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Docket Nos. 50-390
and 50-391



Mr. H. G. Parris
 Manager of Power
 Tennessee Valley Authority
 500A Chestnut Street, Tower II
 Chattanooga, Tennessee 37401

Dear Mr. Parris:

SUBJECT: REQUEST FOR INFORMATION ON WATTS BAR NUCLEAR PLANT,
UNITS 1 AND 2

The Power Systems and Geotechnical Branches require additional information to complete their review of the Final Safety Analysis Report for Watts Bar Nuclear Plant, Units 1 and 2. The information required to complete our review is listed in Enclosure 1, concerning such subjects as separation of cabling for redundant safe shutdown systems, settlement data of Category I structures, and soil properties and conditions.

We request that the geotechnical information (Q 362.29 through Q 362.35) be received within 30 days of receipt of this letter to support a site visit in May, 1981 and the fire protection information (Q 040.126) be received by August 1, 1981. If you cannot meet these dates, please inform us within seven days after receipt of this letter so that we may consider the need to revise our schedule.

Please contact us if you desire any discussion or clarification of the enclosed requests.

Sincerely,

ASchwencer
 Robert L. Tedesco, Assistant Director
 for Licensing
 Division of Licensing

Enclosures;
As stated

cc: See next page

810.4090269

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APP 3

OFFICE	DL:LB#2	DL:LB#3	DL:AD				
SURNAME	TKenyon	ASchwencer	RTedesco				
DATE	3/30/81	3/30/81	3/30/81				



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

MAR 30 1981

Docket Nos. 50-390
and 50-391

Mr. H. G. Parris
Manager of Power
Tennessee Valley Authority
500A Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Dear Mr. Parris:

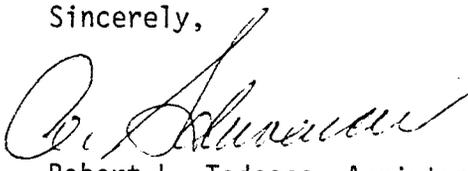
SUBJECT: REQUEST FOR INFORMATION ON WATTS BAR NUCLEAR PLANT,
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Please contact us if you desire any discussion or clarification of the enclosed requests.

Sincerely,

for 

Robert L. Tedesco, Assistant Director
for Licensing
Division of Licensing

Enclosures:
As stated

cc: See next page

Mr. H. G. Parris
Manager of Power
Tennessee Valley Authority
500A Chestnut Street, Tower II
Chattanooga, Tennessee 37401

cc: Herbert S. Sanger, Jr., Esq.
General Counsel
Tennessee Valley Authority
400 Commerce Avenue
E11B33
Knoxville, Tennessee 37902

Mr. Michael Harding
Westinghouse Electric Corp.
P. O. Box 355
Pittsburgh, Pennsylvania 15230

Mr. David Lambert
Tennessee Valley Authority
400 Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Mr. J. F. Cox
Tennessee Valley Authority
400 Commerce Avenue, W10C131C
Knoxville, Tennessee 37902

Resident Inspector/Watts Bar
NPS
c/o U. S. Nuclear Regulatory Commission
Post Office Box 629
Spring City, Tennessee 37831

ENCLOSURE 1

REQUEST FOR ADDITIONAL INFORMATION

WATTS BAR NUCLEAR PLANT, UNITS 1 & 2

040.126 In accordance with section 9.5.1, Branch Technical Position ASB 9.5-1, position C.4.a.(1) of NRC Standard Review Plan and section III.G of new Appendix R to 10 CFR Part 50, it is the staff's position that cabling for redundant safe shutdown systems should be separated by walls having a three-hour fire rating or equivalent protection (see section III.G.2 of Appendix R). That is, cabling required for or associated with the primary method of shutdown, should be physically separated by the equivalent of a three-hour rated fire barrier from cabling required for or associated with the redundant or alternate method of shutdown. To assure that redundant shutdown cable systems and all other cable systems that are associated with the shutdown cable systems are separated from each other so that both are not subject to damage from a single fire hazard, we require the following information for each system needed to bring the plant to a safe shutdown.

1. Provide a table that lists all equipment including instrumentation and vital support system equipment required to achieve and maintain hot and/or cold shutdown. For each equipment listed:
 - a. Differentiate between equipment required to achieve and maintain hot shutdown and equipment required to achieve and maintain cold shutdown,
 - b. Define each equipment's location by fire area,
 - c. Define each equipment's redundant counterpart.

