LICENSEE POST-EXAM COMMENTS

ST. LUCIE EXAM 2000-301
50-335/2000-301 & 50-389/2000-301

FEBRUARY 7 - 11, 2000

LICENSEE POST-EXAM COMMENTS

LICENSEE POST-EXAM COMMENTS

ST. LUCIE EXAM 2000-301
50-335/2000-301 & 50-389/2000-301

FEBRUARY 7 - 11, 2000

LICENSEE POST-EXAM COMMENTS

Florida Power & Light Company, 6351 S. Ocean Drive, Jensen Beach, FL 34957

February 17, 2000

L-2000-044
10 CFR 55.5

Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
Attn: Mr. Harold O. Christensen
Chief, Operator Licensing and
Human Performance Branch
Atlanta, GA 30303

Re: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Operator License Examination Comments
February 2000

During the week of February 7, 2000, the NRC administered Reactor Operator (RO) and Senior Reactor Operator (SRO) Examinations at St. Lucie Plant. An analysis was performed after administration of the written portion of the examinations; the attached comments on the RO/SRO written examinations are submitted for consideration by the NRC. These comments affect questions 30 and 45 on the RO examination and questions 31, 43, and 47 on the SRO examination. Questions 31 and 47 on the SRO examination are the same as questions 30 and 45 on the RO examination.

Please contact Doug Lauterbur at (561) 467-7107 with any questions regarding this matter.

Very truly yours,

Rajiv S. Kundalkar
Vice President
St. Lucie Plant

RSK/spt

Attachments

Received
FEB 22 2000

St. Lucie Plant post written examination comments.
Examination administered 2/10/00

SRO Question 31, RO Question 30

Operators have implemented 1-EOP-03 'Loss of Coolant Accident' with the following conditions:

- RCS pressure: 440 psia lowering
- Pressurizer level: 12% rising
- Core exit CET's: 398 °F
- Containment pressure: 1.5 psig slowly going down
- Containment Temperature: 110 °F and lowering

Which of the following describes the correct Operator response?

A. Restart RCP's.

B. Throttle HPSI pumps.

C. Terminate Containment Spray.

D. Isolate the Safety Injection Tanks.

Comment:
Stem of question never states Containment Spray initially actuated. To answer question correctly (terminate containment spray, choice C) you had to assume it has actuated. The stem states the operators have implemented EOP-03 LOCA, but this could be a small break, in which Containment Spray may not actuate.

Recommendation:
Retain question and add to stem of question 'all ESFAS signals have actuated'

NOTE: No candidate missed this question, but numerous questions during exam resulted in Proctor writing on board 'SIAS, CIAS and CSAS' has actuated.

SRO only Question 43

Unit 1 is experiencing a dual event with the following conditions:

- All Charging Pumps are inoperable
- RCS Temperature: 520 °F
- RCS Pressure: 980 psia
- Pressurizer Level: 25%
- Safety Injection flow: meeting Figure 2
- Both S/G's are at 40% Wide Range Level and are steaming and feeding

Which of the following Success Paths will be implemented to meet the RCS Pressure Control Safety Function in accordance with 1-EOP-15 'Functional Recovery?'

A. Heaters and Spray

B. Safety Injection

C. Steam Generator Heat Removal

D. PORVs

Comment:
Correct answer should be 'B'. Steam Generator Heat removal is used to control a high pressure condition only. The subcooling of the RCS is 20-200°F so there is no high pressure condition. Additionally, two RCP's may be operating, enabling the use of the main spray valves for pressure control. Although all charging pumps are inoperable, the safety function acceptance criteria states 'all available' operating. Considering none are available, this portion of the safety function is met.

Recommendation:
Current answer states 'C' Steam Generator Heat Removal. Change key to 'B' Safety Injection

SRO QVE 43

5.5 RCS PRESSURE CONTROL
(continued)

Success Path 4: Steam Generator Heat Removal

INSTRUCTIONS	CONTINGENCY ACTIONS

NOTE
This success path provides guidance for reducing RCS pressure using steam generator heat removal. This method should only be used if RCS pressure cannot be reduced using Pressurizer sprays.

☒* 1. BORATE the RCS as necessary to maintain greater than 3600 pcm shutdown margin.

☐ 2. ENSURE Pressurizer heaters are OFF and ALLOW Pressurizer level to lower (maintaining 10% to 70%) while cooling down to aid in the depressurization.

☒* 3. If no RCPs are running, Then VERIFY natural circulation flow in at least one loop by **ALL** of the following:

A. Loop ΔT (T-hot minus T-cold) is less than full power ΔT (50°F).

B. T-cold constant or decreasing.

C. T-hot constant or decreasing.

D. No abnormal differences (greater than 20°F) between T-hot and Representative CET temperature.

3. If natural circulation flow is NOT observed, Then ENSURE proper control of S/G feeding and steaming, and RCS inventory and pressure.

(Continued on Next Page)

SRO QUES 43

APPENDIX A
SAFETY FUNCTION STATUS CHECK SHEET
RCS PRESSURE CONTROL - SECTION 5.5

SAFETY FUNCTION	ACCEPTANCE CRITERIA	CHECK √
3. SAFETY INJECTION		SUCCESS PATH IN SERVICE
Charging Pumps	All available operating or HPSI throttling criteria met.	
		AND
Safety Injection Pumps	Injection flow per Figure 2, "Safety Injection Flow vs. RCS Pressure" or HPSI throttling criteria met.	OR
	RAS with at least one HPSI pump operating.	

