DOE EM Activities and Implications for Performance Assessments

Performance Assessment Community of Practice Technical Exchange

May 25, 2011

Martin J Letourneau
DOE Office of Environmental Compliance
DOE Topical Areas / Activities

• Update to DOE Order 435.1
• Low-Level Waste Disposal Facility Federal Review Group (LFRG)
• Implementation of NDAA Section 3116
• Performance Assessment Assistance Teams (PAAT)
• PA Scoping Process
• PA Community of Practice (PA CoP)
DOE Order 435.1, *Radioactive Waste Management*

- 435.1 implements DOE’s authority under the Atomic Energy Act of 1954, as amended, for management of HLW, LLW, and TRU
- 435.1 identifies roles and responsibilities of HQ and Field Managers and provides basic waste management requirements for:
  - Generation
  - Characterization
  - Certification
  - Treatment
  - Storage
  - Disposal
  - Closure
DOE Order 435.1 History

• **DOE Order 435.1 issued in July 9, 1999**
  – Primary inputs to the Order were
    • DNFSB Recommendation 94-2 identified findings in DOE’s management of LLW across the Complex
    • Complex-Wide Review of DOE’s LLW ES&H vulnerabilities was conducted in 1996 and substantiated the DNFSB findings

• **Has been implemented for over 10 years**
  – Order, Manual and Guide have been effective tools for managing HLW, TRU and LLW
  – Users of the Order have identified areas that need clarification or updating
DOE Order 435.1 Update Project Strategy

• Project initiated in January 2009 by EM
  
  – **Phase 1** - A complex-wide review (CWR) was initiated to capture best practices and areas of improvement from HQ and the Site federal and contractor organizations

  – **Phase 2** – Update the Order using inputs from:
    • CWR
    • Federal and contractor (EFCOG) experts from HQ and Field
    • NRC, EPA, & IAEA regulations
    • Current national and international treatment, storage and disposal practices
    • Corporate Boards
    • Senior technical advisors from industry
    • stakeholders

  – **Phase 3** – provide the updated Order in the new DOE O 251.1C format for review and comment (October 2011)
DOE Order 435.1 Update Strategy

- Project management plan/schedule based on DOE O 413.1
- Teams established for phase 1 and 2 of the project consisting of a cross-section of federal and contractor waste management experts from across the Complex

---

**Phase 1 - CWR Team**
- Headquarter - Mary Willcox, ID
- LLW – Frank DiSanza, NNSS
- HLW – Joel Case, ID
- TRU – J.R. Stroble/Alton Harris, CBO/EM

**Phase 2 - Chapter Specific Core Teams**
- General Requirements – Linda Suttora, EM
- LLW – Frank DiSanza, NNSS
- HLW – Joel Case, ID
- TRU – J.R. Stroble/Alton Harris, CBO/EM

---

**Senior Technical Advisors**
Mark Frei
Willis Bixby
John Greeves
Keith Klein
John Longenecker
Jim Lieberman

STAs provide independent review and advise throughout Phase 1 & 2
DOE Order 435.1 Update Status

• Workshop #1- April 2010 – Portland
  • Established core teams
  • Developed plans and schedules
  • Team assignments
  • Expectations

• Workshop #2 – October 2010 – Salt Lake City
  • Status
  • Crosscutting issues
  • Technical Standards (rogue guides)
  • Team consistency

• Workshop #3 – March 4, 2011 – Phoenix
  • Input from public and user communities

• Future Workshops TBD
Current Schedule

Oct Thru Dec 2010

- Letter Req Updates
- FPD/STA Review

Jan 2011

- Compilation of Redline Chapters
- FPD/STA Review

Feb Thru Jun 2011

- Compilation of Revised Directives Package – old format
- FPD/STA Review
- Public Wkshp WM 2011

