000

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

   A. Verify that "2A" RFPT is in Standby Mode of operation.
   B. Place Recirc in Master Manual and allow power to stabilize.
   C. Bypass IRM "F."

6. **PLACE** the Simulator in **FREEZE** until the crew assumes the shift.

7. **PLACE DANGER TAGS** on the following equipment:

MPL #	COMPONENT	TAGGED POSITION
2G31-C001A	RWCU Pump 2G31-C001A	TRIP
2R23-S014	Alternate Feeder To Lighting Xfmr 2M (2R23-S014)	TRIP
2T47-C001B	Return Air Fan 2T47-C001B	TRIP

8. **ESTIMATED** Simulator **SETUP TIME:** **20 Minutes**

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

1.	**Second RFPT Startup and Power Increase** The crew will assume shift with the "2A" RFPT in Standby Mode and ready to be started. When the RFPT has been started, the crew will increase power.

PLANT: A PEO is stationed at the "2A" RFPT to coordinate any local actions that must be performed.

MESSAGE: **IF REQUESTED,** as the PEO, **REPORT** that the "2A" RFPT drain valves are closed.

2.	**HPCI Torus Level Instrument Failure** **AFTER** the crew has started the "2A" RFPT and increased power to satisfy the reactivity manipulation, **ACTIVATE MALFUNCTIONS: mf60111063**, "Spur Ann – Torus Level High."

PLANT: TORUS LEVEL HIGH alarms.
HPCI suction supply does not swap to the Torus

MESSAGE: **AFTER** the crew dispatches I & C to investigate, **REPORT** that HPCI Torus level transmitter 2E41-N662B has failed high. Estimated time of repair is 12 hours.

SCENARIO PRESENTATION
CREW ACTIONS

1.	**Second RFPT Startup and Power Increase**

CREW ACTIONS

SS:	Direct the operator to start the second feed pump.	_____
PO:	Startup the second RFPT per 34SO-N21-007-2S.	_____
SS:	Once the RFPT is started, direct the crew to increase Reactor power per 34GO-OPS-005-2S.	_____
PO:	Commence power increase using Recirc flow per 34GO-OPS-005-2S and 34SO-B31-001-2S.	_____

2.	**HPCI Torus Level Instrument Failure**

CREW ACTIONS

PO:	Respond to the Torus high level alarm and report that HPCI suction did not transfer to the Torus.	_____
TEAM:	Dispatch personnel to determine if the annunciator or the transmitter has failed.	_____
SS:	Address Tech Specs 3.3.5.1-1(3.e) and direct that the HPCI suction be swapped to the Torus.	_____
PO:	Swap the HPCI suction supply to the Torus per 34SO-E41-001-2S.	_____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

3.	**Circ Water Pump Trip and Vacuum Decrease** **AFTER** HPCI isolation actions have been completed and Tech Specs addressed, use T1 and **ACTIVATE MALFUNCTION mf65602136**, "Spur Ann – Circ Wtr Pump 2N71-C001B Overload," intermittently. **AFTER** the crew has acknowledged the alarm, **ACTIVATE MALFUNCTIONS:** **mfN37_134**, "All Bypass Valves Fail Closed," **mfN71_68B**, "Circulation Water Pump B Trip," and **mfN61_73**, "Main Condenser Air Inleakage."

PLANT: CIRC WTR PUMP 2N71-C001B OVERLOAD alarms.
Circ Water Pump "B" trips.
Main Condenser vacuum slowly decreases.
Main Turbine trips on low vacuum.
RFPTs trip on low vacuum.
MSIVs will close on low vacuum.

NOTE: The crew may initiate a manual scram prior to the Main Turbine trip and the resulting automatic scram.

AFTER the Turbine trip and an SRV has opened, **DELETE MALFUNCTION mfN37_134**, "All Bypass Valves Fail Closed."

IF NECESSARY to continue the vacuum decrease, **TOGGLE REMOTE FUNCTION rfN11045**, "SJAE A Steam," to **CLOSE.**

MESSAGE: **AS** a PEO dispatched to the SJAE, **REPORT** that the air ejector is not working properly and the steam source valve is closed.

SCENARIO PRESENTATION
CREW ACTIONS

3.	**Circ Water Pump Trip and Vacuum Decrease**

CREW ACTIONS

PO:	Recognize Circ Water pump trip and decreasing vacuum and notify the SS.	_____
	Respond to the ARP for the Circ Water pump overload condition.	_____
TEAM:	Dispatch personnel to investigate cause of the Circ Water pump trip and to determine if the SJAE is functioning properly.	_____
SS:	Direct the operators to reduce Reactor power to maintain vacuum.	_____
	Direct the operators to manually scram the Reactor if a scram is deemed imminent.	_____
PO:	Take actions per placard RC-1 and inform the SS when complete.	_____
	Take actions per placard RC-2 and RC-3 and inform the SS when complete.	_____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

4.	**Torus Level Decrease/Emergency Depress** **WHEN** the crew has returned RWL to the normal band and an SRV has opened, **ACTIVATE SIMULATOR VALUE OVERRIDES:** **svoT48140,** "Water Level in Torus," **svoT48142**, "Level in Torus Area NE Sump," **svoT48143**, "Level in Torus Area SE Sump," **svoT48147**, "Level in Torus Area NW Sump," and **svoT48148**, "Level in Torus Area SW Sump."

PLANT: Various sump annunciators alarm.
Torus level decreases.

MESSAGE: **AFTER** the being sent to investigate the Torus level decrease, **REPORT** as a PEO that there is a 6 – 8 inch fish-mouth crack in the Torus near the "B" Loop RHR suction line. It cannot be isolated.

SCENARIO PRESENTATION
CREW ACTIONS

4.	**Torus Level Decrease/Emergency Depress**

CREW ACTIONS:

PO:	Acknowledge alarms and dispatch an operator to investigate.	_____
	Report decreasing Torus level and dispatch an operator to investigate.	_____
SS:	When Torus level reaches 146 inches, executes all portions of PC-1 and PC-2 concurrently.	_____
	If operators are available, direct Torus cooling started.	_____
	Directs operators to enter 34AB-T23-001-2S, "Loss of Primary Containment Integrity."	_____
	If time is available, address Technical Specifications.	_____
	Orders PO to line-up to fill and commence filling the Torus per 34SO-E21-001-2S or 34GO-OPS-087-2S.	_____
PO:	If directed, starts Torus cooling.	_____
	Takes actions to line-up and fill the Torus per 34SO-E21-001-2S or 34GO-OPS-087-2S.	_____
SS:	Directs Torus level to be maintained above both 110 inches and the HCTL.	_____
	Directs the PO, prior to operation below 110 inches, to prevent operation of HPCI.	_____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

NOTE: If the MSIVs are open, the SS may anticipate an emergency depress and order all turbine bypass valves opened.

The exercise will be terminated when:

1. All critical tasks are completed.
2. The Reactor has been Emergency Depressed.
3. RWL is stable.
4. Primary Containment parameters have all been addressed.

SCENARIO PRESENTATION
CREW ACTIONS

PO:	Prior to HPCI starting, prevent HPCI operation when Torus level is less than 110 inches. (Crew Critical Task)	_____	***CRIT TASK**
	As directed by the SS the PO will attempt to open the turbine bypass valves.	_____	
SS:	When Torus level and Reactor pressure can not be maintained below the HCTL and/or >98 inches, orders an Emergency Depress.	_____	
	Orders all ADS valves open.	_____	
	Directs PO to restore and maintain RWL between +3 to +50 inches using low pressure ECCS Systems.	_____	
PO:	Operates ADS SRVs to emergency depress the Reactor. (Crew Critical Task)	_____	***CRIT TASK**
	Recognize that all ADS valves did not open and open LLS SRVs to emergency depress. (Must have four SRVs opened). (Crew Critical Task)	_____	***CRIT TASK**
	PO takes manual control of low pressure ECCS Systems to restore and maintain RWL above TAF.	_____	
SS:	Classify the event as a NUE per 73EP-EIP-001-0S, Section 7.0. (This classification may be done after the simulator is put in freeze. Classifying the emergency is normally a SOS function.)	_____	

The exercise will be terminated when:

1. All critical tasks are completed.
2. The Reactor has been Emergency Depressed.
3. RWL is stable.
4. Primary Containment parameters have all been addressed.

Attachment 1
Initial Conditions

UNIT 1 STATUS

Unit One is operating at MOP. Activities in progress:

- PM on the "B" Stator Cooling Water Pump.

UNIT 2 STATUS

Power:

Unit Two is operating at approximately 55% power. A plant startup is in progress following a scram resulting from EHC pump problems. The plant was shutdown for 7 days to repair the EHC System.

The following equipment is inoperable:

IRM "F" is bypassed due to erratic operation. I & C is investigating. Tracking RAS is written.

RWCU Pump "2A" has seal leakage. ETR is unknown.

Alternate Feeder to Lighting Xfmr 2M (2R23-S014) for breaker cleaning and PM. ETR is 2 days.

Drywell Return Air Fan – 2T47-C001B has a ground. ETR is next Drywell entry.

Scheduled evolutions:

The "A" RFPT is in Standby and has been on the turning gear for 4 hours. Start the second RFPT. Continue power ascension to 70% with Recirc. At that time, the control rods will be withdrawn to the desired rod pattern.

Surveillances due this shift:

As required by 34GO-OPS-005-2S.

Active clearances:

IRM "F"

RWCU Pump "2A" – 2G31-C001A

Alternate Feeder to Lighting Xfmr 2M (2R23-S014)

Drywell Return Air Fan – 2T47-C001B

Rod Configuration:

See RWM

Attachment 2
CRITICAL TASK COMPLETION CHECKLIST

SOS _____ SS _____ STA _____

POs _____ _____ _____

TASK NUMBER	TASK DESCRIPTION	PERFORMED BY:	COMMENTS
1. 005.004	When Torus level cannot be maintained above HPCI exhaust level of 110 inches, **TRIP AND PREVENT** HPCI, prior to operation, irrespective of adequate core cooling.		
2. 201.085	When Torus water level cannot be maintained in the safe region of the HCTL, **INITIATE** an emergency depress.		

Facility: Plant E. I. Hatch Scenario No.: **LT-NRC-00005** Op-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Event No.	Malf/Ovr Number	Event Type	Event Description
Setup	G31_C001_A	C	Setup – RWCU Pump A tagged out
Setup	R23-S014_A	C	Setup – Lighting Transformer 2M tagged out
Setup	T47-C001B_A	C	Setup – Drywell Return Air Fan tagged out
Setup		I	Setup – IRM F bypassed
Setup	mfE51_110	C	Setup – RCIC Trip
Setup	mfG31_207A	C	Setup – G31-F001 Fails to Isolate on Group V
Setup	mfR43_239A	C	Setup – D/G A Fails to Auto Tie
Setup	mfR43_62C	C	Setup – D/G C Fails to Auto Start
1		N	RHR Placed in Torus Cooling
2	mf60211179	I	SRV Fails Open With LLS Malfunction
2	mf60211154	I	SRV Fails Open With LLS Malfunction
2	mfB21_130D	I	SRV Fails Open With LLS Malfunction
3	rfN11045	C/R	SJAE Failure/Power Decrease
4	rfC71138	C	Loss of RPS/G31-F001 Fails to Isolate
5	mfS11_161	M	LOSP/HPCI Restoration for RWL Control
5	mfE41_108	M	LOSP/HPCI Restoration for RWL Control

Southern Nuclear
E. I. Hatch Nuclear Plant

Operations Training
Simulator Evaluation

TITLE		
STUCK OPEN SRV/SJAE FAILURE/LOSP		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. L. SMITH/R. A. BELCHER	**LT-NRC-00005-00**	1.0 HOUR
RECOMMENDED BY:	**APPROVED BY:**	**DATE**
NR	RLSmith	10/21/99

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LT-NRC-00005**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	10/21/99	Initial development	RLS/RAB	[illegible]

CRITICAL ITEMS

CREW CRITICAL TASKS

1. **REMOVE** fuses to SRV prior to Torus temperature reaching Boron Injection Initiation Temperature (BIIT). Task #200.009

2. During a LOSP with diesels failing to start and tie, **ENERGIZE** at least one 4160V emergency bus by manually tying a diesel to a bus by lowering/raising frequency or by manually starting a diesel with the remote start switch. Task #028.006

SCENARIO DESCRIPTION

The crew will assume the shift at Maximum Operating Power (MOP) with RCIC tagged for a steam leak repair. In preparation for an HPCI surveillance, RHR will be placed in Torus cooling. ***(normal evolution)***

After Torus cooling has been established the ATTS Master Trip Unit (MTU) for a Low-Low Set SRV fails. ***(instrument malfunction)*** The associated SRV opens. The crew will remove the fuses and the SRV will close. Actions will be taken to repair the MTU and Tech Specs addressed for the inoperative LLS valve.

After Tech Specs has been addressed for the Inoperative LLS valve, the operating SJAE will fail. ***(component malfunction)*** The crew will reduce power to maintain vacuum ***(reactivity manipulation)*** and place the standby SJAE inservice.

After the standby SJAE is in service and the plant is stable, an RPS bus will trip. ***(component malfunction)*** Reactor Water Cleanup (RWCU) isolation valve will fail to close. The crew will enter the appropriate ARPs and Abnormals, isolate RWCU, and initiate actions to restore the bus.

As the bus is being restored, a Loss of Off Site power will occur. ***(major transient)*** Crew actions are required to start and tie the Unit 2 Diesel Generators. ***(component failure)***

HPCI will be required to restore and maintain RWL. As HPCI starts, it will isolate due to a invalid steam isolation signal. ***(component failure)*** The crew must initiate actions to restore HPCI from the isolation and recover RWL.

The following is a list of malfunctions/evolutions contained in the scenario:

		QUANTITATIVE ATTRIBUTES	
Reactivity:	Reactor power decrease	Total malfunctions	9
Normal:	Place standby SJAE in service	Malfunctions after EOP entry	3
Instrument:	ATTS failure	Abnormal Events	3
Component:	SJAE failure Trip of RPS bus Emergency Diesel Generator failures (2) HPCI steam supply valve	Major Transients	1
Major Evolutions	Loss of Off Site Power	EOPs entered	2
		EOP Contingencies	1
		Critical Tasks	2

NOTE: The major evolution (LOSP) was picked because, per the PRA, it is the event most likely to cause fuel damage.

OBJECTIVES

1. **PERFORM** a manual initiation of Torus cooling per 34SO-E11-010-2S. (007.005)
2. **REMOVE** fuses to SRV prior to Torus temperature reaching Boron Injection Initiation Temperature (BIIT). (200.009)
3. **TRANSFER** a SJAE per 34SO-N61-001-2S. (025.006)
4. **RECOGNIZE** and **RESPOND** to a loss of an RPS Bus. (200.102)
5. During a LOSP with diesels failing to start and tie, **ENERGIZE** at least one 4160V emergency bus by manually tying a diesel to a bus by lowering/raising frequency or by manually starting a diesel with the remote start switch. (028.006)

NOTE: Objectives 2 and 5 are considered critical tasks for this scenario.

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #125** and leave in **FREEZE**.

2. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfE51_110	RCIC Turbine Trip			000
mf60211179	Spur Ann – LOW LOW SET LOGIC B/D ARMED			999
mf60211154	Spur Ann – ECCS/RPS DIVISON I TROUBLE			999
mfB21_130D	Main Steam Relief Valve D Fails Open			999
mfG31_207A	G31-F001 Fails to Isolate on Group 5			000
mfR43_239A	DG A Output Bkr One Shot Fail to Auto Tie			000
mfR43_62C	Diesel Gen Fail to Auto Start 2C			000
mfS11_161	Loss of Off Site Power (Black Out)			999
mfE41_108	HPCI Auto Isolation E41-F002			999
mfC11_30A	Control Rod Drive Pump A Trip			999
mfC11_30B	Control Rod Drive Pump B Trip			999

3. **INSERT** the following **ORS OVERRIDES:**

TAG #	P/L	DESCRIPTION	STATUS	ACT. TIME
E51-F008_A	L	RCIC Steam Supply Line Isol	OFF	000
G31-C001A_A	L	RWCU Pmp A	OFF	000
R23-S014_A	L	Lighting Xformr 2M	OFF	000
T47-C001B_A	L	Drywell Return Air Fan	OFF	000

SIMULATOR SETUP

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

   A. Bypass IRM "F."
   B. Close 2E51-F008
   C. Place RHRSW in the "B" loop in service, both pumps.

5. **PLACE** the Simulator in **FREEZE** until the crew assumes the shift.

6. **PLACE DANGER TAGS** on the following equipment:

MPL #	COMPONENT	TAGGED POSITION
2E51-F008	RCIC Outboard Isolation Valve	CLOSE
2E51-F524	RCIC Trip and Throttle Valve	CLOSE
2G31-C001A	RWCU Pump 2G31-C001A	TRIP
2R23-S014	Alternate Feeder To Lighting Xfmr 2M (2R23-S014)	TRIP
2T47-C001B	Return Air Fan 2T47-C001B	TRIP

7. **ESTIMATED** Simulator **SETUP TIME:** **25 Minutes**

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

1.	**Torus Cooling** The crew will assume the shift and complete placing RHR Loop "B" in Torus cooling.

PLANT: RHR Loop "B" is placed in Torus cooling.

2.	**SRV Fails Open With LLS Malfunction** **AFTER** RHR is placed in Torus cooling, **ACTIVATE MALFUNCTIONS:** **mf60211179**, "Spur Ann – LOW LOW SET LOGIC B/D ARMED," **mf60211154**, "Spur Ann – ECCS/RPS DIVISON I TROUBLE," and **mfB21_130D**, "Main Steam Relief Valve D Fails Open."

PLANT: The "D" SRV will open.
LOW LOW SET LOGIC B/D ARMED alarms.
ECCS/RPS DIVISON I TROUBLE alarms.
Generator megawatts decreases slightly.
Torus temperature and pressure increase.

WHEN contacted to pull fuses for the SRV, wait 4 minutes (goal is to exceed 100°F in the Torus), then **TOGGLE REMOTE FUNCTION rfB21303,** "SRV D Fuse," to **ORIDE**.

WHEN asked to bypass the HPCI Suction Valve Swap, wait four minutes and **TOGGLE REMOTE FUNCTION rfE41153**, "HPCI Torus Suction Bypass" to **BYPAS**.

IF requested to start the H2 O2 Analyzers, wait four minutes and **TOGGLE REMOTE FUNCTIONS:**
rfP33237, "H2 O2 Analyzer A," and
rfP33238, "H2 O2 Analyzer B," to **ANLYZ**.

SCENARIO PRESENTATION
CREW ACTIONS

1.	Torus Cooling

CREW ACTIONS:

PO: Places RHR Loop "B" in Torus cooling per 34SO-E11-010-2S. (See attached procedure) _____

2.	SRV Fails Open With LLS Malfunction

CREW ACTIONS:

PO: Acknowledge the annunciators and inform the SS the "D" SRV is stuck open. _____

Respond to the event per 34AB-B21-003-2S. _____

Attempt to reset LLS. (Cycling of the "D" SRV switch is not appropriate at this time due the valve being electrically open.) _____

SS: If Torus temperature reaches 100°F, enter 31EO-EOP-012-2S and 31EO-EOP-013-2S (PC-1 and PC-2) _____

Direct the PO to have fuses removed for the "D" SRV prior to Torus temperature reaching 110°F. _____

Direct the PO to place the H2 O2 Analyzers in service. _____

PO: Initiate actions to have fuses removed for the "D" SRV per 34AB-B21-003-2S prior to Torus temperature reaching 110°F. (Crew Critical Task) _____ ***CRIT TASK**

Inform the SS of SRV indication light out. _____

Monitor indication to verify SRV closure. _____

Place the H2 O2 Analyzers in service. _____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

3.	**SJAE Failure/Loss of Vacuum** After the fuses for the "D" SRV are removed and the LCO for the LLS valve have been addressed, **TOGGLE REMOTE FUNCTION rfN11045**, "SJAE A Steam," to **CLOSE**.

PLANT: 3RD STG SJAE A FLOW LOW alarms.
SJAE "A" Supply Press indicates "0" psig on 2H11-P650.
Off Gas Preheater "A" temperature decreases.
SJAE "A" Suction Valve closes.
Main Condenser vacuum decreases slowly.

MESSAGE: **AFTER** two minutes from being dispatched, **REPORT** as PEO that the pressure regulator for SJAE "A" does not respond locally.

WHEN requested to open the Steam Supply Valve for the "B" SJAE, **TOGGLE REMOTE FUNCTION rfN11046**, "SJAE B Steam," to **OPEN.**

SCENARIO PRESENTATION
CREW ACTIONS

SS: Determine the LCO for this condition per Technical Specifications. _____
(Tracking RAS 3.4.3 for 10 of 11 SRVs)
(Tracking RAS 3.6.1.6 for 3 of 4 LLS SRVs)
(Possible RAS 3.6.2.2 for Torus level)

Notify I & C to assist in problem with LLS and SRV. _____

Inform the SOS of the problem and the LCO. _____

3.	**SJAE Failure/Loss of Vacuum**

CREW ACTIONS:

PO: Recognize and respond to 3rd STG SJAE A FLOW LOW per ARP. _____

Investigate cause of low flow condition and dispatch PEO to locally investigate. _____

Monitor condenser vacuum and make recommendations on load reduction. _____

SS: Assist in investigation of low flow condition and directs/supervises load reduction when required. _____

PO: place SJAE "B" in service per 34SO-N61-001-2S. _____
(All actions are local except: SJAE 3rd Stage Press Controller,
SJAE Disch Valve, 2N62-F501B,
SJAE 1st Stg Stm Supply Valve, 2N11-F008B,
SJAE B Suction Vlv, 2N22-F004B

Reduce Reactor power to maintain condenser vacuum. (Exceeding 10 MWe/min is acceptable at this time) _____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

4.	**Loss of RPS/Failure to Isolate** **WHEN** the "B" SJAE has been placed in service and vacuum is stable, **TOGGLE REMOTE FUNCTION rfC71138**, "RPS MG Set A," to **OFF.**

PLANT: Half scram.
Half Group I.
Half Group II, inboard valves close.
Half Group V, 2G31-F001 fails to close.

MESSAGE: **AFTER** being contacted to investigate the "A" RPS MG Set, as a PEO, **REPORT** that the RPS MG Set motor is very warm to the touch and there is a burnt odor in the room.

5.	**LOSP/HPCI Restoration for RWL Control** After the crew has initiated actions to restore the bus, **ACTIVATE MALFUNCTION:** **mfS11_161**, "Loss of Off Site Power (Black Out)," **mfC11_30A**, "Control Rod Drive Pump A Trip," and **mfC11_30B**, "Control Rod Drive Pump B Trip."

PLANT: Loss of Site Power occurs.
"A" D/G starts but fails to automatically tie.
"B" D/G starts and ties to the "1F" bus.
"C" D/G fails to start.
The Reactor will scram.
Both CRD pumps receive a trip signal and cannot be restarted.
MSIVs close and LLS actuates to control Reactor pressure.

MESSAGE: **IF** contact, as the Load Dispatcher, **REPORT** that there has been a major traffic accident that involved the transmission lines. The grid was grounded. Off Site power should be available in approximately an hour.

SCENARIO PRESENTATION
CREW ACTIONS

4.	Loss of RPS/Failure to Isolate

CREW ACTIONS:

TEAM:	Diagnose the loss of a RPS bus.	_____
	Dispatch personnel to determine the cause of the bus loss.	_____
PO:	Respond per 34AB-C71-002-2S, "Loss of RPS."	_____
	Determine that 2G31-F001 failed to close and inform the SS.	_____
SS:	Direct the operator to secure and isolate RWCU.	_____
PO:	Secure RWCU and close 2G31-F001.	_____
SS:	Address Tech Specs for the lost of leakage detection and the failure of RWCU to isolate. (RAS 3.4.5.B, grab samples once per 12 hours & restore in 30 days.) (RAS 3.6.1.3.A, isolate the flow path in 4 hours)	_____

5.	LOSP/HPCI Restoration for RWL Control

CREW ACTIONS:

PO:	Recognize loss of power and resulting Reactor scram.	_____
	Take actions per placard RC-1 and inform SS when complete.	_____
	Take actions per placard RC-2 & RC-3 and inform SS when complete.	_____
	Inform SS that the Reactor is shutdown.	_____
	Inform the SS that the "2A" D/G failed to tie to the "2E" bus, the "1B" is tied to Unit 1, and "2C" D/G failed to start. The operator takes action to tie the "2A" D/G to the "2E" bus. The operator starts the "2C" D/G. The operator must have "1B" D/G control transferred to Unit 2.	_____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

IF the crew request that the "1B" D/G be transferred to Unit II, **TOGGLE REMOTE FUNCTION rfR43241**, "Diesel Gen 1B Engine Control Switch," to **U II**.

WHEN HPCI is started/starts and to injects and RWL is –20 inches, **ACTIVATE MALFUNCTION mfE41_108**, "HPCI Auto Isolation E41-F002."

PLANT: HPCI isolates and trips.

IF requested to restart the "B" RPS MG Set, **TOGGLE REMOTE FUNCTION rfC71139**, "RPS M/G Set B," to **ON**.

IF requested to reset the undervoltage relay for the "A" side of RPS, **TOGGLE REMOTE FUNCTION rfC71177**, "RPS Alt Source UV Relay Reset," to **RESET.**

IF requested to reset the breaker for the "2A" SSAC, **TOGGLE REMOTE FUNCTION rfP51291**, "Station Air Compressor 2A Local Breaker CS," to CLOSE.

IF requested to restart the 125/250 Battery Chargers, **TOGGLE REMOTE FUNCTIONS:**
rfR41183, "125/250 Batt Charg 2A,B,C Supply Breaker,"
rfR41184, "125/250 Batt Charg 2D,E,F Supply Breaker," to **RESET**.

IF requested to perform the EOP 114 actions for RHR, **TOGGLE REMOTE FUNCTION rfE11167**, "2E11-F017A & B Override 5 Min Timer," to **ORIDE.**

MESSAGE: **IF** sent to investigate the HPCI isolation, wait 5 minutes and **REPORT** to the crew that appears to be a bad relay. Repairs should only take a few minutes.

SCENARIO PRESENTATION
CREW ACTIONS

SS:	Enter the EOPs and progress down the RC RPV Control Path.	_____	
	Direct the PO to maintain Reactor pressure below 1080 psig.	_____	
	Direct PO to maintain RWL between +3 and +50 inches.	_____	
PO:	Recognize HPCI isolation, inform the SS, initiate actions to determine the cause of the isolation.	_____	
	Manually tie D/G "2A" to 4160V Bus "2E" by lowering frequency to 57 Hz and then back to 60 Hz per 34AB-R43-001-2S. (Crew Critical Task)	_____	***CRIT TASK**
	Manually start "2C" and verify that it ties to the "2G" bus.	_____	
SS:	Direct the PO to restore loads on 4160 Bus "2E" as D/G loading allows.	_____	
	Progress down EOP flowchart PC-1 and PC-2 due to Drywell temperature above 150°F.	_____	
	Direct PO to restart a Drywell Chiller and coolers. (If Drywell Chiller and Coolers are not restored, a LOCA signal on high Drywell pressure will occur.)	_____	
PO:	Restore electrical loads with the capacity of the Diesel Generator. (RPS, 125/250 Battery Chargers, SSAC)	_____	
	Restart Drywell cooling ensuring that the Diesel Generators are not overloaded.	_____	
SS:	Direct PO to inhibit ADS.	_____	
	After receiving the report of HPCI repair, direct the operator to use HPCI to restore and maintain RWL above top of active fuel.	_____	

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

IF directed to reset lockout on chiller and to open links to restart due to LOCA/LOSP signal, **WAIT** four minutes, **TOGGLE REMOTE FUNCTIONS:**
rfP64194, "Drywell Chillers B006A&B LOCA/LOSP Trip Links," to **BYPAS**,
rfP64195, "Drywell Chillers B006A&B Lockout Reset," to **RESET**, and
rfP64270, "Drywell Chillers Safety Shutdown Local Reset," to **RESET**.

NOTE: If a LOCA signal occurs the "1B" D/G will automatically tie to the "2F" Emergency Bus.

AFTER about 10 minutes, **DELETE MALFUNCTION mfE41_108**, "HPCI Auto Isolation E41-F002."

MESSAGE: **AS** maintenance, **REPORT** that the relay has been replaced and HPCI should be available.

The exercise will be terminated when:

1. All critical tasks are completed.
2. The Emergency Buses have been re-energized.
3. HPCI has been restored and RWL has been stabilized.
4. Containment parameters are being controlled.

SCENARIO PRESENTATION
CREW ACTIONS

PO:	Inhibit ADS.	_____
	Restore HPCI to operation per 34SO-E41-001-2S by opening the isolation valves and manually starting the system.	_____
	Restore RWL to the normal band in a controlled manner.	_____
	If a LOCA signal occurs, recognize that RHR has started with loops potentially drained. Take actions to have the system inspected and vented.	_____
SS:	Classify the event as a ***NUE*** per 73EP-EIP-001-0S, Section 5.0. (This classification may be done after the simulator is put in freeze. Classifying the emergency is normally a SOS function.)	_____

The exercise will be terminated when:

1. All critical tasks are completed.
2. The Emergency Buses have been re-energized.
3. HPCI has been restored and RWL has been stabilized.
4. Containment parameters are being controlled.

Attachment 1
Initial Conditions

UNIT 1 STATUS

Unit One is operating at MOP. Activities in progress:

- Core Spray Valve Operability

UNIT 2 STATUS

Power: Unit Two is operating at MOP in late August.

The following equipment is inoperable:

RCIC due to a severe steam leak on 2E51-F045. Tagged out last shift. ETR is 2 days. RAS is written.

IRM "F" is bypassed due to erratic operation. I & C is investigating. Tracking RAS is written.

RWCU Pump "2A" has seal leakage. ETR is unknown.

Alternate Feeder to Lighting Xfmr 2M (2R23-S014) for breaker cleaning and PM. ETR is 2 days.

Drywell Return Air Fan – 2T47-C001B has a ground. ETR is next Drywell entry.

Scheduled evolutions: Due to elevated Torus temperatures, Torus cooling is required. The previous shift put RHRSW into operation. Place RHR Loop "B" in Torus cooling.

Surveillances due this shift: None

Active clearances:

RCIC

IRM "F

RWCU Pump "2A" – 2G31-C001A

Alternate Feeder to Lighting Xfmr 2M (2R23-S014)

Drywell Return Air Fan – 2T47-C001B

Rod Configuration: See RWM

Attachment 2
CRITICAL TASK COMPLETION CHECKLIST

SOS _____ SS _____ STA _____

POs _____ _____ _____

TASK NUMBER	TASK DESCRIPTION	PERFORMED BY:	COMMENTS
1. 200.009	REMOVE fuses to SRV prior to Torus temperature reaching Boron Injection Initiation Temperature (BIIT).		
2. 028.006	During a LOSP with diesels failing to start and tie, ENERGIZE at least one 4160V emergency bus by manually tying a diesel to a bus by lowering/raising frequency or by manually starting a diesel with the remote start switch.		

Facility: Plant E. I. Hatch Scenario No.: **LT-NRC-00003** Op-Test No.: _____

Examiners: _____ Operators: _____

Event No.	Malf/Ovr Number	Event Type	Event Description
Setup	G31_C001_A	C	Setup – RWCU Pump A tagged out
Setup	R23-S014_A	C	Setup – Lighting Transformer 2M tagged out
Setup	T47-C001B_A	C	Setup – Drywell Return Air Fan tagged out
Setup		I	Setup – IRM F bypassed
Setup	mfR22_244C	C	Setup – 4 KV Bus 2C Fails to Fast Transfer
Setup	mfR22_244D	C	Setup – 4 KV Bus 2D Fails to Fast Transfer
Setup	ACB135494CDI	C	Setup – 4 KV Bus 2C Fails to Manual Transfer
Setup	ACB135534CDI	C	Setup – 4 KV Bus 2D Fails to Manual Transfer
1		N	Emergency Bus Breaker Transfer
2		P	Power Increase With Recirc
3	mfN34_141	I	Main Turbine Lube Oil Temperature Controller Fails
4	mfE41_103	C	HPCI Inadvertent Startup
5	mfB21_215B	M	False RWL Indication/Break In Drywell/Loss HP Feed
5	MFE51_61	M	False RWL Indication/Break In Drywell/Loss HP Feed
5	MFG31_242	M	False RWL Indication/Break In Drywell/Loss HP Feed

Southern Nuclear
E. I. Hatch Nuclear Plant

Operations Training
Simulator Evaluation

TITLE		
INADVERTENT HPCI START/LOCA/LOSS OF HIGH PRESSURE FEED		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. L. SMITH/R. A. BELCHER	**LT-NRC-00003-00**	1.0 HOUR
RECOMMENDED BY:	**APPROVED BY:**	**DATE**
NR	RA Gramm	10/21/99

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LT-NRC-00003**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	10/21/99	Initial development	RLS/RAB	[illegible]

CRITICAL ITEMS

CREW CRITICAL TASKS

1. With Reactor pressure greater than shutoff head of the low pressure system(s) and when RWL decreases below -155", **INITIATE** emergency depress, before RWL reaches -185". Task #201.085

2. Action is taken to restore RWL above -155", by **OPERATING** available low pressure system(s), when Reactor pressure decreases below the shutoff head of the low pressure system(s). Task # 008.018

SCENARIO DESCRIPTION

The crew will assume the shift with directions to transfer "2E" 4160 VAC bus to Alternate power due to breaker PM ***(normal evolution)*** and then increase power. ***(reactivity manipulation)***

After power is increased, the temperature element for the Main Turbine Oil System will fail. The temperature control valves on the lube oil coolers will close and the temperature of the oil system will increase causing various Main Turbine alarms. The crew will address the ARPs and diagnosis the failure. The crew will manually control the oil temperature and initiate actions to repair the failed temperature element. ***(instrument failure)***

After the Main Turbine oil temperature has been addressed, HPCI will receive an auto initiation signal and start. The crew will secure HPCI. When HPCI is secured, the Auxiliary Oil Pump breaker will trip. ARPs and Tech Specs will be addressed for loss of HPCI. ***(component malfunction)***

When the actions are complete for the HPCI INOP, the reference leg feeding the "A" and "C" RWL instruments will slowly leak in the Drywell causing high RWL indication. ***(instrument failure)*** The crew may insert a manual scram prior to the trip on high RWL. The main turbine and feedwater pumps will trip on high RWL. The Reactor will scram as a result of the main turbine trip. ***(major transient)***

Station Service Buses ("A" through "D") will fail to auto fast transfer when the main turbine trips. These buses cannot be recovered. ***(component failure)*** When RCIC starts, it will trip due to a mechanical linkage failure. ***(component failure)*** The break in the Drywell increases, requiring the crew to spray the Drywell (if the crew determines that the pumps are not required for adequate core cooling). When RWL decreases to below the Top of Active Fuel (TAF), the crew will emergency depress and restore RWL with low pressure systems. ***(major transient)***

The following is a list of malfunctions/evolutions contained in the scenario:

		QUANTITATIVE ATTRIBUTES	
Reactivity:	Increase power with Recirc	Total malfunctions	7
Normal:	Swap of an emergency bus to alternate.	Malfunctions after EOP entry	3
Instrument:	Main Turbine Oil Temperature Element failure RWL reference leak/break	Abnormal Events	2
Component:	Station Service Busses fail to auto/manual transfer RCIC mechanical linkage Break inside containment	Major Transients	2
Major Evolutions	Drywell spray Emergency depress <TAF	EOPs entered	2
		EOP Contingencies	2
		Critical Tasks	2

OBJECTIVES

1. **TRANSFER** Emergency 4160 VAC Buses from Normal to Alternate power supply. (027.010)

2. Given an inadvertent initiation of HPCI, **SHUTDOWN** HPCI per 34SO-E41-001-2S. (005.004)

3. With Reactor pressure greater than shutoff head of the low pressure system(s) and when RWL decreases below -155", **INITIATE** emergency depress, before RWL reaches -185". (201.085)

4. Action is taken to restore RWL above -155", by **OPERATING** available low pressure system(s), when Reactor pressure decreases below the shutoff head of the low pressure system(s). (008.018)

NOTE: Objectives 3 and 4 are considered critical tasks for this scenario.

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #128** and leave in **FREEZE**.

2. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfR22_244C	4KV Bus 2C Fails To Auto Fast Transfer			000
mfR22_244D	4KV Bus 2D Fails To Auto Fast Transfer			000
mfN34_141	Main Turbine Lube Oil Sys Temp Cntl Fail			999
mfE41_103	HPCI Inadvertent Startup			T1
mfB21_215B	Rx Lvl (B) Reference Line Leak (Var)	10	0.1	999
mfE51_61	RCIC Mechanical Overspeed Trip			999
mfG31_242	RWCU Non-Isol Leak (0 – 10000 gpm)	1.0	1000	999

3. **INSERT** the following **ORS OVERRIDES:**

TAG #	P/L	DESCRIPTION	STATUS	ACT. TIME
ACB135494CDI	P	Contr SW ACB 135494 (4KV 2C Startup Brkr)	TRIP	000
ACB135534CDI	P	Contr SW ACB 135534 (4KV 2D Startup Brkr)	TRIP	000
E41A-S20DI	P	HPCI Auxiliary Oil Pump	LOCK	999
E41A-S20_A	L	HPCI Auxiliary Oil Pump	OFF	999
G31-C001A_A	L	RWCU Pmp A	OFF	000
R23-S014_A	L	Lighting Xformr 2M	OFF	000
T47-C001B_A	L	Drywell Return Air Fan	OFF	000

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

   - Bypass IRM "F."

SIMULATOR SETUP

5. **PLACE** the Simulator in **FREEZE** until the crew assumes the shift.

6. **PLACE DANGER TAGS** on the following equipment:

MPL #	COMPONENT	TAGGED POSITION
2G31-C001A	RWCU Pump 2G31-C001A	TRIP
2R23-S014	Alternate Feeder To Lighting Xfmr 2M (2R23-S014)	TRIP
2T47-C001B	Return Air Fan 2T47-C001B	TRIP

7. **ESTIMATED** Simulator **SETUP TIME**: **20 Minutes**

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

1.	**Emergency Bus Breaker Transfer** The crew will assume shift with the directions to transfer 4160 Volt Emergency Bus "2E" to alternate supply.

PLANT: 4160 Volt Bus "2E" is transferred to alternate.

2.	**Power Increase** After 4160 Volt Bus "2E" has been transferred, the crew will increase power with Recirc.

PLANT: Power is increased with Recirc.

SCENARIO PRESENTATION
CREW ACTIONS

1.	**Emergency Bus Breaker Transfer**

CREW ACTIONS:

SS: Direct 4160 Volt Emergency Bus "2E" be transferred to alternate supply. _____

PO: Transfer 4160 Volt Emergency Bus "2E" to alternate supply per 34SO-R22-001-2 by: _____

Place the Sync Switch for ACB 135544 to ON. _____

Close ACB 135544, 4160V Bus "2E" Alternate Supply. _____

Confirm ACB 135554, 4160V Bus "2E" Normal Supply, trips and place the control switch to TRIP. _____

Place the Sync Switch for ACB 135544 to OFF. _____

2.	**Power Increase**

CREW ACTIONS:

PO: Using Master Manual, increase Reactor power with Recirc per 34GO-OPS-005-2S and 34SO-B31-001-2S. Does not exceed 10 MWe. _____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

3.	**Main Turbine Lube Oil System Temperature Controller Failure** **AFTER** power has been increased to satisfy the reactivity manipulation requirement, **ACTIVATE MALFUNCTION mfN34_141**, "Main Turbine Lube Oil Sys Temp Cntl Fail."

PLANT: Temperature element N34-TE-N301 fails to minimum.
Oil system temperature control valves go to closed position.
Lube oil temperature and Turbine bearing temperatures increase.
TURB GEN/CWPS BRG TEMP HIGH alarms.
If uncorrected, the Main Turbine will trip on high vibration.

MESSAGE: **WHEN** contacted for assistance with the controller failure, as maintenance, **REPORT** that the temperature element appears to have failed. Estimated time of repair is 12 hours.

4.	**Inadvertent Initiation of HPCI** **AFTER** the crew has control of the Lube oil temperature, **ACTIVATE MALFUNCTION mfE41_103**, "HPCI Inadvertent Startup," and **HOLD** the T1 push-button until HPCI discharge opens or HPCI is manually tripped. **IF** crew does not secure HPCI, continue to activate the malfunction periodically.

PLANT: HPCI will start and may inject to the Reactor.
RWL will increase, but will stabilize prior to receiving high RWL trip.
If HPCI injects, Reactor power will increase due to cold water injection to the point of receiving APRM high alarms.

AFTER HPCI has been secured, **ACTIVATE OVERRIDES:**
E41A-S20DI, "HPCI Auxiliary Oil Pmp," to **STOP** and
E41A-S20_A, "HPCI Auxiliary Oil Pmp," to **OFF**.

(These overrides are to simulate a trip of the Aux Oil Pump breaker.)

PLANT: Indicating lights will extinguish for the HPCI Aux Oil Pump.
The HPCI Aux Oil Pump cannot be started.

MESSAGE: **AFTER** being dispatched, as Electrical Maintenance, **REPORT** that the HPCI Aux Oil Pump motor has a short on the winding and will need to be replaced.

SCENARIO PRESENTATION
CREW ACTIONS

3.	**Main Turbine Lube Oil System Temperature Controller Failure**

CREW ACTIONS:

PO: Acknowledge alarms and respond per the ARPs.

TEAM: Diagnose the controller failure.

PO: Take manual control of the failed controller and increase cooling water flow.

Verify Main Turbine bearing temperatures are decreasing.

TEAM: Request maintenance assistance in repairing the failed controller.

4.	**Inadvertent Initiation of HPCI**

CREW ACTIONS:

PO: Acknowledge annunciators and inform the SS of the event. _____

Take actions per 34AB-E10-001-2S to secure HPCI. Trips HPCI and attempts to reset the initiation signal. When the initiation signal does not clear, places HPCI in PTL. _____

Monitor Reactor power, level, and pressure. _____

Reference applicable ARPs and respond accordingly. _____

Dispatch operator to the ATTS panel to check associated MTUs. _____

SS: Direct the PO to secure HPCI per 34AB-E10-001-2S. _____

Notify the I & C Dept to investigate spurious initiation signal. _____

Declare HPCI inoperable and initiate LCO. Tech Spec Section 3.5.1 is entered. _____

Inform the SOS of plant condition. _____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

5.	**False RWL Indication/Unisolable Break in the Drywell/Loss of High Pressure Feed** **AFTER** the Tech Spec for an Inop HPCI has been addressed, **ACTIVATE MALFUNCTION mfB21_215B**, "Rx Lvl (B) Reference Line Leak (Var)."

PLANT: B21-R606A & C will slowly trend upscale until both RFPTs and the main turbine to trip on a high RWL signal.
A Reactor scram will occur.
RWL will decrease rapidly causing a Group II and RCIC initiation.

NOTE: The crew may insert a manual scram prior to the automatic scram caused by the Main Turbine trip.

ALLOW RCIC to be started and inject for about 1 minute, then **ACTIVATE MALFUNCTION mfE51_61**, "RCIC Mechanical Overspeed Trip."

PLANT: RCIC trips resulting in a loss of all high pressure feedwater.

AS RWL decreases to -50 to -80 inches, **ACTIVATE MALFUNCTION mfG31_242**, "RWCU Non-Isol Leak (0 - 10000 gpm)."

PLANT: Drywell temperature and pressure begin to increase.
A LOCA signal will occur due to high Drywell pressure of 1.85 psig and low RWL -101 inches.

MODIFY MALFUNCTION mfG31_242, "RWCU Non-Isol Leak (0 - 10000 gpm)," incrementally as required, to cause RWL to slowly decrease to TAF. Do not to exceed 5% at 0.5%/minute.

PLANT: RWL decreases to TAF.
No high pressure make-up systems are available.
Due to the leak, Torus pressure will increase and possibly exceed the initiation pressure of 11 psig.

SCENARIO PRESENTATION
CREW ACTIONS

5.	**False RWL Indication/Unisolable Break in the Drywell/Loss of High Pressure Feed**

CREW ACTIONS:

PO:	Acknowledge annunciators and inform the SS of the event.	_____
TEAM:	Diagnosis the failure and determine that a Main Turbine trip/Reactor will occur.	_____
PO:	When the scram occurs, inform the SS that all rods are fully inserted.	_____
	Take actions per placard RC-1, RC-2, & RC-3 and inform the SS when complete.	_____
	Enter 34AB-C71-001-2S, "Scram Procedure."	_____
SS:	Enter the EOPs and progress down 31EO-EOP-010-2S, "RC RPV Control" flowchart and 31EO-EOP-012-2S and 31EO-EOP-013-2S, PC-1 and PC-2 "Primary Containment Control."	_____
	When it is determined that all high pressure feed is loss, enter 31EO-EOP-015-2S, "CP-1 Alternate Level Control."	_____
	Directs Torus cooling and sprays to be started.	_____
	Directs Drywell Chillers and coolers be restarted.	_____
	Directs ADS be inhibited.	_____
PO:	Verify automatic actions.	_____
	Initiate Torus cooling and spray.	_____
	Inhibits ADS	_____
	Start Drywell Chillers and coolers.	

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

NOTE: The crew may spray the Drywell. However, prior to the emergency depress, the spray should be terminated and those systems aligned for injection.

The exercise will be terminated when:

1. All critical tasks are completed.
2. RWL is above TAF and controlled by low pressure systems.
3. Containment control guidelines have been implemented.

SCENARIO PRESENTATION
CREW ACTIONS

SS:	Orders systems in Table 8 to be aligned for injection.	_____	
	Orders the Reactor be emergency depressed when RWL decreases to below –155" (TAF), but prior to –185".	_____	
PO:	Initiates actions to align Table 8 Systems for operation.	_____	
	Open 7 ADS valves to emergency depress the Reactor. (Crew Critical Task)	_____	***CRIT TASK**
	Control injection to the Reactor with the low pressure systems. (Crew Critical Task)	_____	***CRIT TASK**
	Analyze which RWL instruments are available.	_____	
SS:	Classify the event as a ***Alert Emergency*** per 73EP-EIP-001-0S, Section 20.0. (This classification may be done after the simulator is put in freeze. Classifying the emergency is normally a SOS function.)	_____	

The exercise will be terminated when:

1. All critical tasks are completed.
2. RWL is above TAF and controlled by low pressure systems.
3. Containment control guidelines have been implemented.

Attachment 1
Initial Conditions

UNIT 1 STATUS

Unit One is operating at approximately 50% power following the trip of the "1B" RFPT. Activities in progress:

- Identify the cause of the RFPT trip.
- Restore the RFPT to service.
- Return power to MOP.

UNIT 2 STATUS

Power:

Unit Two is operating at approximately 75% power. Power was reduced to perform a rod pattern adjustment.

The following equipment is inoperable:

IRM "F"

RWCU Pump "2A" has seal leakage. ETR is unknown.

Alternate Feeder to Lighting Xfmr 2M (2R23-S014) for breaker cleaning and PM. ETR is 2 days.

Drywell Return Air Fan – 2T47-C001B has a ground. ETR is next Drywell entry.

Scheduled evolutions:

Transfer 4160 Volt "2E" to alternate supply to allow for a breaker PM on the normal supply breaker.

Continue power increase to MOP.

Surveillances due this shift:

As required by 34GO-OPS-005-2S.

Active clearances:

IRM "F" is bypassed due to erratic operation. I & C is investigating. Tracking RAS is written.

