



Office of Health, Safety and Security



# Monthly Analysis of Electrical Safety Occurrences

March 2012

## Purpose

This analysis resource provides the Department of Energy's (DOE) electrical safety community with a compilation of, and informal observations on, electrical safety occurrences reported through the Occurrence Reporting and Processing System (ORPS). The topics addressed in this analysis resource are responsive to requests for this information by the electrical safety community, who utilizes this information through monthly conference calls to foster information exchange and continual learning regarding electrical safety occurrences and their prevention across the DOE complex.

## Key Observations

The number of electrical safety occurrences increased from twelve in February to fourteen in March; however, there were no reported electrical shocks as opposed to the three shocks in February. Also the number of electrical intrusion occurrences decreased from three to two while the number of hazardous energy control occurrences increased from five to six. There was an improvement in hazards identification during March as workers found problems with lockout/tagout implementation and conditions involving uncontrolled hazardous energy. In each of those cases, the hazard was identified by an electrical worker. There have been no high electrical severity occurrences reported in over ten months.

## Electrical Safety Occurrences

The following sections provide a summary of selected occurrences based upon specific areas of concern regarding electrical safety (e.g., bad outcomes or prevention/barrier failures). The complete list and full report of the March occurrence reports is provided in Attachment 2.

### Electrical Shock

There were no electrical shock occurrences reported for the month of March. This is the first time since January 2010 in which the DOE complex had a shock-free month. Figure 1 shows a 3-year trend of electrical shocks for the DOE complex. During this period, the average number of electrical shocks has remained below three per month. The majority of the shocks (about 75 percent) involved non-electrical workers.

Figure 1 – Three-Year Trend of Electrical Shocks

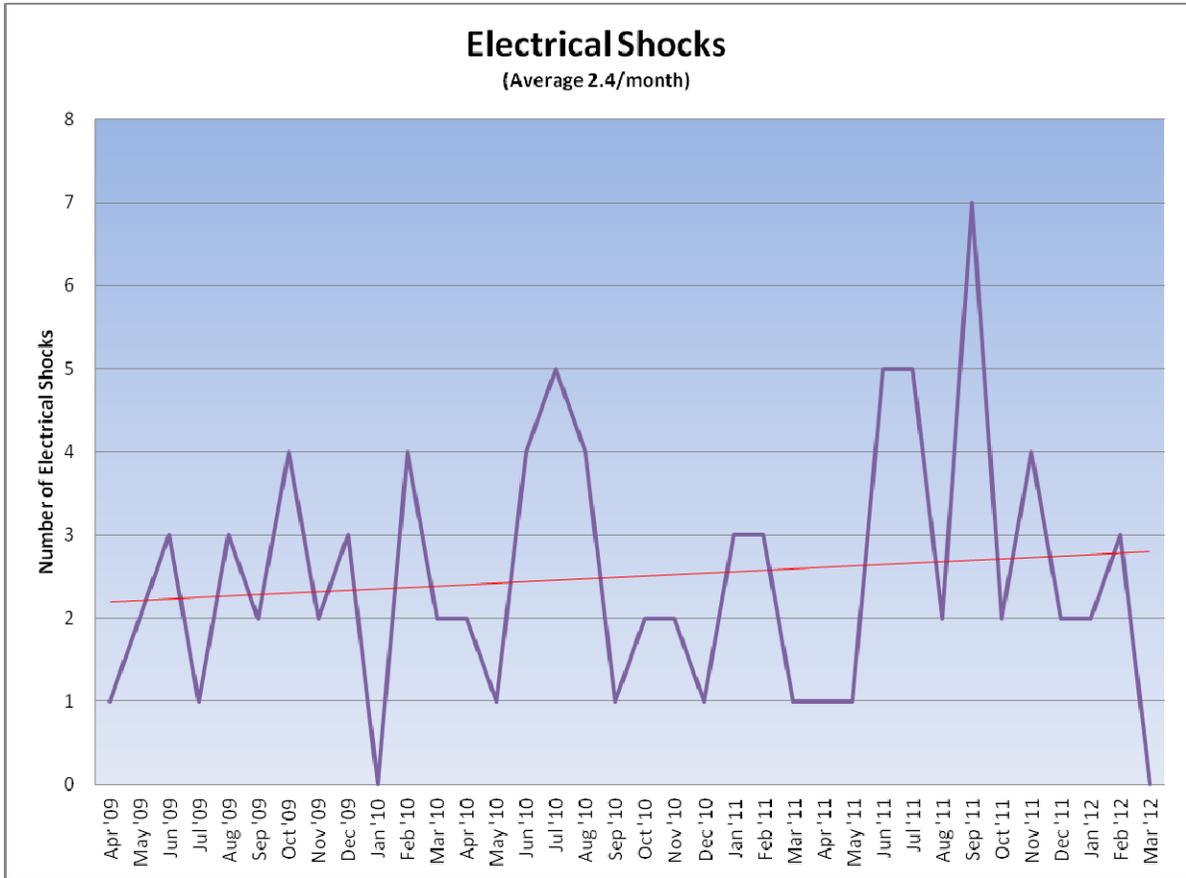
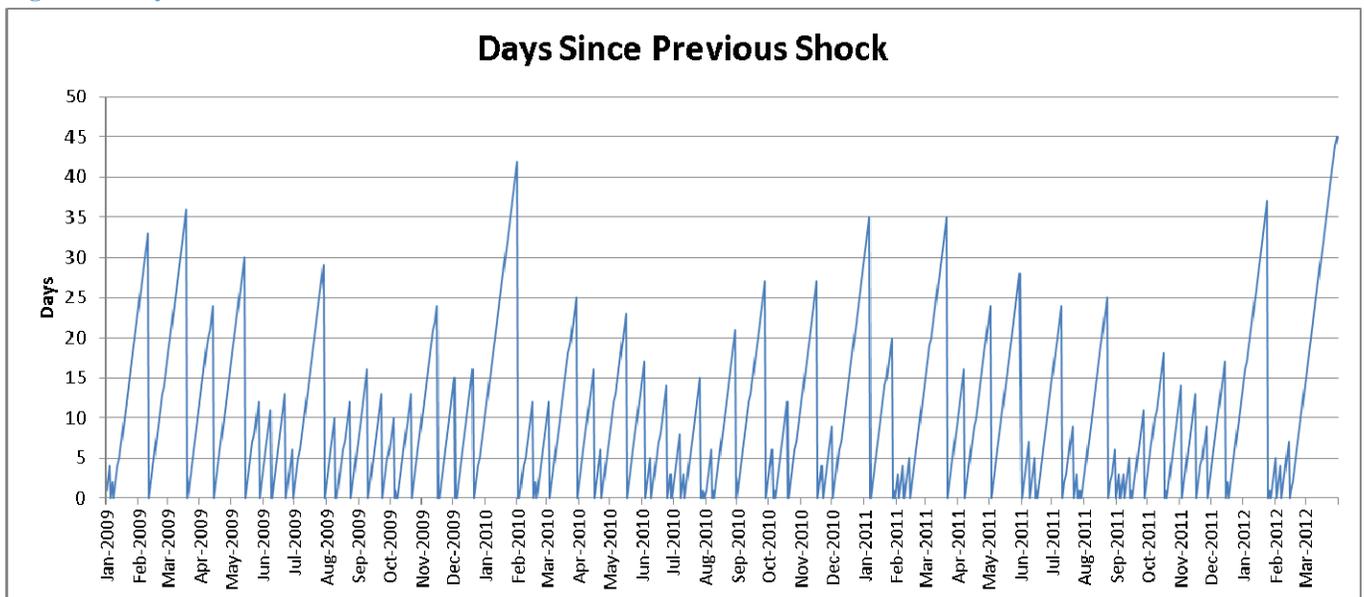


Figure 2 shows the number of days since the previous electrical shock for the DOE complex. The present interval is 45 days, which exceeds the February 2010 longest interval of 42 days.

Figure 2 - Days since Previous Shock



## **Electrical Intrusion**

In March, the number of electrical intrusion occurrences (i.e., cutting/penetrating, excavating, or vehicle contact of electrical conductors) decreased from three in February to two this month. Both of these occurrences involved subcontractors who were non-electrical workers.

1. While installing insulation around a float and thermostatic trap, a subcontractor saw a spark. The subcontractor was installing a "blanket" type of insulation on top of an energized 277-volt pipe heat trace. The insulation blanket uses metal connectors that are held on one side of the blanket by a metal washer. The other end of this metal connector's installation was used to lace each side of the insulation blanket together. During the "lacing" of these metal connectors, one of the ends of the metal washer rubbed against and penetrated the energized heat trace, causing it to arc to ground. Subsequently, the protecting circuit breaker tripped. Electricians arrived at the scene and placed the main service distribution panel under a lockout/tagout.
2. Subcontractor personnel cut two energized conductors cause an arc while performing D&D in support of a floor installation. The 120-volt conductors had been stubbed out during a 2009 D&D activity and all indications were that these conductors had been isolated from electrical energy sources (air gapped). The subcontractor used an insulated tool protected by a GFCI and appropriate personal protective equipment. Work was stopped and notifications were made. The subcontractor's assumption that the conductors were electrically isolated was never physically validated. Additionally, workers did not employ the good work practice of performing an electrical energy check before cutting the conductors. The combination of not validating the assumption and poor work practices resulted in the potential exposure of a worker to hazardous energy.

## **Hazardous Energy Control**

In March there were six reported occurrences involving lockout/tagout (LOTO), which represents an increase of one occurrence from February. Two of these occurrences resulted from not hanging locks, one involved a faulty lockbox, one involved the wrong type of lockout, and two involved incorrect signoffs on safety condition checks and independent verification checks. The increase in the number of procedural mistakes is troubling. A correctly planned and executed LOTO is not fully implemented until the paperwork (signatures) have been properly completed. Summaries of these events are provided in the following two sections.

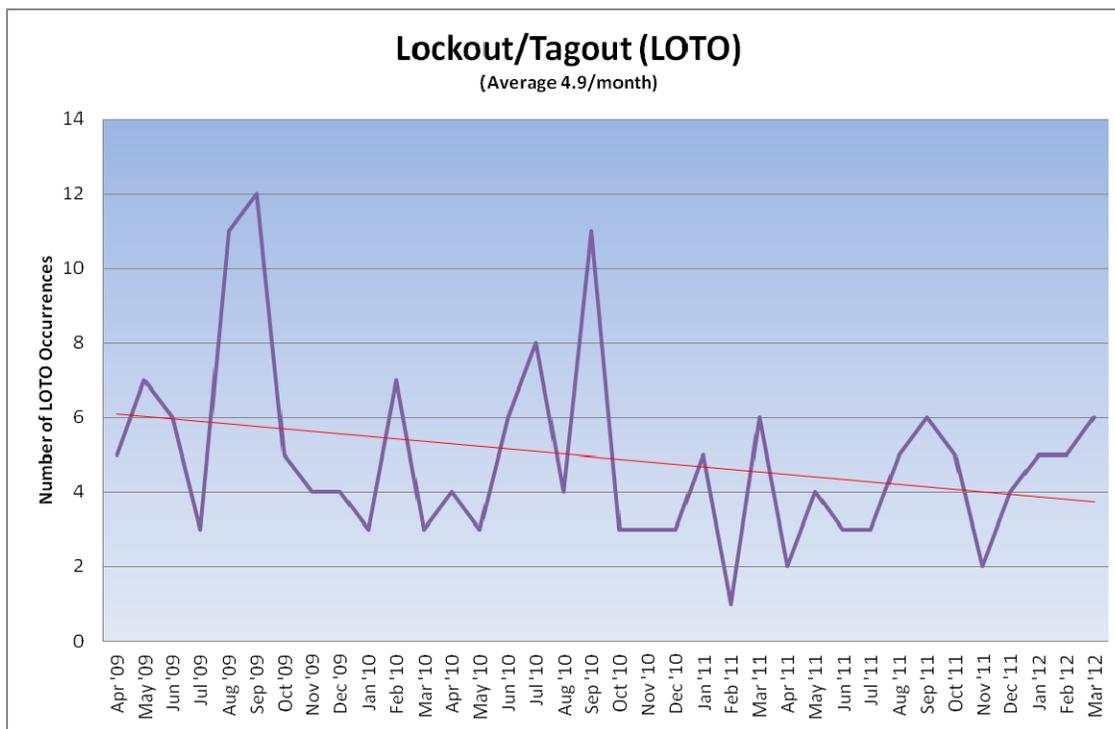
### **Occurrences Involving Lockout/Tagout**

1. Two maintenance craft personnel and one maintenance engineer were preparing to adjust exhaust fan inlet and outlet damper limit switches (120 volt). They performed a lockout/tagout using personal locking devices for equipment lockout instead of a cognizant operations manager lockout as required by the site's hazardous energy control process. During the execution of the work package, no worker was injured or exposed to any hazardous energy source and workers were wearing all required PPE.

2. After the installation of a Tagout Authorization Form (TAF), but before releasing for work, a field work supervisor performed a walk down of the TAF to verify that all actions had been properly performed and noted that the electrical Safety Condition Checks (SCC) had been signed off as complete by a nuclear chemical operator and not by an electrician as should have been the case. Electricians were called to perform the SCC. A critique was conducted and it was determined that no personnel were exposed to hazardous energy.
3. While performing a LOTO isolation boundary walk-down of a LOTO Authorization Form prior to start of work, an electrician saw that the independent verification had not been signed by the independent verifier on one of the Danger Do Not Operate tags. However, a review of the Authorization Form showed that the Independently Verified By block on the form was properly signed and dated. Work was immediately stopped and the work package was suspended.
4. As a result of an event investigation, it was determined that lockboxes used for Controlling Organization (CO) Lockout/Tagout (LOTO) evolutions are not adequately controlling keys and equivalent protection indicators used to control the components that are stored and controlled by attachment of authorized worker personal locks. Although the CO LOTO was correctly hung and the hazard was isolated and lockbox controlled by the CO, the method for adding tags and controlling keys using the existing lockbox fails to meet the intent of the Site's procedure because the lockbox lid could be opened enough for an individual to place their hand inside the lockbox. At no time was there a hazard energy source present for any of the associated workers involved.
5. A low voltage electrician was installing new light switches in a building and failed to apply the required lock and tags before performing the work. During the installation the electrician donned the appropriate personal protective equipment, de-energized the appropriate breakers (208/120 volts) and successfully conducted the required steps for absence of power verification. Although the electrician had de-energized the necessary panel breakers he did not apply his lock and tag to the breakers, which was a violation of the LOTO procedure. Work was stopped and a LOTO was appropriately applied the circuit breakers.
6. A subcontractor technician was working in the 24-volt control section of a local equipment control panel for a vacuum pump skid; however, the 208-volt lug connections that supply primary power to the skid were located in the same panel and were exposed. A Group LOTO at the main electrical distribution panel provided the required electrical energy control for the local panel and the vacuum pump skid. The technician had not received the required LOTO briefing, was not on the approved LOTO Permit, did not sign on the LOTO Permit, and did not attach his personal lock/tag to the Group LOTO Lockbox for the main electrical distribution panel where the group LOTO and lock box were located. There were no injuries or exposure to hazardous energy.

Figure 3 shows a 3-year trend of LOTO occurrences for the DOE complex. During the period we have seen a general decrease in the number of occurrences.

**Figure 3 – Three-Year Trend of Lockout/Tagout Occurrences**



### Occurrences Involving the Discovery of Uncontrolled Hazardous Energy

1. A researcher left helium cryostat plugged into a 120-volt outlet with the outer cover plate removed from the cryostat, exposing the wiring configuration. An electrician unplugged the cryostat. Upon initial investigation, it was determined that the researcher did not have current lockout/tagout or Qualified Electrical Worker safety training.
  
2. Personnel discovered uncovered 480-volt electrical panels underneath a Power Distribution Center (PDC), which transforms 13.8 kV to 480 volts and distributes to various loads. The 480-volt panels are required per code and cover the bottoms of energized 480-volt cabinets. The openings are not in normal occupied areas. The PDC is elevated approximately 4 feet off the ground. The missing covers are believed to be a legacy issue from initial construction of the PDC. The area beneath the PDC was barricaded and posted. Personnel were not exposed to electrical energy. They were outside of the 4-foot arc flash and 3.6-foot approach distances from the electrical energy.
  
