

REGULATOR INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8009150460 DOC. DATE: 80/09/09 NOTARIZED: YES DOCKET #  
 FACIL: 50-438 Bellefonte Nuclear Plant, Unit 1, Tennessee Valley Au 05000438  
 50-439 Bellefonte Nuclear Plant, Unit 2, Tennessee Valley Au 05000439  
 AUTH. NAME: AUTHOR AFFILIATION  
 MILLS, L.M. Tennessee Valley Authority  
 RECIP. NAME: RECIPIENT AFFILIATION  
 YOUNGBLOOD, B.J. Licensing Branch 1

SEE REPORTS <sup>m/2</sup>

SUBJECT: Forwards addl info on Topical Rept CEB-76-25, Revision 1, "Pipe Rupture Analysis for Guard Pipe" re util penetration design & CEB-78-14, Revision 1, "Analysis of Bellefonte Main Steam Guard During Postulated Pipe Rupture."

DISTRIBUTION CODE: B001S COPIES RECEIVED: LTR 3 ENCL 25 SIZE: 3+26  
 TITLE: PSAR/FSAR AMDTS and Related Correspondence

NOTES:

ACTION:	RECIPIENT	COPIES		RECIPIENT	COPIES	
	ID CODE/NAME	LTR	ENCL		ID CODE/NAME	LTR
ACTION:	A/D LICENSNG	1	0	YOUNGBLOOD, B	1	0
	RUSHBROOK, M.	1	0	BOURNIA, T. 04	1	1
INTERNAL:	ACCID EVAL BR26	1	1	AUX SYS BR 07	1	1
	CHEM ENG BR 08	1	1	CONT SYS BR 09	1	1
	CORE PERF BR 10	1	1	EFF TR SYS BR12	1	1
	EMERG PREP 22	1	0	EQUIP QUAL BR13	1	1
	GEOSCIENCES 14	1	1	HYD/GEO BR 15	1	1
	I&C SYS BR 16	1	1	I&E 06	3	3
	MATL ENG BR 17	1	1	MECH ENG BR 18	1	1
	MPA	1	0	NRC PDR 02	1	1
	OELD	1	0	POWER SYS BR 19	1	1
	PROC/TST REV 20	1	1	QA BR 21	1	1
	RAD ASSESS BR22	1	1	REAC SYS BR 23	1	1
REG FILE 01	1	1	SIT ANAL BR 24	1	1	
STRUCT ENG BR25	1	1				
EXTERNAL:	ACRS 27	16	16	LPDR 03	1	1
	NSIC 05	1	1			

SEP 17 1980

R

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

September 9, 1980

Director of Nuclear Reactor Regulation  
Attention: Mr. B. J. Youngblood, Chief  
Licensing Branch No. 1  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Mr. Youngblood:

In the Matter of the Application of ) Docket Nos. 50-438  
Tennessee Valley Authority ) 50-439

On July 21, 1978, TVA submitted Topical Report CEB-76-25, Revision 1, "Pipe Rupture Analysis for Guard Pipe, Bellefonte Nuclear Plant Units 1 and 2," for your review. Topical Report CEB-76-25 was revised to incorporate additional information requested by the NRC to allow a meaningful evaluation of the TVA penetration design.

In a letter from O. D. Parr to N. B. Hughes dated March 16, 1979, TVA was requested to provide additional information concerning Topical Report CEB-76-25, Revision 1. Enclosed is TVA's response and 25 copies of Topical Report CEB-78-14, Revision 1, "Analysis of Bellefonte Main Steam Guard Pipe During a Postulated Pipe Rupture," which is referenced by our response. TVA believes the analyses demonstrate that the loading has been justified and that containment integrity is protected considering the postulated rupture of the process pipe. Based upon this conclusion, TVA believes that the requested exemption from inservice inspection of welds in the main steam and feedwater process pipes enclosed by guard pipes should be granted.

TVA has already procured and installed the forgings and guard pipes described in the topical report. Because of the impact changes in this

*Boo1  
5/25*

8009150 460

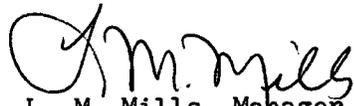
Director of Nuclear Reactor Regulation

September 9, 1980

penetration design would have on plant construction schedules and ultimate fuel loading, we would appreciate an expeditious review of our response and the topical report. We will be glad to answer any questions you may have related to our response and the topical report.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



L. M. Mills, Manager  
Nuclear Regulation and Safety

Sworn to and subscribed before me  
this 9<sup>th</sup> day of Sept. 1980

Bryant M. Lowery  
Notary Public

My Commission Expires 4/4/82

Enclosure

cc: Mr. James McFarland (Enclosure)  
Senior Project Manager  
Babcock & Wilcox Company  
P.O. Box 1260  
Lynchburg, Virginia 24505

ENCLOSURE

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION  
ON TOPICAL REPORT CEB-76-25, REVISION 1

1. Provide the methodology for determining the pipe impact loads required for evaluating the dynamic effects associated with pipe rupture. In Section 7(f) it is indicated that the impingement loads govern the design of the guard pipe insofar as the pipe rupture loads are concerned. Provide justification for arriving at this conclusion.

Response

A finite element analysis has been performed for the actual piping arrangement that shows that under the most adverse postulated break location process pipe impact on the guard pipe cannot occur. This conclusion is documented in Topical Report CEB-78-14, Revision 1.

2. In Section 9.0(b) the structural model of the guard pipe was given as a statically indeterminate beam. This model is considered to be inadequate in providing the stress levels developed from either the jet force or for a pipe impact load. A statically indeterminate, thick walled circular shell model appears to be more appropriate for this analysis. Determine the stress levels under the postulated rupture condition using such a shell model; or, alternatively, provide justification that the use of the statically indeterminate beam model results in more conservative calculated stress levels as compared with the circular shell model.

Response

Since the original analysis referred to in Section 9.0(b) of CEB-76-25, Revision 1, was performed, a more detailed analysis has been conducted. This analysis is a more rigorous finite element nonlinear dynamic analysis which considers the statically indeterminate beam as a shell structure. This is in accordance with the NRC recommendation.

The results of this analysis show that the computed stress levels are within allowable limits.

The results of this finite element analysis are documented in Topical Report CEB-78-14, Revision 1.