

UNCLASSIFIED

PROPOSAL

for the Center of Excellence for Electrical Safety

Lloyd Gordon

October 10, 2006

Los Alamos National Laboratory

EFCOG ESIP Project Update

Idaho Falls, Idaho

Background

- Over the past decades site electrical safety programs have evolved separately. Although the elements based on national codes (e.g., NEC, NESC, NFPA 70E) may be common, other elements have evolved somewhat independently.
- Key elements that vary from site to site include:
 - structure of AHJ (e.g., Electrical Safety Committee, ESOs)
 - electrical hazard classification
 - unlisted electrical equipment approval
 - training
 - management of subcontractors
 - electrical incident investigation and reporting
 - R&D safe work practices
 - program assessments

The goal of consistency

- Consistency across the complex is important to:
 - Minimize resources needed for program development
 - Don't keep reinventing the same wheel
 - Share best practices and common issues
 - Improve safety across the complex
 - Aid in program assessment
 - Have a robust and defensible program for CFR 851
- This is particularly true in R&D electrical safety

Efforts towards consistency

- Annual Electrical Safety Meeting (for over 15 years)
 - held in Las Vegas
 - focused on facility issues
- DOE Electrical Safety Handbook
 - 1998, revised 2004
- R&D Electrical Safety Meeting/Workshop
 - 2004, 2005, 2006
 - 100 participants from 28 sites and site offices
 - major contributions in last two years
- EFCOG Electrical Safety Improvement Project
- New National Standards submissions
- Proposed Center of Excellence for Electrical Safety

Proposal for the Center of Excellence for Electrical Safety to be Established at LANL

- Key Issues
 - Capitalize on success and leadership in R&D Electrical Safety
 - Electrical Safety Committee (25 members) composed of SMEs from all fields
 - 150 Electrical Safety Officers
 - Largest student program
 - Largest R&D workforce (4500 electrical workers)
 - 8 years of experience with unlisted electrical equipment approval
 - large subcontractor electrical workforce (400 electricians and linemen)
 - Build on planned improvement in Subcontractor Electrical Safety
 - Provide to the DOE/NNSA complex
 - Resources
 - Leadership
 - Training
 - Research

Resources

- Library
 - Texts, articles
 - Codes and standards
 - Videos
 - Training materials
 - DOE electrical safety archives
- Equipment
 - PPE
 - Below surface detection equipment
 - Meters and other verification instruments
 - New technologies for protection of electrical workers
- Laboratories
 - For the use of below surface detection tools
 - Demonstration of PPE and verification instruments
 - Unlisted electrical equipment inspection and approval
- Personnel
 - SMEs to answer questions for other sites

Leadership at LANL

- Annual R&D Electrical Safety Meeting/Workshops
- Involvement and leadership in all EFCOG Electrical Safety Improvement Projects groups
- Members and/or participants in ISA, IEEE, and NFPA committees
- Provide expertise in (from LANL and other sites):
 - Event analysis and severity ranking
 - R&D Electrical Safety training
 - Electrical Hazard Classification
 - Managing R&D Electrical Hazards
 - Unlisted Electrical Equipment Approval
 - Subcontractor management

Training (working with Center of Excellence in Training at Albuquerque Service Center)

- Provide modules in R&D Electrical Safety Training
- Provide modules and leadership in ESO Training
- Hands-on training for:
 - Use of PPE
 - Use of detection technologies
 - Hazardous energy control
 - Unlisted electrical equipment inspection and approval
 - Methods for safing R&D equipment (capacitors, magnets, etc.)

Research (for the future!)

- Determine hazards of pulsed and dc arcs
- Test PPE for use around pulsed and dc arcs
- Measure voltage gradients for conductors in contact with water
- Develop standards for Personnel Safety Devices (e.g., ground hooks)

Summary

- The proposed Center of Excellence for Electrical Safety would
 - capitalize on LANL's expertise in R&D electrical safety
 - gather best practices from other sites, especially in subcontractor electrical safety and management
 - work closely with National Training Center, and other Centers
 - serve as a resource to the complex
 - centralize
 - aim towards consistency across the complex
 - be a great asset to smaller sites