DOE/IG-0544

INSPECTION REPORT

U.S. DEPARTMENT OF ENERGY
OFFICE OF INSPECTOR GENERAL
OFFICE OF INSPECTIONS

INSPECTION OF THE ACCOUNTABILITY AND CONTROL OF SEALED RADIOACTIVE SOURCES AT SELECTED DEPARTMENT OF ENERGY SITES

MARCH 2002

U.S. DEPARTMENT OF ENERGY
Washington, DC 20585

March 12, 2002

MEMORANDUM FOR THE SECRETARY

FROM: Gregory H. Friedman /s/
Inspector General

SUBJECT: INFORMATION: Report on "Inspection of the Accountability and Control of Sealed Radioactive Sources at Selected Department of Energy Sites"

BACKGROUND

Sealed radioactive sources consist of radioactive material either contained within a sealed capsule, sealed between layers of non-radioactive material, or firmly fixed to a non-radioactive surface. Statistics in the United States Radiation Accident Registry show that of the 246 major radiation accidents in the United States between 1944 and 2000, 110 were caused by sealed radioactive sources.

Sealed radioactive sources are used in large numbers at Department of Energy (DOE) facilities, including those managed by the National Nuclear Security Administration (NNSA), most commonly for the testing and calibration of radiation detection instrumentation. In view of the potential health and safety hazards associated with sealed radioactive sources, DOE is required by regulation to establish and implement strict accountability and control over the sealed radioactive sources at its facilities. According to DOE officials, most DOE sealed source accidents have involved "micro- or milli-curie" sources, which contain relatively low levels of radiation.

The objective of our inspection was to review the adequacy of procedures implemented by DOE and NNSA officials and their contractors for controlling, safeguarding and disposing of sealed radioactive sources.

RESULTS OF INSPECTION

We found no evidence that DOE's work with sealed radioactive sources had adversely impacted the safety and health of DOE and contractor employees or the public. However, we found that actions are needed by DOE line managers to assure that sealed radioactive sources are properly controlled, inventoried and leak-tested in accordance with the requirements in applicable Federal rules and local site procedures.

Also, we observed that management contractors at DOE sites are making decisions on the disposition of their unwanted sealed radioactive sources, which includes recycle and reuse options, as well as waste disposal, with minimal input from DOE officials. As a result, in the absence of a Department-wide approach to disposition of sealed radioactive sources, there is no assurance that cost-effective alternatives are being considered. Although each DOE site has responsibility for determining how it will dispose of its unwanted sealed radioactive sources, DOE has not issued specific guidelines to ensure there are viable disposition paths for surplus sealed radioactive sources. Also, some sites are not aware of an organization, the Nonactinide Isotopes and Sealed Source Management Group, which could possibly provide disposition assistance.

We recommended that management take appropriate action to assure that sealed radioactive sources are properly controlled, inventoried and leak-tested. We also recommended that NNSA and the Office of Environmental Management coordinate actions to assist sites to identify cost-effective reuse and disposal alternatives for unwanted sealed radioactive sources.

MANAGEMENT REACTION

Management concurred with our recommendations and agreed to take corrective actions.

Attachment

cc: Deputy Secretary
Under Secretary for Energy, Science and Environment
Administrator, National Nuclear Security Administration
Assistant Secretary for Environmental Management

INSPECTION OF THE ACCOUNTABILITY AND CONTROL OF SEALED RADIOACTIVE SOURCES AT SELECTED DEPARTMENT OF ENERGY SITES

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Overview

INTRODUCTION AND OBJECTIVE

Sealed radioactive sources consist of radioactive material either contained within a sealed capsule, sealed between layers of non-radioactive material, or firmly fixed to a non-radioactive surface. Statistics in the United States Radiation Accident Registry, which is maintained by the Radiation Emergency Assistance Center, show that of the 246 major radiation accidents in the United States between 1944 and 2000, 110 were caused by sealed radioactive sources. The Radiation Emergency Assistance Center is operated by the Oak Ridge Institute for Science and Education (ORISE) in Oak Ridge, Tennessee.

Sealed radioactive sources are used in large numbers at Department of Energy (DOE) facilities, including those managed by the National Nuclear Security Administration (NNSA), most commonly for the testing and calibration of radiation detection instrumentation. In view of the potential health and safety hazards associated with sealed radioactive sources, DOE is required by regulation to establish and implement strict accountability and control over the sealed radioactive sources at its facilities. According to DOE officials, most DOE sealed source accidents have involved "micro- or milli-curie" sources.

