December 2008 Electrical Safety Occurrences

The number of reported electrical shock events for 2008 exceeded 2007 by one shock event. However, the 26 events for 2008 were below the average number of electrical shocks per year (28.75) for the previous four years. Almost three quarters of the 2008 electrical shocks involved non-electrical workers. Hazardous energy control continues to be an issue, involving more than a third of the 2008 events. Half of all lockout/tagouts problems were associated with subcontractors. It is extremely important to plan the job correctly and ensure that an electrically safe work condition exists before starting the job. This will greatly reduce the risk of contacting energized parts, which can cause an electrical shock or arc flash.

On the positive side, the average number of electrical safety occurrences per month in 2008 (9.4) is the lowest in five years and shows a 27 percent reduction from the previous four-year monthly average.

There were 7 electrical safety occurrences for December 2008:

- 1 resulted in an electrical shock
- 1 involved damaging an electrical conduit during drilling
- 1 involved cutting an energized 120-volt cable
- 1 involved lockout/tagout
- 4 involved electrical workers and 3 involved non-electrical workers
- 2 occurrences involved subcontractors

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

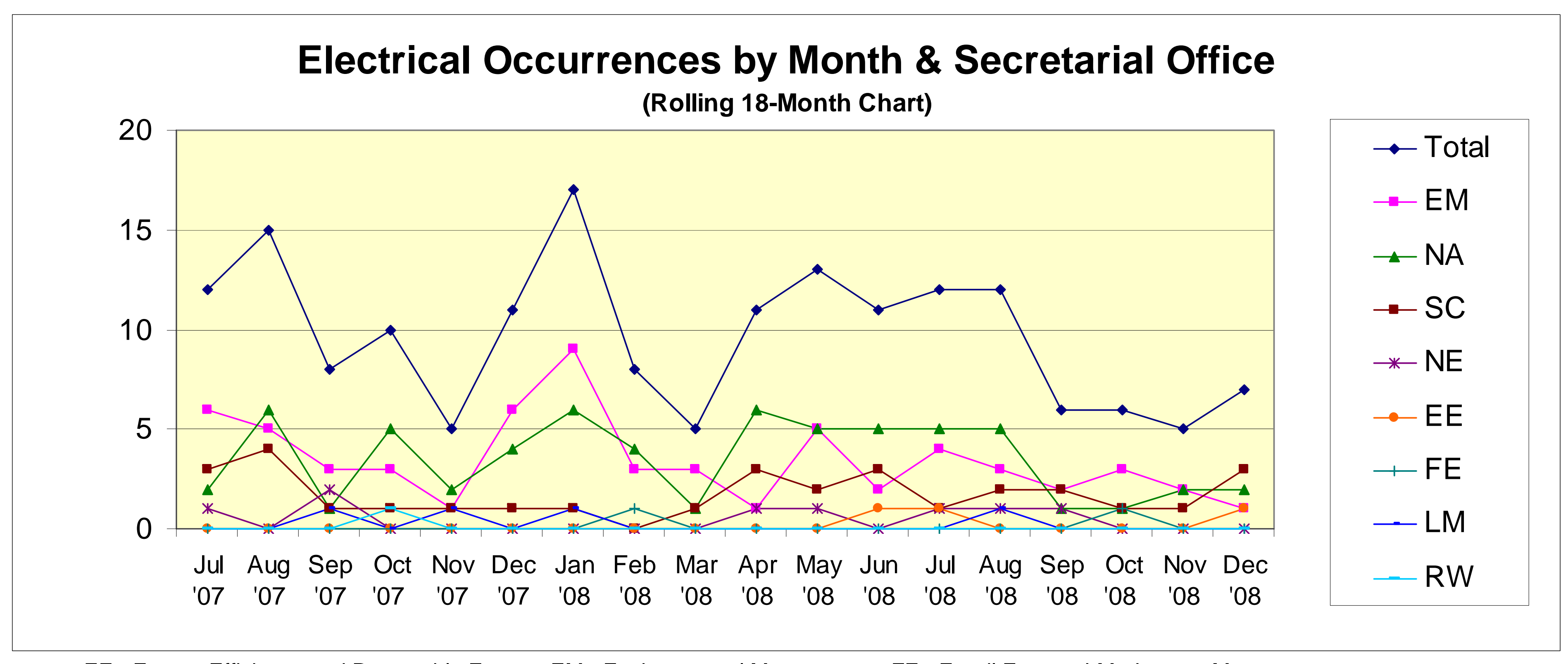
01K – Lockout/Tagout Electrical, 01M – Inadequate Job Planning (Electrical),
08A – Electrical Shock, 08J – Near Miss (Electrical), 12C – Electrical Safety

The initial search yielded 7 occurrences and a review of these determined none needed to be culled out.