⇓

(Continued on Next Page)

SRO QUES 13

APPENDIX A
SAFETY FUNCTION STATUS CHECK SHEET
RCS PRESSURE CONTROL - SECTION 5.5

SAFETY FUNCTION	ACCEPTANCE CRITERIA	CHECK √
4. STEAM GENERATOR HEAT REMOVAL		SUCCESS PATH IN SERVICE: [ ][ ][ ][ ][ ][ ]
Pressurizer Pressure	Being maintained or restored within limits of Figure 1, "RCS Pressure Temperature" curve.	[ ][ ][ ][ ][ ][ ]
5. PORV'S		SUCCESS PATH IN SERVICE: [ ][ ][ ][ ][ ][ ]
Pressurizer Pressure	Less than 2340 psia and constant or decreasing.	[ ][ ][ ][ ][ ][ ] **AND**
	Being maintained or restored within limits of Figure 1, "RCS Pressure Temperature" curve.	[ ][ ][ ][ ][ ][ ]

END OF SECTION 5.5 RCS PRESSURE CONTROL

SRO Question 47, RO Question 45

Unit 1 has shut down the plant due to a Steam Generator tube leak on the 1B S/G. ONP 1-0830030 'Steam Generator Tube Leak' is being implemented. Given the following conditions:

- One RCP in each loop is stopped
- RCS pressure: 2230 psia
- Tave: 530 ° F

Which of the following statements explains why one RCP in each loop was stopped?

A. To prevent fuel uplift.

B. To reduce heat input into the RCS.

C. To allow a greater cooldown rate.

D. To minimize leak flow into the affected S/G.

Comment:
Question asked why two RCP's are tripped during implementation of Steam Generator Tube leak Off-Normal. Off-Normal procedure 1-0830030 'Steam Generator Tube Leak' has been revised. No RCP's are tripped in the new revision of the procedure.

Recommendation:
Current answer states 'B' To reduce heat input into the RCS. Because the current procedure does not direct tripping any RCP, recommend delete Question.

SRO QUES 47 RO QUES 45

FPL

ST. LUCIE UNIT 1 OFF-NORMAL OPERATING PROCEDURE

SAFETY RELATED

Procedure No. **1-0830030**

Current Rev. No. **18A**

Effective Date: **02/08/00**

Title:

STEAM GENERATOR TUBE LEAK

Responsible Department: **OPERATIONS**

Revision Summary

Revision 18A - Minor change to correct step number references. (J. Napier, 02/07/00)

Revision 18 - Isolated Nitrogen flow to the Condenser during SGTL conditions and deleted RCP "Trip 2/Leave 2" instruction in Step 2.T.1 and 3.N. (Ron Pennenga, 11/04/99)

Revision 17B - Changed OP 1-0110056 to 1-NOP-100.04. (C. Simpkins, 10/25/99)

Revision 17A - Corrected step references. (Art Singer, 08/23/99)

Revision 17 - Provide additional guidance for estimating primary to secondary leakage based on Daily Chemistry Summary Report. (Steve Willett, 2/19/99)

Revision	FRG Review Date	Approved By	Approval Date
0	12/23/85	D. A. Sager Plant General Manager	12/23/85
18A	11/04/99	R. G. West Plant General Manager	11/04/99
		A. Scales Designated Approver	02/07/00

S 1 OPS
DATE
DOCT PROCEDURE
DOCN 1-0830030
SYS
COMP COMPLETED
ITM 18A

1.0 TITLE:

STEAM GENERATOR TUBE LEAK

2.0 PURPOSE:

This procedure provides operator actions to be accomplished in the event of a steam generator tube leak less than the capacity of the charging pumps. Safety injections would NOT be actuated during this condition.

3.0 REFERENCES:

1. One or more of the following symbols may be used in this procedure.

   A. § indicates a Regulatory commitment made by technical specifications, condition of license, audit, LER, bulletin, etc. and should NOT be revised without Facility Review Group approval.

   B. ¶ indicates a management directive, vendor recommendation, plant practice or other non-regulatory commitment that should NOT be revised without consultation with the plant staff.

   C. Ψ indicates a step that requires a sign off on a data sheet.

2. St. Lucie Unit 1 UFSAR, Section 10.4.2 and 15.

3. NOP 1-0030125, "Turbine Shutdown, Full Load to Zero Load."

4. NOP 1-0030128, "Reactor Shutdown."

5. NOP 1-0030127, "Reactor Plant Cooldown - Hot Standby To Cold Shutdown."

6. OP 1-0010125A, "Surveillance Data Sheets," Data Sheet 1 (Reactor Coolant System Water Inventory Balance).

7. Ebasco P&ID 8770-G-080 Sheet 3 of 4.

8. Ebasco P&ID 8770-G-079 Sheet 1 of 6 and Sheet 5 of 6.

§1 9. St. Lucie Unit 1 Technical Specifications.

3.0 REFERENCES: (continued)

§2 10. EPRI TR-104788, PWR Primary-To-Secondary Leak Guidelines

11. COP-06.05, High Activity in a Steam Generator

12. COP-07.05, Process Monitor Setpoints

4.0 RECORDS REQUIRED:

1. Normal log entries.

5.0 ENTRY CONDITIONS:

Plant conditions indicate that a steam generator tube leak has occurred. Any one or more of the following symptoms may be present:

1. Condenser air ejector radiation monitor alarm or increasing trend.
2. Steam generator blowdown radiation monitor alarm or increasing trend.
3. Main steamline radiation monitor alarm or increasing trend.
4. High activity in steam generator liquid sample.
5. Increasing steam generator level.
6. Steam generator blowdown and sample valves closed due to high radiation.
7. Charging flow versus letdown plus RCP controlled bleedoff flow mismatch.

