SAND2005-8008P

QUARTERLY CONSTRUCTION SAFETY SEMINAR

SNL FACILITIES

January 10, 2006

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company,
for the United States Department of Energy's National Nuclear Security Administration
under contract DE-AC04-94AL85000.

Sandia National Laboratories

Agenda

2:00 PM	Introduction: Nita Estes
2:05 PM	New 01065 Spec Update: Greg Kirsch
2:20 PM	Noise & ACGIH TLVs – OA Audit CA: Fred Shelly
2:35 PM	BBS: Bill Leinneweber and William Tierney
2:45 PM	Break
3:00 PM	Quarterly Review of Accidents/Injuries: Carol Walker
3:15 PM	Contractor's Implementation of Oversight Training and Assessment: Larry Wright, Hensel Phelps
3:35 PM	SNL Summary of Contractor's Implementation of Oversight, Training and Assessment: Greg Kirsch
3:45 PM	Lessons Learned: SNL – Greg Kirsch; B&D – Kenny Easley
3:55 PM	Safety Stars and Closing

Standard Specification 01065
ES&H for Construction and Service Contracts Update

Greg C. Kirsch
Construction Safety Engineer

Why Change the 01065 Spec?

- During the last Oversight Audit, it was identified that SNL has not assured that:
  - ES&H requirements flow down to construction subcontractors to the extent necessary to ensure compliance
  - Construction tasks are not defined in sufficient detail to support the identification of task-specific hazards and controls
  - Construction contractors establish and effectively implement systems for identification and analysis of safety hazards

Why Change the 01065 Spec?

- Specification 1065, ES&H for Construction and Service Contracts, is the Sandia document that is used to identify requirements that are above OSHA Standards and site-specific for Sandia/NM.
- An analysis of requirements in DOE O 440.1A, Worker Protection Management for DOE Federal and Contractor Employees, and the 01065 specification identified some gaps in the 01065 specification.

Flow Down of Requirements

- Flow Down of Requirements: Prime Contractor shall flow down the requirements identified in this specification to subcontracts for all tiers. Sandia has the right to validate that the work is being performed in accordance with a documented safety plan, and to stop work and resolve any noncompliance with applicable ES&H requirements for this contract and subcontracts for all tiers associated with this contract.

Qualifications for Safety Officer

- Qualifications for Safety Officer: Safety Officer identified in the Contract-Specific Safety Plan shall meet the following minimum requirements:
  - Education: Two-year degree with course work in occupational health and safety, industrial hygiene, environmental engineering, or related field. Documented experience in safety inspection and coordination may be substituted on a year for year basis in lieu of formal coursework.
  - Experience: Two years documented experience in safety inspection and coordination.

Qualifications for Safety Officer (continued)

- Qualifications for Safety Officer (continued):
  - Shall be knowledgeable of:
    - Principles and practices of industry and construction site safety.
    - Safety and occupational health laws and procedures.
    - Methods of assessing safety hazards and controls.
    - Hazardous material storage and transfer procedures.
    - Emergency preparedness activities.

Worker Hazard Awareness and Training

- Worker Hazard Awareness and Training: Prime Contractor is responsible for ensuring their employees, subcontractors, and suppliers are informed of foreseeable hazards and protective measures associated with the work site/project.
  - Prime and Subcontractors shall certify on the Sandia National Laboratories/NM Facilities Contractor Badge/Clearance Request Form that employees have received the following training:
  - 10-hour OSHA
  - Training for Standard Specification Section 01065, “ES&H for Construction and Service Contracts.”
  - Prime Contractor’s Contract-Specific Safety Plan

Contract-Specific Safety Plan (CSSP)

- Safety Inspections: Conduct and document daily workplace inspections to identify and correct hazardous conditions and noncompliance with CSSP
- Keep on site a copy of CSSP, and documentation demonstrating personnel have received training on the CSSP to ensure all affected personnel are informed of foreseeable hazards and the requirement to follow protective measures.

Clarification of Sandia's Expectations

- Integrated Safety Management System (ISMS) Guiding Principles expanded.

- Revised ISMS Contractor Requirements Table 1 to clarify Sandia's expectations regarding implementation of the requirements for each phase of the Integrated Safety Management System

Industrial Hygiene Program

- Revised to include requirements from DOE O 440.1A
  - Contractor shall conduct assessment of worker exposure to reduce the risk of work-related disease or illness through workplace monitoring
  - Comply with the current edition of the ACGIH Threshold Limit Values (TLVs) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEIs) when they are lower (more protective) that OSHA Permissible Exposure Limits (PELs)
- Fred Shelly will review the new Industrial Hygiene section

Other Changes

- Fire Safety: Follow requirements in the International Fire Code (IFC) ANSI Z49.1, Sections 4.3 and E4.3
- Hot Work: Fire watch duty includes responsibility for the safety of the welder(s) in addition to that of property
- Fugitive Dust Control Permit: Required for demolition of any building containing over 75,000 cubic feet of total volume
- Storm Water Control: Inspections are required every 14 calendar days and within 24 hours of the end of the storm event of 0.5 inches or greater for construction sites greater than one acre
  - Inspections are required through the duration of the project.
  - All documents shall be submitted to SDR upon request for final payment

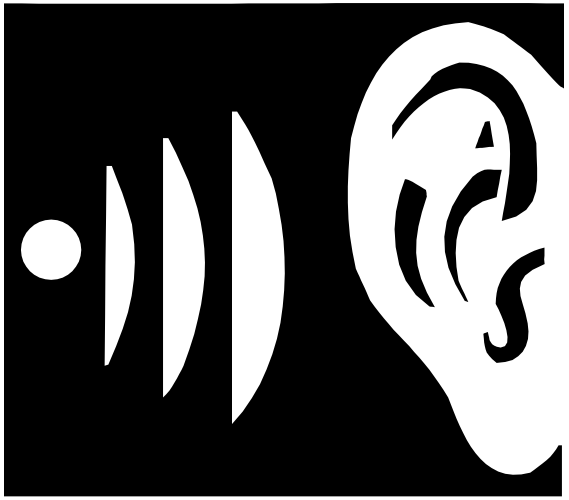
What do you need to do?