Below is the current summary of 2008 electrical safety occurrences:

Period	Electrical Safety Occurrences	Shocks	Burns	Fatalities
Jan-08	17	7	0	0
Feb-08	8	3	0	0
Mar-08	5	1	0	0
Apr-08	11	1	0	0
May-08	13	1	1	0
Jun-08	11	4	0	0
Jul-08	12	1	0	0
Aug-08	12	4	0	0
Sep-08	6	1	0	0
Oct-08	6	1	0	0
Nov-08	5	1	0	0
Dec-08	7	1	0	0
2008 total	113 (avg. 9.4/month)	26	1	0
2007 total	140 (avg. 11.7/month)	25	2	0
2006 total	166 (avg. 13.8/month)	26	3	0
2005 total	165 (avg. 13.8/month)	39	5	0
2004 total	149 (avg. 12.4/month)	25	3	1

The average rate of electrical safety occurrences in 2008 is 9.4 per month, which is less than the average rate of 11.7 per month experienced in 2007.



EE - Energy Efficiency and Renewable Energy, EM - Environmental Management, FE - Fossil Energy, LM - Legacy Management, NA - National Nuclear Security Administration, NE - Nuclear Energy, RW - Civilian Radioactive Waste Management, SC - Science

Electrical Safety Occurrences – December 2008

No	Report Number	Subject/Title	EW[(1)]	N-EW[(2)]	SUB[(3)]	SHOCK	BURN	ARCF[(4)]	LOTO[(5)]	EXCAV[(6)]	CUT/D[(7)]	VEH[(8)]
1	EE-GO--NREL-NREL-2008-0013	Subcontractor Pulling Cable through Power/Data Raceway without LOTO	X		X				X			
2	EM-ID--CWI-RWMC-2008-0005	Noncompliance with Requirements for Grounding of Temporary Power	X									
3	NA--LSO-LLNL-LLNL-2008-0061	Mechanical Interlock Failure on Door to Main Electrical Transformer in Building 191	X									
4	NA--PS-BWP-PANTEX-2008-0128	Unauthorized Work in Building 16-18		X							X	
5	SC--BSO-LBL-OPERATIONS-2008-0017	Energized 120-V Wire Cut in Fire Alarm Control Wire Pull Box - No Injuries	X								X	
6	SC--PNSO-PNNL-PNNLBOPER-2008-0025	Electrical Short Discovered in HVAC Heat Pump Unit		X		X						
7	SC--PNSO-PNNL-PNNLBOPER-2008-0026	Subcontractor Noncompliance with Electrical Safety Requirements		X	X							
	TOTAL		4	3	2	1			1		2	

Key

(1)EW = electrical worker, (2)N-EW = non-electrical worker, (3)SUB = subcontractor, (4)ARCF = significant arc flash, (5)LOTO = lockout/tagout, (6)EXCAV = excavation, (7)CUT/D = cutting or drilling, (8)VEH = vehicle event

ORPS Operating Experience Report

Production GUI - New ORPS

ORPS contains 54010 OR(s) with 57328 occurrences(s) as of 1/7/2009 6:43:39 AM
Query selected 7 OR(s) with 7 occurrences(s) as of 1/7/2009 10:32:02 AM

Download this report in Microsoft Word format.

1)Report Number:	EE-GO--NREL-NREL-2008-0013 **After 2003 Redesign**
Secretarial Office:	Energy Efficiency and Renewable Energy
Lab/Site/Org:	National Renewable Energy Laboratory
Facility Name:	National Renewable Energy Laboratory
Subject/Title:	Subcontractor pulling cable through power/data raceway without LOTO
Date/Time Discovered:	12/19/2008 12:05 (MTZ)
Date/Time Categorized:	12/19/2008 14:00 (MTZ)
Report Type:	Notification
Report Dates:	Notification — 12/22/2008 — 10:44 (ETZ) Initial Update Latest Update Final
Significance Category:	3
Reporting Criteria:	2C(2) - Failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout) or a site condition that results in the unexpected discovery of an uncontrolled hazardous energy source (e.g., live electrical power circuit, steam line, pressurized gas). 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:	Yes DRG and American Datapath
Occurrence Description:	An information services subcontractor was observed pulling information cables through a power/data raceway. The power to the raceway had not been locked and tagged out, even though the receptacle face plates had been removed. The raceway had shielding separating the power and data sides of the raceway. At this time the event appears to be a low severity, and the Electrical Severity Measurement Tool (EFCOG) will be used during the incident investigation to verify the severity level.
Cause Description:	

Operating Conditions:	Normal
Activity Category:	Normal Operations (other than Activities specifically listed in this Category)
Immediate Action(s):	Subcontractor was asked to stop the cable pulling task. Project supervisor was interviewed. Incident investigation has been initiated.
FM Evaluation:	No injuries, property damage, environmental impacts or impacts to Laboratory operations resulted.
DOE Facility Representative Input:	
DOE Program Manager Input:	
Further Evaluation is Required:	Yes. Before Further Operation? No By Whom: Site Operations By When:
Division or Project:	Site Operations/Lab Remodel
Plant Area:	FTLB 205
System/Building/Equipment:	Laboratory Remodel/FTLB
Facility Function:	Solar Activities
Corrective Action:	
Lessons(s) Learned:	
HQ Keywords:	01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical) 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 December 19, 2008, an information services subcontract worker was observed pulling information cables through a power/data raceway. The raceway power had not been locked and tagged out, even though the receptacle face plates had been removed. The raceway had shielding separating the power and data sides of the raceway. There were no injuries or electrical shock associated with the event. The DOE Electrical Severity Measurement Tool will be used during the ongoing investigation to verify the event severity level.
Similar OR Report Number:	
Facility Manager:	Name: Rukavina, Frank Phone: (303) 275-3220 Title: EHS Office Director
Originator:	Name: OKANE, BARBARA V. Phone: (303) 384-7609