6.0 EXIT CONDITIONS:

1. Any of the Safety Function Status Check Acceptance Criteria from the Low Mode Off-Normal Procedure for the current plant condition are NOT met.

OR

2. Leakage is in excess of charging pump capacity.

OR

3. The affected steam generator has been isolated.

OR

4. Primary to secondary leakage is less than or equal to 30 gpd.

7.0 OPERATOR ACTIONS:

7.1 Immediate Operator Actions:

1. None

7.2 Subsequent Operator Actions:

INSTRUCTIONS	CONTINGENCY ACTIONS
1. **If in Mode 3 through Mode 6 and SIAS is blocked, Then go to step 7.2.3.**	
2. **If in Mode 1 through Mode 3 (SIAS NOT Blocked), Then:** A. If at any time RCS leakage exceeds the capacity of the charging pumps and pressurizer level cannot be maintained, Then: 1. If in Modes 1 and 2, Then trip the reactor and turbine and implement 1-EOP-01, "Standard Post Trip Actions." 2. If in Mode 3 (SIAS NOT Blocked), Then implement 1-EOP-04, "Steam Generator Tube Rupture."	

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
2. (continued)	2. (continued)

NOTE

Quick diagnosis of a tube leak and subsequent rapid isolation of the effected S/G will minimize secondary contamination and radiation exposure. Even before confirmation of a tube leak has been established, planning and preparation for unit shutdown and mitigating the affects should commence, by performing notifications, procedure reviews, crew briefings, and ensuring resources are available to tend to the unit conditions.

B. Ensure sufficient charging pumps are operating and maintaining pressurizer level.	B. If pressurizer level is NOT being maintained, Then isolate letdown to assist in maintaining pressurizer level.
C. Ensure steam generator blowdown and sample valves from the affected steam generator have closed on high radiation.	C. Manually close the S/G blowdown and sample valves from the affected steam generator.
D. Notify Health Physics of present plant conditions and to conduct secondary area radiation surveys.	
E. CLOSE V29372, N2 Gas to Cndsr Hotwell Isol, to isolate Nitrogen to the Condenser.	
F. CHECK Air Ejector monitor reading.	

/R18

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
2. (continued)	2. (continued)
G. If Air Ejector monitor shows step rise or continuous rise, Then perform the following:	G.
1. DIRECT Chemistry to implement COP-06.05, High Activity in a Steam Generator.	
2. ESTIMATE primary to secondary leakage by comparing Air Ejector monitor reading with Daily Chemistry Report.	
NOTE 150 gpd = 0.1 gpm	
3. VERIFY estimated primary to secondary leakage is less than 150 gpd in any one S/G.	3. **GO TO Step 7.2.2.O.** /R18A

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
2. (continued)	2. (continued)
G. (continued)	G. (continued)

NOTE
The following step is used to estimate the rate of change (acceleration) of the leak.
Example: Initially estimated leak rate is 40 gpd. 10 minutes later estimated leak rate is 50 gpd. 50 gpd - 40 gpd = 10 gpd increase in 10 minutes, which is an acceleration of 60 gpd/hr.

4. VERIFY estimated primary to secondary leakage acceleration is less than 60 gpd/hr.	4. **GO TO Step 7.2.2.O.** /R18A
5. VERIFY estimated primary to secondary leakage is less than or equal to 30 gpd.	5. PERFORM the following: a. ESTIMATE primary to secondary leakage by comparing Air Ejector monitor reading with Daily Chemistry Report every 15 minutes. b. CONTINUE with this procedure.

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS **CONTINGENCY ACTIONS**

2. (continued)

NOTE

A full isotopic analysis of steam generator water activity could take up to an hour. If an expeditious indication of gross activity is required, a frisk in the Secondary Lab or a gamma analysis in the Hot Lab, will yield the necessary information to determine the gross magnitude and source of the leak.

H. Notify Chemistry of present plant conditions and to sample both steam generators for activity. If a CIAS or high radiation signal has closed the steam generator sample valves, Then they may be opened to permit sampling as follows:

1. Place control switch for FCV-23-7/9 to CLOSE/OVERRIDE position and then take switch to OPEN position.

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS

2. (continued)

NOTE
A prompt determination of the leak rate takes precedence over fulfilling the 2 hour time requirement of Data Sheet 1.

NOTE
Figure 2, "Operator Action Flow Chart," identifies actions required to manage Primary to Secondary Steam Generator leaks.

I. Determine the primary to secondary leak rate, per Data Sheet 1, "Reactor Coolant System Water Inventory Balance."

§1

NOTE
If total tube leakage is greater than 1 GPM, Then the reactor must be in Hot Standby within 6 hours, and Cold Shutdown within the following 30 hours. Reference Daily Chemistry Report for projected Condenser Air Ejector Reading (CPM) with a 1 GPM Primary/Secondary Leak.

NOTE
A prompt expeditious shutdown is desired, however a controlled shutdown with minimal pressure transients takes precedence over a short duration to shutdown.

