SAND2018-9267R

CHAPTER 9
CONTROL OF ACCOUNTABLE SEALED RADIOACTIVE SOURCES (ASRSs) AND RADIOISOTOPE THERMOELECTRIC GENERATORS (RTGs)

Marilyn S. Bange

Prepared by
Sandia National Laboratories
Albuquerque, New Mexico 87185 and Livermore, California 94550

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POC:

Marilyn S. Bange
ES&H Planning Department
Sandia National Laboratories
P. O. Box 5800
MS0794
Albuquerque, New Mexico 87185

Content Description

Methodology for SNL Nuclear Facility Categorization for OIG audit in FY18.

Sandia National Laboratories

MN471016, *Radiological Protection Procedures Manual*

CHAPTER 9

CONTROL OF ACCOUNTABLE SEALED RADIOACTIVE SOURCES (ASRSs) AND RADIOISOTOPE THERMOELECTRIC GENERATORS (RTGs)

This document is no longer a corporate process requirement (CPR). This document implements the requirements of Corporate Procedure ESH100.2.RAD.1, *Implement Radiation Protection Procedures*.

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Sponsor: Jaime L. Moya, 600
Subject Matter Expert: Betsy Forbes
MN471016, Issue I-2
Effective Date: August 3, 2017
Review Date: March 30, 2018

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List of Acronyms

Acronym	Definition
ASRS	Accountable Sealed Radioactive Source
Bq	Becquerel
CFRC	Customer Funded Record Center
D&S	Device and Source
DARTS	Device and Radioactive Source Tracking System
DOE	Department of Energy
Gy	Gray
MOW	Member of the Workforce
NRC	Nuclear Regulatory Commission
PHS	Primary Hazard Screen
RCT	Radiological Control Technician
RMWMF	Radioactive and Mixed Waste Management Facility
RP	Radiation Protection
RPIR	Radiological Process Improvement Report
RPPM	Radiological Protection Procedures Manual
RTG	Radioisotope Thermoelectric Generator
RTWD	Radiological Technical Work Document
SNL	Sandia National Laboratories
SNL/CA	Sandia National Laboratories/California
SNL/NM	Sandia National Laboratories/New Mexico
SNL/NV	Sandia National Laboratories/Nevada
Sv	Sievert
TID	Tamper-Indicating Device

9.1 Purpose

This chapter describes the processes that Members of the Workforce (MOW) follow to control Accountable Sealed Radioactive Sources (ASRSs) and Radioisotope Thermoelectric Generators (RTGs). It also describes the Sandia National Laboratories (SNL) program for implementing the ASRS requirements in 10 CFR 835.1202 and the ASRS and RTG requirements in DOE O 231.1B.

9.2 Scope

The requirements of this chapter apply only to Members of the Workforce responsible for the use of ASRSs and RTGs.

Note: Custodians of non-ASRSs registered in DARTS shall comply with semi-annual inventory and any applicable training requirements.

ASRSs and RTGs capable of generating external radiation fields in excess of 100 millirem/hour equivalent dose rate from all radiation emissions at 30 centimeters from the unshielded source are considered high strength radioactive sources and are subject to additional requirements (see Section 9.4.5).

Members of the Workforce who use ASRSs and RTGs are also subject to all the requirements contained in Chapter 6, "Control of Radioactive Material," as well as any other applicable sections of the RPPM.

The Device and Radioactive Source Tracking System (DARTS) is the database application used to track ASRSs and RTGs. Registration of all ASRSs and RTGs is mandatory and all source leak tests, inventories, and changes described in this chapter shall be documented in DARTS.

Note: Owners of classified ASRSs and RTGs shall contact the D&S Registrar to determine how the requirements of this chapter will be met.

Note: DARTS can be accessed by typing "DARTS" into the address line of the SRN Techweb browser.

Guidance

Non-accountable sealed radioactive sources and other radioactive materials may be registered in DARTS for Primary Hazard Screen (PHS) radioactive material roll up and/or other local inventory purposes.