	Title: ENVIRONMENTAL H & S SENIOR ES&H SPEC

HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

Other Notifications:

Date	Time	Person Notified	Organization
12/19/2008	14:05 (MTZ)	Steve Blazek	DOE-GO

Authorized Classifier(AC):

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2)Report Number:	EM-ID--CWI-RWMC-2008-0005 **After 2003 Redesign**
Secretarial Office:	Environmental Management
Lab/Site/Org:	Idaho National Laboratory
Facility Name:	Radioactive Waste Management Complex
Subject/Title:	Noncompliance with Requirements for Grounding of Temporary Power
Date/Time Discovered:	12/17/2008 11:00 (MTZ)
Date/Time Categorized:	12/17/2008 12:36 (MTZ)
Report Type:	Notification/Final

Report Dates:

Notification	12/18/2008	16:40 (ETZ)
Initial Update	12/18/2008	16:40 (ETZ)
Latest Update	12/18/2008	16:40 (ETZ)
Final	12/18/2008	16:40 (ETZ)

Significance Category:	4
Reporting Criteria:	4B(5) - A facility operational event caused by deviating from a written procedure or using an inadequate procedure resulting in an adverse effect on safety, such as: an inadvertent facility or operations shutdown (i.e., a change of operational mode or curtailment of work or processes), facility or operations shutdown due to alarm response procedures, inadvertent process liquid transfer, or inadvertent release of hazardous material from its engineered containment.
Cause Codes:	
ISM:	4) Perform Work Within Controls
Subcontractor Involved:	No
Occurrence Description:	At approximately 1100 on December 17, a formal stop work was initiated at the RWMC ARP-IV Construction Area. A Quality Inspector (QI) identified electrical issues associated with grounding of temporary electrical installations on a portable electrical distribution panel and a hazardous materials cargo container. The temporary electrical installations installed did not comply with the work control and one line sketch requirement described in GDE-436, Engineering Guide for Temporary Electrical Power Use, and

	MCP-6403, Assured Equipment Grounding Conductor Program. The construction Work Order (WO) #621458 being used and the construction foreman each identified the work as using plug and cord connected equipment from a portable generator power source. The workers initially used a 120VAC 5KW generator and extension cords, which is within the scope of the work order and in compliance. When additional power was needed to supply portable electrical equipment, a larger generator was obtained by construction personnel. This 480VAC 50KW generator was connected through a portable distribution panel with a step-down transformer to operate the portable electrical equipment. This change in scope, to install a temporary power system, invoked additional requirements from GDE-436 and MCP-6403 for grounding the secondary side of the transformer. The installation and use of a temporary power system was not intended, and was not included in the original work order scope. The additional grounding requirements of this change were not recognized or identified by supervision and the electrician was directed to proceed with the installation. On December 16, the QI inspected the installation, and determined that the installation of the electrical distribution panel with transformer and the temporary electrical installation for the cargo container did not meet the applicable grounding requirements. In response to the findings of the QI, Construction personnel disconnected the temporary power installations. The electrician energized the temporary power system for about one hour and connected light stands while checking the equipment installation. The power source had not yet been used by other construction personnel. On December 17, the QI again visited the construction site and inquired about the work control documents being used to perform the temporary power installations. The QI determined that the work control documents in use did not have the required engineering design direction, work control scope, and hazard analysis for the new temporary power installations. Upon identification of these deficiencies, the QI notified the Construction Supervisor, initiated a Stop Work, and all work on the construction site was immediately stopped. The event was initially categorized as non-reportable at 1236, 12/17/2008. At 1448, 12/17/2008, based upon information gathered at the fact finding meeting, the Facility Manager re-categorized the event as reportable - 4.B(5) Sig cat 4.
Cause Description:	
Operating Conditions:	Does not apply
Activity Category:	Construction
Immediate Action(s):	When the Stop Work was initiated, all work activities on the ARP-IV