J. NOTIFY Plant Management of potential plant shutdown.

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
2. (continued)	2. (continued)
K. REVIEW procedures needed for plant shutdown.	
L. CONDUCT a shift brief.	
M. VERIFY RCS water inventory balance and Chemistry samples indicate primary to secondary leak rate is less than or equal to 30 gpd.	M. **RETURN TO Step 7.2.2.F.** /R18A
N. EXIT this procedure.	
O. If RCS inventory balance or Chemistry confirms primary to secondary leakage exceeds Tech Spec or Chemistry limits, Then COMMENCE a turbine shutdown at less than 5%/min in accordance with **ONE** of the following: • NOP-1-0030125, Turbine Shutdown - Full Load to Zero Load • 1-ONP-22.01, Rapid Downpower	

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
2. (continued)	
P. Initiate the emergency plan, if necessary.	
Q. Ensure condenser air ejector is aligned to the plant vent.	
R. Locally isolate auxiliary steam to auxiliary priming ejectors by closing V08245.	
S. If the Condensate Polisher Filter Demineralizer system is in service to Unit 1, Then shut down and isolate the system from Unit 1 per OP 0700026, "Condensate Polisher Filter Demineralizer Operation."	

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
2. (continued)	2. (continued)
T. When the turbine is tripped and the reactor is NOT shutdown, Then shutdown the reactor as follows:	T. If the reactor is shutdown, Then go to step 7.2.2.T.
1. Depress the MANUAL SEQUENTIAL (MS) pushbutton of the CEDS and insert the Regulating Groups into the core until nuclear power indicates less than or equal to 10^{-1}%.	
2. When nuclear power is less than or equal to 10^{-1}%, Then Open the Reactor Trip Circuit Breakers (TCBs).	
3. Verify core mimic display indicates dropped rods for all CEAs.	

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
2. (continued)	2. (continued)
T. (continued)	T. (continued)
4. Verify that shutdown margin is greater than or equal to 3600 PCM per 1-NOP-100.04, "Surveillance Requirements for Shutdown Margin, Modes 2, 3, 4, and 5 Subcritical."	
U. When the reactor is shutdown, Then PERFORM BOTH of the following: /R18	
1. COMMENCE an RCS cooldown until hot leg temperature is less than 525°F using the SBCS.	1. If the SBCS is NOT available, Then steam to atmosphere using the atmospheric steam dump valves and reevaluate the E-Plan classification. /R18
2. DEPRESSURIZE the RCS and maintain 20°F to 50°F subcooling per Figure 1, "RCS Pressure/ Temperature." /R18	

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
2. (continued)	
V. If RCS pressure and level are being controlled, Then when RCS pressure reaches 1700 psia and annunciator R-6 SIAS Channel Block Permissive alarms, perform the following:	
1. Block channels A and B of SIAS by turning the SIAS block key switches (Key 61) on RTGB 106 to the block position.	
2. Verify annunciators R-7 and R-8 SIAS Actuation Channel A (B) Blocked have annunciated.	
W. If continued use of SBCS is desired, Then block automatic initiation of MSIS at 700 psia (annunciators Q-18, Q-20), as follows:	

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS

2. (continued)

W. (continued)

1. Block MSIS by turning MSIS block key switches (Key 61) on RTGB 106 to the block position.

2. Ensure annunciators Q8 and (Q-10) MSIS Actuation Channel A (B) Blocked alarm when blocked.

CAUTION

To reduce the release of potentially radioactive steam from turbine driven pump exhaust, motor driven auxiliary or main feedwater pumps should be used. If the motor driven pumps are NOT available, steam from the unfaulted or least affected steam generator should be used to drive the turbine driven auxiliary feed pump.

X. Maintain steam generator level in the operating band (60% - 70% narrow range) using main or auxiliary feedwater system.

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS **CONTINGENCY ACTIONS**

2. (continued)

NOTE
If both steam generators are faulted, use the least affected steam generator for heat removal.

Y. Determine which steam generator has the tube leak by the following:

1. High activity or increasing radiation trends on one of the following:

   a. Steam generator liquid sample.

   b. Main steam line radiation monitors.

   c. Steam generator blowdown radiation monitors.

2. Increasing steam generator water level.

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
2. (continued)	2. (continued)

CAUTION
Steam trestle area may have higher than normal radiation levels.

Z. When RCS hot leg temperature is less than 525°F, Then isolate the affected steam generator by performing Appendix A, "Steam Generator Isolation."	
AA. Ensure the correct steam generator is isolated by checking the following: 1. Steam generator liquid samples for activity or secondary area radiation surveys. 2. Possible steam generator level increases.	AA. If the wrong steam generator was isolated, Then unisolate that steam generator and isolate the affected steam generator. 1. If both steam generators are affected, Then the steam generator with the highest activity should be isolated.

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
2. (continued)	2. (continued)
AB. Maintain the isolated steam generator level less than 100% (wide range) by depressurizing the RCS 0 to 50 psi less than the isolated steam generator pressure.	AB. If maintaining isolated generator level by backflow to RCS is NOT desired, Then: 1. Ensure sufficient capacity is available in the monitor storage tanks and blowdown cooling system is operable. 2. Locally close vacuum drag valves on both units (V31189 on Unit 1 and V31190 on Unit 2). 3. If CIAS or high radiation signal has closed the steam generator blowdown containment isolation valve, Then it may be opened as follows: a. 1A steam generator: Place control switch for FCV-23-3 to CLOSE/OVERRIDE position, then OPEN. Now open FCV-23-4.

