

Part 21 (PAR)

Event # 47505

<b>Rep Org:</b> FLOWSERVE LIMITORQUE ACTUATORS		<b>Notification Date / Time:</b> 12/06/2011 16:43 (EDT)	
<b>Supplier:</b> FLOWSERVE LIMITORQUE ACTUATORS		<b>Event Date / Time:</b> 12/05/2011 (EST)	
<b>Last Modification:</b> 06/27/2012			
<b>Region:</b> 1		<b>Docket #:</b>	
<b>City:</b> LYNCHBURG		<b>Agreement State:</b> Yes	
<b>County:</b>		<b>License #:</b>	
<b>State:</b> VA			
<b>NRC Notified by:</b> JEFF McCONKEY		<b>Notifications:</b> CHRISTOPHER CAHILL R1DO	
<b>HQ Ops Officer:</b> STEVE SANDIN		RANDY MUSSER R2DO	
<b>Emergency Class:</b> NON EMERGENCY		RICHARD SKOKOWSKI R3DO	
<b>10 CFR Section:</b>		NEIL OKEEFE R4DO	
21.21 UNSPECIFIED PARAGRAPH		PART 21 via email	

**LIMITORQUE PART 21 NOTIFICATION INTERIM REPORT - POTENTIAL DEFECTIVE PART IN SMB-0 HEAVY SPRING PACK**

The following information was received via fax:

**Background:** During in-house production testing of Limitorque SMB-0 actuators, test lab personnel reported an inability to maintain consistent torque output at the various torque switch settings. Investigation revealed that the actuator torque spring pack assembly had lost preload during the test. Component inspection determined that the loss of preload was due to disc springs that had experienced an excessive permanent relaxation of free height during actuator testing.

**Components Affected:** Only SMB/SB/SBD-0 actuators with heavy spring pack assemblies shipped between September 15, 2011 and November 7, 2011 could possibly be affected. No parts orders for SMB/SB/SBD-0 replacement heavy spring packs were built in this time period.

**Potential Impact on Safety Related Operation:** A significant loss of preload on the actuator torque spring pack assembly could result in the actuator producing insufficient output torque thereby affecting proper valve function.

**Cause and Corrective Action:** Communications with the spring manufacturer revealed that Limitorque was shipped a single lot of springs that were not in accordance with our parts requirements. These springs were incorrectly shipped to Limitorque due to a manufacturer backorder on our normally requested product. Vendor controls have been implemented to prevent reoccurrence of this issue. Limitorque has identified the problem springs and purged them from inventory.

On November 14, 2011 Limitorque notified all affected customers who received the actuators which shipped during

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the time period identified above. The serial numbers and locations of the potentially affected actuators are provided in the table below. Limitorque has requested that the actuator spring packs be returned for detailed inspection and replacement if needed.

After inspection of the spring pack assembly of all actuators listed below, Flowserve-Limitorque will issue a follow-up to this interim report on or before February 3, 2012.

## Affected Customers/Locations:

Customer - Velan Valve Corp.  
Location of Actuator - Velan Valve, Montreal  
Limitorque Order No. 110309.001  
Quantity - 6  
Actuator Serial # 909476-909481

Customer - Velan Valve Corp.  
Location of Actuator - Velan Valve, Montreal  
Limitorque Order No. 115055.001  
Quantity - 1  
Actuator Serial # 926332

Customer - Weir Valve Corp.  
Location of Actuator - Weir Valve, Ipswich, MA  
Limitorque Order No. 106839.008  
Quantity - 4  
Actuator Serial # 911621-911624

Customer - Weir Valve Corp.  
Location of Actuator - Weir Valve, Ipswich, MA  
Limitorque Order No. 106839.009  
Quantity - 4  
Actuator Serial # 911625-911628

Customer - Weir Valve Corp.  
Location of Actuator - Weir Valve, Ipswich, MA  
Limitorque Order No. 106930.012  
Quantity - 4  
Actuator Serial # 912769-912772

Customer - Areva NP  
Location of Actuator - Exelon, Braidwood NGS  
Limitorque Order No. 112724.001  
Quantity - 1  
Actuator Serial # 917953

\*\*\* UPDATE FROM JEFF MCCONKEY TO PETE SNYDER ON 6/27/12 AT 1714 EDT \*\*\*

The following update was received via fax:

Pursuant to 10 CFR 21.21, Flowserve Corp is providing notification of the identification of a defect. This information was originally reported to the NRC Operations Center on 12/6/2011 (Event # 47505). This document is a follow-up to the interim Part 21 report.

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Nineteen of the twenty actuators identified in the interim report as potentially suspect have been returned to Limatorque for inspection of the spring pack. All nineteen of these actuators were returned from two different valve manufacturer's facilities and had not been shipped to any utilities for installation. Six of the actuators returned from Velan Valve Corporation were found to contain defective springs. The spring packs were replaced and the actuators were returned to Velan Valve. The actuators returned from Weir Valve Corporation did not contain defective springs.

The remaining actuator (serial number 917953) identified in the interim report which has not been returned to Limatorque is at Exelon Braidwood NGS. Exelon reported the following with regards to this actuator. The actuator is installed on a 36" quarter-turn MOV that is normally open and de-energized. This MOV has no safety related function to close. The MOV is position limit controlled and the valve functioned properly during operational testing after installation. Exelon Braidwood NGS is aware of the potential spring defect and plans to change the spring pack on this MOV at the first available maintenance cycle.

