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JOSEPH A. WIDAY
VICE PRESIDENT & PLANT MANAGER
GINNA STATION

November 21, 2002

U.S. Nuclear Regulatory Commission
Document Control Desk
Attn: Robert Clark
Project Directorate I
Washington, D.C. 20555

Subject: Emergency Operating Procedures
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Clark:

As requested, enclosed are Ginna Station Emergency Operating Procedures.

Very truly yours,

Joseph A. Widay

Joseph A. Widay

JAW/jdw

xc: U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406-1415

Ginna USNRC Senior Resident Inspector

Enclosure(s):

AP Index
AP-SG.1, Rev 3

A045

PARAMETERS: DOC TYPES - PRAP PRRSSP STATUS· EF QU 5 YEARS ONLY·

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
AP-CCW.1	LEAKAGE INTO THE COMPONENT COOLING LOOP	015	06/26/02	06/26/02	06/26/07	EF
AP-CCW.2	LOSS OF CCW DURING POWER OPERATION	017	11/19/02	06/26/02	06/26/07	EF
AP-CCW.3	LOSS OF CCW - PLANT SHUTDOWN	015	11/19/02	06/26/02	06/26/07	EF
AP-CR.1	CONTROL ROOM INACCESSIBILITY	018	06/26/02	06/26/02	06/26/07	EF
AP-CVCS.1	CVCS LEAK	013	06/26/02	06/03/02	06/03/07	EF
AP-CVCS.3	LOSS OF ALL CHARGING FLOW	003	06/26/02	02/26/99	02/26/04	EF
AP-CW.1	LOSS OF A CIRC WATER PUMP	011	06/26/02	05/01/98	05/01/03	EF
AP-ELEC 1	LOSS OF 12A AND/OR 12B BUSSES	023	06/26/02	06/26/02	06/26/07	EF
AP-ELEC 2	SAFEGUARD BUSSES LOW VOLTAGE OR SYSTEM LOW FREQUENCY	010	06/26/02	06/26/02	06/26/07	EF
AP-ELEC.3	LOSS OF 12A AND/OR 12B TRANSFORMER (BELOW 350 F)	011	06/26/02	06/26/02	06/26/07	EF
AP-ELEC.14/16	LOSS OF SAFEGUARDS BUS 14/16	004	06/26/02	06/26/02	06/26/07	EF
AP-ELEC.17/18	LOSS OF SAFEGUARDS BUS 17/18	004	06/26/02	06/26/02	06/26/07	EF
AP-FW.1	ABNORMAL MAIN FEEDWATER FLOW	014	07/25/02	06/26/02	06/26/07	EF
AP-IA.1	LOSS OF INSTRUMENT AIR	018	06/26/02	05/01/98	05/01/03	EF
AP-PRZR.1	ABNORMAL PRESSURIZER PRESSURE	013	06/26/02	06/26/02	06/26/07	EF
AP-RCC.1	CONTINUOUS CONTROL ROD WITHDRAWAL/INSERTION	008	06/26/02	05/14/98	05/14/03	EF
AP-RCC.2	RCC/RPI MALFUNCTION	010	06/26/02	01/22/02	01/22/07	EF
AP-RCC.3	DROPPED ROD RECOVERY	005	06/26/02	02/27/98	02/27/03	EF
AP-RCP.1	RCP SEAL MALFUNCTION	014	06/26/02	05/01/98	05/01/03	EF
AP-RCS.1	REACTOR COOLANT LEAK	016	06/26/02	05/01/98	05/01/03	EF
AP-RCS.2	LOSS OF REACTOR COOLANT FLOW	011	06/26/02	05/01/98	05/01/03	EF
AP-RCS.3	HIGH REACTOR COOLANT ACTIVITY	010	06/26/02	04/01/02	01/22/07	EF
AP-RCS.4	SHUTDOWN LOCA	012	06/26/02	05/01/98	05/01/03	EF
AP-RHR.1	LOSS OF RHR	018	07/25/02	05/01/98	05/01/03	EF

PARAMETERS: DOC TYPES - PRAP PRRSSP STATUS EF QU 5 YEARS ONLY:

