NUREG/CR-4003

Closeout of IE Bulletin 79-04: Incorrect Weights for Swing Check Valves Manufactured by Velan Engineering Corporation

Prepared by W. J. Foley, R. S. Dean, A. Hennick

PARAMETER, Inc.

Prepared for
U.S. Nuclear Regulatory
Commission

NUREG/CR-4003
PARAMETER IE-143

Closeout of IE Bulletin 79-04: Incorrect Weights for Swing Check Valves Manufactured by Velan Engineering Corporation

Manuscript Completed: May 1985
Date Published: June 1985

Prepared by
W. J. Foley, R. S. Dean, A. Hennick

PARAMETER, INC.
Elm Grove, WI 53122

Prepared for
Division of Emergency Preparedness and Engineering Response
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
NRC FIN B1302

ABSTRACT

IE Bulletin 79-04 was issued March 30, 1979 as a result of reports from three facilities that Velan Engineering Corporation had provided incorrect weights for swing check valves. The reason for concern was the possibility that these incorrect weights had been used in analyses of Seismic Category I piping systems at a large number of plants. Evaluation of utility responses and NRC/IE inspection reports shows that the bulletin can be closed out for 117 (92%) of the 127 current facilities on the basis of specific criteria. Followup items for the remaining 10 current facilities are proposed for use by NRC/IE. Incorrect weights reported for valves other than Velan swing check valves are identified as Remaining Areas of Concern. This bulletin has served its purpose and can be closed out. A final check of valve weights will be made per later IE Bulletin 79-14 on seismic analyses for as-built safety-related piping systems.

TABLE OF CONTENTS

CLOSEOUT OF IE BULLETIN 79-04: INCORRECT WEIGHTS FOR SWING CHECK VALVES MANUFACTURED BY VELAN ENGINEERING CORPORATION

INTRODUCTION

In accordance with the Statement of Work in Task Order 65 under Contract NRC 05-82-249, this report provides documentation for the closeout status of IE Bulletin 79-04. The following documentation is based on the records obtained from the IE File, the NRC Document Control System and the Cognizant Engineer's File.

IE Bulletin 79-04 was issued March 30, 1979 as a result of reports from Beaver Valley 1, North Anna 1 and Salem 1 that Velan Engineering Corporation had provided incorrect weights for swing check valves. These reports caused concern because of the possibility that incorrect weights of these Velan valves had been used in analyses of Seismic Category I piping systems at a large number of plants.

For background information, IE Bulletin 79-04 and a description of interrelated bulletins are included in Appendix A. Evaluation of utility responses and NRC/IE inspection reports is documented in Appendix B as the basis for bulletin closeout. Followup items are proposed in Appendix C for use by NRC/IE in ensuring satisfactory completion of corrective action. Abbreviations used in the report and associated documents are presented in Appendix D.

SUMMARY

1. The bulletin has been closed out automatically for 38 non-current facilities, per Criterion 1.

2. The bulletin has been closed out for 56 current facilities which have no Velan swing check valves in Seismic Category I piping systems, per Criterion 2.

3. The bulletin has been closed out for 21 current facilities which used correct or conservative weights of Velan swing check valves in analyses of Seismic Category I piping systems, per Criterion 3.

4. The bulletin has been closed out for 29 current facilities for which NRC/IE inspection reports verify that corrective action has been completed satisfactorily, per Criterion 4.

5. The bulletin has been closed out for 11 current facilities for which IE Bulletin 79-14 has been closed per Criterion 5.

6. The bulletin is called open for the following 10 current facilities. Followup items are proposed in Appendix C for use by NRC/IE.

   Kewaunee
   Maine Yankee
   Nine Mile Point 2
   North Anna 2
   Oconee 1,2,3
   Oyster Creek 1
   Prairie Island 1,2

CONCLUSIONS

1. Seventy-one of 127 current facilities have reported Velan swing check valves in Seismic Category I piping systems. Forty-nine current facilities have reported using lower than acceptable weights for Velan swing check valves in analyses of Seismic Category I piping systems. These results confirm the validity of the following statement excerpted from IE Bulletin 79-04.

   "It is recognized that there is a significant number of Velan swing check valves used in nuclear systems and it is possible that other stress analyses have been performed with incorrect valve weights."

2. Satisfactory completion of corrective action is ensured not only by the followup items proposed in Appendix C but also by the requirements of later IE Bulletin 79-14 pertaining to seismic analyses for as-built safety-related piping systems. IE Bulletin 79-04 (Velan valve weights) is mentioned specifically in IE Bulletin 79-14 (as-builts). Furthermore, valve weights are identified as potential nonconformances in the August 15, 1979 Supplement to IE Bulletin 79-14.

REMAINING AREAS OF CONCERN

1. The bulletin is called open for the 10 facilities identified in preceding Summary Item 6. Proposed followup items for these facilities are presented in Appendix C for use by NRC/IE.

2. Braidwood 1,2/Byron 1,2
   For each station, approximately 60 Velan globe valves with incorrect weights are reported in the CECO response of July 16, 1979. This deficiency has been reported per 10 CFR 50.55(e) and is to be tracked accordingly. IE Bulletin 79-04 has been closed out for these plants per Criterion 3.

3. WNP 2
   WPPSS reported May 25, 1979 that some piping hangers were modified in the past after 62 "overweight" Velan gate valves were discovered. This nonconformance is to be checked per later IE Bulletin 79-14 on as-builts. IE Bulletin 79-04 has been closed out for this facility per Criterion 2.