RWCU Pump "2A" – 2G31-C001A

Alternate Feeder to Lighting Xfmr 2M (2R23-S014)

Drywell Return Air Fan – 2T47-C001B

Rod Configuration:

See RWM

Attachment 2
CRITICAL TASK COMPLETION CHECKLIST

SOS _____ SS _____ STA _____

POs _____ _____ _____

TASK NUMBER	TASK DESCRIPTION	PERFORMED BY:	COMMENTS
1. 201.085	With Reactor pressure greater than shutoff head of the low pressure system(s) and when RWL decreases below -155", **INITIATE** emergency depress, before RWL reaches -185".		
2. 008.018	Action is taken to restore RWL above -155", by **OPERATING** available low pressure system(s), when Reactor pressure decreases below the shutoff head of the low pressure system(s).		

Facility: Plant E. I. Hatch Scenario No.: **LT-NRC-00002** Op-Test No.: _____

Examiners: _____ Operators: _____

Event No.	Malf/Ovr Number	Event Type	Event Description
Setup	G31_C001_A	C	Setup – RWCU Pump A tagged out
Setup	R23-S014_A	C	Setup – Lighting Transformer 2M tagged out
Setup	T47-C001B_A	C	Setup – Drywell Return Air Fan tagged out
Setup		I	Setup – IRM F bypassed
Setup	mfC11_211	M	Setup – Scram Discharge Volume ATWS
Setup	mfN37_135A	C	Setup – Turbine Bypass Valve A Stuck
Setup	mfN37_135B	C	Setup – Turbine Bypass Valve B Stuck
1		~~N~~/R	~~Station Service Bus Transfer~~/Power increase
~~2~~	~~mfE51_113~~	~~I~~	~~RCIC Instrument Failure/Isolation~~
~~2~~	~~mf6021154~~	~~I~~	~~RCIC Instrument Failure/Isolation~~
3	mfC51_14B	I	APRM/OPRM Failure
4	mfB31_37B	C	Recirc Pump B Trip
4	B31-31BDI	C	Recirc Pump B Trip
5	mfC71_60A	C	Power Instabilities/ATWS
5	mfC51_253	C	Power Instabilities/ATWS
5	mfN30_122	C	Power Instabilities/ATWS

Southern Nuclear
E. I. Hatch Nuclear Plant

Operations Training
Simulator Evaluation

TITLE		
~~STATION SERVICE BUS TRANSFER~~/POWER INSTABILITIES/ATWS		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. L. SMITH/R. A. BELCHER	**LT-NRC-00002-00**	1.0 HOUR
RECOMMENDED BY:	**APPROVED BY:**	**DATE**
NR	RLSmith	10/21/99

SOUTHERN COMPANY

Energy to Serve Your World℠

SOUTHERN NUCLEAR OPERATING COMPANY
PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LT-NRC-00002**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	10/12/99	Initial development	RLS/RAB	[illegible]

CRITICAL ITEMS

CREW CRITICAL TASKS

1. Given excessive power oscillations while operating in the Region of Potential Instabilities, manually **SCRAM** the Reactor. Task #001.013

2. **REDUCE** Reactor power by driving control rods in a timely manner and **INJECTING** Standby Liquid Control prior to entering the BIIT curve. Task #201.071

3. **INHIBIT** ADS to prevent an uncontrolled Reactor depress to prevent causing a significant power excursion. Task #038.008

4. **TERMINATE** and **PREVENT** injection into the Reactor when conditions are met. Task #201.089

5. **RE-ESTABLISH** injection into the Reactor and **MAINTAIN RWL** above -185". Task #201.090

SCENARIO DESCRIPTION

The crew will assume the shift with the Main Generator tied and Station Service Buses on ~~Alternate~~ Normal supplies. ~~The crew will transfer Station Service Buses to the Normal supplies.~~ ***(normal evolution)***

After the Buses are transferred, the crew will increase Reactor power and generator load. ***(reactivity manipulation)***

~~After power has been increased, a dP instrument will fail and RCIC will isolate. The crew addresses the resulting ARPs and Tech Specs for the isolation. *(instrument failure)*~~

After the actions are complete for the RCIC isolation, the "A" APRM will fail. ***(instrument failure)*** The crew will address the resulting ARPs and be informed that it is the OPRM function of APRM that has failed. The crew will be informed that this being evaluated as a common failure. The crew will address the AB for operations without OPRM. The discharge valve for the "2B" Recirc pump will fail closed resulting in pump trip. ***(component malfunction)*** Core flow will be reduced into the Region of Potential Instabilities (ROPI). The crew will take actions to exit ROPI. After actions are initiated to exit ROPI, power oscillations will occur and the crew will manually scram the Reactor (auto scram failure). ***(component failure)***

The Reactor will fail to scram and the crew will enter the ATWS EOP ***(major transient).*** The Main Turbine will trip and two bypass valves will fail to open. ***(component failure)*** The crew will be required to terminate and prevent injection for ATWS level control. Subsequent re-scram of the Reactor will insert all control rods. The crew will restore normal Reactor water level band and take appropriate Primary Containment control actions.

The following is a list of malfunctions/evolutions contained in the scenario:

		QUANTITATIVE ATTRIBUTES	
Reactivity:	Increasing Main generator load and Reactor Power.	Total malfunctions	~~12~~ 11
~~**Normal:**~~	~~Synchronizing the Main generator to the grid.~~	Malfunctions after EOP entry	2
~~**Instrument:**~~	~~RCIC dP instrument failure~~	Abnormal Events	2
Component:	Recirc Discharge valve closure RPV power oscillations, RPS auto failure, failure of control rods to insert, bypass valves failure	Major Transients	1
Major Evolutions	ATWS	EOPs entered	2
		EOP Contingencies	1
		Critical Tasks	5

NOTE: The major evolution (ATWS) was picked because, per the PRA, it has been identified as an event likely to cause fuel damage at Hatch.

OBJECTIVES

1. RECOGNIZE and RESPOND to a failed APRM/OPRM per Technical Specifications and applicable ARPs. (200.095)

2. Given excessive power oscillations while operating in the Region of Potential Instabilities, MANUALLY SCRAM the Reactor. (001.013)

3. REDUCE Reactor power by driving control rods in a timely manner and INJECTING Standby Liquid Control prior to entering the BIIT curve. (201.071)

4. INHIBIT ADS to prevent an uncontrolled Reactor depress to prevent causing a significant power excursion. (038.008)

5. TERMINATE and PREVENT injection into the Reactor when conditions are met. (201.089)

6. RE-ESTABLISH injection into the Reactor and maintain RWL above -185". (201.090)

NOTE: Objectives 2, 3, 4, 5, and 6 are considered critical tasks for this scenario.

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #112** and leave in **FREEZE**.

2. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfC11_211	Scram Discharge Volume ATWS (Var)	55	1000	000
mfN37_135A	Bypass Valve A Stuck			000
mfN37_135B	Bypass Valve B Stuck			000
~~mfE51_113~~	~~RCIC Auto Isolation E51-F008~~			999
~~mf60211154~~	~~Spur Ann – ECCS/RPS DIVISION I TROUBLE~~			999
mfC51_14B	APRM B Failure (Inoperative)			999
mfC71_60A	React Prot Fails To Scram – Auto			999
mfC51_253	Region Independent LPRM Oscillations	30	5	999
mfN30_122	Main Turbine Trip.			999
mf60313289	Ann Fail – SCRAM DISCH VOL HIGH LEVEL TRIP			999

3. **INSERT** the following **ORS OVERRIDES:**

TAG #	P/L	DESCRIPTION	STATUS	ACT. TIME
B31-F031BD1	P	Recirc Pmp B Disch	CLOSE	999
G31-C001A_A	L	RWCU Pmp A	OFF	000
R23-S014_A	L	Lighting Xformr 2M	OFF	000
T47-C001B_A	L	Drywell Return Air Fan	OFF	000

SIMULATOR SETUP

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

   A. Bypass IRM "F."
   ~~B. Transfer Station Services Buses to Alternate.~~
   C. Start the 3rd Condensate and 2nd Condensate Booster Pump.
   D. Place the 2nd RFPT in service.
   E. Place Recirc in Master Manual.
   F. Withdraw control rods, through Group 56C – Position 32.

7. **PLACE** the Simulator in **FREEZE** until the crew assumes the shift.

8. **PLACE DANGER TAGS** on the following equipment:

MPL #	COMPONENT	TAGGED POSITION
2G31-C001A	RWCU Pump 2G31-C001A	TRIP
2R23-S014	Alternate Feeder To Lighting Xfmr 2M (2R23-S014)	TRIP
2T47-C001B	Return Air Fan 2T47-C001B	TRIP

9. **ESTIMATED** Simulator **SETUP TIME:** **30 Minutes**

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

1.	**~~Station Service Buses Transfer~~** Reactor Power Increase After the crew assumes shift, ~~the crew will transfer Station Services Buses "A" through~~ "D" to ~~their normal supply. After the buses have been transferred~~, the crew will increase Reactor power and generator load.

~~2.~~	~~**RCIC dP Instrument Failure and Isolation**~~ **AFTER** power has been increased to satisfy the reactivity manipulation requirements, **ACTIVATE MALFUNCTIONS:** **mfE51_113**, "RCIC Auto Isolation E51-F008." **mf6021154**, "Spur Ann – ECCS/RPS Division I Trouble,"

PLANT: RCIC STEAM LINE DIFF PRESS HIGH alarms.
ECCS/RPS DIVISION I TROUBLE alarms.
RCIC STEAM LINE DIFF PRESS HIGH alarms.
2E51-F008 closes.

MESSAGE: **WHEN** requested to investigate ATTS, report as I & C that MTU 2E51-N657A has a gross fail light illuminated. Estimate that it will take 2 hours to replace and calibrate the MTU.

SCENARIO PRESENTATION
CREW ACTIONS

1.	~~Station Service Busses Transfer~~ Reactor Power Increase

CREW ACTIONS:

~~**PO:**~~ Transfer Station Service Buses ~~per 34SO-R22-001-2S by:~~ (for each bus) Deleted _____

- Placing the Station SVC Interlock Cutout to CUTOUT-DOWN,
- Placing the Sync Switch to ON,
- Closing the Normal Supply Breaker,
- Tripping the Alternate Supply Breaker,
- Placing the Sync Switch to OFF,
- ~~Placing the Station SVC Interlock Cutout to NORMAL-UP.~~

Do this! → Increase Reactor power with Recirc per 34GO-OPS-005-2S. (Should not exceed 10 MWe/min.) _____

~~2.~~	~~RCIC dP Instrument Failure and Isolation~~

CREW ACTIONS:

TEAM: Recognize and diagnose the RCIC isolation and cause. Deleted _____

Dispatch personnel to ATTS to investigate alarm. _____

PO: Respond to the ARP, close 2E51-F007. _____

SS: Address Tech Specs for RCIC inoperability. _____
(RAS 3.5.3, restore RCIC to operable in 14 days)
~~(RAS 3.6.1.3.A, Isolate RCIC with 4 hours)~~

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

3.	**APRM/OPRM Failure** **AFTER** actions are complete for the RCIC Isolation, **ACTIVATE MALFUNCTION mfC51_14B**, "APRM B Failure (Inoperative)."

PLANT: APRM/OPRM TRIP alarms.
ROD OUT BLOCK alarms.
INOP on the "B" ODA

MESSAGE: **AS** the I & C supervisor, **REPORT** that the OPRM function of the APRM has failed. The malfunction is being evaluated as a common failure and that the OPRM functions cannot be assumed to operable at this time. I & C is continuing to investigate.

4.	**Recirc Discharge Valve Failure/Entrance Into ROPI** **AFTER** the crew has addressed the AB for operations without OPRMs, **ACTIVATE OVERRIDE B31-F031BDI**, "Recirc Pmp B Disch."

PLANT: 2B31-F031B closes
Recirc Pump B trips reducing core flow.
Plant stabilizes in the immediate exit region of the Region of Potential Instabilities.

SCENARIO PRESENTATION
CREW ACTIONS

3.	APRM/OPRM Failure

CREW ACTIONS:

PO: Acknowledges the annunciators and diagnoses the failure of the "A" APRM. _____

SS: Directs the SSS/I & C to investigate the cause of the APRM failure. _____

Investigates appropriate Tech Specs for the APRM (3.3.1.1) _____

TEAM: Determine that all OPRM functions are inoperable. _____

Enter 34AB-C51-001-2S, "Reactor Operations With Inoperable OPRM System," and closely monitor for power/flow oscillations. _____

Monitor plant operation using Attachment 1 of 34AB-C51-001-2S, "OPRM System INOP Power Verses Flow Map." _____

4.	Recirc Discharge Valve Failure/Entrance Into ROPI

CREW ACTIONS:

PO: Acknowledges the annunciators and inform the SS the "B" Recirc Pump has tripped. _____

Enter 34AB-B31-001-2S and recognize entry into the Immediate Exit Region of the Power/Flow map. _____

Take actions to exit the region. (Prepare to insert control rods). _____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

5.	**Power Instabilities/ATWS** **AFTER** the crew has taken action to exit the Region of Potential Instabilities, activate malfunctions: **mfC71_60A**, "React Prot Fails To Scram – Auto," **mfC51_253**, "Region Independent LPRM Oscillations."

PLANT: 30% peak to peak LPRM oscillations occur.
OPRMs fails to auto scram.
Manual scram fails to insert control rods due to a hydraulic lock on the scram discharge volume.

AFTER a scram is entered:

DELETE MALFUNCTION mfC51_243, Region Independent LPRM Oscillations,"

ACTIVATE MALFUNCTION mfN30_122, Main Turbine Trip."

The crew may request the following **REMOTE FUNCTIONS:**
rfC71281, "Jumper to Oride All Scrams," to **ORIDE**.
rfC11290, "ARI System Test," to **TEST**.
rfC11143, "C11-F034," to **CLOSE**.
rfB21148, "Grp I Rx Water Level Bypass," to **BYPAS**.
rfP64195, "Drywell Chillers B006A&B Lockout Reset," to **RESET**.
rfP64270, "Drywell Chiller Safety Shutdown Local Reset," to **RESET**.
rfE11022, "2E11-F015A & B Override Jumpers and Links," to **OPEN**.
rfE11167, "2E11-F017A & B Override 5 Min Timer," to **ORIDE**.
rfE21168, "2E21-F005A & B Override LOCA Signal," to **ORIDE**.
rfE41153, "HPCI Torus Suction Bypass," to **BYPAS**.
rfE51155, "RCIC Torus Suction Bypass," to **BYPAS**.

SCENARIO PRESENTATION
CREW ACTIONS

5.	**Power Instabilities/ATWS**

CREW ACTIONS:

TEAM:	Diagnose power oscillations of 30% peak to peak.	_____	
SS:	Direct that the crew manually scram the Reactor per 34AB-C51-001-2S.	_____	
PO:	Manually scram the Reactor. (Crew Critical Task)	_____	***CRIT TASK**
TEAM:	Diagnose that control rods failed to insert.	_____	
SS:	Enter the RCA Flowchart and order the following actions: Initiate ARI, trip Recirc pumps, & insert control rods per 31EO-EOP-103-2S.	_____	
PO:	Initiate ARI and trip Recirc pumps.	_____	
	Insert control rods per 31EO-EOP-103-2S. (Crew Critical Task)	_____	***CRIT TASK**
SS:	Enter CP-3 and order ADS inhibited	_____	
	Prior to entering the BIIT curve, direct SBLC be initiated per RCA.	_____	
	Direct the Group I low level isolation to be overridden.	_____	
	When conditions are met to terminate and prevent injection, direct the operator to terminate and prevent injection per 31EO-EOP-113-2S.	_____	
PO:	Inhibit ADS. (Crew Critical Task)	_____	***CRIT TASK**
	Initiate SBLC. (Crew Critical Task)	_____	***CRIT TASK**
	Terminate and Prevent injection per 31EO-EOP-113-2S. (Crew Critical Task)	_____	***CRIT TASK**

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

WHEN scram and ARI are reset per EOP 103, **MODIFY MALFUNCTION mfC11_211**, "Scram Discharge Volume ATWS (Var)," to a final value of **0%.**

The instructor may **ACTIVATE MALFUNCTION mf60313289**, "Ann Fail – SCRAM DISCH VOL HIGH LEVEL TRIP," to clear the alarm if necessary to conserve time.

The exercise will be terminated when:

1. All critical tasks are completed.
2. All control rods have been inserted.
3. RWL is being controlled per the EOPs.
4. Containment control actions have stabilized containment parameters.

SCENARIO PRESENTATION
CREW ACTIONS

SS:	Enter PC-1 & PC-2 on high Torus temperature and direct the following: Torus cooling, restore Drywell chillers/cooling, H_2 O_2 analyzers. (These actions may be done as operators become available and are not critical.)	_____	
PO:	Place RHR in Torus cooling, restore Drywell chillers/coolers, and start the H_2 O_2 analyzers.	_____	
SS:	When the conditions are met, direct the operator to re-establish injection with an upper band where injection was re-established and a lower band of -185".	_____	
PO:	Re-establish injection into the RPV with an upper band where injection was re-established and a lower band of -185". (***NOTE:*** If power gets low enough, CRD pumps may raise level above the upper band.) (Crew Critical Task)	_____	***CRIT TASK**
	When the conditions are met, rescram the Reactor and diagnosis that all control rods have fully inserted.	_____	
SS:	Exit RCA flowchart and enter RC for Non-ATWS.	_____	
	Direct the operator to terminate SBLC.	_____	
	Direct the operator to restore RWL to the normal operating band.	_____	
PO:	Terminate SBLC.	_____	
	Restore RWL to the normal band in a controlled manner.	_____	
SS:	Classify the event as a ***Site Area Emergency*** per 73EP-EIP-001-0S, Section 15.3. (This classification may be done after the simulator is put in freeze. Classifying the emergency is normally a SOS function.)	_____	

The exercise will be terminated when:

1. All critical tasks are completed.
2. All control rods have been inserted.
3. RWL is being controlled per the EOPs.
4. Containment control actions have stabilized containment parameters.

Attachment 1
Initial Conditions

UNIT 1 STATUS

Unit One is operating at MOP. Activities in progress:

- "1C Diesel Generator Surveillance.

UNIT 2 STATUS

Power:

Unit Two is operating at approximately 55% power. A plant startup is in progress following a scram resulting from EHC pumps problems. The plant was shutdown for 7 days to repair the EHC System

The following equipment is inoperable:

IRM "F" is bypassed due to erratic operation. I & C is investigating. Tracking RAS is written.

RWCU Pump "2A" has seal leakage. ETR is unknown.

Alternate Feeder to Lighting Xfmr 2M (2R23-S014) for breaker cleaning and PM. ETR is 2 days.

Drywell Return Air Fan – 2T47-C001B has a ground. ETR is next Drywell entry.

Scheduled evolutions:

Transfer Station Services buses to the Normal supply. The breakers have been racked in and the tags have been removed. Continue power ascension.

Surveillances due this shift:

As required by 34GO-OPS-005-2S

Active clearances:

IRM "F"

RWCU Pump "2A" – 2G31-C001A

Alternate Feeder to Lighting Xfmr 2M (2R23-S014)

Drywell Return Air Fan – 2T47-C001B

Rod Configuration:

See RWM

Attachment 2
CRITICAL TASK COMPLETION CHECKLIST

SOS _____ SS _____ STA _____

POs _____ _____ _____

TASK NUMBER	TASK DESCRIPTION	PERFORMED BY:	COMMENTS
1. 001.013	Given excessive power oscillations while operating in the Region of Potential Instabilities, manually scram the Reactor.		
2. 201.071	Reduce Reactor power by driving control rods in a timely manner and injecting Standby Liquid Control prior to entering the BIIT curve.		
3. 038.008	Inhibit ADS to prevent an uncontrolled Reactor depress to prevent causing a significant power excursion.		
4. 201.089	Terminate and prevent injection into the Reactor when conditions are met.		
5. 201.090	Re-establish injection into the Reactor and maintain RWL above -185".		

Outline and initial exam submittal
designated under RIDS Code A070

DISTRIBUTION CODE
A070

OK

1. The Unit 2 Station Service 4160V buses are operating in a normal lineup with the unit at MOP. The normal supply breaker to 4160V bus "2C" inadvertantly trips. There is no fault on the bus. Which one of the following equipment responses should occur?

   a. The normal supply breaker for that bus auto recloses after 5 seconds since there is not a fault on the bus.
   b. The bus fast transfers and the alternate supply breaker auto closes to maintain power to the bus.
   c. The alternate supply breaker for that bus closes to re-energize the bus and EDG "2C" receives an auto start signal.
   ✓d. The alternate supply breaker for that bus will not close and the bus remains de-energized.

Bank question (slightly modified)
LT-LP-02702-03, p. 13

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
262001	AA3.02	(3.2/3.3)	1	TIER2GRP1	BWR-4	HATCH	BANK

DATES: Modified: Monday, September 13, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☐ Scramble Choices

Scramble Range: A - D

1 ST DRAFT

Red = Hatch comments

Blue = NRC resolution

2. A LOSP has occurred on ~~Unit~~ 2. The following plant conditions existed for the last 5 minutes ~~Exist~~ on Unit 2:

All 4160 V emergency buses are deenergized.
No EDGs are currently running.
HPCI and RCIC are isolated.
RPV level ~~has been steady for the past 5 minutes~~ is at -110" and steady.
Drywell pressure is 4.2 psig.
Inhibit switches are in NORMAL.

Which one of the following describes the status of the ADS?

a. ADS has initiated and 7 ADS valves should be open.
b. ADS will initiate in approximately 7 minutes when the 13 minute timer times out.
c. ADS will initiate immediately when AC power is restored and a low pressure ECCS pump is started.
d. ADS will initiate 2 minutes after AC power is restored and a low pressure ECCS pump is started.

97 NRC exam, Q# 10
33-LP-03801-00, pp. 4-7

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
218000	K5.01	(3.8/3.8)	3	TIER2GRP1	BWR-4	HATCH	3/14/97

DATES: Modified: Monday, August 23, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☐ Scramble Choices

Scramble Range: A - D

3. Which one of the following is true with the Emergency Transfer Switches at the Remote Shutdown Panels (RSDPs) in the NORM position?

a. Neither Unit can control equipment from the RSDPs.
b. Unit 1 can control equipment from the RSDPs but Unit 2 can not.
c. Unit 2 can control equipment from the RSDPs but Unit 1 can not.
d. Both units can control equipment from the RSDPs.

New question
SI-LP-05201-00, p. 8

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295016	AA1.07	(4.2/4.3)	1	TIER1GRP1	BWR-4	HATCH	NEW

DATES: Modified: Thursday, September 09, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

Scramble Choices

Scramble Range: A - D

4. Preparations are presently being made to startup the Unit 1 reactor. The following conditions exist:

Reactor Mode Switch:	Refuel
Reactor Pressure:	~~125~~ psig
Reactor Temperature:	200°F
RPV Head Closure Bolts:	All fully tensioned
Control Rods:	All rods in

Based on the above conditions, the reactor is in which one of the following Modes?

a. Mode 2
b. Mode 3
c. Mode 4
d. Mode 5

'97 NRC exam, Q# 84 (modified)
Unit 1 TS, p. 1.1-~~8~~, Table 1.1-1
LR-LP-30005, Obj. p.6

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.1.22	(2.8/3.3)	2	TIER3CAT1	BWR-4	HATCH	3/14/97

DATES: Modified: Wednesday, August 25, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

Scramble Choices

Scramble Range: A - D

Believe this question is beyond scope of memory level. Should have table 1.1-1.
Suggest changing mode req. to Shutdown
⇒ ans. C

5. Fuel movement is in progress of Unit 2 with the following plant conditions:

	Mode Switch Position	Coolant Temperature	Reactor Power
Unit 1	Run	545°F	80%
Unit 2	Refuel	128°F	0%

Which one of the following is the MINIMUM on-site shift staffing required by the Unit 2 Technical Specifications?

a. SRO 1 + 1 for Fuel Handling
RO 2
PEO 3
STA 0

b. SRO 1 + 1 for Fuel Handling
RO 2
PEO 3
STA 1

c. SRO 2 + 1 for Fuel Handling
RO 2
PEO 3
STA 1

✓d. SRO 2 + 1 for Fuel Handling
RO 3
PEO 3
STA 1

'93 NRC exam, Q# 87 (updated for ITS)
Unit 2 TS, p. 5.0-1 - 5.0-4 30AC-OPS-0003-05, p. 35 ✓
10 CFR 50.54(m)(2)(i)
LT-ST-30003-05, p. 8

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.1.4	(2.3/3.4)	1	TIER3CAT1	BWR-4	HATCH	2/29/93

DATES: Modified: Wednesday, August 25, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☐ Scramble Choices

Scramble Range: A - D

6. Which one of the following documents is required to be reviewed by the Shift Supervisor prior to assuming shift per 31GO-OPS-007-0S, "*Shift Logs and Relief of Personnel*"?

✓a. Control room log
b. Annunciator control log
c. Temporary modification log
d. Required action tracking log
RAS Log

Bank question (modified slightly)
31GO-OPS-007-0S, p. 3
LT-LP-30004-04, p. 32

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.1.3	(3.0/3.4)	1	TIER3CAT1	BWR-4	HATCH	BANK

DATES: Modified: Tuesday, August 31, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

☒ Scramble Choices
Scramble Range: A - D

7. Which one of the following is the consequence of a very low zinc concentration being provided by the Zinc Injection System?

   a. The potential for Main Condenser tube leaks is increased.
   b. The potential for Intergranular Stress Corrosion Cracking is increased.
   ✓c. Dose rates in the drywell ~~will increase~~ due to more Cobalt-60 plating out on primary system components. during outages
   d. Dose rates out the Main Stack will increase due to less effective Iodine-133 scrubbing in the Off-gas system.

New question
LT-LP-07301-04, pp. 8, 34-35

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.1.34	(2.3/2.9)	1 (2) 100	TIER3CAT1	BWR-4	HATCH	NEW

DATES: Modified: Wednesday, September 01, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☐ Scramble Choices

Scramble Range: A - D

While operating mid-cycle on Unit 2, chemistry reports that the ZIS ~~is inop~~ has failed and ~~it cannot be repaired~~ repair parts will not be available for 6 months.

8. According to Facility Operating License No. DPR-57, which one of the following is the maximum power level authorized by NRC for Unit 1?

Current

a. 897 MWe
b. 943 MWe
✓c. 2763 MWt
d. 2816 MWt

New question
Facility Operating License No. DPR-57
Unit 1 Tech. Spec., Sect. 1.1, p. 1.1-5
LT-LP-30005-04, p. 7 (note: U1 data in LP is incorrect, see license)

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.1.10	(2.7/3.9)	1	TIER3CAT1	BWR-4	HATCH	NEW

DATES: Modified: Tuesday, September 07, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☐ Scramble Choices

Scramble Range: A - D

9. Unit 1 is operating at 80% ~~RTP~~ power. CRD Pump "1A" is in service. The operators observe the following indications:

Drive water ~~header pressure~~ dP:	Low
Cooling water flow:	Low
CRD Mechanism temperatures:	Rising
Recirc Pump seal temperatures:	Rising

Which one of the following CRD components has caused these abnormal conditions?

a. The drive water filter is plugged.
b. The flow control valve has failed closed.
c. The cooling water control valve has failed closed.
d. The drive water pressure control valve has closed.

→ New Question
SI-LP-00101-00, p. 8, 35

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
201001	A3.08	(3.0/2.9)	2	TIER2GRP2	BWR-4	HATCH	NEW

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

☐ Scramble Choices

Scramble Range: A - D

Can we give them a simplified line diagram - (Fig. 12) ← OK

10. Unit 2 was operating at ~~100% RTP~~ MOP when a reactor scram occurs. The following plant conditions exist:
Main turbine tripped
Main generator PCBs are closed.
Position indication for DC powered RCIC valves is out.
~~Position indication for 2E11-F045A is out.~~ CORE SPRAY SYS A LOGIC POWER FAILURE annunciator is lit.

Which one of the following is the likely cause of this event?

a. Loss of 125/250 VDC Switchgear A (2R22-S016)
b. Loss of 125/250 VDC Switchgear B (2R22-S017)
c. Loss of 125 VDC Cabinet B (2R25-S002)
d. Loss of 125 VDC Cabinet C (2R25-S003)

SIE ~~97 NRC exam, Q# 33 (modified)~~ ~~New question~~
LT-LP-02704-03 34AB-R22-C01-25, p. 8
pp. 31, 32

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
263000	K3.03	(3.4/3.8)	3	TIER2GRP2	BWR-4	HATCH	3/14/97

DATES: Modified: Monday, August 23, 1999 Used:

ANSWERS: Single Points 1

Version Answers: 0 1 2 3 4 5 6 7 8 9
D A B C D A B C D A

☐ Scramble Choices
Scramble Range: A - D

Want to add as reference "panel logic status" lights. 31, p. 32 tells how to interpret the lights. What about R25-S002 & S003?
Purpose is to diagnose based on equipment lost not sys indications.

11. Unit 1 is operating at ~~100% RTP~~ MOP with the "1A" EDG in TEST and paralleled to the "1E" 4160 VAC bus. While testing the EDG, a LOCA occurs. Which one of the following describes the electrical plant response to this event?

a. The EDG comes out of TEST and all 4160 VAC station service buses deenergize.
b. The EDG remains paralled to the "1E" bus and all 4160 VAC station service buses deenergize.
✓c. The EDG comes out of TEST and all 4160 VAC station service buses transfer to alternate supply.
d. The EDG remains paralled to the "1E" bus and all 4160 VAC station service buses transfer to alternate supply.

'97 NRC exam, Q# 22 (modified)
LT-LP-02702-03, p. 9-17

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
264000	A4.03	(3.2/3.4)	2	TIER2GRP1	BWR-4	HATCH	3/14/97

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☐ Scramble Choices

Scramble Range: A - D

12. Unit 1 was operating at 35% ~~MOP~~ when a loss of offsite power transient occurred. If the 600 VAC Nonessential Load Lockout protection failed to function, which one of the following is a possible a consequence of this failure?

✓a. The Emergency Diesel Generators could be overloaded.
b. 4160V buses "1C" & "1D" would experience an overcurrent condition.
c. The Emergency Diesel Generators could trip due to under frequency.
d. Essential loads on 600V buses "1C" & "1D" would fail to automatically restart.

Bank question (reworded and reordered)
LT-LP-02703-03, p. 19

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
264000	K4.05	(3.2/3.5)	2	TIER2GRP1	BWR-4	HATCH	BANK

DATES: Modified: Monday, September 13, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

☒ Scramble Choices

Scramble Range: A - D

13. Which one of the following Emergency Director responsibilities *may* be delegated to another individual?

a. The decision to request federal assistance.
b. The decision to notify offsite emergency response agencies.
✓c. The decision to evaluate and implement ~~onsite~~ protective actions. on plant site.
d. The decision to declare, escalate, or downgrade emergency classifications.

73EP-EIP-004-0S, p. 2
EP-LP-20101-00, pp. 14-15

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.4.38	(2.2/4.0)	1	TIER3CAT4	BWR-4	HATCH	NEW

DATES: Modified: Thursday, August 26, 1999 Used:

ANSWERS:

Single

Points 1

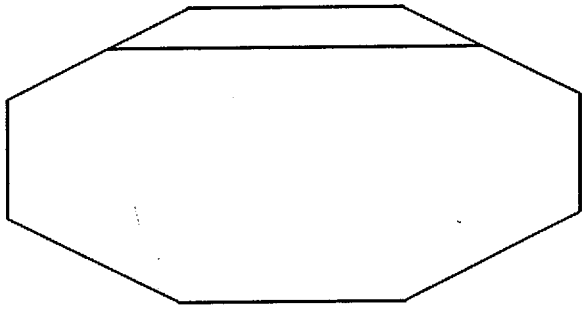
Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☑ Scramble Choices

Scramble Range: A - D

14. Which one of the following describes the meaning of the EOP flowchart symbol below?



a. Emergency depressurization is required.
✓b. Wait until a specified condition is met before proceeding.
c. Stop the current procedure and go to the specified procedure to continue.
d. Terminate and prevent the specified equipment from injecting to the reactor vessel.

EOP flowcharts
LR-LP-20303-04 03, p. 10

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.4.19	(2.7/3.7)	1	TIER3CAT4	BWR-4	HATCH	NEW

DATES: Modified: Thursday, August 26, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☒ Scramble Choices

Scramble Range: A - D

Need flow charts for other Q's ⇒ gives this away.

Look at replacement Q that DN give away answer if candidates have a flowchart.

15. Primary Containment Control flowchart, PC-1, directs initiation of drywell sprays before the bulk drywell temperature reaches the drywell design temperature limit. Which one of the following is the basis for this action? new A See below

✓a. To ensure that equipment within the drywell will operate when required.
b. To maintain the equipment qualification of the highest valves in the drywell capable of removing the full decay heat load following a LOCA.
c. Temperatures above the design temperature limit cause increased degradation of structural concrete and release of hydrogen to the drywell.
d. If drywell sprays are initiated above the design temperature limit, the subsequent rate of pressure reduction will be in excess of what the torus to drywell vacuum breakers can handle.

EOP PC-1, G-6
LR-LP-20310-05, p. 59

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.4.18	(2.7/3.6)	1	TIER3CAT4	BWR-4	HATCH	NEW

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS: Single Points 1

Version Answers: 0 1 2 3 4 5 6 7 8 9

A	B	C	D	A	B	C	D	A	B

☐ Scramble Choices
Scramble Range: A - D

Which one of the following is the basis for initiating D/W sprays before the bulk drywell temp. reaches the D/W design temp. limit?

16. Unit 2 has experienced a large LOCA and a Site Area Emergency has been declared. The TSC is in the process of being manned. Suddenly, the Shift Superintendent (SOS) has indications of a heart attack. The Unit 1 Shift Supervisor (SS) calls for medical assistance and the SOS is transported to Appling General Hospital. Which one of the following personnel must relieve the SOS in this situation?

procedurally

a. The Unit 1 Shift Supervisor.
b. The Unit 2 Shift Supervisor.
c. Any licensed SRO.
✓d. Any higher ranking actively licensed SRO.

New question
30AC-OPS-003-0S, p. 18
LT-LP-30004-04

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.4.37	(2.0/3.5)	1	TIER3CAT4	BWR-4	HATCH	NEW

DATES: Modified: Tuesday, August 31, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☒ Scramble Choices
Scramble Range: A - D

In a Site Area Emergency, if the SOS becomes medically incapacitated, procedurally the SOS must be relieved by

The SOS becomes medically incapacitated during a S_A_E_ on Unit 2. Per procedure, which one of the following personnel must relieve the SOS?

17. Which one of the following represents the major threat to the public during a severe reactor accident with substantial core damage?

a. Gamma radiation that is being emitted directly from the damaged fuel.
b. Radioactive contamination and radiation shine from the release plume.
c. Hydrogen explosion that occurs due to buildup of hydrogen over the course of the accident.
d. Steam explosion that occurs when the core melts and relocates to the containment base mat.

Bank question (reworded and modified slightly)
LT-LP-20018-01, p. 9

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.4.44	(2.1/4.0)	1	TIER3CAT4	BWR-4	HATCH	BANK

DATES: Modified: Tuesday, August 31, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

Scramble Choices

Scramble Range: A - D

18. In preparation for plant startup, the PEO lining-up the Standby Diesel Service Water system informs the Shift Supervisor that a valve is in the correct position but is listed incorrectly on the valve checkoff sheet. Which one of the following describes the action to be taken to make a temporary procedure change?

a. Since this is an editorial change, the Shift Supervisor may approve the change.
✓b. Since the intent of this procedure is changed, two members of management must approve the change before the procedure may be used.
c. Since the intent of this procedure is changed, the PRB must review and the applicable manager must approve the change before the procedure may be used.
d. Since this is an editorial change, the PEO may make the change in the field and then fill out a Procedure Processing Form (PPF) to document the change when he returns to the control room.

'93 NRC exam, Q# 43 (slightly modified and updated)
10AC-MGR-003-0S, pp. 3-4
LT-LP-30004-04, pp. 15-17

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.2.6	(2.3/3.3)	1	TIER3CAT2	BWR-4	HATCH	2/29/93

DATES: Modified: Wednesday, August 25, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☑ Scramble Choices

Scramble Range: A - D

Procedure has changed and have no correct answer. Will work on and make recommendation

Ok to use flowchart? Why isn't this right?

19. The automatic scram signals on Unit 2 have been overridden per the EOPs during an ATWS. Per 40AC-ENG-018-0S, "*Temporary Modification Control,*" which one of the following actions ~~should~~ must the crew perform for ~~this~~ these jumper?

✓a. No action is required for these conditions.
b. ~~Fill out~~ Complete the temporary modification form only.
c. Attach temporary modification tags to the jumpers only.
d. ~~Fill out~~ Complete the temporary modification form and attach temporary modification tags.

Complete?

Bank question (reworded to eliminate teaching in correct answer)
40AC-ENG-018-0S
LT-LP-30004-04, p. 41

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.2.14	(2.1/3.0)	1	TIER3CAT2	BWR-4	HATCH	BANK

DATES: Modified: Monday, August 30, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

☐ Scramble Choices

Scramble Range: A - D

ok

"offload" to be consistent w/ terminology in #23.

20. Unit 2 is in a refueling outage with a full core discharge in progress. A fuel bundle is being transfered from the core to the fuel pool when the control room operator reports that reactor cavity water level is decreasing. Per 34AB-G41-002-2S, "*Decreasing Rx Well/Fuel Pool Water Level,*" which one of the following actions should the refueling SRO direct the bridge operator to perform?

a. Return the fuel bundle to any in-core location that is available.
✓b. Move the fuel bundle to any fuel storage rack in the fuel pool.
c. Move the fuel bundle to the fuel pool and lower it as deep into the pool as possible.
d. Do not move the fuel bundle any further and lower it as deep as possible where it is.

Bank question (modified slightly)
34AB-G41-002-2S
LT-LP-04502-03, p. 36

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.2.32	(2.3/3.3)	1	TIER3CAT2	BWR-4	HATCH	BANK

DATES: Modified: Monday, August 30, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☒ Scramble Choices

Scramble Range: A - D

21. An event caused the "2G" 4160V bus to be de-energized. The "2C" Emergency Diesel Generator is not supplying bus "2G". The cause of the electrical failure has been found and corrected. Which one of the following represents the necessary approval(s) required to reset the LOSP lock-out relay and restore normal power to the bus?

a. Shift Supervisor only.
b. Maintenance Supervisor (Electrical) only.
✓c. Shift Supervisor and Supervisor Engineering Support.
d. Unit Superintendent and Maintenance Supervisor (Electrical).

Bank question (reworded slightly)
30AC-OPS-003-0S, sec. 8.5.1, p. 15
LT-LP-30007-01, p. 27

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.2.21	(2.3/3.5)	1	TIER3CAT2	BWR-4	HATCH	BANK

DATES: Modified: Tuesday, August 31, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☐ Scramble Choices

Scramble Range: A - D

22. Which one of the following conditions will directly result in an automatic start of both diesel fire pumps?

✓a. A loss of offsite power.
b. A loss of instrument air.
c. A fire alarm on the XL3 Master Panel.
d. A sustained low fire main pressure of 110 psig.

Bank question (distractors rearranged, "d" changed)
34SO-X43-001-2S
LT-LP-03601-03, p. 21

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
286000	K5.05	(3.0/3.1)	1	TIER2GRP2	BWR-4	HATCH	BANK

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

☒ Scramble Choices
Scramble Range: A - D

Ensure define what directly means to the candidates.

23. Core defueling is in progress. All control rods are fully inserted into the reactor core. A fuel assembly has just been placed in the fuel pool and unlatched. The main hoist has been raised to a safe elevation to pass through the cattle chute (not "normal-up") with the bridge still over the fuel pool location. The next step requires that another fuel assembly be removed from the reactor core and placed in the fuel pool.

    Which one of the following states when the Rod Block Interlock #1 light on the Interlock Status Display Panel first illuminates as the next step is performed?

    ✓a. As the bridge is moved near the reactor core (LS1 is actuated).
    b. When the bridge is over the reactor core (LS1 is actuated) and the main hoist is lowered into the reactor vessel.
    c. When the fuel assembly is latched with both grapple hooks closed.
    d. When the fuel assembly is being raised and the main hoist loaded signal is actuated.

'97 BSEP exam, Q# 99 (adapted)

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
234000	K5.02	(3.1/3.7)	3	TIER2GRP2	BWR-4	HATCH	NEW

DATES: Modified: Tuesday, August 24, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

Scramble Choices

Scramble Range: A - D

Will fax recommended wording. Not same terminology as BSEP. ✓

Done using slightly different version of Hatch prog

24. A complete loss of Unit 1 service air has occurred. Which one of the following describes the effect this loss will have on the Fuel Pool Transfer Canal inflatable seals?

a. ~~Pneumatic~~ pressure will be immediately lost to ~~only~~ the inner gate seals.
b. ~~Pneumatic~~ pressure will be immediately lost to ~~only~~ the outer gate seals.
✓c. Pressure to the seals will not be immediately lost due to air receivers that are available to supply air pressure to the seals.
d. Pressure to the seals will not be lost due to a backup nitrogen bottle that is available to automatically supply pressure to the seals.

'93 NRC exam, Q# 32
SLKT-SP-04501-00, p. 14

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
233000	K4.06	(2.9/3.2)	1	TIER2GRP3	BWR-4	HATCH	2/29/93

DATES: Modified: Tuesday, August 24, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☒ Scramble Choices

Scramble Range: A - D

25. A LOCA has occurred on Unit 1. EOP flowcharts PC-1 & PC-2, ~~"Primary Containment Control,"~~ are being implemented. Plant conditions are as follows:

Drywell pressure:	5.5 psig
Drywell temperature:	165°F
Torus water level:	~~305~~ inches (280 inches) new Δ
Drywell [H2]:	(5.4) ~~6.4%~~
Drywell [O2]:	4.7%
Torus [H2]:	5.2%
Torus [O2]:	(6.4) ~~5.8%~~
Radioactive release rate:	0.63 mR/hr

Based on the above conditions, which one of the following actions should not be implemented to restore primary containment parameters to acceptable levels?

a. Vent the drywell. torus
b. ~~Initiate~~ ~~drywell~~ sprays. new Δ
✓c. Operate the drywell cooling fans.
d. Initiate drywell nitrogen purge flow.

Bank question (modified)
EOP Flowcharts PC-1 & PC-2, coord. D-10
LR-LP-20310-05, pp. 68, 86

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
500000	G2.4.22	(3.0/4.0)	3	TIER1GRP1	BWR-4	HATCH	BANK

DATES: Modified: Friday, September 17, 1999 Used:

ANSWERS:

Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☐ Scramble Choices
Scramble Range: A - D

Want to give the DW spray init. limit. Also EOP flow chart.

Not a test of flowchart usage. Rather testing if know not to use spark causing equip in explosive mixture situations.

26. Unit 2 has scrammed due to high Drywell pressure. The RHR system is operating in the Drywell Spray mode with the following plant conditions:

Drywell average temperature:	198° and decreasing
Drywell pressure:	1.7 psig
Suppression Chamber pressure:	1.7 psig
Suppression Pool level:	149 inches and stable
Suppression Pool temperature:	93°F and increasing
Reactor Water Level:	-15 inches and increasing

Which one of the following describes the appropriate action for operation of the Drywell Sprays under these conditions?

a. Drywell Sprays should remain in service until the plant is operating inside the safe region of the Drywell Spray Initiation Limit.
b. Drywell sprays should remain in service until drywell/suppression chamber differential pressure reaches -0.5 psid. before drops to 0.0
✓c. Drywell Sprays should be secured ~~because~~ Drywell pressure ~~is below 1.85~~ psig.
d. Drywell Sprays should be secured because Suppression Chamber pressure is below 1.85 psig.

Bank question ~~CHECK ANSWER!!! THIS DOESN'T LOOK RIGHT.~~
LR-LP-20310-04, p. 46 EOP Flowchart PC/1, E-9

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295010	2.4.6	(3.1/4.0)	3	TIER1GRP1	BWR-4	HATCH	BANK

DATES: Modified: Thursday, September 09, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☐ Scramble Choices

Scramble Range: A - D

ok

27. While performing a HPCI surveillance with the "2A" loop of RHR in suppression pool cooling, a HPCI instrument line breaks resulting in drywell pressure rising to 2.15 psig. Which one of the following describes the status of RHRSW after this event?

a. Still running due to not having a LOSP load shed signal.
b. Tripped and cannot be restarted due to the LOCA load shed logic.
✓c. Tripped initially, but can be restarted by overriding the LOCA signal.
d. Tripped initially and then sequentially tied back onto the Emergency Bus due to the LOCA load shed logic.

Bank question (reworded slightly)
34SO-E11-010-2S
SI-LP-03401-02, pp. 26-27

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295024	EK2.04	(3.9/3.9)	2	TIER1GRP1	BWR-4	HATCH	BANK

DATES: Modified: Friday, September 03, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☒ Scramble Choices

Scramble Range: A - D

28. Which one of the following describes the intent of the below EOP override?

IF drywell pressure is above 1.85 psig	THEN prevent injection from CS and LPCI pumps per 31EO-EOP-114-2S EXCEPT when required for adequate core cooling.

a. To prevent a power excursion due to cold water injection.
b. To allow the crew to initiate containment sprays during a LOSP.
✓c. To prevent uncontrolled injection as reactor pressure decreases.
d. To force the crew to lower RPV level in an attempt to reduce reactor power.

'97 NRC exam, Q# 51
LR-LP-20308

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295024	EK2.04	(3.9/3.9)	1	TIER1GRP1	BWR-4	HATCH	3/14/97

DATES: Modified: Friday, September 03, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

Scramble Choices
Scramble Range: A - D

Don't use on 10/99 exam.

Bank item: H1 D/W PRESSURE (E) 002

29. Unit 2 is operating at ~~100% RTP~~ with drywell cooling unit/fans B007A & B, B008A, B009A, and B010A in RUN and operating. Suddenly the crew receives the following alarms and indications:

DRYWELL COOLING UNIT B007A AIR DISCH TEMP HIGH annunciator lit
DRYWELL COOLING UNIT B007B AIR DISCH TEMP HIGH annunciator lit
DRYWELL COOLING UNIT B008A AIR DISCH TEMP HIGH annunciator lit
DRYWELL COOLING UNIT B009A AIR DISCH TEMP HIGH annunciator lit
DRYWELL COOLING UNIT B010A AIR DISCH TEMP HIGH annunciator lit
DRWL CHILLED WTR B006A SAFETY S/D annunciator lit

Drywell Pressure: 0.88 psig and slowly rising

Drywell Temperature Readings from SPDS:

UPPER	MIDDLE	LOWER
158°F	138°F	125°F
149°F	134°F	122°F
151°F		128°F
147°F		132°F

All drywell temperatures are slowly rising.

The SRO implements 34AB-T47-001-2S, *"Complete Loss of Drywell Cooling,"* in response to the above conditions. Which one of the following actions should the SRO perform based on these indications?

a. Correct reactor water level indications due to high drywell temperature.
b. Vent the drywell with ~~DAC~~/CAD to control drywell pressure.
c. Enter EOP PC-2, *"Primary Containment Control,"* due to high drywell temperature.
d. Commence a Fast Reactor Shutdown per 34GO-OPS-014-2S ~~before drywell pressure reaches its reactor trip setpoint.~~ Immediately

New question

34AB-T47-001-2S
SI-LP-01394-01, pp. 17-19, 27-34

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295012	AA2.02	(3.9/4.1)	3	TIER1GRP2	BWR-4	HATCH	NEW

DATES: Modified: Wednesday, September 08, 1999 Used:

29. **ANSWERS:**

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☒ Scramble Choices

Scramble Range: A - D

30. The Unit 2 reactor has scrammed. All PSW pumps are tripped and cannot be restarted The following plant conditions are noted:

Reactor water level:	-5" and increasing slowly
Reactor pressure:	920 psig, controlled with the bypass valves
Drywell temperature:	339°F and increasing slowly
Drywell pressure:	1.4 psig and steady

Based on the above conditions, which one of the following actions should the operators perform?

a. ~~Emergency depressurize the RPV.~~ d.
b. ~~Anticipate emergency depressurization and open the bypass valves.~~ a. Initiate drywell sprays
c. Start all available drywell cooling, overriding any automatic trips. c.
d. Commence a controlled cooldown within the cooldown limits. b.

