

The United States Department of Energy
Radioactive Waste Management Order 435.1 Update
The First Step - A Complex Wide Review

Martin Letourneau *, E. Frank DiSanza**, Howard Pope+, Susan Krenzien++, and Harmony Paulsen^

*United States Department of Energy, Germantown, MD 20874

** National Nuclear Security Administration Nevada Site Office, North Las Vegas, NV 89030

+Project Enhancement Corporation, Germantown, MD 20874

++Navarro Research and Engineering, Inc., North Las Vegas, NV 89030

^Sapere Consulting, Inc., Seattle, WA 98121

ABSTRACT

The United States Department of Energy (DOE) is responsible for managing radioactive waste and providing radiological protection from DOE operations pursuant to its *Atomic Energy Act* authority. DOE Order 435.1, *Radioactive Waste Management*, and the associated Manual and Implementation Guide were approved for implementation in 1999. The Order and its associated documents continue to be protective of human health and the environment; however, significant improvements and insight in radioactive waste management practices have been realized in the last ten years.

DOE embarked on a complex wide review (CWR) of radioactive waste management activities to complete the feedback and continuous improvement loop of the Integrated Safety Management System process. The CWR captured and organized the successes, lessons learned, best management practices, and areas that need improvement associated with implementing radioactive waste management requirements for High-Level (HLW), Low-Level Waste (LLW), and Transuranic Waste (TRU). The CWR gathered input from across the DOE complex and provided Program Offices and Field Sites the rare opportunity to identify requirements in the DOE O 435.1 Directives Package that needed to be changed, clarified, or interpreted and/or implemented as complex wide requirements. It was also an opportunity to share the progress made in radioactive waste management since DOE Order 435.1 was issued, including successes and best practices. The CWR assembled information that will be used in revising DOE Order 435.1 and improving the management of radioactive waste across the Complex.

This paper discusses the history of the CWR and DOE Order 435.1, outlines the planning process for initiating the CWR and DOE Order 435.1 Update, details the steps followed to successfully execute the CWR and looks forward to the DOE Order 435.1 Update project.

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History

The United States Department of Energy (DOE) is responsible for managing radioactive waste and providing radiological protection from DOE operations pursuant to its *Atomic Energy Act* authority. In 1994, The Defense Nuclear Facilities Safety Board (DNFSB) reviewed the DOE low-level radioactive waste (LLW) management activities against DOE Order 5820.2A, *Radioactive Waste Management*, and the Nuclear Regulatory Commission's regulation on LLW disposal - Code of Federal Regulations Section 10 Part 61.¹ The resultant DNFSB Recommendation 94-2, reported concerns with safety standard conformance at DOE LLW disposal sites across the complex. DOE committed to conducting a complex-wide baseline assessment of DOE LLW disposal requirements and practices with the objective of identifying problems affecting worker and public safety as part of the DNFSB Recommendation response.

The 1996 Complex-Wide Review (CWR) was a comprehensive assessment of LLW management activities at 36 Sites around the DOE Complex. It identified six complex-wide vulnerabilities and numerous site-specific concerns. The six complex-wide vulnerabilities were²:

1. LLW forecasting and capacity planning is inadequate
2. Characterization of LLW is ineffective.
3. LLW with a disposal path remains in storage.
4. Storage conditions are inadequate.
5. Some LLW has no path to disposal.
6. Performance Assessments (PA) are unapproved and lack adequate requirements.

DOE decided a revision to DOE Order 5820.2A would not be adequate and a new approach and Order would be necessary to address these vulnerabilities. DOE decided to use the Integrated Safety Management System (ISMS, defined in DOE Manual 450.4-1) process to revise the Order because it provided a formal, organized process for planning, performing, assessing, and improving the radioactive waste management system. Developing a new Order would require DOE to use the first three ISMS basic safety core functions of defining the work, analyzing the hazards, and developing controls.