9.3 Responsibilities

9.3.1 Device and Source (D&S) Personnel

D&S personnel are comprised of the D&S Registrar and D&S technical support staff. D&S personnel are responsible for:

- Managing the Accountable Sealed Radioactive Source Control Program and DARTS.
- Submitting Transaction Reports to DOE within five business days for transactions involving ASRSs or RTGs that meet or exceed Category 1 or Category 2 levels.
- Reporting discrepancies (e.g., physical location) between SNL inventory and the DOE database for ASRSs or RTGs that meet or exceed Category 1 or Category 2 levels within five business days of the discovery of the discrepancy.
- Ensuring that custodians are notified frequently and redundantly as necessary, when source leak test and/or inventories are due. Line management will be notified when source leak tests and/or inventories are overdue.

9.3.2 Managers

Managers of departments who maintain custody of ASRSs and RTGs, regardless of location, are responsible for ensuring:

- All ASRSs and RTGs under their control are maintained in compliance with this chapter and other applicable sections of the RPPM.
- Each ASRS and RTG is assigned to a custodian.

  Note: It is strongly recommended that an alternate custodian also be assigned to assume the responsibilities when the custodian is unavailable. If an alternate is not assigned, that role will default to the custodian's manager.

9.3.3 ASRS and RTG Custodians

ASRS and RTG custodians are responsible for:

- Notifying Radiation Protection (RP) personnel prior to acquisition of any ASRS or RTG.
- Ensuring that the requirements of this chapter are met prior to using any ASRS or RTG.
- Maintaining the appropriate minimum radiological training (see RPPM 3).
- Ensuring that all of their ASRSs and RTGs are registered in DARTS.
- Ensuring that the necessary records and documents are maintained (see Section 9.5).
- Ensuring that source leak tests are performed in accordance with the requirements in Section 9.4.4.
- Ensuring that the RCT performing the source leak tests is informed prior to performance of the leak test if the source is electroplated or of a form such that directly swiping the source will damage it and/or result in release of contamination.

- Ensuring that radiation surveys are performed on active high strength radioactive sources in accordance with the requirements in Section 9.4.5.
- Performing inventories in accordance with the requirements in Section 9.4.6.

> **WARNING:** Contact the D&S Registrar immediately upon the discovery of discrepancies between the inventory and physical location for ASRSs or RTGs that meet or exceed Category 1 or Category 2 levels.

- Completing the necessary updates in DARTS to reflect the location changes described in Section 9.4.7.
- Taking appropriate actions for a lost or damaged ASRS or RTG in accordance with the requirements in Chapter 11, "Radiological Incidents," and Chapter 13 "Feedback and Improvement."
- Controlling any leaking ASRS or RTG in a manner that minimizes the spread of radioactive contamination.

  Note: When the Custodian is unavailable, the responsibilities specified in this section are performed by the Member of the Workforce assigned as alternate custodian.

9.3.4 ASRS or RTG Users

ASRS or RTG users are responsible for:

- Maintaining the appropriate minimum radiological training (see RPPM 3).
- Notifying the custodian whenever:
  - Placing an ASRS or RTG into storage or returning it to active service.
  - Any damage to an ASRS or RTG is suspected.
- Taking appropriate actions for a lost or damaged ASRS or RTG in accordance with the requirements in Chapter 11 "Radiological Incidents," and Chapter 13 "Feedback and Improvement."

9.3.5 Radiation Protection (RP) Personnel

RP personnel are responsible for:

- Helping line personnel with radiological work planning, e.g., when notified of the intent to acquire an ASRS or RTG.
- Conducting source leak tests when requested.
- Choosing the appropriate analytical method capable of detecting 0.005 µCi.
- Documenting and reporting the results of source leak tests to the custodian.
- Notifying the custodian if the leak test results indicate that the source is leaking and initiating appropriate follow up actions.
- Forwarding all approved source leak test surveys to D&S personnel.