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
AP-RHR.2	LOSS OF RHR WHILE OPERATING AT RCS REDUCED INVENTORY CONDITIONS	012	05/30/02	03/31/00	03/31/05	EF
AP-SG.1	STEAM GENERATOR TUBE LEAK	003	11/21/02	06/26/02	06/26/07	EF
AP-SW.1	SERVICE WATER LEAK	017	06/26/02	06/03/98	06/03/03	EF
AP-SW.2	LOSS OF SERVICE WATER	002	06/26/02	10/31/01	10/31/06	EF
AP-TURB.1	TURBINE TRIP WITHOUT RX TRIP REQUIRED	011	06/26/02	06/26/02	06/26/07	EF
AP-TURB.2	TURBINE LOAD REJECTION	018	06/26/02	06/26/02	06/26/07	EF
AP-TURB.3	TURBINE VIBRATION	011	06/26/02	06/26/02	06/26/07	EF
AP-TURB.4	LOSS OF CONDENSER VACUUM	016	07/25/02	05/01/98	05/01/03	EF
AP-TURB.5	RAPID LOAD REDUCTION	006	06/26/02	06/26/02	06/26/07	EF

TOTAL FOR PRAP 33

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

RESPONSIBLE MANAGER

11-21-2002

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

A. PURPOSE - This procedure provides the necessary instructions to be taken in the event of a Steam Generator tube leak within the capacity of the charging pumps.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITION - This procedure is entered from:

   a. AP-RCS.1, REACTOR COOLANT LEAK, if S/G tube leak is indicated.

   b. AR-PPCS-1, SGTL INDICATED, when R-15A-5 is increasing for greater than one minute.

   c. AR-RMS-15, R15 AIR EJECTOR, AR-RMS-19, R-19 STEAM GEN BLOWDOWN, when SG sample indicates a tube leakrate of greater than 5 gpd.

   d. AR-RMS-31, R31 STEAM LINE A and AR-RMS-32, R32 STEAM LINE B when other indications of SG tube leakage exist.

   e. Shift Supervisor discretion.

2. SYMPTOMS - Symptoms of STEAM GENERATOR TUBE LEAK are:

   a. Primary to secondary tube leak rate in one S/G has been verified by sampling to be greater than or equal to 5 gpd.

   b. Either of the following indicating a leak rate of greater than or equal to 5 gpd AND increasing for greater than one minute:

      o R15A5G

      OR

      o Sping (using R15A5 conversion table, Curve Book #06-004)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
* 1	Monitor PRZR Level - STABLE AT PROGRAM LEVEL	IF PRZR level decreasing, THEN start additional charging pumps and increase speed as necessary to stabilize PRZR level. IF PRZR level continues to decrease, THEN close letdown isolation, AOV-427 and excess letdown AOV-310. IF available charging pumps are running at maximum speed with letdown isolated, AND PRZR level is decreasing, THEN trip the reactor and go to E-0, REACTOR TRIP OR SAFETY INJECTION.
* 2	Monitor S/G Tube Leak Rate: a. Estimate S/G tube leak rate: o Charging/Letdown mismatch o Δ VCT o PPCS Point R15A5G o SPING (using R15A5 conversion table, Curve Book #06-004)	
	b. Check total RCS to secondary leak rate - LESS THAN 1 GALLON PER MINUTE (1440 GPD)	b. Go to Step 8.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

3 Trend S/G Leak Rate:

a. While continuing with this procedure, perform Part A of ATT-16.1, ATTACHMENT SGTL

b. Determine S/G leak rate:

- o PPCS point R15A5G

-OR-

- o SPING (using R15A5 conversion table, Curve Book #06-004)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	Determine If Shutdown Required:	
	a. S/G tube leak rate - GREATER THAN OR EQUAL TO 5 GPD	a. Perform the following: 1) Notify higher supervision 2) Return to guidance in effect
	b. S/G tube leak rate - GREATER THAN OR EQUAL TO 30 GPD	b. Perform the following: 1) Notify higher supervision 2) Determine S/G tube leak rate at least once per hour o PPCS point R15A5G -OR- o SPING (using R15A5 conversion table, Curve Book #06-004) 3) IF leak rate is stable OR decreasing for 4 consecutive samples, THEN reduce leak rate trending to at least once per 4 hours. o PPCS point R15A5G -OR- o SPING (using R15A5 conversion table, Curve Book #06-004) 4) Return to Step 1.

