

October 2007 Electrical Safety Occurrences

There were 10 electrical safety occurrences for October 2007:

- 2 resulted in shocks to a worker
- 3 involved lockout/tagout
- 1 involved cutting conduit and electrical cables
- 4 involved electrical workers and 6 involved non-electrical workers
- 3 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),

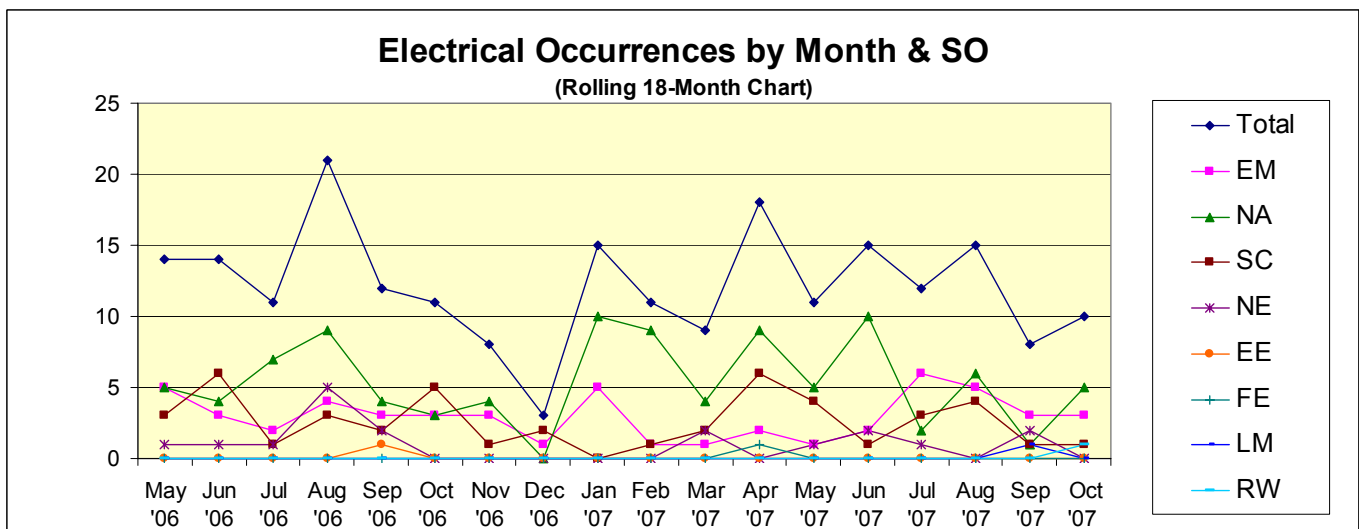
08A – Electrical Shock, 08J – Near Miss (Electrical), 12C – Electrical Safety

The initial search yielded 10 occurrences and a review of these determined none needed to be culled out.

Below is the current summary of 2007 electrical safety occurrences:

Period	Electrical Safety Occurrences	Shocks	Burns	Fatalities
Jan-07	15	1	0	0
Feb-07	11	3	0	0
Mar-07	9	1	0	0
Apr-07	18	3	1	0
May-07	11	1	0	0
Jun-07	15	5	0	0
Jul-07	12	3	1	0
Aug-07	15	5	0	0
Sep-07	8	0	0	0
Oct-07	10	2	0	0
2007 total	124 (avg. 12.4/month)	24	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 2007 is now 12.4 per month, which remains less than the average rate of 13.8 per month experienced in 2006.



Electrical Safety Occurrences – October 2007

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	EM-OH-MCP-ARC-MOU1-2007-0003	PRS 441 East Dock Shed Power Cable		X	X							
2	EM-RP--CHG-TANKFARM-2007-0013	Four Closure Operations Non-Reportable Lockout/Tagout Related Issues Represent Management Concern	X						X			
3	EM-SR--WSRC-KAREA-2007-0008	Cutting of Energized Cable		X							X	
4	NA--LASO-LANL-CMR-2007-0009	Lockout/Tagout Verification was Discovered as Inadequate	X		X				X			
5	NA--LSO-LLNL-LLNL-2007-0050	Discovery of an Uncontrolled 110-Volt Energy Source on the Exterior of Building 482	X									
6	NA--SS-SNL-CASITE-2007-0007	Discovery of failure to follow LOTO procedure		X					X			
7	NA--SS-SNL-NMFAC-2007-0013	Construction Contract Insulator Receives Shock from Exposed 120 Volt Conductor in Bldg. 802 Ceiling		X	X	X						
8	NA--SS-SNL-NMFAC-2007-0014	Exposed Energized #12 120-volt Conductors Short to Conduit when Contacted by Ceiling Tile in Bldg. 856	X									
9	RW--YMPO-BSYM-YMSGD-2007-0022	Management Concern: Unqualified employee Opened an Electrical Cover Plate		X								
10	SC--BHSO-BNL-BNL-2007-0018	Electrical Shock from Broken Wall Clock		X		X						
	TOTAL		4	6	3	2			3		1	

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

ORPS contains 53627 OR(s) with 56945 occurrences(s) as of 3/4/2008 5:10:18 AM
 Query selected 10 OR(s) with 10 occurrences(s) as of 3/4/2008 2:11:05 PM

Download this report in Microsoft Word format. 

1)Report Number:	EM-OH-MCP-ARC-MOU1-2007-0003 After 2003 Redesign														
Secretarial Office:	Environmental Management														
Lab/Site/Org:	Mound Plant														
Facility Name:	Mound Operable Unit 1 Project														
Subject/Title:	PRS 441 East Dock Shed Power Cable														
Date/Time Discovered:	10/25/2007 15:00 (ETZ)														
Date/Time Categorized:	10/25/2007 16:00 (ETZ)														
Report Type:	Final														
Report Dates:	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Notification</td> <td style="width: 30%;">10/29/2007</td> <td style="width: 30%;">16:14 (ETZ)</td> </tr> <tr> <td>Initial Update</td> <td>11/05/2007</td> <td>12:22 (ETZ)</td> </tr> <tr> <td>Latest Update</td> <td>12/05/2007</td> <td>13:58 (ETZ)</td> </tr> <tr> <td>Final</td> <td>12/05/2007</td> <td>13:58 (ETZ)</td> </tr> </table>			Notification	10/29/2007	16:14 (ETZ)	Initial Update	11/05/2007	12:22 (ETZ)	Latest Update	12/05/2007	13:58 (ETZ)	Final	12/05/2007	13:58 (ETZ)
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Initial Update	11/05/2007	12:22 (ETZ)													
Latest Update	12/05/2007	13:58 (ETZ)													
Final	12/05/2007	13:58 (ETZ)													
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:	<p>A4B3C08 - Management Problem; Work Organization & Planning LTA; Job scoping did not identify special circumstances and/or conditions</p> <p>A4B2C02 - Management Problem; Resource Management LTA; Insufficient supervisory resources to provide necessary supervision</p> <p>A4B1C01 - Management Problem; Management Methods Less Than Adequate (LTA); Management policy guidance / expectations not well-defined, understood or enforced</p> <p>A3B3C03 - Human Performance Less Than Adequate (LTA); Knowledge Based Error; Individual justified action by focusing on biased evidence</p> <p>-->couplet - A4B4C01 - Management Problem; Supervisory Methods LTA; Tasks and individual accountability not made clear to worker</p> <p>-->couplet - A4B4C11 - Management Problem; Supervisory Methods LTA; Assignment did not consider worker's ingrained work patterns</p> <p>-->couplet - A5B3C01 - Communications Less Than Adequate (LTA); Written Communications Not Used; Lack of written communication</p>														

ISM:	1) Define the Scope of Work
Subcontractor Involved:	Yes S&S Onsite Analytical, LLC
Occurrence Description:	<p>On the morning of October 25, 2007, an Area Supervisor was notified that an air sampler was not working. While trying to determine why the sampler was non-operational, the Supervisor observed that an electrical panel door on the PRS 441 East Dock Shed was partially opened. No locks or tags were applied to the panel box. The panel on the PRS 441 East Dock Shed provided power to the non-operating air sampler. The Supervisor observed that several breakers had been turned off in the panel box. While attempting to restore power to the air sampler (by switching the breakers on in sequence one at a time), the Supervisor heard a popping sound behind him. He immediately turned the breakers off and notified appropriate personnel to perform lock out/tag out on the panel box. Upon further investigation, a power cable was found partially lying on the ground in a radiological control area (RCA) behind where the Supervisor had been standing. One end of the cable had exposed wires on the ground in the RCA. The other end of the cable was connected to the circuit breaker inside the electrical panel on the PRS 441 East Dock Shed. Power to the air sampler was also provided through the panel. When the breaker had been turned on by the Area Supervisor, the cable end lying on the ground inside the RCA was energized causing an electrical arc. The power cable was wired (unauthorized) to the electrical panel by a second tier subcontractor to supply power to an on-site mobile laboratory trailer. The unauthorized hookup was disconnected on one end the previous day when the lab trailer was moved off-site by the subcontractor. The subcontractor had switched the breakers off in the panel box on the PRS 441 East Dock Shed when disconnecting the cable from the mobile lab trailer. The subcontractor left the other end of the power cord (with bare wires exposed) disconnected from the lab trailer on the ground in the RCA when he removed the trailer from the site.</p>
Cause Description:	<p>A second tier subcontractor wired an electrical power panel without authorization. Although the individual attended the site safety briefing, he did not notify site personnel of his need for power to operate instrumentation in his mobile laboratory. Only an electrician can perform electrical hookups and disconnects on the project. In disconnecting the power cable from the lab, the subcontractor left the bare wires lying on the ground in a RCA without notifying site personnel. The subcontractor has been removed from the site. Future subcontractors will be briefed on this occurrence as part of the site's standard safety briefing to ensure unauthorized activities are not performed.</p>
Operating Conditions:	Normal Operations
Activity Category:	Normal Operations (other than Activities specifically listed in this Category)
Immediate Action(s):	The electrical panel box was locked out/tagged out. The power cable in the RCA was surveyed, found to be non-contaminated and removed from the RCA. The bare wires were covered with electrical tape and capped with wire

	nuts. The cable was placed in a safe configuration adjacent to the PRS 441 East Dock Equipment Shed. Personnel performed an area walkdown to verify no other unauthorized power cables were present. The subcontractor was contacted to meet with site personnel that day to discuss the occurrence.	
FM Evaluation:	Initial classification is a near miss due to the energizing of the exposed cable and the existence of one barrier (de energized breaker) between the energy source and a person. The subcontractor has been removed from the site. Another mobile laboratory trailer remains onsite but has been inspected and is in a safe configuration. The Mound OU-1 site was inspected for similar conditions throughout the trailers and electrical panels on the date of the occurrence. No other problem conditions were identified. A causal analysis was performed on the occurrence. On 11/5/07, the incident was changed from a Group 10(3)3 to a Group 2, Subgroup C , (2)3.	
DOE Facility Representative Input:		
DOE Program Manager Input:		
Further Evaluation is Required:	No	
Division or Project:	OU-1	
Plant Area:	PRS 441	
System/Building/Equipment:	PRS 441 East Dock Shed	
Facility Function:	Environmental Restoration Operations	
Corrective Action 01:	Target Completion Date: 11/14/2007	Actual Completion Date: 11/07/2007
	Lessons Learned Briefing	
Corrective Action 02:	Target Completion Date: 01/31/2008	Actual Completion Date:
	Review of procurement requisitions	
Corrective Action 03:	Target Completion Date: 01/31/2008	Actual Completion Date:
	Implement safety questionnaire	
Corrective Action 04:	Target Completion Date: 12/31/2007	Actual Completion Date:
	Assign Project Management/Supervision	
Corrective Action 05:	Target Completion Date: 12/31/2007	Actual Completion Date:
	Limit Second Tier Subcontractor Scope and Location	
Corrective Action 06:	Target Completion Date: 12/31/2007	Actual Completion Date:
	Second Tier Subcontractor Re-briefing	
Corrective Action 07:	Target Completion Date: 01/31/2008	Actual Completion Date:
	Label Electrical Panels	

Lessons(s) Learned:									
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 01Q--Inadequate Conduct of Operations - Personnel error 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) 11G--Other - Subcontractor 12K--EH Categories - Near Miss (Could have been a serious injury or fatality) 14E--Quality Assurance - Work Process Deficiency 14G--Quality Assurance - Procurement Deficiency								
HQ Summary:	While investigating a non-operational air sampler, a Supervisor observed that several breakers had been turned off in a panel box in the PRS 441 East Dock Shed. While switching the breakers on in an attempt to restore power to the air sampler, the Supervisor heard a popping sound behind him. A power cable with exposed wires was found partially lying on the ground behind where the Supervisor. The other end of the cable was connected to a circuit breaker inside the electrical panel. The power cable was wired (unauthorized) to the electrical panel by a second tier subcontractor to supply power to an on-site mobile laboratory trailer. The unauthorized hookup was disconnected on one end the previous day when the lab trailer was moved off-site by the subcontractor. The panel was locked and tagged out and the cable was secured in a safe configuration.								
Similar OR Report Number:	1. None								
Facility Manager:	<table border="1"> <tr> <td>Name</td> <td>KOPP, MICHAEL J</td> </tr> <tr> <td>Phone</td> <td>(937) 865-3759</td> </tr> <tr> <td>Title</td> <td>PROJECT MANAGER</td> </tr> </table>	Name	KOPP, MICHAEL J	Phone	(937) 865-3759	Title	PROJECT MANAGER		
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Title	PROJECT MANAGER								
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NA	NA	NA	NA						
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Date	Time	Person Notified	Organization						
10/25/2007	16:00 (ETZ)	Don Pfister	DOE						
Authorized Classifier(AC):									

