UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

JUN 19 1970

Mr. Harold Price
Director of Regulation
U.S. Atomic Energy Commission
7920 Norfolk Avenue
Bethesda, Maryland 20545

Dear Mr. Price:

Transmitted herewith in response to a request by Mr. Roger S. Boyd, is a review of the hydrologic aspects of the Oconee Nuclear Station Unit Nos. 1, 2 and 3 - AEC Docket Nos. 50-269, 270, and 278 - proposed by the Duke Power Company.

This review was prepared by P. J. Carpenter and has been discussed with members of your staff. We have no objections to your making this review a part of the public record.

Sincerely yours,

W. A. Rainwater

Acting Director

Enclosure

cc: Walter G. Belter, AEC

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Duke Power Company
Oconee Nuclear Station
Units 1, 2, and 3

AEC Docket Numbers 50-269, 270, and 287

The Oconee Nuclear Station is located on the eastern shore of Lake Keowee, approximately 8 miles northeast of Seneca, Oconee County, South Carolina. Each unit will use a pressurized-water reactor with an ultimate power output rated at 2,584 megawatts thermal or 866 megawatts electrical.

A copy of the hydrology review (dated June 9, 1967) prepared at the construction license stage by E. L. Meyer is attached. This hydrology review is in regard to the application for an operating license and is based on a review of the "Preliminary" and "Final Safety Analysis Reports" and an independent check of available data and literature. Because no additional hydrologic data or analyses are presented in the "Final Safety Analysis Report" comments made in the earlier review are still applicable and comments made below will correct and supplement them.

The plant grade is established at an elevation of 796 feet above mean sea level. Because the plant grade is separated from Lake Keowee by a topographic ridge varying from 25 to 150 feet high, and is some 130 feet above the flood pool of Hartwell Reservoir (immediately downstream of the site), flooding of the site would be unlikely.

Water for the once-through condenser cooling of all three units will be taken from Lake Keowee at an approximate rate of 4,700 cubic feet per second. The cooling water will be released immediately upstream from Lake Keowee Dam and the Keowee Hydroelectric Station owned by Duke Power Company. The applicant states that a submerged weir placed in the intake canal will provide an emergency cooling pond with adequate storage for safe shutdown of the plant in the event of loss of water level in Lake Keowee. Lake Keowee is formed by dams on the Little and Keowee Rivers. If the water level were lost in the Lake by failure of either dam, the Keowee and Little Rivers would be separated by a topographic ridge and the natural flow of Little River only would then pass the intake. Based on streamflow records collected at surrounding nearby sites it appears that for a period of any seven consecutive days the flow of Little River at the site may fall below 20 cubic feet per second with an average recurrence of once every 40 years. Hence, the integrity and adequate capacity of the emergency cooling pond should be assured.

Ground-water supplies in the area should not be affected by the accidental release of radionuclides at the site because the hydraulic gradient of the unconfined water in the relatively impermeable saprolite which mantles the area tends to follow the surface topography, is directed toward (southeast) the Keowee River, and should not be materially altered by the water level in Lake Keowee.

Radionuclides, such as Cesium-137, released in the liquid effluent at the plant site could be deposited and concentrated in the slower moving portions of the Hartwell Reservoir immediately downstream of the site. Large flood flows could subsequently resuspend those deposits and move them downstream. As Hartwell Reservoir is used as a municipal water supply and recreation area the radioactive liquid releases should be kept at a level as low as practical and the environmental monitoring program should include sediment samples from possible areas of deposition downstream of the site.