3. A worker discovered that a 120-volt Compensated Ion Chamber power supply was left plugged into the wall outlet. A technician de-energized the equipment. Further investigation determined that the power supply is designed with an exposed unguarded 115-VAC terminal board. The restricted approach boundary was 3' 6". The equipment was labeled "DANGER HIGH VOLTAGE."

## Electrical Near Miss

In March, there were three occurrences that were considered to be an electrical near miss. This is a decrease from the six near-miss occurrences reported in February. Two of these near-miss occurrences were the occurrences discussed in the Electrical Intrusion section and the third near-miss occurrence was the first occurrence discussed in the Hazardous Energy Control section under Occurrences Involving the Discovery of Uncontrolled Hazardous Energy.

## Monthly Occurrences Tables

Table 1 shows a breakdown of the outcomes, performance issues, and worker types associated with the electrical safety occurrences for March 2012.

**Table 1 - Breakdown of Electrical Occurrences**

Number of Occurrences	Involving:	Last Month
0	Electrical Shocks	3
0	Electrical Burns	0
6	Hazardous Energy Control	5
3	Inadequate Job Planning	0
2	Inadvertent Drilling/Cutting of Electrical Conductors	1
0	Excavation of Electrical Conductors	1
0	Vehicle Intrusion of Electrical Conductors or Equipment	1
3	Electrical Near Misses	6
10	Electrical Workers	6
4	Non-Electrical Workers	6
3	Subcontractors	6

NOTE: The numbers in the left-hand column are not intended to total the number of occurrences for the month and are only associated with the items in the center column.

In compiling the monthly totals, the search initially looked for occurrence discovery dates in this month [excluding Significance Category R (Recurring) reports], and for the following ORPS HQ keywords:

01K – Lockout/Tagout Electrical, 01M – Inadequate Job Planning (Electrical), 08A – Electrical Shock, 08J – Near Miss (Electrical), 12C – Electrical Safety

The search produced fifteen occurrence reports and one of the occurrences was culled out because it involved an installation error ([SC--BHSO-BNL-BNL-2012-0011](#)).

Table 2 provides a summary of the electrical safety occurrences for CY 2012.

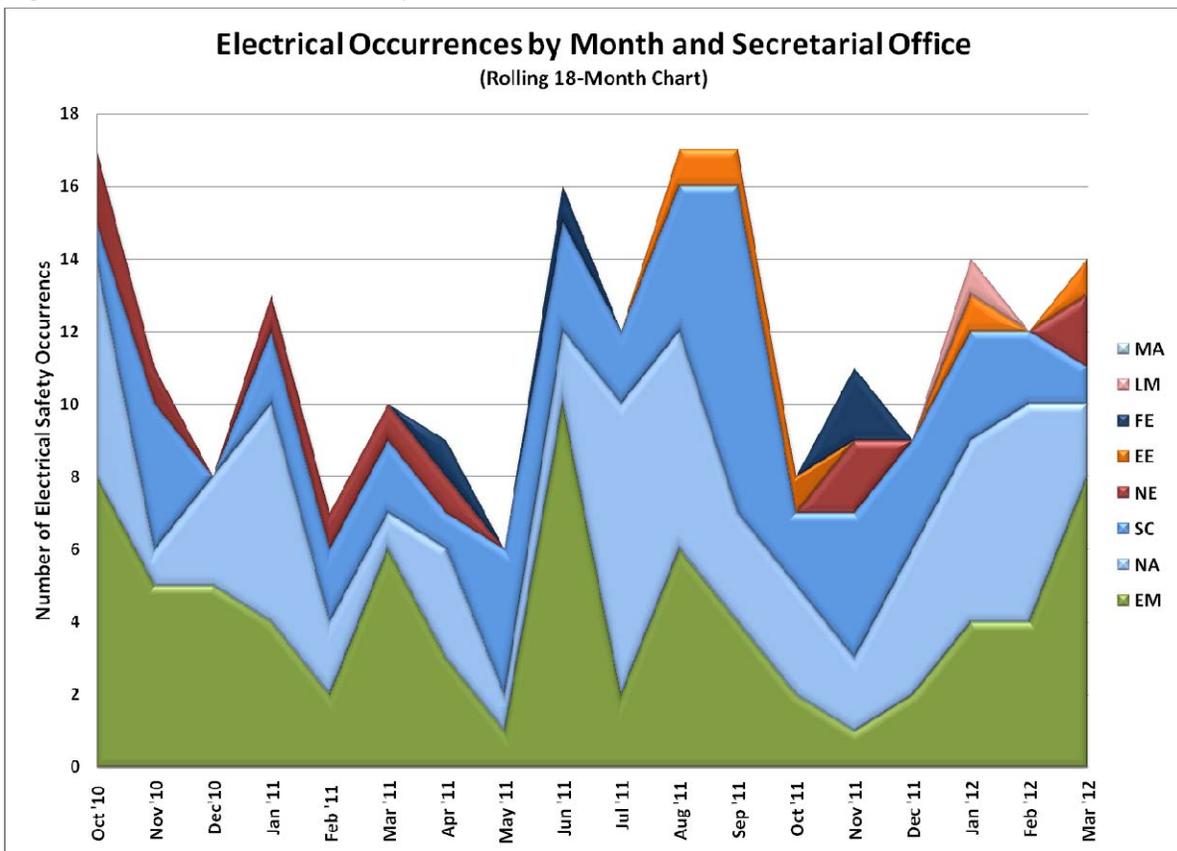
**Table 2 - Summary of Electrical Occurrences**

Period	Electrical Safety Occurrences	Shocks	Burns	Fatalities
March	14	0	0	0

Period	Electrical Safety Occurrences	Shocks	Burns	Fatalities
February	12	3	0	0
January	14	2	0	0
2012 total	40 (avg. 13.3/month)	5	0	0
2011 total	136 (avg. 11.3/month)	36	5	0
2010 total	155 (avg. 12.9/month)	28	2	0
2009 total	128 (avg. 10.7/month)	25	3	0
2008 total	113 (avg. 9.4/month)	26	1	0
2007 total	140 (avg. 11.7/month)	25	2	0
2006 total	166 (avg. 13.8/month)	26	3	0
2005 total	165 (avg. 13.8/month)	39	5	0
2004 total	149 (avg. 12.4/month)	25	3	1

Figure 4 shows the distribution of electrical safety occurrences by Secretarial Office. The Office of Environmental Management (EM), the Office of Science (SC), and the National Nuclear Security Administration (NA) typically report the most occurrences of all the offices. Over the past several months EM has increased as NA and SC decreased. Until March, the Office of Nuclear Energy (NE) hasn't reported any occurrences since November 2011.

Figure 4 - Electrical Occurrences by Month and Secretarial Office



# Electrical Severity

The electrical severity of an electrical occurrence is based on an evaluation of electrical factors that include: electrical hazard, environment, shock proximity, arc flash proximity, thermal proximity and any resulting injury(s) to affected personnel. Calculating an electrical severity for an occurrence provides a metric that can be consistently applied to evaluate electrical occurrences across the DOE complex.

## Electrical Severity Scores

The electrical severity scores (ES) are calculated using Revision 2 of the Electrical Severity Measurement Tool, which can be found on the EFCOG website at [http://www.efcog.org/wg/esh\\_es/docs/Electrical\\_Severity\\_Measurement\\_Tool.pdf](http://www.efcog.org/wg/esh_es/docs/Electrical_Severity_Measurement_Tool.pdf). Seven of the electrical occurrences did not have an ES score. The other seven occurrences are classified as shown in Table 3. The actual score for each occurrence is provided in Attachment 1.

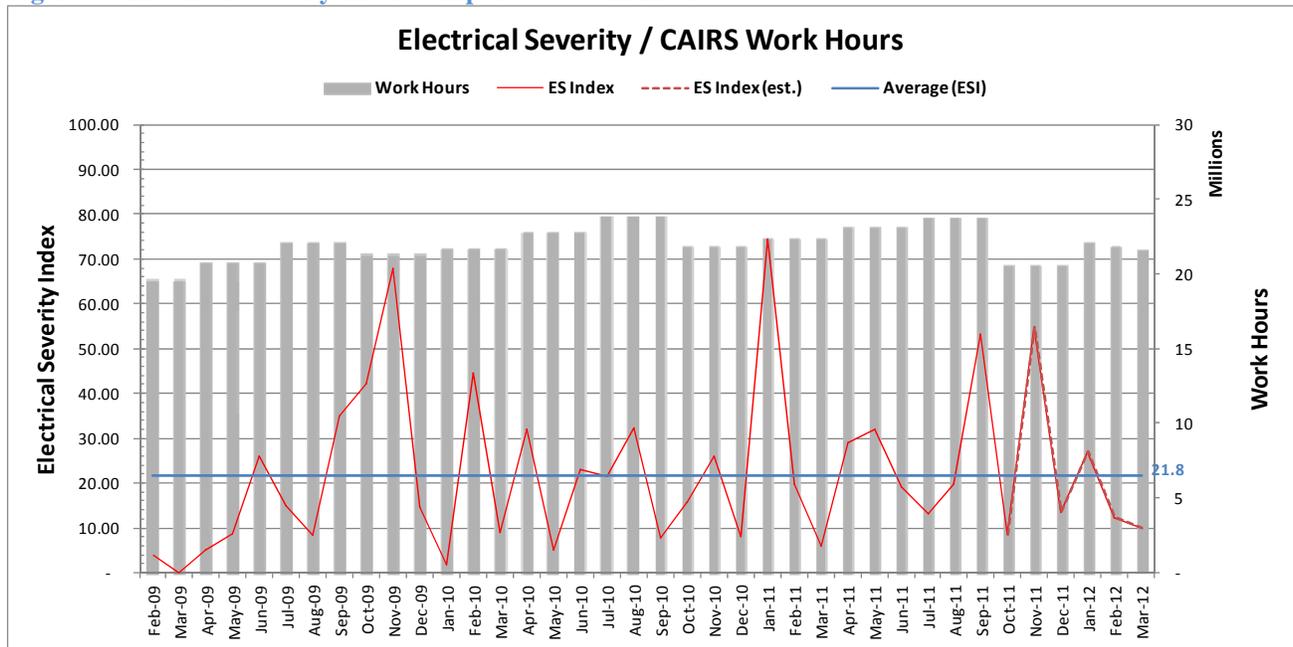
**Table 3 – Classification of Electrical Safety Occurrences by ES Score**

Occurrence Classification	Electrical Severity Score	Number of Occurrences
HIGH	≥ 1750	0
MEDIUM	31-1749	3
LOW	1-30	4

## Electrical Severity Index

The Electrical Severity Index (ESI) is a performance metric that was developed to normalize events against organizational work hours. The ESI is calculated monthly and trended. Figure 5 shows a calculated ESI for the DOE complex and Table 4 shows the ESI and how it has changed from the previous month.

**Figure 5 - Electrical Severity Index Compared to Work Hours**



Note: An estimated ESI is calculated until accurate CAIRS man-hours are available. The chart is updated monthly.

Table 4 - Electrical Severity Index

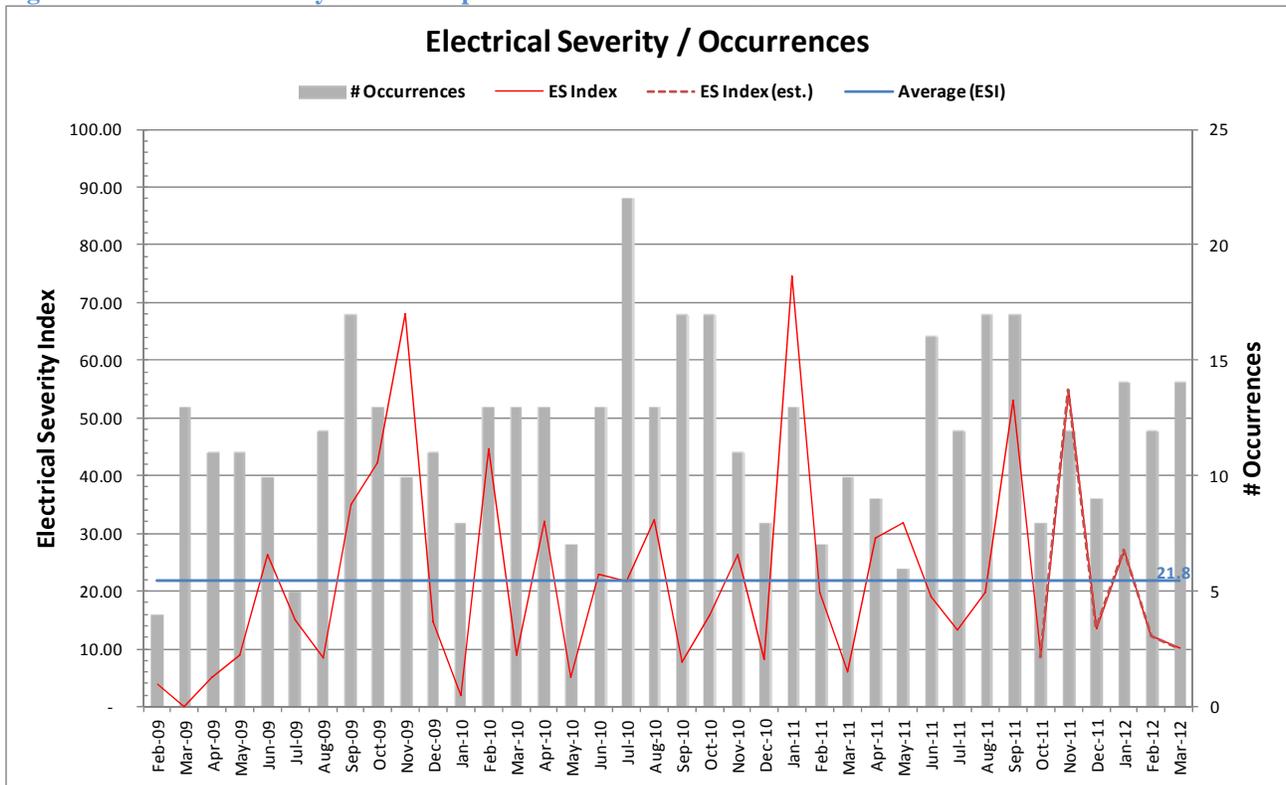
Category	February	March	Δ
Total Occurrences	12	14	+2
Total Electrical Severity	1,340	1,090	-250
Estimated Work Hours	21,867,825* (21,867,825)	21,561,150	-306,674
ES Index	12.26* (12.26)	10.11	-2.14
Average ESI	22.1	21.8	-0.3

\* These are estimated CAIRS work hours for February and ES Index based on the estimated hours. The estimated hours and ES Index based on the estimated hours (as reported in February) are shown below in parentheses.

$$\text{Electrical Severity Index} = (\sum \text{Electrical Severity} / \sum \text{Work Hours}) 200,000$$

Figure 6 shows the ESI with the number of Occurrences instead of Work Hours.

Figure 6 - Electrical Severity Index Compared to Number of Occurrences



The average ESI (21.8) has shown a decrease over the past two months. The lowest average ESI was 19.2 in June 2010. Figure 7 shows the number of days since the previous high severity occurrence. The present interval is 333 days as of March 31. The previous longest interval was 181 days in 2009.

