Criticality Safety Officers at Rocky Flats

Criticality Safety and Operations Interface

June 2009, Atlanta
Rocky Flats site and objective
Rocky Flats location and 1995 inventory

- Plutonium
  - 10.8 U.S. tons
- Plutonium Residues
  - 3.4 U.S. tons
- Uranium
  - 7.4 U.S. tons
Example Projects with criticality safety interest

Pencil tank draining

SNM stabilization

Residue stabilization
Partial Criticality Safety History

1951 - Operations begin
1989 - Allegations
    Violation of Environmental laws
    Criticality accidents
1990 - Operations stopped abruptly
1990 - New contractor-mandate for radical change
1993 - End of defense mission
1994 - Undisciplined draining incident
1995 - Multiple contractor system instituted
Operations and Criticality Safety

Early History -
- Good interaction
- Innovative analysis and control methods
- Relatively stable criticality safety staff

Early 1990’s
- Significant outside attention
- Rapid criticality staff turnover
- Many new controls on operations
- Evaluation response time long
Operations-Criticality Safety Relations

Operations
- observed high turnover of criticality safety staff
- suspicious of new controls
- facility goals confronted by a low probability accident

Criticality Safety
- trouble getting information necessary for evaluations
- unprofessional communications
- significant project changes without informing analyst
  - consistent rework
Role of Criticality Safety

- Safety oft considered an obstacle to be overcome rather than a resource to protect the employee.
- Evaluations and criticality safety controls considered a permissive to start an operation - not a commitment to understand or comply.
General Status in mid 1990’s

- Many practices developed in response to regulatory initiatives
- Large staff with few veterans
- Most controls had scanty documentation
- Excessive debate on basic requirements
- Program element responsibility diffuse
- Communication awkward
- Integrated Management Contract
Site Response to Issues

- New manager
  - Observations and Interviews
  - Occasion for Program Development
- Interface with Operations
  - Fundamental Issue
  - Needed structural response
Wide Discussion on Ops/CS Interface

- Decide to build new program and build it around communication
  - Other sites surveyed
  - RFETS group convened
    - Safety/Operations/Union
  - Extensive Offsite Review
  - Consensus - Individual in Operations as bagholder

- Comprehensive Program Manual
  - CSO at core
CSO job description

- Set priorities for Criticality Safety staff
- Conduit of Information
  - Documents & People
- Approve evaluations and controls
- Develop Implementation Plan for Controls
- Manage nonconformance response
- Decide or mediate compliance issues
- Coordinate criticality related training
Initial CSO qualification

- Considerable operations experience
- Qualification Card
  - Reading list (Knief’s book, Handbooks, Accidents)
  - Authorization basis
  - Criticality Safety Operating Basis (facility)
  - Nuclear Criticality Safety Manual
- Qualification Board
- OJT with Criticality Safety Engineer
- UNM short course on criticality safety
Final CSO qualification

Qualification Card requirements
- basic - 12 site courses
- reading list
  - Handbooks and ANSI standards
  - Site manuals and procedures
- 7 facility walkthroughs
- 7 system reviews with SME
- 6 specific OJT assignments

Qualification Board
- short course on criticality safety
Later CSO program history

- 1995  Planning started
- 1996  NCS program manual and new CSO program established
- 1998  Program fully implemented
- 2005  Last fissile container shipment
Facility Manager CSO report

- Provide considerable knowledge to facility
- Resource for problem solving
- Coordinated better evaluations
- Assured operator understanding of evaluations and controls
- Resulted in fewer violations of controls
- Problem - too much to do
Overall Assessment - Criticality Safety Program
- mature
- functioning adequately
- ranks among the best in the complex

Notable Strengths
- presence of criticality safety personnel on the operating floor
- Criticality Safety Officer liaison
- clarity of the criticality safety evaluations
DOE HQ report on B371
January, 2000

“"The criticality safety officer (CSO) program in Building 371 is effective in integrating NCS into operations.”

“The NCS staff presence on the floor and interaction with operations has improved implementation of NCS controls and operator understanding and awareness of NCS.”
Aftermath

Result

- Criticality Safety program became healthy
  (Safety and operational efficiency enhanced)
- Ownership of Operational Criticality Safety shifted
- CSO a necessary element

CSO Program Needs

- time to develop
- continued attention
- High level company advocate
- periodic meetings with criticality safety