

Limitorque

# Limitorque Corporation

Automated Valve Actuators and Jacks for Industry  
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December 11, 1990

U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Re: Limitorque Corporation  
Potential 10 CFR Part 21 Corporation

Subject: SMB 00 Torque Switch Roll Pin Failures

Attention: Director, Nuclear Reactor Regulation

Gentlemen:

Pursuant to the requirements of Title 10 of the Code of Federal Regulations Part 21 herein provided is notification of a potential for failure of SMB 00 Torque Switch Roll Pins depending on Licensee operating conditions, as detailed in the attached letter. In order to expedite the notification of the facilities affected, Limitorque has made simultaneous written notice to both the commission and the attached list of nuclear utility customers.

Signed:

A handwritten signature in cursive script, appearing to read "I. E. Wilkinson".

I. E. Wilkinson  
Vice President of Engineering

LIMITORQUE CORPORATION

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PDR ADOCK 05000029  
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December 11, 1990

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RE: Potential 10 CFR Part 21 Condition

SUBJECT: SMB 00 Torque Switch Roll Pin Failures

Please be advised that Limitorque has concluded its evaluation of reported failures of SMB 00 Torque Switch Roll Pins and determined that this condition could potentially be reportable depending upon the operating practices of the licensee. Therefore, pursuant to the requirements of 10CFR Part 21, herein provided is notification of a potential defect in Limitorque supplied actuators.

Identification of Basic Component

The defective component is the Torque Switch Roll Pin used in the SMB, SB and SBD 00 actuators (serial numbers 233218 and greater) with heavy spring packs.

Nature Of The Defect

Recent Engineering studies of Torque Switch Roll Pin failures have revealed that the SMB 00 nuclear Torque Switch may fail when declutched under maximum rated load. Of concern are the roll pins on both ends of the torque switch shaft. One pin secures the lever arm while the other secures the actuation link. Failure of these pins have been



reported when an SMB 00 actuator, built with a heavy spring pack, is declutched under rated load while in the torque seated condition.

Preliminary testing, performed at Limitorque, indicates that these pins may fail after eleven (11) declutching operations from the torque seated condition. The failure is attributed to the large impact load of the heavy spring pack when released by declutching and a rather large mass of the nuclear torque switch that must be actuated. When lighter spring packs are used with the nuclear switch, the unit could be declutched under rated load fifty-eight (58) times before failing. Likewise, an SMB 00 unit with a heavy spring pack and a standard torque switch, which is a lighter aluminum design than the nuclear torque switch, would not fail until approximately forty (40) cycles. It should be noted that unseating an actuator under motor operation does not allow the simultaneous release of the stored energy and therefore will not cause failure of the Torque Switch Roll Pins.

#### Equipment Affected

The equipment affected is all SMB, SB and SBD 00 actuators (serial number 233218 and greater) with heavy spring packs installed.

#### Licensee Corrective Action

The Licensee is requested to perform a complete review of standard operating conditions of installed SMB 00 actuators with heavy spring packs to determine the frequency of torque seated declutching operations and the potential for operator failure due to this condition. The improved design torque switches will be available in late February 1991. In the interim, the licensee should monitor declutching operations on the subject actuator and replace torque switches as necessary.

#### Limitorque Corrective Action

As a design improvement, the SMB 00 torque switch shaft will be changed to a 416 stainless steel, while the 3/32 roll pin will be changed to a 1/8 inch groove pin on both ends of the shaft. These changes will provide 200 declutching cycles under maximum rated load conditions.

A copy of this notification has been sent to the NRC under a separate cover letter.

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Part 21 Notification

Any questions or clarification regarding the above notification may be directed to  
P. McQuillan, Nuclear/Special Projects Manager at Ext. 714.

Signed:

A handwritten signature in cursive script, appearing to read "I. E. Wilkinson".

I. E. Wilkinson  
Vice President of Engineering

LIMITORQUE CORPORATION

cc: Mr. Mignogna  
Mr. Kornsey  
Part 21 Notification File