Part 21 (PAR) Event # 52029

Rep Org: EMERSON PROCESS MANAGEMENT		**Notification Date / Time:** 06/21/2016 14:50	(EDT)
Supplier: FISHER CONTROLS INTERNATIONAL LLC		**Event Date / Time:** 04/29/2016	(CDT)
		Last Modification: 06/21/2016	
Region: 3	**Docket #:**		
City: MARSHALLTOWN	**Agreement State:**	Yes	
County:	**License #:**		
State: IA			
NRC Notified by: KIM SAGAR	**Notifications:**	RANDY MUSSER	R2DO
HQ Ops Officer: DANIEL MILLS		ROBERT ORLIKOWSKI	R3DO
Emergency Class: NON EMERGENCY		PART 21/50.55 REACTORS	EMAIL
10 CFR Section:			
21.21(d)(3)(i) DEFECTS AND NONCOMPLIANCE			

PART 21 - INSUFFICIENT VALVE CAGE HARDFACING

The following is excerpted from an email provided by the supplier:

"Items subject to this Fisher Information Notice (FIN) are confined to the equipment and orders referred to in Table 1 [see original submission]. Specifically, 'Equipment' refers to the eight inch sized hardfaced HPNS cages supplied per the order numbers listed in Table 1.

"The purpose of this FIN is to alert affected customers that, as of 29 April 2016, Fisher Controls International LLC (Fisher) became aware of a situation which may affect the performance of the aforementioned Equipment, including its safety-related function.

"Fisher is informing affected customers of this circumstance in accordance with Section 21.21(b) of 10 CFR 21.

"The Equipment in question is subject to CoCr-A hardface overlay requirements. The CoCr-A overlay deposit thickness must be 0.060 inch minimum after machining. However, the cages supplied in fulfilment of the orders listed in Table 1 may have insufficient hardfacing depth on the inside bore diameter at the top of the cages (approximately 1.50 inches from top).

"This issue first came to Fisher's attention when a material grade inspection revealed insufficient cobalt. Subsequent PMI testing confirmed the upper section at the top of the cage fell short of expected CoCr-A. Two in-stock cages were sent to a third party accredited laboratory for macroetch examination and hardness survey. The results of this survey confirmed the top of the cages did not meet the minimum hardness requirement of 34 HRC and further confirmed the insufficiency is limited to the uppermost 1.50 inches of the inside bore diameter of the cages.

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"The absence of hardfacing at the mating surface between cage and plug creates the potential for galling, which could prevent the valve from performing its intended safety function. Testing has been conducted to analyze the risk of galling. Typically, galling is observed in cycle tests well exceeding the 600 cycle recommended lifetime for the equipment. However, testing has proven galling to be an unpredictable phenomenon and could occur prior to the recommended lifetime of the equipment. There are no known field issues with the affected equipment.

"The problem of post-hardfacing material shrinkage is associated with the ratio of bore diameter to cage wall thickness. Large bore diameter thin-walled cages are at greater risk for material shrinkage. A third party accredited laboratory performed additional macroetch supplemental tests and evaluations on similar cages of varying bore sizes. It was determined that this issue is unique to the 8 inch sized HPNS cages.

"Fisher will provide the affected customers with a properly coated cages at Fisher's cost. In addition, a Corrective Action Request (CAR 1804) has been initiated by Fisher to prevent reoccurrence of this issue."

The US reactor sites affected by this issue include VC Summer and Vogtle. The foreign reactor sites include Sanmen and Haiyang.

FIN 2016-06 dated 20 June, 2016.

Point of Contact:
Ben Ahrens
Quality Manager
Emerson Process Management
Fisher Controls International LLC
30 1 South First Avenue
Marshalltown, IA 50 1 58
Phone: (64 1) 754-2249
Benjamin.ahrens@emerson.com

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EMERSON
Process Management

Fisher Controls International LLC
301 South First Ave.
P.O. Box 190
Marshalltown, Iowa 50158-0190
USA
T (641) 754-3011
F (641) 754-2830

June 21, 2016

To Whom It May Concern:

Attached is a Fisher Information Notice, (FIN) 2016-05

Emerson Process Management – Fisher Valves complies with the reporting requirements of 10 CFR Part 21 Section 21.21 (b) and 10 CFR Part 50.55 (e) by informing the U.S. Nuclear Regulatory Commission Licensees or Purchaser of deviations or failures to comply.

Please review the attached FIN notice for applicability to your facility.

George Baitinger
Director, Quality Americas

Attachments

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EMERSON.
Process Management

Fisher Controls International LLC
301 South First Ave
P.O. Box 190
Marshalltown, Iowa 50158-0190
USA
T (641) 754-3011
F (641) 754-2830

Fisher Information Notice: FIN 2016-05

20 June 2016

Subject: Insufficient Valve Cage Hardfacing

Equipment Affected by this Fisher Information Notice:

Items subject to this Fisher Information Notice (FIN) are confined to the equipment and orders referred to in Table 1 attached below ("Equipment"). Specifically, "Equipment" refers to the 8" sized hardfaced HPNS cages supplied per the order numbers listed in Table 1.

Purpose:

The purpose of this FIN is to alert affected customers that, as of 29 April 2016, Fisher Controls International LLC (Fisher) became aware of a situation which may affect the performance of the aforementioned Equipment, including its safety-related function.

Fisher is informing affected customers of this circumstance in accordance with Section 21.21 (b) of 10 CFR 21.

