

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

December 3, 1982

DEC 6 AIO: 07

U.S. Nuclear Regulatory Commission  
Region II

Attn: Mr. James P. O'Reilly, Regional Administrator  
101 Marietta Street, Suite 3100  
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - NRC-OIE REGION II INSPECTION  
REPORT 50-390/82-29, 50-391/82-26 - REVISED RESPONSE TO DEVIATIONS

The subject inspection report dated August 27, 1982 cited TVA with two deviations. Our response to those deviations was submitted on October 8, 1982. Based on a subsequent telephone call with Inspectors B. Miller and T. Conlin, TVA is revising its response in order to provide more information.

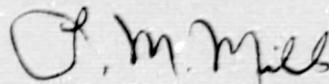
Enclosure 1 is our revised response to those deviations. This revision was requested by Inspectors Miller and Conlin during the teleconference call on October 25, 1982 in order to provide more information concerning our initial response. Enclosure 2 addresses an additional matter discussed during the October 25 call. The submittal date of this response was discussed with Inspector R. V. Crlenjak on November 23, 1982.

If you have any questions, please get in touch with R. H. Shell at FTS 858-2688.

To the best of my knowledge, I declare the statements contained herein to be complete and true.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



L. M. Mills, Manager  
Nuclear Licensing

Enclosures

cc: Mr. Richard C. DeYoung, Director (Enclosures)  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

## ENCLOSURE 1

### WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 REVISED RESPONSE TO DEVIATIONS

#### Deviation 390/82-29-03, 391/82-26-03

The Watts Bar Fire Protection Program Evaluation of April 18, 1977, Section C identifies the quality assurance program to be applied to the design and construction of the fire protection systems at Watts Bar. TVA Drawing No. 47W832-1, Note 9 states that "all construction activities for the fire protection system shown on this drawing shall be documented in accordance with the limited QA program for fire protection. TVA Quality Control Instruction WBNP-QCI 1.39, Fire Protection QA Program, Section 2.1.1 states that the fire protection quality assurance program is applicable to mechanical fire protection system, pumps, piping, and valves.

Contrary to the above, the exterior TVA Class H fire protection water system shown on Drawing 47W832-1 was not installed or tested under a quality assurance program.

#### TVA Response

We acknowledge that construction activities for the exterior piping system shown on drawing 47W832-1 have not been adequately documented per our commitments. However, we feel the drawing in question overstates the extent to which the quality assurance program applies to this piping. It is our position that the program applies only to those features that may affect fire protection for safety-related areas of the plant. Thus, only those headers supplying water directly from the fire pumps located in the intake pumping station to the safety-related structures should fall under the quality assurance program.

Reviews of our construction quality assurance program at Watts Bar indicate that a similar problem with documentation may exist for other fire protection features. This problem has been primarily attributed to poorly defined quality assurance boundaries on design drawings as required by Section 2.2 of TVA General Construction Specification G-73, Inspection, Testing and Documentation Requirements for Fire Protection Systems and Features.

#### Corrective Actions for Specific Finding

1. Any applicable portions of the fire protection exterior piping system not having documentation on record will be hydrostatically tested and documented.

2. Flow tests will also be run on exterior piping loops and main feeds to safety-related buildings. These tests will be conducted and documented as part of the plant's preoperational test TVA series 25.

Corrective Actions That Have Been or Will Be Taken

1. TVA's Division of Engineering Design (EN DES) will issue an engineering procedure applying to all nuclear projects that will clearly state what organizations are responsible for defining fire protection quality assurance boundaries on design drawings and will state the general criteria for establishing these boundaries.
2. EN DES will then review all Watts Bar drawings that fall under the fire protection quality assurance program for conformance to the engineering procedure. All deficiencies will be corrected through drawing revisions.
3. TVA's Division of Construction (CONST) will review all Watts Bar drawings falling under the Fire Protection Quality Assurance Program and will verify that adequate quality assurance records exist in compliance with TVA General Construction Specification G-73, Inspection, Testing and Documentation Requirements for Fire Protection Systems and Features. All non-conforming items will be documented and appropriately dispositioned.

Corrective Actions Which Will Be Taken to Prevent Further Deviations

Full implementation of the proposed engineering procedure and the existing general construction specification should prevent further deviations at Watts Bar.

TVA will evaluate the adequacy of the fire protection quality assurance boundaries on design drawings for our other active nuclear plants. If problems are identified, they will be corrected in a manner similar to the actions outlined above.

Date Corrective Actions Will Be Completed

The corrective actions listed above will be completed by July 1, 1983.

Deviation 390/82-29-01, 391/82-26-01

The Watts Bar Fire Protection Program Evaluation of April 18, 1977, Sections E.3 and F.3 state that the automatic sprinkler systems at Watts Bar will be in conformance to the requirements of National Fire Protection Association (NFPA) Standard No. 13, Automatic Sprinkler Systems. NFPA-13 Section 5-3.5.2 states that the sprinkler piping of pre-action systems containing more than 20 heads shall be automatically supervised.

