Evolution of Long-Term Stewardship at Hanford - 14189

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ABSTRACT

Hanford's Long-Term Stewardship (LTS) Program has evolved from a small, informal process, with minimal support, to a robust program that provides comprehensive transitions from cleanup contractors to long-term stewardship for post-cleanup requirements specified in the associated cleanup decision documents. The LTS Program has the responsibility for almost 100,000 acres of land, along with over 200 waste sites and will soon have six cocooned reactors. Close to 2,600 documents have been identified and tagged for storage in the LTS document library. The program has successfully completed six consecutive transitions over the last two years in support of the U.S. DOE Richland Operations Office's (DOE-RL) near-term cleanup objectives of significantly reducing the footprint of active cleanup operations for the River Corridor.

The program has evolved from one that was initially responsible for defining and measuring Institutional Controls for the Hanford Site, to a comprehensive, post remediation surveillance and maintenance program that begins early in the transition process. In 2013, the first reactor area—the cocooned 105-F Reactor and its surrounding 1,100 acres, called the F Area was transitioned. In another "first," the program is expected to transition the five remaining cocooned reactors into the program through using a Transition and Turnover Package (TTP).

As Hanford's LTS Program moves into the next few years, it will continue to build on a collaborative approach. The program has built strong relationships between contractors, regulators, tribes and stakeholders and with the U.S. Department of Energy's Office of Legacy Management (LM). The LTS Program has been working with LM since its inception. The transition process utilized LM's Site Transition Framework as one of the initial requirement documents and the Hanford Program continues to collaborate with LM today. One example of this collaboration is the development of the LTS Program's records management system in which, LM has been instrumental. The development of a rigorous data collection and records management systems has been influenced and built off of LMs success, which also ensures compatibility between what Hanford's LTS Program develops and LM. In another example, we are exploring a pilot project to ship records from the Hanford Site directly to LM for long-term storage. This pilot would gain program efficiencies so that records would be handled only once. Rather than storage on-site, then shipment to an interim Federal Records Center in Seattle, records would be shipped directly to LM.

The Hanford LTS Program is working to best align programmatic processes, find efficiencies, and to benchmark site transition requirements. Involving the Hanford LTS Program early in the transition process with an integrated contractor and DOE team is helping to ensure that there is time to work through details on the completed remediation of transitioning areas. It also will allow for record documentation and storage for the future, and is an opportunity for the program

to mature through the experiences that will be gained by implementing LTS Program activities over time.

INTRODUCTION

The Hanford Site is composed of approximately 1,518 km2 (586 mi2) in southeastern Washington State. The site consists of three major geographical components: the Hanford Reach National Monument, River Corridor and Central Plateau. Cleanup along the River Corridor began in 1995, under interim action records of decision (RODs) and CERCLA removal action authority. Part of the cleanup activities in the River Corridor includes the nine surplus plutonium production reactors located along the Columbia River in the River Corridor.
In 1989, representatives from the Washington State Department of Ecology (Ecology), the U.S. Environmental Protection Agency (EPA), and DOE (known as the Tri-Parties) signed the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement [TPA]) which defined the cleanup requirements for the Hanford Site. A major component of the cleanup efforts have focused on the River Corridor, where portions of active cleanup are now complete with remedial objectives achieved. The focus for these segments now shifts to the post cleanup phase, which is the responsibility of the Hanford LTS Program.

Hanford's LTS Program has evolved from a small informal process several years ago that was initially only responsible for defining and measuring Institutional Controls to a robust program that is responsible for a comprehensive transition process that shifts post-cleanup requirements from cleanup contractors. The program is responsible for ensuring post-cleanup requirements specified in the associated cleanup decision documents are met. Hanford's LTS Program manages the geographic areas for which active cleanup has been completed.