9.4 Procedure

9.4.1 Acquiring and Receiving an ASRS or RTG

Requirements

ASRS or RTG custodians shall perform the following steps prior to the acquisition of any ASRS or RTG:

1. Notify RP personnel.
2. Verify that a PHS is in place and updated, as appropriate, as well as any required RP approved Radiological Technical Work Document (RTWD), in accordance with the following:
   - Chapter 1, "Radiological Work Management"
   - MN471017, *Safety Basis Manual*
   - ESH100.2.GEN.3, *Develop and Use Technical Work Documents*

ASRS or RTG custodians shall perform the following steps upon the receipt of any ASRS or RTG:

1. Schedule the appropriate radiological surveys with RP personnel (i.e., receipt and source leak tests).

   Note: Some ASRSs are exempted from source leak testing (see Section 9.4.4).

2. Verify that the source leak test results indicate that the ASRS is not leaking.

9.4.2 Registering an ASRS or RTG in DARTS

Requirements

ASRS or RTG custodians shall perform the following steps to register all ASRSs or RTGs in DARTS within 30 days of receipt of the ASRS or RTG.

> **WARNING:** The D&S Registrar must be notified immediately upon receipt of any Category 1 or 2 ASRS or RTG in order to ensure that required reporting is completed (see Section 9.4.9). Notification two weeks before receipt is preferred.

Note: Non-Sandia owned ASRSs or RTGs, subject to the requirements of this manual (see "Introduction," Section I-2.8.1), are required to be registered in DARTS only if they will be on Sandia-controlled premises for greater than 30 days.

1. Complete the Radioactive Source Registration Form, SF 2001–SRF (6-2013) (MSWord / PDF) and submit it to D&S personnel within 30 days of receipt of the ASRS or RTG.
2. Include any pertinent documentation sent by the manufacturer with the Radioactive Source Registration Form (e.g., source calibration certificates, integrity test certifications, shipping documents, special form certificates).
3. Verify that their ASRS or RTG is registered and has passed a source leak test, if required (see Section 9.4.4), after receipt.

   Note: An ASRS or RTG that is registered prior to conducting the initial source leak test survey is registered as in "Storage" status.

   Note: A unique identification number is assigned to each ASRS or RTG registered in DARTS; D&S personnel will furnish the custodian with a barcode identification label to attach to the ASRS or RTG.

4. Review the information in DARTS and consult with D&S personnel to correct any discrepancies.
5. Label the ASRS or RTG (see Section 9.4.3).
6. Perform an initial source inventory and enter it into DARTS (see Section 9.4.6).

9.4.3 Labeling ASRSs and RTGs

Requirements

ASRS and RTG custodians shall attach the appropriate barcode identification label to the ASRS or RTG. The label is provided by D&S personnel when the ASRS or RTG is registered.

The barcode identification label shall be applied directly to the source. If this is not practical, then the label shall be applied to the source housing or storage container. If the label is not affixed directly to the source, then a method of tracing the source to its label shall be implemented (e.g., associating a serial number or a unique description of the source with the label).

Note: Additional labeling requirements for ASRSs or RTGs as radioactive material are contained in Chapter 2, "Posting and Labeling for Radiological Control."

Guidance

A current Radioactive Source Information sheet for each source should be maintained near the storage location or be readily available.

Note: A Radioactive Source Information sheet for each source can be printed from DARTS.

9.4.4 ASRS and RTG Leak Testing

Requirements

ASRS and RTG custodians shall:

- Schedule source leak test surveys with the appropriate RP personnel enough in advance of the source leak test due date to allow for survey completion and processing (at least two weeks' notice is recommended).
- Inform the RCT performing the source leak tests prior to performance of the leak test if the source is electroplated or of a form such that directly swiping the source will damage it and/or result in release of contamination.

  Note: The source leak test survey **is not** considered complete until the survey documentation is reviewed by RP personnel.

- Subject ASRSs and RTGs to a source leak test:
  - Upon receipt,
  - When damage is suspected, and
  - At intervals not to exceed six months (with a 30-day grace period).
- Control any ASRS or RTG found to be leaking radioactive material in a manner that minimizes the spread of radioactive contamination.
- Subject any ASRS or RTG in storage to a source leak test prior to returning it to service.

