



Office of Health, Safety and Security

Monthly Analysis of Electrical Safety Occurrences



May 2013

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 eleven in April to seventeen in May. There were three reported electrical shocks, one electrical intrusion occurrence, and nine reported lockout/tagout occurrences. In May, workers identified electrical hazards 71 percent of the time, which is a slight decrease in hazards identification from 82 percent in April.

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 occurrence reports is provided in Attachment 2.

Electrical Shock

There were three reported electrical shocks in the month of May, which is an increase from the two shocks reported in April. These occurrences are summarized below.

1. A mechanical contractor felt an electrical shock to the right hand while insulating a pipe in a ceiling area during a building renovation project. Examination of the area identified a J-box without a cover and containing a single exposed 110-volt conductor. The circuit was rated for 20 amperes. The conductor was cut flush and was not stripped. The insulation had marks from a previous wire nut installation. It appears to be a pre-existing condition in the ceiling space. There is no indication of when, or by whom, the J-box was left open. The mechanical contractor was taken to medical and the circuit was placed in a safe condition.

2. An engineer received an electrical shock to his hand that was believed to be from a portable boroscope while holding the hand-held video probe. The engineer made appropriate notifications and reported to the medical facility. Investigators discovered that an extension cord used with the boroscope had a broken ground wire resulting in 57 volts from the boroscope to ground.

3. A research employee unplugged a 120-volt bench top sieve shaker and while wrapping the unplugged power cord around the sieve shaker, the employee inadvertently touched the prongs of the cord and received a mild electrical shock to the hand. The employee stopped work and notified other personnel in the work area. The commercially available sieve shaker was tagged out of service and verified to be in a safe condition. An investigation was initiated to inspect and test the equipment, which is commercially available.

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 (2.8) shocks per month.

Figure 1 – Three-Year Trend of Electrical Shocks

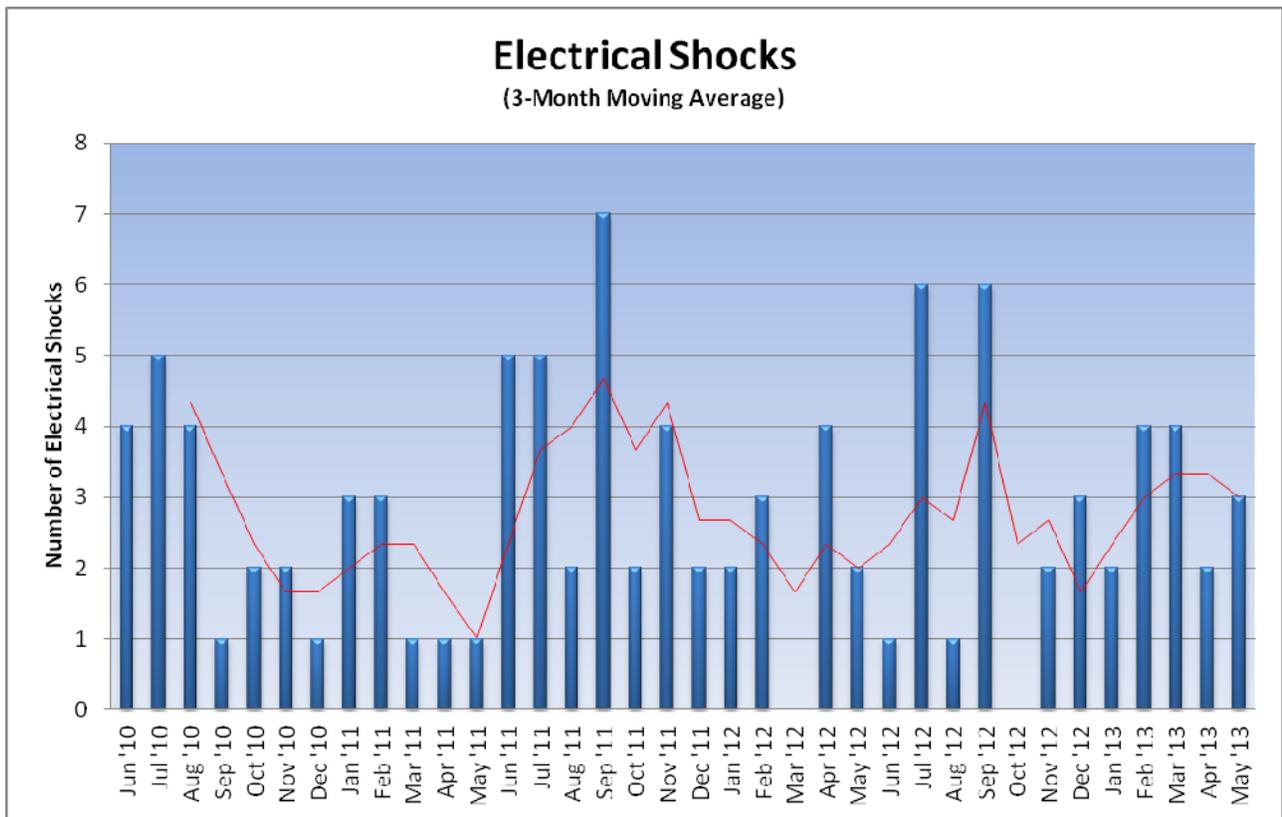


Figure 2 shows electrical shocks by worker type through May 2013. The number of shocks involving electrical workers slowly increased through 2012 and then dropped in 2013, while those involving non-electrical workers decreased after 2011. Since 2008, the majority of shocks (about 73 percent) involve non-electrical workers.

Figure 2 - Electrical Shock by Worker Type

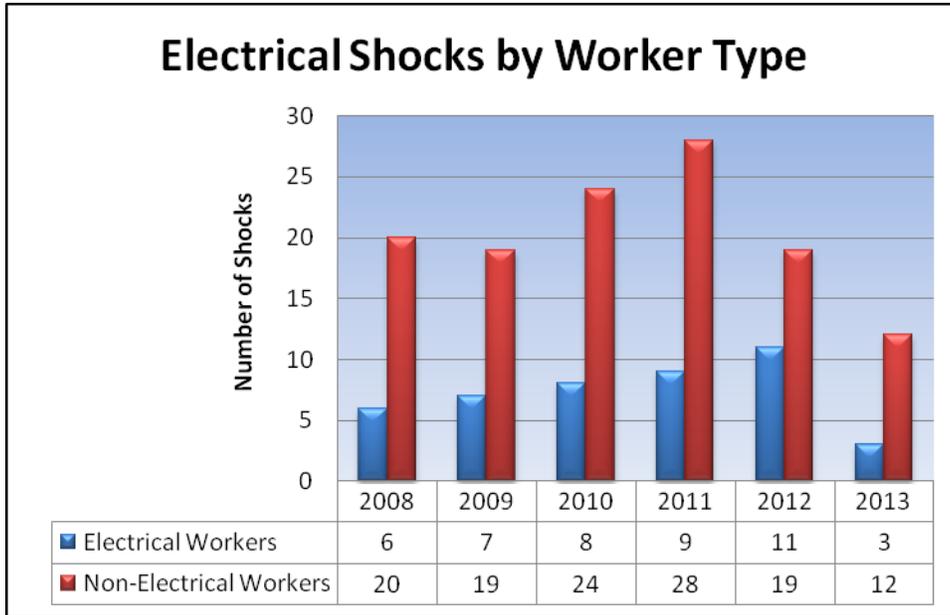
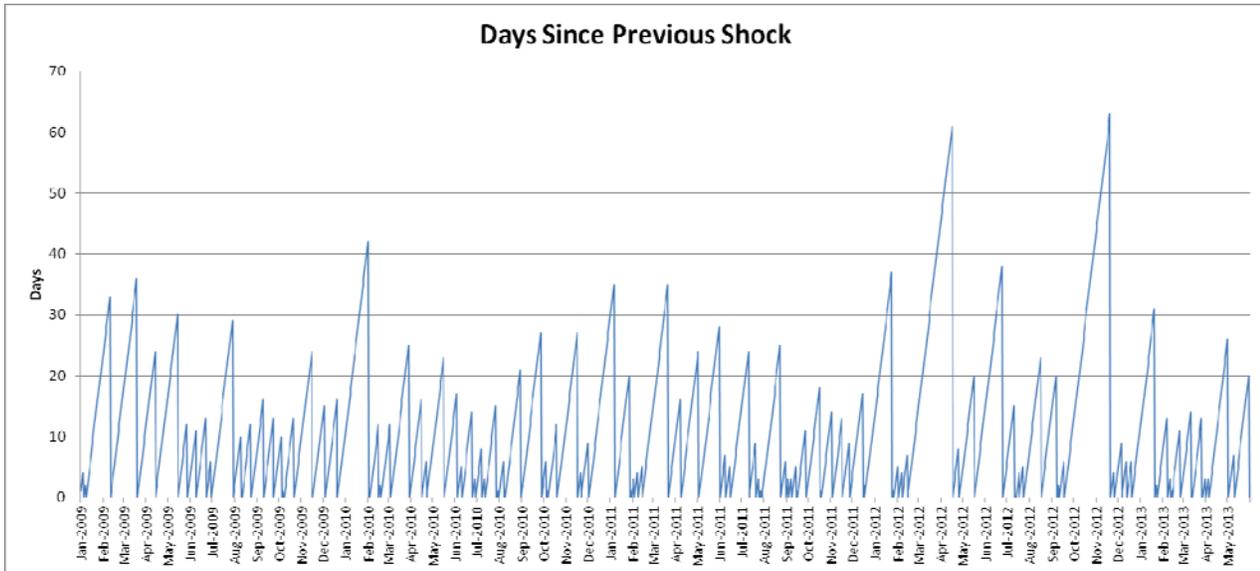


Figure 3 shows the number of days since the previous electrical shock for the DOE complex. The longest interval was 63 days (November 20, 2012) and the present interval is 0 days as of May 31.

Figure 3 - Days since Previous Shock



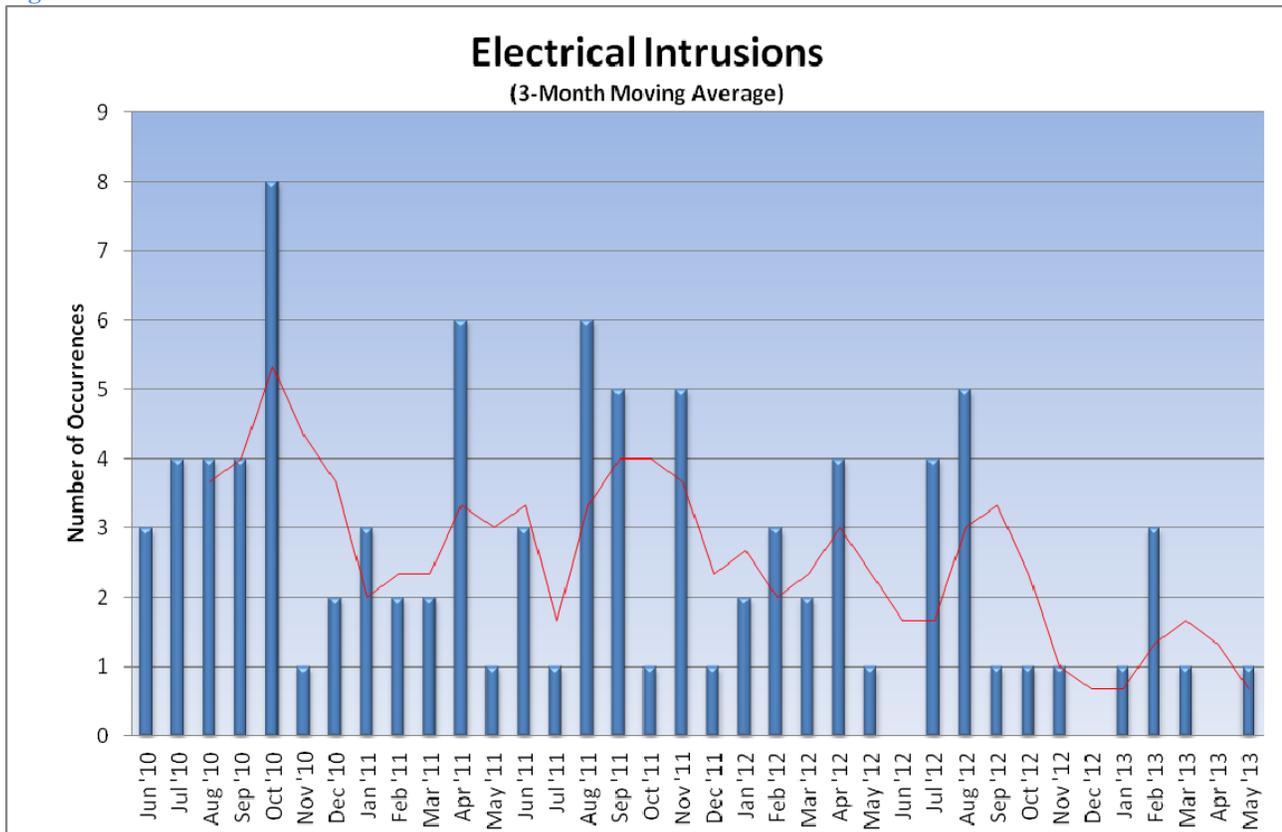
Electrical Intrusion

There was one electrical intrusion occurrence (i.e., cutting/penetrating, excavating, or vehicle/equipment contact of overhead electrical conductors) for May, which is an increase from April in which there were none. In this occurrence, maintenance technicians were installing a condensate discharge pan assembly underneath a through-the-wall mounted air

conditioner and a self-tapping screw accidentally penetrated a strain relief connector attached to a 110 volt electrical outlet (i.e. duplex) located inside a bulkhead. They heard a pop and a circuit breaker trip. Prior to the installation, the technicians had not inspected the inside of the bulkhead to see what could be affected when the screws penetrated the sheet metal bulkhead. No of the technicians came in contact with hazardous energy or sustained injury.

Figure 4 shows a 3-year trend of electrical intrusion occurrences for the DOE complex. During this period we have seen an average of just under 3 occurrences per month (2.6).

Figure 4 – Three-Year Trend of Electrical Intrusion Occurrences



Hazardous Energy Control

In May there were nine reported occurrences involving lockout/tagout (LOTO), which is an increase from the six occurrences reported in April. These occurrences are summarized below.

Occurrences Involving Lockout/Tagout

1. Maintenance personnel performed annual Fire Panel Preventive Maintenance (PM) activities without the required LOTO. During the work package review and closure process, a Work Control employee identified missing LOTO information in the PM work order. The LOTO Control Sheet and the prepared DANGER tag, to support implementation of the PM

work order, were located and indicated that the LOTO had not been authorized. No employees were injured or exposed to hazardous electrical energy.

2. Workers connected the electrical leads from an ultrasonic testing (UT) trailer to a generator during the process of grounding the generator to support testing, without a LOTO being installed. Field Work Supervisors realized through discussions that the tie-in of the generator to the UT trailer was not in the scope of the work package. Work was paused and an event investigation was scheduled.
3. A worker removed a LOTO without obtaining the proper authorization following the performance of corrective maintenance on a chiller. The chiller was controlled by an installed Single Point Documented lockout. All work had been completed and all holders had signed off the lockout. Because all work had been completed, there was no hazard to personnel or impact to facility operations.
4. During a building walkthrough, a manager questioned LOTO practices within the facility in conjunction with construction activities and learned that a technician did not have a lock applied along with an electrical contractor's lock for work within an electrical cabinet. Furthermore, the technician's work was performed without the required LOTO written procedure. Once discovered, the technician applied the appropriate locks and tags, and signs were posted to ensure that no further work was performed in the electrical cabinet.
5. Subcontractor electricians for a construction project failed to perform a LOTO on a 110-volt circuit supplying power to lighting and exit signs which they were installing. Once the electricians identified the wires associated with the lights, they applied black electrical tape over the nearby light switch to prevent anyone from turning it on. A subsequent violation occurred when they failed to use a multimeter to test for zero-energy as required, and instead, used a tic-tracer to test for voltage from the circuit.
6. A construction safety inspector observed a subcontractor electrician working on a lighting circuit without applying personal LOTO to an existing LOTO and without signing onto the LOTO permit. An existing LOTO was in place at the time therefore the electrician was not working with energized wiring and did not receive an electrical shock.
7. On two separate occasions a researcher replaced a ballast in an overhead fluorescent light without applying a lock and tag to the electrical breaker that fed the light. This constitutes a failure to follow a prescribed hazardous energy control process and a near miss to unintended personal contact with an electrical hazardous energy source. There were no injuries associated with this event.
8. A worker discovered that a visiting researcher had not followed an established energy control process for disconnecting sample environment equipment from a pulsed magnet power supply. A Job Hazard Analysis had been developed to implement stored energy hazard controls for the experiment that required a qualified electrical worker to verify zero energy status before disconnecting power supply connections. The researcher did not observe the established requirement and was not authorized to perform this work. There was no injury or contact with hazardous energy as a result of the event.

