

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

November 3, 1981

Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Chief
Licensing Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555



Dear Ms. Adensam:

In the Matter of the Application of)
Tennessee Valley Authority)

Docket Nos. 50-390
50-391

Enclosed is additional information concerning long-term operability of deep draft pumps at Watts Bar Nuclear Plant requested by letter dated August 31, 1981 from R. L. Tedesco to H. G. Parris.

If you have any questions concerning this matter, please get in touch with D. P. Ormsby at FTS 858-2682.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

A handwritten signature in cursive script, appearing to read "L. M. Mills".

L. M. Mills, Manager
Nuclear Regulation and Safety

Sworn to and subscribed before me
this 3rd day of Nov., 1981

Bryant M. Lowery
Notary Public

My Commission Expires 4/4/82

Enclosure

8111090389 811103
PDR ADDCK 05000390
A PDR

Boo!
5
1/1

ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 DEEP DRAFT PUMPS

General Discussion

Sixteen deep draft pumps, similar to those discussed in a July 11, 1979, letter from J. P. O'Reilly to H. G. Parris (MEB 790718 375), are installed at Watts Bar Nuclear Plant (WBN). All 16 pumps are located in the intake pumping station with independent functions performed by various pumps. A listing of function, manufacturer, model, and capacity is given in Table 1. In responding to the referenced letter, TVA is addressing conformance to the guidelines of only the ERCW pumps since inspection and installation procedures are generally generic between pumps, and the ERCW pumps are of greatest importance to safe operation of the plant.

Responses

Item 1.1a - The ERCW pumps were furnished by Byron-Jackson Pump Company (B-J). The shaft segments were fabricated to meet requirements of the American National Standards Institute (ANSI) B58.1 - "American National Standards for Deep Well Vertical Turbine Pumps - Line Shaft and Submersible Types" and accepted quality assurance and quality control procedures. These segments were inspected and measured by the fabricator to ensure straightness within the specified tolerances before shipment. When the pump segments were received at the site, they remained in their shipping container until the time of installation. They were then uncrated and visually inspected for damage. In addition, field instructions were issued at the site for installation purposes. These instructions were written to ensure proper utilization of the manufacturer's manuals and drawings, as well as implementation of various quality control procedures for handling, lifting, cleanliness, lubrication, and protection of the pumps.

Item 1.1b - The complete couplings (i.e. pump half and motor half) were furnished by B-J and fabricated to meet their own specifications and accepted quality assurance and quality control procedures. The couplings were inspected and measured by the fabricator to ensure conformance to the specified tolerances before shipment. The couplings were fabricated with such precision as to not be interchangeable. Applicable field instructions were issued at the site for installation purposes (see item 1.1a).

Item 1.1c - The column pipe segments and bearing guides were fabricated to meet requirements of the ANSI-B58.1 and accepted quality assurance and quality control procedures. These segments were inspected and machined square by the fabricator to ensure that the segment flanges were perpendicular to the centerline of the segment prior to shipment. Each item was matchmarked by the fabricator and identified by pump and joint during preassembly at the factory. Applicable field instructions were issued at the site for installation purposes (see item 1.1a).

Item 1.1d - The pump column sections were installed a segment at a time using construction procedures and the manufacturer's drawings. No optical methods of aligning or checking alignment were required by these documents and no total casing alignment measurements were taken. Section-to-section alignment was ensured by use of matchmarked couplings and bolt torquing of sections to manufacturer's recommendations. The pump wells were checked for clearance, proper elevation, and plumbness before the pump installation.

Item 1.1e - Construction procedures required that motor mounting flanges dimensions be checked to ensure the motor would fit the motor mount surface. Concentricity of mounting face and rabbet fit was checked. Tolerances used were based on National Electrical Manufacturers Association (NEMA) standards. Couplings were installed by heating and a slight press fit.

Item 1.1f - All coupling joints were torqued according to manufacturer's recommendations and installation procedures for torque value and sequence.

Item 1.2a - The pump housings were set using machined surfaces on the pump and motor. A master level was used to set up a three-point check. The pumps were held in place by steel shim plates and anchor bolts, grouted, and then rechecked.

Item 1.2b and 1.2c - The sump was designed in accordance with the requirements of the Hydraulic Institute Standards of America. There are no sharp bends in the entrance to the sump and no interferences between the bottom of the sump and any portion of the pump which would restrict flow to the inlet of the bellmouth.

Item 2.0 - TVA has an extensive set of surveillance instruction, technical instruction, and maintenance instruction requirements which are utilized at Watts Bar Nuclear Plant. These instructions will ensure us of long-term operation. Copies of a typical surveillance instruction (SI-4.0.5.67.p), maintenance instruction (MI-67.1), and technical instruction (TI-31-2) are attached. These instructions provide for specific installation instructions which ensure that the pump alignment and bearing clearances are carefully checked. The instructions also provide for periodic (monthly or quarterly) inspections which will reveal potential defects in capacity or excessive vibrations. Once operational limits or vibrations exceed the specifications, the pump would be removed from service and repaired. A postmaintenance surveillance instruction would be completed to ensure satisfactory operations, and a technical instruction for equipment monitoring would be carried out to ensure continued satisfactory operation.

Similar maintenance instructions for the screen wash pumps and high-pressure fire protection pumps will be completed before fuel loading.

TABLE 1 - TVA SAFETY-RELATED, DEEP DRAFT, TURBINE-TYPE PUMPS (RESPONSE TO IEB 79-10)

TVA Plant	Pump ID	No.	Manufacturer	Model No.	Flow(GPM)/Head(ft)	Plant Application	Dimension
					Capacity		Length/Dia
Watts Bar (2 units)	ERCW	8	Byron Jackson	32" RXL- VCT	11800/210	Essential Raw Cooling Water	90'-0"/ 2'-10"
	ERCW Screen Wash	4	Johnston Pump Co.	8 CC	270/350	ERCW Screen Wash in Intake Pumping Station	87'-10"/ 8-1/2"
	HPFP	4	Goulds Pumps, Inc.	VIT-12X16	1590/330	High Pressure Fire Protection and Flood Supply to Aux. Feedwater	84'-8"/ 16-3/4"