Exemptions from Leak Testing

ASRSs or RTGs are exempt from source leak testing if they:

- Consist solely of:
  - Tritium or,
  - Gaseous radioactive material.
- Have been removed from service (see Section 9.4.7.1)

An ASRS or RTG is not subject to periodic leak testing if that ASRS or RTG is located in an area that is unsafe for human entry or otherwise inaccessible (e.g., oxygen deficient or very high radiation areas).

Note: This exemption is not applicable to ASRSs or RTGs that are located in instruments or other devices located in accessible areas, nor should it be applied to ASRSs or RTGs that may be considered inaccessible due to radiological conditions created by the presence of the source itself; source leak tests are performed on these sources by wiping the area where contamination is most likely to occur from a failure of source integrity.

Note: If an ASRS or RTG is removed from the unsafe area or otherwise becomes accessible, then this exception no longer applies, and a source leak test is required.

9.4.5 High Strength ASRSs or RTGs

Requirements

This section applies only to ASRSs or RTGs capable of generating external radiation fields in excess of 100 millirem/hour equivalent dose rate from all radiation emissions at 30 centimeters from the unshielded source.

In addition to the other requirements of this chapter, ASRS or RTG custodians shall:

- Coordinate with RP personnel to determine if a particular ASRS or RTG meets the above criteria.
- Notify D&S personnel of any ASRS or RTG that meets this criterion to ensure that it is identified as a high strength radioactive source in DARTS.
- Schedule radiation surveys with the appropriate RP personnel.
- Subject high strength radioactive sources to radiation surveys:
  - Prior to initial use.
  - Prior to returning a high strength radioactive source in storage to active service.
  - Any time changes occur that could increase radiation exposure from the high strength radioactive source.
  - Annually when in active service (with a 30-day grace period).
- If possible, configure high strength radioactive sources so that the radiation surveys are conducted under the worst-case operating conditions that will produce the maximum exposure in the area under evaluation. This aids in the evaluation of the effectiveness of the radiological controls.

  Note: If a high strength radioactive source is not surveyed under worst-case conditions, ensure that an appropriate operating restriction is reflected in the appropriate RTWD.

- Identify and implement work controls per Chapter 1, “Radiological Work Management.”
- Maintain the appropriate minimum radiological training per Chapter 3, “Radiological Training Program.”
- Maintain access controls per Chapter 5, “Entry Control.”
- Maintain radiological postings per Chapter 2, “Posting and Labeling for Radiological Control.”
- Use dosimetry per Chapter 4 “Radiation Dosimetry.”

9.4.6 ASRS and RTG Inventorying

Requirements

All ASRSs and RTGs are required to be inventoried. ASRS and RTG custodians shall:

- Inventory their ASRSs and RTGs at intervals not to exceed six months (with a 30-day grace period).
    - The inventory must:
    - Establish the physical location of each ASRS and RTG.
    - Verify the presence and adequacy of associated postings and labels.
    - Establish the adequacy of storage locations, containers, and devices.
    - Verify that the ASRS and RTG use status is accurately reflected in DARTS.
    - Correct all discrepancies prior to documenting completion of the inventory.

Note: Consult the appropriate RP personnel for assistance with inventory-related questions (e.g., the adequacy of postings and labels or the adequacy of storage locations, containers, and devices.)

- Complete the inventory using the inventory tab in DARTS.

Discrepancies Between the Physical Location of the ASRS or RTG and the Location of Record in DARTS During Inventory

> **WARNING:** Contact the D&S Registrar immediately upon the discovery of discrepancies between the inventory and physical location for ASRSs or RTGs that meet or exceed Category 1 or Category 2 levels.

If the physical location of an ASRS or RTG is not the location of record indicated in DARTS at the time of the inventory, then:

- Notify RP Personnel immediately.
- Enter the physical location of the ASRS or RTG at the time the inventory is performed in DARTS.

Note: The location of record in DARTS must be updated within five business days after moving a source to a new physical location. The requirements for moving an ASRS or RTG to a new physical location are in Section 9.4.7.2.

Non-ASRS or RTG:

All non-accountable sources or other radioactive material registered in DARTS shall be inventoried using the same method as for ASRSs and RTGs.

