



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
ENVIRONMENTAL
MANAGEMENT

Safe Performance of Work at the Savannah River Site (SRS)

Michael Mikolanis

Assistant Manager for Infrastructure and Environmental Stewardship
DOE-Savannah River

Savannah River Site Citizens Advisory Board
March 24, 2015

Purpose/ Overview

- Fulfill a 2015 Strategic & Legacy Management (S&LM) committee Work Plan requirement in response to CAB recommendation 323.

Overview:

- Characterization of issues
- Review casual factors
- Highlight key improvement actions
- Perspective of significance

Acronyms

CONOPS	Conduct of Operations
CAS	Contractor Assurance Systems
DOE	Department of Energy
DSA	Documented Safety Analysis
PISA	Potential Inadequacies in the Safety Analysis
SRNS	Savannah River Nuclear Solutions
SRR	Savannah River Remediation
SRS	Savannah River Site
TSR	Technical Safety Requirements
WIPP	Waste Isolation Pilot Plant

Defense Board concerns relate to 4 broad issue groups previously identified by DOE

– **Conduct of operations (ConOps)**

- Hazardous energy control
- Technical Safety Requirements (TSR) control violations
- Contamination events

– **Conduct of engineering**

- Documented Safety Analysis (DSA) errors
- Rigor of technical basis
- Potential Inadequacies in the Safety Analyses (PISAs)/Unreviewed Safety Questions (USQs)

– **Maintenance of Safety Systems**

- Growing backlog of corrective maintenance
- Increased process equipment downtime

– **Training**

- Exam bank configuration management with DSAs
- Rigor of exam grading

- **Conduct of Operations**
 - Aging infrastructure
 - Workers get accustomed to degraded or broken equipment
 - Increased downtime due to design or process problems
 - Workforce reductions
 - Inconsistency/lack of rigor managing Technical Safety Requirements (TSRs)
- **Conduct of Engineering**
 - Human performance related to validating inputs and assumptions
 - Leadership and integration of engineering interfaces
 - Legacy errors
- **Conduct of Maintenance of Safety Systems**
 - Hiring of maintenance personnel has only kept up with attrition
 - Increasing backlog due to the need to maintain and operate aging equipment
 - Maintaining operability of safety systems assures worker and public protection
 - Process/production systems allowed to operate to failure and are then repaired as needed
- **Training**
 - Insufficient staffing to maintain exam bank configuration control

- **Savannah River Nuclear Solutions (SRNS)**

- Increased staffing and rotational assignments of managers
- Strengthening and reinvigorating drill programs
- Raising standards through continuing and scenario-based training
 - *Dedicated training time, tech school partnerships and internships, improved entry exam*
- Strengthen leadership
 - *Developed and implemented First and Second Line Manager Leadership Program*
 - *Executed personnel rotation at Mid-Level Management*
 - *Hiring additional Shift Managers – strengthen Procedures/Training*
 - *Long-term focus to ensure proper decision making/strong controls*
- Improve quality/effectiveness of hazardous energy control qualification and training

- **Savannah River Remediation (SRR)**

- Frequent planned outages to improve plant reliability
- Investing in safety related equipment modifications and improvements
- Emphasize rigor/technical inquisitiveness to identify and resolve problems

Actions Taken to Improve Conduct of Engineering

- **SRNS**

- Hiring additional engineers
- Additional technical staff qualification program requirements
 - *Engineering reasoning and critical thinking topics.*
- Improving technical review quality
 - *Control of scope*
 - *Critical thinking and project management training*
 - *Standardizing review processes by procedure*

- **SRR**

- Reviewed TSRs/Specific Administrative Controls with a focus on implementation
 - *Identified Potential Inadequacies in the Safety Analysis (PISAs) and implementation errors through improved inquisitiveness*
- Increased operations involvement in Safety Basis development
- Reviewed Unreviewed Safety Question (USQ) process implementation for content/consistency

Actions Taken to Improve Maintenance of Safety Systems

- Hiring additional planners and maintenance personnel
- Heavy prioritization to maintain and repair safety related equipment
- Enhancing outage planning and scheduling
- Process improvements
 - LEAN process analysis, nuclear services contracts, optimize periodicity
- Increased management priority and attention

Actions Taken to Improve Training

- **Hiring personnel and reorganizing Site Training for better alignment to field needs**
 - Manager – 26 year Navy Veteran with extensive training background
 - New instructors and support personnel
- **Reinforce knowledge through more formal training**
 - Classroom/exam versus briefings
- **Developing partnerships with key Tech Schools (non-exempt positions)**
 - Increased fundamental / knowledge level for new hires
 - Entry exam improvements
- **Dedicated training time to ensure continuing training programs are robust**
 - Scenario based, team-based, problem solving training

DOE Perspective – Waste Isolation Pilot Plant (WIPP) Incident Context

Some Similarities with Causal Factors Noted for WIPP Incidents

- Weaknesses with CONOPS rigor and discipline (ref. CON 20, Accident Investigation Report for WIPP salt truck fire)
 - SRS actions: *Significant improvements since the initial DOE CONOPS Concern Letter*
- Degraded equipment (ref. CON 7, 8, 9, Accident Investigation Report for WIPP salt truck fire)
 - SRS actions: *Established Integrated Project Team to evaluate the Site Maintenance Program*
 - SRS actions: *Increased management focus on maintenance activity and support*
- Weaknesses with Contractor Assurance Systems (CAS) (ref. CON 24, Accident Investigation Report for WIPP Rad Release, Phase 1)
 - SRS actions: *DOE to perform a review of CAS effectiveness*
 - **Contractors are effective at identifying deficiencies**
 - **Pulling together trends and elevating issues are areas for improvement**
- Weaknesses with DOE oversight of safety management programs (ref. CON 25, rad release Accident Investigation Report)
 - SRS actions: *Developing framework for more integrated programmatic reviews*

- **Significant Differences with WIPP Causal Factors**

- Nuclear focus versus mine operation focus (ref. CON 6, Accident Investigation Report for WIPP Rad Release, Phase 1)
 - *Complexity of SRS facilities and operations drive a strong nuclear focus*
 - *Decades long tradition of focusing on hazardous operations*
 - DuPont began with experience with chemical hazards
 - Reactor programs created a strong nuclear operations focus
- Strong line oversight (ref. CON 8,9, & 25, Accident Investigation Report for WIPP Rad Release, Phase 1)
 - *Facility Representatives and Facility Engineers*
 - *Contractor and federal resources mentoring and supporting WIPP recovery*
- Known deficiencies are driven to closure (ref. CON 23, Accident Investigation Report for WIPP Rad Release, Phase 1)
 - *Institutionalized process in the Integrated Performance Assurance Manual*

Summary

- **SRR and SRNS are addressing issues and their underlying causes.**
 - Improvements noted in conduct of operations and engineering
- **While some WIPP incident precursors are present (i.e., slide 10), there are significant differences that indicate the present situation does not represent an urgent safety concern.**
 - Similarities are being worked and represent a need for continued vigilance.