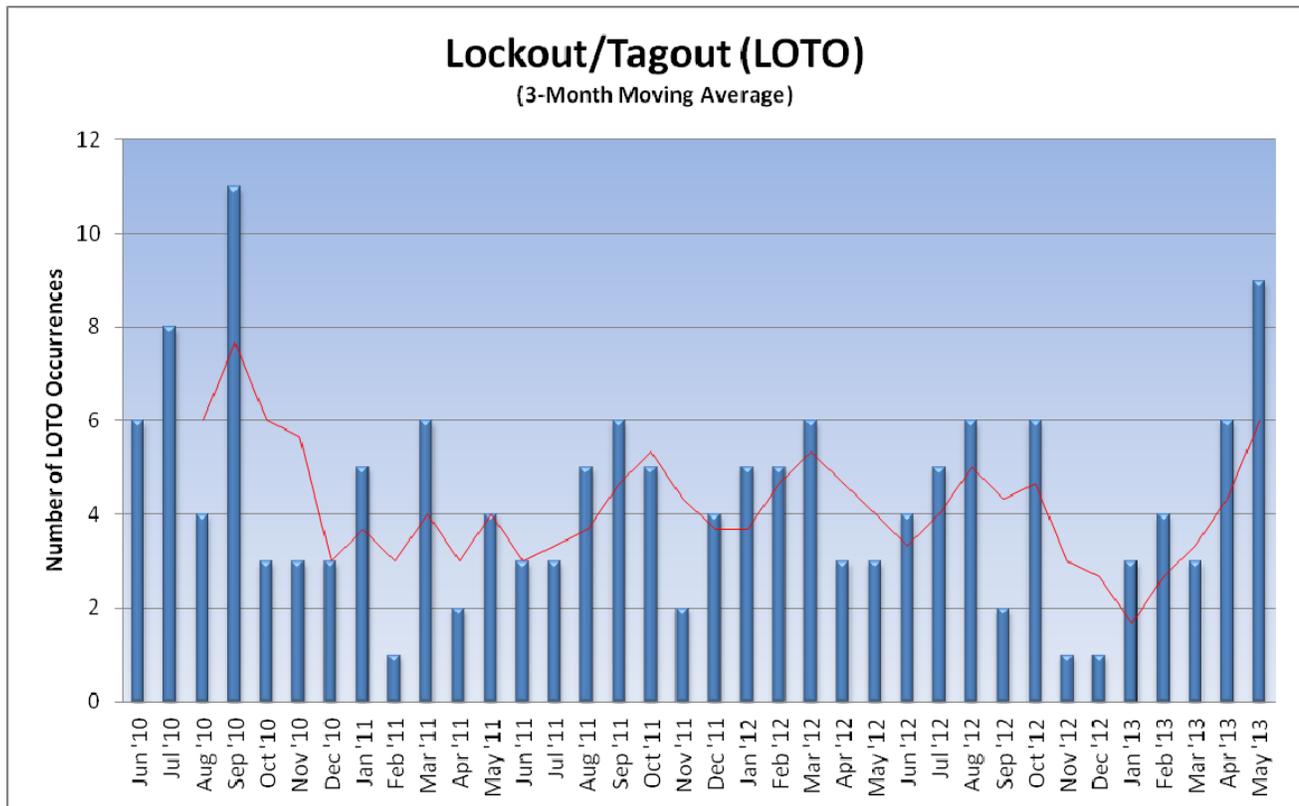
- An employee identified an electrical disconnect switch locked out without the appropriate tag. During a critique of the event, it was identified that a qualified electrical worker removed de-energized fuses from the disconnect switch as part of testing and troubleshooting. This work was performed in the proximity of an energized electrical source, without an energized electrical work permit.

Occurrences Involving Discovery of Uncontrolled Hazardous Energy Control

- An employee observed electrical arcing coming from two electrical cables connected to a Proton Storage Ring (PSR) Ion Pump power supply. The employee was performing PSR Personnel Access Control System interlock checks in the PSR when the arcing was observed from a distance of approximately 10 feet. The Ion Pump power supply racks were locked and tagged out with Management Control locks until the cause of the arcing from the cables could be determined.
- An electrician discovered unanticipated energized 277-volt wiring in the base of an uncompleted perimeter lighting pole. The electrician had used a Fluke voltage detector to move some wires in the base while looking for the grounding rod and when the wires were moved he observed an arc from wire to wire. Only the voltage tester was within the arc flash boundary. The circuits feeding the perimeter lighting pole were identified, de-energized, and locked and tagged out.

Figure 5 shows a 3-year trend of LOTO occurrences for the DOE complex. The monthly average is 4.3 occurrences.

Figure 5 – Three-Year Trend of Lockout/Tagout Occurrences



Electrical Near Miss

There were three electrical near miss occurrences reported in May, which is an increase from no occurrences in April.

3. Maintenance technicians penetrated a strain relief connector attached to a 110 volt electrical outlet with a self-tapping screw and tripped a circuit breaker. (See Electrical Intrusion Section)
4. An arc flash occurred while electricians were decommissioning portions of an electrical cabinet when a copper bar, which connected two buss bar sections in the cabinet upper compartment, fell into the lower compartment, causing a phase to phase short on two of three energized buss bars. All components in the upper compartment had been de-energized. The 2-inch wide by 4-inch long copper bar fell through an opening in the bottom of the upper compartment. The short circuit instantaneously tripped the 2,000 amp main breaker feeding the lower cabinet buss bars and the main breaker for the building, resulting in loss of facility power. No personnel were injured. An investigation of the incident is underway.
5. A researcher replaced a ballast in an overhead fluorescent light without applying a lock and tag to the electrical breaker that fed the light. (See Hazardous Energy Control Section – Occurrence #7)

Monthly Occurrences Tables

Table 1 shows a breakdown of the outcomes, performance issues, and worker types associated with the electrical safety occurrences for May 2013.

Table 1 - Breakdown of Electrical Occurrences

Number of Occurrences (May)	Involving:	Last Month (April)
3	Electrical Shocks	2
0	Electrical Burns	0
9	Hazardous Energy Control (LOTO)	6
0	Inadequate Job Planning	2
1	Inadvertent Drilling/Cutting of Electrical Conductors	0
0	Excavation of Electrical Conductors	0
0	Vehicle Intrusion of Electrical Conductors or Equipment	0
3	Electrical Near Misses	0
8	Electrical Workers	8
9	Non-Electrical Workers	3
5	Subcontractors	1

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 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

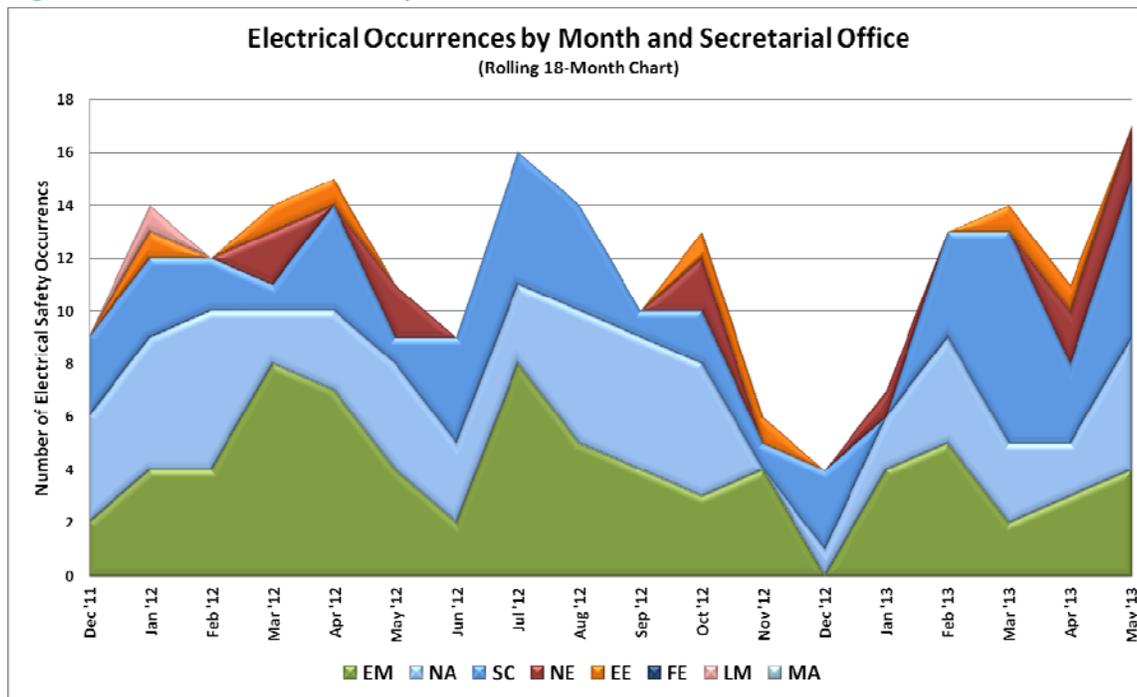
Table 2 provides a summary of the electrical safety occurrences for the previous 5 years and CY 2013. The average number of occurrences a year ago (May 2012) was 13.2 per month.

Table 2 - Summary of Electrical Occurrences

Period	Electrical Safety Occurrences	Shocks	Burns	Fatalities
May	17	3	0	0
April	11	2	0	0
March	14	4	0	0
February	13	4	0	0
January	7	2	0	0
2013 total	62 (avg. 12.4/month)	15	0	0
2012 total	138 (avg. 11.5/month)	30	1	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

Figure 6 shows the distribution of electrical safety occurrences by Secretarial Office.

Figure 6 - 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 the Electrical Severity Measurement Tool (http://www.efcog.org/wg/esh_es/docs/Electrical_Severity_Measurement_Tool.pdf). The seventeen occurrences are classified as shown in Table 3. Actual scores are provided in Attachment 1.

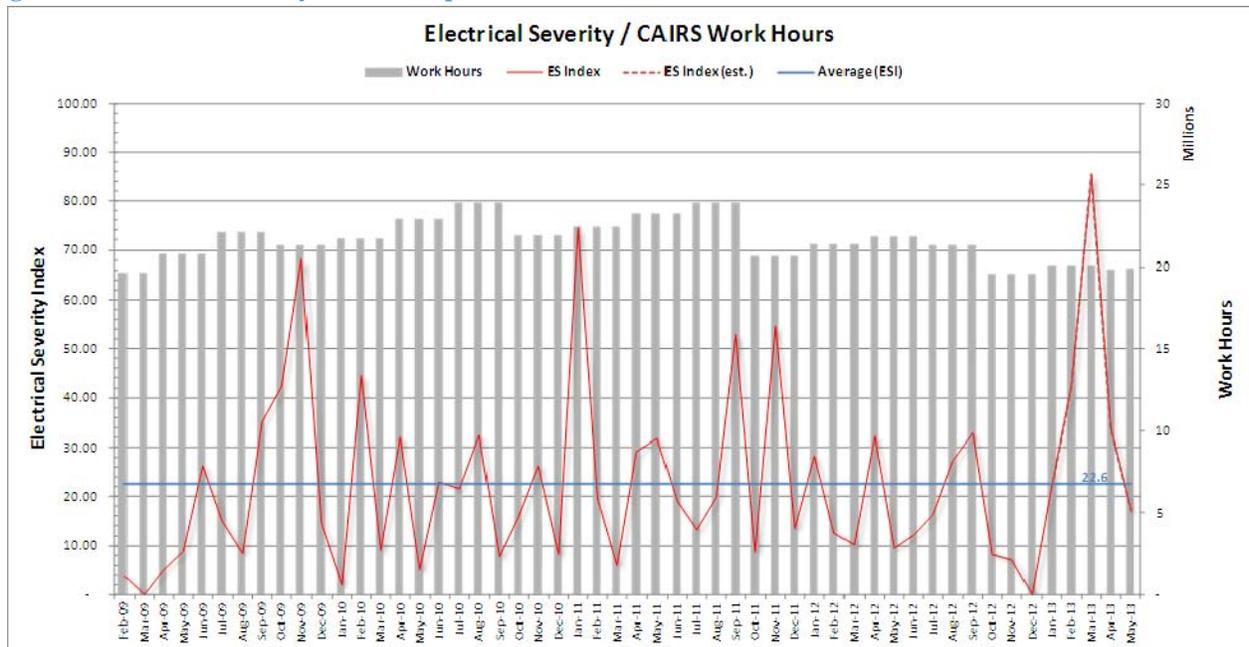
Table 3 – Classification of Electrical Safety Occurrences by ES Score

Occurrence Classification	Electrical Severity Score	Number of Occurrences
HIGH	≥ 1750	0
MEDIUM	31-1749	9
LOW	1-30	1
No Score	0	7

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 7 shows a calculated ESI for the DOE complex and Table 4 shows the ESI.

Figure 7 - 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.

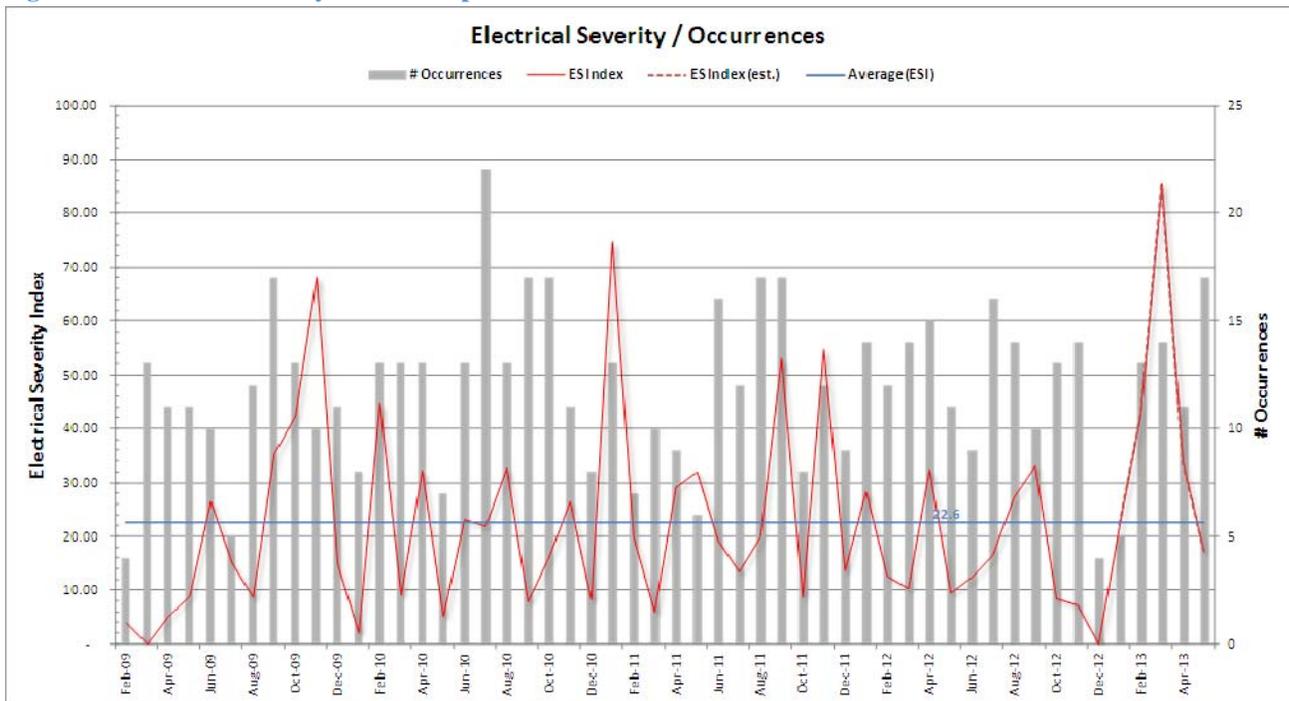
Table 4 - Electrical Severity Index

Category	April	May	Δ
Total Occurrences	11	17	+6
Total Electrical Severity	3,341	1,700	-1,641
Estimated Work Hours	19,808,163* (19,808,163)	19,855,705	+47,542
ES Index	33.73* (33.73)	17.12	-16.61
Average ESI	22.7	22.6	-0.1

* These are estimated CAIRS work hours for April and ES Index based on the estimated hours. The estimated hours and ES Index based on the estimated hours (as reported in April) are shown below in parentheses.
 Electrical Severity Index = $(\Sigma \text{Electrical Severity} / \Sigma \text{Work Hours}) 200,000$

Figure 8 shows the ESI with the number of Occurrences instead of Work Hours.

Figure 8 - Electrical Severity Index Compared to Number of Occurrences



The average ESI (22.6) has shown a decrease since increasing for the previous three months. The lowest average ESI was 19.2 in June 2010.

Figure 9 shows the number of days since the previous high severity occurrence. The present interval is 56 days as of May 31. The previous longest interval was 679 days ending March 12, 2013.

