

REV. 1

DATE 5-4-79

EMERGENCY PROCEDURE EP-29

TITLE: Loss of Condensate Vacuum

APPROVALS: PORC (Vice-Chairman) [Signature] DATE 5-7-79

UNIT SUPT.: [Signature] DATE 5/8/79

B&W B.O. [Signature] DATE 5/11/79 HRC _____ DATE _____

ALARA [Signature] DATE 5-9-79

NRC

LOSS OF CONDENSER VACUUM1.0 INITIAL CONDITIONS

- 1.1 Decay heat removal is being accomplished by using one or both Steam Generators in the steaming mode, using the condenser (at $>22.5''$ Hg) as the heat sink.
- 1.2 Atmospheric dump valves (MS-V3A and V3B) are isolated.
- 1.3 Main turbine on turning gear with sealing steam.
- 1.4 Low vacuum interlock for turbine bypass valves has been jumpered and atmospheric dump valves have been manually isolated.

2.0 SYMPTOMS

- 2.1 Control Room Condenser vacuum indication less than $22.5''$ Hg.
- 2.2 Received alarms on 17.A7 (Cold Condenser Vacuum lo) and 17.B7 (Hot Condenser Vacuum lo).
- 2.3 Computer Alarm on points #152 (Cold Condenser Vacuum lo) and #153 (Hot Condenser Vacuum lo).
- 2.4 All circulating water pumps tripped.

3.0 ACTIONS3.1 Immediate Actions

- 3.1.1 Verify loss of vacuum by local indication and that backup vacuum pump did start.
- 3.1.2 If backup vacuum pump did not auto-start, start manually and verify that alarm clears. Transfer power to the emergency power source (if available) in the event of loss of power to all vacuum pumps.
- 3.1.3 Verify main steam atmospheric dump valves (MS-V3A/V3B) are closed.
- 3.1.4 Maintain turbine bypass valve position for the operating OTSG(s) at the value(s) in use prior to loss of vacuum.

CAUTION: Do not allow condenser pressure to exceed 1 psig to ensure the condenser rupture disc is not blown. If necessary, throttle the bypass valves as required to keep pressure in the condenser at <1 psig. If both OTSG are in use, maintain equal bypass valve positions for each OTSG.

- 3.1.5 Adjust the feed to the OTSG's as required to maintain level between 400 and 430".
- 3.1.6 Try to re-establish vacuum by insuring the following systems are in service:
 - A. Condenser Air Extraction
 - B. Circulating Water
 - C. Auxiliary Steam
- 3.1.7 Check the condenser for possible sources of air in-leakage.

3.2 Follow Up Actions

- 3.2.1 Adjust the feed as required to maintain OTSG level between 400" - 430".

NOTE: Maintaining the level between 400" - 430" should allow continuation of natural recirculation until the new steaming conditions are established.

- 3.2.2 Adjust the turbine bypass valves to maintain condenser pressure less than 1 psig.
- 3.2.3 If a loss of natural circulation occurs, proceed to EP-34. Loss of natural circulation is indicated by:
 - A. Loop A ΔT greater than 200°F.
 - B. Loop A T_H increasing for 8 hours.
 - C. Hottest incore thermocouple exceeds 350°F.
 - D. Any incore thermocouple increases by more than 30°F in one hour.