Evolving from the “Safety Guy” to COO
Managing Risk at a National Laboratory

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BOLD PEOPLE VISIONARY SCIENCE REAL IMPACT
SLAC-at-a-glance

426 acres (172 ha)
4.5 km long
1.7Msf (160K m²)
US$2.8B value

1,700+ Employees from 55 countries
32 Faculty; 330 Students; 145 Post-docs
3,000+ Facility Users: LCLS, SSRL, FACET

Be the world-leader in X-ray and ultrafast science

Foster a frontier program in the physics of the universe

Be an innovator for massive-scale data analytics

Advance high energy density science

Create a world-leading bioimaging program

Emerging Initiative in Quantum Information Science

US$360M operating
US$230M capital projects

Background

- Undergraduate and graduate degrees in Biological Science
- 9 years in ESH in the microelectronics industry
- Co-founded an ESH consulting/engineering firm (15 years)
- Joined SLAC 12 years ago
  - Chemical & General Safety Dept. Head
  - Deputy Director, ESH Division
  - Director, ESH Division
  - Deputy Director for Operations | COO

Emergency Response
- Volunteer Firefighter
- US HHS Disaster Assistance Team
Typical organizational model

Mission

- Associate Lab Director
- Associate Lab Director
- Associate Lab Director

Director's Office

- Lab Director
- Deputy Lab Director
- Deputy Lab Director, Operations

Mission Support

- Human Resource Director
- Facilities Director
- Business Systems Director
- Information Technology Director
- Communications / Public Affairs Director
- Environment & Safety Director

Advisory & Oversight Functions

- Legal Counsel
- Contract Assurance
- Chief Research Officer

Chief Operating Officer (COO)
COO backgrounds within the DOE Labs

- Historically, the most common professional background has been engineering.
- In the last several years, an increasing number of COOs have come from safety or environmental management professions:
  - 3 of the last 4 COOs
“I believe that to be a successful ES&H leader one has to know enough about all the operations to manage the risk inherent in operations, research, construction, etc. Ensuring policies, procedures, human capital, and material conditions are appropriately balanced to manage risk is the basic undertaking. In addition, M&O contracts are generally heavy on financial and safety requirements, and the ES&H leader has to also be fluent in managing these contractor requirements.”

“The COO role is closer to ESH because it involves anticipation, recognition, evaluation, and control/mitigation of operational and business risks to the Institution. My mantra is to anticipate and recognize problems as they are emerging and intervening as early as possible to reduce the severity of the outcome.”
Operational Risks

The chance of detrimental outcomes due to an issue with people, systems, procedures, and external events.
Operational Risks

Processes
- Procurement
- Work planning
- Project management
- Employment practices

People
- Resources, skills, training
- Succession planning
- Human error
- Intentional acts

Systems
- Infrastructure health
- Cybersecurity
- System design and quality

External Events
- Funding
- Politics
- Natural disasters
- Man-made disasters

Operational Risks
- Science Mission
- People & Community
- Reputational
- Financial
- Legal
Top operational risks faced by institutions

- IT disruptions & data compromise
- Talent Acquisition & Retention
- Misconduct & Fraud
- Infrastructure
- Regulatory
- Physical Threat

https://www.risk.net/risk-management/5424761/top-10-operational-risks-for-2018
Risk Management Process

- Identify threats
- Assess probability & consequences
- Evaluate progress and effectiveness
- Implement risk management
- Identify current mitigations
- Select risk management strategy
- Recording & Reporting
- Risk Assessment
- Risk Identification
- Risk Analysis
- Risk Evaluation

ISO 31000

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Risk Management Process Diagram:

- Define Work Scope
- Feedback and Continuous Improvement
- ID work activity
- ID controls
- Revise approach as needed
- Prepare ATA/LSA, Procedure or WIP
- Be aware of unexpected events
- Execute work
- ID and evaluate hazards
- Post job review
- Pre-job briefing
- Authorize work
- Release work
- Develop and Implement Hazard Controls
- Perform Work Within Controls
- Work Safely!
Enterprise Risk Management at SLAC

- Division-level risk assessments; workshop annually
- Enterprise (institutional-level) risk registry

Examples:

- Responsible line manager assigned to every risk on the registry
- Quarterly Director’s Assurance Council
  - Senior management team + representation from Stanford University
  - Semi-annual update of risks to the Board of Overseers
Example: 230 kV Powerline Risk

- Main power supply is a 9km, 230kV line through woodland and residential areas
- Fire risk is substantial
  - Historical 50 yr cycle, but climate change is increasing fire conditions in NorCal
  - Multi-million dollar homes; impact to mission; reputational risk; risk to firefighters
- Required improved powerline fire prevention efforts
### Example: 230 kV Powerline Risk

- Vegetation management plan
- Remote fault protection relays through PG&E
- Remote breaker operation from power substation

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<th>Medium</th>
<th>Major</th>
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<td>Management effort required</td>
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Balancing the science mission and institutional protection

Mission support enables mission objectives in the most efficient and effective manner possible, while protecting Stanford University's and DOE's assets

— Bill Madia
Balancing the science mission and institutional protection

Lean too far toward Mission:
• Institution is put at risk
• Operational problems impact Mission performance
• Sponsors lose confidence and reputation is put at risk impacting future investment

Lean too far toward assets protection:
• Mission is restricted
• Not viewed as supportive
• “We versus They” confrontational culture is created
Summary

- An critical, underlying skillset for senior management is risk management – Effective managers manage risk.
- Recognition, assessment, control, and improvement is the underlying principle of both safety & environmental management and overall operations management.
- Must maintain a reasonable balance between protection and mission and remember that the goal is to support safe and sustainable science.
QUESTIONS?