This Step continued on the next page.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

(Step 4 continued from previous page)

c. S/G tube leak rate - GREATER THAN OR EQUAL TO 75 GPD

c. Perform the following:

1) Notify higher supervision

2) Determine S/G leak rate every 15 minutes (IF performing a procedural loop, THEN use trending rates previously determined in Step 5)

- o PPCS point R15A5G

-OR-

- o SPING (using R15A5 conversion table, Curve Book #06-004)

3) Go to Step 5.

d. S/G tube leak rate - STABLE OR INCREASING

d. Perform the following:

1) Notify higher supervision

2) IF the leak rate spiked to greater than 144 gpd, THEN go to Step 6.

IF the leak rate spiked to less than 144 gpd but has remained greater than 75 gpd for at least one hour, THEN go to Step 6.

IF the leak rate spiked to less than 144 gpd AND has decreased to less than 75 gpd within one hour, THEN return to Step 4b.

e. Go to Step 6.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

5 Determine Trending Requirements:

a. S/G leak rate - INCREASES LESS THAN 10% DURING A ONE HOUR PERIOD — a. Return to Step 1.

- o PPCS point R15A5G
- o SPING (using R15A5 conversion table, Curve Book #06-004)
- o Grab sample

b. Trend S/G leak rate at least once per hour

- o PPCS point R15A5G

-OR-

- o SPING (using R15A5 conversion table, Curve Book #06-004)

c. Review E-3, STEAM GENERATOR TUBE RUPTURE.

d. At least 24 hours since one-hour leak rate trending began. — d. Return to Step 1.

e. S/G leak rate - INCREASES LESS THAN 10% DURING the last 24 HOURS — e. Return to Step 1.

f. Trend S/G leak rate at least once per 4 hours

- o PPCS point R15A5G

-OR-

- o SPING (using R15A5 conversion table, Curve Book #06-004)

g. Return to Step 1.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Confirm S/G Leak Rate: a. At least two independent indications - TREND IN THE SAME DIRECTION o R-31 o R-32 o PPCS point R15A5G OR SPING (using R15A5 conversion table, Curve Book #06-004) o R-15 o R-19 o Grab samples (only allowed for confirming leaks less than 144 gpd which increase at less than 30 gpd/hr) b. Notify higher supervision c. While continuing with this procedure, perform Parts A AND B of ATT-16.1, ATTACHMENT SGTL	a. IF an instrument failure can be confirmed, THEN return to guidance in effect. Otherwise return to Step 4.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

MAINTAIN PRZR LEVEL AT 50% TO ACCOMMODATE RCS SHRINKING DURING PLANT SHUTDOWN AND COOLDOWN

* *

NOTE: Measured leakrate depends on RCS activity level, which may increase or decrease during power reduction, depending on fuel condition. Therefore, once the power reduction has begun, R-15A should NOT be used to determine if the rate of power reduction should be changed.

7 Initiate Plant Shutdown

a. Determine S/G leakrate every 15 minutes

- o PPCS point R15A5G

-OR-

- o SPING (using R15A5 conversion table, Curve Book #06-004)

b. Check S/G leak rate - INCREASING LESS THAN 30 GPD/HR

- o Leak increases less than 15 gpd in 30 minutes (R15A5G or SPING)
- o Grab samples indicate less than 30 GPD increase in 60 minutes

b. Perform the following:

1) Reduce power to less than 50% RTP within 1 hour of exceeding 30 gpd/hr. (Refer to AP-TURB.5, RAPID LOAD REDUCTION)

2) Be in Mode 3 within 3 hours of exceeding 30 gpd/hr. (Refer to O-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN)

3) Go to Step 7g.