The transition process guides the shift of land and facility management responsibilities from a cleanup contractor to the LTS contractor. This process is initiated when the remedial objectives have been achieved for a discrete geographic area (segment of land). An Integrated Project Team (IPT) made up of DOE-RL, Site cleanup contractors and the Mission Support Contractor, Mission Support Alliance, LLC (MSA) - (currently responsible for LTS), coordinates the transition process. The team typically meets every other week to discuss the upcoming transitions and address new or pending issues. This team works to ensure that the cleanup activities, as-left conditions and any outstanding actions (i.e. final ROD requirements) are documented to capture current information for posterity. This information is transmitted to the mission support contractor, who will assume management responsibility upon completion of the transition. An integrated schedule is developed that identifies the activities to be performed to ensure a coordinated, seamless transition is achieved.

The DOE LTS Program established the Project Team (IPT) which included representatives from the DOE River Corridor Cleanup Program, the DOE Central Plateau Cleanup Project along with the three prime contractors, Washington Closure Hanford (WCH) the River Corridor cleanup contractor, CH2M HILL Plateau Remediation Company (CHPRC) the central plateau cleanup contractor and Mission Support Alliance (MSA) the mission support contractor.

The IPT was instrumental in reviewing and commenting on changes to the LTS Program Plan as it was being developed, as well as assisting in developing the Transition and Turnover Package (TTP) templates and criteria used for transition. This team established a collaborative approach in which all issues were identified and dealt with in an open and transparent manner.

The team members aggressively manage the schedule to establish a high level of confidence and hold individuals accountable for their assigned tasks. These actions have so far resulted in this high-performing team beating every deliverable to date and completing actions within the established budget.

A key component of the transition process is TTP. This package is used to document the condition of the land at transition and to convey all relevant information about the area to the mission support contractor. The TTP covers:

- Site Assessment
- Cleanup Activities
- As-left Conditions
- Remaining Regulatory Actions
- Resource Management
- Information Management
- Surveillance and Maintenance

The TTP includes a reference library of cleanup documentation and also includes information such as a list of remediated waste sites, remaining facilities, demolished facilities, remaining infrastructure and real estate agreements pertaining to the area. In addition, the TTP verifies and documents materials used to gather this information. Information gathering is a key component of the transition process. Obtaining information as interim cleanup actions are completed aids in the identification of requirements and remaining actions (e.g., surveillance and maintenance, institutional controls).

