

OE-3: 2016-07

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Clearance and Release of Personal Property from Accelerator Facilities, DOE-STD-6004

PURPOSE

This Operating Experience Level 3 (OE-3) document describes a recently issued Department of Energy (DOE) technical standard, DOE-STD-6004-2016, *Clearance and Release of Personal Property from Accelerator Facilities* that may be useful in implementing clearance of personal property in a manner compliant with the requirements of DOE Order (O) 458.1, *Radiation Protection of the Public and the Environment*.

BACKGROUND

DOE-STD-6004 provides DOE accelerator facilities, or modules thereof, an acceptable approach for managing and dispositioning personal property that may be radiologically impacted (mainly by activation) by accelerator operations. The Standard was developed by the Office of Science in consultation with the Office of Environment, Health, Safety and Security (AU) and includes processes and requirements that meet DOE O 458.1 clearance requirements contained Section 4.k of the Order, applicable to DOE-regulated accelerators. The Standard incorporates elements of American National Standards Institute (ANSI) N13.12-2013, *Surface and Volume Radioactivity Standards for Clearance*, into its approach. It includes criteria for assessing material and equipment that may have potential to contain either surficial or volumetric residual radioactive material. However, the primary focus is property that may be volumetrically impacted. Use of the DOE-STD-6004 is not mandatory. If used, the applicability of the standard should be recorded in the documentation describing the site's environmental radiological protection program and approved by

the responsible DOE Field Element Manager. The DOE line management in the field is responsible for ensuring that the contractor applies and implements the standard appropriately.

DISCUSSION

DOE-STD-6004 adopts a 3-tiered approach for satisfying DOE O 458.1 clearance requirements for release of personal property from accelerator operations.

- Tier 1 is applicable to material and equipment that is not expected to contain residual radioactive material. It uses process and historical knowledge to demonstrate that the property is not impacted by the radiological operations and supplements that information with measurement processes consistent with Multi-Agency Radiation Survey and Assessment of Materials and Equipment Manual (MARSAME) interagency guidance that confirm levels of radioactivity are indistinguishable from background levels, thereby ensuring there is no need for radiological control of the property.
- Tier 2 adopts the screening criteria from ANSI N13.12-2013 and establishes procedures and methodology for confirming compliance with DOE O 458.1 protective requirements. Publication in DOE-STD-6004 meets the DOE O 458.1 conditions for pre-approved authorized limits (Section 4.k.(6)(g)). Use of Tier 2 may therefore, be approved directly by the DOE Field Element Manager.
- Tier 3 is an alternative approach for release of property that may not be cleared under Tier 1 or Tier 2. It follows the DOE O 458.1 process for development of site or activity specific authorized limits and therefore, requires

coordination with the DOE program elements and consultation with AU.

The Standard indicates that, in most cases, the Tier 1 approach should be the preferred option and Tier 3 (use of alternative criteria to the ANSI-N13.12 screening levels) is primarily for designated end use, restricted release or situations where physical or chemical properties of the material or equipment being cleared are such that the conservatism that is part of the ANSI screening criteria is not appropriate or necessary to meet DOE dose constraints and As Low As Reasonably Achievable requirements.

The provisions of the standard were designed to address the 2001 DOE direction on improving monitoring and release programs and includes details on process knowledge, technical bases and documentation, measurement, independent verification and stakeholder communication.

CONCLUSIONS

The standard is applicable to DOE accelerator facilities and establishes property disposition clearance processes that are compliant with DOE requirements and protective of the public and environment.

The preferred approach, Tier 1, identifies procedures that provide reasonable assurance, based on process knowledge, or process knowledge supported by measurements, that the property contains no detectable residual radioactive material.

The Tier 2 approach established release criteria and protocols that are compliant with DOE clearance requirements and may be employed as pre-approved authorized limits under DOE O 458.1.

The Tier 3 approach describes the process for proposing and establishing facility or activity specific authorized limits (DOE O 458.1 requirements) for clearing property where special situations or conditions apply.

REFERENCES

U.S. Department of Energy, *Clearance and Release of Personal Property from Accelerator Facilities*, DOE-STD-6004-2016, March 2016.

American National Standard Institute (ANSI), *Surface and Volume Radioactivity Standards for Clearance*, ANSI N13.12, 2013.

U.S. Department of Energy memorandum from Mathew Moury, AU-1 to Cherry Murray, SC-1, Consultation on DOE-STD-6004-2016, *Clearance of Property from DOE Accelerators*, 7/20/2016

U.S. Department of Energy (DOE), *Radiation Protection of the Public and the Environment*, DOE Order 458.1, Chg. 3, 1-15-2013.

U.S. Department of Energy (DOE), *Managing the Release of Surplus and Scrap Materials*, US Memorandum for Heads of Departmental Elements, 1-19-2001.

MARSAME, *Multi-Agency Radiation Survey and Assessment of Materials and Equipment Manual (MARSAME)*, NRC NUREG-1575, Supplement 1, EPA 402-R-09-001 Rev 1, DOE/EH-004, 2009

ADDITIONAL SOURCE OF INFORMATION

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This OE-3 document requires no follow-up report or written response.



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