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TO: Mr. Norman C Moseley

FROM: Duke Power Co.
Charlotte, N.C. 28242
William O. Parker Jr.

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03-25-77

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(1 page)
ACKNOWLEDGED
PLANT NAME: OCONEE UNIT # 1
jcm
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ENCLOSURE Licensee Event Report (RO-50-269/77-8)
on 02-28-77 concerning an increase in radiation levels as registered by air ejector monitor RIA-40 indicated a possible primary-to-secondary system leak due to leaking tube having leak at fourteenth support plate.....
(2 pages)
NOTE: IF PERSONNEL EXPOSURE IS INVOLVED SEND DIRECTLY TO KREGER/J. COLLINS

FOR ACTION/INFORMATION

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CONTROL NUMBER

770870213

DUKE POWER COMPANY

POWER BUILDING

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

WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

March 14, 1977

TELEPHONE: AREA 704
373-4083

REGULATORY DOCKET FILE COPY

Mr. Norman C. Moseley, Director
U. S. Nuclear Regulatory Commission
Suite 818
230 Peachtree Street, Northwest
Atlanta, Georgia 30303

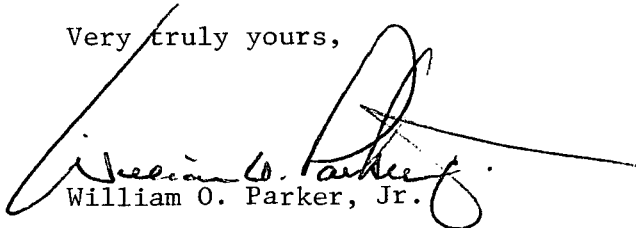


Re: Oconee Unit 1
Docket No. 50-269

Dear Mr. Moseley:

Pursuant to Sections 6.2 and 6.6.2 of the Oconee Nuclear Station Technical Specifications, please find attached Reportable Occurrence Report RO-269/77-8.

Very truly yours,


William O. Parker, Jr.

LJB:ge
Attachment

cc: Director, Office of Management Information
and Program Control

770870219

DUKE POWER COMPANY
OCONEE UNIT 1

Report No.: RO-269/77-8

Report Date: March 14, 1977

Occurrence Date: February 28, 1977

Facility: Oconee Unit 1, Seneca, South Carolina

Identification of Occurrence: Primary-to-secondary system leakage in "1B"
once-through steam generator

Conditions Prior to Occurrence: Unit at 100 percent full power

Description of Occurrence:

On February 28, 1977, an increase in radiation levels as registered by air ejector monitor RIA-40 indicated a possible primary-to-secondary system leak. Sampling of the steam lines and portable instrument readings confirmed that primary-to-secondary leakage was occurring in the "1B" once-through steam generator (OTSG). A reactor shutdown was initiated at this time due to an unrelated dropped control rod incident that is described in RO-269/77-7. Within ten hours from the time that increasing readings were observed on RIA-40 reactor shutdown was completed and preparations were made to drain the Reactor Coolant System and investigate the source of the steam generator leakage.

The Reactor Coolant System was cooled and drained within 3 days following the initial high radiation indication and an internal inspection of the "1B" OTSG was initiated.

Apparent Cause of Occurrence:

Eddy current testing was performed and revealed one leaking tube, identical as tube number 13 in row 32. The leaking tube was discovered to have a leak at the fourteenth support plate. The tube could not be visually inspected to determine the character of the leak due to the location of the leak.

Eddy current examinations of 490 other tubes revealed no additional tube leaks. However, eddy current signal distortions were found on tube 4 of row 101, tubes 7 and 8 of row 2 and tube 14 of row 33. Therefore, as a precautionary measure, these four tubes were plugged. Also, a section of one tube with an eddy current signal distortion, tube 25 of row 77, was removed for further inspection. This tube was also plugged.

With regard to this and previous Oconee steam generator tube leaks, evaluation by Duke and the OTSG vendor, the Babcock & Wilcox Company, is continuing. However, there is no evidence to date to indicate that the leaks have resulted from tube wastage/thinning, chemical attack, or intergranular stress-corrosion cracking.

Analysis of Occurrence:

Primary-to-secondary system leakage, resulting from this occurrence, was approximately 0.1 gallons per minute and was detected by installed radiation monitoring equipment. The leakage did not exceed the operational limits of Oconee Technical Specification 3.1.6.1.

The calculated gaseous activity released to the environment via the air ejectors was 0.83 curies. This amount is considered insignificant in comparison to the station's annual release limit.

This report describes the seventh occurrence of steam generator tube leakage experienced on the three Oconee units. Defective tubes were previously reported in Reportable Occurrence Reports RO-287/76-10, RO-269/76-17, RO-270/76-15, RO-269/76-19, RO-269/77-2 and RO-287/77-2, submitted by our letters of August 5, 1976, November 15, 1976, December 20, 1976, December 22, 1976, January 31, 1977 and February 28, 1977, respectively. In the first three occurrences and the fifth and sixth occurrences, the defective tubes edged an open tube lane (a radial row with no tubes, used for inspection purposes). In the fourth instance, the leaking defective tube was angularly located approximately 150° counterclockwise from the locations of the other defective tubes and was not adjacent to an open tube lane. In the seventh instance, the leaking tube was located approximately 45° clockwise from the open tube lane.

It is considered that this incident did not affect the health and safety of the public.

Corrective Action

The leaking tube, tube 13 of row 32, and three other tubes with questionable eddy current signals, tube 4 of row 101 and tubes 7 and 8 of row 33, were plugged at both ends utilizing explosive plugs. Tube 14 of row 33 was explosively plugged in the bottom of the tube and plugged from the top by insertion of a metal rod to increase the tube's stability. A section of tube 25 of row 77 was removed for inspection. This tube was plugged at both ends with explosive plugs.

As stated in RO-269/77-2 submitted by my letter of January 31, 1977, the OTSG vendor, Babcock & Wilcox, is currently involved in a program to further evaluate the cause of the tube failures. This program includes a review of deposit samples, a computer evaluation of all available eddy current data, a review of visual observations from fiber-optics and videotapes, and macro-microscopic analysis of two of the defective tubes that were removed from the Oconee Unit 2 "2B" OTSG and one which was removed from the Unit 1 "1B" OTSG. Additionally, the open lane flow characteristics are being analyzed and a detailed stress/vibration analysis is being conducted on the tubes in rows 75 and 77. A review has been made of the Oconee station operating history, the Oconee steam generator manufacturing history and previously conducted OTSG analysis and testing results and no explanation of the phenomena has been determined to date.

U.S.A.E.C.
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