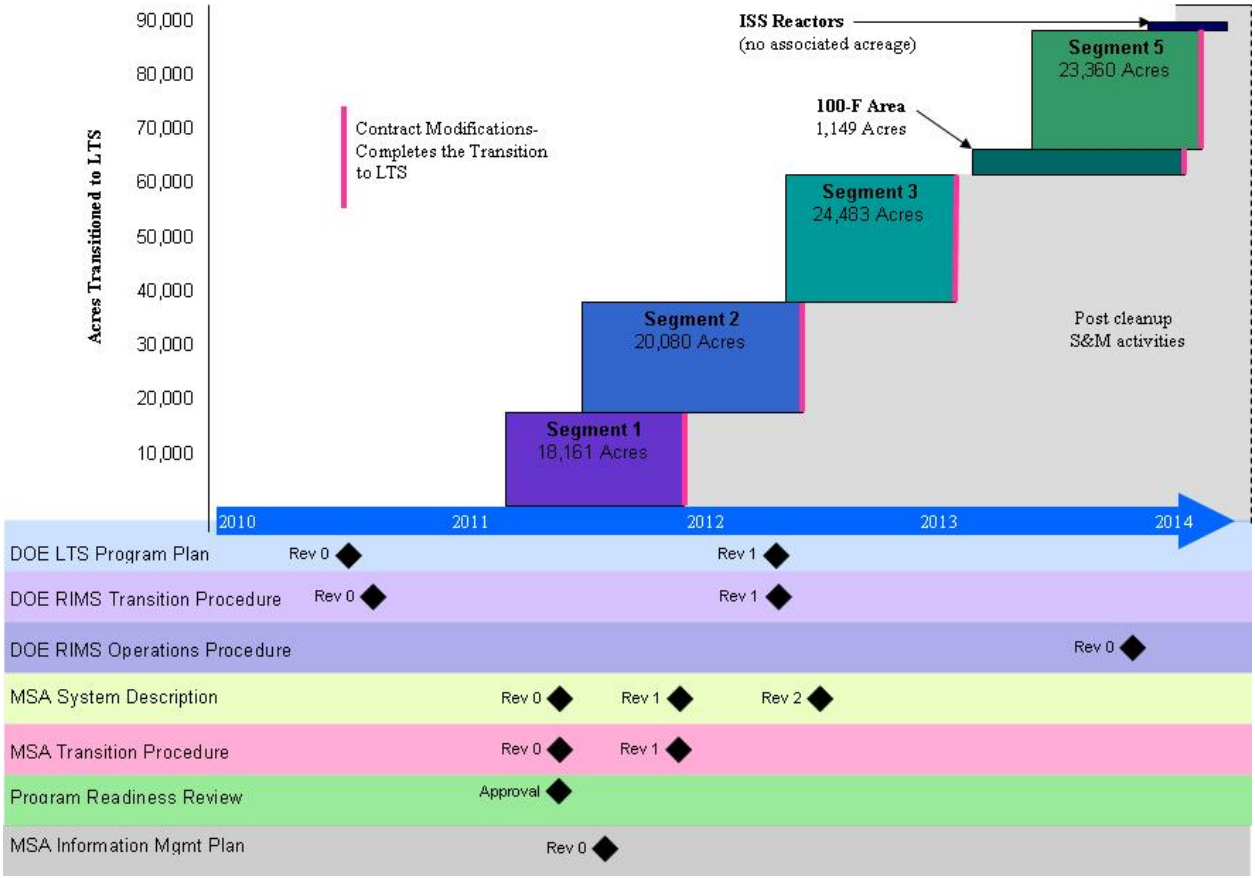
The TTP is prepared as a collaborative effort by the Site cleanup and mission support contractors who are responsible for completion of their respective sections. DOE-RL Subject Matter Experts (SMEs) review the TTP and verify that it is correct and complete. DOE-RL must approve the TTP prior to the transition taking place.

The formal TTP process is initiated once the remedial objectives for a segment have been achieved and the cleanup contractor provides the initial documentation to DOE and the mission support contractor. The mission support contractor integrates this information with additional information about the area (non-clean up information such as land agreements) into the TTP and delivers the final integrated TTP to DOE-RL. The completion of the final integrated TTP is accomplished in collaboration with the IPT to ensure the information is correct and address any questions that arise. The integrated TTP provides the necessary documentation to facilitate the contractual modification that transitions management responsibility from the cleanup contractor to the mission support contractor and completes the transition process. The Hanford LTS Program has successfully completed the transition of five segments in less than three years since the initiation of the first segment transition.

Figure 1 shows the schedule of the segments that have been successfully transitioned. This Figure also identifies the guidance documents that were developed as the LTS Program began. Review of the document schedule reveals how we were developing the program and defining the requirements at the same time we were initiating the initial transition process for Segment 1. Once the DOE LTS Program Plan was completed (August 2010), the mission support contractor, Mission Support Alliance (MSA), began completing its procedures as it initiated the transition process for Segment 1. Early in the process (July 2011), MSA successfully lead the

LTS Program and IPT through a DOE-RL readiness review that demonstrated their understanding of the program requirements and proved their ability to successfully execute the transition and post cleanup Surveillance and Maintenance (S&M) activities. A lessons learned workshop conducted immediately after the Segment 1 transition, provided valuable insight to the processes and facilitated the effective revision of program documents to reflect identified areas for improvement.

Figure 1 – LTS Program Schedule of Transitions and Guidance Documents



EVOLVING PROGRAM COMPONENTS

As the Hanford LTS Program grows and matures, the team also is challenged to evolve. Change in task mix, addition of new scope elements and prioritization of tasks based on funding constraints are evaluated regularly. New ideas such as the cocooned reactor transition are given due consideration and if found having merit are moved forward. New S&M tasks such as radiological monitoring require new equipment and the staff to operate. These challenges are met head on and quickly resolved in a manner intended to keep the program moving forward.

