



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 3, 2012

Mr. M. J. Ajluni
Nuclear Licensing Director
Southern Nuclear Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295, Bin - 038
Birmingham, AL 35201-1295

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNIT 2 – SUMMARY OF
SURVEILLANCE TEST RESULTS REVIEW, FOR CAPSULE Z RESULTS
(TAC NO. ME6069)

Dear Mr. Ajluni:

By letter dated March 17, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML112450171), Southern Nuclear Operating Company (SNC, the licensee), submitted Westinghouse Electric Company LLC test report WCAP-17343-NP, Revision 0, "Analysis of Capsule Z from the Southern Nuclear Operating Company Vogtle Unit 2 Reactor Vessel [RV] Radiation Surveillance Program." The test report was submitted in compliance with Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Appendix H, "Reactor Vessel Material Surveillance Program Requirements." The U.S. Nuclear Regulatory Commission (NRC) staff has completed its review of the test report and has made the following observations:

- 1) The report contains all of the data required by Paragraph IV.B of Appendix H to 10 CFR Part 50, and by the American Society for Testing and Materials Standard Practice E185-82;
- 2) The NRC staff has not identified any immediate safety issues; and
- 3) The excessive embrittlement experienced by the Capsule Z surveillance plate at high fluence (i.e. around 4.2×10^{19} n/cm², E > 1 MeV) may be a valuable data point for studying the late-blooming-phase embrittlement for RV materials under high fluence. The Office of Nuclear Regulatory Research may use this information to update its existing database.

Considering the Capsule Z surveillance plate data in evaluation of RV material properties in accordance with Revision 2 of Regulatory Guide 1.99, "Radiation Embrittlement of Reactor Vessel Materials," May 1988, has no impact on the plant's current pressure-temperature limits because the Capsule Z surveillance plate data make the entire set of plate data from all capsules not credible due to data scatter exceeding 28 degrees Fahrenheit. Further, based on the Vogtle 2 pressure temperature limits report (PTLR) dated April 2005 (ADAMS Accession No. ML051310203), even for 54 effective full power years (EFPYs), the estimated maximum fluence is 2.86×10^{19} n/cm² (E > 1 MeV), far below the fluence of 4.2×10^{19} n/cm² (E > 1 MeV) at which the surveillance plate data showed unusually excessive embrittlement. The RV neutron

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embrittlement evaluation in the April 2005 PTLR is consistent with the April 2009 safety evaluation on the license renewal application (LRA) regarding Vogtle 2, except that the end of the period of extended operation in the LRA is 57 EFPYs.

If you have any questions regarding the information in this review, please feel free to contact me at (301) 415-3936.

Sincerely,

A handwritten signature in black ink that reads "Patrick G. Boyle" followed by a horizontal line.

Patrick G. Boyle, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-425

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Sincerely,

/RA/

Patrick G. Boyle, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
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