This Step continued on the next page.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

(Step 7 continued from previous page)

c.	Check R15A5 - OPERABLE	c. Perform the following: 1) Be in Mode 3 within 6 hours of exceeding 75 gpd.. (Refer to O-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN) 2) Go to Step 7g.
d.	Check S/G leak rate - HAS REMAINED LESS THAN 144 GPD SINCE LEAK INITIATION	d. Perform the following: 1) Be in Mode 3 within 6 hours of exceeding 144 gpd. (Refer to O-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN) 2) Go to Step 7g.
e.	Check S/G leak rate - REMAINED GREATER THAN 75 GPD FOR GREATER THAN ONE HOUR	e. Return to Step 1.
f.	Be in Mode 3 within 24 hours of exceeding 75 gpd (Refer to O-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN)	
g.	Refer to ITS o LCO 3.4.13 o LCO 3.4.16 o LCO 3.7.14	
h.	Check reactor - IN MODE 3	h. Return to Step 7a.
i.	Go to Step 26.	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Initiate Load Reduction	
	a. Notify higher supervision.	
	b. Verify rods in AUTOMATIC	b. Perform the following: 1) Place rods to MANUAL. 2) Adjust rods to match Tavg and Tref.
	c. Reduce turbine load in Auto as follows: 1) Place Turbine EH Control in OPER PAN., IMP PRESS IN, if desired. 2) Select rate of 3%/min on thumbwheel. 3) Reduce the setter to zero. 4) Depress the GO button.	c. IF Auto Control is inoperable, THEN reduce turbine load in manual at 3%/min.
	d. Steam dump armed and operating: o Annunciator G-15, STEAM DUMP ARMED - LIT o Steam dump operating properly in AUTO	d. IF steam dump required but NOT operating, THEN perform the following: 1) Place STEAM DUMP MODE SELECTOR Switch to MANUAL. 2) Place steam dump controller, HC-484, to MANUAL. 3) Operate steam dump valves manually as necessary.
	e. Place PRZR backup heaters switch to ON.	
	f. Transfer 4160V Auxiliary load from #11 Transformer. (Refer to ATT-23.0, ATTACHMENT TRANSFER 4160V LOADS)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

EXTREME AND RAPID ROD MOTION TO MITIGATE TAVG SWINGS MAY RESULT IN LARGE POWER EXCURSIONS AND SHOULD BE AVOIDED.

* *

* 9 Monitor RCS Tavg

- o Tavg - GREATER THAN 545°F
- o Tavg - LESS THAN 566°F

Verify control rods responding in AUTO. IF NOT, THEN place rods to MANUAL and adjust control rods to restore Tavg within limits.

IF Tavg is outside limits AND can NOT be controlled, THEN trip the reactor and go to E-0, REACTOR TRIP OR SAFETY INJECTION.

NOTE: The thumb rule for initial boron addition is ~2 gal/% load reduction.

10 Add Boric Acid As Necessary To:

- o Maintain or return Δ Flux to the target band
- o Maintain control rods above insertion limits
- o Match Tavg and Tref
- o Compensate for Xenon

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

11 While Continuing With This Procedure, Perform The Following:

a. Perform parts A AND B of ATT-16.1, ATTACHMENT SGTL

b. Dispatch an AO to perform T-35H, NUCLEAR HOUSE HEATING STEAM TO BOILER STEAM SUPPLY CHANGE OVER

12 Request RP to obtain the following samples:

- RCS boron
- RCS activity (ITS 3.4.16)

NOTE: It is permissible to operate RCPs for limited periods without seal injection, provided CCW is being supplied to the thermal barriers.

13 Check IA Available To CNMT

- o IA pressure - > 60 psig
- o Instr Air to CNMT Isol Valve, AOV-5392 - OPEN

Control PRZR level and pressure as follows:

- o Adjust load reduction rate
- o Ensure control rods are moving to control Tavg
- o IF CCW supplied to BOTH RCP thermal barrier heat exchangers, THEN start/stop charging pumps as necessary to control PRZR level
- o Operate proportional and backup heaters to control PRZR pressure

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: With PRZR pressure controller 431K in manual, PORV-431C will not operate in the automatic mode. (Refer to TR 3.4.3)

***14** Monitor PRZR Pressure - TRENDING TO 2235 PSIG IN AUTO

Control PRZR pressure by one of the following:

- 431K in MANUAL
- Manual control of PRZR heaters and sprays

IF PRZR pressure can NOT be controlled manually, THEN refer to AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE.

***15** Monitor MFW Regulating Valves - RESTORING S/G LEVEL TO 52% IN AUTO

Perform the following:

a. Place affected S/G(s) MFW regulating valve in MANUAL

b. Restore S/G level to 52%

IF S/G level can NOT be controlled manually, THEN refer to AP-FW.1, ABNORMAL MAIN FEEDWATER FLOW.

