



## Department of Energy

Oak Ridge Office  
P.O. Box 2001  
Oak Ridge, Tennessee 37831—

August 4, 2008

Mr. Lance Mezga, Chairman  
Oak Ridge Site Specific Advisory Board  
Post Office Box 2001  
Oak Ridge, Tennessee 37830

Dear Mr. Mezga:

### **RESPONSE TO RECOMMENDATION 165: RECOMMENDATION ON CONDUCTING FUTURE VERIFICATIONS OF CLEANUP**

Thank you for your recent recommendation concerning independent verification of cleanup activities at Department of Energy (DOE) facilities. Enclosed please find guidance issued by DOE Headquarters on this subject. In summary, the guidance directs field offices to assure independent verification for all property to be transferred to the private sector. Independent verification at Oak Ridge facilities will be conducted in full compliance with this guidance. The adequacy of cleanup at remediated properties not planned for transfer will still be subject to external regulatory oversight by the Environmental Protection Agency and the Tennessee Department of Environment and Conservation. Independent verifications of these sites may occur prior to the transfer of these remediated areas to the other DOE programs located on the Reservation for long term stewardship.

If you have any questions concerning this subject please feel free to contact me at 576-0742 or David Adler at 576-4094.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen H. McCracken".

Stephen H. McCracken  
Assistant Manager for  
Environmental Management

Enclosure

cc w/enclosure:  
LOC

cc w/o enclosure:  
Melissa Nielson, EM-13, FORS  
Constance Jones, EPA, Region 4  
John Owsley, TDEC, Oak Ridge

# memorandum

DATE June 15, 2007

REPLY

ATTN OF EM-23 (W. A. Williams, 301-903-8149)

SUBJECT Clarification of Independent Verification and Radiological Release Requirements


TO Distribution

The purpose of this memorandum is to clarify the policy for independent verification of cleanup, as well as for the release of property. The U.S. Government Accountability Office Report to Congressional Requesters entitled "Nuclear Cleanup of Rocky Flats: DOE Can Use Lessons Learned to Improve Oversight of Other Sites' Cleanup Activities" (GAO-06-352), July 2006, recommended that the Department of Energy (DOE) "clarify guidance on whether and how to conduct cleanup verification activities."

Independent verification of cleanup is required to support Departmental decisions on release of property from radiological control and to confirm that any property transferred from Environmental Management (EM) control to another entity meets the approved criteria for release or transfer. The attachments describe, in general, the needed actions by the sites and contractors as well as the expectations and products for sites, contractors, and EM headquarters. We also received some valuable input from the Energy Facility Contractors Group (EFCOG), and I am pleased to acknowledge this valuable assistance.

It is essential that the requirements clarified in this memorandum are implemented to ensure EM mission priorities are satisfactorily met. Mr. Mark Gilbertson, Deputy Assistant Secretary, Office of Engineering and Technology (EM-20), has the lead in supporting you in meeting independent verification requirements, as well as in developing authorized limits for real and personal property. Please contact Ms. Sandra Waisley, Director of D&D and Facility Engineering, at (202) 586-3087, if you have any questions regarding this memorandum.

In addition, the Office of Nuclear Safety and Environment (HS-20) is available to provide technical assistance in reviewing authorized limits for real and personal property during their development and prior to submission for approvals.

  
Charles E. Anderson  
Principal Deputy Assistant Secretary for  
Environmental Management

Attachments (3)

**DISTRIBUTION:**

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## **Clarification of Independent Verification and Radiological Release Requirements**

### ***Contractual Bases:***

The contractual bases for independent verification include the radiation protection requirements of DOE O 5400.5 and 10 CFR 835, the environmental management goals of DOE O 450.1 ("Checking"), and the contractor oversight requirements in DOE P 226.1, DOE O 226.1, and 10 CFR 830.122. These DOE requirements are referenced in most DOE contracts.

### ***Conduct of Independent Verification:***

The independent verification of physical completion of cleanup for *real* property shall be conducted by an organization separate from immediate Departmental line management for the release or remediation. It should be accomplished prior to demobilization of the cleanup contractor(s). This allows for cost-effective resolution of issues that may arise during the verification process.

