



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

August 3, 2001

Institute of Scrap Recycling Industries, Inc.  
Attn: Mr. Mike Mattia  
Director of Risk Management  
1325 G Street, NW, Suite 1000  
Washington, DC 20005

SUBJECT: REQUEST FOR INFORMATION ON LOST AND FOUND RADIOACTIVE  
SOURCES

Dear Mr. Mattia:

This is in response to your letter dated June 5, 2001, requesting aids for your recycling facility training course on radioactive sources that were found and removed from the public domain. We searched our Nuclear Materials Events Database (NMED) and other historical files and are able to provide you with the following:

1. Two case studies that include pictures of sources recovered from scrap metal.
2. Nine reported incidents within the last five years of devices that were lost and found.
3. Illustrations of devices that are likely to be lost and found at recycling facilities.

A hard copy of this information is enclosed. A CD containing related files in BMP, JPG, PDF, and WPD formats is also enclosed. If you need further help, please contact Jonathan Rivera of my staff at 301-415-5810.

Sincerely,

*Dr. Downis-Beth Howe  
for*

Frederick Sturz, Section Leader  
Materials Safety and Inspection Branch  
Division of Industrial and  
Medical Nuclear Safety  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: As stated

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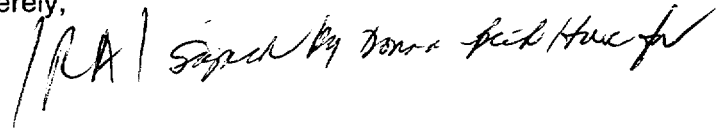
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\* See previous correspondence

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**ENCLOSURE 1**  
**Case Studies**

**Case #1:**

On May 16, 1997, the licensee Anheuser Busch, Inc. reported to the NRC that two level gauges, each containing approximately 100 millicuries of Americium-241, were missing from its St. Louis, Missouri plant. They reported the loss in accordance with the regulatory requirements in 10 CFR 20.2201: "Reports of theft or loss of licensed material".

The level gauges were manufactured by Peco Controls Corporation located in Milpitas, CA. Each gauge holds a Model Number AMC36 low-energy photon source capsule prepared and distributed by AEA Technologies (Amersham) Corporation. The source is triple encapsulated and is contained in a level unit container which is 10" x 8" x 4" in size. A diagram of the source is shown in Figure 1 (from **Anheuser1.pdf** on the CD). Figure 2 is a diagram of the Peco Controls Corporation gauge (from **Anheuser2.pdf** on the CD). [Note: **Anheuser1.pdf** and **Anheuser2.pdf** are the registration certificates for the source and the gauge.]

As of February 23, 1997, both sources have decayed to approximately 98 millicuries.

On May 6, 1997, a demolition project took place at the St. Louis plant, at which time the production line conveyor holding the level gauges was removed and taken to Rimco, Inc., a scrap processor also located in St. Louis. The Anheuser Busch supervisor responsible for the demolition mistakenly assumed that the radiation sources had already been removed from the gauges, and the gauges could be handled and disposed of without regard to radiological concerns.

On May 15, 1997, the Anheuser Busch Environmental Engineer visited the work area to verify the scope of work for the removal of the sources. He then discovered that there had been a mis-communication about the status of the sources in the gauges, that the production line conveyor had already been removed, and that the gauges were missing. A search of the plant and discussion with employees confirmed that the gauges and the demolished production line conveyor had been transferred to the scrap processor.

On May 16, 1997, the Environmental Engineer contacted the scrap processor and requested that operations with the scrap metal collected from Anheuser Busch be stopped. Anheuser Busch and its health physics contractor then visited the Rimco site and searched the scrap sorting area. This resulted in recovery of the outer housings and electronics from both gauges, along with the inner housing, source shield, and bushing from Gauge #2 and Source #2. The inner housing, source shield, and bushing from Gauge #1 and Source #1 were not recovered.

After the Anheuser Busch scrap was received at RIMCO, it was broken up, sorted by type (e.g., aluminum, ferrous metals, etc.) packaged and either staged on-site or shipped to smelters for use in steel production. Anheuser Busch secured a listing of companies to whom RIMCO had sent scrap during the time period of interest (May 6 through May 16, 1997), along with a description of the physical form of the scrap that was sent.

On May 24, 1997, the search for Source #1 was terminated.

Figures 3 and 4 are images of the low-energy photon source capsule prepared and distributed by Amersham Corporation (**Amersham1.bmp** and **Amersham2.bmp** on the CD). Figure 3 is the actual source by itself. Figure 4 is a dummy source. Both sources in these two figures are the same size.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF SOURCE  
(AMENDED IN ENTIRETY)

NO: IL-136-S-278-S

DATE : March 3, 1988

PAGE: 2 of 4

SOURCE TYPE: Low Energy Photon Source

DESCRIPTION: This source consists of a tubular capsule, the X.103, containing radioactive ceramic beads. Both ends of the capsule are sealed by tungsten inert gas welding

The radioactive beads are prepared by mixing a non-radioactive glass frit with Americium-241 oxide and then fusing the mixture at high temperature to form a homogeneous ceramic bead.