- If your CSSP does not address requirements in the 01065 spec:
  - Your CSSP will have to be updated and submitted for review and acceptance to meet these requirements
- Sandia developed a 01065 specification requirements checklist to formalize the CSSP review process and improve consistency.
- Facilities will be auditing CSSPs for compliance to the 01065 spec requirements.
- Questions?

Noise and ACGIH TLVs – OA Audit

Fred Shelly
Industrial Hygienist

NOISE-ACGIH TLVs

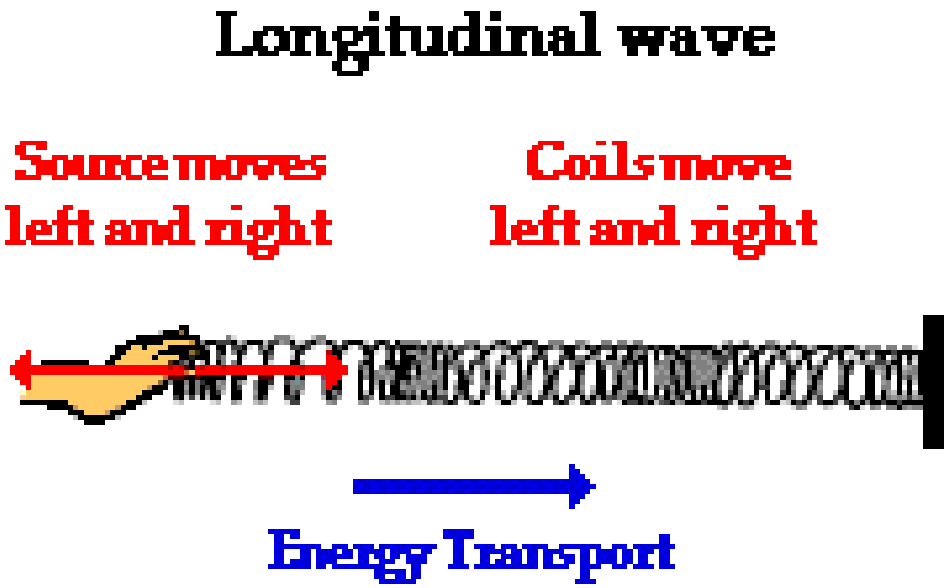


NOISE-ACGIH TLVs

- OBJECTIVES
  - Understand sound/noise
  - Learn how to measure sound exposure
  - Learn how to reduce noise exposure
  - Learn requirements of hearing conservation program
  - Learn how to calculate PPE noise attenuation
  - Understand history of ACGIH and OSHA
  - OSHA PEL vs. ACGIH TLVs

NOISE-ACGIH-TLVs

- Sound is a longitudinal wave
- Sound is pressure wave



NOISE ACGIH-TLVs
ACGIH vs. OSHA

Sound exposure (dBA)	TLV exposure time limit	OSHA exposure time limit
80	24 hours	32 hours
82	16 hours	24.3 hours
85	8 hours	16 hours

NOISE ACGIH-TLVs
ACGIH vs. OSHA (Continued)

Sound exposure (dBA)	TLV exposure time limit	OSHA exposure time limit
124	3.52 second	4.32 minutes
127	1.76 seconds	2.82 minutes
130	0.88 seconds	1.86 minutes

NOISE-ACGIH TLVs

- Recommended TLVs became law at the inception of the OSH Act in 1971.
  - OSHA now enforces 8 hour 90 dBA PEL
  - Uses 5 db exchange rate
    - Determines allowable exposure time to noise level
- ACGIH more conservative TLVs
  - Recommends 8 hour TLV of 85 dBA
  - Utilizes 3 dB exchange rate

NOISE-ACGIH TLVs

- Calculate PPE noise attenuation
  - Time Weighted Average (TWA)
  - Noise Reduction Rating (NRR)
  - TWA (dBA) – (NRR-7)

- Calculate noise attenuation for simultaneous use of plugs and muffs
  - TWA (dBA) – (NRR-7 +5)

NOISE-ACGIH TLVs

- Measuring sound and assessing exposure
  - Sound level meter
    - Sound levels at source
    - Measure area sound levels
  - Dosimeter for personnel exposure
    - Microphone worn on worker lapel
    - Integrates sound levels over time period
    - C = Time exposed to certain level of sound
    - T = Time allowed to be exposed to that level
    - C1/T1 + C2/C2 + Cn/Tn >1 (exceeds TLV)

NOISE ACGIH-TLVs

- Means of Reducing Noise Exposure
  - Source enclosure (engineering control)
  - Worker enclosure (engineering control)
  - Muffle source (engineering control)
  - Training (administrative control)
  - Job rotation (administrative control)
  - Ear plugs/muffs (PPE)

NOISE-ACGIH TLVs

- Sound units of measure
- Decibels (dB), unweighted
- Decibels (dBA), weighted “A” scale
  - Simulate human hearing
- Decibels (dBB), not used very much
- Decibels (dBC), linear weighting
  - Used more for loud impact noise

NOISE-ACGIH TLVs

- Hearing conservation requirements
  - Initiated at 85 dBA
  - Monitoring Program
  - Employee notification
  - Annual audiogram
  - Baseline audiogram within 6 months
  - Evaluation of audiogram for STS
  - Employees fitted for plugs, trained, and required to wear

NOISE ACGIH-TLV

- ACGIH more conservative TLVs (continued)
  - Continuous and impulse noise unified in “equal energy” TLV
  - Hearing protection should be worn for impact noise above 140 dBC
  - Ototoxic effects may result from exposure to noise and chemicals such as toluene, lead, manganese, or n-butyl alcohol

NOISE-ACGIH TLVs

- Ototoxic effects continued
  - Toluene
  - Lead
  - Manganese
  - N-butyl alcohol
    - Periodic audiograms are advised
- Evidence shows 8 hour TWA of 115 dBC or peak exposure of 155 dBC to abdomen of pregnant workers beyond the 5th month of pregnancy may cause hearing loss in fetus

NOISE ACGIH-TLVs

- Sum of fractions for any one day can exceed unity, provided the sum of the fractions over a 7 day period is 5 or less and no daily fractions over 3
- The TLVs are based on the theory that workers have time away from workplace to relax and sleep. When worker restricted to spaces that serve as workplace and place to relax and sleep, background must be 70 dBA or below in spaces used for relaxation and sleeping.