Independent verification of processes, procedures, equipment, and sample radiological measurements is required for release of *personal* property. The verification of a satisfactory radiological program for release of personal property by an organization, separate from immediate line management for the release, ensures that any problems with personal property being released can be promptly addressed to preclude release of contaminated personal property.

In addition, verification of a satisfactory radiological program for waste stream characterization is appropriate for meeting the waste acceptance criteria at the accepted waste disposal sites and should be accomplished by an organization, separate from immediate line management for the shipment of the material. Verification of waste through the quality assurance program of the receiving facility is acceptable.

### ***Authorized Limits and Other Cleanup Requirements:***

Use of the Resource Conservation and Recovery Act (RCRA) Corrective Action (CA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) processes do not relieve the Department of responsibilities set forth in the Atomic Energy Act, DOE O 5400.5, "Radiation Protection of the Public and the Environment," and 10 CFR 835, "Occupational Radiation Protection." At the same time, cleanup or radiological release criteria approved under those regulatory regimes can be submitted for approval as authorized limits, and vice versa.

The best approach to addressing the multiple regulatory issues is to request authorized limits under DOE O 5400.5 and any needed exceptions to 10 CFR 835 during the remedy review process at the proposed plan phase. Further, the approved authorized limits and/or exceptions should be proposed as an ARAR if site cleanup is being conducted under CERCLA or RCRA CA. Since RCRA does not apply to source, special nuclear, or byproduct material (as defined by the Atomic Energy Act, as amended), there is minimal conflict between RCRA radiological release criteria and the Department's radiological release criteria under DOE 5400.5.

To the extent that DOE site management has determined (and documented) that the CERCLA Record of Decision (ROD) satisfies DOE O 5400.5 requirements, the documentation can be submitted to EM (the responsible program office) for approval. Similarly, the CERCLA ROD could be submitted to the Office of Health, Safety, and Security (HS) for approval as an exception to 10 CFR 835. However, for both DOE O 5400.5 and 10 CFR 835, this approach incurs significant program delay risk if the ROD does not adequately address radiological release or protection issues and cannot be approved by EM or HS.

DOE O 5400.5 regulates the release of property (both real and personal) through the development, approval, and use of "authorized limits." The following discussion provides the specific process leading to authorized limits for the radiological release of property. At sites where cleanup is conducted under CERCLA or RCRA, the development and approval of authorized limits under DOE 5400.5 should be conducted in conjunction with other relevant regulatory requirements, as discussed above.

***Authorized Limits for Surfaces (Surface Release Guidelines):***

Generic authorized limits for residual radioactivity on surfaces of both real and personal property are provided in Figure IV-1 of DOE O 5400.5. These limits are further supplemented by DOE G 441.1-xx. The surface release limits as contained in DOE O 5400.5 and DOE G 441.1-xx may be used without further headquarters approval; authorized limits using surface activity guidelines are approved by DOE field elements. However, consideration should be given to achieving lower limits in keeping with the Department's commitment to keep radiation exposures as low as reasonably achievable (ALARA). This consideration should be evaluated with the mindset for minimizing additional waste generation if lower limits are set. The Authorized Limits for Surfaces (Surface Release Guidelines) should also be reviewed in relation to the decision for disposal as radioactive waste versus radiological release of waste to sanitary landfills.

As discussed above, when cleanup is conducted under RCRA CA or CERCLA, the best approach to addressing the multiple regulatory issues is to request authorized limits under DOE O 5400.5 and any needed exceptions to 10 CFR 835 during the remedy review process at the proposed plan phase. Further, the approved authorized limits and/or exceptions should be proposed as an ARAR if site cleanup is being conducted under CERCLA or RCRA. Since RCRA does not apply to source, special nuclear, or byproduct material (as defined by the Atomic Energy Act, as amended), there is minimal conflict between RCRA radiological release criteria and the Department's radiological release criteria under DOE 5400.5.