4. Watts Bar 1,2
   Twelve three-inch Velan globe valves with weights greater than used in analyses are reported in the TVA response of May 31, 1979. Reanalysis results are reported in the final response of October 20, 1980. This nonconformance is to be checked per later IE Bulletin 79-14 on as-builts. IE Bulletin 79-04 has been closed out for this plant per Criterion 4.

DEFINITIONS USED WITH CLOSEOUT CRITERIA

1. An affected valve is a 3, 4 or 6 inch swing check valve of any pressure rating, manufactured by Velan Engineering Corporation and used in a Seismic Category I piping system.

   Note: For definition of "Seismic Category 1," refer to NRC Regulatory Guide 1.29, Revision 3, September 1978, "Seismic Design Clarification."

2. An acceptable response is a clear, written reply by utility personnel indicating compliance with actions required by the bulletin.

3. A correct valve design weight is an affected valve weight which (a) equals or exceeds the actual weight or (b) equals or exceeds the estimated maximum weight listed in the bulletin.

Note: A design weight is considered to be "equal" if it is no more than 15% under either the actual weight or the estimated maximum weight. This tolerance has been set by some licensees and is considered to be reasonable; however, it is important to note that it is not an NRC criterion.

CRITERIA FOR CLOSEOUT OF BULLETIN

The bulletin is closed for facilities to which one of the following criteria applies:

1. A facility which has been cancelled, deferred indefinitely, or shut down indefinitely.

2. A facility which has submitted an acceptable response indicating that it has no affected valves installed or planned for installation.

3. A facility which has submitted an acceptable response indicating that correct valve design weights have been used for all affected valves in analyses of Seismic Category I piping systems, and explaining (either explicitly or implicitly) how and when the correct weights were determined.

4. A facility which has submitted an acceptable response confirmed per an NRC/IE inspection report indicating that all piping systems for which incorrect valve design weights were used have been reanalyzed or reevaluated, that stresses and support loads are allowable and that support system changes (if necessary) have been planned and scheduled satisfactorily.

   Note: In some cases, application of this criterion is based on evaluation of utility responses and NRC/IE inspection reports for later IE Bulletin 79-14 pertaining to seismic analyses for as-built safety-related piping systems.

5. A facility which has submitted an acceptable response and that has been closed out for IE Bulletin 79-14, Seismic Analyses for As-Built Safety-Related Piping Systems, which required the use of actual valve and valve operator weights and locations.

As mentioned on Page A-4, IEB 79-14 is of major importance because it serves as the final check on closeout of related bulletins 79-02, 79-04 and 79-07 on seismic analyses of safety-related piping systems. All three of these earlier bulletins are mentioned specifically in comprehensive IEB 79-14. For further explanation of the importance of IEB 79-14 in followup of corrective action, refer to Conclusion 2 on Page 2.

APPENDIX A

Background Information

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

March 30, 1979

IE Bulletin No. 79-04

INCORRECT WEIGHTS FOR SWING CHECK VALVES MANUFACTURED BY VELAN ENGINEERING CORPORATION

Description of Circumstances:

North Anna No. 1, Beaver Valley No. 1 and Salem No. 1 have reported to the NRC that they had been provided incorrect weights for the six inch swing check valves provided by Velan Engineering Corporation. The six inch valve weight provided on the drawing was 225 pounds, whereas the actual weight has been determined to be 450 pounds. In addition to the 6 inch valves, drawings for 3 inch valves have specified 60 pounds weight while the measured weight by the manufacturer was 85 pounds and drawings for 4 inch valves have specified 100 pounds weight while the measured weight was 135 pounds. The manufacturer presently estimates the following maximum weights for swing check valves.

Nominal Valve Size	Maximum Weight (lbs) for High Pressure (1500 psi)	
	Up to 1973	After 1973
3 inches	85	100
4 inches	135	150
6 inches	450	525
8 inches	750	1200
10 inches	1200	1200

The NRC staff has indications that in some cases, incorrect valve weights derived from engineering drawings were used in piping stress analyses. The staff is not aware of a significant difference in the actual weight and the weight provided on drawings for the 8 and 10 inch valves.

It is recognized that there is a significant number of Velan swing check valves used in nuclear systems and it is possible that other stress analyses have been performed with incorrect valve weights.

Action To Be Taken By Licensees and Permit Holders:

1. List all Seismic Category I piping systems (or portions thereof) where 3, 4, or 6 inch diameter Velan swing check valves are installed or are scheduled to be installed.

2. Verify for all those systems identified in item 1 above that correct check valve weights were used in the piping analysis. Explain how and when the correct valve weights were determined.

3. If incorrect valve weights were used, explain what actions have been taken or are planned to re-evaluate the piping systems affected.

4. Specify for all the affected systems identified in Item 1 whether modifications were or are required to the piping systems or their supports because of changes in valve weight. Also, include the basis for this determination. For those systems in which the actual valve weight is greater than the design weight provide a summary of stresses and loads and their allowable limits for the piping and its supports.

5. Identify the analytical technique including identification of any computer codes used to determine the stresses indicated in Item 4.

