



U.S. DEPARTMENT OF
ENERGY

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

Michael Mikolanis
Chief Engineer

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Overview

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

- **Observed Problems Relate to Four Broad Categories**
 - 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 bases*
 - *Potential Inadequacies in the Safety Analyses/Unreviewed Safety Questions*
 - Maintenance
 - *Growing backlog of deferred maintenance*
 - *Increased process equipment downtime*
 - Training
 - *Exam bank configuration management with DSAs*
 - *Rigor of exam grading*

Causal Factors

- **Conduct of Operations**

- Aging infrastructure
 - Workers get used to degraded or broken equipment
 - Increased downtime due to design or process problems
- Workforce reductions
 - Resulting from retirements, furloughs, and changing tempo of operations
- 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**

- 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

Actions to Improve Conduct of Operations

- **SRNS**

- Increased staffing (+56 operators) 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 six 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

- **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 to Improve Conduct of Engineering

- **SRNS**

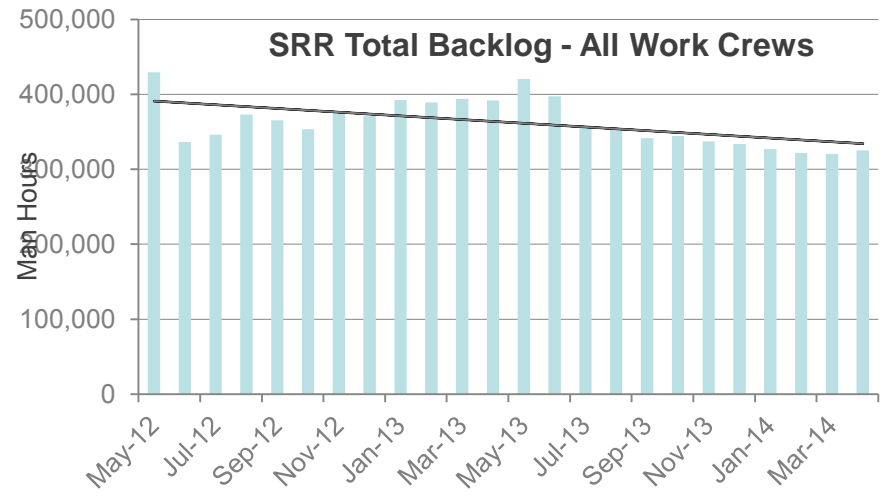
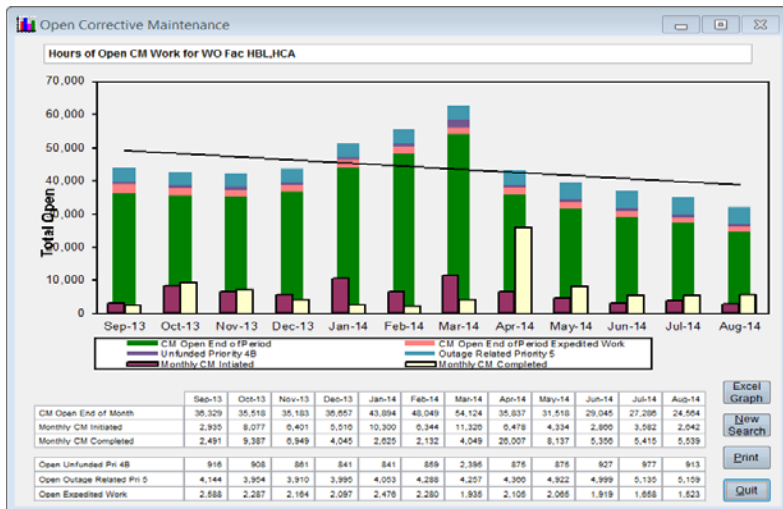
- Hiring additional engineers
- Additional technical staff qualification program requirements
 - *Engineering reasoning and critical thinking topics.*
- Improving technical review quality
 - *Control of scope*
 - *Critical thinking and project management training*
 - *Standardizing review processes by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

Actions to Improve Maintenance Backlog

- 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
 - Higher priority for funding





Actions to Improve Training

- **Hiring personnel and reorganizing Site Training for better alignment to field needs**
 - Manager – 26 year Navy Veteran with extensive training background
 - Twenty-nine new instructors and support personnel
- **Re-enforce 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 – WIPP Incident Context

- **Some Similarities with Causal Factors Noted for WIPP Incidents**
 - Tightening budgets
 - SRS actions: *Use of management efficiencies and new technologies, seek funding, revisit production goals and work scope priority*
 - Weaknesses with CONOPS rigor and discipline
 - SRS actions: *Significant improvements since the initial DOE CONOPS Concern Letter*
 - Degrading equipment
 - SRS actions: *Established Integrated Project Team to evaluate the Site Maintenance Program*
 - SRS actions: *Increased management focus on maintenance activity and support*
 - Weaknesses with CAS implementation
 - 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
 - SRS actions: *Developing framework for more integrated programmatic reviews*