- d. Identify each equipment's essential cabling (instrumentation, control, and power). For each cable identified: (1) Describe the cable routing (by fire area) from source to termination, and (2) Identify each fire area location where the cables are separated by less than a wall having a three-hour fire rating from cables for any redundant shutdown system, and
 - e. List any problem areas identified by item 1.d.(2) above that will be corrected in accordance with Section III.G.3 of Appendix R (i.e., alternate or dedicated shutdown capability).
2. Provide a table that lists Class 1E and Non-Class 1E cables that are associated with the essential safe shutdown systems identified in item 1 above. For each cable listed: (* See note on Page 3).
- a. Define the cables' association to the safe shutdown system (common power source, common raceway, separation less than IEEE-Standard-384 guidelines, cables for equipment whose spurious operation will adversely affect shutdown systems, etc.).
 - b. Describe each associated cable routing (by fire area) from source to termination, and
 - c. Identify each location where the associated cables are separated by less than a wall having a three-hour fire rating from cables required for or associated with any redundant shutdown system.

3. Provide one of the following for each of the circuits identified in item 2.c above:

(a) The results of an analysis that demonstrates that failure caused by open, ground, or hot short of cables will not affect it's associated shutdown system, * Note *

(b) Identify each circuit requiring a solution in accordance with section III.G.3 of Appendix R, or

(c) Identify each circuit meeting or that will be modified to meet the requirements of section III.G.2 of Appendix R (i.e., three-hour wall, 20 feet of clear space with automatic fire suppression, or one-hour barrier with automatic fire suppression).

4. To assure compliance with GDC 19, we require the following information be provided for the control room. If credit is to be taken for an alternate or dedicated shutdown method for other fire areas (as identified by item 1.e or 3.b above) in accordance with section III.G.3 of new Appendix R to 10 CFR Part 50, the following information will also be required for each of these plant areas.

a. A table that lists all equipment including instrumentation and vital support system equipment that are required by the primary method of achieving and maintaining hot and/or cold shutdown.

* NOTE

Option 3a is considered to be one method of meeting the requirements of Section II.G.3 Appendix R. If option 3a is selected the information requested in items 2a and 2c above should be provided in general terms and the information requested by 2b need not be provided.

- b. A table that lists all equipment including instrumentation and vital support system equipment that are required by the alternate, dedicated, or remote method of achieving and maintaining hot and/or cold shutdown.
- c. Identify each alternate shutdown equipment listed in item 4.b above with essential cables (instrumentation, control, and power) that are located in the fire area containing the primary shutdown equipment. For each equipment listed provide one of the following:
 - (1) Detailed electrical schematic drawings that show the essential cables that are duplicated elsewhere and are electrically isolated from the subject fire areas, or
 - (2) The results of an analysis that demonstrates that failure (open, ground, or hot short) of each cable identified will not affect the capability to achieve and maintain hot or cold shutdown.
- d. Provide a table that lists Class 1E and Non-Class 1E cables that are associated with the alternate, dedicated, or remote method of shutdown. For each item listed, identify each associated cable located in the fire area containing the primary shutdown equipment. For each cable so identified provide the results of an analysis that demonstrates that failure (open, ground, or hot short) of the associated cable will not adversely affect the alternate, dedicated, or remote method of shutdown.

5. The residual heat removal system is generally a low pressure system that interfaces with the high pressure primary coolant system. To preclude a LOCA through this interface, we require compliance with the recommendations of Branch Technical Position RSB 5-1. Thus, this interface most likely consists of two redundant and independent motor operated valves with diverse interlocks in accordance with Branch Technical Position ICSB 3. These two motor operated valves and their associated cable may be subject to a single fire hazard. It is our concern that this single fire could cause the two valves to open resulting in a fire-initiated LOCA through the subject high-low pressure system interface. To assure that this interface and other high-low pressure interfaces are adequately protected from the effects of a single fire, we require the following information:

- a. Identify each high-low pressure interface that uses redundant electrically controlled devices (such as two series motor operated valves) to isolate or preclude rupture of any primary coolant boundary.
- b. Identify each device's essential cabling (power and control) and describe the cable routing (by fire area) from source to termination.
- c. Identify each location where the identified cables are separated by less than a wall having a three-hour fire rating from cables for the redundant device.

- d. For the areas identified in item 5.c above (if any), provide the bases and justification as to the acceptability of the existing design or any proposed modifications.