DOE defined the work as needing to develop a new radioactive waste management approach that (1) incorporated DOE commitments in response to 94-2 and other DNFSB Recommendations into the Order; (2) developed clear and sound technical basis for the requirements and guidance; (3) incorporated considerations of risk; (4) developed performance-based requirements; (5) addressed stakeholder concerns and other emerging considerations, such as the movement toward external regulation, legislation requiring the adoption of industry consensus standards, and DOE's ongoing efforts to delegate decision-making and managerial controls from Headquarters to the Field Office level.³

DOE analyzed the hazards and identified the needed standards and requirements by conducting a complex-wide review of waste management functions and activities; assessing the hazards of those

¹ Recommendation 94-2 to the Secretary of Energy, September 8, 1994

² Final Report Complex-Wide Review of DOE's Low-Level Waste Management ES&H Vulnerabilities, DOE/EM-0280, May, 1996

³ Appendix A, Technical Basis and Considerations for DOE Manual 435.1-1, 7/9/99

functions and activities; identifying regulatory requirements and guidance to mitigate hazards and manage waste effectively; and establishing and documenting the technical basis for requirements and guidance.

DOE identified and implemented the necessary controls for waste management by issuing DOE Order 435.1, *Radioactive Waste Management*. DOE also provided requirements and direction through issuing DOE Manual 435.1-1 and implementation guidance through DOE Guide 435.1-1. The DOE Order, Manual and Guide (herein referred to as the DOE Order 435.1 Directives Package) were implemented in 1999, fulfilling the perform work segment of ISMS process.

Mission Need

The 1996 CWR provided crucial insight into radioactive waste management at different levels of management and was a catalyst for development of the original DOE Order 435.1. The recent CWR was an essential first step in the current update to DOE Order 435.1. The recent CWR assessed the implementation of radioactive waste management requirements across the complex (including HQ) and solicited feedback from field elements on progress, lessons learned, best practices, and suggested improvements in radioactive waste management since the 1996 CWR, including specific improvements to the DOE Order 435.1 Directives Package. The CWR provided feedback on radioactive waste management requirements to support continuous improvement of the DOE O 435.1 Directives Package consistent with the ISMS process.

The DOE Order 435.1 Directives Package has been implemented in the field for nearly ten (10) years with only minor editorial changes. While DOE Order 435.1 requirements and guidance continue to be protective of human health and the environment, significant improvements and insight in radioactive waste management practices have been realized during the past decade of implementation. DOE policy is to use a consistent and effective management system for the development, communication, implementation, and periodic review of its Orders with the objective of providing more effective program direction, accountability, and performance assurance. Feedback gathered from the HQ Program Offices, Field Element Managers and site contractors during the CWR indicate that radioactive waste managers would benefit from an update to DOE Order 435.1 Directives Package. The updates to the DOE Order 435.1 Directives Package will reflect the current regulatory environment and incorporate process improvements and lessons learned from a decade of radioactive waste management implementation.

Project Planning and Preparation

In January 2008 DOE Environmental Management (DOE-EM) convened a team of radioactive waste management experts and project management consultants to initiate project planning and design for the DOE Order 435.1 Update project. A combined Critical Decision (CD)-0, Mission Need, and CD-1, Approve Alternative Selection and Cost Range Milestone package per DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, was developed and submitted to DOE-EM for approval in July 2008.⁴ The mission need statement identified over fifteen specific examples of changes or updates needed in the DOE Order 435.1 Directives Package, including outdated references, incorporation of new external regulations (e.g., NDAA 3116), and

⁴ CD-0/1 DOE Order 435.1 Update Project July, 2008

incorporation of best practices and lessons learned over a decade of implementation (e.g., the use of probabilistic modeling in performance assessments.)

The CD-2, Performance Baseline, and CD-3, Start of Project combined package was approved on June, 12, 2009.⁵ This approved the scope, schedule, and cost, including the baseline schedule, Project Execution Plan, Communications Plan, Document Controls Plan, and Risk Management Plan. The CD 2-3 approval also initiated the first step the DOE Order 435.1 Update, conducting a new CWR.

Organization

Overall direction and management for the CWR and DOE Order 435.1 Update project is provided by a federal project director (FPD) from the Office of Environmental Compliance (EM-41). The FPD oversees the integrated project team, which includes a project coordination team, technical and support contractors, CWR and DOE Order 435.1 Update core teams, senior technical advisors (STAs) and points of contact from organizations across the DOE complex with radioactive waste management responsibilities.