	construction site were immediately placed in a safe configuration and stopped. Management notifications were made and a fact finding was conducted.
FM Evaluation:	Preliminary corrective actions identified at the fact finding to allow the lifting of the Stop Work order include: 1. Complete a drawing of the temporary power installation and grounding per GDE-436 and MCP-6403 2. Add the required scope for temporary power installation, including the necessary hazard analysis, mitigations, and quality inspections to work orders that will be used to perform the installation of the temporary power systems. 3. Perform an extent of conditions review for similar issues at the construction site 4. Re-perform the Quality Inspections The Stop Work on the installation and use of temporary electrical systems at the ARP-IV construction site remains in effect. Other construction work activities are resumed.
DOE Facility Representative Input:	
DOE Program Manager Input:	
Further Evaluation is Required:	No
Division or Project:	RWMC CLEANUP PROJECT
Plant Area:	SDA
System/Building/Equipment:	Construction Site Temporary Power
Facility Function:	Nuclear Waste Operations/Disposal
Corrective Action:	
Lessons(s) Learned:	
HQ Keywords:	01E--Inadequate Conduct of Operations - Operations Procedure Noncompliance 01M--Inadequate Conduct of Operations - Inadequate Job Planning (Electrical) 07D--Electrical Systems - Electrical Wiring 12C--EH Categories - Electrical Safety 14E--Quality Assurance - Work Process Deficiency 14I--Quality Assurance - Management Assessment Deficiency
HQ Summary:	On December 17, 2008, a Quality Inspector (QI) identified electrical issues associated with grounding of temporary electrical installations on a portable electrical distribution panel and a hazardous materials cargo container. The temporary electrical installations did not comply with the work control and one line sketch requirements. The original work order had called for the use of a portable generator power source. When additional power was needed, a

	larger generator was obtained. This change in work scope invoked additional grounding requirements that were not initially recognized or implemented. Upon discovery, a formal stop work was initiated.
Similar OR Report Number:	
Facility Manager:	Name: MILLHOUSE, ALBERT E Phone: (208) 533-0629 Title: RWMC NUCLEAR FACILITY MANAGER
Originator:	Name: MILLHOUSE, ALBERT E Phone: (208) 533-0629 Title: RWMC NUCLEAR FACILITY MANAGER
HQ OC Notification:	
Other Notifications:	
Authorized Classifier(AC):	SWENSON, MICHAEL C Date: 12/17/2008

HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

Other Notifications:

Date	Time	Person Notified	Organization
12/17/2008	12:38 (MTZ)	J. E. Garza	DOE-ID
12/17/2008	14:48 (MTZ)	J. E. Garza	DOE-ID

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3)Report Number:	NA--LSO-LLNL-LLNL-2008-0061 **After 2003 Redesign**
Secretarial Office:	National Nuclear Security Administration
Lab/Site/Org:	Lawrence Livermore National Lab.
Facility Name:	Lawrence Livermore Nat. Lab. (BOP)
Subject/Title:	Mechanical Interlock Failure on Door to Main Electrical Transformer in Building 191
Date/Time Discovered:	12/08/2008 10:10 (PTZ)
Date/Time Categorized:	12/08/2008 11:00 (PTZ)
Report Type:	Notification
Report Dates:	
Significance Category:	3

Report Dates:

Notification	12/10/2008	18:58 (ETZ)
Initial Update		
Latest Update		
Final		

Reporting Criteria:	2C(2) - Failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout) or a site condition that results in the unexpected discovery of an uncontrolled hazardous energy source (e.g., live electrical power circuit, steam line, pressurized gas). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.
Cause Codes:	
ISM:	
Subcontractor Involved:	No
Occurrence Description:	On November 14, 2008, at approximately 1100 hours in Building 191, a Facilities & Infrastructure (F&I) Directorate Low Voltage electrician was cleaning the floor in the main electrical room (2204) and bumped the door on the main electrical transformer (13.8 kV) and it slightly opened. The electrician attempted to close and latch the door, but was unsuccessful. The electrician stopped work, barricaded the area and notified line management. An F&I High Voltage electrician responded to verify that the area was safely barricaded until repairs to the door could be made. No injury or shock occurred. An investigation is pending. Based upon an inspection conducted on 11-19-08 by the F&I Directorate by the High Voltage Crew and the evaluation conveyed by the LLNS Electrical Safety Advisory Board (ESAB) on 12-4-08, the severity rating related to this event was revised from its original calculation of zero. The revised severity rating, as determined by the LLNS Subject Matter Expert (SME), was calculated at "1400" in accordance to the DOE Electrical Severity Measurement Tool (dated 4/16/2007 Rev 1). On 11/25/08, the event was entered into the LLNS Issue Tracking System (ITS) by the F&I Directorate so that the appropriate corrective action could be tracked (ITS# 26921).
Cause Description:	
Operating Conditions:	Does not apply
Activity Category:	Maintenance
Immediate Action(s):	1. The F&I Electrician attempted to re-latch the electrical cabinet door, but was unsuccessful. 2. The F&I Electrician ceased sweeping activities, barricaded the area, and contacted F&I line management. 3. The F&I High Voltage Crew responded to B191, Rm 2204 electrical room and installed a bolt and "L" bracket restraint to prevent any opening of the cabinet door. 4. On 11-19-08, the F&I High Voltage Crew de-energized and inspected the electrical cabinet door along with the LLNS Electrical Subject Matter Expert (SME). 5. On 12-4-08 the information related to this event was presented to the

