General Information or Other (PAR) Event # 46340

Rep Org:	ASCO VALVE	**Notification Date / Time:**	10/18/2010 13:09 (EDT)
Supplier:	AREVA	**Event Date / Time:**	09/18/2010 (EDT)
		Last Modification:	10/18/2010
Region:	1	**Docket #:**	
City:	AIKEN	**Agreement State:**	Yes
County:		**License #:**	
State:	SC		
NRC Notified by:	ROBERT ARNONE	**Notifications:**	VIVIAN CAMPBELL R4DO
HQ Ops Officer:	JOE O'HARA		PART 21 GRP
Emergency Class:	NON EMERGENCY		
10 CFR Section:			
21.21	UNSPECIFIED PARAGRAPH		

POTENTIAL EXTERNAL LEAKAGE IN SOLENOID VALVE

The following notification was received via fax:

"On 9/18/10 a single solenoid valve was returned to ASCO with a reported problem of external leakage at the bonnet area below the coil housing. The valve was returned from Cooper Nuclear Station through AREVA, who was the distributor.

"The returned valve was retested at ASCO. No external leakage was observed when the valve was tested in the de-energized state. However, when the valve was tested in the energized state, the reported leakage was confirmed. The root cause of the leakage was determined to be a misaligned O-ring between the solenoid base sub-assembly and the valve body.

"The customers that were shipped affected valves are being notified of the potential non-conformance. ASCO will recommend the affected valves be returned to be retested in accordance with updated test procedures."

****

IE19

Received at: 10/18/2010 13:12

ASCO Valve Manufacturing, Inc.

AIKEN, S.C.
FAX: 803-641-9290

FAX NO: 301-816-5151

TO: NRC Documents Control Desk

FROM: Robert Arnone

DATE: October 18, 2010

Attached is letter to the NRC Document Control Desk and two referenced exhibits.

If transmission is not clear, please contact Bob Arnone at 803-641-9395.

PAGES INCLUDING Cover Page 6

If you did not receive all pages of this fax, please call (803) 641-9307

Form Aiken 3504 (i) R3 – 01/01

EMERSON.
Industrial Automation

ASCO Valve, Inc.
50 Hanover Road
Florham Park, NJ 07932
USA

T (973) 966 2000
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www.asconumatics.com

October 18, 2010

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

Subject: External leakage in NP8320 solenoid valve

Reference A – ASCO letter to AREVA dated 9/13/2010
Reference B – ASCO Returned Material Authorization (RMA) number 44797

Gentlemen:

The enclosed information relates to a single NP8320 ASCO valve identified by Cooper Nuclear Station to exhibit external leakage. The customers who have received similar valves potentially susceptible to external leakage are being notified.

ASCO does not have adequate knowledge of the actual installations and operating conditions of these valves to determine whether this condition could create a "substantial safety hazard" as defined in 10CFR21.3. This information is intended to provide investigation results and corrective action.

Background – On 9/8/2010, a single NP8320 solenoid valve (NP832094E 120/60,110/50, serial number A408921-004) was returned to ASCO with a reported problem of external leakage at the bonnet area below the coil housing. This valve was 1 of 5 produced on an order for AREVA in April 2010. The valve was returned from Cooper Nuclear Station through AREVA, who was the distributor. See Ref. B.

The returned valve was retested at ASCO. No external leakage was observed when the valve was tested in the de-energized state. However, when the valve was tested in the energized state (power was applied to the valve coil), the reported leakage was confirmed. The root cause of the leakage was determined to be a misaligned O-ring between the Solenoid Base Sub Assembly (SBSA) and the valve body.

ASCO's NP8320 series valves are offered in 2 different body materials, brass or stainless steel; with 2 different types of seals and disc, Ethylene Propylene or Viton®; and for 3 different forms of flow, Normally-Closed, Normally-Open and Universal. The NP832094E returned is a stainless steel valve with Ethylene Propylene seals and Discs for Normally-Closed form of flow.

For Normally-Closed valves, air pressure is to be applied at port 2. This port is blocked when the valve is de-energized and the cylinder port 1 is exhausted through the exhaust port 3. When the valve is energized pressure is allowed to flow to the cylinder port at 1, and the exhaust port at 3 is blocked. See Figure 1 on next page.

For Normally-Open valves, pressure is applied at port 3. This port is connected to port 1 when de-energized and port 2 is blocked. When the valve is energized, port 3 is blocked and the pressure at the cylinder port 1 is exhausted through port 2.