In addition to this inspection, the Office of Inspector General (OIG) has conducted two reviews regarding the control and accountability of sealed radioactive sources. In DOE/OIG-0529, "Accounting For Government-Owned Nuclear Materials Provided to Non-Department Domestic Facilities," dated October 26, 2001, we reported that DOE's Nuclear Materials Management and Safeguards System did not contain information on all sealed sources in the hands of domestic licensees. Also, in a draft report entitled "Accounting for U.S. Government-owned Sealed Sources Provided to Foreign Facilities," which was issued for management comment, we reported that DOE did not maintain a current database of sealed sources that it loaned to foreign entities.

The objective of our inspection was to review the adequacy of procedures implemented by DOE and NNSA officials and their contractors for controlling, safeguarding and disposing of sealed radioactive sources.

OBSERVATIONS AND CONCLUSIONS

We concluded that actions are needed by DOE's line managers to assure that sealed radioactive sources are properly controlled, inventoried and leak tested in accordance with the requirements in applicable Federal rules and local site procedures. We found no evidence that DOE's work with sealed radioactive sources had adversely impacted the safety and health of DOE and contractor

employees or the public. However, at each of the six DOE sites we visited, we found that internal controls regarding the accountability, inventory and leak testing of sealed radioactive sources could be improved.

Also, we observed that management contractors at DOE sites are making disposition decisions for their unwanted sealed radioactive sources with minimal input from DOE. Disposition includes recycle and reuse options for sealed radioactive sources, as well as waste disposal. As a result, there is no assurance that cost-effective alternatives resulting from a Department-wide approach to disposition of sealed radioactive sources are being considered. Each DOE site has responsibility for determining how it will dispose of its unwanted sealed radioactive sources. However, DOE has not issued specific guidelines to ensure there are viable disposition paths for surplus sealed radioactive sources, and some sites are not aware of an organization, the Nonactinide Isotopes and Sealed Source Management Group (NISSMG), that could possibly provide disposition assistance. In comments dated February 14, 2002, to our draft report, the Under Secretary for Energy, Science and Environment stated that since our review, NISSMG has engaged in additional outreach activities which have increased NISSMG's visibility and "enhanced communications of the NISSMG technical resource to DOE site nuclear material managers."

Details of Finding

Radiation protection standards, limits, and program requirements for protecting individuals from ionizing radiation resulting from the conduct of DOE's activities are found in Part 835, Title 10, Code of Federal Regulations, "Occupational Radiation Protection" (10 C.F.R. 835). This regulation was promulgated by DOE to implement specific requirements of the Price-Anderson Amendments Act of 1988 (Price-Anderson Amendments Act), which, among other things, establishes requirements for controlling and leak testing sealed radioactive sources. DOE Guide 441.1-13, "Sealed Radioactive Source Accountability and Control Guide," provides further guidance for establishing and operating a radioactive source accountability and control program. Key components of such a program include receipt, labeling, storage, inventory, leak testing, handling and disposal.

Internal Controls Could Be Improved

We found that internal controls to ensure the appropriate accountability, inventory, leak testing, and labeling of sealed radioactive sources could be improved. At each of the sites we visited, we identified sources that were not maintained in accordance with either the requirements in 10 C.F.R. 835 or the requirements established by local site procedures. Failure to adhere to local site procedures regarding nuclear materials could potentially be a regulatory violation under the Price Anderson Amendments Act.

We reviewed the implementation by DOE officials and contractor personnel at six DOE sites of requirements in 10 C.F.R. 835 and local site procedures concerning the receipt, inventory, leak testing, labeling, storage, and handling of sealed radioactive sources. These six sites were: the Nevada Test Site (NTS); the Rocky Flats Closure Project Site (Rocky Flats); the Oak Ridge National Laboratory (ORNL); the Y-12 National Security Complex (Y-12); the Eastern Tennessee Technology Park (ETTP), formerly known as K-25; and the Pantex Plant (Pantex).

For our review, we selected and examined a judgmental sample of 110 accountable sealed radioactive sources of the total of approximately 2300 accountable sources at these six sites.[1] We selected the sources from inventory lists received upon our arrival at each site. Our sample was comprised of different types of sources, i.e., sources containing different isotopes; sources maintained by various Source Custodians; sources controlled by various contractors and subcontractors; and sources stored at various locations. Although not the primary focus of our review, we identified 24 non-accountable sealed radioactive

[1] A source is "accountable" if it has a half-life equal to or greater than 30 days and an isotopic activity equal to or greater than quantities specified in 10 C.F.R. 835. Accountable sealed radioactive sources in service must be inventoried and leak tested at six-month intervals. Non-accountable sources contain lower quantities of isotopic activity and are not subject to sealed source requirements of 10 C.F.R. 835.

sources at one site and one non-accountable sealed radioactive source at another site that were not maintained in accordance with local site procedures.

