



Loss of RHR in Mode 6

M. E. Henshaw, B&W Owners Group

BWOG/WOG/NRC Meeting

June 24, 2004

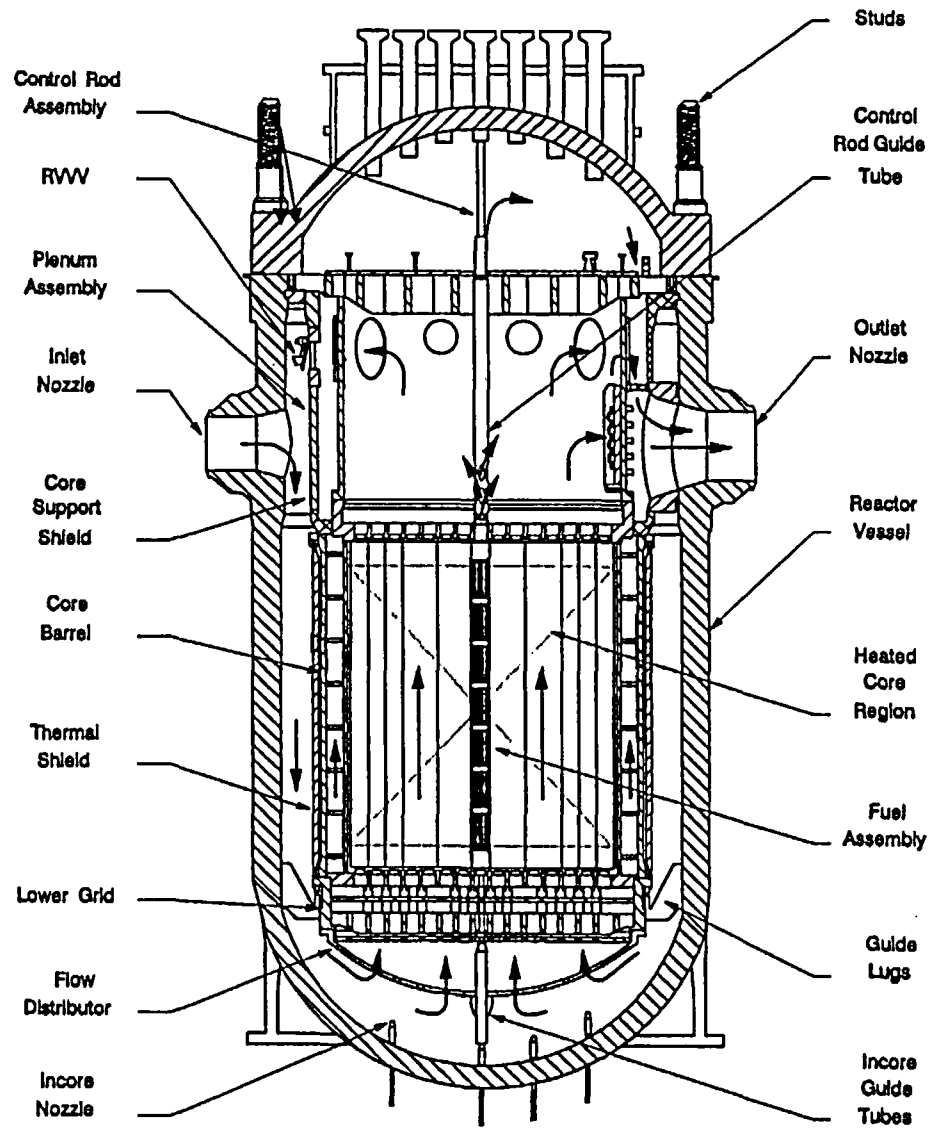
Rockville, MD

Loss of RHR in Mode 6

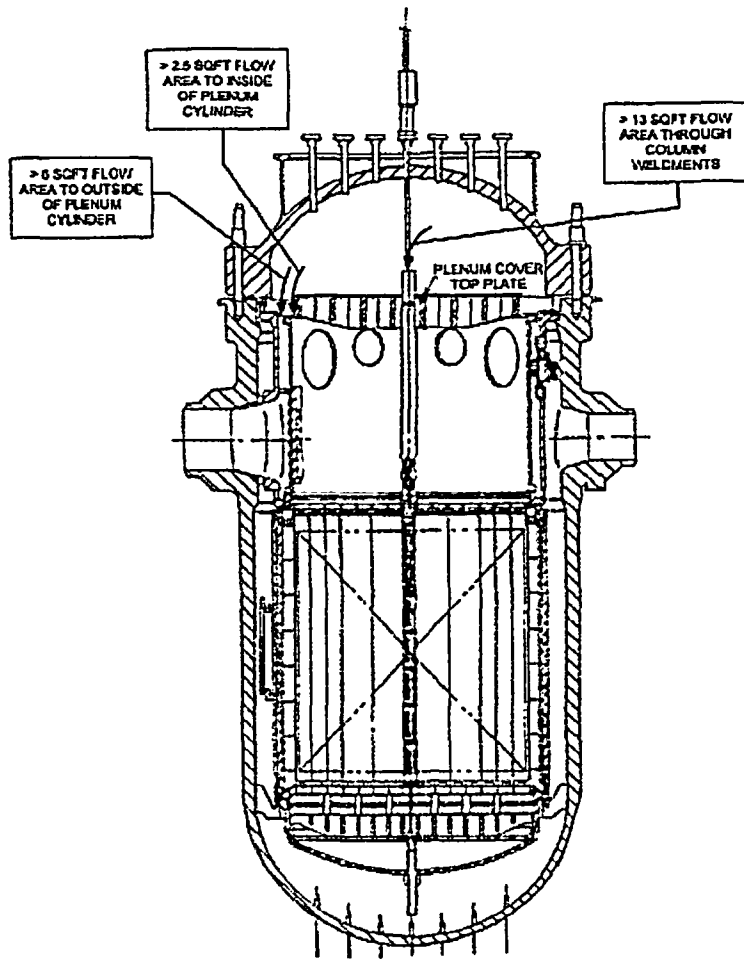
■ B&W Designed Plant Technical Specifications

- Technical Specifications for all B&W designed plants allow the condition of one operable and operating RHR system when a specified amount of water is above the vessel flange available for cooling.
- The technical specifications are silent as to the presence of reactor vessel internals assuming that the available fluid is sufficient to maintain core coolant below 200°F in the event of loss of the operating RHR.
- The B&W designed plants have in excess of 20 square feet of flow area supporting communication of fluid, even with the internals in place.

Reactor Vessel Flow Path Sketch



Flow Areas Connecting Region Above Upper Plenum to Top of Core



Summary of Flow Areas

- Column weldments FA > 13 sq.ft.
- FA to inside of plenum cylinder > 2.5 sq.ft.
- FA to outside of plenum cylinder > 6 sq.ft.
- LL plant RV vent valve FA > 8 sq.ft.
- RL plant RV vent valve FA > 4 sq.ft.

Loss of RHR in Mode 6

■ B&W Designed Plant Internals Removal Procedure

- 3 Plants remove the upper internals when dry prior to flooding the refueling canal.
 - ◆ Two RHR systems are operable and one is operating during this process.
 - ◆ For these plants an adequate flow path exists.

Loss of RHR in Mode 6

■ B&W Designed Plant Internals Removal Procedure

- 2 Plants fill the refueling canal and operate with one RHR operable and operating prior to removing the upper internals.
 - ◆ In this configuration, water can naturally circulate through the inside of the column weldments and clearance gap or slots around the periphery of the plenum cover plate.
 - ◆ The total flow area is in excess of 20 square feet.
 - ◆ This supports the conclusion that an adequate flow path is available to maintain core coolant below 200°F.