Project Coordination Team

A project coordination team was convened by the FPD to support project planning and execution for the two phases of this project; the CWR and the DOE Order 435.1 Update project. The project coordination team is specifically responsible for: supporting the FPD to achieve project performance, scope, schedule, cost, and safety and quality objectives detailed in the CD documentation; ensuring that all project interfaces are identified, completely defined, and managed to completion; and, ensuring that the appropriate subject matter experts are included in project execution.

The project coordinators are responsible for successful management and execution of the CWR and the DOE Order 435.1 Update project and were selected by the FPD. The project coordinators are responsible for: identifying and coordinating resources; providing instructions to resources regarding their role in execution of project tasks; overseeing core team activities for each project; involving the project coordination team in project management and execution as appropriate; and communicating progress to the FPD.

Technical and Support Contractors

The technical and support contractors, Project Enhancement Corporation (PEC) and Sapere Consulting, Inc., provide resources in project management, document review and development, technical writing and editing, website development and database management, and administrative and contractual support. The support contractors ensure that the CWR and DOE Order 435.1 Update activities are coordinated and remain on schedule. Project baselines, tracking and reporting earned value, and supporting analyses of project performance and management are also provided to the FPD.

⁵ Memorandum, F. M Marcinowski, Deputy Assistant Secretary for Regulatory Compliance to M. Letourneau, Federal Project Director, Office of Compliance, Approval of Critical Decision-2/3, Performance Baseline and Start of Project for the Complex-Wide Review and the Department of Energy Order 435.1 Update Projects, dated 06/12/2009

Complex-Wide Review Core Teams

Four core teams were formed for the CWR, corresponding to the four chapters of DOE Order 435.1: General Requirements and Responsibilities (Headquarters), HLW, TRU, and LLW. The core teams were lead by federal employee from DOE HQ or a Field Site and consisted of federal employees, contractors, and consultants from across DOE/NNSA with experience in regulatory compliance, disposal operations, performance assessment and program implementation. The number of core team members varied according to the workload.

DOE O 435.1 Update Core Teams

Similar to the CWR, the update to DOE Order 435.1 will be executed by four core teams, one for each chapter in the Manual. The core teams are comprised of federal representatives from the five program offices that manage radioactive waste (i.e., Environmental Management [EM], National Nuclear Security Administration [NNSA], Nuclear Energy [NE], Science [SC], Legacy Management [LM]), the Office of Health, Safety and Security, and radioactive waste management sites across the complex. The core teams are responsible for determining the scope of the DOE Order 435.1 Update effort, developing and overseeing work plans. The core teams will be assisted by subject matter experts and contractors from across the complex in analyzing and executing the changes to radioactive waste management requirements and guidance.

The core team structure for the DOE Order 435.1 Update maximizes the experience and knowledge gained through the CWR by recruiting individuals who were integral to the CWR effort. This has facilitated the transition from the CWR to the DOE Order 435.1 Update. In addition, team members who contributed to the 1996 CWR and original DOE Order 435.1 development in 1999 have been recruited for this effort.

The core teams will be responsible for identifying subject matter experts and contractors who will assist the federal representatives in updating the DOE Order 435.1 requirements and guidance. Integrated project team membership will continue to evolve commensurate with the expected scope and nature of the work to be executed.

Senior Technical Advisors

A senior review panel was integral to the successful development of the original DOE Order 435.1 directives package in 1999. For that reason, the FPD recruited a group of senior technical advisors to serve in an advisory capacity during the planning and execution of the current CWR and DOE Order 435.1 Update. The senior technical advisors are highly skilled and experienced individuals that have been involved in radioactive waste management activities for a number of years. The senior technical advisors were briefed at key points and provided the FPD with expert advice and recommendations on the approach and direction of the CWR. The senior technical advisors from the CWR will remain involved throughout the DOE Order 435.1 Update effort to review and provide independent advice on technical and policy issues, analytical approaches, and conclusions.

