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 FACIL: 50-270 Oconee Nuclear Station, Unit 2, Duke Power Co.
 AUTH. NAME: PARKER, W.O. AUTHOR AFFILIATION: Duke Power Co.
 RECIP. NAME: O'REILLY, J.P. RECIPIENT AFFILIATION: Region 2, Atlanta, Office of the Director

DOCKET #
05000270

SUBJECT: Follows up 800530 ltr which provided preliminary info re large vol of water discovered in tendon gallery on 800529. Caused by inleakage permitted by inoperable tendon gallery sump pumps. Diagram encl.

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NOTES: M Cunningham: all amends to FSAR & changes to Tech Specs. 05000270

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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

August 1, 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 Sir:

On May 29, 1980, your office was informed of the discovery of a large volume of water in the Unit 2 tendon gallery. My letter of May 30 provided preliminary information on this event. The following paragraphs provide a more detailed report. Although this event does not constitute a reportable occurrence, this report is provided for your information.

During an inspection of the Unit 2 reactor building on May 29, 1980, prior to the performance of an Integrated Leak Rate Test (ILRT), approximately 45,000 gallons of water were discovered in the tendon gallery. This water, which covered the entire tendon gallery floor to a depth of about 20 inches, was sampled and found to be contaminated. Since the Tendon Gallery Sump Pumps (TGSP) for Unit 2 were inoperable at that time, it is considered that the majority of the water resulted from normal inleakage for which the TGSP's were designed to handle. An investigation was started to determine the source of the contamination.

As part of the investigation, the tendon galleries of Units 1 and 3 were inspected. The TGSP's for these units were found to be effectively keeping any inleakage pumped out. Samples of the water found in the sumps of these tendon galleries were isotopically analyzed. These analyses indicated that Unit 1's sample consisted of similar isotopes as found in Unit 2, but with a lower activity, and that Unit 3 had only trace activity. Based on these results, the TGSP's of Units 1 and 3 were stopped, halting transfer of any water from the tendon galleries until the sources of contamination could be identified.

During the search for the sources of contamination, an inspection of the Unit 1 Auxiliary Building revealed that two High Pressure Injection (HPI) system valves in the West Penetration Room were leaking. Water from this leakage was observed to be seeping through the West Penetration Room floor-Reactor Building wall interface and down into the Decon Tank Room below. This interface consists of 2 inches of self-expanding cork which separates the Reactor Building wall

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from the West Penetration Room floor. This exact arrangement is also used to separate the Decon Tank Room floor from the Reactor Building wall. Thus, it is considered that the water from the leaking valves, after entering the Decon Tank Room seeped through the cork interface between the Decon Tank Room floor and the Reactor Building wall and into the soil below. Since the Decon Tank Room is the lowest room on the west side of the Auxiliary Building that is adjacent to the Reactor Building, it is further considered that the seepage of this water could continue through the soil and into the top of the tendon gallery by means of a joint in the concrete. Figure 1 illustrates this flow path.

To test this theory, a sample was taken from some water on Unit 1's Decon Tank Room floor which had collected from the seepage coming down from the West Penetration Room. This sample was isotopically analyzed and compared with a sample of water taken from the west sump in Unit 1's tendon gallery. The two samples indicated the presence of similar isotopes. However, the activity of the tendon gallery sump sample was so low that it can only be considered that the water in the sump may be from the same source as the water in the Decon Tank Room.

Inspection of Unit 2's West Penetration Room indicated no leaking valves. However, standing water was found in a pipe trench in Unit 2's Decon Tank Room. A sample of this water was isotopically analyzed and compared to a sample from Unit 2's tendon gallery. Although the sample from the tendon gallery was more dilute, the two samples indicated nearly identical isotopes and the ratio of activities of similar isotopes were comparable. Therefore, it is strongly considered that these two samples had the same source of contamination. However, no water was observed in the Decon Tank Room other than that in the pipe trench. Furthermore, no leakage was observed in the West Penetration Room. Thus, the source of contamination cannot be positively identified.

The observations made on Unit 1, however, demonstrate that water can violate the expanding cork interface used to separate the Auxiliary Building floors from the Reactor Building wall. Therefore, it is considered that a leak occurred at some time in the past in Unit 2's West Penetration Room and that water from this leak entered the Unit 2 tendon gallery following the flow path illustrated in Figure 1. Although the leak was evidently repaired, some of the water that seeped into the Decon Tank Room was trapped in the pipe trench, thereby providing a link in the identification of the source of contamination.

The water in the tendon galleries of all three Oconee units has been analyzed to determine the combined exposure to the public from the water's contamination. A combined dose of 0.138 mrem was calculated using the method described in the Offsite Dose Calculation Manual. An exposure of 0.138 mrem is considered to be insignificant. In addition, water pumped from the tendon galleries and discharged has always been monitored, since this water passes to the Oil Collection Basin via the yard drains. No abnormal releases have

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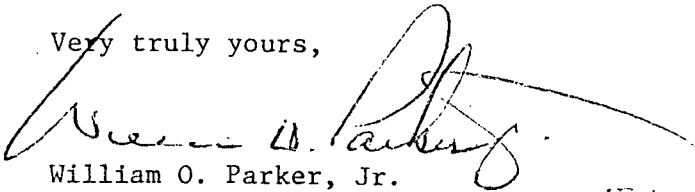
been observed which may be attributable to the tendon gallery water. Thus, this event was of no significance with respect to safe operation and did not affect the health and safety of the public.

As stated previously, the transfer of all water from the tendon galleries was halted during this investigation. A procedure will be written and approved by August 31, 1980 to pump this water from the tendon galleries, accounting for the total activity content of each release and providing for proper monitoring during the release. A modification will be examined to permanently reroute the water from the tendon galleries to provide monitoring prior to and during release. In addition, a program for periodic isotopic analysis of the water in the tendon galleries has been established.

In order to eliminate the potential flow path of contaminated water from the Auxiliary Building, Duke Power Company will review the adequacy of the current design of the interface between the Auxiliary Building floors and the Reactor Building wall. Other designs will be evaluated and appropriate design modifications will be implemented to establish an effective seal in this interface.

My letters of July 2 and July 21, 1980 addressed the delays in the preparation of this report.

Very truly yours,



William O. Parker, Jr.

FTP:scs

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

Mr. Bill Lavallee
Nuclear Safety Analysis Center
P. O. Box 10412
Palo Alto, California 94303

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OCONEE UNIT 2

FIGURE 1

CONTAMINATED WATER FLOW PATH TO TENDON GALLERY