	LLNS Electrical Safety Advisory Board (ESAB) for evaluation. 6. On 12-8-08 the LLNS Electrical SME notified the F&I Assurance Manager of the ESAB's evaluation findings and provided a revised electrical severity rating on 12-10-08.
FM Evaluation:	The final report is due to the ORO by 1/19/2009. The final report is due for entry into ORPS by 11/22/2009.
DOE Facility Representative Input:	
DOE Program Manager Input:	
Further Evaluation is Required:	Yes. Before Further Operation? No By Whom: Kevin Akey By When: 01/22/2009
Division or Project:	O&B, F&I
Plant Area:	Site 200
System/Building/Equipment:	Building 191 Main Electrical Transformer
Facility Function:	Balance of Plant - Infrastructure (Other Functions not specifically listed in this Category)
Corrective Action:	
Lessons(s) Learned:	
HQ Keywords:	05D--Mechanical/Structural - Mechanical Equipment Failure/Damage 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance 12C--EH Categories - Electrical Safety 14L--Quality Assurance - No QA Deficiency
HQ Summary:	On December 10, 2008, following an Electrical Safety Advisory Board evaluation of a November 14, 2008, event involving the discovery of a failed mechanical door latch on a 13.8 kV main transformer cabinet, the electrical severity rating was changed from zero to 1400 using the DOE Electrical Severity Measurement Tool (April 16, 2007 Revision 1). During the event, an electrician was cleaning the main electrical room floor and bumped the door on the main electrical transformer and the door slightly opened. The electrician attempted to close and latch the door, but was unsuccessful. The electrician stopped work, barricaded the area and notified management. A high voltage electrician responded to verify that the area was safely barricaded until repairs to the door could be made. No injury or electrical shock occurred. A bolt and "L" bracket restraint were installed to prevent any opening of the cabinet door.
Similar OR Report Number:	
Facility Manager:	Name: Harold Conner Phone: (925) 422-5786 Title: Facilities & Infrastructure Dep Associate Director

Originator:	Name: FREEMAN, JEFFREY W Phone: (925) 424-6787 Title: OCCURRENCE REPORTING

HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

Other Notifications:

Date	Time	Person Notified	Organization
12/08/2008	11:30 (PTZ)	Monya Lane	LEDO
12/08/2008	11:45 (PTZ)	Jim Mecozzi	ESH TL
12/08/2008	11:55 (PTZ)	John Retelle	NNSA/LSO

Authorized Classifier(AC):

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4)Report Number:	NA--PS-BWP-PANTEX-2008-0128 **After 2003 Redesign**
Secretarial Office:	National Nuclear Security Administration
Lab/Site/Org:	Pantex Plant
Facility Name:	Pantex Plant
Subject/Title:	Unauthorized work in building 16-18
Date/Time Discovered:	12/19/2008 09:20 (CTZ)
Date/Time Categorized:	12/19/2008 11:00 (CTZ)
Report Type:	Notification

Report Dates:

Notification	12/23/2008	15:04 (ETZ)
Initial Update		
Latest Update		
Final		

Significance Category:	3
Reporting Criteria:	10(2) - An event, condition, or series of events that does not meet any of the other reporting criteria, but is determined by the Facility Manager or line management to be of safety significance or of concern to other facilities or activities in the DOE complex. One of the four significance categories should be assigned to the occurrence, based on an evaluation of the potential risks and the corrective actions taken. (1 of 4 criteria - This is a SC 3 occurrence)
Cause Codes:	A3B2C02 - Human Performance Less Than Adequate (LTA); Rule Based Error; Signs to stop were ignored and step performed incorrectly -->couplet - NA A3B3C03 - Human Performance Less Than Adequate (LTA); Knowledge Based Error; Individual justified action by focusing on biased evidence -->couplet - NA

ISM:	4) Perform Work Within Controls
Subcontractor Involved:	No
Occurrence Description:	On 12/19/08 at 0730, an employee drilled holes in the purlin of an equipment room to mount a piece of unistrut. Before drilling, the employee felt above the purlin but did not identify any obstructions. The employee drilled three holes, but on the fourth hole hit an obstruction. At this point the employee got a small ladder and looked above the purlin and discovered conduit. The employee inspected the conduit but identified no damage. There was no arching or any indication that the conduit had been penetrated. The employee moved locations to clear the conduit and drilled another hole. While applying bolts through the unistrut into the purlin, the employee used a flashlight to inspect the conduit. The inspection revealed the conduit had been penetrated. The employee immediately contacted supervision who subsequently made the appropriate notifications to report the event and secure the work site. It was determined the employee was performing unauthorized work, had no penetration permit, nor an approved work package.
Cause Description:	An individual decided to circumvent the formal plant infrastructure system and to mount some unistrut to a purlin in a metal building. By doing so, the established plant protocol was bypassed which had been set up to prevent and or mitigate the type of mistake that occurred. These systems include formal job walkdown and planning, lock-out tag-out, and assignment of task to the appropriate craft shop. The employee came out of the infrastructure system and was comfortable with performing the task at hand. His walkdown of the task, however, did not include a visual look of the top of the purlin. The top was about 7 feet high and was only visible with a ladder. He did feel the purlin above with his hands and fingers but did not detect the conduit running on the top of the purlin. Consequently, the conduit was not known to be there and was subsequently penetrated by the drill when the fourth hole was made.
Operating Conditions:	Operational Mode
Activity Category:	Normal Operations (other than Activities specifically listed in this Category)
Immediate Action(s):	1. Contacted the Operations Center. 2. Safety contacted electricians to assess damage. 3. Electricians locked out the circuits in the conduit. 4. Critique conducted.
FM Evaluation:	The circuit that the conduit was on was locked out until electricians can more closely examine the wires for damge to the insulation.
DOE Facility Representative Input:	
DOE Program Manager Input:	
Further Evaluation is Required:	No

