

August 1, 2006

Maarij Syed, Ph.D.  
Radiation Safety Officer  
Rose-Hulman Institute of Technology  
5500 Wabash Avenue  
Terre Haute, IN 47803

SUBJECT: NRC INSPECTION REPORT 030-30904/06-001(DNMS) -  
ROSE-HULMAN INSTITUTE OF TECHNOLOGY

Dear Dr. Syed:

On July 13, 2006, the NRC completed inspection activities associated with Rose-Hulman Institute of Technology's former radioactive source storage building. The purpose of the inspection was to determine if decommissioning activities were conducted safely and in accordance with NRC requirements. The inspection included the review of your September 27, 2005, final status survey report for the building, as well as the performance of an NRC confirmatory survey. The inspection also included the performance of confirmatory surveys in laboratories and classrooms, which had been used for student instruction involving licensed material. At the conclusion of the July 13, 2006, on-site inspection, the NRC inspectors discussed the preliminary findings with you and Mr. Michael Howard, Manager, Environmental Health and Safety. A final exit meeting was conducted via telephone on July 28, 2006, with Mr. Howard.

This inspection consisted of an examination of decommissioning activities conducted in the radioactive storage building as they relate to safety and compliance with the Commission's rules and regulations. Areas examined during the inspection are identified in the enclosed report. Within these areas, the inspection consisted of a selective examination of procedures and representative records, interviews with available personnel, and confirmatory radiological surveys.

Based on the results of this inspection, the NRC did not identify any violations. A response to your license amendment request to release the former radioactive storage building for unrestricted use will be provided separately from this correspondence.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). The NRC's document system is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

M. Syed

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We will gladly discuss any questions you have concerning this inspection.

Sincerely,

***/William G. Snell acting for RA/***

Jamnes L. Cameron, Chief  
Decommissioning Branch

Docket No. 030-30904  
License No. 13-17582-02

Enclosure:  
Inspection Report 030-30904/06-001(DNMS)

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R. Bowser, State of Indiana

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No.: 030-30904

License No.: 13-17582-02  
13-17582-01 (retired)

Report No.: 030-30904/06-001(DNMS)

Licensee: Rose-Hulman Institute of Technology

Facilities: Former Radioactive Source Storage Building

Location: Terre Haute, Indiana

Date of Inspection : July 13, 2006 (on-site)  
July 28, 2006 (telephonic exit)

Inspectors: George M. McCann, Senior Health Physicist  
Samuel J. Mulay, Health Physicist

Approved By: Jamnes L. Cameron, Chief  
Decommissioning Branch  
Division of Nuclear Materials Safety

Enclosure

## **EXECUTIVE SUMMARY**

### **Rose-Hulman Institute of Technology Former Radioactive Source Storage Building Inspection Report No. 030-30904/06-001(DNMS)**

This closeout inspection focused on the licensee's decommissioning and survey activities performed in a former radioactive source storage building. In letters dated February 14, 2006 and July 17, 2006, the licensee requested release of the former radioactive source storage building for unrestricted use. The inspectors performed confirmatory surveys in the former storage building, laboratories and classrooms, which had been previously used for preparation of calibration sources, and student instruction involving unsealed licensed material. The licensee will continue licensed operations involving the use of a sealed source.

The NRC issued License No. 13-17582-01 on July 19, 1977. This license was superceded on February 2, 1989, by NRC License No. 13-17582-02. The former radioactive source storage building was authorized for use by NRC License No. 13-17582-02, Amendment No. 04, dated December 13, 2005. These licenses authorized the licensee to use low millicurie quantities of byproduct materials in sealed and unsealed form for the training and instruction of students in nuclear and radiation physics.

#### **Closeout Inspection and Survey**

- The inspectors concluded that levels of residual radioactive contaminants in the former radioactive source storage building, laboratories and classrooms were consistent with the NRC's radiological criteria for unrestricted use as specified in Title 10, Code of Federal Regulations, Part 20, Standards for Protection Against Radiation," Subpart E, Section 20.1402, "Radiological criteria for unrestricted use." (Section 1.3)

## Report Details

### 1.0 Closeout Inspection and Survey (83890)

#### 1.1 Inspection Scope

The inspectors performed independent, direct confirmatory radiological surveys of the former source storage building, which included walkover surface scans of the concrete floor, entrance way, and small amounts of debris in the structure. This storage building formerly contained a lead storage vault and was used to store licensable sources (Plutonium 239/Beryllium neutron sources, and an americium 241 source) when not in use in student laboratories. The structure was also used for limited manufacture of laboratory reference sources containing microcurie quantities of cesium 137 for in-house use.