The capsule is prepared from stainless steel tubing which is plugged at one end and then TIG (tungsten inert gas) welded. The radioactive ceramic beads are then loaded (along the major axis of the capsule) and the open end of the capsule plugged and TIG welded to completely close the capsule.

The maximum active length of the source train of ceramic beads is 20 mm. Each bead is 1.9 mm in diameter. The overall length of the X.103 stainless steel 316 or 321 capsule is 30 mm, and the diameter is 2.6 mm.

The working life of the source capsule is 10 years. The source is designed to contain a maximum of 100 mCi  $\pm$  10% Americium-241.

LABELING: All sources are marked by permanent engraving with the manufacturer's logo, **nuclide**, activity, serial number, and radiation symbol.

DIAGRAM:

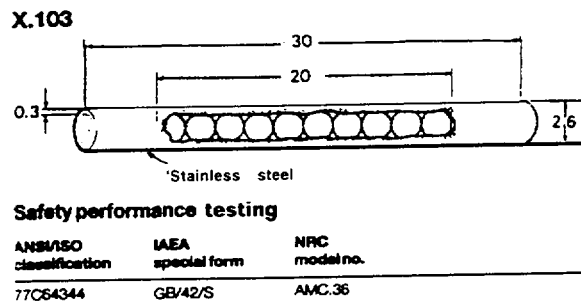


Figure 1

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE

(AMENDED IN ITS ENTIRETY)