Figure 9 - Days since Previous High Severity Occurrence

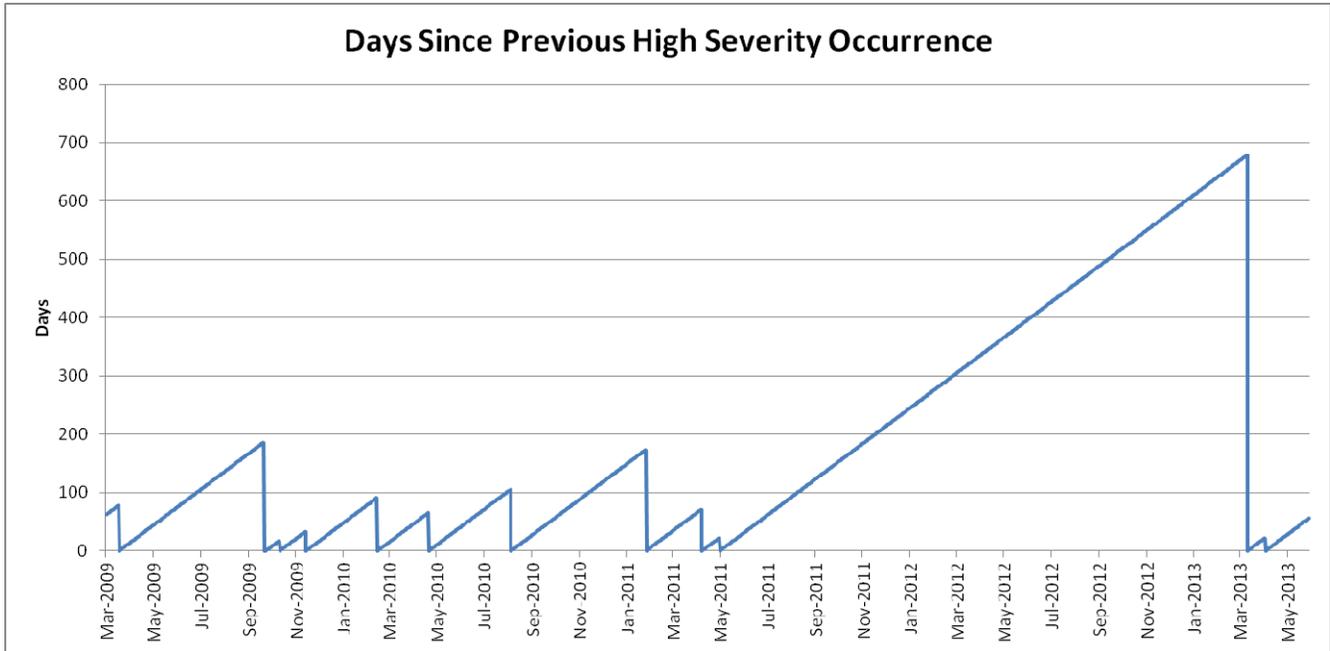
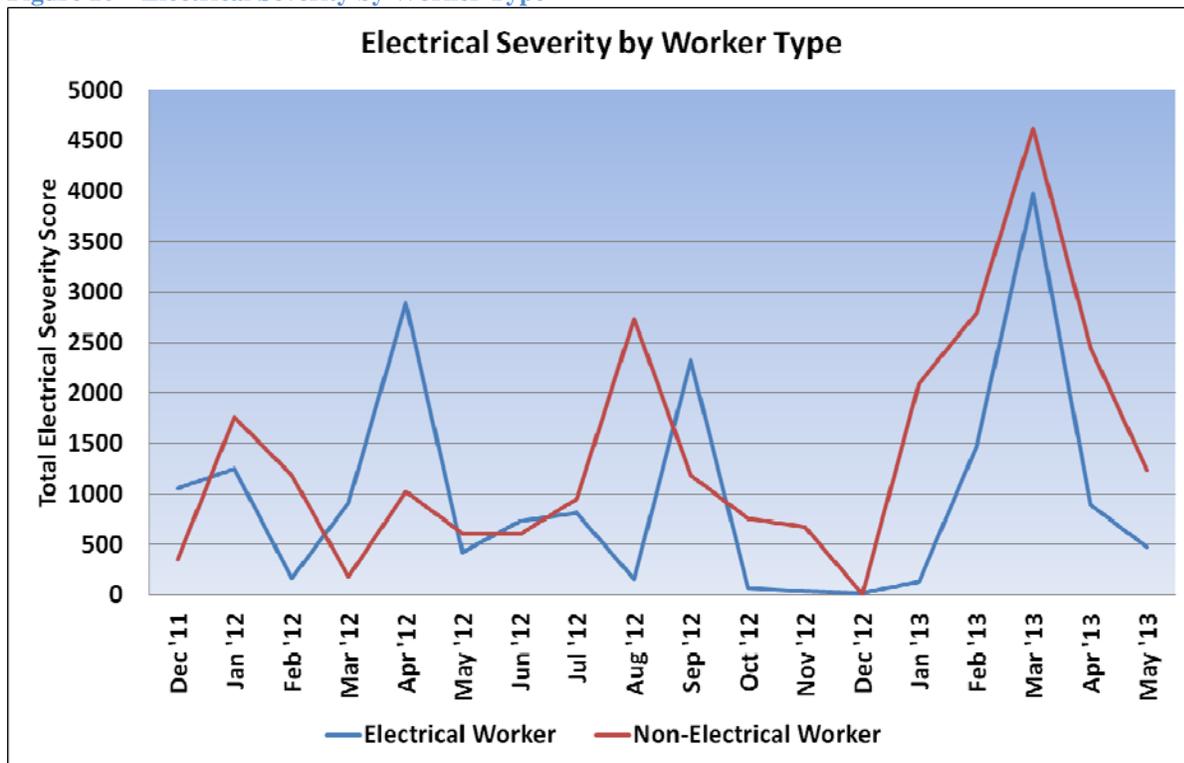


Figure 10 shows the total electrical severity score by worker type for each month.

Figure 10 – Electrical Severity by Worker Type



Following a peak in March 2013 for electrical workers and non-electrical workers, the ES score for both groups has continued to decrease. Electrical workers ES scores are at 470 and non-

electrical workers ES scores are at 1,230. The average ES scores for the 18 month period are 985 for electrical workers and 1,398 for non-electrical workers.

Summary of Occurrences by Severity Band

For the interval May 2012 through May 2013 (current month and the past 12), Figures 11 and 12 summarize occurrences by severity band and month of discovery date by percentage of total occurrences in month and number of occurrences in month.

Figure 11 - Occurrences by Electrical Severity Band (Percentage)

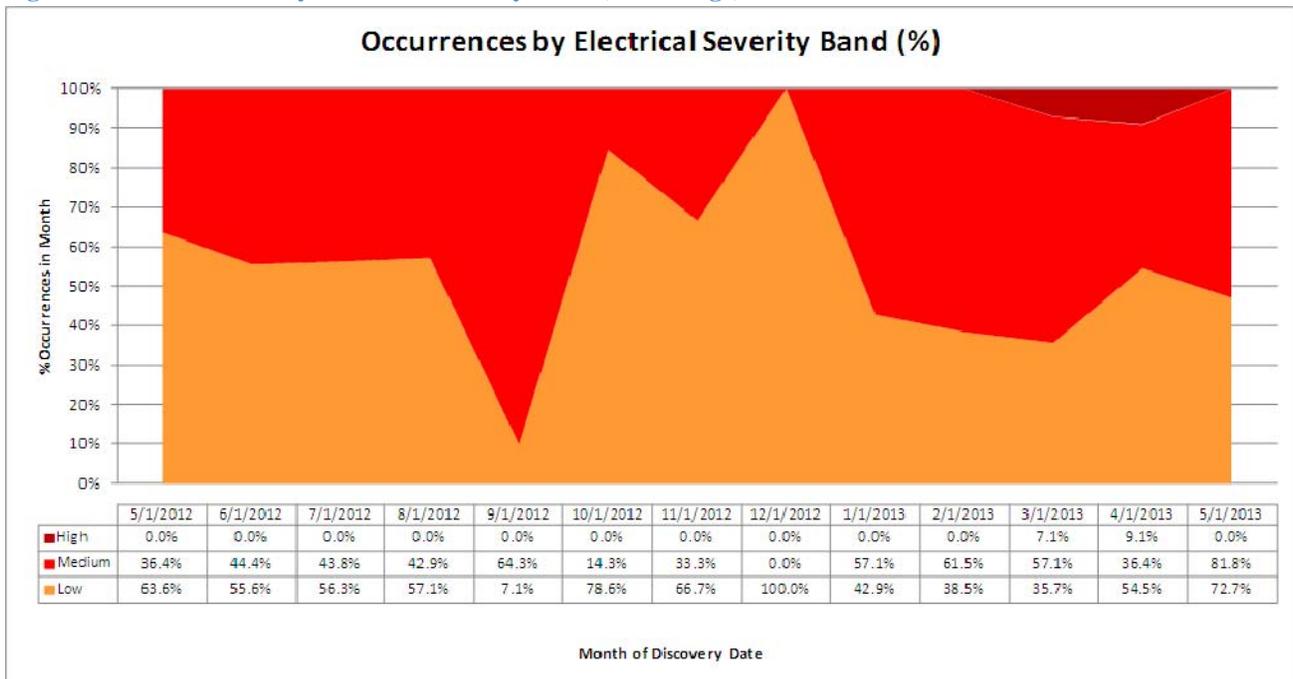
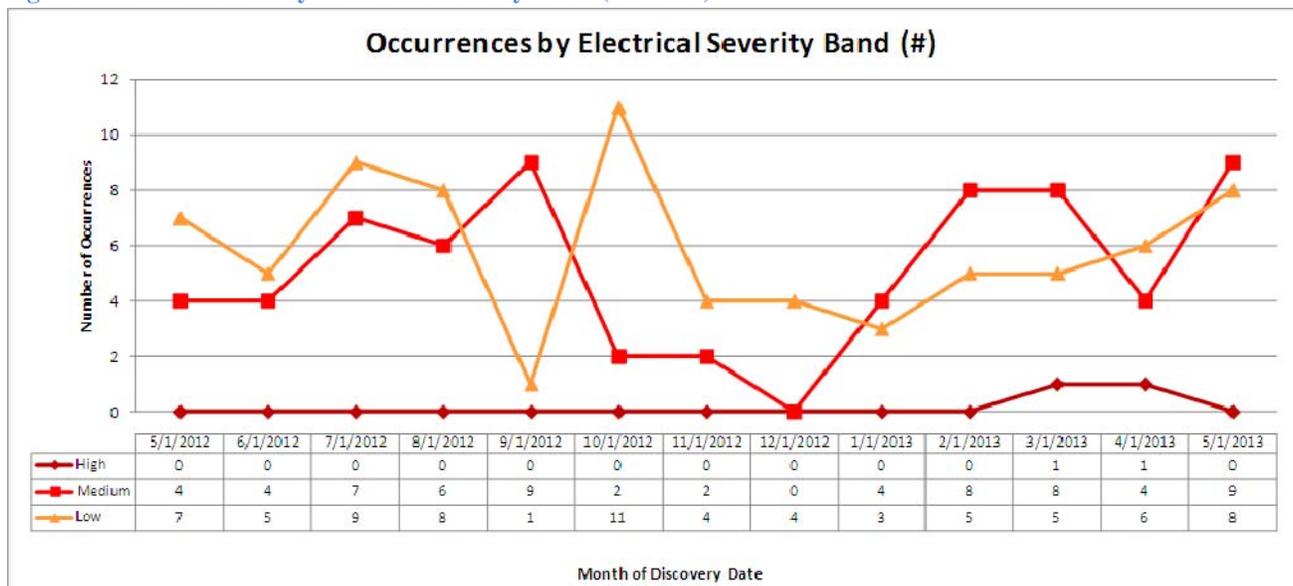


Figure 12 - Occurrences by Electrical Severity Band (Number)

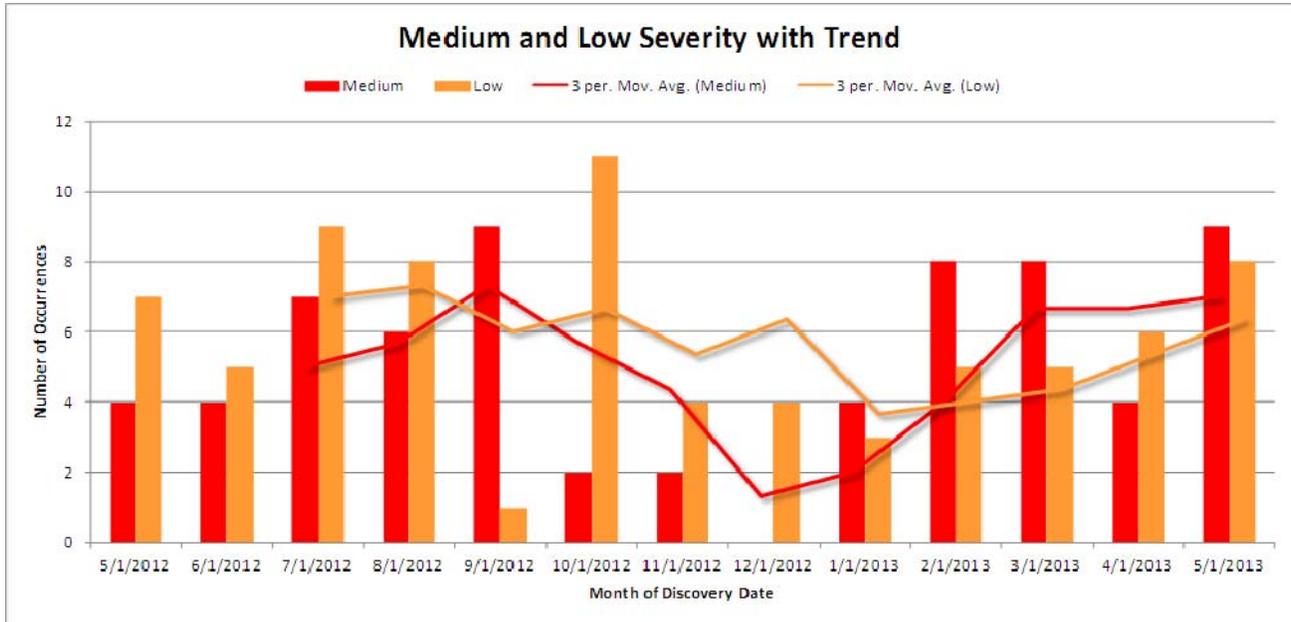


The previous two charts shows that a high electrical severity event occurred in March and in April, ending a 679-day period since the last occurrence in May 2011. The number of occurrences with Medium scores increased sharply while those with Low or zero severity scores continued with a increasing trend.

Medium and Low Severity with Trend

Figure 13 focuses on the Medium and Low severity data series for May 2012 through May 2013. Trend lines are included for each, using a 3-month moving average.

Figure 13 - Trend of Medium and Low Electrical Severity Occurrences



The 3-month moving average shows an slight increasing trend for Low and Medium severity occurrences.