Use of a Tamper-Indicating Device (TID) as an Alternative to a Physical Inventory

A TID is a one-time use only device installed on a container or storage repository in a manner that ensures a clear indication of the integrity of the container or the repository.

An ASRS or RTG placed in a container sealed with a TID can be inventoried by checking that the TID is in place and has not been tampered with provided that the bullets below have been met:

- Containers are designed so that attempts to open the TID'd container will result in damage to the container and/or the TID, thus indicating tampering.
- An inventory has been performed for all sources being secured in a TID'd container.
- The inventory has been documented and verified at the time of attaching the TID.
- A local inventory of all sources secured in a TID'd container is maintained.
- Each TID has a unique identification number that is documented on the locally maintained source inventory.

  NOTE: If the TID or container is compromised in any manner, either intentional or unintentional, then the source inventory cannot be completed by this method and each source must be individually inventoried.

9.4.7 Documenting Changes that Affect the Use or Status of an ASRS or RTG

Requirements

ASRS or RTG custodians shall update DARTS when:

- Moving an ASRS or RTG to a new physical location (see Section 9.4.7.2).

> **WARNING:** Notify the D&S Registrar at least three days before offsite transport of any Category 1 or 2 ASRS or RTG in order to ensure that required reporting is completed (see Section 9.4.9). Notification two weeks before transport is preferred.

ASRS or RTG custodians shall submit a completed SF 2001-RS Radioactive Source Change Form when:

- Placing an ASRS or RTG into storage or returning one to active service (see Section 9.4.7.1). When returning an ASRS or RTG to active service, the custodian shall arrange with RP personnel to perform a source leak test. The ASRS or RTG cannot be placed into "Active" status until the survey has been completed.
- Transferring (permanently) or loaning an ASRS or RTG to a Non-Sandia Organization (see Section 9.4.7.4).
- Making an ASRS or RTG available for reapplication (see Section 9.4.7.5).

- Transferring custodianship (see Section 9.4.7.3.1) or loaning (see Section 9.4.7.3.2) an ASRS or RTG to another MOW at SNL.
- Disposing of an ASRS or RTG (see Section 9.4.7.6).

Note: ASRS or RTG transportations may be subject to the requirements in SCM100.3.17, *Receive, Transfer and Ship Nuclear/Radioactive Materials, at Sandia National Laboratories*.

Note: D&S personnel may elect to accept an email with the same information as required by the change form for some changes, e.g., a change of status.

9.4.7.1 Placing an ASRS or RTG into Storage or Returning One to Active Service

Changes in status reflect how the ASRS or RTG is being used and may affect the tracking and testing requirements of that ASRS or RTG.

Requirements

ASRS or RTG custodians shall submit a completed SF 2001-RS, Radioactive Source Change Form, within five business days of removing an ASRS or RTG from service or returning one to active service.

Note: An ASRS or RTG available for reapplication shall be identified as such in DARTS (see Section 9.4.7.5) and is subject to the same requirements as ASRS or RTGs in storage.

ASRS or RTG custodians shall:

- Secure stored ASRSs or RTGs in a controlled location.
- Complete periodic inventories for ASRSs or RTGs in storage as required (see Section 9.4.6).
- Subject the ASRS or RTG to a source leak test, if it is currently in storage, prior to returning it to service (see Section 9.4.4).
- Implement a method of tracing an ASRS or RTG to its label, if the label is not affixed directly to the source.

Note: ASRSs or RTGs removed from service are not subject to periodic source leak testing (see Section 9.4.4).

Guidance

In addition to the requirements in Chapter 2, "Posting and Labeling for Radiological Control," ASRS and RTG custodians should:

- Label ASRSs or RTGs in storage with:
  - The words "storage" or "out of service."
  - The instruction to have the ASRS or RTG leak tested prior to being returned to active service.

9.4.7.2 Moving an ASRS or RTG to a New Physical Location

Requirements

> **WARNING:** For offsite movement of Category 1 and Category 2 sources,
> a Transaction Report shall be submitted to the D&S Registrar within three business days
> —such as when the ASRS or RTG is moved from one SNL site to another
> (i.e., SNL/NM, SNL/CA, SNL/NV).
> Contact the D&S Registrar for a copy of the transaction report format.