NO: CA533D103G

DATE: January 15, 1997

PAGE: 8 of 9

DEVICE TYPE: Gamma Gauge

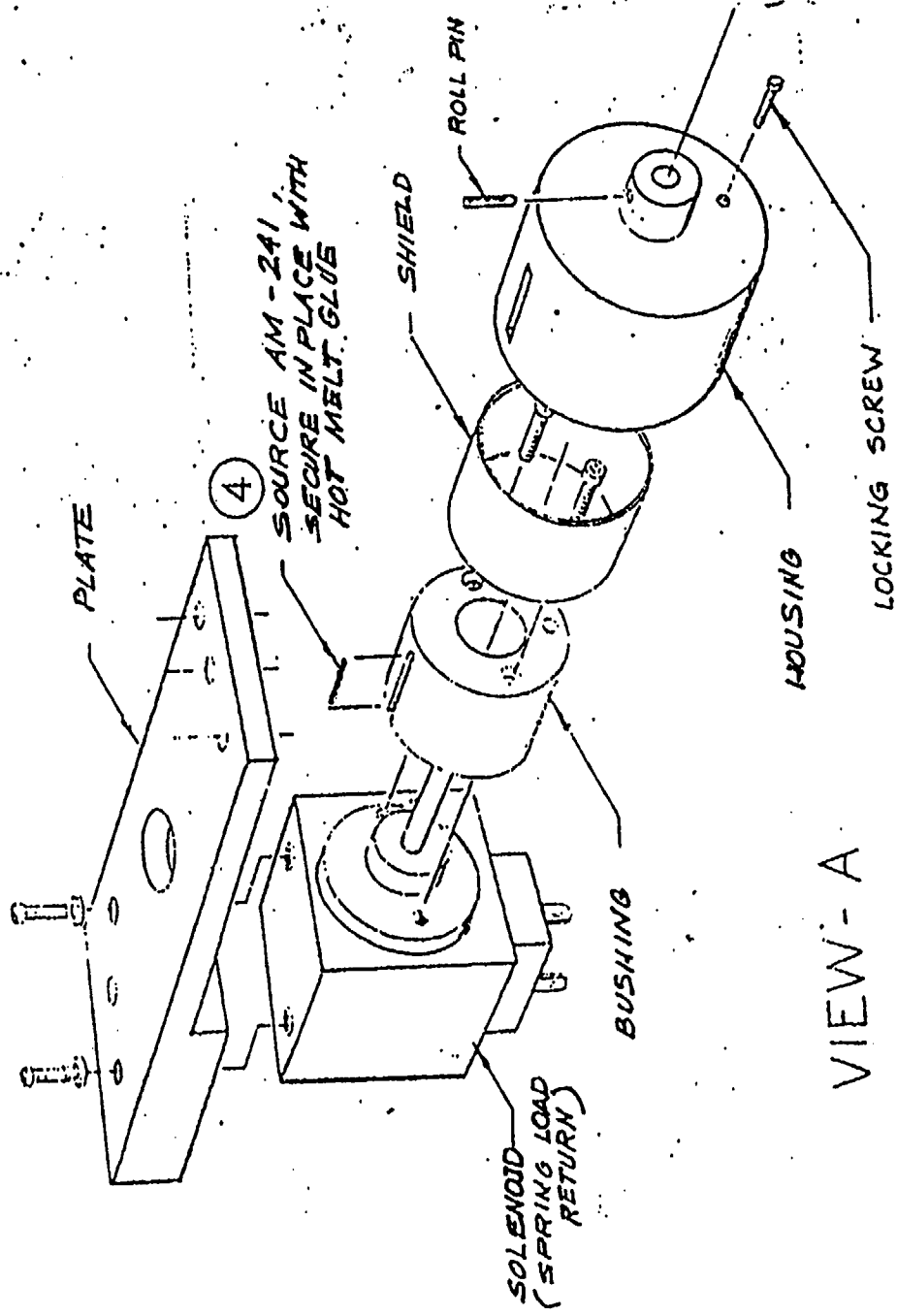
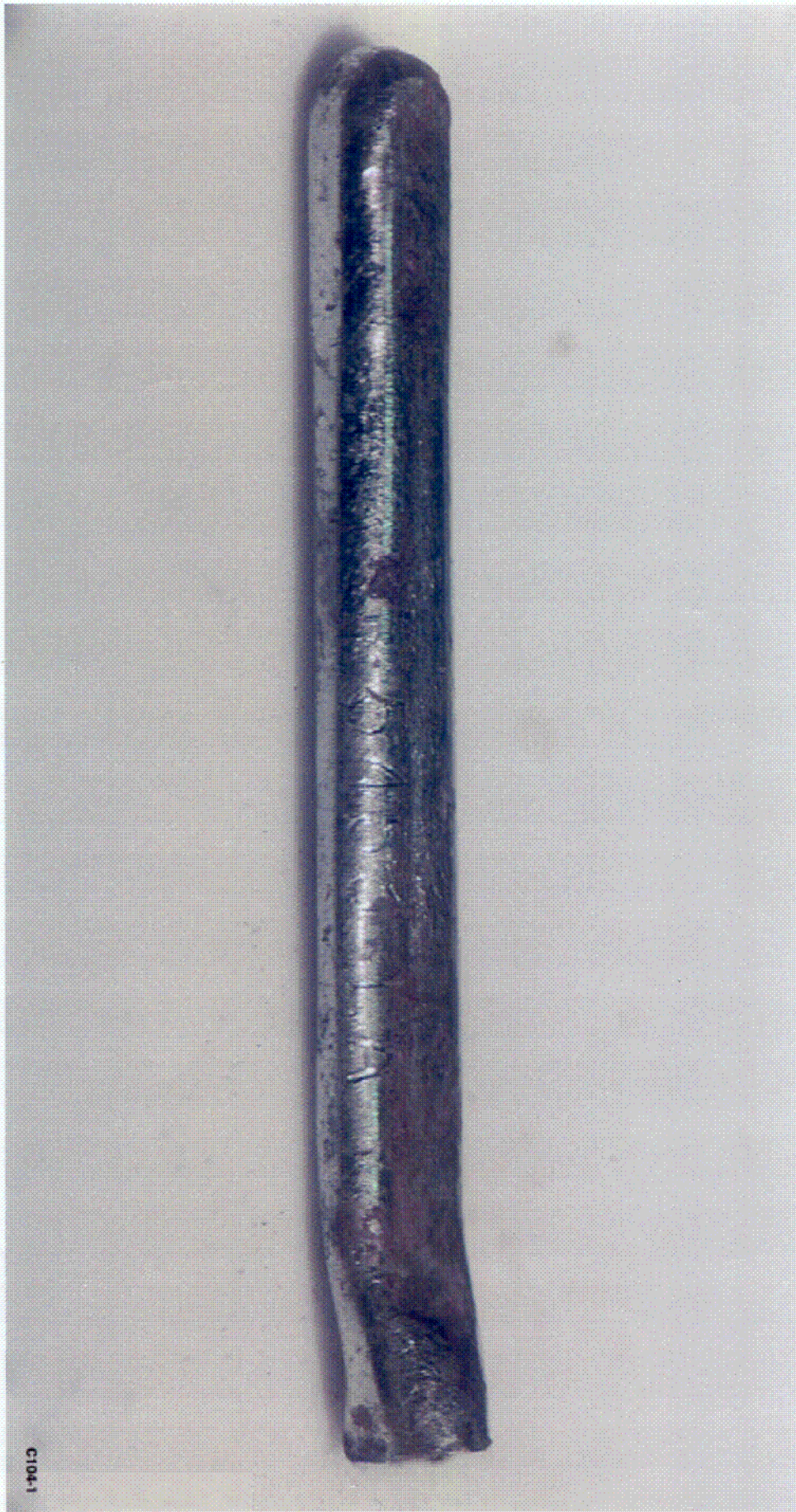


FIGURE 2



C104-1

Figure 3



Figure 4



**Case #2:**

On March 26, 2000, the Tennessee Division of Radiological Health notified the Georgia Department of Natural Resources about the return of a scrap metal shipment due to elevated radiation levels. A dump trailer load of aluminum scrap had been rejected and returned from Alchem Aluminum Recycling of Shelbyville, Tennessee, to Newell Recycling of East Point, Georgia due to elevated radiation levels of approximately 0.4 mR/hr on the exterior of the truck (using a Ludlum Model 19).

Georgia Radiation Control (GRC) personnel responded at Newell. Staff of the Georgia Environmental Radiation Program and the Radioactive Materials Program surveyed the scrap. The load was dumped and sorted and a piece of aluminum that had been processed through a shredder was found. This piece of crumpled aluminum was roughly cylindrical in shape (~ 4"-5" dia.) with no identifiable markings or discernable features. This piece had elevated radiation levels and removable contamination. Maximum radiation levels were measured as 2 mR/hr (on contact with same end with removable contamination) using a Ludlum Model 19. Removable contamination was identified as Americium-241 using an Exploranium Model GR130. The source was bagged and secured onsite pending disposal.