Approximately 32 percent (35 of 110) of the accountable sealed radioactive sources that we selected for review at the six sites were not maintained in accordance with requirements in either 10 C.F.R. 835 or local site procedures. Although our sample selection methodology did not result in a statistically random sample, the sources we examined at each site were a cross-section of the population of sources at the site. Accordingly, given the large numbers of sealed radioactive sources at each of these sites, the results from our sample suggests additional sources at these sites might not be appropriately controlled, inventoried, leak tested, or labeled.

The following are examples of the lack of adherence to requirements in 10 C.F.R. 835 and local site procedures for sealed radioactive sources that we observed during our site visits. Additional examples involving each of the sites we visited are discussed in Appendix B.

At ETTP and NTS we identified accountable sealed radioactive sources that were not inventoried or leak tested as required by 10 C.F.R. 835. We found no evidence that officials at these sites were aware prior to our visit that these sources had not been inventoried or leak tested. At Pantex, we identified a Source Custodian who did not adhere to a local site procedure that required accountable sealed radioactive sources to be tracked/logged-out before they were removed from their designated storage location. At Rocky Flats, we identified 55 sources that were listed on the site's sealed radioactive source database as "missing over 90 days." Two of the sources were listed as accountable sources, while the remaining 53 sources were listed as non-accountable sources. At the time of our review, 54 of the 55 sources could not be individually identified because the identification labels had been removed from the sources. The remaining source was subsequently located in a controlled radioactive waste storage area. At ETTP, Y-12, ORNL, and Pantex we also identified accountable and non-accountable sealed radioactive sources that were not labeled in accordance with local site requirements.

At the conclusion of each site visit, we met with the appropriate DOE and contractor officials to discuss the internal control weaknesses involving sealed radioactive sources that we had identified at their site. Officials at each site told us that they would review the weaknesses that we had identified and would take appropriate corrective actions. We were subsequently notified by NTS, Pantex, and Rocky Flats officials of the corrective actions they had implemented in response to

each of the weaknesses we had identified at their sites. Although the actions taken will correct some of the weaknesses we identified, additional corrective actions are still needed. Specific actions taken by each site are discussed in Appendix C.

We discussed the results of our site visits with a Health Physicist in the Office of Environment, Safety and Health (EH) who is knowledgeable in matters concerning sealed radioactive sources. He also assists the EH Office of Price-Anderson Enforcement in its reviews of potential violations of the Price-Anderson Amendments Act at DOE sites, including sites managed by NNSA. The Health Physicist told us that the examples we described involving the failure to conduct required leak tests of accountable sealed radioactive sources are violations of 10 C.F.R. 835, and might also have Price-Anderson Amendments Act implications. He said that, at a minimum, the violations should be entered into the site's local noncompliance database and identified as potential Price-Anderson Amendments Act violations.[2] He added that if the violations had been identified previously, but not corrected, this might indicate a systemic problem that would rise to a level that would require reporting in the Office of Price-Anderson Enforcement's Department-wide Noncompliance Tracking System.

OBSERVATION

We observed that management contractors at the DOE sites we reviewed are making disposition decisions for their unwanted sealed radioactive sources with minimal input from DOE. As a result, there is no assurance that cost-effective alternatives resulting from a Department-wide approach to disposition of sealed radioactive sources are being considered.

Each DOE site has responsibility for determining how it will dispose of its unwanted sealed radioactive sources. However, DOE has not issued specific guidelines for disposition of sealed radioactive sources, and some sites are not aware of an organization, NISSMG, that could possibly provide disposition assistance.

Disposal Guidelines Not Issued

The DOE Office of Policy, now the Office of Policy and International Affairs, recently issued a draft DOE order, DOE O 410.X, "Nuclear Materials Stewardship," for comment. According to the draft Order, requirements for stewardship of the nuclear materials covered by the Order will be contained in a DOE manual. We were told, however, that this manual, DOE M 410.X-X, "Nuclear Materials Stewardship Manual," which will have specific guidelines regarding source

[2] Violations of the DOE regulations that implement Price-Anderson Amendments Act provisions, such as violations of 10 C.F.R. 835, are viewed as potential violations of the Price-Anderson Amendment Act. Only the EH Office of Price-Anderson Enforcement can determine if a potential violation is, in fact, a Price-Anderson Amendments Act violation.

disposal, will not be issued for comment until sometime in FY 2002, following review of the comments on the draft Order. At present, the draft Order contains no specific reference to source disposition issues.

