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June 19, 1997

Chief, Rules Review and Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop T-6D-69
Washington, D.C. 20555-0001

Gentlemen: ULNRC-3604

DOCKET NUMBER 50-483
CALLAWAY PLANT
CONTROL ROD INSERTION PROBLEMS

References: 1) Proposed NRC Bulletin 96-01 Supplement 1

Union Electric concurs with and endorses the comments provided by the Westinghouse Owners Group and the Nuclear Energy Institute on the subject Supplement 1 to NRC Bulletin 96-01. In addition, Union Electric would like to provide the following comments, see attached, which are more plant specific to the impact of the proposed supplement on Callaway Plant.

In summary, we believe the testing proposed in the referenced supplement is unwarranted due to the data provided in response to Bulletin 96-01, the modeling performed by Westinghouse, the design of the fuel used at Callaway, and the additional risk associated with plant shutdowns to perform testing. We encourage the Staff to consider all of these items in determining the scope of the supplement.

Very truly yours,

David Shafer
for Alan C. Passwater
Manager, Licensing and Fuels

jmc

Attachment

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COMMENTS ON NRC SUPPLEMENT TO BULLETIN 96-01

The purpose of this letter is to provide Union Electric's comments regarding the Draft NRC Bulletin 96-01, Supplement 1: Control Rod Insertion Problems.

Callaway Plant uses Westinghouse's Vantage 5 fuel, which incorporates intermediate flow mixing grids (IFMs) and also ZIRLO cladding, guide and instrument tubes. In the current cycle (cycle 9) the first rodded assembly is expected to achieve 40,000 MWD/MTU burnup in October, 1997. Compliance with the proposed supplement would require a total of 3 shutdowns to perform rod drop testing before the end of the cycle. The estimated cost of replacement power for these outages is approximately $1 million dollars, not to mention other less quantifiable costs such as waste water processing, overtime, and increased radiation exposure. Future cycles will also be impacted by either more expensive core designs or shutdowns for testing. The risk of an unplanned reactor trip is also increased during a shutdown and startup.

In 1996, in response to Bulletin 96-01, extensive rod drop testing was performed by Westinghouse PWRs. Rod drop testing was performed in over 1000 fuel assemblies with IFMs, with nearly 300 of these having burnups over 40,000 MWD/MTU. In every case, rods inserted successfully. In addition to this testing, rod drops have been performed at plants using IFM fuel assemblies for years, both intentional from required startup testing, and inadvertant, from unplanned reactor trips. There has been no reported instance of an incomplete rod insertion. Testing at Callaway was part of this effort and rod drop testing was performed at the end of cycle 8. Five of the assemblies tested had burnups in excess of 47,000 MWD/MTU and their drop times were well below technical specification limits.

Westinghouse has developed a mechanical model to predict the susceptibility of fuel to incomplete rod insertion. Based on predictions of the mechanical model and on results of rod drag testing, Westinghouse has determined that fuel with IFMs is not susceptible to incomplete rod insertion at burnups below at least 52,000 MWD/MTU.

There is a slight increase in calculated core damage frequency associated with bringing the plant to hot zero power to perform the rod drop tests. Based upon historical information presented in WCAP-14333P, the probabilities of reactor trip during controlled plant shutdown and startup are 0.068 and 0.088, respectively. Since each rod drop test would require a controlled shutdown and startup evolution, the probability of an unplanned reactor trip occurring, per rod drop test, is 0.156. Based upon the Callaway PRA, the conditional probability of core damage, given a reactor trip, is approximately 2.5E-6. Therefore, the core damage probability, attributable to the performance of this test, is 3.9E-7 per test. Since Callaway Plant will have to perform three rod drop tests during the remainder of this operating cycle, the core damage probability introduced by the performance of these tests is 1.17E-6. This represents 2 percent of the annual core damage probability reported in the Callaway IPE submittal.

As shown above, the burnup limit provided in the proposed supplement for IFM fuel assemblies is extremely conservative. Requiring shutdowns for rod drop testing at a burnup of 40,000 MWD/MTU is unjustified for Callaway Plant and does not warrant the expense, increased risk, additional radiation exposure, and plant shutdowns which such testing would entail. The burnup limit for any testing should recognize the demonstrated benefits of fuel with IFMs and ZIRLO and be based on results of Westinghouse's susceptibility model, as specifically determined for Callaway Plant.