ASCO numatics

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Universal valves can be connected as either Normally-Closed or Normally-Open.

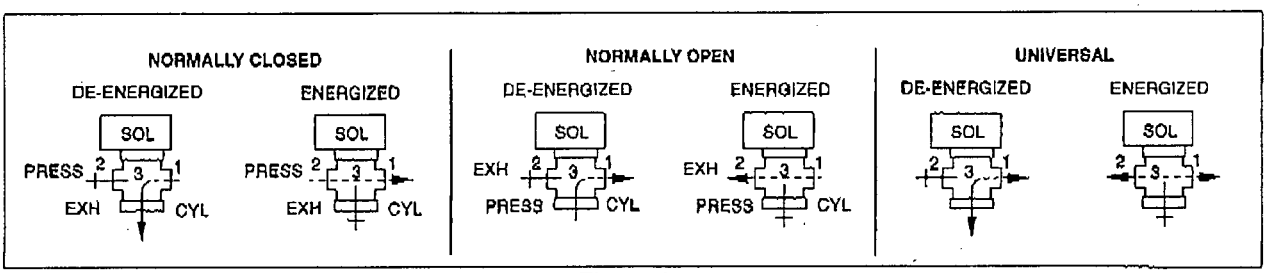

Figure 1

ASCO Investigation Results – As part of ASCO's investigation, ASCO requested that AREVA return all NP8320 valves in their stock for retest. 91 more valves were returned and retested at ASCO. None exhibited external leakage in either the energized or de-energized state.
As a further part of our investigation we discovered that the written test procedure did not provide explicit instructions to energize the valve during the external leakage portion of the test. For Normally-Closed and Universal valves the solenoid must be energized to pressurize the internal cavity (The internal cavity of the valve is defined by the SBSA, valve body and lower end cap). For Normally-Open valves, the internal cavity is pressurized when de-energized, so they are not affected).

The manufacture of the NP8320 valve series was transferred to Aiken, SC from Florham Park, NJ on October 1, 2009. Interviews with Engineering and test personnel at Aiken indicated that the valves were not energized to pressurize the cavity when conducting the external leakage test. Interviews with Engineering and test personnel at Florham Park indicated that the valves were energized to pressurize the cavity when conducting the external leakage test, even though the test procedure did not specifically require this. ASCO has therefore concluded that NP8320 valves manufactured and shipped from Aiken, SC after the transfer date could be potentially affected, but not the valves produced at Florham Park.

Impact on Performance – ASCO believes that any external leakage caused by a misaligned O-ring would likely be immediately apparent and detectable upon initial installation and operation. This condition does not affect basic operation of the valve and is unlikely to degrade over time.

Interim Action – The test procedure for the NP8320 valves has been revised to ensure that any external leakage is detected.

Containment Action – A preliminary report was provided to AREVA (Reference A) on 9/13/2010. There were a total of 174 of this series valves shipped from Aiken, SC since October 1, 2009. 145 of the 174 valves were shipped to AREVA (includes the 92 retested above). 25 valves were shipped to our subsidiary, ASCO ASIA. 4 valves were shipped to Ralph A. Hiller Co. of Export, PA.

Corrective Action – The customers that were shipped affected NP8320 valves are being notified of the potential non-conformance. ASCO will recommend the affected valves be returned to be retested in accordance with the updated test procedure.

If you have any questions, you can contact Bob Arnone at 803-641-9395.

Very Truly Yours,

Lars Gaad
Vice-President Quality
ASCO Valve, Inc.

ASCO NUMATICS

EMERSON.
Industrial Automation

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September 13, 2010

AREVA NP Inc.
3315-A Old Forest Road
Lynchburg, VA 24501

Attn: Chris Marsh

Re: ASCO RMA 44797
AREVA RDR 10-206, AREVA PO # 1010038058

Dear Chris,

One NP832094E 120/60, serial number A408921-004, was received with reported problem of leaking externally at the bonnet area. An external inspection of the valve had revealed it to be new and unused. The ports and visible passageways were free of any particulate matter and no pipe sealant was noted on any of the ports. No excessive solenoid noise was heard when a test voltage of 102/60 was applied without pressure. The valve was cycled ten times. The valve did function satisfactorily when cycled and no internal leakage was recorded in either state. The valve was then checked for external leakage at the bonnet area. None was detected when the valve was de-energized, however; there was leakage when energized. The valve was disassembled for inspection and the cause was attributed the o-ring was not completely on the ledge of the valve body (figure 1).