Complex Wide Review

Although the 1996 CWR reviewed only LLW radioactive waste management activities, the new CWR was expanded to include all waste types (HLW, TRU, LLW) and a Headquarters review. The complex-wide vulnerabilities, recommendations and general approach of the 1996 review were

incorporated into the new CWR effort. The review consisted of sites completing lines of inquiry (LOIs) based on the 1996 vulnerabilities and DOE Manual 435.1-1 requirements. The CWR also asked the sites to “tell the story” of their waste management progress since the 1996 CWR, 1996 Baseline Environmental Management Report (BEMR) and the 1997 Waste Management Programmatic Environmental Impact Statement (WMPEIS) and subsequent Records of Decision. The CWR also provided an ISMS feedback loop for improvement to DOE Order 435.1 and a self assessment tool for sites to measure their DOE Manual 435.1-1 implementation. Sites were asked to identify successes, best management practices, lessons learned and areas needing improvement based upon their waste management history and current activities. Mound, Fernald, and Rocky Flats points of contact also provided lessons learned gained from the final closure of these sites. The CWR also provided departmental elements with a rare opportunity to suggest modifications to the DOE Order 435.1 Directives Package that would improve radioactive waste management.

Lines of Inquiry

The LOIs are a series of questions designed to acquire accurate information about requirement implementation and feedback to improve processes and procedures. The LOIs for the CWR were developed based on the 1996 CWR LOIs and DOE Manual 435.1-1 requirements for LLW, TRU, HLW, Field Element Managers (FEM) and HQ. LOIs were organized under four broad categories: HQ, LLW, TRU and HLW. The LOIs were developed for two purposes. The first was to provide a self-assessment tool for the sites to evaluate their implementation of DOE Manual 435.1-1. The other was to request information to be used in an update of DOE Order 435.1. Information on successes, best practices, lessons learned, areas of improvement and suggested revisions to DOE Order 435.1 were requested.

The LOIs were divided into sections (i.e. General, Generation, Storage, Treatment, Disposal, Closure, Waste Incidental to Reprocessing, Crosscutting and FEM as appropriate) so that a graded approach to completion could be used. Smaller sites, with only LLW generation and storage capacity, completed only those sections of the LLW LOIs. Larger sites, with multiple waste types and facilities may complete all the LOI sections for each waste type.

The General section acquired contract and Program Office information at the sites. Many sites had only a Management and Operations contractor when DOE Order 435.1 was initially developed and implemented. Today, many sites (e.g., Oak Ridge, Savannah River, Richland, Idaho, Nevada) have multiple contractors and Program Offices with waste management responsibilities. This section gathered information that could be helpful in updating DOE Order 435.1 to the current site organizational structures.

The LOIs for the Generation, Treatment, Storage, Closure, Waste Incidental to Reprocessing and Disposal sections for HLW, TRU, and LLW were developed, as appropriate, using the requirements from DOE Manual 435.1-1 Chapters II, III, and IV respectively and by applying the 1996 CWR LLW vulnerabilities to the HLW and TRU programs as well,

The Crosscutting section obtains information that may cross boundaries between HLW, TRU and LLW or between regulatory authorities, such as the Nuclear Regulatory Commission and Environmental Protection Agency (CERCLA and RCRA). The Crosscutting section also requested

information on the effectiveness of the Low-level Waste Disposal Facility Federal Review Group (LFRG) and the HLW, LLW and TRU Corporate Boards.

The Waste Incidental to Reprocessing and Closure sections are specific to the HLW LOIs and were developed from DOE Manual 435.1-1 Chapter II requirements.

The FEM and HQ LOIs were developed using DOE Manual 435.1-1, Chapter I, Responsibilities. These LOIs were developed to gather information beneficial in updating the FEM and Program Office responsibilities.

Developing the LOIs was difficult because the individuals responsible for completing the LOIs had different experience levels. The LOIs were reviewed by the FPD, individual core teams, and senior technical advisors to ensure they met the scope and goals of the CWR. Each of the core teams reviewed the LOIs multiple times both individually and collectively to ensure the LOIs were easily understood and consistent, as appropriate, across the waste types. The LOIs were revised based on the review comments and placed into a central data base for configuration control and input of data from the POCs.