Behavior Based Safety
Pre-Job Inspection

William Tierney and Bill Leinneweber

Project Managers

Sandia
National
Laboratories

Overview

- Background
- Introduction
- Benefits
- Observation Review
- Conclusion

Background

- Reviewed Sandia Facilities Accident Data
  - 2002 to 2004
  - Construction Only
  - Analyzed accidents to determine applicable behavior that could have prevented
- Ranked 2nd overall on Pareto Analysis
- Good Practice

Introduction

- Pre-Job Inspection
  - Review activity plan
  - Identify tasks required for activity
  - Identify hazards associated with tasks
  - Develop strategies for mitigating risks
  - Perform daily
  - Review with all crews affected
  - Tailor to task complexity

Benefits

- Hazard Identification/Mitigation
- Improved Efficiency

Hazard Identification/Mitigation

- Identify hazards
- Analyze hazards
- Develop hazard mitigation
- Reduce chance of injury
- Increase worker safety awareness

Improved Efficiency

- Provide guidance
- Proper personnel assignment
- Proper tool selection
- Adequate materials
- Reduce wasted time and costs

Observation Review

- Pre-Job Inspection (PJI) will be reviewed during every BBS observation
- Worker observed will be requested to review PJI for task being performed
- Observer will mark as concern if worker responds with following:
  - No PJI conducted
  - PJI does not appear to be adequate
- Will create awareness for behavioral need