Applicability:

This FIN applies only to the Equipment identified in Table 1, which lists serial and order numbers of the Equipment that was delivered to affected customers.

Discussion:

The Equipment in question is subject to CoCr-A hardface overlay requirements. The CoCr-A overlay deposit thickness must be 0.060" minimum after machining. However, the cages supplied in fulfilment of the orders listed in Table 1 may have insufficient hardfacing depth on the inside bore diameter at the top of the cages (approximately 1.50" from top).

This issue first came to Fisher's attention when a material grade inspection revealed insufficient cobalt. Subsequent PMI testing confirmed the upper section at the top of the cage fell short of expected CoCr-A. Two in-stock cages were sent to a third party accredited laboratory for macroetch examination and hardness survey. The results of this survey confirmed the top of the cages did not meet the minimum hardness requirement of 34 HRC and further confirmed the insufficiency is limited to the uppermost 1.50" of the inside bore diameter of the cages.

EMERSON.
Process Management

Fisher Controls International LLC
301 South First Ave
P.O. Box 190
Marshalltown, Iowa 50158-0190
USA
T (641) 754-3011
F (641) 754-2830

The absence of hardfacing at the mating surface between cage and plug creates the potential for galling, which could prevent the valve from performing its intended safety function. Testing has been conducted to analyze the risk of galling. Typically, galling is observed in cycle tests well exceeding the 600 cycle recommended lifetime for the Equipment. However, testing has proven galling to be an unpredictable phenomenon and could occur prior to the recommended lifetime of the Equipment. There are no known field issues with the affected Equipment.

Extent of Condition:

The problem of post-hardfacing material shrinkage is associated with the ratio of bore diameter to cage wall thickness. Large bore diameter thin-walled cages are at greater risk for material shrinkage. A third party accredited laboratory performed additional macroetch supplemental tests and evaluations on similar cages of varying bore sizes. It was determined that this issue is unique to the 8" sized HPNS cages.

Action Required:

Fisher will provide the affected customers with a properly coated cages at Fisher's cost. In addition, a Corrective Action Request (CAR 1804) has been initiated by Fisher to prevent reoccurrence of this issue.

EMERSON.
Process Management

Fisher Controls International LLC
301 South First Ave
P.O. Box 190
Marshalltown, Iowa 50158-0190
USA
T (641) 754-3011
F (641) 754-2830

10 CFR 21 Implications:

Fisher requests that the recipient of this FIN review it and take appropriate action in accordance with 10 CFR 21. If there are any technical questions or concerns, please contact:

Ben Ahrens
Quality Manager
Emerson Process Management
Fisher Controls International LLC
301 South First Avenue
Marshalltown, IA 50158
Phone: (641) 754-2249
Benjamin.ahrens@emerson.com

Chad Engle
Nuclear Business Unit Director
Fisher Controls International LLC
301 South First Avenue
Marshalltown, IA 50158
Fax: (641) 754-2854

Table 1
Affected Equipment and Orders

Serial #	Plant	LBP Order #	LBP Line #	Customer PO	Cust Line #
19073487	Sanmen	004 -X012140579	25	4500280610	25
19073491	Haiyang	004 -X012140579	46	4500280610	46
19073488	Sanmen	004 -X012140579	25A	4500280610	25
19073489	Sanmen	004 -X012140579	25B	4500280610	25
19073490	Sanmen	004 -X012140579	25C	4500280610	25
19073492	Haiyang	004 -X012140579	46A	4500280610	46
19073493	Haiyang	004 -X012140579	46B	4500280610	46
19073494	Haiyang	004 -X012140579	46C	4500280610	46
19089916	Vogtle	004 -X012149977	43A	4500327665	43
19089915	Vogtle	004 -X012149977	43	4500327665	43
19089914	Vogtle	004 -X012149977	24A	4500327665	24
19089913	Vogtle	004 -X012149977	24	4500327665	24
19089912	Vogtle	004 -X012149977	42A	4500327665	42
19089911	Vogtle	004 -X012149977	42	4500327665	42
19089910	Vogtle	004 -X012149977	5A	4500327665	5
19089909	Vogtle	004 -X012149977	5	4500327665	5
21294100	Summer	004 -X012149761	1A	4500327852	1
19089851	Summer	004 -X012149761	42A	4500327852	42
19089850	Summer	004 -X012149761	42	4500327852	42
19089849	Summer	004 -X012149761	20A	4500327852	20
19089848	Summer	004 -X012149761	20	4500327852	20
19089847	Summer	004 -X012149761	40A	4500327852	40
19089846	Summer	004 -X012149761	40	4500327852	40
19089844	Summer	004 -X012149761	1	4500327852	1
19720772	Haiyang	860 -PV14HYG2	5D	SEH210POVA051F-ORG	5
19720771	Haiyang	860 -PV14HYG2	5C	SEH210POVA051F-ORG	5
19720770	Haiyang	860 -PV14HYG2	5B	SEH210POVA051F-ORG	5
19720769	Haiyang	860 -PV14HYG2	5A	SEH210POVA051F-ORG	5
19794752	Sanmen	860 -PV14SAN2	5D	SES210POVA050F-ORG	5
19794751	Sanmen	860 -PV14SAN2	5C	SES210POVA050F-ORG	5
19794750	Sanmen	860 -PV14SAN2	5B	SES210POVA050F-ORG	5
19794749	Sanmen	860 -PV14SAN2	5A	SES210POVA050F-ORG	5