The CWR team decided to perform a pilot project of the LOIs at a large and small site before sending the LOIs to the complex at large. The pilot helped ensure the LOIs were effective in obtaining the information necessary to meet the goals and objectives of the CWR. The Savannah River Site (SRS) was selected for the large site because of the numerous onsite HLW, TRU and LLW waste generators, the multiple waste treatment facilities (DOE/commercial) and various waste disposal facilities (DOE/commercial), both on- and offsite. Lawrence Berkeley National laboratory (LBNL) was chosen as the small site because of the small amount of LLW and TRU waste generated and stored at the site and to test the LOIs organization to ensure a graded approach, according to need, could be accomplished. Numerous improvements were made to the LOIs as a result of the pilot project.

A pilot project lessons learned meeting with the points of contact (POCs) from SRS and LBNL, core team leads, and FPD evaluated the effectiveness of the LOIs and database. LOI questions requiring revision or clarification were identified and the core teams tested the ability to sort, segregate, and report data in the database. These abilities would be beneficial in their evaluation of each site's input and indentifying any complex-wide successes, best practices, lessons learned and areas of improvement. Different database reports were discussed to ensure that the data could be easily analyzed for trends, best practices, and lessons learned. The need for an LOI for the Field Element Managers of each waste type was also identified. This LOI focused on the DOE Manual 435.1-1 Chapter I responsibilities of the FEM. Once all revisions were complete the LOIs were finalized and no further revisions were made.

Database

The CWR team needed an effective method to collect and sort a large amount of data. The scope of the CWR included data input from 29 different LLW sites, 4 HLW sites, 13 TRU sites, and 7 different Program Offices. Additionally, some sites would require more than one input due to multiple contractors and Program Offices having radioactive waste management responsibilities. A database with the flexibility to effectively collect and sort data received from over 100 individuals

from approximately 29 different locations was needed. The database had to be user friendly, easily navigable, and reliable. The database was also envisioned as a means to provide the core teams with a cost effective and efficient method of evaluation.

The LOI data base was developed specifically for this CWR effort. The LOIs were formatted with the data collection system in mind. Most LOIs were framed to be answered with either a “yes” or “no” accompanied with a text box to expand or explain the answer or to add a reference. General LOIs used text box entries to gather information. The data base was also used to provide a repository for documents that the POCs and core teams would need for the progress section, including the 1996 CWR, 1997 WMPEIS RODs, 1996 BEMR, and the 2009 EM Report to Congress.

The data base needed an appropriate level of security (logins and passwords) to ensure the integrity of the data. An access hierarchy was established to allow the FPD, project coordinators, senior technical advisors and core team leads to access all of the data. Members of the core team had access to the information for their area of responsibility (LLW, TRU, HLW, and HQ). Points of Contact (POCs) at the sites would only have access to the LOIs for their site. Therefore login identification and passwords with appropriate access levels were established.

Acknowledging that security firewall issues may occur, the database allowed core teams to download an Excel/Word spreadsheet of LOIs which could be electronically mailed to the site POC for completion. Once completed the LOI responses were directly uploaded into the database.

Making Contact

Communication is an essential element for the success of any project. Briefings were conducted with HQ, Site Management, various Corporate Boards (LLW, HLW, TRU) and to the Energy Facility Contractor Group (EFCOG) announcing the CWR and explaining the scope and purpose. The various Corporate Boards and the EFCOG volunteered to be the primary interface between the CWR team and the sites. The core teams briefed the POCs on the LOIs and the CWR effort, ensuring POC understood their role in completing the LOIs. The core teams, where appropriate, developed talking points to explain or provide additional information that clarified or expounded on specific LOIs. Lines of communication were developed to ensure POC questions were readily answered by a core team, Corporate Board or EFCOG member.