'97 NRC exam, Q# 76 (modified)
LP-LP-20310-05, p. 61

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295028	EA2.01	(4.0/4.1)	3	TIER1GRP2	BWR-4	HATCH	3/14/97

DATES: Modified: Friday, September 03, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☐ Scramble Choices
Scramble Range: A - D

b. ~~Spray the dr~~ Initiate drywell sprays.

⇒ 'a' is correct answer.

31. Which one of the following describes the basis for ~~establishing an~~ offsite radioactivity release rate ~~of 0.57mr/hr~~ as an entry condition to ~~the~~ Unit 2 ~~Radioactive Release Control flowchart, RR?~~

a. ~~Indicates a primary system break~~ which cannot be isolated.
b. Corresponds to an entry into a Site Area Emergency in the Emergency Plan.
c. Represents an immediate threat to the continued health and safety of the public.
d. Represents a release rate that is higher than expected during normal plant operations, but does not pose an immediate threat to the public.

New question
LR-LP-20325-05, pp. 26,29

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295038	AA2.03	(3.5/4.3)	1	TIER1GRP1	BWR-4	HATCH	NEW

DATES: Modified: Thursday, September 09, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☒ Scramble Choices

Scramble Range: A - D

32. Given the following plant conditions: new A

- Unit 1 is ~~experiencing~~ A transient has occurred resulting in high RPV pressure ~~due to a transient.~~
- ~~The SRVs are~~ actuating in the Low Low Set (LLS) mode to relieve pressure.

Which one of the following describes how the LLS signal will reset.

a. The LLS logic automatically resets when RPV pressure is less than 1080 psig and SRV tailpipe pressure switches are less than 85 psig.
b. The LLS logic automatically resets when RPV pressure is less than 1080 psig or SRV tailpipe pressure switches are less than 85 psig.
c. The LLS logic can be manually reset if RPV pressure is less than 1080 psig and SRV tailpipe temperature is less than 85 psig.
✓d. The LLS logic can be manually reset if RPV pressure is less than 1080 psig or SRV tailpipe temperature is less than 85 psig.

New question
SI-LP-01401-00, pp. 12, 45

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295007	AK3.04	(4.0/4.1)	2	TIER1GRP1	BWR-4	HATCH	NEW

DATES: Modified: Thursday, September 09, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☐ Scramble Choices

Scramble Range: A - D

33. Unit 2 was operating at ~~100% RTP~~ when the main turbine inadvertantly tripped. The following conditions were noted on 2H11-P603 two minutes after the scram:

All 4 scram Group A lights are *illuminated*
All 4 scram Group B lights are *extinguished*
Reactor pressure peaked at 1190 psig and is now 920 psig
RWM shows all control rods are inserted

Which one of the following states the reason why control rods were inserted?

a. ARI actuated.
b. Backup scram valves actuated.
c. High reactor pressure scram signal.
d. Main Turbine trip > 30% scram signal.

97 NRC exam, Q# ~~65~~ (slightly modified)
~~LT~~-LP-00101-00, p. 16

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295025	EK2.04	(3.9/4.1)	2	TIER1GRP1	BWR-4	HATCH	3/14/97

DATES: Modified: Thursday, September 09, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

Scramble Choices

Scramble Range: A - D

34. The Unit 2 reactor has just received a spurious scram signal. During recovery actions the crew identifies that reactor water level is 105 inches. Based on this condition, which one of the following actions should the operators **immediately** perform?

not bolded.

✓a. Close the MSIVs.
b. Isolate HPCI and RCIC.
c. Trip any operating ~~RFP turbine~~ CD pump.
d. Reduce reactor water level using RWCU.

'97 NRC exam, Q# 69 (slightly modified)
LR-LP-20301-03, p.14

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295008	AA1.03	(3.1/3.1)	1	TIER1GRP2	BWR-4	HATCH	3/14/97

DATES: Modified: Monday, August 23, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

☐ Scramble Choices

Scramble Range: A - D

35. Unit 2 is conducting a plant startup per 34GO-OPS-001-2S, "*Plant Startup*," and surveillance 34SV-E41-005-2S, "*HPCI Pump Operability 165 PSIG Test*," is in progress. The following plant conditions exist:

    - Suppression pool water temperature is 98°F and rising.
    - The "A" loop of suppression pool cooling in service.

    The SS is implementing the actions of 34AB-T23-003-2S, "*Torus Temperature Above 95°F*". In accordance with Unit 2 Technical Specifications, what action is required once suppression pool temperature exceeds 105°F?

    a. Place the "B" loop of RHR in suppression pool cooling.
    b. Suspend all testing that adds heat to the suppression pool.
    c. Place the reactor mode switch in SHUTDOWN.
    d. Depressurize the reactor vessel to less than 200 psig within 12 hours.

~~DOES 34SV-E41-005-2S REQUIRE BOTH LOOPS OF S/P COOLING IN SERVICE?~~

New question
Unit 2 Tech. Spec. 3.6.2.1
34AB-T23-003-2S, p. 2
LT-LP-20201-05, p. 22

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295013	2.2.22	(3.4/4.1)	1	TIER1GRP1	BWR-4	HATCH	NEW

DATES: Modified: Thursday, September 09, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☐ Scramble Choices

Scramble Range: A - D

OK

36. During an accident on Unit 2, suppression pool water level has reached 200 inches. Reactor pressure is 300 psig and decreasing. Which one of the following containment components will NOT properly function at this point?

a. Suppression chamber spray nozzles.
✓b. SRV tail pipes and/or supports.
c. Suppression chamber to drywell vacuum breakers.
d. Normal control room suppression pool level instrumentation.

New question
LR-LP-20310-05, pp. 25, 30, 32 — Graph 6

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295029	EK 3.01	(3.5/3.9)	2	TIER1GRP2	BWR-4	HATCH	NEW

DATES: Modified: Thursday, September 09, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☐ Scramble Choices

Scramble Range: A - D

Provide to candidate as reference? ^Graph 6 No. Is leading cand to answer and is not germane to answering Q. Testing knowledge of component locations. If tested at higher press./lower lvl then graph would be approp.

37. Unit 2 was operating at 68% when a main steam line leak occurred. The following plant conditions exist:

Steam tunnel area temperature:	145°F
130' Northwest area radiation:	1100 mr/hr
130' Southwest area radiation:	820 mr/hr

Based on plant conditions, which one of the following actions should the operators perform?

a. The reactor must be scrammed.
b. The reactor must be shutdown per 34GO-OPS-013-2S, Normal Plant Shutdown.
c. The reactor must be shutdown per 34GO-OPS-014-2S, Fast Reactor Shutdown.
d. The reactor must be scrammed and Emergency Depressurization initiated per CP-1.

'93 NRC exam, Q# 83 (reordered)
LR-ST-20325-02, p. 10

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295033	G2.4.6	(3.1/4.0)	2	TIER1GRP2	BWR-4	HATCH	2/29/93

DATES: Modified: Monday, August 23, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

Scramble Choices

Scramble Range: A - D

OK

38. An ATWS has occurred on Unit 2. Reactor water level is being controlled using the "2A" Reactor Feedwater Pump and drywell pressure is steady at 2.4 psig. The SS directs the PO to prevent the HPCI system from injecting to the RPV. Which one of the following actions is the correct method for accomplishing this task?

a. Manually trip HPCI, then close the HPCI Steam Supply Valve (2E41-F001).
b. Close the HPCI Steam Supply Valve (2E41-F001), then place the HPCI Auxiliary Oil Pump in "Pull-to-Lock".
c. Place the HPCI Auxiliary Oil Pump in "Pull-to-Lock," then press the HPCI manual trip pushbutton until the HPCI turbine has stopped.
✓d. Press the HPCI manual trip pushbutton until the HPCI turbine has stopped, then place the HPCI Auxiliary Oil Pump in "Pull-to-Lock".

Bank question (reworded and reordered)
34SO-E41-001-2S, p. 26
SI-LP-00501-01, p. 7

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
206000	A4.10	(3.7/3.5)	1	TIER2GRP1	BWR-4	HATCH	BANK

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☐ Scramble Choices

Scramble Range: A - D

39. During a reactor startup on Unit 2 with reactor power at 7% ~~RTP~~, an operator starts to withdraw a control rod to its withdraw limit of 12. The following conditions are then noted:

    ROD DRIFT annunciator lit.
    Rod drift light is illuminated.
    RPIS indication shows the rod is moving towards position 48.

    Based on the above conditions, which one of the following should the operator perform?

    a. Drive the control rod in using EMERGENCY IN.
    b. Enter the Fast Reactor Shutdown procedure, 34GO-OPS-014-2S.
    c. Scram the control rod with the SCRAM TEST toggle switch.
    ✓d. Immediately insert a manual reactor scram.

'97 NRC exam, Q# 45
LT-LP-20201

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295014	AA1.03	(3.5/3.5)	2	TIER1GRP1	BWR-4	HATCH	3/14/97

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☐ Scramble Choices
Scramble Range: A - D

Same topic as on TPM exam. Change!

40. Which one of the following statements describes one reason why the mode switch is taken from the SHUTDOWN position to the REFUEL position during an ATWS condition?

a. Allows the scram solenoids to be de-energized without causing MSIV closure.
b. Allows bypassing the RWM so the operator may drive rods using Emergency In.
✓c. Allows control rod selection for position monitoring during individual rod ~~scrams~~ movement or Scrams.
d. Allows the scram to be reset and the scram discharge volume vent and drain valves to be opened.

Bank question (modified distractors)
LR-LP-20314-02, p. 19, 20

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295015	AK2.02	(2.0/3.5)	1	TIER1GRP1	BWR-4	HATCH	BANK

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☐ Scramble Choices

Scramble Range: A - D

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

A Station Service Air Compressor (SSAC):	NORMAL
B SSAC:	STOP
C SSAC:	Running
Service Air pressure:	Normal

A fault on 4160V Bus "2E" results in loss of power to the bus.

Which one of the following describes the expected response of system air pressure and the Station Service Air Compressors? (Assume no operator action.)

a. System pressure will decrease until A SSAC will automatically starts.
b. System pressure will decrease until B SSAC automatically starts.
✓c. System pressure will be maintained, however there is no automatic backup available.
d. System pressure will be maintained, and an automatic backup compressor is available.

New question
LT-03501-03, p. 19 17-18

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
300000	K2.01	(2.8/2.8)	2	TIER2GRP2	BWR-4	HATCH	NEW

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☐ Scramble Choices

Scramble Range: A - D

42. Which one of the following describes the condition and an adverse affect associated with operating with a low reactor water level while at power?

a. Increased levels of moisture in the steam can erode turbine blades.
b. Increased levels of moisture in the steam can cause main steam line water hammer.
c. Steam being entrained in the water can cause localized power peaks.
✓d. Steam being entrained in the water can erode recirculation pump impellers.

New question
LT-LP-00202-03, p. 9

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295009	AK1.01	(2.7/2.9)	1	TIER1GRP1	BWR-4	HATCH	NEW

DATES: Modified: Thursday, September 09, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☐ Scramble Choices

Scramble Range: A - D

43. Unit 1 is operating at 60% RTP when an event occurs resulting in the following plant conditions:

"A" reactor feedwater pump flow:	16%
"B" reactor feedwater pump flow:	28%
RPV water level:	30 inches

Which one of the following describes the response of the Reactor Recirculation Pumps (RRPs) to this situation?

a. The RRPs run back to 22%, and reset automatically when "A" feedwater flow increases above 20%.
b. The RRPs run back to 44%, and reset automatically when "A" feedwater flow increases above 20%.
c. The RRPs run back to 22%, but must be manually reset when "A" feedwater flow increases above 20% and RPV level increases above 32 inches.
d. The RRPs run back to 44%, but must be manually reset when "A" feedwater flow increases above 20% and RPV level increases above 32 inches.

'93 NRC exam, Q# 5 (slightly reworded)
LT-IH-00401-00, p. 27

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295009	K3.01	(3.2/3.3)	2	TIER1GRP1	BWR-4	HATCH	2/29/93

DATES: Modified: Thursday, September 16, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

Scramble Choices

Scramble Range: A - D

44. Which one of the following is the ~~MINIMUM~~ suppression pool level at which the Unit ~~HPCI exhaust line will be covered~~? do you come to become uncovered?

a. 98 inches
b. 102 inches
c. 110 inches
d. 146 inches

New question
LR-LP-20310-05, pp. 17, 20

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295030	EK1.01	(3.8/4.1)	1	TIER1GRP1	BWR-4	HATCH	NEW

DATES: Modified: Thursday, September 09, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

Scramble Choices

Scramble Range: A - D

45. The Unit 1 Primary Containment Control flowchart, PC-1, has the operators perform the following action if suppression pool water level can ***not*** be maintained above 115 inches:

> Trip and prevent operation of HPCI irrespective of adequate core cooling

Which one of the following HPCI system responses will this action prevent?

a. Unstable HPCI operation.
b. HPCI exhaust check valve chatter.
c. Loss of back pressure on the exhaust line.
✓d. Overpressurization of the primary containment.

'97 NRC exam, Q# 61
LR-LP-20310-05, p. 23

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295030	G2.4.18	(2.7/3.6)	1	TIER1GRP1	BWR-4	HATCH	3/14/97

DATES: Modified: Thursday, September 09, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☐ Scramble Choices

Scramble Range: A - D

46. Which one of the following describes the difference between Unit 1 and Unit 2 when power is lost to that unit's RPS bus "A"?

✓a. Unit 1 inboard Reactor Building ventilation dampers will close.
b. Unit 1 outboard Reactor Building ventilation dampers will close.
c. Unit 2 inboard Reactor Building ventilation dampers will close.
d. Unit 2 outboard Reactor Building ventilation dampers will close.

New question
SI-LP-01001-01, p. 27

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295003	AK 3.06	(3.7/3.7)	1	TIER1GRP1	BWR-4	HATCH	NEW

DATES: Modified: Thursday, September 09, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

☑ Scramble Choices
Scramble Range: A - D

Will fax proposed new question.

Don't like proposed Q. Will rewrite this one to test knowledge that on loss of U1 RPS A, the Rx Bldg vent will isol.

See new Q.

DK

47. A partial loss AC power has occurred resulting in loss of one RPS bus. The SS desires to re-energize the RPS bus from its alternate power supply. Which one of the following statements correctly describes how alternate power is supplied to the RPS buses?

a. RPS Bus "B" may receive its alternate power supply from Instrument Bus "A" or "B" depending on the position of the RPS Power Source Select Switch on P610.
b. RPS Bus "A" or RPS Bus "B" may receive its alternate power supply from Vital AC after repositioning the throwover switch in the RPS MG Set room.
✓c. RPS Bus "B" may receive its alternate power supply from Essential Cabinet "A" or "B" depending on the position of the throwover switch in the RPS MG Set room.
d. RPS Bus "A" receives its alternate power supply from Essential Cabinet "A" and RPS Bus "B" receives its alternate power supply from Essential Cabinet "B".

Bank question (modified)
SI-LP-01001-01, pp. 28, 45

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295003	K1.04	(3.1/3.2)	1	TIER1GRP1	BWR-4	HATCH	BANK

DATES: Modified: Monday, September 13, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

Scramble Choices

Scramble Range: A - D

48. While placing the "2A" RHRSW Pump in service to support suppression pool cooling, the operator places the "Interlock Override Vlv 2E11-F068A" switch to the OVERRIDE position and leaves it there. Subsequently, a leak in the drywell causes drywell pressure to increase to 5 psig. Which one of the following describes the impact of this ccondition on the RHRSW system?

a. The "2A" RHRSW Pump will trip and valve 2E11-068A will isolate.
b. The discharge piping may rupture if the "2B" RHRSW Pump is also started.
c. The RHR heat exchanger relief valve will lift if the "2B" RHRSW Pump is also started.
✓d. If a leak developed in the RHR heat exchanger, a release path to the flume would exist.

DO NOT USE ON 10/99 EXAM!!

'97 NRC exam, Q# 75
LT-LP-03401

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295018	AK1.01	(3.5/3.6)	2	TIER1GRP2	BWR-4	HATCH	3/14/97

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☐ Scramble Choices
Scramble Range: A - D

49. Unit 2 is operating at ~~100% RTP~~ MOP with all Plant Service Water pumps running. Annunciator TURB BLG PSW FLOW HIGH actuates and the operators note that both Division 1 and Division 2 PSW pressures are reading 45 psig. Based on these conditions, which one of the following is the proper operator response?

✓a. Manually scram the reactor and close valves 2P41-F316A, B, C, and D.
b. Throttle closed 2P41-F316A and B until division pressures are > 80 psig.
c. Reduce reactor power as required to maintain equipment temperatures within limits.
d. Reduce reactor power as required to maintain equipment temperatures within limits and close 2P41-316A, B, C, and D.

'97 NRC exam, Q# 74 (slightly modified)
LT-LP-20201 -05, pp. 2, 16 -34AB P41-001-2S, p. 3

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295018	AK3.02	(3.3/3.4)	2	TIER1GRP2	BWR-4	HATCH	3/14/97

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS: Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

☐ Scramble Choices

Scramble Range: A - D

50. Unit 1 is operating at 55% ~~RTP~~ power and rod scram insertion time testing is in progress. While withdrawing control rod 42-18 from position 28 to 48, rod movement suddenly stops and the following plant conditions are observed:

CRD ACCUMULATOR LOW PRESSURE OR HIGH LEVEL ~~annunciator~~ lit
CRD HYD HIGH TEMP annunciator lit

CRD system flow: 0 gpm
Cooling water flow: ~~0~~ 20 gpm
Charging water pressure: ~~1200~~ 920 psig
Drive water pressure: ~~1000~~ 920 psig
Cooling water pressure: ~~200~~ 210 psig

ck if have correct #'s

LP-00101 p. 31 says have Dr. wtr press indicator p601

Which one of the following is the cause of the above plant indications?

a. The CRD pump tripped.
b. The flow stabilizing valves failed closed.
c. The CRD flow control valve failed closed.
d. The cooling water pressure control valve failed closed.

Lesson plan question (reworded and rearranged)
LT-LP-00101-04, pp. 20-21

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295022	AK2.03	(3.4/3.4)	2	TIER1GRP2	BWR-4	HATCH	BANK

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

Scramble Choices

Scramble Range: A - D

OK

51. Given a loss of 125/250 VDC Switchgear "B", which one of the following systems would be unavailable?

a. RCIC
✓b. HPCI
c. LPCI mode of RHR
d. 2A EDG

New question
LT-LP-02704-03, p. 38

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295004	AA1.02	(3.8/4.1)	1	TIER1GRP2	BWR-4	HATCH	NEW

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☐ Scramble Choices

Scramble Range: A - D

52. Unit 2 is operating at 100% RTP when a plant air system break occurs. Upon investigation, the operators determine the following information:

Service Air Pressure	Non-Essential Air Pressure	Interruptible Essential Air Pressure	Non-Interrupt Essential Air Pressure
0 psig	0 psig	50 psig	105 psig

Based on these indications, which one of the following describes the most likely location of the rupture? (Reference attached)

a. Service air header line
✓b. Non-essential air header line
c. Interruptible essential air header line
d. Non-interruptible essential air header line

'97 NRC exam, Q# 71
LT-LP-03501-03, p.51

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295019	AK3.01	(3.2/3.2)	3	TIER1GRP2	BWR-4	HATCH	3/14/97

DATES: Modified: Friday, August 27, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☐ Scramble Choices
Scramble Range: A - D

Need copy of IA drawings as ref.

53. Unit 2 is operating at ~~100% RTP~~. All condensate ~~pumps~~ and ~~the "2A" and "2C"~~ Condensate Booster Pumps are running and the "A" SJAE is in service. Suddenly, the "2C" Condensate Pump trips. When conditions stabilize, the following conditions exist: (Assume no operator action.)

COND PUMPS DISCH PRESS LOW annunciator lit
Condensate discharge pressure indicator reads ~~120~~ psig
Main Condenser vacuum is slowly decreasing

Which one of the following decribes the cause of the vacuum decrease?

a. Closure of Main Steam Supply to SJAE, 2N11-F001.
b. Closure of Condenser Inner Suction Valve, 2N22-F004A.
c. Closure of Condenser Outer Suction Valve, 2N22-F005A.
d. Closure of First Stage Steam Supply Valve, 2N11-F008A.

'97 NRC exam, Q# 68 (slightly modified)
~~LT~~-LP-02501-00, p.8

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295002	AK2.06	(2.6/2.7)	3	TIER1GRP2	BWR-4	HATCH	3/14/97

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

Scramble Choices

Scramble Range: A - D

54. Unit 2 is in Mode 3 with the "2A" RHR pump in shutdown cooling when valve 2E11-F008 spuriously closes and will **not** re-open. Which one of the following is the appropriate operator response to this event?

a. Place the "2C" RHR pump in the Shutdown Cooling Mode of operation.
b. Place the "2B" loop of RHR in the Shutdown Cooling Mode of operation.
✓c. Increase reactor water level greater than 53 inches to promote natural circulation.
d. Throttle open the 2E11-F017A, RHR Outboard Injection Valve, to increase cooling.

'97 NRC exam, Q# 72 (slightly modified)
LT-LP-20201-05, p. 14

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295021	AK1.04	(3.6/3.7)	2	TIER1GRP2	BWR-4	HATCH	3/14/97

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☑ Scramble Choices

Scramble Range: A - D

55. Unit 2 has been in Mode 4 for 6 weeks for "2A" Core Spray Pump replacement. Maintenance has been completed and it is decided to place the Core Spray system Loop "A" in standby condition. A valve line up for this subsystem has been completed. Based on these conditions, which one of the following statements list the minimum additional administrative requirements, if any, that must be met for placing the loop in standby?

✓a. Both an instrument valve line up and an electrical line up are required to be done prior to placing the loop in standby.
b. An instrument valve line up is not required unless the SOS requires it to be done; an electrical line up is required to be done prior to placing the loop in standby.
c. An instrument valve line up is required to be done prior to placing the loop in standby; an electrical line up is not required unless the SOS requires it to be done.
d. Neither an instrument valve line up nor an electrical line up are required to be done unless the SOS requires they be done prior to placing the loop in service.

Bank question (reworded)
34SO-E21-001-2S, p. 6 3460-0f6-003-25 p.3, sect 7.0
SI-LP-0801-00

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
209001	2.2.18	(2.3/3.6)	2	TIER2GRP1	BWR-4	HATCH	BANK

DATES: Modified: Thursday, September 09, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

☐ Scramble Choices
Scramble Range: A - D

Steve, wonders why this is something oper. has to memorize

56. Unit 2 has just completed a refueling outage. While placing the Reactor Mode Switch in START & HOT STBY per 34GO-OPS-001-2S, "*Plant Startup,*" the mode switch is inadvertantly positioned to RUN. Which one of the following is the expected plant response?

a. The reactor will not scram and the MSIVs will remain open.
b. The MSIVs will close due to main steam line low pressure but the reactor will not scram.
c. The reactor will scram due to main steam line low pressure but the MSIVs will remain open.
✓d. The MSIVs will close due to main steam line low pressure and the reactor will scram on MSIV closure.

New question
34GO-OPS-001-2s
SI-LP-01401-00, p. 18, 23

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
239001	K1.27	(4.0/4.1)	2	TIER2GRP3	BWR-4	HATCH	NEW

DATES: Modified: Wednesday, August 25, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☐ Scramble Choices

Scramble Range: A - D

57. Unit 2 is operating at 75% ~~RTP~~ with Feedwater Level Control in 3 element. ~~Level instrument "B" is selected to input to the RWLCS~~. The following indications are observed:

RFPT speed:	~~increases~~
Total feedwater flow:	~~increases~~
Indicated level on N004A:	~~increases~~
Indicated level on N004B:	decreases
Indicated level on R604A:	~~increases~~

Which one of the following problems would cause the above indications?

a. The reference leg for ~~N004A~~ is leaking.
b. The reference leg for N004B is leaking.
c. The variable leg ~~N004A~~ is leaking.
d. The variable leg ~~N004B~~ is leaking.

Bank question, instruments are reversed.
34AB-B21-002-2S
SI-LP-04404-00, p. 32, 35

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
216000	K1.01	(3.4/3.3)	1	TIER2GRP1	BWR-4	HATCH	BANK

DATES: Modified: Monday, August 30, 1999 Used:

ANSWERS:

Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

Scramble Choices

Scramble Range: A - D

Reactor Level Select Switch is selected to "B".

Need to have new Q or better distractors 'a' & 'c'

58. Unit 2 is operating at 23% RTP. Drywell venting is in progress via valves 2T48-F319 and 2T48-F320. Drywell pressure is 0.6 psig. During this time, the Unit 1 Refuel Floor Vent Exhaust Radiation Monitors, 1D11-D611A thru D reach their trip setpoints. Which one of the following describes the effect of the Unit 1 radiation monitors on the Unit 2 drywell venting?

a. Venting would continue with Unit 2 Standby Gas Treatment System taking suction on the Unit 2 drywell only.
b. Venting would continue with Unit 2 Standby Gas Treatment System taking suction on the Unit 2 drywell and refuel floor, and Unit 2 reactor building.
c. Venting would stop due to Unit 2 vent and purge valves, F319 and F320, closing.
d. Venting would stop due to Unit 2 filter train suction dampers realigning to take suction from the refuel floor.

'93 NRC exam, Q# 17
SI-LT-ST-01301-00, p. 35 SI-LP-01301-00, p. 16

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
223002	K1.12	(3.1/3.3)	2	TIER2GRP1	BWR-4	HATCH	2/29/93

DATES: Modified: Tuesday, August 24, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

Scramble Choices

Scramble Range: A - D

59. A fire alarm is received in the control room on the CXL for the Cable Spreading Room. The PEO investigates the alarm and reports that black smoke is coming out from around the door to the Cable Spreading Room. He also reports that the red light next to the CO2 "START" pushbutton is extinguished. Which one of the following describes the ~~status of CO2 discharge~~ actions required to discharge CO2 into the cable spreading room?

a. The extinguished red light indicates that CO2 has been automatically released into the room. (No actions required)

b. The extinguished red light indicates that automatic discharge of CO2 has failed and the Fire Brigade Leader must depress the "START" pushbutton for CO2 to be released into the room.

✓c. When the Fire Brigade Leader operates the manual release lever on the Master Pilot Valve, CO2 will be discharged into the room.

d. When the Fire Brigade Leader presses the "START" pushbutton and the red light illuminates, CO2 will be discharged into the room.

Bank question (modified)
LT-LP-03601-03, pp. 53-56

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
600000	AA1.08	(2.6/2.9)	3	TIER1GRP2	BWR-4	HATCH	BANK

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☐ Scramble Choices

Scramble Range: A - D

60. A large break LOCA has occurred on Unit 1. Which one of the following consequences would occur if the pressure suppression chamber to drywell vacuum breakers failed open during this event?

a. When drywell sprays are initiated, drywell pressure will decrease such that the external design pressure of the drywell will be exceeded.
b. When the drywell blows down to the torus, the radioactive gases from the suppression pool will be released directly to the Reactor Building atmosphere
c. When the drywell blows down to the torus, the steam will pass straight through to the torus air space resulting in primary containment pressure exceeding internal design pressure.
d. When torus sprays are initiated, the non-condensible gases released from the suppression pool will be vented directly back to the drywell resulting in a rapid increase in drywell pressure.

Bank question (modified slightly)
SI-LP-01301-00, pp. 11, 40

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
223001	K6.09	(3.4/3.6)	1	TIER2GRP1	BWR-4	HATCH	BANK

DATES: Modified: Wednesday, September 01, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

Scramble Choices

Scramble Range: A - D

61. Given the following plant conditions:

- A LOCA has occurred
- RHR pump 2A has tripped on instantaneous overcurrent
- RHR pump 2B is the only high volume source of water
- The room cooler for RHR pump 2B will not run
- RHR pump 2B pump and motor temperatures are increasing
- A maintenance worker needs to enter the diagonal to set up temporary cooling
- Task will take no longer than 20 minutes, radiation levels are 30 R/hr.

Which one of the following describes the approval required to perform this task?

a. Would not require prior approval because the dose would be within the predefined Plant Hatch emergency response personnel exposure limits.
b. Would not require prior approval because the dose would be within NRC limits, but a 10 CFR 50.72 report would be required.
c. The Senior Vice President of Nuclear Operations must give approval prior to performing the task.
d. The Emergency Director must give approval prior to performing the task.

New question
73EP-EIP-017-0S, p. 4
LT-LP-30008-02, p. 11

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.3.4	(2.5/3.1)	2	TIER3CAT3	BWR-4	HATCH	NEW

DATES: Modified: Thursday, August 26, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

Scramble Choices

Scramble Range: A - D

62. Given the following exposure history for an 21 year old male radiation worker:

Lifetime exposure:	14500 mrem (Form 4 on file)
Annual exposure:	4300 mrem
Quarterly exposure:	600 mrem

Which one of the following statements describes the maximum additional whole body dose the individual is allowed in the current calendar quarter per 10 CFR 20 exposure limits?

a. 400 mrem
b. 500 mrem
c. 650 mrem
✓d. 700 mrem

Bank question (slightly modified, answer changed due to 10CFR20 changes)
10 CFR 20.1201
LT-LP-30008-02, p. 7
60AC-HPX-001-0S, p. 5

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.3.1	(2.6/3.0)	2	TIER3CAT3	BWR-4	HATCH	BANK

DATES: Modified: Friday, August 27, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☐ Scramble Choices
Scramble Range: A - D

63. Given the following conditions for Unit 2:

Post treatment
K615A
-Log Radiation Monitor ~~K612~~ is out of service for maintenance
K615B
-Log Radiation Monitor ~~K618~~ receives a valid Hi-Hi signal

Which one of the following describes the complete expected response of the Offgas system?

a. No automatic actions will occur.
b. Carbon bed bypass valve (F043) closes and carbon bed inlet valve (F042) opens.
c. Offgas Stack Isolation (2N62-F057), Offgas Cooler Condenser/Moisture Separator Valves (N62-FO30A and B both units), and Offgas Holdup Line Drain, (2N62-FO85) will close.
d. Carbon bed bypass valve (F043) closes and carbon bed inlet valve (F042) opens. Offgas Stack Isolation (2N62-F057), Offgas Cooler Condenser/Moisture Separator Valves (N62-FO30A and B both units), and Offgas Holdup Line Drain, (2N62-FO85) will close.

New question
LT-LP-10007-04, p. 19

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
272000	A3.02	(3.6/3.7)	2	TIER2GRP2	BWR-4	HATCH	NEW

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☐ Scramble Choices

Scramble Range: A - D

1st bullet POST TREATMENT OFFGAS RADIATION Hi-Hi annunciator is lit
" " " Hi " " "
2

64. The Unit 1 Floor Drain Sample Tank is being released through valves 1G11-F428 and 1G11-F430 to the Discharge Canal per 34SO-G11-036-1S. The Radwaste Canal Discharge Line Isolation Valves, 1G11-F184 and 1G11-F185, are open to support the release. Which one of the following describes the complete response of the Radwaste system if, during the release, the Liquid Radwaste Effluent Radiation Monitor receives a high radiation trip signal?

✓a. Both Radwaste Canal Discharge Line Isolation Valves (1G11-F184 and 1G11-F185) close only.
b. The FDST pump trips and the outboard Radwaste Canal Discharge Line Isolation Valve (1G11-F185) closes only.
c. The FDST pump trips, the tank discharge isolation valve (1G11-F428) closes, and the outboard Radwaste Canal Discharge Line Isolation Valve (1G11-F185) closes.
d. The FDST pump trips, the tank discharge isolation valve (1G11-F428) closes, and both Radwaste Canal Discharge Line Isolation Valves (1G11-F184 and 1G11-F185) close.

New question ✓
34SO-G11-036-1S
LT-LP-02901-02, pp. 14-20, 32-36 LT-LP-10007-04, p. 26 ✓

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
268000	A1.01	(2.7/3.1)	2	TIER2GRP3	BWR-4	HATCH	NEW

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS: Single Points 1

Version Answers: 0 1 2 3 4 5 6 7 8 9
A B C D A B C D A B

☐ Scramble Choices
Scramble Range: A - D

Define what use of "only" means to candidates

What about dropping the ~~1G11-~~ "1G11-" from the front of each valve in distractors?

65. Unit 2 is operating at ~~100% RTP~~. ~~During~~ daily rounds, the PEO checks the RBCCW system and notes the following equipment status:

RBCCW surge tank counter reads:	0000
RBCCW surge tank timer reads:	08:15
RBCCW surge tank level reads:	45"

Which one of the following statements correctly ~~represents~~ the current condition of the RBCCW system and appropriate PEO response?

a. An automatic make-up is in progress and the ~~Timer/Counter~~ reset pushbutton needs to be depressed to allow future automatic make-up to occur.
b. A fill occurred 8 hours and 15 minutes ago. If surge tank level is not restored above the make-up valve opening setpoint within the next 4 hours and 45 minutes, then a system leak above 134 gallons is in progress.
c. A fill occurred 4 hours and 45 minutes ago. If surge tank level is not restored above the make-up valve opening setpoint within the next 8 hours and 15 minutes, then a system leak above 134 gallons is in progress.
✓d. A system leak above 134 gallons is confirmed and manual make-up to the tank needs to be initiated.

Bank question (modified slightly)
34AR-650-248-2S
SI-LP-00901-00, pp. 13-14

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
400000	A1.04	(2.8/2.8)	2	TIER2GRP2	BWR-4	HATCH	BANK

DATES: Modified: Friday, September 03, 1999 Used:

ANSWERS: Single Points 1

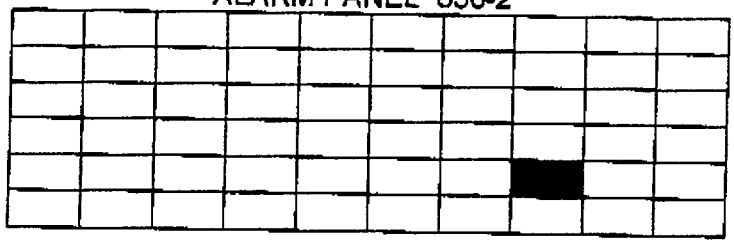
Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☐ Scramble Choices
Scramble Range: A - D

1.0 IDENTIFICATION:

ALARM PANEL 650-2



RBCCW SURGE TK
LEVEL LOW OR
EXCESS LEAKAGE

DEVICE:
2P42-N033
2P42-M002

SETPOINT:
49" from tank bottom (7" above tank centerline)
> 1 fill cycle in 13 hours

2.0 CONDITION:

RBCCW Surge Tank level has decreased below 49" from tank bottom OR has dropped below the Level Control Valve opening point of 50.5" more than once in 13 hours.

3.0 CLASSIFICATION:
EQUIPMENT STATUS

4.0 LOCATION:
2H11-P650 Panel 650-2

5.0 OPERATOR ACTIONS:

5.1 At RBCCW Surge Tank 2P42-A001, check Level Gage 2P42-D020 and Counter 2P42-M002 in RBCCW (DEPENDENT) Local Control Panel, 2H21-P350 to determine IF the cause is a low level OR excessive fill cycles as indicated by an indicated count of zero on the counter.

5.2 Confirm RBCCW Surge Tank Drain Valve, 2P42-F032, is CLOSED.

5.3 IF Level Control Valve, 2P42-F054, is malfunctioning, CONTROL level using Level Control Valve Bypass, 2P42-F055.

5.4 Walk down RBCCW loads to determine source of leakage.

5.5 IF cause of alarm was excessive fill cycles AND investigation is complete, THEN, RESET alarm by depressing Fill Cycle Timer reset pushbutton at Panel 2H21-P350.

6.0 CAUSES:

6.1 Tank drain valve open
6.2 Level control valve malfunction
6.3 System leak
6.4 Stuck open relief valve

7.0 REFERENCES

7.1 H-27750, Reactor Building Closed Cooling Water System 2P42 Elementary Diagram
7.2 H-26054, Reactor Bldg. Closed Cooling Water Sys P&ID
7.3 57CP-CAL-094-2S, Robertshaw Level Switch Calibration
7.4 DCR 82-165

8.0 TECH. SPEC./LCO:

N/A - Not applicable to this procedure

66. Unit 1 RCIC is injecting to control reactor vessel level. A large oil leak develops on the in-service RCIC oil filter which results in decreasing oil pressure. Which one of the following describes the response of the RCIC system as oil pressure decreases?

a. The governor valve will close and turbine speed will decrease to zero RPM.
✓b. The governor valve will open and turbine speed will increase possibly resulting in a turbine trip.
c. The auxiliary oil pump will start, the trip valve will close and turbine speed will decrease to zero RPM.
d. The turbine will trip but the steam stop valve will fail open on low oil pressure.

'93 NRC exam, Q# 10 (changed units)
LT-ST-03901-01, p. 17

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
217000	A2.10	(3.1/3.1)	1	TIER2GRP1	BWR-4	HATCH	2/29/93

DATES: Modified: Monday, August 23, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☒ Scramble Choices

Scramble Range: A - D

67. Unit 2 has experienced a reactor scram from ~~100% power~~. The following conditions exist:

Highest drywell temperatures:	210°F (2T47-N001A & N001K)
Drywell pressure:	1.3 psig
Reactor pressure:	920 psig

The following RPV water level instruments read as indicated:

Floodup Range:	+13"
Narrow Range:	+ 6"
Wide Range:	+ 4"
Fuel Zone:	- 80"

Based on the above conditions, which one of the following reactor water level indicators would be considered unreliable for level trend information per EOP guidance? (References included)

a. Floodup Range
b. Narrow Range
c. Wide Range
d. Fuel Zone

~~HAVE LICENSEE CHECK ANSWER AND EXPLAIN!~~
Bank question (reworded, changed floodup range I.C.)
34AB-B21-002-2S
LR-LP-20305-04, pp. 7-14

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
259002	A1.01	(3.8/3.8)	2	TIER2GRP1	BWR-4	HATCH	BANK

DATES: Modified: Wednesday, September 01, 1999 Used:

ANSWERS: Single Points 1

Version Answers: 0 1 2 3 4 5 6 7 8 9 | A B C D A B C D A B | ☐ Scramble Choices | Scramble Range: A D

Provide copy of AB-B21 AA.1?

68. Which one of the following is the reason that continued plant operation with an inoperable (or failed) jet pump is restricted?

a. Invalid APRM flow biased scram setpoints due to the change in flow through the failed jet pump.
b. Increased blowdown area during a LOCA.
c. Unbalanced neutron flux across the core due to flow variations.
d. Physical core and cladding damage from a loose piece of the damaged jet pump.

'93 NRC exam, Q# 23
S1-LP-LT-ST-00401-01, p. 15

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
202001	A2.01	(3.4/3.9)	1	TIER2GRP2	BWR-4	HATCH	2/29/93

DATES: Modified: Friday, August 27, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☑ Scramble Choices

Scramble Range: A - D

69. While moving an irradiated fuel bundle from the East Fuel Prep Machine to its storage location in the Unit 2 fuel storage rack, the bundle is dropped. The bundle hits on top of the rack and then falls off to the bottom of the pool. The bridge operator observes bubbles rise out of the water and refuel floor area radiation monitors begin alarming. Which one of the following actions should be performed immediately by the Refueling SRO per 34AB-J11-001-2S, "Irradiated Fuel Damage During Handling"?

a. Evacuate all personnel from the reactor building.
b. Start the Standby Gas Treatment System.
c. Isolate the Secondary Containment.
✓d. Cease all refueling floor operations.

Bank question (modified)
34AB-J11-001-2S, p. 1
LT-LP-04502-03, p. 36

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295023	AK2.03	(3.4/3.6)	1	TIER1GRP1	BWR-4	HATCH	BANK

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

Scramble Choices

Scramble Range: A - D

70. Unit 2 is shutdown with drywell pressure at 2.1 psig and all RHR pumps running. After the RHR pumps started, 125 VDC Distribution Cabinet "B" (2R25-S002) lost power and is currently deenergized. Which one of the following will occur if the operator places the "2A" RHR Pump to STOP?

a. The pump will remain running and must be tripped locally.
b. The pump will trip and then restart once the switch is released.
c. The pump will trip and can be restarted with the control switch.
d. The pump will trip and must be restarted using the START/RESET pushbutton.

'97 NRC exam, Q# 9 (modified)
SI-LP-00701, p. 27

NOT operationally relevant.

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
203000	K1.07	(3.1/3.3)	3	TIER2GRP1	BWR-4	HATCH	3/14/97

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

Scramble Choices
Scramble Range: A - D

Will propose a replacement Q.

71. A loss of reactor feedwater and large LOCA have occurred on Unit 2. The following plant indications currently exist:

RWL:	-225" and steady
Reactor pressure:	53 psig
SRV status:	7 ADS valves OPEN
RHR pump status:	2A injecting at 11,500 gpm
CS pump status:	2A tagged out 2B indicates 0 gpm flow, discharge pressure is oscillating between 50 psig and 320 psig.
Torus water level:	142 "
Torus water temperature:	165°F

Based on the above conditions, which one of the following actions should the operator perform? (*References are included.*)

a. Reduce 2A RHR flow to ~~within the NPSH~~ limit.
b. Throttle closed 2E21-F005B to increase CS discharge pressure.
✓c. Align the suction of the 2B CS pump to the CST.
d. Maintain the current status until RPV level is above TAF.

Provide Graph 12A, "RHR Pump NPSH Limit (Suppression Pool Water Level Below 146") as a reference.

'97 NRC exam, Q# 60
LR-LP-20309-05, pg 13-14

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295031	EA1.03	(4.4/4.4)	3	TIER1GRP1	BWR-4	HATCH	3/14/97

DATES: Modified: Friday, August 20, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☐ Scramble Choices

Scramble Range: A - D

72. An ATWS has occurred on Unit 2 and reactor power is approximately 19% ~~RTP~~. The operator attempts to insert control rod 22-27 with the EMERGENCY IN switch but the rod fails to move. The operator then notes the following plant conditions:

Drive water D/P:	240 psig
Rx Mode Switch:	REFUEL
CRD flow:	> 100 gpm
CRD FCVs:	CLOSED
CRD Pumps:	"2A" and "2B" running
RWM:	Normal

Which one of the following describes the reason why control rod 22-27 will not move?

a. The RWM is enforcing an insert block.
b. There is excessive CRD flow to the HCU accumulators.
c. The drive water D/P is not sufficient to move the control rod.
d. The CRD flow to the HCU accumulators is shut off because the CRD FCVs are closed.

97 NRC exam, Q# 27 (slightly reworded and rearranged)
SI-LT-LP-05401, -00, p. 9

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
201002	K1.05	(3.5/3.6)	3	TIER2GRP2	BWR-4	HATCH	3/14/97

DATES: Modified: Monday, August 23, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

Scramble Choices

Scramble Range: A - D

73. Unit 2 is operating at ~~100% RTP~~, with the "A" EHC Pressure Regulator in service, when the #4 Turbine Control Valve goes closed. Which one of the following describes the expected plant response to this event. (Assume no operator action.)

a. The reactor scrams due to a turbine trip signal from the TCV closure.
b. The EHC pressure regulator shifts to "B" controlling.
✓c. The turbine bypass valves open to control pressure.
d. The reactor scrams on high reactor pressure.

97 NRC exam, Q# 1
SILT-LP-01901-00, pp. 9-13

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
241000	A2.04	(3.7/3.8)	1	TIER2GRP1	BWR-4	HATCH	3/14/97

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☑ Scramble Choices

Scramble Range: A - D

74. SRV operability testing is in progress with Unit 2 operating at 30% ~~RTP~~. After SRV 2B21-F013A is opened for the test, it remains open even though the control switch was cycled several times and then placed to AUTO. The operating crew implements the actions of 34AB-B21-003-2S, "*Failure of Safety/Relief Valves*," and the following is the current status of the plant:

SAFETY/BLOWDOWN VALVE LEAKING annunciator lit
TORUS WATER TEMP HIGH annunciator lit

Suppression Pool temperature:	105°F, increasing slowly
Torus cooling:	1 Loop aligned
SRV control switch:	AUTO
SRV status lights:	Green LIT
	Amber LIT
	Red NOT LIT
SRV fuses:	Removed
SRV discharge temperature:	245°F, steady

Based on the current plant conditions, which one of the following actions is required?

a. Maximize torus cooling only.
b. Reset the Low Low Set Logic to attempt to close the valve.
c. Commence a fast reactor shutdown per 34GO-OPS-014-2S.
d. Scram the reactor per 34AB-C71-001-2S.

Bank question (modified slightly)
34AB-B21-003-2S, p. 3
SI-LP-01401-00, pp. 9-12, 16-18

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
239002	A2.03	(4.1/4.2)	2	TIER2GRP1	BWR-4	HATCH	BANK

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☐ Scramble Choices

Scramble Range: A - D

75. A reactor scram has occurred on Unit 2. The SS directs the operator to verify that all control rods have fully inserted by obtaining a "Control Rod Position" printout from the plant process computer. ~~Which one of the following would indicate that the scram was not complete?~~ See below

a. 117 of the control rod positions read "00" and 20 are blank.
b. 117 of the control rod positions read "02" and 20 read "00".
c. 121 of the control rod positions read "00", 13 read "02", and 3 read "S".
d. 121 of the control rod positions read "02", 13 read "00", and 3 read "-99".

New question
34AB-C71-001-2S, pp. 1, 18
LR-LP-20301-03, p. 7
LT-LP-40001-02, p. 38

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295006	G2.1.19	(3.0/3.0)	1	TIER1GRP1	BWR-4	HATCH	NEW

DATES: Modified: Friday, September 17, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

☒ Scramble Choices
Scramble Range: A - D

Which one of the following would be conformation that the reactor is shutdown?

Hatch will propose an alternative. With changes, Q is not very difficult.

76. An ATWS has occurred on Unit 2. Injection was terminated and prevented for power/level control and eventually re-established. The following conditions now exist:

Reactor ~~RPV level band:~~ RPV level	~~-155" to -185"~~ -100" slowly increasing
SLC tank level:	10%
Reactor power:	3%

Based on these conditions, which one of the following actions should the crew perform?

a. Commence a controlled cooldown of the reactor vessel.
b. ~~Restore and maintain RPV level in the normal band.~~ Exit the RCA with RC/Q and go to the scram procedure.
c. Exit the CP-3 flowchart and control level per the RC flowchart.
d. Exit the RCA and CP-3 flowcharts to control level, power, and pressure.

'97 NRC exam, Q# 62 (modified)
LR-LP-20327

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295037	EK1.04	(3.4/3.6)	3	TIER1GRP1	BWR-4	HATCH	3/14/97

DATES: Modified: Thursday, September 16, 1999 Used:

ANSWERS: Single Points 1

Version Answers: 0 1 2 3 4 5 6 7 8 9

A	B	C	D	A	B	C	D	A	B

☐ Scramble Choices
Scramble Range: A - D

Provide flowchart?
If flowchart is reference, then answer to next Q is aided.

What is right answer now? Looks like "a" and "b" are correct.

77. An ATWS has occurred on Unit 1. After running back recirculation flow to minimum, reactor power indicates 4% on the APRMs. Which one of the following actions should the SS direct under this condition and the basis for performing it?

a. Trip both recirc pumps to further reduce reactor power.
b. Trip both recirc pumps to remove pump heat from the reactor system heat load.
✓c. Keep both recirc pumps operating to enhance boron mixing during SLC injection.
d. Keep both recirc pumps operating because reactor water level will be too low to establish natural circulation.