Flowserve's investigation of this issue concluded that this was an isolated incident and that all defective components have been identified.

Notified R3DO (Valos) and Part 21 Group (e-mail).

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Flowserve  
5114 Woodall Road  
Lynchburg, VA. 24502

# Flowserve

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<b>To:</b>	NRC Operations Center	<b>Fax:</b>	(301) 816-5151
<b>From:</b>	Jeff McConkey	<b>Date:</b>	6/27/2012
<b>Re:</b>			
<b>Pages:</b>	4 including this cover sheet		

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<input checked="" type="checkbox"/> Urgent	<input checked="" type="checkbox"/> For Review	<input type="checkbox"/> Please Comment	<input type="checkbox"/> Please Reply	<input type="checkbox"/> Please Recycle
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**Notes:** Limitorque part 21 Notification Interim Report Potential Defective Part in SMB-0 Heavy Spring Pack

Thank You

Jeff McConkey  
Quality Assurance Manager  
Flowserve Corporation – FCD Lynchburg  
5114 Woodall Road  
Lynchburg, VA 24506  
(office) 434-845-9738  
(cell) 434-851-4402  
jmccconkey@flowserve.com



Flow Control Division  
**Limatorque**  
June 27, 2012

To: U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555-0001

Attention: NRC Operations Center, Fax # 301-816-5151

**Subject: Limatorque Part 21 Notification**  
**Defective Part in SMB-0 Heavy Spring Pack**


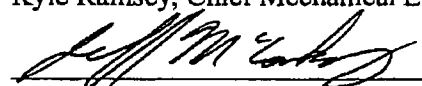
References: NRC Log # 2011-55-00  
NRC Event No. / Accession No. ML11342A072  
Limatorque Part 21 File # 70

Pursuant to 10CFR21.21, Flowserve Corp is providing notification of the identification of a defect. This information was initially reported to the NRC Operations center on 12/6/2011 (Event # 47505). This document is a follow-up to the interim Part 21 report included as Enclosure A.

Nineteen of the twenty actuators identified in the interim report as potentially suspect have been returned to Limatorque for inspection of the spring pack. All nineteen of these actuators were returned from two different valve manufacturer's facilities and had not been shipped to any utilities for installation. Six of the actuators returned from Velan Valve Corporation were found to contain defective springs. The spring packs were replaced and the actuators were returned to Velan Valve. The actuators returned from Weir Valve Corporation did not contain defective springs.

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Flowserve's investigation of this issue concluded that this was an isolated incident and that all defective components have been identified.

Submitted By:   
Kyle Ramsey, Chief Mechanical Engineer  
  
Jeff McConkey, Quality Assurance Manager  
Flowserve Corporation  
5114 Woodall Road  
Lynchburg VA 24506



Flow Control Division  
Limitorque

### Enclosure A

**Subject: Limitorque Part 21 Notification Interim Report  
Potential Defective Part in SMB-0 Heavy Spring Pack**

**Background:**

During in-house production testing of Limitorque SMB-0 actuators, test lab personnel reported an inability to maintain consistent torque output at the various torque switch settings. Investigation revealed that the actuator torque spring pack assembly had lost preload during the test. Component inspection determined that the loss of preload was due to disc springs that had experienced an excessive permanent relaxation of free height during actuator testing.

**Components Affected:**

Only SMB/SB/SBD-0 actuators with heavy spring pack assemblies shipped between September 15, 2011 and November 7, 2011 could possibly be affected. No parts orders for SMB/SB/SBD-0 replacement heavy spring packs were built in this time period.

**Potential Impact on Safety Related Operation**

A significant loss of preload on the actuator torque spring pack assembly could result in the actuator producing insufficient output torque thereby affecting proper valve function.

**Cause and Corrective Action:**

Communications with the spring manufacturer revealed that Limitorque was shipped a single lot of springs that were not in accordance with our parts requirements. These springs were incorrectly shipped to Limitorque due to a manufacturer backorder on our normally requested product. Vendor controls have been implemented to prevent reoccurrence of this issue. Limitorque has identified the problem springs and purged them from inventory.

On November 14, 2011 Limitorque notified all affected customers who received the actuators which shipped during the time period identified above. The serial numbers and locations of the potentially affected actuators are provided in the table below. Limitorque has requested that the actuator spring packs be returned for detailed inspection and replacement if needed.

After inspection of the spring pack assembly of all actuators listed below, Flowserve-Limitorque will issue a follow-up to this interim report on or before February 3, 2012.



Flow Control Division  
**Limatorque**

Customer	Location of Actuator	Limatorque Order No.	Quantity	Actuator Serial #
Velan Valve Corp	Velan Valve, Montreal	110309.001	6	909476 - 909481
Velan Valve Corp	Velan Valve, Montreal	115055.001	1	926332
Weir Valve Corp	Weir Valve, Ipswich, MA	106839.008	4	911621 - 911624
Weir Valve Corp	Weir Valve, Ipswich, MA	106839.009	4	911625 - 911628
Weir Valve Corp	Weir Valve, Ipswich, MA	106930.012	4	912769 - 912772
Areva NP	Exelon, Braidwood NGS	112724.001	1	917953