Division or Project:	Applied Technology
Plant Area:	Zone 11
System/Building/Equipment:	16-18
Facility Function:	Balance-of-Plant - Storage (except SNM)
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 01N--Inadequate Conduct of Operations - Inadequate Job Planning (Other) 01Q--Inadequate Conduct of Operations - Personnel error 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 December 19, 2008, a worker performed unauthorized work when he drilled holes in an equipment room purlin to mount a piece of unistrut. The unauthorized drilling was done without a penetration permit or an approved work package. The worker drilled three holes, but on the fourth hole hit an obstruction. The worker used a small ladder and looked above the purlin and discovered an electrical conduit. The employee inspected the conduit but saw no damage and drilled another hole. The worker then noted that the conduit had been penetrated. Appropriate notifications were made. Electricians assessed the damaged conduit and locked out the conduit circuits. An investigation is ongoing.
Similar OR Report Number:	
Facility Manager:	Name: POCHOPIEN, JAMES A Phone: (806) 477-6894 Title: FACILITY MANAGER
Originator:	Name: POCHOPIEN, JAMES A Phone: (806) 477-6894 Title: FACILITY MANAGER
HQ OC Notification:	Date: NA; Time: NA; Person Notified: NA; Organization: NA
Other Notifications:	Date: 12/19/2008; Time: 10:10 (CTZ); Person Notified: Brian Jones; Organization: DOE
Authorized Classifier(AC):	Don Gerber Date: 12/23/2008

5)Report Number:	SC--BSO-LBL-OPERATIONS-2008-0017 **After 2003 Redesign**
Secretarial Office:	Science
Lab/Site/Org:	Lawrence Berkeley Laboratory
Facility Name:	Operations Division
Subject/Title:	Energized 120-V Wire Cut in Fire Alarm Control Wire Pull Box - No Injuries
Date/Time Discovered:	12/05/2008 11:51 (PTZ)
Date/Time Categorized:	12/05/2008 13:11 (PTZ)
Report Type:	Notification
Report Dates:	Notification 12/09/2008 19:45 (ETZ); Initial Update; Latest Update; Final
Significance Category:	3
Reporting Criteria:	2C(2) - Failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout) or a site condition that results in the unexpected discovery of an uncontrolled hazardous energy source (e.g., live electrical power circuit, steam line, pressurized gas). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.
Cause Codes:	
ISM:	2) Analyze the Hazards 3) Develop and Implement Hazard Controls 4) Perform Work Within Controls
Subcontractor Involved:	No
Occurrence Description:	At approximately 1030 on 12/05/2008, an LBNL Fire Alarm Electrician cut an energized 120-volt wire in building 72. There were no injuries. The Electrician was in the process of removing two old fire alarm panels and old signal control wires and had Locked out/Tagged Out (LOTO) the 115 volt source to these old panels. A signal control cable feeding a new fire alarm system was using the two old panels as a chase to the new panel. The Electrician was looking in the signal control wire pull boxes for a new path for this cable when he saw two cables, one black one red. The two cables went through one pull box and terminated, with wire nuts, in another. He concluded that if he pulled those two cables back into the first pull box he would have a clear path for the cable that needed to be rerouted. Given that the two cables were in the signal control wiring pull box and it is against code to have 120-volt wires in the same pull box or conduit as low voltage ones, The Electrician did not consider that these could be 120 volts.

Report Dates:

Report	Date	Time
Notification	12/09/2008	19:45 (ETZ)
Initial Update		
Latest Update		
Final		

	As he proceeded to cut each wire separately and pull them down into the first pull box, he realized that the cables were too long to roll up into the box. He cut through one cable to shorten it and caused an electrical flash. He checked the voltage and realized the cable was 120 volts and still live. Unable to locate the breaker to secure power, he notified the Rapid Response Supervisor who, with the Fire Alarm Electrician's Supervisor, responded. After checking breaker panels for the source, the Rapid Response Supervisor was able to locate the correct breaker and the source was confirmed by the Electrician who then LOTO'ed the breaker and completed connecting the two cables back together.
Cause Description:	
Operating Conditions:	Indoors, lighted, dry
Activity Category:	Maintenance
Immediate Action(s):	- The Fire Alarm Electrician sought assistance from supervisors. - A supervisor located the source breaker and the Electrician LOTO'ed the breaker. - After reviewing his steps leading up to the incident with the Lab's EH&S Electrical Safety Engineer, the Fire Alarm Electrician resumed work.
FM Evaluation:	This 120-volt source was installed years ago to supply power to a receptacle located in a panel outside of the building.
DOE Facility Representative Input:	
DOE Program Manager Input:	
Further Evaluation is Required:	Yes. Before Further Operation? No By Whom: Facilities Division By When:
Division or Project:	Facilities Division
Plant Area:	Building 72
System/Building/Equipment:	Fire Alarm Control Wire Pull Box - B. 72
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) 01B--Inadequate Conduct of Operations - Loss of Configuration Management/Control 01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical)

