SRS Safety Performance Perspective
M&O Contractor Perspective
Briefing to the South Carolina Governor's Nuclear Advisory Council

Tony Umek
Vice President, Environment, Safety Health and Quality
Savannah River Nuclear Solutions, LLC
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Governor's Nuclear Advisory Council
Why We’re Here

- Follow-up briefing/background
- Progress over the past couple of months
  - SRNS Site Wide Leadership
  - DOE Complex Performance
  - SRS 2009 Safety Performance Time line
  - Safety Improvement Compensatory Actions and Measures
  - Actions and Lessons Learned
SRNS Provides Site Wide Leadership

- SRS Training – GET Video (General Employee Training)
- Employee, Subcontractor & Community Engagement
  - President’s Zero Incidents Safety Meeting (PZIC)
  - Blitz at SRS
  - EXPO at USC Aiken Convocation Center
  - Subcontractor Safety Forum (Aiken)
- Communications
  - Website
  - Take 5
  - Spectrum
  - Lunch ‘n Learns
  - 2010 Calendar
SRNS Provides Site Wide Leadership

- Site wide Exercises/Drills
- Site wide Procedures Council
- Integrated Safety Management (ISMS) Integration Council (Policy Level – DOE, SRNS, and Contractors) examples:
  - Training
  - Vehicles/barricades
  - Medical
  - Lessons learned/shared

- SRS ISMS Processes and Communications Team (SME Working Group)
  - Behavior Based Safety (BBS)
  - Voluntary Protection Program (VPP)
  - Human Performance Improvement (HPI)
  - Health and wellness
Safety Performance Across the DOE Complex
FY09 through June 2009

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<th>Company</th>
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<th>Workforce</th>
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Performance

Including subcontractors without Construction

- DART Rate
- TRC Rate

Cases per 200,000 hours
Background - SRS FY09 Safety Performance

- Lowest fiscal year first quarter injury rates on record (seven weeks w/o TRC); Operations and Subs worked 8 million hours, without a lost time injury
- Construction logged 11 years, > 23 million hours without a lost time injury
- SRNL safest of 12 multi-program national labs for fifth straight year
- Eighth VPP Star of Excellence
  - National Safety Council’s Operational Excellence Award
  - S.C. Manufacturer’s Alliance’s Plant Safety Award
- Site lost work days (e.g., severity) reduced by 83 percent from FY 2007 to 2009
  - 2007 = 206 LWD
  - 2008 = 146 LWD
  - 2009 = 34 LWD

All of this lulled us into thinking we were inherently “safe”, but, as we know Safety requires constant vigilance
In early CY 2009, several significant events occurred in the DOE Complex
  – Golf cart incident/injury at WIPP; Electrical event at ETEC; Vehicle fatality at LLNL; Fall from 50 ft height at Hanford (& subsequent fall at Hanford from platform)
• In July - August, based on these events, as well an upward trend in injuries and Opportunities for Improvement identified in the SRNS 2009 ISMS Phase 2 Assessment, SRNS initiated corrective actions
• However, the August acid spill and September electrical arc flash events required a more urgent and overarching response
• SRNS Senior Management took action and implemented the Safety Improvement Compensatory Action and Measures (SICAM) Process.
• In parallel DOE undertook Type B Investigations for the arc flash and a separate incident at the Salt Waste Project
SRNS Actions Taken to Address Issues

- Corporate Reachback (e.g., Assessments, Statistician, etc.)
- Lessons Learned from 42 External (Third Party) Assessments (e.g., EM62, OIO, DHEC, EPA, etc.)
- SICAM—Safety Improvement Program
  - Began October 6, 2009 (Phase 1)
  - Increased management attention and involvement in field ops
  - Increased reviews of work packages
  - Review Safety Improvement Compensatory Actions and Measures status
  - Renewed personnel commitment to safety
  - Rolling timeouts for each area
  - Moved to Phase 2 in late November

- DuPont Cultural Assessment
  - 5,347 of 6,432 respondents completed (83%)
Safety Improvement Compensatory Actions and Measures

SICAM PROCESS - FOCUSED ON ISMS

SICAM PHASE 3
Transition to Sustainable Performance
(Continuous Improvement)