Disposition Issues Not Adequately Communicated

The Office of Nuclear Material and Spent Fuel (NMSF), Office of Environmental Management (EM), is responsible for developing DOE policy for disposition of sealed radioactive sources. According to the NMSF Director, there has been insufficient communication on disposition issues between his office and DOE sites not involved in closure actions. He said that in light of the potential benefit to DOE, the various sites that have unwanted sealed radioactive sources should make a concerted effort to communicate and integrate source disposition activities with his office, as well as with NISSMG.

NISSMG Has Role In Source Disposition

NISSMG, which was established by the EM Deputy Assistant Secretary for Integration and Disposition, is managed by DOE's Albuquerque Operations Office (Albuquerque). NISSMG's role is to provide an integrated, corporate structure for achieving EM missions through effective and integrated cradle-to-grave management of nonactinide isotopes and sealed source materials.[3] A specific objective of NISSMG is to enhance worker and public safety by reducing the inventories of excess nonactinide isotopes and sealed source materials and thereby reduce the potential for loss of control of these materials.

According to DOE officials, the first choice for disposition of excess materials is recycle and reuse. When recycle and reuse are not viable options, NISSMG does assist the sites in disposing of excess materials as waste. However, items that have already formally been declared waste are outside the scope of NISSMG and should be addressed by appropriate waste management organizations.

None of the Radiation Control Managers at the sites we visited mentioned NISSMG when discussing disposition alternatives for sealed radioactive sources. Also, an Albuquerque official who had responsibility for disposition of sealed radioactive sources told us that he had no idea that the NISSMG group had such responsibilities.

We were told that NISSMG operates with a small permanent staff and draws resources from DOE and DOE laboratories and sites to manage its technical activities. We were also told, however, that because of limited resources NISSMG has focused its attention on closure sites such as Rocky Flats, and has provided only limited assistance to non-closure sites within DOE.

[3] Nonactinide isotopes consist of radioactive elements with atomic numbers less than 90.

RECOMMENDATIONS

We recommend that the Under Secretary for Energy, Science and Environment:

1. Ensure that line management officials under his purview take appropriate action to assure that sealed radioactive sources are properly controlled, inventoried and leak tested in accordance with the requirements in applicable Federal rules and local site procedures.

2. Direct the Assistant Secretary for Environmental Management to coordinate with the National Nuclear Security Administration to develop and implement actions to assist sites to identify cost-effective reuse and disposal alternatives for unwanted sealed radioactive sources.

We also recommend that the Administrator, National Nuclear Security Administration:

3. Ensure that line management officials under his purview take appropriate action to assure that sealed radioactive sources are properly controlled, inventoried and leak tested in accordance with the requirements in applicable Federal rules and local site procedures.

4. Coordinate with the Assistant Secretary for Environmental Management to develop and implement actions to assist sites to identify cost-effective reuse and disposal alternatives for unwanted sealed radioactive sources.

MANAGEMENT COMMENTS

Management concurred with our recommendations and identified specific actions to address the concerns identified in our report (see Appendix D). Specific comments on our draft report and site specific comments provided by management have been addressed in our report, as appropriate.

INSPECTOR COMMENTS

Management comments were responsive to our inspection report.

Appendix A

SCOPE AND METHODOLOGY

The purpose of our inspection was to review the accountability and control of sealed radioactive sources at selected Department of Energy (DOE) field sites, including sites managed by the National Nuclear Security Administration (NNSA). The objective was to review the adequacy of procedures implemented by DOE and NNSA officials and contractors for controlling, safeguarding, and disposing of sealed radioactive sources.

Fieldwork for this inspection was conducted from February 2001 through July 2001. As part of our review, we visited six sites that we selected based on our determination that activities were conducted at the sites that involved or required the use of sealed radioactive sources. These were: the Nevada Test Site; the Rocky Flats Closure Project Site; the Y-12 National Security Complex; Oak Ridge National Laboratory; the Eastern Tennessee Technology Park (ETTP), formerly known as K-25; and the Pantex Plant.

To accomplish our inspection objectives, we interviewed Headquarters officials in the Office of Nuclear Materials and Spent Fuel, Office of Environmental Management, and the Office of Price-Anderson Enforcement, Office of Environment, Safety and Health. We also interviewed Federal and contractor personnel at each of the six sites. We reviewed applicable Federal and local requirements pertaining to sealed radioactive sources. We also collected, reviewed, and analyzed extensive documentation from each site to assess the site's ability to maintain accountability and control over its sealed radioactive sources. Further, we selected sources for our sample at each site that we believed were representative of the entire population of sources at the site. We also conducted walkthroughs of storage and end-user locations for the sealed radioactive sources in our sample, and physically examined the sources to verify their storage location and to assess the overall adequacy of accountability and control measures.

