



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

December 15, 1978

Docket Nos. 50-390
50-391

Mr. N. B. Hughes
Manager of Power
Tennessee Valley Authority
830 Power Building
Chattanooga, Tennessee 37401

Dear Mr. Hughes:

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION AND POSITIONS ON
WATTS BAR

Enclosed are requests for additional information and positions
concerning the hydrologic aspects of the Watts Bar design.

Your response is requested by February 2, 1979 in order to continue
our review.

Sincerely,

A handwritten signature in cursive script, appearing to read "Steven A. Varga".

Steven A. Varga, Chief
Light Water Reactors Branch 4
Division of Project Management

Enclosure:
As stated

ccs:
Listed on following
page

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Tennessee Valley Authority

ccs:

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Mr. David Lambert
Tennessee Valley Authority
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Chattanooga, Tennessee 37401

HYDROLOGIC ENGINEERING POSITIONS

- 371.18 The figures submitted in response to question 371.1 do not correspond to the text of the response. Specifically, Figure Q371.1-2 is only one sheet not two, it does not show the elevations of roads and railroads, paved and unpaved areas, and the separate watershed areas are not numbered for identification as the text suggests. Provide the correct figures that will support your conclusion that structures housing safety-related facilities, systems, and equipment are protected from flooding during a local Probable Maximum Precipitation event by virtue of the slope of the plant yard.
- 371.19 Several of the ground elevation contours on Figure 2.1-5 are too unclear to interpret. Provide a figure that clearly shows the contours. Also on the figure outline the 150-acre drainage area north of the site and show the double 96-inch pipe that drains the area discussed in the text.
- 371.20 Several times in your response to Question 371.1 you state that the estimated maximum water surface (resulting from the Probable Maximum Precipitation at the site) will be below the critical floor elevation of 729. Provide these estimates and the detailed basis (including the estimated peak discharge and the size of the drainage area) for each of these estimates.

- 371.21 The following positions and questions are with regard to the 2-year extreme wind used to estimate the wind-wave activity associated with flooding events. If these concerns can not be adequately resolved, it is our position that the 45-mile per hour over water wind, that was approved at CP stage, be used.
- a. You stated in your response to Question 371.7 that the height of the anemometer at Chattanooga was indeterminable for much of the period of record. It is our position that wind speed data cannot be used unless the height of the anemometer is known, or it can be demonstrated that using such data is conservative.
 - b. Provide an example of how the hourly vector wind speed is calculated.
 - c. It is our position that the winds to be considered should be those associated with the season (not just the month) in which the flood producing event is postulated to occur.
 - d. In determining the 2-year extreme wind for the season, all directions should be considered and the fastest mile, 5 minute, 30 minute, and one hour duration should be analyzed.
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- The data should be presented both in tabular form and plotted on frequency paper.

e. Your response to question 371.6 is incomplete. Provide the detailed basis for the interpolation procedure used to estimate winds of different duration. Provide references for the procedures and the theory on which it is based. Also provide the basis for plotting wind speed and time on semilogarithmic graph paper.

371.22 In Section 2.4.13.4, you state that observation wells, in addition to the five existing wells, will be installed near the completion of construction. Identify the exact location of the wells that are to be installed and depths and formations that they will be sampling.

371.23 Provide the design basis ground water level for the subsurface hydrostatic loading on all safety related buildings. In Section 2.5.4.6, you only state the design level for buildings in the main plant area. It is our position that all safety related buildings be designed for a ground water level of the adjacent ground; unless it can be adequately substantiated that the maximum anticipated naturally occurring ground water level is less. The information that is provided in Section 2.5.6.4 is not adequate to substantiate that the maximum anticipated naturally occurring ground water level is less than the plant grade.

- 371.24 Page 2.4-2 has a list of the structures which have safety-related equipment and systems. For each of these structures provide the design basis water level.
- 371.25 Provide the basis for the water levels used in Section 3.8.1.2 for determining the hydrostatic pressures. Define the drawn-down ground water table that is referred to in Section 3.8.1.2.
- 371.26 Provide the basis for the conclusion that the essential raw cooling water pumps and fire pumps are able to operate during severe flooding events..
- 371.27 The data and information provided in Section 2.4.3.4 of the Watts Bar FSAR is insufficient to document that the peak discharge and bore effects of the Watts Bar failure have been considered. Therefore,
- . document that the effects of the short duration peak discharge, from the assumed rapid failure of Watts Bar dam, has been included in the Watts Bar flooding design bases, including structural loadings, for Watts Bar Nuclear Power Plant.

- document that the coincident bore, limited to an expansion of about 10° and as reflected by Blalock Ridge, has been considered in the flood design bases, including structural loadings, for Watts Bar Nuclear Power Plant.

ADDITIONAL INFORMATION WATTS BAR

DISTRIBUTION:

NRC PDR

Local PDR

Docket file

Branch file

RSBoyd

DBVassallo

FJWilliams

SAVarga

Project Manager CStahle

MService

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RTedesco

RDeYoung

VAMoore

RHVollmer

MLErnst

RPDenise

OELD

IE (3)

bcc:

JRBuchanan

TBAbernathy

ACRS (16)

no second copy recd.