***16** Monitor PRZR Level - TRENDING TO PROGRAM IN AUTO CONTROL

Perform the following:

a. Place affected charging pumps in MANUAL

b. Adjust charging pump speed to restore PRZR level to program

IF PRZR level can NOT be controlled manually, THEN refer to AP-RCS.1, REACTOR COOLANT LEAK.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: The load reduction should not be delayed to perform the remaining steps.

17 Check If Condensate Booster Pumps Should Be Secured

a. Power < 65% OR Trim Valve V-9508G indicates > 80% open

a. WHEN power < 65% OR Trim Valve V-9508G indicates 80% open, THEN continue with Step 17b.

b. Place the auto condensate booster pump to the trip position

c. Stop one condensate booster pump

d. WHEN condensate system pressures stabilize, THEN stop the remaining condensate booster pump

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Check If One MFW Pump Should Be Secured	
	a. Power < 50%	a. WHEN power < 50%, THEN continue with step 18b.
	b. Verify at least one MFWP Seal Booster pump in service	b. Notify AO to start one MFWP Seal Booster pump
	c. Two MFW Pumps running	c. Go to Step 19.
	d. Close discharge valve for the pump to be secured • MFW Pump A - MOV-3977 • MFW Pump B - MOV-3976	
	e. Stop the desired MFW Pump	
	f. Close the secured MFW pump recirc valve by placing the control switch in pull stop	
	g. Close the service water block valve to the secured MFW pump oil cooler • MFW Pump A - V-4701 • MFW Pump B - V-4702	
19	Verify Trim Valves Controlling Condensate System Pressure In Auto (300-375 PSIG)	Place controller in manual and control pressure between 300-375 psig

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

IF MAIN FEEDWATER FLOW SHOULD DECREASE TO 25% OF FULL POWER VALUE (.825 E+6 LBM/HR) PRIOR TO THE AMSAC SYSTEM AUTOMATICALLY BLOCKING, THEN A TURBINE TRIP AND AUX FEED PUMPS START COULD RESULT.

* *

20 Check AMSAC System Status

a. Power < 35% (~150 psig first stage pressure)

a. Continue with Step 21. WHEN power < 35% (~150 psig first stage pressure), THEN do Step 20b.

b. Verify AMSAC Auto Block Status Light is ON

b. Place AMSAC Manual Block switch to the BLOCK position

21 Check Heater Drain Tank Pump Status

a. Generator load < 175 MWe

a. WHEN generator load < 175 MWe, THEN continue with Step 21b.

b. Stop one Heater Drain Tank Pump

c. WHEN Heater Drain Tank level control is stable, THEN stop the second Heater Drain Tank Pump

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
22	Check MFW Regulating Bypass Vlv Status	
	a. Power < 30%	a. WHEN power < 30%, THEN continue with Step 22b.
	b. MFW Regulating Bypass Vlvs in AUTO • HCV-480 • HCV-481	b. Perform the following: 1) Slowly open the MFW Regulating Bypass Vlvs while verifying the associated MFW Regulating Vlv compensates by closing slightly 2) Place MFW Regulating Bypass Vlvs in AUTO
23	Align Systems for Low Power Operation	
	a. Place AOV-3959, CNDST Bypass Vlv to CLOSE	
	b. Place LC-107, Hotwell Level Control, to MANUAL at 50%	
	c. Generator load < 100 MWe	c. WHEN generator load < 100 MWe, THEN continue with step 23d.
	d. Open turbine drain valves	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
24	Check If Turbine Should Be Tripped:	
	a. Check turbine load - ≤ 15 MW	a. WHEN turbine load is ≤ 15 MW, THEN continue with Step 24b.
	b. Trip the turbine.	
	c. Verify annunciator G-15, STEAM DUMP ARMED - LIT	c. Place steam dump mode selector switch to MANUAL.
	d. Condenser steam dump operating in AUTO	d. IF steam dump NOT available, THEN perform the following: 1) IF power is greater than 8%, THEN ensure reactor trip and go to E-0, REACTOR TRIP OR SAFETY INJECTION. 2) Adjust intact S/G ARV setpoint to 1005 psig and verify proper operation.
	e. Tavg - TRENDING TO PROGRAM	e. IF temperature less than 547°F and decreasing, THEN perform the following: 1) Stop dumping steam 2) IF cooldown continues, THEN close both MSIVs. IF temperature greater than 547° and increasing, THEN dump steam to stabilize and slowly decrease temperature to 547°F. IF Tavg can NOT be controlled, THEN manually trip the reactor and go to E-0, REACTOR TRIP OR SAFETY INJECTION.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Transition to E-0 is NOT required when the reactor trip breakers are opened in the following step.