6. All holders of operating licenses for power reactor facilities are requested to complete Items 1 through 5 as promptly as possible, but no later than May 1, 1979. Report in writing by May 1, 1979, to the Director of the appropriate NRC Regional Office to describe your evaluation, any discrepancies in meeting Items 1 through 5, and, if necessary, your plans and schedule for resolution. For planned action, a final report is to be submitted upon completion of your action.

A copy of your report(s) should be sent to the United States Nuclear Regulatory Commission, Office of Inspection and Enforcement, Division of Reactor Operations Inspection, Washington, D.C. 20555. These reporting requirements do not preclude nor substitute for the applicable requirements to report as set forth in the regulations and license.

7. All holders of construction permits for power reactor facilities are requested to describe your actions to assure that Items 1 through 5 will be satisfied before plant startup. Documentation of these actions is to be maintained on site and available for NRC inspection. Report in writing within (60) days of date of Bulletin issuance, to the Director of the appropriate NRC Regional Office, completion of your review and describe any discrepancies in meeting Items 1 through 5 and, if necessary, your plans and schedule for resolution. A copy of your report should be sent to the United States Nuclear Regulatory Commission, Office of Inspection and Enforcement, Division of Reactor Construction Inspection, Washington, D.C. 20555.

Approved by GAO B-80225 (R0072); clearance expires 7/31/80. Approval was given under a blanket clearance specifically for identified generic problems.

Enclosure:
List of IE Bulletins
Issued in Last
Twelve Months

DESCRIPTION OF INTERRELATED BULLETINS

IE Bulletin 79-04 is one of four interrelated bulletins issued during a four-month period in 1979. These bulletins are identified below. Bulletin 79-14 is of major importance because it serves as the final check on closeout of the other three bulletins. Utility responses and NRC/IE inspection reports reflect the interrelationship of these bulletins, which have seismic loading of safety-related piping systems in common.

Bulletin Number	Date of Issue of Bulletin	Title
79-02	March 8, 1979	Pipe Support Base Plate Designs Using Concrete Expansion Anchor Bolts
79-04	March 30, 1979	Incorrect Weights for Swing Check Valves Manufactured by Velan Engineering Corporation
79-07	April 14, 1979	Seismic Stress Analysis of Safety-Related Piping
79-14	July 2, 1979	Seismic Analyses for As-Built Piping Systems

APPENDIX B

Documentation of Bulletin Closeout

TABLE B.1 BULLETIN CLOSEOUT STATUS

Facility	Utility	Docket Number	Facility Status	NRC Region	Utility Response Date	Closeout Status and Criterion
Arkansas 1	AP&L	50-313	OL	IV	04-27-79	Closed 3
Arkansas 2	AP&L	50-368	OL	IV	04-27-79	Closed 3
Bailly 1	NIPSCO	50-367	CD	III	05-21-79	Closed 1
Beaver Valley 1	DLC	50-334	OL	I	04-30-79	Closed 4
Beaver Valley 2	DLC	50-412	CP	I	05-30-79	Closed 2
Bellefonte 1	TVA	50-438	CP	II	05-31-79	Closed 2
Bellefonte 2	TVA	50-439	CP	II	05-31-79	Closed 2
Big Rock Point 1	CPC	50-155	OL	III	05-01-79	Closed 2
Braidwood 1	CECO	50-456	CP	III	05-29-79 06-19-79 07-16-79 10-17-80	Closed 3
Braidwood 2	CECO	50-457	CP	III	05-29-79 06-19-79 07-16-79 10-17-80	Closed 3
Browns Ferry 1	TVA	50-259	OL	II	05-01-79 05-04-79 05-11-79	Closed 4
Browns Ferry 2	TVA	50-260	OL	II	05-01-79 05-04-79 05-11-79	Closed 4
Browns Ferry 3	TVA	50-296	OL	II	05-01-79 05-04-79 05-11-79	Closed 4
Brunswick 1	CP&L	50-325	OL	II	04-30-79	Closed 2
Brunswick 2	CP&L	50-324	OL	II	04-30-79	Closed 2
Byron 1	CECO	50-454	LPTL	III	05-29-79 06-19-79 07-16-79 10-17-80	Closed 3
Byron 2	CECO	50-455	CP	III	05-29-79 06-19-79 07-16-79 10-17-80	Closed 3

See notes at end of table.

TABLE B.1 (contd.)