New question
EOP Flowchart RCA RPV Control ATWS
LR-LP-20328-06, p. 43

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295037	EA2.01	(4.2/4.3)	2	TIER1GRP1	BWR-4	HATCH	NEW

DATES: Modified: Monday, September 20, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☒ Scramble Choices

Scramble Range: A - D

78. A loss of shutdown cooling has occurred on Unit 2 and Alternate Shutdown Cooling has been established per 34AB-E11-001-2S, "*Loss of Shutdown Cooling,*" using the RHR A loop in the LPCI mode. The "B" loop of RHR is in Suppression Pool cooling and the "B" SRV is open.

Which one of the following explains why RPV pressure must be maintained less than 165 psig above suppression pool pressure?

a. To prevent exceeding the allowable Tech Spec cooldown rate.
✓b. To ensure sufficient RHR pump flow to remove decay heat load.
c. To prevent auto isolation of the SDC suction isolation valves F008/F009.
d. To ensure the RPV Pressure-Temperature limit for a non-critical core is not violated.

✓New question (based on BSEP '98 exam question #82)
34AB-E11-001-2S, p. 7,9 34SO-E11-0102S, 5.1.13, p. 4
SI-LP-00701-00, p. 21, 29, 33

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
205000	K3.01	(3.3/3.3)	3	TIER2GRP2	BWR-4	HATCH	NEW

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

Scramble Choices
Scramble Range: A - D

Explain answer to Hatch. Common sense since 220# is shut off press for RHR pumps and proc. req's opening another SRV if pressure cannot be maintained < 165#. Also other distractors are obviously wrong.

79. Unit 2 reactor startup and heatup is in progress. After verifying SRM/IRM overlap, the SRM detectors were withdrawn per 34GO-OPS-001-2S, "Plant Startup". Which one of the following is correct regarding use of reactor period as an indication to check reactor power response to control rod withdrawal?

a. It is not valid because inputs to the reactor period indicator are automatically bypassed when the IRMs are above range 3.
b. It is still valid with the SRMs in the fully withdrawn position because the SRM detectors continue to monitor neutron flux.
c. It is not valid with the SRMs in the fully withdrawn position because the SRM detectors are now only monitoring background radiation.
d. It is still valid because the inputs to the reactor period indicator are automatically transferred to the IRMs when all IRM range switches are above range 3.

Bank question (reworded and reordered)
34GO-OPS-001-2S
SI-LP-01201-00, p. 6

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
215004	K5.03	(2.8/2.8)	1	TIER2GRP1	BWR-4	HATCH	BANK

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☐ Scramble Choices

Scramble Range: A - D

80. Chemistry has just sampled the Unit 2 SLC storage tank and the following conditions were reported to the Shift Supervisor:

Volume	Concentration	Temperature
2000	8%	50°F

Based on these conditions, which one of the following relates the current status and appropriate action for the SLC system? (References ~~are attached~~ included.)

a. The system is operable but boron concentration (only) needs to be increased.
b. The system is operable but both boron concentration and temperature need to be increased.
✓c. The system is inoperable and boron concentration (only) needs to be increased.
d. The system is inoperable and both boron concentration and temperature need to be increased.

'97 NRC exam, Q# 14 (modified)
SI LR-LP-01101-00, pp 30-31
Unit 2 T.S. Figs ~~3.1.7-1~~, 3.1.7-2

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
211000	G2.2.23	(2.6/3.8)	2	TIER2GRP1	BWR-4	HATCH	3/14/97

DATES: Modified: Monday, August 23, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

Scramble Choices
Scramble Range: A - D

Provide Fig 3.1.7-1
3.1.7-2
U2 T.S

81. Unit 1 is operating at 75% ~~RTP~~ power when the "B" SRV fails open. The fuses are pulled to the "B" SRV and the following conditions are noted:

SAFETY/BLOWDOWN VALVE LEAKING annunciator lit
SAFETY BLOWDOWN PRESSURE HIGH annunciator green
SPDS indication for the "B" SRV is green
Suppression pool temperature is 111°F

Based on these conditions, which one of the following statements regarding "B" SRV is correct? The "B" SRV is:

a. OPEN and the reactor should be manually scrammed.
✓b. CLOSED and the reactor should be manually scrammed.
c. OPEN and one loop of RHR should be placed in suppression pool cooling.
d. CLOSED and one loop of RHR should be placed in suppression pool cooling.

'97 NRC exam, Q# 64
LR-LP-20310-05, p. 37

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295026	EK3.05	(3.9/4.1)	2	TIER1GRP1	BWR-4	HATCH	3/14/97

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☑ Scramble Choices
Scramble Range: A - D

Replace. Too similar to Q# 74

OK

82. A Unit 2 TIP trace is being run in the Manual mode using TIP Machine C which is in the core at the TOP limit. RPV water level then lowers to 1" and reactor building ventilation exhaust radiation monitors K609A-D begin alarming. Which one of the following describes the TIP system response for this condition?

a. No automatic response will occur because the TIP trace is being run in manual.
b. The shear valve for TIP Machine C will automatically fire to isolate any radioactive release from this pathway.
c. TIP Machine C will automatically withdraw to the in-shield position, then the ball valve must be manually closed.
✓d. TIP Machine C will automatically withdraw to the in-shield position, then the ball valve will automatically close.

New question
SI-LP-01301-00, p. 25, 45

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
215001	K6.04	(3.1/3.4)	2	TIER2GRP3	BWR-4	HATCH	NEW

DATES: Modified: Wednesday, September 08, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☐ Scramble Choices

Scramble Range: A - D

83 X. Unit 1 is operating at 50% power when the APRM "B" fails upscale. Before APRM "B" can be bypassed, the RPS power to the "A" two-out-of-four Logic Module is lost. Which one of the following describes the resulting status of the RPS system?

a. Both RPS "A" and RPS "B" scram relays are energized.
✓b. RPS "A" scram relays are deenergized and RPS "B" scram relays are energized.
c. RPS "A" scram relays are energized and RPS "B" scram relays are deenergized.
d. Both RPS "A" and RPS "B" scram relays are deenergized.

~~CHECK ANSWER. ANSWER PER BANK DOESN'T SEEM CORRECT.~~

Bank question (reworded slightly)
SI-LP-01203-00, pp. 8, 10-11, 26-27

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
215005	K3.01	(4.0/4.0)	2	TIER2GRP1	BWR-4	HATCH	BANK

DATES: Modified: Tuesday, September 21, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☒ Scramble Choices

Scramble Range: A - D

84 X. Unit 1 is starting up. A plant heatup/pressurization is in progress. Reactor water level control is in "dP" mode, with the "1A" Reactor Feed Pump in service. Which one of the following describes the effect of lining up RWCU to blowdown to the Main Condenser while steaming in this condition?

a. It will overheat the Non-Regenerative Heat Exchanger.
✓b. It will improve stability of the Feedwater Control System.
c. It will complicate level control by causing a level increase.
d. It will flood out the Main Condenser Hotwell causing a loss of vacuum.

Bank question (reworded slightly) 3450-N21-057-25, p. 37, Note
SI-LP-00201-00, pp. 28-29, 36

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
259001	K4.01	(3.6/3.5)	2	TIER2GRP2	BWR-4	HATCH	BANK

DATES: Modified: Tuesday, September 21, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☒ Scramble Choices

Scramble Range: A - D

ok

85. A. Which one of the following specifies how adequate NPSH is ensured for the Recirc Pumps when the Unit 1 reactor is operating at 5% power?

Physical placement of the Recirc Pumps and:

✓a. the # 1 speed limiter.
b. the # 2 speed limiter.
c. subcooling of the downcomer water due to feedwater.
d. subcooling of the downcomer water due to carryunder.

Bank question (reordered and reworded slightly)
SI-LP-00401-01, p. 9

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
202002	K4.06	(3.1/3.1)	1	TIER2GRP1	BWR-4	HATCH	BANK

DATES: Modified: Wednesday, September 22, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

☒ Scramble Choices

Scramble Range: A - D

86. A RHR system full flow test is being conducted with Loop "A" on Unit 2. A large break LOCA and the reactor trip occurs while the test is in progress. With reactor water level at -90 inches (decreasing) and a torus pressure of 9 psig (increasing), the SS directs the operator to initiate torus spray.

If the operator takes the containment spray valve control switch to MANUAL and the torus spray valve (F027A) to open, which one of the following describes the expected system response? (Assume no other operator action and all ECCS equipment responds automatically, as designed.)

a. The torus spray valve will open immediately and design flow will spray the torus. when the F028A strokes open.
b. The torus spray valve will open immediately but no spray flow will occur until F028A is manually opened.
c. The torus spray valve will remain closed until the 2/3 core height interlock is manually overridden, then design flow will spray the torus. when the F028A strokes open.
d. The torus spray valve will remain closed until the 2/3 core height interlock is manually overriden but no spray flow will occur until F028A is manually opened.

New question
EOP Flowchart PC-1
SI-LP-00701-00, pp. 24-25, 32, 48

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
230000	A4.02	(3.8/3.6)	3	TIER2GRP2	BWR-4	HATCH	NEW

DATES: Modified: Monday, September 20, 1999 Used:

ANSWERS: Single Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

☒ Scramble Choices
Scramble Range: A - D

① Unit 2 Loop "A" of RHR is in full flow test with 2E11-F028A open and 2E11-F024A throttled.

② No valves are repositioned by the operators. Already have in stam.

OK

87. Unit 1 is operating at 75% power with the "D" APRM bypassed. Which one of the following describes the effect on RBM system if the "B" APRM fails low?

a. Both RBM channels are bypassed.
b. RBM Channel A is selected to APRM "A" and Channel B is bypassed.
c. RBM Channel A is bypassed and Channel B is selected to APRM "C".
✓d. RBM Channel A is selected to APRM "A" and Channel B is selected to APRM "C".

New question
SI-LP-01203-00, pp. 21-22

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
215002	A2.03	(3.1/3.3)	2	TIER2GRP2	BWR-4	HATCH	NEW

DATES: Modified: Wednesday, September 22, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☒ Scramble Choices

Scramble Range: A - D

88 1. Unit 2 is operating at MOP. Which one of the following describes that expected response of the Backup Scram Valves and the Scram Pilot Solenoid Valves to a loss of RPS bus "B"?

a. One backup scram valve energizes and half of the scram pilot solenoid valves deenergize.
b. One backup scram valve energizes and all scram pilot solenoid valves remain deenergized.
✓c. Both backup scram valves remain deenergized and half the scram pilot solenoid valves deenergize.
d. Both backup scram valves remain deenergized and all the scram pilot solenoid valves remain energized.

Bank question (reordered and reworded slightly)
SI-LP-01001-01, pp. 20-21

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
212000	K3.06	(4.0/4.1)	1	TIER2GRP1	BWR-4	HATCH	BANK

DATES: Modified: Wednesday, September 22, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☒ Scramble Choices

Scramble Range: A - D

89 1. Unit 2 reactor shutdown is in progress and primary containment de-inerting has been authorized. Which one of the following is the basis for not allowing all four 18 inch containment air vent valves (2T48-F318, F319, F320, and F326) to be open simultaneously during the performance of this evolution?

a. To prevent the high flow rate from damaging the non-hardened ventilation ducts.
b. To prevent creating a high dP between the primary containment and the Reactor Building.
c. To prevent release of the drywell atmosphere through an unmonitored ventilation flow path.
✓d. To prevent the possibility of any drywell steam from entering the torus air space ~~during~~ at power ~~operation.~~

New question
34SO-T48-002-2S, 1st Caution, p. 16
SI-LP-01301-00, p. 32

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
GENERICS	2.3.9	(2.5/3.4)	1	TIER3CAT3	BWR-4	HATCH	NEW

DATES: Modified: Tuesday, September 28, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☒ Scramble Choices

Scramble Range: A - D

90 X. Which one of the following describes the HPCI system suction valve response if the Condensate Storage Tank (CST) level decreases to 30 inches?

a. The Suppression Pool suction valves (E41-F041 & F042) open when the CST suction valve (E41-F004) is fully closed.
b. The Suppression Pool suction valves (E41-F041 & F042) open when the CST suction valve (E41-F004) indicates not fully open.
✓c. The CST suction valve (E41-F004) closes when both Suppression Pool suction valves (E41-F041 & F042) are fully open.
d. The CST suction valve (E41-F004) closes when either Suppression Pool suction valve (E41-F041 or F042) indicates not fully closed.

Bank question (reworded slightly)
SI-LP-00501-01, pp. 10, 14, 22

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
206000	K4.17	(3.4/3.4)	1	TIER2GRP1	BWR-4	HATCH	BANK

DATES: Modified: Tuesday, September 28, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☒ Scramble Choices

Scramble Range: A - D

91 X. Which one of the following Standby Gas Treatment system components is directly powered by 120/240V Vital AC Power Cabinet 2A (2R25-S063)?

a. SBGTS initiation logic supply "A".
✓b. SBGTS initiation logic supply "B".
c. SBGTS heat detector and water spray Division I.
d. SBGTS heat detector and water spray Division II.

New question
34SO-T46-001-2S, p. 13
SI-LP-03001-00

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
261000	K2.03	(2.3/2.5)	1	TIER2GRP1	BWR-4	HATCH	NEW

DATES: Modified: Wednesday, September 29, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☒ Scramble Choices

Scramble Range: A - D

92. Both units are at MOP. Given the following conditions on Unit 1:

All ventilation systems are in a normal line up
Supply Fan C001A is in RUN and C001B is in STANDBY
Accessible Area exhaust fan C004A in RUN and C004B is in STANDBY.
Inaccessible Exhaust Fan C007A is in RUN and C007B is in STANDBY
The accessible area ventilation exhaust radiation monitors (K607A/B) receive a high alarm.

Which one of the following describes the expected automatic response of the Unit 1 Reactor Zone ventilation system to this condition?

a. Fan C001A trips and supply suction fan valve F024A closes. Fan C004A trips and discharge valves F043A/B close. Fan C007A trips and discharge valves F044A/B close.
b. Fan C001A trips and supply suction fan valve F024A closes. Fan C004A trips and discharge valves F043A/B close. Accessible to inaccessible area bypass valve F027 receives a close signal.
✓c. Fan C004A trips and discharge valves F043A/B close. Accessible to inaccessible area bypass valve F027 opens. Supply suction fan valve F024A throttles partially closed.
d. Fan C004A trips and discharge valves F043A/B close. Fan C007A trips and discharge valves F044A/B close. Accessible to inaccessible area bypass valve F027 opens to cross connect to SBGT.

New question
SI-LP-01303-00, p. 30

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295017	AA1.03	(3.4/3.4)	2	TIER1GRP1	BWR-4	HATCH	NEW

DATES: Modified: Wednesday, September 29, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☐ Scramble Choices

Scramble Range: A - D

93 X. Both units are operating at MOP when a Hi-Hi alarm is received on Unit 1 Reactor Building exhaust ventilation radiation monitor channels K609 A and B while channels C and D indicate normal. Which one of the following describes the response of both units' Secondary Containment systems?

a. No automatic actions occur.
b. Only Unit 1 SBGT system auto starts. Unit 1 and 2 Reactor Building ventilation trips and only the outboard isolation valves close.
c. Unit 1 and 2 SBGT systems auto start. Unit 1 and 2 Reactor Building ventilation trips and all isolation valves close.
✓d. Unit 1 and 2 SBGT systems auto start. Unit 1 and 2 Reactor Building ventilation trips and only the inboard isolation valves close.

New question
SI-LP-100007-04, p. 28

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
290001	A1.08	(3.2/3.3)	2	TIER2GRP1	BWR-4	HATCH	NEW

DATES: Modified: Wednesday, September 29, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☒ Scramble Choices

Scramble Range: A - D

94. A startup of Unit 2 is in progress with no equipment out of service. Reactor power is 40% and the speed of both recirc pumps was just raised to 30%. A trip of Recirc Pump "2A" occurs and the operators respond to the transient per the guidance of 34AB-B31-001-2S, "*Reactor Recirculation Pump(s) Trip, or Recirc Loops Flow Mismatch*" to stabilize the plant. Which one of the following describes how an accurate reading of total core flow is determined under these conditions?

a. The Total Core Flow indication must be reduced by the "2A" Jet Pump flow to obtain an accurate reading.
✓b. Total core flow must be manually calculated by adding "2A" and "2B" Jet Pump flows to obtain an accurate reading.
c. Total core flow must be manually calculated by subtracting "2A" Jet Pump flow from the "2B" Jet Pump flow to obtain an accurate reading.
d. The summing circuitry for the Total Core Flow indication automatically accounts for the idle "2A" recirc loop and provides an accurate reading.

New question
34AB-B31-001-2S, p. 2, Note
SI-LP-004-1-01, p. 19

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295001	AK2.07	(3.4/3.4)	2	TIER1GRP2	BWR-4	HATCH	NEW

DATES: Modified: Thursday, September 30, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
B	C	D	A	B	C	D	A	B	C

☒ Scramble Choices

Scramble Range: A - D

95 X. From the following list of Safeguard Equipment Cooling coolers, which set will not generate a SEC AUTO INITIATION SIGNAL PRESENT annunciator on panel P650 after they are automatically started?

a. HPCI room coolers.
b. RCIC room coolers.
✓c. CRD diagonal coolers.
d. Core Spray and RHR diagonal coolers.

New question
SI-LP-01303-00, pp.34-35

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295032	EK2.01	(3.5/3.6)	1	TIER1GRP2	BWR-4	HATCH	NEW

DATES: Modified: Thursday, September 30, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☒ Scramble Choices

Scramble Range: A - D

96 X. Which one of the following describes the normal APRM and LPRM flux noise bandwidth?

a. Approximately 1% to 3% at full power and will INCREASE as power decreases.
b. Approximately 3% to 5% at full power and will INCREASE as power decreases.
c. Approximately 1% to 3% at full power and will DECREASE as power decreases.
✓d. Approximately 3% to 5% at full power and will DECREASE as power decreases.

New question
34AB-C51-001-2S, p. 4, Note
SI-LP-01203-00

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295014	AA2.01	(4.1/4.2)	1	TIER1GRP1	BWR-4	HATCH	NEW

DATES: Modified: Friday, October 01, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☒ Scramble Choices

Scramble Range: A - D

Alt. Question
Reactivity Addition

97 2. Which one of the following describes the basis and the use of the term SIGMA THETA from the meteorological data?

a. average temperature differential over 15 minutes to determine stability class.
b. based on fluctuations in wind speed for determining range of release.
c. average wind direction over 15 minutes to determine direction of release.
✓d. based on fluctuations in wind direction for determining stability class.

New question
LT-LP-20017-02, p. 6

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295017	AA1.12	(2.5/3.9)	1	TIER1GRP1	BWR-4	HATCH	NEW

DATES: Modified: Friday, October 01, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
D	A	B	C	D	A	B	C	D	A

☒ Scramble Choices

Scramble Range: A - D

98 1. Which one of the following describes the purpose of the Drywell Spray Initiation Limit which is derived from Graph 8?

a. Ensures evaporative cooling to maximize spray effectiveness.
b. Ensures the internal torus to drywell vacuum breakers will function.
✓c. Ensures initiation of drywell sprays will not result in containment failure.
d. Ensures initiation of drywell sprays to dilute drywell hydrogen and oxygen concentrations.

New question
LT-LP-20310-05, p. 48

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
226001	G2.4.17	(3.1/3.8)	1	TIER2GRP1	BWR-4	HATCH	NEW

DATES: Modified: Friday, October 01, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
C	D	A	B	C	D	A	B	C	D

☒ Scramble Choices

Scramble Range: A - D

99 X. A radiological event has occurred on Unit 1 resulting in radiation levels greater than Max Safe Operating Value in the 158' elevation area (north) and the 185' elevation area of the Reactor Building. Which one of the following, in conjunction with the above conditions, would require a reactor scram and Emergency Depressurization to be initiated per EOP flowchart SC?

✓a. An unisolable sample line break occurs at the reactor sample sink.
b. An uncontrolled fire is in progress at Remote Shutdown Panel C82-P002.
c. Severe weather is approaching the site with wind blowing towards Baxley.
d. 20 rods in the north CRD HCU bank cannot be moved for a reactor power change.

New question
EOP Flowchart SC, D-9

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295034	G2.1.20	(4.3/4.2)	1	TIER1GRP2	BWR-4	HATCH	NEW

DATES: Modified: Friday, October 01, 1999 Used:

ANSWERS:

Single

Points 1

Version Answers:

0	1	2	3	4	5	6	7	8	9
A	B	C	D	A	B	C	D	A	B

[X] Scramble Choices

Scramble Range: A - D

#100

100 92. The following conditions exist on Unit 2 after the unit scrammed due to a loss of condenser vacuum:

Condensate and Feedewater systems are not available
RCIC is in manual control maintaining reactor level at -39 inch and increasing
HPCI is in reactor pressure control maintaining reactor pressure below 820 psig
Both loops of torus cooling are in service with suppression pool temperature at 104 (140) degrees and increasing about 1 degree every 15 minutes
The torus N-E area instrument sump AND the S-E area instrument sump level High, High, High alarms are actuated and have been in alarm for 5 hours due to a confirmed RHRSW system leak
All available sump pumps are operating

Which one of the following actions should the operators perform for these conditions? (References included)

a. Not isolate any system, wait until area water level is above Maximum Safe Operating Level in more than one area
b. Not isolate any system and emergency depressurize the reactor
c. Isolate all systems discharging water into the sump or area except the RCIC system
d. Isolate RHRSW and enter the SAGs

New question
EOP Flowchart SC, path SC/L
LR-LP-20305-05

KEY WORDS:

System	K/A No.	K/A Value	Difficulty	SamplePlan	Vendor	Licensee	Last used
295036	G2.4.24	(3.3/3.7)	2	TIER1GRP2	BWR-4	HATCH	NEW

DATES: Modified: Friday, October 01, 1999 Used:

Look at wording.

Southern Nuclear
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Operations Training
JPM

TITLE DETERMINE FIRE PROTECTION REQUIREMENTS		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER/R. L. SMITH	LR-JP-25033-00	15.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-25033**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00		Initial development	RAB/RLS	

UNIT 1 ( ) UNIT 2 (X)

TASK TITLE:	**DETERMINE FIRE PROTECTION REQUIREMENTS**
JPM NUMBER:	LR-JP-25033-00
TASK STANDARD:	The task shall be complete when the operator has properly determined the fire protection requirements per 31GO-OPS-011-0S.

TASK NUMBER: 200.024

PLANT HATCH JTA IMPORTANCE RATING:

RO 3.20

SRO 3.40

K/A CATALOG NUMBER: 286000K301/286000A103

K/A CATALOG JTA IMPORTANCE RATING:

RO 2.80

SRO 3.10

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 2**
	31GO-OPS-011-0S Rev 3 Ed 1

REQUIRED MATERIALS:	**Unit 2**
	31GO-OPS-011-0S (current revision)

APPROXIMATE COMPLETION TIME: 15.0 Minutes

SIMULATOR SETUP: N/A

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 1 and Unit 2 are at MOP.
2. Maintenance has requested that Unit 2 Station Battery Room "2A" door, 2C03, be blocked open for the next 12 hours to perform Electrolyte testing of the Batteries.
3. The following Fire Action sheets are in effect:

   2-99-141

   2-99-142

   2-99-143

INITIATING CUES:

Determine the requirements for allowing the Unit 2 Station Battery Room "2A" door to be blocked open.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

PROMPT: **AT** this time, **GIVE** the operator the attached Fire Action Sheets.

1.	Enter the FHA Appendix B of the TRM.	The operator ADDRESSES the FHA Appendix B of the TRM.	

NOTE: The order that the fire actions are addressed is not critical. Steps 2 through 4 may be performed in any order.

2.	Evaluate FAS 2-99-141 per the FHA Appendix B of the TRM for possible effects of opening the Battery Room "2A" door.	The operator ADDRESSES FHA Appendix B of the TRM and DETERMINES that there is NO EFFECT on the request.	
****3.**	Evaluate FAS 2-99-142 per the FHA Appendix B of the TRM for possible effects of opening the Battery Room "2A" door.	The operator ADDRESSES FHA Appendix B of the TRM and DETERMINES that FAS 2-99-142 INOPs the Fire Detection System on one side of the door. THIS HAS AN EFFECT on the request.	

RESPONSE CUE: N/A

PROMPT: If addressed by the operator, inform the opeator that there are no other FAS and/or no current Alarms or Troubles on the CXL Fire Computer in the Control Room.

4.	Evaluate FAS 2-99-143 per the FHA Appendix B of the TRM for possible effects of opening the Battery Room "2A" door.	The operator ADDRESSES FHA Appendix B of the TRM and DETERMINES that there is NO EFFECT on the request.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**5.	Determine that a Fire Action Sheet must be completed, with the requirement of an hourly fire watch, within one hour of opening the door.	The operator DETERMINES that a Fire Action Sheet must be completed prior to opening the door. This FAS will require the establishment of an hourly fire watch (previously established on on 2-99-142).	

RESPONSE CUE: N/A

NOTE: **ESTABLISHING** a continuous fire watch would meet the requirements of an hourly fire watch.

NOTE: **IF** the operator states that no additional requirements are needed, the evaluator should question the operator as to the exact meaning of this statement.

PROMPT: **IF** the operator addresses completing a Fire Action Sheet for the "2A" Station Battery Room door, **INFORM** the operator that another supervisor will complete the form.

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)**

FIRE ACTION SHEET 2 - 99 - 141

SECTION 1

FIRE ACTION SHEET INITIATION: **DATE :** 10/15/99 **TIME :** 13:00

REQUIRED RESTORATION TIME: **DATE :** N/A **TIME :** N/A

APPLICABILITY

☐ AT ALL TIMES ☐ WITH FUEL IN VESSEL ☒ WHEN EQUIP. IS REQ. TO BE OPER.

INITIATING CONDITION (MPL/DESCRIPTION): DETECTORS 2T43-N406DJ, 2T43-N406DK, 2T43N406DL, AND 2T43-N406DM FOR FIRE ZONE 2T43-164 DOZ ARE INOP FOR DRYWELL CHILLER ROOM.

APPLICABLE FHA APPENDIX "B" SECTION

☐ 1.1.1 DOORS/BARRIERS	☐ 1.4.1 SPRAY/SPRINKLERS	☐ 1.7.1 HYDRANTS/HOUSES
☒ 1.2.1 DETECTION	☐ 1.5.1 CO2	☐ 1.8.1 HALON
☐ 1.3.1 TANKS/PUMPS	☐ 1.6.1 HOSE STATIONS	☐ 1.9.1 EMERGENCY LIGHT

NON-FHA APPENDIX "B" FIXED FIRE SUPPRESSION SYSTEMS (NML)

☐

FIRE PROTECTION NOTIFIED WHEN INOPERABLE: ☐ YES: DATE: TIME: ☒ N/A

R. L. SMITH	TRAS
SHIFT SUPERVISOR SIGNATURE (FAS ACTIVE)	SHIFT SUPERINTENDENT INITIALS

SECTION 2

FIRE ZONE	2205N	**COMMON NAME**	DRYWELL CHILLER ROOM

BACKUP SUPPRESSION EQUIPMENT NEEDED ☐ YES ☐ NO ☒ N/A — **TYPE (IF APPLICABLE)**

DETECTOR SYSTEMS REQUIRED OPERABLE ☐ YES ☐ NO ☒ N/A — **TYPE (IF APPLICABLE)**

TYPE OF FIRE WATCH REQUIRED ☐ CONTINUOUS ☐ HOURLY ☒ NONE — **TYPE AREA** ☐ RAD ☒ NONRAD

R. L. SMITH	10/15/99	1330
ACTIONS MET SIGNATURE	DATE	TIME

SECTION 3

IF RESTORATION TIME IS EXCEEDED, INITIATE A DEFICIENCY CARD DISPOSITIONED TO NSAC FOR SPECIAL REPORTING

DEFICIENCY CARD INITIATED DATE/TIME ____/	**DEFICIENCY CARD NUMBER:**

SECTION 4

CORRECTIVE ACTION PERFORMED:

FIRE ACTION TERMINATED: DATE: ____ TIME:

FIRE PROT. NOTIFIED WHEN OPERABLE: ☐ YES DATE: ____ TIME: ____ ☐ N/A

SHIFT SUPERVISOR SIGNATURE (FAS INACTIVE)	SHIFT SUPERINTENDENT INITIALS

FIRE ACTION SHEET 2 - 99 - 142

SECTION 1

FIRE ACTION SHEET INITIATION: **DATE :** 10/16/99 **TIME :** 8:00

REQUIRED RESTORATION TIME: **DATE :** N/A **TIME :** N/A

APPLICABILITY

☐ AT ALL TIMES ☐ WITH FUEL IN VESSEL ☒ WHEN EQUIP. IS REQ. TO BE OPER.

INITIATING CONDITION (MPL/DESCRIPTION): FIRE DETECTION FOR ZONE 2Z43 112 D10 STA. BATTERY ROOM 2A IS INOPERABLE. DETECTORS 2Z43-N406AK, AL, AM AND AN FAILED SURVEILLANCE.

APPLICABLE FHA APPENDIX "B" SECTION

☐ 1.1.1 DOORS/BARRIERS	☐ 1.4.1 SPRAY/SPRINKLERS	☐ 1.7.1 HYDRANTS/HOUSES
☒ 1.2.1 DETECTION	☐ 1.5.1 CO2	☐ 1.8.1 HALON
☐ 1.3.1 TANKS/PUMPS	☐ 1.6.1 HOSE STATIONS	☐ 1.9.1 EMERGENCY LIGHT

NON-FHA APPENDIX "B" FIXED FIRE SUPPRESSION SYSTEMS (NML)

☐

FIRE PROTECTION NOTIFIED WHEN INOPERABLE: ☒ YES: DATE: TIME: ☐ N/A

R. L. SMITH	RAB
SHIFT SUPERVISOR SIGNATURE (FAS ACTIVE)	SHIFT SUPERINTENDENT INITIALS

SECTION 2

FIRE ZONE	2004	**COMMON NAME**	2A STATION BATTERY ROOM

BACKUP SUPPRESSION EQUIPMENT NEEDED ☐ YES ☐ NO ☒ N/A — **TYPE (IF APPLICABLE)**

DETECTOR SYSTEMS REQUIRED OPERABLE ☐ YES ☐ NO ☒ N/A — **TYPE (IF APPLICABLE)**

TYPE OF FIRE WATCH REQUIRED ☐ CONTINUOUS ☒ HOURLY ☐ NONE

TYPE AREA ☐ RAD ☒ NONRAD

R. L. SMITH	10/16/99	0830
ACTIONS MET SIGNATURE	DATE	TIME

SECTION 3

IF RESTORATION TIME IS EXCEEDED, INITIATE A DEFICIENCY CARD DISPOSITIONED TO NSAC FOR SPECIAL REPORTING

DEFICIENCY CARD INITIATED DATE/TIME ____/ **DEFICIENCY CARD NUMBER:**

SECTION 4

CORRECTIVE ACTION PERFORMED:

FIRE ACTION TERMINATED: DATE: ____ TIME:

FIRE PROT. NOTIFIED WHEN OPERABLE: ☐ YES DATE: ____ TIME: ____ ☐ N/A

SHIFT SUPERVISOR SIGNATURE (FAS INACTIVE)	SHIFT SUPERINTENDENT INITIALS

FIRE ACTION SHEET 2 - 99 - 143

SECTION 1

FIRE ACTION SHEET INITIATION: **DATE:** 10/17/99 **TIME:** 9:00

REQUIRED RESTORATION TIME: **DATE:** N/A **TIME:** N/A

APPLICABILITY

☐ AT ALL TIMES ☐ WITH FUEL IN VESSEL ☒ WHEN EQUIP. IS REQ. TO BE OPER.

INITIATING CONDITION (MPL/DESCRIPTION): DIESEL GENERATOR BUILDING CO2 SYSTEM FOR DIESEL GENERATOR ROOM 2C TAGGED ON CLEARENCE 2-99-605 FOR NOZZLE REPLACEMENT.

APPLICABLE FHA APPENDIX "B" SECTION

☐ 1.1.1 DOORS/BARRIERS	☐ 1.4.1 SPRAY/SPRINKLERS	☐ 1.7.1 HYDRANTS/HOUSES
☐ 1.2.1 DETECTION	☒ 1.5.1 CO2	☐ 1.8.1 HALON
☐ 1.3.1 TANKS/PUMPS	☐ 1.6.1 HOSE STATIONS	☐ 1.9.1 EMERGENCY LIGHT

NON-FHA APPENDIX "B" FIXED FIRE SUPPRESSION SYSTEMS (NML)

☐

FIRE PROTECTION NOTIFIED WHEN INOPERABLE: ☒ YES: DATE: TIME: ☐ N/A

R. L. SMITH	TAR
SHIFT SUPERVISOR SIGNATURE (FAS ACTIVE)	SHIFT SUPERINTENDENT INITIALS

SECTION 2

FIRE ZONE	2407	**COMMON NAME**	CO2 SYSTEM FOR DG 2C

BACKUP SUPPRESSION EQUIPMENT NEEDED
☒ YES ☐ NO ☐ N/A

TYPE (IF APPLICABLE)
Charged firehose from hydrant prestaged to DG room

DETECTOR SYSTEMS REQUIRED OPERABLE
☐ YES ☐ NO ☒ N/A

TYPE (IF APPLICABLE)

TYPE OF FIRE WATCH REQUIRED
☒ CONTINUOUS ☐ HOURLY ☐ NONE

TYPE AREA
☐ RAD ☐ NONRAD

R. L. SMITH	10/17/99	0945
ACTIONS MET SIGNATURE	DATE	TIME

SECTION 3

IF RESTORATION TIME IS EXCEEDED, INITIATE A DEFICIENCY CARD DISPOSITIONED TO NSAC FOR SPECIAL REPORTING

DEFICIENCY CARD INITIATED DATE/TIME ____/

DEFICIENCY CARD NUMBER:

SECTION 4

CORRECTIVE ACTION PERFORMED:

FIRE ACTION TERMINATED: DATE: ____ TIME:

FIRE PROT. NOTIFIED WHEN OPERABLE: ☐ YES DATE: ____ TIME: ____ ☐ N/A

SHIFT SUPERVISOR SIGNATURE (FAS INACTIVE)	SHIFT SUPERINTENDENT INITIALS

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Operations Training
JPM

TITLE DETERMINING OVERTIME AVAILABILITY		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER/R.L. SMITH	**LR-JP-25032-00**	15.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-25032**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00		Initial development	RAB/RLS	

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

TASK TITLE: **DETERMINING OVERTIME AVAILABILITY**

JPM NUMBER: LR-JP-25032-00

TASK STANDARD: The task shall be complete when the operator has determined which operators are available for overtime per 10AC-MGR-020-0S.

TASK NUMBER: 300.001

PLANT HATCH JTA IMPORTANCE RATING:

RO Not Available

SRO Not Available

K/A CATALOG NUMBER: Generis K/A 2.14

K/A CATALOG JTA IMPORTANCE RATING:

RO 2.30

SRO 3.40

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 1 & 2**
	10AC-MGR-020-0S Rev 0 Unit 1 or 2 Tech Specs, Section 5.2.2.e

REQUIRED MATERIALS:	**Unit 1 & 2**
	10AC-MGR-020-0S (current revision) Unit 1 or 2 Tech Specs

APPROXIMATE COMPLETION TIME: 15.0 Minutes

SIMULATOR SETUP: N/A

UNIT 1 & 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 2 is shutdown following a scram.
2. Preparations for startup are in progress.
3. This is THURSDAY NIGHT SHIFT.
4. The SOS has directed you to call in additional operators to work in assisting the crew during the startup.
5. The called in operators will work 12 hours on FRIDAY DAY SHIFT, on 10/22/99.
6. The operator's time sheets are available.

INITIATING CUES:

Select the operators that would violate overtime restrictions if called in to work FRIDAY DAY SHIFT, on 10/22/99.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

PROMPT: **AT** this time, **GIVE** the operator the attached operator time sheets.

1.	Operator identifies the procedure needed to perform the task.	Operator has obtained procedure 10AC-MGR-020-0S. (or Unit 1 or 2 Tech Specs	
**2.	Operator determines that Operator #1 WILL violate overtime restrictions.	Referring to Operator #1 time sheet, the operator DETERMINES that Operator #1 WILL violate the overtime limits. (>72 hours during 7 days)	

RESPONSE CUE: N/A

**.3.	Operator determines that Operator #2 WILL NOT violate overtime restrictions.	Referring to Operator #2 time sheet, the operator DETERMINES that Operator #2 WILL NOT violate the overtime limits.	

RESPONSE CUE: N/A

**4.	Operator determines that Operator #3 WILL NOT violate overtime restrictions.	Referring to Operator #3 time sheet, the operator DETERMINES that Operator #3 WILL NOT violate the overtime limits.	

RESPONSE CUE: N/A

**5.	Operator determines that Operator #4 WILL violate overtime restrictions.	Referring to Operator #4 time sheet, the operator DETERMINES that Operator #4 WILL violate the overtime limits. (>24 hours in a 48 hour period)	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**6.	Operator determines that Operator #5 WILL NOT violate overtime restrictions.	Referring to Operator #5 time sheet, the operator DETERMINES that Operator #5 WILL NOTviolate the overtime limits.	

RESPONSE CUE: N/A

**7.	Operator determines that Operator #6 WILL NOT violate overtime restrictions.	Referring to Operator #6 time sheet, the operator DETERMINES that Operator #6 WILL NOT violate the overtime limits.	

RESPONSE CUE: N/A

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)**

PLANT OPERATOR #1

PLANT E. I. HATCH STANDARD TIMESHEET **OPERATIONS DEPARTMENT** **Period Ending** **10/22/99**

	Shift	ST	OT/ EST	Account # OT Description		Shift	ST	OT/ EST	Account #/OT Description
	N	12				N	12		
SAT	D				SAT	D			
	E					E			
	N	12				N	12		
SUN	D				SUN	D			
	E					E			
	N	12				N	12		
MON	D				MON	D			
	E					E			
	N	4	8			N	4	8	
TUES	D				TUES	D			
	E					E			
	N	R				N			
WEDS	D	O			WEDS	D		12	
	E	D				E			
	N	R				N			
THURS	D	O			THURS	D		12	
	E	D				E			
	N	R				N			
FRI	D	O			FRI	D			
	E	D				E			
TOTAL					TOTAL				

PLANT OPERATOR #2

PLANT E. I. HATCH STANDARD TIMESHEET **OPERATIONS DEPARTMENT** **Period Ending** **10/22/99**

	Shift	ST	OT/ EST	Account # OT Description		Shift	ST	OT/ EST	Account #/OT Description
	N	R				N			
SAT	D	O			SAT	D		12	
	E	D				E			
	N	R				N	R		
SUN	D	O			SUN	D	O		
	E	D				E	D		
	N	R				N			
MON	D	O			MON	D	8		
	E	D				E			
	N					N			
TUES	D		12		TUES	D	8		
	E					E			
	N					N			
WEDS	D	12			WEDS	D	8		
	E					E			
	N					N			
THURS	D	12			THURS	D	8		
	E					E			
	N					N			
FRI	D	12			FRI	D			
	E					E			
TOTAL					TOTAL				

PLANT OPERATOR #3

PLANT E. I. HATCH STANDARD TIMESHEET **OPERATIONS DEPARTMENT** **Period Ending** **10/22/99**

	Shift	ST	OT/ EST	Account #/OT Description		Shift	ST	OT/ EST	Account #/OT Description
	N	R				N	R		
SAT	D	O			SAT	D	O		
	E	D				E	D		
	N	R				N	R		
SUN	D	O			SUN	D	O		
	E	D				E	D		
	N	R				N	R		
MON	D	O			MON	D	O		
	E	D				E	D		
	N	R				N	12		
TUES	D	O			TUES	D			
	E	D				E			
	N					N	12		
WEDS	D	12			WEDS	D			
	E					E			
	N					N	12		
THURS	D	12			THURS	D			
	E					E			
	N					N			
FRI	D	12			FRI	D			
	E					E			
TOTAL					TOTAL				

PLANT OPERATOR #4

PLANT E. I. HATCH STANDARD TIMESHEET **OPERATIONS DEPARTMENT** **Period Ending** **10/22/99**

	Shift	ST	OT/ EST	Account #/OT Description		Shift	ST	OT/ EST	Account #/OT Description
	N	R				N	R		
SAT	D	O			SAT	D	O		
	E	D				E	D		
	N	R				N	R		
SUN	D	O			SUN	D	O		
	E	D				E	D		
	N	R				N	R		
MON	D	O			MON	D	O		
	E	D				E	D		
	N	R				N			
TUES	D	O			TUES	D	12		
	E	D				E			
	N					N			
WEDS	D	12			WEDS	D	12		
	E					E			
	N					N			
THURS	D	12			THURS	D	12	4	
	E					E			
	N					N			
FRI	D	12			FRI	D			
	E					E			
TOTAL					TOTAL				

PLANT OPERATOR #5

PLANT E. I. HATCH STANDARD TIMESHEET **OPERATIONS DEPARTMENT** **Period Ending** **10/22/99**

	Shift	ST	OT/ EST	Account #/OT Description		Shift	ST	OT/ EST	Account #/OT Description
	N	12				N	12		
SAT	D				SAT	D			
	E					E			
	N	12				N	12		
SUN	D				SUN	D			
	E					E			
	N	12				N	12		
MON	D				MON	D			
	E					E			
	N	4	8			N	4	8	
TUES	D				TUES	D			
	E					E			
	N	R				N	R		
WEDS	D	O			WEDS	D	O		
	E	D				E	D		
	N	R				N	R		
THURS	D	O			THURS	D	O		
	E	D				E	D		
	N	R				N			
FRI	D	O			FRI	D			
	E	D				E			
TOTAL					TOTAL				

PLANT OPERATOR #6

PLANT E. I. HATCH STANDARD TIMESHEET **OPERATIONS DEPARTMENT** **Period Ending** **10/22/99**

	Shift	ST	OT/ EST	Account #/OT Description		Shift	ST	OT/ EST	Account #/OT Description
	N	R				N	R		
SAT	D	O			SAT	D	O		
	E	D				E	D		
	N	R				N	R		
SUN	D	O			SUN	D	O		
	E	D				E	D		
	N	R				N			
MON	D	O			MON	D	12		
	E	D				E			
	N					N			
TUES	D	12			TUES	D	12		
	E					E			
	N					N			
WEDS	D	12			WEDS	D	12		
	E					E			
	N					N			
THURS	D	12			THURS	D	4	8	
	E					E			
	N					N			
FRI	D	4	8		FRI	D			
	E					E			
TOTAL					TOTAL				

Southern Nuclear
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JPM

TITLE REVIEW OF CORE SPRAY VALVE OPERABILITY SURVEILLANCE		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER/R. L. SMITH	LR-JP-25034-00	20.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**

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SOUTHERN NUCLEAR OPERATING COMPANY
PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

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

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00		Initial development	RAB/RLS	

UNIT 1 ( ) UNIT 2 (X)

TASK TITLE:	**REVIEW OF CORE SPRAY VALVE OPERABILITY SURVEILLANCE**
JPM NUMBER:	LR-JP-25034-00
TASK STANDARD:	The task shall be complete when the operator reviews the completed surveillance procedure, 34SV-E21-002-2S, and determines if the test is satisfactory or unsatisfactory.

TASK NUMBER: 300.011

PLANT HATCH JTA IMPORTANCE RATING:

RO Not Available

SRO Not Available

K/A CATALOG NUMBER: 209001G2.2.12

K/A CATALOG JTA IMPORTANCE RATING:

RO 3.0

SRO 3.4

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 2**
	34SV-E21-002-2S Rev 8

REQUIRED MATERIALS:	**Unit 2**
	Completed surveillance package: 34SV-E21-002-2S. (Copy available in JPM filing cabinet)

APPROXIMATE COMPLETION TIME: 20.0 Minutes

SIMULATOR SETUP: N/A

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 2 is at MOP.
2. 34SV-E21-002-2S, "Core Spray Valve Operability," has just been completed.

INITIATING CUES:

Review the procedure data and determine the acceptability of the test.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

PROMPT: **AT** this time, **GIVE** the operator the completed copy of 34SV-E21-002-2S, "Core Spray Valve Operability."

1.	The operator reviews the procedure.	The operator REVIEWS 34SV-E21-002-2S, "Core Spray Valve Operability."	
2.	The operator evaluates the stroke time data for 2E21-F004A.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F004A and DETERMINES that the valve data is SATISFACTORY.	
****3.**	**The operator evaluates the stroke time data for 2E21-F005A.**	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F005A and DETERMINES that the valve data is UNSATISFACTORY in the open direction. The valve must be declared INOP or retested.	

RESPONSE CUE: N/A

4.	The operator evaluates the stroke time data for 2E21-F015A.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F015A and DETERMINES that the valve data is SATISFACTORY.	
5.	The operator evaluates the stroke time data for 2E21-F001A.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F001A and DETERMINES that the valve data is SATISFACTORY.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**6.	The operator evaluates the stroke time data for 2E21-F031A.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F031A and DETERMINES that the valve data is UNSATISFACTORY in the close direction. The valve must be declared INOP or retested.	

RESPONSE CUE: N/A

7.	The operator evaluates the stroke time data for 2E21-F004B.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F004B and DETERMINES that the valve data is SATISFACTORY.	
**8.	The operator evaluates the stroke time data for 2E21-F005B.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F005B and DETERMINES that the valve data is UNSATISFACTORY due to exceeding the maximum time to close. The valve must be declared INOP.	

RESPONSE CUE: N/A

PROMPT: **IF** the operator addresses Tech Spec actions for 2E21-F005B, **INFORM** the operator that another supervisor will evaluate the LCO.

9.	The operator evaluates the stroke time data for 2E21-F015B.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F015B and DETERMINES that the valve data is SATISFACTORY.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
10.	The operator evaluates the stroke time data for 2E21-F001B.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F001B and DETERMINES that the valve data is SATISFACTORY.	
**11.	The operator evaluates the stroke time data for 2E21-F031B.	On Attachment 1 of 34SV-E21-002-2S, the operator EVALUATES the stroke time data for 2E21-F031B and DETERMINES that the valve data is UNSATISFACTORY in the close direction. The valve must be declared INOP or retested.	

RESPONSE CUE: N/A

PROMPT: **IF** the operator addresses retesting the failed valves, **INFORM** the operator that another operator will perform the retest.

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)**

1.0 OBJECTIVE

This procedure provides instructions for performing the Core Spray System Valve Operability as required by Unit 2 Technical Specifications, TS 5.5.6, TS 3.6.1.3.5, Bases 3.0.1 and ASME OM Code, Subsection ISTC.

This procedure in conjunction with the following procedures meet Unit 2 Technical Specifications, TS SR 3.3.3.1.2 for 3.3.3.1-1(6.), TS SR 3.5.1.13

34SV-R43-001-2S
57SV-MNT-001-2S
57SV-MNT-002-2S
57SV-MNT-003-2S
57SV-MNT-004-2S

This procedure also collects data for evaluating the reliability of the Emergency Response Data System (ERDS).

2.0 APPLICABILITY

2.1 This procedure applies to the Unit 2 Core Spray System motor operated and air operated valves on a frequency of:

Once per 92 days
Once per 18 months
After valve maintenance (affected valve(s))

2.2 Valve stem verification is performed each refueling outage, not to exceed 2 years, AND, IF necessary, following maintenance where position indication is affected.

3.0 REFERENCES

3.1 90AC-OAP-001-0S, Test and Surveillance Control

3.2 42EN-INS-001-0S, Inservice Testing Program

3.3 Technical Specifications, Unit 2, TS 3.5.1, TS 3.5.2, Bases SR 3.0.1, TS 3.5.1.13, TS 3.6.1.3

3.4 31GO-INS-001-0S, ISI Pump and Valve Operability Tests

3.5 Edwin I. Hatch Nuclear Plant Unit 2 Valve Inservice Testing Plan

3.6 S-43483, Emergency Response Data System (ERDS) User's Manual

3.7 H-26018, Core Spray System, P&ID

3.8 H-27658, Core Spray System 2E21A Elementary Diagram, Sheets 1-6 through H-27663

4.0 REQUIREMENTS

4.1 PERSONNEL REQUIREMENTS

The number and qualification level of Operations personnel performing this procedure will be determined by the Shift Supervisor.