2)Report Number:	EM-RP--CHG-TANKFARM-2007-0013 After 2003 Redesign		
Secretarial Office:	Environmental Management		
Lab/Site/Org:	Hanford Site		
Facility Name:	Tank Farms		
Subject/Title:	Four Closure Operations Non-Reportable Lockout/Tagout Related Issues Represent Management Concern		
Date/Time Discovered:	10/12/2007 12:30 (PTZ)		
Date/Time Categorized:	10/12/2007 12:45 (PTZ)		
Report Type:	Notification/Final		
Report Dates:	Notification	10/15/2007	16:18 (ETZ)
	Initial Update	10/15/2007	16:18 (ETZ)
	Latest Update	10/15/2007	16:18 (ETZ)
	Final	10/15/2007	16:18 (ETZ)
Significance Category:	4		
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 4 occurrence)		
Cause Codes:			
ISM:	3) Develop and Implement Hazard Controls 4) Perform Work Within Controls		
Subcontractor Involved:	No		
Occurrence Description:	<p>On 10/12/2007, it was established that over the past four weeks, there have been four Lockout/Tagout (LOTO) related issues in the Closure Operations (CO) organization. These issues are documented in the Tank Farm Contractor (TFC) Problem Evaluation Report (PER) system as follows:</p> <p>CH2M-PER-2007-1632 Discovery Date: 09/17/2007 Problem Description: During the S-102 spill investigation, a question arose with respect to the use of Authorized Workers Lock use. This concern was communicated with the CO Manager and a fact finding was held that afternoon.</p> <p>During troubleshooting of the S-102 pump, the millwright and the electrician established a safe condition by unplugging the pump and the electrician held the plug while the millwright manually rotated the pump.</p>		

The issue in question was, "Is that [electrician holding the plug verses the millwright] in compliance with the "Authorized Worker Single Point Lockout/Tagout Without Written Authorization" section of the LOTO program?"

It was determined that, in addition to the eight criteria prescribed in Table 2 of the LOTO program, these three conditions must also be met: 1) the plug must be in line of sight, 2) the plug must be within arms' length and 3) the equipment must be on the exception list which is in the CO LOTO binder in the shift managers' office.

As a result, it was found that the electrician holding the plug was not within arms' length of, but was in the line-of-sight of, the millwright; this is a procedure violation. The pump and the plug were not listed on the shift managers' exception list; this is a misinterpretation of the procedure.

At no time was any employee put at risk of a hazardous energy release during this evolution. Although there were several errors noted in the fact finding, the safety of the employees was not at risk.

CH2M-PER-2007-1633

Discovery Date: 09/17/2007

Problem Description: While performing C Farm Motor Control Center cleaning and inspection during the C Farm electrical outage, the electrical field work supervisor (FWS) encountered a controlling organization LOTO. This LOTO prevented the panel from being opened for inspection so the FWS turned the tag over to document the LOTO number off the tag and the device when the lock and tag came off.

No power was onto this panel since it was off at the pole to support the outage.

CH2M-PER-2007-1634

Discovery Date: 09/17/2007

Problem Description: During the regularly scheduled LOTO surveillance on a lockout in S Farm, it was noted by the Nuclear Chemical Operator that he had not signed off the safe condition check when he had performed it last month.

He had installed it the month before, performed the safe condition check as required in Box 32, but noted that he had not signed for the safe condition check. The safe condition was noting the pressure indicators in the raw water line at S-102 were approximately zero. Rather than cover up his error by filling in Box 27 on Tag 26 on LOTO CO-2007-039, he brought it to the

Shift Manager's (SM) attention. The paperwork was updated clearly noting the error. Also noted was that Tag 16 was hung on the raw water system by the same worker with the same safe condition check on the same day and it was properly signed off at the time it was done.

CH2M-PER-2007-1800

Discovery Date: 10/10/2007

Problem Description: Immediately following the S-102 spill, S Farm equipment was locked out due to uncertainties about how the contamination fixative used in the mitigation actions would affect the wiring insulation in the farm. Some of the components in the farm were powered by a portable generator. The generator was a rental unit, rented to a TFC subcontractor. Since the S-102 event scene could not be disturbed for investigation purposes, some of the components in the farm were locked out at the portable generator; the electrical motive force.

On 10/10/2007, following the completion of investigative processes, the portable generator was disconnected from the farm wiring and moved to across the parking lot. During an inspection of portable generator before calling the subcontractor to arrange pick-up, a danger tag hanging on the grounding strap of the battery was discovered. The tag was in a closed compartment, unseen by the electricians. The SM was immediately notified and the High Radiation Area (HRA)/High Contamination Area (HCA) was verified locked (the work boundary for the LOTO is inside the fenced and locked HRA/HCA) and the key accounted for in the shift office. No entries into the HRA/HCA were made during the disconnection of the generator (last entry was 10/08/2007).

The work to disconnect the plugs and move the generator was a minor work order and the scope well documented. Neither the FWS nor SM thought to go through the Tagout Authorization Forms in the LOTO binder in the shift office.

The plugs to the farm were de-termed on 10/11/2007 so in the very unlikely event of someone bringing in another generator, they could not mistakenly plug in S-102 HRA/HCA components.

TFC's LOTO Program states, "Equipment shall not be removed from their installed location with locks or tags attached. When an installed component is to be removed (for example, during demolition, replacement, or rework), the isolation boundaries must be set or adjusted so that any locks and tags are removed from the component before the component is removed."

Although the portable generator is not installed equipment (no engineering change notices were completed to show the configuration of the rented

	<p>subcontractors' equipment) it, strictly speaking, does not represent procedure non-compliance. It does seem to be non-compliant with the spirit of the requirement, however. Although no one had been in the work boundary for two days and immediate compensatory measures were taken, the work boundary was compromised.</p> <p>TFC, and particularly CO, are relying more and more on uninstalled equipment; portable generators and air compressors, all motive forces for energy. These are often rented. In the unlikely event that the components hooked to the generator or air compressor cannot be unplugged and canded, this type of event could recur. This situation was immediately recognized by the SM when it was reported. During the draining of the dilution line, there had been a question about use of the heat trace and how to reestablish a LOTO boundary once a component had been taken out of the boundary, energized and used. This approach was deemed unworkable so warming blankets were used. Since this issue had arisen twice in two weeks, this PER is being written to request Safety Programs to look at the use of uninstalled equipment or to change the wording of the procedure if necessary.</p> <p>As a result, management determined these issues collectively represent a management concern categorizing this event as a 10(2) SC-4.</p>
Cause Description:	
Operating Conditions:	Does not apply.
Activity Category:	Normal Operations (other than Activities specifically listed in this Category)
Immediate Action(s):	Categorized as an Occurrence Group 10 (2) SC4, Management Concern. Completed all required notifications.
FM Evaluation:	
DOE Facility Representative Input:	
DOE Program Manager Input:	
Further Evaluation is Required:	No
Division or Project:	CH2MHILL/Office of River Protection
Plant Area:	200 West
System/Building/Equipment:	Various
Facility Function:	Nuclear Waste Operations/Disposal
Corrective Action:	
Lessons(s) Learned:	
HQ Keywords:	<p>01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical)</p> <p>12I--EH Categories - Lockout/Tagout (Electrical or Mechanical)</p> <p>14E--Quality Assurance - Work Process Deficiency</p>

HQ Summary: Over the past four weeks there have been four Lockout/Tagout (LOTO) related issues in the Closure Operations organization. These LOTO issues include failure to follow procedures, failure to properly install locks and tags, and failure to sign off performance of safe condition checks. As a result, management determined these issues collectively represent a management concern. These issues have been documented in the Tank Farm Contractor Problem Evaluation Report system.

Similar OR Report Number:

Facility Manager:	Name	Raven, Rebecca P
	Phone	(509) 373-6016
	Title	Director, Closure Operations

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
	10/12/2007	12:50 (PTZ)	Raven, R. P.	CH2MHILL
	10/12/2007	12:50 (PTZ)	On-Call Sr. Management Rep	CH2MHILL
	10/12/2007	12:52 (PTZ)	Wright, D. L.	ORP
	10/12/2007	12:58 (PTZ)	Smithwick, R. L.	ONC

Authorized Classifier(AC):

3)Report Number: [EM-SR--WSRC-KAREA-2007-0008](#) After 2003 Redesign

Secretarial Office: Environmental Management

Lab/Site/Org: Savannah River Site

Facility Name: K - Area

Subject/Title: Cutting of Energized Cable

Date/Time Discovered: 10/11/2007 11:55 (ETZ)

Date/Time Categorized: 10/11/2007 12:24 (ETZ)

Report Type: Final

Report Dates:	Notification	10/15/2007	17:16 (ETZ)
	Initial Update	11/02/2007	07:33 (ETZ)
	Latest Update	11/16/2007	10:09 (ETZ)
	Final	11/16/2007	10:09 (ETZ)

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:	A1B3C01 - Design/Engineering Problem; Design / documentation LTA; Design/documentation not complete
ISM:	2) Analyze the Hazards
Subcontractor Involved:	No
Occurrence Description:	<p>During D&R work in the Presentation Area involving cutting and removing a concrete column, a 1/2" conduit containing two cables was cut. GPR conducted prior to the work did not show the presence of the conduit/cable. Subsequent determination by Construction Electrical was that one of the two cables within the conduit was energized at 109 VAC.</p> <p>11/01/07 UPDATE (Additional ORPS Criteria 2A(5) Sig. Cat. 3 Personnel exposure to chemical, biological or physical hazards above limits established by the Occupational Safety and Health Administration (refer to 29 CFR Part 1910) or American Conference of Governmental Industrial Hygienists. Categorized 11/1/07 1250 hours) Results from an air monitor worn by a construction worker while cutting concrete in the KAC Presentation Area on 10/10/07 indicated an airborne silica concentration above the American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit value (TLV). The construction worker was operating a Trentec Diamond Wire Concrete Cutting Saw. The saw had a continuous water supply to cool the diamond wire blade and to minimize dust. The exposure level calculated from laboratory analysis was 0.031mg/m3. The 2007 ACGIH threshold limit for an 8 hour time weighted average is 0.025 mg/m3. Respiratory protection was not required for performance of the concrete cutting based on sample results from similar work conducted in December of 2005. Notified the following on 11/1/07. 11/1/07 1310 G. Yaffe - DOE 11/1/07 1310 J. Marshall - KAC Ops Mgr 11/1/07 1310 S. Kozemko - KAC Dep Ops Mgr 11/1/07 1310 T. Henson - S&H Mgr 11/1/07 1310 S. Glover - IH 11/1/07 1340 T. Gibson - EDO 11/1/07 1359 M. Sautman - DNFSB</p> <p>11/08/07 UPDATE to the 11/01/07 Update</p>

10 CFR 851 criteria by law binds contractors to report against the TLVs as published in 2005. At that time, the silica exposure limit as a time weighted average was 0.05 milligrams per cubic meter. The Site's use of TLVs has always been "most current" based on direction from DOE within the 440.1A order. The current 2007 TLV is 0.025 mg/m3.

Based on the 10 CFR 851 criteria, there is a disparity between the 2005 TLV guidance which we are contractually bound to, and the lower 2007 TLV under which we reported in the 11/01/07 update above. The reported exposure level calculated from laboratory analysis was 0.031 mg/m3 and did not exceed the 2005 reporting threshold of 0.05 mg/m3. Since the facility did not exceed the 2005 reportable criteria, management has directed, with DOE's concurrence, that the facility amend the 11/01/07 update as stated; therefore, the sample results on the 11/01/07 update are non-ORPS reportable.

11/08/07 Notifications:

11/8/07 0825 G. Yaffe - DOE

11/8/07 0800 J. Marshall - KAC Ops Mgr

11/8/07 0800 S. Kozemko - KAC Dep Ops Mgr

11/8/07 0800 T. Henson - S&H Mgr

11/8/07 0800 S. Glover - IH

11/8/07 0800 T. Gibson - EDO

Cause Description:

As part of the CSSC (Container Surveillance and Storage Project) project D&R work in the KAC Presentation Area and Final Storage, a non-load bearing concrete shield column was in the process of being removed by Construction. The shield column was being removed using a remote diamond wire saw, making vertical and horizontal cuts, and removing in sections.

This work was extensively planned by Construction. Several drawings (electrical and structural) were reviewed and walked down in the field. Through the drawing reviews and walkdowns, there were no indications of electrical cable/conduit in the concrete shield column. GPR was performed on the column and areas were marked where potential rebar/interferences were identified. The GPR did not indicate any other interferences in the column other than rebar.

The energy source was later determined to be from Panel EC Breaker 5 Circuit 3 which provides loads for emergency lights in the -20 Corridor and a junction box in the Inhibitor Room and associated lights. The energy source was identified by document review and field walkdowns. None of the drawings showed the imbedded conduit and cables in the column.