Facility	Utility	Docket Number	Facility Status	NRC Region	Utility Response Date	Closeout Status & Criterion
Callaway 1	UE	50-483	OL	III	05-29-79	Closed 3
Callaway 2	UE	50-486	CD	III	05-29-79	Closed 1
Calvert Cliffs 1	BG&E	50-317	OL	I	04-30-79 07-13-79	Closed 4
Calvert Cliffs 2	BG&E	50-318	OL	I	04-30-79 07-13-79	Closed 4
Catawba 1	DUPCO	50-413	CP	II	04-24-79	Closed 2
Catawba 2	DUPCO	50-414	CP	II	04-24-79	Closed 2
Cherokee 1	DUPCO	50-491	CHI	II	04-24-79	Closed 1
Cherokee 2	DUPCO	50-492	CHI	II	04-24-79	Closed 1
Cherokee 3	DUPCO	50-493	CHI	II	04-24-79	Closed 1
Clinton 1	IP	50-461	CP	III	05-29-79	Closed 2
Clinton 2	IP	50-462	CHI	III	05-29-79	Closed 1
Comanche Peak 1	TUGCO	50-445	CP	IV	05-23-79 06-14-79	Closed 2
Comanche Peak 2	TUGCO	50-446	CP	IV	05-23-79 06-14-79	Closed 2
Cook 1	IMECO	50-315	OL	III	05-08-79	Closed 4
Cook 2	IMECO	50-316	OL	III	05-08-79	Closed 4
Cooper Station	NPPD	50-298	OL	IV	05-01-79	Closed 5
Crystal River 3	FP	50-302	OL	II	05-01-79 10-11-79	Closed 4
Davis-Besse 1	TECO	50-346	OL	III	05-01-79	Closed 5
Diablo Canyon 1	PG&E	50-275	LPTL	V	10-16-79 10-17-79 04-17-80 04-29-81	Closed 4
Diablo Canyon 2	PG&E	50-323	CP	V	10-16-79	Closed 4
Dresden 1	CECO	50-010	SDI	III	05-01-79	Closed 1
Dresden 2	CECO	50-237	OL	III	05-01-79	Closed 2
Dresden 3	CECO	50-249	OL	III	05-01-79	Closed 2
Duane Arnold	IELPCO	50-331	OL	III	05-01-79	Closed 4
Farley 1	APCO	50-348	OL	II	05-01-79	Closed 4
Farley 2	APCO	50-364	OL	II	05-31-79	Closed 3

See notes at end of table.

TABLE B.1 (contd.)

Facility	Utility	Docket Number	Facility Status	NRC Region	Utility Response Date	Closeout Status & Criterion
Fermi 2	DECO	50-341	CP	III	05-24-79 05-25-79	Closed 2
FitzPatrick	PASNY	50-333	OL	I	04-16-79 05-09-79 08-04-79	Closed 3
Forked River	JCP&L	50-363	CD	I	05-01-79	Closed 1
Fort Calhoun 1	OPPD	50-285	OL	IV	04-23-79	Closed 2
Fort St. Vrain	PSCC	50-267	OL	IV	05-04-79	Closed 3
Ginna	RG&E	50-244	OL	I	04-30-79	Closed 5
Grand Gulf 1	MP&L	50-416	OL	II	05-29-79	Closed 2
Grand Gulf 2	MP&L	50-417	CHI	II	05-29-79	Closed 1
Haddam Neck	CYAPCO	50-213	OL	I	04-26-79	Closed 2
Harris 1	CP&L	50-400	CP	II	05-29-79	Closed 2
Harris 2	CP&L	50-401	CP	II	05-29-79	Closed 2
Harris 3	CP&L	50-402	CD	II	05-29-79	Closed 1
Harris 4	CP&L	50-403	CD	II	05-29-79	Closed 1
Hartsville A-1	TVA	50-518	CHI	II	05-31-79	Closed 1
Hartsville A-2	TVA	50-519	CHI	II	05-31-79	Closed 1
Hartsville B-1	TVA	50-520	CHI	II	05-31-79	Closed 1
Hartsville B-2	TVA	50-521	CHI	II	05-31-79	Closed 1
Hatch 1	GP	50-321	OL	II	05-02-79	Closed 2
Hatch 2	GP	50-366	OL	II	05-02-79	Closed 2
Hope Creek 1	PSE&G	50-354	CP	I	05-22-79	Closed 2
Hope Creek 2	PSE&G	50-355	CD	I	05-22-79	Closed 1
Humboldt Bay 3	PG&E	50-133	SDI	V	05-30-79	Closed 1
Indian Point 1	ConEd	50-003	SDI	I	05-01-79	Closed 1
Indian Point 2	ConEd	50-247	OL	I	05-01-79 06-08-79	Closed 3
Indian Point 3	PASNY	50-286	OL	I	05-01-79 05-22-79 06-01-79 08-03-79	Closed 4
Jamesport 1	LILCO	50-516	CD	I	05-25-79	Closed 1
Jamesport 2	LILCO	50-517	CD	I	05-25-79	Closed 1
Kewaunee	WPS	50-305	OL	III	04-26-79	Open

See notes at end of table.

TABLE B.1 (contd.)

Facility	Utility	Docket Number	Facility Status	NRC Region	Utility Response Date	Closeout Status & Criterion
LaCrosse	DPC	50-409	OL	III	04-20-79	Closed 2
LaSalle 1	CECO	50-373	OL	III	05-24-79	Closed 2
LaSalle 2	CECO	50-374	OL	III	05-24-79	Closed 2
Limerick 1	PECO	50-352	LPTL	I	05-25-79	Closed 3
Limerick 2	PECO	50-353	CP	I	05-25-79	Closed 3
Maine Yankee	MYAPCO	50-309	OL	I	05-02-79	Open
Marble Hill 1	PSI	50-546	CD	III	05-25-79 06-28-79	Closed 1
Marble Hill 2	PSI	50-547	CD	III	05-25-79 06-28-79	Closed 1
McGuire 1	DUPCO	50-369	OL	II	05-29-79	Closed 2
McGuire 2	DUPCO	50-370	OL	II	05-29-79	Closed 2
Midland 1	CPC	50-329	CP	III	05-17-79	Closed 2
Midland 2	CPC	50-330	CP	III	05-17-79	Closed 2
Millstone 1	NNECO	50-245	OL	I	04-30-79	Closed 3
Millstone 2	NNECO	50-336	OL	I	04-30-79	Closed 3
Millstone 3	NNECO	50-423	CP	I	05-30-79	Closed 2
Monticello	NSP	50-263	OL	III	05-01-79 08-30-79	Closed 4
Nine Mile Point 1	NMP	50-220	OL	I	05-01-79	Closed 2
Nine Mile Point 2	NMP	50-410	CP	I	05-31-79 08-03-81 09-30-81	Open
North Anna 1	VEPCO	50-338	OL	II	05-03-79 05-23-79	Closed 4
North Anna 2	VEPCO	50-339	OL	II	05-30-79	Open
North Anna 3	VEPCO	50-404	CD	II	05-24-79	Closed 1
North Anna 4	VEPCO	50-405	CD	II	05-24-79	Closed 1
Oconee 1	DUPCO	50-269	OL	II	05-02-79 05-30-79 06-26-79	Open
Oconee 2	DUPCO	50-270	OL	II	05-02-79 05-30-79 06-26-79	Open
Oconee 3	DUPCO	50-287	OL	II	05-02-79 05-30-79 06-26-79	Open