25 Shutdown The Reactor

a. Place rods in MANUAL

b. Drive control rods until ≤ 1% RTP

c. Press Rx trip pushbutton

d. Verify Rx Trip breakers open — d. Dispatch AO to locally open reactor trip breakers

e. Verify all control and shutdown rods on bottom

NOTE: The following step is intended to start an RCS boration at the earliest opportunity. The boration endpoint is determined in Step 32.

26 Initiate RCS Boration At Maximum Rate Using FCV-110A

a. Start BOTH BAST pumps

b. Place FCV-110A controller to MANUAL AND adjust to full open.

IF normal boration can NOT be performed, THEN align charging pump suction to RWST

- o LCV-112B - OPEN
- o LCV-112C - CLOSED

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

IF ANY S/G LEVEL ABOVE 52%, THEN AFW FLOW MAY BE THROTTLED IMMEDIATELY TO PREVENT S/G ISOLATION.

* *

27 Check S/G Feed Flow Status:

a. Manually start both MDAFW pumps

b. Verify AFW flow - SUFFICIENT FLOW TO MAINTAIN S/G LEVELS

b. Perform the following:

1) Establish MFW flow using MFW regulating valve bypass valves.

IF MFW NOT available, THEN manually start TDAFW pump from the non-leaking S/G and establish flow and go to Step 27c.

2) Adjust feed flow to restore S/G level to 52%.

3) Go to Step 29.

c. Verify MFW flow control valves - CLOSED

- MFW regulating valves
- MFW bypass valves

c. Place A and B MFW regulating and bypass valve controllers in manual at 0% demand.

d. Close MFW pump discharge valves

- MOV-3977, A MFW pump
- MOV-3976, B MFW pump

e. Stop any running MFW pump and place in pull stop

f. Place A and B MFW regulating and bypass valve controllers in manual at 0% demand.

g. Adjust AFW pump flow to restore S/G level to 52%.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

28 Establish Normal AFW Pump Shutdown Alignment:

a. Place AFW bypass switches to DEF

b. Close MDAFW pump discharge valves

- MOV-4007
- MOV-4008

c. Adjust AFW bypass valves to control S/G levels at 52%

- AOV-4480
- AOV-4481

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
29	Complete Leaking S/G Isolation:	
	a. Close leaking S/G MSIV - LEAKING S/G MSIV CLOSED	a. Perform the following: 1) Close intact S/G MSIV. 2) Place intact S/G ARV controller at 1005 psig in AUTO. 3) Adjust condenser steam dump controller to 1050 psig in AUTO. 4) Place condenser steam dump mode selector switch to MANUAL. 5) Adjust reheat steam supply controller cam to close reheat steam supply valves. 6) Ensure turbine stop valves - CLOSED. 7) Dispatch AO to complete leaking S/G isolation (Refer to ATT-16.0, ATTACHMENT RUPTURED S/G, parts A for the leaking S/G AND B).
	b. Dispatch AO to complete leaking S/G isolation (Refer to ATT-16.0, ATTACHMENT RUPTURED S/G part A for the leaking S/G)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
30	Check Leaking S/G Level:	
	a. Narrow range level - GREATER THAN 17%	a. Perform the following: 1) Maintain feed flow to leaking S/G until level greater than 17%. 2) Continue with Step 31. WHEN leaking S/G level greater than 17%, THEN do Steps 30b through f.
	b. Close MDAFW pump discharge valve to leaking S/G • S/G A, MOV-4007 • S/G B, MOV-4008	b. Dispatch AO to locally close valve.
	c. Close MDAFW pump bypass valve for leaking S/G • S/G A, AOV-4480 • S/G B, AOV-4481	
	d. Pull stop MDAFW pump for leaking S/G	
	e. Close TDAFW pump flow control valve to leaking S/G • S/G A, AOV-4297 • S/G B, AOV-4298	e. Dispatch AO with locked valve key to locally close TDAFW pump manual feedwater isolation valve to leaking S/G. • S/G A, V-4005 • S/G B, V-4006
	f. Verify MDAFW pump crosstie valves - CLOSED • MOV-4000A • MOV-4000B	f. Manually close valves.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