Figure 7 - Days since Previous High Severity Occurrence

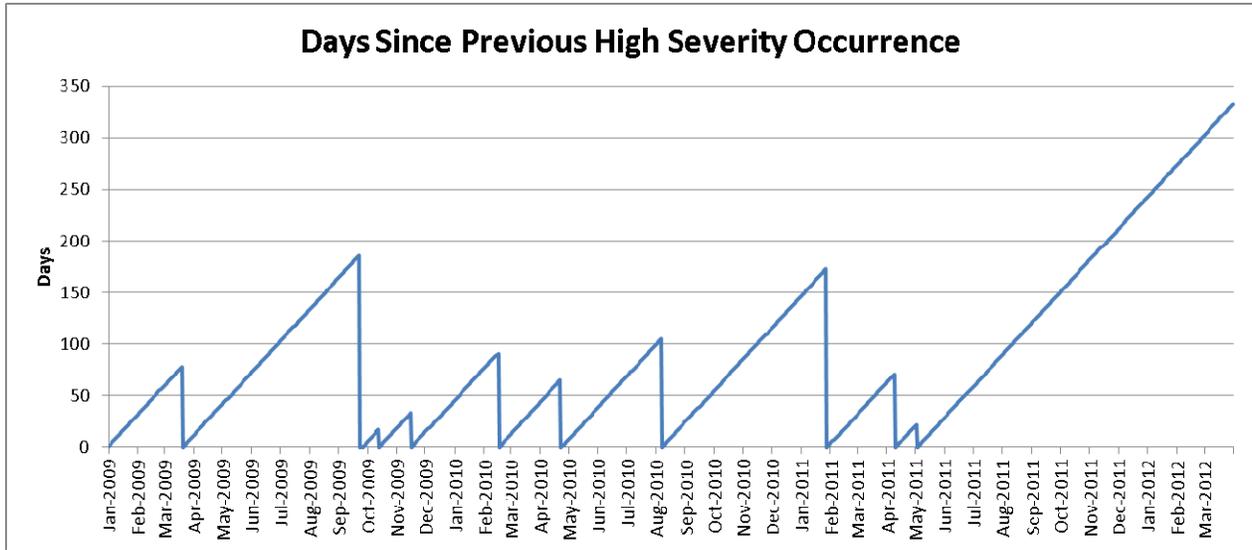
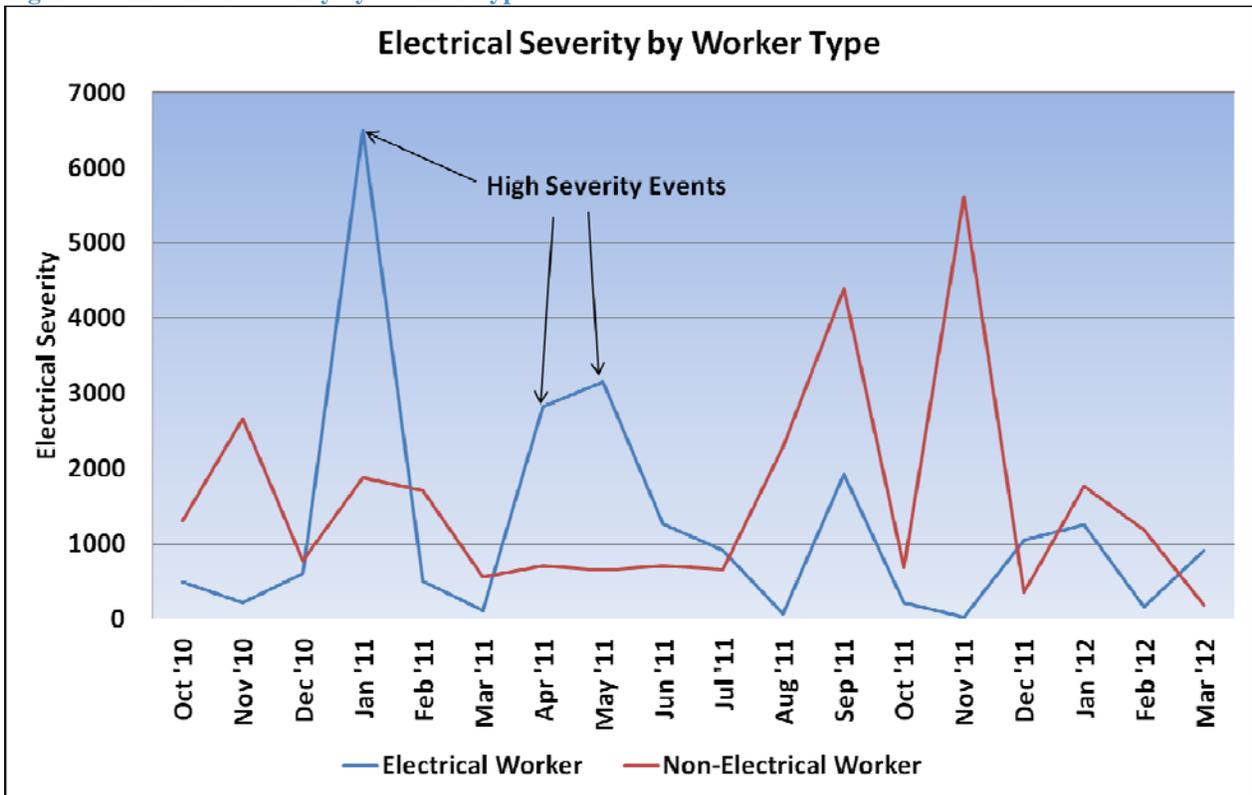


Figure 8 shows the total electrical severity score by worker type for each month.

Figure 8 – Electrical Severity by Worker Type



Electrical Workers were involved in the fewest number of occurrences but had three High-Severity events. Events involving Non-Electrical Workers usually have Low to Medium electrical severity scores but have a higher total score per month because of more occurrences and type of occurrences (e.g., electrical shock or exposure to energized conductors).

## Summary of Occurrences by Severity Band

For the interval March 2011 through March 2012 (current month and the past 12), Figures 9 and 10 summarize occurrences by severity band and month of discovery date by percentage of total occurrences in month and number of occurrences in month.

Figure 9 - Occurrences by Electrical Severity Band (Percentage)

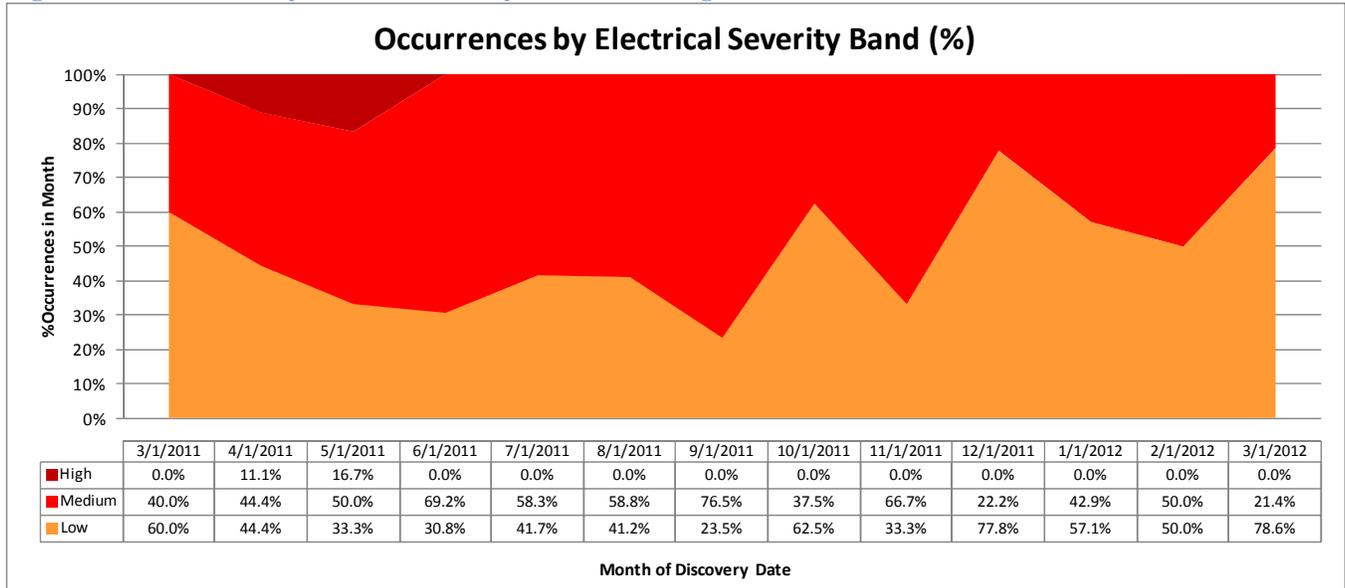
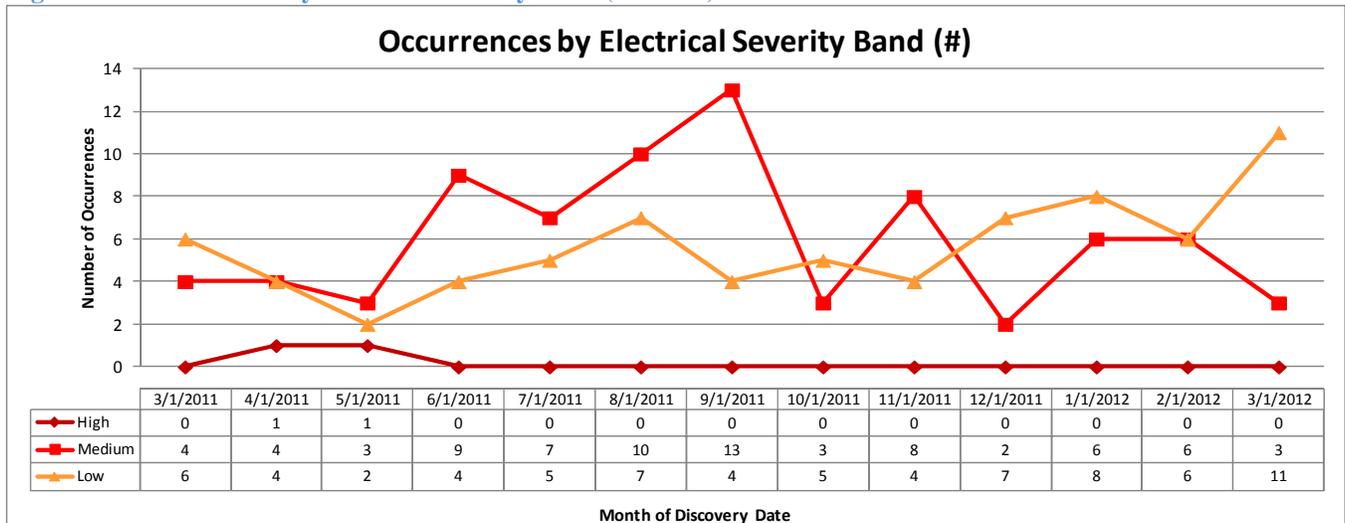


Figure 10 - Occurrences by Electrical Severity Band (Number)

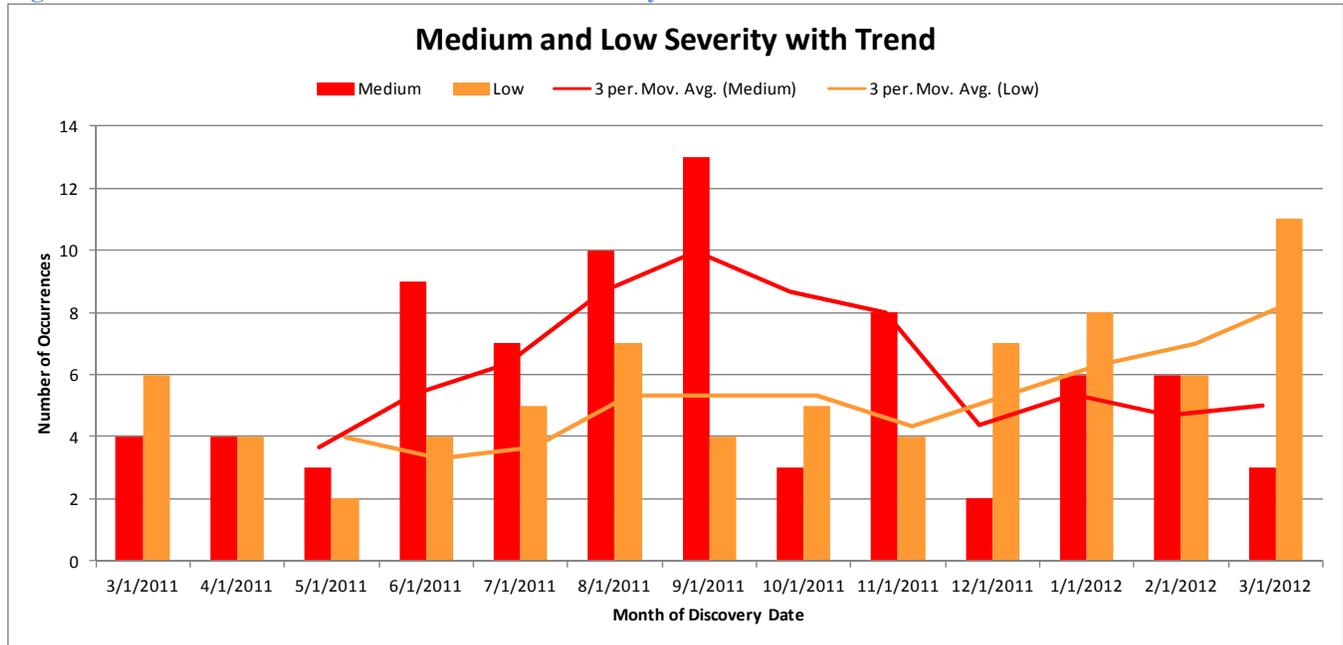


What can be seen from the previous two charts is that the number of occurrences with High electrical severity scores has remained at zero for the past ten months and that the number of occurrences with Medium scores has decreased while the number of Low severity occurrences has increased.

## Medium and Low Severity with Trend

Figure 11 focuses on the Medium and Low severity data series for March 2011 through March 2012. Trend lines are included for each, using a 3-month moving average.

Figure 11 - Trend of Medium and Low Electrical Severity Occurrences



The 3-month moving average shows a flat trend since December 2011 for Medium severity occurrences and an increase in occurrences with Low severities. A higher percentage of Low severity occurrences is preferred.

## Additional Resources

### Electrical Safety Blog

<http://hsselectricalsafety.wordpress.com/>

### Electrical Safety Wiki

<http://electricalsafety.doe-hss.wikispaces.net/home>

### EFCOG Electrical Safety Subgroup

[http://www.efcog.org/wq/esh\\_es/index.htm](http://www.efcog.org/wq/esh_es/index.htm)

### Center of Excellence for Electrical Safety

<http://www.lanl.gov/safety/electrical/>

## Contact

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## Attachment 1

## Electrical Safety Occurrences – March 2012

No	Report Number	Event Summary	SHOCK	BURN	ARCF <sup>(1)</sup>	LOTO <sup>(2)</sup>	PLAN <sup>(3)</sup>	EXCAV <sup>(4)</sup>	CUT/D <sup>(5)</sup>	VEH <sup>(6)</sup>	SC <sup>(7)</sup>	RC <sup>(8)</sup>	ES <sup>(9)</sup>
1	EE-GO--NREL-NREL-2012-0006	A researcher left a cryostat plugged into an outlet without the outer cover in place.									3	2E(2)	20
2	EM-CBFO--WTS-WIPP-2012-0004	Workers performed a LOTO using personal locking devices instead of a cognizant operations manager lockout as required.				X					4	2E(3)	0
3	EM-CBFO--WTS-WIPP-2012-0005	An electrician partially removed arc flash-rated PPE before removing the arc flash boundary.									4	2E(3)	0
4	EM-ID--CWI-IWTU-2012-0003	Personnel discovered uncovered 480V electrical panels underneath a Power Distribution Center.									3	2E(2)	850
5	EM-RL--CPRC-SNF-2012-0003	Electrical Safety Condition Checks for a LOTO were signed off by an operator and not by an electrician.				X					4	2E(3)	0
6	EM-RP--BNRP-RPPWTP-2012-0009	An electrician identified a temporary modification tag located on a disconnect switch that was not in the LOTO.					X				3	2E(2)	0
7	EM-RP--BNRP-RPPWTP-2012-0010	An electrician performed a Safe Condition Check without making required safety notifications.					X				4	2E(3)	0
8	EM-RP--WRPS-TANKFARM-2012-0003	An independent verifier did not sign the independent verifier section of the LOTO tag.				X					4	2E(3)	0
9	EM-RP--WRPS-TANKFARM-2012-0005	Process to modify a LOTO boundary not followed.				X					3	10(2)	0
10	NA--LSO-LLNL-LLNL-2012-0011	An electrician was installing new light switches and failed to apply the required lock and tags before performing the work.				X					4	2E(3)	20
11	NA--PS-BWP-PANTEX-2012-0024	A subcontractor damaged energized 277V heat trace while installing pipe insulation.							X		4	2E(3)	50

