

Part 21 (PAR)

Event # 46846

<b>Rep Org:</b> ASCO VALVE	<b>Notification Date / Time:</b> 05/12/2011 16:14 (EDT)
<b>Supplier:</b> ASCO VALVE	<b>Event Date / Time:</b> 05/12/2011 (EDT)
	<b>Last Modification:</b> 05/12/2011
<b>Region:</b> 1	<b>Docket #:</b>
<b>City:</b> AIKEN	<b>Agreement State:</b> Yes
<b>County:</b>	<b>License #:</b>
<b>State:</b> SC	
<b>NRC Notified by:</b> ROBERT ARNONE	<b>Notifications:</b> ANNE DEFRANCISCO R1DO
<b>HQ Ops Officer:</b> DONG HWA PARK	EUGENE GUTHRIE R2DO
<b>Emergency Class:</b> NON EMERGENCY	DAVE PASSEHL R3DO
<b>10 CFR Section:</b>	DAVID PROULX R4DO
21.21 UNSPECIFIED PARAGRAPH	PART 21 GROUP

U-RINGS FABRICATED WITH INCORRECT MATERIAL

"The following was received via facsimile:

"This report relates to two NP8344E series four-way solenoid valves found to be leaking through the exhaust port in both the energized and de-energized states.

"Background - On January 21, 2011, ASCO Valve, Inc. (ASCO) was notified by AREVA that a four-way solenoid valve NP8344A75E AC, (serial number F623557002-002) from the Dresden Station was leaking from the exhaust port in both the energized and de-energized states. AREVA reported that Exelon Labs had performed a Fourier Transform Infrared Spectroscopy (FTIR) analysis which indicated the piston U-ring exhibited properties consistent with a Nitrile compound instead of Teflon® coated Ethylene Propylene as required by the ASCO design drawing. The valve itself was not returned to ASCO. At ASCO's request, Exelon returned the U-ring on January 27, 2011. ASCO provided a letter to Dresden Station on February 3, 2011 (Reference A) maintaining the correct U-ring material was installed at the time of shipment and that no additional action was required.

"The second occurrence involved another four-way solenoid valve, NPK8344A072E DC, (serial number F337837-2), from PSEG Nuclear's Salem station, returned to ASCO on Service RMA 47113 on February 25, 2011. The valve was brought to ASCO where testing confirmed the valve was leaking through the exhaust ports in both the energized and de-energized states. The inspection of parts showed that the U-ring material had become brittle. If the U-ring becomes brittle, it may no longer perform its sealing function.

"ASCO Investigation Results - The above referenced valves were manufactured in 1992 (Dresden) and 1995 (Salem) respectively. It was determined that both valves used the same piston U-ring, part number 029043-024-S. This U-ring is common to both the 3/8" and 1/2" NPT valve constructions, A review of ASCO's incoming and

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NRC

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dedication inspection records indicated that these U-rings were Teflon® coated Ethylene Propylene. The piston U-rings from the Salem and Dresden valves, along with a piston U-ring from ASCO's current stock, were sent to a third party laboratory for a FTIR analysis. The U-rings from both the Salem and Dresden valves were determined by the laboratory to be Nitrile. The U-ring from current stock was determined to be Teflon® coated Ethylene Propylene, as called for by the design drawings,

"Impact on Performance - The use of a Nitrile piston U-ring could potentially reduce the valve life and result in leakage through the exhaust port.

"Initial Action - FTIR analysis confirmed that the piston U-ring in ASCO's current stock was Teflon® coated Ethylene Propylene. ASCO records disclosed no prior cases of piston U-rings fabricated with incorrect material. Discussions with the distributor of the U-rings disclosed no other cases of improper material.

"Corrective Action - The customers that were shipped potentially affected NP8344E valves are being notified of the potential deviation. All variations of NP8344A72E, NP8344A73E, NP8344A74E, NP8344A75E, NP8344850E, NP8344B52E, NP8344B62E, and NP8344B64E manufactured from 1992 through 1995 are recommended to be monitored for leakage. Due to the qualified service life and date of manufacture, it is believed a majority of these valves are no longer in service, Subsequent to 1995, ASCO has implemented a more rigorous lot and batch control to verify the material compound at incoming and dedication inspection. This action further enhanced traceability of resilient materials used in specific production lots.

\*\*\*\*\*

# ASCO<sup>®</sup> Valve Manufacturing, Inc.

**AIKEN, S.C.**

**FAX: 803-641-9290**

**FAX  
NO:**

301-816-5151

**TO:**

NRC Documents Control Desk

**FROM:**

Robert Amone

**DATE:**

May 12, 2011

Attached is letter to NRC Document Control Desk with one referenced exhibit

If there are any questions, please call 803-641-9395.

*Robert Amone*

**PAGES INCLUDING  
Cover Page** 5



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May 12, 2011

NRC Documents Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-001

Subject: NP8344 Valve U-Rings

Ref A: ASCO letter to Dresden Station dated 2/3/2011

Gentlemen:

This report relates to two NP8344E series four-way solenoid valves found to be leaking through the exhaust port in both the energized and de-energized states.