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/wg/esh_es/index.htm

Center of Excellence for Electrical Safety

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

Contact

Glenn S. Searfoss
 Office of Analysis, HS-24
 Phone: 301-903-8085
 Email: glenn.searfoss@hq.doe.gov

Attachment 1

Electrical Safety Occurrences – May 2013

No	Report Number	Event Summary	SHOCK	BURN	ARCF ⁽¹⁾	LOTO ⁽²⁾	PLAN ⁽³⁾	EXCAV ⁽⁴⁾	CUT/D ⁽⁵⁾	VEH ⁽⁶⁾	SC ⁽⁷⁾	RC ⁽⁸⁾	ES ⁽⁹⁾
1	EM-CBFO--NWP-WIPP-2013-0004	Vendor worked on a HVAC unit without approval and not following a hazardous energy control process.									4	2E(3)	0
2	EM-CBFO--NWP-WIPP-2013-0005	Maintenance personnel performed PM on Fire Panel without the required LOTO.				X					4	2E(3)	0
3	EM-CBFO--NWP-WIPP-2013-0006	A maintenance technician penetrated a strain relief connector attached to a 110V electrical outlet with a self-tapping screw.							X		3	2E(2)	110
4	EM-RP--WRPS-TANKFARM-2013-0006	Failure to apply LOTO on portable generator while connecting electrical leads.				X					4	2E(3)	0
5	NA--LASO-LANL-ACCCOMPLEX-2013-0005	Electrical arcing was observed coming from two electrical cables connected to the Proton Storage Ring Ion Pump power supply.									3	2E(2)	0
6	NA--LASO-LANL-TA55-2013-0016	Energized 277V wiring was discovered in an uncompleted lighting pole that had been reported as a zero voltage check.									3	2E(2)	200
7	NA--SRSO-SRNS-TRIT-2013-0002	A worker removed a LOTO without obtaining authorization.				X					4	2E(3)	0
8	NA--SS-SNL-1000-2013-0005	Worker performed electrical work under another contractor's LOTO device/lock.				X					4	2E(3)	0
9	NA--SS-SNL-NMFAC-2013-0003	Contract worker received shock while contacting exposed 110V conductor in uncovered J-Box.	X								2	2E(1)	330
10	NE-ID--BEA-ATR-2013-0018	An engineer received a shock to his hand while holding the hand-held video probe.	X								2	2E(1)	330
11	NE-ORO--USEC-K1600-2013-0001	A copper bar contacts energized buss causing phase to phase short on two of the three energized buss bars and arc flash.			X						3	10(3)	50

Attachment 1

No	Report Number	Event Summary	SHOCK	BURN	ARCF ⁽¹⁾	LOTO ⁽²⁾	PLAN ⁽³⁾	EXCAV ⁽⁴⁾	CUT/D ⁽⁵⁾	VEH ⁽⁶⁾	SC ⁽⁷⁾	RC ⁽⁸⁾	ES ⁽⁹⁾
12	SC--ASO-ANLE-ANLEFMS-2013-0003	Subcontractor electricians failed to perform a LOTO on a 110V circuit while installing exit signs.				X					4	2E(3)	110
13	SC--BSO-LBL-OPERATIONS-2013-0009	A subcontractor electrician worked on a lighting circuit without applying personal LOTO to an existing LOTO.				X					4	2E(3)	0
14	SC--PNSO-PNNL-PNNLBOPER-2013-0006	A researcher replaced a fluorescent light ballast without applying a LOTO to the electrical breaker.				X					2	2E(3), 10(3)	20
15	SC-ORO--ORNL-X10CENTRAL-2013-0002	Mild electrical shock from unplugged laboratory equipment.	X								2	2E(1)	330
16	SC-ORO--ORNL-X10CHRIDGE-2013-0002	A visiting researcher did not follow an established energy control process for disconnecting equipment from a pulsed magnet power supply.				X					4	2E(3)	110
17	SC-ORO--ORNL-X10EAST-2013-0006	A qualified electrical worker removed de-energized fuses from a disconnect switch in proximity of an energized electrical source without an energized electrical work permit.				X					3	2E(2)	110
	TOTAL		3	0	1	9	0	0	1	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 ≥ 1750 , Medium is 31-1749, and Low is 1-30

Attachment 1

Electrical Safety Occurrences – May 2013

No	Report Number	Event Summary	EW ⁽¹⁾	N-EW ⁽²⁾	SUB ⁽³⁾	HFW ⁽⁴⁾	WFH ⁽⁵⁾	PPE ⁽⁶⁾	70E ⁽⁷⁾	VOLT ⁽⁸⁾		C/I ⁽⁹⁾	NEUT ⁽¹⁰⁾	NM ⁽¹¹⁾
										H	L			
1	EM-CBFO--NWP-WIPP-2013-0004	Vendor worked on a HVAC unit without approval and not following a hazardous energy control process.		X	X		X				X			
2	EM-CBFO--NWP-WIPP-2013-0005	Maintenance personnel performed PM on Fire Panel without the required LOTO.					X				X			
3	EM-CBFO--NWP-WIPP-2013-0006	A maintenance technician penetrated a strain relief connector attached to a 110V electrical outlet with a self-tapping screw.	X	X		X					X			X
4	EM-RP--WRPS-TANKFARM-2013-0006	Failure to apply LOTO on portable generator while connecting electrical leads.	X				X				X			
5	NA--LASO-LANL-ACCCOMPLEX-2013-0005	Electrical arcing was observed coming from two electrical cables connected to the Proton Storage Ring Ion Pump power supply.		X			X				X			
6	NA--LASO-LANL-TA55-2013-0016	Energized 277V wiring was discovered in an uncompleted lighting pole that had been reported as a zero voltage check.	X				X				X			
7	NA--SRSO-SRNS-TRIT-2013-0002	A worker removed a LOTO without obtaining authorization.	X				X				X			
8	NA--SS-SNL-1000-2013-0005	Worker performed electrical work under another contractor's LOTO device/lock.	X		X		X				X			
9	NA--SS-SNL-NMFAC-2013-0003	Contract worker received shock while contacting exposed 110V conductor in uncovered J-Box.		X	X	X					X			
10	NE-ID--BEA-ATR-2013-0018	An engineer received a shock to his hand while holding the hand-held video probe.		X		X					X			
11	NE-ORO--USEC-K1600-2013-0001	A copper bar contacts energized buss causing phase to phase short on two of the three energized buss bars and arc flash.	X			X					X			X

Attachment 1

No	Report Number	Event Summary	EW ⁽¹⁾	N-EW ⁽²⁾	SUB ⁽³⁾	HFW ⁽⁴⁾	WFH ⁽⁵⁾	PPE ⁽⁶⁾	70E ⁽⁷⁾	VOLT ⁽⁸⁾		C/I ⁽⁹⁾	NEUT ⁽¹⁰⁾	NM ⁽¹¹⁾
										H	L			
12	SC--ASO-ANLE-ANLEFMS-2013-0003	Subcontractor electricians failed to perform a LOTO on a 110V circuit while installing exit signs.	X		X		X				X			
13	SC--BSO-LBL-OPERATIONS-2013-0009	A subcontractor electrician worked on a lighting circuit without applying personal LOTO to an existing LOTO.	X		X		X				X			
14	SC--PNSO-PNNL-PNNLBOPER-2013-0006	A researcher replaced a fluorescent light ballast without applying a LOTO to the electrical breaker.					X				X			X
15	SC-ORO--ORNL-X10CENTRAL-2013-0002	Mild electrical shock from unplugged laboratory equipment.	X	X		X					X			
16	SC-ORO--ORNL-X10CHRIDGE-2013-0002	A visiting researcher did not follow an established energy control process for disconnecting equipment from a pulsed magnet power supply.		X			X				X			
17	SC-ORO--ORNL-X10EAST-2013-0006	A qualified electrical worker removed de-energized fuses from a disconnect switch in proximity of an energized electrical source without an energized electrical work permit.	X				X				X			
	TOTAL		8	9	5	5	12	0	0		17	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 56176 OR(s) with 59486 occurrences(s) as of 6/20/2013 6:15:47 AM
 Query selected 17 OR(s) with 17 occurrences(s) as of 6/20/2013 12:14:54 PM

Download this report in Microsoft Word format. 

1)Report Number: [EM-CBFO--NWP-WIPP-2013-0004](#) **After 2003 Redesign**
Secretarial Office: Environmental Management
Lab/Site/Org: Carlsbad Field Office
Facility Name: Waste Isolation Pilot Plant
Subject/Title: Vendor failed to follow prescribed hazardous electrical energy control process
Date/Time Discovered: 05/07/2013 09:30 (MTZ)
Date/Time Categorized: 05/07/2013 13:09 (MTZ)
Report Type: Notification/Final

Report Dates:

Notification	05/09/2013	15:27 (ETZ)
Initial Update	05/09/2013	15:27 (ETZ)
Latest Update	05/09/2013	15:27 (ETZ)
Final	05/09/2013	15:27 (ETZ)
Revision 1	05/22/2013	09:08 (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
 5) Provide Feedback and Continuous Improvement

Subcontractor Involved: Yes
 Trane, E&C Trane and Sun City Electrical

Occurrence Description: On May 7, 2013, at 0815 hours, vendors arrived at the site to perform work on a Heating, Ventilation and Air Conditions (HVAC) unit. The vendors interfaced with a Security Officer at the gate house and then proceeded to work on the HVAC unit without required oversight by the Nuclear Waste Partnership (NWP) assigned Subcontract Technical Representative (STR). When the STR arrived at the work location and discovered work had commenced prior to approval, work was suspended. A subsequent Debrief was conducted where it was determined that the vendor did not follow the NWP prescribed Hazardous Energy Control

Process.

No employee was injured or exposed to hazardous electrical energy.

DETAILS:

May 7, 2013

At 0715 hours, Work Control Document 1301320, 45B408 Replace Condenser was scheduled to work at the NWP Plan of the Day scheduling meeting.

At 0815 hours, the vendors (Trane, E&C Trane and Sun City Electrical) arrived at the site to perform work on a Heating, Ventilation and Air Conditions (HVAC) unit. The vendors interfaced with a Security Officer at the gate house and then proceeded to work on the HVAC unit located on the west side of Building 458. This area is outside the WIPP Property Protection Area (defined by the WIPP fence).

At 0930 hours, the STR arrived at the work location and suspended the work and escorted the vendors to the Maintenance Trailer.

At 1030 hours, the STR notified the Central Monitoring Room (CMR) and the Facility Shift Manager (FSM). The FSM secured the suspended work location and took photographs.

At 1038 hours, the Facility Manager (FM) was notified. The FM requested vendor employee statements and scheduled a Debrief at 1200 hours.

At 1200 hours, the Debrief was held.

At 1309 hours, the Debrief revealed that the vendors performed work, without required oversight by the Nuclear Waste Partnership (NWP) assigned Subcontract Technical Representative (STR), which resulted in the vendor executing work that did not follow the NWP prescribed Hazardous Energy Control Process. The FM determined this issue was a reportable occurrence based on that information.

At 1544 hours, the FM entered this issue into the Issues Management system and directed a causal analysis to be performed. A formal Corrective Action Plan will be developed based on the results of the causal analysis. NOTE: This Significance Category 4 report will be final upon submittal but will be revised to incorporate the identified causes and corrective actions.

Cause Description:

Operating Conditions:

Activity Category:

Immediate Action(s):

Does not apply.

Maintenance

Work was stopped upon discovery and the vendor(s) escorted to the

Maintenance trailer.

The Central Monitoring Room (CMR) and Facility Shift Manager (FSM) were notified.

The FSM secured and photographed the scene.

The FSM notified the Facility Manager, Facility Manager Designee and the DOE Facility Representative.

A Debrief was scheduled and conducted at 1200 hours.

FM Evaluation:

DOE Facility Representative

Input:

DOE Program Manager

Input:

Further Evaluation is Required: No

Division or Project: NWP/WIPP

Plant Area: Security Building

System/Building/Equipment: HV06/Bld 458/45-B-408

Facility Function: Nuclear Waste Operations/Disposal

Corrective Action:

Lessons(s) Learned:

HQ Keywords: 01E--Inadequate Conduct of Operations - Operations Procedure Noncompliance
11G--Other - Subcontractor
12C--EH Categories - Electrical Safety
14E--Quality Assurance - Work Process Deficiency
14G--Quality Assurance - Procurement Deficiency

HQ Summary: On May 7, 2013, vendors arrived at the site to perform work on a Heating, Ventilation and Air Conditions (HVAC) unit, the vendors interfaced with a Security Officer at the gate house and then proceeded to work on the HVAC unit without required oversight by the Nuclear Waste Partnership (NWP) assigned Subcontract Technical Representative (STR). When the STR arrived at the work location and discovered work had commenced prior to approval. Work was stopped upon discovery and the vendor(s) escorted to the Maintenance trailer. A debrief was conducted where it was determined that the vendor did not follow the NWP prescribed Hazardous Energy Control Process. Management notifications were made.

Similar OR Report Number: 1. EM-CBFO--WTS-WIPP-2012-0011
2. EM-CBFO--WTS-WIPP-2012-0005
3. EM-CBFO--WTS-WIPP-2012-0004

Attachment 2

Facility Manager:

Name	KENNEDY, SCOTT J
Phone	(575) 234-8434
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
05/07/2013	10:30 (MTZ)	Mike Proctor	NWP/FSM
05/07/2013	10:36 (MTZ)	Jeff Knox	NWP/FMD
05/07/2013	10:38 (MTZ)	Scott Kennedy	NWP/FM
05/07/2013	10:38 (MTZ)	Wes Bryan	NWP/WCM
05/07/2013	10:39 (MTZ)	Ken Padilla	CBFO/FR

Authorized Classifier(AC):

2)Report Number:

[EM-CBFO--NWP-WIPP-2013-0005](#) After 2003 Redesign

Secretarial Office:

Environmental Management

Lab/Site/Org:

Carlsbad Field Office

Facility Name:

Waste Isolation Pilot Plant

Subject/Title:

Failure to follow prescribed hazardous electrical energy control process - Fire Panel

Date/Time Discovered:

05/09/2013 11:30 (MTZ)

Date/Time Categorized:

05/10/2013 19:15 (MTZ)

Report Type:

Notification/Final

Report Dates:

Notification	05/14/2013	16:43 (ETZ)
Initial Update	05/14/2013	16:43 (ETZ)
Latest Update	05/14/2013	16:43 (ETZ)
Final	05/14/2013	16:43 (ETZ)
Revision 1	05/22/2013	09:10 (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 April 25, 2013, Maintenance personnel performed annual Fire Panel Preventive Maintenance (PM) activities in Building 474C without implementing the required lockout/tagout (LOTO). On May 9, 2013, during the work package review and closure process, a Work Control employee identified missing LOTO information in the PM work order. Initially the issue was thought to be a missing LOTO record, as the LOTO was not entered in the Facility Operations (Fac Ops) Tagout Index. The Work Control employee contacted the Fac Ops Manager to assist in locating the missing record. The LOTO Control Sheet and the prepared DANGER tag, to support implementation of PM work order, were located and indicated that the LOTO had not been authorized. No employees were injured or exposed to hazardous electrical energy.

A Causal Analysis will be conducted and a Corrective Action Plan will be developed based on the results of the Causal Analysis. This final report will be revised after Causes and corrective actions have been identified.

Cause Description:

Operating Conditions: Does not apply.

Activity Category: Maintenance

Immediate Action(s): 4/25/13:
- Issue occurred.

5/9/13:
- Issue was discovered during work order review and close-out process.
- Notified NWP management and CBFO FR.
- Performed document review and interviewed (on-shift) employees involved in the event. Note: Some employees involved were not on-shift when the issue was discovered and had to be interviewed when they returned on 5/10/13.
- A critique was scheduled for 5/10/2013 to assure involved personnel were present.

5/10/13:
- Conducted Critique at 0900 hours.
- Categorized event at 1915 hours.
- As part of the initial evaluation, a number of previous Fire Panel PMs were reviewed. There was no indication of LOTO not being performed on those reviewed.

5/11/13:
- Initiated a LOTO Safety Pause. All scheduled operating groups performing LOTO conducted a safety pause with on-shift personnel and will follow-up with other oncoming shifts.

FM Evaluation:

DOE Facility Representative

Input:

DOE Program Manager

Input:

Further Evaluation is Required: No

Division or Project: NWP/WIPP

Plant Area: Haz Mat Area

System/Building/Equipment: FP03/474C/474C-FP-096-01

Facility Function: Nuclear Waste Operations/Disposal

Corrective Action:

Lessons(s) Learned: Verbatim compliance with approved Work Control Documents and procedures is essential to ensure that critical steps/actions are not missed, worker safety is not compromised, and plant equipment is properly maintained.

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 April 25, 2013, Maintenance personnel performed annual Fire Panel Preventive Maintenance (PM) activities without the required lockout/tagout (LOTO). On May 9, during the work package review and closure process, a Work Control employee identified missing LOTO information in the PM work order. The LOTO Control Sheet and the prepared DANGER tag, to support implementation of the PM work order, were located and indicated that the LOTO had not been authorized. A Corrective Action Plan will be developed.

- Similar OR Report Number:**
1. EM-CBFO--NWP-WIPP-2013-0004
 2. EM-CBFO--WTS-WIPP-2012-0011
 3. EM-CBFO--WTS-WIPP-2012-0005

Facility Manager:

Name	KENNEDY, SCOTT J.
Phone	(575) 234-8434
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
05/09/2013	11:30 (MTZ)	Dale Parrish	NWP/FOM
05/09/2013	13:30 (MTZ)	Scott Kennedy	NWP/FM
05/09/2013	13:32 (MTZ)	Jeff Knox	NWP/FMD
05/09/2013	13:32 (MTZ)	Ken Padilla	CBFO/FR

Authorized Classifier(AC):

3)Report Number: [EM-CBFO--NWP-WIPP-2013-0006](#) After 2003 Redesign

Secretarial Office: Environmental Management

Lab/Site/Org: Carlsbad Field Office

Facility Name: Waste Isolation Pilot Plant

Subject/Title: Receptacle connection penetrated by a self-tapping screw

Date/Time Discovered: 05/30/2013 14:50 (MTZ)

Date/Time Categorized: 05/30/2013 15:28 (MTZ)

Report Type: Notification

Report Dates:

Notification	06/03/2013	18:06 (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:**
- 1) Define the Scope of Work
 - 2) Analyze the Hazards
 - 3) Develop and Implement Hazard Controls
 - 4) Perform Work Within Controls
 - 5) Provide Feedback and Continuous Improvement

Subcontractor Involved: No

Occurrence Description: On May 30, 2013, at approximately 1430 hours, underground maintenance technicians were installing a condensate discharge pan assembly underneath a through-the-wall mounted air conditioner located in an underground bulkhead. The technicians were using four self-tapping screws to secure the frame of the drip pan assembly onto the sheet metal outside the bulkhead using a battery operated drill. When the third screw was being installed it penetrated a strain relief connector attached to a 110 volt electrical outlet (i.e. duplex) located on the inside of the bulkhead. A

pop was heard and a circuit breaker tripped. Prior to the installation, the technicians had not inspected the inside of the bulkhead to see what could be affected when the screws penetrated the sheet metal bulkhead.