Attachment 1

No	Report Number	Event Summary	SHOCK	BURN	ARCF <sup>(1)</sup>	LOTO <sup>(2)</sup>	PLAN <sup>(3)</sup>	EXCAV <sup>(4)</sup>	CUT/D <sup>(5)</sup>	VEH <sup>(6)</sup>	SC <sup>(7)</sup>	RC <sup>(8)</sup>	ES <sup>(9)</sup>
12	NE-ID--BEA-ATR-2012-0012	A 120V power supply with an exposed unguarded 115VAC terminal board was left plugged into an outlet.									3	2E(2)	20
13	NE-ID--BEA-ZPPR-2012-0002	Two energized 120V conductors that were believed to have been air gapped, arced when they were cut.					X		X		3	2E(2)	110
14	SC--BSO-LBL-OPERATIONS-2012-0004	A technician was working on a 24V control section of a local panel in the area of 208V lugs and did not hang locks on the lockbox.				X					4	2E(3)	20
	TOTAL		0	0	0	6	3	0	2	0			

Key

(1) ARCF = significant arc flash, (2) LOTO = lockout/tagout, (3) PLAN = job planning, (4) EXCAV = excavation/penetration, (5) CUT/D = cutting or drilling, (6) VEH = vehicle or equipment intrusion, (7) SC = ORPS significance category, (8) RC = ORPS reporting criteria, (9) ES = electrical severity

ES Scores: High is  $\geq 1750$ , Medium is 31-1749, and Low is 1-30

## Attachment 1

## Electrical Safety Occurrences – March 2012

No	Report Number	Event Summary	EW <sup>(1)</sup>	N-EW <sup>(2)</sup>	SUB <sup>(3)</sup>	HFW <sup>(4)</sup>	WFH <sup>(5)</sup>	PPE <sup>(6)</sup>	70E <sup>(7)</sup>	VOLT <sup>(8)</sup>		C/T <sup>(9)</sup>	NEUT <sup>(10)</sup>	NM <sup>(11)</sup>
										H	L			
1	EE-GO--NREL-NREL-2012-0006	A researcher left a cryostat plugged into an outlet without the outer cover in place.		X			X				X			X
2	EM-CBFO--WTS-WIPP-2012-0004	Workers performed a LOTO using personal locking devices instead of a cognizant operations manager lockout as required.	X				X				X			
3	EM-CBFO--WTS-WIPP-2012-0005	An electrician partially removed arc flash-rated PPE before removing the arc flash boundary.	X				X	X	X		X			
4	EM-ID--CWI-IWTU-2012-0003	Personnel discovered uncovered 480V electrical panels underneath a Power Distribution Center.	X				X		X		X			
5	EM-RL--CPRC-SNF-2012-0003	Electrical Safety Condition Checks for a LOTO were signed off by an operator and not by an electrician.		X			X				X			
6	EM-RP--BNRP-RPPWTP-2012-0009	An electrician identified a temporary modification tag located on a disconnect switch that was not in the LOTO.	X				X				X			
7	EM-RP--BNRP-RPPWTP-2012-0010	An electrician performed a Safe Condition Check without making required safety notifications.	X				X				X			
8	EM-RP--WRPS-TANKFARM-2012-0003	An independent verifier did not sign the independent verifier section of the LOTO tag.	X				X				X			
9	EM-RP--WRPS-TANKFARM-2012-0005	Process to modify a LOTO boundary not followed.	X				X				X			
10	NA--LSO-LLNL-LLNL-2012-0011	An electrician was installing new light switches and failed to apply the required lock and tags before performing the work.	X				X				X			
11	NA--PS-BWP-PANTEX-2012-0024	A subcontractor damaged energized 277V heat trace while installing pipe insulation.		X	X	X					X			X

Attachment 1

No	Report Number	Event Summary	EW <sup>(1)</sup>	N-EW <sup>(2)</sup>	SUB <sup>(3)</sup>	HFW <sup>(4)</sup>	WFH <sup>(5)</sup>	PPE <sup>(6)</sup>	70E <sup>(7)</sup>	VOLT <sup>(8)</sup>		C/I <sup>(9)</sup>	NEUT <sup>(10)</sup>	NM <sup>(11)</sup>
										H	L			
12	NE-ID--BEA-ATR-2012-0012	A 120V power supply with an exposed unguarded 115VAC terminal board was left plugged into an outlet.	X				X		X		X			
13	NE-ID--BEA-ZPPR-2012-0002	Two energized 120V conductors that were believed to have been air gapped, arced when they were cut.		X	X	X					X			X
14	SC--BSO-LBL-OPERATIONS-2012-0004	A technician was working on a 24V control section of a local panel in the area of 208V lugs and did not hang locks on the lockbox.	X		X		X				X			
	TOTAL		10	4	3	2	12	1	3	0	14	0	0	3

Key

(1) EW = electrical worker, (2) N-EW = non-electrical worker, (3) SUB = subcontractor, (4) HFW = hazard found the worker, (5) WFH = worker found the hazard, (6) PPE = inadequate or no PPE used, (7) 70E = NFPA 70E issues, (8) VOLT = H (>600) L(≤600), (9) C/I = Capacitance/Inductance, (10) NEUT = neutral circuit, (11) NM = near miss

# ORPS Operating Experience Report

## Production GUI - New ORPS

ORPS contains 55653 OR(s) with 58963 occurrences(s) as of 4/12/2012 10:11:59 AM  
Query selected 14 OR(s) with 14 occurrences(s) as of 4/12/2012 1:05:37 PM

Download this report in Microsoft Word format. 

**1)Report Number:** [EE-GO--NREL-NREL-2012-0006](#) **After 2003 Redesign**  
**Secretarial Office:** Energy Efficiency and Renewable Energy  
**Lab/Site/Org:** National Renewable Energy Laboratory  
**Facility Name:** National Renewable Energy Laboratory  
**Subject/Title:** Improper electrical configuration resulting in LOTO violation  
**Date/Time Discovered:** 03/21/2012 15:30 (MTZ)  
**Date/Time Categorized:** 03/21/2012 17:00 (MTZ)  
**Report Type:** Notification  
**Report Dates:**

Notification	03/23/2012	18:58 (ETZ)
Initial Update		
Latest Update		
Final		

**Significance Category:** 3  
**Reporting Criteria:** 2E(2) - Any unexpected discovery of an uncontrolled electrical hazardous energy source (e.g., live electrical power circuit, etc.). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.

**Cause Codes:**

**ISM:**

**Subcontractor Involved:** No

**Occurrence Description:** On March 21, 2012, a researcher was preparing a new helium cryostat to replace an older device that no longer reached the required temperatures to provide adequate temperature control. The manufacturer of the cryostat provided an operating manual and an electrical cable for the purchaser to install. The researcher was uncertain if the cryostat was set up for 120 VAC or 220 VAC due to confusing markings on the cryostat and incomplete directions in the operating manual. To test whether the system was 120V or 220V, the researcher removed the outer cover of the cryostat, attached the cable to the inside electrical connections, replaced the outer cover, and installed a temporary 120V plug to the other end of the cable. The researcher then plugged the cryostat into a 120V outlet. After a 15 second test which determined that the cryostat ran on 120 VAC, the researcher used the power switch on the cryostat to turn the unit off.

The researcher needed additional information about the electrical setup of the cryostat, so the researcher removed the outer cover in preparation to show a coworker and an electrician the wiring configuration. The researcher left at 10:00 AM and did not unplug the cable from the electrical outlet or replace the outer cover of the cryostat. At approximately 3:00 PM, a coworker observed that the cryostat was plugged into an outlet without the outer cover in place and contacted an electrician. The electrician unplugged the cryostat and removed the temporary plug. The coworker and electrician informed their EHS point of contact of this condition at 3:30 PM. Upon initial investigation, it was determined that the researcher did not have current NREL lockout/tagout (LOTO) or Qualified Electrical Worker safety training.

An electrical severity measurement was conducted using the EFCOG tool to determine the severity of the electrical energy. The primary factors reviewed included: electrical hazard, environment, shock proximity, arc flash proximity, thermal proximity and any resulting injury(s) to affected personnel. The electrical severity was 20, corresponding to a "low" significance.

**Cause Description:**

**Operating Conditions:**

**Activity Category:**

**Immediate Action(s):**

Normal operations

Normal Operations (other than Activities specifically listed in this Category)

1. An electrician unplugged the cryostat and removed the temporary plug.
2. The EHS POC tagged the cryostat "out of service" and placed a LOTO device on the end of the cable.
3. The EHS POC contacted the research group and requested that line managers review staff who conduct electrical work and verify they have the appropriate training.
4. An incident investigation has been initiated.
5. Activities associated with the cryostat have been suspended pending the result of an investigation.

**FM Evaluation:**

No worker injuries or equipment damage occurred as a result of this event.

**DOE Facility Representative**

**Input:**

**DOE Program Manager**

**Input:**

**Further Evaluation is Required:**

Yes.  
Before Further Operation? No  
By Whom: CMS and EHS  
By When:

**Division or Project:**

Chemical and Materials Science

**Plant Area:**

South Table Mountain

**System/Building/Equipment:** Solar Energy Research Facility  
**Facility Function:** Laboratory - Research & Development

**Corrective Action:**

**Lessons(s) Learned:**

**HQ Keywords:** 01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous)  
01F--Inadequate Conduct of Operations - Training Deficiency  
01Q--Inadequate Conduct of Operations - Personnel error  
08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance  
08J--OSHA Reportable/Industrial Hygiene - Near Miss (Electrical)  
12C--EH Categories - Electrical Safety  
14B--Quality Assurance - Training and Qualification Deficiency  
14E--Quality Assurance - Work Process Deficiency

**HQ Summary:** On March 21, 2012, a researcher was preparing a new helium cryostat to replace an older device. The manufacturer of the cryostat provided an operating manual and an electrical cable for the purchaser to install. The researcher was uncertain if the cryostat was set up for 120 VAC or 220 VAC due to confusing markings and incomplete directions in the operating manual. To test whether the system was 120V or 220V, the researcher removed the outer cover of the cryostat, attached the cable to the inside electrical connections, replaced the outer cover, and installed a temporary 120V plug to the other end of the cable. The researcher then plugged the cryostat into a 120V outlet. After a 15 second test which determined that the cryostat ran on 120 VAC, the researcher used the power switch to turn the unit off. The researcher needed additional information about the electrical setup of the cryostat, so the researcher removed the outer cover in preparation to show a coworker and an electrician the wiring configuration. The researcher left and did not unplug the cable from the electrical outlet or replace the outer cover. A coworker observed that the cryostat was plugged into an outlet without the outer cover in place and contacted an electrician. The electrician unplugged the cryostat and removed the temporary plug. Upon initial investigation, it was determined that the researcher did not have current NREL lockout/tagout or Qualified Electrical Worker safety training.

**Similar OR Report Number:**

**Facility Manager:**

Name	JORDAN, MAUREEN Y
Phone	(303) 275-3248
Title	EHS Office Director

**Originator:**

Name	BAYLOSIS, ED A.
Phone	(303) 275-3240
Title	ISM PROGRAM MANAGER

**HQ OC Notification:**

Date	Time	Person Notified	Organization
NA	NA	NA	NA

**Other Notifications:**

Date	Time	Person Notified	Organization
03/21/2012	17:58 (MTZ)	Event Distribution	NREL/DOE

**Authorized Classifier(AC):**

**2)Report Number:**

[EM-CBFO--WTS-WIPP-2012-0004](#) After 2003 Redesign

**Secretarial Office:**

Environmental Management

**Lab/Site/Org:**

Carlsbad Field Office

**Facility Name:**

Waste Isolation Pilot Plant

**Subject/Title:**

Failure to follow a prescribed hazardous energy control process - Procedural Compliance

**Date/Time Discovered:**

03/19/2012 14:20 (MTZ)

**Date/Time Categorized:**

03/20/2012 16:21 (MTZ)

**Report Type:**

Notification/Final

**Report Dates:**

Notification	03/22/2012	13:33 (ETZ)
Initial Update	03/22/2012	13:33 (ETZ)
Latest Update	03/22/2012	13:33 (ETZ)
Final	03/22/2012	13:33 (ETZ)

**Significance Category:**

4

**Reporting Criteria:**

2E(3) - Any failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout, hazardous energy control program).

**Cause Codes:**

**ISM:**

4) Perform Work Within Controls

**Subcontractor Involved:**

No

**Occurrence Description:**

On March 19, 2012, at approximately 1420 hours, two Washington TRU Solutions, LLC (WTS), maintenance craft personnel and one WTS Maintenance Engineer (ME), were preparing to perform adjustments to 860C exhaust fan inlet and outlet damper limit switches (120 volt). The employees were performing lockout/tagout (LOTO) using Personal Locking Devices (PLDs) for equipment lockout instead of a Cognizant Operations Manager (COM) lockout required by the site's hazardous energy control process.

**DETAILS:**

On March 19, 2012, at approximately 1420 hours, two WTS maintenance craft personnel and one WTS ME were preparing to perform adjustments to 860C exhaust fan inlet and outlet damper limit switches (120 volt). The work was being performed under work orders 1203423 and 1203422. The

two maintenance craft employees were in the process of performing LOTO on the 120 volt breaker that feeds the damper limit switches. This breaker is located inside Building 413. The ME located outside Building 413, removed a cover that protects the damper limit switches and shaft prior to the completion of the LOTO process being performed inside the building. The Facility Shift Manager (FSM) arrived at the work location and noticed that a protective cover had been removed from the limit switch housing by the ME before the LOTO was completed. The FSM noted that although the protective cover had been removed, no work had been performed on the switches and that the ME was wearing appropriate personal protective equipment (PPE) required to remove the cover. The FSM directed the craft and ME to suspend work and complete the LOTO before proceeding. The LOTO was completed and the work resumed.

On March 20, at 0700 hours, the Facility Manager initiated the event investigation process and directed an event Debrief to be conducted in order to gather sufficient information to determine if employees were or could have been exposed to a hazardous energy source or if any LOTO violations had occurred. The results of the Debrief and investigation identified that the WIPP hazardous energy control process (WIPP Procedure 04-AD3011, Equipment Lockout/Tagout) was violated by performing LOTO using a Personal Locking Device (PLD) lockout instead of the required Cognizant Operations Manager (COM) lockout.

During the execution of the work package, no worker was injured or exposed to any hazardous energy source and workers were wearing all required PPE.

**Cause Description:**

**Operating Conditions:**

**Activity Category:**

**Immediate Action(s):**

Normal Operations

Maintenance

On 3/20/12, remaining work on damper limit switches was suspended and associated Work Orders (1203422 and 1203423) were suspended and reviewed.

The Facility Manager directed a Debrief meeting to be conducted and initial event investigation.

**FM Evaluation:**

The FM has directed a formal Root Cause Analysis (RCA) to be performed to determine causes, extent of condition and prevent recurrence.

NOTE: Since Significance Category 4 notification reports are considered final once submitted this report will be revised once the RCA is completed and the corrective actions have been identified.

**DOE Facility Representative**

**Input:**

**DOE Program Manager**

**Input:**

**Further Evaluation is Required:** No  
**Division or Project:** WTS/WIPP  
**Plant Area:** Exhaust Filter Bld  
**System/Building/Equipment:** VU01/Bld 413/41-B-860C  
**Facility Function:** Nuclear Waste Operations/Disposal  
**Corrective Action:**  
**Lessons(s) Learned:**

**HQ Keywords:** 01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical)  
 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance  
 12I--EH Categories - Lockout/Tagout (Electrical or Mechanical)  
 14E--Quality Assurance - Work Process Deficiency

**HQ Summary:** On March 19, 2012, two Washington TRU Solutions, LLC (WTS), maintenance craft personnel and one WTS Maintenance Engineer, were preparing to perform adjustments to 860C exhaust fan inlet and outlet damper limit switches (120 volt). The employees were performing lockout/tagout using personal locking devices for equipment lockout instead of a cognizant operations manager lockout required by the site's hazardous energy control process. During the execution of the work package, no worker was injured or exposed to any hazardous energy source and workers were wearing all required PPE. An investigation was initiated and all remaining work on damper limit switches was stopped. Associated Work Orders (1203422 and 1203423) were suspended and reviewed.

