

INDIANA & MICHIGAN POWER COMPANY

P. O. BOX 18
BOWLING GREEN STATION
NEW YORK, N. Y. 10004

May 8, 1979
AEP:NRC:00182

D. C. Cook Nuclear Plant Units 1 & 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
IE Bulletin No. 79-04
Incorrect Weights of Swing Check Valves Manufactured
by VELAN Engineering Company

Mr. J. G. Keppler, Regional Director
U.S. Nuclear Regulatory Commission
Office of the Inspection and Enforcement
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Dear Mr. Keppler:

This letter and its attachments constitute our response to I.E. Bulletin No. 79-04, "Incorrect Weights of Swing Check Valves Manufactured by Velan Engineering Company." An extension was granted to our Mr. Castresana by your Mr. Hartster on May 1, 1979 to respond to the bulletin by May 7, 1979.

The responses are provided to the corresponding items as cited in the bulletin.

Item 1:

All Seismic Class I piping systems (or portions thereof) which contain Velan swing check valves (diameters of 3", 4" or 6") are tabulated on Attachment "A".

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Item 2:

The correct valve weight (450 lbs) was used in the reanalysis of the systems containing the 6" Velan swing check valves. Westinghouse notified us on March 19, 1979 of the correct weight of the 6" Velan check valves. I.E. Bulletin No. 79-04, dated March 30, 1979, notified us of the estimated maximum weights for the 3" and 4" Velan check valves.

Item 3:

Those portions of the systems containing the 3", 4" and 6" Velan check valves listed on Attachment "A" were reviewed. This was accomplished by examining the piping layouts and considering the following items with regard to the increased weights:

- a. The locations of the valves with respect to the points of highest combined stress (seismic plus dead weight plus pressure).
- b. The values of the combined stresses for OBE and DBE.
- c. The stress margin available.
- d. The locations of pipe supports.
- e. The support load margin available.

The 6" valves have the greatest weight difference. Considering the stress margins available, we felt assured that these systems would not be overstressed under seismic loading; nevertheless, they were reanalyzed and none of the lines were overstressed. Attachment A shows the results of the reanalysis for the 6" safety injection lines. Attachment B shows the increase in the cold leg safety injection lines and their supports due to the increased valve weights and that in all cases the increases in the maximum combined stresses amounted to less than five percent, and of the support loads to less than 30%, even though the weight of the valve was doubled.

Item 4:


Considering the slight increase in valve weights for the 3" and 4" piping systems, and the reanalysis results of the 6" lines, we conclude that the stress and support load margins available to absorb the additional weights of the valves are more than adequate. We therefore conclude that these systems and supports are not overstressed and that the reanalysis of these systems is not required and that, consequently, no modifications to the piping systems or their supports listed in Attachment "A" are necessary.

Item 5:

The seismic analyses for the piping systems shown in Attachments "A" & "B" performed by E.D.S. Nuclear, were done using the computer code PISOL-IA that utilizes the response spectrum modal analysis method. Both spatial and intermodal responses were combined without regard to sign. The analyses of the systems in Attachment "A" performed by Westinghouse, were done using an updated version of the WESTDYN code which combines the intramodal responses through absolute summation. The WESTDYN code was documented to the NRC in WCAP-8522, Revision No. 1 "Documentation of Selected Westinghouse Structural Analysis Computer Codes," May 1977.

As can be seen from our submittal, the additional weight of the Velan check valves will not adversely affect the capability of the Donald C. Cook Nuclear Plant to withstand a seismic event.