No personnel came in contact with hazardous energy or sustained injury.

A Root Cause Analysis will be conducted.

DETAILS:

On 5/30/13, at approximately 1130 hours, an Operations Safety professional noted a concern with a condensate discharge from a wall mounted air conditioner located outside the Mining Managers' office area. The Mining Manager's office area is located in the underground inside a mined out area with a sheet metal bulkhead across the mined out end. The condensate had dripped on an electrical junction box located below the air conditioner. The Safety professional spoke with the Repository Projects Manager and suggested that a condensate discharge/drip pan be installed under the air conditioning unit to direct the condensate away from the junction box.

The Repository Projects Manager asked the Maintenance Engineer (ME) to prepare a Work Control Document (WCD) to fabricate a drip pan and informed a Mining Manager (MM) of the plan. The ME prepared a Fix-it-Now (shop work) WCD to fabricate a drip pan. The MM contacted one of the technicians that typically fabricate and install bulkheads and together they evaluated the air conditioner installation and discussed fabrication of a drip pan.

The Fix-it-Now WCD was completed and two technicians were assigned to commence work in the shop to fabricate the drip pan. Fabrication of the pan was completed at approximately 1400 hours. Based on verbal instruction from the ME, the technicians believed that the work scope also included installation of the drip pan and transported the pan assembly to the bulkhead. The MM intended the work to be limited to fabricating the condensate discharge pan assembly but had not made this clear to the technicians. The MM hadn't expected the technicians to complete the fabrication so quickly and assumed they would stop work after completing the fabrication.

When the incident occurred, the ME, MM and the Repository Projects Manager were inside the Mine Manager's office. The ME and Repository Projects Manager were reviewing the Work Control procedure (WP 10-WC3011) and discussing what the next step in the drip pan installation process would be. They recognized that Fix-it-Now WCD was limited to shop work fabrication and that the installation process would require an Expedited WCD.

At approximately 1430 hours, the maintenance technicians arrived at the bulkhead and began the installation by positioning the drip pan assembly under the air conditioner (outside the bulkhead) and then began fastening

the assembly using the four self-tapping screws. A battery operated drill was used to set the screws through the frame of the drip pan assembly and into the sheet metal of the bulkhead.

The maintenance technicians had not inspected the inside of the bulkhead/Mining Manager's office prior to installation to see what would be affected when the self-tapping screws penetrated the bulkhead. The first two screws were installed without incident. When the third screw was being installed it penetrated the sheet metal bulkhead and a strain relief connector attached to a 110 volt electrical outlet (i.e. duplex) located on the inside of the bulkhead. A pop was heard and a circuit breaker tripped. The MM came out of the Mining Manager's office area and stopped the installation.

The electrical outlet circuit was locked and tagged out of service. Required notifications were made.

At 1541 hours, the Mining Operations Manager conducted a Debrief.

Cause Description:

Operating Conditions:

Does not apply

Activity Category:

Maintenance

Immediate Action(s):

Work was stopped.

Performed a lockout/tagout on the affected system.

Required notifications were made to the Central Monitoring Room, Facility Shift Manager, Facility Manager and Facility Representative.

A Debrief was conducted.

Developed a WIPP Initial Notification Report (WINR) and sent to applicable Carlsbad Field Office (CBFO) and Nuclear Waste Partnership (NWP)management.

Entered the occurrence into the WIPP Issues Management process.

FM Evaluation:

DOE Facility Representative

Input:

DOE Program Manager

Input:

Further Evaluation is Required:

No

Division or Project:

NWP/WIPP

Plant Area:

Underground

System/Building/Equipment:

534/Underground office/bulkhead

Facility Function:

Nuclear Waste Operations/Disposal

Corrective Action:

Lessons(s) Learned:

HQ Keywords:

01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous)
 01O--Inadequate Conduct of Operations - Inadequate Maintenance
 01P--Inadequate Conduct of Operations - Inadequate Oral Communication
 07D--Electrical Systems - Electrical Wiring
 08J--OSHA Reportable/Industrial Hygiene - Near Miss (Electrical)
 12B--EH Categories - Conduct of Operations
 14E--Quality Assurance - Work Process Deficiency

HQ Summary:

On May 30, 2013, underground maintenance technicians were installing a condensate discharge pan assembly underneath a through-the-wall mounted air conditioner located in an underground bulkhead and a self-tapping screw accidentally penetrated a strain relief connector attached to a 110 volt electrical outlet (i.e. duplex) located on the inside of the bulkhead. They heard a pop and a circuit breaker tripped. Prior to the installation, the technicians had not inspected the inside of the bulkhead to see what could be affected when the screws penetrated the sheet metal bulkhead. No personnel came in contact with hazardous energy or sustained injury. A root cause analysis will be conducted.

Similar OR Report Number:

Facility Manager:

Name	KENNEDY, SCOTT J.
Phone	(575) 234-8434
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
05/30/2013	14:50 (MTZ)	Joe Bealler	NWP/FSM
05/30/2013	15:11 (MTZ)	Jeff Knox	NWP/FMD
05/30/2013	15:12 (MTZ)	Scott Kennedy	NWP/FM
05/30/2013	15:18 (MTZ)	Erin Preciado	CBFO/FR

Authorized Classifier(AC):

4)Report Number:

[EM-RP--WRPS-TANKFARM-2013-0006](#) After 2003 Redesign

Secretarial Office:

Environmental Management

Attachment 2

Lab/Site/Org: Hanford Site
Facility Name: Tank Farms
Subject/Title: Failure to Apply Lockout/Tagout on Portable Generator in AP Farm for Ultrasonic Testing
Date/Time Discovered: 05/13/2013 10:00 (PTZ)
Date/Time Categorized: 05/13/2013 10:30 (PTZ)
Report Type: Notification/Final
Report Dates:

Notification	05/15/2013	10:41 (ETZ)
Initial Update	05/15/2013	10:41 (ETZ)
Latest Update	05/15/2013	10:41 (ETZ)
Final	05/15/2013	10:41 (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:
2) Analyze the Hazards
3) Develop and Implement Hazard Controls
4) Perform Work Within Controls

Subcontractor Involved: No

Occurrence Description: On Thursday, May 9, 2013, a towable generator (single phase, 40kVA, 240V) was staged at 241-AP Tank Farm and being set up in support of ultrasonic testing (UT). During the process of grounding the generator as described in work package TFC-WO-12-5922, the workers also connected the electrical leads from the UT Trailer to the generator without a lockout/tagout being installed. Midstream of this setup process, it was realized by the Field Work Supervisor (FWS), upon discussion with another FWS, the tie-in of the generator to the UT Trailer was not in the scope of the work package - the work to establish a generator has usually been handled using a separate, standalone, level 3 work package with an 8-Criteria Checklist lockout/tagout included.

Work was paused and placed in a safe configuration and notifications were made. No one was injured, as the towable generator was under the exclusive control of the workers. An event investigation was scheduled for Monday, May 13, 2013.

At the conclusion of the event investigation held on Monday, May 13, 2013, it was concluded this event represented a failure to follow the hazardous energy control process prescribed in DOE-0336, Hanford Site Lockout/Tagout.

Cause Description:

Attachment 2

Operating Conditions: Does not apply.
Activity Category: Normal Operations (other than Activities specifically listed in this Category)
Immediate Action(s): Categorized event and completed occurrence notifications.
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: Ultrasonic Testing/241 AP Farm/Towable Generator
Facility Function: Nuclear Waste Operations/Disposal
Corrective Action:
Lessons(s) Learned:
HQ Keywords: 01E--Inadequate Conduct of Operations - Operations Procedure Noncompliance
 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 May 9, 2013, during the process of grounding a generator to support ultrasonic testing (UT), workers also connected the electrical leads from the UT trailer to the generator without a lockout/tagout being installed. Field Work Supervisors realized through discussions that the tie-in of the generator to the UT Trailer was not in the scope of the work package. Work was paused and an event investigation was scheduled.

Similar OR Report Number:

Facility Manager:

Name	Legard, James D
Phone	(509) 373-4940
Title	Manager, Resource Team

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
05/13/2013	10:47 (PTZ)	Domnoske-Rauch, L. A.	DOE-ORP
05/13/2013	10:47 (PTZ)	Gregory, R. E.	WRPS
05/13/2013	10:47 (PTZ)	Woodford, T. L	MSA-EOC

Authorized Classifier(AC):

5)Report Number: [NA--LASO-LANL-ACCCOMPLEX-2013-0005](#) After 2003 Redesign
Secretarial Office: National Nuclear Security Administration
Lab/Site/Org: Los Alamos National Laboratory
Facility Name: Accelerator Complex
Subject/Title: Ion Pump Cable Testing Work Activity Results in Unexpected Discovery of Uncontrolled Electrical Hazardous Energy
Date/Time Discovered: 05/02/2013 14:26 (MTZ)
Date/Time Categorized: 05/02/2013 15:50 (MTZ)
Report Type: Update
Report Dates:

Notification	05/06/2013	18:52 (ETZ)
Initial Update	06/12/2013	11:38 (ETZ)
Latest Update	06/12/2013	11:38 (ETZ)
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: UPDATE(06/12/2013): The due date for this report is being extended to allow for causal analysis completion, factual accuracy review, and corrective action development. The new due date is 07/26/2013.

MANAGEMENT SYNOPSIS

On May 2, 2013, at 1426 hours, at the Los Alamos National Laboratory (LANL) Los Alamos Neutron Science Center (LANSCE), an Accelerator Operations and Technology Operations (AOT-OPS) employee (E-1) notified the LANSCE Duty Officer regarding electrical arcing that was observed coming from two (2) electrical cables connected to the Proton Storage Ring (PSR) Ion Pump power supply at Technical Area 53, building 8 (TA53-8). E-1 was in the process of performing PSR Personnel

Access Control System (PACS) interlock checks in the PSR when the arcing was observed from a distance of approximately ten (10) feet. E-1 was aware that a concurrent work activity was taking place in the associated PSR equipment building where the PSR Ion Pump cables were being tested. The Vacuum Team (VT) performing the testing was located in a building directly above the PSR, referred to as the Ring Equipment Building (REB) (TA53, building 28). E-1 notified the AOT Electrical Safety Officer (ESO) and then instructed the VT to pause work. Additional notifications were made to the LANSCE Duty Officer, AOT AOT Management and the AOT Mechanical Design Engineering (MDE) Group Leader (GL). The Ion Pump power supply racks were locked and tagged out (LO/TO) with Management Control locks until the cause of the arcing from the cables could be determined.

At 1550 hours, the LANSCE Facility Operations Director (FOD) categorized the event as 2E(2) significance category 3 “Any unexpected discovery of an uncontrolled electrical hazardous energy source.” The AOT ESO determined that the electrical severity score for this event was fifty (50).

A critique was held on May 3, 2013 whereby the categorization was confirmed.

There was no impact to the health and safety of personnel, the environment, or the program as a result of this event.

BACKGROUND

The LANSCE Facility is in its maintenance outage mode. Ion Pump cable testing and replacement is a routine activity during this facility mode.

Cause Description:

Operating Conditions:

Maintenance Outage

Activity Category:

Maintenance

Immediate Action(s):

1. Ion Pump work was paused pending further review.
2. The Ion Pump power supply racks were locked and tagged out with Management Control locks.

FM Evaluation:

UPDATE(06/12/2013): The due date for this report is being extended to allow for causal analysis completion, factual accuracy review, and corrective action development. The new due date is 07/26/2013.

DOE Facility Representative

Input:

DOE Program Manager

Input:

Further Evaluation is

Yes.

Required:

Before Further Operation? No

By Whom: QPA-PA, LFO-OPS, AOT-MDE

Attachment 2

By When: 07/26/2013

Division or Project: LANSCE Operations

Plant Area: TA53-7; TA53-28

System/Building/Equipment: Ion Pump Cables

Facility Function: Accelerators

Corrective Action:

Lessons(s) Learned:

HQ Keywords: 07D--Electrical Systems - Electrical Wiring
 12C--EH Categories - Electrical Safety
 14L--Quality Assurance - No QA Deficiency

HQ Summary: On May 2, 2013, at the Los Alamos National Laboratory Los Alamos Neutron Science Center (LANSCE), an Accelerator Operations and Technology Operations (AOT-OPS) employee (E-1) notified the LANSCE Duty Officer regarding electrical arcing that was observed coming from two electrical cables connected to the Proton Storage Ring (PSR) Ion Pump power supply at Technical Area 53, Building 8 (TA53-8). E-1 was in the process of performing PSR Personnel Access Control System interlock checks in the PSR when the arcing was observed from a distance of approximately ten feet. E-1 was aware that a concurrent work activity was taking place in the associated PSR equipment building where the PSR Ion Pump cables were being tested. The Vacuum Team (VT) performing the testing was located in a building directly above the PSR. E-1 notified the AOT Electrical Safety Officer and then instructed the VT to pause work. Management was notified. The Ion Pump power supply racks were locked and tagged out with Management Control locks until the cause of the arcing from the cables could be determined.

Similar OR Report Number:

Facility Manager:

Name	Paul Lewis
Phone	(505) 665-8363
Title	Facility Operations Director

Originator:

Name	VOSS, SUSAN J
Phone	(505) 667-5979
Title	OCCURRENCE INVESTIGATOR

HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

Other Notifications:

Date	Time	Person Notified	Organization
05/02/2013	17:19 (MTZ)	Bruce Lebrun	NNSA

Authorized Classifier(AC): Susan J. Voss Date: 06/12/2013

6)Report Number: [NA--LASO-LANL-TA55-2013-0016](#) After 2003 Redesign
Secretarial Office: National Nuclear Security Administration
Lab/Site/Org: Los Alamos National Laboratory
Facility Name: Plutonium Proc & Handling Fac
Subject/Title: Unexpected Discovery of Electrical Energy: Electric Arc Occurred During Check of Wiring Which Should Have Been De-Energized
Date/Time Discovered: 05/08/2013 09:30 (MTZ)
Date/Time Categorized: 05/08/2013 09:30 (MTZ)
Report Type: Final

Report Dates:

Notification	05/09/2013	18:21 (ETZ)
Initial Update	06/03/2013	16:55 (ETZ)
Latest Update	06/03/2013	16:55 (ETZ)
Final	06/03/2013	16:55 (ETZ)

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:

A5B2C08 - Communications Less Than Adequate (LTA); Written Communication Content LTA; Incomplete / situation not covered

ISM:

3) Develop and Implement Hazard Controls

Subcontractor Involved:

Yes
 Corbin Electric, B & D Industries

Occurrence Description:

MANAGEMENT SYNOPSIS: On Wednesday, May 8, 2013, at approximately 1000, the Technical Area 55 (TA-55) Facility Operations Director (FOD) re-categorized an electrical incident which occurred on Tuesday, May 7, 2013 as ORPS reportable. The event, an unanticipated discovery of live 277 volt wiring in the base of an uncompleted perimeter lighting pole, had originally been reported as a zero voltage check and categorized as sub-ORPS. Based on information presented during the critique of the event at 0900 on Wednesday, May 8, 2013, it was determined that the discovery was made during an assessment of materials needed to complete the wiring as part of the resumption of the Nuclear Material Safeguards and Security Upgrade Project (NMSSUP). There were no injuries and no shock because the B & D Industries electrician (E1) who made the discovery had used a Fluke (Trade Mark) voltage detector to move some wires in the base while looking for the grounding rod. Only the voltage tester was within the arc flash boundary. There was no impact to the health and safety of personnel, the program, or the environment.

BACKGROUND: B & D Industries and Corbin Electric were

subcontracted to wire some of the perimeter lighting poles at TA-55 as part of NMSSUP. Corbin Electric was contracted to run the main power and perform the electrical installation of some of the perimeter lighting poles. However, Corbin was not supposed to connect the power to the perimeter lighting poles under the B & D Industries contract. NMSSUP was paused in October 2012 and re-started in April 2013. As part of the restart E1 was instructed to check the perimeter lighting poles contracted to B & D Industries and make an assessment of materials needed to complete the wiring. E1 stated that, when he looked in the base of the first pole, he could not see the grounding rod. The wires were not supposed to be connected (air gapped) to the power source (277 volts). E1 used his Fluke (Trade Mark) voltage detector to move some wires in order to look for the grounding rod. When the wires were moved E1 observed an arc from wire to wire.