After the cut cable was identified, GPR methods were tested by Construction

	on the column for detection of electrical/energized cable. Results showed that the cable could not be distinguished from the rebar.
Operating Conditions:	Normal Operations - D&R activities were authorized in the Presentation Area.
Activity Category:	Normal Operations (other than Activities specifically listed in this Category)
Immediate Action(s):	Area was barricaded and the Shift Manager directed that all work in the Presentation Area be stopped.
FM Evaluation:	All work in the area was stopped and access to the work area has been barricaded. Print review to identify a potential source of the energization is underway.
DOE Facility Representative Input:	
DOE Program Manager Input:	
Further Evaluation is Required:	No
Division or Project:	M&O/NMM
Plant Area:	KAREA
System/Building/Equipment:	Presentation Area/KAC/D&R Work
Facility Function:	Plutonium Processing and Handling
Corrective Action 01:	Target Completion Date: 10/11/2007 Tracking ID: 2007-CTS-012164
	Stop all Construction work in the KAC Presentation Area.
Corrective Action 02:	Target Completion Date: 10/11/2007 Tracking ID: 2007-CTS-012164
	Barricade work access in the KAC Presentation Area.
Corrective Action 03:	Target Completion Date: 10/11/2007 Tracking ID: 2007-CTS-012164
	Safety Engineer to verify hazard areas are appropriately barricaded.
Corrective Action 04:	Target Completion Date: 10/15/2007 Tracking ID: 2007-CTS-012164
	Investigate and isolate energy source to the cut electrical cables and de-energize.
Corrective Action 05:	Target Completion Date: 10/19/2007 Tracking ID: 2007-CTS-012164
	Contact D&D personnel to inquire about lessons learned that may help us understand the problem and do a better job of planning the future
Corrective Action 06:	Target Completion Date: 10/17/2007 Tracking ID: 2007-CTS-012164
	Reconvene Critique attendees to status investigation and findings.
Corrective Action 07:	Target Completion Date: 10/15/2007 Tracking ID: 2007-CTS-012164
	Heat seal the two energized wires in the cut conduit.

Corrective Action 08:	Target Completion Date: 10/24/2007 Tracking ID: 2007-CTS-012164
	Develop plan to investigate the junction box and identify any additional loads and develop a work package to de-term cables in cut conduit.
Corrective Action 09:	Target Completion Date: 10/24/2007 Tracking ID: 2007-CTS-012164
	Evaluate Breaker 5 and all breakers in Panel EC to determine operational status: - Send Breaker 5 to 722 Shop for performance testing to see if it is working properly. - Check other breakers for proper operation and submit to 722 Shop also, if necessary. - Verify spare breakers are available and test them for proper operation before removing breakers from Panel EC. - Have Maintenance notify Operations and Field Engineering of all electrical loads that will be removed from service before removing breakers.
Corrective Action 10:	Target Completion Date: 10/19/2007 Tracking ID: 2007-CTS-012164
	Evaluate emergency light configuration in -20 Corridor and Inhibitor Room.
Corrective Action 11:	Target Completion Date: 10/22/2007 Tracking ID: 2007-CTS-012164
	Develop plan and remove expansion joint in shield column to verify physically that no other conduit is present.
Corrective Action 12:	Target Completion Date: 10/22/2007 Tracking ID: 2007-CTS-012164
	Evaluate method to drain or plug column conduit to prevent water from entering junction box during concrete cutting with water.
Corrective Action 13:	Target Completion Date: 12/06/2007 Tracking ID: 2007-CTS-012164
	Issue a Lessons Learned to Construction to raise awareness for handling suspect embedded interferences.
Lessons(s) Learned:	D&D personnel were contacted to inquire about previous lessons learned from hidden interferences to assist in understanding the problem and perform better planning in the future. Information was obtained and provided to Construction. Construction will issue a Lessons Learned to raise awareness for handling suspect embedded interferences. A copy of the ORPS/Critique report will be provided to the Site Lessons Learned Coordinator for site applicability.
HQ Keywords:	01B--Inadequate Conduct of Operations - Loss of Configuration Management/Control 07D--Electrical Systems - Electrical Wiring 08C--OSHA Reportable/Industrial Hygiene - Industrial Hygiene Exposure 08F--OSHA Reportable/Industrial Hygiene - Industrial Operations Issues 12C--EH Categories - Electrical Safety 14D--Quality Assurance - Documents and Records Deficiency

	14E--Quality Assurance - Work Process Deficiency																																			
HQ Summary:	While cutting and removing a concrete column in the Presentation Area, a ½-inch conduit containing two cables was cut. Ground Penetrating Radar scans conducted prior to the work did not show the presence of the conduit/cable. Construction electricians determined that one of the two cables within the conduit was energized at 109 VAC. All work in the area was stopped and access to the work area has been barricaded. A review of prints is underway to identify the electrical source.																																			
Similar OR Report Number:	1. None Identified																																			
Facility Manager:	<table border="1"> <tr> <td>Name</td> <td colspan="3">KOZEMKO, SUSAN C.</td> </tr> <tr> <td>Phone</td> <td colspan="3">(803) 557-3715</td> </tr> <tr> <td>Title</td> <td colspan="3">K-AREA DEPUTY FACILITY MANAGER</td> </tr> </table>				Name	KOZEMKO, SUSAN C.			Phone	(803) 557-3715			Title	K-AREA DEPUTY FACILITY MANAGER																						
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Originator:	<table border="1"> <tr> <td>Name</td> <td colspan="3">STEPHENS, PAMELA W.</td> </tr> <tr> <td>Phone</td> <td colspan="3">(803) 557-3285</td> </tr> <tr> <td>Title</td> <td colspan="3">MBA CUSTODIAN/OPS SUPPORT</td> </tr> </table>				Name	STEPHENS, PAMELA W.			Phone	(803) 557-3285			Title	MBA CUSTODIAN/OPS SUPPORT																						
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HQ OC Notification:	<table border="1"> <tr> <td>Date</td> <td>Time</td> <td>Person Notified</td> <td>Organization</td> </tr> <tr> <td>NA</td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> </table>				Date	Time	Person Notified	Organization	NA	NA	NA	NA																								
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10/11/2007	12:25 (ETZ)	J. O. Marshall	Ops FM																																	
Authorized Classifier(AC):	Pamela W. Stephens Date: 11/16/2007																																			

4)Report Number:	NA--LASO-LANL-CMR-2007-0009 After 2003 Redesign		
Secretarial Office:	National Nuclear Security Administration		
Lab/Site/Org:	Los Alamos National Laboratory		
Facility Name:	Chemistry & Metallurgy Research		
Subject/Title:	Lockout/Tagout Verification was Discovered as Inadequate		
Date/Time Discovered:	10/02/2007 14:24 (MTZ)		
Date/Time Categorized:	10/04/2007 12:10 (MTZ)		
Report Type:	Update		
Report Dates:	Notification	10/09/2007	17:48 (ETZ)

	Initial Update	11/26/2007	13:01 (ETZ)
	Latest Update	02/07/2008	17:33 (ETZ)
	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		
Subcontractor Involved:	Yes KSL Services		
Occurrence Description:	<p>UPDATE (2/7/08) this report is being extended to complete the causal analysis and develop corrective actions. The new due date will be 3/21/2008.</p> <p>Management Synopsis: On October 2, 2007, at Technical Area 3, Building 29 (CMR Facility) in Wing 4, during a management observation assessment of lockout/tagout work, the Management Observation and Verification (MOV) team identified Circuit Breaker 138 with a questionable lockout/tagout (LO/TO). The MOV team contacted a facility operations worker who identified that the LO/TO device on Circuit Breaker 138 was installed incorrectly (backward) and that the device appeared to be locked in the energized position. Subsequent review found that a KSL electrician had performed LOTO work on Circuit Breaker 138, a 480-volt electrical breaker, and did not perform a zero energy verification check per Implementation Support Document (ISD) 101-3.1, "Lockout/Tagout for Hazardous Energy Control." After notification, the CMR Facility Operation Director (FOD) paused all LO/TO work until all LO/TO operations were reviewed and determined to be compliant with ISD 101-3.1.</p> <p>Upon notification, the CMR Facility FOD initially categorized the event within two hours as not reportable, but after holding a critique, the event was re-categorized under the Hazardous Energy criteria, as a Significant Category 3 event.</p> <p>Background: In support of deactivation work in Wing 4 of CMR, a number of work packages had been written by the facility operations management group to remove electrical boxes and conduit. On September 13, 2007, in preparation for this work, a KSL electrician performed a series of LO/TOs of electrical panels in Wing-4. He was working under an approved integrated work document (IWD) and work package. The work package included a</p>		

supplemental Attachment B, "Specific Written Procedure for Lockout/Tagout,"(found in ISD 101-3.1) for each electrical circuit to be isolated.

On October 2, 2007, an MOV team performed a management observation assessment of LO/TO. The MOV team selected three work packages to verify LO/TO. One of the work packages included Circuit Breaker 138 that had been added to Attachment B. During the walk-down, the MOV team identified this breaker had a questionable LO/TO because it was in the tripped configuration. The MOV team also noted that the zero voltage verification tag had no signature. The breaker was located nine feet above the floor. No work was being performed on the electrical circuit served by this breaker at this time. The MOV team contacted a facility operator who later identified that the LO/TO device on the breaker was installed incorrectly and that the breaker appeared to be in the "on" position, rather than the tripped position. Using a proximity detector, the facility operations worker tested the breaker and detected the presence of electrical energy. The facility operations worker in the presence of the KSL responsible line manager (RLM) and KSL supervisor removed the lock by cutting it off in accordance with ISD 101-3. The facility worker was able to place the breaker in the off position. The facility worker used a proximity detector test to perform a zero energy check, which indicated that no voltage was present. The breaker was re-locked out and the facility worker verified zero voltage at the circuit that fed this breaker.

A critique conducted on October 4, 2007, revealed the following information:

- 1) The Attachment B LO/TO form for breaker 138 was inserted into the work package as an additional LO/TO energy isolation operation after the work package was started; however, the work instructions in the work package were not amended to incorporate Circuit Breaker 138.
- 2) The Attachment B LO/TO form required a zero voltage verification, but the zero voltage verification was not performed.
- 3) The LO/TO tag that was placed on Circuit Breaker 138 indicated that the electrical energy was OPEN meaning that the electrical energy was isolated, but it was not.
- 4) No intrusive work was planned for the electrical circuit being fed by Circuit Breaker 138. The electrical circuit was being isolated as a safety precaution to prevent accidental contact with an electrical energy source during demolition activities.
- 5) The LANL Lead Electrical Safety Officer (ESO) categorized this event using the electrical severity tool value of zero. The LANL Lead ESO evaluated the event and determined that this was not an electrical incident due to the fact that there was no contact with electrical energy and none was

	anticipated.				
Cause Description:					
Operating Conditions:	Normal				
Activity Category:	Inspection/Monitoring				
Immediate Action(s):	1. All work in the facility was paused under LOTO 2. The operations manager is requiring all LOTO be verified before work will continue				
FM Evaluation:	UPDATE (2/7/08) This report is being extended to complete the causal analysis and develop corrective actions. The new due date will be 3/21/2008.				
DOE Facility Representative Input:					
DOE Program Manager Input:					
Further Evaluation is Required:	No				
Division or Project:	CMR				
Plant Area:	TA3-29 Wing 4				
System/Building/Equipment:	Circuit Breaker 138, 480-Volt				
Facility Function:	Laboratory - Research & Development				
Corrective Action:					
Lessons(s) Learned:					
HQ Keywords:	01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical) 01M--Inadequate Conduct of Operations - Inadequate Job Planning (Electrical) 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance 11G--Other - Subcontractor 12I--EH Categories - Lockout/Tagout (Electrical or Mechanical) 14D--Quality Assurance - Documents and Records Deficiency 14E--Quality Assurance - Work Process Deficiency 14H--Quality Assurance - Inspection and Acceptance Testing Deficiency				
HQ Summary:	As part of deactivation work in Wing 4 of the CMR facility, an electrician performed a lockout/tagout (LO/TO) operation on a 480-volt electrical breaker without performing a zero energy verification check as required. In addition, the facility operation technician independent verifier of the LO/TO did not identify that the locking device was installed incorrectly. All facility work under lockout/tagouts was paused and the facility manager has required verification of all lockout/tagouts before work can continue.				
Similar OR Report Number:	1. NA--LASO-LANL-PHYSTECH-2006-0005				
Facility Manager:	<table border="1"> <tr> <td>Name</td> <td>Pat Volza</td> </tr> <tr> <td>Phone</td> <td>(505) 667-5434</td> </tr> </table>	Name	Pat Volza	Phone	(505) 667-5434
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Phone	(505) 667-5434				

	Title	Facility Operations Director		
Originator:	Name	Hakonson-Hayes, Audrey C		
	Phone	(505) 667-9364		
	Title	OCCURRENCE INVESTIGATOR		
HQ OC Notification:	Date	Time	Person Notified	Organization
	NA	NA	NA	NA
Other Notifications:	Date	Time	Person Notified	Organization
	10/02/2007	15:51 (MTZ)	Notification Line	NNSA
Authorized Classifier(AC):	Antonia Tallarico		Date: 02/07/2008	

5)Report Number:	NA--LSO-LLNL-LLNL-2007-0050 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:	Discovery of an Uncontrolled 110-Volt Energy Source on the Exterior of Building 482		
Date/Time Discovered:	10/27/2007 13:30 (PTZ)		
Date/Time Categorized:	10/27/2007 15:00 (PTZ)		
Report Type:	Final		
Report Dates:	Notification	10/30/2007	11:14 (ETZ)
	Initial Update	12/17/2007	12:57 (ETZ)
	Latest Update	12/17/2007	12:57 (ETZ)
	Final	12/17/2007	12:57 (ETZ)
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:	A3B4C01 - Human Performance Less Than Adequate (LTA); Work Practices LTA; Individual capabilities to perform work LTA -->couplet - A4B4C02 - Management Problem; Supervisory Methods LTA; Progress/status of task not adequately tracked		
ISM:	4) Perform Work Within Controls		
Subcontractor Involved:	No		