On April 18, 2000, the State of Georgia contacted IMNS (Division of Industrial and Medical Nuclear Safety at the NRC) to request DOE assistance/acceptance with this found source.

The material was packaged and shipped to Alaron Corporation in PA for analysis. Alaron will attempt to identify markings that could be used to determine the manufacturer or former owner, and verify the isotope and activity. Below is the picture of this source, between the screwdriver and the wrench (**Case2Picture.wpd** on the CD).



## ENCLOSURE 2

### Reported incidences of recovered sources from scrap metal

#### Event #1:

On July 6, 1998, an individual with the licensee (Orion Elizabeth New Jersey) identified an abandoned fixed density gauge, mounted on a piece of pipe, during renovation of property located in Elizabeth, New Jersey. The gauge (TN Technologies model 5203) contained a 37 GBq (1 Ci) Cs-137 (generally licensed) source. The New Jersey Department of Environmental Protection conducted preliminary surveys that indicated radiation readings of approximately 2 - 4 mR/hour at a distance of 1 foot. The New Jersey Department of Environmental Protection's preliminary field wipe test did not indicate the presence of contamination. Caution tape extending approximately 10 feet in radius was established to prevent inadvertent personnel exposure. The individual believed that the gauge may have been owned by a now defunct company (Walsh Remedial Construction) that did work at this location about a year before. Orion Elizabeth New Jersey hired a contractor to dispose of the gauge. An NRC inspection noted that Walsh Remedial Construction (a general licensee) abandoned the facility and the gauge during the summer of 1997. The gauge source holder was damaged. The pictures related to this event are below. (**Events.wpd** on the CD).



#### Event #2:

On February 13, 2001, the Commonwealth of Virginia reported that a generally licensed Kay Ray, Incorporated, fixed level gauge (model 7062) was found in a shipment of scrap metal that had been sent to Cycle Systems (a scrap metal recycling facility) located in Lynchburg, Virginia. The gauge contained a Cs-137 source with an activity of 1.85 GBq (50 mCi). On 2/14/2001, the licensee (Martin Marietta Anderson Creek Rock Quarry) was notified by Cycle Systems that the shipment of scrap metal received from their facility had set off a radiation monitor alarm. On 2/15/2001, the licensee received the gauge with the shutter mechanism in the closed position from Cycle Systems. The licensee locked the gauge shutter mechanism in the closed position and secured it in an area to prevent access and unauthorized removal. The licensee was in the process of cleaning up scrap metal that had been received from other licensee facilities that have been dismantled as well as refurbishing equipment at their facility. The licensee was unaware that this gauge was at its facility and is not aware of other devices at this facility. The licensee will contact the manufacturer of the gauge to determine which facility the gauge came from and what measures they need to take to properly dispose of the gauge.

### **Event #3:**

On November 7, 2000, the Alabama Office of Radiation Control went to Hueytown, Alabama, to investigate the finding of a generally licensed TN Technologies, Incorporated, density or level gauge source housing (model 5191, serial #B-1806) containing 37 GBq (1 Ci) of Cs-137 (assay date: 6/14/1982). The source housing was discovered by K-Lee Processing personnel in a wooded area near a settling pond away from personnel, on private property not accessible to the general public. It is believed that the source housing has been in that location since early 1992. The source housing was originally sold and shipped in 9/1982 to Tailing Products Corporation in McMurray, Pennsylvania. The device remained in that location until Design Fuels Corporation acquired the plant out of bankruptcy on 4/11/1989. When the plant was dismantled and moved to Rosa, Alabama, in 1989 by Design Fuels Corporation, the source holder was apparently transported with the shutter still locked in the open position. This transport occurred without a license from the State of Alabama. The device remained at the Rosa site (near Oneonta, Alabama) until it was transported to Hueytown, Alabama, with other equipment from the site. When the sale of this equipment fell through, Design Fuels Corporation arranged to retrieve this equipment. For unknown reasons, the gauge was not picked up. It is believed that up until the time of its discovery, the source housing shutter was locked in the open position. Maximum exposure rate readings with the shutter open were 2.6 cSv/hour (2.6 rem/hour) at near contact with the pipe opposite the source housing. After closing the shutter, maximum readings were 18 uSv/hour (1.8 mrem/hour) at contact with the pipe opposite the source housing, 5 uSv/hour (0.5 mrem/hour) at 30 cm, and 70 uSv/hour (7.0 mrem/hour) at contact with the source housing. The source was tested for leakage and results were negative. The source housing shutter was subsequently locked in the closed position and the source housing moved to a secure storage location near Hueytown, Alabama, until final disposition. Further investigation determined that a second generally licensed TN Technologies, Incorporated, gauge (model 5191, serial #B-1808) containing 74 GBq (2 Ci) of Cs-137 (assay date: 6/10/1981) was also shipped to the same Tailing Products Corporation plant in McMurray, Pennsylvania, and may have been in the possession of Design Fuels Corporation. The location of this gauge is unknown. LTV Steel Company, Incorporated, of Cleveland, Ohio, (NRC license #34-00811-04 and 34-00811-05) was also contacted by the NRC regarding the location of the missing gauge due to bankruptcy papers showing that both gauges were transferred to them in October 1986. LTV Steel indicated that they are not in possession of the gauge. (Licensee: Design Fuels Corp.)