Jul Thru Sep 2011

- Conversion into 251.1C Compliant Package
- FPD/STA Review

Oct 2011 To Aug 2012

- DRB/Public/Dept Review Process

Aug / Sep 2012

- Outreach

Formalization of Rogue Guides

Tech Standard Review
Proposed DOE O 435.1 Changes Affecting PA

- Characterization Section
  - Clarification of WIR evaluation and citation
  - Incorporation of NDAA 3116
- Concentration Averaging and blending (consolidation)
- Institutional Controls
  - Passive controls – no more than several hundred years
  - IC implementation & control plan – public reviewed
  - Cost estimate, transfer documentation, permanent markers
  - Reviewed on 5-year cycle
- PA water resources & intruder performance measures changed to performance objectives
Proposed 435.1 Changes (continued)

• Probabilistically analyze compliance performance objectives (e.g. the peak of the mean or median of the results distribution, whichever is higher)

• PA sensitivity/uncertainty analysis includes assessment of peak impact within a period of 10,000 years. Qualitative assessment of peaks beyond 10,000 years

• PA shall address protection of biota and include a systems evaluation (new facilities only)
Proposed 435.1 Changes (continued)

- Will require sites with PAs to have unreviewed disposal question evaluation (UDQE) Process
- CA performance objective of 100 mrem and admin limit of 30 mrem (previously in the Guide only)
- PA critical assumptions must be protected in operational procedures
- Revised section on “Waste Resulting from Environmental Restoration Activities” (Interface of CERCLA/ RCRA and DOE Order 435.1 requirements)
- Requirements for in-situ closure of radioactive facilities (e.g. reactors)
Low-Level Waste Disposal Facility Federal Review Group (LFRG)

- Will continue to conduct PA/CA Reviews
  - Documenting lesson-learned and best practices
  - Promoting consistency across DOE complex
  - Revising procedures and review criteria as need to address new developments (e.g., 3116, probabilistic analyses)

- All LFRG Manuals and Guides being incorporated into 435.1
  - PA/CA Format and Content Guide
  - Monitoring Plan Guide
  - PA/CA Maintenance Guide
  - Preliminary Closure Plan Guide
Implementation of NDAA Section 3116

• Increased interactions and dialog with NRC technical staff
  – Sharing ideas and methods
  – Promoting consistency across regulatory regimes
  – Coordination with NRC Rulemaking activities
    • Unique waste streams
    • Concentration Averaging / Blending
    • Time of Compliance
    • Potential update to 10 CFR 61
PA Community of Practice (History)

- PA CoP discussed conceptually between EM-10 and 20 with SRNL and CRESP early in 2008 to address concerns related to consistency of PAs
- Briefing for EM-1 Fall of 2008
- Originally planned for implementation via the Tank Waste (HLW) Corporate Board
- Workshop on Sensitivity and Uncertainty Analysis in 2008 as an example of improving consistency
- PA CoP sponsored workshops in 2009, 2010 and 2011 (Engineered Barriers, ASCEM/CBP, Software QA & Use of models in decision-making)
Performance Assessment Assistance Teams (PAAT)

- EM-41 has established program for providing up-front assistance to sites in planning stages of developing new disposal facilities
- Send subject matter experts from National Labs and other sites to provide lessons learned and technical assistance
- Sponsored by EM-41 and LFRG
  - Paducah
  - Idaho
- Considered a Best Management Practice
PA Scoping Process

• Evolved out of Core-Team process originally developed at Savannah River Site
  – Process of bringing all parties together to decide on parameters and assumptions before preparing PA
  – Produce one document to serve all regulatory masters
    • Includes radionuclides and chemicals, as needed
• PA no longer draws conclusions – will be done in regulatory decision documents
• Considered a Best Management Practice
PA Educational Forums

- Conduct Public Meetings to explain PA process when a PA is released for review
- PA 101 perspective oriented to general public
- Generally conducted over a full day
- Emphasize robustness of process and reviews
- Provide perspective on the approach and philosophy used to conduct PAs rather than detailed discussions of models
PA Community of Practice

• PA CoP should not be owned by any one agency or group
• Should be self-sustaining and self-directing
• Does not bind anyone to decisions that trump regulatory obligations
• Opportunities
  – Providing PA consistency
  – Sharing of lessons learned
  – Sharing data, methods, and science (information clearinghouse)
• Could someday be as important as NCRP, INPO, etc