OPERATING PROCEDURES

Procedure Title EOP 1 through 12 - EMERGENCY OPERATING PROCEDURES

Revision Number	Abstract	PRC Date	Approval
1	EOP 1 - Change Page 2, 3, and page 2 of Attachment 1.	6/4/80 5/2/80	Original Signatures are on file in Operations Clerk's Office.
	EOP 2 - Change page 1 and page 2 and Attach. 2.	6/4/80 5/2/80	
	EOP 5 - Change page 3.	5/2/80	
	EOP 6 - Change page 1 and 2.	6/4/80	
	EOP 7 - Change page 1 and 2.	6/4/80	
	EOP 8.1 Change page 1 and page 2 and 7.	6/4/80 5/2/80	
	EOP 8.2 Change page 3.	5/2/80	
	EOP 10 Change page 6 and 7.	5/2/80	
2	EOP 1 - Change page 1, 2, and 3 of Attachment 1.	8/12/80	
	EOP 6 - Change Page 2 of Attachment 7.	7/2/80	
	EOP 8.1 Change page 2 of procedure and page 2 of Attachment 3.	7/2/80	
3	EOP 6 Change page 1 and 2 of Attachment 7.	8/12/80	
	EOP 8.1 Change page 1 and 2 of Attachment 3.	8/12/80	
4	EOP 6 Change page 1 and 2 of Attachment 7.	9/3/80	
	EOP 8.1 Change page 1 and 2 of Attachment 3.	9/3/80	
	Add Attachment 6.	8/14/80	
5	EOP 1 Change page 2 through 4.	10/16/80	
	EOP 8.2 Change Attachment 1.	10/1/80	

EOP 1

REACTOR TRIP

Revision 0

This procedure applies to a reactor trip initiated from one or more normal inputs to the Reactor Protective System, with standby power available at the time of the trip.

1.0 Symptoms

(1) Any one or more of the Reactor Protection Trip (RPS) alarms.

(2) Control Rod lower electrical limit lights (green).

(3) Control Rod positions indicate near zero.

(4) Various other alarms may be present, depending on the situation causing the trip.

2.0 Automatic

(1) Turbine/Generator trip causes:

(a) Fast transfer of station power to startup power.

(b) Cooling tower fans trip.

(c) MSR inlet valves closed. **E-9A **CV-0594, **E-9B **CV-0595, **E-9C **CV-0596 and **E-9D **CV-0597.

3.0 Immediate

(1) Insure the Full Length Control Rods are indicating fully inserted and that reactor power is decreasing.

(2) Verify turbine trip and generator breakers opened; manually trip the turbine, then gererator, if necessary.

(3) Verify both Emergency Diesel Generators have started.

(4) Trip one Main Feed Pump if both are running.

(5) Trip the other Main Feed Pump as T-avg nears 525°F.

(6) If safety injection has been initiated, then trip all Primary Coolant Pumps after insuring that the Reactor has been tripped > 5 seconds. Follow up with this procedure and Natural Circulation Procedure, ONP 21.

(7) Insure and/or establish Auxiliary Feedwater flow to restore normal level in the Steam Generators.

NOTE: Steam Generator refill rate shall be:

Two operable Steam Generators

- 150 gpm for Steam Generator level ≤ 15%
- 100 gpm (or less) for Steam Generator level >15% and ≤ 25%
- unrestricted for Steam Generator level >25%

One operable Steam Generator

- 300 gpm for Steam Generator level ≤ 15%
- 100 gpm (or less) for Steam Generator level >15% and ≤ 25%
- unrestricted for Steam Generator level >25%

NOTE: A Feedwater Line Water Hammer will be noticeable from:

- Intermittent banging of the Main Feedwater Check Valves in Component Cooling Room
- Fluctuations in flow on **FI-0736 and **FI-0737

Should a Feedwater Line Water Hammer occur, continue Feedwater addition at the prescribed rates. If a Feedwater Line break should occur, proceed to EOP 6 or EOP 7 Main Steam Line Break/Main Feedwater Line Break Inside or Outside Containment.

