

February 16, 2007

Mr. Mark Driscoll, Director
Radiation Safety Officer
Radiation Safety Service
Occupational Safety & Environmental Health
University of Michigan
1239 Kipke Drive
Ann Arbor, MI 48109-1010

SUBJECT: NRC INSPECTION REPORT 030-01988/07-002(DNMS) AND
NOTICE OF VIOLATION - UNIVERSITY OF MICHIGAN

Dear Mr. Driscoll:

On January 25, 2007, the NRC completed inspection activities at the University of Michigan, Ann Arbor, Michigan campus. The purpose of the inspection was to determine whether specific decommissioning activities were conducted safely and in accordance with NRC requirements. Specifically, inspectors reviewed the decommissioning program for: tracking of current and past authorized radioactive material use locations, conducting and documenting radiological surveys necessary for unrestricted release of former use areas, decommissioning activities performed prior to the release of these areas, and maintenance of required information important to the decommissioning and release of a facility for unrestricted use. At the conclusion of the inspection, the inspectors discussed the findings with you and members of your staff.

The inspection consisted of an examination of activities 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, and interviews with personnel.

Based on the results of this inspection, the NRC has determined that two Severity Level IV violations of NRC requirements occurred. The violations were evaluated in accordance with the NRC Enforcement Policy included on the NRC's Web site at www.nrc.gov; select **What We Do, Enforcement**, then **Enforcement Policy**. The violations are cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding them are described in detail in the inspection report. The violations are being cited in the Notice because they involve: 1) the failure to perform adequate surveys prior to the release of the Simpson Memorial Institute Building for unrestricted use and prior to the demolition of the Neuroscience Building; and 2) failure to maintain in a single document a list of formerly designated restricted areas that existed prior to 1990.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. In your response to this letter, please describe why your proposed corrective actions are expected to be more successful in preventing future or similar violations than the actions and commitments stated in the past. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

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 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>.

We will gladly discuss any questions you may have regarding this inspection.

Sincerely,

/RA by W. Snell Acting for/

Jamnes L. Cameron, Chief
Decommissioning Branch

Docket No.: 030-01988
License No.: 21-00215-04

Enclosures:

- 1. Notice of Violation
- 2. NRC Inspection Report 030-01988/07-002(DNMS)

DISTRIBUTION:

- Docket File
- G. Grant, RIII
- S. Reynolds, RIII
- G. Shear, RIII

DOCUMENT NAME:C:\FileNet\ML070470568.wpd

X Publicly Available Non-Publicly Available Sensitive X Non-Sensitive

To receive a copy of this document, indicate in the concurrence box "C" = Copy without attach/encl "E" = Copy with attach/encl "N" = No copy

OFFICE	RIII		RIII		RIII		RIII	
NAME	GMMcCann:mb by WGSnell for		SJMulay		JLCameron WGSnell for			
DATE	02/16/07		02/16/07		02/16/07			

OFFICIAL RECORD COPY

NOTICE OF VIOLATION

University of Michigan
Ann Arbor, Michigan

Docket No. 030-01988
License No. 21-00215-04

During an NRC inspection completed on January 25, 2007, two violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," the violations are listed below:

1. 10 CFR 20.1501 requires that each licensee make or cause to be made surveys that may be necessary for the licensee to comply with the regulations in Part 20 and that are reasonable under the circumstances to evaluate the extent of radiation levels, concentrations or quantities of radioactive materials, and the potential radiological hazards that could be present.

Pursuant to 10 CFR 20.1003, *survey* means an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation.

Contrary to the above, the licensee did not make surveys to assure compliance with 10 CFR 20.1402, which limits radiation exposure to 25 millirem per year from residual radioactivity that is distinguishable from background. Specifically, the licensee released for unrestricted use the Simpson Memorial Institute Building on June 14, 1999, and demolished the Neuroscience Building on April 11, 2002, without having conducted adequate surveys of the buildings to verify compliance with the 25 millirem exposure requirement.

This is a Severity Level IV violation (Supplement IV).