See notes at end of table.

TABLE B.1 (contd.)

Facility	Utility	Docket Number	Facility Status	NRC Region	Utility Response Date	Closeout Status & Criterion
Oyster Creek 1	JCP&L	50-219	OL	I	05-01-79	Open
Palisades	CPC	50-255	OL	III	05-01-79	Closed 2
Palo Verde 1	APSCO	50-528	CP	V	05-21-79	Closed 2
Palo Verde 2	APSCO	50-529	CP	V	05-21-79	Closed 2
Palo Verde 3	APSCO	50-530	CP	V	05-21-79	Closed 2
Peach Bottom 2	PECO	50-277	OL	I	05-01-79 05-31-79	Closed 5
Peach Bottom 3	PECO	50-278	OL	I	05-01-79 05-31-79	Closed 5
Perkins 1	DUPCO	50-488	CD	II	04-24-79	Closed 1
Perkins 2	DUPCO	50-489	CD	II	04-24-79	Closed 1
Perkins 3	DUPCO	50-490	CD	II	04-24-79	Closed 1
Perry 1	CEI	50-440	CP	III	05-21-79	Closed 2
Perry 2	CEI	50-441	CP	III	05-21-79	Closed 2
Phipps Bend 1	TVA	50-553	CHI	II	05-31-79	Closed 1
Phipps Bend 2	TVA	50-554	CHI	II	05-31-79	Closed 1
Pilgrim 1	BECO	50-293	OL	I	05-01-79 05-17-79	Closed 5
Point Beach 1	WEPCO	50-266	OL	III	05-02-79 05-25-79	Closed 5
Point Beach 2	WEPCO	50-301	OL	III	05-02-79 05-25-79	Closed 5
Prairie Island 1	NSP	50-282	OL	III	05-01-79	Open
Prairie Island 2	NSP	50-306	OL	III	05-01-79	Open
Quad Cities 1	CECO	50-254	OL	III	05-01-79	Closed 2
Quad Cities 2	CECO	50-265	OL	III	05-01-79	Closed 2
Rancho Seco 1	SMUD	50-312	OL	V	04-26-79	Closed 4
River Bend 1	GSU	50-458	CP	IV	05-25-79 11-29-79	Closed 3
River Bend 2	GSU	50-459	CHI	IV	05-25-79 11-29-79	Closed 1
Robinson 2	CP&L	50-261	OL	II	05-01-79 06-01-79 10-30-79	Closed 4
Salem 1	PSE&G	50-272	OL	I	04-30-79	Closed 4
Salem 2	PSE&G	50-311	OL	I	04-30-79	Closed 4

See notes at end of table.

TABLE B.1 (contd.)

Facility	Utility	Docket Number	Facility Status	NRC Region	Utility Response Date	Closeout Status & Criterion
San Onofre 1	SCE	50-206	OL	V	04-30-79	Closed 2
San Onofre 2	SCE	50-361	OL	V	05-24-79	Closed 2
San Onofre 3	SCE	50-362	OL	V	05-24-79	Closed 2
Seabrook 1	PSNH	50-443	CP	I	05-25-79	Closed 3
Seabrook 2	PSNH	50-444	CP	I	05-25-79	Closed 3
Sequoyah 1	TVA	50-327	OL	II	05-31-79 11-09-79	Closed 4
Sequoyah 2	TVA	50-328	OL	II	05-31-79 11-09-79	Closed 4
Shoreham	LILCO	50-322	CP	I	06-15-79	Closed 3
South Texas 1	HL&P	50-498	CP	IV	05-21-79	Closed 2
South Texas 2	HL&P	50-499	CP	IV	05-21-79	Closed 2
St. Lucie 1	FPL	50-335	OL	II	05-02-79 06-05-79 02-13-81	Closed 5
St. Lucie 2	FPL	50-389	OL	II	05-22-79	Closed 2
Sterling	RG&E	50-485	CD	I	05-18-79	Closed 1
Summer 1	SCE&G	50-395	OL	II	04-11-79	Closed 2
Surry 1	VEPCO	50-280	OL	II	05-03-79 08-01-79	Closed 4
Surry 2	VEPCO	50-281	OL	II	05-03-79 02-22-80	Closed 4
Susquehanna 1	PP&L	50-387	OL	I	06-13-79	Closed 2
Susquehanna 2	PP&L	50-388	OL	I	06-13-79	Closed 2
TMI 1	Met-Ed	50-289	OL	I	05-01-79	Closed 2
TMI 2	Met-Ed	50-320	SDI	I		Closed 1
Trojan	PGE	50-344	OL	V	05-01-79 09-14-79	Closed 3
Turkey Point 3	FPL	50-250	OL	II	05-02-79 05-05-79	Closed 4
Turkey Point 4	FPL	50-251	OL	II	05-02-79 05-05-79	Closed 4
Tyrone	NSP	50-484	CD	III	05-22-79	Closed 1
Vermont Yankee 1	VYNP	50-271	OL	I	05-02-79	Closed 2
Vogtle 1	GP	50-424	CP	II	05-25-79	Closed 2
Vogtle 2	GP	50-425	CP	II	05-25-79	Closed 2

See notes at end of table.