Data Collection

DOE has approximately 29 sites around the Complex that manage radioactive waste. The sites have different contractual arrangements, multiple contractors and multiple Program Offices with radioactive waste management responsibilities. Therefore, the core teams and POCs determined if one or multiple LOIs for a waste type(s) would be completed to represent a site’s diversity in the contractual and programmatic areas. For example, SRS completed one collective LOI for each waste type even though the site has two major contracts and two different Program Offices. On the other hand, Oak Ridge completed multiple LOIs for each waste type based on the diversity and complexity of the sites contractual arrangements and the different Program Office responsibilities.

In some cases, the POC had the direct knowledge and experience to complete the LOIs. In others, the POCs obtained the necessary information from multiple sources and combined it into the LOIs.

The POCs could either input directly into the data base or download an Excel/Word spreadsheet. The spreadsheet was especially helpful for large sites with multiple generators because information was easily integrated and combined from multiple sources.

The contractor(s) initially completed the LOIs, then the site DOE/NNSA POC was provided the opportunity to review and comment on the contractors input in a separate text block within the data base. The DOE POC could not revise the contractor's response. This allowed the core teams to receive independent opinions and responses from the contractor and DOE. The FEM LOIs were completed by the DOE/NNSA federal personnel only. The sites were requested to identify successes, lessons learned, best practices, areas of improvement, and suggested revisions to the DOE Order 435.1 Directives Package.

The HQ review (responsibilities section) was conducted using an interview technique. The core team interviewed the appropriate personnel at HQ and ascertained if the responsibilities were adequately implemented. The HQ core team inputted the LOI responses in the data base and identified success, best practice, lessons learned and areas of improvement.

Phone calls to the POCs and occasionally site visits were used to clarify responses or gather more information. The LLW core team decided that onsite visits to several disposal sites were necessary (i.e., Savannah River, Richland, Los Alamos, and Nevada). The TRU and HLW core teams performed telephone interviews only.

Site Report

The core teams wrote site specific reports detailing the site progress in radioactive waste management since the 1996 CWR and identified the successes, lessons learned, best practices, and areas improvement that should be considered for complex-wide implementation. The report included the following sections:

- **Progress**
- **Site description** – a general description of the site, location, mission(s) etc.
- **Background** – the mission(s) of the site, contract arrangement and areas of responsibility for the various contractor(s)
- **Implementation of DOE Order 435.1 and associated Manual and Guide** – including an evaluation of the full or partial implementation of the manual, status of performance assessment, composite analysis, disposal authorization statement, monitoring plan, closure plan etc, radioactive waste management basis status and innovations or successes for the waste type.
- **Progress in the management of radioactive Waste** – including identifying current waste management practices, waste management practices at the time of the BEMR, and a description of major changes.
- **Success** – successes that could affect the complex-wide mission, goals or milestones such as elimination of legacy LLW, closure of HLW tanks, etc.
- **Best Practices** – program or processes implemented that are cost effective such as electronic waste tracking systems, forecasting tools, using deterministic and probabilistic analysis, un-reviewed disposal question evaluations, etc.
- **Lessons Learned** – program or processes that should not be repeated and the lessons communicated to the complex.

- **Areas of Improvement** – suggested revisions to DOE Order 435.1 requirements and guidance that would provide clarification and/or improve implementation, additional actions that would result in more effective or efficient radioactive waste management.

Complex-wide Analysis

The core teams evaluated the data from a complex-wide standpoint by grouping the data into the same categories (e.g., general, generation, treatment, storage, disposal, crosscutting, etc) that were used for the site evaluation except the evaluation is across all sites (complex-wide). The core teams looked for successes, best practices, lessons learned, and areas of improvement in each of these categories for commonalities, trends or for specific items of interest for the improving the management of radioactive waste and for updating the DOE Order 435.1 Directives Package.

The core teams wrote a waste type specific (LLW, TRU, HLW) report detailing the progress made across the complex in radioactive waste management since the 1996 CWR and identifying complex-wide successes, areas of improvement, best practices, or lessons learned. The report outline followed that of the site report with a complex wide view of the successes, lessons learned, best practices, and areas of improvement.