This inspection was conducted in accordance with the "Quality Standards for Inspections" issued by the President's Council on Integrity and Efficiency.

Appendix B

LACK OF ADHERENCE TO REQUIREMENTS

We reviewed the adequacy of procedures to receive, inventory, leak test, label, store, handle and dispose of sealed radioactive sources, which were implemented by contractor personnel at six DOE sites, including one site managed by the National Nuclear Security Administration. At each of the sites, we identified examples involving a lack of adherence to either 10 C.F.R. 835 requirements or specific site requirements and procedures. The following are some of the examples we identified based on a review of a sample of sources at each site.

Nevada Test Site (NTS):

- One accountable sealed radioactive source had not been leak tested or inventoried since May 2000, as required by 10 C.F.R. 835.

- At the time of our visit, officials were unable to document that two accountable sources had been leak tested and inventoried. Subsequently, documentation was found showing the two sources had been appropriately inventoried and leak tested.

- Not all the documentation required by NTS site procedures was contained in files for three of the twelve sources that we reviewed.

- While preparing for our site visit, NTS officials discovered that contrary to site procedures, an accountable source had been relocated for more than 60 days from its original storage location to another building without the new location being designated as the source's storage location.

- Radiation safety training for one Source Custodian had expired in the 1998-1999 time frame and had not been updated as required by site procedures.

- It was not possible to determine from the NTS sealed radioactive source database when sources had been leak tested since the entry field for leak test dates contained only the term "inventoried." 10 C.F.R. 835 requires leak tests be conducted every six months for sources in service, with auditable documentation.

Rocky Flats Closure Project Site (Rocky Flats):

- 55 sealed radioactive sources, consisting of 53 labeled "TS" (non-accountable) and two labeled "AS" (accountable), were listed in the Rocky Flats sealed radioactive source database as "missing over 90 days." At the time of our review, 54 of the 55 sources could not be individually identified because the identification labels had been removed from the sources. The remaining source was later located in a controlled radioactive waste storage area. We were subsequently advised by Rocky Flats officials that they completed actions to enhance the administration and control of their sources.

- Labels on some sources did not contain correct information. At one location, the labels on 30 accountable sources did not contain the name and telephone number of the current Source Custodian, as required by local site procedures. We were subsequently advised by Rocky Flats officials that the contractor will evaluate local site requirements to determine if the requirement for the Source Custodian's name and telephone number is appropriate.

- At a second location, 30 mixed sources (sources containing more than one isotope) that had been reclassified from accountable to non-accountable status had labels that identified the sources as "AS" [accountable]. We were subsequently advised by Rocky Flats officials that following our review the 30 mixed sources were relabeled with the correct registry prefix "TS" [non-accountable].

- At a third location, 10 "standards," which contained special nuclear material and were treated by Rocky Flats as sealed radioactive sources in its ROCKMAS database, had source identification tags with the Source Custodian's name and telephone number and/or the source tracking number crossed out. We were subsequently advised by Rocky Flats officials that following our review the ROCKMAS sources were relabeled with new tags and the custodians were cautioned not to permit improper changing of the labels.

- In late February 2001, while reviewing files associated with the sources in our sample, Rocky Flats officials discovered that a required leak test had not been conducted for one of the accountable sources. Had we not requested the documentation for this particular source, it was possible the required leak test would not have been conducted within the required timeframe, since the tracking system did not indicate that a leak test was required for the source. The Source Custodian was tasked by the Radiation Source Program Administrator to conduct the leak test, which was required by 10 C.F.R. 835 to be conducted by March 10, 2001. We were subsequently advised by Rocky Flats officials that the required leak test was conducted on March 1, 2001.

We also had the following observations:

- We were told by a Radiation Source Program Administrator that at the time he took responsibility for the sources under his control, he did not open any of the storage containers that contained the sources, including those that did not have Tamper Indicating Devices (TIDs) on them, to confirm that the sources were, in fact, in the containers. He added that it is possible that some day someone could check any of the containers that he did not open and discover the sources to be missing. Several Source Custodians told us that they would not accept responsibility for sources unless they verified the sources were in their containers. Rocky Flats officials subsequently advised us that in accordance with site procedures and ALARA [as low as reasonably achievable] principles, those sources that are either in containers sealed with a TID or those that are classified as Hazard Source Code 4 or 5 should not be opened to confirm that the sources are in the containers. They stated that the scheduled semi-annual inventory was performed in July 2001, and all accountable sources were verified to be present, either visually, by intact TID, or by radiation detection instrument readings for those sources with Hazard Source Codes 4 and 5.