Contrary to the above, the pre-action sprinkler system for the cable spreading room and 755-foot elevation of the control building contains approximately 363 heads and the piping system is not supervised.

TVA Response

All preaction sprinkler systems at Watts Bar, including the one in question, are supervised by pressure switches downstream of the system control valves. The switches provide annunciation in the Main Control Room anytime a control valve opens and water is admitted into the sprinkler systems.

The preaction sprinkler systems covering areas of the plant containing class 1E motor control centers and auxiliary control panels are also provided with low pressure air supervision. The systems have pressure switches that provide Main Control Room annunciation indicating when the integrity of the piping systems have been lost.

The following table identifies the type of supervision provided for preaction sprinkler systems located in safety-related areas of the plant:

<u>Building</u>	<u>Elevation</u>	<u>Room Number</u>	<u>Room Name</u>	<u>Pressure Switch Only</u>	<u>Pressure Switch &amp; Air</u>
Control	592.0	C1	Mechanical Equip	X	
		C2	Mechanical Equip	X	
		C3	250V Battery Room No. 1	X	
		C6	250V Battery Room No. 2	X	
		C7	24V & 48V Battery Room	X	
		C9	Communications Room	X	
		C10	Mechanical Equip	X	
		C11	Corridor	X	
		C12	Secondary Alarm Sta	X	
		723.0	C1	Spreading Room	X
	755.0	C1	Mechanical Equip	X	
		C2	Janitors Closet	X	
		C3	Corridor	X	

<u>Building</u>	<u>Elevation</u>	<u>Room Number</u>	<u>Room Name</u>	<u>Pressure Switch Only</u>	<u>Pressure Switch &amp; Air</u>
		C4	Kitchen	X	
		C5	Toilet	X	
		C6	Locker Room	X	
		C9	Inst. Calib.	X	
		C10	Chart Storage	X	
		C11	Shift Engr Office	X	
		C14	Record Storage Vault*	X	
		C16	PSO Engr Shop*	X	
Auxiliary	692.0	A1	Corridor	X	
		A4	Chemical Drain Tank Rm	X	
		A6	Aux Feedwater Pump 1A-S	X	
		A7	Pipe Gallery	X	
		A9	Charging Pump 1A-A	X	
		A10	Charging Pump 1B-B	X	
		A11	Charging Pump 1C	X	
		A12	Safety Injection Pump 1B-B	X	
		A13	Safety Injection Pump 1A-A	X	
		A14	Cask Decontn Coll Tk Room	X	
		A15	Spent Resin Tank Room	X	
		A16	Valve Gallery	X	
		A17	Waste Evap Package	X	
		A18	Aux Waste Evap Pckg	X	
		A19	Safety Injection Pump 2A-A	X	
		A20	Safety Injection Pump 2B-B	X	
		A21	Charging Pump 2C	X	
		A22	Charging Pump 2B-B	X	
		A23	Charging Pump 2A-A	X	
		A25	Pipe Gallery	X	
		A26	Aux Feedwater Pump 2A-S	X	
	713.0	A1	Auxiliary Bldg Room	X	
		A2	Air Lock	X	
		A3	Titration Room	X	
		A4	Radiochemical Lab	X	
		A5	Counting Room	X	
		A6	Pipe Gallery	X	
		A7	Vol Control Tank Room	X	
		A13	Sample Room I	X	
		A14	Sample Room II	X	
		A19	Pipe Gallery	X	
		A20	Vol Control Tank Room	X	
		A22	Valve Gallery	X	
		A27	Decontamination Room	X	

\*Rooms are being converted to a Technical Support Center.

<u>Building</u>	<u>Elevation</u>	<u>Room Number</u>	<u>Room Name</u>	<u>Pressure Switch Only</u>	<u>Pressure Switch &amp; Air</u>
Auxiliary	729.0	A3	Waste Package Area	X	
		A4	Waste Package Area	X	
		A5	Cask Loading Area	X	
		A8	Fuel Transfer Valve Rm	X	
	737.0	A9	Fuel Transfer Valve Rm	X	
		A1	Common Area	X	
		A2	Hot Instrument Shop	X	
		A3	Heating & Vent	X	
		A5	Ventilation & Purge Air	X	
		A9	Ventilation & Purge Air	X	
		A12	Heating & Vent	X	
		A15	GF Fuel Detector Rm	X	
		A16	GF Fuel Detector Rm	X	
		757.0	A1	Auxiliary Control Room	
	A2		6.9KV & 480V Shutdown Bd Room A		X
	A5		480V Shutdown Bd Rm 1B		X
	A9		Personnel & Equip Access		X*
	A10		Reverse Osmosis Equip Room		X*
	A11		Reactor Bldg Equip Hatch		X*
	A12		Reactor Bldg Access Room		X*
	A14		Reactor Bldg Access Room		X*
	A15		Reactor Bldg Access Room		X*
	A16		Emer Gas Treatment Filter		X*
	A17		Personnel & Equip Access		X*
	A21		480V Shutdown Bd Rm 2A		X
	A24		6.9KV & 480V Shutdown Bd Rm B		X
	A25		Aux Control Inst Rm 1A		X
	A26	Aux Control Inst Rm 1B		X	
A27	Aux Control Inst Rm 2A		X		
A28	Aux Control Inst Rm 2B		X		