4.0 Subsequent

(1) Transfer plant power sources from station power transformers to startup transformers. Observe switchyard power conditions closely for instabilities due to the loss of plant output, which could result in a loss of the startup power source.

STATION POWER BREAKERS OPEN

BUS 1A **252--101
1B **252--201
1C **152--105
1D **152--203
1E **152--302

STARTUP POWER BREAKERS CLOSE

BUS 1A **252--102
1B **252--202
1C **152--106
1D **152--202
1E **152--303

(2) Insure Steam Dump(s), **E-50A **CV-0781 and **CV-0782, **E-50B **CV-0779 and **CV-0780 and/or Bypass Valve **CV-0511 open and are controlling steam pressure to 900 psia.

(3) To restore Pressurizer pressure and level insure:

(a) Maximum charging and minimum letdown flow established.

(b) Pressurizer heaters on (proportional).

(c) Pressurizer Spray Valves closed.

(4) If Steam Generator water indication level is lost, close the associated Steam Generator Blowdown control valves (**E-50A; **CV-767 and **CV-0771) (**E-50B; **CV-0768 and **CV-0770). When level indication is restored, the blowdown valves may be reopened.

(5) Insure PORV's and/or Pressurizer Relief Valves are closed by oberving and verifying the following:

(a) PORV Position Indication is closed.

(b) PORV Isolation Valves indicate closed - **MO-1042A, **MO-1043A.

(c) Observe Relief Valve Line Discharge temperatures.

(d) Quench Tank level, pressure and temperature indicates normal conditions.

(e) Acoustic Monitor Panel **EC-51 is clear of alarms.

(6) Insure Turbine Stop Valves and MSR Inlet CV's are closed, **E-9A **CV-0594, **E-9B **CV-0595, **E-9C **CV-0596 and **E-9D **CV-0597.

(7) Insure Steam Dump Valves, **E-50A **CV-0781 and **CV-0782, **E-50B **CV-0779 and **CV-0780 close proportionally as T-avg is reduced.

(8) On low S/G press of 500 psi insure:

(a) MSIV's close **E-50A, **CV-0510, **E-50B and **CV-0501.

(b) Feedwater regulating valves close, **E-50A, **CV-0701, **E-50B, **CV-0703 (observe valve position indication only).

(c) Feedwater regulation bypass valves close **E-50A, **CV-0735 and **E-50B, **CV-0734 (observe valve position indication only).

NOTE: Dryout of a Steam Generator(s) will be noticeable from:

- Decrease in Steam Generator(s) pressure below P_{SAT} of the Primary
- Abnormal increase in Primary System temperature and pressure
- Increase in letdown flow

If dryout should occur, the affected Steam Generator is to be considered inoperable.

(9) Insure all Cooling Tower fans have tripped.

(10) If safety injection has actuated, reset only after all of the following conditions are met, insuring that hot and cold leg temperatures are at least 50°F subcooled per Attachment #2 (also posted in the Control Room) using all available instrumentation including all hot and cold leg temperatures, several incore thermocouples, PCS Pressure.

(a) The cause of the low-pressure condition is known and corrected.

(b) The reactor is shutdown and will remain shutdown.

(c) Pressurizer level is greater than 20% and is returning to normal.

(d) T-avg is stable or increasing and is less than 545°F.

(e) Pressurizer pressure is greater than 1700 psia and is returning to normal.

If after a reset of the Safety Injection System 50°F subcooling cannot be maintained, restart the High Pressure Safety Injection System.

(11) If standby power is available and stable shutdown conditions are assured, shutdown one Emergency Diesel Generator. Shutdown the second Emergency Diesel Generator after the Main Turbine is on turning gear.

(12) After safety injection has been reset and equipment returned to post SIS actuation, per Attachment #1, and plant conditions are stable, restart the PCP's per SOP 1.

(13) As makeup is needed to **T-2 (Condensate Storage Tank) for Auxiliary Feedwater Pumps, refer to SOP 12.

(14) Complete this procedure by executing Emergency Shutdown Checklist G CL 10.

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