Very truly yours,


G. P. Maloney
Vice President

cc: R. C. Callen
G. Charnoff
D. V. Shaller - Bridgman
R. W. Jurgensen

ATTACHMENT A

SYSTEMS CONTAINING VELAN CHECK VALVES

ITEM DESCRIPTION	VALVE WEIGHT		COMBINED OBE	ALLOWABLE OBE	OBE STRESS	COMBINED OBE	ALLOWABLE OBE	OBE STRESS	SIZE	ISOMETRIC	ORIGINAL	MAXIMUM	AVAILABLE
ANALYSIS LINE NO.	ACTUAL	USED	STRESS (psi)	STRESS (psi)	MARGIN (psi)	STRESS (psi)	STRESS (psi)	MARGIN	OF VALVE	LINE NUMBER	SUPPORT LOAD	ALLOWABLE LOAD	SUPPORT MARGIN
MAINMENT			10,769	20,000	9,231	18,214	30,000	11,786		1-CS-34	1378	2681	1303
LY.	135#	100#	14,170	19,860	5,690	24,520	29,790	5,270	4"	2-CS-84	1373	2681	1303
ANALYSIS			10,769	20,000	9,231	18,214	30,000	11,786		1-CS-34	1590	2681	1091
			14,170	19,860	5,690	24,520	29,790	5,270		2-CS-85	1590	2681	1091
MAINMENT SPRAY			10,769	20,000	9,231	18,214	30,000	11,786		1-CS-32	3065	8000	4935
ANALYSIS	100#	60#	15,350	19,200	2,850	24,210	28,800	4,090	3"	2-CS-82	350	1130	780
MAINMENT SPARY			12,219	17,160	4,941	20,536	25,740	5,204	3"	1-CS-95	1714	6000	4286
ANALYSIS	100#	60#	10,031	17,160	2,749	15,936	25,740	9,804	3"	2-CS-118	1714	6000	4286
MAINMENT SPRAY										1-CS-96	1591	4000	2409
ANALYSIS	100#	60#	5,815	17,160	11,345	7,043	25,740	18,697	3"	2-CS-120	1591	4000	2409
										1-CS-96	1591	4000	2409
										2-CS-120	1591	4000	2409
										1-CS-92	340	1000	660
										2-CS-121	340	1000	660
										1-CS-93	340	1000	660
										1-CS-121	340	1000	660
ITY INJECTION	135#	350#	6,905	10,541	3,636	21,150	31,720	10,570	4"	1-SI-19	420	1810	1605
ANALYSIS										2-SI-25	3560	8000	4440
ITY INJECTION	135#	350#	6,905	10,541	3,636	21,150	31,720	10,570	4"	1-SI-74	420	1810	1605
ANALYSIS										2-SI-64	3560	8000	4440
ITY INJECTION*	450#	450#	9,226	19,200	9,974	13,008	23,300	15,792	6"	1-SI-26			
ANALYZED BY	450#	450#	9,233	19,200	9,462	14,012	28,800	14,788	6"	1-SI-22			
STRESSING DEVICE	450#	450#	10,763	19,200	8,437	16,032	23,300	12,718	6"	1-SI-23			
	450#	450#	10,050	19,200	9,150	14,656	23,300	14,144	6"	1-SI-27			
ITY INJECTION*	450#	450#	12,343	19,200	6,857	14,738	28,800	14,062	6"	1-SI-63	890	3,620	2,725
ANALYSIS	450#	450#	9,364	19,200	9,836	11,075	23,300	17,725	6"	1-SI-69	897	3,620	2,725
	450#	450#	10,303	19,200	8,897	12,123	28,800	16,667	6"	1-SI-70	945	3,620	2,674
	450#	450#	11,006	19,200	3,194	13,145	23,300	15,655	6"	1-SI-71	945	3,620	2,775

THERE ARE NO PIPE SUPPORTS ON THESE LINES

COMBINED STRESSES REFLECT ADJUSTED VALVE WEIGHTS.

ATTACHMENT "B"
REANALYSIS RESULTS FOR 6" S.I. LINES

SAFETY INJECTION SYSTEM TO COLD LEGS METRIC NUMBER	VALVE WEIGHT = 225#		VALVE WEIGHT = 450#		% CHANGE IN O.B.E. STRESS (psi)	% CHANGE IN O.B.E. STRESS (psi)	ALLOWABLE O.B.E. STRESS (psi)	ALLOWABLE O.B.E. STRESS (psi)	SUPPORT LOAD			
	MAXIMUM COMBINED O.B.E. STRESS (psi)	MAXIMUM COMBINED O.B.E. STRESS (psi)	MAXIMUM COMBINED O.B.E. STRESS (psi)	MAXIMUM COMBINED O.B.E. STRESS (psi)					225# VALVE	450# VALVE	% CHANGE IN SUPPORT LOAD	ALLOWABLE SUPPORT LOAD
1-SI-68	11,753	14,076	12,343	14,733	+ 4.93	+ 4.7	19,200	23,800	890	1115	25.3%	30,300
1-SI-69	9,165	10,834	9,364	11,075	+ 2.17	+ 2.22	19,200	28,800	897	1122	25.1	3,620
1-SI-70	10,018	11,779	10,303	12,123	+ 2.84	+ 2.92	19,200	28,800	946	1171	23.7	3,620
1-SI-71	10,744	12,853	11,006	13,145	+ 2.44	+ 2.23	19,200	28,800	845	1070	26.6	3,620