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TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

October 20, 1980 A 9:49

A01/2

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

OFFICE OF INSPECTION AND ENFORCEMENT BULLETIN 79-04 - RII:JPO 50-390, 50-391 AND NCR MEB 79-20 - WATTS BAR NUCLEAR PLANT

In response to your March 30, 1979, letter which transmitted OIE Bulletin 79-04 on Velan valves, we are enclosing the final results of our investigation for Watts Bar Nuclear Plant. TVA reported the Velan valve problem at Watts Bar to NRC-OIE Region II Inspector M. Thomas on May 22, 1979 (NCR MEB 79-20), in accordance with 10 CFR 50.55(e). The enclosed information completes TVA's repsonse to this NCR for Watts Bar Nuclear Plant. Interim reports on the bulletin and/or the NCR were submitted on March 31, May 31, June 22, November 9, and November 13, 1979, and February 27, May 1, and August 6, 1980.

If you have any questions, please get in touch with D. L. Lambert at FTS 857-2581.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L M Mills by

L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure
cc: Mr. Victor Stello, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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ENCLOSURE

FINAL RESPONSE TO IE BULLETIN 79-04 AND NCR MEB 79-20
FOR WATTS BAR NUCLEAR PLANT
INCORRECT VELAN VALVE WEIGHTS USED IN SEISMIC ANALYSIS

The following is a response to each item as listed under "Action To Be Taken by Licensees and Permit Holders" for the subject bulletin.

1. Chemical and Volume Control System (CVCS)

   Reactor Coolant Auxiliary and Miscellaneous System (RCS)

   Table 1 provides a summary of the Velan valves installed in Watts Bar with pertinent information.

2. The 12 Velan valves (six in each unit) shown in table 1 are those installed in seismic category I systems at the Watts Bar Nuclear Plant. The values of valve weight shown in the table 1 column "Design Weight" are those that were used in the original design of the piping systems and their supports. The corrected valve weights shown in the table 1 column "Actual Weights" are for those Velan valves installed in Watts Bar. These data were obtained from Westinghouse on May 15, 1979.

3-5. The following summarizes what was done to review piping and supports at Watts Bar using the corrected valve weights.

Chemical and Volume Control System (CVCS)

Table 1 shows a total of five Velan valves in each unit in this system.

Piping problems containing these valves were reanalyzed utilizing the computer program TPIPE. Isometric drawings of these sytems are attached, and the Velan valves are circled. Changes to pipe stresses were found to be minimal and still within the allowable limits. New support loads were tabulated and all supports were reevaluated. The adequacy of all supports were reevaluated. The adequacy of all supports was reaffirmed by the following methods:

1. For standard mechanical supports, the revised support loads were compared with the allowable loads from the manufacturer's catalog.

2. For noncatalog item supports, the revised support loads were compared with allowable loads based on allowable stresses.

Table 2 provides a comparison of old and new support design loads. Design loads changes and minor revisions to supports were required by these reanalyses.

Reactor Coolant Auxiliary and Miscellaneous (RCS)

Table 1 shows a total of two valves (one in each unit) in this system.

Piping problems containing these valves were reanalyzed utilizing the computer program TPIPE. An isometric drawing of this system is attached, and the Velan valve circled in red. Changes to the pipe stresses were found to be minimal and still within the allowable limits. Other minor design changes were incorporated into this reanalysis. New support loads were tabulated, and all supports were reevaluated. The adequacy of all supports was reaffirmed by the above method.

Table 2 provides a comparison of old and new support design loads. Design load changes and minor revisions to supports were required by this reanalysis.

TPIPE Computer Program

The piping was anlyzed for the deadweight, thermal, and seismic conditions using the TPIPE computer program. (A description of the TPIPE computer program is presented in the Bellefonte Nuclear Plant FSAR, section 3.9.1.2.) Stress combinations were computed for ASME section III, equations 8, 9U, 9E, 9F, 10, and 11. These combinations were then compared to the appropriate allowable stresses. The output of the TPIPE computer program provides a summary of stresses and their allowable limits for the reanalyzed piping.

Summary

Our investigation and reanalysis indicated that the corrected valve weights do not create any overstressing in pipes because of the conservation in the original design. Design documentation of load changes and minor design revisions to some supports which were marginal have been completed. All construction revisions will be made in the field before initial criticality.

