

LESSONS LEARNED FROM INDEPENDENT
VERIFICATION ACTIVITIES

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Statement:

In 2008, the Oak Ridge Institute for Science and Education (ORISE) prepared a Lessons Learned document summarizing recent independent verification activities performed at various DOE sites in response to a report released by the Government Accountability Office (GAO) entitled "Nuclear Cleanup of Rocky Flats-DOE Can Use Lessons Learned to Improve Oversight of Other Sites' Cleanup Activities (GAO 2006)." The Lessons Learned document is a compilation of the major issues that were observed and documented by ORISE during independent verification activities performed at the Argonne National Laboratory, the Ashtabula Closure Project, the Battelle Columbus Closure Project, the Brookhaven National Laboratory, the East Tennessee Technology Park, the Fernald Closure Project, the Miamisburg Closure Project (Mound), and the Rocky Flats Environmental Technology Site. ORISE serves as the primary independent (third party) verification contractor for DOE Decontamination and Decommissioning (D&D) projects, using technical expertise to rigorously evaluate and verify that previously contaminated areas are in compliance with federal criteria for release.

Discussion:

Numerous instances of improper releases of contaminated property have been averted through independent verification efforts. The DOE and NRC have determined that independent verification is a cost-effective way to provide assurance that a site is successfully remediated to the established cleanup criteria. The DOE good practice policy states "As part of their regulatory oversight, DOE site personnel should establish independent verification programs to confirm that survey and evaluation processes are in place and are being properly implemented, and that property released from DOE control meets authorized limits... A well-implemented and documented independent verification program helps demonstrate that DOE property releases are credible and in compliance with authorized limits established for the property." (See Reference 1)

Independent verification should be integrated into the planning stages rather than after the cleanup contractor has completed the remediation work and demobilized from the site. The authorized limits or radiological release criteria should be established prior to CD-2, and radiological survey plans should be approved and in place prior to CD-3 in order to coordinate and sequence work with the contractor's schedule. Authorized limits and release criteria must be in compliance with DOE O 458.1, *Radiation Protection of the Public and the Environment*.

While the lessons learned report prepared by ORISE focused specifically on environmental remediation and facility D&D projects, independent verification is important for projects of all types, including construction and facility modifications. These activities can occur at all stages of the project, from design, construction, commissioning, and start-up. These independent verification activities can be performed by independent contractors, government agencies, or in some cases internally by another department of the prime contractor.

A well-implemented and thorough independent verification program for a site requires independent verification involvement throughout the project's duration. Independent verification is not a substitute for routine contractor quality assurance; however, these activities often improve the contractor's performance and final status survey (FSS) procedures and results while increasing the probability of complete remediation and documentation. ORISE is independent of the site contractor and reports the results regardless of the outcome. When ORISE is able to validate the contractor's methods and FSS results against the requirements and commitments, public credibility concerning DOE operations and cleanup objectives are greatly enhanced.

Analysis:

There are some patterns among different sites of both best practices and lessons learned. The best practices includes (1) the early and clear identification of authorized limits (or other radiological release criteria), (2) the early development of radiological survey plans for demonstrating compliance with the authorized limits, and (3) the early engagement of independent verification personnel, enabling problems to be addressed early without significant impact to budget and schedule, and (4) the need for upfront planning to include the independent verification activities as part of the project execution and at critical inspection points during the project cycle.

Actions:

The ORISE report identified three major Lessons Learned for project teams to utilize when executing environmental cleanup projects:

1. The optimum solution is for authorized limits or other radiological release criteria to be identified early, before CD-2.
2. Radiological survey plans need to be approved and in place early, before CD-3 and then properly executed.
3. Independent verification activities need to be planned early in the project, before CD-3, before significant time and cost are committed.

Critical Decision(s): CD-0, CD-1, CD-2, CD-3, CD-4

Facility Type(s): Environmental Remediation, Facility D&D

Work Function(s): Independent Verification

Technical Discipline(s): N/A



In support of the project, ORISE is performing characterization surveys at Oak Ridge National Laboratory (ORNL) and independent verification activities at ORNL, East Tennessee Technology Park (ETTP) and the Y-12 National Security Complex. ORISE's \$8.5 million scope of work involves support to DOE in the accelerated cleanup and disposition of deteriorated facilities that will also pave the way for greater footprint reduction across the reservation. (Retrieved May 6, 2014 from <http://orise.ornl.gov/images/leav/10.1.2.2-arra.jpg>)

REFERENCES:

1. U.S. Department of Energy. Environment, Safety and Health Bulletin: A Guide to Good Practices for the Control and Release of Property. DOE/EH-0697. Washington, D.C. July 2006. (https://www.ornl.gov/dsdc/Resources/guidance/ESH_Property_Bulletin_final.pdf)
2. Bailey, E.N., prepared for the U.S. Department of Energy. Lessons Learned from Independent Verification Activities. DCN 0476-TR-02-0. Oak Ridge, Tennessee, July 2008. (<http://www.ornl.gov/documents/ivhp/survey-projects/lessons-learned-from-independent-verification-activities.pdf>)