**Similar OR Report Number:**

**Facility Manager:**

Name	BRYAN, WESLEY
Phone	(575) 234-8250
Title	FACILITY MANAGER

**Originator:**

Name	KNOX, JEFF W.
Phone	(575) 234-8462
Title	FACILITY MANAGER DESIGNEE

**HQ OC Notification:**

Date	Time	Person Notified	Organization
NA	NA	NA	NA

**Other Notifications:**

Date	Time	Person Notified	Organization
03/20/2012	07:00 (MTZ)	Wesley Bryan	WTS/FM
03/20/2012	07:28 (MTZ)	Jeff Knox	WTS/FMD

03/20/2012	07:32 (MTZ)	Lina Pacheco	CBFO/FR
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**Authorized Classifier(AC):**


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**3)Report Number:** [EM-CBFO--WTS-WIPP-2012-0005](#) After 2003 Redesign  
**Secretarial Office:** Environmental Management  
**Lab/Site/Org:** Carlsbad Field Office  
**Facility Name:** Waste Isolation Pilot Plant  
**Subject/Title:** Failure to follow a prescribed hazardous energy control process  
**Date/Time Discovered:** 03/28/2012 09:46 (MTZ)  
**Date/Time Categorized:** 04/04/2012 08:45 (MTZ)  
**Report Type:** Notification/Final

**Report Dates:**

Notification	04/05/2012	12:24 (ETZ)
Initial Update	04/05/2012	12:24 (ETZ)
Latest Update	04/05/2012	12:24 (ETZ)
Final	04/05/2012	12:24 (ETZ)

**Significance Category:**

4

**Reporting Criteria:**

2E(3) - Any failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout, hazardous energy control program).

**Cause Codes:****ISM:**

3) Develop and Implement Hazard Controls  
 4) Perform Work Within Controls

**Subcontractor Involved:**

No

**Occurrence Description:**

On March 26, 2012, while working on the waste hoist controller, an assessor observed improper donning of Personal Protective Equipment (PPE) by an electrician located inside an established arc flash boundary. Two electricians working in the arc flash boundary completed the required lockout/tagout and zero energy checks. Once absence of power was established one of the electricians raised his safety shield, partially unzipped arc flash rated coveralls and removed gloves prior to removing the established arc flash boundary. Although no hazards were present, removing required PPE prior to removal of the arc flash boundary (barrier) violated the site hazardous energy control process. No employee was exposed to hazardous energy.

**Details:**

On March 26-28, 2012, an informal assessment was being performed on the Electrical Safety Program by an NNSA employee.

On March 26, 2012, the assessor observed an electrician remove his PPE while inside the established arc flash boundary. The assessor noted it on

his checklist but did not stop the work or question the violation at that time.

On March 28, 2012, an informal out-briefing was conducted with the Carlsbad Field Office (CBFO) and Washington TRU Solutions (WTS) personnel and the issue was identified. Personnel attending the out-briefing did not identify this issue as a potential reportable occurrence.

On March 30, 2012, the assessor provided a written observation to CBFO and WTS management. It was decided that the issue would be entered into the Issues Management Program as a process improvement. Personnel receiving the written observation did not identify this issue as a potential reportable occurrence.

On April 2, 2012, the issue was submitted into the Issues Management Program system. The issue was then identified by the Facility Manager Designee (FMD) as a potential reportable occurrence. The FMD notified the Facility Manager (FM). With limited information available at that time, the FM requested more information before making a categorization determination.

On April 4, 2012, additional information identified that the proper lockout/tagout and absence of electrical hazardous energy verifications had been completed when the employee removed the PPE. New information also noted that although the employee was not exposed to hazardous electrical energy, the arc flash boundary (barrier) was still in place. WIPP Procedure 12-IS.03, Electrical Safety Program requires PPE to be donned until required lockout/tagout and zero energy checks are completed and the arc flash boundary has been cleared/removed. Entering an arc flash boundary without proper PPE or removal of PPE before the arc flash boundary was cleared violates the WIPP hazardous energy control process. Based on the new information, the FM categorized this issue as reportable.

**Cause Description:**

**Operating Conditions:**

Does not apply

**Activity Category:**

Maintenance

**Immediate Action(s):**

No immediate actions were taken because the assessor did not identify the issue at that time. Written observations were provided on 3/30/12 but were considered possible process improvements and not hazardous energy control violations.

**FM Evaluation:**

**DOE Facility Representative**

**Input:**

**DOE Program Manager**

**Input:**

**Further Evaluation is**

No

**Required:**

**Division or Project:** WTS/WIPP  
**Plant Area:** Waste Hoist Tower  
**System/Building/Equipment:** ED02/Bld 411/31PSWG15/1-1  
**Facility Function:** Nuclear Waste Operations/Disposal

**Corrective Action:**

**Lessons(s) Learned:**

**HQ Keywords:** 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance  
 12C--EH Categories - Electrical Safety  
 14E--Quality Assurance - Work Process Deficiency

**HQ Summary:** On March 26, 2012, while working on the waste hoist controller, an assessor observed improper donning of Personal Protective Equipment (PPE) by an electrician located inside an established arc flash boundary. Two electricians working in the arc flash boundary completed the required lockout/tagout and zero energy checks. Once absence of power was established one of the electricians raised his safety shield, partially unzipped arc flash rated coveralls and removed gloves prior to removing the established arc flash boundary. Although no hazards were present, removing required PPE prior to removal of the arc flash boundary (barrier) violated the site hazardous energy control process. The employees were not exposed to hazardous energy. Management was notified.

**Similar OR Report Number:**

**Facility Manager:**

Name	BRYAN, WESLEY
Phone	(575) 234-8250
Title	FACILITY MANAGER

**Originator:**

Name	KNOX, JEFF W.
Phone	(575) 234-8462
Title	FACILITY MANAGER DESIGNEE

**HQ OC Notification:**

Date	Time	Person Notified	Organization
NA	NA	NA	NA

**Other Notifications:**

Date	Time	Person Notified	Organization
03/30/2012	09:46 (MTZ)	Tim Rotert	WTS/ESH
03/30/2012	09:46 (MTZ)	Tammy Reynolds	WTS/AGM
04/02/2012	14:46 (MTZ)	Jeff Knox	WTS/FMD
04/02/2012	15:50 (MTZ)	Wesley Bryan	WTS/FM
04/04/2012	09:00 (MTZ)	Glenn Gamlin	CBFO/FR
04/04/2012	09:21 (MTZ)	Kenny Padilla	CBFO/FR

**Authorized Classifier(AC):**

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**4)Report Number:** [EM-ID--CWI-IWTU-2012-0003](#) After 2003 Redesign  
**Secretarial Office:** Environmental Management  
**Lab/Site/Org:** Idaho Cleanup Project  
**Facility Name:** Integrated Waste Treatment Unit  
**Subject/Title:** Missing 480 Volt Electrical Panel Covers at IWTU Power Distribution Center  
**Date/Time Discovered:** 03/12/2012 14:36 (MTZ)  
**Date/Time Categorized:** 03/12/2012 15:05 (MTZ)  
**Report Type:** Notification

**Report Dates:**

Notification	03/14/2012	17:36 (ETZ)
Initial Update		
Latest Update		
Final		

**Significance Category:** 3  
**Reporting Criteria:** 2E(2) - Any unexpected discovery of an uncontrolled electrical hazardous energy source (e.g., live electrical power circuit, etc.). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.

**Cause Codes:**

**ISM:** 4) Perform Work Within Controls  
 5) Provide Feedback and Continuous Improvement

**Subcontractor Involved:** Yes  
 Wheeler Electric

**Occurrence Description:** On March 12, 2012 at 1436 hours MDT, IWTU discovered uncovered 480 V electrical panels underneath the Power Distribution Center (PDC). The PDC transforms 13.8 kV to 480 V and distributes to various loads at IWTU. The 480 volt panels are required per code and cover the bottoms of energized 480 V cabinets. The openings are not normal occupied areas. The PDC is elevated approximately 4 feet off the ground. The missing covers are believed to be a legacy issue from initial construction of the PDC.

On Monday March 12, 2012 at approximately 1130 hours, during installation of IWTU exterior lighting it was noticed by subcontract electricians and an electrical quality inspector the 480 V covers were missing. The quality inspector inspected the general area and identified 3 penetrations in the floor below the switchgear without covers and several cable penetrations that were not sealed. The quality inspector notified the Force Account manager and Safety personnel of the exposed electrical

energy. The area was barricaded and posted. The quality inspector entered a non-conformance report for the missing panels and cable penetration sealant.

**Cause Description:**

**Operating Conditions:** Does not apply

**Activity Category:** Construction

**Immediate Action(s):** A work step back was initiated  
The area beneath the PDC was barricaded and posted.

**FM Evaluation:** The Nuclear Facility Manager (NFM) was informed of the nonconformance issue at 1436, categorized it at 1505 per MCP-190 as Group 2 -Personnel Safety and Health, Subgroup E - Hazardous Electrical Energy Control, Sequence number 2 - Any unexpected discovery of an uncontrolled electrical hazardous energy source (e.g., live electrical power circuit, etc.). The NFM notified the DOE-ID Facility Representative at 1520.

The FR agrees with the event categorization.

Personnel were not exposed to electrical energy. They were outside of the 4 feet arc flash and 3.6 feet approach distances from the 480 volt electrical energy. The employees were wearing natural fiber clothing and no persons or tools broke the plane of the opening. There was no water under the PDC.

**DOE Facility Representative**

**Input:**

**DOE Program Manager**

**Input:**

**Further Evaluation is Required:** Yes.  
Before Further Operation? No  
By Whom: Steve Davies  
By When:

**Division or Project:** IWTU - Idaho Completion Project

**Plant Area:** CPP-2719

**System/Building/Equipment:** Power Distribution Center

**Facility Function:** Nuclear Waste Operations/Disposal

**Corrective Action:**

**Lessons(s) Learned:**

**HQ Keywords:** 01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous)  
01Q--Inadequate Conduct of Operations - Personnel error  
01S--Inadequate Conduct of Operations - Incorrect/Inadequate Installation  
08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance  
11G--Other - Subcontractor

12C--EH Categories - Electrical Safety  
 14E--Quality Assurance - Work Process Deficiency

**HQ Summary:**

On March 12, 2012, IWTU personnel discovered uncovered 480-volt electrical panels underneath a Power Distribution Center (PDC). The PDC transforms 13.8 kV to 480 volts and distributes to various loads at IWTU. The 480-volt panels are required per code and cover the bottoms of energized 480-volt cabinets. The openings are not in normal occupied areas. The PDC is elevated approximately 4 feet off the ground. The missing covers are believed to be a legacy issue from initial construction of the PDC. The area beneath the PDC was barricaded and posted. Personnel were not exposed to electrical energy. They were outside of the 4-foot arc flash and 3.6-foot approach distances from the electrical energy.

**Similar OR Report Number:**

**Facility Manager:**

Name	SPELLS, JIMMY L.
Phone	(208) 533-3481
Title	FACILITY MANAGER

**Originator:**

Name	BOSLEY, JAMES B
Phone	(208) 351-5969
Title	STAFF ENGINEER - ISSUE MANAGEMENT CO

**HQ OC Notification:**

Date	Time	Person Notified	Organization
NA	NA	NA	NA

**Other Notifications:**

Date	Time	Person Notified	Organization
03/12/2012	15:08 (MTZ)	W. Lloyd	IWTU
03/12/2012	15:20 (MTZ)	D. Larsen	DOE-ID

**Authorized Classifier(AC):** Spells, Jimmy L    Date: 03/14/2012

**5)Report Number:**

[EM-RL--CPRC-SNF-2012-0003](#) After 2003 Redesign

**Secretarial Office:**

Environmental Management

**Lab/Site/Org:**

Hanford Site

**Facility Name:**

Spent Nuclear Fuels Project

**Subject/Title:**

Lockout/Tagout Technical Error - Walk Down Prior to Work Release  
 Discovered Safe Condition Check Documented But Not Performed

**Date/Time Discovered:**

03/06/2012 13:02 (PTZ)

**Date/Time Categorized:**

03/06/2012 13:02 (PTZ)

**Report Type:**

Notification/Final

**Report Dates:**

Notification	03/08/2012	17:06 (ETZ)
Initial Update	03/08/2012	17:06 (ETZ)

Latest Update	03/08/2012	17:06 (ETZ)
Final	03/08/2012	17:06 (ETZ)

**Significance Category:** 4

**Reporting Criteria:** 2E(3) - Any failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout, hazardous energy control program).

**Cause Codes:**

**ISM:** 3) Develop and Implement Hazard Controls

**Subcontractor Involved:** No

**Occurrence Description:** On 3/6/12, 105K West Operations authorized installation of Tagout Authorization Form (TAF) KW-12-002 for the Compressed Air System. The installer completed installation, the verifier completed verification, and then the installer went back to perform the required Safety Condition Checks (SCC).

After all actions were completed, but prior to releasing for work, the Operations Field Work Supervisor (FWS) performed a walk down of the TAF to verify that all actions had been properly performed. During the walk down, the FWS noted that the electrical SCC had been signed off as complete by the Nuclear Chemical Operator (NCO) and not the Electrician as should have been the case. The Shift Operations Manger (SOM) was notified, who in turn called the Electricians to perform the SCC. The NCO was also asked to one-line, initial and date through his signature on the TAF.

The SOM notified the Facility Manager of the issue and it was screened against PRC-PRO-EM-060 for reportability. After discussions and review, it was determined that this issue met the definition of a technical error and was reported as such. All proper notifications were made and a critique was scheduled. A decision was made not to release this work pending further review.

The Critique Meeting was conducted on 3/7/12. It was determined that no personnel were exposed to hazardous energy. The issue was identified prior to release of work under that boundary established by the TAF.

**Cause Description:** An Apparent Cause Analysis will be performed on this issue and documented in the Corrective Action Management System as Condition Report CR-2012-0629.

**Operating Conditions:** Normal Operations, Lockout/Tagout Walk Down

**Activity Category:** Normal Operations (other than Activities specifically listed in this Category)

**Immediate Action(s):** 1. Notified the Shift Operations Manager (SOM).

2. The individual who signed Block 27 for the Air Dryer Disconnect Switch Safe Condition Check was directed to correct the entry via one-line strikeout, initial and date.

3. Electrician support was requested to perform the required absence of voltage test, and an additional field walk down was performed.

4. Field work to complete installation of the lockout was halted and a critique meeting was scheduled.

**FM Evaluation:**

The walk down resulted in identification that the Safe Condition Check had not yet been performed. The activity had not been released for work, and the Safe Condition Check was performed prior to that release taking place. It was determined that no personnel were exposed to hazardous energy.

**DOE Facility Representative**

**Input:**

**DOE Program Manager**

**Input:**

**Further Evaluation is Required:** No

**Division or Project:** CHPRC/D&D Project/100K Area

**Plant Area:** 100K Area

**System/Building/Equipment:** Lockout/Tagout KW-12-002/105K West Basin

**Facility Function:** Nuclear Waste Operations/Disposal

**Corrective Action:**

**Lessons(s) Learned:**

**HQ Keywords:** 01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical)  
08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance  
12I--EH Categories - Lockout/Tagout (Electrical or Mechanical)  
14E--Quality Assurance - Work Process Deficiency

**HQ Summary:**

On March 6, 2012, after the installation of a Tagout Authorization Form (TAF), but prior to releasing for work, an Operations Field Work Supervisor performed a walk down of the TAF to verify that all actions had been properly performed and noted that the electrical Safety Condition Checks (SCC) had been signed off as complete by the nuclear chemical operator and not by the electrician as should have been the case. The Shift Operations Manger was notified, who in turn called the electricians to perform the SCC. A critique was conducted and it was determined that no personnel were exposed to hazardous energy.