Cause Description:

INVESTIGATIVE METHODOLOGY

Apparent causal analysis and the DOE Causal Analysis Tree, as described in the DOE Occurrence Reporting Causal Analysis Guide (DOE G 231.1-2), were used to identify the causal factor(s) for this event. Apparent causes are identified as the most probable causes of an event or condition that explain why the event happened, that management has the control to fix, and for which effective recommendations for corrective action(s) to remedy the problem can be generated.

The investigation of the incident indicated that, when NMSSUP was re-started in April 2013, the e-mail to the subcontractors only directed resumption of work. It appeared that when some subcontractors finished their section of the work they would, 1) energize their work to demonstrate the work was sound and complete and, 2) safe any interfaces to the work of the next subcontractor. In this incident there were two perimeter light poles that were the connection between the work done by Corbin Electric and the work to be done by B & D Industries. Investigation revealed that only one pole was air gapped. The other pole was still fully connected and feeding power to the pole where the event occurred.

The direct cause of the event was the processes for transferring work between subcontractors on NMSSUP was not adequately explained. The ORPS cause code which best describes this deficiency is; Communications Less Than Adequate (A5), Written Communication Content Less Than Adequate (B2), Incomplete / situation not covered (C08), A5B2C08.

Corrective action No. 1 will be to enhance the formality and expectations for transferring electrical work scope from one subcontractor to another in NMSSUP. The clarification will include the following three requirements for NMSSUP work;

1) No LANL electrical circuits will be energized by a subcontractor

without LANS prior written approval. This includes all project work in progress or completed to date.

2) Before a Lock-Out/Tag-Out (LO/TO) is removed, an interface walk-down shall be performed, and the LO/TO will be transferred as needed from subcontractor to subcontractor.

3) All legacy electrical work in progress at the time of NMSSUP work suspension shall have zero energy checks performed utilizing proper electrical Personal Protective Equipment (PPE) and testing equipment prior to resuming work.

The Manager of Functions, Construction Management, Subcontract Technical representative (MOF-CM-STR) will issue letters to the three major NMSSUP subcontractors directing these actions. The subcontractors receiving the letters will ensure the requirements are communicated to their employees and lower-tier subcontractor personnel.

ISM

The ISM deficiency was Step 3, Develop and Implement Hazard Controls. The processes for transferring work between subcontractors on NMSSUP was not adequately explained. Corrective action no. 1 should address this deficiency.

EXTENT OF CONDITION:

The FOD assessed the need for an Extent of Condition (EOC), in accordance with DOE Order 232.2, Occurrence Reporting and Processing of Operations Information, and determined that one was warranted for this event because processes for transferring work between subcontractors on NMSSUP was not adequately explained.

Corrective action No. 1 should address the EOC.

Operating Conditions:

Inspection of uncompleted perimeter lighting

Activity Category:

Construction

Immediate Action(s):

Work was paused on the day of the event.

Management notifications were made.

The circuits feeding the perimeter lighting pole were identified, de-energized, and locked and tagged out.

FM Evaluation:

Minor facility impact.

DOE Facility Representative

Input:

DOE Program Manager

Input:

Further Evaluation is Required:

No

Division or Project:

NMSSUP

Plant Area:

TA-55

System/Building/Equipment: TA-55 perimeter lighting pole

Facility Function: Plutonium Processing and Handling

Corrective Action 01:

Target Completion Date: 05/15/2013	Actual Completion Date: 05/15/2013
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REVISION OR EXTENSION OF THIS ACTION REQUIRES FACILITY OPERATIONS DIRECTOR APPROVAL.

Title: Enhance the Formality and Expectations for Transferring Electrical Work Scope

Action: Enhance the formality and expectations for transferring electrical work scope from one subcontractor to another in NMSSUP. The clarification will be through the issue of letters to NMSSUP contractors. The letters will include the following requirements,

- 1) No LANL electrical circuits will be energized by a subcontractor without LANS prior written approval. This includes all project work in progress or completed to date.
- 2) Before a Lock-Out/Tag-Out (LO/TO) is removed, an interface walk-down shall be performed, and the LO/TO will be transferred as needed from subcontractor to subcontractor.
- 3) All legacy electrical work in progress at the time of NMSSUP work suspension shall have zero energy checks performed utilizing proper electrical Personal Protective Equipment (PPE) and testing equipment prior to resuming work.

Deliverable: Copies of the letters issued to the three major NMSSUP subcontractors with the three requirements listed above.

1) Letter No. NMSSUP-75167-019
Reference: Subcontract No. 75167-001-009
Hensel Phelps Construction New Mexico, LLC (H-P)
Electrical Work Clarification

2) Letter No. NMSSUP-141313-043
Reference: Subcontract No. 141313-1
Hensel Phelps Construction New Mexico, LLC (H-P)
Energization Clarification

3) Letter No. NMSSUP-88243-069
Reference: Subcontract No. 88243-001-11
Hensel Phelps Construction New Mexico, LLC (H-P)
Energization Clarification

4) Letter No. NMSSUP-77086-067
Reference: Subcontract No. 77086-001-010

Kiewit New Mexico Company
Energization Clarification

5) Letter No. NMSSUP-77233-042
Reference: Subcontract No. 77233-001-10
Jack B. Henderson Construction Co., Inc.
Energization Clarification

Responsible Organization: Acquisition Services Management (ASM)

Target or Completed Due Date: 05/09/2013

See PFITS 2013-1730, action # 6 for action closure and objective evidence.

This action addresses cause code A5B2C08, which is identified in the causal analysis.

NOTE: This action has been closed in ORPS based on the documented completion of the Performance Feedback Improvement Tracking System (PFITS) entry.

Lessons(s) Learned:

Good electrical safety practices can find electrical energy in unexpected areas.

HQ Keywords:

01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous)
01M--Inadequate Conduct of Operations - Inadequate Job Planning (Electrical)
01P--Inadequate Conduct of Operations - Inadequate Oral Communication
01R--Inadequate Conduct of Operations - Management issues
07D--Electrical Systems - Electrical Wiring
08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance
08J--OSHA Reportable/Industrial Hygiene - Near Miss (Electrical)
12C--EH Categories - Electrical Safety
14E--Quality Assurance - Work Process Deficiency
14G--Quality Assurance - Procurement Deficiency

HQ Summary:

On May 8, 2013, the Technical Area 55 the Facility Operations Director discovered an electrical incident that happened on May 7, when an unanticipated discovery of energized 277-volt wiring in the base of an uncompleted perimeter lighting pole had originally been reported as a zero voltage check. The discovery was made during an assessment of materials needed to complete the wiring as part of the resumption of the Nuclear Material Safeguards and Security Upgrade Project. There were no injuries and no shock because the B & D Industries electrician who made the discovery had used a Fluke voltage detector to make a voltage check. Only the voltage tester was within the arc flash boundary. There was no impact to the health and safety of personnel, the program, or the environment. The circuits feeding the perimeter lighting pole were identified, de-energized,

and locked and tagged out. Management notifications were made.

Similar OR Report Number: 1. NA--LASO-LANL-ADOADMIN-2009-0004
 2. NA--LASO-LANL-ADOADMIN-2011-0010

Facility Manager:

Name	Chuck Tesch
Phone	(505) 667-3030
Title	Operations Manager

Originator:

Name	HUNSINGER, MARK W
Phone	(505) 665-1496
Title	OCCURRENCE INVESTIGATOR

HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

Other Notifications:

Date	Time	Person Notified	Organization
05/08/2013	09:30 (MTZ)	Dan Carter	NNSA/FR

Authorized Classifier(AC): Mark Hunsinger Date: 05/08/2013

7)Report Number: [NA--SRSO-SRNS-TRIT-2013-0002](#) **After 2003 Redesign**
Secretarial Office: National Nuclear Security Administration
Lab/Site/Org: Savannah River Site
Facility Name: Tritium Facilities
Subject/Title: Failure to Follow Prescribed Hazardous Energy Control (HEC) Process
Date/Time Discovered: 05/14/2013 15:24 (ETZ)
Date/Time Categorized: 05/14/2013 16:00 (ETZ)
Report Type: Notification/Final

Report Dates:

Notification	05/16/2013	09:04 (ETZ)
Initial Update	05/16/2013	09:04 (ETZ)
Latest Update	05/16/2013	09:04 (ETZ)
Final	05/16/2013	09:04 (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 05/14/2013, following the performance of corrective maintenance on Chiller 2 that had been controlled by an installed Single Point Documented

Attachment 2

lockout, the lockout was removed without obtaining the proper authorization. All work had been completed, and all holders had signed off the lockout. Because all work was had been completed, there was no hazard to personnel or impact to facility operations.

Cause Description:

Operating Conditions:

Chiller 2 was Out of Service for Maintenance.

Activity Category:

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

Immediate Action(s):

Verified all holders were off the lockout, the work was completed and that lockout was in fact ready to remove.

FM Evaluation:

No impacts to the facility as a result of this occurrence.

DOE Facility Representative

Input:

DOE Program Manager

Input:

Further Evaluation is Required:

No

Division or Project:

NNSA Programs / Tritium

Plant Area:

H-Area / Tritium

System/Building/Equipment:

H-Area Old Manufacturing (HAOM) / Chiller

Facility Function:

Tritium Activities

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 May 14, 2013, a worker removed a lockout without obtaining the proper authorization following the performance of corrective maintenance on Chiller 2. The chiller was controlled by an installed Single Point Documented lockout. All work had been completed and all holders had signed off the lockout. Because all work had been completed, there was no hazard to personnel or impact to facility operations.

Similar OR Report Number:

Facility Manager:

Name	Collins, Michael A.
Phone	(803) 208-1313
Title	Tritium Facility Area Operations Manager

Originator:

Name	Hall, William R.
Phone	(803) 208-8558

Title	PRINCIPLE ENGINEER & TECHNICAL SUPPO
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HQ OC Notification:

Date	Time	Person Notified	Organization
05/14/2013	16:20 (ETZ)	Deshong, Edwin	NNSA FR

Other Notifications:

Date	Time	Person Notified	Organization
05/14/2013	16:05 (ETZ)	Schifer, Lee	ISC Dir
05/14/2013	16:20 (ETZ)	Burnfield, Dan	DNFSB
05/14/2013	16:20 (ETZ)	Sautman, Mark	DNFSB
05/14/2013	16:30 (ETZ)	Booth, Dennis	SERB
05/14/2013	16:30 (ETZ)	Goldenberg, Jack	OOP
05/14/2013	16:30 (ETZ)	McAlhaney, Jackie	SERB
05/14/2013	16:45 (ETZ)	Utley, Debra	Eng Mgr
05/14/2013	16:45 (ETZ)	Patton, Sonya	Safety
05/14/2013	16:50 (ETZ)	Hollway, Cassandra	SRSOC

Authorized Classifier(AC): McNitt, Arthur A. Date: 05/16/2013

8)Report Number: [NA--SS-SNL-1000-2013-0005](#) **After 2003 Redesign**
Secretarial Office: National Nuclear Security Administration
Lab/Site/Org: Sandia National Laboratories - SS
Facility Name: SNL Division 1000
Subject/Title: Worker Performed Electrical Work under Another Contractor's LOTO Device/Lock
Date/Time Discovered: 05/21/2013 10:00 (MTZ)
Date/Time Categorized: 05/21/2013 15:00 (MTZ)
Report Type: Notification/Final
Report Dates:

Notification	05/23/2013	17:23 (ETZ)
Initial Update	05/23/2013	17:23 (ETZ)
Latest Update	05/23/2013	17:23 (ETZ)
Final	05/23/2013	17:23 (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
 TMSS

Attachment 2

Occurrence Description: On May 20, 2013, during a manager walk-thru in TA-III, Building 6741, the Dept. 1533 manager had questions about the LOTO practices within the facility. NOTE: The facility is under construction (TCR). Electrical work was being performed in conjunction with construction activities. Dept. 1533 personnel had previously asked the electrical contractor to apply LOTO to the PLC control box in the control room. The technician from Dept. 1533 did not have the lock applied in conjunction with the electrical contractor's lock. Furthermore, the Dept. 1533 technician's work was performed without the required LOTO written procedure. Once discovered, the Dept. 1533 technician applied the appropriate locks/tags, and signs were posted to ensure that no further work was performed in the PLC electrical cabinet.

As a result of this occurrence:

- The Dept. 1533 manager paused all electrical work in the PLC box.
- The Dept. 1533 manager directed the 1533 employees involved to call the appropriate Subject Matter Experts.
- The Dept. 1533 manager facilitated an incident investigation.

Future actions will include:

- LOTO retraining/training for all affected Dept. 1533 employees/personnel.
- Briefings to Dept. 1533 employees/personnel regarding this incident.

Cause Description:

Operating Conditions: Building was under TCR Construction.

Activity Category: Construction

Immediate Action(s): The Dept. 1533 manager paused all electrical work in the PLC box.

The Dept. 1533 manager directed the Dept. 1533 employees involved to call the appropriate Subject Matter Experts.

The Dept. 1533 manager facilitated an incident investigation.

FM Evaluation: EOC No.: 6741

DOE Facility Representative

Input:

DOE Program Manager

Input:

Further Evaluation is Required: No

Division or Project: 1000, Rocket Sled Track Facility

Plant Area: Tech Area III

System/Building/Equipment: PLC Cabinet/Bldg. 6741/Control Room

Facility Function: Laboratory - Research & Development

Corrective Action 01:

Target Completion Date: 07/12/2013	Actual Completion Date:
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Train Dept. 1533 personnel in LOTO procedures.

Corrective Action 02:

Target Completion Date: 07/12/2013	Actual Completion Date:
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Briefings to Dept. 1533 personnel to maintain LOTO awareness.

Lessons(s) Learned:

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

HQ Summary: On May 20, 2013, during a manager walk-thru in TA-III, Building 6741, the Dept. 1533 manager had questions about lockout/tagout (LOTO) practices within the facility in conjunction with construction activities and learned that a technician from Dept. 1533 did not have a lock applied in conjunction with an electrical contractor's lock. Furthermore, the technician's work was performed without the required LOTO written procedure. Once discovered, the Dept. 1533 technician applied the appropriate locks/tags, and signs were posted to ensure that no further work was performed in the PLC electrical cabinet.

Similar OR Report Number:

Facility Manager:

Name	Craig A. Dickensheets
Phone	(505) 844-2473
Title	ES&H Coordinator

Originator:

Name	GOETSCH, ROBERT S.
Phone	(505) 284-4647
Title	SENIOR TECHNICAL WRITER

HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

Other Notifications:

Date	Time	Person Notified	Organization
05/21/2013	15:40 (MTZ)	Veronica Martinez	DOE/SFO
05/21/2013	16:15 (MTZ)	EOC	4236

Authorized Classifier(AC): Michael F. Hessheimer Date: 05/23/2013

9)Report Number: [NA--SS-SNL-NMFAC-2013-0003](#) **After 2003 Redesign**

Secretarial Office: National Nuclear Security Administration

Lab/Site/Org: Sandia National Laboratories - SS

Facility Name: SNL NM Site-wide F & M

Attachment 2

Subject/Title: Contract Employee Received Shock While Contacting Exposed Conductor in Uncovered J-Box

Date/Time Discovered: 05/31/2013 11:30 (MTZ)

Date/Time Categorized: 05/31/2013 14:24 (MTZ)

Report Type: Notification

Report Dates:

Notification	06/03/2013	15:56 (ETZ)
Initial Update		
Latest Update		
Final		

Significance Category: 2

Reporting Criteria: 2E(1) - Any unexpected or unintended personal contact (burn, injury, etc.) with an electrical hazardous energy source (e.g., live electrical power circuit, etc.).

Cause Codes:

ISM: 2) Analyze the Hazards
3) Develop and Implement Hazard Controls
4) Perform Work Within Controls

Subcontractor Involved: Yes
Cross Connection (Sub to Summit)

Occurrence Description: At approximately 1130 on May 31, a mechanical contractor was insulating a pipe in the ceiling area during a renovation project at Building 880. While discarding paper that came with the insulation, the worker felt an electrical shock to the right hand. Examination of the area identified a j-box without a cover. A single 110-volt conductor was exposed in the j-box.

The circuit was in Panel 3A, Circuit 2, and was 20 amps. The conductor was cut flush and was not stripped. The insulation had marks from a previous wire nut installation. The contractor does not have any interaction with this circuit at this location. It appears to be a pre-existing condition in the ceiling space. There is no indication of when, or by whom, the J-box was left open.

The mechanical contractor was on a ladder and utilizing fall protection at the time of the event.

The mechanical contractor has no injuries and there was no effect to the facility.

The electrical severity for this event has been determined to be 330.

Cause Description:

Attachment 2

Operating Conditions: Normal
Activity Category: Construction
Immediate Action(s): The contractors notified EOC and the circuit was placed in a safe condition.