ASRS or RTG custodians shall:

- Notify the appropriate RP personnel of the new physical location.
- Post the new physical location in accordance with Chapter 2, "Posting and Labeling for Radiological Control."
- Update the location of record in DARTS within five business days of the move.

  Note: Custodians are not required to update the location of record in DARTS when an ASRS or RTG is:

  - Returned to the location of record within five business days; or
  - Returned to the location of record prior to the next inventory cycle and a logbook is maintained at the location of record identifying the ASRSs or RTGs physical location and the date the ASRS or RTG was moved to that location.

Guidance

Radiological surveys should be performed at the new physical location after an ASRS or RTG is moved, to verify that the radiological conditions have not changed.

9.4.7.3 Transferring Custodianship or Loaning an ASRS or RTG to another MOW

9.4.7.3.1 Transferring Custodianship

Responsibilities for ASRS or RTG custodians are described in Section 9.3.3.

Requirements

The relinquishing ASRS or RTG custodian shall:

- Notify the new ASRS or RTG custodian and RP personnel of the intent to transfer custody.
- Transfer all documentation pertaining to the ASRS or RTG to the new custodian.
- Submit a completed SF 2001-RS Radioactive Source Change Form within five business days of the physical transfer.

The new ASRS or RTG custodian shall:

- Update the location of record in DARTS if necessary (see Section 9.4.7.2).
- Coordinate with D&S personnel to perform an inventory on the transferred ASRS or RTG (see Section 9.4.6).

9.4.7.3.2 Loans

When an ASRS or RTG custodian loans an ASRS or RTG to another MOW, the ASRS or RTG custodian maintains responsibility for the ASRS or RTG as described in Section 9.3.3.

Requirements

ASRS or RTG custodians shall:

- Verify that appropriate work authorization documents are in place prior to the loan.
- Note: Contact RP personnel if there are any questions.
- Verify that the MOW who is borrowing the ASRS or RTG has the appropriate training (see RPPM 3).
- Subject the ASRS or RTG to a source leak test, if it is currently in storage, prior to returning it to service (see Section 9.4.4).
- Submit a completed SF 2001-RS, Radioactive Source Change Form, to update the status to "active" (see Section 9.4.7.1)
- Update the location of record (see Section 9.4.7.2) in DARTS within five business days.

9.4.7.4 Permanent Transfers or Loans of an ASRS or RTG to a Non-Sandia Organization

> **WARNING:** The D&S Registrar must be notified three days prior to any Category 1 or 2 ASRS or RTG transfers or loans in order to ensure that required reporting is completed (see section 9.4.9). Notification two weeks before the transfer or loan is preferred.

When an ASRS or RTG is permanently transferred or loaned for a period of time to a non-Sandia organization (e.g., government agency or university), that organization shall assume ownership of the ASRS or RTG while it is in their possession and is responsible for all regulatory compliance. Custodians shall perform all permanent transfers or loans of an ASRS or RTG in accordance with Supply Chain Management procedures.

In addition, the ASRS or RTG custodian shall:

- Verify that the receiving organization is appropriately licensed (e.g., DOE, NRC, Agreement State, or other applicable government authority) to receive the ASRS or RTG.
    - Obtain a copy of the license or equivalent document from the receiving organization

- Verify that the ASRS or RTG will be covered under their license or equivalent document

Note: Contact RP personnel for assistance in reviewing the license or equivalent document

- Notify RP personnel prior to the transfer so the appropriate radiological surveys can be performed (e.g., packaging and shipping).
- Identify and document a point of contact along with the phone number and address of the receiving organization.
- Submit a completed SF 2001-RS, Radioactive Source Change Form, to update the status of the ARS to "Permanent Transfer" or "Loaned" as appropriate in DARTS within five business days.
- Provide D&S personnel with copies of the following documents:
  - Receiving organization's license or equivalent document
  - Shipping documents
  - Radiological surveys
  - Any other related documentation not previously mentioned.

