

August 18, 2000

Mr. James F. Mallay
Director, Nuclear Regulatory Affairs
Siemens Power Corporation
2101 Horn Rapids Road
Richland, WA 99352

SUBJECT: PWR ASSEMBLY LIFTOFF CALCULATIONS

Dear Mr. Mallay:

By letter dated January 11, 2000, Siemens Power Corporation (SPC) informed the NRC of errors in the calculational approach it used to evaluate the potential for PWR fuel assembly liftoff. The errors identified were:

- (1) The calculation did not account for the lack of an RCCA in controlled assemblies under operating conditions.
- (2) The calculation did not account for the effect of momentum changes in the flow.
- (3) The flow velocity used in the calculation did not account for the temperature increase in the core at operating conditions.

The SPC criterion for pressurized water reactor (PWR) fuel assembly liftoff is given in SPC Topical Report EMF-92-116(P)(A), "Generic Mechanical Design Criteria for PWR Fuel Designs," February 1999. The criterion is:

SPC requires that the assembly not levitate from hydraulic loads. Therefore, for normal operation and anticipated operational occurrences, the submerged fuel assembly weight and hold-down must be greater than the hydraulic loads. The criteria covers both cold and hot conditions and uses the maximum flow limits specified for the reactor.

SPC conducted an investigation of the errors and concluded that the impact of the errors was not significant. The SPC evaluation of all PWRs for which SPC supplies fuel indicated that the SPC criterion for fuel assembly liftoff would be satisfied for all except two reactors. For those two reactors, liftoff was a possibility under certain conditions at beginning-of-cycle. The staff has reviewed the material that SPC provided and through a March 7, 2000, teleconference obtained confirmation that the two reactors were already to the point (in cycle) at which positive hold-down margin exists. This additional information was documented in an electronic mail, dated March 8, 2000, from you to N. Kalyanam (ADAMS Accession No. ML003742353).

Furthermore, SPC has stated that a combination of analytical changes, design changes and operating condition changes will be in place for the next reload at the two affected reactors to ensure that the fuel loaded in the future satisfies the NRC approved PWR fuel assembly liftoff criterion.

The staff has reviewed the explanation and the SPC response to the errors and considers the matter closed.

Sincerely,

/RA/

Stephen Dembek, Chief, Section 2
Project Directorate IV and Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Project No. 702

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