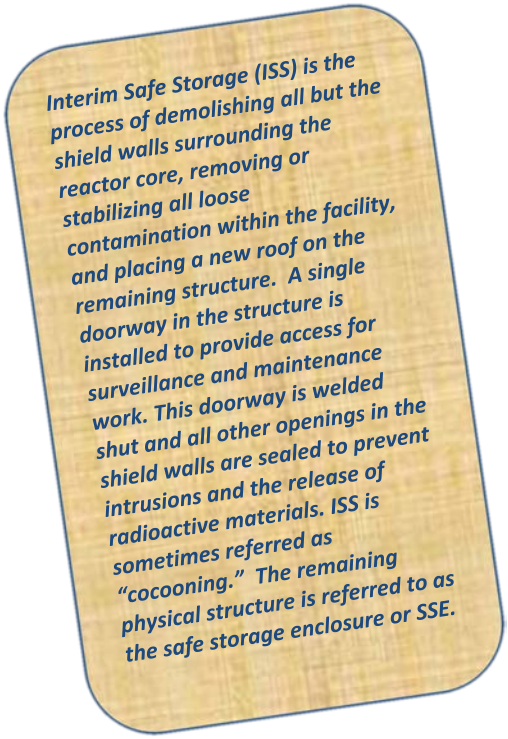
One of the current challenges facing the LTS Program is the evolution of tasks. Up to this point, the program primarily focused on transitioning land and facilities from the clean-up contractor to the LTS Program. FY14 marks a significant crossroad in that focus. The Hanford LTS Program now has nearly 90,000 acres and over 200 waste sites and one cocooned reactor; and in early 2014, will be accepting 5 more cocooned reactors. Those lands and facilities all require extensive S&M activities in 2015. This change in program requirements (transition documentation to S&M execution) drives a similar transition in the LTS team skill mix. The mission support contractor who is responsible for managing these requirements must adjust to the LTS team.

While the LTS initial team focused on building the program, preparing transition documents and gathering reference documentation while the cleanup contractor was still around, the transformation into S&M execution requires a more field orientated skill mix. The S&M requirement for the cocooned reactors is one of the key drivers for the change in the program as it transitions into an operational phase. In the meantime, it will be important for the LTS Program to balance the need so not to lose the expertise that's already been developed, as it moves into a new role, in times of fiscal challenges.

ISS REACTOR TRANSITION

Five of the surplus plutonium production reactors that have been put into Interim Safe Storage (ISS) or cocooned, are being transitioned to the Hanford LTS Program under the established transition process using a TTP. At the current time only the cocooned reactors (the physical structure) and not the surrounding land will be transferred. The first cocooned reactor was transitioned as part of the 100-F Area Segment (August 2013) and represented a "first" in the DOE complex. The lessons learned on the 100-F Area transition have been incorporated into the ISS TTP and the process initiated with little fanfare and a very aggressive schedule. The ISS transition should be complete in early 2014. The decision to transition just the physical facilities of the reactors was made to support the exit strategy of the closure contractor, and better align the continuing surveillance and maintenance activities under one contract that will generate programmatic efficiencies and result in cost savings to DOE.

