UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION

INADVERTENT SAFETY INJECTION DURING COOLDOWN

DIVISION OF OPERATING REACTORS

Inadvertent actuation of the emergency core cooling system (ECCS) had occurred at a number of PWR facilities. If, at the time of inadvertent actuation, the reactor coolant system (RCS) pressure is less than the ECCS discharge pressure and the RCS temperature is significantly above the ECCS water temperature, then the regions of the injection nozzles can be subjected to thermal stresses.

We have performed analyses using conservative assumptions to obtain an upper bound for these stresses and conclude that a typical nozzle could withstand at least fifty (50) injection events with the temperature differential as high as about 500°F. These results are consistent with those reported by Westinghouse on the Salem docket. It is likely that a facility could withstand more than 50 inadvertent actuations of the ECCS because 1) not all inadvertent actuations will result in cold water injection into a hot RCS, 2) if injection does occur, the temperature differential will most likely be less than that assumed in our analyses, and 3) there is additional margin to failure because the ASME Code limit is itself conservative.

IE Circular 78-05 dated May 23, 1978 on this subject advised facility owners of specific actions that could be taken to minimize the frequency of inadvertent safety injections. We conclude that no additional licensing action is required at this time. It would be prudent, however, for facility owners to continue to monitor the frequency of these events. If a particular PWR facility should experience more than about 25 inadvertent safety injections, then a plant specific analysis should be considered.

Date: March 17, 1981