***31** Reduce RCS Pressure To Minimize Tube Leak:

a. Maintain RCS pressure low in the desired operating range (Refer to O-2.2, PLANT SHUTDOWN FROM HOT SHUTDOWN TO COLD CONDITIONS)

b. WHEN RCS pressure is less than 1950 psig, THEN place SI block switches to BLOCK

- Train A
- Train B

c. Verify SAFETY INJECTION BLOCKED status light - LIT

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

OPERATION OF BOTH RCPS IS PREFERRED TO MINIMIZE REQUIRED BORON ADDITION FOR SUBSEQUENT COOLDOWN.

* *

32 Increase RCS Boron

a. Determine desired RCS boron concentration for subsequent cooldown (Refer to ATT-16.2, ATTACHMENT RCS BORON FOR SGTL)

b. Borate RCS to desired concentration using FCV-110A

b. IF normal boration can NOT be performed, THEN align charging pump suction to RWST

- o LCV-112B - OPEN
- o LCV-112C - CLOSED

c. If desired, request Reactor Engineer evaluate an alternate desired RCS boron concentration to maintain SDM during subsequent cooldown

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
33	Establish Normal Shutdown Alignment:	
	a. Check condenser - AVAILABLE	a. Dispatch AO to perform ATT-17.1, ATTACHMENT SD-2.
	b. Perform the following as necessary: o Open generator disconnects • 1G13A71 • 9X13A73 o Place voltage regulator to OFF o Open turbine drain valves o Rotate reheater steam supply controller cam to close valves o Place reheater dump valve switches to HAND o Stop all but one condensate pump and place in PULL STOP (Refer to T-5F, STARTING OR STOPPING THE CONDENSATE PUMPS)	
	c. Verify Bus 11A and Bus 11B energized - BOTH BUSSES GREATER THAN 4 KV	c. IF either bus NOT energized, THEN refer to 0-6.9.2, ESTABLISHING AND/OR TRANSFERRING OFFSITE POWER TO BUS 12A/BUS 12B.
	d. Dispatch AO to perform ATT-17.0, ATTACHMENT SD-1	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
34	Check If Source Range Detectors Should Be Energized:	
	a. Source range channels - DEENERGIZED	a. Go to Step 34e.
	b. Check intermediate range flux - EITHER CHANNEL LESS THAN 10^{-10} AMPS	b. Continue with Step 35. WHEN flux is less than 10^{-10} amps on any operable channel, THEN do Steps 34c, d and e.
	c. Check the following: o Both intermediate range channels - LESS THAN 10^{-10} AMPS -OR- o Greater than 20 minutes since reactor trip	c. Continue with Step 35. WHEN either condition met, THEN do Steps 34d and e.
	d. Verify source range detectors - ENERGIZED	d. Manually energize source range detectors by depressing P-6 permissive defeat pushbuttons (2 of 2). IF source ranges can NOT be restored, THEN refer to ER-NIS.1, SR MALFUNCTION, and go to Step 35.
	e. Transfer RK-45 recorder to one source range and one intermediate range channel	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
35	Check Rx Trip Breakers - OPEN	DO NOT continue until Rx trip breakers open.
36	Check RCS Boron Concentration	
	a. RCS Boron Concentration - equal to or greater than required for cooldown to 500 degrees per step 32	a. Continue boration. WHEN RCS boron equal to or greater than required value, THEN go to step 36b.
	b. Verify MRPI indicates all control and shutdown rods on bottom	b. Borate an additional 650 gallons of boric acid for each rod not fully inserted. WHEN boration complete, THEN continue with Step 37.
37	Initiate RCS Cooldown To 500 degrees:	
	a. Check leaking S/G MSIV - CLOSED	a. Perform the following: 1) Manually or locally initiate steam dump from intact S/G using S/G ARV 2) Go to step 37d
	b. Place Steam Dump Mode Selector switch to MANUAL	
	c. Initiate dumping steam to condenser from intact S/G	c. IF condenser steam dumps not available, THEN manually or locally initiate steam dump from intact S/G using S/G ARV
	d. Establish and maintain cooldown rate in RCS cold legs - LESS THAN 50°F/HR	
	e. Maintain RCS pressure low in the desired operating range (Refer to O-2.2, PLANT SHUTDOWN FROM HOT SHUTDOWN TO COLD CONDITIONS)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
38	Notify RP To Obtain Primary Samples Required By ITS LCO 3.4.16 (load reduction > 15% in one hour)	
39	Check RCS Boron Concentration	
	a. RCS boron - equal to or greater than required for cooldown to 450 degrees per step 32	a. Perform the following: 1) Stop cooldown AND maintain stable RCS temperature above 500 degrees and stable. 2) Continue boration. WHEN RCS boron equal to or greater than required value, THEN go to step 39b.
	b. Verify MRPI indicates all control and shutdown rods on bottom	b. Request Rx Engineer determine amount of boration required due to rods not fully inserted.
	c. Borate to 2.45% CSD Curve per O-3.1, BORON CONCENTRATION FOR THE XENON FREE ALL RODS IN - MOST REACTIVE ROD STUCK OUT SHUTDOWN MARGIN	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