**Similar OR Report Number:** 1. None.

**Facility Manager:**

Name	R. K. Nissen
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Phone	(509) 373-4547
Title	Manager, K West Facility

**Originator:**

Name	FEIL, RHONDA K		
Phone	(509) 373-4551		
Title	ADMINISTRATIVE SPECIALIST		

**HQ OC Notification:**

Date	Time	Person Notified	Organization
NA	NA	NA	NA

**Other Notifications:**

Date	Time	Person Notified	Organization
03/06/2012	13:44 (PTZ)	R. K. Nissen	CPRC/D&D
03/06/2012	13:44 (PTZ)	D.L. Splett	RL/OOD

**Authorized Classifier(AC):**

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**6)Report Number:** [EM-RP--BNRP-RPPWTP-2012-0009](#) After 2003 Redesign  
**Secretarial Office:** Environmental Management  
**Lab/Site/Org:** Hanford Site  
**Facility Name:** RPP Waste Treatment Plant  
**Subject/Title:** Electrician identified an electrical hazard not mitigated in his work package.  
**Date/Time Discovered:** 03/26/2012 08:30 (PTZ)  
**Date/Time Categorized:** 03/26/2012 09:30 (PTZ)  
**Report Type:** Notification  
**Report Dates:**

Notification	03/28/2012	16:59 (ETZ)
Initial Update		
Latest Update		
Final		

**Significance Category:** 3  
**Reporting Criteria:** 2E(2) - Any unexpected discovery of an uncontrolled electrical hazardous energy source (e.g., live electrical power circuit, etc.). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.

**Cause Codes:**

**ISM:** 2) Analyze the Hazards  
 3) Develop and Implement Hazard Controls

**Subcontractor Involved:** No

**Occurrence Description:** On 3/22/2012 an electrician was tasked with performing work on a disconnect switch for an overhead door without proper isolation from a

Lock Out/Tag Out.

The electrician was given a work package with a task to perform maintenance on a disconnect switch for an Overhead door. The package he was provided was designed to incorporate the site MASTER CLEARANCE LO/TO to perform this work.

Prior to beginning the task the electrician identified a temporary modification tag located on the disconnect switch approximately 18 feet in the air. The temporary modification tag is used to inform an affected employee that the disconnects source of energy is from a temporary energy source.

**Cause Description:**

**Operating Conditions:**

Construction

**Activity Category:**

Construction

**Immediate Action(s):**

The work was paused by the electrician and he notified his supervisor. The supervisor brought the information to the planner for the work. The event was found to be accurate during the review of documents in project archives.

An additional change order was developed to incorporate a LO/TO for the disconnect.

**FM Evaluation:**

**DOE Facility Representative**

**Input:**

**DOE Program Manager**

**Input:**

**Further Evaluation is Required:**

No

**Division or Project:**

Waste Treatment Plant

**Plant Area:**

600

**System/Building/Equipment:**

Balance of Facilities

**Facility Function:**

Nuclear Waste Operations/Disposal

**Corrective Action:**

**Lessons(s) Learned:**

**HQ Keywords:**

01M--Inadequate Conduct of Operations - Inadequate Job Planning (Electrical)  
12C--EH Categories - Electrical Safety  
14E--Quality Assurance - Work Process Deficiency

**HQ Summary:**

On March 22, 2012, an electrician was tasked with performing work on a disconnect switch for an overhead door without proper isolation from a Lock Out/Tag Out (LO/TO). The electrician was given a work package

with a task to perform maintenance on a disconnect switch for an overhead door, the package he was provided was designed to incorporate the site Master Clearance LO/TO to perform this work. Prior to beginning the task the electrician identified a temporary modification tag located on the disconnect switch approximately 18 feet in the air. The temporary modification tag is used to inform an affected employee that the disconnect source of energy is from a temporary energy source. The work was stopped by the electrician and he notified his supervisor. An additional change order was developed to incorporate a LO/TO for the disconnect switch.

**Similar OR Report Number:**

**Facility Manager:**

Name	Steve Overton
Phone	(509) 373-8268
Title	Manager of Construction

**Originator:**

Name	MEAGHER, THOMAS S.
Phone	(509) 373-8467
Title	SAFETY ASSURANCE

**HQ OC Notification:**

Date	Time	Person Notified	Organization
NA	NA	NA	NA

**Other Notifications:**

Date	Time	Person Notified	Organization
03/26/2012	09:30 (PTZ)	Steve Overton	BNI
03/26/2012	09:30 (PTZ)	Tucker Campbell	BNI
03/26/2012	10:10 (PTZ)	Brad Eccleston	DOE
03/26/2012	10:13 (PTZ)	Newell Crary	ONC

**Authorized Classifier(AC):**

**7)Report Number:** [EM-RP--BNRP-RPPWTP-2012-0010](#) After 2003 Redesign

**Secretarial Office:** Environmental Management

**Lab/Site/Org:** Hanford Site

**Facility Name:** RPP Waste Treatment Plant

**Subject/Title:** Electrician performed a Safe Condition Check within a safe approach boundary without notifying an emergency service.

**Date/Time Discovered:** 03/20/2012 16:00 (PTZ)

**Date/Time Categorized:** 03/26/2012 16:00 (PTZ)

**Report Type:** Notification/Final

**Report Dates:**

Notification	03/28/2012	18:16 (ETZ)
Initial Update	03/28/2012	18:16 (ETZ)

Latest Update	03/28/2012	18:16 (ETZ)
Final	03/28/2012	18:16 (ETZ)

**Significance Category:** 4

**Reporting Criteria:** 2E(3) - Any failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout, hazardous energy control program).

**Cause Codes:**

**ISM:** 4) Perform Work Within Controls

**Subcontractor Involved:** No

**Occurrence Description:** On 3/20/2012 an electrician performed a Safe Condition Check (SCC) without notifying Safety Assurance, medical staff or Emergency Services Personnel. This is out of compliance with the Electrical Safety In the Workplace procedure.

The Balance of Facility (BOF) had an inspection at the Switch Gear Building 87. The Authority Having Jurisdiction was going to enter the building to perform this inspection under LO/TO. The electricians installed the LO/TO and performed the SCC and proceeded to get the Management Suspension of Work (MSOW) for partial release. Upon completion of the inspection there was a discussion about criteria in procedure 24590-WTP-GPP-WPHA-003 section 5.3.2 The Qualified Person in Charge ensures Safety Assurance, Site Medical Staff, or Emergency Services Personnel are notified and available before crossing the Restricted Approach Boundary.

Although the personnel were available on site it was determined by the Management Staff that they were not notified.

**Cause Description:**

**Operating Conditions:** Construction

**Activity Category:** Construction

**Immediate Action(s):** The Lead Electrical Superintendent immediately addressed this concern with notification to the electrical superintendents to flow down and reinforce expectations for Section 5.3.2 requirements when performing safe condition checks.  
This information will be tracked in 24590-WTP-PIER-MGT-12-0421 once it has cleared the PIER Review Committee.

**FM Evaluation:**

**DOE Facility Representative**

**Input:**

**DOE Program Manager**

**Input:**

**Further Evaluation is** No

**Required:**

**Division or Project:** Waste Treatment Plant  
**Plant Area:** 600  
**System/Building/Equipment:** Switchgear building 87.  
**Facility Function:** Nuclear Waste Operations/Disposal  
**Corrective Action:**  
**Lessons(s) Learned:**  
**HQ Keywords:** 01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous)  
 01E--Inadequate Conduct of Operations - Operations Procedure Noncompliance  
 01M--Inadequate Conduct of Operations - Inadequate Job Planning (Electrical)  
 01P--Inadequate Conduct of Operations - Inadequate Oral Communication  
 12C--EH Categories - Electrical Safety  
 14E--Quality Assurance - Work Process Deficiency

**HQ Summary:** On March 20, 2012, an electrician performed a Safe Condition Check (SCC) without notifying Safety Assurance, medical staff or Emergency Services Personnel. This is out of compliance with the Electrical Safety in the Workplace procedure. The Balance of Facility had an inspection at the Switch Gear Building 87, the Authority Having Jurisdiction was going to enter the building to perform this inspection under Lockout/Tagout (LO/TO). The electricians installed the LO/TO and performed the SCC and proceeded to get the Management Suspension of Work for partial release. Upon completion of the inspection there was a discussion about criteria in procedure 24590-WTP-GPP-WPHA-003 section 5.3.2. The Qualified Person in Charge ensures Safety Assurance, Site Medical Staff, or Emergency Services Personnel are notified and available before crossing the Restricted Approach Boundary. Although the personnel were available on site it was determined by the Management Staff that they were not notified.

**Similar OR Report Number:**

**Facility Manager:**

Name	Steve Overton
Phone	(509) 373-8268
Title	Manager of Construction

**Originator:**

Name	MEAGHER, THOMAS S.
Phone	(509) 373-8467
Title	SAFETY ASSURANCE

**HQ OC Notification:**

Date	Time	Person Notified	Organization
NA	NA	NA	NA

**Other Notifications:**

Date	Time	Person Notified	Organization
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03/26/2012	16:00 (PTZ)	Steve Overton	BNI
03/26/2012	16:00 (PTZ)	Tucker Campbell	BNI
03/26/2012	16:00 (PTZ)	Brad Eccleston	DOE
03/26/2012	16:31 (PTZ)	Newell Crary	ONC

**Authorized Classifier(AC):**

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**8)Report Number:** [EM-RP--WRPS-TANKFARM-2012-0003](#) **After 2003 Redesign**  
**Secretarial Office:** Environmental Management  
**Lab/Site/Org:** Hanford Site  
**Facility Name:** Tank Farms  
**Subject/Title:** Installed Danger Do Not Operate Tag Missing Independent Verification Signature  
**Date/Time Discovered:** 03/25/2012 16:10 (PTZ)  
**Date/Time Categorized:** 03/25/2012 18:00 (PTZ)  
**Report Type:** Notification/Final

**Report Dates:**

Notification	03/26/2012	15:09 (ETZ)
Initial Update	03/26/2012	15:09 (ETZ)
Latest Update	03/26/2012	15:09 (ETZ)
Final	03/26/2012	15:09 (ETZ)

**Significance Category:** 4  
**Reporting Criteria:** 2E(3) - Any failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout, hazardous energy control program).

**Cause Codes:**  
**ISM:** 4) Perform Work Within Controls  
**Subcontractor Involved:** No  
**Occurrence Description:** On March 25, 2012, while performing lockout/tagout isolation boundary walk-down of Lockout/Tagout Authorization Form (TAF) AN-11-42 prior to start of work, an electrician observed one of the Danger Do Not Operated tag's (Tag No. 6) independent verification had not been signed by the independent verifier. Review of TAF AN-11-42 showed that the Independently Verified By block (Block 26) on the form was properly signed and dated.

**Cause Description:**  
**Operating Conditions:** Does not apply.  
**Activity Category:** Maintenance  
**Immediate Action(s):** Work was immediately stopped and the work package was suspended. Remaining controlling organization Danger tag independent verifications were verified to be properly signed and documented. All the required

notifications Completed. An event investigation is to be scheduled.

**FM Evaluation:**

**DOE Facility Representative**

**Input:**

**DOE Program Manager**

**Input:**

**Further Evaluation is Required:** No

**Division or Project:** Washington River Protection Solutions LLC (WRPS)

**Plant Area:** 200 East

**System/Building/Equipment:** AN-Farm/Mobile Office 284/Electrical Panel

**Facility Function:** Nuclear Waste Operations/Disposal

**Corrective Action:**

**Lessons(s) Learned:**

**HQ Keywords:** 01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical)  
 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance  
 12I--EH Categories - Lockout/Tagout (Electrical or Mechanical)  
 14D--Quality Assurance - Documents and Records Deficiency  
 14E--Quality Assurance - Work Process Deficiency

**HQ Summary:** On March 25, 2012, while performing Lockout/Tagout (LO/TO) isolation boundary walk-down of LO/TO Authorization Form (TAF) AN-11-42 prior to start of work, an electrician observed one of the Danger Do Not Operated tag's (Tag No. 6) independent verification had not been signed by the independent verifier. Review of TAF AN-11-42 showed that the Independently Verified By block (Block 26) on the form was properly signed and dated. Work was immediately stopped and the work package was suspended. Remaining controlling organization Danger tag independent verifications were verified to be properly signed and documented. All the required notifications were made and an investigation was scheduled.

**Similar OR Report Number:**

**Facility Manager:**

Name	Ellis, Martin W
Phone	(509) 373-4696
Title	Manager, Base OPS Technical Support

**Originator:**

Name	WATERS, SHAUN F
Phone	(509) 373-3457
Title	OPERATIONS SPECIALIST

**HQ OC Notification:**

Date	Time	Person Notified	Organization
NA	NA	NA	NA

**Other Notifications:**

Date	Time	Person Notified	Organization
03/25/2012	18:06 (PTZ)	Klos, J. J.	WRPS
03/25/2012	18:07 (PTZ)	Stickney, B. J.	DOE-ORP
03/25/2012	18:09 (PTZ)	Woodford, T. L.	MSA-ONC

**Authorized Classifier(AC):**

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**9)Report Number:** [EM-RP--WRPS-TANKFARM-2012-0005](#) **After 2003 Redesign**

**Secretarial Office:** Environmental Management

**Lab/Site/Org:** Hanford Site

**Facility Name:** Tank Farms

**Subject/Title:** Process To Modify Lockout/Tagout Boundary Not Followed

**Date/Time Discovered:** 03/27/2012 16:30 (PTZ)

**Date/Time Categorized:** 03/27/2012 16:35 (PTZ)

**Report Type:** Notification

**Report Dates:**

Notification	03/28/2012	17:32 (ETZ)
Initial Update		
Latest Update		
Final		

**Significance Category:** 3

**Reporting Criteria:** 10(2) - An event, condition, or series of events that does not meet any of the other reporting criteria, but is determined by the Facility Manager or line management to be of safety significance or of concern for that facility or other facilities or activities in the DOE complex.  
The significance category assigned to the management concern should be based on an evaluation of the potential risks and impact on safe operations.  
(1 of 4 criteria - This is a SC 3 occurrence)

**Cause Codes:**

**ISM:** 3) Develop and Implement Hazard Controls

**Subcontractor Involved:** No

**Occurrence Description:** On March 27, 2012, as a result of an event investigation, it was determined that lockboxes used for Controlling Organization (CO) lockout/tagout evolutions are not adequately controlling keys and equivalent protection indicators used to control the components (e.g., hand wheels, fuses, tag out forms) that are stored and controlled by attachment of Authorized Worker (AW) personal locks. Although the CO lockout/tagout was correctly hung and the hazard was isolated and lockbox controlled by the CO, the method for adding tags and controlling keys using the existing lockbox fails to meet the intent of the Site's procedure DOE-0336, Hanford Site Lockout/Tagout.

## Background

On March 25, 2012, prior to starting work while performing a lockout/tagout isolation boundary walk-down of Lockout/tagout Authorization Form (TAF) AN-11-42, an electrician observed one of the Danger Do Not Operate tags (Tag No. 6) independent verification had not been signed by the Independent Verifier. However, review of TAF AN-11-42 showed that the Independently Verified By block (Block 26) on the form was properly signed and dated. Also, an additional tag (Tag No. 9) and lock had been added to the existing TAF. Work was immediately stopped and the work package was suspended. Remaining controlling organization Danger tag independent verifications were verified to be properly signed and documented.

On March 27, 2012, during the event investigation for the missed independent verification event (ref: EM-RP--WRPS-TANKFARM-2012-0003), it was discovered that during the process of adding Tag No. 9, the CO Key for this lock and tag was placed in the CO Lockbox without removal of the existing AW locks locked to the lockbox. The Tag No. 9 key was added to the lockbox by removing the CO Lockbox lock and sliding the key through the lockbox lid. Based on the positioning of the AW locks on the lockbox, the lockbox lid was opened enough for the individual to place their hand inside the lockbox. This does not meet the intent of a "lockbox" in the definition section of DOE-0336, which states a lockbox is, "A specifically identified and job-specific container or device used in group lockout activities which is capable of being locked. A lockbox contains keys and equivalent protection indicators used to control the components."

It is important to note that at no time was there a hazard energy source present for any of the associated workers involved. On March 27, 2012, due to the nature of this issue, Washington River Protection Solutions management decided to report this as a Management Concern occurrence report to notify other affected users of DOE-0336 that may have similar lockbox issues.

**Cause Description:**

**Operating Conditions:**

**Activity Category:**

**Immediate Action(s):**

Does not apply.

Normal Operations (other than Activities specifically listed in this Category)

Issued Stop Work, "Work is not authorized to be performed on activities controlled by a lockbox until the responsible controlling organization manager or designee confirms that the lockbox lock is locked through the lockbox hasp which prevents accessing the keys to the lockbox.

