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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 Additional Information Regarding Item II.E.4.2 of NUREG-0737 for The Watts Bar Nuclear Plant, Units 1 and 2

The staff has reviewed your May 14, 1982 submittal as it applies to containment purge and vent valve operability assurance (Item 6 of II.E.4.2, NUREG-0737) and has determined that additional information is needed before we can complete our review. We request that you respond to the attached list of needed information by January 1, 1983.

If you have any comments or questions regarding this matter please contact the project manager, T. J. Kenyon, at (301) 492-2726.

The reporting and/or recordkeeping 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 No. 4
Division of Licensing

Enclosure: As Stated

cc: See next page

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DATE	9/28/82	9/29/82	10/5/82				

WATTS BAR

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Request for Additional Information
Concerning Purge and Vent Valve Operability
for Watts Bar 1 and 2
(NUREG-0737, II.E.4.2)

1. Analysis, where used to determine operability of purge and vent butterfly valves, should be supported by tests which established torque coefficients of the valve at various angles. As torque coefficients to determine dynamic torques in butterfly valves are dependent on disc shape, aspect ratio, angle of closure, flow direction, and approach flow, these things should be accurately represented during tests. Specifically, piping installations (upstream and downstream of the valve) during the test should be representative of the worst case of the actual field installations. Model or prototype tests may be used if the valve and installations are accurately represented and the results are conservatively scaled to the proper size. Supply a copy of the test report or a detailed description of the test performed for review by the staff. The test report or description should include as a minimum:

   A. A sketch of the test set up (including upstream and downstream piping and inlet and outlet nozzle configurations).

   B. A description of the test valve and justification that the valve is representative of the inservice valve.

   C. A description of the test procedure including
      i. flow medium used
      ii. minimum pressure maintained through the full valve stroke from open to close.

   D. Piping flow resistances differences between the test valve and the actual installation.

   E. Sample calculation of how dynamic torques are calculated for the inservice valve using test data.

NOTE: The following questions apply to inservice valves.

2. Provide the following information for each valve type/size.

   Valve
   A. Size
   B. I.D. numbers (tag number)
   C. Model number
   D. Pressure rating
   E. Inside or outside containment
   F. Standards and codes designed to

Operator

G. Manufacturer
H. Model number
I. Style
J. Type (air/spring, air/air, motor, air/spring-with-air-assist, etc.)
K. Standards and codes designed to

Solenoids

L. Manufacturer
M. Model number
N. Type (3-way, 9-way)
O. Inside or outside containment

3. Describe how static pressure loads on the disc and seismic loads on the valve assembly are combined with the torque loads in the stress analysis.

4. Provide a stress report or a tabulation which includes the following information for each valve type/size.

   A. Valve parts analyzed
   B. Loads or load combinations used (torsional, bending, etc.)
   C. Stress allowables vs. calculated stresses
   D. Codes/standards used to determine allowable stresses for each part (include percentage of yield/ultimate strength used i.e., shear stress = .4 Sy)
      Upset and Faulted stress allowables should not be used unless operability under combined load conditions is verified by test.

5. Describe how the valve integrity in the closed position is assured under accident loads.

6. Is there sufficient torque margin available from the operator to overcome the combined torques developed that tend to oppose valve closure as the valve closes? What is the minimum margin and at what angle does this minimum occur?

7. Is the torque/load rating of the operator exceeded by the absolute value of combined valve torque/load developed? Where rating is dependent on disc angle indicate the minimum margin and angle.

8. If air is used to assist in closing the valve, the worst case (with or without available air) should be used for the analysis unless the air supply system is environmentally and seismically qualified and the air supply inventory is periodically checked for leak rates and inventory. If credit is to be taken for air assist in closing, a description of the air supply system should be provided and a description of the periodic maintenance and inspection, as well as qualification of the air supply should also be provided.

9. What margins are available on actual versus allowable loads to account for increased torques on the valve from the shaft in-plane with elbow non-uniform approach flow. (Should be provided if torques are based on straight pipe flow-testing).

10. The following questions apply to specific valve types only and need to be answered only where applicable. If not applicable, state so.

    A. Torque Due to Containment Backpressure Effect (TCB)

    For those air operated valves located inside containment, is the operator design of a type that can be affected by the containment pressure rise (backpressure effect) i.e., where the containment pressure acts to reduce the operator torque capability due to TCB. Discuss the operator design with respect to the air vent and bleed. Show how TCB was calculated (if applicable).

    B. Where air operated valve assemblies use accumulators as the fail safe feature, describe the accumulator air system configuration and its operation. Discuss active electrical components in the accumulator system, and the basis used to determine their qualification for the environmental conditions experienced. Is this system seismically designed? How is the allowable leakage from the accumulators determined and monitored?

    C. For valve assemblies requiring a seal pressurization system (inflatable main seal), describe the air pressurization system configuration and operation including means used to determine their qualification for the environmental condition experienced. Is this system seismically designed?

    D. Where electric motor operators are used to close the valve has the minimum available voltage to the electric operator under both normal or emergency modes been determined and specified to the operator manufacturer to assure the adequacy of the operator to stroke the valve at accident conditions with these lower limit voltages available? Does this reducedvoltage operation result in any significant change in stroke timing? Describe the emergency mode power source used.

E. Where electric motor and air operator units are equipped with handwheels, does their design provide for automatic re-engagement of the motor operator following the handwheel mode of operation? If not, what steps are taken to preclude the possibility of the valve being left in the handwheel mode following some maintenance, test etc. type operation?

F. For electric motor operated valves have the torques developed during operation been found to be less than the torque limiting settings?