

Notable Event Worksheet

(See [ES&H Manual Chapter 5200 Appendix T1 Event Investigation and Causal Analysis](#) for Instructions)

Click
For Word Doc

Title of Event			
Event Title:	EWB Solenoid Valve Failure		
Date and Time of Occurrence:	02/23/2012 12:10pm	Notable Event Number:	FML-12-0223
Event Location:	Test Lab Rm122	Date Notable Event Report is Due*:	03/23/2012

*The Notable Event Report is due to the ESH&Q Reporting Officer with 30 days of the Initial Fact Finding Meeting unless an extension is requested.

Categorization and Reporting (To be completed by ESH&Q Reporting Officer within two hours – unless essential information is still pending)			
ORPS Determination:	Date:	02/24/2012	Time: ~ 1620
This event does not meet ORPS reporting criteria per DOE O 232.2			
10 CFR 851 Screen:	Date:	02/24/2012	Time: ~ 1620
This event does not meet the voluntary reporting criteria either as a discreet event or as a programmatic weakness.			

Unless otherwise specified the following is to be completed by the [Lead Investigator](#).

Step 1 Initial Fact-Finding Meeting					
Date:	02/24/2012	Time:	11:00am	Location:	VARC 53
Required Attendees:			Optional Attendees:		√ if Present
Lead Investigator:			Associate Director:		
(Print Name): Richard Jacobsen - DSO			(Print Name):		
ESH&Q Representative:			TJSO Observer:		X
(Print Name): Tina Johnson			(Print Name): Steve Neilson		
Supervisor of involved persons(s):			Subject Matter Expert(s), Facility/Equipment Owner as applicable:		
(Print Name): Mike Sprouse			(Print Name): Carroll Jones		X
Involved or impacted person(s):			(Print Name): David Fazenbaker - SOTR		X
(Print Name):			(Print Name): Todd Kujawa		X
(Print Name):			Ned Walker		X
(Print Name):			(Print Name): Jason Willoughby		X

Witness(es):	(Print Name):	
(Print Name): Steve Manning	(Print Name):	

Agenda (Ensure the pace of the meeting allows time for accurate note taking.)	√ if Complete
1. Introduction – Provide Event Title, Date and Time of Occurrence, and Location:	X
2. Attendance - Are Required Attendees present.	X
3. Purpose of Initial Fact-Finding meeting.	X
4. Event Reconstruction – Use information to complete Section 3. Summary of Event and/or Injuries below.	X
a. Personnel and organizations involved in the event.	X
b. Conditions and actions preceding the event.	X
c. Chronology (timeline) of the event; and	X
d. Immediate actions taken in response to the event.	X
5. Clarify information – Subject-Matter Expert (SME) confirms work conditions.	X
6. Stop Work or the Tag Out Required? If “Yes” – establish the restart criteria and inform the affected Management chain.	N/A
7. Compensatory Actions Required? If “Yes” determine responsibility and include confirmation documentation.	N/A
8. Records or documentation required to confirm, clarify, or complete information (i.e., work plans, work control documents, photos, etc).	X
9. Other Questions or Concerns: Ask attendees if there are any other questions, concerns, or information that they wish to provide.	X
10. Obtain TJSO Observer feedback on conduct of fact finding meeting and potential improvements.	X

Step 2 Investigation Team:		Date Convened: 02/2/4/2012 ~11:00-12:00	
		(Within 24 hours of Fact Finding Meeting.)	
Role	Name	Department/Group	Phone
Lead Investigator	Richard Jacobsen - DSO	FM	5771
SME - Mechanical	Carroll Jones	FMM	7672
Electrical	Jason Willoughby	FME	5372
Mechanical	Mike Sprouse	FMM	7574
SME - Electrical	Todd Kujawa	ESH&Q	7006
Safety SOTR	Ned Walker David Fazenbaker - SOTR	ESH&Q FM	6638 5808
TJSO Observer	Steve Neilson	TJSO	7215

Step 3 Summary of Event and / or Injuries, including Initial Fact Finding Meeting information: determine the chain of events and timeline. Use attachment as necessary.

