



Limatorque Actuation
LIMDOC-2025-002

February 14, 2025

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

Subject: Final Report Notification Pursuant to 10 CFR 21.21 Regarding Limatorque SMB-00 Torque Switch Assemblies

Reference: Interim Notification Accession No. ML25006A165

Flowserve hereby submits the enclosed written final notification of the identification of a defect in accordance with the requirements of 10CFR 21.21. This report pertains to SMB-00 torque switch assemblies supplied for use in safety related applications. The affected switches were supplied either as replacement parts under Limatorque part # 11501-010 or as original equipment switches contained in new SMB/SB-00 actuators.

The extent of condition investigation of the issue has been completed. Enclosure 1 has been updated to reflect additional information not contained in the interim notification (reference NRC Accession No. ML25006A165).

Should you have any questions regarding this submittal, please contact Chris Shaffer, Global Quality Manager at (434) 258-5074.

Regards,


Arie van Eyk, Director, Plant Manager
Flowserve US Inc.

Enclosures:

- 1) Final Report Notification Information

Enclosure 1
Final Report Notification Information

1. Reporting Individual

Arie van Eyk, Director, Plant Manager
Flowserve US Inc.
5114 Woodall Road
Lynchburg VA 24502

2. Identification of Basic Components that Contains a Defect

The basic components that contain a defect are torque switch assemblies identified by Limitorque part # 11501-010 used exclusively in Limitorque actuator model number and size SMB/SB/SBD-00

3. Identification of the Supplier

The torque switch assemblies are manufactured and supplied by Flowserve US Inc.

4. Nature of Defect

Description of the Defect

During installation of a replacement torque switch into a SMB-00 actuator at Beaver Valley nuclear power station, technicians reported that the roller subassembly which connects the torque switch to the actuator drive train was loose and was easily removed from the torque switch. The condition was identified on a quantity of two torque switches at Beaver Valley NPS. The torque switches were shipped to Beaver Valley NPS from Framatome nuclear parts center.

Investigations by Flowserve indicate that the torque switch assemblies contain a manufacturing error resulting in the torque switch roller pin to be improperly secured in the tripper arm. This condition can potentially result in the roller subassembly becoming detached from the torque switch rendering the torque switch assembly non-functional.

Safety Hazard Created by the Defect

The Limitorque SMB torque switch assembly is certified as a safety related component which is typically wired into the electrical control circuit of the actuator. For valve applications that are torque seated, the primary function of the torque switch is to interrupt control power to the motor control center at the end of valve travel when seating the valve. If the torque switch becomes non-functional, electric power to the motor may be maintained resulting in a motor stall event.

5. Date the Information was Obtained

Flowserve was informed of the issue found at Beaver Valley NPS on 11/12/2024. The affected torque switches were received for inspection on 12/13/2024.

6. Number and Location of the Basic Component Supplied

Flowserve's extent of condition investigation has identified a quantity of 75 torque switches supplied to domestic U.S. nuclear power plant customers that are affected. The torque switches were manufactured between September 29, 2022 and December 3, 2024. Enclosure 1 details the Flowserve order number, customer name, customer purchase order, end user location and actuator serial number (when applicable) of the affected components.

7. Corrective Action Plan

Flowserve is notifying all customers identified in Enclosure 1 by separate correspondence containing guidance for return of the components for replacement. Flowserve is also notifying international customers who received torque switches containing the defect.

8. Advice Given to Purchasers or Licensees

For affected torque switch assemblies which have been installed and are in-service, either as a replacement part or in a new SMB/SB/SBD-00 actuator assembly, plants are advised to evaluate the potential impact of the reported defect on plant operation and safety related systems. To date, there have been no occurrences of a loss of torque switch function reported to Flowserve on in-service SMB/SB/SBD-00 actuators attributable to this issue.