9.4.7.5 Making an ASRS or RTG Available for Reapplication

Requirements

If an ASRS or RTG can still be used but is no longer needed, the ASRS or RTG custodian shall:

- Verify that the ASRS or RTG is not damaged or is leaking radioactive material (see section 9.4.4)
- Submit a completed SF 2001-RS Radioactive Source Change Form to update the status in DARTS to "Reapplication."

Note: An ASRS or RTG that is damaged or is leaking radioactive material cannot be reapplied and should be properly dispositioned (see Section 9.4.7.6).

- Remove the ASRS or RTG from service and submit a completed SF 2001-RS Radioactive Source Change Form to place it into storage (see Section 9.4.7.1).

Note: An ASRS or RTG that is available for reapplication is subject to the same requirements as an ASRS or RTG in storage.

If a new use for the ASRS or RTG is identified, the current ASRS or RTG custodian shall transfer the ASRS or RTG in accordance with Section 9.4.7.3 or Section 9.4.7.4, as appropriate.

Guidance

Contact the D&S Registrar for information regarding ASRSs or RTGs available for reapplication.

9.4.7.6 Disposing of an ASRS or RTG

Requirements

If an ASRS or RTG is no longer needed and it cannot be returned to the manufacturer or reapplied, (see Section 9.4.7.5), the ASRS or RTG custodian shall:

- Notify RP personnel so the appropriate radiological surveys can be performed (i.e., waste characterization).
- Submit a Radioactive or Mixed Waste Disposal Request (DR) Form.
- Submit a completed SF 2001-RS, Radioactive Source Change Form, to update the status in DARTS to "Storage."
- After the ASRS or RTG is picked up by waste management personnel, submit a completed SF 2001-RS Radioactive Source Change Form to transfer custodianship of the ASRS or RTG to Radioactive and Mixed Waste
- Management Facility (RMWMF) personnel (contact D&S personnel for the current RMWMF point of contact).

NOTE: All requirements in this chapter still apply to the ASRS or RTG while it is onsite and awaiting offsite disposal.

9.4.8 Loss or Damage of an ASRS or RTG

> **WARNING:** The D&S Registrar and the appropriate RP personnel must be notified immediately of loss or damage to any Category 1 or 2 ASRS or RTG in order to ensure that required reporting is completed (see Section 9.4.9).

Requirements

Immediately upon determining that an ASRS has been lost or damaged, the user shall notify RP personnel and take the appropriate actions per Chapter 11, "Radiological Incidents." Prepare a Radiological Process Improvement Report (RPIR) per Chapter 13, "Feedback and Improvement," for lost ASRSs or RTGs. Consult with RP Personnel to determine if an RPIR is appropriate for damaged ASRSs or RTGs.

9.4.9 Transactions Involving Category 1 or Category 2 ASRSs or RTGs

Requirements

For all transactions where the activity of the ASRS or RTG meets or exceeds either Category 1 or Category 2 values, the ASRS or RTG Custodian shall provide the D&S Registrar with a Transaction Report within three business days. Transactions include the manufacture (including assembly), shipment (or transfer), receipt, regeneration, loss, disassembly, or disposal of a Category 1 or 2 radioactive source. Contact the D&S Registrar for a copy of the report format.

NOTE: Category 1 or 2 ASRSs or RTGs have activities greater than five Curies. Each radionuclide has a different limit.

9.5 Records

Requirements

Members of the Workforce who generate occupational radiation protection related records shall use the special units of curie, rad, roentgen, or rem, including multiples and subdivisions of these units, or other conventional units, such as dpm, dpm/100 cm2, or mass units. The SI units, becquerel (Bq), gray (Gy), and sievert (Sv), may be provided parenthetically for reference with scientific standards, and for use in Category 1 and 2 transaction reports.

Managers shall be responsible for ensuring that records are maintained to document compliance with the Radiation Protection Program.

Unless otherwise specified, records shall be retained for 75 years or until final disposition is authorized by DOE. **[10 CFR 835.701(b)]**.