- Rocky Flats was the only site we visited that allowed sources to be removed from storage without being logged out. The site had a "15 minute" checkout rule that allowed workers to take a source from its storage cabinet for 15 minutes without signing for the source if the worker was located in the same room as the storage cabinet. According to the Radiation Source Program Administrator, the site "15 minute" checkout rule essentially states that, "if you are in view of the source locker," you do not have to sign out the source. We were subsequently advised by Rocky Flats officials that the use of a 15 minute period cited in their procedure in lieu of a documented checkout provides an appropriate level of control for source usage, minimizes an unnecessary administrative burden, and is a generally accepted industry practice.

- Standards containing special nuclear materials, which were tracked as sealed radioactive sources in the site's ROCKMAS database, were sometimes moved from their storage locations without notification of the responsible Source Custodian. Although not a site requirement, the Source Custodians we interviewed expressed concern that they were usually not notified by the special nuclear materials safeguards and security workers when the locations of their standards were changed. We were subsequently advised by Rocky Flats officials that even though the designated custodians for ROCKMAS sources may not be notified of each material movement, the location of the material is readily available in a timely manner by accessing the ROCKMAS database.

<u>Eastern Tennessee Technology Park (ETTP), formerly known as the K-25 Site</u>:

- One accountable sealed radioactive source had not been leak tested or inventoried as required by 10 C.F.R. 835 since 1999. Although the source was listed on the ETTP inventory list, the ETTP Source Control Coordinator said that the database did not show the source was due for a leak test and also listed an incorrect individual as the Source Custodian. Since the last known Source Custodian did not have possession of the source, the Source Control Coordinator was initially unable to physically locate the source. When the source was located, a review of the tag showed the last inventory and leak test was conducted on December 12, 1999, which was two years past due.

- Three other accountable sources had not been inventoried or leak tested as required by 10 C.F.R. 835 during all of 1999 and the first half of 2000.

- The tags on the three sources discussed above did not contain the name and telephone number of the correct Source Custodian or the correct Source Control Coordinator, as required by site procedures.

- The tag on an accountable source at another location did not contain the name and telephone number of the correct Source Custodian, as required by site procedures. Also, the ETTP inventory list showed custody of the source being transferred between two individuals, neither of whom was the individual on the tag. In addition, the date on the tag for the leak test was not updated.

Oak Ridge National Laboratory (ORNL):

- The back of the tags on six accountable sealed radioactive sources (two at one location and four at another) contained incorrect information. Four of the tags did not contain the name of the correct Source Custodian, while the remaining two tags did not contain the name and telephone number of the current Source Control Coordinator, as required by site procedures.

Y-12 National Security Complex:

- Tags on sealed radioactive sources at one storage location did not always contain the Source Custodian's telephone number, as required by site procedures.

- A tag on one accountable source at another location did not have the Source Custodian's telephone number, as required by site procedures.

Pantex Plant:

- Since mid-2000, a Source Custodian allowed the Electronics Crafts Group at Pantex to use his sealed radioactive sources without signing them out from their designated storage bay, as required by site procedures. The Source Custodian said that it was his policy to allow the Electronics Crafts Group to use his sources at other locations as long as the sources were returned by the end of the workday. According to the Radiation Control Manager, this could possibly be a Price-Anderson Amendments Act [nuclear safety] violation, as well as a 10 C.F.R. 835 [nuclear safety] rule flow-down violation.

- The tags on two accountable and one non-accountable sources did not contain the correct name of the Source Custodian, as required by site procedures.

Appendix C

SITE CORRECTIVE ACTIONS

Corrective Actions by the Nevada Test Site (NTS)

Following our visit to NTS, NTS officials notified us of actions taken to address the internal control weakness we identified at the site. NTS officials adequately addressed two of our concerns: the incident when an accountable sealed radioactive source was relocated without following site procedures, and the incident concerning a Source Custodian who lacked the required radiation safety training. Specifically, NTS officials: (1) conducted a review of training for all Source Custodians to ensure training was current; (2) tasked the Health Physics Department to provide lessons learned guidance; (3) required all Source Custodians to review the NTS "Source Accountability and Control Directive," CD-0441.007; and (4) tasked the Health Physics Department to enter a "Computerized Requirement Evaluation, Assessment, and Technical Evidence System" (CREATES) action for warehouse management to review the radioactive material receipt process.