### **Event #4:**

The Louisiana Department of Environmental Quality reported that a 3.7 GBq (100 mCi) Cs-137 source (model 696894), manufactured by TN Technologies, Incorporated, in 1991, was found at Southern Scrap Yard in Baton Rouge, Louisiana. The source was part of a source housing (model 5200, serial #B2209) used by the licensee (Formosa Plastics) in conjunction with a level gauge. The attachment plate on the housing was damaged by a shredder at Southern Scrap. This action exposed the source, leading to its discovery. A TN Technologies representative recovered the source on 3/30/2000. Four wipe tests were performed on the source and results of the wipes showed no contamination. There was no contamination of the area. The source housing's shutter was not sheared off and was returned to the locked position. The housing was returned to the licensee on 3/31/2000. The licensee does not know how the source housing escaped their possession. The State of Louisiana is investigating how the source ended up in the scrap yard.

**Event #5:**

The Allegheny County Health Department reported that depleted uranium triggered the radiation monitor alarms at a scrap yard. In 1994, the licensee (Mercy Hospital) transferred a Varian Clinac 4 linear accelerator (LINAC) to the South Pittsburgh Cancer Center (SPCC), who did not have an NRC license for possession of the depleted uranium contained in the unit. SPCC intended to send the unit to Columbia, South America. The proposed recipient in Columbia declined to take the unit and the unit was disassembled at SPCC. The pieces, including the depleted uranium blocks, were sent to a scrap yard for disposal. When the pieces (including the depleted uranium) arrived at the scrap yard, the radiation monitor alarmed. The unit was subsequently returned to the SPCC. The FBI was notified by an unrelated party and the FBI notified the Allegheny County Health Department. The Allegheny County Health Department sent an inspector to the SPCC on 10/24/2000 and the inspector measured 0.38 to 0.56 mSv/hour (38 to 56 mrem/hour) on contact with four black, rectangular blocks found in the basement. Removable contamination measurements of the blocks revealed 20 to 27 cpm and markings on the blocks identified the material as uranium. During an NRC investigation, the Office of Investigations (OI) determined that SPCC was also in possession of a second LINAC containing depleted uranium, which was purchased from an unknown entity in Ohio. A representative from the Pennsylvania Department of Environmental Protection verified that the depleted uranium bricks from both LINAC units were present at SPCC on 10/30/2000.

**Event #6:**

Representatives from the New York Department of Labor and the State of New Jersey reported that depleted uranium (DU), in the form of a primary collimator from a linear accelerator that originated from the licensee (Acceliner Service Co.), had set off radiation monitor alarms at Co-Steel Sayreville in Sayreville, New Jersey. The licensee is a company that services linear accelerators used for radiation therapy. The licensee frequently buys outdated accelerators, ships them to their warehouse in Ramsey, New Jersey, and recovers useable parts. During September 2000, a Varian accelerator (model 6100) of vintage 1990 was being gutted at the licensee's warehouse. The "nose" of the machine is made up of about 300 pounds of steel and includes a primary collimator made of DU. One of the licensee's employees used a forklift to pick up the "nose" of the machine, including the collimator, and placed it into a 30 yard rolloff box with other metal to be recycled. The rolloff box was picked up by Waste Management, Incorporated, on 9/28/2000. The load of scrap was then stored overnight at Marangi Brothers, Incorporated, (a wholly owned subsidiary of Waste Management, Incorporated) of Hillburn, New York. On 9/29/2000, the load of scrap was delivered to the Rockland County Materials Recovery Facility in Hillburn, New York. The load of scrap metal was later transferred to Teplitz scrap yard in Nanuet, New York, who eventually shipped the scrap to Co-Steel. The licensee estimated that the DU recovered from Co-Steel weighs approximately 70 pounds and contains an activity of approximately 0.93 GBq (25 mCi). To prevent recurrence, the licensee improved their DU handling and storage policies. These improvements include clear tagging, logging, and tracking of all items containing DU, storing all items containing DU in a designated area, and improved radiation surveys (both by the licensee and by the waste hauler). In addition, the licensee entered into an agreement with Starmet Corporation of Concord, Massachusetts, to accept most of the licensee's DU, thereby significantly reducing the licensee's DU inventory.