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
2. (continued)	2. (continued)
	AB. (continued)
	3. (continued)
	b. 1B steam generator: Place control switch for FCV-23-5 to CLOSE/OVERRIDE position, then OPEN. Now open FCV-23-6.
	4. Ensure combined unit blowdown flow is limited to less than 300 gpm.
AC. Contact the Chemistry Department to sample the condensate for radioactivity and to report the results to the Control Room. The Chemistry Department Supervisor may determine an increased sampling frequency and additional sample points.	

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS

2. (continued)

CAUTION

When cooling down and depressurizing using only one steam generator, AFW flow to the operable steam generator may be isolated by the AFAS rupture identification circuitry. Should this occur, manual initiation of AFAS, to the operable steam generator, will be necessary.

AD. Cool and depressurize the isolated steam generator as the cooldown proceeds by one of the following methods:

1. Feed and bleed using main or auxiliary feedwater and blowdown to the MST(s).

2. Steaming the isolated steam generator to the main condenser.

3. Ambient cooling (takes approximately 24 hours).

4. Steaming the isolated steam generator to atmosphere.

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
2. (continued)	
AE. Continue cooldown using the non-affected steam generator per Normal Operating Procedure 1-0030127, "Reactor Plant Cooldown - Hot Standby To Cold Shutdown."	
3. Actions when in Mode 3 through Mode 6 with SIAS blocked.	3.

NOTE
If conditions continue to degrade or this procedure is NOT succeeding in stabilizing plant conditions, Then the Low Mode Off-Normal Procedure (LMONP) for the current plant condition should be implemented.

A. Perform safety function status check per Low Mode Off-Normal Procedure, Appendix A, for the current plant condition.	
B. Ensure sufficient charging pumps are operating and maintaining pressurizer level.	B. Isolate letdown to assist in maintaining pressurizer level.

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
3. (continued)	3. (continued)

NOTE

Quick diagnosis of a tube leak and subsequent rapid isolation of the effected S/G will minimize secondary contamination and radiation exposure. Even before confirmation of a tube leak has been established, planning and preparation for stopping the leak and mitigating its affects should commence, by performing notifications, procedure reviews, crew briefings, and ensuring resources are available to tend to the unit conditions.

C. Ensure steam generator blowdown and sample valves from the affected steam generator have closed on high radiation.	C. Manually close the S/G blowdown and sample valves from the affected steam generator.
D. Notify Health Physics of present plant conditions and to conduct secondary area radiation surveys.	
E. CLOSE V29372, N2 Gas to Cndsr Hotwell Isol, to isolate Nitrogen to the Condenser.	/R18
F. CHECK Air Ejector monitor reading.	

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
3. (continued)	3. (continued)
G. If Air Ejector monitor shows step rise or continuous rise, Then perform the following:	G.
1. DIRECT Chemistry to implement COP-06.05, High Activity in a Steam Generator.	
2. ESTIMATE primary to secondary leakage by comparing Air Ejector monitor reading with Daily Chemistry Report.	
NOTE 150 gpd = 0.1 gpm	
3. VERIFY estimated primary to secondary leakage is less than 150 gpd in any one S/G.	3. **GO TO Step 7.2.3.N.** /R18A

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
3. (continued)	3. (continued)
G. (continued)	G. (continued)

NOTE

The following step is used to estimate the rate of change (acceleration) of the leak.

Example: Initially estimated leak rate is 40 gpd. 10 minutes later estimated leak rate is 50 gpd. 50 gpd - 40 gpd = 10 gpd increase in 10 minutes, which is an acceleration of 60 gpd/hr.

4. VERIFY estimated primary to secondary leakage acceleration is less than 60 gpd/hr.	4. **GO TO Step 7.2.3.N.** /R18A
5. VERIFY estimated primary to secondary leakage is less than or equal to 30 gpd.	5. PERFORM the following: a. ESTIMATE primary to secondary leakage by comparing Air Ejector monitor reading with Daily Chemistry Report every 15 minutes. b. CONTINUE with this procedure.

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
3. (continued)	
H. Notify Chemistry of present plant conditions and to sample both steam generators for activity. If a CIAS or high radiation signal has closed the steam generator sample valves, Then they may be opened to permit sampling as follows:	
1. Place control switch for FCV-23-7/9 to CLOSE/OVERRIDE position and then take switch to OPEN position.	

NOTE

- Reference Daily Chemistry Report for projected Condenser Air Ejector Reading (CPM) with a 1 GPM Primary/Secondary Leak.
- A prompt determination of the leak rate takes precedence over fulfilling the 2 hour time requirement of Data Sheet 1.
- Figure 2, "Operator Action Flow Chart," identifies actions required to manage Primary to Secondary Steam Generator leaks.

I. If possible, Then determine the primary to secondary leak rate, per Date Sheet 1, "Reactor Coolant System Water Inventory Balance."

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
3. (continued)	3. (continued)
J. NOTIFY Plant Management of plant status.	
K. CONDUCT a shift brief.	
L. VERIFY RCS water inventory balance and Chemistry samples indicate primary to secondary leak rate is less than or equal to 30 gpd.	L. **RETURN TO Step 7.2.3.F.** /R18A
M. EXIT this procedure.	
N. Initiate the emergency plan, if necessary.	

CAUTION

To reduce the release of potentially radioactive steam from turbine driven pump exhaust, motor driven auxiliary or main feedwater pumps should be used. If the motor driven pumps are NOT available, steam from the unfaulted or least affected steam generator should be used to drive the turbine driven auxiliary feed pump.