	01M--Inadequate Conduct of Operations - Inadequate Job Planning (Electrical) 01Q--Inadequate Conduct of Operations - Personnel error 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance 08J--OSHA Reportable/Industrial Hygiene - Near Miss (Electrical) 12C--EH Categories - Electrical Safety 14D--Quality Assurance - Documents and Records Deficiency 14E--Quality Assurance - Work Process Deficiency
HQ Summary:	On December 5, 2008, an LBNL fire alarm electrician cut an energized 120-volt wire in Building 72 while removing old fire alarm panels and wires. There was no electrical shock or injury. The electrician had locked and tagged out the 115-volt source to these panels. While looking in the signal control wire pull box, he saw two wires (one black and one red) and assumed they were not 120 volts because code requirements do not allow 120-volt wires in the same pull box or conduit as low-voltage wires. When he cut one of the wires, he saw an electrical flash. Voltage verification indicated the presence of 120 volts. The correct circuit was located and de-energized. After consultation with the LBNL Electrical Safety Engineer, work was resumed. An investigation is ongoing.
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: NA; Time: NA; Person Notified: NA; Organization: NA
Other Notifications:	Date: 12/05/2008; Time: 13:13 (PTZ); Person Notified: Julie Henderson; Organization: BSO
Authorized Classifier(AC):	

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6)Report Number:	SC--PNSO-PNNL-PNNLBOPER-2008-0025 **After 2003 Redesign**
Secretarial Office:	Science
Lab/Site/Org:	Pacific Northwest National Laboratory
Facility Name:	Energy Research Programs (PNNL)
Subject/Title:	Electrical Short Discovered in HVAC Heat Pump Unit
Date/Time Discovered:	12/11/2008 14:30 (PTZ)
Date/Time Categorized:	12/11/2008 17:00 (PTZ)

<table>
<tr><td>Report Type:</td><td>Update</td></tr>
<tr><td>Report Dates:</td><td><table>
<tr><td>Notification</td><td>12/15/2008</td><td>17:39 (ETZ)</td></tr>
<tr><td>Initial Update</td><td>12/16/2008</td><td>11:36 (ETZ)</td></tr>
<tr><td>Latest Update</td><td>12/16/2008</td><td>11:36 (ETZ)</td></tr>
<tr><td>Final</td><td></td><td></td></tr>
</table></td></tr>
<tr><td>Significance Category:</td><td>3</td></tr>
<tr><td>Reporting Criteria:</td><td>2C(2) - Failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout) or a site condition that results in the unexpected discovery of an uncontrolled hazardous energy source (e.g., live electrical power circuit, steam line, pressurized gas). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.</td></tr>
<tr><td>Cause Codes:</td><td></td></tr>
<tr><td>ISM:</td><td>5) Provide Feedback and Continuous Improvement</td></tr>
<tr><td>Subcontractor Involved:</td><td>No</td></tr>
<tr><td>Occurrence Description:</td><td>On Thursday, December 12, 2008, at approximately 1430 hours, a staff member placed his hand on the outside cover of an operating heat pump unit and felt what he thought was a "tingle" of electricity and an electrician was called to inspect the unit.

The electrician initially observed no voltage, but after a few seconds noted brief voltage spikes of 10 to 200 volts that immediately returned to 0 volts. The electrician shut the unit down at its disconnect, applied lock/tag, and removed the outer shell. The electrician noticed a small dark spot on the surface of a metal channel carrying several insulated wires. The wires were removed and inspected and one wire was observed to have a small chafe in its insulation explaining the intermittent voltage observed on the cover of the HVAC unit. The staff member was not injured but was sent for medical evaluation.</td></tr>
<tr><td>Cause Description:</td><td></td></tr>
<tr><td>Operating Conditions:</td><td>Temp 45, Dewpoint 43, Precip = 0, Humidity 89%</td></tr>
<tr><td>Activity Category:</td><td>Normal Operations (other than Activities specifically listed in this Category)</td></tr>
<tr><td>Immediate Action(s):</td><td>The electrician replaced the frayed wire and installed additional abrasion padding around the wires and returned the heat pump to service. Follow-up check of ground voltage did not show any further indication of leakage. A critique was held Monday, December 15, 2008.</td></tr>
<tr><td>FM Evaluation:</td><td><<< 12/16/08 Update >>>

Title corrected to read "Electrical Short Discovered in HVAC Heat Pump Unit." ~RAP</td></tr>
<tr><td>DOE Facility Representative</td><td></td></tr>
</table>

