



July 13, 2007

Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555

Subject: Dresser, Pressure Relief Operation  
10CFR Part 21 Final Report, Dresser Investigation File No. 2007-02  
Reportable defect involving Consolidated® Power Actuated Pressure Relief Valve  
Model 31533VX

Gentlemen,

The result of Dresser 10CFR Part 21 investigation, under file number 2007-02, is that a reportable defect does exist in the valves involved. The affected equipment, which was delivered to nuclear power plants in the United States, is identified below by serial number, site, control document and drawing. The details of the defect and corrective action to be implemented are also provided. This defect is not generic for all Consolidated® 31533VX Power Actuated Relief Valves, but applies only to the specific valve serial numbers given in this report.

### ***Background***

The 31533VX Electromatic® is a power actuated pressure relief valve (PORV) whose pilot is activated by an electrical operator, and is used in the overpressure protection of a pressure system or vessel in conjunction with spring loaded safety valves. The PORV is usually mounted on the down stream side of a gate valve and so it can be isolated. Usually no credit is taken for the capacity of the PORV valve in the Overpressure Protection Report, thus capacity certification in accordance with the Construction Code is not required. The valve is either not Code stamped or is provided with an "N" stamp like a line valve. However, this valve may be considered important to the safety shutdown of the nuclear facility and may be classified by the Owner as **safety related**. To provide overpressure protection in accordance with the Construction Code, the PORV must (1) open upon command (2) remain open until the over pressure condition decays and (3) close upon command. The PORV closes on loss of electrical power.

A Part 21 investigation was initiated based on the occurrence of four (4) events in the field resulting in the equipment's inability to perform its intended function.

*Event No. 1:* In March 2004, a 31533VX Electromatic® Relief Valve at the Fort Calhoun Nuclear Power Plant failed to close on site during performance testing conducted while shutting down the plant. The valve was returned to Wyle Laboratories for additional testing or repair. The valve was disassembled for inspection. Upon disassembly, the pilot was found stuck in the partially open position due to a metal burr. Also the main disc was found jammed in a closed position. The main disc had to be driven out of the guide. The guide had to be machined out of the cage. In machining, the inside diameter of the cage was over bored to an unacceptable level resulting in the main-pilot base assembly being replaced. Reference: valve serial number BY83422. This valve has been returned to service.

*Event No. 2:* In December 2006, a 31533VX Electromatic® Relief Valve at the Calvert Cliffs Nuclear Power Plant failed to close on site during performance testing conducted while shutting down the plant. The valve was returned to Wyle laboratories for additional testing or repair. The valve was disassembled. Upon disassembly, the main disc was found stuck in a partial open position. The main disc had to be driven out of the guide. The guide had to be machined out of the cage. Reference: valve serial number BM07950. This valve is currently at Wyle Laboratories.

*Event No. 3 and 4:* In February 2007, a 31533VX Electromatic® Relief Valve from the Oconee Nuclear Power Plant, failed nitrogen seat leakage test after being acceptable on steam test. Dimensional inspection indicated the cage was found out-of-round and the contact line of the seat was eccentric. The inside diameter of the cage was re-machined. The valve was re-assembled and steam tested. Again, the valve fail nitrogen seat leakage test after passing steam testing. The valve disassembled again and re-inspected. Initial inspection seems to indicate the cage was out-of-round again. At this point the valve was placed on hold and remains on hold until possible root cause can be determined. Reference: valve serial number BY93617. This valve is currently at Wyle Laboratories.

### ***Affected Equipment***

<b><i>Site</i></b>	<b><i>MCD</i></b>	<b><i>Serial No.</i></b>	<b><i>Current Status</i></b>	<b><i>Construction Drawing</i></b>	<b><i>Year of Manufacture</i></b>
Calvert Cliffs	OS178	BM07950	Wyle Labs -- Not In Service	3CP1356	1998
		BM07951	Unknown		2000
		BS07325	Unknown		1998
	3NC2005	BY11098	Unknown	3NC2005	1989
		BY68900	Unknown		1992
		BY77325	Unknown		2002
Oconee	3NC2024	BY93617	Wyle Labs -- Not In Service	3NC2024	2004
		BY93618	Wyle Labs -- Not In Service		2004
		DA07379	In Storage at Site		2006
		DA07380	In Storage at Site		2006

**Defect**

The defect is the potential for hang-up of the main disc due to deformation of the cage. Based on as-found conditions, it is obvious dimensional deformation of the cage occurred resulting in distortion of the thin guide and seizure of the disc.

**Root Cause of Defect**

Based on Dresser's evaluation, the deformation of the cage is likely attributed to the use of austenitic stainless steel of the low carbon type (316L) in construction of the cage. This material is subject to small plastic deformations at stresses around 40% of its yield.

**Corrective Action**

Corrective action was previously taken for valve serial number BY83422 at the Ft. Calhoun Nuclear Plant and is not subject to this 10CFR Part 21 notice. However, it is recommended that Dresser monitor this valve.

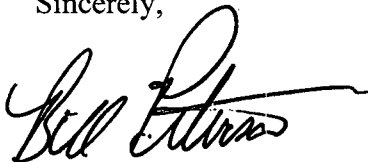
Regarding the valves at Calvert Cliffs, some of these valves may be eliminated from the candidate list after the number of service/repair cycles for the valves has been determined. Feedback from the Owner will be required. Valve serial number DM-07950 is currently at Wyle Laboratories for test or refurbishment.

Regarding the valves at Oconee, these valves are not in service. Valve serial numbers BY93617 and BY93618 are currently at Wyle Laboratories for test or refurbishment. Valve serial numbers DA07379 and DA07380 are currently in storage at the site.

Of the ten (10) total valves identified, the current status as Dresser is presently aware is that 3 are currently at Wyle Labs for service/repair, 2 are in storage at site and the status of the remaining 5 is unknown.

Dresser will be working directly with the sites involved to resolve the potential defect. Review of historical data and further inspection and testing shall be employed as required.

Sincerely,



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