TABLE 1

SUMMARY OF VELAN VALVES INSTALLED AT WATTS BAR

Plant	Valve Tag No.	Location No. (Westinghouse)	System	Design Wt. (lb)	Actual Wt. (lb)	Valve size (in)
WBN	3T78	1-,2-8383	CVCS	180	285	3
WBN	3T78	1-,2-8387A	CVCS	180	285	3
WBN	3T78	1-,2-8387B	CVCS	180	285	3
WBN	3T78	1-,2-8388	CVCS	180	285	3
WBN	3T78	1-,2-8403	CVCS	180	285	3
WBN	3T88	1-,2-8085	RCS	180	285	3

All corrected valve weights were obtained on May 15, 1979, from Westinghouse.

TABLE 2

COMPARISON OF OLD AND NEW SUPPORT DESIGN LOADS

Valve Location No.	Valve MFG No.	System	Problem/ D.P. No.	Direction	Maximum Load (Lb.) New	Maximum Load (Lb.) Old	Support Type	Support Dwg. No.	Support Fabricator
1-8383	E73-034R	CVCS	47W406-06 30A	Lateral	80	80	Rigid	62-1CVC-R183	BP, TVA
				Vertical	115	120	Spring	62-1CVC-V184	
			516	Vertical	59	60	Spring	62-1CVC-V192	
				Lateral	80	80	Rigid	62-1CVC-R191	
			317	Vertical	600	600	Rigid	62-1CVC-R190	
			323	Lateral	60	30	Rigid	62-1CVC-R201	
				Vertical	400	400	Rigid		
			543	Vertical	102	80	Spring	62-1CVC-V199	
				Lateral	200	200	Rigid	62-1CVC-R198	
			540	Lateral	130	100	Rigid	62-1CVC-R189	
			903	Vertical	103	60	Spring	62-1CVC-V187	
			90Q	Vertical	222	50	Spring	62-1CVC-V188	
			906	Vertical	172	180	Spring	62-1CVC-V195	
			90Z	Vertical	108	130	Spring	62-1CVC-V196	
1-8387A	E73-034R	CVCS	47W406-205 10	Vertical	912	850	Spring	62-1CVC-V148	
			14	Lateral	600	600	Rigid	62-1CVC-R149	
				Vertical	600	600	Rigid		
			105	Lateral	400	400	Rigid	62-1CVC-R147	
				Vertical	480	400	Rigid		
1-8387B	E73-034R	CVCS	47W406-205 83	Lateral	400	400	Rigid	62-1CVC-R141	
			89	Lateral	400	400	Rigid	62-1CVC-R142	
				Vertical	600	600	Rigid		
1-8388	E73-034R	CVCS	47W406-205 246	Lateral	560	560	Rigid	62-1CVC-R175	
				Vertical	550	420	Rigid	62-1CVC-R176	
			638	Vertical	11	14	Spring	62-1CVC-V179	BP, TVA
			Y259	Vertical	310	0	Spring	47A406-1-3	TVA
			26B	Lateral	520	520	Rigid	47A406-1-1	TVA