The inspectors performed the confirmatory measurements in the storage building using a Ludlum Model 239-1F gas proportional floor monitor equipped with a 425 square centimeter Mylar detector, calibrated on January 6, 2006, a Ludlum Model 2241-2, hand held radiation survey instrument equipped with a 43-68, 100 square centimeter Mylar gas detector, calibrated on February 21, 2006, and a Ludlum Model 2241-2, hand held radiation survey instrument equipped with a 44-9 pancake probe, calibrated on March 21, 2006. Additionally, walkover surface scans and direct beta and gamma radiation surveys (using pancake probes and the floor monitor) were performed in previous instructional areas in laboratories CL-105, DL-106, CL-101, BL-114, and CL-117 of Rose-Hulman Institute of Technology's Moench Hall.

The inspectors referenced the licensee's September 27, 2005, "Final Status Survey of the Radioactive Source Storage Building at the Rose-Hulman Institute of Technology," during the performance of their surveys. The licensee's letter and Final Status Survey Report are publicly available through NRC's Agencywide Documents Access and Management System (ADAMS) Accession No. ML060520463. The inspectors also reviewed a July 26, 2006, letter from the licensee's contractor, which provided additional information on the building's radiological status prior to decommissioning activities being performed by the contractor.

#### 1.2 Observations and Findings

The NRC inspectors survey results were consistent with the survey data cited in the licensee's final status survey report. The NRC's unrestricted release criteria specified in NUREG 1757, "Consolidated NMSS Decommissioning Guidance, Decommissioning Process for Material Licensees," "Table B.1 "Acceptable License Termination Screening Values of Common Radionuclides for Building-Surface Contamination," for cesium-137, is 28,000 disintegrations per minute (dpm/100 cm<sup>2</sup>)).

The NRC confirmatory surveys performed in the former source storage building utilizing the instrumentation described in Section 1.1, did not identify residual radiological contamination in excess of the buildings ambient radiological background, which ranged from 100 to 150 dpm/100 cm<sup>2</sup>. The inspectors also did not identify any radiological

contamination in the above referenced laboratories and classrooms significantly different than the ambient radiological background.

### 1.3 Conclusions

The inspectors concluded that levels of residual radioactive contaminants in the former radioactive source storage building, laboratories and classrooms were consistent with the NRC's radiological criteria for unrestricted use as specified in Title 10, Code of Federal Regulations, Part 20, Standards for Protection Against Radiation," Subpart E, Section 20.1402, "Radiological criteria for unrestricted use."

### 2.0 **Exit Meeting**

On July 13, 2006, the NRC inspectors presented preliminary inspection findings to the licensee's Radiation Safety Officer and other staff members following the onsite inspection . On July 28, 2006, the inspectors discussed the final inspection findings with your Manager of Environmental Health and Safety. The licensee acknowledged the findings presented and did not identify any documents or processes reviewed by the inspectors as proprietary.

## **SUPPLEMENTARY INFORMATION**

### **PARTIAL LIST OF PERSONS CONTACTED**

Maarij Syed, Ph.D., Radiation Safety Officer  
Michael R. Howard, Manager, Environmental Health and Safety  
Jerry Wiza, President, RAM Services, Inc., Rose-Hulman Decommissioning Service Contractor

### **INSPECTION PROCEDURES USED**

IP 83890      Closeout Inspection and Survey

### **ITEMS OPENED, CLOSED, AND DISCUSSED**

Opened	None
Closed	None
Discussed	None

### **PARTIAL LIST OF DOCUMENTS REVIEWED**

Letter from Rose-Hulman Institute of Technology dated February 14, 2006, with an attached "Final Status Survey of the Radioactive Source Storage Building," completed by RAM Services, Inc., dated September 27, 2005.

### **LIST OF ACRONYMS USED**

ADAMS	Agencywide Documents Access and Management System
CFR	Code of Federal Regulations
DNMS	Division of Nuclear Materials Safety
dpm	Disintegrations per minute
MDC	Minimal Detectable Concentration
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records