362.29 (2.5.4) The measured settlement data given in Figures Q362.19-1 through Q362.19-5 of the FSAR is provided only up to June 1978. Provide time vs settlement plots of up-to-date settlement data obtained for all Category I structures where settlements are being monitored. Tabulate values of the measured maximum differential settlements and show comparisons of the measured data with anticipated settlements assumed in the analysis of these structures and their appurtenances, and evaluate the impact of any differences between the measured and anticipated settlements on the design and construction of these structures and appurtenances. Staff requires that the settlement of safety related structures and appurtenances be monitored for a period of at least five years after the issuance of the operating license and the impact of observed settlement, if any, on the design limits of Category I structures be evaluated periodically.

362.30 (2.5.4) Indicate how much settlement of the structures has occurred since the connections between structures and safety-related utilities were made. Evaluate the effect of the past and anticipated future settlement of structures on safety related utility connections.

362.31 (2.5.4) Your response to Question Number 371.23 indicates that you are relying on proper performance of weep holes to maintain water level at elevation 685 for retaining walls at the intake pumping station and that, based on the performance of weep holes, you have used this water elevation in the design of retaining walls. Provide the following information:
(i) the factors of safety for sliding and overturning of the walls based on water elevation of 685. Please provide analysis method and bases for assumptions made in the analysis.

- (ii) the safety factors in the design of retaining walls, if weep holes were considered inoperative due to blockage or plugging?
- (iii) details of monitoring program, if any, to assure the proper performance of weep holes during the life of the plant.

362.32
(2.5.4)

The information provided for the foundation soil conditions underneath several Category I structures, e.g., ERCW Discharge Overflow Structure, Refueling Water Storage Tanks and Waste Packaging Area is not sufficient to complete the review. Where applicable, provide the depth to bedrock, properties of in-situ gravel, properties and thickness of granular fill under the structure and excavation and backfill details for these category I structures. Provide details of pile foundation design and installation for category I structures founded on piles (e.g., Condenser Demineralizing Building and ERCW Pipe Slabs).

362.33
(2.5.4)

Provide quantitative and procedural details of the basis for the dynamic soil properties used for horizontal and vertical soil-structure interaction analysis of the Diesel Generator Building. Indicate the design water table used in seismic analysis and describe how the effect of water table was considered in the vertical seismic analysis.

362.34 In response to Question 371.23 you indicate that use of a permanent
(2.5.4) dewatering system is required to permanently lower groundwater levels at safety-related structures. Provide an evaluation of the effect of the lowered water table on the stability and settlement of Category I structural foundations.

362.35 In June of 1979, you reported that the piles supporting Category I
(2.5.4) ERCW pipe slabs were not driven to drawing requirements. In March 1980, based on load tests on six piles driven to the same criteria you concluded that no corrective action is required. You also indicated at that time that field measurements show no settlement of the slabs. Provide the following information:

- (a) quantitative and procedural details of the pile load tests conducted to verify the adequacy of installed piles. Provide the design loads, test loads, the location of test piles, comparison of soil conditions at the location of test piles and the piles installed under the ERCW pipe slabs and load test results.
- (b) up-to-date time vs settlement plots at various locations of the slabs where settlements are being monitored. Tabulate the values of the measured maximum differential settlement of the slabs and evaluate its effect on the allowable stress levels in these slabs.

MAR 27 1981

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LB#2 File
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FWilliams
IE(3)
JCooke, OELD
MRushbrook

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~~Service~~

Mr. H. G. Parris
Manager of Power
Tennessee Valley Authority
500A Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Dear Mr. Parris:

SUBJECT: WATTS BAR SAFEGUARDS CONTINGENCY PLAN

Enclosed are comments related to the review of the Safeguards Contingency Plan for the Watts Bar Nuclear Plant. It is requested that the appropriate changes be submitted within 30 days of receipt of this letter.

The enclosure is marked "PROPRIETARY," contains sensitive safeguards information, and should be protected under 10 CFR 2.790(d).

Sincerely,

Original signed by
Robert L. Tedesco

Robert L. Tedesco, Assistant Director
for Licensing
Division of Licensing

Enclosure:
As stated

cc w/o enclosure
See next page

**ENCLOSURE WITHHELD FROM
PUBLIC DISCLOSURE**

APPB

OFFICE	DL:LB#1	DL:LB#2	DL:AD:L				
SURNAME	TKenyon	ASchwencer	RTedesco				
DATE	3/25/81	3/25/81	3/25/81				