***Authorized Limits for Soil (Soil Cleanup Criteria):***

DOE O 5400.5 provides generic authorized limits for residual radioactivity from radium and thorium in soil. In the case of all other radionuclides, the authorized limits must be developed by the field office and approved by the Deputy Assistant Secretary for Engineering and Technology in the Office of Environmental Management (EM-20) in accordance with the approval requirements set forth in DOE O 5400.5, Chapter IV, Sections 5(a) and 7. Development of authorized limits begins with a dose assessment to demonstrate that proposed levels of residual radioactivity meet the radiation dose requirements of DOE O 5400.5. Tools

such as the Department's Residual Radioactive (RESRAD) family of computer codes and associated manuals are available to assist in these analyses. Then an ALARA analysis evaluates the costs and benefits of establishing a lower authorized limit. The field office should forward the dose calculations and ALARA analysis with a brief memorandum to EM-20 requesting approval of the recommended limits.

Authorized limits should be developed on a site-wide basis or for large sub-units of a site, rather than for individual impacted areas. It is necessary to have an authorized unit for the radiological release of soil areas, including buffer areas where there is little or no likelihood of radiological impacts. Radiological survey guidance provides the appropriate steps for determining whether or not land areas have been impacted. The development of authorized limits facilitates performing a radiological survey in these areas where it is necessary or where the impacts are thought to be less than the authorized limits.

As discussed above, when cleanup is conducted under RCRA CA or CERCLA, the best approach to addressing the multiple regulatory issues is to request authorized limits under DOE O 5400.5 and any needed exceptions to 10 CFR 835 during the remedy review process at the proposed plan phase. Further, the approved authorized limits and/or exceptions should be proposed as an ARAR if site cleanup is being conducted under CERCLA or RCRA. Since RCRA does not apply to source, special nuclear, or byproduct material (as defined by the Atomic Energy Act, as amended), there is minimal conflict between RCRA radiological release criteria and the Department's radiological release criteria under DOE 5400.5.

***Alternative Authorized Limits for Real Property Other than Soil (Structures):***

The surface guidelines in DOE O 5400.5, Figure IV-1, can be adopted for use as authorized limits for release of property containing residual radioactive material on surfaces subject to an ALARA review (which can generally be a qualitative review). However, although protective, DOE O 5400.5, Figure IV-1, surface guidelines are not dose/risk-based. Potential annual doses (depending on the scenario and radionuclide) can vary from a few millirem to very small fractions of a millirem. As an alternative, the field office may develop and implement dose-based authorized limits. Possible benefits include improved measurability and performance, tailored protocols more applicable to the project or conditions and in many cases, cost savings. The process for development and approval of alternative authorized limits for real property is the same as discussed above for soil. A dose assessment is used to demonstrate that radiation dose requirements have been met, and an ALARA analysis is prepared. The field office should forward the dose calculations and ALARA analysis with a brief memorandum to EM-20 requesting approval of the recommended limits (See DOE O 5400.5, Chapter IV, Sections 5(a) and 7).

As discussed above, when cleanup is conducted under RCRA CA or CERCLA, the best approach to addressing the multiple regulatory issues is to request authorized limits under DOE O 5400.5 and any needed exceptions to 10 CFR 835 during the remedy review process at the proposed plan phase. Further, the approved authorized limits and/or exceptions should be proposed as an ARAR if site cleanup is being conducted under CERCLA or RCRA. Since RCRA does not apply to source, special nuclear, or byproduct material (as defined by the

Atomic Energy Act, as amended), there is minimal conflict between RCRA radiological release criteria and the Department's radiological release criteria under DOE 5400.5.

#### ***Supplemental Limits:***

Variances to normal procedures or requirements are sometimes warranted. DOE O 5400.5 permits variances to authorized limits for real property in the form of "Supplemental Limits." Supplemental limits are most appropriate for restricted releases of property or individual tracts of land where the land use assumptions used for the site are implausible or impossible. A request for Supplemental Limits must be from the field office manager to EM-20 for approval (See DOE O 5400.5, Chapter IV, Sections 5(a) and 7).

