

# Lessons Learned from an ES&H Coordinator

CJ Backlund, CIH, CSP, Sandia National  
Laboratory, Operational Risk Department

Insert SAND #

# Governance of Sandia Laboratories

## Sandia Corporation

- AT&T: 1949–1993
- Martin Marietta: 1993–1995
- Lockheed Martin: 1995–2017
- National Technology and Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc.: 2017-present
- Government owned, contractor operated

Federally funded  
research and development center





# Energy



## Energy Research

ARPAe, BES Chem Sciences, ASCR, CINT, Geo Bio Science, BES Material Science

## Climate & Environment

Measurement & Modeling, Carbon Management, Water & Environment, and Biofuels

## Renewable Systems & Energy Infrastructure

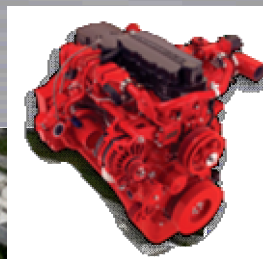
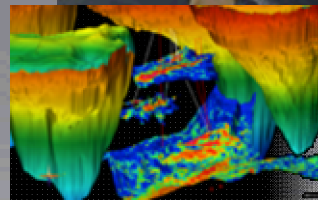
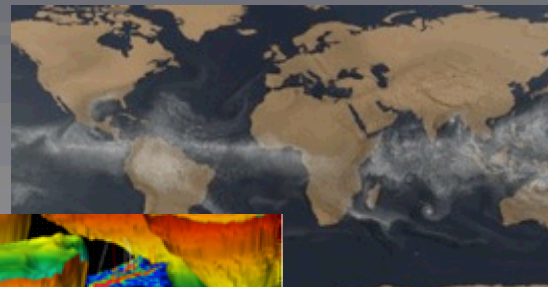
Renewable Energy, Energy Efficiency, Grid and Storage Systems

## Nuclear Energy & Fuel Cycle

Commercial Nuclear Power & Fuel, Nuclear Energy Safety & Security, DOE Managed Nuclear Waste Disposal

## Transportation Energy & Systems

Vehicle Technologies, Biomass, Fuel Cells & Hydrogen Technology







# Learning Never Ends



# Significant Events Lead Sandia To Engineered Safety Process





A photograph showing three researchers in a desert environment. One researcher is operating a piece of equipment on a stand, while the other two observe. The ground is covered with various cables, hoses, and equipment bags. In the background, there are rugged hills and a clear blue sky.

# Reaping the benefits of Work Planning and Control



# GeoMechanics Lab

**Rock Saw Before Housekeeping**



**Rock Saw After with  
Engineering Control**



# Watch as the rock is sawed in the Wet Lab





# Implementing a Silica Exposure Control Plan



# Silica: Engineering Control for the Coring Operation

**Old coring Machine: Manual**



**New Coring Machine: Auto**





# Not Your Typical Water Bottle

## Ergonomic Challenge





**Ouch!! My shoulder hurts!!**





Possible Solution

Safety Goal Impacted

MOW Sustains OSHA Recordable Injury (DAIR)

Medical specified PT as treatment & restriction

MOW Reported to medical after "twink" in shoulder (Date)

Duration/Rep  
Lifts 35% of 30 jugs (1090 & 9925)

MOW was removing 5 Gallon H<sub>2</sub>O Jug from Truck cab.

Reduce # of trips from 2 to 1

RT takes 40 min  
- Time savings  
- Env. Impact  
- Efficiency - \$

Truck Size Limitation (No stacking)

Pallet fits in truck bed

Manually Removing Jugs to H<sub>2</sub>O Storage racks at 9925

Cannot use 9925 forklift because no Pallet

Have used FC in past

Lifts 5 GAL @ weighs ~40 lbs (Force) at 9925

Pushing & Pulling onto/off truck bed

Traverse: 5-7 feet 9925

Manually Move Jugs from Scissor lift at 1090

Reaching into cab (Awkward Posture)

Ergo Risk Factors

- Force
- Posture
- Repetition
- Duration

Could stack 4 layers of bottles high.  
12 jugs/pallet  
limit stack to 3

# Causal Analysis: Results





# Ouch!! My rib hurts!!







## **Ergonomics Lesson #2**

### **Use the right tool!**



# Yes, this is me in summer time!





# Challenges include no grid power!

**Generator Shed**



**Generators inside the shelter**





**It's March, so some of that snow has  
already melted!**



# Actions identified to prevent similar events in the future

**5,000 gallon Diesel Tank  
Fire Damage**



**Region of Maximum Fire  
Damage to Diesel Tank**





**What's a pigeon got to  
do with it??**

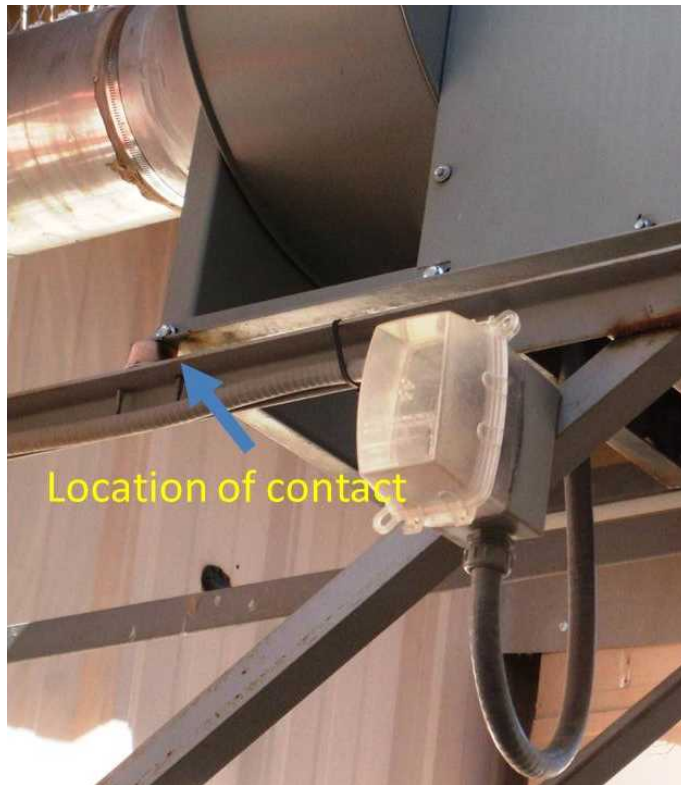






# Electric Spark Generated Due to Improper Grounding of Facility Equipment

Location of the contact



End of the hose clamp







**And the sunset to  
wrap this up.**