Confirmation is to be documented in the Central Shift Manager's Logbook in order to be released from the stop work."

Issued Standing Order OPS-12-004 (Rev 0), Lock & Tag Lockboxes, as interim guidance requiring, "immediately prior to removing the lockbox lock and opening the controlling organization lockbox, the controlling organization administrator must verify there are no authorized worker locks on the lockbox."

Published through the Hanford Information and Lessons Learned Sharing (HILLS) database Just-In-Time Report WRPS-JIT-12-002, Lockbox Caution, for immediate dissemination to HILLS subscribers and WRPS employees and subcontractors.

**FM Evaluation:** Standing Order OPS-12-004 (Rev 0), Lock & Tag Lockboxes, issued as interim guidance until causes are identified and corrective actions determined.

**DOE Facility Representative**

**Input:**

**DOE Program Manager**

**Input:**

**Further Evaluation is Required:** Yes.  
Before Further Operation? Yes  
By Whom: Ellis, Martin W  
By When: 05/11/2012

**Division or Project:** Washington River Protection Solutions LLC (WRPS)

**Plant Area:** 200 East

**System/Building/Equipment:** 241-AN Farm/Controlling Organization Lockbox

**Facility Function:** Nuclear Waste Operations/Disposal

**Corrective Action:**

**Lessons(s) Learned:**

**HQ Keywords:** 01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical)  
08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance  
12I--EH Categories - Lockout/Tagout (Electrical or Mechanical)  
14D--Quality Assurance - Documents and Records Deficiency  
14E--Quality Assurance - Work Process Deficiency

**HQ Summary:** On March 27, 2012, as a result of an event investigation, it was determined that lockboxes used for Controlling Organization (CO) Lockout/Tagout (LO/TO) evolutions are not adequately controlling keys and equivalent protection indicators used to control the components (e.g., hand wheels, fuses, tag out forms) that are stored and controlled by attachment of authorized worker personal locks. Although the CO LO/TO was correctly hung and the hazard was isolated and lockbox controlled by the CO, the method for adding tags and controlling keys using the existing lockbox

fails to meet the intent of the Site's procedure DOE-0336, Hanford Site LO/TO, because the lockbox lid could be opened enough for an individual to place their hand inside the lockbox. At no time was there a hazard energy source present for any of the associated workers involved. Work was stopped and Standing Order OPS-12-004 (Rev 0), Lock & Tag Lockboxes was issued as interim guidance requiring immediately prior to removing the lockbox lock and opening the CO lockbox, the CO Administrator must verify there are no authorized worker locks on the lockbox.

**Similar OR Report Number:**

**Facility Manager:**

Name	Ellis, Martin W
Phone	(509) 373-4696
Title	Manager, Base OPS Technical Support

**Originator:**

Name	WATERS, SHAUN F
Phone	(509) 373-3457
Title	OPERATIONS SPECIALIST

**HQ OC Notification:**

Date	Time	Person Notified	Organization
NA	NA	NA	NA

**Other Notifications:**

Date	Time	Person Notified	Organization
03/27/2012	16:49 (PTZ)	Davis, K. W.	MSA-ONC
03/27/2012	16:55 (PTZ)	Metzger, S. L.	WRPS
03/27/2012	16:57 (PTZ)	Stracener, J. E.	DOE-ORP

**Authorized Classifier(AC):**

**10)Report Number:**

[NA--LSO-LLNL-LLNL-2012-0011](#) After 2003 Redesign

**Secretarial Office:**

National Nuclear Security Administration

**Lab/Site/Org:**

Lawrence Livermore National Lab.

**Facility Name:**

Lawrence Livermore Nat. Lab. (BOP)

**Subject/Title:**

Failure to Follow Lock Out/ Tag Out Procedures During Electrical Work at Building 411

**Date/Time Discovered:**

03/01/2012 09:30 (PTZ)

**Date/Time Categorized:**

03/01/2012 15:00 (PTZ)

**Report Type:**

Notification/Final

**Report Dates:**

Notification	03/05/2012	12:00 (ETZ)
Initial Update	03/05/2012	12:00 (ETZ)
Latest Update	03/05/2012	12:00 (ETZ)
Final	03/05/2012	12:00 (ETZ)

**Significance Category:** 4

**Reporting Criteria:** 2E(3) - Any failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout, hazardous energy control program).

**Cause Codes:**

**ISM:** 4) Perform Work Within Controls

**Subcontractor Involved:** No

**Occurrence Description:** On Thursday, March 1, 2012, at approximately 9:30 am, a Maintenance & Utility Service Department (MUSD) low voltage electrician was installing new light switches in Building 411 and failed to apply the required lock and tags prior to performing work.

During the installation of the new switches the electrician donned the appropriate PPE, de-energized the appropriate breakers in panel #170A21 (208/120 volts), and successfully conducted the required steps for absence of power verification. However, although the electrician had de-energized the necessary panel breakers and was not working on live circuits; he did not apply his LOTO lock and tag to the breakers. This was determined to be a violation of LLNL LOTO procedure.

No injuries resulted from this event.

This occurrence report is being tracked in LLNL's Issues Tracking System, reference Assessment No. 34086

**Cause Description:**

**Operating Conditions:** Normal

**Activity Category:** Normal Operations (other than Activities specifically listed in this Category)

**Immediate Action(s):**

1. Work was stopped
2. The Facilities & Infrastructure Directorate (F&I) line managers were immediately notified of the event.
3. LOTO was appropriately applied the the circuit breakers
4. A review was initiated.

**FM Evaluation:**

**DOE Facility Representative Input:**

**DOE Program Manager Input:**

**Further Evaluation is Required:** No

**Division or Project:** O&B, F&I

**Plant Area:** Site 200

**System/Building/Equipment:** Electrical panel #170A21 (208/120 volts) in Building 411

**Facility Function:** Laboratory - Research & Development

**Corrective Action:**

**Lessons(s) Learned:**

**HQ Keywords:** 01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical)  
 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance  
 12I--EH Categories - Lockout/Tagout (Electrical or Mechanical)  
 14E--Quality Assurance - Work Process Deficiency

**HQ Summary:** On March 1, 2012, a Maintenance & Utility Service Department low voltage electrician was installing new light switches in Building 411 and failed to apply the required lock and tags prior to performing work. During the installation the electrician donned the appropriate personal protective equipment, de-energized the appropriate breakers in panel #170A21 (208/120 volts), and successfully conducted the required steps for absence of power verification. Although the electrician had de-energized the necessary panel breakers he did not apply his Lockout/Tagout (LOTO) lock and tag to the breakers. This was determined to be a violation of the LOTO procedure. Work was stopped, the Facilities & Infrastructure Directorate line managers were immediately notified, and a review was initiated. A LOTO was appropriately applied the circuit breakers.

- Similar OR Report Number:**
1. NA--LSO-LLNL-LLNL-2012-0008
  2. NA--LSO-LLNL-LLNL-2012-0002
  3. NA--LSO-LLNL-LLNL-2011-0046
  4. NA--LSO-LLNL-LLNL-2011-0037
  5. NA--LSO-LLNL-LLNL-2011-0020
  6. NA--LSO-LLNL-LLNL-2011-0003

**Facility Manager:**

Name	Harold Conner
Phone	(925) 422-5786
Title	Associate Director, Facilities & Infrastructure Di

**Originator:**

Name	LUDWIG, MARK E.
Phone	(925) 422-6964
Title	OCCURRENCE REPORTING OFFICER

**HQ OC Notification:**

Date	Time	Person Notified	Organization
NA	NA	NA	NA

**Other Notifications:**

Date	Time	Person Notified	Organization
03/01/2012	15:30 (PTZ)	Scott McAllister	LEDO
03/01/2012	15:33 (PTZ)	Tracey Simpson	ESH TL
03/01/2012	15:35 (PTZ)	John Retelle	NNSA LSO

**Authorized Classifier(AC):** Kevin Akey    **Date:** 03/01/2012

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**11)Report Number:** [NA--PS-BWP-PANTEX-2012-0024](#) **After 2003 Redesign**

**Secretarial Office:** National Nuclear Security Administration

**Lab/Site/Org:** Pantex Plant

**Facility Name:** Pantex Plant

**Subject/Title:** 12-32 Electrical Spark Event

**Date/Time Discovered:** 03/20/2012 13:06 (CTZ)

**Date/Time Categorized:** 03/20/2012 14:27 (CTZ)

**Report Type:** Notification/Final

**Report Dates:**

Notification	03/22/2012	17:19 (ETZ)
Initial Update	03/22/2012	17:19 (ETZ)
Latest Update	03/22/2012	17:19 (ETZ)
Final	03/22/2012	17:19 (ETZ)

**Significance Category:** 4

**Reporting Criteria:** 2E(3) - Any failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout, hazardous energy control program).

**Cause Codes:**

**ISM:** 1) Define the Scope of Work  
3) Develop and Implement Hazard Controls

**Subcontractor Involved:** Yes  
Missouri Valley Inc. (MVI), Ellison Insulation, MMM

**Occurrence Description:** On 03-21-2012, at approximately 1302 hrs, a B&W Pantex subcontractor representative of Ellison Insulation noticed a spark while installing insulation around a Float and Thermostatic (F&T) trap outside of a Zone 12 South facility equipment room. Upon this discovery, the B&W Pantex Project Manager (PM) halted work and made appropriate subsequent notifications.

B&W Pantex Electrical Safety arrived at the scene, assessed the situation and determined the following:

- a. The branch circuit (heat-trace) line was a 277-volt line.
- b. The electrical service panel indicated that circuit breaker #2 (CB2) was tripped. This breaker provided service to this particular heat trace.
- c. The CB2 provides equipment ground-fault protection at 30 milliamps as marked on the branch circuit breakers.

B&W Pantex Electrical Crafts/Maintenance Electricians arrived at the scene and placed the main service distribution panel under LOTO. This area remains under LOTO and is in a Safe and Stable configuration.

There was no personnel injury, no damage to equipment or facilities, nor any threat to the environment or security as a result of this event.

**Cause Description:**

An event critique was conducted on 03-21-2012 where it was identified that the B&W Pantex subcontractor incorrectly took new work instructions from a B&W Pantex Projects Engineer as a work authorization without gaining approval from the B&W Pantex Project Manager.

As a result of this issue, Ellison Insulation installed a "blanket" type of insulation on top of an energized pipe heat trace (electrical tape used to prevent pipes from freezing). This insulation blanket utilized metal connectors held on one side of the blanket by a metal washer. The other end of this metal connector's installation was used to lace each side of the insulation blanket together in order to obtain a tight fit around the pipe so that it becomes mechanically secure.

During the "lacing" of these metal connectors, one of the ends of the metal washer rubbed against and penetrated the energized heat trace, causing it to arc to ground. Subsequently, the protecting circuit breaker was thrown.

During the event critique, B&W Electrical Safety Personnel provided an electrical severity score of 50 which indicates that this event is classed as a medium hazard. This event involved potential personnel exposure to a 277-volt line/energized circuit, with a ground fault protection at 30 milliamps.

**Operating Conditions:**

Facility was operating normally, This area was in construction

**Activity Category:**

Construction

**Immediate Action(s):**

Actions

1. Work stopped and notification of M.V.I. Superintendent, conducted by Ellison Insulation.
2. B&W Pantex PM notified by Ellison Insulation and subsequently PM halted any further project work.
3. B&W Pantex PM notified Operations Center, NNSA Duty Officer, and B&W Pantex PSTR.
4. B&W Pantex PSTR notified B&W Pantex Projects Division Management.
5. Upon notification, B&W Pantex Industrial Safety arrives, obtains personnel statements, takes event photos and investigates.
6. B&W Pantex Electrical Safety arrives, takes additional photos, and conducts an electrical event investigation.

7. B&W Pantex Electrical Shop installed Lock Out Tag Out on main control panel that provides service for the three area heat trace circuits.

**FM Evaluation:**

This particular project has been difficult from its inception. During the event critique, it was revealed that many separate/involved groups had "missed opportunities" that would have prevented this event's occurrence. It appears that many were "complacent" with this portion of the job involving application of insulation around a low wattage heat trace, creating inaccurate risk perceptions that ultimately allowed this event's occurrence.

These multiple misses are examples of Human Performance, Human Nature, as assumptions were made regarding the hazards involved with the heat trace insulation process. The subcontractor conducting the work appeared to be complacent in regards to working with an energized circuit.

**DOE Facility Representative**

**Input:**

**DOE Program Manager**

**Input:**

**Further Evaluation is Required:**

No

**Division or Project:**

Projects

**Plant Area:**

Zone 12 South

**System/Building/Equipment:**

Building 12-32

**Facility Function:**

Balance of Plant - Infrastructure (Other Functions not specifically listed in this Category)

**Corrective Action:**

**Lessons(s) Learned:**

The B&W Pantex Projects Division Work Authorization process is formal and must be followed during initiation of a project and when changes occur in project execution.

**HQ Keywords:**

07D--Electrical Systems - Electrical Wiring  
08J--OSHA Reportable/Industrial Hygiene - Near Miss (Electrical)  
11G--Other - Subcontractor  
12C--EH Categories - Electrical Safety  
14E--Quality Assurance - Work Process Deficiency  
14G--Quality Assurance - Procurement Deficiency

**HQ Summary:**

On March 21, 2012, a B&W Pantex subcontractor representative of Ellison Insulation noticed a spark while installing insulation around a float and thermostatic trap outside of a Zone 12 South facility equipment room. Upon this discovery, the B&W Pantex Project Manager halted work and made appropriate subsequent notifications. An event critique was conducted on March 21, where it was identified that the B&W Pantex subcontractor incorrectly took new work instructions from a B&W Pantex

Projects Engineer as a work authorization without gaining approval from the B&W Pantex Project Manager. As a result of this issue, Ellison Insulation installed a "blanket" type of insulation on top of an energized 277-volt pipe heat trace. This insulation blanket used metal connectors held on one side of the blanket by a metal washer. The other end of this metal connector's installation was used to lace each side of the insulation blanket together. During the "lacing" of these metal connectors, one of the ends of the metal washer rubbed against and penetrated the energized heat trace, causing it to arc to ground. Subsequently, the protecting circuit breaker was thrown. Electrical Crafts/Maintenance Electricians arrived at the scene and placed the main service distribution panel under Lockout/Tagout (LOTO). This area remains under LOTO and is in a Safe and Stable configuration.

**Similar OR Report Number:**

**Facility Manager:**

Name	Marlin Conner
Phone	(806) 477-7199
Title	12-32 Electrical Spark Event

**Originator:**

Name	MCNABB, RON O
Phone	(806) 477-6855
Title	SUPPORT REPRESENTATIVE

**HQ OC Notification:**

Date	Time	Person Notified	Organization
NA	NA	NA	NA

**Other Notifications:**

Date	Time	Person Notified	Organization
03/20/2012	13:06 (CTZ)	Rob Intrater Duty Manager	PXSO

**Authorized Classifier(AC):** Bob Barr      Date: 03/20/2012

**12)Report Number:**

[NE-ID--BEA-ATR-2012-0012](#) After 2003 Redesign

**Secretarial Office:**

Nuclear Energy, Science and Technology

**Lab/Site/Org:**

Idaho National Laboratory

**Facility Name:**

Advanced Test Reactor

**Subject/Title:**

Exposed Unguarded 115V Terminal Board on Compensated Ion Chamber Power Supply at ATR

**Date/Time Discovered:**

03/15/2012 13:11 (MTZ)

**Date/Time Categorized:**

03/20/2012 08:28 (MTZ)

**Report Type:**

Update

**Report Dates:**

Notification	03/20/2012	16:40 (ETZ)
Initial Update	03/26/2012	18:56 (ETZ)
Latest Update	03/26/2012	18:56 (ETZ)

Final		
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**Significance Category:** 3  
**Reporting Criteria:** 2E(2) - Any unexpected discovery of an uncontrolled electrical hazardous energy source (e.g., live electrical power circuit, etc.). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.

