National Nuclear Security Administration

Safety Culture in Cooperative Agreements

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Tom Williams bio

- Tom Williams serves on the staff of the NNSA Senior Advisor for Environment, Safety and Health as the program lead for Accident Investigation, Quality Assurance and PAAA Enforcement. He has over thirty-five years experience in the DOE complex both as a federal employee and a contractor employee, including over thirty years field experience. He served as analyst in the HHS Office of Analysis supporting the operating experience and suspect counterfeit items programs. He served in EM as a completion project site manager, and a technology development program manager, including serving as a contracting officer's representative in both these capacities. As a federal employee he has participated in a variety of assessment including formal follow-up "Progress Assessments" to the 1990's "Tiger Teams", operational readiness reviews, formal program reviews, process feasibility reviews, and accident investigations. His contractor experience base includes project management, design and construction, process engineering and strategic planning positions. He received a BS in Chemical Engineering from Montana State University, an ME in Chemical Engineer from the University of Idaho, and is a Registered Professional Engineer in California.

Overview

- The Accident
- DOE Follow-up Review
- Benefit of Cooperative Agreements
- Limitations of Cooperative Agreements
- Path Forward

The Accident

- In June 2008, a technician at a major university research center was injured while making adjustment a diagnostic instrument.
- The pressurized diagnostic broke free of the structure, knocking the worker from a ladder and landing on him.
- Fellow workers immediately responded and summoned medical attention for the severely injured worker.
- The facility was secured and a stand-down initiated.

The University Response

- Investigation of the accident revealed that the diagnostic has been improperly installed – a “latent error” - the workers did not challenge and engage structural engineering designer
- A comprehensive extent of condition review was preformed
- Pre-restart and post-restart corrective actions were identified
- Pre-restart actions were completed
- The facility was restart
- A formal briefing was made to Senior DOE Management
- All University actions met or exceeded the commitments made in the cooperative agreement.

DOE Response

- DOE Senior Management was concerned about whether DOE should participate in the restart decision following events of this type.

- A team from the program office (NA 123) and the Senior Advisor Office (NA3.6) conducted an onsite review of the incident response and safety programs
  - A formal incident analysis and tracking system is in place
  - The extent of condition review was interdisciplinary and thorough
  - The restart process included appropriate external review
  - Recommended improving causal analysis expertise
  - Recommended cognizance of schedule pressure as a safety threat

- DOE Senior Management conducted a follow-up visit to the University and confirmed the staff findings
- A process was initiated to review reporting requirements for Cooperative Agreements and identify improvements

Benefits of Cooperative Agreements

- Better access to a wider research community
- Academic freedom and creativity are applied to DOE problems
- Develop the next generation of scientists and engineers with skills applicable to DOE's needs
- DOE and other sponsors use existing resources to leverage their investment
- DOE has limited liability
- Less DOE oversight is needed

Limiations of Cooperative Agreements

- The research organization is autonomous
- DOE has limited influence over activities, but remains exposed to public criticism
- Cost and schedule are more unpredictable
- Reporting is limited

Which Agreements to Change?

- Size of DOE financial contribution (>$1 Million/yr)
- Exclude purely mathematical modeling and administrative activities
- Identify high risks activities:
  - Biosafety Level 3 or 4.
  - Chemicals used in quantities larger than 100 liters.
  - Class 3 and 4 lasers.
  - Radioactive materials or accelerators.
  - Significant amount of construction, greater than $10M.
  - Unique electrical usage in high voltage.
  - Pyrophoric and explosive chemicals higher than laboratory quantities.
  - Large hoisting and rigging operations.

Recommended Changes

- Reduce reporting threshold to include serious injuries (>5 days hospitalization)
- Establish an ES&H Plan including:
  - Safety Program Description
  - Safety training
  - Internal incident reporting and casual analysis
  - Overall research center safety coordinator
- Make internal incident reporting available for periodic review
- Perform periodic DOE reviews of the Safety Program
- Include safety status review in Program Reviews
- Ensure ES&H Awareness Training for DOE Program managers