

DUKE POWER COMPANY

POWER BUILDING

422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28242

WILLIAM O. PARKER, JR.  
VICE PRESIDENT  
STEAM PRODUCTION

June 5, 1980

TELEPHONE: AREA 704  
373-4083

Mr. James P. O'Reilly, Director  
U. S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, Suite 3100  
Atlanta, Georgia 30303

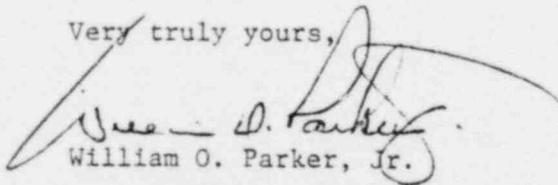
Re: Oconee Unit 2  
Docket No. 50-270

Dear Mr. O'Reilly:

Please find attached Reportable Occurrence Report RO-270/80-3. This report is submitted pursuant to Oconee Nuclear Station Technical Specification 6.6.2.1.a(4), which concerns an unplanned reactivity insertion of greater than 0.5%  $\Delta k/k$ , and describes an incident which occurred while Oconee 2 was at cold shutdown and which is considered to be of no significance with respect to the health and safety of the public.

My letter of May 21, 1980 addressed the delays in the preparation of this report.

Very truly yours,

  
William O. Parker, Jr.

SRL:scs  
Attachment

cc: Director  
Office of Management & Program Analysis  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Mr. Bill Lavalley  
Nuclear Safety Analysis Center  
P. O. Box 10412  
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DUKE POWER COMPANY  
OCONEE UNIT 2

Report Number: RO-270/80-3

Report Date: June 5, 1980

Occurrence Date: May 7, 1980

Facility: Oconee 2, Seneca, South Carolina

Identification of Occurrence: Unplanned Reactivity Insertion at Cold Shutdown

Conditions Prior to Occurrence: Cold Shutdown

Description of Occurrence:

At 2104 on May 7, 1980, the spare deborating demineralizer was placed in service for chloride removal from the Oconee 2 Low Pressure Injection (LPI) System while the unit was at cold shutdown and the Reactor Coolant System (RCS) partially drained for reactor coolant pump maintenance. Chemistry records indicated that the demineralizer was boron-saturated to approximately the same concentration as the LPI system, 1895 ppmb. The demineralizer was operated for ten minutes to allow a chemistry sample to be taken and was then secured. The sample results indicated a demineralizer outlet concentration of 1884 ppmb, and the demineralizer was returned to service at 2144. At 2150 another chemistry sample was requested, but there was an inconsistency in the results, and another sample was taken at 2240. At 2320 the sample evaluation was completed, indicating a LPI system boron concentration of 1539 ppmb and a demineralizer outlet concentration of 800 ppmb. The demineralizer was immediately bypassed and isolated.

Apparent Cause of Occurrence:

Apparently, the chemistry records which indicated that the deborating demineralizer was boron-saturated had not been kept up-to-date. In addition, it is possible that the demineralizer was not operated for a long enough period prior to taking the first sample to reach equilibrium outlet conditions.

Analysis of Occurrence:

The RCS deboration from 1895 ppmb to 1539 ppmb corresponds to reduction in the shutdown margin of from -11.89%  $\Delta k/k$  to -7.44%  $\Delta k/k$ . A margin of 296 ppmb existed above that necessary to maintain the 1%  $\Delta k/k$  shutdown margin required by Oconee Nuclear Station Technical Specification 3.1.3.4. This includes allowance for the worth of a stuck rod, which is highly unlikely under these conditions, as well as an additional 100 ppmb conservation for calculational uncertainty. In addition, assuming an RCS volume of approximately 30,000 gallons and an initial boron concentration of 1895 ppmb, a new demineralizer would become saturated at approximately 1400 ppmb, still above the concentration required for a 1%  $\Delta k/k$  shutdown margin. Thus, this incident constituted an unplanned reactivity insertion of greater than 0.5%  $\Delta k/k$ , and must be reported pursuant to Technical Specification 6.6.2.1a(4), although it was not considered to be significant with respect to safe operation, and the health and safety of the public were not affected.

Corrective Action:

The immediate corrective action was to bypass and isolate the deborating demineralizer. Makeup to the RCS was initiated in order to restore it to its original concentration. Steps will be taken to assure that chemistry records concerning the demineralizer are kept up-to-date. Further administrative controls will be developed concerning the use of demineralizers. Administrative controls will be implemented to preclude the use of demineralizers while the RCS is in a drained-down condition. In addition, a step will be added to the procedure for instrument surveillance while at shutdown to require the source range alarm to be checked once per shift, since it would provide early warning in the unlikely event of an approach to criticality.