Unless otherwise authorized, the method for recording, storage, retention and archival of these records is in accordance with IM100.2.2, *Control of Records*, and as specified in the Sandia Records Retention and Disposition Schedule maintained by the Customer Funded Records Center (CFRC) within the Recorded Information Management Department filed under records series HE-130-207-000.

If using an alternate system (reviewed and authorized by Recorded Information Management Department as capable of meeting the regulatory required retention period identified above) for records maintenance, it is the responsibility of the individual organization to assure long-term retention of these records and to ensure that they are retrievable over their required storage lifetime as identified above.

ASRS and RTG custodians shall:

- Maintain the necessary records to demonstrate compliance with the requirements of this chapter, including Source Registration Forms.

- Maintain any pertinent documentation sent by the manufacturer (e.g., source calibration certificates, integrity test certifications, shipping documents, special form certificates).

Note: Documentation that is sent to D&S personnel for registration (see Section 9.4.2) is forwarded to the Customer Funded Records Center to comply with the radiation protection record-keeping requirements as implemented in the Sandia Records Retention and Disposition Schedule.

Note: As of October 1, 2006, records of source leak tests and inventories are maintained in DARTS. All official records previous to this date are maintained by the Integrated Information Services Recorded Information Management Department.

9.6 References

9.6.1 Requirements Source Documents

10 CFR 835, *Occupational Radiation Protection*

DOE O 231.1B, *Administrative Change, Environment, Safety and Health Reporting*

9.6.2 Related Documents

DOE G 441.1-1C, *Administrative Change 1, Radiation Protection Programs Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection*

DOE-STD-1098-2008, *Change Notice 1, Radiological Control*

ESH100.2.GEN.3, *Develop and Use Technical Work Documents*

MN471016, *Radiological Protection Procedures Manual*

MN471017, *Safety Basis Manual*

RPTB-014, *Technical Basis for Screening for Potential High Strength Sources*

Supply Chain Management Procedures

Attachment 9-1 Table of DOE O231.1B Category 1 and 2 Radioactive Sealed Sources

Radionuclide	Category 1		Category 2	
	(TBq)	(Ci)	(TBq)	(Ci)
Ac-227	2.0E+01	5.4E+02	2.0E-01	5.4E+00
Am-241	6.0E+01	1.6E+03	6.0E-01	1.6E+01
Am-241/Be	6.0E+01	1.6E+03	6.0E-01	1.6E+01
Cf-252	2.0E+01	5.4E+02	2.0E-01	5.4E+00
Cm-244	5.0E+01	1.4E+03	5.0E-01	1.4E+01
Co-60	3.0E+01	8.1E+02	3.0E-01	8.1E+00
Cs-137	1.0E+02	2.7E+03	1.0E+00	2.7E+01
Gd-153	1.0E+03	2.7E+04	1.0E+01	2.7E+02
Ir-192	8.0E+01	2.2E+03	8.0E-01	2.2E+01
Pm-147	4.0E+04	1.1E+06	4.0E+02	1.1E+04
Po-210	6.0E+01	1.6E+03	6.0E-01	1.6E+01
Pu-236	6.0E+01	1.6E+03	6.0E-01	1.6E+01
Pu-238	6.0E+01	1.6E+03	6.0E-01	1.6E+01
Pu-239	6.0E+01	1.6E+03	6.0E-01	1.6E+01
Pu-239/Be	6.0E+01	1.6E+03	6.0E-01	1.6E+01
Pu-240	6.0E+01	1.6E+03	6.0E-01	1.6E+01
Ra-226	4.0E+01	1.1E+03	4.0E-01	1.1E+01
Se-75	2.0E+02	5.4E+03	2.0E+00	5.4E+01
Sr-90 (Y-90)	1.0E+03	2.7E+04	1.0E+01	2.7E+02
Th-228	2.0E+01	5.4E+02	2.0E-01	5.4E+00
Th-229	2.0E+01	5.4E+02	2.0E-01	5.4E+00
Tm-170	2.0E+04	5.4E+05	2.0E+02	5.4E+03
Yb-169	3.0E+02	8.1E+03	3.0E+00	8.1E+01