**Background** – On January 21, 2011, ASCO Valve, Inc. (ASCO) was notified by AREVA that a four-way solenoid valve NP8344A75E AC, (serial number F623557002-002) from the Dresden Station was leaking from the exhaust port in both the energized and de-energized states. AREVA reported that Exelon Labs had performed a Fourier Transform Infrared Spectroscopy (FTIR) analysis which indicated the piston U-ring exhibited properties consistent with a Nitrile compound instead of Teflon® coated Ethylene Propylene as required by the ASCO design drawing. The valve itself was not returned to ASCO. At ASCO's request, Exelon returned the U-ring on January 27, 2011. ASCO provided a letter to Dresden Station on February 3, 2011 (Reference A) maintaining the correct U-ring material was installed at the time of shipment and that no additional action was required.

The second occurrence involved another four-way solenoid valve, NPK8344A072E DC, (serial number F337837-2), from PSEG Nuclear's Salem station, returned to ASCO on Service RMA 47113 on February 25, 2011. The valve was brought to ASCO where testing confirmed the valve was leaking through the exhaust ports in both the energized and de-energized states. The inspection of parts showed that the U-ring material had become brittle. If the U-ring becomes brittle, it may no longer perform its sealing function.

**ASCO Investigation Results** – The above referenced valves were manufactured in 1992 (Dresden) and 1995 (Salem) respectively. It was determined that both valves used the same piston U-ring, part number 029043-024-S. This U-ring is common to both the 3/8" and 1/2" NPT valve constructions. A review of ASCO's incoming and dedication inspection records indicated that these U-rings were Teflon® coated Ethylene Propylene. The piston U-rings from the Salem and Dresden valves, along with a piston U-ring from ASCO's current stock, were sent to a third party laboratory for a FTIR analysis. The U-rings from both the Salem and Dresden valves were determined by the laboratory to be Nitrile. The U-ring from current stock was determined to be Teflon® coated Ethylene Propylene, as called for by the design drawings.

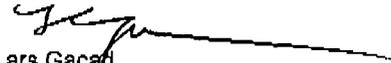
**Impact on Performance** – The use of a Nitrile piston U-ring could potentially reduce the valve life and result in leakage through the exhaust port.

**Initial Action** – FTIR analysis confirmed that the piston U-ring in ASCO's current stock was Teflon® coated Ethylene Propylene. ASCO records disclosed no prior cases of piston U-rings fabricated with incorrect material. Discussions with the distributor of the U-rings disclosed no other cases of improper material.

**Corrective Action** – The customers that were shipped potentially affected NP8344E valves are being notified of the potential deviation. All variations of NP8344A72E, NP8344A73E, NP8344A74E, NP8344A75E, NP8344B50E, NP8344B52E, NP8344B62E, and NP8344B64E manufactured from 1992 through 1995 are recommended to be monitored for leakage. Due to the qualified service life and date of manufacture, it is believed a majority of these valves are no longer in service. Subsequent to 1995, ASCO has implemented a more rigorous lot and batch control to verify the material compound at incoming and dedication inspection. This action further enhanced traceability of resilient materials used in specific production lots.

Please contact Bob Arrone at 803-641-9395 if you have any questions.

Very Truly Yours,



Lars Gacad  
Vice-President Quality  
ASCO Valve, Inc.



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February 3, 2011

Dresden Nuclear Power Plant Exelon Corporation  
6500 North Dresden Road  
Morris, IL 60450

Attention: Mr. Silva Jagadeesan, Procurement Engineer

Dear Mr. Jagadeesan:

Subject: Analysis of ASCO NP 8344A75E from Dresden Nuclear Power Plant.

Ref: A - Report from Exelon Power Labs dated 1/14/11, project number DRE-23045.

Attachments:

- 1- Inspection records
- 2- Photos of u-ring with markings (red and pink dots)

Background:

On January 21<sup>st</sup>, Chris Marsh of Areva provided a copy of ref A to ASCO for review and comment. The report details an analysis of an NP 8944 valve that was removed from service. Among the findings of the report was the observation that one of the u-rings (larger) was identified as being made of a blend of Buna-N and Fluoroelastomers. The valve is supposed to be assembled with Ethylene Propylene.

Several conference calls were initiated between ASCO, Areva, Exelon and Dresden in order to review the investigation and discuss explanations for material.

Summary of Investigation:

ASCO reviewed the incoming and pre-assembly dedication inspection records for the valve and u-ring. These records document the inspection of all elastomers and critical dimensions being checked. The inspection records confirm that the material used in assembling the valves were conforming, indicating that the material validated in 1993 was Ethylene Propylene with a Teflon coating. Copies of the inspection records were forwarded to Exelon for review and are included as attachments.



PCL XL error

Subsystem: IMAGE

Error: ExtraData

Operator: ReadImage

Position: 161