Occurrence Description:	On October 27, 2007 at approximately 1330 hours in Building 482 on the outside of the 1000 Wing, an exposed 110-volt energized conductor was discovered. Electricians were in the process of tracing the configuration of the circuits in Building 482 and discovered an uncovered exterior four-plex gang box with energized 110-volt wiring coiled inside the box. The coiled wires in the box were energized and did not have wire nuts. The wires were not stripped, but the end of the wires were exposed. The cover of the gang box was subsequently discovered on the ground in the nearby bushes.
Cause Description:	<p>A3B4C01 Human Performance LTA, Work Practices LTA</p> <p>The as-found condition clearly indicated that the skill of the workers performing the electrical termination work was less than adequate in that the work did not meet basic electrical journey skills. The live electrical wires improperly terminated, lacking wire nuts and not having the cover plate re-installed, is below an acceptable level of electrical journeyman performance. The fact that the work was left in an unsafe condition is taken as an indicator that the person who performed the work did not feel responsible or accountable for work quality or safety.</p> <p>Couplet: A4B4C02 Management Problem, Management Methods LTA, Progress/status of task not adequately tracked</p> <p>The workers and supervisor involved in this noncompliance are unknown. It is assumed that management was not reviewing worker habits and work practices because the workers left their work incomplete and in an unsafe condition. Given the state in which the electrical box was left, it is assumed that the supervisor was not adequately tracking progress and status of the task to ensure proper work methods were used and that work was properly completed and left in a safe condition.</p>
Operating Conditions:	NA
Activity Category:	Normal Operations (other than Activities specifically listed in this Category)
Immediate Action(s):	The electricians immediately locked out the circuit, replaced the gang box cover, and informed the Facility Manager. The NIF Directorate Facility Manager directed the electricians to protect the scene and to take pictures. The Facility Manager then proceeded to notify the NIF and Photon Science Directorate On-Call Duty Officer and the NIF and Photon Science Directorate Assurance Manager. The Directorate On-Call Duty Officer notified the Laboratory Emergency Duty Officer.
FM Evaluation:	The involved equipment was secured for the investigation. Stopping this work activity and barricading the work area did not adversely impact the other normal work activities conducted in this facility.
DOE Facility Representative Input:	
DOE Program Manager Input:	
Further Evaluation is	No

Required:			
Division or Project:	NIF&P		
Plant Area:	Site 200		
System/Building/Equipment:	482		
Facility Function:	Balance of Plant - Infrastructure (Other Functions not specifically listed in this Category)		
Corrective Action 01:	<table border="1"> <tr> <td>Target Completion Date:11/30/2007</td> <td>Actual Completion Date:11/30/2007</td> </tr> </table>	Target Completion Date: 11/30/2007	Actual Completion Date: 11/30/2007
Target Completion Date: 11/30/2007	Actual Completion Date: 11/30/2007		
	Conduct a Causal Analysis. NIF management will perform a causal analysis, to include extent of condition review as appropriate, and determine corrective actions.		
Corrective Action 02:	<table border="1"> <tr> <td>Target Completion Date:11/30/2007</td> <td>Actual Completion Date:11/30/2007</td> </tr> </table>	Target Completion Date: 11/30/2007	Actual Completion Date: 11/30/2007
Target Completion Date: 11/30/2007	Actual Completion Date: 11/30/2007		
	Implement Post-Maintenance Verification. Implement post-maintenance verification of maintenance windowing as a requirement for issuing a work permit to require a walkdown of the area prior to work closeout.		
Corrective Action 03:	<table border="1"> <tr> <td>Target Completion Date:11/30/2007</td> <td>Actual Completion Date:11/30/2007</td> </tr> </table>	Target Completion Date: 11/30/2007	Actual Completion Date: 11/30/2007
Target Completion Date: 11/30/2007	Actual Completion Date: 11/30/2007		
	Implement Facility Walks. Implement formal facility walks in NIF Directorate facilities, including checks for electrical safety concerns.		
Corrective Action 04:	<table border="1"> <tr> <td>Target Completion Date:11/30/2007</td> <td>Actual Completion Date:11/30/2007</td> </tr> </table>	Target Completion Date: 11/30/2007	Actual Completion Date: 11/30/2007
Target Completion Date: 11/30/2007	Actual Completion Date: 11/30/2007		
	Increase work observation activities by the Work Control Officer and Industrial Safety Engineers for maintenance and construction work.		
Corrective Action 05:	<table border="1"> <tr> <td>Target Completion Date:05/31/2008</td> <td>Actual Completion Date:</td> </tr> </table>	Target Completion Date: 05/31/2008	Actual Completion Date:
Target Completion Date: 05/31/2008	Actual Completion Date:		
	NIF management will conduct a verification review of effectiveness of corrective actions.		
Lessons(s) Learned:	This a demonstration that we must have tight control of the work, including post-maintenance testing and verification of work.		
HQ Keywords:	01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous) 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		
HQ Summary:	Electricians tracing the configuration of the circuits in Building 482 discovered an uncovered, exterior four-plex gang box with energized 110-volt wiring coiled inside the box. The coiled wires in the box did not have		

	wire nuts. The wires were not stripped, but the ends of the wires were exposed. The cover of the gang box was subsequently discovered on the ground in the nearby bushes. The electricians immediately locked out the circuit, replaced the gang box cover, and informed the NIF Facility Manager, who made notifications and directed the electricians to protect the scene.																				
Similar OR Report Number:	1. N/A																				
Facility Manager:	<table border="1"> <tr> <td>Name</td> <td>Jeff Wisoff</td> </tr> <tr> <td>Phone</td> <td>(925) 423-7775</td> </tr> <tr> <td>Title</td> <td>NIF and Photon Science Principle Deputy Associate</td> </tr> </table>	Name	Jeff Wisoff	Phone	(925) 423-7775	Title	NIF and Photon Science Principle Deputy Associate														
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Title	OCCURRENCE REPORTING																				
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10/27/2007	18:10 (PTZ)	Roy Kearn	NNSA/LSO																		
Authorized Classifier(AC):																					

6)Report Number:	NA--SS-SNL-CASITE-2007-0007 After 2003 Redesign												
Secretarial Office:	National Nuclear Security Administration												
Lab/Site/Org:	Sandia National Laboratories - Livermore												
Facility Name:	SNL California Site												
Subject/Title:	Discovery of failure to follow LOTO procedure												
Date/Time Discovered:	10/29/2007 11:15 (PTZ)												
Date/Time Categorized:	10/29/2007 13:00 (PTZ)												
Report Type:	Final												
Report Dates:	<table border="1"> <tr> <td>Notification</td> <td>10/31/2007</td> <td>17:13 (ETZ)</td> </tr> <tr> <td>Initial Update</td> <td>12/13/2007</td> <td>14:38 (ETZ)</td> </tr> <tr> <td>Latest Update</td> <td>12/13/2007</td> <td>14:38 (ETZ)</td> </tr> <tr> <td>Final</td> <td>12/13/2007</td> <td>14:38 (ETZ)</td> </tr> </table>	Notification	10/31/2007	17:13 (ETZ)	Initial Update	12/13/2007	14:38 (ETZ)	Latest Update	12/13/2007	14:38 (ETZ)	Final	12/13/2007	14:38 (ETZ)
Notification	10/31/2007	17:13 (ETZ)											
Initial Update	12/13/2007	14:38 (ETZ)											
Latest Update	12/13/2007	14:38 (ETZ)											
Final	12/13/2007	14:38 (ETZ)											
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:	A3B3C03 - Human Performance Less Than Adequate (LTA); Knowledge Based Error; Individual justified action by focusing on biased evidence -->couplet - A4B1C01 - Management Problem; Management Methods Less Than Adequate (LTA); Management policy guidance / expectations not well-defined, understood or enforced A4B4C01 - Management Problem; Supervisory Methods LTA; Tasks and individual accountability not made clear to worker
ISM:	2) Analyze the Hazards 4) Perform Work Within Controls
Subcontractor Involved:	No
Occurrence Description:	<p>On Monday October 29, 2007 management became aware of issues surrounding a work order submitted by the Life Design Center (LDC), an exercise facility. The LDC space owner initiated a maintenance work order on Wednesday October 24th to repair a broken pull chain that starts a fan. The fan is an oscillating 30 inch diameter blade inside a safety cage. The fan is mounted on a wall 7 foot high, and power is supplied by a standard plug and cord.</p> <p>The chain had broken off the fan when a user pulled the chain to start the fan, and the movement of the chain thereafter got caught inside the safety cage and rotating blades. The chain was immediately separated from the fan housing by the rotating of the blades. Other than the chain separating from the fan housing, no other damage was physically apparent.</p> <p>On Thursday October 25th, an employee (1) visiting the LDC unplugged the fan and removed the fan housing to see if the chain could be reattached. Employee 1 then stated that the chain could not be reattached and the switch required replacement. Removing the housing did not expose bare electrical conductors because the switch was connected with crimp splices, but repair would require cutting the wires. The housing on the back of the fan was left off and the plug remained removed from the wall socket.</p> <p>On Friday morning October 26th a non-electrical maintenance worker (Employee 2) came with the work order to replace the pull chain on the fan. The fan was found unplugged with the housing removed. However, further work had been performed in that the switch was found disconnected with the wires cut. The person who cut the wires has not been identified (mystery person).</p> <p>Employee 2 verified the fan was unplugged and took the switch that was</p>

lying on top of the fan to an Electrician. Employee 2 indicated to the space owner that the unit should not be plugged in and that electricians would be contacted. Employee 2 and an Electrician returned shortly, and placed a LOTO device on the plug. Both left the LDC briefly to find a replacement switch, and upon return the Electrician utilized LOTO immediately replaced and repaired the switch/pull chain assembly. The fan was returned to an operational configuration the same Friday morning.

Management became aware of the anomalies Monday morning and proper notifications were made.

There was no injury or shock to personnel and no equipment damage.

Plug and Cord is a Sandia electrical procedure that states: "Work on single-energy-source cord- and plug-connected electrical equipment on which the exposure to hazardous energy is controlled by unplugging the equipment from the source and the plug remains in the exclusive control of the authorized worker. "

It is the conclusion that the work condition was not adequately controlled and should have been controlled by any of the two administrative means available, i.e., Plug and Cord, or LOTO. Either of the two would have provided adequate protection for both personnel (potential exposure) and the authorized worker conducting the maintenance. It is noted that the Electrician that repaired the fan utilized LOTO and maintained proper administrative control.

It is further noted that potential gaps may exist in the understanding of the Plug and Cord requirements versus LOTO in the area of maintaining control. Plug and Cord is briefly mentioned in the Section 4C of the ES&H Manual, and the context of its implementation, training and worker authorization may not be readily clear. In addition, as evidence in the general discussion of administrative control, there is confusion of applicability of Plug and Cord with respect to the applicability of LOTO, i.e., when should one be utilized or implemented?

It was determined that a mystery person cut the wires to the fan switch and left it atop the fan housing. On Friday morning, the cut wires were discovered by Employee 2 the non-electrical Maintenance Worker assigned to scope the work as stated in the Maintenance Trouble ticket. As a result, the RCA Team does not know the conditions or qualifications of the mystery person, but do know that the cutting of the switch wires left exposed wires in the housing, resulting in a potentially exposed hazard. When the wires were cut, the work should have been conducted under Plug and Cord, by using exclusive control of the "cord and plug" or by applying LOTO. In retrospect, the main point of this incident stems from the standpoint that unauthorized

work was being performed.

Lastly, the understanding of worker authorization may not be readily understood by individuals who are, in fact, qualified. Having the training and experience may qualify you for the work, but if you are not authorized to conduct the work as part of your basic duties, then you are considered an unauthorized worker (LOTO definition), and not qualified. This may be in conflict with the empowerment issues and the authority to take responsibility for your safety may be sending a mixed message. In this case Employee 1 intended to inspect and fix the pull chain if possible (empowerment), but failed to realize that he was not authorized.

Cause Description:

Root Cause A4B1C01

Management policy guidance / expectations not well-defined, understood or enforced

Personnel exhibited a lack of understanding of existing policy and/or expectations, or policy/expectations were not well-defined or policy/expectation is not enforced.

Employee 1 saw no visible electrical hazard as there were no exposed electrical wires, and left the fan unplugged and the housing cover removed for an electrician to fix. Employee 1 thought this action was appropriate as no hazards existed. In this case, the understanding of an authorized worker was less than adequate considering the training and qualification of the individual, and their ability to do the work.

Direct Cause A3B3C03

Individual justified action by focusing on biased evidence

An individual was overconfident in evaluating the correctness of his/her knowledge. After unplugging the power to the fan and opening the fan housing cover, Employee 1 inspected the housing and determined that the pull chain could not be easily repaired. After being told that a Maintenance Trouble Ticket had been initiated, and would be responding, Employee 1 left both the fan unplugged and the housing cover removed, and exited the LDC. In doing so Employee 1 failed to maintain exclusive administrative control of the plug and cord, nor was Employee 1 considered an authorized worker by definition, thus violating the 2 key requirements of Plug and Cord.