**Event #7:**

The licensee (Oklahoma Gas & Electric Co.) reported that a Cs-137 source from an Ohmart source housing (model SHDP, serial #977) was discovered missing from a group of sources removed from the Muskogee Power Plant for disposal. The source housing was placed in service in 1982 and contained a 7.4 GBq (200 mCi) source at that time. The source housing was removed from service in 1998 and placed in storage in a warehouse at the Muskogee Generating Station. In June 1999, a tornado demolished the warehouse. The source housings were recovered and moved to a new storage location. On 5/13/2000, the licensee transferred the source housings to Radiation Technology, Incorporated. On 5/17/2000, the licensee was notified by Radiation Technology, Incorporated, that one of the source housings was empty. At the time that source housing was transferred to Radiation Technology, Incorporated, the licensee noted that the bottom of the source housing had cables and bolts sheared off, most likely allowing the source to fall out. However, at the time the housing was transferred to Radiation Technology, the staff believed the source and source holder were still in the source housing. The licensee did not notice this damage when the housing was removed from its use location in 1998. The licensee's RSO performed surveys on 5/18/2000 in the warehouse where the housings were previously stored and in areas of the Generating Station where the gauges were previously used. The missing source was not located. The direct cause of the loss of the source was the damaged source head. The licensee believes that the damage was most likely caused by the tornado. Contributing causes included the failure to examine each source housing prior to transferring them to a second warehouse, and the failure of licensee personnel to perform a radiation survey of each source housing to ensure the sources were still contained within. The probable root cause was the licensee's failure to recognize the possibility that a source head could have been damaged, and the possibility of its source becoming detached from the source housing. To prevent recurrence, the licensee's RSO will meet annually with plant personnel to discuss nuclear safety awareness.

**Event #8:**

The Georgia Radioactive Materials Program reported that a radioactive source had been identified in a trailer of scrap metal located at the Newell Recycling scrap metal facility. Personnel from the Georgia Radioactive Materials Program conducted surveys of the trailer, isolated the source, and conducted tests for leakage and contamination. The source was not leaking. Initial radiation levels outside the trailer were measured up to 3.0 uSv/hour (300 urem/hour) and 3.0 cSv/hour (3 rem/hour) inside the trailer in the immediate vicinity of the unshielded source. Following the removal of the source from the trailer, the radiation levels of the remaining scrap metal were determined to be at background. Twenty-six smears were taken on various pieces of scrap removed from the trailer and the floor in the vicinity of where the source was found. No removable or fixed contamination was noted. The source (model 3F1L, serial #1389) was identified as being manufactured by the 3M Company in July of 1984 and contained 3.7 GBq (100 mCi) of Sr-90 as sealed glass microspheres. The source now contains an activity of approximately 2.5 GBq (66.8 mCi). The source was shielded, secured, and stored at the Newell Recycling facility until appropriate disposal could be arranged. The Georgia Radioactive Materials Program determined that the source was sold to INDEV Gauging Systems located in Providence, Rhode Island, in a generally licensed device. INDEV Gauging Systems searched their database and determined that the last time they had worked with the source was 5/1/1995. The source was distributed to Atlas Roofing Corporation located in Hampton, Georgia. The Georgia Radioactive Materials Program contacted Atlas Roofing to

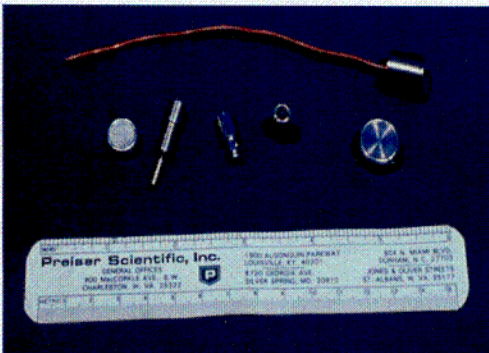
determined the disposition of the Betamike containing the Sr-90 source. Atlas Roofing stated that a former maintenance manager had placed the source and holder in storage and that sometime between then and now it had been removed and scrapped, but they did not know by whom or how. The Georgia Radioactive Materials Program conducted an inspection at the Newell Recycling facility on 11/3/2000 and determined that the likelihood of radiation exposure to members of the public is low because the handling of scrap material at the facility, the scrap hauler, and the scrap recycle facility does not include any manual handling of scrap for disassembly or size reduction of metal scrap. The scrap metal recycler uses either a shredder or metal shears to reduce the size of the scrap. The source holder/gauge went through one of these two processes. INDEV Gauging Systems recovered the source and reported that the source showed significant external damage (badly misshapen and beat up and the window had the appearance of being ripped), consistent with the gauge having been subjected to the recycler's shredder or metal shears. The Georgia Radioactive Materials Program received a letter and leak test results from INDEV Gauging Systems acknowledging receipt and possession until disposal of the source. Leak test results were less than 185 Bq (0.005 uCi). (Licensee: Newell Recycling)

**Event #9:**

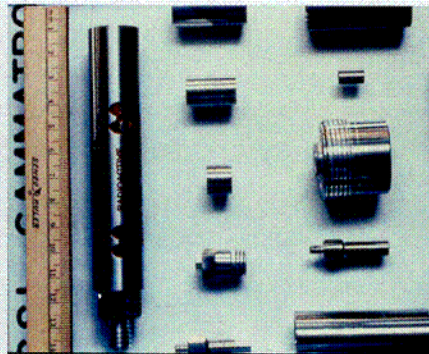
The licensee (Department of the Air Force) reported the loss of two Amersham 0.15 MBq (4 uCi) Am-241 sources (model AMM.7, serial #1174 and 1176) contained within a Low Altitude Navigation Targeting Infrared (LANTIRN) pod, due to the crash of an F-16 approximately 10 miles north of Donaldsonville, Georgia. The Disaster Control Group moved all aircraft material from the crash site to Moody AFB, Georgia. The damaged LANTIRN pod was recovered. The licensee believes that the sources are still inside the pod, which will be disposed of as radioactive waste.