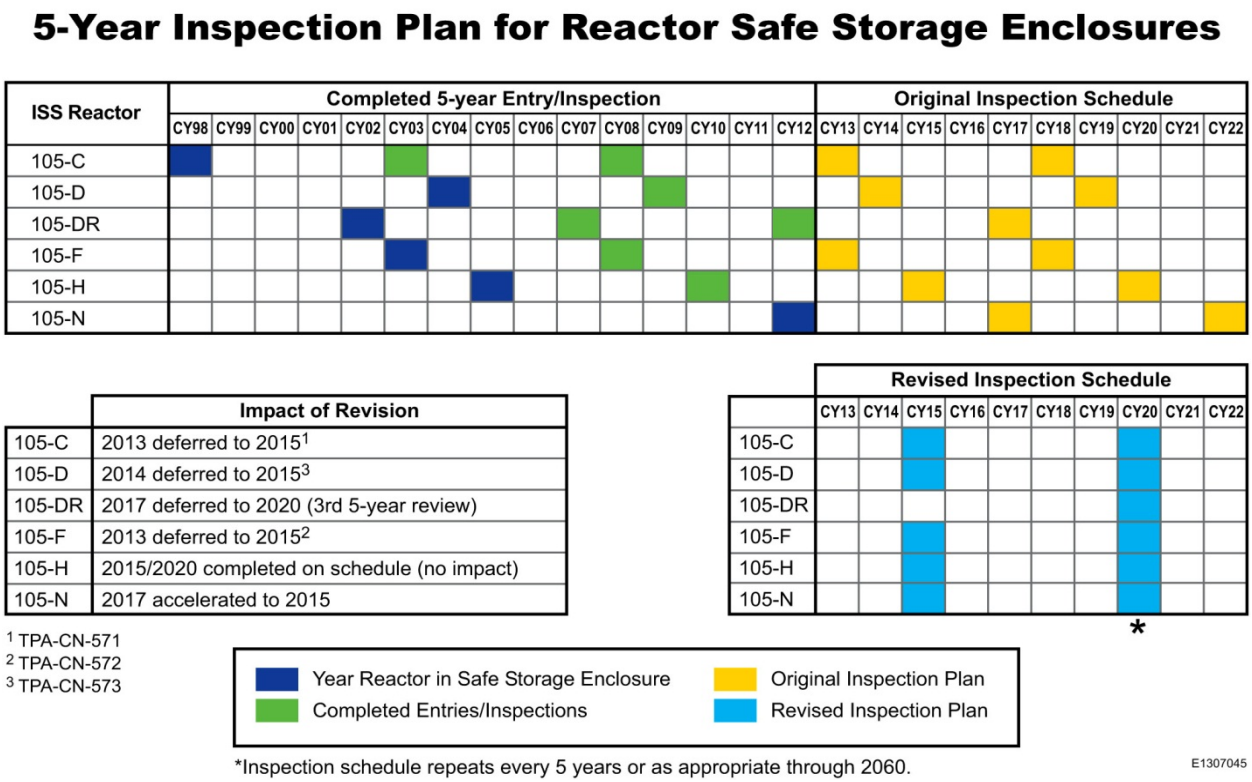
Cleanup activities associated with the cocooned reactors have included partial demolition of ancillary structures and facilities to shrink the reactor building footprint back to the shield walls followed by construction of a Safe Storage Enclosures (SSE) to prevent deterioration and release of contamination. This process resulted in an ISS condition pending final disposition of the reactors in the future. The initial plan was to transition the cocooned reactors over a three-year period, through five separate contract actions and transition plans. As the team looked forward, it recognized several efficiencies that could be realized if the cocooned reactors were



transitioned to the LTS Program in a single TTP as soon as possible. With the construction of the SSEs completed on these five cocooned reactors, the opportunity to transition them to the LTS Program was explored.

The idea of a cocooned reactor transition was first proposed to DOE-RL in August 2012. The mission support contractor had developed and submitted to DOE-RL a LTS Baseline for the period between 2013 and 2060. In that Baseline, the mission support contractor proposed an alignment of the 5-year recurring S&M activities required for the six cocooned reactors into a single year. Subsequent discussions in November 2012 accelerated that alignment to 2015 as shown in Figure 2 below. One key action that was needed to gain some of the potential efficiencies that was getting the cocooned reactors into the LTS Program early in order to meet this 2015 alignment.

Figure 2 – Re-Alignment of 5-Year Cocooned Reactor Inspections



In the spring of 2013, DOE obtained agreement on the change in the S&M schedule and published the Tri Party Agreement change notices documenting the regulatory approval of the realignment. At that time, the cleanup contractor initiated preparing the transition documentation, while working closely with the mission support contractor to complete the documentation. The mission support contractor then completed the integrated TTP and submitted it to DOE-RL in October 2013. The approval for the TTP is anticipated to be completed in December 2013. The contractual modification to transition the reactors from cleanup contractor to the mission support contractor will follow.