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On February 23, 2012 during the course of preparing to remove the nitrogen line to the Electron Beam Welding unit, the ASCO solenoid valve (EBW N2 valve) was to be removed. A pre job briefing was held by Mike Sprouse with MRI and David Fazenbaker. Direction given was to cut the pipe on the down leg side of the valve and plug it. The valve would be removed later. Instead the mechanic decided to remove the valve. He first removed the solenoid. Since the solenoid unit was still under power and was attempting to continue working, it overheated and started to smoke (12:10pm) and failed open circuit. This unit was located in an adjacent area, room 122. When the smoke was noticed, the fire alarm was pulled and the building was evacuated. Upon re-entry into the area, it was noted that the solenoid had completely failed and no more smoke was being generated. Power to the solenoid was cut off and the wiring to the unit was removed.

This valve is designed "Fail Safe" in that when electricity is powered to the solenoid, it withdraws the valve stem and opens the line so nitrogen can flow thru the line. In case of power failure, the valve fails shut stopping the flow of nitrogen. It takes a heavy draw of electricity to open the valve but a very small draw of electricity to hold it open. By removing the solenoid and leaving the electricity connected, the valve was continuing to demand a heavy draw of electricity as it was attempting to open the valve which was no longer connected. The valve body was no longer connected to the solenoid so there was no mass to dissipate the heat.

This was the first of this type of valve to be installed – some 6 or 7 years ago. It is a 120v solenoid valve. Most all solenoid valves since are low voltage units (It depends on the size of the valve).

Notable Event Report

Emergency Notifications Made (Subsequent to the Event):	Date	Time
Fire, Rescue & Emergency Medical: (9-911)		
Guard Post: x4444; 269-5822		
Occupational Medicine 269-7539		
ESH&Q Reporting Officer: 876-1750	02/23/2012	3:20pm
Crew Chief 630-7050		
Industrial Hygiene: 269-7863:		
Other: Steve Nielson - TJSO	02/23/2012	4:45pm

Witness Accounts: (Use attachments as necessary. Box will expand as necessary)

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EBW N2 Valve Fire Alarm Event

Sequence of Events:

- At ~12:10 pm on Feb. 23, 2012, Steve Castagnola and Danny Forehand observed smoke coming from the nitrogen isolation valve for the EBW lab, room 122 in the Test Lab.
- Not sure as to how to secure power to the valve and the amount of smoke increasing rapidly, Danny pulled the building fire alarm and the building was evacuated.
- Upon arriving at the building muster point, I was informed by Tony Reilly of the situation and was escorted to the valve by Dave Kausch. The valve had already failed and stopped smoking at that point.
- I secured power to the valve by hitting the close button on the valve controller box, and then turned the breaker off at that power panel.
- Harris Electrical was contacted and asked to secure the power to the valve. The breaker was locked out and the wiring removed to the valve by Harris.
- What led to the problem was the following: During removal of the nitrogen line for the EBW lab in preparation for moving the welder, MRI had removed the solenoid from the valve body and left the solenoid powered up. It is believed that with the loss of the inductive load that the valve body presents, the coil essentially became a short and overheated to the point of failure.
- I followed up with discussions of the event with the EBW project SOTR, Dave Fazenbaker, who was going to follow up on his side with MRI, and briefed the ADSO Harry Fanning.

Note:

It appears that the valve is manufactured by ASCO, whom I contacted and discussed the event with. They confirmed that removing the solenoid with the power on did create the situation as described above, and that it is a general no-no. Their literature however, does not "clearly" tell you not do this; it's more of an implied thing.

Steve Manning

Witness Accounts: (Use attachments as necessary. Box will expand as necessary)



P.O. Box 120900
 Newport News, VA 23612
 Phone: (571) 873-0266
 Fax: (571) 873-0199

Incident Report

February 29, 2012

Incident: Jefferson Lab – Test Lab – Overheated Coil

February 23, 2012

Scott Weiss

Mike Levelle

On the morning of February 23, 2012 Mike Sprouse and * reviewed the relocation of the E.B. Welder from the E.B. Welder Room. The disconnection of the Water and Nitrogen lines going to the equipment was discussed. Mike Sprouse and * locked out the Ball Valves located outside the room and on the other side of the wall. Mike Sprouse put Admin Tags and Locks on the Ball Valves. Mike Sprouse left and * and Mike Levelle proceeded to disconnect the Water and Nitrogen lines from the E.B. Welder, so it could be moved out of the room. Mike Sprouse wanted to plug the Nitrogen line outside of the room. Before * removed any Nitrogen piping outside of the room he called Mike Sprouse to discuss how he was going to plug the line. He told Mike Sprouse that he was going to remove piping to the ball valve. Mike Sprouse told him to be careful, because there is power on the solenoid coil. * removed the coil on the solenoid valve, so he could remove the solenoid valve body from the piping and then be able to plug the ball valve above the solenoid valve. By removing the coil from the solenoid valve and not securing the power, it caused the coil to overheat and smoke.