9. In the case of an early site permit, the entities to whom the early site permit was transferred. Not applicable.

ENCLOSURE 1

Flowserve Order #	Part Identifier	QTY	Customer Name	Customer PO	End User / Location	Ship Date	Serial Numbers
193798.001	SMB-00/HBC-3	2	Trillium Valves, USA	2046513	Energy River Bend NGS	7/20/2023	1310618-1310619
193798.001	SMB-00/HBC-3	2	Trillium Valves, USA	2046513	Energy River Bend NGS	7/25/2023	1310617 & 1310620
193798.003	SMB-00/HBC-3	2	Trillium Valves, USA	2046513	Energy River Bend NGS	2/17/2023	1310629-1310630
193798.003	SMB-00/HBC-3	2	Trillium Valves, USA	2046513	Energy River Bend NGS	3/15/2023	1310631-1310632
195531.001	SMB-00	1	Framatome Nuclear Parts Center	1022035137	Constellation Energy Calvert Cliffs NPP	11/30/2022	1316993
195531.002	SMB-00	1	Framatome Nuclear Parts Center	1022035137	Constellation Energy Calvert Cliffs NPP	11/30/2022	1316994
195682.001	SMB-00	1	Framatome Nuclear Parts Center	1022036273	Constellation Energy Calvert Cliffs NPP	8/2/2023	1318552
195682.002	SMB-00	1	Framatome Nuclear Parts Center	1022036273	Constellation Energy Calvert Cliffs NPP	11/3/2023	1318553
195682.003	SMB-00	1	Framatome Nuclear Parts Center	1022036273	Constellation Energy Calvert Cliffs NPP	8/2/2023	1318554
196076.001	SMB-00	1	Framatome Nuclear Parts Center	1022038905	Exelon Limerick NGS	10/13/2023	1319236
198666.001	SMB-00	1	Framatome Nuclear Parts Center	1023006495	TVA	6/6/2024	1331847
205552.001	SMB-00	1	Framatome Nuclear Parts Center	1024026973	OPG	10/4/2024	1364731
198483.006	11501-010	10	Framatome Nuclear Parts Center	1023012379		4/3/2023	N/A
201205.001	11501-010	11	Framatome Nuclear Parts Center	1023041178		10/2/2023	N/A
204636.001	11501-010	9	Framatome Nuclear Parts Center	1024025352		7/17/2024	N/A
197749.001	SB-00	1	IMI Critical Engineering LLC	5100479027	Florida Power & Light	1/29/2024	1329043

ENCLOSURE 1 (continued)

Flowserve Order #	Part Identifier	QTY	Customer Name	Customer PO	End User / Location	Ship Date	Serial Numbers
192796.001	SMB-00	2	Velan Valve Corp. Williston VT	P30006052	OPG Darlington NGS	7/3/2023	1309056-1309057
198089.001	SMB-00	1	Velan Valve Corp. Williston VT	P30006936	OPG Darlington NGS	2/1/2024	1330063
198209.001	SMB-00	4	Velan Inc. Montreal	P40010642	Bruce Power	2/6/2024	1330480-1330483
198314.001	SMB-00/HBC-3	1	Velan Inc. Montreal	P10011876	Energy Harbor Beaver Valley NPS	4/4/2024	1331530
195668.001	SMB-00	1	Tennessee Valley Authority	7325136	Watts Bar NP	9/11/2023	1318987
195668.002	SMB-00/HBC-2	1	Tennessee Valley Authority	7325136	Watts Bar NP	9/11/2023	1318988
195668.003	SMB-00	1	Tennessee Valley Authority	7325136	Watts Bar NP	9/20/2024	1340908
198617.001	SMB-00	1	Tennessee Valley Authority	7442790	Sequoyah NP	4/12/2024	1331741
200416.001	SMB-00	1	Tennessee Valley Authority	7494583	Sequoyah NP	2/13/2024	1341213
200416.002	SMB-00	1	Tennessee Valley Authority	7494583	Sequoyah NP	2/26/2024	1341214
200416.004	SMB-00	1	Tennessee Valley Authority	7494583	Sequoyah NP	8/14/2024	1341216
200416.005	SMB-00	1	Tennessee Valley Authority	7494583	Sequoyah NP	10/15/2024	1360617
200968.001	SMB-00	1	Tennessee Valley Authority	7509327	Sequoyah NP	10/15/2024	1341888
200968.002	SMB-00	1	Tennessee Valley Authority	7509327	Sequoyah NP	10/15/2024	1341889
201369.001	SMB-00	1	Tennessee Valley Authority	7529807	Sequoyah NP	11/18/2024	1343965
200978.001	SMB-00/HBC-3	1	Duke Energy Corp.	3166623	McGuire NPS	10/29/2024	1343348
200986.001	SMB-00	1	Duke Energy Corp.	3167332	McGuire NPS	8/14/2024	1341850
196898.001	SMB-00	2	Duke Energy Corp.	3153951	Catawba NS	10/16/2023	1322784-1322785
202290.001	11501-010	1	Florida Power & Light	2462421	Point Beach NPP	1/23/2024	N/A
199300.001	SMB-00	2	Flowserve Edward Valve	296127	Bruce Power	11/13/2023	1334418-1334419
199300.002	SMB-00	2	Flowserve Edward Valve	296127	Bruce Power	5/29/2024	1341622-1341623