2. 10 CFR 30.35 requires, in part, that each person licensed under this part or Parts 32 through 36 and 39 of this chapter shall keep records of information important to the decommissioning of a facility in an identified location until the site is released for unrestricted use. Specifically, 10 CFR 30.35(g)(3) requires, in part, that a list contained in a single document must be kept of all areas designated and formerly designated restricted areas as defined in 10 CFR 20.1003.

Contrary to the above, as of January 25, 2007, the licensee failed to account for all areas designated as restricted areas prior to 1990 in its list of restricted areas.

This is a Severity Level IV violation (Supplement VI).

Pursuant to the provisions of 10 CFR 2.201, the University of Michigan is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555, with a copy to the Regional Administrator, Region III, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and

Enclosure 1

should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>, to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 16th day of February 2007

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 030-01988

License No: 21-00215-04

Report No: 030-01988/07-002(DNMS)

Licensee: The University of Michigan

Facility: Ann Arbor Campus

Location: Ann Arbor, Michigan

Dates: January 22-25, 2007

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 2

EXECUTIVE SUMMARY
The University of Michigan
Report No: 030-01988/07-002(DNMS)

This inspection focused on the licensee's decommissioning program for: tracking of current and past authorized radioactive material use locations, conducting and documenting radiological surveys necessary for unrestricted use of former use areas, decommissioning activities performed prior to the release of these areas, and maintenance of required information important to the decommissioning of a facility until the site is released for unrestricted use. During the inspection the inspectors discussed the status of decommissioning activities with licensee personnel, and examined licensee records and procedures.

Closeout Inspection and Surveys

- The inspectors concluded that the licensee's program for managing and tracking current locations of restricted use was being adequately managed. However, the inspectors identified one violation for failure to identify and track locations designated prior to 1990 as restricted areas of use, as required by 10 CFR 30.35(g). (Section 1.0)

Radiation Protection

- The inspectors determined that the licensee had an active and thorough program for the survey and release of laboratories, since 1990. However, the inspectors identified a violation of 10 CFR 20.1501 for failure to conduct radiation surveys that demonstrate compliance with 10 CFR Part 20.1402, the exposure criteria for release for unrestricted use. (Section 2.0)

Report Details¹

1.0 Closeout Inspections and Surveys (IP 83890)

1.1 Inspection Scope

The inspectors reviewed and evaluated the licensee's management over-sight procedures, practices, and documentation used to track areas formerly approved for use of licensed radioactive material, and the subsequent decommissioning and release of those areas for unrestricted use. The inspectors interviewed the University's health physics management and staff regarding the maintenance and tracking of decommissioning records necessary for the release of areas for unrestricted use and license termination pursuant to requirements of 10 CFR Part 30.35 *Financial Assurance and Recordkeeping for Decommissioning*.

The inspectors reviewed and or evaluated the following documents: 1) *Request for Inactive Status for Use of Radionuclides* forms, 2) *Request for Termination Status for Use of Radionuclides* forms, 3) *Authorization Termination Processing* forms, 4) spill and incident records, 5) laboratory drawings and diagrams, 6) *Laboratory Decommissioning /Close-out Checklists*, 7) *Room Change* forms, 8) decommissioning memos (documenting release of former use areas), and 9) decommissioning computer records of users and use locations (a PARADOX database starting calendar year 1990 to 2002, and an ACCESS database since 2002).

1.2 Observations and Findings

The licensee maintains spill and incident records and reports in a single file. The licensee was not aware of any incidents, with persistent contamination, that would need to be addressed during later decommissioning activities. The licensee indicated that the University's Architecture, Engineering and Construction Department possessed drawings and diagrams for each location of use. The licensee's *Laboratory Decommissioning/Close-out Checklists*, also had attached general line diagrams of each location of use. The licensee's decommissioning packages contained the forms mentioned above and were completed according to procedure.

The licensee maintained an ACCESS computer database "Room Decommissioning" for tracking radioactive material use locations that were released pursuant to the licensee's decommissioning release procedures. The licensee's database as of January 23, 2007, identified: room locations, associated buildings, release request dates, area statuses, effective dates of release, and the health physicists and technicians responsible for the room releases. Prior to the ACCESS database, the licensee used a PARADOX database, that began in 1990 and was used until 2002. The licensee's databases did not track authorized locations of use prior to 1990, nor did the licensee possess another document with a list of all former locations approved for radioactive material use prior to 1990.