## ENCLOSURE 3

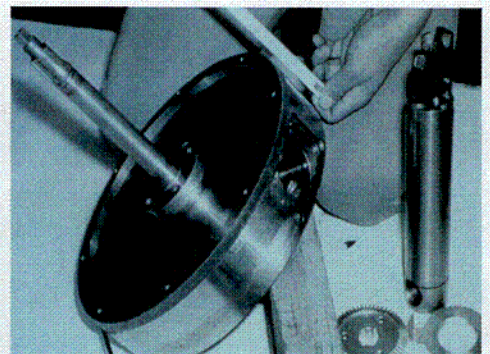
Pictures of sources and devices that are likely to be lost and found at recycling facilities (also provided as 1.jpg through 18.jpg on CD)



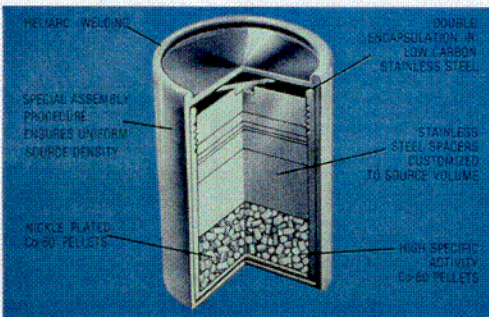
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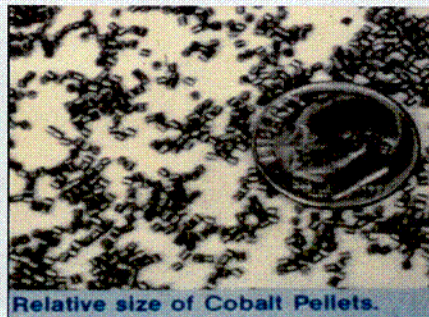
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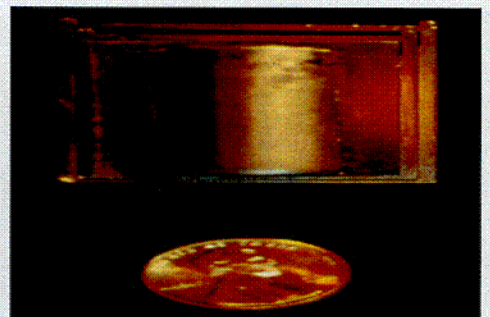
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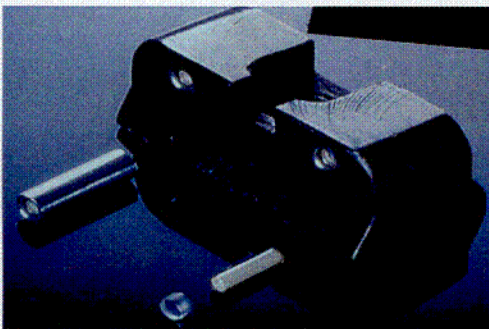
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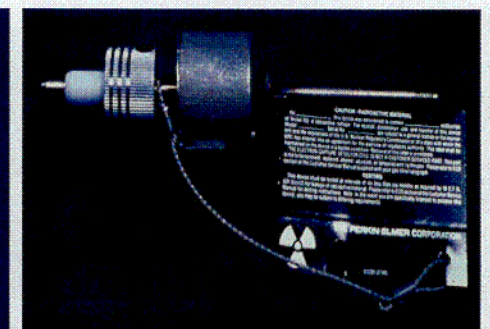
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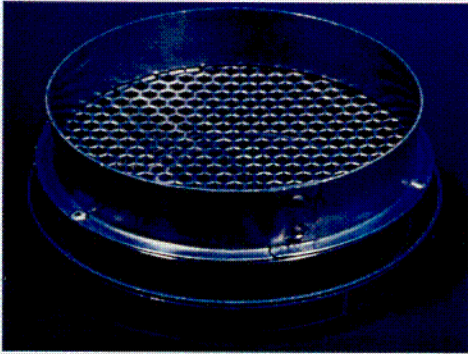


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Pictures (Cont.)