HQ Review

The HQ data was reviewed against Program Office responsibilities, 1996 CWR vulnerabilities and the DNFSB 94-2 Recommendation findings. Multiple Program Offices (SC, EM, NE, NNSA, etc.) have radioactive waste management responsibilities identified in DOE Manual 435.1-1. The HQ LOIs reviewed those responsibilities and included an updated review of the 1996 CWR vulnerabilities and the DNFSB Recommendation 94-2 responses.

The re-evaluation of the DNFSB Recommendation 94-2 Report and the 1996 CWR responses was also applied to all waste types even though the original scope was LLW only. The review focused on ensuring the resolutions to the findings and vulnerabilities were implemented at HQ and at the sites.

A HQ specific report was written, identifying successes, best practices, lessons learned and areas of improvement. The report also detailed the progress made at HQ in radioactive waste management since the 1996 CWR. The HQ report outline followed the site reports with an emphasis on program office responsibilities, direction, processes and polices.

Crosscutting Review

The crosscutting review looked across the HLW, LLW, TRU and HQ successes, best practices, lessons learned, and areas of improvement to see if any could be applied “across the board” or to other waste types. For example, a LLW best practice could be applied to the management of TRU and/or HLW. This review was also beneficial in identifying consistent approaches that could be used in updating the DOE Order 435.1 Directives Package.

A crosscutting review team included the FPD, senior technical advisors, core team leads, project coordinators and federal/contractor technical experts. The cross-cutting review team collectively evaluated successes, areas of improvement, lessons learned and best practices from all the LOIs. The cross-cutting review team provided a written report on their review results.

CWR Conclusions and Recommendations

A review of all the LOI successes, best practices, lessons learned, and areas of improvement, including the cross-cutting review, was conducted to provide conclusions and general recommendations to Program Office Management. These general recommendations included potential updates to the DOE Order 435.1 Directives Package and other actions outside of the DOE Order 435.1 Update scope that will be documented in a forthcoming Action Plan.

DOE O 435.1 Update

The CWR findings recommended revisions to radioactive waste management requirements and guidance that will be considered during the update of the DOE Order 435.1 Directives Package. In addition, best practices and lessons learned identified by sites and headquarters during the CWR may be incorporated as examples in DOE Guide 435.1-1 to foster coordination and standardization in radioactive waste management across the complex. The update to the DOE Order 435.1 Directives Package is in the beginning stages of implementation with the current focus on transitioning information and resources from the CWR effort to the DOE Order 435.1 Update project. As currently scheduled, the updated Order is expected to be ready for departmental review by the first quarter of fiscal year 2012.

Directives Program

DOE uses directives as its primary means to establish, communicate, and institutionalize policies, requirements, responsibilities, and procedures for multiple Departmental elements. DOE-EM will be updating the DOE Order 435.1 directives package consistent with the updated requirements contained in DOE Order 251.1C, *Departmental Directives Program*. Given the departmental direction to phase out manuals, the requirements currently contained in DOE Manual 435.1-1 will be captured in the updated Order. DOE Order 435.1 will continue to focus on performance-based requirements and will place greater emphasis on using a graded approach based on consideration of risk when implementing the requirements.

Workshops

The core teams and necessary contract staff will be convened at a series of four workshops to update different components of the DOE Order 435.1 Directives Package. The first two workshops will focus on requirements contained in DOE Order 435.1 and DOE Manual 435.1-1 and the technical basis document (Appendix A to DOE Guide 435.1). At the first workshop the core teams will use the refined list of recommendations identified during the CWR as a basis to: develop work plans for updating the Order consistent with the CWR recommendations; assemble work teams; and, begin updating requirements and the technical basis. Following the first workshop, the core teams will coordinate with subject matter experts and contractors to update the requirements and technical basis according to the work plan. The focus of the second workshop will be to review, revise and reach core team consensus on the modifications to requirements and the technical bases of these requirements. Some updates may take longer than the time allotted between the first and second workshops and will be tracked to completion on a separate schedule.