4.2 MATERIAL AND EQUIPMENT

4.2.1 Material

N/A - Not applicable to this procedure

4.2.2 Equipment

4.2.2.1 Calibrated stopwatch

4.2.2.2 5/16 inch nutdriver

4.3 SPECIAL REQUIREMENTS

4.3.1 Independent verification, as described in 10AC-MGR-019-0S, Procedure Use and Adherence, will be required for portions of this procedure.

4.3.2 The VERIFIED part of any step requiring independent verification may be performed out of sequence any time after completion of the first sign-off.

4.3.3 Emergency Response Data System (ERDS) data is confirmed in this procedure. The purpose of this data is to ensure ERDS reliability. Data is recorded in appropriate spaces in this procedure. Results of ERDS testing are NOT within the acceptance criteria of this surveillance. All ERDS data is recorded from the Safety Parameter Display System (SPDS) console displays in the Main Control Room. IF the ERDS is NOT operable, the appropriate engineer must be notified.

4.3.4 Full-stroke time is that time interval from initiation of the actuating signal to the end of the actuation cycle. Valves will be timed from WHEN the switch is positioned to either the green light EXTINGUISHED (open) or the red light EXTINGUISHED (close).

4.3.5 An RWP will be required IF activities require personnel to enter a contaminated AND/OR high radiation area.

4.3.6 Performance of this procedure will place valves of the Core Spray system in positions other than normally required for the standby lineup. The operator performing this procedure must be aware of his responsibility to confirm that all automatic actions associated with these valves occur in the event of an isolation signal.

5.0 PRECAUTIONS/LIMITATIONS

5.1 PRECAUTIONS

5.1.1 Observe safety rules outlined in the Southern Nuclear Safety and Health Manual.

5.1.2 Observe proper radiation protection procedures to maintain personnel exposure to ALARA and to limit the spread of contamination.

5.1.3 Avoid excessive cycling of MOVs to prevent overheating and possible damage to valve motor.

5.2 LIMITATIONS

IF CORE SPRAY SUCTION is from the CST, Valves 2E21-F015A AND 2E21-F015B must NOT be tested to avoid draining the CST to the Suppression Pool.

6.0 PREREQUISITES

N/A - Not applicable to this procedure

7.0 PROCEDURE INITIALS

7.1 PRETEST

7.1.1 Obtain Shift Supervisor's permission to perform this test. RJS

7.1.2 IF being performed during a refueling outage, establish communications between valve locations and the Control Room. N/A

7.1.3 Record stopwatch number: LT503 RJS

> NOTE
>
> Per ASME OM Code, paragraph ISTC 3.4, WHEN a valve OR its control system has been repaired, replaced OR has undergone maintenance that could affect the valves performance, THEN a new reference value shall be determined OR the previous value reconfirmed, by an inservice test performed before the valve is returned to service OR immediately IF not removed from service. Consult the IST Engineer OR 31GO-INS-001-0S for additional information.

> NOTE
>
> IF it is unclear whether new reference values are required to be established, contact the IST Engineer.

7.1.4 Determine IF new reference values are required to be established for any of the valves included in this surveillance procedure. N/A

7.1.5 IF new reference values are being established, skip the actions required by step 7.1.6 for the affected valves AND document the reason for establishing new reference values at step 7.5.6. N/A

INITIALS

7.1.6 Complete Attachment 1 as follows:

> NOTE
>
> WHEN calculating OR recording valve stroke times, round off to the nearest tenth second.

7.1.6.1 RECORD the REFERENCE times from the IST Log in the Control Room. RW

7.1.6.2 For MOV's with REFERENCE times of > 10 seconds, multiply the REFERENCE times by 0.85 and 1.15 AND RECORD as the CALCULATED ALLOWABLE times, IF less than the MAXIMUM TIME LIMIT. RW

7.1.6.3 For MOV's with REFERENCE times of ≤ 10 seconds perform the following applicable step:

7.1.6.3.1 For MOVs with REFERENCE times > 4 seconds and ≤ 10 seconds, multiply the REFERENCE times by 0.75 and 1.25. RW

7.1.6.3.2 For REFERENCE times ≤ 4 seconds, add and subtract 1 second to/from the REFERENCE time. N/A

7.1.6.3.3 RECORD the CALCULATED ALLOWABLE time from the previous steps, IF less than the MAXIMUM TIME LIMIT. RW

7.1.6.4 IF the CALCULATED ALLOWABLE time is greater than the MAXIMUM TIME LIMIT, THEN record the MAXIMUM TIME LIMIT as the CALCULATED ALLOWABLE time. RW

7.1.7 Confirm or PLACE the Core Spray System Loop to be tested in standby per 34SO-E21-001-2S, Core Spray System. RW

INITIALS

7.2 LOOP A MOTOR AND AIR OPERATED VALVE TEST

7.2.1 Valves 2E21-F004A and 2E21-F005A

7.2.1.1 TAKE Outbd Discharge Vlv, 2E21-F004A Control Switch to CLOSE, and record stroke time on Attachment 1. RN

7.2.1.2 IF during a refueling outage, perform the following:

7.2.1.2.1 Confirm that valve stem position for 2E21-F004A indicates CLOSED. N/A

7.2.1.2.2 Confirm that the ERDS Valve Status for 2E21-F004A indicates CLOSED [MISC/VALVE STATUS (E21-E41)]. N/A

7.2.1.3 TAKE and HOLD OPEN Inbd Discharge Vlv, 2E21-F005A Control Switch to OPEN UNTIL valve is fully OPEN, and record stroke time on Attachment 1. RN

7.2.1.4 IF during a refueling outage, perform the following:

7.2.1.4.1 Confirm that valve stem position for 2E21-F005A indicates OPEN. N/A

7.2.1.4.2 Confirm that the ERDS Valve Status for 2E21-F005A indicates OPEN [MISC/VALVE STATUS (E21-E41)]. N/A

7.2.1.5 TAKE and HOLD Inbd Discharge Vlv, 2E21-F005A control switch to CLOSE UNTIL valve is fully CLOSED, and record stroke time on Attachment 1. RN

7.2.1.6 IF during a refueling outage, perform the following:

7.2.1.6.1 Confirm that valve stem position for 2E21-F005A indicates CLOSED. N/A

7.2.1.6.2 Confirm that the ERDS Valve Status for 2E21-F005A, indicates CLOSED [MISC/VALVE STATUS (E21-E41)]. N/A

7.2.1.7 TAKE Outbd Discharge Vlv, 2E21-F004A Control Switch to OPEN, and record Stroke time on Attachment 1. RN

INITIALS

7.2.1.8 IF during a refueling outage, perform the following:

7.2.1.8.1 Confirm that valve stem position for 2E21-F004A indicates OPEN. N/A

7.2.1.8.2 Confirm that the ERDS Valve Status for 2E21-F004A indicates OPEN [MISC/VALVE STATUS (E21-E41)]. N/A

NOTE

IF Core Spray suction is from the CST refer to 5.2, LIMITATIONS.

7.2.2 Valve 2E21-F015A

7.2.2.1 TAKE and HOLD Test Vlv, 2E21-F015A control switch to OPEN UNTIL valve is fully OPEN, and record stroke time on Attachment 1. RNS

7.2.2.2 IF during a refueling outage, perform the following:

7.2.2.2.1 Confirm that valve stem position for 2E21-F015A indicates OPEN. N/A

7.2.2.2.2 Confirm that the ERDS Valve Status for 2E21-F015A indicates OPEN [DIAG/PCIS GROUP 2B]. N/A

7.2.2.3 TAKE and HOLD Test Vlv, 2E21-F015A control switch to CLOSE UNTIL valve is fully CLOSED, and record stroke time on Attachment 1. RNS

7.2.2.4 IF during a refueling outage, perform the following:

7.2.2.4.1 Confirm that valve stem position for 2E21-F015A indicates CLOSED. N/A

7.2.2.4.2 Confirm that the ERDS Valve Status for 2E21-F015A indicates CLOSED [DIAG/PCIS GROUP 2B]. N/A

INITIALS

7.2.3 Valve 2E21-F001A

> NOTE
>
> IF Core Spray A is in STANDBY with suction from the CST Steps 7.2.3.3 & 7.2.3.4 are to be performed before Steps 7.2.3.1 AND 7.2.3.2

> CAUTION
>
> IF CORE SPRAY A IS IN STANDBY WITH SUCTION FROM THE CST, DO NOT OPEN 2E21-F001A UNLESS 2E21-F019A IS CLOSED.

7.2.3.1 PLACE Torus Suction Vlv, 2E21-F001A, Control Switch in CLOSE and record stroke time on Attachment 1. RW

7.2.3.2 IF during a refueling outage, perform the following:

7.2.3.2.1 Confirm that valve stem position for 2E21-F001A indicates CLOSED. N/A

7.2.3.2.2 Confirm that the ERDS Valve Status for 2E21-F001A indicates CLOSED [MISC/VALVE STATUS (E21-E41)]. N/A

7.2.3.2.3 Place torus suction valve, 2E21-F019A, control switch in CLOSED. N/A

7.2.3.2.4 Confirm that valve stem position for 2E21-F019A indicates CLOSED. N/A

7.2.3.2.5 Confirm that the ERDS Valve Status for 2E21-F019A indicates CLOSED [MISC/VALVE STATUS (E21-E41)]. N/A

7.2.3.2.6 Place torus suction valve, 2E21-F019A, control switch in OPEN. N/A

7.2.3.2.7 Confirm that valve stem position for 2E21-F019A indicates OPEN. N/A

INITIALS

7.2.3.2.8 Confirm that the ERDS Valve Status for 2E21-F019A indicates OPEN [MISC/VALVE STATUS (E21-E41)]. N/A

7.2.3.3 PLACE Torus Suction Vlv, 2E21-F001A, Control Switch in OPEN and record stroke time on Attachment 1. RW

7.2.3.4 IF during a refueling outage, perform the following:

7.2.3.4.1 Confirm that valve stem position for 2E21-F001A indicates OPEN. N/A

7.2.3.4.2 Confirm that the ERDS Valve Status for 2E21-F001A indicates OPEN [MISC/VALVE STATUS (E21-E41)]. N/A

NOTE

IF Core Spray suction is from the CST, Min Flow Vlv 2E21-F031A may be cycled provided the Minimum Flow Line Manual Isolation Valve, 2E21-F010A is closed.

7.2.4 Valve 2E21-F031A

7.2.4.1 OPEN Link JJ-25 in Panel 2H11-P927 (removes low flow valve opening contact). RW

7.2.4.2 TAKE Core Spray Min Flow Vlv, 2E21-F031A Control Switch to CLOSE, and record stroke time on Attachment 1. RW

7.2.4.3 IF during a refueling outage, confirm that valve stem position for 2E21-F031A indicates CLOSED. N/A

7.2.4.4 TAKE Core Spray Min Flow Vlv, 2E21-F031A Control Switch to OPEN, and record stroke time on Attachment 1. RW

7.2.4.5 IF during a refueling outage, confirm that valve stem position for 2E21-F031A indicates OPEN. N/A

7.2.4.6 CLOSE and independently verify Link JJ-25 in Panel 2H11-P927. RW

VERIFIED RAB

INITIALS

7.3 LOOP B MOTOR AND AIR OPERATED VALVE TEST

7.3.1 Valves 2E21-F004B and 2E21-F005B

7.3.1.1 TAKE Outbd Discharge Vlv, 2E21-F004B Control Switch to CLOSE, and record stroke time on Attachment 1. RM

7.3.1.2 IF during a refueling outage, perform the following:

7.3.1.2.1 Confirm that valve stem position for 2E21-F004B indicates CLOSED. N/A

7.3.1.2.2 Confirm that the ERDS Valve Status for 2E21-F004B indicates CLOSED [MISC/VALVE STATUS (E21-E41)]. N/A

7.3.1.3 TAKE and HOLD Inbd Discharge Vlv, 2E21-F005B Control Switch to OPEN until the valve is fully OPEN, and record stroke time on Attachment 1. RM

7.3.1.4 IF during a refueling outage, perform the following:

7.3.1.4.1 Confirm that valve stem position for 2E21-F005B indicates OPEN. N/A

7.3.1.4.2 Confirm that the ERDS Valve Status for 2E21-F005B indicates OPEN [MISC/VALVE STATUS (E21-E41)]. N/A

7.3.1.5 TAKE and HOLD Inbd Discharge Vlv, 2E21-F005B Control Switch to CLOSE UNTIL the valve is fully CLOSED, and record stroke time on Attachment 1. RM

7.3.1.6 IF during a refueling outage, perform the following:

7.3.1.6.1 Confirm that valve stem position for 2E21-F005B indicates CLOSED. N/A

7.3.1.6.2 Confirm that the ERDS Valve Status for 2E21-F005B, indicates CLOSED [MISC/VALVE STATUS (E21-E41)]. N/A

7.3.1.7 TAKE Outbd Discharge Vlv, 2E21-F004B Control Switch to OPEN, and record Stroke time on Attachment 1. RM

7.3.1.8 IF during a refueling outage, perform the following:

7.3.1.8.1 Confirm that valve stem position for 2E21-F004B indicates OPEN. N/A

7.3.1.8.2 Confirm that the ERDS Valve Status for 2E21-F004B indicates OPEN [MISC/VALVE STATUS (E21-E41)]. N/A

INITIALS

NOTE

IF Core Spray suction is from the CST refer to 5.2, LIMITATIONS.

7.3.2 Valve 2E21-F015B

7.3.2.1. TAKE and HOLD Test Vlv, 2E21-F015B control switch to OPEN UNTIL valve is fully OPEN, and record stroke time on Attachment 1. RM

7.3.2.2 IF during a refueling outage, perform the following:

7.3.2.2.1 Confirm that valve stem position for 2E21-F015B indicates OPEN. N/A

7.3.2.2.2 Confirm that the ERDS Valve Status for 2E21-F015B indicates OPEN [DIAG/PCIS GROUP 2B]. N/A

7.3.2.3. TAKE and HOLD Test Vlv, 2E21-F015B control switch to CLOSE UNTIL valve is fully CLOSED, and record stroke time on Attachment 1. RM

7.3.2.4 IF during a refueling outage, perform the following:

7.3.2.4.1 Confirm that valve stem position for 2E21-F015B indicates CLOSED. N/A

7.3.2.4.2 Confirm that the ERDS Valve Status for 2E21-F015B indicates CLOSED [DIAG/PCIS GROUP 2B]. N/A

INITIALS

7.3.3 Valve 2E21-F001B

> CAUTION
>
> IF CORE SPRAY B IS IN STANDBY WITH SUCTION FROM THE CST, DO NOT OPEN 2E21-F001B UNLESS 2E11-F019B IS CLOSED.

> NOTE
>
> IF Core Spray B is in STANDBY with suction from the CST, Steps 7.3.3.3 AND 7.3.3.4 are to be performed before 7.3.3.1 AND 7.3.3.2.

7.3.3.1 PLACE Torus Suction Vlv, 2E21-F001B, Control Switch in CLOSE and record stroke time on Attachment 1. RW

7.3.3.2 IF during a refueling outage, perform the following:

7.3.3.2.1 Confirm that valve stem position for 2E21-F001B indicates CLOSED. N/A

7.3.3.2.2 Confirm that the ERDS Valve Status for 2E21-F001B indicates CLOSED [MISC/VALVE STATUS (E21-E41)]. N/A

7.3.3.2.3 Place torus suction valve, 2E21-F019B, control switch in CLOSED. N/A

7.3.3.2.4 Confirm that valve stem position for 2E21-F019B indicates CLOSED. N/A

7.3.3.2.5 Confirm that the ERDS Valve Status for 2E21-F019B indicates CLOSED [MISC/VALVE STATUS (E21-E41)]. N/A

7.3.3.2.6 Place torus suction valve, 2E21-F019B, control switch in OPEN. N/A

INITIALS

7.3.3.2.7 Confirm that valve stem position for 2E21-F019B indicates OPEN. N/A

7.3.3.2.8 Confirm that the ERDS Valve Status for 2E21-F019B indicates OPEN [MISC/VALVE STATUS (E21-E41)]. N/A

7.3.3.3 OPEN Torus Suction Vlv, 2E21-F001B, and record stroke time on Attachment 1. RW

7.3.3.4 IF during a refueling outage, perform the following:

7.3.3.4.1 Confirm that valve stem position for 2E21-F001B indicates OPEN. N/A

7.3.3.4.2 Confirm that the ERDS Valve Status for 2E21-F001B indicates OPEN [MISC/VALVE STATUS (E21-E41)]. N/A

NOTE

IF Core Spray suction is from the CST, Min Flow Vlv 2E21-F031B may be cycled provided the Minimum Flow Line Manual Isolation Valve, 2E21-F010B is closed.

7.3.4 Valve 2E21-F031B

7.3.4.1 OPEN Link JJ-25 in Panel 2H11-P928 (removes low flow valve opening contact). RW

7.3.4.2 TAKE Core Spray Min Flow Vlv, 2E21-F031B Control Switch to CLOSE, and record stroke time on Attachment 1. RW

7.3.4.3 IF during a refueling outage, confirm that valve stem position for 2E21-F031B indicates CLOSED. N/A

7.3.4.4 TAKE Core Spray Min Flow Vlv, 2E21-F031B Control Switch to OPEN, and record stroke time on Attachment 1. RW

7.3.4.5 IF during a refueling outage, confirm that valve stem position for 2E21-F031B indicates OPEN. N/A

7.3.4.6 CLOSE and independently verify Link JJ-25 in Panel 2H11-P928. RW

VERIFIED RAB

INITIALS

7.4 POSTTEST

7.4.1 Perform the Restoration to Standby, Attachment 1, of 34SO-E21-001-2S, Core Spray System. RW

7.4.2 Confirm that valve stroke times are less than the MAXIMUM TIME LIMIT on Attachment 1. RW

7.4.3 IF IST was performed, perform the following:

7.4.3.1 Confirm that the stroke times for each valve are within the allowable range specified on Attachment 1. RW

7.4.3.2 Independently verify that the stroke times for each valve on Attachment 1, are within the allowable range. RAB
LIC OPER

7.4.3.3 IF new reference values were established, log the results in the Control Room IST Log Book. N/A

7.5 TEST RESULTS

7.5.1 Reason for test: (✓) Norm. Surv. ( ) MWO # _____
( ) Other _____

7.5.2 Acceptance Criteria

7.5.2.1 The stroke times for each valve are less than the MAXIMUM TIME LIMIT on Attachment 1.

7.5.2.2 The stroke times for each valve are within the CALCULATED ALLOWABLE TIME range on Attachment 1.

7.5.2.3 During a refueling outage, valve stem position agrees with remote position indication.

7.5.3 Corrective Action - All power Operated Valves

7.5.3.1 IF a valve fails to exhibit the required change of valve stem or disk position OR exceeds the MAXIMUM TIME LIMIT, the valve will be immediately declared inoperable.

7.5.3.2 Valves with OPERATING times that do NOT meet the CALCULATED ALLOWABLE time, will be immediately retested OR declared inoperable.

7.5.3.2.1 IF retested, and IF the second set of data meets the CALCULATED ALLOWABLE times, the cause of the initial deviation will be analyzed by the IST Engineer and the results will be documented in the surveillance procedure data package.

7.5.3.2.2 IF retested, and IF the second set of data does NOT meet the CALCULATED ALLOWABLE times, but meets the MAXIMUM TIME LIMIT, initiate a TRACKING RAS. This will ensure the data will be analyzed within 96 hours by the IST engineer to determine if the measured stroke time represents acceptable operation. Otherwise, the valve will be declared inoperable.

7.5.3.3 In all cases, IF a valve is required to be stroked a second time, record MPL number along with both sets of times on a deficiency card and in the comments section of the procedure.

7.5.4 Test Result:

(✓) Satisfactory
( ) Unsatisfactory

7.5.5 Unsatisfactory Conditions: None

7.5.6 Comments/Corrective Actions: None

7.5.7 Test completed and/or verified by:

Print Name	Initial	Date
R.L. Smith	RLS	10/15/99
R A. Belcher	RAB	10/15/99

7.6 TEST REVIEW

7.6.1 The Shift Supervisor will review the procedure data for completeness and indicate concurrence with the test satisfactory/unsatisfactory determination by signing below.

Results Reviewed By: _____ _____
Shift Supervisor Date

7.6.2 IF new reference times were established, CONFIRM the results for the affected valves are logged in the Control Room IST Valve Log Book.

_____ _____
Shift Supervisor Date

7.6.3 The Shift Supervisor will forward this procedure, with all sign-offs through step 7.6.2, complete, to the IST Engineer for IST and ANII review.

_____ _____ _____ _____
IST Engineer Date ANII Date

7.6.4 The IST Engineer will forward this procedure, with all sign-offs complete, to Document Control for retention in accordance with 20AC-ADM-002-0S, Plant Records Management.

TITLE: IST VALVE DATA

NOTE

WHEN calculating OR recording valve stroke times, round off to the nearest tenth second.

COLUMN 1 MPL (TYPE)	COLUMN 2 REFERENCE TIME (SEC)		COLUMN 3 CALCULATED ALLOWABLE TIME (SEC)				COLUMN 4 OPERATING TIME (SEC)		COLUMN 5 MAXIMUM TIME LIMIT (SEC)		TIMED BY:
	OPEN	CLOSE	OPEN MIN	OPEN MAX	CLOSE MIN	CLOSE MAX	OPEN	CLOSE	OPEN	CLOSE	INIT
2E21-F004A MOV	8.5	N/A	6.4	10.6	N/A	N/A	8.7	N/A	≤11	N/A	RW
2E21-F005A MOV	8.3	8.6	6.2	10.4	6.5	10.8	10.5	9.0	≤11	≤11	RW
2E21-F015A MOV	N/A	55.7	N/A	N/A	47.3	57.0	N/A	55.8	N/A	≤57	RW
2E21-F001A MOV	95.8	94.3	81.4	105.0	80.2	105.0	96.1	94.5	≤105	≤105	RW
2E21-F031A MOV	11.9	11.7	10.1	13.7	9.9	13.5	13.6	13.6	≤22	≤22	RW
2E21-F004B MOV	7.4	N/A	5.6	9.3	N/A	N/A	7.5	N/A	≤11	N/A	RW
2E21-F005B MOV	8.0	8.0	6.0	10.0	6.0	10.0	9.9	11.1	≤11	≤11	RW
2E21-F015B MOV	N/A	53.3	N/A	N/A	45.3	57.0	N/A	54.0	N/A	<57	RW
2E21-F001B MOV	96.3	93.8	81.9	105.0	79.7	105.0	96.5	94.2	≤105	≤105	RW
2E21-F031B MOV	19.1	18.7	16.2	22.0	15.9	21.5	21.9	21.7	≤22	≤22	RW

CALCULATIONS PERFORMED BY: R. L. Smith DATE: 10/15/99

CALCULATIONS VERIFIED BY: R. A. Belcher DATE: 10/15/99

VERIFY STROKE TIMES ACCEPTABLE: R. A. Belcher DATE: 10/15/99

Question 1

Two Mechanics, a PEO, and a HP Tech are to locate and isolate a water leak in the Unit 1 RWCU heat exchanger room. Current HP Survey for the Unit 1 RWCU heat exchanger room has a general Dose rate field at 6 Rem/hr. The following doses have been received for the current year:

Mechanic #1	300 mRem
Mechanic #2	450 mRem
HP Tech	2600 mRem
PEO	1500 mRem

a. Calculate the dose they would receive if their stay time in the room is 15 minutes.

b. For each individual, determine the minimum level of authority required to authorize entry into the room for projected dose?

Question 1

Two Mechanics, a PEO, and a HP Tech are to locate and isolate a water leak in the Unit 1 RWCU heat exchanger room. Current HP Survey for the Unit 1 RWCU heat exchanger room has a general Dose rate field at 6 Rem/hr. The following doses have been received for the current year:

Mechanic #1	300 mRem
Mechanic #2	450 mRem
HP Tech	2600 mRem
PEO	1500 mRem

a. Calculate the dose they would receive if their stay time in the room is 15 minutes.

1500 mRem (.2 pt)

b. For each individual, determine the minimum level of authority required to authorize entry into the room for projected dose?

Mechanic #1 1800 mRem (Dose not required for credit) None additional, initial exposure limit not exceeded. (.2 pt)
Mechanic #2 1950 mRem (Dose not required for credit) None additional, initial exposure limit not exceeded. (.2 pt)
PEO 3000 mRem (Dose not required for credit) HP Supervisor, initial exposure limit are exceeded. (.2 pt)
HP Tech 4100 mRem (Dose not required for credit) AGM or higher, exposure limits are exceeded. (.2 pt)

Question 2

A RWCU pump room has an 11 Rem/hr field.

a. What type of radiation area is this room?

b. How is access controlled (included whether the door is locked, how is the area posted, and door color).

c. What administrative requirements must be met for personnel to enter this room?

NO REFERENCES ALLOWED

Question 2

A RWCU pump room has an 11 Rem/hr field.

a. What type of radiation area is this room?

High Radiation Area (.4pt)

b. How is access controlled (included whether the door is locked, how is the area posted, and door color).

Danger High Radiation Area (.1 pt.)
Door RED (.1 pt)
Door Locked (.1pt)

c. What administrative requirements must be met for personnel to enter this room?

RWP (.1 pt.)
Rad Monitoring device – Digital alarming Dosimetry (DAD) (.1pt)
HP Tech accompanies the individual (.1 pt.)

NO REFERENCES ALLOWED

Question 1

Time	
1305	While investigating a steam leak in the Unit 2 HPCI room, a worker receives a severe steam burn when the leak worsens.
1320	The SOS is notified that the worker is contaminated to a level of 600 cpm per probe area above background and that he must be transported to a hospital.

For this situation, state:

a. The emergency classification

b. The criteria for the classification

c. What reports are required

d. When the reports are required to be made

e. If a site evacuation is required

Question 1

Time

1305 While investigating a steam leak in the Unit 2 HPCI room, a worker receives a severe steam burn when the leak worsens.

1320 The SOS is notified that the worker is contaminated to a level of 600 cpm per probe area above background and that he must be transported to a hospital.

For this situation, state:

a. The emergency classification

.2 pts NUE

b. The criteria for the classification

.2 pts Contaminated Injured Victim (section 12)

c. What reports are required

.2 pts ENN (state & locals) and ENS (NRC)

d. When the reports are required to be made

.2 pts Within 15 min (or 1335) for ENN and within 1 hour (or 1420)

e. If a site evacuation is required

.2 pts Not required

Question 2

1325 Unit 2 is operating at 75% power when HPCI isolation alarms are received. The HPCI isolation valves do not shut and cannot be shut manually. Leak detection alarms are received and area temperatures are 200F and increasing. Area radiation levels are 30 mr/hr and increasing.

For this change in conditions, state:

a. The emergency classification

b. The criteria for the classification

c. What reports are required

d. When the reports are required to be made

e. If a site evacuation is required

Question 2

1325 Unit 2 is operating at 75% power when HPCI isolation alarms are received. The HPCI isolation valves do not shut and cannot be shut manually. Leak detection alarms are received and area temperatures are 200F and increasing. Area radiation levels are 30 mr/hr and increasing.

For this change in conditions, state:

a. The emergency classification

.2 pts Site Area Emergency

b. The criteria for the classification

.2 pts Steam Line Break (section 4)

c. What reports are required

.2 pts ENN (state & locals) and ENS (NRC)

d. When the reports are required to be made

.2 pts Within 15 min (or 1340) for ENN and within 1 hour (or 1425). Also accept, communications may already be established if continuous communications.

e. If a site evacuation is required

.2 pts Required

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Operations Training
JPM

TITLE PERFORM AN MSIV TRIP TEST		
AUTHOR R. A. BELCHER	**MEDIA NUMBER** LT-JP-14.01-02	**TIME** 10.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LT-JP-14.01**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	01/06/93	Initial development	RAB	RSG
01	11/04/94	Change initiating cue to a command, modify simulator setup, change valve naming to match the plant	RAB	SMC
02		Format modification, procedure changes	RAB	

FACILITY: **PLANT E. I. HATCH** **UNIT 1 ( )** **UNIT 2 (X)**

TASK TITLE: **PERFORM AN MSIV TRIP TEST**

TASK NUMBER: 014.001

JPM NUMBER: LT-JP-14.01-02

TASK STANDARD: The task shall be completed when the MSIV Trip Test has been completed on one Inboard and one Outboard MSIV per 34SV-B21-002-2S.

NOTE: This JPM is written for the "A" valves. Other MSIVs may be used.

PLANT HATCH JTA IMPORTANCE RATING:

RO 3.70

SRO 3.31

K/A CATALOG NUMBER: 2390001A401

K/A CATALOG JTA IMPORTANCE RATING:

RO 4.20

SRO 4.00

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 2**
	Procedure: 34SV-B21-002-2S Rev 4

REQUIRED MATERIALS:	**Unit 2**
	Procedure: 34SV-B21-002-2S (current revision) Stop watch

APPROXIMATE COMPLETION TIME: 10.0 Minutes

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

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #106** and leave in **FREEZE.**

2. Make sure RECORDER POWER is TURNED ON. Roll Chart Recorders and Process Computer Typers forward. Ensure any information printed on the Process Computer Typer from previous ICs is removed.

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

   A. Take the simulator out of FREEZE, place the Mode Switch to SHUTDOWN.
   B. Perform RC-1 and RC-2, restore water level to the normal band.
   C. Reset the Scram.
   D. Reset the Rod Drifts and all annunciators and ensure the SDV Drains open.
   E. Allow the simulator to run until the Scram Disch Vol High Level Trip Annunciator clears.

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

5. **ESTIMATED** Simulator **SETUP TIME:** **15 Minutes**

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. The Reactor is SHUTDOWN and progressing towards Cold Shutdown for Refueling.

INITIATING CUES:

Perform the MSIV Trip Test for MSIVs 2B21-F028A and 2B21-F022A, per procedure 34SV-B21-002-2S.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

PROMPT: **IF** addressed by the operator, as the Shift Supervisor **INFORM** the operator that permission to perform the surveillance is granted.

**1.	Confirm that NO Group 1 or RPS trips are in.	At panel 2H11-P603, the operator VERIFIES that NO Scram or Group 1 Isolation annunciators are ILLUMINATED.	

RESPONSE CUE: N/A

2.	Record Stopwatch number.	The operator RECORDS the number of stopwatch in the data package.	
3.	Confirm MSIV 2B21-F028A is OPEN and that red OPEN indicating light is ILLUMINATED.	At panel 2H11-P601, the operator VERIFIES that MSIV 2B21-F028A is OPEN and the red OPEN indicating light is ILLUMINATED.	

NOTE: Timing of the MSIV will be from when the switch is positioned, to the red light EXTINGUISHED.

**4.	Close MSIV 2B21-F028A and record stroke time.	At panel 2H11-P601, the operator CLOSES MSIV 2B21-F028A, and TIMES the closure of the MSIV. Stroke time RECORDED.	

RESPONSE CUE: MSIV 2B21-F028A, red light illuminated.

5.	Confirm the green CLOSE light is illuminated and the red OPEN light is extinguished.	At panel 2H11-P601, the operator VERIFIES that for MSIV 2B21-F028A, the green CLOSE indicating light is ILLUMINATED and the red OPEN indicating light is EXTINGUISHED.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**6.	Confirm MSIV stroke time is within limits.	The operator VERIFIES that MSIV stroke time is greater than or equal to 3 seconds, but less than or equal to 5 seconds.	

RESPONSE CUE: MSIV stroke time <3 seconds or >5 seconds.

PROMPT: **WHEN** addressed by the operator, as the Shift Supervisor **INFORM** the operator that it is desired to OPEN 2B21-F028A.

7.	Open MSIV 2B21-F028A.	At panel 2H11-P601, the operator OPENS MSIV 2B21-F028A, red light illuminated.	

RESPONSE CUE: MSIV 2B21-F028A, green light illuminated.

8.	Confirm MSIV 2B21-F022A is OPEN and that red indicating light is ILLUMINATED.	At panel 2H11-P602, the operator VERIFIES that MSIV 2B21-F022A is OPEN and the red indicating light is ILLUMINATED.	

NOTE: Timing of the MSIV will be from when the switch is positioned, to the red light EXTINGUISHED.

**9.	Close MSIV 2B21-F022A and record stroke time.	At panel 2H11-P602, the operator CLOSES MSIV 2B21-F022A, and TIMES the closure of the MSIV. Stroke time is RECORDED.	

RESPONSE CUE: MSIV 2B21-F022A, red light illuminated.

10.	Confirm the green CLOSE light is illuminated and the red OPEN light is extinguished.	At panel 2H11-P601, the operator VERIFIES that for MSIV 2B21-F022A, the green CLOSE indicating light is ILLUMINATED and the red OPEN indicating light is EXTINGUISHED.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**11.	Confirm MSIV stroke time is within limits.	The operator VERIFIES that MSIV stroke time is greater than or equal to 3 seconds, but less than or equal to 5 seconds.	

RESPONSE CUE: MSIV stroke time <3 seconds or >5 seconds.

PROMPT: **WHEN** addressed by the operator, as the Shift Supervisor **INFORM** the operator that it is desired to OPEN 2B21-F022A.

12.	Open MSIV 2B21-F022A.	At panel 2H11-P602, the operator OPENS MSIV 2B21-F022A, red light illuminated.	

RESPONSE CUE: MSIV 2B21-F022A, green light illuminated.

PROMPT: **WHEN** addressed by the operator, as the Shift Supervisor **INFORM** the operator that another operator will complete the rest of the surveillance.

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)**

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Operations Training
JPM

TITLE PERFORM A DIESEL GENERATOR MANUAL START SURVEILLANCE		
AUTHOR R. A. BELCHER	**MEDIA NUMBER** LT-JP-28.16-02	**TIME** 30.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LT-JP-28.16**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	03/10/95	Initial development	RAB	SMC
01	08/01/96	Format change, added procedure change steps	RAB	SMC
02		Format upgrade, added procedure change steps, added malfunction and actions to shutdown the diesel and changed the time allowance accordingly	RAB	

FACILITY: **PLANT E. I. HATCH** **UNIT 1 ( )** **UNIT 2 (X)**

TASK TITLE: **PERFORM A DIESEL GENERATOR MANUAL START SURVEILLANCE**

TASK NUMBER: 028.016

JPM NUMBER: LT-JP-28.16-02

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

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: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 2**
	34SV-R43-004-2S Rev 15 34AR-652-111-2S Rev 4 34AR-652-129-2S Rev 2

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

APPROXIMATE COMPLETION TIME: 30.0 Minutes

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

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #121** and leave in **FREEZE.**

2. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mf65213665	Spur Ann – LUBE OIL PRESS LOW			999
mf65213683	Spur Ann – EMERGENCY ENGINE SHUTDOWN			999

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

REM #	DESCRIPTION	STATUS
rfR43294	DG 2A Engine Remote Speed Droop (0 – 100)	0

4. **ESTIMATED** Simulator **SETUP TIME:** **10 Minutes**

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Diesel Generator "2A" and its associated equipment are in Standby. The Diesel is at ambient conditions.
2. No other testing or maintenance is in progress.
3. A PEO is standing by at the Diesel Generator.

INITIATING CUES:

Perform the Diesel Generator 2A Semi-Annual Test per 34SV-R43-004-2S. IST is not being performed.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the procedure needed to perform the task.	Operator has obtained procedure 34SV-R43-004-2S.	
2.	Operator identifies the materials that are required.	Operator identifies the required materials and where to obtain them.	
3.	Operator reviews the procedure's precautions and limitations.	Operator has reviewed the precautions and limitations.	

PROMPT: **WHEN** the operator addresses obtaining permission from the Shift Supervisor, **INFORM** the operator that permission has been granted.

PROMPT: **WHEN** the operator addresses Subsection 7.6, Pre-Test Subsection, as a PEO, **INFORM** the operator at the Diesel Building, that this subsection is complete and satisfactory.

NOTE: The operator should establish communications with the Diesel Generator 2A Room. The simulator operator will perform this function.

PROMPT: **WHEN** the operator addresses the Eng Lube Oil Inlet Temp from 2R43-R012A, the PEO at the Diesel (simulator operator) should **REPORT** a temperature of 110°F.

4.	Confirm that the Diesel Gen 2A Mode Select Switch is in NORM.	At panel 2H11-P652, the operator CONFIRMS that Diesel Gen 2A MODE SELECT switch is in NORM.	
5.	Confirm that the Diesel Gen 2A Shutdown System Operative red light is EXTINGUISHED.	At panel 2H11-P652, the operator CONFIRMS that the Diesel Gen 2A SHUTDOWN SYSTEM OPERATIVE red light is EXTINGUISHED.	
6.	Confirm that the Diesel Gen 2A Start red light is EXTINGUISHED.	At panel 2H11-P652, the operator CONFIRMS that the Diesel Gen 2A START red light is EXTINGUISHED.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
7.	At the Diesel Gen 2A Voltage Reg Transfer Switch, confirm the following: Voltage Reg Transfer switch is in AUTO. AUTO red light is ILLUMINATED. MANUAL green light is EXTINGUISHED.	At panel 2H11-P652, at the Diesel Gen 2A VOLTAGE REG TRANSFER switch, the operator CONFIRMS: VOLTAGE REG TRANSFER switch is in AUTO. AUTO red light is ILLUMINATED. MANUAL green light is EXTINGUISHED.	
8.	At the Diesel Gen 2A Voltage Adjust Switch, confirm the following: RAISE red light is EXTINGUISHED. LOWER green light is EXTINGUISHED.	At panel 2H11-P652, at the Diesel Gen 2A VOLTAGE ADJUST switch, the operator CONFIRMS: RAISE red light is EXTINGUISHED. LOWER green light is EXTINGUISHED.	
9.	Confirm that the Diesel Gen 2A Auto Start Sys Operative clear light is ILLUMINATED.	At panel 2H11-P652, the operator CONFIRMS that the Diesel Gen 2A AUTO START SYS OPERATIVE clear light is ILLUMINATED.	

NOTE: Since the Auto Start Sys Operative clear light is illuminated, it is not necessary to depress the Shutdown Relay pushbutton.

10.	Confirm that the annunciator, GOVERNOR NOT AT SYNCHRONOUS SPEED SETTING (652-108) is **NOT** in the ALARMED condition.	At panel 2H11-P652, the operator CONFIRMS that the annunciator, GOVERNOR NOT AT SYNCHRONOUS SPEED SETTING (652-108) is **NOT** in the ALARMED condition.	
11.	Confirm that Diesel Gen 2A Emergency Supply ACB 135530 indicates OPEN.	At panel 2H11-P652, the operator CONFIRMS that Diesel Gen 2A EMERGENCY SUPPLY ACB 135530 indicates OPEN, green light ILLUMINATED.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**12.	Place the Diesel Gen 2A Mode Select switch in the TEST position.	At panel 2H11-P652, the operator PLACES the Diesel Gen 2A MODE SELECT switch in the TEST position.	

RESPONSE CUE: Mode Select Switch, in the NORM position, or Annunciator, DIESEL 2A IN TEST MODE, is not in the alarm condition.

NOTE: The operator should recognize that SAT 2C is energized, by observing the Pot lights or checking the SAT 2C breaker condition. Therefore, the step using the SAT 2C Out Of Svc Interlock Switch is not required.

13.	Confirm that annunciator DIESEL 2A IN TEST MODE (652-105) is in the ALARM condition.	At panel 2H11-P652, the operator CONFIRMS that annunciator DIESEL 2A IN TEST MODE (652-105) is in the ALARM condition.	

NOTE: For steps 14 through 21, the simulator operator will confirm the actions and indications for the operator.

14.	Confirm that the AT ENGINE - REMOTE control switch is in the REMOTE position.	Contacting the PEO at the Diesel Generator 2A Room, the operator CONFIRMS that the AT ENGINE - REMOTE control switch is in the REMOTE position.	
15.	Confirm that the Diesel Generator 2A Woodward Governor Control, the Speed Droop control knob is at "0".	Contacting the PEO at the Diesel Generator 2A Room, at the Diesel Generator 2A Woodward Governor Control, the operator CONFIRMS that the SPEED DROOP control knob is at "0".	
16.	Confirm that the Diesel Generator 2A Woodward Governor Control, the Load Limit control knob is set at "10".	Contacting the PEO at the Diesel Generator 2A Room, at the Diesel Generator 2A Woodward Governor Control, the operator CONFIRMS that the LOAD LIMIT control knob is set at "10".	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
17.	Confirm that the Diesel Generator 2A Cooling Water Outlet AOV, 2P41-F339A, is CLOSED.	Contacting the PEO at the Diesel Generator 2A Room, the operator CONFIRMS that Diesel Generator 2A COOLING WATER OUTLET AOV, 2P41-F339A, is CLOSED.	
18.	Confirm that the governor oil level is between the two (2) FULL marks.	Contacting the PEO at the Diesel Generator 2A Room, the operator CONFIRMS that the governor oil level is between the two (2) FULL marks.	
19.	Confirm that the front and rear generator bearing oil levels are between the two (2) FULL marks.	Contacting the PEO at the Diesel Generator 2A Room, the operator CONFIRMS that the front and rear generator bearing oil levels are between the two (2) FULL marks.	
20.	Confirm that the diesel lube oil level indicates between the two (2) FULL marks on the dipstick.	Contacting the PEO at the Diesel Generator 2A Room, the operator CONFIRMS that the diesel lube oil level indicates between the two (2) FULL marks on the dipstick.	

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

****21.**	**Take the Diesel 2A Prelube Pump to ON.**	Contacting the PEO at the Diesel Generator 2A Room, the operator CONFIRMS that the Diesel 2A PRELUBE PUMP to ON, red light illuminated.	

RESPONSE CUE: N/A

22.	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.	

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

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**23.	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.	

RESPONSE CUE: N/A

24.	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.	
25.	Confirm that the average diesel generator output voltage is between 3740 V and 4240 V AND that diesel generator frequency is between 59 and 60 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 60 Hz.	
26.	Confirm that the Diesel Generator 2A Cooling Water Outlet AOV, 2P41-F339A is OPEN.	Contacting the PEO at the Diesel Generator 2A Room, the operator CONFIRMS that the Diesel Generator 2A COOLING WATER OUTLET AOV, 2P41-F339A, is OPEN.	

NOTE: The simulator operator, when contacted by the operator, will **TOGGLE REMOTE FUNCTION rfR43294**, "DG 2A Engine Remote Speed Droop (0 to 100), to change the speed droop for the following step.

**27.	Place the Speed Droop Control Knob to "50".	Contacting the PEO 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".	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
28.	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.	
29.	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.	
****30.**	**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.	

RESPONSE CUE: Diesel Gen 2A Voltage Reg Transfer switch, red light illuminated.

31.	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.	
32.	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.	
****33.**	**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.	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**34.	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.	

RESPONSE CUE: Synchroscope, not rotating and/or Synchroscope lights, not illuminated.

35.	Using Diesel Gen 2A Speed Adjust, adjust synchroscope rotation to approximately 3 to 5 revolutions per minutes in the clockwise (fast) direction.	At panel 2H11-P652, the operator uses the Diesel Gen 2A SPEED ADJUST, to ADJUST synchroscope rotation to approximately 3 to 5 revolutions per minutes in the clockwise (fast) direction.	
36.	Observe the voltage on each phase of 4160V Bus 2E and records 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.	
37.	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.	
**38.	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.	

RESPONSE CUE: ACB 135530, green light illuminated.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

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

39.	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.	
40.	Using the Diesel Gen 2A Voltage Adjust switch, adjust the reactive load to 500 to 1000 kVar.	At panel 2H11-P652, the operator uses the Diesel Gen 2A VOLTAGE ADJUST switch, ADJUSTS the reactive load to 500 to 1000 kVar, as indicated on KILOVAR, 2R43-R616A.	
41.	Gradually increase load to between 2764 and 2825 kW.	At panel 2H11-P652, the operator uses the Diesel Gen 2A SPEED ADJUST switch, ADJUSTS the load on the diesel to 2764 and 2825 kW, as indicated on KILOWATT, 2R43-R615A.	

NOTE: **AS** the operator is increasing the diesel loading to 2764 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 PEO 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.

42.	Opens the Emergency Supply ACB.	At panel 2H11-P652, the operator, OPENS EMERGENCY SUPPLY ACB 135530, green light illuminated.	

RESPONSE CUE: EMERGENCY SUPPLY ACB 135530, red light illuminated.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**43.	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.	

RESPONSE CUE: Diesel Generator 2A is at 60 Hz.

PROMPT: **ONCE** the operator has stopped the diesel, **INFORM** the operator that another operator will complete the shutdown, contact maintenance, and place the diesel into Standby configuration.

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)**

Southern Nuclear
E. I. Hatch Nuclear Plant

Operations Training
JPM

TITLE PURGE THE TORUS WITH AIR FOR HYDROGEN CONTROL		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER	LR-JP-13.58-02	9.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**

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FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-13.58**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	06/22/95	Initial development	RAB	SMC
01	06/21/96	Format change, modify time allowance	RAB	DHG
02		Format upgrade, modify terminology and title per the new EOP/SAGs	RAB	

FACILITY: **PLANT E. I. HATCH** **UNIT 1 (X)** **UNIT 2 (X)**

TASK TITLE: **PURGE THE TORUS WITH AIR FOR HYDROGEN CONTROL**

TASK NUMBER: 013.058

JPM NUMBER: LR-JP-13.58-02

TASK STANDARD: This task shall be completed when the Torus is being purged with air per 31EO-EOP-104.

PLANT HATCH JTA IMPORTANCE RATING:

RO 4.07

SRO 3.83

K/A CATALOG NUMBER: 223001A204

K/A CATALOG JTA IMPORTANCE RATING:

RO 3.70

SRO 3.80

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 1**	**Unit 2**
	31EO-EOP-104-1S Rev 5 31EO-EOP-013-1S Rev 4	31EO-EOP-104-2S Rev 4 31EO-EOP-013-2S Rev 4

REQUIRED MATERIALS:	**Unit 1**	**Unit 2**
	31EO-EOP-104-1S (current revision) Designated jumpers (6) found in EOP jumper book	31EO-EOP-104-2S (current revision) Designated jumpers (6) found in EOP jumper book

APPROXIMATE COMPLETION TIME: 9.0 Minutes

SIMULATOR SETUP: N/A

UNIT 1

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Flowchart 31EO-EOP-013-1S (PC-2) is in progress.
2. Drywell Hydrogen and Oxygen concentrations are 4% and 6%, respectively.
3. Drywell is venting through the Torus and is being purged with air.
4. Offsite radioactivity release rate is less than 0.057 mR/hr and is expected to remain at its present level.
5. Normal AC Power is available.
6. A Group II isolation has occurred on the Primary Containment Isolation System.

INITIATING CUES:

Initiate Torus air purge flow per 31EO-EOP-104-1S.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the materials that are required.	Operator identifies the required materials and where to obtain them.	

PROMPT: If the operator addresses Drywell purging, inform the operator that Drywell purge with air is in progress.

NOTE: The following prompt can be used after the operator indicates where he would obtain the indications.

PROMPT: When the operator addresses Torus pressure, indicate for the operator that Torus pressure is <1.00 psig.

NOTE: The order of installing the jumpers is not critical. Steps 2 and 3 may be performed in any order.

PROMPT: When the operator addresses defeating isolation interlocks, inform the operator as the Shift Supervisor that isolation interlocks for vent and purge valves must be defeated.

**2.	Install the following jumper: From UU-44 to UU-53, for valve 1T48-F324.	At panel 1H11-P601D, jumper is INSTALLED at the following: From UU-44 to UU-53, for valve 2T48-F324.	