¹A list of acronyms used in the report is included at the end of the Report Details.

Title 10 CFR 30.35(g) requires, in part, that each person licensed under this part or Parts 32 through 36 and 39 of this chapter shall keep records of information important to the decommissioning of a facility in an identified location until the site is released for unrestricted use. Specifically, 10 CFR 30.35(g)(3)(I) requires, in part, that a list contained in a single document and updated every 2 years, be kept of all areas designated and formerly designated restricted areas as defined in 10 CFR 20.1003. The licensee's failure to identify and track locations designated prior to 1990 as restricted areas of use constitutes a violation of 10 CFR 30.35(g). This is a Severity Level IV violation (VIO 030-01988/07-002-01).

1.3 Conclusion

The inspectors concluded that the licensee's program for managing and tracking current locations of restricted use was being adequately managed. However, the inspectors identified one violation for failure to identify and track locations designated prior to 1990 as restricted areas of use, as required by 10 CFR 30.35(g).

2.0 **Radiation Protection (IP 83822)**

2.1 Inspection Scope

The inspectors evaluated the licensee's procedures and practices for survey, decontamination, and the periodic release of areas for unrestricted use associated with decommissioning activities applicable to all of the University of Michigan's campuses. The inspectors reviewed and or evaluated the documents as follows: 1) Occupational Safety and Environmental Health Procedure, Procedure No. RSS-109, Health Physics Procedure, *Laboratory Decommissioning*, April 04, 2005, Rev. 03, and 2) Occupational Safety and Environmental Health Guideline *Laboratory Decommissioning*, Rev. 0, April 9, 1997, and 3) Occupational Safety & Environmental Health, Radiation Safety Service, *Radiological Decommissioning Criteria*.

The inspectors also evaluated close-out survey results for the University's Simpson Memorial Institute and Neuroscience Buildings. The review included evaluation of the licensee's *Final Report of the Building Decommissioning* dated June 14, 1999, for the Simpson Memorial Institute Building. The inspectors reviewed radiological survey and test results for removable contamination contained in completed *Laboratory Decommissioning/Close-out* documentation for the following laboratories: 50, 51, 52, 53, 54, 54A, 55, 56, 109, 114, 200, 205, 206, 208, 210, 212, 300, 305, 308, 311, 312 and 405. The inspectors also reviewed the licensee's *Final Report of the Building Decommissioning* dated March 2002, for the Neuroscience Building, which included an evaluation of radiological survey and test results for removable contamination contained in completed *Laboratory Decommissioning/Close-out* documentation. The inspectors reviewed four reports, each dated March 14, 2002, and one report dated March 19, 2002, for former laboratories in the Neuroscience Building as follows: 1017, 1018, 1019, 1021, 1116, 2029A, 2041, 2045, 2063, 2068, 2073, 3018, 3022, 3024, 3027, 3027A, 3033, 3063, 3063A, 3067, 3067A, 3067B and 3074.

2.2 Observations and Findings

Following remediation and radiological surveys, the licensee released the Simpson Memorial Institute Building for unrestricted use on June 14, 1999, which was renovated and converted into an office building. Additionally, the licensee determined that the Neuroscience Building was acceptable for unrestricted use after conducting radiological surveys as documented in a March 2002, memorandum regarding the decommissioning of the Neuroscience Building, which was subsequently demolished on April 11, 2002.

The radiological surveys performed on these two buildings involved the performance of fixed and scan surface measurements and the collection of samples for the determination of removable contamination. The survey and test measurements were limited to a number of biased survey points in each laboratory, supplemented by a random general area survey. The licensee did not use a reference grid system for documenting survey results, nor was instrumentation minimum detectable activities (MDAs) for fixed or scanning measurements derived prior to the conduct of surface surveys. Direct surface instrument measurements reported on the licensee's survey forms were reported in counts per minute, and none of the raw surface measurements were converted to disintegrations per minute (dpm) to take into account instrumentation efficiencies based on the types of radioactive materials being measured. Additionally, the instrument surface measurement results were not adjusted to account for the size of the detector probe being used. The inspectors noted that data obtained from tests for removable contamination collected in each building was reported in dpm. The tests for removable contamination were also not correlated to uniform test areas, such as one square meter or 100 centimeters squared. All reports reviewed were reported as being indistinguishable from background.