#### ***Alternative Authorized Limits for Personal Property:***

Personal property includes materials, equipment, soil in drums, waste in containers or truck beds, and privately owned property (e.g., employee clothing, jewelry, briefcases). The generic authorized limits for radiological release of personal property are contained in Figure IV-1, and are referenced in Chapter II of DOE O 5400.5. The text states that materials with radioactivity in depth can be released only with the approval of the Assistant Secretary for Environment, Safety and Health (EH-1). Please note that in 2006 these EH-1 functions were transferred to the Department's Chief Health, Safety and Security Officer (HS-1). EH established an expedited process in which field office managers could develop authorized limits for the release of personal property, subject to the conditions in DOE G 441.1-xx. The field office manager must provide a copy of the documentation supporting the authorized limits to the Office of Nuclear Safety and Environment (HS-20, formerly EH-41) and to EM-20, for review in advance of the authorized limits taking effect. If proposed authorized limits for radiological release of personal property do not meet the conditions specified in DOE G 441.1-xx, then limits will be approved by HS-1 after review by the HS and EM staffs.

Authorized limits have been used by some sites to release waste materials from radiological areas to sanitary landfills. This restricted release avoids the use of more valuable and space limited radioactive waste landfills, disposes of the material at lower cost, and in many cases reduces transportation costs and risks while still protecting the public and environment. Similarly, some wastes with very low radioactivity have been safely disposed in a RCRA subtitle C waste landfill, rather than in a mixed waste facility because they have been determined not to require radiological control under the Atomic Energy Act.

#### ***Implementation of Authorized Limits:***

Radiological surveys are used to implement authorized limits. DOE field offices must approve the radiological survey procedures used at the Department's sites. Further, the approval should establish that the survey methods are adequate to determine whether or not the authorized limits have been met. One useful guidance document for radiological surveys of real property is the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), which was prepared by an interagency group. MARSSIM also provides guidance on determining whether particular real property areas are impacted by radiological activities. In impacted areas, MARSSIM utilizes a graded approach in which radiological survey activities are concentrated in areas most impacted by residual radioactivity. Revision 1 of MARSSIM was issued in August 2000 as DOE report DOE/EH-0624, Rev. 1. Requests for authorized limits should

include a discussion of radiological survey methods (MARSSIM or some other approach) which will be used to implement the limits.

There are several organizations with independent verification capabilities that can provide services to the sites. These organizations, however, should be independent of the cleanup contractor and the field office line management. Further, no organizations should be considered for independent verification work if they are performing (or competed for) radiological survey services at a DOE site as a contractor or subcontractor. It is important that the organization providing independent verification be completely independent from contractors providing cleanup services and the DOE field management.

***Program Management Considerations:***

DOE O 413.3A, "Program and Project Management for the Acquisition of Capital Assets," defines the Critical Decisions (CD) for projects. Approval of CD-4 will not be granted until the following items (for each major contract deliverable) are provided to and validated by EM Headquarters Chief Operating Officer:

- (1) A written evaluation of the adequacy of the independent verification and field oversight program;
- (2) Completed punch list items for acceptance of physical completion;
- (3) Final Certification Package (FCP) and Addendum Declaration of Project Physical Completion;
- (4) DOE comments from review of the FCP and the resolution of those comments; and
- (5) DOE formal acceptance of Closure Services' FCP.

***Additional Information and Resources:***

Attachment 2, "Control and Release of Property: A Guide to Good Practices for the Control and Release of Property," Environment, Safety and Health (EH) bulletin, DOE/EH-0697 (now the Office of Health, Safety and Security (HS)), highlights Departmental policy and guidance relevant to the control and release of property. This document provides a useful overview of the topic and explains many of the rather complicated issues in a brief and succinct manner.

Please also refer to the following documents which are not attached because of their length:

- (1) "Cross-Cut Guidance on Environmental Requirements for DOE Real Property Transfers"(DOE/EH-413/9712)  
(<http://homer.ornl.gov/nuclearsafety/nsea/oepa/guidance/rcra/property.pdf>)
- (2) "Implementation Guide for the Control and Release of Property with Residual Radioactive Material (Draft DOE G 441.1-xx)," dated 4/05/2002  
(<http://homer.ornl.gov/nuclearsafety/nsea/oepa/guidance/aca/doeg441.1xx.pdf>)

DOE G 441.1-xx was distributed by memorandum as a draft guide on May 1, 2002, for both comment and interim use.