SUPPLEMENT TO THE DRAFT SAFETY EVALUATION
(CONTAINMENT SYSTEMS)
CRYSTAL RIVER UNIT 3
DOCKET NO. 50-302

ECCS Containment Pressure Evaluation

Appendix K to 10 CFR 50 of the Commission's regulations requires that the effect of operation of all the installed pressure reducing systems and processes be included in the ECCS evaluation. For the evaluation it is conservative to minimize the containment pressure since this will increase the resistance to steam flow in the reactor coolant loops and reduce the reflood rate in the core. Following a loss-of-coolant accident, the pressure in the containment building will be increased by the addition of steam and water from the primary reactor system into the containment atmosphere. After initial blowdown, heat flow from the core, primary metal structures, and steam generators to the ECCS water, will produce additional steam. This steam together with any ECCS water spilled from the primary system will flow through the postulated break into the containment. This energy will be released to the containment during both the blowdown and later ECCS operation phases; i.e., reflood and post-reflood phases.

Energy removal occurs within the containment by several means. Steam condensation on the containment walls and internal structures serves as a passive energy heat sink that becomes effective early in the blowdown transient. Subsequently, the operation of the containment heat removal systems such as containment sprays and fan coolers will remove energy from the containment atmosphere. When the energy removal rate exceeds the rate of energy addition from the primary system, the containment pressure will decrease from its maximum value.

The ECCS containment pressure calculations for Crystal River Unit 3 were done generically by B&W for reactors of this type as described in BAW-10103 "ECCS Evaluation of B&W's 177-FA Lowered Loop NSS." The NRC staff reviewed B&W's ECCS evaluation model and published a Status Report on October 15, 1974, which was amended November 13, 1974. We concluded that B&W's containment pressure model was acceptable for ECCS evaluation. We required, however, that justification of the plant-dependent input parameters used in the analysis be submitted for our review of each plant.

Justification for the containment input data were submitted for Crystal River Unit 3 dated October 15, 1975. This justification includes a comparison of the actual containment parameters for Crystal River with those assumed by B&W in BAW-10103. Florida Power Corporation has reevaluated the containment net-free volume, the passive heat sinks, and operation of the containment heat-removal systems with regard to the conservatism for the ECCS analysis. This evaluation was based on as-built drawings. The containment heat removal systems were assumed to operate at their maximum capacities, and minimum operational values for the spray water and service water temperatures were assumed. The containment pressure analysis by B&W in BAW-10103 was demonstrated to be conservative for Crystal River Unit 3.

We have concluded that the plant-dependent information used for the ECCS containment pressure analysis for Crystal River Unit 3 is reasonably conservative, and therefore, the calculated containment pressures are in accordance with Appendix K to 10 CFR Part 50 of the Commission's regulations.