The third and fourth workshop will focus on updates to the implementation guide (DOE Guide 435.1) and associated guidance documents. At the third workshop the core teams will develop work plans for updating the guidance; assemble work teams; and, begin to modify the guidance consistent

with any changes made to the radioactive waste management requirements. This may require development of additional standalone guidance documents, or revisions to existing guidance documents that have not yet been formally adopted through the directives process (e.g., LLW Disposal Facility PA and CA Format and Content Guide). The workshop participants will consider lessons learned and best practices identified during the CWR to include as examples in the radioactive waste management guidance. Following the third workshop, the core teams will coordinate with subject matter experts and contractors to update the radioactive waste management guidance. The focus of the fourth workshop will be to review, revise and reach core team consensus on the modifications to guidance. Meetings and conference calls will be scheduled as appropriate between the workshops to maintain communication and execute the work scope.

Each workshop session will be facilitated and recorded to ensure maximum productivity and transparency. As a part of the workshops each core team (i.e., General Requirements, HLW, TRU, LLW) will have opportunities to discuss and coordinate proposed modifications that span different chapters. The product of each workshop will be reviewed by the FPD and senior technical advisors who will provide feedback and direction to each core team. This level of review will also help to ensure coordination between the different chapters.

Reviews

Once the DOE Order 435.1 requirements and guidance have been updated, the core teams will conduct a final review of the directives package in its entirety to ensure clarity and cohesiveness between General Requirements and the waste-type specific sections. The project coordination team and core teams will make any final modifications and prepare the package for submittal to the directives system for departmental review.

All departmental elements will have an opportunity to formally review and comment on the updated DOE Order 435.1 Directives Package through the Directives system. Following the departmental review, a Notice of Availability will be published in the Federal Register for public review and comment of the updated DOE Order 435.1. Every effort will be made by the DOE-EM to respond to the comments received during the review of the updated DOE Order 435.1. All comments received, both internal and external, will be considered and may result in changes to the draft Order or the corresponding Implementation Guide.

Training and Outreach

All Department elements that are involved in the management of radioactive waste will be required to implement revised requirements contained in the updated DOE Order 435.1. There are thousands of workers involved in DOE's radioactive waste management operations, facilities and activities. This includes Federal employees at Headquarters, Operations and Field Offices, and a number of smaller Area Offices. Additionally, there are contractor employees at sites involved in waste management and environmental restoration activities across the complex. DOE employees and contractors will need to be aware of the requirements of this Order in varying degrees, depending on their job responsibilities.

Changes stipulated in an updated DOE Order 435.1 require that DOE inform and educate many of the thousands of DOE Headquarters and Field employees or contractors who are responsible for managing low-level, transuranic, or high-level waste. DOE is committed to conducting outreach

efforts to assist radioactive waste managers across the complex in understanding and complying with any revised radioactive waste management requirements. Training and outreach activities will be developed and implemented once the directives package has been updated.

Status and Next Steps

All relevant input has been received from the CWR and the first workshop will take place in the first quarter of this calendar year (CY 2010). The CWR was a crucial first step in identifying areas of improvement across the complex as well as best practices and lessons learned that can be incorporated into the updated DOE Order 435.1 Directives Package. The DOE Order 435.1 Update project will employ the systems engineering approach developed for the original development of DOE Order 435.1 in 1999. DOE will draw on the technical expertise of its Headquarters and Field staff and contractors to assist in analyzing how requirements should be modified to account for: evolving radioactive waste management functions and activities; the hazards posed by these functions and activities; and, the new internal and external requirements and industry consensus standards that impact DOE management of radioactive waste.

References

1. Recommendation 94-2 to the Secretary of Energy, September 8, 1994
2. "Final Report Complex-Wide Review of DOE's Low-Level Waste Management ES&H Vulnerabilities," DOE/EM-0280, (1996)
3. U.S. Department of Energy Manual 435.1-1, Appendix A, "Technical Basis and Considerations for DOE Manual 435.1-1," (1999)
4. CD-0/1 DOE Order 435.1 Update Project (2008)
5. Memorandum, F. M Marcinowski, Deputy Assistant Secretary for Regulatory Compliance to M. Letourneau, Federal Project Director, Office of Compliance, Approval of Critical Decision-2/3, Performance Baseline and Start of Project for the Complex-Wide Review and the Department of Energy Order 435.1 Update Projects, (2009)

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