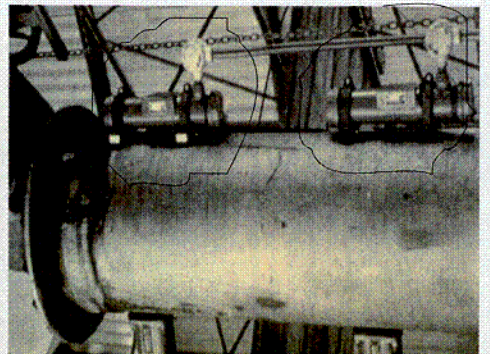
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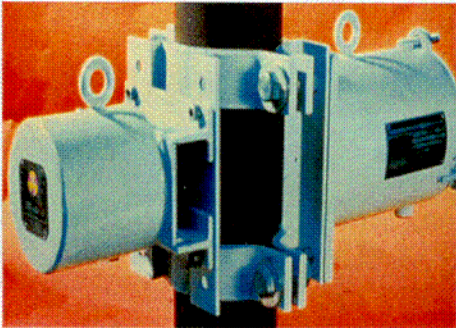
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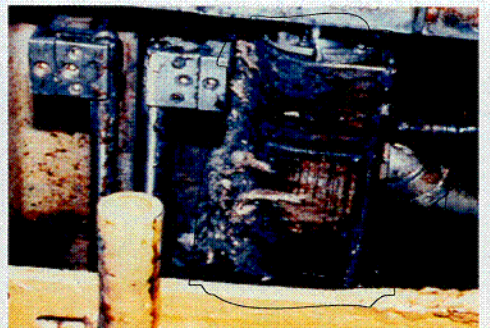
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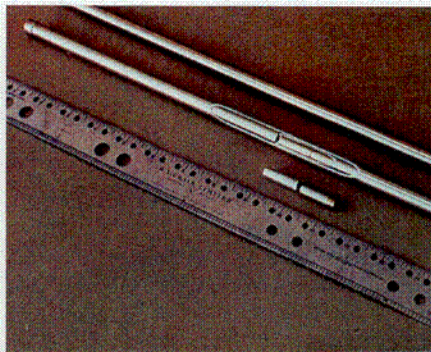
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15



16



17



18



## **Pictures of sources and devices that are likely to be lost and found at recycling facilities**

### **Picture 1:**

Six different sources in a variety of shapes and sizes. The one across the top (with the brass wire) is a Krypton-85 source with an activity of 1.5 curies. The one on the far left is an Americium-241 source that is used in X-ray fluorescence. An example of this type of source is Model AMC 2084 manufactured by Amersham Corporation which has a maximum activity of 10 millicuries. The one to the right of that is an Iridium source with an activity of 220 curies and is used in radiography. The following one is a Cesium source with an activity of 500 millicuries and is used in gauging. The last two sources to the right are gauging sources with Americium and Cesium sources, respectively. All these sources can have activities ranging from microcuries to curies.

### **Picture 2:**

Americium-241 well-logging sources. An example of this type of device is Model NSR-M manufactured by Schlumberger Technology Corporation, which has a maximum activity of 20 Curies.

### **Picture 3:**

Empty teletherapy head that would contain Cesium-137 or Cobalt-60 sources similar to the one in **Picture 4**. The sources would be inserted into the side of the teletherapy head (the hole on the side visible in the picture). The teletherapy head can have a total activity up to 30,000 Curies.

### **Picture 4:**

Teletherapy source that contains Cobalt-60 pellets with activities ranging from 20 to 100 curies each. In total, the whole source can have an activity up to 6,000 curies due to the many small sized pellets. This source was manufactured by AECL/Theratronics (now called Nordion).

### **Picture 5:**

Cobalt-60 pellets used in the teletherapy source of **Picture 4**.

### **Picture 6:**

Cobalt-60 source using a slug instead of pellets.

**Picture 7:**

Gun sights containing Tritium (Hydrogen-3). HESCO, Inc. manufactures such devices. Model ML200A has a maximum activity of 30 millicuries.

**Picture 8:**

Mine field (top) and personnel markers (bottom) used in firefighting, search and rescue, and military applications. Contain activities between 30 millicuries and 1 curie.

**Picture 9:**

Electron Capture Detector (ECD) with a Tritium source having an activity of about 200 millicuries. ScienTech, Inc. manufactures such devices. An example is Model ECD-289.

**Picture 10:**

Vent-type static eliminator. The source is beneath the wire mesh. A similar device is manufactured by NRD, Inc. It is Model P-2063, contains Polonium-210 as the isotope, and has a maximum activity of 31.5 mCi.

**Picture 11:**

Gun-type static eliminator with an activity of about 250 microcuries. An example would be Model PDM 1001H manufactured by Amersham Corporation. It also contains Polonium-210 as the isotope and has an activity of 0.8 mCi per length.

**Picture 12:**

Two Level/Density Gauges containing Cesium-137, with an activity of 50mCi (circled on the picture). Aptec-NRC, Inc. manufactures such a device: Model LS-101.

**Picture 13:**

Texas Nuclear gauge. Cesium-137 source with an activity of 5 curies.

**Picture 14:**

Two gauges used in sewage treatment plants (circled on the picture). Cesium source with activities ranging from 300 to 500 millicuries.

**Picture 15:**

Gauge used in shingle fabrication plant (circled on the picture).

**Picture 16:**

Depleted uranium shield surrounding an S-tube from a radiography camera. Iridium-192 or Cobalt-60 source. The device is like Amersham model 900 with a maximum activity of 120 Curies.

**Picture 17:**

Sealed irradiator sources containing Cobalt-60. This device is Model C-188 manufactured by MDS Nordion, Inc. and has a maximum activity of 17,000 Curies.

**Picture 18:**

Drums containing scrap material radioactive sources.