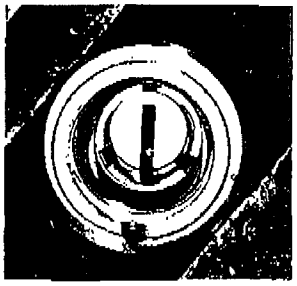

Figure 1

There were five valves manufactured on this order and the test logs had indicated all were checked for external leakage and 10 and 175 PSI. There has not been any return history of any solenoid valves with these symptoms and is therefore considered an anomaly. The AREVA purchase order had indicated to repair if possible. It would be suggested to place a no charge replacement order. If there are any further questions, please contact me at 803-641-9395.

Sincerely,

Bob Arnone

Bob Arnone
Technical Service Engineer

ASCO numatics

ASCO numatics

RMA # 44797 Return Type : Service

Created By Marsh, Chris 7/29/2010 2:27 PM - Modified By Arnone, Robert 10/18/2010 7:36 AM

Customer Information

Account #	170151	**RMA #**	44797	**ASCO Invoice #**	
Location	AREVA NP INC,AREVA NP INC 3315-A OLD FOREST ROAD,LYNCHBURG,VA,24501,USA				
Territory	001	**Customer Type**	AUTH. VALVE DIST.		
Contact Name	Chris Marsh	**Phone #**	434-832-2930	**Email**	chris.marsh@areva.com
Customer's Reason for Return	Evaluation	**Other**	Valve Return from customer for failed bench test		
Return Products To	ASCO Valve Inc. - Aiken	**Disposition Instructions**	To be determined	**Order #**	
Status	Closed, material not returned	**Other**			

Do you intend to take a deduction for this return

Debit Memo Number		**Debit Amount**	
Purchase Order To Use		**Credit Amount**	

Product(s) to be returned

Catalog #	NP 8320 094 E	**Serial #**	A408921-004	**Quantity**	1
Voltage / Hz	120/60,110/50	**Media**		**Ambient Temperature**	° F
Pressure	psi	**Min Pressure**	psi	**Max Pressure**	psi
Length of time in Service				**Fluid Temperature**	° F
Cycling Rate		**times per**	Second		

How are valves mounted?

Number of valves in use?

Has this problem occurred in more than one location?

Is this a new application?

Problems Experienced

- **Primary Problem**	See Additional Remarks
- **Secondary Problem**	See Additional Remarks
- **Other Problem**	Valve failed customer bench test

ASCO Findings / Response

Reported Problems Confirmed	Yes	**Warranty**	No
Problems Found			
Primary Problem Found		**Secondary Problem Found**	
Other Problem Found	see attached report		
Comments			

File Attached By Customer

Additional Remarks

User Name	Description	Date Entered
	Correction to entry of 9/8/2010:	

ArnoneR	No external leakage detected when de-energized.	10/15/2010 11:42:23 AM
ArnoneR	Report is attached. If a replacement is required, suggest placing a no charge replacement order.	9/13/2010 12:40:26 PM
ArnoneR	External leakage confirmed at the bonnet area when energized. No external leakage detected when energized. Valve will be carefully disassmbled tomorrow to determine root cause.	9/8/2010 3:25:18 PM
LCARROLL	Attached purchase order for evaluation.	8/3/2010 2:37:19 PM
ArnoneR	Attached RDR 10-206 has been attached. Is the purchase order included in the carton?	7/30/2010 8:04:18 AM
cmarsh	Valve was returned from NPPD/Cooper for failing their bench test. Valve was leaking at bonnet area undersolenoid coil housing. Reference RDR 10-206 attached. AREVA to issue no cost purchase order for evaluation/replacment.	7/29/2010 2:27:01 PM

ASCO Internal Remarks

User Name	Description	Date Entered	Product Evaluation
ArnoneR	NCMR 5676 issued	9/15/2010 9:25:03 AM	No
ArnoneR	Confirmed external leakage when energized, none detected de-energized.	9/10/2010 11:25:27 AM	Yes
	Attached pictures of disassembly		

File Attached By ASCO

Internal Email Circulation

Type (Assigned to / CC)	Email Recipient's Name
Assigned to	Arnone, Robert
CC	Casadevall, Steve;Greame, Jim;Loprete, Jeffrey;Ingles, Nicholas

Follow up By

07/31/2010

[redacted]