NTS officials did not adequately resolve our concerns regarding the lack of documentation to show that three accountable sources had been inventoried and leak tested, as required. Although NTS officials subsequently provided documentation that showed two of the three sources were inventoried and leak tested during the period in question, insufficient documentation was provided to show the third source had been inventoried or leak tested during the second half of 2000. NTS officials also did not address our concern that it was not possible to determine from the NTS sealed radioactive source database when sources, which were in use, had been leak tested since the entry field for leak test dates contained only the term "inventoried."

Corrective Actions Taken by the Pantex Plant

Following our visit to the Pantex Plant (Pantex), Pantex officials notified us of actions taken to address the internal control weakness we identified at the site. Pantex officials adequately addressed our concern regarding mislabeled sealed radioactive sources. Source labels were corrected and appropriate training was provided to all Source Custodians.

Pantex officials also adequately addressed our concern regarding the Source Custodian who allowed users to borrow his sealed radioactive sources without tracking them. Pantex officials reported that they had appropriate procedures in place, but retrained all of the Source Custodians and users.

Corrective Actions Taken by Rocky Flats

In comments dated February 14, 2002, to our draft report, Rocky Flats officials advised of actions taken to address the internal control weaknesses we identified at the site. Rocky Flats officials adequately addressed our concerns regarding 55 sources that were listed on the site's sealed radioactive source database as "missing over 90 days." They stated that the procedure for administration and control of sources was enhanced to: (1) clarify the steps to be taken for accountable and non-accountable sealed radioactive sources when processing excess sources for

disposal; (2) include a new designation in the source control registry software to accurately identify sources destined for disposal as radioactive waste and update the database accordingly; and (3) initiate action to require review of the source control database for input errors.

Rocky Flats officials also adequately addressed our concern regarding 30 mixed non-accountable sources that were not labeled as such. They stated that the 30 mixed sources were relabeled with the correct registry prefix following our inspection. In addition, Rocky Flats officials adequately addressed our concern regarding 10 ROCKMAS sources that were not labeled with information regarding the current source custodian. They stated that the ROCKMAS sources were relabeled with new tags and the custodians were cautioned not to permit improper changing of the labels.

Rocky Flats officials have not yet addressed our concern regarding 30 accountable sources that did not contain the name and telephone number of the source custodian, as required by local site procedures. They stated that their contractor would evaluate local site requirements to determine if the requirement for the Source Custodian's name and telephone number is appropriate.

Corrective Actions Taken by theY-12 National Security Complex

Concerns that we identified regarding incorrect labeling of sealed radioactive sources were adequately addressed at the time of our site visit.

Corrective Actions Taken by Oak Ridge National Laboratory

Concerns that we identified regarding incorrect labeling of sealed radioactive sources were adequately addressed at the time of our site visit.

Corrective Actions Taken by the Eastern Tennessee Technology Park (ETTP)

Concerns that we identified regarding one accountable source that had not been leak tested or inventoried since 1999 were adequately addressed at the time of our visit. However, we have not received information from ETTP officials regarding corrective actions taken to address our other concerns with the control and accountability of sealed radioactive sources.

The Under Secretary of Energy

Washington, DC 20585

February 14, 2002

MEMORANDUM FOR THE INSPECTOR GENERAL

FROM: ROBERT G. CARD /s/
UNDER SECRETARY FOR
ENERGY, SCIENCE AND ENVIRONMENT

SUBJECT: Response to Draft Inspector General Report, "Inspection of the Accountability and Control of Sealed Radioactive Sources at Selected Department of Energy Sites"

I am pleased that you "have found no evidence that the Department of Energy's (DOE) work with sealed radioactive sources had adversely impacted the safety and health of DOE and contractor employees or the public." I accept the recommendations given in this Inspector General (IG) draft report.

To address your first recommendation, I have directed the responsible Secretarial Officers to review the IG report and to take appropriate action within the context of their Integrated Safety Management systems. This includes actions on the part of both the contractor and the DOE line management to ensure that the IG recommendations are addressed in their self-assessment process and the annual field assessment of the contractor in accordance with DOE line management oversight (DOE Policy 450.5).

