

DUKE POWER COMPANY

POWER BUILDING

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

WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

July 23, 1982

82 JUL 29 10 59:21
TELEPHONE AREA 704
773-4083
NORTH ATLANTA REGIONAL
OFFICE

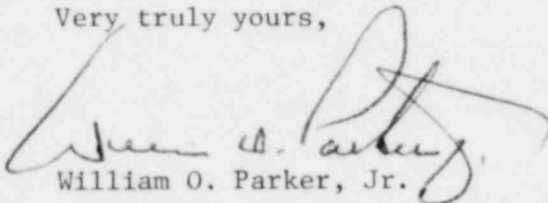
Mr. James P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

Re: Oconee Nuclear Station
Docket No. 50-287

Dear Mr. O'Reilly:

Please find attached Reportable Occurrence Report RO-287/82-07. This report is submitted pursuant to Oconee Nuclear Station Technical Specification 6.6.2.1.a(9), which concerns the discovery of conditions not specifically considered in the safety analysis report or Technical Specifications that require corrective measures to prevent the existence or development of an unsafe condition, and describes an incident which is considered to be of no significance with respect to its effect on the health and safety of the public. My letter of June 24, 1982 addressed the delay in submitting this report.

Very truly yours,



William O. Parker, Jr.

JFK/php
Attachment

cc: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. W. T. Orders
NRC Resident Inspector
Oconee Nuclear Station

Mr. Philip C. Wagner
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Records Center
Institute of Nuclear Power Operations
1820 Water Place
Atlanta, Georgia 30339

OFFICIAL COPY

8208030297 820723
PDR ADOCK 05000297
S PDR

IE 22

DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNIT 3

Report Number: RO-287/82-07

Report Date: July 23, 1982

Occurrence Date: May 21, 1982

Facility: Oconee Unit 3, Seneca, South Carolina

Identification of Occurrence: Fuel Assembly broken holddown springs

Conditions Prior to Occurrence: Cold Shutdown

Description of Occurrence: On May 21, 1982, broken holddown springs (HD springs) were discovered on Oconee 3 Fuel Assemblies NJ001MH and NJ001M9 during visual core inspection.

Apparent Cause of Occurrence: The apparent cause of the broken springs is fatigue induced cracking at an existing surface flaw which then propagated by fatigue. This incident is similar to those reported for Oconee 1 and 2 by letters of W. O. Parker, Jr. dated June 6, 1980 and February 16, 1982.

Analysis of Occurrence: The safety implications of operation with broken HD springs was adequately addressed in the letters referenced above, and is repeated here. The spring failures pose three potential concerns: (1) loss of holddown force; (2) loose parts; and (3) interference with normal CRA movement. Analysis of these potential concerns has eliminated any reasonable safety questions.

With regard to loss of holddown force, Babcock and Wilcox has confirmed analytically that reactivity increases due to reinsertion of a "lifted" assembly add less than 0.01% $\Delta k/k$ per assembly. No lateral movement would result from lift since positive lateral restraint is provided through core internal structures. Lastly, no cyclic lifting/reinsertion is expected since one break in a spring reduces holddown force slightly allowing the assembly to remain in place, and two breaks reduce the force to essentially zero, pinning the assembly in the lifted position.

Loose parts pose no additional safety hazard but are simply operational problems. All the spring breaks have occurred in one or both of the interface regions between the compressed and normal regions of the coil. Therefore, no more than three pieces, all of which exceed one complete circle, would be anticipated. Such large pieces would not escape the upper end fitting. If they did, normal core flow would sweep the parts to the OTSG upper head where the piece would be reduced to a size small enough to move through the tubes before reentering the core. Pieces of such size do not cause sufficient flow blockage to be a safety concern.

Preliminary analysis of worse case positioning of broken springs indicates that no configuration will allow sufficient force to prevent CRA insertion or to substantially increase drop time. There is no way for a piece to completely block the CRA path since the fingers are partially inserted in the guide tubes at all times.

The results of the safety analysis indicate that operation with broken HD springs does not affect the health and safety of the public.

Corrective Action: The broken HD springs on the Oconee 3 Fuel Assemblies will be replaced prior to reloading these assemblies in the core. The HD springs inspection program, which was initiated at the time of the previous HD spring failures, will continue until future data and inspection results indicate the program is no longer necessary.