40 Cooldown RCS To 450 Degrees

a. Initiate dumping steam

b. Establish and maintain cooldown rate in RCS cold legs - LESS THAN 50°F/HR

c. Maintain RCS pressure low in the desired operating range

d. WHEN RCS pressure is less than 1500 psig, THEN isolate SI ACCUMs as follows:

1) Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves

- MOV-841, MCC C position 12F
- MOV-865, MCC D position 12C

2) Close SI ACCUM outlet valves

- ACCUM A, MOV-841
- ACCUM B, MOV-865

3) Locally reopen breakers for MOV-841 and MOV-865

e. Check RCS temperature - LESS THAN 460 DEGREES

e. Continue RCS cooldown

f. Stop the cooldown AND maintain RCS between 450 and 460 degrees

g. WHEN RCS pressure equals leaking S/G pressure, THEN maintain stable RCS pressure

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
41	Check Normal Or Excess Letdown - IN SERVICE	IF normal letdown desired, THEN establish normal letdown (Refer to ATT-9.0, ATTACHMENT LETDOWN) IF normal letdown NOT available, THEN establish excess letdown if desired (Refer to ATT-9.1, ATTACHMENT EXCESS L/D).
42	Evaluate Long Term Plant Status:	
	a. Consult the following groups: • Operations Staff • Plant Engineering Staff • Chemistry	
	b. RCS boron - MEETS 2.45% CSD CURVE PER O-3.1, BORON CONCENTRATION FOR THE XENON FREE ALL RODS IN - MOST REACTIVE ROD STUCK OUT SHUTDOWN MARGIN	b. Perform the following: 1) Continue RCS boration to CSD concentration. (Refer to O-3.1, BORON CONCENTRATION FOR THE XENON FREE ALL RODS IN - MOST REACTIVE ROD STUCK OUT SHUTDOWN MARGIN) 2) Continue with Step 42e. WHEN RCS boron meets 2.45% CSD curve requirement, THEN do steps 42c and d.
	c. Stop RCS boration	
	d. Restore RCS makeup to desired alignment	
	e. Determine if condensate cleanup is desired	
	f. Determine appropriate cooldown method	

-END-

AP-SG.1 APPENDIX LIST

TITLE

1) ATTACHMENT TRANSFER 4160V LOADS (ATT-23.0)
2) ATTACHMENT SD-1 (ATT-17.0)
3) ATTACHMENT SD-2 (ATT-17.1)
4) ATTACHMENT RUPTURED S/G (ATT-16.0)
5) ATTACHMENT SGTL (ATT-16.1)
6) ATTACHMENT RCS BORON FOR SGTL (ATT-16.2)
7) ATTACHMENT EXCESS L/D (ATT-9.1)
8) ATTACHMENT LETDOWN (ATT-9.0)