TABLE B.1 (contd.)

Facility	Utility	Docket Number	Facility Status	NRC Region	Utility Response Date	Closeout Status & Criterion
WNP 1	WPPSS	50-460	CP	V	05-25-79	Closed 2
WNP 2	WPPSS	50-397	OL	V	05-25-79	Closed 2
WNP 3	WPPSS	50-508	CP	V	05-25-79	Closed 2
WNP 4	WPPSS	50-513	CD	V	05-25-79	Closed 1
WNP 5	WPPSS	50-509	CD	V	05-25-79	Closed 1
Waterford 3	LP&L	50-382	CP	IV	05-28-79	Closed 2
Watts Bar 1	TVA	50-390	CP	II	05-31-79	Closed 4
					11-09-79	
					02-27-80	
					05-01-80	
					08-06-80	
					10-20-80	
Watts Bar 2	TVA	50-391	CP	II	05-31-79	Closed 4
					11-09-79	
					02-27-80	
					05-01-80	
					08-06-80	
					10-20-80	
Wolf Creek 1	KG&E	50-482	CP	IV	05-29-79	Closed 3
Yankee-Rowe 1	YAECO	50-029	OL	I	05-02-79	Closed 4
Yellow Creek 1	TVA	50-566	CHI	II	05-31-79	Closed 1
Yellow Creek 2	TVA	50-567	CHI	II	05-31-79	Closed 1
Zimmer 1	CG&E	50-358	CD	III	05-29-79	Closed 1
Zion 1	CECO	50-295	OL	III	05-01-79	Closed 5
					05-07-79	
Zion 2	CECO	50-304	OL	III	05-01-79	Closed 5
					05-07-79	

Notes:
1. Facility status is based on References 1 through 4, Page B-9.
2. The following abbreviations apply to facility status:
   CD, Cancelled
   CHI, Construction Halted Indefinitely
   CP, Construction Permit
   LPTL, Low Power Testing License
   OL, Operating License
   SDI, Shut Down Indefinitely
3. Refer to Page 4 of this report for Bulletin Closeout Criteria.

TABLE B.2 LIST OF NRC/IE INSPECTION REPORTS USED FOR BULLETIN CLOSEOUT PER CRITERION 4

Facility	Report Number	Date of Approval	NRC Region	Facility Status
Beaver Valley 1	50-334/79-20	10-12-79	I	OL
Browns Ferry 1,2,3	50-259/80-30	09-11-80	II	OL
	50-260/80-23	09-11-80		
	50-296/80-24	09-11-80		
Calvert Cliffs 1,2	50-317/84-26	11-28-84	I	OL
	50-318/84-26	11-28-84		
Cook 1,2	50-315/79-22	10-02-79	III	OL
	50-316/79-19	10-02-79		
Crystal River 3	50-302/81-07	06-12-81	II	OL
Diablo Canyon 1	50-275/83-14	05-09-83	V	LPTL
	50-275/84-24	10-10-84		
Diablo Canyon 2	50-323/83-11	05-09-83	V	CP
	50-323/84-14	10-10-84		
Duane Arnold	50-331/79-32	01-08-80	III	OL
Farley 1	50-348/79-26	07-25-79	II	OL
Indian Point 3	50-286/84-04	06-08-84	I	OL
Monticello	50-263/79-13	09-12-79	III	OL
	50-263/79-16	11-05-79		
	50-263/81-14	08-10-81		
North Anna 1	50-338/80-23	06-04-80	II	OL
Rancho Seco 1	50-312/79-11	08-20-79	V	OL
Robinson 2	50-261/80-39	03-19-81	II	OL
Salem 1,2	50-272/84-05	04-05-84	I	OL
	50-311/84-05	04-05-84		
Sequoyah 1,2	50-327/79-72	01-10-80	II	OL
	50-328/79-35	01-10-80		
Surry 1,2	50-280/79-55	09-24-79	II	OL
	50-281/79-73	09-24-79		
Turkey Point 3,4	50-250/81-27	11-30-81	II	OL
	50-251/81-27	11-30-81		
Watts Bar 1,2	50-390/83-15	05-20-83	II	CP
	50-391/83-11	05-20-83		
Yankee-Rowe 1	50-029/84-14	08-05-84	I	OL

TABLE B.3 LIST OF NRC/IE INSPECTION REPORTS USED FOR BULLETIN CLOSEOUT PER CRITERION 5

Facility	Report Number	Date of Approval	NRC Region	Facility Status
Cooper Station	50-298/81-10	06-15-81	IV	OL
Davis-Besse 1	50-346/80-22*	08-18-80	III	OL
	50-346/83-12	06-17-83		
Ginna	50-244/83-18	09-16-83	I	OL
Peach Bottom 2,3	50-277/83-26	10-18-83	I	OL
	50-278/83-26	10-18-83		
Pilgrim 1	50-293/83-11	06-15-83	I	OL
Point Beach 1,2	50-266/81-09	05-18-81	III	OL
	50-301/81-10	05-18-81		
St. Lucie 1	50-335/81-26*	10-29-81	II	OL
	50-335/83-38	12-12-83		
Zion 1,2	50-295/82-29	12-10-82	III	OL
	50-304/82-26	12-10-82		

* This inspection report closes out IEB 79-04.