Contributing Causes A4B4C01

Tasks and individual accountability not made clear to worker

Tasks (and the individual accountability for the task) that were outside written guidance or training were not made clear to the worker.

It was noted that the culture of empowerment over safety issues and the level of authority to perform work to resolve safety issues may have clashed in this incident. In general, Members of the Workforce are encouraged and empowered to take responsibility for their safety and that of others. In this case, Employee 1 was simply being a Good Samaritan to inspect and fix a

	fan pull chain that had broken off so visitors to the LDC can use the fan. Employee 1 incorrectly assumed he was qualified based on his experience and background.			
Operating Conditions:	Normal			
Activity Category:	Normal Operations (other than Activities specifically listed in this Category)			
Immediate Action(s):	Verified fan repaired correctly.			
FM Evaluation:	EOC - 10/29/2007 - 0900 Event #4023 FR - Jeff Irwin - 0915 12/13/2007 = 45Days			
DOE Facility Representative Input:				
DOE Program Manager Input:				
Further Evaluation is Required:	No			
Division or Project:	8000			
Plant Area:	M32			
System/Building/Equipment:	Wall Mounted Oscillating Fan			
Facility Function:	Balance of Plant - Infrastructure (Other Functions not specifically listed in this Category)			
Corrective Action 01:	<table border="1"> <tr> <td>Target Completion Date:05/31/2008</td> <td>Actual Completion Date:</td> </tr> </table>		Target Completion Date: 05/31/2008	Actual Completion Date:
Target Completion Date: 05/31/2008	Actual Completion Date:			
	A3B3C03 Org.8513 will assist the Electrical Safety Committee to review the "Plug and Cord" procedure with respect to LOTO and determine if gaps exist and can be adequately applied to protect both authorized worker and other employees from the hazards.			
Corrective Action 02:	<table border="1"> <tr> <td>Target Completion Date:05/31/2008</td> <td>Actual Completion Date:</td> </tr> </table>		Target Completion Date: 05/31/2008	Actual Completion Date:
Target Completion Date: 05/31/2008	Actual Completion Date:			
	A4B1C01 A4B4C01 Org.8513 will assist the Electrical Safety Committee to clarify and disseminate the definition an electrical authorized worker and authorized work in general.			
Corrective Action 03:	<table border="1"> <tr> <td>Target Completion Date:03/31/2008</td> <td>Actual Completion Date:01/29/2008</td> </tr> </table>		Target Completion Date: 03/31/2008	Actual Completion Date: 01/29/2008
Target Completion Date: 03/31/2008	Actual Completion Date: 01/29/2008			
	Org. 8527 Life Design Center (LDC) staff will request and authorize the repair of all fan pull chains located in the LDC to preclude the chain from entering the fan cage.			
Lessons(s) Learned:				
HQ Keywords:	01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous) 01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical)			

01R--Inadequate Conduct of Operations - Management issues
 07D--Electrical Systems - Electrical Wiring
 07E--Electrical Systems - Electrical Equipment Failure
 12I--EH Categories - Lockout/Tagout (Electrical or Mechanical)
 14E--Quality Assurance - Work Process Deficiency

HQ Summary: The Life Design Center (LDC) (exercise facility) submitted a work order to repair the pull chain, on-off switch on a 30-inch wall mounted oscillating fan. When a worker arrived to repair the fan on Friday, October 26, the fan was found unplugged with the housing removed and no LOTO device on the plug. The pull chain had been removed by cutting the wires to the switch. The person who cut the wires has not been identified. Electricians installed a LOTO device on the plug and the worker repaired the fan and returned it to service. Management became aware of the unauthorized work on Monday, made notification and verified that the repairs were correct.

Similar OR Report Number: 1. NA--SS-SNL-CASITE-2007-0001

Facility Manager:	Name	Jill Hruby
	Phone	(925) 294-2596
	Title	Director

Originator:	Name	CRIPPEN, TERRI L
	Phone	(925) 294-3675
	Title	OCCURRENCE MANAGEMENT REPRESENTATIVE

HQ OC Notification:	Date	Time	Person Notified	Organization
	NA	NA	NA	NA

Other Notifications:	Date	Time	Person Notified	Organization
	10/29/2007	11:30 (PTZ)	Terri Crippen	8518
	10/29/2007	11:30 (PTZ)	Bernie Bernal	8518
	10/29/2007	11:45 (PTZ)	Ed Cull	8510
	10/29/2007	11:45 (PTZ)	Jeff Irwin	DOE/SSO
	10/29/2007	12:00 (PTZ)	Robert Petro	8527
	10/29/2007	12:45 (PTZ)	Jill Hruby	8100

Authorized Classifier(AC): John Garcia Date: 12/13/2007

7)Report Number: [NA--SS-SNL-NMFAC-2007-0013](#) After 2003 Redesign

Secretarial Office: National Nuclear Security Administration

Lab/Site/Org: Sandia National Laboratories - SS

Facility Name: SNL NM Site-wide F & M

Subject/Title: Construction Contract Insulator Receives Shock from Exposed 120 Volt Conductor in Bldg. 802 Ceiling

Date/Time Discovered:	10/16/2007 07:30 (MTZ)		
Date/Time Categorized:	10/16/2007 07:30 (MTZ)		
Report Type:	Final		
Report Dates:	Notification	10/17/2007	17:49 (ETZ)
	Initial Update	10/18/2007	10:39 (ETZ)
	Latest Update	11/30/2007	17:36 (ETZ)
	Final	12/13/2007	09:26 (ETZ)
Significance Category:	2		
Reporting Criteria:	2C(1) - Failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout) or disturbance of a previously unknown or mislocated hazardous energy source (e.g., live electrical power circuit, steam line, pressurized gas) resulting in a person contacting (burn, shock, etc.) hazardous energy.		
Cause Codes:	A3B4C02 - Human Performance Less Than Adequate (LTA); Work Practices LTA; Deliberate violation -->couplet - A4B4C02 - Management Problem; Supervisory Methods LTA; Progress/status of task not adequately tracked A4B3C07 - Management Problem; Work Organization & Planning LTA; Job scoping did not identify potential task interruptions and/or environmental stress		
ISM:	4) Perform Work Within Controls		
Subcontractor Involved:	Yes Kenner Insulation (sub to Brycon)		
Occurrence Description:	<p>At approximately 12:40 a.m., on October 16, 2007, an Insulator working above the ceiling in Bldg. 802/Room 1139D was insulating a 1-inch copper hot water heating pipe when the Insulator's wrist brushed against an exposed energized 120 volt conductor, receiving a shock. The conductor was protruding from a 1/2-inch flex connector in an electrical j-box that had been inappropriately left in place when a light fixture was removed in 1991. It appears that the person who removed the light fixture in 1991 cut the conductors outside of the j-box and installed insulating wire nuts on the conductors. It is believed that one of the wire nuts came off, exposing the energized conductor. The conductors should have been cut back to the j-box in addition to installing the insulating wire nuts, which would have provided adequate protection from the electrical hazards to the Insulator and other personnel accessing the ceiling space.</p> <p>The impacted Insulator works for the Insulating Subcontractor on the FMOC Variable Air Volume (VAV) Replacement project in Building 802. The Insulator notified the Prime Construction Contractor's foreman of the shock. As a precaution (required by SNL), the Insulator was transported to a local hospital for medical evaluation and released. The Prime Construction</p>		

	<p>Contractor left a message with the FMOC Electrical Observer at approximately 12:50 a.m. the morning of the incident, reporting the shock. Another message was left a few hours later at 3:30 a.m. reporting that the Insulator had been evaluated at the hospital and released. The Observer listened to the phone messages at 6:25 a.m. that same day, and notified the Sandia Incident Commander, reporting the shock. The NNSA FR was notified when the FR arrived at work at 7:15 a.m.</p> <p>An FMOC Maintenance electrician responded to the site, de-energized the conductors, replaced the flex connector with an approved knockout plug, replaced the missing insulating wire nut and placed the conductors in the j-box.</p>
<p>Cause Description:</p>	<p>Timeline, Causal Factors Analysis</p> <p>A3B4C02 Deliberate violation: In 1991 when the work was performed the craftsperson removing the two light fixtures loosened the flex connector, pulled the flex out of the connector and cut the exposed conductors. The craftsperson then put wire nuts on the conductors outside of the four-square box which is a violation of NEC Code #300.15. Over time the wire nut on the black energized conductor came off resulting in an exposed energized conductor above the ceiling where the Insulator was performing work activities. The two conductors protruded from the flex connector about 1/2 an inch and were not easily visible.</p> <p>A4B4C02 Progress/status of task not adequately tracked: Project documentation that was found did not identify the contractor performing the work or the project manager assigned to the job. It was a very small project, the removal of two light fixtures, which could have been completed in a couple of hours. The Contractor's supervisor in 1991 did not provide adequate oversight of the small project to ensure work was performed in accordance with existing codes and standards.</p> <p>A4B3C07 Job scoping did not identify special circumstances and/or conditions: The Insulator working in the ceiling space did not complete a thorough investigation of the work area to identify legacy hazards that were present (the exposed electrical conductor) prior to beginning work activities.</p> <p>Critique/Fact Finding Performed: 10/16/07</p>
<p>Operating Conditions:</p>	<p>Normal</p>
<p>Activity Category:</p>	<p>Construction</p>
<p>Immediate Action(s):</p>	<p>Insulator was evaluated and released from a local hospital</p> <p>Work above the ceiling was suspended</p>

	Exposed conductor was placed in safe condition			
	Investigation was started			
FM Evaluation:	DOE/SSO Early Notification Date & Time: EOC - 10/16/07 - 06:43 FR - Wayne Walker - 10/16/07 - 07:30			
	There have been many improvements made to construction operations at SNL since 1991 when the light fixtures were removed. The include Behavior Based Safety Observations, documented routine Compliance Observations by Safety Professionals, and increased inspection. This incident provides an excellent opportunity to remind SNL personnel and contractors the importance of project oversight and performing a thorough investigation of the work area to identify any legacy hazards that may impact workers performing any remodel, construction, or maintenance activity.			
DOE Facility Representative Input:				
DOE Program Manager Input:				
Further Evaluation is Required:	No			
Division or Project:	4000/VAV Replacement Project			
Plant Area:	Tech Area I			
System/Building/Equipment:	120 Volt Lighting Circuit/Bldg. 802/Rm. 1139D			
Facility Function:	Balance of Plant - Infrastructure (Other Functions not specifically listed in this Category)			
Corrective Action 01:	<table border="1"> <tr> <td>Target Completion Date:12/15/2007</td> <td>Actual Completion Date:12/12/2007</td> </tr> </table>	Target Completion Date: 12/15/2007	Actual Completion Date: 12/12/2007	
Target Completion Date: 12/15/2007	Actual Completion Date: 12/12/2007			
	Department 4800 - Lessons learned from this incident will be shared through the SNL Corporate Lesson Learned process. The lesson learned will emphasize the importance of assuring work is performed in accordance with identified safety standards, in this case NEC requirements regarding the guarding of energized conductors. The lesson learned will also remind personnel performing remodel projects to perform a thorough investigation of the work area to identify any legacy hazards that may impact workers performing the remodel activity. (A3B4C02, A4B4C02, A4B3C07)			
Corrective Action 02:	<table border="1"> <tr> <td>Target Completion Date:01/30/2008</td> <td>Actual Completion Date:01/23/2008</td> </tr> </table>	Target Completion Date: 01/30/2008	Actual Completion Date: 01/23/2008	
Target Completion Date: 01/30/2008	Actual Completion Date: 01/23/2008			
	Department 4800 - Lessons learned from this incident will be shared with FMOC Maintenance craftspeople. The lesson learned will emphasize the importance of assuring work is performed in accordance with identified safety standards, in this case NEC requirements regarding the guarding of energized conductors. The lesson learned will also remind personnel			

performing maintenance activities to perform a thorough investigation of the work area to identify any legacy hazards that may be present in the area. (A3B4C02, A4B4C02, A4B3C07)

Corrective Action 03:

Target Completion
Date:01/30/2008

Actual Completion
Date:01/22/2008

Department 4827 - Lessons learned from this incident will be shared at the next FMOC Quarterly Safety Seminar with FMOC construction contractors and Observers. The lesson learned will emphasize the importance of assuring work is performed in accordance with identified safety standards, in this case NEC requirements regarding the guarding of energized conductors. The lesson learned will also remind personnel performing remodel projects to perform a thorough investigation of the work area to identify any legacy hazards that may impact workers performing the remodel activity. (, A4B4C02, A4B3C07)

Lessons(s) Learned:

Title:

Construction Contract Insulator Receives Shock from Exposed 120-Volt Conductor in Bldg. 802 Ceiling

Lesson Learned Statement:

Craftspeople should always perform a thorough investigation of the work area where they will be working to identify any legacy hazards in the area prior to performing any remodel, construction, or maintenance activity.

Discussion of Activities:

An Insulator working above the ceiling in Bldg. 802/Room 1139D was insulating a 1-inch copper hot water heating pipe when the Insulator's wrist brushed against an exposed energized 120 volt conductor, receiving a shock. The conductor was protruding approximately 1/2-inch from a 1/2inch flex connector in an electrical j-box that had been inappropriately left in place when a light fixture was removed in 1991. It appears that the person who removed the light fixture in 1991 cut the conductors outside of the j-box and installed insulating wire nuts on the conductors. It is believed that one of the wire nuts came off, exposing the energized conductor. The conductors should have been cut back to the j-box in addition to installing the insulating wire nuts, which would have provided adequate protection from the electrical hazards to the Insulator and other personnel accessing the ceiling space.