To address your second recommendation, General Gordon and I will issue a joint memorandum that it is our policy that sites be responsible for the disposition of their surplus sealed sources. We will inform the DOE complex (both NNSA and non-NNSA sites) of the surplus sealed radioactive source disposition planning capabilities developed by EM that are available to other interested offices in fiscal year 2002. Experts from the Non-Actinide Isotopes and Sealed Sources Management Group (NISSMG), established at the Albuquerque Operations Office, are assisting EM closure sites to disposition surplus nuclear materials, including sealed sources, stored at their facilities. For example, the NISSMG, working with experts from the Oak Ridge National Laboratory (ORNL), assisted Mound to transport Ionium (^{230}Th) ampoules to the ORNL for recovery of the valuable radioisotope protactinium (^{231}Pa) for research.

Specific comments on the draft report are included as Attachment 1. Site-specific comments are addressed in Attachment 2. Coordination with NNSA has occurred in preparing this response.

If you have any further questions, please feel free to contact Ms. Jessie Hill Roberson, Assistant Secretary for Environmental Management, at (202) 586-7710, or Ms. Patrice Bubar, Associate Deputy Assistant Secretary, Office of Integration and Disposition, at (202) 586-5151.

Attachments

Department of Energy

National Nuclear Security Administration
Washington, DC 20585

MEMORANDUM FOR SANDRA L. SCHNEIDER
ASSISTANT INSPECTOR GENERAL
FOR INSPECTIONS

FROM: RICHARD M. SPEIDEL, DIRECTOR /s/ 12/17/01
POLICY AND INTERNAL CONTROLS
MANAGEMENT
OFFICE OF THE ASSOCIATE ADMINISTRATOR FOR
MANAGEMENT AND ADMINISTRATION

SUBJECT: REVISED COMMENTS ON INSPECTOR GENERAL
DRAFT REPORT

I have attached revised comments to the Office of the Inspector General's draft report, "Inspection of the Accountability and Control of Sealed Radioactive Sources at Selected Department of Energy Sites." This revision is being submitted after discussions with your staff. Should you have any comments or questions, please do not hesitate to contact me at 202-586-5009.

Attachments

cc: Director, Office of Environment, Safety and Health Operations Support

Management Decision—Revised
on Inspector General Draft Report
"Inspection of the Accountability and Control
of Sealed Radioactive Sources
at Selected Department of Energy Sites"

General Comments:

The National Nuclear Security Administration (NNSA) agrees that the accountability and control of sealed radioactive sources is a vital element of our radiation protection programs. The Administrator welcomes the Inspector General's report as a significant contribution to our continuous feedback and improvement process. The NNSA agrees that, while the issues identified in the report do not individually represent significant concerns, they collectively indicate a pattern that demonstrates a weakness in compliance with Departmental regulations and site-specific procedures and policies.

In accordance with DOE and NNSA policies, it is the responsibility of the cognizant contractor to ensure compliance with DOE rules and Orders, and the responsibility of the NNSA line managers to oversee the contractors' activities and processes. Furthermore, it is the responsibility of NNSA line managers to ensure that adequate guidance and support is provided to the contractors where necessary and appropriate. Therefore, NNSA concurs with both recommendations directed towards it, as they are stated, and agrees that they are appropriate, necessary, and sufficient to address the issues of concern.

Assuming that the report's recommendations are not revised, NNSA intends to take the following actions upon the issuance of the final inspection report:

1. The NNSA will issue a memorandum to all NNSA field elements. This memorandum will direct them to ensure that contractor line management under their cognizance is aware of the concerns identified in the report, and that the contractor takes appropriate action to identify and correct any potential weaknesses in their sealed radioactive source control programs. In addition, the NNSA field elements will be directed to ensure that their daily and/or periodic oversight activities include a focus on the contractors' sealed radioactive source control programs.

2. The NNSA will ensure that NNSA works with the Office of Environmental Management (EM) and other DOE elements towards the development and dissemination of guidance for the disposal or re-application of unwanted radioactive sources. As noted in the draft IG report, NNSA recognizes that there are EM sponsored technical resources such as the Non-Actinide Isotopes and Sealed Sources (Nuclear) Material Management Group (NISSMG) that have experience in the disposition planning of excess sealed sources. We will communicate to contractor line management, the capabilities and availability of these technical resources such as NISSMG to support the NNSA sites seal source management program.

IG Report No. DOE/IG-0544

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2. What additional information related to findings and recommendations could have been included in the report to assist management in implementing corrective actions?

3. What format, stylistic, or organizational changes might have made this report's overall message more clear to the reader?

4. What additional actions could the Office of Inspector General have taken on the issues discussed in this report which would have been helpful?

5. Please include your name and telephone number so that we may contact you should we nay any questions about your comments.

Name _____ Date _____

Telephone _____ Organization _____

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Washington, DC 20585

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