SICAM PHASE 1
Deliberate Operations

SICAM PHASE 2
Deliberate Operations Continued
Verify Consistent Implementation

Perform Work Within Controls
Define the Work Scope
Analyze the Hazards
Develop & Implement Hazards Controls
Provide Feedback & Continuous Improvement

Savannah River Nuclear Solutions, LLC
A River Daniel Partnership
"SICAM"

Safety Improvement Compensatory Actions and Measures

- Work Package
- Does Work Package meet High Hazard Screening (A1)?
  - Yes
    - Perform Multidisciplinary Team Review (A2)
  - No
    - Feedback & Improvement
    - Perform Work Release Actions (B)
    - Feedback & Improvement
- PERFORM WORK SAFELY
Rolling Timeout Action Plan (VP/Director Lead)

Actions:

1. **Review SICAM Status**

2. **Conduct hazard awareness training (2 hour interactive video)**
   - Adapt Fluor Hanford briefing (piloted in SRNS ARRA Project)
   - Using trained presenters
   - Review HPI / BBS tools/methods
   - Management Field Observations (MFOs)
   - Lessons Learned (LL)

3. **Feedback continuous improvement**
   - How to improve on safety performance
   - Discuss facility project specific information
   - Address “hot” issues
   - Ask: How we can do better each day?

4. **Perform housekeeping; MFOs; BBS**
Lessons Learned - SRNS ORPS and TRC "Top 4" Causes

(March 1 to November 23 2009)

Attributes
Check of work was LTA
Step was omitted
Infrequently performed step
Delay in time caused LTA actions
Wrong action selected

Attributes
Defective or failed part/material
End of life failure
Electrical or instrument noise
Contaminant

Attributes
Strong rule incorrectly chosen
Signs to stop were ignored
Too much activity was occurring
Previous success in use of rule reinforced
Situation incorrectly identified

Attributes
Attention was given to wrong issues
LTA conclusion based on sequencing of facts
LTA review based on assumptions
Individual underestimated the problem

Skill Based Error: A3B1
Defective, Failed, or Contaminated: A2B6
Rule Based Error: A3B2
Knowledge Based Error: A3B3
Lessons Learned

Total Recordable Case (TRC) vs Behaviors

Attributes
- Working at heights
- Pinch points
- Eyes on path
- Eyes on hands
- Lifting technique
- Body position

Top Four TRCs
Injury Dates since March 1, 2009
Date as of November 23, 2009
SRNS

Attributes
- Environmental hazard
- Housekeeping
- Adequate lighting
- Handling chemicals/gasses
- Hazard control
- Insects

Attributes
- Body part protection

Attributes
- Tool selection
- Tool use
- Tool condition

Body Use / Ergonomics
Environment
Personal Protective Equipment
Tools and Equipment
Lessons Learned

Attributes:
- Distractions
- Confusing Displays
- Work arounds
- Departure from routine
- Hidden system response

Attributes:
- Stress
- Assumptions
- Complacency
- Inaccurate risk perception
- Shortcuts

Attributes:
- Unfamiliarity with task
- Lack of knowledge
- Imprecise communication
- Lack of proficiency
- Unsafe attitude

Attributes:
- Time pressure
- High workload
- Simultaneous tasks
- Unclear goals, roles, or responsibilities

Analysis by HPI Error Precursors
Since March 1, 2009
Data as of November 23, 2009

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Measuring Effectiveness – Management in the Field

Monthly management field observations

Average = 759 (Jan 07 - Sep 07)

Average = 436 (Oct 06 - May 09)

SRNS Contract Starts
Measuring Effectiveness: SRNS First Aids and TRCs

SRNS (Ops + Service Subs) TRC Cases per 200,000 hours
(Without Construction)
Path Forward

- Institutionalize “phased” SICAM process to ensure continuous improvement
  - Increase management field observations-presence in the field
  - Conduct “timeouts” when needed
  - Act on DuPont safety assessment/survey results
  - Gather continuous feedback from Local Safety Improvement Teams and incorporate in work practices
  - Measure work performance and incorporate into work practices
  - Monitor Effectiveness using leading and lagging indicators
Watch Out for Those Crocs/Gators