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DOCKET NUMBER	50-287
FILE NUMBER	INCIDENT REPORT
TO:	N.C. Moseley
FROM:	Duke Power Co. Charlotte, N.C. W.O. Parker, Jr.
DATE OF DOCUMENT	6-3-76
DATE RECEIVED	6-17-76
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DESCRIPTION

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PLANT NAME: Oconee # 3

ENCLOSURE

Reportable Occurrence # 76-6, on 5-5-76, Concerning Feedwater and reactor coolant flow constants incorrectly set on the plant computer.....

(1 Signed Cy. Received)

NOTE: IF PERSONNEL EXPOSURE IS INVOLVED SEND DIRECTLY TO KREGER/J. COLLINS

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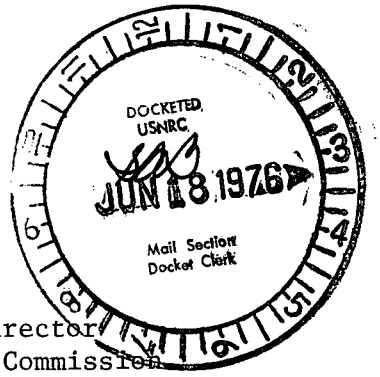
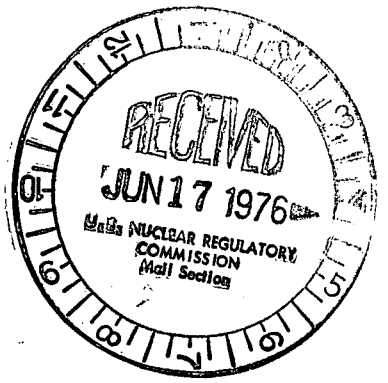
DUKE POWER COMPANY

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

WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

TELEPHONE: AREA 704
373-4083





June 3, 1976

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

Re: Oconee Unit 3
Docket No. 50-287

Dear Mr. Moseley:

Pursuant to Sections 6.2 and 6.6.2 of the Oconee Nuclear Station Technical Specifications, please find attached Reportable Report RO-287/76-6.

Very truly yours,

William O. Parker Jr. by WAH

William O. Parker, Jr.

PMA:vr
Attachment

cc: Director, Office of Management Information
and Program Control

6165

DUKE POWER COMPANY
OCONEE UNIT 3

Report No.: RO-287/76-6

Report Date: June 3, 1976

Occurrence Date: May 5, 1976

Facility: Oconee Unit 3, Seneca, South Carolina

Identification of Occurrence: Feedwater and reactor coolant flow constants incorrectly set on the plant computer

Conditions Prior to Occurrence: Power Operation

Description of Occurrence:

On April 30, 1976, a precision RC flow measurement utilizing specially installed instruments was performed on Oconee Unit 3 to investigate a slightly lower-than-normal indicated RC flow. Subsequent analysis of the test data revealed that the plant computer flow constants for feedwater flow calculation were greater than the correct values by approximately 2.52 percent, and the flow constants for the RC flow calculation were less than the correct values by approximately 4.52 percent. Therefore, the computer values of the feedwater flow were greater than the correct flow values by approximately 2.52 percent and the computer values of the RC flow were less than the correct values by approximately 4.52 percent. Since the core thermal power calculations by the plant computer are based on the computer measured values of the feedwater flow and the RC flow, errors in the computer measured values of either feedwater flow or RC flow could induce errors in the computer indicated core thermal power levels.

Analysis of Occurrence:

The plant computer provides information on the core thermal power level based on three different calculations: (1) a primary heat balance - i.e., a heat balance across the primary side of each of the two steam generators using RC flow, RC inlet and exit enthalpies, pump power, heat loss, etc.; (2) a secondary heat balance - i.e., a heat balance across the secondary side of each of the two steam generators using feedwater flow, feedwater enthalpy, steam enthalpy, pump power, heat loss, etc.; and (3) a best estimate calculation, which consists of obtaining a weighted average of the core thermal power values obtained from the primary and secondary heat balances. It is the best estimate power level indication that the operators use for controlling the reactor power level as well as for calibrating the out-of-core nuclear instrumentation in the power range. The weighting factors for the best estimate calculation vary according to the power level, the primary heat balance power being weighted more heavily at lower power levels, and the secondary heat balance power being weighted more heavily at higher power levels.

The 2.52 percent error in the feedwater flow constants could have caused the computer-indicated secondary heat balance power level to be in error by approximately -2.5 percent (a conservative indication) and the -4.5% error in the RC flow constants could have caused the computer-indicated primary heat balance power level to be in error by approximately +4.5 percent (a non-conservative indication). These errors could have caused the best estimate core thermal power indication to be conservative at high power levels (above 70% FP) and slightly non-conservative at low power levels with the maximum positive error being approximately 1% FP. Since it is the best estimate core thermal power indication that is normally used for controlling the reactor power level and for calibrating the out-of-core power range nuclear instrumentation, and since the 1% FP error induced in the best estimate core thermal power values by the errors in the computer flow constants is less than the 2% FP heat balance error assumed in the safety analysis, it is concluded that this incident did not create an unsafe condition and that it did not affect the health and safety of the public.

Corrective Action:

The correct flow constants were incorporated into the Oconee Unit 3 computer flow calculational program on May 4, 1976. In addition, these flow constants will be verified annually upon completion of the annual RC flow measurement.

The computer flow constants for Oconee Units 1 and 2 have been checked and verified to be correct.