Conclusion

- Prevent Injuries before they occur
- Small task with great benefits

15 Minute Break

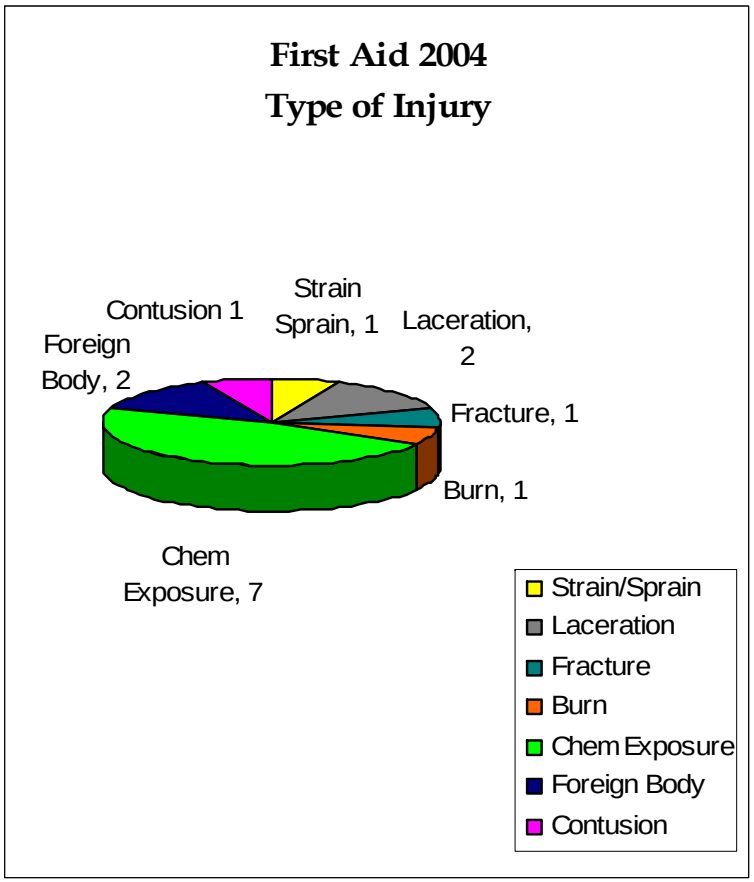
Quarterly Review of Accidents/Injures

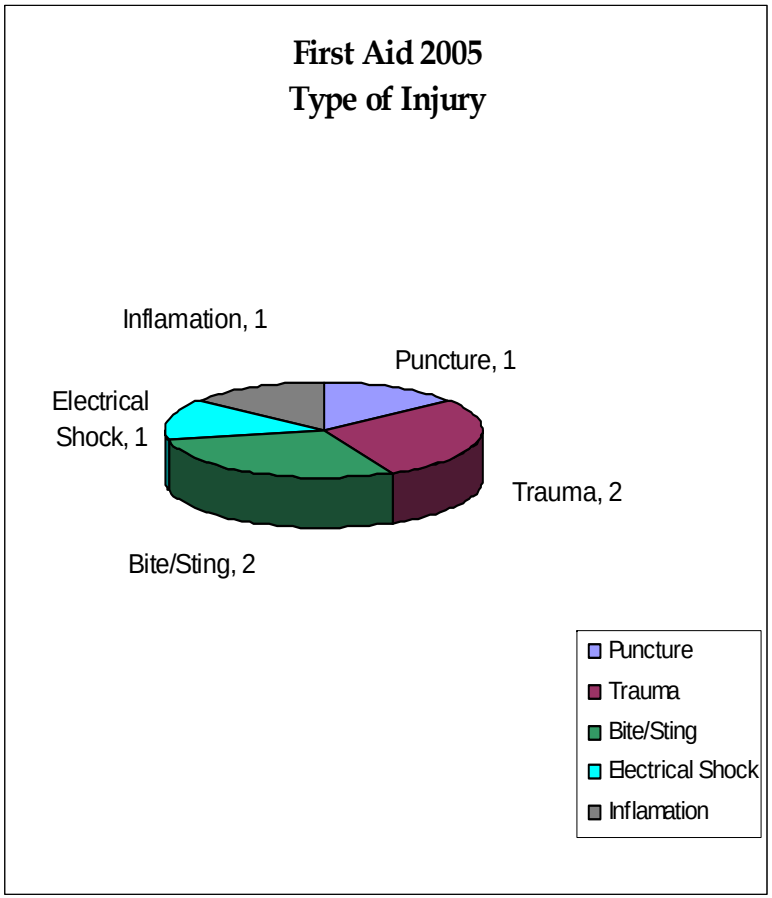
Carol Walker

Construction Safety Engineer

Sandia National Laboratories

First Aid Type of Injury





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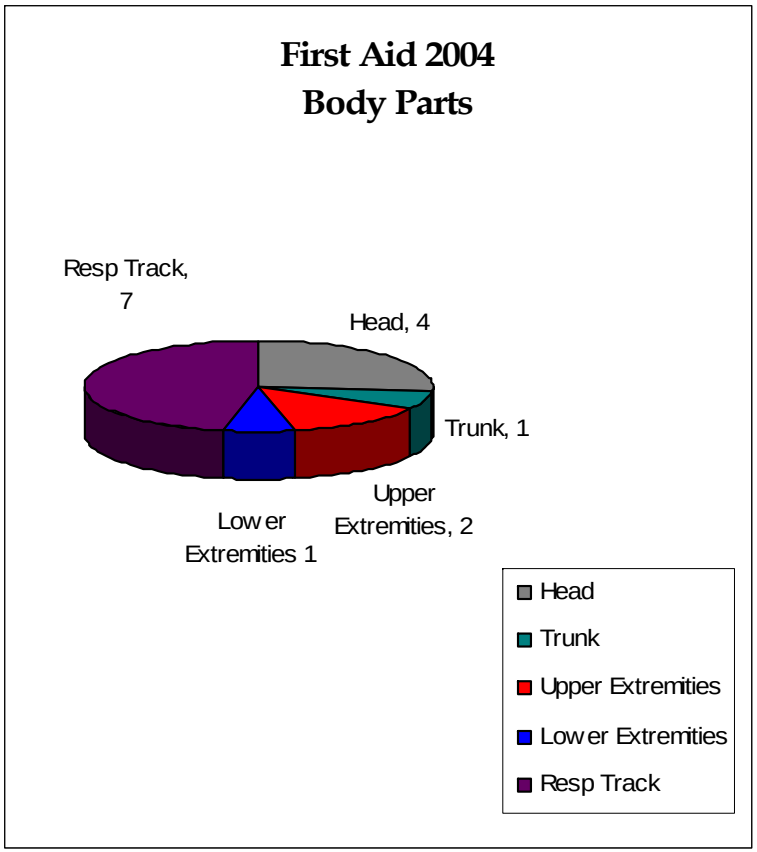
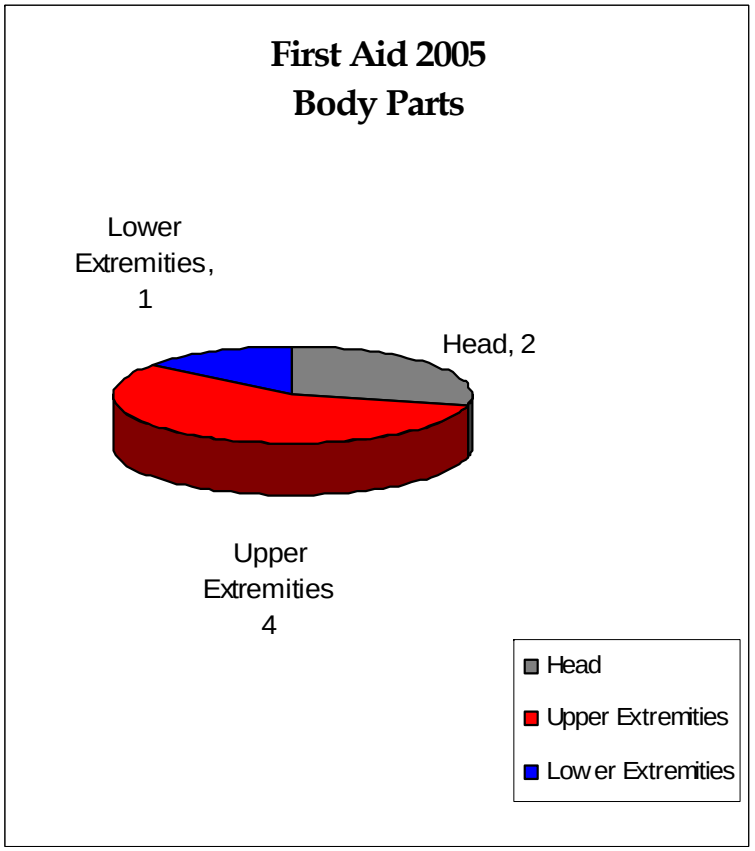
First Aid Injuries by Body Parts





