



Flow Control Division  
Anchor/Darling Valves  
BW/IP Valves  
Edward Valves  
Valtek Control Products  
Worcester Valves

October 31, 2006

**NRC Document Control Desk  
US Nuclear Regulatory Commission  
Washington, DC 20555-0001**

**Subject: USNRC 10CFR Part 21 Notification**

This is to notify the US Nuclear Regulatory Commission, in accordance with the provisions of 10CFR - Part 21 of a deviation identified by Flowserve Corporation.

On September 18, 2006, Flowserve was notified via e-mail from Alabama Power – Farley NPP that a ¾ NPS Class 1500 Y-Globe Valve in their inventory had the outward appearance and characteristics of a carbon steel valve body (rust blooms and magnetic), whereas the valve body was identified as ASME SA 182, Type 316 stainless steel material. The valve was supplied as an ASME Section III Class 1 stainless steel valve. Subsequent discussions and e-mails resulted in Flowserve authorizing the return of this valve on September 26, 2006. It was received in our plant on October 9, 2006.

Flowserve performed an alloy analyzer check on the valve body and confirmed it to be a non-stainless material. A subsequent chemical and physical analysis of the valve body confirmed it to be a carbon steel material (UNS G10450).

The valve body in question (Heat Code – “FS12”) was forged by DeKalb Forge Company of DeKalb, IL for Flowserve. DeKalb Forge Company forgings were limited to Kerotest and BWIP (Borg Warner) valve bodies and bonnets. These forgings were made from bar material supplied to them by Flowserve Corporation or Charles E. Larson & Sons. DeKalb Forge Company was a limited scope supplier and had an audited and approved quality program for Material Identification and Control at the time these materials were being processed.

A search of our records revealed that a total of six (6) nuclear power plants received valves with valve bodies from this heat of material. We have contacted each of these plant sites and relayed the information regarding the products supplied and requested that they verify the valve body material of each of the valves received. To date, no other instances of incorrectly identified materials have been discovered, however not all valves supplied have been verified as of this report.

Flowserve also checked the materials in our inventory supplied by this vendor. A total of 660 pieces, representing 60 heats of material, have been checked and there was no further evidence of mixed materials.

Flowserve visited the suppliers who had been contracted to provide materials from DeKalb Forge Company to further our investigation and try to determine the exact cause of the incorrectly identified material. The fact that the Heat Code “FS12” is forged in the material

IE19

leads Flowserve to conclude that the incorrect identification of the material occurred at DeKalb Forge Company.

The Flowserve Investigator visited Charles E. Larson & Sons of Chicago IL, who had been contracted between January 2004 and December 2005 to provide finished forgings. As a result of this visit it was discovered that Charles E. Larson & Sons had identified on 2 separate occurrences where DeKalb Forge Company had incorrectly identified materials supplied to them on orders for Flowserve. Charles E. Larson & Sons during their processing had been able to identify these materials by visual inspection and confirmation with a material analyzer. These incorrectly identified materials were scrapped at Charles E. Larson & Sons.

Based upon this information, Flowserve determined that the single incident reported by Alabama Power may not be an isolated case. However, Flowserve concluded that a higher level of assurance that incorrectly identified materials processed through Charles E. Larson & Sons would have been identified and thus reduced the likelihood of incorrectly identified material being supplied to the industry.

The Flowserve Investigator then visited DeKalb Forge Company of DeKalb IL. DeKalb had been directly providing Flowserve Corporation with valve body and bonnet forgings from March 2002 until March 2004. During this time Flowserve was subcontracting the heat treatment of these forgings and providing material certification. DeKalb did not offer any explanation for how the material had been incorrectly identified and mixed.

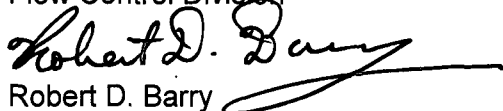
Flowserve can only conclude that the opportunity for incorrect identification and mixture of material specifications existed at DeKalb Forge Company based upon the one incident reported by Alabama Power and the 2 incidents of non conformances identified by Charles E. Larson & Sons.

While the evidence does not indicate that these deficiencies occurred often, there is no way to conclude that all incidents have been identified prior to forged valve bodies or bonnets being provided to the nuclear industry. Because of this, Flowserve would recommend that Kerotest and BWIP (Borg Warner) valves identified on the attached listing be inspected at the earliest convenient time to determine that the materials are carbon steel or stainless steel as required. A magnet check is suggested. If evidence is found that the material of construction is not what it is required to be, replacement of the valve should be considered.

Flowserve is not aware of how these valves are being used and therefore is not able to determine the safety significance of the problem.

Flowserve Corporation is presently researching the customers who may be affected and will be notifying them directly once our research is completed.

Flowserve Corporation  
Flow Control Division



Robert D. Barry  
Quality Assurance Manager

Attachment: Flowserve USNRC 10CFR Part 21 Notification dated October 31, 2006



Flow Control Division  
Anchor/Darling Valves  
BW/IP Valves  
Edward Valves  
Worcester Valves  
Valtek Control Products

October 31, 2006

Subject: USNRC 10CFR Part 21 Notification

**Attachment**

Kerotest and BWIP (Borg-Warner) Valves constructed with DeKalb Forge Company valve body and / or Bonnet forgings from March 2002 thru December 2005.

**Kerotest Valves**

<b><u>Model</u></b>	<b><u>Size</u></b>	<b><u>Pressure Class</u></b>
Y-Globe and Check Valves	3/8 thru 2 NPS	150 -1708
Pack Less Metal Diaphragm Globe Valves	3/8 thru 2 NPS	150 -1708
Manifold Valves	1/4 thru 3/4 NPS	600 -1690
Globe and Check Instrument Valves	1/4 thru 3/4 NPS	150 -1690

**BWIP Valves (Borg-Warner)**

<b><u>Model</u></b>	<b><u>Size</u></b>	<b><u>Pressure Class</u></b>
Globe, Gate, and Check Valves	3/8 thru 2 NPS	150 -1665

Flowserve U S Inc  
Flow Control Division

Raleigh Operations  
PO Box 1961  
1900 South Saunders Street  
Raleigh, NC 27603

Toll Free: 1-800-225-6989  
Phone: 1-919-832-0525  
Facsimile: 1-919-831-3369  
[www.flowserve.com](http://www.flowserve.com)

Visit our on-line catalog through Thomas Register at  
<http://thomasregister.com/Flowserve>