REFERENCES

1. United States Nuclear Regulatory Commission, Licensed Operating Reactors, Status Summary Report, Data as of 10-31-84, NUREG-0020, Volume 8, Number 11, November 1984

2. United States Nuclear Regulatory Commission, Nuclear Power Plants, Construction Status Report, Data as of 06-30-82, NUREG-0030, Volume 6, Number 2, October 1982

3. The Cincinnati Gas & Electric Company, Letter of January 27, 1984, to James G. Keppler (NRC Region III) from W. H. Dickhoner

4. Public Service Indiana, Letter of March 1, 1985, addressed to NRR

APPENDIX C

Proposed Followup Items

Region I

1. Maine Yankee
   Utility personnel responded partially May 2, 1979, indicating that they were checking whether correct weights had been used in analyses of Velan swing check valves in two systems.

   Verification is incomplete or not fully documented that correct weights of Velan swing check valves were used in seismic analyses of the two systems mentioned.

2. Nine Mile Point 2
   Utility personnel responded partially May 31, 1979, August 3, 1981 and September 30, 1981, indicating that actual valve weights would be provided to the piping analysts.

   Verification is incomplete or not fully documented that actual (or conservative) weights of Velan swing check valves were used in analyses of all Seismic Category 1 systems.

3. Oyster Creek 1
   Utility personnel responded acceptably May 1, 1979, indicating that one piping system had been reanalyzed to take into account the actual weight of a Velan valve, that piping stresses and support loads were allowable, that assumptions were reasonable and that no modifications were required.

   Verification is incomplete or not fully documented that reanalysis of the piping system mentioned was acceptable and that no modifications were required.

Region II

1. North Anna 2
   Utility personnel responded partially May 30, 1979, indicating that piping systems with Velan swing check valves rated at 1500 pounds had been reanalyzed or reevaluated, that three snubbers had been added and that one rigid restraint had been modified.

Verification is incomplete or not fully documented that (a) reanalyses, reevaluations and modifications were acceptable and (b) Velan swing check valves of three-inch to six-inch sizes and all pressure ratings (not just 1500 pound) were taken into account.

2. Oconee 1,2,3
Utility personnel responded partially May 2, May 30 and June 26, 1979, indicating that reanalysis of lines with Velan swing check valves rated at 1500 pounds had been finished, that modifications had been completed for Unit 3 and that modifications were planned for Units 1 and 2.

Verification is incomplete or not fully documented that (a) reanalyses and modifications were acceptable and (b) Velan swing check valves of three-inch to six-inch sizes and all pressure ratings (not just 1500 pound) were taken into account.

Region III

1. Kewaunee
Utility personnel responded acceptably April 26, 1979, indicating that incorrect weights of high pressure valves had been used in original analyses of eight systems, that stresses were allowable for six systems which were reanalyzed, that two systems were shown by comparison to require no reanalysis and that modifications were not required.

Verification is incomplete or not fully documented that (a) reanalyses and reevaluations were acceptable, (b) modifications were not required and (c) Velan swing check valves of three-inch to six-inch sizes and all pressure ratings (not just high pressure) were taken into account.

2. Prairie Island 1,2
Utility personnel responded partially May 1, 1979, indicating that reanalyses of piping systems having high pressure Velan swing check valves had been completed and that modifications were not required.

Verification is incomplete or not fully documented that (a) reanalyses were acceptable, (b) modifications were not required and (c) Velan swing check valves of three-inch to six-inch sizes and all pressure ratings (not just high pressure) were taken into account.

APPENDIX D

Abbreviations

APCO	Alabama Power Company
AP&L	Arkansas Power and Light Company
APSCO	Arizona Public Service Company
BECO	Boston Edison Company
BG&E	Baltimore Gas and Electric Company
BWR	Boiling Water Reactor
CD	Cancelled
CECO	Commonwealth Edison Company
CEI	Cleveland Electric Illuminating Company
CG&E	Cincinnati Gas and Electric Company
CHI	Construction Halted Indefinitely
ConEd	Consolidated Edison Company of New York, Inc.
CP	Construction Permit
CPC	Consumers Power Company
CP&L	Carolina Power and Light Company
CR	Contractor Report
CYAPCO	Connecticut Yankee Atomic Power Company
DECO	Detroit Edison Company
DLC	Duquesne Light Company
DPC	Dairyland Power Cooperative
DRO	Directorate of Regulatory Operations (NRC)
DUPCO	Duke Power Company
ECCS	Emergency Core Cooling System
ESF	Engineered Safety Feature
FP	Florida Power Corporation
FPL	Florida Power & Light Company
GAO	Government Accounting Office
GP	Georgia Power Company
GSU	Gulf States Utilities Company
HL&P	Houston Lighting and Power Company
HQ	Headquarters
IEB	Inspection and Enforcement Bulletin (NRC)
IELPCO	Iowa Electric Light and Power Company
IMECO	Indiana and Michigan Electric Company
IP	Illinois Power Company
JCP&L	Jersey Central Power and Light Company
KG&E	Kansas Gas and Electric Company
LER	Licensee Event Report
LILCO	Long Island Lighting Company
LOCA	Loss of Cooling Accident
LP&L	Louisiana Power and Light Company
LPTL	Low Power Testing License