\*Air supervision provided because sprinkler system is on same control valve as areas containing class 1E motor control centers.

<u>Building</u>	<u>Elevation</u>	<u>Room Number</u>	<u>Room Name</u>	<u>Pressure Switch Only</u>	<u>Pressure Switch &amp; Air</u>
Auxiliary	772.0	A1	480V Board Rm 1A		X
		A2	480V Board Rm 1B		X
		A5	480V Transformer Rm 1B		X*
		A6	480V Transformer Rm 1A		X*
		A7	Mech Equipment Rm		X*
		A8	HEPA Filter Plenum Rm		X*
		A9	HEPA Filter Plenum Rm		X*
		A10	Mech Equipment Rm		X*
		A11	480V Transformer Rm 2B		X*
		A12	480V Transformer Rm 2A		X*
	A15	480V Board Rm 2B		X	
	A16	480V Board Rm 2A		X	
	782.0	A1	Control Rod Drive Equip Rm		X*
		A2	Pressure Htr Transfer Rm 1		X*
		A3	Control Rod Drive Equip Rm		X*
		A4	Pressure Htr Transfer Rm 2		X*
Reactor		Annulus	X		
		Reactor Coolant Pump No. 1	X		
		Reactor Coolant Pump No. 2	X		
		Reactor Coolant Pump No. 3	X		
ERCW Pumping Station	710.0	Reactor Coolant Pump No. 4	X		
		Mechanical Equip Rm 1A	X		
	721.0	Mechanical Equip Rm 2A	X		
		Mechanical Equip Rm B	X		
		Electrical Equip Rm 1A	X		

\*Air supervision provided because sprinkler system is on same control valve as areas containing class 1E motor control centers.

<u>Building</u>	<u>Elevation</u>	<u>Room Number</u>	<u>Room Name</u>	<u>Pressure Switch Only</u>	<u>Pressure Switch &amp; Air</u>
			Electrical Equip Rm 2A	X	
			Electrical Equip Rm B	X	
	728.0		Entire Elevation	X	
Diesel Generator Building	742.0	9	Pipe Gallery & Corridor	X	

\*Air supervision provided because sprinkler system is on same control valve as areas containing class 1E motor control centers.

Both types of supervision were provided in the sprinkler system design out of concern for release of water in safety-related areas of the plant. Pressure switch supervision coupled with normally dry headers downstream of the control valves, closed sprinkler heads, seismically designed components, and control valve actuation by cross-zoned fire detectors provides a high degree of assurance that water damage to safety-related equipment cannot occur due to spurious sprinkler system operation. Air supervision was provided as an added degree of assurance around critical electrical equipment that is very susceptible to water damage. This philosophy was part of the original fire hazard analysis and was based on a defense in-depth approach instead of a rigorous analysis.

The Watts Bar fire hazard analysis has recently been upgraded to address the requirements of 10 CFR 50 Appendix R. This has rigorously demonstrated a level of separation of redundant safe shutdown equipment that will prevent unacceptable water damage in the highly unlikely event that a sprinkler system operates spuriously, water is released through an unanticipated break in the system, and the break goes undetected due to lack of air supervision.

It is therefore TVA's position that adequate supervision of all sprinkler system piping is provided and that the current design complies with NFPA-13, Section 5-3.5.2.

ENCLOSURE 2

In a teleconference on October 25, 1982, Inspectors T. Conlin and B. Miller requested TVA to update its fire hazard analysis for Watts Bar Nuclear Plant to agree with the as-constructed configuration. TVA commits to revising the following documents that summarize the results of the analysis by June 1, 1983.

1. TVA letter from J. E. Gilleland to Roger S. Boyd dated April 18, 1977 documenting the Watts Bar Nuclear Plant compliance with guidelines in Appendix A of BTP 9.5-1.
2. TVA letter from L. M. Mills to A. Schwencer dated September 9, 1980 forwarding a report entitled "Watts Bar Nuclear Plant Units 1 and 2 - Fire protection Submittal."
3. TVA letter from L. M. Mills to A. Adensam dated July 9, 1982 forwarding a comparison of the Watts Bar Nuclear Plant fire protection program to the requirements of Appendix R to 10 CFR 50.