Input:	
DOE Program Manager Input:	
Further Evaluation is Required:	No
Division or Project:	Operational Systems / Facilities & Operations
Plant Area:	Offsite (Sequim, WA)
System/Building/Equipment:	Marine Sciences Lab 1 (MSL-1)
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 December 12, 2008, a staff member placed his hand on the outside cover of an operating heat pump unit and received a minor electrical shock. An electrician noted brief voltage spikes of 10 to 200 volts that immediately returned to 0 volts. The electrician shut the unit down, applied a lock/tag, and removed the outer shell. Subsequent examination revealed a damaged wire that would have caused the intermittent voltage. The staff member was not injured but was sent for medical evaluation.
Similar OR Report Number:	
Facility Manager:	Name: Sula, M. J. Phone: (360) 681-3690 Title: Building Manager, Sequim Core Team
Originator:	Name: POLLARI, ROGER A Phone: (509) 371-7700 Title:
HQ OC Notification:	Date: NA; Time: NA; Person Notified: NA; Organization: NA
Other Notifications:	Date: 12/11/2008; Time: 17:40 (PTZ); Person Notified: Carlson, J. L.; Organization: PNSO
Authorized Classifier(AC):	Pollari, R. A. Date: 12/16/2008

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7)Report Number:	SC--PNSO-PNNL-PNNLBOPER-2008-0026 **After 2003 Redesign**
Secretarial Office:	Science
Lab/Site/Org:	Pacific Northwest National Laboratory

Facility Name:	Energy Research Programs (PNNL)
Subject/Title:	Subcontractor Noncompliance with Electrical Safety Requirements
Date/Time Discovered:	12/17/2008 08:10 (PTZ)
Date/Time Categorized:	12/17/2008 09:40 (PTZ)
Report Type:	Notification
Report Dates:	Notification — 12/19/2008 — 15:19 (ETZ) Initial Update Latest Update Final
Significance Category:	3
Reporting Criteria:	2C(2) - Failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout) or a site condition that results in the unexpected discovery of an uncontrolled hazardous energy source (e.g., live electrical power circuit, steam line, pressurized gas). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.
Cause Codes:	
ISM:	4) Perform Work Within Controls 5) Provide Feedback and Continuous Improvement
Subcontractor Involved:	Yes Purcell Painting & Coatings
Occurrence Description:	On Wednesday, December 17, 2008, a subcontractor painter was removing sheetrock from a wall to prepare for a new doorway. Within the area of the new opening was a 120 volt receptacle. Wanting to see what direction the conduit ran from the outlet, the painter removed the face plate, unfastened the outlet and pulled it from the electrical box without following the PNNL Electrical Safety requirements for working on or near energized electrical equipment. About this time, the PNNL Construction Safety Representative entered the area and noted the noncompliance and stopped the work. There were no personnel injuries or electrical shocks.
Cause Description:	
Operating Conditions:	Indoors. Dry.
Activity Category:	Construction
Immediate Action(s):	Project work was stopped and the electrical outlet was placed in a safe configuration. A critique will be scheduled.
FM Evaluation:	Electrical Severity Significance Formula: (EHF)*[(1+EF+SPF+AFPF+TPF)*IF]=ES

	Results for this event: (10)*[(1+1+0+0+0)*1]=20 Electrical severity score = 20 (which falls in the N/R "ES Thresholds" range) Recommended ORPS Category = "Non-reportable"
DOE Facility Representative Input:	Based on the potential for receiving an electric shock from inadvertantly touching the outlet''s terminals, the FR believed this occurrence should also be categorized as a Near Miss. The painter was not wearing PPE when he removed the outlet. Entered by: Christ, Josef W 12/19/2008
DOE Program Manager Input:	
Further Evaluation is Required:	No
Division or Project:	Operational Systems / Facilities & Operations
Plant Area:	300 Area
System/Building/Equipment:	331 / Room 195
Facility Function:	Laboratory - Research & Development
Corrective Action:	
Lessons(s) Learned:	
HQ Keywords:	01E--Inadequate Conduct of Operations - Operations Procedure Noncompliance 01M--Inadequate Conduct of Operations - Inadequate Job Planning (Electrical) 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance 08J--OSHA Reportable/Industrial Hygiene - Near Miss (Electrical) 11G--Other - Subcontractor 12C--EH Categories - Electrical Safety 14E--Quality Assurance - Work Process Deficiency
HQ Summary:	On December 17, 2008, a Lab construction safety representative discovered a subcontract painter had removed a 120-volt receptacle cover and pulled the outlet from the electrical box. The worker had not followed electrical safety requirements for working on or near energized electrical equipment. Project work was stopped and the outlet was placed in a safe configuration. An investigation is ongoing.
Similar OR Report Number:	
Facility Manager:	Name: Sadesky, R. Phone: (509) 371-7934 Title: Manager, Project Support Office
Originator:	Name: POLLARI, ROGER A Phone: (509) 371-7700

	Title
HQ OC Notification:	Date: NA; Time: NA; Person Notified: NA; Organization: NA
Other Notifications:	Date: 12/17/2008; Time: 10:00 (PTZ); Person Notified: Christ, J.; Organization: PNSO
Authorized Classifier(AC):	Pollari, R. A. Date: 12/19/2008

Please send comments or questions to orpssupport@hq.doe.gov or call the Helpline at (800) 473-4375. Hours: 7:30 a.m. - 5:00 p.m., Mon - Fri (ETZ). Please include detailed information when reporting problems.