100-D/DR Reactors

The successful transition of the cocooned reactor to LTS was possible through:

Focused IPT: This aggressive action was accomplished through a focused Integrated Project Team. The team met weekly to discuss and resolve the various issues including contract changes, which allowed for early transition of the cocooned reactors from the cleanup contractor to mission support contractor. The IPT also provided periodic briefings to DOE-RL and contractor management staff to ensure alignment of all involved parties. The result was very few surprises and no showstoppers.

Flexible LTS Program Plan: While the DOE-RL LTS Program Plan (DOE/RL-2010-35 rev 1) defines the requirements of the program and outlines the actions necessary to transition land and facilities from the cleanup contractors to the LTS Program, it was designed to be flexible enough to handle unknowns and mid-stream changes. The addition of the ISS TTP is one example. When the LTS Program was initially envisioned, the cocooned reactors would have been transitioned (over a three to four year period) together with the large land parcels associated with each reactor. As described above, the LTS Program recognized the economic and management efficiencies associated with an early transition. The idea was socialized with the appropriate entities including the respective contracting officers and regulatory agencies. As the team briefed the various entities involved, the merit of the idea rapidly gained recognition. The LTS Program, along with the IPT agreed to move forward under the existing program plan with no immediate contract changes and no program document changes in order to act quickly. Upon completion of the transition, the mission support contractor will request an equitable adjustment to manage all six of the cocooned reactors at once. As a change request would have been submitted under the initial approach as well, for each separate transition requiring a separate request. So by transitioning all of the cocooned reactors at one time, the potential number of requests for equitable adjustments was minimized.

Contractor Flexibility: Transitioning post closure S&M activities for cocooned reactors from the Site cleanup contractor to the mission support contractor in an accelerated fashion under separate contract actions allows Washington Closure Hanford (WCH) to incrementally closeout portions of their contract through time, minimizing contract closeout after the period of performance is expired. Because WCH's contract expires in 2015, all parties are motivated to ensure smooth transition that will seamlessly transfer management responsibilities for land and waste sites and minimize contract changes.

DOE-RL and their contractors went from concept to execution, transitioning six cocooned nuclear reactors from clean-up to LTS, in just over 1 years' time.

The focus on efficient execution and continuous advancement of the LTS Program, together with the flexibility built into the fabric of the guiding documents provide an environment that fosters new ideas and continually looks for ways to do more with less. Examples of key S&M activities that have been optimized are described below.

105-F Reactor

Reactor Surveillance and Maintenance

Assessments of cocooned reactors are conducted to ensure that the reactor is maintained in a safe, environmentally secure posture until final disposition. The cocooned reactors are assessed according to the S&M Plan for each cocooned reactor safe storage enclosure. The assessment requirements are identified as part of the transition process and documented in the ISS TTP. The mission support contractor's S&M plan is one attachment to the TTP and is updated to include the assessment requirement. The alignment of these inspections discussed previously provides the opportunity to exploit efficiencies gained through repetition.

The assessment requirement includes performing an inspection of the external areas annually, performing an inspection of the internal areas every 5 years, and remotely monitoring temperature and water levels inside the reactors. Specifically, the assessment activities include the following:

1. Annual assessment includes a visual inspection conducted to evaluate obvious deterioration of the roof or exterior walls and general exterior housekeeping items, including observation of the locks on the doors. The annual assessment also includes a radiological survey of the reactor exterior and around the reactor base as required by 10 CFR 835, “Occupational Radiation Protection.”
2. Five-Year Assessment includes the following activities:
   - Determine the integrity of the structural components including the roof area and the weather protection systems
   - Determine if repairs are needed to correct deficiencies
   - Determine the integrity of barriers and posting
   - Conduct radiological surveys along a prescribed route to assess changed conditions
   - Removal of hazardous substances
   - Required maintenance of monitoring for temperature and water level monitoring instrumentation.
3. Remote monitoring involves monthly monitoring of temperature and water level inside the safe storage enclosure at various elevations.