/R18

O. Ensure condenser air ejector is aligned to the plant vent.

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
3. (continued)	3. (continued)
P. Locally isolate auxiliary steam to auxiliary priming ejectors by closing V08245.	
Q. If the Condensate Polisher Filter Demineralizer system is in service to Unit 1, Then shut down and isolate the system from Unit 1 per OP 0700026, "Condensate Polisher Filter Demineralizer Operation."	
R. Cool down the RCS until hot leg temperature is less than 525°F using the SBCS.	R. If the SBCS is NOT available, Then steam to atmosphere using the atmospheric steam dump valves and revaluate the E-Plan classification.
S. Depressurize the RCS and maintain 20°F to 50°F subcooling per Figure 1, "RCS Pressure/ Temperature."	

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
3. (continued)	
T. If continued use of SBCS is desired, Then block automatic initiation of MSIS at 700 psia (annunciators Q-18, Q-20), as follows:	
1. Block MSIS by turning MSIS block key switches (Key 61) on RTGB 106 to the block position.	
2. Ensure annunciators Q-8 and (Q-10) MSIS Actuation Channel A (B) Blocked alarm when blocked.	
U. Maintain steam generator level in the operating band (60% - 70% narrow range) using main or auxiliary feedwater system.	

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS

3. (continued)

NOTE
If both steam generators are faulted, use the least affected steam generator for heat removal.

V. Determine which steam generator has the tube leak by the following:

1. High activity or increasing radiation trends on one of the following:

   a. Steam generator liquid sample.

   b. Main steam line radiation monitors.

   c. Steam generator blowdown radiation monitors.

2. Increasing steam generator water level.

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
3. (continued)	3. (continued)

CAUTION
Steam trestle area may have higher than normal radiation levels.

W. When RCS hot leg temperature is less than 525°F, Then isolate the affected steam generator by performing Appendix A, "Steam Generator Isolation."	
X. Ensure the correct steam generator is isolated by checking the following: 1. Steam generator liquid samples for activity or secondary area radiation surveys. 2. Possible steam generator level increases.	X. If the wrong steam generator was isolated, Then unisolate that steam generator and isolate the affected steam generator. 1. If both steam generators are affected, Then the steam generator with the highest activity should be isolated.
Y. Maintain the isolated steam generator level less than 100% (wide range) by depressurizing the RCS 0 to 50 psi less than the isolated steam generator pressure.	Y. If maintaining isolated generator level by backflow to RCS is NOT desired, Then:

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
	3. (continued)
	Y. (continued)
	1. Ensure sufficient capacity is available in the monitor storage tanks and blowdown cooling system is operable.
	2. Locally close vacuum drag valves on both units (V31189 on Unit 1 and V31190 on Unit 2).
	3. If CIAS or high radiation signal has closed the steam generator blowdown containment isolation valve, Then it may be opened as follows:
	a. 1A steam generator: Place control switch for FCV-23-3 to CLOSE/OVERRIDE position, then OPEN. Now open FCV-23-4.
	b. 1B steam generator: Place control switch for FCV-23-5 to CLOSE/OVERRIDE position, then OPEN. Now open FCV-23-6.

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
3. (continued)	3. (continued)
	Y. (continued)
	4. Ensure combined unit blowdown flow is limited to less than 300 gpm.
Z. Contact the Chemistry Department to sample the condensate for radioactivity and to report the results to the Control Room. The Chemistry Department Supervisor may determine an increased sampling frequency and additional sample points.	

CAUTION

When cooling down and depressurizing using only one steam generator, AFW flow to the operable steam generator may be isolated by the AFAS rupture identification circuitry. Should this occur, manual initiation of AFAS, to the operable steam generator, will be necessary.

AA. Cool and depressurize the isolated steam generator as the cooldown proceeds by one of the following methods:

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS	CONTINGENCY ACTIONS
3. (continued)	
AA. (continued)	
1. Feed and bleed using main or auxiliary feedwater and blowdown to the MST(s).	
2. Steaming the isolated steam generator to the main condenser.	
3. Ambient cooling (takes approximately 24 hours).	
4. Steaming the isolated steam generator to atmosphere.	
AB. Continue cooldown using the non-affected steam generator per Normal Operating Procedure 1-0030127, "Reactor Plant Cooldown - Hot Standby To Cold Shutdown."	

APPENDIX A
STEAM GENERATOR ISOLATION
(Page 1 of 4)

> CAUTION
> The steam trestle area may have higher than normal radiation levels.

1. To isolate the 1A Steam Generator:

   A. Close HCV-08-1A, Main Steam Hdr. A Isolation Valve (MSIV).

   B. Close or verify closed MV-08-1A, MSIV Header A Bypass Valve.

   C. Close MV-09-7, Main Feedwater Isolation Valve to S/G 1A.

   D. Close or verify closed FCV-23-3 and FCV-23-4, 1A Steam Generator Blowdown Isolation Valves.

   E. Verify closed PIC-08-1A, S/G 1A Atmospheric Dump Valve.

      1. If PIC-08-1A, S/G 1A Atmospheric Dump Isolation Valve can NOT be closed, Then locally close V08114, ADV Isolation Valve.

   F. Stop feedwater flow to the 1A Steam Generator from RTGB and place 1A AFW pump control switch to OFF.

   G. Locally close V09120 and V09152, 1A and 1C AFW Pump Isolations to 1A S/G.

   H. Isolate 1C AFW Pump steam supply from the 1A Steam Generator as follows:

      1. If access to AFW Area is available, Then:

         a. Place 1C AFW pump control switch Start-Stop-Start to the START position for the 1B Steam Generator.

         b. Place AFAS AB Bypass Keyswitch to BYPASS.