Notifications were conducted.

Investigation was initiated.

Employee was taken to medical.
FM Evaluation: EOC Event Number: 29536
DOE Facility Representative Input:
DOE Program Manager Input:
Further Evaluation is Required: No
Division or Project: 4000/Renovation
Plant Area: Tech Area I
System/Building/Equipment: Electrical Panel 3A/Circuit 2/Building 880/Room Z13
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)
01Q--Inadequate Conduct of Operations - Personnel error
01S--Inadequate Conduct of Operations - Incorrect/Inadequate Installation
07D--Electrical Systems - Electrical Wiring
08A--OSHA Reportable/Industrial Hygiene - Electrical Shock
08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance
12C--EH Categories - Electrical Safety
14E--Quality Assurance - Work Process Deficiency
HQ Summary: On May 31, 2013, a mechanical contractor felt an electrical shock to the right hand while insulating a pipe in the ceiling area during a renovation project at Building 880. Examination of the area identified a j-box without a cover and containing a single exposed 110-volt conductor. The circuit was in Panel 3A, Circuit 2, and was 20 amps. The conductor was cut flush and was not stripped. The insulation had marks from a previous wire nut installation. It appears to be a pre-existing condition in the ceiling space. There is no indication of when, or by whom, the J-box was left open. The mechanical contractor was taken to medical and the circuit was placed in a safe condition.

Similar OR Report Number:

Facility Manager:

Name	Greg Kirsch
Phone	(505) 845-9497
Title	FESH Lead

Originator:

Name	GOETSCH, ROBERT S.
Phone	(505) 284-4647
Title	SENIOR TECHNICAL WRITER

HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

Other Notifications:

Date	Time	Person Notified	Organization
05/31/2013	11:33 (MTZ)	EOC	4236
05/31/2013	12:15 (MTZ)	Stan Harrison	4870
05/31/2013	12:15 (MTZ)	Anthony Chavez	4843
05/31/2013	12:15 (MTZ)	Art Ratzel	4800
05/31/2013	12:15 (MTZ)	Bess Campbell-Domme	4020
05/31/2013	12:15 (MTZ)	Lynn Schluter	4820
05/31/2013	12:17 (MTZ)	Joyce Arviso-Benally	SFO

Authorized Classifier(AC): John Lewis **Date:** 06/03/2013

10)Report Number: [NE-ID--BEA-ATR-2013-0018](#) After 2003 Redesign
Secretarial Office: Nuclear Energy, Science and Technology
Lab/Site/Org: Idaho National Laboratory
Facility Name: Advanced Test Reactor
Subject/Title: ATR Employee Receives Electrical Shock From Hand-Held Video Probe
Date/Time Discovered: 05/02/2013 15:42 (MTZ)
Date/Time Categorized: 05/09/2013 16:20 (MTZ)
Report Type: Notification

Report Dates:

Notification	05/14/2013	18:40 (ETZ)
Initial Update		
Latest Update		
Final		

Significance Category:

2

Reporting Criteria:

2E(1) - Any unexpected or unintended personal contact (burn, injury, etc.) with an electrical hazardous energy source (e.g., live electrical power circuit, etc.).

Attachment 2

Cause Codes:

ISM:

Subcontractor Involved: No

Occurrence Description: At 1542 on 2 May 2013, an Engineer received what he thought to be an electrical shock from a portable boroscope (Model Everest XLG3 Video Probe System) when he felt a slight tingle on his hand holding the hand-held video probe. He reported this to his manager and was taken to the Central Facility Area (CFA) medical facility.

ATR Complex Electricians completed an inspection of the boroscope equipment on 6 May 2013 and found no evidence of a failure that would lend itself to the availability of 110/120 volts. The instrument is protected by a double insulated sheath that is in sound condition; however, construction of the sheath itself, in conjunction with carpeted flooring and possibly compounded by the type of footwear the Engineer was wearing, led to the conclusion that if any shock were received, it was likely static build-up. This investigation also led to the conclusion that this event was not reportable.

It was discovered on 9 May 2013, however, the extension cord that was used with the boroscope had a broken ground wire resulting in 57 volts from the boroscope to ground. The event was determined at that time to be reportable.

ATR management requested further confirmation of the electrical shock aspect of this equipment, which delayed submission of this notification report.

Investigation continues with ATR Electrical Engineer and BEA company Subject Matter Expert.

Cause Description:

Operating Conditions: The ATR was shut down in support of the scheduled Cycle 154A-1 outage.

Activity Category: Maintenance

Immediate Action(s): Appropriate levels of BEA management and DOE-ID were notified of this event.

Further investigation was initiated.

FM Evaluation:

DOE Facility Representative

Input:

DOE Program Manager

Input:

Attachment 2

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

HQ Keywords: 07D--Electrical Systems - Electrical Wiring
 08A--OSHA Reportable/Industrial Hygiene - Electrical Shock
 12C--EH Categories - Electrical Safety
 14L--Quality Assurance - No QA Deficiency

HQ Summary: On May 2, 2013, an engineer received an electrical shock to his hand that was believed to be from a portable boroscope while holding the hand-held video probe. The employee made appropriate notifications and reported to the medical facility. On May 9, it was discovered that the extension cord used with the boroscope had a broken ground wire resulting in 57 volts from the boroscope to ground. An investigation was initiated with the electrical engineer and the Subject Matter Expert.

Similar OR Report Number:

Facility Manager:

Name	Hill, Shawn Ashley
Phone	(208) 533-4128
Title	ADVANCED TEST REACTOR OP. FACILITY M

Originator:

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

HQ OC Notification:

Date	Time	Person Notified	Organization
05/09/2013	16:29 (MTZ)	J. Duplessis	DOE-ID

Other Notifications:

Date	Time	Person Notified	Organization
05/02/2013	17:38 (MTZ)	J. Duplessis	DOE-ID

Authorized Classifier(AC): D. D. Miller Date: 05/14/2013

11)Report Number: [NE-ORO--USEC-K1600-2013-0001](#) After 2003 Redesign
Secretarial Office: Nuclear Energy, Science and Technology
Lab/Site/Org: East Tennessee Technology Park
Facility Name: K-1600 Complex
Subject/Title: Electrical Incident K-1600
Date/Time Discovered: 05/01/2013 08:41 (ETZ)

Attachment 2

Date/Time Categorized: 05/01/2013 12:30 (ETZ)

Report Type: Update

Report Dates:

Notification	06/11/2013	10:37 (ETZ)
Initial Update	06/14/2013	10:11 (ETZ)
Latest Update	06/14/2013	10:11 (ETZ)
Final		

Significance Category: 3

Reporting Criteria:

10(3) - A near miss to an otherwise ORPS reportable event, where something physically happened that was unexpected or unintended, or where no or only one barrier prevented an event from having a reportable consequence.

The significance category assigned to the near miss must be based on an evaluation of the potential risks and extent of personnel exposure to the hazard. (1 of 3 criteria - This is a SC 3 occurrence)

Cause Codes:

A4B3C11 - Management Problem; Work Organization & Planning LTA; Inadequate work package preparation

ISM:

2) Analyze the Hazards

Subcontractor Involved:

No

Occurrence Description:

At approximately 0840 on May 1, 2013, electricians were in the process of decommissioning portions of an electrical cabinet that would subsequently be removed. One electrician was on a 6 foot non-conducting folding ladder while removing conductive electrical components in a transition box (approximately 2 feet square and 2 feet deep) that was attached to an electrical cabinet. The box was attached to the upper compartment of a 2-compartment cabinet section. All components were de-energized in the box and upper compartment. As a copper bar that connected two buss bar sections was being removed from the box, the copper bar (approximately 2" W x 4" L x 3/8" T) fell through an opening in the bottom of the upper compartment. The bar fell into the lower compartment and made a phase to phase short on two of the three energized buss bars in the lower compartment. An arc flash resulted. The 2000 amp main breaker feeding the lower cabinet buss bars and the main breaker for the building were instantaneously tripped as a result of the phase to phase short, resulting in power loss to the facility. No personnel incurred any injury. No functional equipment was damaged since the lower buss bars were going to be decommissioned at a later date. Work was stopped and management was notified of the incident. An investigation of the incident is underway.

Cause Description:

Inadequate work planning and system knowledge.

Operating Conditions:

Normal

Activity Category:

Maintenance

Immediate Action(s):

Management ensured that electrical system was in safe status. Backup

generators operated as programmed. Safe recovery of copper bar was completed. Boxes were successfully removed. Normal power returned to facility. Standing Order issued for path forward on work performance.

FM Evaluation: Inadequate work planning and system knowledge. Investigation of incident will be performed.

DOE Facility Representative

Input:

DOE Program Manager

Input:

Further Evaluation is Required: Yes.
 Before Further Operation? No
 By Whom: Independent Investigator
 By When:

Division or Project: K-1600 Maintenance

Plant Area: Switchgear room

System/Building/Equipment: Electrical switchgear

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

Corrective Action 01:

Target Completion Date: 07/31/2013	Actual Completion Date:
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Corrective actions will be identified in investigation of incident.

Lessons(s) Learned:

HQ Keywords: 01M--Inadequate Conduct of Operations - Inadequate Job Planning (Electrical)
 07C--Electrical Systems - Power Outage
 07E--Electrical Systems - Electrical Equipment Failure
 08J--OSHA Reportable/Industrial Hygiene - Near Miss (Electrical)
 12C--EH Categories - Electrical Safety
 14E--Quality Assurance - Work Process Deficiency

HQ Summary: On May 1, 2013, an arc flash occurred while electricians were decommissioning portions of an electrical cabinet when a copper bar, which connected two buss bar sections in the cabinet upper compartment, fell into the lower compartment, causing a phase to phase short on two of three energized buss bars. All components in the upper compartment had been de-energized. The 2-inch wide by 4-inch long copper bar fell through an opening in the bottom of the upper compartment. The short circuit instantaneously tripped the 2,000 amp main breaker feeding the lower cabinet buss bars and the main breaker for the building, resulting in loss of facility power. No personnel were injured. Work was stopped and management was notified. An investigation of the incident is underway.

Similar OR Report Number:

Facility Manager:

Name	WINEBARGER, GEORGE H
Phone	(865) 425-9989

Title	ES&H, QA, AND OPERATIONS CONSULTANT
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Originator:

Name	MCDONALD, LARRY A
Phone	(865) 482-8936
Title	ESH CONSULTANT

HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

Other Notifications:

Date	Time	Person Notified	Organization
05/01/2013	12:30 (ETZ)	George Herron	DOE-OR

Authorized Classifier(AC): D. R. Willis Date: 05/03/2013

12)Report Number: [SC--ASO-ANLE-ANLEFMS-2013-0003](#) **After 2003 Redesign**
Secretarial Office: Science
Lab/Site/Org: Argonne National Laboratory East
Facility Name: Facility Management Services
Subject/Title: Subcontractor Electricians Fail to Follow Required Hazardous Electrical Energy Control Procedures

Date/Time Discovered: 05/07/2013 14:15 (CTZ)

Date/Time Categorized: 05/07/2013 14:32 (CTZ)

Report Type: Notification/Final

Report Dates:

Notification	05/09/2013	17:53 (ETZ)
Initial Update	05/09/2013	17:53 (ETZ)
Latest Update	05/09/2013	17:53 (ETZ)
Final	05/09/2013	17:53 (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
Titan Electric

Occurrence Description: On the morning of 5/7/2013, subcontractor electricians for the Energy Sciences Building (ESB) construction project failed to perform Lock-Out/Tag-Out (LO/TO) on a 110 volt circuit supplying power to lighting and exit signs which they were installing on the north side of the lower level service floor of Building 223. Once the electricians identified the wires associated with the lights, black electrical tape was placed over the nearby light switch to prevent anyone from turning it on. Furthermore, a

subsequent violation occurred when the subcontractor electricians failed to use a multi-meter to test for zero-energy as required by Argonne policy. Instead, a tic-tracer was used to test for voltage from the circuit. Upon verification of a de-energized state with the tic-tracer, one electrician remained at the taped-over light switch while the second electrician proceeded to splice the wires.

At approximately 9:30 am, an unrelated safety inspection of custodial areas was taking place in Building 223. During the inspection, a request was made to visit a caged custodial storage area on the service floor. Upon arrival, two subcontractor electricians were observed performing electrical work running conduit to a lighted exit sign on the north wall by the new door leading to the Energy Sciences Building. The inspectors requested that the Custodial foreman turn on the lights to the cage in order to perform the inspection. The Custodial foreman stated that the light switch was located at the entrance to the service area, however, the switch had a piece of black tape over it. The inspectors viewed the tape on the light switch, briefly questioned the electricians, and then contacted ESB project management. The job was halted and Facilities Management & Services (FMS) - Building Infrastructure was contacted to perform a LO/TO on the circuit supplying power to the light switch.

Cause Description:

Operating Conditions:

Normal

Activity Category:

Construction

Immediate Action(s):

ESB project management was immediately contacted, the job was halted, and Facilities Management and Services (FMS) - Building Infrastructure was contacted to perform a LO/TO on the circuit supplying power to the light switch. The electrical subcontractor was ultimately allowed to complete the installation of the lighting and exit signs. Afterwards, the LO/TO was removed by FMS - Building Infrastructure.

FM Evaluation:

An informal fact-finding meeting was convened on 5/8/2013 at 0900 to confirm the timeline of events.

DOE Facility Representative

Input:

DOE Program Manager

Input:

Further Evaluation is Required:

No

Division or Project:

FMS - Office of Project Management

Plant Area:

200 Area

System/Building/Equipment: Building 223, Lower Level Service Floor, North Side

Facility Function:

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

Corrective Action:

Lessons(s) Learned:

HQ Keywords:

01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical)
 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 May 7, 2013, subcontractor electricians for the Energy Sciences Building (ESB) construction project failed to perform Lock-Out/Tag-Out (LO/TO) on a 110-volt circuit supplying power to lighting and exit signs which they were installing on the north side of the lower level service floor of Building 223. Once the electricians identified the wires associated with the lights, black electrical tape was placed over the nearby light switch to prevent anyone from turning it on. A subsequent violation occurred when the subcontractor electricians failed to use a multi-meter to test for zero-energy as required by Argonne policy, instead, a tic-tracer was used to test for voltage from the circuit. Upon verification of a de-energized state with the tic-tracer, one electrician remained at the taped-over light switch while the second electrician proceeded to splice the wires. ESB project management was immediately contacted, the job was halted, and Facilities Management and Services Building Infrastructure was contacted to perform a LO/TO on the circuit supplying power to the light switch. The electrical subcontractor was ultimately allowed to complete the installation of the lighting and exit signs.

Similar OR Report Number:

Facility Manager:

Name	Gail Stine
Phone	(630) 252-8930
Title	FMS - Division Director

Originator:

Name	ALICZ, JEFFREY E.
Phone	(630) 252-9525
Title	SAFETY SPECIALIST

HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

Other Notifications:

Date	Time	Person Notified	Organization
05/07/2013	14:32 (CTZ)	Gail Stine	ANL-FMS
05/07/2013	16:50 (CTZ)	Robin Colglazier	ANL-PMA
05/07/2013	17:00 (CTZ)	Craig Schumann	DOE-ASO

05/07/2013	17:06 (CTZ)	Chuck Clarke	ANL-ESQ
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Authorized Classifier(AC):

13)Report Number: [SC--BSO-LBL-OPERATIONS-2013-0009](#) After 2003 Redesign
Secretarial Office: Science
Lab/Site/Org: Lawrence Berkeley National Laboratory
Facility Name: Operations Division
Subject/Title: Subcontractor Failed to Apply Personal LOTO -No Exposure, No Injury
Date/Time Discovered: 05/28/2013 10:30 (PTZ)
Date/Time Categorized: 05/29/2013 12:11 (PTZ)
Report Type: Notification/Final

Report Dates:

Notification	05/30/2013	13:18 (ETZ)
Initial Update	05/30/2013	13:18 (ETZ)
Latest Update	05/30/2013	13:18 (ETZ)
Final	05/30/2013	13:18 (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
 Contra Costa Electric (CCE)

Occurrence Description: On Tuesday 05/28/2013, at approximately 10:30 AM, an LBNL construction safety inspector observed a subcontractor electrician working on a lighting circuit without applying personal Lock and Tag to an existing LOTO and without signing onto the LOTO permit. The Contra Costa Electric (CCE) electrician was working on the Building 15 OML (Optical Metrology Lab) project. An existing LOTO was in place at the time, therefore the electrician was not working with energized wiring and did not receive an electrical shock.

Upon being notified of the observation, the Facilities Chief Construction Manager stopped work and ordered a stand-down during which the CCE electrician applied the personal LOTO and signed onto the LOTO permit.

Cause Description:
Operating Conditions: Indoors, lighted, dry
Activity Category: Normal Operations (other than Activities specifically listed in this Category)
Immediate Action(s): - The LBNL construction safety inspector immediately notified the project

manager.