Radiological Controls

Monitoring of closed waste sites with residual radiologic activity above naturally occurring background is conducted under 10 CFR 835 Occupational Radiation Protection. The mission support contractor recently procured radiological instrumentation and a new all-terrain survey vehicle to efficiently perform this required monitoring. The system provides low-level detection for cesium-137 surface activity, a radionuclide of concern for much of Hanford. The resulting survey data, along with soil sampling results, verify that radiological remediation areas remain stable while under the LTS Program and demonstrate the remedial cleanup actions remain effective. These actions, in conjunction with other determinations potentially would allow selected land areas on the Hanford Site to be made available for other uses, including commercial development, and possible to free release (without land use restrictions).

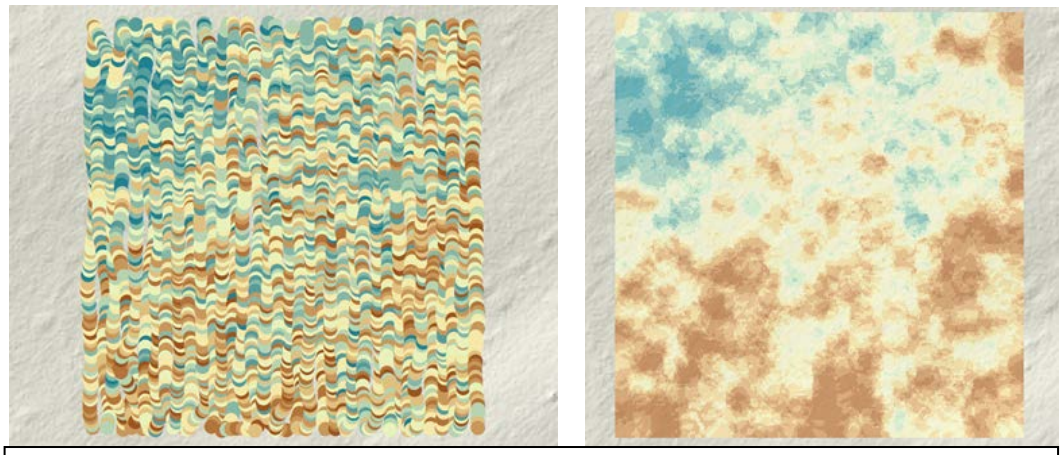
Initially designed to perform aircraft surveys for radioactive mineral exploration, the same

The mobile gamma spectrometer is mounted on a Polaris all-terrain vehicle.

spectrometer system is also used by homeland security and emergency response agencies. The system software provides both data collection and analysis functions in real-time and has an identification library for various radionuclides.

GPS capability allows operators to follow preselected survey routes that display as overlays on aerial photos or topographical map images on the system's computer. The system combines

GPS and gamma energy spectral data from the surveys will be used for subsequent analyses and records. Using the GPS data, analysts can prepare detailed maps showing the intensity of the gamma radiation from various radionuclides over the areas surveyed. Selected areas will be surveyed annually to evaluate potential change with time. Examples of raw and processed data from the system are shown below.



Mobile Sodium-Iodide Gamma Spectrometer raw output (left) and ordinary kriging of count rate (right) - approximate 2 acre parcel.