RESPONSE CUE: N/A

**3.	Install the following jumper: From AA-66 to AA-74, for valve 1T48-F309.	At panel 1H11-P602A, jumper is INSTALLED at the following: From AA-66 to AA-74, for valve 1T48-F309.	

RESPONSE CUE: N/A

PROMPT: If the operator addresses Drywell purging, inform the operator that Drywell purge with air is in progress.

NOTE: The following prompt can be used after the operator indicates where he would obtain the indications.

PROMPT: When the operator addresses Torus water level, indicate for the operator that Torus water level is less than 152 inches.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**4.	Open Torus Air Purge Vlv, 1T48-F324.	At panel 1H11-P601, TORUS AIR PURGE VLV, 1T48-F324 is OPEN, red light illuminated.	

RESPONSE CUE: Valve 1T48-F324, green light illuminated.

**5.	Open Torus Air Purge Vlv, 1T48-F309.	At panel 1H11-P602, TORUS AIR PURGE VLV, 1T48-F309 is OPEN, red light illuminated.	

RESPONSE CUE: Valve 1T48-F309, green light illuminated.

PROMPT: If the operator addresses System Restoration, inform the operator as the Shift Supervisor that it 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.

(Indicates critical step)**

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Flowchart 31EO-EOP-013-2S (PC-2) is in progress.
2. Drywell Hydrogen and Oxygen concentrations are 4% and 6%, respectively.
3. Drywell is venting through the Torus and is being purged with air.
4. Offsite radioactivity release rate is less than 0.057 mR/hr and is expected to remain at its present level.
5. Normal AC Power is available.
6. A Group II isolation has occurred on the Primary Containment Isolation System.

INITIATING CUES:

Initiate Torus air purge flow per 31EO-EOP-104-2S.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the materials that are required.	Operator identifies the required materials and where to obtain them.	

PROMPT: If the operator addresses Drywell purging, inform the operator that Drywell purge with air is in progress.

NOTE: The following prompt can be used after the operator indicates where he would obtain the indications.

PROMPT: When the operator addresses Torus pressure, indicate for the operator that Torus pressure is <0.35 psig.

NOTE: The order of installing the jumpers is not critical. Steps 2 and 3 may be performed in any order.

PROMPT: When the operator addresses defeating isolation interlocks, inform the operator as the Shift Supervisor that isolation interlocks for vent and purge valves must be defeated.

**2.	Install the following jumper: From UU-53 to UU-40, for valve 2T48-F324.	At panel 2H11-P601D, jumper is INSTALLED at the following: From UU-53 to UU-40, for valve 2T48-F324.	

RESPONSE CUE: N/A

**3.	Install the following jumper: From AA-66 to AA-22, for valve 2T48-F309.	At panel 2H11-P602A, jumper is INSTALLED at the following: From AA-66 to AA-22, for valve 2T48-F309.	

RESPONSE CUE: N/A

PROMPT: If the operator addresses Drywell purging, inform the operator that Drywell purge with air is in progress.

NOTE: The following prompt can be used after the operator indicates where he would obtain the indications.

PROMPT: When the operator addresses Torus water level, indicate for the operator that Torus water level is less than 152 inches.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**4.	Open Torus Air Purge Vlv, 2T48-F324.	At panel 2H11-P601, TORUS AIR PURGE VLV, 2T48-F324 is OPEN, red light illuminated.	

RESPONSE CUE: Valve 2T48-F324, green light illuminated.

**5.	Open Torus Air Purge Vlv, 2T48-F309.	At panel 2H11-P602, TORUS AIR PURGE VLV, 2T48-F309 is OPEN, red light illuminated.	

RESPONSE CUE: Valve 2T48-F309, green light illuminated.

PROMPT: If the operator addresses System Restoration, inform the operator as the Shift Supervisor that it 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.

(Indicates critical step)**

Southern Nuclear
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Operations Training
JPM

TITLE HPCI SHUTDOWN (ABNORMAL)		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER	LR-JP-05.04-04	4.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-05.04**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	09/10/93	Initial development	RAB	RSG
01	07/18/94	Procedure change, modify simulator setup	RAB	SMC
02	04/19/96	Format change	RAB	DHG
03	03/02/99	Revised based on new simulator computer.	SCB	DHG
04		Upgrade format	RAB	

FACILITY: **PLANT E. I. HATCH** **UNIT 1 ( )** **UNIT 2 (X)**

TASK TITLE: **HPCI SHUTDOWN (ABNORMAL)**

TASK NUMBER: 005.004

JPM NUMBER: LR-JP-05.04-04

TASK STANDARD: The task shall be completed when the operator has shutdown HPCI per 34SO-E41-001-2S.

PLANT HATCH JTA IMPORTANCE RATING:

RO 3.40

SRO 2.96

K/A CATALOG NUMBER: 206000A217

K/A CATALOG JTA IMPORTANCE RATING:

RO 3.90

SRO 4.30

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 2**
	34SO-E41-001-2S Rev 20 Ed 1 34AB-E10-001-2S Rev 0 Ed 2 30AC-OPS-003-0S Rev 20

REQUIRED MATERIALS:	**Unit 2**
	34SO-E41-001-2S (current revision)

APPROXIMATE COMPLETION TIME: 4.0 Minutes

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

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #127** and leave in **FREEZE.**

2. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfE41_103	HPCI Inadvertent Startup			000

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

   A. Take the simulator out of FREEZE and allow to stabilize.
   B. Acknowledge all annunciators.

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

5. **ESTIMATED** Simulator **SETUP TIME:** **5 Minutes**

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. The Reactor was at approximately 50% power, when HPCI automatically initiated.
2. No surveillances or work was being performed on HPCI when it started.
3. The cause of the HPCI start is being investigated.
4. HPCI is not necessary for level or pressure control.

INITIATING CUES:

Shutdown HPCI.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

PROMPT: If addressed by the operator, indicate for the operator that RWL and Drywell pressure are normal.

1.	Operator identifies the correct procedure to perform the task.	The operator has identified 34SO-E41-001-2S as the correct procedure to be used.	
2.	Operator reviews the procedure's precautions and limitations.	Operator has reviewed the precautions and limitations.	
3.	Operator confirms that HPCI initiation signal is present.	At panel 2H11-P601, the operator OBSERVES that the INITIATION SIGNAL white light is illuminated. AND/OR At panel 2H11-P601, the operator DEPRESSES the INITIATION SIGNAL pushbutton and observes that the white light remains illuminated.	

PROMPT: If requested by the operator, as the Shift Supervisor, give the operator permission to attempt to reset the initiation signal.

****4.**	Operator DEPRESSES and HOLDS the HPCI Turbine Trip pushbutton.	At panel 2H11-P601, the operator DEPRESSES and HOLDS the REMOTE TURB TRIP pushbutton.	

RESPONSE CUE: HPCI TURBINE TRIP SOLENOID ENERGIZED annunciator is NOT illuminated.

****5.**	When the HPCI turbine has stopped, the operator places the HPCI Aux Oil Pump in Pull-to-Lock.	At panel 2H11-P601, the operator confirms on 2E41-R610, TURBINE SPEED, that HPCI Turbine Speed is 0 rpm and PLACES 2E41-C002-3, AUX OIL PUMP, in Pull-to-Lock.	

RESPONSE CUE: HPCI Turbine Speed is greater than 0 rpm and/or the Aux Oil Pump is in Auto.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
6.	When the HPCI Low Bearing Oil Pressure alarm is received, the operator releases the HPCI Turbine Trip Pushbutton.	At panel 2H11-P601, the operator OBSERVES the HPCI TURBINE BRG OIL PRESS LOW annunciator and RELEASES the REMOTE TURB TRIP pushbutton.	

NOTE: If the operator releases the HPCI Turbine Trip pushbutton and HPCI restarts, the operator should take the Aux Oil Pump out of Pull-to-Lock and repeat steps 4, 5, and 6 of this JPM.

PROMPT: If the operator addresses placing HPCI into Standby, inform the operator as the Shift Supervisor that when the on-going investigation are complete, another operator will perform that task.

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)**

Southern Nuclear
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Operations Training
JPM

TITLE MOVE CONTROL RODS USING SINGLE NOTCH (ROD DRIFT)		
AUTHOR R. A. BELCHER	**MEDIA NUMBER** **LR-JP-25031-02**	**TIME** 15.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**

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FORM TITLE: TRAINING MATERIAL REVISION SHEET	

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-25031**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	09/16/98	Initial development	SCB	DHG
01	03/05/99	Revised to correct inaccurate procedure number.	SCB	DHG
02		Upgrade format, procedure revision	RAB	

UNIT 1 ( ) UNIT 2 (X)

TASK TITLE:	**MOVE CONTROL RODS USING SINGLE NOTCH (ROD DRIFT)**
JPM NUMBER:	LR-JP-25031-02
TASK STANDARD:	The task shall be completed when the Reactor has been manually scrammed per 34AB-C11-004-2S.

TASK NUMBER: 001.010

PLANT HATCH JTA IMPORTANCE RATING:

RO 3.57

SRO 3.52

K/A CATALOG NUMBER: 201003A201

K/A CATALOG JTA IMPORTANCE RATING:

RO 3.40

SRO 3.60

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 2**
	34GO-OPS-065-0S Rev 4 Ed 5 34AB-C11-004-2S Rev 2 Ed 1

REQUIRED MATERIALS:	**Unit 2**
	34GO-OPS-065-0S (current revision) 34AB-C11-004-2S (current revision) Control Rod Movement Sequence Sheet (Step 20)

APPROXIMATE COMPLETION TIME: 15.0 Minutes

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

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #105** and leave in **FREEZE**.

2. Make sure RECORDER POWER is TURNED ON. Roll Chart Recorders and Process Computer Typers forward. Ensure any information printed on the Process Computer Typer from previous ICs is removed.

3. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfC11_24A	Control Rod Failure (Drift Out)	38.15		000

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

   A. Take the simulator out of Freeze and verify/withdraw Control Rods of Group 19 to their withdraw limit.
   B. Ensure that drive water dP is 260 psid and stable.

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

6. **ESTIMATED** Simulator **SETUP TIME:** **15 Minutes**

NOTE: The simulator operator will act as ***second verifier*** for rod movement and read the pre-job brief to the operator.

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. A normal plant startup is in progress per 34GO-OPS-001-2S, "Plant Startup, and is currently at Step 7.4.2.
2. Rod withdrawal to achieve 6-7% on the APRMs is in progress.
3. Rods in Group 19 of the Pull Sequence has just been completed.
4. Rod Worth Minimizer is operable and has been loaded with the correct movement sequence, which has been approved by the Reactor Engineering Supervisor.

INITIATING CUES:

Withdraw Controls Rods in Group 20 to their withdraw limit.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the procedure needed to perform the task.	Operator has identified the correct procedure as 34GO-OPS-065-0S.	
2.	Operator reviews the procedure's precautions and limitations.	Operator has reviewed the precautions and limitations.	
3.	Operator identifies the materials that are required.	Operator has identified the required materials and where to obtain them.	

PROMPT: **WHEN** the operator addresses an approved copy of the Control Rod Movement Sequence Sheet, **GIVE** the operator the Control Rod Movement Sequence Sheet.

NOTE: The operator may select any control rod in Rod Group 20, although the operator should proceed in consecutive order.

4.	Select a control rod in Rod Group 20.	At panel 2H11-P603, the push-button is DEPRESSED on CONTROL ROD SELECT Matrix for selected control rod in Rod Group 20.	

RESPONSE CUE: Backlight for selected Control Rod not illuminated.

5.	Withdraw the control rod to Position 08.	At panel 2H11-P603, ROD MOVEMENT CONTROL switch is momentarily PLACED to "OUT" position and RELEASED.	

RESPONSE CUE: Selected Rod is at Position 06.

6.	Confirm the proper control rod movement.	At panel 2H11-P603, the operator VERIFIES that rod position indicator indicates "08" for rod moved in previous step on Four-Rod Display and/or RWM.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
7.	Complete the line, for the selected rod, on the Control Rod Movement Sequence sheet.	On the Control Rod Movement Sequence sheet, on the line for the selected rod (Withdrawn side of sheet), the operator has: Filled in INIT block. Filled in DATE block.	
**8.	Select the next control rod in Rod Group 20.	At panel 2H11-P603, the push-button is DEPRESSED on CONTROL ROD SELECT Matrix for selected control rod in Rod Group 20.	

RESPONSE CUE: Backlight for selected Control Rod not illuminated.

**9.	Withdraw the control rod to Position 08.	At panel 2H11-P603, ROD MOVEMENT CONTROL switch is momentarily PLACED to "OUT" position and RELEASED.	

RESPONSE CUE: Selected Rod is at Position 06.

NOTE: 38-15 is the control rod that will drift. If the operator selects another rod in Group 20 to move, evaluate using steps 4 and 5.

10.	Confirm the proper control rod movement.	At panel 2H11-P603, the operator VERIFIES that rod position indicator indicates drifts past "08" and the ROD DRIFT alarm illuminates.	

NOTE: The operator may drive the control rod in using the EMERGENCY IN switch. To allow the operator to address 34AB-C11-004-2S, the ***simulator operator*** may hold the rod in with the EMERGENCY IN switch.

**13.	Manually scram the Reactor.	At panel 2H11-P603, REACTOR SCRAM PUSHBUTTONS are depressed or the REACTOR MODE SWITCH in placed in shutdown.	

RESPONSE CUE: Pushbutton lights extinguished or Mode Switch in Startup/Hot Standby.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

NOTE: The task is to scram the Reactor. If the operator scrams the Reactor and continues with scram actions, the evaluator may stop the JPM by stating that another operator will take care of scram actions.

PROMPT: **IF** the operator asks whether or not to scram the Reactor, **DIRECT** the operator to respond as the procedure directs.

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)**

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Operations Training
JPM

TITLE VERIFY THE CORRECT OVERLAP BETWEEN IRM RANGES 6 AND 7		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER	LR-JP-12.01-04	14.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-12.01**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	02/25/93	Initial development	CME	RSG
01	08/25/94	Change initiating cue to a command, modify simulator setup, modify initial conditions	RAB	SMC
02	06/17/96	Format change, change time allotment, procedure step changes, modification to attachment 9, modify simulator setup and JPM to allow any IRM to be the failure	RAB	RSG
03	03/02/99	Revised due to new simulator computer.	SCB	DHG
04		Format upgrade, increase number of IRMs that fail the overlap requirement, add the initial IRM failure	RAB	

UNIT 1 ( ) UNIT 2 (X)

TASK TITLE:	**VERIFY THE CORRECT OVERLAP BETWEEN IRM RANGES 6 AND 7**
JPM NUMBER:	LR-JP-12.01-04
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-001-2S, Plant Startup.

TASK NUMBER: 012.010

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: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 2**
	34GO-OPS-001-2S Rev 34 Ed 3

REQUIRED MATERIALS:	**Unit 2**
	34GO-OPS-001-2S (current revision)

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 #102** and leave in **FREEZE**.

2. Make sure RECORDER POWER is TURNED ON. Roll Chart Recorders and Process Computer Typers forward. Ensure any information printed on the Process Computer Typer from previous ICs is removed.

3. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfC51_7F	IRM F Failure (Inoperative)			000
mfC51_155C	IRM C Range 7 Fails High By a Factor of 2			000
mfC51_155B	IRM B Range 7 Fails High By a Factor of 2			000

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

6. **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 TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 2 is in Startup, with 34GO-OPS-001-2S (Plant Startup) in progress.
2. All plant equipment is in normal line-up for this condition. IRM "F" failed inoperative 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-001-2S, Plant Startup, has been completed up to 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-065-0S.
7. A second operator is monitoring the remainder of the Control Room Panels, including Feedwater Control.

INITIATING CUES:

Perform Steps 7.2.24 and 7.2.25 of 34GO-OPS-001-2S, Plant Startup, to verify IRM overlap.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

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-001-2S and has LOCATED Step 7.2.24.	

PROMPT: **WHEN** operator addresses Attachment 9 of 34GO-OPS-001-2S, **PROVIDE** the operator a copy of Attachment 1 of this JPM.

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 5 and 80 on the 0 - 125 scale (black scale).	Operator has RANGED IRMs to maintain IRM indications between 5 and 80 on the recorder 0 - 125 scale (black scale).	

RESPONSE CUE: N/A

PROMPT: **IF** addressed, **INDICATE** to the operator that all the SRMs are fully withdrawn.

****3.**	Operator RANGES each IRM from Range 6 to Range 7 and LOGS Range 6 and Range 7 readings on Attachment 1 of this JPM.	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 1 of this JPM.	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**4.	Operator DIVIDES Range 6 (Column 2) readings by 10 and ENTERS the RESULTS in Column 4 of Attachment 1 of this JPM.	Operator has DIVIDED Range 6 (Column 2) readings by 10 and has ENTERED the RESULTS in Column 4 of Attachment 1 of this JPM.	

RESPONSE CUE: N/A

PROMPT: **IF** addressed, as a second operator, **PERFORM** verification of Column 5 of Attachment 1.

**5.	Operator CONFIRMS that Column 3 equals Column 4 ± 2 (on the red scale, Column 3) and DETERMINES that IRM "B" and "C" overlap is Not Acceptable (> ± 2).	Operator has CONFIRMED that Column 3 equals Column 4 ± 2 (on the red scale, Column 3) and has DETERMINED that IRM "B" and "C" overlap is Not Acceptable (> ± 2).	

RESPONSE CUE: N/A

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

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

6.	Operator RECORDS the unacceptable overlap for IRM "B" and "C" in the Operator's log and NOTIFIES I&C Shop and 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 has NOTIFIED I&C Shop and the Shift Supervisor of the unacceptable overlap for IRM "B" and "C."	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
7.	Operator notifies the SS that per the Note of Attachment 9, power accesion cannot contine with less than three IRM channels in each RPS trip system.	Operator NOTIFIES the the SS that per the Note of Attachment 9, power accesion cannot contine with less than three IRM channels in each RPS trip system.	

PROMPT: **AS** the Shift Supervisor, **INFORM** the operator that another operator will mainatin 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-001-2S - 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 ± 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

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Operations Training
JPM

TITLE		
FROM OUTSIDE THE CONTROL ROOM, DURING A CONTROL ROOM EVACUATION, LOCALLY START THE SBGT SYSTEM		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER	LR-JP-30.07-10	25.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-30.07**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
01	06/13/89	General revision and format change	JEM	SMC
02	08/07/89	Add LR lesson plan references	JEM	DHG
03	07/11/90	Procedure, format, and question revision	JEM	DHG
04	05/10/91	General, procedure, and format change	CME	DHG
05	09/04/92	General revision and format change	WMM	SMC
06	02/03/95	General revision, incorporate instructor and NRC comments, word processor change, incorporate DCR and procedure revision, change initiating cue to a direct command and include phonetics, change time allowance	RAB	DHG
07	07/23/96	Format change	RAB	DHG
08	04/10/97	Revised due to procedure change.	SCB	RSG
09	02/13/98	Added note to allow opening RFF damper.	SCB	DHG
10		Format upgrade	RAB	

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

TASK TITLE:	**FROM OUTSIDE THE CONTROL ROOM, DURING A CONTROL ROOM EVACUATION, LOCALLY START THE SBGT SYSTEM**
JPM NUMBER:	LR-JP-30.07-10
TASK STANDARD:	The task shall be completed when the operator has locally started one of the SBGT System filter trains per 31RS-T46-001, Section 4.1.2.

TASK NUMBER: 030.007

PLANT HATCH JTA IMPORTANCE RATING:

RO 3.79

SRO Not Available

K/A CATALOG NUMBER: 261000G009

K/A CATALOG JTA IMPORTANCE RATING:

RO 3.70

SRO 3.50

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	Unit 1	Unit 2
	31RS-OPS-001-1S Rev 5 Ed 1 31RS-T46-001-1S Rev 4 Ed 2	31RS-OPS-001-2S Rev 6 31RS-T46-001-2S Rev 1 Ed 2

REQUIRED MATERIALS:	Unit 1	Unit 2
	31RS-T46-001-1S (current revision) Jumpers for SBGT from EOP cabinet on 130 ft elevation Screwdriver or Nutdriver Ladder	31RS-T46-001-2S (current revision) Jumpers for SBGT from EOP cabinet on 130 ft elevation Screwdriver or Nutdriver Ladder

APPROXIMATE COMPLETION TIME: 25.0 Minutes

SIMULATOR SETUP: N/A

UNIT 1

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. The plant has experienced an event that required the Control Room to be evacuated. At the same time Unit 1 SBGT received a valid start signal, caused by Unit 1 low RWL.
2. The "A" SBGT System fan has been placed under clearance for maintenance and the "B" SBGT System fan has failed to Auto Start.
3. Normal AC Power and Instrument Air are available.
4. Procedure 31RS-OPS-001-1S is in progress.
5. SPDS is NOT available.

INITIATING CUES:

Start the Bravo SBGT System with a suction on the Reactor Building, per 31RS-T46-001-1S.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the materials that are required.	Operator identifies the required materials and where to obtain them.	
****2.**	Open damper 1T41-F032B by opening link TB-1 (wire SV1) in the damper junction box.	At location 164RBR05 (10 feet off the floor north of the Reactor Building Exhaust Filter Train 1T41-D005): Link TB-1 (wire SV1) is OPEN in the junction box for damper 1T41-F032B. 1T41-F032B REACTOR BUILDING INBOARD ISOLATION TO SBGT damper is OPEN.	

RESPONSE CUE: N/A

PROMPT: **WHEN** the operator identifies the junction box, **INFORM** the operator that link TB-1 (wire SV1) is open and **INDICATE** that the damper is open.

NOTE: **The operator may also open 1T41-F040B. This is allowed per procedure.**

****3.**	Open damper 1T46-F005 by opening link TB-1 (wire SV1) in the damper junction box.	At location 164RBR02 (on east wall near the ceiling): Link TB-1 (wire SV1) is OPEN in the junction box for damper 1T46-F005. 1T46-F005 STANDBY GAS TRT SYS DISCHARGE TO STACK damper is OPEN.	

RESPONSE CUE: N/A

PROMPT: **WHEN** the operator identifies the junction box, **INFORM** the operator that link TB-1 (wire SV1) is open and **INDICATE** that the damper is open.

NOTE: The operator should not address disconnecting the air supply lines since dampers 1T41-F032B and 1T46-F005 are open.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
4.	Confirm the following dampers are open: 1T46-F003B 1T46-F004B	At location 164RAR02 (west end of the B Filter Train), the operator VERIFIES the following dampers are OPEN: 1T46-F003B STANDBY GAS TRT SYS FAN C001B INLET AOV 1T46-F004B STANDBY GAS TRT SYS FILTER TRAIN "B" OUTLET AOV.	

PROMPT: **WHEN** the operator addresses 1T46-F003B and 1T46-F004B, **INDICATE** for the operator that the dampers are open.

NOTE: The operator should not address closing 1T46-F015B since dampers 1T46-F003B and 1T46-F004B are open.

5.	Open the breaker for SBGT Train 1B.	At location 130RER03, on MCC 1R24-S012 (Frame 3C), the breaker for STANDBY GAS TREATMENT FAN 1T46-C001B is OPEN.	
**6.	Install jumper wire from point 3C1 to 3C2 at panel 1R24-S012.	At panel 1R24-S012, jumper wire is INSTALLED from point 3C1 to 3C2 in the top compartment of Frame 3.	

RESPONSE CUE: N/A

**7.	Close the breaker for SBGT Train 1B.	At location 130RER02, on MCC 1R24-S012 (Frame 3C), the breaker for STANDBY GAS TREATMENT FAN 1T46-C001B is CLOSED.	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
8.	Depress the Reset push-buttons for SBGT Train 1B panels.	At location 164RAR03 (on side of SBGT Train 1B), the RESET push-buttons have been DEPRESSED on the following panels: OVERHEAT CNTRL PNL FOR 1T46-D001B TRIP UNIT #1 OVERHEAT CNTRL PNL FOR 1T46-D001B TRIP UNIT #2	
9.	Confirm the following dampers open after SBGT Fan 1B starts: 1T46-F001B 1T46-F002B	At location 164RAR03, the operator VERIFIES the following dampers are OPEN after SBGT Fan 1B starts: 1T46-F0)1B STANDBY GAS TRT SYS FILTER TRAIN "B" INLET AOV 1T46-F002B STANDBY GAS TRT SYS FAN C001B OUTLET AOV	

PROMPT: **WHEN** the operator addresses 1T46-F001B and 1T46-F002B, **INDICATE** for the operator that the dampers are open.

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)**

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. The plant has experienced an event that required the Control Room to be evacuated. At the same time Unit 2 SBGT received a valid start signal, caused by Unit 2 low RWL.
2. The "B" SBGT System fan has been placed under clearance for maintenance and the "A" SBGT System fan has failed to Auto Start.
3. Normal AC Power and Instrument Air are available.
4. Procedure 31RS-OPS-001-2S is in progress.
5. SPDS is NOT available.

INITIATING CUES:

Start the Alpha SBGT System with a suction on the Reactor Building, per 31RS-T46-001-2S.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the materials that are required.	Operator identifies the required materials and where to obtain them.	
****2.**	**Open damper 2T46-F001A, by opening link SV-1 in the damper junction box.**	At location 185RBR19 (outside the door to "B" SBGT): Link SV-1 is OPEN in the junction box for damper 2T46-F001A. SBGT A FLTR INLET FROM RX BLDG 2T46-F001A damper is OPEN.	

RESPONSE CUE: N/A

PROMPT: **WHEN** the operator identifies the junction box, **INFORM** the operator that link SV-1 is open and indicate that the damper is open.

****3.**	**Open damper 2T46-F002A, by opening link SV-1 in the damper junction box.**	At location 164RAR24 (behind the Drywell Chiller): Link SV-1 is OPEN in the junction box for damper 2T46-F002A. SBGT A FLTR DISCH 2T46-F002A damper is OPEN.	

RESPONSE CUE: N/A

PROMPT: **WHEN** the operator identifies the junction box, **INFORM** the operator that link SV-1 is open and **INDICATE** that the damper is open.

NOTE: **The operator may also open 2T46-F003A. This is allowed by procedure.**

4.	Open the breaker for SBGT Train 2A.	At location 130RFR14, on MCC 2R24-S011 (Frame 4DR), the breaker for STBY GAS FILTER TRAIN 2T46-D001A, is OPEN.	

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**5.	Install jumper wire from point TB3-15 to TB3-16 at cabinet 2T46-D001A.	At location 185RAR23, inside control cabinet 2T46-D001A STANDBY GAS FILTER TRAIN, jumper wire is INSTALLED from point TB3-15 to TB3-16.	

RESPONSE CUE: N/A

**6.	Close the breaker for SBGT Train 2A.	At location 130RFR14, on MCC 2R24-S011 (Frame 4DR), the breaker for SBGT 2A is CLOSED.	

RESPONSE CUE: N/A

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)**

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Operations Training
JPM

TITLE START AN IDLE STATION SERVICE AIR COMPRESSOR		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER/R. L. SMITH	LR-JP-35.02-00	15.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**

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FORM TITLE: TRAINING MATERIAL REVISION SHEET	

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-35.02**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00		Initial development	RAB/RLS	

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

TASK TITLE:	**START AN IDLE STATION SERVICE AIR COMPRESSOR**
JPM NUMBER:	LR-JP-35.02-00
TASK STANDARD:	The task shall be complete when the operator has started the idle station service air compressor per 34SO-P51-002.

TASK NUMBER: 035.002

PLANT HATCH JTA IMPORTANCE RATING:

RO 2.5

SRO 2.5

K/A CATALOG NUMBER: 300000K501

K/A CATALOG JTA IMPORTANCE RATING:

RO 2.5

SRO 2.5

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 1**	**Unit 2**
	34SO-P51-002-1S Rev 9 Ed 4	34SO-P51-002-2S Rev 15 Ed 6

REQUIRED MATERIALS:	**Unit 1**	**Unit 2**
	34SO-P51-002-1S (current revision)	34SO-P51-002-2S (current revision)

APPROXIMATE COMPLETION TIME: 15.0 Minutes

SIMULATOR SETUP: N/A

UNIT 1

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 1 is at MOP.
2. The "1B" SSAC is scheduled for PM.
3. The Unit 1 Closed Cooling Water System is in service.
4. Another operator has begun the start process and is currently at Step 7.1.11 of 34SO-P51-002-1S.

INITIATING CUES:

Start the idle, Alpha Station Service Air Compressor per 34SO-P51-002-1S, Step 7.2.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the procedure needed to perform the task.	Operator has obtained 34SO-P51-002-1S.	
2.	Operator reviews the procedure's precautions and limitations.	Operator has reviewed the precautions and limitations.	

PROMPT: **WHEN** the operator addresses the position of the remote hand switch for the "1B" SSAC, **INFORM** the operator that the hand switch is in the STOP PULL TO LOCK position.

3.	Confirm, for the "1A" SSAC, that the Programmed Stop LED is illuminated.	At the "1A" SSAC, 1P51-C001A, the operator CONFIRMS that the Programmed Stop LED is ILLUMINATED.	

PROMPT: **WHEN** the operator addresses Step 7.1.1, as the Support Shift Supervisor, **INFORM** the operator that another operator has successfully completed the steps through 7.1.10. The next step to be addressed is 7.1.11.

NOTE: Only the aftercooler and intercooler manual drain valves for the "A" SSAC are required. If the operator drains the other SSACs, there will be no detrimental effects.

4.	Open the manual aftercooler and intercooler drain valves and drains any Condensate present. Reclose the valves. 1P51-F1017A 1P51-F1021A	At the "A" SSAC, 1P51-C001A, the operator OPENS the manual aftercooler and intercooler drain valves and drains any Condensate present. RECLOSE the valves. 1P51-F1017A, AFTERCOOLER DRAIN 1P51-F1021A, INTERCOOLER DRAIN	

PROMPT: **WHEN** the operator addresses the remote control switch for the "A" SSAC, as the Unit 1 CBO, **INFORM** the operator that the switch has been placed in the NORMAL position.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**5.	Place the remote control switch to the NORMAL position.	The operator CONTACTS the main control room and DIRECTS the control room operator to PLACE the Remote Control Switch for the "A" SSAC 1P51-C001A, to the NORMAL position.	

RESPONSE CUE: N/A

**6.	Start the "A" SSAC.	At the "A" SSAC, 1P51-C001A, the operator starts the "A" SSAC by depressing the Start Push Button.	

RESPONSE CUE: "A" SSAC is not running.

7.	Confirms that the Automatic Operation LED is illuminated.	At the "A" SSAC, 1P51-C001A, the operator CONFIRMS that the Automatic Operation LED is ILLUMINATED.	

RESPONSE CUE: Automatic Operation LED is not illuminated.

PROMPT: **IF** the operator addresses the Closed Cooling Water System, **INFORM** the operator that the Closed Cooling Water System is in operation.

PROMPT: **WHEN** addressed by the operator, **INDICATE** the following values:
CCW Pump Discharge Pressure 90 psig
CCW Pump Suction Pressure 3 psig

8.	Confirm the CCW System is performing properly.	At the CCW skid, the operator confirms that: On 1P51-R037, CCW PUMP DISCHARGE PRESSUE is 88 psig ±7 psig, and 1P51-R038, CCW PUMP SUCTION PRESSUE is –4 inches Hg Vac to 7 psig.	

PROMPT: If the operator addresses the availability of Instrument air pressure, inform the operator that Instrument Air pressure is 100 psig.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

PROMPT: **WHEN** the operator addresses oil pressure, **INDICATE** that oil pressure is 35 psig.

9.	Confirms the oil pressure is available for the "A" SSAC.	At the "A" SSAC, 1P51-C001A, the operator DEPRESSES the oil pushbutton in the pressure column and CONFIRMS that the oil pressure is 26 – 41 psig.	

PROMPT: **WHEN** the operator addresses monitoring the continued operation of the SSAC, **INFORM** the operator that another operator will monitor the SSACs.

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)**

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 2 is at MOP.
2. The "2B" SSAC is scheduled for PM.
3. The Unit 2 Closed Cooling Water System is in service.

INITIATING CUES:

Start the idle, Alpha Station Service Air Compressor per 34SO-P51-002-2S, Step 7.2.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the procedure needed to perform the task.	Operator has obtained 34SO-P51-002-2S.	
2.	Operator reviews the procedure's precautions and limitations.	Operator has reviewed the precautions and limitations.	

PROMPT: **WHEN** the operator addresses the position of the remote hand switch for the "2B" SSAC, **INFORM** the operator that the hand switch is in the STOP PULL TO LOCK position.

3.	Confirm, for the "2A" SSAC, that the Programmed Stop LED is illuminated.	At the "2A" SSAC, 2P51-C001A, the operator CONFIRMS that the Programmed Stop LED is ILLUMINATED.	

NOTE: Only the aftercooler and intercooler manual drain valves for the "A" SSAC are required. If the operator drains the other SSACs, there will be no detrimental effects.

4.	Open the manual aftercooler and intercooler drain valves and drains any Condensate present. Reclose the valves. 2P51-F986 2P51-F985	At the "A" SSAC, 2P51-C001A, the operator OPENS the manual aftercooler and intercooler drain valves and drains any Condensate present. RECLOSE the valves. 2P51-F986, AFTERCOOLER DRAIN 2P51-F985, INTERCOOLER DRAIN	

PROMPT: **WHEN** the operator addresses the remote control switch for the "A" SSAC, as the Unit 2 CBO, **INFORM** the operator that the switch has been placed in the NORMAL position.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**5.	Place the remote control switch to the NORMAL position.	The operator CONTACTS the main control room and DIRECTS the control room operator to PLACE the Remote Control Switch for the "A" SSAC 2P51-C001A, to the NORMAL position.	

RESPONSE CUE: N/A

**6.	Start the "A" SSAC.	At the "A" SSAC, 2P51-C001A, the operator starts the "A" SSAC by depressing the Start Push Button.	

RESPONSE CUE: "A" SSAC is not running.

7.	Confirms that the Automatic Operation LED is illuminated.	At the "A" SSAC, 2P51-C001A, the operator CONFIRMS that the Automatic Operation LED is ILLUMINATED.	

RESPONSE CUE: Automatic Operation LED is not illuminated.

PROMPT: **IF** the operator addresses the Closed Cooling Water System, **INFORM** the operator that the Closed Cooling Water System is in operation.

PROMPT: **WHEN** addressed by the operator, **INDICATE** the following values:
CCW Pump Discharge Pressure 90 psig
CCW Pump Suction Pressure 3 psig

8.	Confirm the CCW System is performing properly.	At the CCW skid, the operator confirms that: On 2P51-R030, CCW PUMP DISCHARGE PRESSUE is 87 psig ±7 psig, and 2P51-R029, CCW PUMP SUCTION PRESSUE is –4 inches Hg Vac to 7 psig.	

PROMPT: If the operator addresses the availability of Instrument air pressure, inform the operator that Instrument Air pressure is 100 psig.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

PROMPT: **WHEN** the operator addresses oil pressure, **INDICATE** that oil pressure is 35 psig.

9.	Confirms the oil pressure is available for the "A" SSAC.	At the "A" SSAC, 2P51-C001A, the operator DEPRESSES the oil pushbutton in the pressure column and CONFIRMS that the oil pressure is 26 – 41 psig.	

PROMPT: **WHEN** the operator addresses monitoring the continued operation of the SSAC, **INFORM** the operator that another operator will monitor the SSACs.

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)**

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E. I. Hatch Nuclear Plant

Operations Training
JPM

TITLE		
LINEUP AND OPERATE THE FIRE SYSTEM VIA CONDENSATE TRANSFER/SHUTDOWN COOLING FOR INJECTION INTO THE REACTOR		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER	LR-JP-36.23-04	30.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-36.23**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00	10/25/93	Initial development	GSG	SMC
01	08/31/94	Incorporate student feedback, remove unneeded prompts.	RAB	SMC
02	08/01/96	Format change	RAB	DHG
03	09/14/98	Changed initiating cue to make it clearer.	SCB	DHG
04		Upgrade format	RAB	

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

TASK TITLE:	**LINEUP AND OPERATE THE FIRE SYSTEM VIA CONDENSATE TRANSFER/SHUTDOWN COOLING FOR INJECTION INTO THE REACTOR**
JPM NUMBER:	LR-JP-36.23-04
TASK STANDARD:	This task shall be completed when the Fire System water is injected into the Reactor per 31EO-EOP-110.

TASK NUMBER: 036.023

PLANT HATCH JTA IMPORTANCE RATING:

RO 4.07

SRO 3.50

K/A CATALOG NUMBER: 295031EA108

K/A CATALOG JTA IMPORTANCE RATING:

RO 3.80

SRO 3.90

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 1**	**Unit 2**
	31EO-EOP-110-1S Rev 2 31EO-EOP-015-1S Rev 4	31EO-EOP-110-2S Rev 2 Ed 1 31EO-EOP-015-2S Rev 6

REQUIRED MATERIALS:	**Unit 1**	**Unit 2**
	31EO-EOP-110-1S (current revision) Designated fire hose adapter flange, wrenches and rope in EOP box in Unit 2 CTP enclosure. Designated 2 1/2 inch fire hose at Hydrant 11. Keys for 2P11-F026B and 2P11-F091 and 1P11-F091. Key for Fire Hydrant 11 (fire key).	31EO-EOP-110-2S (current revision) Designated fire hose adapter flange, wrenches and rope in EOP box in CTP enclosure. Designated 2 1/2 inch fire hose at Hydrant 11 Keys for 2P11-F023 and 2P11-F026B Key for Fire Hydrant 11 (fire key)

APPROXIMATE COMPLETION TIME: 30.0 Minutes

SIMULATOR SETUP: N/A

UNIT 1

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. The Alternate Level Control portion of CP-1 (31EO-EOP-015-1S) is being performed.
2. The Reactor has been emergency depressed and RWL cannot be maintained above -160 inches.
3. No alternate injection systems are lined up.
4. No fire deluge systems have actuated.
5. No injection subsystems are operating.

INITIATING CUES:

Lineup and inject with the Fire System to the Reactor per 31EO-EOP-110-1S, Section 3.2.2, Fire System Via Condensate Transfer Crosstie.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the materials that are required.	Operator has identified the required materials and where to obtain them.	

PROMPT: **WHEN** the operator addresses stopping the Condensate Transfer Pumps, as the Shift Supervisor, **INFORM** the operator that Condensate Transfer Pumps 1P11-C001A and B and 2P11-C001A and B have been stopped.

**2.	Close the following valves at the Condensate Transfer Pump enclosure: 2P11-F024A 2P11-F024B 2P11-F025B	At the Unit 2 Condensate Transfer Pump (CTP) enclosure, the following valves are CLOSED: 2P11-F024A, PUMP 2P11-C001A DISCHARGE Valve 2P11-F024B, PUMP 2P11-C001B DISCHARGE Valve 2P11-F025B, PUMP 2P11-C001B SUCTION Valve	

RESPONSE CUE: N/A

**3.	Unlock and close Valve 2P11-F026B.	At the Unit 2 CTP enclosure, 2P11-F026B MINIMUM FLOW B Valve is CLOSED.	

RESPONSE CUE: N/A

**4.	Remove the flanged cover of the CTP Discharge Check Valve 2P11-F027B.	At the Unit 2 CTP enclosure, cover is REMOVED from CTP DISCHARGE CHECK VALVE 2P11-F027B.	

RESPONSE CUE: N/A

**5.	Install fire hose adapter flange in place of removed cover at CTP Discharge Check Valve 2P11-F027B.	At the Unit 2 CTP enclosure, fire hose adapter flange is INSTALLED at CTP DISCHARGE CHECK VALVE 2P11-F027B.	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

PROMPT: **IF** the operator addresses use of a fire pumper truck, as the Shift Supervisor, **INFORM** the operator that a fire pumper truck will not be used.

**6.	Connect 2 1/2 inch fire hose from Hydrant 11 (1Y43-F314K) to the adapter flange.	At Hydrant 11, 2 1/2 inch fire hose CONNECTED from Hydrant 11 (1Y43-F314K) to the adapter flange.	

RESPONSE CUE: N/A

7.	Confirm the following valves are closed: 1E11-F006A 1E11-F006B 1E11-F006C 1E11-F006D 1E11-F009	The operator has called the Control Room to have the following valves CLOSED on panel 1H11-P601: 1E11-F006A, SHUTDOWN COOLING VALVE 1E11-F006B, SHUTDOWN COOLING VALVE 1E11-F006C, SHUTDOWN COOLING VALVE 1E11-F006D, SHUTDOWN COOLING VALVE 1E11-F009, SDC SUCTION VALVE	

RESPONSE CUE: N/A

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**8.	Confirm or close the following valves: 2P11-F020A 1P11-F021 2P11-F090 1P11-F090 1P11-F024A 1P11-F024B 1P11-F020A 1P11-F022 2P11-F020B	The following valves are CLOSED: 2P11-F020A, HDR TO RX BLDG ISOLATION, at location 130RLR17 1P11-F021, HEADER TO RADWASTE ISOL VLV, at U-1 CTP enclosure 2P11-F090, CROSS-TIE ISOLATION VALVE, at U-2 CST enclosure 1P11-F090, CROSS-TIE ISOLATION VALVE, at U-1 CST enclosure 1P11-F024A, PUMP 1P11-C001A DISCHARGE, at U-1 CTP enclosure 1P11-F024B, PUMP 1P11-C001B DISCHARGE, at U-1 CTP enclosure 1P11-F020A, HDR TO RX BLDG ISOLATION, at location 130RLR06 1P11-F022, HDR CROSS-TIE, at location 130RLR06 2P11-F020B, HDR TO RHR SYSTEM ISOLATION, at location 130RLR17.	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**9.	Open the following valves: 1E11-F084 1E11-F083 2P11-F023 2P11-F094 1P11-F023 1P11-F020B	The following valves are OPEN: 1E11-F081A, RHR S/D COOLING SUCT FLUSH SUPPLY, at location 130RLR08. 1E11-F083, RHR S/D COOLING SUCT FLUSH SUPPLY, at location 130RLR08. 2P11-F023, HDR CROSS-TIE, at U-2 CTP enclosure. 2P11-F094, U1/U2 CROSS-TIE THROTTLE VALVE, at U-2 CST enclosure. 1P11-F023, PUMP DISCHARGE HDR CROSS-TIE, at U-1 CTP enclosure. 1P11-F020B, HDR TO RHR SYSTEM ISOLATION, at location 130RLR06.	

RESPONSE CUE: N/A

**10.	Unlock and open 2P11-F091 and 1P11-F091.	The following valves are OPEN: 2P11-F091, U1/U2 CROSS-TIE ISOLATION, at U-2 CTP enclosure. 1P11-F091, U2/U1 CROSS-TIE ISOLATION, at U-1 CTP enclosure.	

RESPONSE CUE: N/A

**11.	Charge the fire hose at Hydrant 11.	At Hydrant 11, the fire hose has been CHARGED.	

RESPONSE CUE: N/A

**12.	Slowly open 2P11-F024B.	At the Unit 2 CTP enclosure, PUMP 2P11-C001B DISCHARGE valve 2P11-F024B is OPEN.	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**13	Install jumpers from: EE-31 to EE-32 AA-40 to AA-41	At panel 1H11-P611C, the operator has INSTALL a jumper from EE-31 to EE-32. At panel 1H11-P611A, the operator has INSTALL a jumper from AA-40 to AA-41.	

RESPONSE CUE: N/A

**14.	Reset the Group II Isolations.	At panels 1H11-P601 and 1H11-P602, the operator has RESET the Group 2 Isolations.	

RESPONSE CUE: N/A

**15.	Open 1E11-F008.	At panel 1H11-P601, the operator has OPENED 1E11-F008, SDC SUCTION VALVE, red light illuminated.	

RESPONSE CUE: Valve, 1E11-F008, green light illuminated.

**16.	Open 1E11-F009.	At panel 1H11-P602, the operator has OPENED 1E11-F009, SDC SUCTION VALVE, red light illuminated.	

RESPONSE CUE: Valve, 1E11-F009, green light illuminated.

PROMPT: **IF** the operator addresses additional injection paths, as the Shift Supervisor, **INFORM** the operator that none are desired.

PROMPT: **IF** the operator addresses system restoration, as the Shift Supervisor, **INFORM** the operator that system restoration 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.

(Indicates critical step)**

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. The Alternate Level Control portion of CP-1 (31EO-EOP-015-2S) is being performed.
2. The Reactor has been emergency depressed and RWL cannot be maintained above -160 inches.
3. No alternate injection systems are lined up.
4. No fire deluge systems have actuated.
5. No injection subsystems are operating.

INITIATING CUES:

Lineup and inject with the Fire System to the RPV per 31EO-EOP-110-2S, Section 3.2.2, Fire System Via Condensate Transfer Piping.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the materials that are required.	Operator has identified the required materials and where to obtain them.	

PROMPT: **WHEN** the operator addresses stopping the Condensate Transfer Pumps, as the Shift Supervisor, **INFORM** the operator that Condensate Transfer Pumps, 2P11-C001A and B, have been stopped.

**2.	Close the following valves at the Condensate Transfer Pump enclosure: 2P11-F024B 2P11-F025B	At the Condensate Transfer Pump (CTP) enclosure, the following valves are CLOSED: 2P11-F024B, PUMP 2P11-C001B DISCHARGE Valve 2P11-F025B, PUMP 2P11-C001B SUCTION Valve	

RESPONSE CUE: N/A

**3.	Unlock and close the following valves: 2P11-F026B 2P11-F023	At the CTP enclosure, the following valves are CLOSED: 2P11-F026B, MINIMUM FLOW B Valve 2P11-F023 HEADER CROSTIE ISOLATION Valve.	

RESPONSE CUE: N/A

**4.	Remove the flanged cover of the CTP Discharge Check Valve 2P11-F027B.	At CTP enclosure, cover is REMOVED from CTP DISCHARGE CHECK VALVE, 2P11-F027B.	

RESPONSE CUE: N/A

**5.	Install fire hose adapter flange in place of removed cover at DISCHARGE CHECK VALVE 2P11-F027B.	At CTP enclosure, fire hose adapter flange is INSTALLED at CTP DISCHARGE CHECK VALVE, 2P11-F027B.	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

PROMPT: **IF** the operator addresses use of a fire pumper truck, as the Shift Supervisor, **INFORM** the operator that a fire pumper truck will not be used.

****6.**	**Connect a 2 1/2 inch fire hose from Hydrant 11 (1Y43-F314K) to the adapter flange.**	At Hydrant 11, 2 1/2 inch fire hose is CONNECTED from Hydrant 11 (1Y43-F314K) to the adapter flange.	

RESPONSE CUE: N/A

7.	Confirm the following valves are closed: 2E11-F006A 2E11-F006B 2E11-F006C 2E11-F006D 2E11-F009	The operator has called the Control Room to have the following valves CLOSED on panel 2H11-P601: 2E11-F006A, SHUTDOWN COOLING VALVE 2E11-F006B, SHUTDOWN COOLING VALVE 2E11-F006C, SHUTDOWN COOLING VALVE 2E11-F006D, SHUTDOWN COOLING VALVE 2E11-F009, SDC SUCTION VALVE	

RESPONSE CUE: N/A

PROMPT: **WHEN** the operator addresses the preceding valves, as the Control Room operator, **INFORM** the operator that these valves are closed.

****8.**	**Close the following valves:** **2P11-F022** **2P11-F021**	The following valves are CLOSED: 2P11-F022 HDR CROSS-TIE Valve, at location 130RLR17. 2P11-F021 HDR TO RADWASTE BLDG Valve, at the CTP enclosure.	

RESPONSE CUE: N/A

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**9.	Open the following valves: 2E11-F084 2E11-F083 2P11-F020B	The following valves are OPEN: 2E11-F084, SDC COND FLUSH SUPPLY, at location 130RJR19. 2E11-F083, SDC COND FLUSH SUPPLY, at location 130RJR19. 2E11-F020B, HDR TO RHR SYSTEM ISOL, at location 130RLR17.	