The inspectors noted that only laboratories in the Simpson and Neuroscience Buildings with current radiological use permits were surveyed prior to their release for unrestricted use. These laboratories were assessed for the types and quantities of material used to insure that appropriate survey instrumentation was used. However, neither of the two buildings were evaluated to determine if radioactive materials had been used in other laboratories in the building, nor were the current authorized laboratories evaluated to determine if these areas had been used under previous permits authorizing different types of radioactive materials other than those approved by the current permits in use.

The licensee uses concentration based measurements for the release of former use areas, rather than a dose base limit. Specifically, the inspectors noted that the licensee had not evaluated the release of the two buildings to determine compliance with 10 CFR 20.1402, which permits unrestricted use of buildings and areas if the radiation exposure from residual radioactivity that is distinguishable from background does not exceed 25 millirem per year. The licensee's conclusion that the two buildings were acceptable for unrestricted use was based on direct instrument measurements and comparison of these results against background values for each area surveyed. The licensee follows a zero tolerance for residual contamination such that any detectable contamination is decontaminated to background levels. However, the inspectors determined that the licensee had not accounted for differences in radiological backgrounds, which can vary significantly with the types of materials being surveyed.

Title 10 CFR 20.1501 requires that each licensee make or cause to be made surveys that may be necessary for the licensee to comply with the regulations in Part 20 and that are reasonable under the circumstances to evaluate the extent of radiation levels concentrations or quantities of radioactive materials, and the potential radiological hazards that could be present. Pursuant to 10 CFR 20.1003, *survey* means an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation. The licensee's failure to make or cause to be made surveys necessary to demonstrate compliance with 10 CFR 20.1402, which limits radiation exposure to 25 millirem per year from residual radioactivity that is distinguishable from background, constitutes a violation of 10 CFR 20.1501. This is a Severity Level IV violation (VIO 030-01988/07-002-02).

2.3 Conclusion

The inspectors determined that the licensee had an active and thorough program for the survey and release of laboratories, since 1990. However, the inspectors identified a violation of 10 CFR 20.1501 for failure to conduct radiation surveys that demonstrate compliance with 10 CFR Part 20.1402, the exposure criteria for release for unrestricted use.

3.0 **Exit Meeting Summary**

The inspectors presented preliminary inspection findings to members of the licensee management team at the conclusion of onsite inspection activities on January 25, 2007. The licensee did not identify any documents or processes reviewed by the inspectors as proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

- *T. Alexander, Director, Occupational Safety and Environmental Health
- *M. Driscoll, Radiation Safety Officer, Radiation Safety Service (RSS)
- *J. Mikios, Senior Health Physicist, RSS
- R. Garcia, Health Physicist (HP), RSS
- *R. Dugan, HP, RSS
- *P. Kedues, Health Physicist Technician (HPT), RSS
- *A. Cabot, RHT, RSS
- *P. Quatro, HPT, RSS
- *S. Uitti, HP, RSS
- *S. Rice, HPT, RSS

*Persons present at the exit meeting on January 25, 2007.

INSPECTION PROCEDURES USED

IP 83890 Closeout Inspections and Surveys
IP 83822 Radiation Protection

ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Opened</u>	<u>Type</u>	<u>Summary</u>
VIO 030-01988/07-002-01	VIO	Failure to account for formerly designated restricted areas.
VIO 030-01988/07-002-02	VIO	Failure to make or cause to be made surveys necessary to demonstrate compliance with Part 20.

Closed
None

Discussed
None

PARTIAL LIST OF DOCUMENTS REVIEWED

Licensee documents reviewed and utilized during the course of this inspection are specifically identified in the "Report Details" above.

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
CPM	Counts per minute
CM ²	Centimeters squared
DPM	Disintegrations per minute
IP	Inspection Procedure
NRC	Nuclear Regulatory Commission
MDA	Minimum Detectable Activity