* Where the name has been scrubbed from the report.

Environmental Aspects

Type of Material Released:

Quantity:

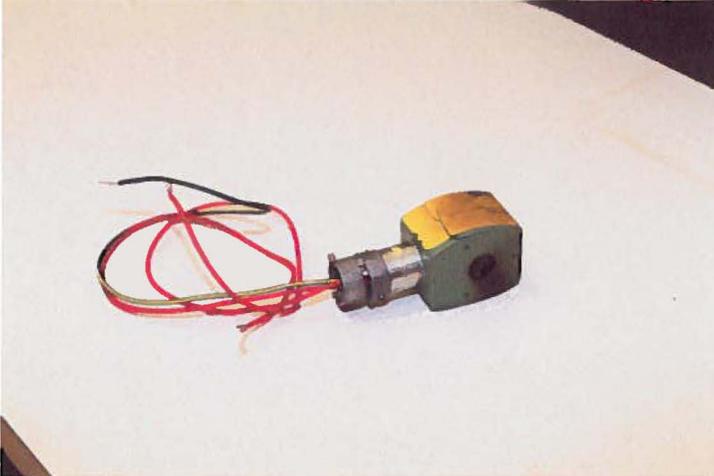
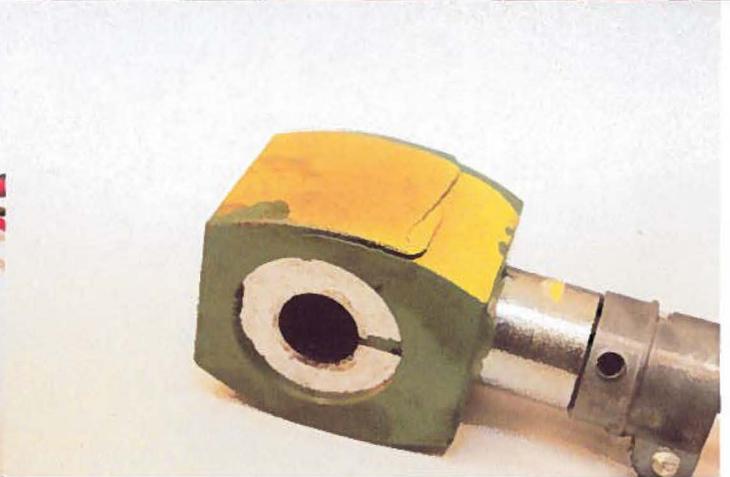
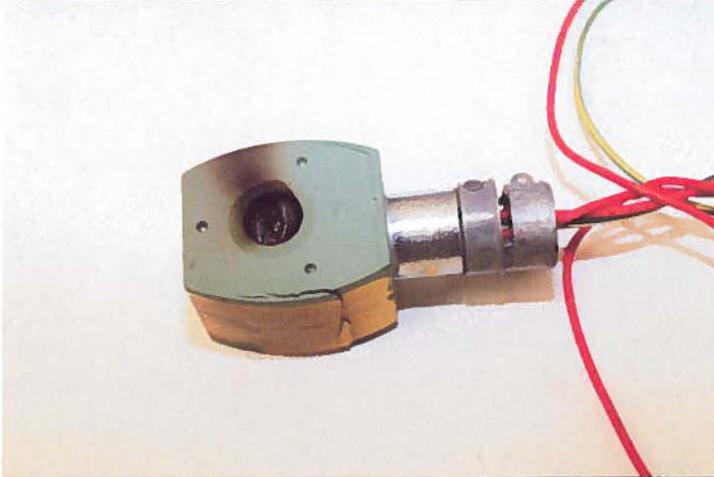
Source:

Time Flow was Halted or Controlled:

For Investigation Team (√ All That Apply):

- Reportable Quantity
 Impact Ground/Soil
 Storm Water Channel/Drain
 Sanitary Sewer

Records, Documents, Pictures, and Other References: (Copy and paste, use attachments or document links as necessary)



Causal Analysis: (Use attachment as necessary)

Root Cause:	This was a breakdown in communications. Mechanical contractor was advised to cut the pipe below the valve and plug the pipe. During the job, a telephone conversation took place between the MRI mechanic and Mike Sprouse. MRI was told to plug the line below the valve. Mike was talking about the solenoid valve and MRI thought he was talking about the Ball valve just above it so he removed the solenoid portion of the valve which was still under power and then broke for lunch. He was not aware of the problems with disconnecting the solenoid from a valve while under power.
Contributing Causes: (List as many as apply.)	The solenoid valve body was not removed as a complete unit. The electrical power was not locked out to the solenoid portion of unit prior to its removal. The work was not performed as directed. Either one of these 3 steps would have eliminated this failure.