The impacted Insulator works for the Insulating Subcontractor on the FMOC Variable Air Volume (VAV) Replacement project in Building 802. The Insulator notified the Prime Construction Contractor's foreman of the shock. As a precaution (required by SNL), the Insulator was transported to a local hospital for medical evaluation and released. The Prime Construction Contractor left a message with the FMOC Electrical Observer at approximately 12:50 a.m. the morning of the incident, reporting the shock.

Another message was left a few hours later at 3:30 a.m. reporting that the Insulator had been evaluated at the hospital and released. The Observer listened to the phone messages at 6:25 a.m. that same day, and notified the Sandia Incident Commander, reporting the shock. The NNSA FR was notified when the FR arrived at work at 7:15 a.m.

An FMOC Maintenance electrician responded to the site, de-energized the conductors, replaced the flex connector with an approved knockout plug, replaced the missing insulating wire nut and placed the conductors in the j-box.

Analysis:

Deliberate violation: In 1991 when the work was performed the craftsperson removing the two light fixtures loosened the flex connector, pulled the flex out of the connector and cut the exposed conductors. The craftsperson then put wire nuts on the conductors outside of the four-square box which is a violation of NEC Code #300.15. Over time the wire nut on the black energized conductor came off resulting in an exposed energized conductor above the ceiling where the Insulator was performing work activities. The two conductors protruded from the flex connector about 1/2 an inch and were not easily visible.

Progress/status of task not adequately tracked: Documentation on the drawings did not identify the contractor performing the work or the project manager assigned to the job. It was a very small project, the removal of two light fixtures, which could have been completed in a couple of hours. The Contractor's supervisor in 1991 did not provide adequate oversight of the small project to ensure work was performed in accordance with existing codes and standards.

Job scoping did not identify special circumstances and/or conditions: The insulator working in the ceiling space did not complete a thorough investigation of the work area to identify legacy hazards that were present (the exposed electrical conductor) prior to beginning work activities.

Recommended Actions:

Take this opportunity to remind personnel performing construction, remodeling and maintenance activities to complete a thorough investigation of the work area to identify legacy hazards that are present prior to beginning work activities.

HQ Keywords:

- 01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous)
- 01N--Inadequate Conduct of Operations - Inadequate Job Planning (Other)
- 01Q--Inadequate Conduct of Operations - Personnel error
- 08A--OSHA Reportable/Industrial Hygiene - Electrical Shock
- 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance

	11G--Other - Subcontractor 12C--EH Categories - Electrical Safety 14E--Quality Assurance - Work Process Deficiency																
HQ Summary:	An insulating subcontractor received an electrical shock while working above the ceiling in Building 802 Room 1139D when the insulator's wrist brushed against an exposed energized 120-volt conductor. The energized conductor was protruding from a 1/2-inch flex connector in an electrical junction box that had been inappropriately left in place when a light fixture was removed in 1991. The insulator was evaluated at a local hospital and released. Work above the ceiling was suspended and the exposed conductor was placed in a safe condition.																
Similar OR Report Number:	1. DP-ALO-KO-SNL-TA1ALBQ-1990-0006 2. EM-ID--BNFL-AMWTF-2005-0010 3. DP-ALO-KO-SNL-2000-2000-0001																
Facility Manager:	<table border="1"> <tr> <td>Name</td> <td>Carla Lamb</td> </tr> <tr> <td>Phone</td> <td>(505) 844-1753</td> </tr> <tr> <td>Title</td> <td>ES&H Coordinator - Facilities Management & Ops Ctr</td> </tr> </table>	Name	Carla Lamb	Phone	(505) 844-1753	Title	ES&H Coordinator - Facilities Management & Ops Ctr										
Name	Carla Lamb																
Phone	(505) 844-1753																
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Originator:	<table border="1"> <tr> <td>Name</td> <td>LUCERO, JEWEELEE A</td> </tr> <tr> <td>Phone</td> <td>(505) 845-4727</td> </tr> <tr> <td>Title</td> <td>REPORTING ADMINISTRATOR</td> </tr> </table>	Name	LUCERO, JEWEELEE A	Phone	(505) 845-4727	Title	REPORTING ADMINISTRATOR										
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Phone	(505) 845-4727																
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HQ OC Notification:	<table border="1"> <tr> <td>Date</td> <td>Time</td> <td>Person Notified</td> <td>Organization</td> </tr> <tr> <td>NA</td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> </table>	Date	Time	Person Notified	Organization	NA	NA	NA	NA								
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Other Notifications:	<table border="1"> <thead> <tr> <th>Date</th> <th>Time</th> <th>Person Notified</th> <th>Organization</th> </tr> </thead> <tbody> <tr> <td>10/16/2007</td> <td>07:45 (MTZ)</td> <td>Jeff Quintenz</td> <td>4800</td> </tr> <tr> <td>10/16/2007</td> <td>07:30 (MTZ)</td> <td>Wayne Walker, FR</td> <td>DOE/SSO</td> </tr> <tr> <td>10/16/2007</td> <td>07:45 (MTZ)</td> <td>Michael Quinlan</td> <td>4820</td> </tr> </tbody> </table>	Date	Time	Person Notified	Organization	10/16/2007	07:45 (MTZ)	Jeff Quintenz	4800	10/16/2007	07:30 (MTZ)	Wayne Walker, FR	DOE/SSO	10/16/2007	07:45 (MTZ)	Michael Quinlan	4820
Date	Time	Person Notified	Organization														
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10/16/2007	07:45 (MTZ)	Michael Quinlan	4820														
Authorized Classifier(AC):	Bruce Green Date: 11/30/2007																

8)Report Number:	NA--SS-SNL-NMFAC-2007-0014 After 2003 Redesign
Secretarial Office:	National Nuclear Security Administration
Lab/Site/Org:	Sandia National Laboratories - SS
Facility Name:	SNL NM Site-wide F & M
Subject/Title:	Exposed Energized #12 120-volt Conductors Short to Conduit when Contacted by Ceiling Tile in Bldg. 856
Date/Time Discovered:	10/18/2007 14:45 (MTZ)
Date/Time Categorized:	10/18/2007 15:30 (MTZ)
Report Type:	Final

Report Dates:	Notification	10/22/2007	16:18 (ETZ)
	Initial Update	10/29/2007	14:52 (ETZ)
	Latest Update	11/30/2007	10:27 (ETZ)
	Final	11/30/2007	10:27 (ETZ)
Significance Category:	3		
Reporting Criteria:	<p>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.</p> <p>10(3) - A near miss, where no barrier or only one barrier prevented an event from having a reportable consequence. One of the four significance categories should be assigned to the near miss, based on an evaluation of the potential risks and the corrective actions taken. (1 of 4 criteria - This is a SC 3 occurrence)</p>		
Cause Codes:	A4B2C10 - Management Problem; Resource Management LTA; Means / method not provided for assuring adequate quality of contract services		
ISM:	<p>1) Define the Scope of Work</p> <p>5) Provide Feedback and Continuous Improvement</p>		
Subcontractor Involved:	No		
Occurrence Description:	<p>On October 18th, 2007, a Construction Electrician removed a ceiling tile in the hall outside Room 111B of Bldg. 856. The ceiling tile contacted exposed energized #12 120-volt conductors (there were no wire nuts installed on the conductors), causing the conductors to contact the metal conduit, resulting in an arc. The conductors were coming out of a 4-square electrical j-box (j-box "A") without a cover that had three 1/2-inch conduits entering the box.</p> <p>The first conduit contained the following conductors: three energized phase (black, red, and blue), a neutral (white) and a ground (green). The second conduit contained the following non-energized conductors: one non-energized phase (black), one neutral (white), and one ground (green). The third and last conduit contained the following non-energized conductors: two non-energized phase (red and blue), one neutral (white) and one ground (green).</p> <p>The first conduit containing the energized conductors was routed to electrical distribution panel D4 located in Room 107B and terminated on three 20-amp single phase breakers. The breakers were identified as "in use" on the panel schedule and were in the "on" position. The second conduit containing non-energized conductors was routed 35 feet to another j-box (j-box "B:") located above the ceiling of cubicle 111B. The conductors had</p>		

insulating wire nuts installed, but no j-box cover. The third conduit containing non-energized conductors was routed approximately 30-feet away and ended above the ceiling of cubicle 111Q. The conductors were left long enough to reach the top of a power pole located in the south end of the cubicle 111Q, but the conductors were not connected to the power pole, and did not have insulating wire nuts on the end of the conductors. The power pole located in cubicle 111Q had three conductors coming out of the top: one phase (red), one neutral (white) and one ground (green). These conductors were routed down the power pole, entered a 1/2-inch flex conduit, and were terminated on a receptacle located on the cubicle wall. Because the conductors in the power pole had not been spliced to the energized conductors in j-box "A", the receptacle was not energized.

J-box "A" containing the energized conductors, the power pole and receptacle are not part of the job the Construction Electrician was working on at the time of the incident.

Investigation:

An area occupant who had been in the area for 11 years identified that the power pole located in cubicle 111Q had been there for as long as the occupant had worked in the area.

A search of the FMOC project tracking database, Visual Project Analysis & Tracking (VPAT), did not identify any FMOC project work in the area where the exposed conductors were found. The VPAT database has been used since 1999.

A search of the FMOC maintenance work control database, MAXIMO, identified that there is no equipment requiring preventive maintenance located above the office ceiling.

The investigation team was unable to identify any FMOC construction or service projects, or maintenance activities that would have resulted in the installation of the conduits or conductors. The power pole had been there a minimum of 11 years, but the receptacle located at the bottom of the pole had never functioned.

Building 856 was constructed in 1987. The conduits, conductors and power pole were most likely installed during the original installation of the systems furniture. The systems furniture was most likely installed and energized by the supplier, who remains unknown at this time.

There was no injury, shock or impact to the environment or line operations as a result of this incident.

Cause Description:

A4B2C10 Means/method not provided for assuring adequate quality of

	<p>contract services: There was inadequate oversight of the contractor installing the conductors and conduit above the cubicle area to ensure work was completed and conductors were placed in a safe condition.</p> <p>Methodology: Timeline, Causal Factors Analysis</p> <p>Critique/Fact Finding Performed 10/18/07</p>			
Operating Conditions:	Normal			
Activity Category:	Construction			
Immediate Action(s):	<p>The area was put in a safe condition by the contractor.</p> <p>Conductors were removed during a building outage on October 20, 2007.</p>			
FM Evaluation:	<p>EOC Event #3912</p> <p>DOE/SSO Early Notification Date & Time: EOC - 10/18/07 - 14:45 FR - Wayne Walker - 10/18/07 - 15:36</p> <p>There have been many improvements made to construction operations at SNL since the installation of the systems furniture. One of the most recent was an update to the SNL ES&H Manual clarifying SNL responsibilities regarding flowdown of ES&H requirements and oversight of construction and service contractors. This incident provides an excellent opportunity to remind SNL personnel the importance of construction and service contractor oversight.</p>			
DOE Facility Representative Input:				
DOE Program Manager Input:				
Further Evaluation is Required:	No			
Division or Project:	4000			
Plant Area:	Tech Area I			
System/Building/Equipment:	Electrical System/Bldg. 856/Hallway Outside Rm. 111B			
Facility Function:	Balance of Plant - Infrastructure (Other Functions not specifically listed in this Category)			
Corrective Action 01:	<table border="1"> <tr> <td>Target Completion Date:12/15/2007</td> <td>Actual Completion Date:11/30/2007</td> </tr> </table>		Target Completion Date: 12/15/2007	Actual Completion Date: 11/30/2007
Target Completion Date: 12/15/2007	Actual Completion Date: 11/30/2007			
	<p>Department 4800 - Lessons learned from this incident will be shared through the SNL Corporate Lessons Learned process, stressing the importance of oversight to all construction and construction-like work activities. (A4B2C10)</p>			

Corrective Action 02:	Target Completion Date: 01/30/2008	Actual Completion Date: 01/30/2008
	Department 4800 - Lessons learned from this incident will be shared with all SNL Safety Engineers providing support to line organizations that obtain construction and construction-like activities from contractor support. (A4B2C10)	
Corrective Action 03:	Target Completion Date: 01/30/2008	Actual Completion Date: 12/12/2007
	Department 4827 - Lessons learned will be shared with FMOC Construction Observers and Project Managers stressing the importance of providing adequate oversight to construction operations performed by FMOC contractors. (A4B2C10)	
Corrective Action 04:	Target Completion Date: 01/30/2008	Actual Completion Date: 01/22/2008
	Department 4827 - Lessons learned will be shared with FMOC Construction Contractors at the next Quarterly Construction Safety Seminar. (A4B2C10)	
Lessons(s) Learned:	<p>Title: Exposed Energized #12 120-volt Conductors Short to Conduit when Contacted by Ceiling Tile in Bldg. 856</p> <p>Discussion of Activities: A Construction Electrician removed a ceiling tile in the hall outside of Room 111B in Bldg. 856. The ceiling tile contacted exposed energized #12 120-volt conductors, pushing the conductors into contact with metal conduit, resulting in an arc. The conductors were coming out of a 4-square electrical j-box (j-box "A") that had three 1/2-inch conduits entering the box.</p> <p>The first conduit contained the following conductors; three energized phase (black, red, and blue), a neutral (white) and a ground (green). The second conduit contained the following non-energized conductors: one non-energized phase (black), one neutral (white), and one ground (green). The third and last conduit contained the following non-energized conductors: two non-energized phase (red and blue), one neutral (white) and one ground (green).</p> <p>The first conduit containing the energized conductors was routed to electrical distribution panel D4 located in Room 107B and terminated on three 20-amp single phase breakers. The breakers were identified as "in use" on the panel schedule and were in the "on" position. The second conduit containing non-energized conductors was routed 35 feet to another j-box (j-box "B") located above the ceiling of cubicle 111B. The conductors had insulating wire nuts installed, but no j-box cover. The third conduit containing non-energized conductors was routed approximately 30-feet</p>	

away and ended above the ceiling of cubicle 111Q. The conductors were left long enough to reach the top of a power pole located in the south end of the cubicle 111Q, but the conductors were not connected to the power pole, and did not have insulating wire nuts on the end of the conductors. The power pole located in cubicle 111Q had three conductors coming out of the top: one phase (red), one neutral (white) and one ground (green). These conductors were routed down the power pole, entered a 1/2-inch flex conduit, and were terminated on a receptacle located on the cubicle wall. Because the conductors in the power pole had not been spliced to the energized conductors in j-box "A" the receptacle was not energized.