Met-Ed	Metropolitan Edison Company
MP&L	Mississippi Power and Light Company
MYAPCO	Maine Yankee Atomic Power Company
NIPSCO	Northern Indiana Public Service Company
NMP	Niagara Mohawk Power Company
NNECO	Northeast Nuclear Energy Company
NPPD	Nebraska Public Power District
NRC/IE	Nuclear Regulatory Commission/ Office of Inspection and Enforcement
NSP	Northern States Power Company
NU	Northeast Utilities
OL	Operating License
OPPD	Omaha Public Power District
PASNY	Power Authority of the State of New York
PECO	Philadelphia Electric Company
PGE	Portland General Electric Company
PG&E	Pacific Gas and Electric Company
PP&L	Pennsylvania Power and Light Company
PSCC	Public Service Company of Colorado
PSCO	Public Service Company of Oklahoma
PSE&G	Public Service Electric and Gas Company
PSI	Public Service Indiana
PSNH	Public Service Company of New Hampshire
PWR	Pressurized Water Reactor
RG&E	Rochester Gas and Electric Corporation
SCE	Southern California Edison Company
SCE&G	South Carolina Electric and Gas Company
SDI	Shut Down Indefinitely
SMUD	Sacramento Municipal Utility District
SNUPPS	Standardized Nuclear Unit Power Plant Systems
TECO	Toledo Edison Company
TMI	Three Mile Island
TUGCO	Texas Utilities Generating Company
TVA	Tennessee Valley Authority
UE	Union Electric Company
VEPCO	Virginia Electric and Power Company
VYNP	Vermont Yankee Nuclear Power Corporation
W	Westinghouse Electric Corporation
WEPCO	Wisconsin Electric Power Company
WNP	Washington Nuclear Project
WPPSS	Washington Public Power Supply System
WPS	Wisconsin Public Service Corporation
YAECO	Yankee Atomic Electric Company

NRC FORM 335 (2-84) NRCM 1102, 3201, 3202

U.S. NUCLEAR REGULATORY COMMISSION

BIBLIOGRAPHIC DATA SHEET

SEE INSTRUCTIONS ON THE REVERSE

1. REPORT NUMBER (Assigned by TIDC, add Vol. No., if any)

NUREG/CR-4003
PARAMETER IE-143

2. TITLE AND SUBTITLE

Closeout of IE Bulletin 79-04:
Incorrect Weights for Swing Check Valves
Manufactured by Velan Engineering Corporation

3. LEAVE BLANK

4. DATE REPORT COMPLETED

MONTH	YEAR
May	1985

5. AUTHOR(S)

W. J. Foley, R. S. Dean, A. Hennick

6. DATE REPORT ISSUED

MONTH	YEAR
June	1985

7. PERFORMING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code)

PARAMETER, Inc.
13380 Watertown Plank Road
Elm Grove, Wisconsin 53122

8. PROJECT/TASK/WORK UNIT NUMBER

Task Order No. 65

9. FIN OR GRANT NUMBER

B-1302

10. SPONSORING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code)

Division of Emergency Preparedness and
Engineering Response
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

11a. TYPE OF REPORT

Technical

b. PERIOD COVERED (Inclusive dates)

7/10/84 - 5/24/85

12. SUPPLEMENTARY NOTES

13. ABSTRACT (200 words or less)

IE Bulletin 79-04 was issued March 30, 1979 as a result of reports from three facilities that Velan Engineering Corporation had provided incorrect weights for swing check valves. The reason for concern was the possibility that these incorrect weights had been used in analyses of Seismic Category I piping systems at a large number of plants. Evaluation of utility responses and NRC/IE inspection reports shows that the bulletin can be closed out for 117 (92%) of the 127 current facilities on the basis of specific criteria. Followup items for the remaining 10 current facilities are proposed for use by NRC/IE. Incorrect weights reported for valves other than Velan swing check valves are identified as Remaining Areas of Concern. This bulletin has served its purpose and can be closed out. A final check of valve weights will be made per later IE Bulletin 79-14 on seismic analyses for as-built safety-related piping systems.

14. DOCUMENT ANALYSIS - a. KEYWORDS/DESCRIPTORS

Closeout of IE Bulletin 79-04

b. IDENTIFIERS/OPEN ENDED TERMS

15. AVAILABILITY STATEMENT

Unlimited

16. SECURITY CLASSIFICATION

(This page)
Unclassified

(This report)
Unclassified

17. NUMBER OF PAGES

18. PRICE

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

FOURTH CLASS MAIL
POSTAGE & FEES PAID
USNRC
WASH. D.C.
PERMIT No. G-67

NUREG/CR-4003

CLOSEOUT OF IE BULLETIN 79-04: INCORRECT WEIGHTS FOR SWING CHECK VALVES MANUFACTURED BY VELAN ENGINEERING CORPORATION

JUNE 1985