RESPONSE CUE: N/A

**10.	Charge the fire hose at Hydrant 11.	At Hydrant 11, the fire hose has been CHARGED.	

RESPONSE CUE: N/A

**11.	Slowly open 2P11-F024B.	At the CTP enclosure, 2P11-F024B, PUMP 2P11-C001B DISCHARGE valve is OPEN.	

RESPONSE CUE: N/A

**12.	Install jumpers from: AA-17 to AA-18 EE-5 to EE-11	At panel 2H11-P609A, the operator has INSTALL a jumper from AA-17 to AA-18. At panel 2H11-P609C, the operator has INSTALL a jumper from EE-5 to EE-11.	

RESPONSE CUE: N/A

**13.	Reset the Group II Isolations.	At panels 2H11-P601 and 2H11-P602, the operator has RESET the Group II Isolations.	

RESPONSE CUE: N/A

**14.	Open 2E11-F008.	At panel 2H11-P601, the operator has OPENED 2E11-F008, SDC SUCTION VALVE, red light illuminated.	

RESPONSE CUE: Valve, 2E11-F008, green light illuminated.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**15.	Open 2E11-F009.	At panel 2H11-P602, the operator has OPENED 2E11-F009, SDC SUCTION VALVE, red light illuminated.	

RESPONSE CUE: Valve, 2E11-F009, green light illuminated.

PROMPT: **IF** the operator addresses additional injection paths, as the Shift Supervisor, **INFORM** the operator that none are desired.

PROMPT: **IF** the operator addresses system restoration, as the Shift Supervisor, **INFORM** the operator that system restoration 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.

(Indicates critical step)**

Southern Nuclear
E. I. Hatch Nuclear Plant

Operations Training
JPM

TITLE		
RESTORE AND MAINTAIN RWL WITHIN A SPECIFIED RANGE WSING RHRSW		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. A. BELCHER	LR-JP-34.12-05	15.0 Minutes
RECOMMENDED BY	**APPROVED BY**	**DATE**

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LR-JP-34.12**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
01	05/14/91	General/procedure revision	JLA	DHG
02	08/25/92	General revision and format change	WMM	SCB
03	08/01/96	General revision, format change, correct simulator setup, word processor change, change initiating cue to a direct command including phonetics	RAB	DHG
04	01/18/99	Revised malfunction numbers for the new simulator computer.	SCB	DHG
05		Upgrade format	RAB	

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

TASK TITLE:	**RESTORE AND MAINTAIN RWL WITHIN A SPECIFIED RANGE WSING RHRSW**
JPM NUMBER:	LR-JP-34.12-05
TASK STANDARD:	The task shall be completed when the operator has successfully started one loop of RHRSW with at least one RHRSW pump injecting into the Reactor per 31EO-EOP-110.

TASK NUMBER: 034.012

PLANT HATCH JTA IMPORTANCE RATING:

RO 3.86

SRO Not Available

K/A CATALOG NUMBER: 295031EA108

K/A CATALOG JTA IMPORTANCE RATING:

RO 3.80

SRO 3.90

OPERATOR APPLICABILITY: Reactor Operator (RO)

GENERAL REFERENCES:	**Unit 1**	**Unit 2**
	31EO-EOP-110-1S Rev 2 31EO-EOP-015-1S Rev 4	31EO-EOP-110-2S Rev 2 Ed 1 31EO-EOP-015-2S Rev 6

REQUIRED MATERIALS:	**Unit 1**	**Unit 2**
	31EO-EOP-110-1S (current revision) Key for RHRSW Manual Override	31EO-EOP-110-2S (current revision) Key for RHRSW Manual Override

APPROXIMATE COMPLETION TIME: 15.0 Minutes

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

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #121** and leave in **FREEZE**.

2. Make sure RECORDER POWER is TURNED ON. Roll Chart Recorders and Process Computer Typers forward. Ensure any information printed on the Process Computer Typer from previous ICs is removed.

3. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfB21_48A	Steam Line A Break (After Restrictor) (Var)	100	100	000
mfG31_242	RWCU Non-Isol Leak (0-10000 gpm)	7	100	000
mfE41_107	HPCI Failure to Start (F001 Stuck)			000
mfE51_110	RCIC Turbine Trip			000
mfS11_227B	SUT 2D Failure			000
mfE11_115A	RHR Pump A Trip			000
mfE11_115B	RHR Pump B Trip			000
mfE11_115C	RHR Pump C Trip			000
mfE11_115D	RHR Pump D Trip			000
mfE21_102A	Core Spray Pump A Trip			000
mfE21_102B	Core Spray Pump B Trip			000
mfC11_30A	Control Rod Drive Pump A Trip			000
mfC11_30B	Control Rod Drive Pump B Trip			000

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

REM #	DESCRIPTION	STATUS
rfE11167	2E11-F017A&B Override 5 Min Timer	ORIDE
rfP64195	Drywell Chillers B006A&B Lockout Reset	RESET

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

   A. Take the simulator out of FREEZE and allow simulator to run until RWL is at the Top of Active Fuel.
   B. Restart the Drywell Chillers and Coolers.
   C. Reopen the 316s.

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

7. **ESTIMATED** Simulator **SETUP TIME:** **20 Minutes**

UNIT 1

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 1 has had a LOCA.
2. RWL is below the Top of Active Fuel and decreasing.
3. HPCI and RCIC have isolated on low steam supply pressure.
4. SUT "1D" is de-energized.
5. RHR pumps "2A," "2B," "2C," & "2D" have tripped.
6. Core Spray pumps "1A" and "1B" have tripped.
7. The EOP jumpers to override the 5 minute timer have been installed for 1E11-F017A & B.

INITIATING CUES:

Inject the Alpha (Bravo) loop of RHRSW to the Reactor using 31EO-EOP-110-1S.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the materials that are required.	Operator identifies the required materials and where to obtain them.	
2.	Confirm that RHR loop A(B) is not operating in the LPCI mode.	At panel 1H11-P601, the operator has VERIFIED that RHR loop A(B) is not operating in the LPCI mode.	
3.	Confirm or stop RHR Pumps 1E11-C002A and C (B and D).	At panel 1H11-P601, RHR PUMPS, 1E11-C002A and C (B and D) are STOPPED, green lights illuminated.	

NOTE: In the following step, only the valves with the ** are critical.

**4.	Confirm or close the following valves: 1E11-F010 **1E11-F003A(B) **1E11-F048A(B) 1E11-F016A(B) 1E11-F028A(B) 1E11-F017A(B) 1E11-F068A(B)	At panel 2H11-P601, the following valves are CLOSED, green light illuminated: RHR CROSSTIE VLV, 1E11-F010 **HX OUTLET VLV, 1E11-F003A(B) **HX BYPASS VLV, 1E11-F048A(B) CNMT SPRAY OUTBD VLV, 1E11-F016A(B) TORUS SPRAY OR TEST VLV, 1E11-F028A(B) RHR OUTBD INJ VLV, 1E11-F017A(B) HX DISCH VLV, 1E11-F068A(B)	

RESPONSE CUE: Valve(s), red light illuminated.

PROMPT: 1E11-F010 is normally de-energized in the closed position. If the operator indicates that this is the condition of the valve, that portion of Step 4 is acceptable. **IF** the operator requests the PEO to verify the valve position, as PEO, **INFORM** the operator that valve 1E11-F010 has been verified closed locally.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**5.	Open the following valves: 1E11-F015A(B) 1E11-F073A(B) 1E11-F075A(B)	At panel 1H11-P601, the following valves are OPEN, red light illuminated: RHR INBD INJ VLV, 1E11-F015A(B) RHRSW CROSSTIE VLV, 1E11-F073A(B) RHRSW VLV, 1E11-F075A(B)	

RESPONSE CUE: Valve(s), green light illuminated.

6.	Prelube RHRSW Pumps 1E11-C001A and C (B and D).	At panel 1H11-P650, the PSW PRELUBE SOLENOID VLVS push-button has been DEPRESSED.	
**7.	Place RHR Service Water Pump Control switch in MANUAL OVERRD position.	At panel 1H11-P601, the Division I (II) SERVICE WATER PUMP CONTROL switch 1E11-S19A(B) is in MANUAL OVERRD.	

RESPONSE CUE: On panel 1H11-P601, RHR CNMT SPRAY OR SERV WTR PMP SEL IN OVERRIDE is extinguished.

**8.	Start RHRSW Pumps 1E11-C001A and C (B and D).	At panel 1H11-P601, SERVICE WATER PUMPs, 1E11-C001A and C (B and D) are RUNNING, red light illuminated.	

RESPONSE CUE: RHRSW Pumps 1E11-C001A and C (B and D), green light illuminated.

9.	Open Service Water Crosstie Valves 1E11-F119A and B, if required.	The operator has IDENTIFIED that SERV WTR CROSSTIE VLV 1E11-F119A(B) does not need to be opened.	

NOTE: RHRSW System has no inoperable components and is capable of injecting to the vessel without the crosstie valve being opened. Only the A(B) loop of RHRSW is needed.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**10.	Throttle RHR Outbd Injection Valve, 1E11-F017A(B), to control RWL	At panel 1H11-P601, RHR OUTBD INJ VLV, 1E11-F017A(B) is THROTTLED OPEN, flow increasing on RHR FLOW, 1E11-R603A(B).	

RESPONSE CUE: Valve 1E11-F017A(B), green light illuminated, flow indicates 0 gpm on 1E11-R603A(B).

PROMPT: **IF** the operator addresses RWL band, as the Shift Supervisor **INFORM** the operator that another operator has been directed to control flow/RWL.

PROMPT: **IF** the operator addresses system restoration, as the Shift Supervisor **INFORM** the operator that it 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.

(Indicates critical step)**

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. Unit 2 has had a LOCA.
2. RWL is below the Top of Active Fuel and decreasing.
3. HPCI and RCIC have isolated on low steam supply pressure.
4. SUT "2D" is de-energized.
5. RHR pumps "2A," "2B," "2C," & "2D" have tripped.
6. Core Spray pumps "2A" and "2B" have tripped.
7. The EOP jumpers to override the 5 minute timer have been installed for 2E11-F017A & B.

INITIATING CUES:

Inject the Alpha (Bravo) loop of RHRSW to the Reactor using 31EO-EOP-110-2S.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

START TIME:_____

1.	Operator identifies the materials that are required.	Operator identifies the required materials and where to obtain them.	
2.	Confirm that RHR Loop A(B) is not operating in the LPCI mode.	At panel 2H11-P601, the operator has VERIFIED that RHR Loop A(B) is not operating in the LPCI mode.	
3.	Confirm or stop RHR Pumps 2E11-C002A and C (B and D).	At panel 2H11-P601, RHR PUMPs 2E11-C002A and C (B and D) are STOPPED, green lights illuminated.	

NOTE: In the following step, only the valves with the ** are critical.

****4.**	Confirm or close the following valves: 2E11-F010 **2E11-F003A(B) **2E11-F048A(B) 2E11-F016A(B) 2E11-F028A(B) 2E11-F017A(B) 2E11-F068A(B)	At panel 2H11-P601, the following valves are CLOSED, green light illuminated: RHR CROSSTIE VLV, 2E11-F010 **HX OUTLET VLV, 2E11-F003A(B) **HX BYPASS VLV, 2E11-F048A(B) CNMT SPRAY OUTBD VLV, 2E11-F016A(B) TORUS SPRAY OR TEST VLV, 2E11-F028A(B) RHR OUTBD INJ VLV, 2E11-F017A(B) HX DISCH VLV, 2E11-F068A(B)	

RESPONSE CUE: Valve(s), red light illuminated.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)

PROMPT: 2E11-F010 is normally de-energized in the closed position. If the operator indicates that this is the condition of the valve, that portion of Step 4 is acceptable.

IF the operator requests the PEO to verify the valve position, as PEO, **INFORM** the operator that valve 2E11-F010 has been verified closed locally.

IF the operator wants the valve energized, the simulator operator should **TOGGLE REMOTE FUNCTION rfE11135**, "E11-F010 BREAKER RACKOUT," TO **ON.**

****5.**	Open the following valves: 2E11-F015A(B) 2E11-F073A(B) 2E11-F075A(B)	At panel 2H11-P601, the following valves are OPEN, red light illuminated: RHR INBD INJ VLV, 2E11-F015A(B) RHRSW CROSSTIE VLV, 2E11-F073A(B) RHRSW VLV, 2E11-F075A(B)	

RESPONSE CUE: Valve(s) green light illuminated.

6.	Prelube RHRSW Pumps 2E11-C001A and C (B and D).	At panel 2H11-P601, the RHR SERVICE WATER LUBE VALVES push-button has been DEPRESSED for RHRSW Loop A(B) pumps.	
****7.**	Place RHR Service Water Pump Control switch in MANUAL OVERRD position.	At panel 2H11-P601, the Division I (II) SERVICE WATER PUMP CONTROL switch 2E11-S19A(B) is in MANUAL OVERRD.	

RESPONSE CUE: On panel 2H11-P601, RHR CNMT SPRAY OR SERV WTR PMP SEL IN OVERRIDE is extinguished.

(Indicates critical step)**

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
**8.	Start RHRSW Pumps 2E11-C001A and C (B and D).	At panel 2H11-P601, SERVICE WATER PUMP 2E11-C001A and C (B and D) are RUNNING, red light illuminated.	

RESPONSE CUE: RHRSW Pumps 2E11-C001A and C (B and D), green light illuminated.

9.	Open Service Water Crosstie Valves 2E11-F119A and B, if required.	The operator has identified that SERV WTR CROSSTIE VLV 2E11-F119A(B) does not need to be opened.	

NOTE: RHRSW System has no inoperable components and is capable of injecting to the vessel without the crosstie valve being opened. Only the A(B) loop of RHRSW is needed.

**10.	Throttle RHR Outbd Injection Valve, 2E11-F017A(B), to control RWL	At panel 2H11-P601, RHR OUTBD INJ VLV, 2E11-F017A(B) is THROTTLED OPEN, flow increasing on RHR FLOW, 2E11-R603A(B).	

RESPONSE CUE: Valve 2E11-F017A(B), green light illuminated, flow indicates 0 gpm on 2E11-R603A(B).

PROMPT: **IF** the operator addresses RWL band, as the Shift Supervisor **INFORM** the operator that another operator has been directed to control flow/RWL.

PROMPT: **IF** the operator addresses system restoration, as the Shift Supervisor **INFORM** the operator that it 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.

(Indicates critical step)**

Southern Nuclear
E. I. Hatch Nuclear Plant

Operations Training
Simulator Evaluation

TITLE		
CIRC WATER PUMP TRIP/LOSS OF CONDENSER VACUUM/LOSS OF TORUS LEVEL		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. L. SMITH/R. A. BELCHER	**LT-NRC-00001-00**	1.0 HOUR
FACILITY REPRESENTATIVE	**CHIEF NRC EXAMINER**	**DATE**

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SOUTHERN NUCLEAR OPERATING COMPANY
PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LT-NRC-00001**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00		Initial development	RLS/RAB	

CRITICAL ITEMS

CREW CRITICAL TASKS

1. When Torus level cannot be maintained above HPCI exhaust level of 110 inches, **TRIP AND PREVENT** HPCI, prior to operation, irrespective of adequate core cooling. Task #005.004

2. When Torus water level cannot be maintained in the safe region of the HCTL, **INITIATE** an emergency depress. Task #201.085

SCENARIO DESCRIPTION

The crew will assume the shift with the second RFPT in the standby configuration. The crew will place the second Reactor feed pump in service. ***(normal evolution)***

After the feed pump is in service, Reactor power will be increased. ***(reactivity manipulation)***

A HPCI Torus water level transmitter will fail upscale; however, HPCI suctions will fail to swap ***(instrument malfunction).*** The crew will address Tech Specs and align the HPCI suction to the Torus.

When the actions are complete for the HPCI Torus suction swap, the "A" Circ Water pump will trip. The plant will experience a slow loss of vacuum due to the pump trip and air in-leakage. ***(component malfunction)*** The crew will reduce power in an attempt to maintain vacuum. ***(reactivity manipulation)*** The crew may decide to shutdown prior to the to the main turbine and feedwater pumps trip on low vacuum. If the crew doesn't manually shutdown the plant, the Reactor will scram as a result of the main turbine trip. ***(major transient)***

When the SRVs begin to lift, a crack will develop in the Torus and Torus level will begin to decrease ***(major transient)*** The crew will not be able to maintain the plant within the safe region of the HCTL Graph. If the MSIVs are open, the crew may anticipate the emergency depress and open the turbine bypass valves. Prior to decreasing below 98 inches in the Torus, the crew will emergency depress the Reactor with SRVs. Only three ADS valves will open (four are bound/stuck) and the crew will open four LLS valves to depress. ***(component failure)***

The following is a list of malfunctions/evolutions contained in the scenario:

		QUANTITATIVE ATTRIBUTES	
Reactivity:	Increase Reactor power following a RFPT start.	Total malfunctions	14
Normal:	Starting the second RFPT.	Malfunctions after EOP entry	2
Instrument:	HPCI Torus level instrument failure	Abnormal Events	1
Component:	ADS fail to open Crack in Torus Circ Water Pump trip	Major Transients	2
Major Evolutions	Loss of vacuum/scram Torus level decrease	EOPs entered	3
		EOP Contingencies	1
		Critical Tasks	2

NOTE: The major evolution (loss of vacuum) was picked because, per the PRA, it has been identified as an event likely to cause fuel damage at Plant Hatch.

The major evolution (Torus level loss) was picked in order to broaden EOP coverage.

OBJECTIVES

1. STARTUP a second Reactor feed pump per 34SO-N21-007-2S. (002.004)
2. RECOGNIZE and RESPOND to a total loss of Main Condenser vacuum. (200.087)
3. RECOGNIZE and RESPOND to a low Torus water level condition per PC-1 & PC-2. (201.075)
4. When it is determined that Torus level cannot be maintained above 110 inches, prior to operation, TRIP and PREVENT HPCI. (005.004)
5. When it is determined that Torus level cannot be maintained within the HCTL, EMERGENCY DEPRESS the Reactor. (201.085)

NOTE: Objectives 4 and 5 are considered critical tasks for this scenario.

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #127** and leave in **FREEZE.**

2. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mf60111063	Spur Ann – TORUS LEVEL HIGH			999
mf65602136	Spur Ann – CIRC WTR PUMP 2N71-C001B OVERLOAD			T1
mfN71_68B	Circulation Water Pump B Trip			999
mfN61_73	Main Condenser Air Inleakage	100	25	999
mfN37_134	All Bypass Valves Fail Closed			999
mfB21_129A	Main Steam Relief Valve A Fails Stuck			000
mfB21_129K	Main Steam Relief Valve K Fails Stuck			000
mfB21_129L	Main Steam Relief Valve L Fails Stuck			000
mfB21_129M	Main Steam Relief Valve M Fails Stuck			000

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

SVO #	DESCRIPTION	FINAL VALUE	RAMP RATE	ACT. TIME
svoT48140	Water Level in Torus	90	4.0	999
svoT48142	Level in Torus Area NE Sump	200	1000	999
svoT48143	Level in Torus Area SE Sump	200	1000	999
svoT48147	Level in Torus Area NW Sump	200	1000	999
svoT48148	Level in Torus Area SW Sump	200	1000	999

SIMULATOR SETUP

4. **INSERT** the following **ORS OVERRIDES:**

TAG #	P/L	DESCRIPTION	STATUS	ACT. TIME
G31-C001A_A	L	RWCU Pmp A	OFF	000
R23-S014_A	L	Lighting Xformr 2M	OFF	000
T47-C001B_A	L	Drywell Return Air Fan	OFF	000

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

   A. Verify that "2A" RFPT is in Standby Mode of operation.
   B. Place Recirc in Master Manual and allow power to stabilize.
   C. Bypass IRM "F."

6. **PLACE** the Simulator in **FREEZE** until the crew assumes the shift.

7. **PLACE DANGER TAGS** on the following equipment:

MPL #	COMPONENT	TAGGED POSITION
2G31-C001A	RWCU Pump 2G31-C001A	TRIP
2R23-S014	Alternate Feeder To Lighting Xfmr 2M (2R23-S014)	TRIP
2T47-C001B	Return Air Fan 2T47-C001B	TRIP

8. **ESTIMATED** Simulator **SETUP TIME**: **20 Minutes**

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

1.	**Second RFPT Startup and Power Increase** The crew will assume shift with the "2A" RFPT in Standby Mode and ready to be started. When the RFPT has been started, the crew will increase power.

PLANT: A PEO is stationed at the "2A" RFPT to coordinate any local actions that must be performed.

MESSAGE: **IF REQUESTED,** as the PEO, **REPORT** that the "2A" RFPT drain valves are closed.

2.	**HPCI Torus Level Instrument Failure** **AFTER** the crew has started the "2A" RFPT and increased power to satisfy the reactivity manipulation, **ACTIVATE MALFUNCTIONS: mf60111063**, "Spur Ann – Torus Level High."

PLANT: TORUS LEVEL HIGH alarms.
HPCI suction supply does not swap to the Torus

MESSAGE: **AFTER** the crew dispatches I & C to investigate, **REPORT** that HPCI Torus level transmitter 2E41-N662B has failed high.

SCENARIO PRESENTATION
CREW ACTIONS

1.	**Second RFPT Startup and Power Increase**

CREW ACTIONS

SS:	Direct the operator to start the second feed pump.	_____
PO:	Startup the second RFPT per 34SO-N21-007-2S.	_____
SS:	Once the RFPT is started, direct the crew to increase Reactor power per 34GO-OPS-005-2S.	_____
PO:	Commence power increase using Recirc flow per 34GO-OPS-005-2S and 34SO-B31-001-2S.	_____

2.	**HPCI Torus Level Instrument Failure**

CREW ACTIONS

PO:	Respond to the Torus high level alarm and report that HPCI suction did not transfer to the Torus.	_____
TEAM:	Dispatch personnel to determine if the annunciator or the transmitter has failed.	_____
SS:	Address Tech Specs 3.3.5.1-1(3.e) and direct that the HPCI suction be swapped to the Torus.	_____
PO:	Swap the HPCI suction supply to the Torus per 34SO-E41-001-2S.	_____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

3.	**Circ Water Pump and Vacuum Decrease** **AFTER** HPCI isolation actions have been completed and Tech Specs addressed, use T1 and **ACTIVATE MALFUNCTION mf65602136**, "Spur Ann – Circ Wtr Pump 2N71-C001B Overload," intermittently. **AFTER** the crew has acknowledged the alarm, **ACTIVATE MALFUNCTIONS:** **mfN37_134**, "All Bypass Valves Fail Closed," **mfN71_68B**, "Circulation Water Pump B Trip," and **mfN61_73**, "Main Condenser Air Inleakage."

PLANT: CIRC WTR PUMP 2N71-C001B OVERLOAD alarms.
Circ Water Pump "A" trips.
Main Condenser Vacuum slowly decreases.
Main Turbine trips on low vacuum.
RFPTs trip on low vacuum.
MSIVs will close on low vacuum.

NOTE: The crew may initiate a manual scram prior to the Main Turbine trip and the resulting automatic scram.

AFTER the Turbine trip and an SRV has opened, **DELETE MALFUNCTION mfN37_134**, "All Bypass Valves Fail Closed."

IF NECESSARY to continue the vacuum decrease, **TOGGLE REMOTE FUNCTION rfN11045**, "SJAE A Steam," to **CLOSE.**

MESSAGE: **AS** a PEO dispatched to the SJAE, **REPORT** that the air ejector is not working properly and the steam source valve is closed.

SCENARIO PRESENTATION
CREW ACTIONS

3.	Circ Water Pump and Vacuum Decrease

CREW ACTIONS

PO:	Recognize Circ Water pump trip and decreasing vacuum and notify the SS.	_____
	Respond to the ARP for the Circ Water pump overload condition.	_____
TEAM:	Dispatch personnel to investigate cause of the Circ Water pump trip and to determine if the SJAE is functioning properly.	_____
SS:	Direct the operators to reduce Reactor power to maintain vacuum.	_____
	Direct the operators to manually scram the Reactor if a scram is deemed imminent.	_____
PO:	Take actions per placard RC-1 and inform the SS when complete.	_____
	Take actions per placard RC-2 and RC-3 and inform the SS when complete.	_____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

4.	**Torus Level Decrease/Emergency Depress** **WHEN** the crew has returned RWL to the normal band and an SRV has opened, **ACTIVATE SIMULATOR VALUE OVERRIDES:** **svoT48140,** "Water Level in Torus," **svoT48142**, "Level in Torus Area NE Sump," **svoT48143**, "Level in Torus Area SE Sump," **svoT48147**, "Level in Torus Area NW Sump," and **svoT48148**, "Level in Torus Area SW Sump."

PLANT: Various sump annunciators alarm.
Torus level decreases.

MESSAGE: **AFTER** the being sent to investigate the Torus level decrease, **REPORT** as a PEO that there is a 6 – 8 inch fish-mouth crack in the Torus near the "B" Loop RHR suction line. It cannot be isolated.

SCENARIO PRESENTATION
CREW ACTIONS

4.	Torus Level Decrease/Emergency Depress

CREW ACTIONS:

PO:	Acknowledge alarms and dispatch an operator to investigate.	_____
	Report decreasing Torus level and dispatch an operator to investigate.	_____
SS:	When Torus level reaches 146 inches, executes all portions of PC-1 and PC-2 concurrently.	_____
	If operators are available, direct Torus cooling started.	_____
	Directs operators to enter 34AB-T23-001-2S, "Loss of Primary Containment Integrity."	_____
	If time is available, address Technical Specifications.	_____
	Orders PO to line-up to fill and commence filling the Torus per 34SO-E21-001-2S or 34GO-OPS-087-2S.	_____
PO:	If directed, starts Torus cooling.	_____
	Takes actions to line-up and fill the Torus per 34SO-E21-001-2S or 34GO-OPS-087-2S.	_____
SS:	Directs Torus level to be maintained above both 110 inches and the HCTL.	_____
	Directs the PO, prior to operation below 110 inches, to prevent operation of HPCI.	_____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

NOTE: If the MSIVs are open, the SS may anticipate an emergency depress and order all turbine bypass valves opened.

The exercise will be terminated when:

1. All critical tasks are completed.
2. The Reactor has been Emergency Depressed.
3. RWL is stable.
4. Primary Containment parameters have all been addressed.

SCENARIO PRESENTATION
CREW ACTIONS

PO:	Prior to HPCI starting, prevent HPCI operation when Torus level is less than 110 inches. (Crew Critical Task)	_____	***CRIT TASK**
	As directed by the SS the PO will attempt to open the turbine bypass valves.	_____	
SS:	When Torus level and Reactor pressure can not be maintained below the HCTL and/or >98 inches, orders an Emergency Depress.	_____	
	Orders all ADS valves open.	_____	
	Directs PO to restore and maintain RWL between +3 to +50 inches using low pressure ECCS Systems.	_____	
PO:	Operates ADS SRVs to emergency depress the Reactor. (Crew Critical Task)	_____	***CRIT TASK**
	Recognize that all ADS valves did not open and open LLS SRVs to emergency depress. (Must have four SRVs opened). (Crew Critical Task)	_____	***CRIT TASK**
	PO takes manual control of low pressure ECCS Systems to restore and maintain RWL above TAF.	_____	
SS:	Classify the event as a NUE per 73EP-EIP-001-0S, Section 7.0. (This classification may be done after the simulator is put in freeze. Classifying the emergency is normally a SOS function.)	_____	

The exercise will be terminated when:

1. All critical tasks are completed.
2. The Reactor has been Emergency Depressed.
3. RWL is stable.
4. Primary Containment parameters have all been addressed.

Attachment 1
Initial Conditions

UNIT 1 STATUS

Unit One is operating at MOP. Activities in progress:

- PM on the "B" Stator Cooling Water Pump.

UNIT 2 STATUS

Power:

Unit Two is operating at approximately 55% power. A plant startup is in progress following a scram resulting from EHC pump problems. The plant was shutdown for 7 days to repair the EHC System.

The following equipment is inoperable:

IRM "F" is bypassed due to erratic operation. I & C is investigating. Tracking RAS is written.

RWCU Pump "2A" has seal leakage. ETR is unknown.

Alternate Feeder to Lighting Xfmr 2M (2R23-S014) for breaker cleaning and PM. ETR is 2 days.

Drywell Return Air Fan – 2T47-C001B has a ground. ETR is next Drywell entry.

Scheduled evolutions:

The "A" RFPT is in Standby and has been on the turning gear for 4 hours. Start the second RFPT. Continue power ascension to 70% with Recirc. At that time, the control rods will be withdrawn to the desired rod pattern.

Surveillances due this shift:

As required by 34GO-OPS-005-2S.

Active clearances:

IRM "F"

RWCU Pump "2A" – 2G31-C001A

Alternate Feeder to Lighting Xfmr 2M (2R23-S014)

Drywell Return Air Fan – 2T47-C001B

Rod Configuration:

See RWM

Attachment 2
CRITICAL TASK COMPLETION CHECKLIST

SOS _____ SS _____ STA _____

POs _____ _____ _____

TASK NUMBER	TASK DESCRIPTION	PERFORMED BY:	COMMENTS
1. 005.004	When Torus level cannot be maintained above HPCI exhaust level of 110 inches, **TRIP AND PREVENT** HPCI, prior to operation, irrespective of adequate core cooling.		
2. 201.085	When Torus water level cannot be maintained in the safe region of the HCTL, **INITIATE** an emergency depress.		

Southern Nuclear
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Operations Training
Simulator Evaluation

TITLE		
STATION SERVICE BUS TRANSFER/POWER INSTABILITIES/ATWS		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. L. SMITH/R. A. BELCHER	**LT-NRC-00002-00**	1.0 HOUR
FACILITY REPRESENTATIVE	**CHIEF NRC EXAMINER**	**DATE**

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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: **LT-NRC-00002**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00		Initial development	RLS/RAB	

CRITICAL ITEMS

CREW CRITICAL TASKS

1. Given excessive power oscillations while operating in the Region of Potential Instabilities, manually **SCRAM** the Reactor. Task #001.013

2. **REDUCE** Reactor power by driving control rods in a timely manner and **INJECTING** Standby Liquid Control prior to entering the BIIT curve. Task #201.071

3. **INHIBIT** ADS to prevent an uncontrolled Reactor depress to prevent causing a significant power excursion. Task #038.008

4. **TERMINATE** and **PREVENT** injection into the Reactor when conditions are met. Task #201.089

5. **RE-ESTABLISH** injection into the Reactor and **MAINTAIN RWL** above -185". Task #201.090

SCENARIO DESCRIPTION

The crew will assume the shift with the Main Generator tied and Station Service Buses on Alternate supplies. The crew will transfer Station Service Buses to the Normal supplies. ***(normal evolution)***

After the Buses are transferred, the crew will increase Reactor power and generator load. ***(reactivity manipulation)***

After power has been increased, a dP instrument will fail and RCIC will isolate. The crew addresses the resulting ARPs and Tech Specs for the isolation. ***(instrument failure)***

After the actions are complete for the RCIC isolation, the "A" APRM will fail. ***(instrument failure)*** The crew will address the resulting ARPs and be informed that it is the OPRM function of APRM that has failed. The crew will be informed that this being evaluated as a common failure. The crew will address the AB for operations without OPRM. The discharge valve for the "2B" Recirc pump will fail closed resulting in pump trip. ***(component malfunction)*** Core flow will be reduced into the Region of Potential Instabilities (ROPI). The crew will take actions to exit ROPI. After actions are initiated to exit ROPI, power oscillations will occur and the crew will manually scram the Reactor (auto scram failure). ***(component failure)***

The Reactor will fail to scram and the crew will enter the ATWS EOP ***(major transient).*** The Main Turbine will trip and two bypass valves will fail to open. ***(component failure)*** The crew will be required to terminate and prevent injection for ATWS level control. Subsequent re-scram of the Reactor will insert all control rods. The crew will restore normal Reactor water level band and take appropriate Primary Containment control actions.

The following is a list of malfunctions/evolutions contained in the scenario:

		QUANTITATIVE ATTRIBUTES	
Reactivity:	Increasing Main generator load and Reactor Power.	Total malfunctions	12
Normal:	Synchronizing the Main generator to the grid.	Malfunctions after EOP entry	2
Instrument:	RCIC dP instrument failure	Abnormal Events	2
Component:	Recirc Discharge valve closure RPV power oscillations, RPS auto failure, failure of control rods to insert, bypass valves failure	Major Transients	1
Major Evolutions	ATWS	EOPs entered	2
		EOP Contingencies	1
		Critical Tasks	5

NOTE: The major evolution (ATWS) was picked because, per the PRA, it has been identified as an event likely to cause fuel damage at Hatch.

OBJECTIVES

1. RECOGNIZE and RESPOND to a failed APRM/OPRM per Technical Specifications and applicable ARPs. (200.095)

2. Given excessive power oscillations while operating in the Region of Potential Instabilities, MANUALLY SCRAM the Reactor. (001.013)

3. REDUCE Reactor power by driving control rods in a timely manner and INJECTING Standby Liquid Control prior to entering the BIIT curve. (201.071)

4. INHIBIT ADS to prevent an uncontrolled Reactor depress to prevent causing a significant power excursion. (038.008)

5. TERMINATE and PREVENT injection into the Reactor when conditions are met. (201.089)

6. RE-ESTABLISH injection into the Reactor and maintain RWL above -185". (201.090)

NOTE: Objectives 2, 3, 4, 5, and 6 are considered critical tasks for this scenario.

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #112** and leave in **FREEZE**.
2. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfC11_211	Scram Discharge Volume ATWS (Var)	55	1000	000
mfN37_135A	Bypass Valve A Stuck			000
mfN37_135B	Bypass Valve B Stuck			000
mfE51_113	RCIC Auto Isolation E51-F008			999
mf6021154	Spur Ann – ECCS/RPS DIVISION I TROUBLE			999
mfC51_14B	APRM b Failure (Inoperative)			999
mfC71_60A	React Prot Fails To Scram – Auto			999
mfC51_253	Region Independent LPRM Oscillations	30	5	999
mfB31_37B	Recirc Pump B Drive Motor Bkr Trip			999
mfN30_122	Main Turbine Trip.			999
mf60313289	Ann Fail – SCRAM DISCH VOL HIGH LEVEL TRIP			999

3. **INSERT** the following **ORS OVERRIDES:**

TAG #	P/L	DESCRIPTION	STATUS	ACT. TIME
B31-F031BD1	P	Recirc Pmp B Disch	CLOSE	999
G31-C001A_A	L	RWCU Pmp A	OFF	000
R23-S014_A	L	Lighting Xformr 2M	OFF	000
T47-C001B_A	L	Drywell Return Air Fan	OFF	000

SIMULATOR SETUP

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

   A. Bypass IRM "F."
   B. Transfer Station Services Buses to Alternate.
   C. Start the 3rd Condensate and 2nd Condensate Booster Pump.
   D. Place the 2nd RFPT in service.
   E. Place Recirc in Master Manual.
   F. Withdraw control rods, through Group 56C – Position 32.

7. **PLACE** the Simulator in **FREEZE** until the crew assumes the shift.

8. **PLACE DANGER TAGS** on the following equipment:

MPL #	COMPONENT	TAGGED POSITION
2G31-C001A	RWCU Pump 2G31-C001A	TRIP
2R23-S014	Alternate Feeder To Lighting Xfmr 2M (2R23-S014)	TRIP
2T47-C001B	Return Air Fan 2T47-C001B	TRIP

9. **ESTIMATED** Simulator **SETUP TIME**: **30 Minutes**

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

1.	**Station Service Buses Transfer** After the crew assumes shift, the crew will transfer Station Services Buses "A" through "D" to their normal supply. After the buses have been transferred, the crew will increase Reactor power and generator load.

2.	**RCIC dP Instrument Failure and Isolation** **AFTER** power has been increased to satisfy the reactivity manipulation requirements, **ACTIVATE MALFUNCTIONS:** **mfE51_113**, "RCIC Auto Isolation E51-F008." **mf6021154**, "Spur Ann – ECCS/RPS Division I Trouble,"

PLANT: RCIC STEAM LINE DIFF PRESS HIGH alarms.
ECCS/RPS DIVISION I TROUBLE alarms.
2E51-F008 closes.

MESSAGE: **WHEN** requested to investigate ATTS, report as I & C that MTU 2E51-N657A has a gross fail light illuminated. Estimate that it will take 2 hours to replace and calibrate the MTU.

SCENARIO PRESENTATION
CREW ACTIONS

1.	**Station Service Busses Transfer** After the crew assumes shift, the crew will transfer Station Services Buses "A" through "D" to their normal supply. After the buses have been transferred, the crew will increase Reactor power and generator load.

CREW ACTIONS:

PO: Transfer Station Service Buses per 34SO-R22-001-2S.

Increase Reactor power per 34GO-OPS-005-2S.

2.	**RCIC dP Instrument Failure and Isolation**

CREW ACTIONS:

TEAM: Recognize and diagnose the RCIC isolation and cause. _____

Dispatch personnel to ATTS to investigate alarm. _____

PO: Respond to the ARP, close 2E51-F007. _____

SS: Address Tech Specs for RCIC inoperability. (3.5.3) _____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

3.	**APRM/OPRM Failure** **AFTER** actions are complete for the RCIC Isolation, **ACTIVATE** **MALFUNCTION mfC51_14B**, "APRM B Failure (Inoperative)."

PLANT: APRM/OPRM TRIP alarms.
ROD OUT BLOCK alarms.
INOP on the "B" ODA

MESSAGE: **AS** the I & C supervisor, **REPORT** that the OPRM function of the APRM has failed. The malfunction is being evaluated as a common failure and that the OPRM functions cannot be assumed to operable at this time. I & C is continuing to investigate.

4.	**Recirc Discharge Valve Failure/Entrance Into ROPI** **AFTER** the crew has addressed the AB for operations without OPRMs, **ACTIVATE:** **MALFUNCTION mfB31_37B**, "Recirc Pump B Drive Motor Bkr Trip," and **OVERRIDE B31-F031BDI**, "Recirc Pmp B Disch."

PLANT: 2B31-F031B closes
Recirc Pump B trips reducing core flow.
Plant stabilizes in the immediate exit region of the Region of Potential Instabilities.

SCENARIO PRESENTATION
CREW ACTIONS

3.	**APRM/OPRM Failure**

CREW ACTIONS:

PO:	Acknowledges the annunciators and diagnoses the failure of the "A" APRM.	_____
SS:	Directs the SSS/I & C to investigate the cause of the APRM failure.	_____
	Investigates appropriate Tech Specs for the APRM (3.3.1.1)	_____
TEAM:	Determine that all OPRM functions are inoperable.	_____
	Enter 34AB-C51-001-2S, "Reactor Operations With Inoperable OPRM System," and closely monitor for power/flow oscillations.	_____

4.	**Recirc Discharge Valve Failure/Entrance Into ROPI**

CREW ACTIONS:

PO:	Acknowledges the annunciators and inform the SS the "B" Recirc Pump has tripped.	_____
	Enter 34AB-B31-001-2S.	

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

5.	**Power Instabilities/ATWS** **AFTER** the crew has taken action to exit the Region of Potential Instabilities, activate malfunctions: **mfC71_60A**, "React Prot Fails To Scram – Auto," **mfC51_253**, "Region Independent LPRM Oscillations."

PLANT: 30% peak to peak LPRM oscillations occur.
OPRMs fails to auto scram.
Manual scram fails to insert control rods due to a hydraulic lock on the scram discharge volume.

AFTER a scram is entered:

DELETE MALFUNCTION mfC51_243, Region Independent LPRM Oscillations,"

ACTIVATE MALFUNCTION mfN30_122, Main Turbine Trip."

The crew may request the following **REMOTE FUNCTIONS:**
rfC71281, "Jumper to Oride All Scrams," to **ORIDE**.
rfC11290, "ARI System Test," to **TEST**.
rfC11143, "C11-F034," to **CLOSE**.
rfB21148, "Grp I Rx Water Level Bypass," to **BYPAS**.
rfP64195, "Drywell Chillers B006A&B Lockout Reset," to **RESET**.
rfP64270, "Drywell Chiller Safety Shutdown Local Reset," to **RESET**.
rfE11022, "2E11-F015A & B Override Jumpers and Links," to **OPEN**.
rfE11167, "2E11-F017A & B Override 5 Min Timer," to **ORIDE**.
rfE21168, "2E21-F005A & B Override LOCA Signal," to **ORIDE**.
rfE41153, "HPCI Torus Suction Bypass," to **BYPAS**.
rfE51155, "RCIC Torus Suction Bypass," to **BYPAS**.

SCENARIO PRESENTATION
CREW ACTIONS

5.	**Power Instabilities/ATWS**

CREW ACTIONS:

TEAM:	Diagnose power oscillations of 30% peak to peak.	_____	
SS:	Direct that the crew manually scram the Reactor per 34AB-C51-001-2S.	_____	
PO:	Manually scram the Reactor. (Crew Critical Task)	_____	***CRIT TASK**
TEAM:	Diagnose that control rods failed to insert.	_____	
SS:	Enter the RCA Flowchart and order the following actions: Initiate ARI, trip Recirc pumps, & insert control rods per 31EO-EOP-103-2S.	_____	
PO:	Initiate ARI and trip Recirc pumps.	_____	
	Insert control rods per 31EO-EOP-103-2S. (Crew Critical Task)	_____	***CRIT TASK**
SS:	Enter CP-3 and order ADS inhibited	_____	
	Prior to entering the BIIT curve, direct SBLC be initiated per RCA.	_____	
	Direct the Group I low level isolation to be overridden.	_____	
	When conditions are met to terminate and prevent injection, direct the operator to terminate and prevent injection per 31EO-EOP-113-2S.	_____	
PO:	Inhibit ADS. (Crew Critical Task)	_____	***CRIT TASK**
	Initiate SBLC. (Crew Critical Task)	_____	***CRIT TASK**
	Terminate and Prevent injection per 31EO-EOP-113-2S. (Crew Critical Task)	_____	***CRIT TASK**

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

WHEN scram and ARI are reset per EOP 103, **MODIFY MALFUNCTION mfC11_211**, "Scram Discharge Volume ATWS (Var)," to a final value of **0%.**

The instructor may **ACTIVATE MALFUNCTION mf60313289**, "Ann Fail – SCRAM DISCH VOL HIGH LEVEL TRIP," to clear the alarm if necessary to conserve time.

The exercise will be terminated when:

1. All critical tasks are completed.
2. All control rods have been inserted.
3. RWL is being controlled per the EOPs.
4. Containment control actions have stabilized containment parameters.

SCENARIO PRESENTATION
CREW ACTIONS

SS:	Enter PC-1 & PC-2 on high Torus temperature and direct the following: Torus cooling, restore Drywell chillers/cooling, H_2 O_2 analyzers. (These actions may be done as operators become available and are not critical.)	_____	
PO:	Place RHR in Torus cooling, restore Drywell chillers/coolers, and start the H_2 O_2 analyzers.	_____	
SS:	When the conditions are met, direct the operator to re-establish injection with an upper band where injection was re-established and a lower band of -185".	_____	
PO:	Re-establish injection into the RPV with an upper band where injection was re-established and a lower band of -185". (***NOTE:*** If power gets low enough, CRD pumps may raise level above the upper band.) (Crew Critical Task)	_____	***CRIT TASK**
	When the conditions are met, rescram the Reactor and diagnosis that all control rods have fully inserted.	_____	
SS:	Exit RCA flowchart and enter RC for Non-ATWS.	_____	
	Direct the operator to terminate SBLC.	_____	
	Direct the operator to restore RWL to the normal operating band.	_____	
PO:	Terminate SBLC.	_____	
	Restore RWL to the normal band in a controlled manner.	_____	
SS:	Classify the event as a ***Site Area Emergency*** per 73EP-EIP-001-0S, Section 15.3. (This classification may be done after the simulator is put in freeze. Classifying the emergency is normally a SOS function.)	_____	

The exercise will be terminated when:

1. All critical tasks are completed.
2. All control rods have been inserted.
3. RWL is being controlled per the EOPs.
4. Containment control actions have stabilized containment parameters.

Attachment 1
Initial Conditions

UNIT 1 STATUS

Unit One is operating at MOP. Activities in progress:

- "1C Diesel Generator Surveillance.

UNIT 2 STATUS

Power: Unit Two is operating at power. A plant startup is in progress following a scram resulting from EHC pumps problems. The plant was shutdown for 7 days to repair the EHC System

The following equipment is inoperable: IRM "F" is bypassed due to erratic operation. I & C is investigating. Tracking RAS is written.

RWCU Pump "2A" has seal leakage. ETR is unknown.

Alternate Feeder to Lighting Xfmr 2M (2R23-S014) for breaker cleaning and PM. ETR is 2 days.

Drywell Return Air Fan – 2T47-C001B has a ground. ETR is next Drywell entry.

Scheduled evolutions: Transfer Station Services buses to the Normal supply. The breakers have been racked in and the tags have been removed. Continue power ascension.

Surveillances due this shift: As required by 34GO-OPS-005-2S

Active clearances: IRM "F"

RWCU Pump "2A" – 2G31-C001A

Alternate Feeder to Lighting Xfmr 2M (2R23-S014)

Drywell Return Air Fan – 2T47-C001B

Rod Configuration: See RWM

Attachment 2
CRITICAL TASK COMPLETION CHECKLIST

SOS _____ SS _____ STA _____

POs _____ _____ _____

TASK NUMBER	TASK DESCRIPTION	PERFORMED BY:	COMMENTS
1. 001.013	Given excessive power oscillations while operating in the Region of Potential Instabilities, manually scram the Reactor.		
2. 201.071	Reduce Reactor power by driving control rods in a timely manner and injecting Standby Liquid Control prior to entering the BIIT curve.		
3. 038.008	Inhibit ADS to prevent an uncontrolled Reactor depress to prevent causing a significant power excursion.		
4. 201.089	Terminate and prevent injection into the Reactor when conditions are met.		
5. 201.090	Re-establish injection into the Reactor and maintain RWL above -185".		

