

Part 21 (PAR)

Event # 48004

Rep Org: FLOWSERVE		Notification Date / Time: 06/07/2012 14:19 (EDT)	
Supplier: FLOWSERVE		Event Date / Time: 05/25/2012 (EDT)	
		Last Modification: 06/07/2012.	
Region: 1	Docket #:		
City: RALEIGH	Agreement State: Yes		
County:	License #:		
State: NC			
NRC Notified by: ROBERT D BARRY		Notifications: CHRISTOPHER CAHILL	R1DO
HQ Ops Officer: DONALD NORWOOD		MALCOLM WIDMANN	R2DO
Emergency Class: NON EMERGENCY		DAVE PASSEHL	R3DO
10 CFR Section:		HEATHER GEPFORD	R4DO
21.21(d)(3)(i) DEFECTS AND NONCOMPLIANCE		PART 21 GRP BY EMAIL	

PART 21 REPORT - PUBLISHED FLOW COEFFICIENTS FOR PILOT OPERATED RELIEF VALVES GREATER THAN ACTUAL

"This is to notify the US Nuclear Regulatory Commission, in accordance with the provisions of 10CFR-Part 21 of a potential deviation identified by Flowserve Corporation.

"On May 25, 2012, Flowserve Corporation notified Exelon - Byron and Braidwood Nuclear Power Stations of the results of a Steam flow test performed by Wyle Labs to confirm steam flow capacity against that specified for WKM PORVs. A refurbished size 6 class 900 WKM model 70-19-9 angle pattern control valve with 4" linear trim had been tested to determine its maximum steam flow capacity. The maximum steam flow was approximately 74% of the anticipated flow rate based on the original published WKM rated Cv for the valve.

"Background and Discussion: As part of their power up rate project, Exelon Braidwood Station procured larger 4" linear valve trim from Flowserve, Raleigh for their steam generator PORVs to increase the valve's steam flow capacity. The original valves were supplied by ACF Industries, WKM Valve Division in the mid to late 1970's with 3" linear trim. The designs for the WKM PORV valves were subsequently acquired by Flowserve. The larger trim was installed in a site spare PORV and tested for steam flow capacity.

"CFD analysis performed by Flowserve on the tested valve with the 4" trim, determined a Cv value that would yield steam flows similar to the test results. Analysis of the valve with the original 3" trim produced similarly reduced Cv values.

"Based on this testing and subsequent CFD analysis it appears that the originally published WKM rated Cv values for WKM angle control valve model 70-19-9 for sizes greater than size 2 are higher than actual values. The actual Cv's are believed to be 65% to 75% of the original WKM ratings.

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"Conclusion: Based on the above, the Nuclear Industry needs to be notified concerning this deviation so that an evaluation may be performed to determine if this constitutes a defect that could create a substantial safety hazard.

"Although Flowserve subsequently acquired the rights to the WKM PORV designs, it does not have the historic sales records from ACF industries (WKM Valve Division). The total number of WKM valves potentially affected and their installed locations are not known."



Flow Control Division

*Anchor/Darling Valves
BW/IP Valves
Edward Valves
Valtek Control Products
Worcester Valves*

June 7, 2012

US Nuclear Regulatory Commission
Document Control Desk
11545 Rockville Pike
Rockville, MD 20852-2746

Subject: USNRC 10CFR Part 21 Notification

Ref: Flowserve Evaluation Report No. 10 CFR 21-67

Issue is the potentially reduced flow capacity of WKM PORVs in sizes 2" and above.

Gentlemen,

This is to notify the US Nuclear Regulatory Commission, in accordance with the provisions of 10CFR-Part 21 of a potential deviation identified by Flowserve Corporation.

On May 25, 2012, Flowserve Corporation notified Exelon – Byron and Braidwood Nuclear Power Stations of the results of a Steam flow test performed by Wyle Labs to confirm steam flow capacity against that specified for WKM PORVs. A refurbished size 6 class 900 WKM model 70-19-9 angle pattern control valve with 4" linear trim had been tested to determine its maximum steam flow capacity. The maximum steam flow was approximately 74% of the anticipated flow rate based on the original published WKM rated Cv for the valve.

Background and Discussion

As part of their power up rate project, Exelon Braidwood Station procured larger 4" linear valve trim from Flowserve, Raleigh for their steam generator PORVs to increase the valve's steam flow capacity. The original valves were supplied by ACF Industries, WKM Valve Division in the mid to late 1970's with 3" linear trim. The designs for the WKM PORV valves were subsequently acquired by Flowserve. The larger trim was installed in a site spare PORV and tested for steam flow capacity.

CFD analysis performed by Flowserve on the tested valve with the 4" trim, determined a Cv value that would yield steam flows similar to the test results. Analysis of the valve with the original 3" trim produced similarly reduced Cv values.

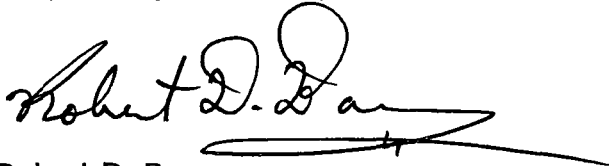
Based on this testing and subsequent CFD analysis it appears that the originally published WKM rated Cv values for WKM angle control valve model 70-19-9 for sizes greater than size 2 are higher than actual values. The actual Cv's are believed to be 65% to 75% of the original WKM ratings.

Conclusion

Based on the above, the Nuclear Industry needs to be notified concerning this deviation so that an evaluation may be performed to determine if this constitutes a defect that could create a substantial safety hazard.

Although Flowserve subsequently acquired the rights to the WKM PORV designs, it does not have the historic sales records from ACF industries (WKM Valve Division). The total number of WKM valves potentially affected and their installed locations are not known.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Robert D. Barry", with a long horizontal flourish extending to the right.

Robert D. Barry
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