**Cause Codes:**  
**ISM:** 2) Analyze the Hazards  
4) Perform Work Within Controls

**Subcontractor Involved:** No  
**Occurrence Description:** At 1311 on 15 March 2012, it was discovered by a DOE-ID Facility Representative that a 115V Compensated Ion Chamber (CIC) Power Supply was left plugged into the wall outlet. The Shift Supervisor (SS), upon being informed of the condition of the CIC Power Supply, directed a Reactor Instrument Control Technician (RICT) to de-energize the equipment, which was done immediately.

On 20 March 2012, further investigation determined that the CIC Power Supply is designed with an exposed unguarded 115V AC terminal board. The limited approach boundary is 3' 6" in accordance with the National Fire Protection Association (NFPA) 70E, Section 130.2, Approach Boundaries to Live Parts. The equipment/work area was left in a condition that could potentially allow untrained workers to enter the 3'6" limited approach boundary; however, the equipment is labeled "DANGER HIGH VOLTAGE" and is located on an elevated work platform in a location that is not typically accessed by untrained workers. The RICTs that use this equipment possess the necessary training, as required by NFPA 70E, to work with this equipment as designed.

**Cause Description:**  
**Operating Conditions:** The ATR was operating at nominal full power for Cycle 151B-1.  
**Activity Category:** Normal Operations (other than Activities specifically listed in this Category)  
**Immediate Action(s):** Appropriate levels of BEA management and DOE-ID were notified of this event.

The equipment was immediately de-energized by a trained RICT.  
**FM Evaluation:** This report is being updated to include the fact that it was identified by a DOE Facility Representative, that the 3' 6" is a "limited" approach boundary - not a "restricted" approach boundary, and to correct 120V to 115V in the Description paragraph.

**DOE Facility Representative Input:**

**DOE Program Manager**

**Input:**

**Further Evaluation is Required:** No  
**Division or Project:** ATR Programs  
**Plant Area:** CIC Power Supply  
**System/Building/Equipment:** Advanced Test Reactor (ATR)  
**Facility Function:** Category "A" Reactors  
**Corrective Action:**  
**Lessons(s) Learned:**

**HQ Keywords:** 01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous)  
 01Q--Inadequate Conduct of Operations - Personnel error  
 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance  
 12C--EH Categories - Electrical Safety  
 14E--Quality Assurance - Work Process Deficiency

**HQ Summary:** On March 15, 2012, it was discovered that a 120-volt Compensated Ion Chamber power supply was left plugged into the wall outlet. The Shift Supervisor directed a Reactor Instrument Control Technician to de-energize the equipment. Further investigation determined that the power supply is designed with an exposed unguarded 115VAC terminal board. The restricted approach boundary was 3' 6" which is in accordance with the National Fire Protection Association (NFPA) 70E, Section 130.2, Approach Boundaries to Live Parts. The equipment was labeled "DANGER HIGH VOLTAGE" and was located on an elevated work platform in a location that is not typically accessed by untrained workers.

**Similar OR Report Number:**

**Facility Manager:**

Name	SCHUEBERT, EDMOND J
Phone	(208) 533-4246
Title	ATR Operations Facility Manager

**Originator:**

Name	OWENS, MARJORIE A
Phone	(208) 533-4563
Title	ATR OPERATIONS FACILITY ADMINISTRATI

**HQ OC Notification:**

Date	Time	Person Notified	Organization
NA	NA	NA	NA

**Other Notifications:**

Date	Time	Person Notified	Organization
03/20/2012	08:28 (MTZ)	R. Denning	DOE-ID

**Authorized Classifier(AC):** M. Zamber      Date: 03/20/2012

**13)Report Number:** [NE-ID--BEA-ZPPR-2012-0002](#) After 2003 Redesign  
**Secretarial Office:** Nuclear Energy, Science and Technology  
**Lab/Site/Org:** Idaho National Laboratory  
**Facility Name:** Zero Power Physic Reactor  
**Subject/Title:** Energized 120V conductors cut during removal of abandoned in place conductors and conduit, no contact with hazardous energy occurred.  
**Date/Time Discovered:** 03/12/2012 10:45 (MTZ)  
**Date/Time Categorized:** 03/12/2012 12:00 (MTZ)  
**Report Type:** Notification

**Report Dates:**

Notification	03/16/2012	12:57 (ETZ)
Initial Update		
Latest Update		
Final		

**Significance Category:**

3

**Reporting Criteria:**

2E(2) - Any unexpected discovery of an uncontrolled electrical hazardous energy source (e.g., live electrical power circuit, etc.). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.

**Cause Codes:**

A5B2C07 - Communications Less Than Adequate (LTA); Written Communication Content LTA; Facts wrong / requirements not correct

**ISM:**

2) Analyze the Hazards

**Subcontractor Involved:**

Yes  
 Wolverine

**Occurrence Description:**

While performing D&D in support of the floor installation, subcontractor personnel cut off stubbed out conductors from a previous 2009 D&D activity. The 120V conductors were located in the ZPPR Cell Pit in a contamination area (CA), and all indications were that these conductors were isolated from electrical energy sources (air gapped). Two of the conductors were energized and arced when cut; however, no personnel contacted the hazardous electrical energy source. The worker was using an insulated tool protected by a GFCI. The worker was wearing safety glasses, Tyvek coveralls, 2 pairs of nitrile gloves with leather outer gloves and rubber booties.

**Cause Description:**

There was an assumption made, based on documentation, that the conductors were electrically isolated during a D&D activity 2 years earlier. This assumption was never physically validated. Additionally, workers did not employ the good work practice of performing an electrical energy check prior to cutting. The combination of an unvalidated assumption and poor work practice resulted in the potential exposure of a worker to hazardous energy.

**Operating Conditions:** Maintenance  
**Activity Category:** Maintenance  
**Immediate Action(s):** Work was stopped. Notifications were made. A critique was performed.  
**FM Evaluation:** The use of electrical isolation (air gapping) needs to be formalized to establish when it appropriate and how it is conducted.

**DOE Facility Representative**

**Input:**

**DOE Program Manager**

**Input:**

**Further Evaluation is Required:** Yes.  
Before Further Operation? No  
By Whom: Electrical engineer  
By When: 03/30/2012

**Division or Project:** Battelle Energy Alliance

**Plant Area:** Cell Pit area

**System/Building/Equipment:** Abandoned-in-place conductors

**Facility Function:** Special Nuclear Materials Storage

**Corrective Action 01:**

<b>Target Completion Date:</b>	<b>Actual Completion Date:</b>
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Complete a cause analysis

**Corrective Action 02:**

<b>Target Completion Date:</b>	<b>Actual Completion Date:</b>
--------------------------------	--------------------------------

Complete a corrective action plan

**Corrective Action 03:**

<b>Target Completion Date:</b>	<b>Actual Completion Date:</b>
--------------------------------	--------------------------------

Complete an extent of conditions review

**Corrective Action 04:**

<b>Target Completion Date:</b>	<b>Actual Completion Date:</b>
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Complete a review of prior self-assessments to identify missed opportunities to identify this noncompliance.

**Corrective Action 05:**

<b>Target Completion Date:</b>	<b>Actual Completion Date:</b>
--------------------------------	--------------------------------

Complete a review of prior self-assessments to identify missed Identify breaker(s) that are tripped and facility impact from loads that are lost if breakers are tripped.  
This was completed 3/13/12. No panels were found tripped. The PNL-G (PNL-196) ckt 9 PNL-H (PNL-195) ckt 12 supplied power to two conductors that were found energized. All required loads are operating as discussed above.

**Corrective Action 06:**

<b>Target Completion Date:</b> 05/25/2012	<b>Actual Completion Date:</b>
-------------------------------------------	--------------------------------

Verify remaining exposed wiring is not energized for the ZPPR Complex.

**Corrective Action 07:**

<b>Target Completion Date:</b> 04/27/2012	<b>Actual Completion Date:</b>
-------------------------------------------	--------------------------------

Verify remaining exposed wiring for the specific activity to be performed by the subcontractor is not energized prior to resuming subcontract work (physically disconnected at the circuit). Complete this activity prior to resuming subcontract work in the affected area(s).

**Corrective Action 08:**

<b>Target Completion Date:</b>	<b>Actual Completion Date:</b>
--------------------------------	--------------------------------

Evaluate 2009 D&D package (EJ 87, ITP-0071) and any associated documentation (e.g. work orders, statements of work) that removed/cut the wiring to determine why a circuit is now energized.

**Corrective Action 09:**

<b>Target Completion Date:</b>	<b>Actual Completion Date:</b>
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Evaluate/Revise the Requirements Document (2024) to include proximity testing for D&D activities.

**Corrective Action 10:**

<b>Target Completion Date:</b>	<b>Actual Completion Date:</b>
--------------------------------	--------------------------------

Train Shift Supervisors and Construction Field Representatives on the R2A2s regarding work control for construction activities.

**Corrective Action 11:**

<b>Target Completion Date:</b>	<b>Actual Completion Date:</b>
--------------------------------	--------------------------------

Validate the electrical panel schedules are correct.

**Corrective Action 12:**

<b>Target Completion Date:</b>	<b>Actual Completion Date:</b>
--------------------------------	--------------------------------

Revise the work package to perform proximity testing.

**Corrective Action 13:**

<b>Target Completion Date:</b>	<b>Actual Completion Date:</b>
--------------------------------	--------------------------------

Develop expectations to perform safe-to-work checks for construction and D&D activities when LO/TOs are not required or used.

**Corrective Action 14:**

<b>Target Completion Date:</b>	<b>Actual Completion Date:</b>
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Perform an effectiveness review.

**Lessons(s) Learned:**

The use of electrical isolation (air gapping) should be physically verified prior to starting work.

**HQ Keywords:**

01B--Inadequate Conduct of Operations - Loss of Configuration Management/Control  
01M--Inadequate Conduct of Operations - Inadequate Job Planning (Electrical)  
07D--Electrical Systems - Electrical Wiring  
08J--OSHA Reportable/Industrial Hygiene - Near Miss (Electrical)  
11G--Other - Subcontractor  
12C--EH Categories - Electrical Safety  
14D--Quality Assurance - Documents and Records Deficiency  
14E--Quality Assurance - Work Process Deficiency

**HQ Summary:**

On March 12, 2012, two energized conductors arced when cut by subcontractor personnel performing D&D in support of a floor installation in the Zero Power Physic Reactor Cell Pit in a contamination area. The 120V conductors had been stubbed out during a 2009 D&D activity and all

indications were that these conductors were isolated from electrical energy sources (air gapped). No personnel contacted the hazardous electrical energy source. The worker used an insulated tool protected by a GFCI and appropriate personal protective equipment. Work was stopped and notifications were made.

**Similar OR Report Number:** 1. None

**Facility Manager:**

Name	GUNDERSON, RICHARD A.
Phone	(208) 533-8045
Title	NUCLEAR FACILITY MANAGER

**Originator:**

Name	GUNDERSON, RICHARD A.
Phone	(208) 533-8045
Title	NUCLEAR FACILITY MANAGER

**HQ OC Notification:**

Date	Time	Person Notified	Organization
NA	NA	NA	NA

**Other Notifications:**

Date	Time	Person Notified	Organization
03/12/2012	10:54 (MTZ)	John Martin	DOE-ID

**Authorized Classifier(AC):** Jeff Garner      Date: 03/15/2012

**14)Report Number:** [SC--BSO-LBL-OPERATIONS-2012-0004](#) After 2003 Redesign

**Secretarial Office:** Science

**Lab/Site/Org:** Lawrence Berkeley National Laboratory

**Facility Name:** Operations Division

**Subject/Title:** LOTO Process Violation at B74 Project

**Date/Time Discovered:** 03/13/2012 12:45 (PTZ)

**Date/Time Categorized:** 03/13/2012 14:20 (PTZ)

**Report Type:** Notification/Final

**Report Dates:**

Notification	03/15/2012	15:21 (ETZ)
Initial Update	03/15/2012	15:21 (ETZ)
Latest Update	03/15/2012	15:21 (ETZ)
Final	03/15/2012	15:21 (ETZ)

**Significance Category:** 4

**Reporting Criteria:** 2E(3) - Any failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout, hazardous energy control program).

**Cause Codes:**

**ISM:** 4) Perform Work Within Controls

**Subcontractor Involved:** Yes

WebCor/WBE/KMS

**Occurrence Description:**

On 03/13/2012, at approximately 1245 hours, the LBNL Chief Construction Manager was notified of a LOTO violation at the B74 project. There were no injuries or exposure to hazardous energy.

A second-tier plumbing subcontractor KMS technician began working on the local electrical panel (equipment control panel) for a vacuum pump skid. This local panel is fed from the main electrical distribution panel through a sub-panel. A Group LOTO at the main electrical distribution panel provided the required electrical energy control for the local panel and the vacuum pump skid.

The KMS technician did not receive a required LOTO briefing, was not on the approved LOTO Permit, did not sign on the LOTO Permit, nor did he attach his personal lock/tag to the Group LOTO Lockbox for the main electrical distribution panel where group LOTO and lock box were located. The technician was working on a 24-volt control section of the local panel. However, the 208-volt lug connections that supply primary power to the skid were located in the same panel and were exposed. This posed a potential exposure to hazardous energy should the main panel become energized.

Initial interviews with the primary contractor Webcor and WBE personnel indicated that they did not think the KMS technician needed to participate in the main distribution panel LOTO. They allowed the KMS technician to proceed with the work without notifying the LBNL Construction Manager who is also the LOTO Person In Charge.

**Cause Description:**

**Operating Conditions:**

Indoors, lighted, dry

**Activity Category:**

Construction

**Immediate Action(s):**

- Work was stopped upon discovery of the LOTO violation.

- LBNL employees immediately conducted fact finding interviews with WBE, KMS and Webcor personnel.

**FM Evaluation:**

- KMS is the plumbing subcontractor to the project's primary contractor Webcor.

- WBE is the electrical subcontractor to the project's primary contractor Webcor.

- All electrical panels in Building 74 are new construction equipment and are in various stages of initial energization. The sub-panel and the local equipment panel are in the same room on opposite walls.

- No further work requiring LOTO was performed at project site until a

stand down and re-training was performed. The retraining was conducted in the morning of 03/14/2012.

**DOE Facility Representative**

**Input:**

**DOE Program Manager**

**Input:**

**Further Evaluation is Required:** No

**Division or Project:** Facilities Division

**Plant Area:** B74

**System/Building/Equipment:** Building 74 Project Main Electrical Distribution Panel

**Facility Function:** Balance of Plant - Infrastructure (Other Functions not specifically listed in this Category)

**Corrective Action:**

**Lessons(s) Learned:**

**HQ Keywords:** 01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous)  
 01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical)  
 01P--Inadequate Conduct of Operations - Inadequate Oral Communication  
 01R--Inadequate Conduct of Operations - Management issues  
 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance  
 11G--Other - Subcontractor  
 12I--EH Categories - Lockout/Tagout (Electrical or Mechanical)  
 14E--Quality Assurance - Work Process Deficiency  
 14G--Quality Assurance - Procurement Deficiency

**HQ Summary:** On March 13, 2012, the LBNL Chief Construction Manager was notified of a lockout/tagout (LOTO) violation at the B74 project. A second-tier plumbing subcontractor technician began working on the local electrical panel (equipment control panel) for a vacuum pump skid. The technician was working on a 24-volt control section of the local panel. However, the 208-volt lug connections that supply primary power to the skid were located in the same panel and were exposed. A Group LOTO at the main electrical distribution panel provided the required electrical energy control for the local panel and the vacuum pump skid. The technician did not receive a required LOTO briefing, was not on the approved LOTO Permit, did not sign on the LOTO Permit, and did not attach his personal lock/tag to the Group LOTO Lockbox for the main electrical distribution panel where the group LOTO and lock box were located. There were no injuries or exposure to hazardous energy.

**Similar OR Report Number:**

**Facility Manager:**

Name	Jennifer Ridgeway
Phone	(510) 486-6339

Title	Division Director
-------	-------------------

**Originator:**

Name	MOU, FLORENCE P.
Phone	(510) 486-7872
Title	SENIOR ADMINISTRATOR

**HQ OC Notification:**

Date	Time	Person Notified	Organization
NA	NA	NA	NA

**Other Notifications:**

Date	Time	Person Notified	Organization
03/13/2012	15:55 (PTZ)	Mary Gross	BSO
03/13/2012	15:55 (PTZ)	Kevin Hartnett	BSO

**Authorized Classifier(AC):**

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