APPENDIX A
STEAM GENERATOR ISOLATION
(Page 2 of 4)

1. (continued)

H. (continued)

1. (continued)

c. Close MV-08-13, S/G 1A Steam to AFW Pump 1C, using local pushbutton. (located approximately 4 feet east of 1C AFW pump.)

OR

d. If MV-08-13, S/G 1A Steam to AFW Pump 1C, can NOT be closed manually, Then locally close V08113, MV-08-13 Upstream Isolation.

e. Locally close V08387, MV-08-13 Bypass Valve.

2. If the AFW Area is inaccessible, Then:

CAUTION
This step will terminate auxiliary feed flow from the 1C AFW pump.

a. Position AFAS AB Bypass Keyswitch to BYPASS (closes both steam supply valves and MV-08-3 trip and throttle valve).

b. Place 1C AFW pump control switch Start-Stop-Start to the STOP position.

c. After AFW pump coastdown, place 1C AFW pump control switch to START for the B S/G and restore 1C AFW flow if desired.

d. When AFW area is accessible, Then close V08387, MV-08-13 Bypass Valve.

APPENDIX A
STEAM GENERATOR ISOLATION
(Page 3 of 4)

2. To isolate the 1B Steam Generator:

   A. Close HCV-08-1B, Main Steam Hdr. B Isolation Valve (MSIV).

   B. Close or verify closed MV-08-1B, MSIV Header B Bypass Valve.

   C. Close MV-09-8, Main Feedwater Isolation Valve to S/G 1B.

   D. Close or verify closed FCV-23-5 and FCV-23-6, 1B Steam Generator Blowdown Isolation Valves.

   E. Verify closed PIC-08-1B, Atmospheric Dump Valve.

      1. If PIC-08-1B, S/G 1B Atmospheric Dump Isolation Valve can NOT be closed, Then locally close V08145, ADV Isolation Valve.

   F. Stop feedwater flow to the 1B Steam Generator from RTGB and place 1B AFW pump control switch to OFF.

   G. Locally close V09136 and V09158, 1B and 1C AFW Pump Isolations to 1B S/G.

   H. Isolate 1C AFW pump steam supply from the 1B Steam Generator as follows:

      1. If access to AFW area is available, Then:

         a. Place 1C AFW pump control switch Start-Stop-Start to the START position for the 1A Steam Generator.

         b. Place AFAS AB Bypass Keyswitch to BYPASS.

         c. Close MV-08-14, S/G 1B Steam to AFW Pump 1C using local pushbutton. (Located approximately 5 feet northeast of 1A AFW pump.)

OR

APPENDIX A
STEAM GENERATOR ISOLATION
(Page 4 of 4)

2. (continued)

H. (continued)

1. (continued)

d. If MV-08-14, S/G 1B Steam to AFW Pump 1C, can NOT be closed manually, Then locally close V08144, MV-08-14 Upstream Isolation.

e. Locally close V08384, MV-08-14 Bypass Valve.

2. If the AFW Area is inaccessible, Then:

> CAUTION
> This step terminates auxiliary feed flow from 1C AFW pump.

a. Position AFAS AB Bypass Keyswitch to BYPASS (closes both steam supply valves and MV-08-3 trip and throttle valve).

b. Place 1C AFW pump control switch Start-Stop-Start to the STOP position.

c. If desire, Then after AFW pump coastdown, place 1C AFW pump control switch to START for the 1A S/G in service and restore 1C AFW flow.

d. When AFW area is accessible, Then close V08384, MV-08-14 Bypass Valve.

END OF APPENDIX A

FIGURE 1
RCS PRESSURE/TEMPERATURE

CAUTION

When below the RCP seal requirement curve, RCP instrumentation should be monitored for indication of pump cavitation, for minimum seal requirements, RCP operations below 250 psia should be avoided.