Extent of Condition Check	Responsible Person(s)	JLab CATS Number	Target Date
Evaluate all similar 120v solenoid valve installations to see if changes to those installations need to be made. If necessary, correct those installations. (This has been completed on 03/15/2012)	Carroll Jones	NE-2012-06	03/15/2012

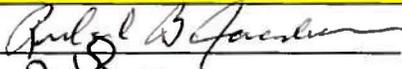
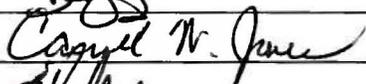
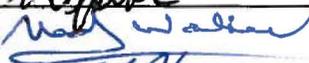
Corrective Action(s)	JLab CATS Number	Target Date
Train all MRI employees on the problem with removing solenoids with power on.	NE-2012-06	Completed 3/15/2012
For all incidents, make sure the area is undisturbed for investigative purposes.	NE-2012-06	Completed 3/16/2012
Follow the manufacturer's recommendations for all maintenance and alteration work activities.	NE-2012-06	Completed 3/15/2012
Make all pre job briefings clear and insure that all parties understand by having them repeat those directions.	NE-2012-06	Completed 3/16/2012

Lessons Learned (Confer with Division/Department Lessons-Learned Coordinator) (Use attachment as necessary)	JLab COE Number
This project had 3 subcontractors working in unison. When more than 1 subcontractor is involved, it is necessary to have meetings with all subs one time so that all parties are informed of the necessary steps and time lines needed to complete the task.	N/A
Insure that all subcontractors are completely aware of the steps and timing necessary to complete their portion of the project by having them repeat back the instructions to verify that they understood the directions.	N/A
Always check and follow manufacturer's recommendations.	N/A
Immediately secure the scene until the investigative process can be completed.	N/A

Lessons Learned (Confer with Division/Department Lessons-Learned Coordinator) (Use attachment as necessary)	<u>JLab COE Number</u>
Retraining of in house mechanical contractor needs to be done.	

Investigation Team Confirmation:

The below signees, confirm to the best of their knowledge, that the information presented in this document is accurate and complete.

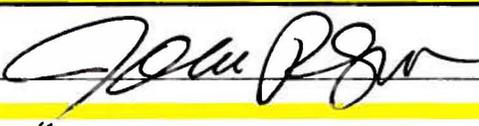
Role	Print	Signature	Date
Lead Investigator	Richard Jacobsen - DSO		3/16/2012
	David Fazenbaker - SOTR		3/16/2012
	Carroll Jones		3/16/12
	Mike Sprouse		3/16/12
	Ned Walker		3/16/2012
	Todd Kujawa		3/16/2012

Upon confirmation submit document to the ES&H Reporting Officer for completion and distribution.

Documentation of Findings: (To be Completed by ESH&Q Reporting Officer)

Notable Event Number:	FML-12-0223
CATS Number:	NE-2012-06
JLab COE Number:	N/A
ORPS Number:	N/A
NTS Number:	N/A
CAIRS Entry:	N/A
DOE Cause Code:	A5 Communication LTA, C01 Communication between work groups LTA
ISM Code:	Define the Scope of Work, Analyze the hazards

Acceptance/Acknowledgement of Facts

	Print	Signature	Date:
Associate Director/ Department Manger	Rusty Sprouse		21 Mar 12

Distribution:

- ES&H Reporting Officer (Original)
- Associate Director/Department Manager
- Division Safety Officer
- Investigation Team Members

Form Revision Summary

- Revision 1.3 – 01/31/12** – Updated ESH&Q Reporting Officer assignment from SSmith to CJohnson per MLogue Edited to clarify process steps.
- Revision 1.2 – 10/20/11** – Updated ESH&Q Reporting Officer assignment from JKelly to SSmith per MLogue.
- Revision 1.1 – 05/24/11** - Edited to clarify process steps.
- Revision 1 – 11/23/10** – Updated to reflect current laboratory operations.

ISSUING AUTHORITY	FORM TECHNICAL POINT-OF-CONTACT	APPROVAL DATE	EXPIRATION DATE	REV.
ESH&Q Division	Tina Johnson	10/19/09	10/09/12	1.3

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