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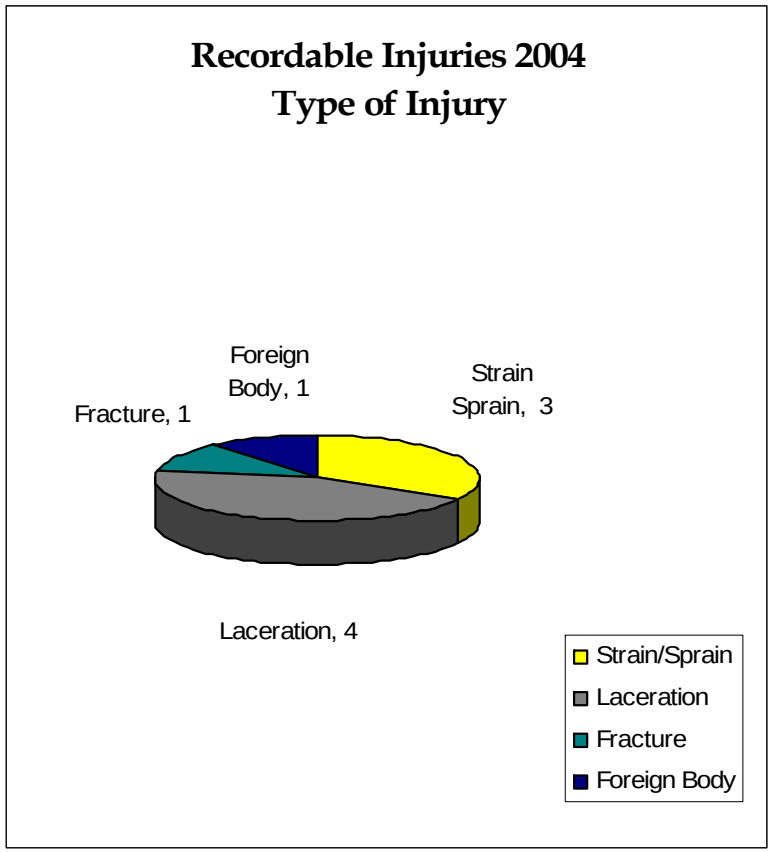
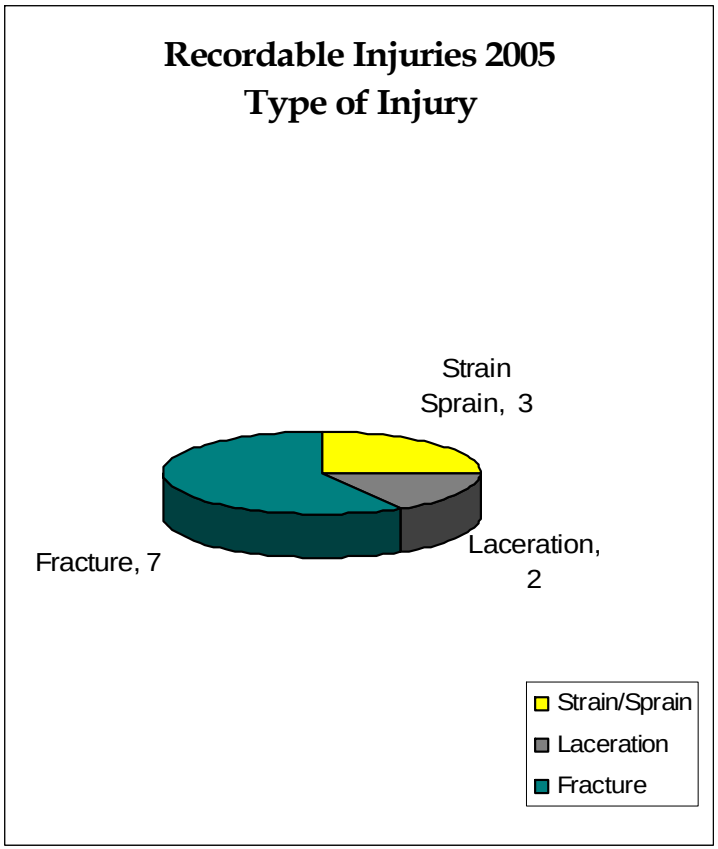
Recordable Injuries by Type





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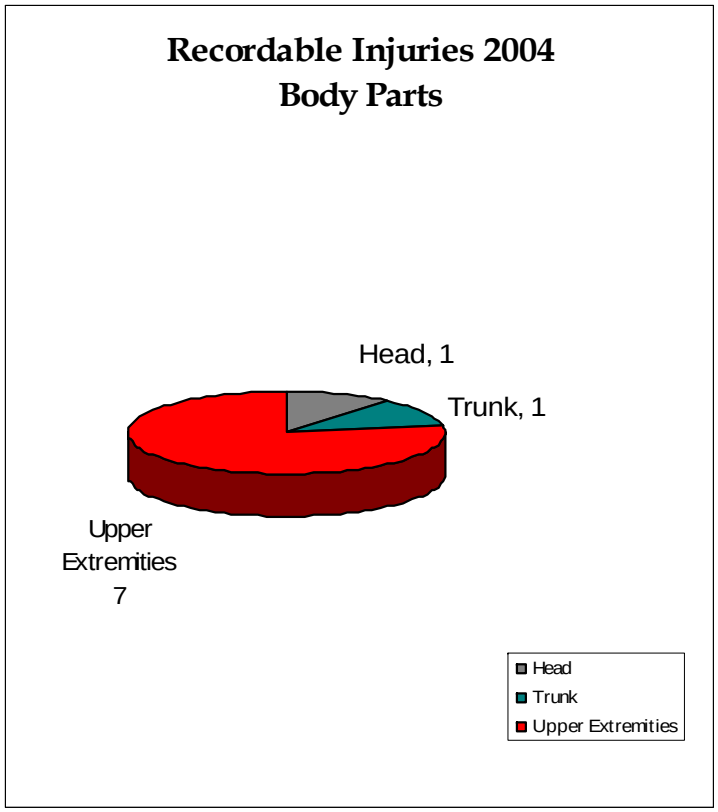
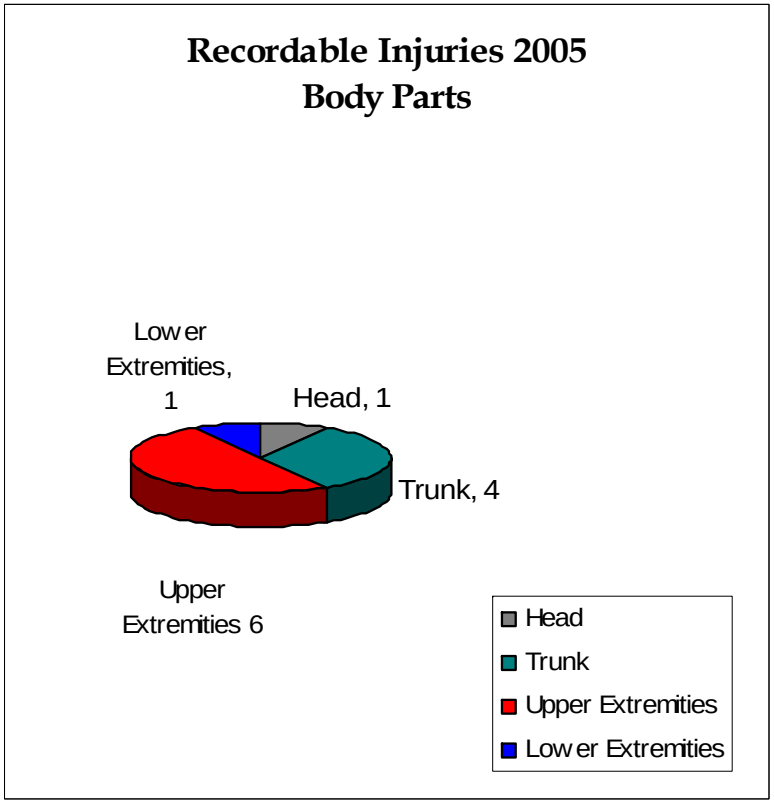
Recordable Injuries Body Parts