TABLE 2

Valve Location No.	Valve MFG No.	System	Problem/ D.P. No.	Direction	Maximum Load (Lb.) New	Maximum Load (Lb.) Old	Support Type	Support Dwg. No.	Support Fabricator
1-8403	E73-034R	CVCS	152	Vertical	337	600	Rigid	62-1CVC-257	BP, TVA
			162	Lateral	97	400	Rigid	62-1CVC-R258	
				Vertical	249	400	Rigid		
			164	Vertical	524	600	Rigid	62-1CVC-R259	
			176	Vertical	362	600	Rigid	62-1CVC-R260	
				Lateral	396	800	Rigid	62-1CVC-R261	
			179	Vertical	194	400	Rigid	62-1CVC-R262	
				Lateral	591	3000	Rigid	62-1CVC-R263	
			184	Lateral	380	800	Rigid	62-1CVC-R264	
				Vertical	158	200	Rigid		
			186	Vertical	492	800	Rigid	62-1CVC-R265	BP, TVA
1-8085	E73-034R	RCS	-08-10 EDS						
			5A	Vertical	905	1032	Spring	1-62A-290	EDS, TVA
			8	Lateral	1284	0	Rigid	1-62A-291	
			9	Lateral	891	887	Rigid		
			12	Lateral	723	493	Snubber	1-62A-292	
			12	Lateral	1388	952	Rigid	1-62A-293	
			14	Vertical	568	316	Snubber	1-62A-294	
			17H	Lateral	1467	811	Snubber	1-62A-295	
				Vertical	1247	1146	Rigid		EDS, TVA
2-8383	E73-034B	CVCS	30A	Lateral	80	80	Rigid	62-2CVC-R183	BP, TVA
				Vertical	115	120	Spring	62-2CVC-V184	
			516	Vertical	59	60	Spring	62-2CVC-V192	
				Lateral	80	80	Rigid	62-2CVC-R191	
			317	Vertical	600	600	Rigid	62-2CVC-R190	
			323	Lateral	60	30	Rigid	62-2CVC-R201	
				Vertical	400	400	Rigid		
			543	Vertical	102	80	Spring	62-2CVC-V199	
				Lateral	200	200	Rigid	62-2CVC-R198	

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Valve Location No.	Valve MFG No.	System	Problem/ D.P. No.	Direction	Maximum Load (Lb.) New	Maximum Load (Lb.) Old	Support Type	Support Dwg. No.	Support Fabricator
2-8383 (cont.)			540	Lateral	130	100	Rigid	62-2CVC-R189	BP, TVA
			903	Vertical	103	60	Spring	62-2CVC-V187	
			90Q	Vertical	222	50	Spring	62-2CVC-V188	
			906	Vertical	172	180	Spring	62-2CVC-V195	
			90Z	Vertical	108	130	Spring	62-2CVC-V196	
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			14	Lateral	600	600	Rigid	62-2CVC-R149	
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			89	Lateral	400	400	Rigid	62-2CVC-R142	
				Vertical	600	600	Rigid		
2-8388	E73-034R	CVCS	246	Lateral	560	560	Rigid	62-2CVC-R175	
				Vertical	550	420	Rigid	62-2CVC-R176	
			638	Vertical	11	14	Spring	62-2CVC-V179	BP, TVA
			Y259	Vertical	310	0	Spring	47A406-4-3	TVA
			26B	Lateral	520	520	Rigid	47A406-4-1	TVA
			249	Vertical	120	100	Rigid	47A406-4-2	TVA
				Lateral	280	280	Rigid		
			805	Lateral	300	250	Rigid	47A435-25-1	TVA
2-8403	E73-034R	CVCS	152	Vertical	337	600	Rigid	62-2CVC-257	BP, TVA
			162	Lateral	97	400	Rigid	62-2CVC-R258	
				Vertical	249	400	Rigid		
			164	Vertical	524	600	Rigid	62-2CVC-R259	
			176	Vertical	362	600	Rigid	62-2CVC-R260	
				Lateral	396	800	Rigid	62-2CVC-R261	
			179	Vertical	194	400	Rigid	62-2CVC-R262	
				Lateral	591	3000	Rigid	62-2CVC-R263	

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Valve Location No.	Valve MFG No.	System	Problem/ D.P. No.	Direction	Maximum Load (Lb.) New	Maximum Load (Lb.) Old	Support Type	Support Dwg. No.	Support Fabricator
2-8403 (cont.)			184	Lateral	380	800	Rigid	62-2CVC-R262	BP, TVA
				Vertical	158	200	Rigid		
			186	Vertical	492	800	Rigid	62-2CVC-R265	BP, TVA
2-8085	E73-034R	CVCS/ RCS	-08-10 EDS						
			5A	Vertical	905	1032	Spring	2-62A-290	EDS, TVA
			8	Lateral	1284	0	Rigid	2-62A-291	
			9	Lateral	891	887	Rigid		
			12	Lateral	723	493	Snubber	2-62A-292	
			12	Lateral	1388	952	Rigid	2-62A-293	
			14	Vertical	568	316	Snubber	2-62A-294	
			17H	Lateral	1467	811	Snubber	2-62A-295	
				Vertical	1247	1146	Rigid		EDS, TVA