BENCHMARKING

During initial LTS Program planning and development of the DOE LTS Program Plan, the Hanford LTS Program actively consulted with LM to LM to identify their best practices. The Hanford LTS Program Plan (DOE-RL-2010-35) was written to incorporate many of LM LTS concepts. The program continues to evolve and benchmarking, in particular, with LM is a key aspect. Since Hanford's LTS Program began transitioning land and facilities in 2011, the teams have found numerous opportunities to share information and best practices. One of the first collaborative efforts involved working with the LM to define a numbering system and organization for real estate records that that aligns with LMs system. As the real estate records were digitized, they were organized and numbered using this approach. An effort is currently underway to digitize the acquisition records for the Site using the same numbering system. The initial collaborations have led to other opportunities including one that resulted in the pilot project discussed in detail below. In 2013, Hanford LTS Program hosted two senior LM executives (Senior Advisor for Office of Site Operations and a Site Manager) to see the program first hand and the progress that was being made along with discussing further collaboration efforts. They were able to participate in a data system brainstorming and development workshop. These collaborative efforts between LM and LTS Hanford ensure the programs are aligned and that

the LTS data being collected and stored will be useable to LM when they ultimately take ownership of the Hanford Site.

Pilot Project: Early Transition of Hanford LTS Records to LM. LTS identified a 1000 box collection of records flagged as LTS for the pilot project. RL will develop a Hanford Site LTS Records Transition Plan by the end of this calendar year. This plan will identify the process and the coordination efforts between EM and LM. With the concurrence of the Hanford Site LTS Records Transition Plan, the physical transfer of the 1000 boxes identified for the pilot will complete on or before March 31, 2014. With the early transition the custody, ownership, management and funding of the records will be transferred from EM to LM.

Records Management: Records management activities have evolved from the development of the Hanford Site Long-Term Stewardship Information Management Program Plan (HNF-50340 Rev.1) which describes the planning, responsibilities and implementation of the Hanford LTS Information Management Program. The record management actions are key to the transition process and include gathering references cited in the TTP. Documents are identified, stored, and protected in approved records repositories; specifically in the approved electronic repository. The documents are indexed and assigned a National Archives and Records Administration (NARA) retention schedule before being stored. Records are captured in a Records Identification Table (RIT) which indicates the following information:

- Description of records
- TTP sections where the record was referenced
- Location of record: Typically IDMS electronic records.
- Evaluate records for public or limited clearance

FUTURE OF LTS AT HANFORD

At some point in the future, the entirety of the Hanford Site, under DOE ownership, will likely be managed by DOE's Legacy Management program. That is to say, an LTS Program will manage the entire DOE portion of the Hanford Site. So the challenge today is to continue building the foundation of a robust working program that will continue to grow and evolve as more of the site is cleaned and transitioned to LTS. We want a program that is flexible enough to handle the myriad of changes to come and that that is nimble enough to recognize new ways of dealing with old problems while focusing on actions to move the program forward.

Communication: Throughout the LTS Program development, lessons learned and benchmarking efforts made clear the importance of feedback from stakeholders, including: regulatory agencies, Tribal Nations and advisory boards. Workshops and presentations to these groups have provided valuable information and insights to the LTS Program. Additionally, as the program evolves, more and more information is being made available through the LTS website that was launched in December 2012. The site provides links to key public documents and summary data of the transitions into the LTS Program. Fact sheets provide answers to specific questions about the program and other links provide information on the background, management and execution of the Hanford LTS Program.

http://www.hanford.gov/page.cfm/longtermstewardship

CONCLUSION

As Hanford's LTS Program continues to evolve, it will be important to retain the expertise that's already been developed, while at the same time, moving into a new execution phase of the program, especially in times of fiscal challenges. The new phase includes radiological monitoring of closed waste sites, and cocooned reactor entries as well as a series of assessments.

Successful transition of the cocooned reactors is a tribute to the flexibility of the program and contractors, as well as a focused integrated project team. The decision to transition just the physical reactor facilities supported the exit strategy of the closure contractor, and better aligned the continuing surveillance and maintenance activities under one contract. This alignment not only generated programmatic efficiencies, but also resulted in significant cost savings to DOE.

As the program evolves, partnering with LM and stakeholders will continue to produce a program that is flexible enough to handle the myriad of changes to come; and a program that that is nimble enough to recognize new ways of dealing with old problems while focusing on actions to move the program forward.

REFERENCES

DOE/RL-2010-35 Rev 1 *Hanford Long-Term Stewardship Program Plan*