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Statistics

SNL Facilities Construction

- Contract Labor Hours CY2004 = 1,753,069
- Contract Labor Hours CY2005 = Approx 1,954,149
- Total Recordable Case Rate (TRCR) 2004 = 1.03
- TRCR 2005 = Approx. 1.23

Bureau of Labor Statistics: TRCR 2003 = 6.8

TRCR 2004 = 6.4

State of NM: TRCR 2003 = 6.1

TRCR 2004 = 5.2

Contractor's Implementation of Oversight, Training & Assessment

Larry Wright
Hensel Phelps

Sandia National Laboratories

Hensel Phelps Safety Philosophy

"No job or service performed by an employee is so important or urgent that it cannot be performed the safe way. Safe and sanitary conditions will be provided. Safe and healthful work practices will be taught and enforced by supervision. It is our firm commitment to truly make safety equal to cost and production."

Jerry Morgensen
President & CEO

Hensel Phelps Safety Culture

- Consequences of an Unsafe Jobsite
- Accident Prevention Training & Procedures
- Jobsite Safety Programs
- Jobsite Safety Tools & Resources

Consequences of an Unsafe Jobsite

- Consequences of an Unsafe Jobsite
  - Personal Injury
  - Effects To The Bottom Line
  - Personal Liability

Consequences of an Unsafe Jobsite

Personal Injury

- When people get hurt their “Quality of Life” will change – it might only be for a day or two, it could be a week or two, maybe a year or two and it could be a lifetime

- Consequences of an Unsafe Jobsite
- Accident Prevention Training & Procedures
- Jobsite Safety Programs
- Jobsite Safety Tools

Consequences of an Unsafe Jobsite

Effects to the Bottom Line

- Costs Associated with Accidents
- Harms Competitiveness
- Lowers Productivity & Performance

Consequences of an Unsafe Jobsite

Effects to the Bottom Line – Harms Competitiveness

- Accidents Increase Insurance Rates
- Accidents Cause Negative Image
  - Impacts Image At Jobsite Level
  - Highly Visible Work Causes Highly Visible Accidents
  - Experience Modifier Effects Ability to Bid Work

- Consequences of an Unsafe Jobsite
- Accident Prevention Training & Procedures
- Jobsite Safety Programs
- Jobsite Safety Tools

Consequences of an Unsafe Jobsite

Effects to the Bottom Line – Lowers Productivity and Performance

- Loss of Moral
- Productivity Loss at Jobsite
- Productivity Loss at District / Corporate
- Safety Drives Performance & Production

Consequences of an Unsafe Jobsite – Summary

- Jobsite Safety is a value within the culture
- Accidents Increase Costs Dramatically
- Accidents Harm Our Competitiveness
- Accidents Lowers Productivity / Performance
- Will impact someone's "Quality of Life"

- Consequences of an Unsafe Jobsite
- Accident Prevention Training & Procedures
- Jobsite Safety Programs
- Jobsite Safety Tools

Accident Prevention Training & Procedures

- Training
- Team Goals
- Employee Responsibility
- Condition of Employment

- Consequences of an Unsafe Jobsite
- Accident Prevention Training & Procedures
- Jobsite Safety Programs
- Jobsite Safety Tools

Accident Prevention Training & Procedures

Training

- OSHA 10-Hour
- STOP Training
- Competent Person Training
- First Aid
- CPR
- Fall Protection / Scaffolding / Forklift / Confined Space / Etc.
- Numerous Classes are Offered through AGC, OSHA & Elsewhere

- Consequences of an Unsafe Jobsite
- Accident Prevention Training & Procedures
- Jobsite Safety Programs
- Jobsite Safety Tools

Accident Prevention Training & Procedures

Employee Responsibility

- Safety is Everyone's Responsibility
- Proactive Not Reactive
  - Safety Coordinators on Jobsites
  - Regularly Scheduled Safety Meetings
  - Training of Personnel
  - Hazard Recognition
  - Participation in Pre-task Planning

- Consequences of an Unsafe Jobsite
- Accident Prevention Training & Procedures
- Jobsite Safety Programs
- Jobsite Safety Tools