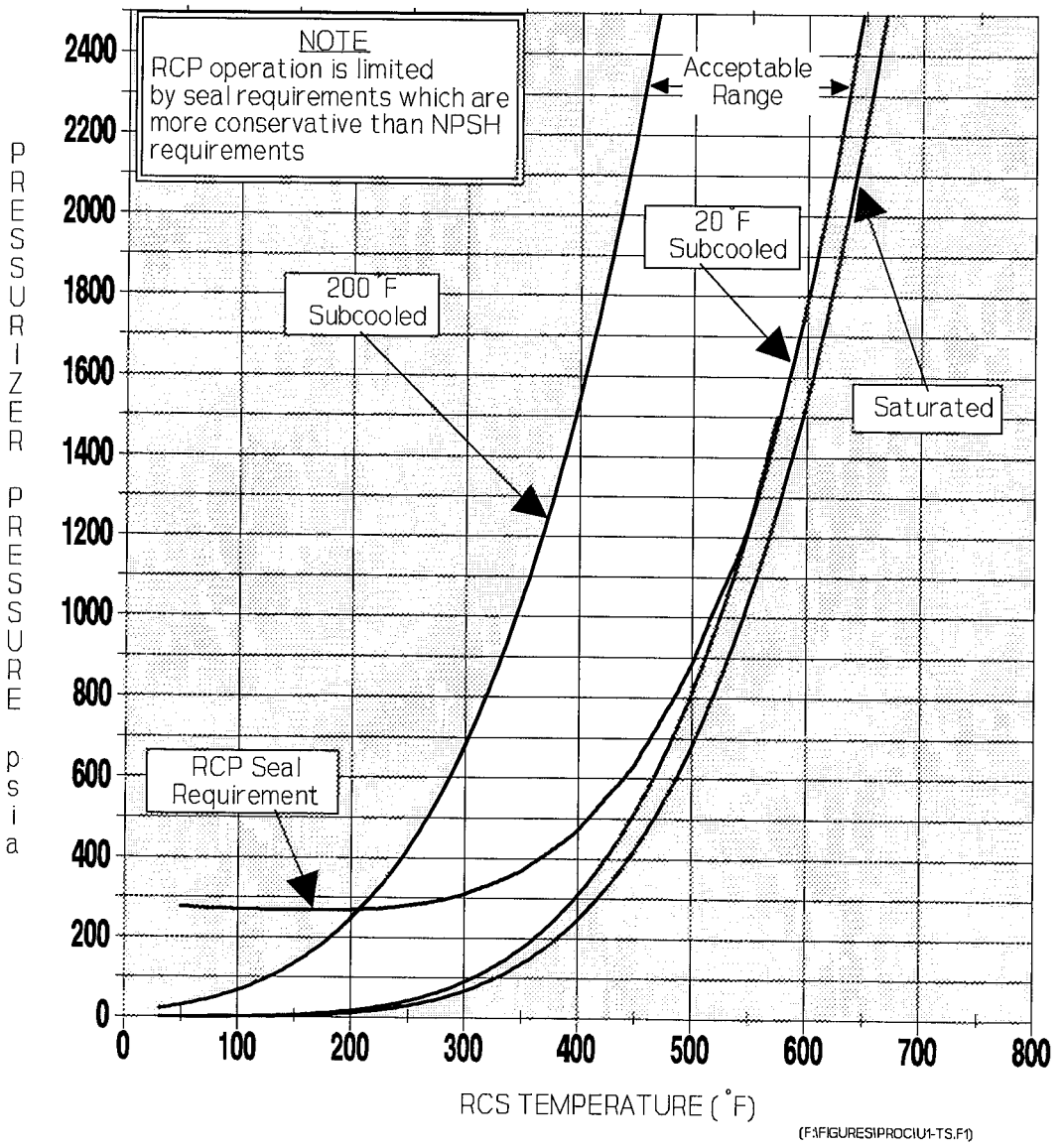
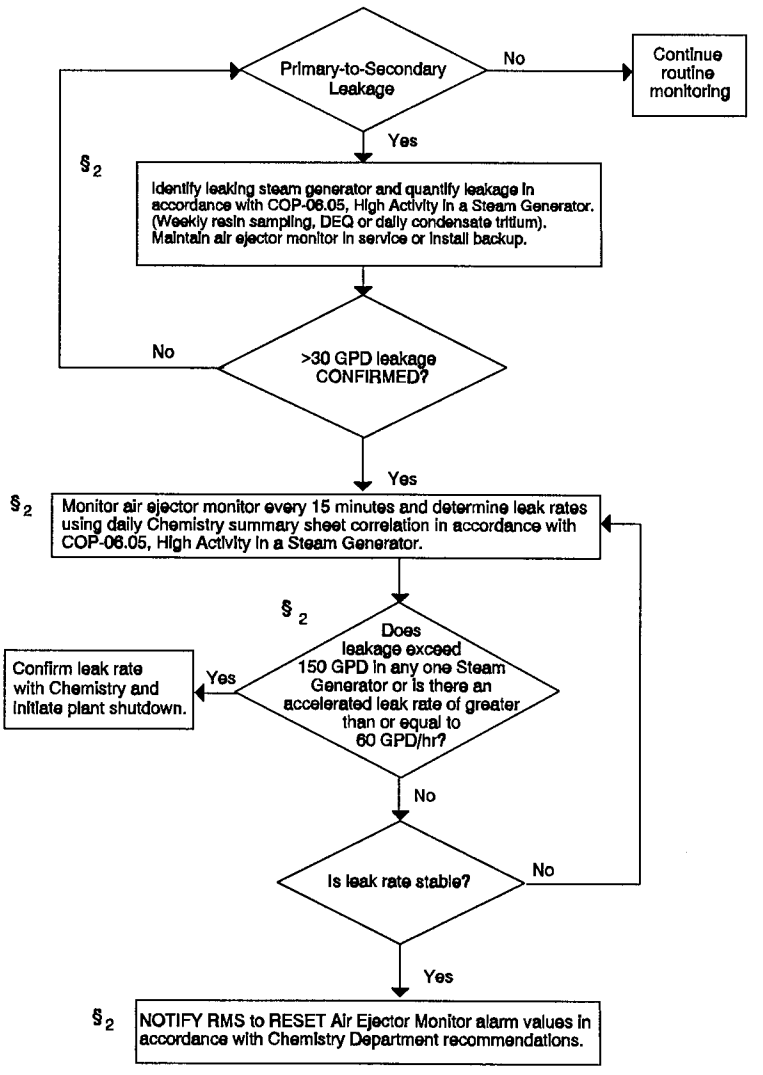


FIGURE 2
OPERATOR ACTION FLOW CHART

NOTE

Rapid estimations of Primary and Secondary leakage can be determined using the current Air Ejector monitor readings and the Daily Chemistry Summary Report that lists monitor readings for leakage of 1 gpm, 30 gpd, 60 gpd and 150 gpd.



(0830030B.WPG)