J-box "A", which contained the energized conductors, the power pole and receptacle are not part of the job the Construction Electrician was working on at the time of the incident.

Analysis:

The investigation indicated that the conduit and conductors were most likely installed when the systems furniture was installed in 1987. There have been no remodels documented in Facilities records since that time, and one area occupant who had been in the area for the past 11 years stated that the power pole had been there at least that long.

Many changes have been made at SNL regarding construction and construction-like activities in the past 20 years that would help to ensure that adequate oversight is provided during construction operations to prevent this type of incomplete installation.

Recommended Actions:

Take this opportunity to remind personnel obtaining contracted support for construction and construction-like activities of their responsibility to ensure means and methods are provided to assure the quality of contract services.

HQ Keywords:

- 01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous)
- 01B--Inadequate Conduct of Operations - Loss of Configuration Management/Control
- 01N--Inadequate Conduct of Operations - Inadequate Job Planning (Other)
- 01R--Inadequate Conduct of Operations - Management issues
- 01S--Inadequate Conduct of Operations - Incorrect/Inadequate Installation
- 07D--Electrical Systems - Electrical Wiring
- 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
- 14G--Quality Assurance - Procurement Deficiency

HQ Summary:

A Construction Electrician was removing a ceiling tile in Building 856 when the tile contacted exposed energized #12 120 volt conductors, pushing the

	conductors into contact with metal conduit, resulting in an arc. The conductors were coming out of a 4-square electrical j-box that had three 1/2-inch conduits entering the box. There is no known project associated with the conductors and conduits abandoned in the ceiling. The area was placed in a safe configuration, and the conductors were removed.																			
Similar OR Report Number:	1. SC-ORO--MMES-X10EAST-1992-0003																			
	2. EM-RFO--KHLL-771OPS-1999-0057																			
	3. DP-ALO-PI-MMSC-PINELLAS-1995-0010																			
Facility Manager:	<table border="1"> <tr> <td>Name</td> <td colspan="3">Carla Lamb</td> </tr> <tr> <td>Phone</td> <td colspan="3">(505) 844-1753</td> </tr> <tr> <td>Title</td> <td colspan="3">ES&H Coordinator - Facilities Management & Ops Ctr</td> </tr> </table>				Name	Carla Lamb			Phone	(505) 844-1753			Title	ES&H Coordinator - Facilities Management & Ops Ctr						
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Title	ES&H Coordinator - Facilities Management & Ops Ctr																			
Originator:	<table border="1"> <tr> <td>Name</td> <td colspan="3">LUCERO, JEWELLEE A</td> </tr> <tr> <td>Phone</td> <td colspan="3">(505) 845-4727</td> </tr> <tr> <td>Title</td> <td colspan="3">REPORTING ADMINISTRATOR</td> </tr> </table>				Name	LUCERO, JEWELLEE A			Phone	(505) 845-4727			Title	REPORTING ADMINISTRATOR						
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10/18/2007	15:36 (MTZ)	Wayne Walker, FR	DOE/SSO																	
Authorized Classifier(AC):	Bruce Green Date: 11/28/2007																			

9)Report Number:	RW--YMPO-BSYM-YMSGD-2007-0022 After 2003 Redesign														
Secretarial Office:	Civilian Radioactive Waste Management														
Lab/Site/Org:	Yucca Mountain Project Office														
Facility Name:	Yucca Mountain Site-Geological Disp.														
Subject/Title:	Management Concern: Unqualified employee Opened an Electrical Cover Plate														
Date/Time Discovered:	10/17/2007 10:15 (PTZ)														
Date/Time Categorized:	10/17/2007 10:45 (PTZ)														
Report Type:	Final														
Report Dates:	<table border="1"> <tr> <td>Notification</td> <td>10/22/2007</td> <td>19:12 (ETZ)</td> </tr> <tr> <td>Initial Update</td> <td>11/29/2007</td> <td>12:25 (ETZ)</td> </tr> <tr> <td>Latest Update</td> <td>01/22/2008</td> <td>12:14 (ETZ)</td> </tr> <tr> <td>Final</td> <td>01/22/2008</td> <td>12:14 (ETZ)</td> </tr> </table>			Notification	10/22/2007	19:12 (ETZ)	Initial Update	11/29/2007	12:25 (ETZ)	Latest Update	01/22/2008	12:14 (ETZ)	Final	01/22/2008	12:14 (ETZ)
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Latest Update	01/22/2008	12:14 (ETZ)													
Final	01/22/2008	12:14 (ETZ)													
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:	A3B2C01 - Human Performance Less Than Adequate (LTA); Rule Based Error; Strong rule incorrectly chosen over other rules -->couplet - A5B3C02 - Communications Less Than Adequate (LTA); Written Communications Not Used; Not available or inconvenient for use A3B3C03 - Human Performance Less Than Adequate (LTA); Knowledge Based Error; Individual justified action by focusing on biased evidence -->couplet - A5B4C03 - Communications Less Than Adequate (LTA); Verbal Communications LTA; Correct terminology not used
ISM:	1) Define the Scope of Work 2) Analyze the Hazards 4) Perform Work Within Controls
Subcontractor Involved:	No
Occurrence Description:	On September 26, 2007 a Bechtel SAIC (BSC) employee performing observations at the Exploratory Studies Facility (ESF) pad, opened an electrical cover plate on an electrical disconnect at the Respirator Fit Test Trailer located on the ESF Pad. When the cover plate was opened by the employee, the employee had the potential of being exposed to 208 volts. The employee was not qualified to open the electrical cover plate, nor was the employee wearing the proper Personal Protective Equipment (PPE). The employee was not working with a qualified electrician or performing work to an authorized work order.
Cause Description:	Researching existing Condition Reports, Federal Codes and Industry Standards; interviews with personnel involved in the incident; and information on training, both required and taken, provided the appropriate information needed. After the interviews, a Why staircase and Fishbone diagram were used for the analysis with regards to both issues identified 1) personnel actions in accessing the electrical disconnect and 2) potentially faulty electrical box. In order to better understand the two identified issues, the Investigation Team summarized statements made by the employee in question as well as other safety professionals, then analyzed personnel actions in accessing the electrical panel by completing a "why" staircase. Additionally, a fishbone diagram approach was used to identify potential issues with regards to a faulty electrical box.

Issue #1 - Accessing the Electrical Disconnect: Why Staircase

Why did a safety professional access an energized electrical panel?

- The cover to the panel was "askew" and didn't look secure and the safety professional wanted to validate his observation.

Why wasn't an electrician contacted to assist in validating the issue?

- The safety professional didn't expect the cover would open and didn't feel he was putting himself in danger.

Why did the safety professional believe he was not in any danger?

- He believed his years of experience in inspecting electrical safety issues, OSHA electrical safety training, and year as a contractor performing electrical installations provided the knowledge to keep him out of danger.

A3B3C03 - Human Performance LTA/Knowledge Based Error/Individual justified action by focusing on biased evidence.

Is it a commonly held belief among safety professionals that accessing energized electrical panels is an acceptable practice?

- This is not a commonly held belief, especially by someone with this many years of experience.

A3B2C01 - Human Performance LTA/Rule Based Error/Strong rule incorrectly chosen over other rules.

Why is this not a commonly held belief?

- A safety professional is to observe operations and identify safety issues, not to fix them. If interaction with equipment is required, the safety professional is to request appropriate technical assistance.

Why should a safety professional not interact with equipment?

- Interactions with equipment require specialized training, personal protective equipment, working knowledge of codes and standards, and information on other work being performed within the facility that the safety professional may not readily possess.

What would prevent a safety professional from interacting with equipment?

- Policies, procedures, training, and indoctrination to location specific (i.e. Site) conduct of operations, including electrical safety, work control processes, etc. A person's years on the job also plays an important part in acquiring experience that contributes to a body of knowledge.

A5B3C02 - Communications LTA/Written Communication Not Used/Not available or inconvenient for use

Why didn't the methods mentioned above prevent this safety professional from interacting with the equipment?

- The employee stated that he had accessed several electrical boxes during

his times at the site. There was no evidence of indoctrination to the Site conduct of operations. Also, the employee's personal beliefs about his knowledge of electrical safety and his feelings that he was not putting himself in danger overrode the accepted industry and company practice of "look, but don't touch" (as directed by the Project ES&H supervisor) when conducting safety walkdowns.

A5B4C03 - Communications LTA/Verbal Communication LTA/Correct terminology not used

Issue #2 - Electrical Disconnect

A Fishbone diagram was used to determine potential reasons why the electrical box was askew. The results pointed to both the equipment and personnel as likely causes of the cover being askew. Preliminary investigation of the electrical box demonstrated that the cover can be removed without the power being off and without a double service disconnect feature being deployed.

As far as personnel involvement in the cover being askew, the most compelling evidence came from the Lead Electrical Field Engineer who stated that he finds them (i.e., the box covers) off the latch a lot of times when he is walking in the field. Hence the reason why this aspect warranted further investigation.

Corrective Actions:

1. Personnel actions, if any, will be handled in accordance with Human Resource policies and procedures.
2. Conduct a survey of site personnel to determine how other personnel would act when encountering an abnormality with an electrical panel.
3. Determine if the electrical box on the M&TE trailer is faulty (ie., the double service disconnect feature is broken); if it is out of compliance with current codes; and/or if it needs to be replaced. Based on the outcome of these actions, a sample of electrical boxes at the Site may be warranted.
4. During the investigation it was noticed that there is a problem with the flow-down of requirements from Standing Work Orders (SWOs) to Child Work Orders. SWOs and Discrete Work Orders have a prerequisite to notify the Site Operations prior to performing work. The green folder (Child Work Order) doesn't specifically tell you to contact Site Ops, however, it does state that you have to conduct work in accordance with the SWO.
5. Cracks in the cable leading to the electrical disconnect on the Respiratory Fit trailer were mended with electrical tape. This was done by an electrician at the request of the Lead Electrical Field Engineer. The Electrical Foreman stated he did not know why someone would put electrical tape on cable and

	<p>that he would have replaced the entire length of cable. OSHA could interpret electrical tape on cable as trying to hide something. Determine if this is a potential problem with OSHA; establish who is responsible for repairing cracked cable; and determine how to prevent a repeat of this situation. Note: This should have been addressed under the standing work order - Perform Continuous Assured Grounding Maintenance. This SWO provides the proper method of repair.</p> <p>6. There is not required indoctrination for ES&H employees regarding Site conduct of operations. There are no differences in training requirements for Safety Professionals assigned to the Site versus other locations and the Training Program Description document for ES&H does not require Site procedures and processes be reviewed prior to assignment to the Site. Modify Training Program Description documents to include review of Site procedures and processes and formal indoctrination of personnel newly assigned to the Site.</p>
Operating Conditions:	Normal
Activity Category:	Normal Operations (other than Activities specifically listed in this Category)
Immediate Action(s):	Initially this issue was evaluated as not ORPS reportable. This issue was communicated as an equipment maintenance issue. After more information was provided this event was re-evaluated and management made the determination this was ORPS reportable under Management Concern for safety.
FM Evaluation:	<p>The job of the safety professional is to identify potential safety hazards then notify the proper personnel so they can investigate and correct any problems. It is the general consensus of the Site ES&H Manager, the Project ES&H supervisor, the Lead Electrical Field Engineer, the Electrical Foreman that the employee in question should not have touched the electrical disconnect.</p> <p>When the employee in question saw a problem with the electrical disconnect, he did not barricade the area or call for assistance from an authorized and qualified electrician. His knowledge and experience dictated that proper electrical related PPE is required to be worn prior to accessing the electrical disconnect; yet he disregarded this safety requirement. He took it upon himself to investigate the issue and in doing so violated OSHA regulations and BSC policies. The employee, given his background and experience, should have known that an askew cover on an electrical disconnect had the potential to open. The employee failed to acknowledge that knowledge of the hazard alone is not enough in any circumstance. The proper barriers need to be in place.</p> <p>Concerning Issue #2-Electrical Disconnect, The Department of Energy (DOE) has directed Bechtel SAIC, LLC (BSC) to de-energize and vacate all facilities at the Yucca Mountain Project (YMP) Repository Site effective January 31, 2008. The DOE will be responsible for all site activities from</p>

