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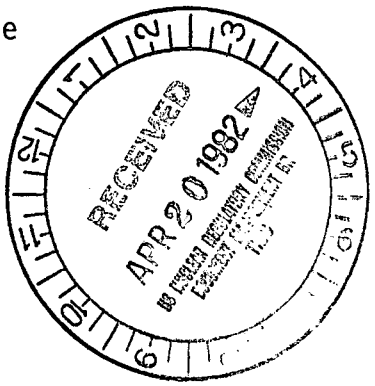

Docket Nos: 50-390/391

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

Dear Mr. Parris:

Subject: Request for Additional Information Concerning the Watts Bar Nuclear Plant, Units 1 and 2

Attached are requests for additional information developed as a result of our review of the Final Safety Analysis Report for the Watts Bar Plant, Units 1 and 2. These requests provide clarification to the concerns discussed in the December 30, 1981 draft SER and subsequent meetings held on these subjects.

Below is a list of the subject areas included in this package:

Attachment	Q Nos.	Subject
1	212.113	Insulation Survey
2	413.22	Initial Test Program
3	40.127 - 40.128	Diesel Generator Engine

If you have any questions concerning these matters, please contact the project manager, T. J. Kenyon, at (301) 492-7266.

The reporting and/or record keeping requirements contained in this letter affect fewer than ten respondents, therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Elinor G. Adensam, Chief
Licensing Branch #4
Division of Licensing

8205040242
A

Enclosure:
As Stated

cc: See nest page

OFFICE	DL:LB#4	LA:DL:LB#4	DL:LB#4				
SURNAME	TKenyon:eb	MDuncan	EAdensam				
DATE	4/16/82	4/19/82	4/19/82				

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WATTS BAR

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ATTACHMENT 1

Confirmatory Item - Information Request

212.113 (6.3) (212.116) The responses (FSAR Amendments 46 and 48 to RSB questions concerning sump debris (Q212.116) and the letters referenced do not provide all the information (per Q212.116) necessary to perform a plant specific analytical assessment (similar to that performed for Sequoyah) which would confirm the conclusions expressed in our SER (based on general containment similarities to the Sequoyah design already accepted, predominantly metal reflexive insulation design used at Watts Bar adequate housekeeping procedures, and adequate alarm and response procedures, Watts Bar sump debris design is acceptable). To confirm our acceptance of Watts Bar, provide the detailed insulation survey requested in Q212.116. We require that this information be provided prior to startup after the first refueling outage.

ATTACHMENT 2

413.22 The staff has requested that the following systems be included in the Initial Test Program:

(1) Condensate system.

(2) Leakage tests of ECCS systems and testing of leak detection and pumping systems provided to control leakage from ECCS systems.

(3) Ventilation systems for the intake pumping station.

(4) Turbine building area ventilation system.

(5) Raw cooling water system.

(6) Hotwell level control system.

(7) Condensate storage tank auxiliaries including systems used for temperature control of tanks and suction lines and indication and alarm functions.

(8) 48 VDC system.

(9) Failed fuel detection system.

(10) Chemical addition systems for the secondary plant.

(11) Turbine gland sealing system and gland seal water system.

(12) Standby lighting system.

(13) Condenser Circulating Water.

TVA has stated these tests are not required by Regulatory Guide 1.68, Rev. 0. It is the staff's understanding that TVA will test some of these systems during the preoperational test program, but is reluctant to provide NRC with documented test abstracts of these tests. The staff requests TVA to re-examine the above list of tests and either provide the NRC with test abstracts or show that these systems:

a. Will not be used for shutdown and cooldown of the reactor under normal plant conditions and for maintaining the reactor in a safe condition for an extended shutdown period.

b. Will not be used for shutdown and cooldown of the reactor under transient (infrequent or moderately frequent events) conditions and postulated accident conditions and for maintaining the reactor in a safe condition for an extended shutdown period following such conditions.

c. Will not be used for establishing conformance with safety limits or limiting conditions for operation that will be included in the facility technical specifications.

d. Are not classified as engineered safety features and will not be relied on to support or ensure the operations of engineered safety features within design limits.

e. Are not assumed to function and for which credit is not taken in the accident analysis of the facility, as described in the FSAR, and

f. Will not be used to process, store, control, or limit the release of radioactive materials.

ATTACHMENT 3

40.127 DIESEL ENGINE JACKET COOLING WATER SYSTEM

A. BACKGROUND

1. From the test data and information supplied in the December 9, 1981 letter from EMD-GM, the staff has been able to determine the following:

   a. With a minimum ambient temperature of 66°F the jacket cooling water temperature is approximately 86°F.

   b. The lube oil cooling water circuit temperature ranges from 114°F to 154°F.

   c. The heat exchanger/radiator cooling water is at room ambient temperature.

   d. The temperatures associated with the cooling water system for a and c above will vary depending on the room ambient temperature.

   e. The purpose as stated by EMD-GM tests ". . .was not to verify that engine water was heated but rather to insure that the engine water would not be overheated." The test showed that "The 155°/125° immersion heater temperature switch setting provides adequate oil and water temperature levels without heating engine to a level where cylinder walls would be 'dried-out' or seals would be adversely affected."

   f. EMD-GM relies on natural circulation (thermo-syphon action) to circulate water within the lube oil heating portion of the system.