Accident Prevention Training & Procedures

- Maintaining a Safe Workplace is a Condition of Employment at Hensel Phelps

- Consequences of an Unsafe Jobsite
- Accident Prevention Training & Procedures
- Jobsite Safety Programs
- Jobsite Safety Tools

Accident Prevention Training & Procedures - Summary

- Training Is Available For All Employees
- Corporate Goals Established Each Year
- Safety Is Everyone's Responsibility
- Be Proactive – Not Reactive
- Maintaining A Safe Workplace Is A Condition Of Employment

- Consequences of an Unsafe Jobsite
- Accident Prevention Training & Procedures
- Jobsite Safety Programs
- Jobsite Safety Tools

Jobsite Safety Programs

- Startup
  - New Job Start-up Manual
  - Bulletin Board
  - Injury Illness Prevention Program (IIPP)
  - Job Hazard Analysis Reports
  - Project Specific Safety Plans
  - MSDS / Hazardous Material Plans
  - Emergency Contact Lists / Response Plans / Maps
- During Construction
  - STOP
  - Daily Tool Box Talks
  - CIP
  - Site Specific Safety Plan

Jobsite Safety Tools & Resources

References Include

- Red Books
- OSHA Sourcebooks
- FOG (Field & Office Guide)
- MSDS Reports
- Safety Committee Inspections
- CFR 1926 Federal Standards
- ANSI Standards
- Tailgate Meeting Manual

- Consequences of an Unsafe Jobsite
- Accident Prevention Training & Procedures
- Jobsite Safety Programs
- Jobsite Safety Tools

Hensel Phelps Safety Culture - Conclusion

- Safety is a “quality of life” issue – when people get hurt their “quality of life” changes
- Significant consequences when accidents occur
- Procedures & Training Programs exist to eliminate accidents
- Continual assessment of individual, crew and Project performance is essential
- Reference materials are readily available for all employees

SNL Summary of Contractor's Oversight, Training and Assessment

Greg Kirsch

Construction Safety Engineer

Sandia National Laboratories

How is your Management Working?

- How are you conducting oversight?
- Are your employees trained adequately?
- Is your assessment of safety operations robust enough to make a difference?

Oversight

- Document and schedule the following:
  - Monitor your Project's safety.
  - Regular site visits, remind workers of the value of safety.
  - Timeline management: Understand the hazards and mitigation methods prior to work.
  - Reinforce clear objectives: People need continual reinforcement.

Training

- The written training program needs to include complete training for every employee for all potential hazards that each employees may be exposed.
- Training records show that every employee received the planned training.
- Written evaluations of training should indicate that the training was successful, and that the employees learned what was intended.
- Employees should tell you what hazards they are exposed to, why those hazards are a threat, and how they can help protect themselves and others.

Training (continued)

- When PPE is used, employees should explain why it is required, and how to use and maintain it properly.
- Employees should feel that health and safety training is adequate.
- Training records should indicate that all supervisors have been trained in their responsibilities to analyze work under their supervision for unrecognized hazards, to maintain physical protections, and to reinforce employee training through performance feedback and, where necessary, enforcement of safe work procedures and safety and health rules ..

Assessment

- Responsibilities are documented so that they can be clearly understood.
- Employees understand their own responsibilities and those of others.
- Hazards are not caused in part because no one was assigned the responsibility to control or prevent them.
- Hazards are not allowed to exist because someone in management did have the clear responsibility to hold a lower-level manager or supervisor accountable for carrying out assigned responsibilities.

Assessment (continued)

- There is documented evidence of employees at all levels being held accountable for safety and health responsibilities, including safe work practices. Accountability is accomplished through either performance evaluations affecting pay and/or promotions or disciplinary actions
- Employees understand what happens to those who violate safety and health rules or safe work practices. Employees understand that rule breakers are clearly and consistently held accountable.