	<p>that date forward. This information was transmitted in a DOE LTR No. 08-006.</p> <p>As a result, no further actions will be taken to address this issue. The actions, as written, to resolve the issue require BSC to complete tasks that affect only BSC Site Operations processes and procedures. As these processes and procedures will no longer be implemented, further efforts to resolve this issue provide no added value.</p>		
DOE Facility Representative Input:			
DOE Program Manager Input:			
Further Evaluation is Required:	No		
Division or Project:	Yucca Mountain Project		
Plant Area:	NTS, Area 25		
System/Building/Equipment:	Electrical Cover Plate		
Facility Function:	Balance of Plant - Infrastructure (Other Functions not specifically listed in this Category)		
Corrective Action 01:	<table border="1"> <tr> <td>Target Completion Date:01/31/2008</td> <td>Tracking ID:11284-001</td> </tr> </table>	Target Completion Date: 01/31/2008	Tracking ID: 11284-001
Target Completion Date: 01/31/2008	Tracking ID: 11284-001		
	Conduct a survey of Site personnel to determine how other personnel would act when encountering an abnormality with an electrical panel.		
Corrective Action 02:	<table border="1"> <tr> <td>Target Completion Date:01/31/2008</td> <td>Tracking ID:11284-002</td> </tr> </table>	Target Completion Date: 01/31/2008	Tracking ID: 11284-002
Target Completion Date: 01/31/2008	Tracking ID: 11284-002		
	Determine if the electrical disconnect on the M&TE trailer is faulty (i.e., the double service disconnect feature is broken); if it is out of compliance with current codes; and/or if it needs to be replaced. Based on the outcome of these actions a sample of electrical boxes at the Site may be warranted.		
Corrective Action 03:	<table border="1"> <tr> <td>Target Completion Date:01/31/2008</td> <td>Tracking ID:11284-003</td> </tr> </table>	Target Completion Date: 01/31/2008	Tracking ID: 11284-003
Target Completion Date: 01/31/2008	Tracking ID: 11284-003		
	Investigate repairs to cracked cable on Respiratory Fit trailer.		
Corrective Action 04:	<table border="1"> <tr> <td>Target Completion Date:01/31/2008</td> <td>Tracking ID:11284-004</td> </tr> </table>	Target Completion Date: 01/31/2008	Tracking ID: 11284-004
Target Completion Date: 01/31/2008	Tracking ID: 11284-004		
	Modify ES&H Training Program Description documents. - This action was cancelled due to the Site closure effective 1/31/08.		
Lessons(s) Learned:	<p>OCRWM-LL-2008-034 - An Unauthorized and Unqualified Employee Opened An Unlabeled Electrical Disconnect</p> <p>Safety hazards associated with any task must be adequately evaluated.</p>		
HQ Keywords:	<p>01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous)</p> <p>01E--Inadequate Conduct of Operations - Operations Procedure Noncompliance</p>		

	01F--Inadequate Conduct of Operations - Training Deficiency 01Q--Inadequate Conduct of Operations - Personnel error 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance 12C--EH Categories - Electrical Safety 14B--Quality Assurance - Training and Qualification Deficiency 14E--Quality Assurance - Work Process Deficiency								
HQ Summary:	A Bechtel SAIC (BSC) employee performing observations at the Exploratory Studies Facility (ESF) pad, opened an electrical cover plate on an electrical disconnect at the Respirator Fit Test Trailer, causing potential exposure to 208 volts. The employee was neither qualified nor authorized to open the electrical cover plate, nor was the employee wearing proper Personal Protective Equipment. This incident is being investigated.								
Similar OR Report Number:	1. None								
Facility Manager:	<table border="1"> <tr> <td>Name</td> <td>SINCLAIR, WILLIAM A</td> </tr> <tr> <td>Phone</td> <td>(702) 295-5140</td> </tr> <tr> <td>Title</td> <td>SENIOR OPERATOR</td> </tr> </table>	Name	SINCLAIR, WILLIAM A	Phone	(702) 295-5140	Title	SENIOR OPERATOR		
Name	SINCLAIR, WILLIAM A								
Phone	(702) 295-5140								
Title	SENIOR OPERATOR								
Originator:	<table border="1"> <tr> <td>Name</td> <td>Lynch, Dee L.</td> </tr> <tr> <td>Phone</td> <td>(702) 295-6148</td> </tr> <tr> <td>Title</td> <td>OPERATIONS ORPS COORDINATOR</td> </tr> </table>	Name	Lynch, Dee L.	Phone	(702) 295-6148	Title	OPERATIONS ORPS COORDINATOR		
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Authorized Classifier(AC):									

10)Report Number:	SC--BHSO-BNL-BNL-2007-0018 After 2003 Redesign												
Secretarial Office:	Science												
Lab/Site/Org:	Brookhaven National Laboratory												
Facility Name:	Brookhaven National Laboratory (BOP)												
Subject/Title:	Electrical Shock from Broken Wall Clock												
Date/Time Discovered:	10/27/2007 09:00 (ETZ)												
Date/Time Categorized:	11/21/2007 11:00 (ETZ)												
Report Type:	Final												
Report Dates:	<table border="1"> <tr> <td>Notification</td> <td>11/26/2007</td> <td>16:58 (ETZ)</td> </tr> <tr> <td>Initial Update</td> <td>01/07/2008</td> <td>15:35 (ETZ)</td> </tr> <tr> <td>Latest Update</td> <td>01/07/2008</td> <td>15:35 (ETZ)</td> </tr> <tr> <td>Final</td> <td>01/07/2008</td> <td>15:35 (ETZ)</td> </tr> </table>	Notification	11/26/2007	16:58 (ETZ)	Initial Update	01/07/2008	15:35 (ETZ)	Latest Update	01/07/2008	15:35 (ETZ)	Final	01/07/2008	15:35 (ETZ)
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Significance Category:	3
Reporting Criteria:	10(3) - A near miss, where no barrier or only one barrier prevented an event from having a reportable consequence. One of the four significance categories should be assigned to the near miss, 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:	A2B6C01 - Equipment/ material problem; Defective, Failed or Contaminated; Defective or failed part
ISM:	3) Develop and Implement Hazard Controls
Subcontractor Involved:	No
Occurrence Description:	<p>On October 5, 2007, a Brookhaven National Laboratory (BNL) guest scientist (retired employee) was resetting the time on a 120V wall clock when he received an electric shock to the leg and hand. The clock was plugged into a 120V wall outlet when he attempted to change the time. The guest placed the clock, which was not wall mounted at the time of the event on his lap with the face up. Since the time adjustment thumb screw was missing, the guest used a pair of uninsulated vice-grips as an aid to grasp the time adjustment arm. Due to age and loss of strength and dexterity he could not grasp the adjustment arm without an aid. The guest placed one hand on the face of the clock to hold it steady and grasped the time adjustment arm with the vice-grips. As he turned the adjustment arm with the vice-grip he applied pressure to the face of the clock to hold it still. The downward force on the face of the clock caused an exposed electric terminal to pierce the leg of the pants and touch the skin. Since the clock was grounded, the shock occurred when the exposed terminal and grounded vice-grips were simultaneously touched. Upon receiving the shock the guest released the vice-grips and pushed the clock from his lap. The guest described the shock as a tingling in the legs that traveled to the hand.</p>
Cause Description:	<p>The guest reported the shock to the Safety and Health Services Division (S&HS) Manager in the early evening of October 31, 2007. Examination of the clock showed the protective cover that formerly enclosed the clock mechanism was removed (broken) with the remnants of the plastic tabs that secured the cover still attached to the back of the clock. A second clock of similar vintage was found with the plastic cover in tact. Because the cover was missing, the 120V terminals were completely exposed.</p> <p>The guest had the clock for 15 – 20 years. He initially obtained the clock from the Medical Department stockroom clerk for use in a former office in Building 490. When the guest moved from Building 490 to Building 703 he took the clock with him and again moved the clock during his recent move to Building 179. The guest did not know when the back of the clock broke. He stated that it did not break during the time of his possession and was likely that way when he initially received it. Before moving to Building 179,</p>

	<p>the clock was wall mounted which precluded contact with the exposed terminals during prior time adjustments.</p> <p>The guest did not report the incident immediately to BNL since he did not think much about reporting it to someone else, but he immediately made an appointment with his private doctor that afternoon since he experienced a rapid heart beat after the shock. According to the guest, the doctor administered an EKG and reported that he did see an increased heart beat. The guest is continuing to follow-up with his doctor. Discussion with the doctor indicates that he did not see evidence of myocardial injury but he referred the guest to a cardiac specialist on 12/21.</p>
Operating Conditions:	Normal Operations
Activity Category:	Normal Operations (other than Activities specifically listed in this Category)
Immediate Action(s):	<p>Upon receiving the shock the guest released the vice-grips and pushed the clock from his lap. The guest did not immediately report this event to BNL supervision but he immediately made an appointment with his private doctor that afternoon since he experienced a rapid heart beat after the shock. According to the guest, the doctor administered an EKG and reported that he did see an increased heart beat. The guest is continuing to follow-up with his doctor. Discussion with the doctor indicated that he did not see evidence of myocardial injury but he referred the guest to a cardiac specialist on December 21, 2007.</p>
FM Evaluation:	<p>A causal analysis was performed using the five-Whys?</p> <ol style="list-style-type: none"> 1. Why did the guest get a shock from the clock? The shock was caused by the simultaneous contact with an energized terminal and the time adjustment arm that is connected to the grounded clock motor assembly body. 2. Why did he contact an energized terminal? The terminal was exposed due to a broken protective cover. Contact was caused when the guest placed the clock in his lap and pushed the terminal through the pant leg; the circuit was completed when he touched the grounded time adjustment arm. 3. Why was the cover removed/broken? It is unknown when or why the protective cover was removed. The guest stated that he did not remove the cover and that the cover was likely missing since taking possession of the clock many years ago. 4. Why wasn't this discovered before? Historically the clock was wall mounted and all time adjustments done while the clock was on the wall; hence the exposed contacts were concealed. During routine reviews of office spaces, electronic devices are not typically removed for inspection, though exposed parts (e.g., cord) would be looked at

	<p>for evidence of deterioration.</p> <p>5. Why was the clock removed from the wall? The guest had just moved into a new office and wanted to set the clock. The clock had not been hung on the wall yet.</p> <p>The direct cause of the incident is identified as a defective part. The broken back of the clock permitted direct contact with the energized terminals. Had the cover been in place, the other actions and events surrounding this event would not have caused the electrical shock.</p>		
DOE Facility Representative Input:			
DOE Program Manager Input:			
Further Evaluation is Required:	No		
Division or Project:	Environmental and Waste Management		
Plant Area:	Building 179		
System/Building/Equipment:	Building 179		
Facility Function:	Balance-of-Plant - Offices		
Corrective Action 01:	<table border="1"> <tr> <td>Target Completion Date:03/03/2008</td> <td>Actual Completion Date:</td> </tr> </table>	Target Completion Date: 03/03/2008	Actual Completion Date:
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	Issue a BNL Monday Memo to highlight the requirement for staff to notify BNL supervision and the Event Categorizer upon discovery of an abnormal event/condition.		
Corrective Action 02:	<table border="1"> <tr> <td>Target Completion Date:02/04/2008</td> <td>Actual Completion Date:01/16/2008</td> </tr> </table>	Target Completion Date: 02/04/2008	Actual Completion Date: 01/16/2008
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	Discuss this event at a ESH Coordinators and Quality Representatives Meeting. The discussion shall include the charge to inspect clocks during Tier 1 safety inspections.		
Lessons(s) Learned:			
HQ Keywords:	<p>01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous)</p> <p>01P--Inadequate Conduct of Operations - Inadequate Oral Communication</p> <p>01Q--Inadequate Conduct of Operations - Personnel error</p> <p>05D--Mechanical/Structural - Mechanical Equipment Failure/Damage</p> <p>08A--OSHA Reportable/Industrial Hygiene - Electrical Shock</p> <p>08D--OSHA Reportable/Industrial Hygiene - Injury</p> <p>08J--OSHA Reportable/Industrial Hygiene - Near Miss (Electrical)</p> <p>11I--Other - Visiting Scientist/Researcher or Student Employee</p> <p>12C--EH Categories - Electrical Safety</p>		

	14E--Quality Assurance - Work Process Deficiency																							
HQ Summary:	A guest scientist (retired employee) was resetting the time on a 120-volt wall clock when he received an electric shock to the leg and hand. Examination of the clock showed the protective cover that formerly enclosed the clock mechanism was missing, completely exposing the energized terminals. The guest scientist did not immediately report the event. The lack of timely reporting will be addressed in the investigation of this event.																							
Similar OR Report Number:	1. SC-CH-BH-BNL-BNL-1998-0036																							
	2. SC-CH-BH-BNL-BNL-1994-0011																							
Facility Manager:	<table border="1"> <tr> <td>Name</td> <td colspan="3">GOODE, GEORGE</td> </tr> <tr> <td>Phone</td> <td colspan="3">(631) 344-4549</td> </tr> <tr> <td>Title</td> <td colspan="3">EWMS DIVISION MANAGER</td> </tr> </table>				Name	GOODE, GEORGE			Phone	(631) 344-4549			Title	EWMS DIVISION MANAGER										
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Authorized Classifier(AC):																								

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