- **Significant Differences with WIPP Causal Factors**
 - Nuclear focus versus mine operation focus
 - *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
 - *Facility Representatives and Facility Engineers*
 - *Contractor and federal resources mentoring and supporting WIPP recovery*
 - Known deficiencies are driven to closure
 - *Institutionalized process in the Integrated Performance Assurance Manual*

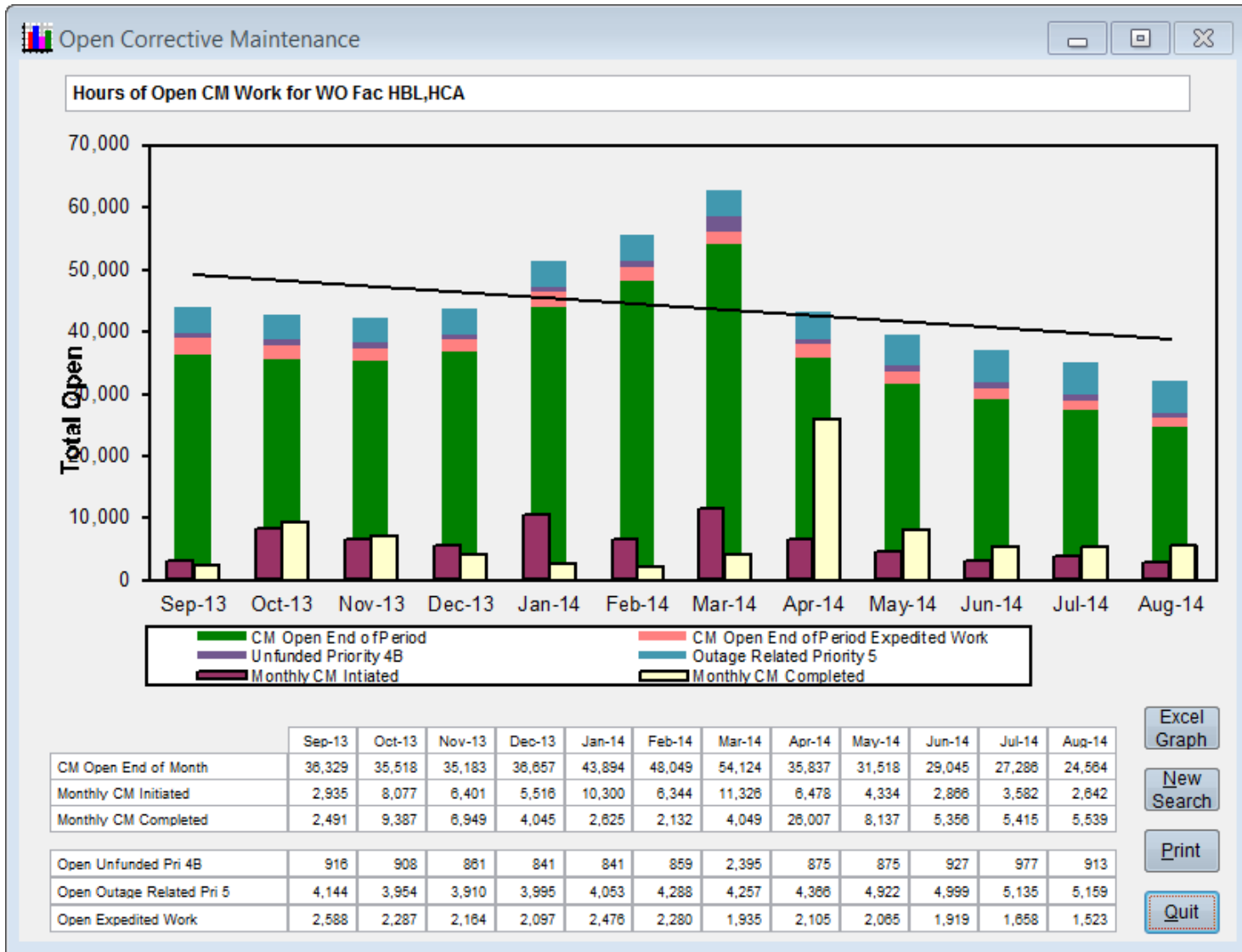
Summary

- **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, 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.
- **The Department has tough decisions regarding production goals.**
 - May decrease or suspend facility production to free up resources
 - Extensions could introduce new technical and project management risks to manage

Back up slides



SRNS Maintenance Backlog



SRR Maintenance Backlog