- The Facilities Chief Construction Manager stopped work and ordered a stand-down.

FM Evaluation:

- The CCE electrician believed that since the wiring for this work was air-gapped, no LOTO was required.

- During the stand-down, the Chief Construction Manager asked CCE to submit a plan of compensatory measures consisting of: 1) how CCE will communicate safety policy and hazard identification to its new and existing employees. 2) how CCE will communicate the Plan of the Day to all CCE employed working on the OML project.

DOE Facility Representative

Input:

DOE Program Manager

Input:

Further Evaluation is Required: No

Division or Project: Facilities Division

Plant Area: B15 OML

System/Building/Equipment: Building 15, Optical Metrology Laboratory

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

Corrective Action:

Lessons(s) Learned:

HQ Keywords: 01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical)
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 May 28, 2013, a construction safety inspector observed a subcontractor electrician working on a lighting circuit without applying personal Lock and Tag to an existing Lockout/Tagout (LOTO) and without signing onto the LOTO permit. The Contra Costa Electric electrician was working on the Building 15 Optical Metrology Laboratory project. An existing LOTO was in place at the time therefore the electrician was not working with energized wiring and did not receive an electrical shock. The Facilities Chief Construction Manager stopped work and ordered a stand-down.

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
05/29/2013	12:41 (PTZ)	Kevin Hartnett	BSO
05/29/2013	12:41 (PTZ)	Mary Gross	BSO

Authorized Classifier(AC):

14)Report Number: [SC--PNSO-PNNL-PNNLBOPER-2013-0006](#) After 2003 Redesign

Secretarial Office: Science

Lab/Site/Org: Pacific Northwest National Laboratory

Facility Name: Energy Research Programs (PNNL)

Subject/Title: Failure to Follow a Prescribed Electrical Hazardous Energy Control Process resulting in a Near Miss in the Field Lysimeter Test Facility

Date/Time Discovered: 05/02/2013 14:17 (PTZ)

Date/Time Categorized: 05/02/2013 15:24 (PTZ)

Report Type: Update

Report Dates:

Notification	05/03/2013	16:59 (ETZ)
Initial Update	05/23/2013	09:31 (ETZ)
Latest Update	05/23/2013	09:31 (ETZ)
Final		

Significance Category: 2

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

10(3) - A near miss to an otherwise ORPS reportable event, where something physically happened that was unexpected or unintended, or where no or only one barrier prevented an event from having a reportable consequence.

The significance category assigned to the near miss must be based on an evaluation of the potential risks and extent of personnel exposure to the hazard. (1 of 3 criteria - This is a SC 2 occurrence)

Cause Codes:

Attachment 2

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

Subcontractor Involved: No

Occurrence Description: On May 2, 2013, PNNL Management was notified that on two separate occasions in early April and during the week of April 22, a PNNL researcher replaced a ballast in an overhead fluorescent light in the Field Lysimeter Test Facility without applying lock and tag to the electrical breaker that fed the light. This constitutes a failure to follow a prescribed hazardous energy control process and also a near miss to unintended personal contact with an electrical hazardous energy source. There were no injuries associated with this event.

Cause Description:

Operating Conditions: Indoors. Dry.

Activity Category: Research

Immediate Action(s): Line management contacted 375-2400, requested and had an electrical safety subject matter expert conduct an electrical assessment at the Field Lysimeter Test Facility. A critique will be scheduled.

FM Evaluation: <<< 5/23/13 Update in Lieu of Final >>>

A formal causal analysis has been commissioned for this event. It's charter calls for a final causal report to be issued by 6/14/13, which is also the due date for the Final occurrence report. Following the issuance of the causal, a corrective action plan will have to be developed and issued, which may take an additional couple weeks. Accordingly, the Final occurrence report will be delayed. The new target due date is 7/19/13. ~RAP

<<< End of Update >>>

Results of the Electrical Severity calculations for this event:

$$(EHF)*[(1+EF+SPF+AFPP+TPF)*IF]=ES$$

$$EHF \text{ (Electrical Hazard Factor)} = 10$$

$$EF \text{ (Environmental Factor)} = 0$$

$$SPF \text{ (Shock Proximity Factor)} = 1$$

$$AFPP \text{ (Arc Flash Proximity Factor)} = 0$$

$$TPF \text{ (Thermal Proximity Factor)} = 0$$

$$IF \text{ (Injury Factor)} = 1$$

$$(10)*[(1+0+1+0+0)*1] = 20 \text{ Low Severity}$$

DOE Facility Representative
Input:
DOE Program Manager
Input:

Attachment 2

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

Division or Project: Energy & Environment Directorate

Plant Area: 600 Area

System/Building/Equipment: 622-S, Field Lysimeter Test Facility

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
 08J--OSHA Reportable/Industrial Hygiene - Near Miss (Electrical)
 12I--EH Categories - Lockout/Tagout (Electrical or Mechanical)
 14E--Quality Assurance - Work Process Deficiency

HQ Summary: On May 2, 2013, Pacific Northwest National Laboratory (PNNL) Management was notified that on two separate occasions in early April and during the week of April 22, a PNNL researcher replaced a ballast in an overhead fluorescent light in the Field Lysimeter Test Facility without applying lock and tag to the electrical breaker that fed the light. This constitutes a failure to follow a prescribed hazardous energy control process and a near miss to unintended personal contact with an electrical hazardous energy source. There were no injuries associated with this event. An electrical safety subject matter expert conducted an electrical assessment at the Field Lysimeter Test Facility. A critique will be scheduled.

Similar OR Report Number: 1. SC--PNSO-PNNL-PNNLBOPER-2010-0023

Facility Manager:

Name	Opitz, B. E.
Phone	(509) 371-7084
Title	Manager, Environmental Assessment

Originator:

Name	Pollari, Roger Allen
Phone	(509) 371-7700
Title	EVENT REPORTING PROGRAM MANAGER

HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

Other Notifications:

Date	Time	Person Notified	Organization
05/02/2013	15:27 (PTZ)	Yasek, R.	PNSO

Authorized Classifier(AC): Pollari, R. A. Date: 05/23/2013

15)Report Number: [SC-ORO--ORNL-X10CENTRAL-2013-0002](#) After 2003 Redesign

Secretarial Office: Science

Lab/Site/Org: Oak Ridge National Laboratory

Facility Name: ORNL Central Complex

Subject/Title: Mild Electrical Shock from Unplugged Laboratory Equipment

Date/Time Discovered: 05/10/2013 14:00 (ETZ)

Date/Time Categorized: 05/16/2013 12:00 (ETZ)

Report Type: Notification

Report Dates:

Notification	05/17/2013	17:43 (ETZ)
Initial Update		
Latest Update		
Final		

Significance Category: 2

Reporting Criteria: 2E(1) - Any unexpected or unintended personal contact (burn, injury, etc.) with an electrical hazardous energy source (e.g., live electrical power circuit, etc.).

Cause Codes:

ISM:

Subcontractor Involved: No

Occurrence Description: On May 10, 2013, a research employee unplugged a 120 volt bench top sieve shaker. While wrapping the unplugged power cord around the sieve shaker, the employee inadvertently contacted the prongs of the cord and received a mild electrical shock to the hand.

After the event, UT-Battelle focused on determining the origin of the energy and determining the level of shock.

On May 16, 2013, after further evaluation, line management notified the Laboratory Shift Superintendent and the event was categorized as a SC(2), 2E(1), "Hazardous Electrical Energy Control" occurrence.

There were no injuries to personnel, or environment, health and safety impacts as a result of this event.

Cause Description:

Operating Conditions: Normal

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

Immediate Action(s): On May 10, 2013, immediately following the event, the employee stopped work and notified other personnel in the work area. Initial notifications

were made to line management and the LSS. The sieve shaker was tagged out of service and verified to be in a safe condition.

On May 13, 2013, an investigation was initiated to inspect and test the equipment.

On May 16, 2013, a critique was conducted.

FM Evaluation: ORNL management is evaluating the circumstances around the event, the extent of condition, and will implement actions as appropriate. Any resulting lessons learned will be shared. The laboratory equipment involved is commercially available.

DOE Facility Representative Input:

DOE Program Manager Input:

Further Evaluation is Required: Yes.
Before Further Operation? No
By Whom: Gene E. Ice
By When: 07/02/2013

Division or Project: Materials Science & Technology Division

Plant Area: 4515

System/Building/Equipment: Bldg 4515

Facility Function: Laboratory - Research & Development

Corrective Action:

Lessons(s) Learned:

HQ Keywords: 07D--Electrical Systems - Electrical Wiring
08A--OSHA Reportable/Industrial Hygiene - Electrical Shock
12C--EH Categories - Electrical Safety
14L--Quality Assurance - No QA Deficiency

HQ Summary: On May 10, 2013, a research employee unplugged a 120-volt bench top sieve shaker and while wrapping the unplugged power cord around the sieve shaker, the employee inadvertently touched the prongs of the cord and received a mild electrical shock to the hand. The employee stopped work and notified other personnel in the work area. The commercially available sieve shaker was tagged out of service and verified to be in a safe condition. On May 13, an investigation was initiated to inspect and test the equipment.

Similar OR Report Number:

Facility Manager:

Name	Gene E. Ice
Phone	(865) 574-4065
Title	Div. Director, Materials Sci. & Tech. Div.

Originator:

Name	PEHRSON, PAUL B.
Phone	(865) 576-7929
Title	OCCURRENCE REPORTING MANAGER

HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

Other Notifications:

Date	Time	Person Notified	Organization
05/16/2013	12:00 (ETZ)	Lab Shift Superintendent	ORNL LSS
05/16/2013	13:20 (ETZ)	Michele Branton	DOE ORNL
05/16/2013	13:20 (ETZ)	Johnny Moore	DOE ORNL

Authorized Classifier(AC):

16)Report Number: [SC-ORO--ORNL-X10CHRIDGE-2013-0002](#) After 2003 Redesign

Secretarial Office: Science

Lab/Site/Org: Oak Ridge National Laboratory

Facility Name: Chestnut Ridge

Subject/Title: Hazardous Energy Control Procedural Violation

Date/Time Discovered: 05/19/2013 08:00 (ETZ)

Date/Time Categorized: 05/21/2013 17:00 (ETZ)

Report Type: Notification/Final

Report Dates:

Notification	05/23/2013	18:14 (ETZ)
Initial Update	05/23/2013	18:14 (ETZ)
Latest Update	05/23/2013	18:14 (ETZ)
Final	05/23/2013	18:14 (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: A5B4C05 - Communications Less Than Adequate (LTA); Verbal Communications LTA; Information sent but not understood

ISM: 4) Perform Work Within Controls

Subcontractor Involved: No

Occurrence Description: On May 19, 2013, a worker discovered that a visiting researcher had not followed an established energy control process for disconnecting sample environment equipment from a pulsed magnet power supply on Beam Line 17 (SEQUOIA) in Building 8700. A Job Hazard Analysis (JHA) was developed to implement stored energy hazard controls for the experiment. The JHA established a requirement to have a qualified electrical worker verify zero energy status before disconnecting power supply connections.

Attachment 2

The researcher did not observe the established requirement and was not authorized to perform this work.

On May 21, 2013, after review of the event, line management notified the Laboratory Shift Superintendent and the event was categorized as a Group 2, Subgroup E(3), Significance Category 4 event "failure to follow a prescribed hazardous energy control process".

There was no injury or contact with hazardous energy or other environmental, health and safety impacts as a result of the event.

Cause Description:

A5B4C05 - Verbal communication LTA; Information sent but not understood - Language barrier with foreign national researcher

Operating Conditions:

Normal

Activity Category:

Facility Decontamination/Decommissioning

Immediate Action(s):

On Sunday May 19, 2013, the worker who discovered the unexpected condition immediately stopped the work, notified their management, and initiated appropriate recovery activities.

On May 21, 2013, a critique was conducted to establish the facts related to this event.

FM Evaluation:

ORNL management is evaluating the circumstances around the event, will implement actions as appropriate, and share any resulting lessons learned.

DOE Facility Representative

Input:

DOE Program Manager

Input:

Further Evaluation is Required:

No

Division or Project:

Research Accelerator Division

Plant Area:

Building 8700

System/Building/Equipment:

8700 Beam Line 17 (SEQUOIA)

Facility Function:

Accelerators

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
01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical)
01P--Inadequate Conduct of Operations - Inadequate Oral Communication
08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance
11I--Other - Visiting Scientist/Researcher or Student Employee

12I--EH Categories - Lockout/Tagout (Electrical or Mechanical)
 14E--Quality Assurance - Work Process Deficiency

HQ Summary:

On May 19, 2013, a worker discovered that a visiting researcher had not followed an established energy control process for disconnecting sample environment equipment from a pulsed magnet power supply on Beam Line 17 (SEQUOIA) in Building 8700. A Job Hazard Analysis had been developed to implement stored energy hazard controls for the experiment that required a qualified electrical worker to verify zero energy status before disconnecting power supply connections. The researcher did not observe the established requirement and was not authorized to perform this work. There was no injury or contact with hazardous energy as a result of the event.

Similar OR Report Number:

Facility Manager:

Name	Kevin W. Jones
Phone	(865) 241-6794
Title	Research Accelerator Division Dir.

Originator:

Name	PEHRSON, PAUL B.
Phone	(865) 576-7929
Title	OCCURRENCE REPORTING MANAGER

HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

Other Notifications:

Date	Time	Person Notified	Organization
05/21/2013	18:41 (ETZ)	Michele Branton	DOE ORNL
05/21/2013	18:41 (ETZ)	Johnny Moore	DOE ORNL

Authorized Classifier(AC):

17)Report Number: [SC-ORO--ORNL-X10EAST-2013-0006](#) After 2003 Redesign

Secretarial Office: Science

Lab/Site/Org: Oak Ridge National Laboratory

Facility Name: ORNL East Complex

Subject/Title: Failure to Correctly Apply LockOut/TagOut

Date/Time Discovered: 05/09/2013 13:00 (ETZ)

Date/Time Categorized: 05/21/2013 12:53 (ETZ)

Report Type: Notification

Report Dates:

Notification	05/24/2013	07:15 (ETZ)
Initial Update		
Latest Update		

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: 4) Perform Work Within Controls

Subcontractor Involved: No

Occurrence Description: On May 21, 2013, an employee identified an electrical disconnect switch locked out without the appropriate tag. This was not in accordance with UT-Battelle LockOut/TagOut (LOTO) procedures. Line management was notified and the event was categorized as a 2E(3), SC4 occurrence, "Hazardous Electrical Energy Control."

On May 22, 2013, during a critique of the event, it was identified that on May 9, 2013, a qualified electrical worker removed de-energized fuses from the disconnect switch as part of testing and trouble shooting. This work was performed in the proximity of an energized electrical source, without an energized electrical work permit. This was not in accordance with UT-Battelle energized electrical work procedures. The employee was wearing the appropriate PPE and using an insulated tool.

Line management contacted the Laboratory Shift Superintendent and upgraded the event to a 2E(2), SC3 occurrence, "Hazardous Electrical Energy Control."

There were no injuries to personnel or environment, health and safety impacts as a result of this event.

Cause Description:

Operating Conditions: Normal

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

Immediate Action(s): On May 21, 2013, after the discovery of the lock without a tag, a permitted LOTO was implemented.

FM Evaluation: ORNL management is evaluating the circumstances around the event, the extent of condition, and will implement actions as appropriate.

DOE Facility Representative

Input:

DOE Program Manager

Input:

Further Evaluation is Yes.

Attachment 2

Required: Before Further Operation? No
 By Whom: Ann Bryant Weaver
 By When: 07/08/2013

Division or Project: Facilities Management Division

Plant Area: Building 6010

System/Building/Equipment: Building 6010

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

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 May 21, 2013, an employee identified an electrical disconnect switch locked out without the appropriate tag, which is not in accordance with UT-Battelle LockOut/TagOut procedures. During a critique of the event, it was identified that a qualified electrical worker removed de-energized fuses from the disconnect switch as part of testing and troubleshooting. This work was performed in the proximity of an energized electrical source, without an energized electrical work permit. The employee was wearing the appropriate PPE and using an insulated tool. Line management was notified. There were no injuries to personnel or environment, health, and safety impacts as a result of this event.

Similar OR Report Number:

Facility Manager:

Name	Ann Bryant Weaver
Phone	(865) 576-8689
Title	Facilities Management Division Director

Originator:

Name	PEHRSON, PAUL B.
Phone	(865) 576-7929
Title	OCCURRENCE REPORTING MANAGER

HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

Other Notifications:

Date	Time	Person Notified	Organization
05/21/2013	12:53 (ETZ)	Johnny Moore	DOE ORNL
05/21/2013	15:12 (ETZ)	Michele Branton	DOE ORNL
05/21/2013	15:12 (ETZ)	Lab. Shift Superintendent	ORNL LSS

Authorized Classifier(AC):

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