Southern Nuclear
E. I. Hatch Nuclear Plant

Operations Training
Simulator Evaluation

TITLE		
INADVERTENT HPCI START/LOCA/LOSS OF HIGH PRESSURE FEED		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. L. SMITH/R. A. BELCHER	**LT-NRC-00003-00**	1.0 HOUR
FACILITY REPRESENTATIVE	**CHIEF NRC EXAMINER**	**DATE**

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LT-NRC-00003**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00		Initial development	RLS/RAB	

CRITICAL ITEMS

CREW CRITICAL TASKS

1. With Reactor pressure greater than shutoff head of the low pressure system(s) and when RWL decreases below -155", **INITIATE** emergency depress, before RWL reaches -185". Task #201.085

2. Action is taken to restore RWL above -155", by **OPERATING** available low pressure system(s), when Reactor pressure decreases below the shutoff head of the low pressure system(s). Task # 008.018

SCENARIO DESCRIPTION

The crew will assume the shift with directions to transfer "2E" 4160 VAC bus to Alternate power due to breaker PM ***(normal evolution)*** and then increase power. ***(reactivity manipulation)***

After power is increased, the temperature element for the Main Turbine Oil System will fail. The temperature control valves on the lube oil coolers will close and the temperature of the oil system will increase causing various Main Turbine alarms. The crew will address the ARPs and diagnosis the failure. The crew will manually control the oil temperature and initiate actions to repair the failed temperature element. ***(instrument failure)***

After the Main Turbine oil temperature has been addressed, HPCI will receive an auto initiation signal and start. The crew will secure HPCI. When HPCI is secured, the Auxiliary Oil Pump breaker will trip. ARPs and Tech Specs will be addressed for loss of HPCI. ***(component malfunction)***

When the actions are complete for the HPCI INOP, the reference leg feeding the "A" and "C" RWL instruments will slowly leak in the Drywell causing high RWL indication. ***(instrument failure)*** The crew may insert a manual scram prior to the trip on high RWL. The main turbine and feedwater pumps will trip on high RWL. The Reactor will scram as a result of the main turbine trip. ***(major transient)***

Station Service Buses ("A" through "D") will fail to auto fast transfer when the main turbine trips. These buses cannot be recovered. ***(component failure)*** When RCIC starts, it will trip due to a mechanical linkage failure. ***(component failure)*** The break in the Drywell increases, requiring the crew to spray the Drywell (if the crew determines that the pumps are not required for adequate core cooling). When RWL decreases to below the Top of Active Fuel (TAF), the crew will emergency depress and restore RWL with low pressure systems. ***(major transient)***

The following is a list of malfunctions/evolutions contained in the scenario:

		QUANTITATIVE ATTRIBUTES	
Reactivity:	Increase power with Recirc	Total malfunctions	7
Normal:	Swap of an emergency bus to alternate.	Malfunctions after EOP entry	3
Instrument:	Main Turbine Oil Temperature Element failure RWL reference leak/break	Abnormal Events	2
Component:	Station Service Busses fail to auto/manual transfer RCIC mechanical linkage Break inside containment	Major Transients	2
Major Evolutions	Drywell spray Emergency depress <TAF	EOPs entered	2
		EOP Contingencies	2
		Critical Tasks	2

OBJECTIVES

1. **TRANSFER** Emergency 4160 VAC Buses from Normal to Alternate power supply. (027.010)

2. Given an inadvertent initiation of HPCI, **SHUTDOWN** HPCI per 34SO-E41-001-2S. (005.004)

3. With Reactor pressure greater than shutoff head of the low pressure system(s) and when RWL decreases below -155", **INITIATE** emergency depress, before RWL reaches -185". (201.085)

4. Action is taken to restore RWL above -155", by **OPERATING** available low pressure system(s), when Reactor pressure decreases below the shutoff head of the low pressure system(s). (008.018)

NOTE: Objectives 3 and 4 are considered critical tasks for this scenario.

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #128** and leave in **FREEZE**.

2. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfR22_244C	4KV Bus 2C Fails To Auto Fast Transfer			000
mfR22_244D	4KV Bus 2D Fails To Auto Fast Transfer			000
mfN34_141	Main Turbine Lube Oil Sys Temp Cntl Fail			999
mfE41_103	HPCI Inadvertent Startup			T1
mfB21_215B	Rx Lvl (B) Reference Line Leak (Var)	10	0.1	999
mfE51_61	RCIC Mechanical Overspeed Trip			999
mfG31_242	RWCU Non-Isol Leak (0 – 10000 gpm)	1.0	1000	999

3. **INSERT** the following **ORS OVERRIDES:**

TAG #	P/L	DESCRIPTION	STATUS	ACT. TIME
ACB135494CDI	P	Contr SW ACB 135494 (4KV 2C Startup Brkr)	TRIP	000
ACB135534CDI	P	Contr SW ACB 135534 (4KV 2D Startup Brkr)	TRIP	000
E41A-S20DI	P	HPCI Auxiliary Oil Pump	LOCK	999
E41A-S20_A	L	HPCI Auxiliary Oil Pump	OFF	999
G31-C001A_A	L	RWCU Pmp A	OFF	000
R23-S014_A	L	Lighting Xformr 2M	OFF	000
T47-C001B_A	L	Drywell Return Air Fan	OFF	000

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

   A. Bypass IRM "F."

SIMULATOR SETUP

5. **PLACE** the Simulator in **FREEZE** until the crew assumes the shift.

6. **PLACE DANGER TAGS** on the following equipment:

MPL #	COMPONENT	TAGGED POSITION
2G31-C001A	RWCU Pump 2G31-C001A	TRIP
2R23-S014	Alternate Feeder To Lighting Xfmr 2M (2R23-S014)	TRIP
2T47-C001B	Return Air Fan 2T47-C001B	TRIP

7. **ESTIMATED** Simulator **SETUP TIME**: **20 Minutes**

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

1.	**Emergency Bus Breaker Transfer** The crew will assume shift with the directions to transfer 4160 Volt Emergency Bus "2E" to alternate supply.

PLANT: 4160 Volt Bus "2E" is transferred to alternate.

2.	**Power Increase** After 4160 Volt Bus "2E" has been transferred, the crew will increase power with Recirc.

PLANT: Power is increased with Recirc.

SCENARIO PRESENTATION
CREW ACTIONS

1.	Emergency Bus Breaker Transfer

CREW ACTIONS:

SS: Direct 4160 Volt Emergency Bus "2E" be transferred to alternate supply. _____

PO: Transfer 4160 Volt Emergency Bus "2E" to alternate supply per 34SO-R22-001-2S. _____

2.	Power Increase

CREW ACTIONS:

PO: Increase Reactor power with Recirc per 34GO-OPS-005-2S and 34SO-B31-001-2S. _____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

3.	**Main Turbine Lube Oil System Temperature Controller Failure** **AFTER** power has been increased to satisfy the reactivity manipulation requirement, **ACTIVATE MALFUNCTION mfN34_141**, "Main Turbine Lube Oil Sys Temp Cntl Fail."

PLANT: Temperature element N34-TE-N301 fails to minimum.
Oil system temperature control valves go to closed position.
Lube oil temperature and Turbine bearing temperatures increase.
TURB GEN/CWPS BRG TEMP HIGH alarms.
If uncorrected, the Main Turbine will trip on high vibration.

MESSAGE: **WHEN** contacted for assistance with the controller failure, as maintenance, **REPORT** that the temperature element appears to have failed. Estimated time of repair is 12 hours.

4.	**Inadvertent Initiation of HPCI** **AFTER** the crew has control of the Lube oil temperature, **ACTIVATE MALFUNCTION mfE41_103**, "HPCI Inadvertent Startup," and **HOLD** the T1 push-button until HPCI discharge opens or HPCI is manually tripped. **IF** crew does not secure HPCI, continue to activate the malfunction periodically.

PLANT: HPCI will start and may inject to the Reactor.
RWL will increase, but will stabilize prior to receiving high RWL trip.
If HPCI injects, Reactor power will increase due to cold water injection to the point of receiving APRM high alarms.

AFTER HPCI has been secured, **ACTIVATE OVERRIDES:**
E41A-S20DI, "HPCI Auxiliary Oil Pmp," to **STOP** and
E41A-S20_A, "HPCI Auxiliary Oil Pmp," to **OFF**.

(These overrides are to simulate a trip of the Aux Oil Pump breaker.)

PLANT: Indicating lights will extinguish for the HPCI Aux Oil Pump.
The HPCI Aux Oil Pump cannot be started.

MESSAGE: **AFTER** being dispatched, as Electrical Maintenance, **REPORT** that the HPCI Aux Oil Pump motor has a short on the winding and will need to be replaced.

SCENARIO PRESENTATION
CREW ACTIONS

3.	**Main Turbine Lube Oil System Temperature Controller Failure**

CREW ACTIONS:

PO: Acknowledge alarms and respond per the ARPs.

TEAM: Diagnose the controller failure.

PO: Take manual control of the failed controller and increase cooling water flow.

Verify Main Turbine bearing temperatures are decreasing.

TEAM: Request maintenance assistance in repairing the failed controller.

4.	**Inadvertent Initiation of HPCI**

CREW ACTIONS:

PO: Acknowledge annunciators and inform the SS of the event. _____

Take actions per 34AB-E10-001-2S to secure HPCI. _____

Monitor Reactor power, level, and pressure. _____

Reference applicable ARPs and respond accordingly. _____

Dispatch operator to the ATTS panel to check associated MTUs. _____

SS: Direct the PO to secure HPCI per 34AB-E10-001-2S. _____

Notify the I & C Dept to investigate spurious initiation signal. _____

Declare HPCI inoperable and initiate LCO. Tech Spec Section 3.5.1 is entered. _____

Inform the SOS of plant condition. _____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

5.	**False RWL Indication/Unisolable Break in the Drywell/Loss of High Pressure Feed** **AFTER** the Tech Spec for an Inop HPCI has been addressed, **ACTIVATE MALFUNCTION mfB21_215B**, "Rx Lvl (B) Reference Line Leak (Var)."

PLANT: B21-R606A & C will slowly trend upscale until both RFPTs and the main turbine to trip on a high RWL signal.
A Reactor scram will occur.
RWL will decrease rapidly causing a Group II and RCIC initiation.

NOTE: The crew may insert a manual scram prior to the automatic scram caused by the Main Turbine trip.

ALLOW RCIC to be started and inject for about 1 minute, then **ACTIVATE MALFUNCTION mfE51_61**, "RCIC Mechanical Overspeed Trip."

PLANT: RCIC isolates resulting in a loss of all high pressure feedwater.

AS RWL decreases to -50 to -80 inches, **ACTIVATE MALFUNCTION mfG31_242**, "RWCU Non-Isol Leak (0 - 10000 gpm)."

PLANT: Drywell temperature and pressure begin to increase.
A LOCA signal will occur due to high Drywell pressure of 1.85 psig and low RWL -101 inches.

MODIFY MALFUNCTION mfG31_242, "RWCU Non-Isol Leak (0 - 10000 gpm)," incrementally as required, to cause RWL to slowly decrease to TAF. Do not to exceed 5% at 0.5%/minute.

PLANT: RWL decreases to TAF.
No high pressure make-up systems are available.
Due to the RWCU leak, Torus pressure will increase and possibly exceed the initiation pressure of 11 psig.

SCENARIO PRESENTATION
CREW ACTIONS

5.	**False RWL Indication/Unisolable Break in the Drywell/Loss of High Pressure Feed**

CREW ACTIONS:

PO:	Acknowledge annunciators and inform the SS of the event.	_____
TEAM:	Diagnosis the failure and determine that a Main Turbine trip/Reactor will occur.	_____
PO:	When the scram occurs, inform the SS that all rods are fully inserted.	_____
	Take actions per placard RC-1, RC-2, & RC-3 and inform the SS when complete.	_____
	Enter 34AB-C71-001-2S, "Scram Procedure."	_____
SS:	Enter the EOPs and progress down 31EO-EOP-010-2S, "RC RPV Control" flowchart and 31EO-EOP-012-2S and 31EO-EOP-013-2S, PC-1 and PC-2 "Primary Containment Control."	_____
	When it is determined that all high pressure feed is loss, enter 31EO-EOP-015-2S, "CP-1 Alternate Level Control."	_____
	Directs Torus cooling and sprays to be started.	_____
	Directs Drywell Chillers and coolers be restarted.	_____
	Directs ADS be inhibited.	_____
PO:	Verify automatic actions.	_____
	Initiate Torus cooling and spray.	_____
	Inhibits ADS	_____
	Start Drywell Chillers and coolers.	
SS:	Orders systems in Table 8 to be aligned for injection.	_____
	Orders the Reactor be emergency depressed when RWL decreases to below TAF.	_____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

NOTE: The crew may spray the Drywell. However, prior to the emergency depress, the spray should be terminated and those systems aligned for injection.

The exercise will be terminated when:

1. All critical tasks are completed.
2. RWL is above TAF and controlled by low pressure systems.
3. Containment control guidelines have been implemented.

SCENARIO PRESENTATION
CREW ACTIONS

PO:	Initiates actions to align Table 8 Systems for operation.	_____	
	Open 7 ADS valves to emergency depress the Reactor. (Crew Critical Task)	_____	***CRIT TASK**
	Control injection to the Reactor with the low pressure systems. (Crew Critical Task)	_____	***CRIT TASK**
	Analyze which RWL instruments are available.	_____	
SS:	Classify the event as a ***Alert Emergency*** per 73EP-EIP-001-0S, Section 20.0. (This classification may be done after the simulator is put in freeze. Classifying the emergency is normally a SOS function.)	_____	

The exercise will be terminated when:

1. All critical tasks are completed.
2. RWL is above TAF and controlled by low pressure systems.
3. Containment control guidelines have been implemented.

Attachment 1
Initial Conditions

UNIT 1 STATUS

Unit One is operating at approximately 50% power following the trip of the "1B" RFPT. Activities in progress:

- Identify the cause of the RFPT trip.
- Restore the RFPT to service.
- Return power to MOP.

UNIT 2 STATUS

Power:

Unit Two is operating at approximately 75% power. Power was reduced to perform a rod pattern adjustment.

The following equipment is inoperable:

IRM "F"

RWCU Pump "2A" has seal leakage. ETR is unknown.

Alternate Feeder to Lighting Xfmr 2M (2R23-S014) for breaker cleaning and PM. ETR is 2 days.

Drywell Return Air Fan – 2T47-C001B has a ground. ETR is next Drywell entry.

Scheduled evolutions:

Transfer 4160 Volt "2E" to alternate supply to allow for a breaker PM on the normal supply breaker.

Continue power increase to MOP.

Surveillances due this shift:

As required by 34GO-OPS-005-2S.

Active clearances:

IRM "F" is bypassed due to erratic operation. I & C is investigating. Tracking RAS is written.

RWCU Pump "2A" – 2G31-C001A

Alternate Feeder to Lighting Xfmr 2M (2R23-S014)

Drywell Return Air Fan – 2T47-C001B

Rod Configuration:

See RWM

Attachment 2
CRITICAL TASK COMPLETION CHECKLIST

SOS _____ SS _____ STA _____

POs _____ _____ _____

TASK NUMBER	TASK DESCRIPTION	PERFORMED BY:	COMMENTS
1. 201.085	With Reactor pressure greater than shutoff head of the low pressure system(s) and when RWL decreases below -155", **INITIATE** emergency depress, before RWL reaches -185".		
2. 008.018	Action is taken to restore RWL above -155", by **OPERATING** available low pressure system(s), when Reactor pressure decreases below the shutoff head of the low pressure system(s).		

Southern Nuclear
E. I. Hatch Nuclear Plant

Operations Training
Simulator Evaluation

TITLE		
EARTHQUAKE/MSIV FAILURE TO CLOSE/STEAM LINE BREAK IN THE REACTOR BUILDING		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. L. SMITH/R. A. BELCHER	**LT-NRC-00004-00**	1.0 HOUR
FACILITY REPRESENTATIVE	**CHIEF NRC EXAMINER**	**DATE**

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LT-NRC-00004**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00		Initial development	RAB	

CRITICAL ITEMS

CREW CRITICAL TASKS

1. **CLOSE** the MSIVs after failing to close automatically. Task #013.045

2. With a primary system discharging into the secondary containment and area radiation/temperature/water levels exceed maximum safe operating levels in more than one area, **INITIATE** an emergency depress. Task #201.085

SCENARIO DESCRIPTION

The crew will assume the shift and prepare to place the Mode Switch in Run. Prior to performing the evolution, an IRM will fail Upscale. ***(instrument failure)*** A control rod will scram in due to a blown fuse in the other logic division. ***(component failure)*** The crew will address ARPs, Abnormals, and Tech Specs for the IRM/Control Rod. The crew will bypass the failed IRM, reset the half-scram, and take actions to recover the scrammed rod. ***(reactivity manipulation)*** When the control rod is recovered the crew will place the Mode Switch in RUN. ***(normal evolution)***

After the Mode Switch has been placed in Run, Reactor power will be increased. ***(reactivity manipulation)***

After power has been increased, an earthquake will occur. ***(major transient)*** A main steam line will break, between the MSIVs in the Reactor Building. The MSIVs will fail to close automatically, but may be closed manually, with the exception of one inboard. ***(component malfunction)***. The crew will scram the Reactor and emergency depress due to unisolable steam leak in Secondary Containment. ***(major transient)***

The following is a list of malfunctions/evolutions contained in the scenario:

		QUANTITATIVE ATTRIBUTES	
Reactivity:	Power increase with Recirc/Control Rods	Total malfunctions	8
Normal:	Transfer Mode Switch to RUN	Malfunctions after EOP entry	1
Instrument:	IRM failure	Abnormal Events	3
Component:	Control Rod scram MSL break MSIV failure	Major Transients	2
Major Evolutions	Earthquake Unisolable steam leak in the Reactor Building	EOPs entered	2
		EOP Contingencies	1
		Critical Tasks	2

OBJECTIVES

1. Given a failed IRM during a Reactor startup or shutdown, **BYPASS** the IRM such that rod withdraw blocks and half scram signals caused by the failure are cleared and required Technical Specification actions are met. (012.003.J)

2. Given an IRM failure, **RECOGNIZE** and **RESPOND** to the failure as demonstrated by placing the IRM detector bypass switch in bypass. (200.086.C)

3. Given plant conditions and a control rod out of position, **RECOGNIZE** and **RESPOND** to the mispositioned control rod such that the control rod is placed in its required position per 34AB-C11-004-1/2S, "Mispositioned Control Rods." (200.091.B)

4. Given plant conditions, Reactor startup in progress, **WITHDRAW** the IRM detectors per 34GO-OPS-001-1/2S, "Plant Startup." (012.006.A)

5. Given a Reactor startup in progress, **WITHDRAW** control rods using notch override per 34GO-OPS-065-0S, "Control Rod Movement." (001.025.B)

6. **CLOSE** the MSIVs after failing to close automatically. (013.045)

7. With a primary system discharging into the Secondary Containment and area radiation/temperature/water levels exceed maximum safe operating levels in more than one area, **INITIATE** an emergency depress. (201.085)

NOTE: Objectives 6 & 7 are considered critical task for this scenario.

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #105** and leave in **FREEZE**.

2. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfC51_7E	IRM E Failure (Inoperative)			999
mfC11_26A	Control Rod Failure (Scram)	06.11		999
mf65702209	Spur Ann – SEISMIC PEAK SHOCK RECORDER HIGH G LEVEL			999
mf65702227	Spur Ann – SEISMIC INSTRUMENTATION TRIGGERED			999
mfB21_225	Inboard MSIV F022A Fails To Close			000
mfB21_124	Steam Leak in Steam Tunnel			999
mfB21_224	Steam Line A Break Between MSIV (Var)	2.0	1.0	999
mfD23_282A	Fuel Gas Gap Release	0.1	1000	999

3. **INSERT** the following **ORS OVERRIDES:**

TAG #	P/L	DESCRIPTION	STATUS	ACT. TIME
G31-C001A_A	L	RWCU Pmp A	OFF	000
R23-S014_A	L	Lighting Xformr 2M	OFF	000
T47-C001B_A	L	Drywell Return Air Fan	OFF	000

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

REM #	DESCRIPTION	STATUS
rfC71279	Group I Isolation Oride Jumpers	ORIDE

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

   A. Bypass IRM "F."
   B. Withdraw control rods to achieve 7% power on the APRMs. (Complete Step 25)
   C. After withdrawing the control rods, reset the memory on the APRM ODAs.

SIMULATOR SETUP

6. **PLACE** the Simulator in **FREEZE** until the crew assumes the shift.

7. **PLACE DANGER TAGS** on the following equipment:

MPL #	COMPONENT	TAGGED POSITION
2G31-C001A	RWCU Pump 2G31-C001A	TRIP
2R23-S014	Alternate Feeder To Lighting Xfmr 2M (2R23-S014)	TRIP
2T47-C001B	Return Air Fan 2T47-C001B	TRIP

8. **ESTIMATED** Simulator **SETUP TIME:** **30 Minutes**

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

1.	**IRM Failure/Rod Scram** After the crew has assumed shift and is making preparation to place the Mode Switch to RUN, , **ACTIVATE MALFUNCTIONS:** **mfC51_7E**, "IRM E Failure (Inoperative)," and **mfC11_26A**, "Control Rod Failure (Scram)."

PLANT: Reactor half scram from the IRM being INOP.
Rod 06-11 scrams.
ROD DRIFT alarms.

AFTER the half scram is reset, **DELETE MALFUNCTION mfC11_26A**, "Control Rod Failure (Scram)."

MESSAGE: **WHEN** addressed, as the Lab Foreman, **REPORT** that the Condensate and Feedwater are acceptable for power operations.

MESSAGE: **WHEN** addressed, as the I & C foreman, **REPORT** that all APRM APRM FTs and 2 Out of 4 Logic Module FTs are complete and Satisfactory.

MESSAGE: **WHEN** requested to investigate why the "E" IRM is INOP, **REPORT** as I & C that you are checking into it.

MESSAGE: **WHEN** requested to investigate why Rod 06-11 scrammed, Wait 6-7 minutes and **REPORT** that a blown fuse was found on the "B" side and maintenance has replaced the fuse.

MESSAGE: **AS** Reactor Engineering, **ASK** the STA/PO to determine the position of the rods around Rod 06-11.

MESSAGE: **AS** Reactor Engineering, **INFORM** the crew to notch withdraw the Rod, verifying that it does not drift out. Reactor Engineering gives permission to bypass Rod Worth Minimizer to perform the coupling check

MESSAGE: **AS** the SOS, **GIVE** the crew permission to bypass Rod Worth Minimizer to perform the coupling check.

SCENARIO PRESENTATION
CREW ACTIONS

1.	**IRM Failure/Rod Scram**

CREW ACTIONS:

PO:	Responds to the half auto scram ARP and performs the required actions, including checking for rod movement by running an OD-7	_____
	Recognizes the "E" IRM has failed and addresses the ARP.	_____
TEAM:	Use plant indications and the Rod Drift Alarm illuminated to discover that Rod 06-11 has fully inserted.	_____
SS:	Directs the operator to bypass the failed IRM and reset the half scram.	_____
PO:	Bypasses the failed IRM.	_____
	Resets the half scram.	_____
	Enter 34AB-C11-004-2S, "Mispositioned Control Rods" is entered and actions taken for the inserted in Rod.	_____
TEAM:	Contact I & C to investigate why the "E" IRM has failed INOP.	_____
	Contact the SSS/Electricians to investigate the reason Rod 06-11 fully inserted.	_____
PO:	Runs an OD-7 to verify where the rods around 06-11 are located.	_____
	Recovers Rod 06-11 per 34AB-C11-004-1/2S and Reactor Engineering recommendations. Bypasses the RWM, as necessary	_____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

2.	**Mode Switch to RUN** **AFTER** the scrammed rod has been recovered, the crew places the Mode Switch in RUN and continues the power increase.

PLANT: Mode Switch is placed in RUN.
Reactor power is increased.

3.	**Seismic Event/Pipe Break in the Reactor Building** **AFTER** power has been increased to satisfy the reactivity manipulation, **ACTIVATE MALFUNCTIONS:** **mf65702209**, "Spur Ann – SEISMIC PEAK SHOCK RECORDER HIGH G LEVEL," and **mf65702227**, "Spur Ann – SEISMIC INSTRUMENTATION TRIGGERED."

PLANT: SEISMIC PEAK SHOCK RECORDER HIGH G LEVEL alarms.
SEISMIC INSTRUMENTATION TRIGGERED alarms.

When the annunciators have been verified, **ACTIVATE MALFUNCTIONS:**
mfB21_124, "Steam Leak in Steam Tunnel," and
mfD23_282A, "Fuel Gas Gap Release."

PLANT: Reactor Building ARMs alarm.
After 2-3 minutes, a Group I isolation occurs on High Steam Tunnel Temperature.
Reactor scram on MSIV closure.
Reactor Building radiation levels do not initially exceed the "Max safe operating level."

SCENARIO PRESENTATION
CREW ACTIONS

2.	**Mode Switch to RUN**

CREW ACTIONS:

PO:	Verifies all the prerequisites are met and places the Mode Switch in RUN.	_____
	Withdraws all IRMs.	_____
	Continues power increase.	_____

3.	**Seismic Event/Pipe Break in the Reactor Building**

CREW ACTIONS:

PO:	Recognize increase in radiation levels and respond per ARPs.	_____
	Verify annunciators using ARM readings.	_____
SS:	Declare a Radiological Event per 73EP-RAD-001-0S and direct evacuation of Reactor Building.	_____
	Enter 31EO-EOP-014-2S (SC - Secondary Containment Control) and perform all paths concurrently.	_____
	Enter 31EO-EOP-010-2S (RPV Control - Non ATWS) if RWL reaches +3 inches or if Reactor pressure reaches 1080 psig. Perform all paths concurrently.	_____
PO:	Take immediate actions per 34AB-C71-001-2S, "Scram Procedure."	_____
	Enter 34AB-C71-001-2S, Scram Procedure, and perform subsequent steps as coordinated by the SS.	_____
SS:	Direct operators to check area ambient and differential temperatures. If any temperature exceeds Max Normal Operating Valve, re-enter 31EO-EOP-014-2S.	_____

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

WHEN directed to override the RCIC Suction Valve swap, wait four minutes and **TOGGLE REMOTE FUNCTION rfE51155**, "RCIC Torus Suction Bypass," to **BYPAS**.

AFTER the SC chart has been initially addressed or a pressure reduction is performed, **ACTIVATE MALFUNCTION mfB21_224**, "Steam Line A Break Between MSIV (Var)."

PLANT: Radiation levels in Reactor Building exceed Max Safe Operating Level.
Reactor Building and Refuel Floor Ventilation isolates.
SBGT will starts for both Units.

If necessary to achieve Max Safe conditions required to depress, **MODIFY MALFUNCTION mfB21_224**, "Steam Line A Break Between MSIV (Var)," to **5%** at 1%/min.

The exercise will be terminated when:

1. All critical tasks are completed.
2. RWL is stabilized at greater than +3 inches.
3. The Reactor is depressed.

SCENARIO PRESENTATION
CREW ACTIONS

SS:	Direct PO to place the MSIV Control Switches to shut per 31EO-EOP-014-2S.	_____	
	Direct PO to monitor Reactor Building Sump and area water levels. If any level exceeds Max Normal, re-enter 31EO-EOP-014-2S.	_____	
	Direct PO to confirm Reactor pressure stabilized below 1080 psig with LLS.	_____	
	Direct PO to maintain RWL between +3 and +50 inches using RCIC and/or CRD.	_____	
PO:	Place MSIV Control Switches to close. (Crew Critical Task)	_____	***CRIT TASK**
	Confirm LLS operation.	_____	
	Monitor Reactor Building sump alarms and report any sump alarms to the SS.	_____	
	Direct Shift Support Supervisor to bypass the RCIC Suction Valve interlock.	_____	
SS:	When radiation levels exceed Max Safe Operating Valve (MSOV) in more than one area, make transition from RC/P to CP-1 at Point G (Emergency Depress).	_____	
	Direct PO to take manual control of Condensate or Low Pressure ECCS to maintain RWL between +3 and +50 inches.	_____	
	Direct PO to open the ADS valves.	_____	
PO:	Operate SRVs to emergency depress the Reactor. (Crew Critical Task)	_____	***CRIT TASK**
	Take manual control of Condensate or Low Pressure ECCS to restore and maintain RWL above TAF.	_____	

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

Intentionally Left Blank

SCENARIO PRESENTATION
CREW ACTIONS

SS:	Make transition from CP-1, "Emergency Depress," to RC/P, Point C.	_____
	When Torus temperature reaches 100°F direct actions per 31EO-EOP-012/013-2S (if not already entered).	_____
PO:	Perform actions of 31EO-EOP-012/013-2S as directed by SS.	_____
SS:	Classify the event as a ***Site Area Emergency*** based on an unisolable steamline break per 73EP-EIP-001-0S, Section 4.0. (This classification may be done after the simulator is put in freeze. Classifying the emergency is normally a SOS function.)	_____

The exercise will be terminated when:

1. All critical tasks are completed.
2. RWL is stabilized at greater than +3 inches.
3. The Reactor is depressed.

Attachment 1
Initial Conditions

UNIT 1 STATUS

Unit One is operating at MOP. Activities in progress:

- HPCI Full Flow Test.

UNIT 2 STATUS

Power:

Unit Two is operating at approximately 7% power. A startup is being conducted following a scheduled Refueling Outage.

The following equipment is inoperable:

IRM "F" is bypassed due to erratic operation. I & C is investigating. Tracking RAS is written.

RWCU Pump "2A" has seal leakage. ETR is unknown.

Alternate Feeder to Lighting Xfmr 2M (2R23-S014) for breaker cleaning and PM. ETR is 2 days.

Drywell Return Air Fan – 2T47-C001B has a ground. ETR is next Drywell entry.

Scheduled evolutions:

Place the Mode Switch in RUN and continue plant startup per 34GO-OPS-001-2S. All steps prior to 7.4.5 are complete.

The SOS has reviewed Attachment 7 with the crew.

Surveillances due this shift:

Per 34GO-OPS-001-2S

Active clearances:

IRM "F"

RWCU Pump "2A" – 2G31-C001A

Alternate Feeder to Lighting Xfmr 2M (2R23-S014)

Drywell Return Air Fan – 2T47-C001B

Rod Configuration:

See RWM

Attachment 2
CRITICAL TASK COMPLETION CHECKLIST

SOS _____ SS _____ STA _____

POs _____ _____ _____

TASK NUMBER	TASK DESCRIPTION	PERFORMED BY:	COMMENTS
1. 013.045	**CLOSE** the MSIVs after failing to close automatically.		
2. 201.085	With a primary system discharging into the secondary containment and area radiation/temperature/water levels exceed maximum safe operating levels in more than one area, **INITIATE** an emergency depress.		

Southern Nuclear
E. I. Hatch Nuclear Plant

Operations Training
Simulator Evaluation

TITLE STUCK OPEN SRV/SJAE FAILURE/LOSP		
AUTHOR	**MEDIA NUMBER**	**TIME**
R. L. SMITH/R. A. BELCHER	**LT-NRC-00005-00**	1.0 HOUR
FACILITY REPRESENTATIVE	**CHIEF NRC EXAMINER**	**DATE**

SOUTHERN COMPANY

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PLANT E. I. HATCH

FORM TITLE: TRAINING MATERIAL REVISION SHEET

Program/Course Code: **OPERATIONS TRAINING** Media Number: **LT-NRC-00005**

Rev. No.	Date	Reason for Revision	Author's Initials	Supv's Initials
00		Initial development	RLS/RAB	

CRITICAL ITEMS

CREW CRITICAL TASKS

1. **REMOVE** fuses to SRV prior to Torus temperature reaching Boron Injection Initiation Temperature (BIIT). Task #200.009

2. During a LOSP with diesels failing to start and tie, **ENERGIZE** at least one 4160V emergency bus by manually tying a diesel to a bus by lowering/raising frequency or by manually starting a diesel with the remote start switch. Task #028.006

SCENARIO DESCRIPTION

The crew will assume the shift at Maximum Operating Power (MOP) with RCIC tagged for a steam leak repair. In preparation for an HPCI surveillance, RHR will be placed in Torus cooling. ***(normal evolution)***

After Torus cooling has been established the ATTS Master Trip Unit (MTU) for a Low-Low Set SRV fails. ***(instrument malfunction)*** The associated SRV opens. The crew will remove the fuses and the SRV will close. Actions will be taken to repair the MTU and Tech Specs addressed for the inoperative LLS valve.

After Tech Specs has been addressed for the Inoperative LLS valve, the operating SJAE will fail. ***(component malfunction)*** The crew will reduce power to maintain vacuum ***(reactivity manipulation)*** and place the standby SJAE inservice.

After the standby SJAE is in service and the plant is stable, an RPS bus will trip. ***(component malfunction)*** Reactor Water Cleanup (RWCU) isolation valve will fail to close. The crew will enter the appropriate ARPs and Abnormals, isolate RWCU, and initiate actions to restore the bus.

As the bus is being restored, a Loss of Off Site power will occur. ***(major transient)*** Crew actions are required to start and tie the Unit 2 Diesel Generators. ***(component failure)***

HPCI will be required to restore and maintain RWL. As HPCI starts, it will isolate due to a invalid steam isolation signal. ***(component failure)*** The crew must initiate actions to restore HPCI from the isolation and recover RWL.

The following is a list of malfunctions/evolutions contained in the scenario:

		QUANTITATIVE ATTRIBUTES	
Reactivity:	Reactor power decrease	Total malfunctions	9
Normal:	Place standby SJAE in service	Malfunctions after EOP entry	3
Instrument:	ATTS failure	Abnormal Events	3
Component:	SJAE failure Trip of RPS bus Emergency Diesel Generator failures (2) HPCI steam supply valve	Major Transients	1
Major Evolutions	Loss of Off Site Power	EOPs entered	2
		EOP Contingencies	1
		Critical Tasks	2

NOTE: The major evolution (LOSP) was picked because, per the PRA, it is the event most likely to cause fuel damage.

OBJECTIVES

1. **PERFORM** a manual initiation of Torus cooling per 34SO-E11-010-2S. (007.005)

2. **REMOVE** fuses to SRV prior to Torus temperature reaching Boron Injection Initiation Temperature (BIIT). (200.009)

3. **TRANSFER** a SJAE per 34SO-N61-001-2S. (025.006)

4. **RECOGNIZE** and **RESPOND** to a loss of an RPS Bus. (200.102)

5. During a LOSP with diesels failing to start and tie, **ENERGIZE** at least one 4160V emergency bus by manually tying a diesel to a bus by lowering/raising frequency or by manually starting a diesel with the remote start switch. (028.006)

NOTE: Objectives 2 and 5 are considered critical tasks for this scenario.

SIMULATOR SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #125** and leave in **FREEZE**.

2. **INSERT** the following **MALFUNCTIONS:**

MALF #	TITLE	FINAL VALUE	RAMP RATE	ACT. TIME
mfE51_110	RCIC Turbine Trip			000
mf60211179	Spur Ann – LOW LOW SET LOGIC B/D ARMED			999
mf6021154	Spur Ann – ECCS/RPS DIVISON I TROUBLE			999
mfB21_130D	Main Steam Relief Valve D Fails Open			999
mfG31_207A	G31-F001 Fails to Isolate on Group 5			000
mfR43_239A	DG A Output Bkr One Shot Fail to Auto Tie			000
mfR43_62C	Diesel Gen Fail to Auto Start 2C			000
mfS11_161	Loss of Off Site Power (Black Out)			999
mfE41_108	HPCI Auto Isolation E41-F002			999

3. **INSERT** the following **ORS OVERRIDES:**

TAG #	P/L	DESCRIPTION	STATUS	ACT. TIME
E51-F008_A	L	RCIC Steam Supply Line Isol	OFF	000
G31-C001A_A	L	RWCU Pmp A	OFF	000
R23-S014_A	L	Lighting Xformr 2M	OFF	000
T47-C001B_A	L	Drywell Return Air Fan	OFF	000

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

   A. Bypass IRM "F."
   B. Close 2E51-F008
   C. Place RHRSW in the "B" loop in service, both pumps.

5. **PLACE** the Simulator in **FREEZE** until the crew assumes the shift.

SIMULATOR SETUP

6. **PLACE DANGER TAGS** on the following equipment:

MPL #	COMPONENT	TAGGED POSITION
2E51-F008	RCIC Outboard Isolation Valve	CLOSE
2E51-F524	RCIC Trip and Throttle Valve	CLOSE
2G31-C001A	RWCU Pump 2G31-C001A	TRIP
2R23-S014	Alternate Feeder To Lighting Xfmr 2M (2R23-S014)	TRIP
2T47-C001B	Return Air Fan 2T47-C001B	TRIP

7. **ESTIMATED** Simulator **SETUP TIME:** **25 Minutes**

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

1.	**Torus Cooling** The crew will assume the shift and complete placing RHR Loop "B" in Torus cooling.

PLANT: RHR Loop "B" is placed in Torus cooling.

2.	**SRV Fails Open With LLS Malfunction** **AFTER** RHR is placed in Torus cooling, **ACTIVATE MALFUNCTIONS:** **mf60211179**, "Spur Ann – LOW LOW SET LOGIC B/D ARMED," **mf6021154**, "Spur Ann – ECCS/RPS DIVISON I TROUBLE," and **mfB21_130D**, "Main Steam Relief Valve D Fails Open."

PLANT: The "D" SRV will open.
LOW LOW SET LOGIC B/D ARMED alarms.
ECCS/RPS DIVISON I TROUBLE alarms.
Generator megawatts decreases slightly.
Torus temperature and pressure increase.

WHEN contacted to pull fuses for the SRV, wait 4 minutes (goal is to exceed 100°F in the Torus), then **TOGGLE REMOTE FUNCTION rfB21303,** "SRV D Fuse," to **ORIDE.**

WHEN asked to bypass the HPCI Suction Valve Swap, wait four minutes and **TOGGLE REMOTE FUNCTION rfE41153,** "HPCI Torus Suction Bypass" to **BYPAS.**

IF requested to start the H2 O2 Analyzers, wait four minutes and **TOGGLE REMOTE FUNCTIONS:**
rfP33237, "H2 O2 Analyzer A," and
rfP33238, "H2 O2 Analyzer B," to **ANLYZ.**

SCENARIO PRESENTATION
CREW ACTIONS

1.	Torus Cooling

CREW ACTIONS:

PO:	Places RHR Loop "B" in Torus cooling per 34SO-E11-010-2S.	_____	

2.	SRV Fails Open With LLS Malfunction

CREW ACTIONS:

PO:	Acknowledge the annunciator and inform the SS the "D" SRV is stuck open.	_____	
	Respond to the event per 34AB-B21-003-2S.	_____	
	Attempt to reset LLS.	_____	
SS:	If Torus temperature reaches 100°F, enter 31EO-EOP-012-2S and 31EO-EOP-013-2S (PC-1 and PC-2)	_____	
	Direct the PO to have fuses removed for the "D" SRV prior to Torus temperature reaching 110°F.	_____	
	Direct the PO to place the H2 O2 Analyzers in service.	_____	
PO:	Initiate actions to have fuses removed for the "D" SRV per 34AB-B21-003-2S prior to Torus temperature reaching 110°F. (Crew Critical Task)	_____	***CRIT TASK**
	Inform the SS of SRV indication light out.	_____	
	Monitor indication to verify SRV closure.	_____	
	Place the H2 O2 Analyzers in service.	_____	
SS:	Determine the LCO for this condition per Technical Specifications.	_____	
	Notify I & C to assist in problem with LLS and SRV.	_____	
	Inform the SOS of the problem and the LCO.	_____	

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

3.	**SJAE Failure/Loss of Vacuum** After the fuses for the "D" SRV are removed and the LCO for the LLS valve have been addressed, **TOGGLE REMOTE FUNCTION rfN11045**, "SJAE A Steam," to **CLOSE**.

PLANT: 3RD STG SJAE A FLOW LOW alarms.
SJAE "A" Supply Press indicates "0" psig on 2H11-P650.
Off Gas Preheater "A" temperature decreases.
SJAE "A" Suction Valve closes.
Main Condenser vacuum decreases slowly.

MESSAGE: **AFTER** two minutes from being dispatched, **REPORT** as PEO that the pressure regulator for SJAE "A" does not respond locally.

WHEN requested to open the Steam Supply Valve for the "B" SJAE, **TOGGLE REMOTE FUNCTION rfN11046**, "SJAE B Steam," to **OPEN.**

4.	**Loss of RPS/Failure to Isolate** **WHEN** the "B" has been placed in service and vacuum is stable, **TOGGLE REMOTE FUNCTION rfC71138**, "RPS MG Set A," to **OFF.**

PLANT: Half scram.
Half Group I.
Half Group II, inboard valves close.
Half Group V, 2G31-F001 fails to close.

MESSAGE: **AFTER** being contacted to investigate the "A" RPS MG Set, as a PEO, **REPORT** that the RPS MG Set motor is very warm to the touch and there is a burnt odor in the room.

SCENARIO PRESENTATION
CREW ACTIONS

3.	**SJAE Failure/Loss of Vacuum**

CREW ACTIONS:

PO:	Recognize and respond to SJAE Low Flow annunciator per ARP.	_____
	Investigate cause of low flow condition and dispatch PEO to locally investigate.	_____
	Monitor condenser vacuum and make recommendations on load reduction.	_____
SS:	Assist in investigation of low flow condition and directs/supervises load reduction when required.	_____
PO:	Attempt to place SJAE "B" in service per 34SO-N61-001-2S.	_____
	Reduce Reactor power to maintain condenser vacuum.	_____

4.	**Loss of RPS/Failure to Isolate**

CREW ACTIONS:

TEAM:	Diagnose the loss of a RPS bus.
	Dispatch personnel to determine the cause of the bus loss.
PO:	Respond per 34AB-C71-002-2S, "Loss of RPS."
	Determine that 2G31-F001 failed to close and inform the SS.
SS:	Direct the operator to secure and isolate RWCU.
PO:	Secure RWCU and close 2G31-F001.
SS:	Address Tech Specs for the lost of leakage detection and the failure of RWCU to isolate.

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

5.	**LOSP/HPCI Restoration for RWL Control** After the crew has initiated actions to restore the bus, **ACTIVATE MALFUNCTION mfS11_161**, "Loss of Off Site Power (Black Out)."

PLANT: Loss of Site Power occurs.
"A" D/G starts but fails to automatically tie.
"B" D/G starts and ties to the "1F" bus.
"C" D/G fails to start.
The Reactor will scram.
MSIVs close and LLS actuates to control Reactor pressure.

MESSAGE: **IF** contact, as the Load Dispatcher, **REPORT** that there has been a major traffic accident that involved the transmission lines. The grid was grounded. Off Site power should be available in approximately an hour.

IF the crew request that the "1B" D/G be transferred to Unit II, **TOGGLE REMOTE FUNCTION rfR43241**, "Diesel Gen 1B Engine Control Switch," to **U II.**

When HPCI is started/starts and to injects for approximately one minute, **ACTIVATE MALFUNCTION mfE41_108**, "HPCI Auto Isolation E41-F002."

PLANT: HPCI isolates and trips.

IF requested to restart the "B" RPS MG Set, **TOGGLE REMOTE FUNCTION rfC71139**, "RPS M/G Set B," to **ON**.

IF requested to reset the undervoltage relay for the "A" side of RPS, **TOGGLE REMOTE FUNCTION rfC71177**, "RPS Alt Source UV Relay Reset," to **RESET.**

IF requested to reset the breaker for the "2A" SSAC, **TOGGLE REMOTE FUNCTION rfP51291**, "Station Air Compressor 2A Local Breaker CS," to CLOSE.

SCENARIO PRESENTATION
CREW ACTIONS

5.	**LOSP/HPCI Restoration for RWL Control**

CREW ACTIONS:

PO:	Recognize loss of power and resulting Reactor scram.	_____	
	Take actions per placard RC-1 and inform SS when complete.	_____	
	Take actions per placard RC-2 & RC-3 and inform SS when complete.	_____	
	Inform SS that the Reactor is shutdown.	_____	
	Inform the SS that the "2A" D/G failed to tie to the "2E" bus, the "1B" is tied to Unit 1, and "2C" D/G failed to start. The operator takes action to tie the "2A" D/G to the "2E" bus. The operator starts the "2C" D/G. The operator must have "1B" D/G control transferred to Unit 2.	_____	
SS:	Enter the EOPs and progress down the RC RPV Control Path.	_____	
	Direct the PO to maintain Reactor pressure below 1080 psig.	_____	
	Direct PO to maintain RWL between +3 and +50 inches.	_____	
PO:	Recognize HPCI isolation, inform the SS, initiate actions to determine the cause of the isolation..	_____	
	Manually tie D/G "2A" to 4160V Bus "2E" by lowering frequency to 57 Hz and then back to 60 Hz per 34AB-R43-001-2S. (Crew Critical Task)	_____	***CRIT TASK**
	Manually start "2C" and verify that it ties to the "2G" bus.	_____	
SS:	Direct the PO to initiate Torus cooling as Diesel loading allows.	_____	
	Progress down EOP flowchart PC-1 and PC-2 due to Drywell temperature above 150°F.		
	Direct PO to restart a Drywell Chiller and coolers.		

SCENARIO SEQUENCE
SIMULATOR CONSOLE OPERATOR

IF requested to restart the 125/250 Battery Chargers, **TOGGLE REMOTE FUNCTIONS:**
rfR41183, "125/250 Batt Charg 2A,B,C Supply Breaker,"
rfR41184, "125/250 Batt Charg 2D,E,F Supply Breaker," to **RESET**.

IF requested to perform the EOP 114 actions for RHR, **TOGGLE REMOTE FUNCTION rfE11167**, "2E11-F017A & B Override 5 Min Timer," to **ORIDE.**

MESSAGE: **IF** sent to investigate the HPCI isolation, wait 5 minutes and **REPORT** to the crew that appears to be a bad relay. Repairs should only take a few minutes.

IF directed to reset lockout on chiller and to open links to restart due to LOCA/LOSP signal, **WAIT** four minutes, **TOGGLE REMOTE FUNCTIONS:**
rfP64194, "Drywell Chillers B006A&B LOCA/LOSP Trip Links," to **BYPAS**,
rfP64195, "Drywell Chillers B006A&B Lockout Reset," to **RESET**, and
rfP64270, "Drywell Chillers Safety Shutdown Local Reset," to **RESET**.

NOTE: When the LOCA signal occurs the "1B" D/G will automatically tie to the "2F" Emergency Bus.

AFTER about 10 minutes, **DELETE MALFUNCTION mfE41_108**, "HPCI Auto Isolation E41-F002."

MESSAGE: **AS** maintenance, **REPORT** that the relay has been replaced and HPCI should be available.

The exercise will be terminated when:

1. All critical tasks are completed.
2. The Emergency Buses have been re-energized.
3. HPCI has been restored and RWL has been stabilized.
4. Containment parameters are being controlled.

SCENARIO PRESENTATION
CREW ACTIONS

PO:	Place all available RHR loops in Torus cooling mode prior to Torus temperature exceeding 100°F or when directed by SS.	_____
	Restart Drywell cooling ensuring that the Diesel Generators are not overloaded.	_____
SS:	Direct PO to inhibit ADS.	_____
	After receiving the report of HPCI repair, direct the operator to use HPCI to restore and maintain RWL above top of active fuel.	_____
PO:	Inhibit ADS.	_____
PO:	Restore HPCI to operation per 34SO-E41-001-2S.	_____
	Restore RWL to the normal band in a controlled manner.	_____
SS:	Classify the event as a ***NUE*** per 73EP-EIP-001-0S, Section 5.0. (This classification may be done after the simulator is put in freeze. Classifying the emergency is normally a SOS function.)	_____

The exercise will be terminated when:

1. All critical tasks are completed.
2. The Emergency Buses have been re-energized.
3. HPCI has been restored and RWL has been stabilized.
4. Containment parameters are being controlled.

Attachment 1
Initial Conditions

UNIT 1 STATUS

Unit One is operating at MOP. Activities in progress:

- Core Spray Valve Operability

UNIT 2 STATUS

Power: Unit Two is operating at MOP in late August.

The following equipment is inoperable:

RCIC due to a severe steam leak on 2E51-F045. Tagged out last shift. ETR is 2 days. RAS is written.

IRM "F" is bypassed due to erratic operation. I & C is investigating. Tracking RAS is written.

RWCU Pump "2A" has seal leakage. ETR is unknown.

Alternate Feeder to Lighting Xfmr 2M (2R23-S014) for breaker cleaning and PM. ETR is 2 days.

Drywell Return Air Fan – 2T47-C001B has a ground. ETR is next Drywell entry.

Scheduled evolutions: Due to elevated Torus temperatures, Torus cooling is required. The previous shift put RHRSW into operation. Place RHR Loop "B" in Torus cooling.

Surveillances due this shift: None

Active clearances:

RCIC

IRM "F

RWCU Pump "2A" – 2G31-C001A

Alternate Feeder to Lighting Xfmr 2M (2R23-S014)

Drywell Return Air Fan – 2T47-C001B

Rod Configuration: See RWM

Attachment 2
CRITICAL TASK COMPLETION CHECKLIST

SOS _____ SS _____ STA _____

POs _____ _____ _____

TASK NUMBER	TASK DESCRIPTION	PERFORMED BY:	COMMENTS
1. 200.009	REMOVE fuses to SRV prior to Torus temperature reaching Boron Injection Initiation Temperature (BIIT).		
2. 028.006	During a LOSP with diesels failing to start and tie, ENERGIZE at least one 4160V emergency bus by manually tying a diesel to a bus by lowering/raising frequency or by manually starting a diesel with the remote start switch.		