Lessons Learned: Employee Receives Electrical Shock from Electrical Pendant

Greg Kirsch

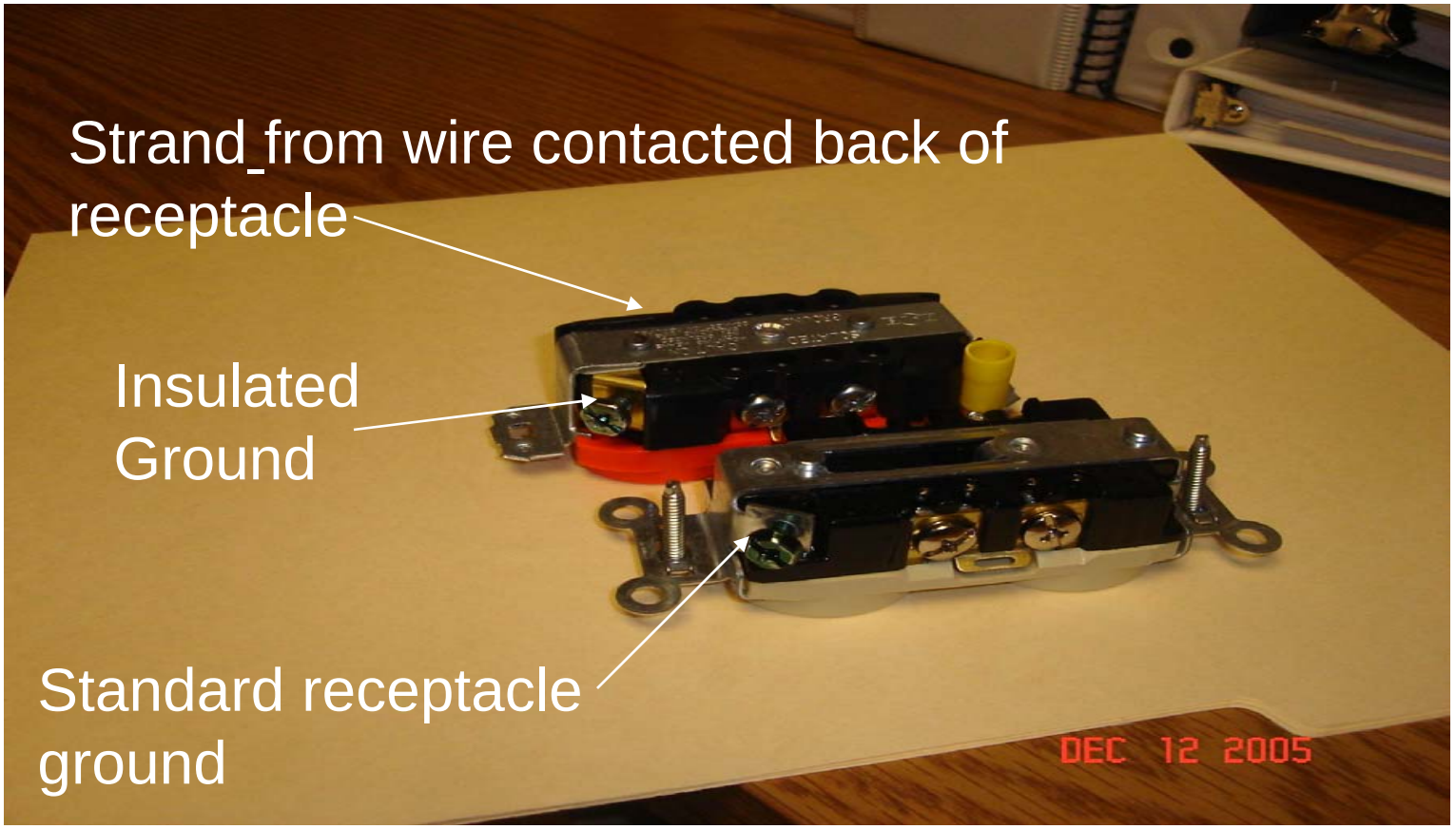
Construction Safety Engineer

Sandia National Laboratories

Electrical Event

- A worker checking electrical grounds on a 120 VAC electrical pendant type receptacle in Building 277 and brushed a finger across a screw on a Yellow Rubber Wood Head Box and received a minor shock.
- The event was reported and the worker went to SNL Medical for testing and was released.
- The pendant was removed from service.

Electrical Event



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Electrical Event

- Description
  - A strand from an SO cord came in contact with the backing of the receptacle.
  - The mounting strip was isolated from the grounding conductor, causing the mounting screw to become energized.

Electrical Event

- Corrective Actions
  - The isolated ground receptacles were replaced with regular 20 amp receptacles which have a grounding screw bonded to the mounting bracket
  - An insulated fork terminal lug was installed to lessen the chance for a strand of wire to contact the back of the receptacle
  - Training and information sharing of the event

Safety Stars

Perry D'Antonio

Manager of Construction Inspection & Acceptance

Sandia National Laboratories

Safety Stars – October 2005

NAME	COMPANY
Richard Archuleta	B&D
Larry Milano	Klinger
Ruben Gallegos	DKD

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Safety Stars – November 2005

NAME	COMPANY
Gary Collins	DKD
Leroy Lopez	DKD
Bobby Baca	Enterprise Electric
John Redvelski	Enterprise Electric
Kevin Crawford	Enterprise Electric
Stewart Smith	Enterprise Electric
Eugene Romero	Enterprise Electric
Patrick Cota	Enterprise Electric

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Safety Stars – December 2005

NAME	COMPANY
Rick Traczyk	U.S. Electric
Henry Wackerbarth	ECI
Candelario Francia	ECI
Jason Olguin	ECI

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Closing Announcements

Construction Safety Seminar Schedule

Location: **Mountain View Club**

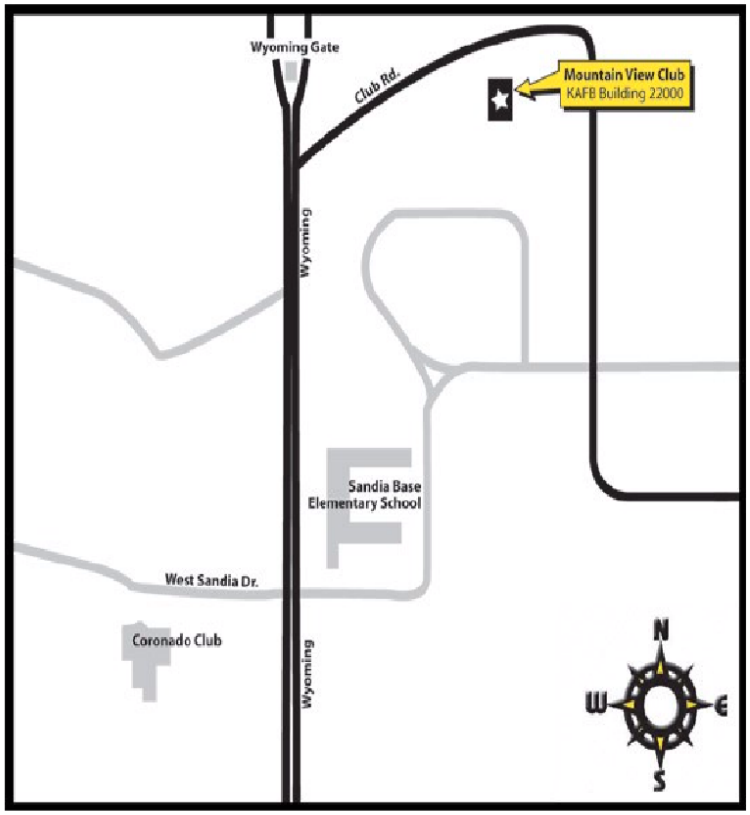
Time: **2:00 – 4:00 PM**

Next Seminars:

April 11, 2006

July 11, 2006

October 24, 2006



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