2. The diesel generator rooms in many plants are designed for a minimum room temperature of 40°F and a maximum of 125°F in the standby condition. In addition, since the heaters in the ventilation system are of non-seismic design, it is assumed that the heaters fail following a seismic event. In this case, the room temperature could drop to outside ambient temperature which could be subfreezing (between 0°F to 32°F). Applicants have stated that no guidance has been given to them by the manufacturer or his supplier concerning room environmental conditions.

3. Other diesel engine manufacturers maintain the diesel engine cooling water system in a temperature range of 120°F to 140°F and provide for the continuous circulation of the water by keep warm circulating pumps. To date no licensing event reports (LERs) have been received on failures of engines to start as a result of dried-out cylinder walls or seal failure due to maintaining diesel engine cooling water in the temperature range of 120°F to 140°F.

4. NRC requirements - Standard Review Plan 9.5.5, "Emergency Diesel Engine Cooling Water System" Section III.1.e states that "The engine 'first try' starting reliability has been increased by providing and independent loop for circulating heated water while the engine is in the standby mode."

B. The staff requests TVA to provide the following additional information with regards to the following areas of concern:

1. Does the manufacturer or supplier/assembler provide design guidance to ensure that the engines are installed in the proper environmental conditions for optimum starting and operating reliability. Please provide the environmental temperature ranges - maximum and minimum ambient temperatures - permitted the design of the engines to ensure optimum first try starting reliability.

2. If the purpose of the manufacture's tests were to show that the water was not over-heated, but maintained at an adequate temperature level so that the cylinder walls would not be dried out or the seals affected, the data obtained by the NRC did not verify this for all conditions. It only verified this for standard conditions; i.e., 66° F. A D/G room at a nuclear plant on a summer day could see a room ambient temperature of 100° F or more. The cooling water in the engine block could be over 120° F, but not more than 155° F. Discuss the effect this environmental condition has on starting the engine, such as ease of starting, verses the lower environmental condition stated in the EMD-GM report and the effects of cylinder dry-out or seal degradation if it could occur at these conditions over an extended period of time (greater than one week). In the event cylinder dry-out or seal degradation could occur at these conditions, has the manufacturer or supplier/assembler provided design guidance, preventive maintenance, or operator actions that should be taken to alleviate the situation. If so, discuss this guidance.

3. Since the engine will see a wide range of ambient environmental conditions (0° F through 100° F+), in order to assure the NRC that first try starting reliability will not be degraded, state whether or not there is a difference in the ease of starting the diesel engine over the ambient temperature range stated. In addition we need to know how the engine is affected over the entire temperature range (i.e., engine clearances, loading capability, water temperatures, etc.), but in particular the lower temperature range (less than 66° F ambient).

40.128 DIESEL ENGINE LUBRICATING OIL SYSTEM

A. BACKGROUND - From information supplied to date, the NRC has been able to determine that:

1. Maintenance instruction M.I. 9644 provides a fix for an Inspection and Enforcement Bulletin issued in 1979 on turbocharger lubrication on restart. It also partially alleviates the NRC-NUREG/CR0660 concern on dry starting of the engine. The modification proposed lubricates the lower portions of the engine (crankshaft, bearings, etc.) but not the upper portions (rocker arm assembly, camshaft, etc.). The reason given for not lubricating upper portions on a continuous basis was that hydraulic oil lock could occur in the cylinders.

2. The manufacturer recommends a 3 to 5 minute prelubrication prior to starting the diesel only if it has not been run in the preceeding 48 hours.

3. The manufacturer states in M.I. 9644 that "Wear is minimuzed if lube oil is supplied to engine and turbocharger bearings prior to and during high speed emergency starts."

B. We request you provide us with additional information with regards to the following areas of concern:

1. Diagrams and drawings in the maintenance manuals show the main bearing pump lube oil system providing lubrication to the camshaft, rocker arm assembly and other upper engine wearing parts except the cylinders and pistons. The M.I. 9644 mods provide a continuous "Trickle" flow to the main bearing pump system. Indicate whether this trickle flow is sufficient to provide lubrication to the upper engine parts and the means used to prevent the oil from lubricating these parts during standby conditions. Also, provide a description with the appropriate diagrams of the lubrication system in the engine.

2. Several applicants have proposed to provide manual or automatic intermittent prelubrication for the entire engine. This lubrication would be for a few minutes (less than 10 minutes) a day or a week. Does TVA propose to provide this prelubrication? If not, does TVA or the manufactures have any problems with this proposal in light of the manufacturer's prelube recommendation? If so, discuss these objections.

3. (a) If TVA proposes to modify the engines using that proposed in EMD-GM's M.I. 9644, show how this modification will not cause undue wear to the upper engine parts, degrade engine reliability, or cause diesel engine failure to start over the lifetime of the plant for both emergency and periodic test starts. In your response, consider the NRC's concerns on dry starting and the manufacturer's concerns on undue wear on high speed emergency engine starting.

(b) If TVA does not propose to provide the modifications of 3(a), state how TVA will prevent undue wear to the upper engine parts, degradation of engine reliability, or diesel engine failure to start considering the conditions stated in 3(a).