

**TENNESSEE VALLEY AUTHORITY**

CHATTANOOGA, TENNESSEE 37402  
400 Chestnut Street Tower II

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August 26, 1983

BLRD-50-438/82-63, 50-439/82-56  
WBRD-50-290/82-92, 50-391/82-38

U.S. Nuclear Regulatory Commission  
Region II  
Attn: Mr. James P. O'Reilly, Regional Administrator  
101 Marie Street, NW, Suite 2900  
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

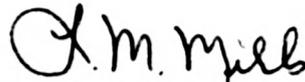
**BELLEFONTE AND WATTS BAR NUCLEAR PLANTS UNITS 1 AND 2 - SHEARED MOTOR  
PINION KEYS IN LIMITORQUE MOTOR OPERATORS - FINAL REPORT**

The subject deficiency was initially reported to NRC-OIE Inspector D. Quick on August 30, 1982 in accordance with 10 CFR 50.55(e) as NCR GEN NEB 8209. This was followed by our interim reports dated September 28, and November 18, 1982, and May 25, 1983. Enclosed is our final report. We consider 10 CFR Part 21 applicable to this deficiency.

If you have any questions concerning this matter, please get in touch with R. H. Shell at FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



L. M. Mills, Manager  
Nuclear Licensing

**Enclosure**

cc: Mr. Richard C. DeYoung, Director (Enclosure)  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Records Center (Enclosure)  
Institute of Nuclear Power Operations  
1100 Circle 75 Parkway, Suite 1500  
Atlanta, Georgia 30339

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1983-TVA 50<sup>TH</sup> ANNIVERSARY

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**ENCLOSURE**

**PELLEPONTE AND WATTS BAR NUCLEAR PLANTS UNITS 1 AND 2  
SHEARED MOTOR PINION KEYS IN LIMITORQUE MOTOR OPERATORS**

**NCR GEN NEB 8209**

**BLRD-50-438/82-63, BLRD-50-439/82-56, WBRD-50-390/82-92, WBRD-50-391/82-88**

**10 CFR 50.55(e)**

**FINAL REPORT**

**Description of Deficiency**

Westinghouse has informed TVA by their letter WAT-D-5052, dated August 10, 1982, that six sheared motor pinion keys have been found in Limitorque Model SB-0-25 motor operators. These keys transmit torque from the motor shaft through the pinion gear and ultimately to the valve stem drive nut. The sheared keys were of a lower strength steel (1119 material) than is normally used (1018 material) in the size and type of motor operators which failed. Limitorque has no record of what type of pinion key is installed in any particular motor operator.

Westinghouse has further notified TVA by their Letter WAT-D-5608, dated July 21, 1983, that this problem is unique to Westinghouse Electro-Mechanical Division (EMD) manufactured valves. Westinghouse also stated, in their letter WAT-D-5608, that "The cause of the sheared key problem on Westinghouse Electro-Mechanical Division-manufactured valves equipped with Limitorque Model SB-0-25 motor operators is a breakdown of the vendor quality control procedures for the particular Westinghouse purchase order that procured several plants worth of motor operators."

**Safety Implications**

Since a sheared key can prevent the transmission of torque from the motor shaft to the valve stem drive nut, this condition could result in the failure of a valve to perform an intended safety function.

**Corrective Action**

TVA has determined that Watts Bar is the only TVA plant which has EMD valves. Therefore, this condition is no longer considered generic to other TVA plants.

TVA has replaced the motor pinion keys, with ones made with the proper 1018 material, in all Limitorque model SB-0-25 motor operators at Watts Bar per Westinghouse field change notices (FCN) WATM-10646 and WBTM-10621.

In order to preclude the potential for sheared pinion keys in SB-0 series Limitorque motor operators supplied with Westinghouse EMD valves, Westinghouse has initiated actions to ensure that the subject motor operators are equipped with pinion keys of the appropriate configuration and made of the appropriate material. This was accomplished by removal of all existing stock from Limitorque's shelves, and by ordering all new material to certified test reports. In addition, Westinghouse has recently reviewed the Limitorque quality assurance program to ensure that pinion key material is subjected to appropriate controls. This information was conveyed to the NRC-OIE's Richard C. DeYoung in Westinghouse letter NS-EPR-2728 dated March 16, 1983.