

**NRC FORM 591X PART 1**  
(11-2001) 10 CFR 2.201

**U.S. NUCLEAR REGULATORY COMMISSION**

**SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION**

**1. LICENSEE/CERTIFICATE HOLDER**  
**The Regents of the University of Michigan**  
**Radiation Safety Service Occupational Safety**  
**and Environmental Health**  
 Location Inspected: **multiple**  
 locations **1239 Kipke Drive**  
**Ann Arbor, MI 48109**

**2. REGIONAL OFFICE**  
**US NRC - Region III**  
**2443 Warrenville Road**  
**Lisle, IL 60532**

REPORT NUMBER(S) **2007-001-**

**3. DOCKET NUMBER(S)**  
**030-01988**

**4. LICENSE/CERTIFICATE NUMBER(S)**  
**21-00215-04 (Hospital Blood Bank and Broad scope)**

**5. DATE(S) OF INSPECTION**  
**January 22-26, 2007**

Inspection Procedures Used:  
**87134**

Inspection Focus Areas: **02.03 thru 02.11; 02.12e, 02.13 thru 02.14; 02.16 thru 02.19; and 02.21.**

**LICENSEE/CERTIFICATE HOLDER:**  
 The inspection was an examination of the activities conducted under your license/certificate as they relate to radiation safety and to compliance with the Nuclear Regulatory Commission (NRC) rules and regulations and the conditions of your license/certificate. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector. The inspection findings are as follows:

- 1. Based on the inspection findings, no violations were identified.
- 2. Previous Violation(s) Closed
- 3. The violation(s), specifically described to you by the inspector as non-cited violations, are not being cited because they were self-identified, non-repetitive, and corrective action was or is being taken, and the remaining criteria in the NRC Enforcement Policy, NUREG-1600, to exercise discretion, were satisfied.

non-cited violation(s) were discussed involving the following requirement(s):

- 4. During this inspection certain of your activities, as described in the attached, were in violation of NRC requirements and are being cited. This form is a NOTICE OF VIOLATION, which may be subject to posting in accordance with 10 CFR 19.11.

**STATEMENT OF CORRECTIVE ACTIONS**

I hereby state that, within 30 days, the actions described by me to the inspector and as described in the attachment will be taken to correct the violations identified. This statement of corrective actions is made in accordance with the requirements of 10 CFR 2.201 (corrective steps already taken, corrective steps which will be taken, date when full compliance will be achieved). I understand that no further written response to NRC will be required, unless specifically requested.

TITLE	PRINTED NAME	SIGNATURE	DATE
LICENSEE/ CERTIFICATE HOLDER	<b>Mark Driscoll, RSO</b>		1/22-26/2007
NRC INSPECTOR	<b>Darrel G. Wiedeman</b>		1/22-26/2007

NRC FORM 591X PART 3 (11-2001) 10 CFR 2.201		Docket File Information		U.S. NUCLEAR REGULATORY COMMISSION	
SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION					
1. LICENSEE/CERTIFICATE HOLDER <b>University of Michigan</b>			2. REGIONAL OFFICE <b>Region III, Lisle, IL 60532</b>		
REPORT NUMBER(S) <b>2007-001</b>					
3. DOCKET NUMBER(S) <b>030-01988</b>		4. LICENSE/CERTIFICATE NUMBER(S) <b>21-00215-04 (Hospital Blood Bank and Broad scope</b>		5. DATE(S) OF INSPECTION <b>1/22-26/2007</b>	
Supplemental Inspection Information					
Program Code(s): <b>02110</b>		Priority: <b>2</b>		Licensee Contact: <b>Mark Driscoll, RSO</b>	
				Telephone No.: <b>734-647-2251</b>	

- Main Office Inspection                      Next Inspection Date: 01/2008
- Field Office **see this report for locations inspected**
- Temporary Job Site Inspection

### Program Scope

This licensee is a State of Michigan owned and operated university. Currently the licensee has a student population of 40,025 students at the Ann Arbor campus, 8,566 students at the Dearborn campus and 6,256 students at the Flint campus. The university hospital and medical facility is a 880 bed hospital located within the university complex. The licensee has an annual workload of approximately 9,000 routine nuclear medicine studies/year. This inspection consisted of an in-depth review of the licensee's research/development programs including a routine inspection of its broadscope programs. During this inspection no human research programs or medical programs were reviewed. During this inspection the licensee had 403 active permits that were previously approved by the Radiation Safety Committee and included 1,323 laboratories that were approved for use of radioactive materials. At this time the licensee has approximately 4,000 monitored and trained radiation workers. In conjunction of this routine inspection the inspector conducted an inspection of the Increased Controls (ICs) for licenses Nos 21-00215-04, 21-00215-06 and SNM-179 (see Report No. 2007-004).

The inspector toured the Hospital Blood Bank and observed the self-shielded, self-contained irradiator. This irradiator is used to irradiate human blood prior to transfusion. The Blood Bank irradiator is used by 97 researchers that have been approved by the Radiation Safety Committee. This facility is staffed 24 hours/day, 7 days per week. This irradiator was leak tested at 6-month intervals (every April and October) and the leak tests showed <.005 microcuries of removable contamination.

During this inspection of the broad scope license the inspector interviewed researchers, physicians, physicists, medical technologists and observed licensed activities at the following university owned and operated facilities:

Phoenix Memorial Laboratory;  
 University of Michigan Hospital , Blood Bank and adjacent laboratories;  
 University of Michigan Hospital and Medical Center, Nuclear Medicine Department (tour only);  
 Cyclotron Facility (tour only);  
 University of Michigan Hospital and Medical Center, Radiation Oncology (tour only);  
 University of Michigan, Radiation Safety Office;  
 Self-Shielded irradiators located at: U of Mi Medical Center Blood Bank, Medical Science Research Building, Biological Medical Science Research Building and the Life Sciences Building.

The next scheduled routine inspection should focus primarily on the licensee's human research, medical and radiation therapy programs. According to the licensee staff that were interviewed, since the last NRC inspection there have been no fires, explosions, or fatalities involving radioactive materials, medical events or over exposures to radiation. The inspector did not identify anything contrary to the above statements made by licensee staff.

**The inspector reviewed the licensee's incident/event logs for the period CY 2006-2007. During this period, 21 events in 2006 and 17 events were documented by the licensee and reviewed by the inspector. It was the view of the inspector that the licensee took appropriate corrective actions in response to these events.**

**No violations of NRC requirements were identified.**

NRC FORM 591X PART 1  
(11-2001) 10 CFR 2.201

U.S. NUCLEAR REGULATORY COMMISSION

**SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION**

<b>1. LICENSEE/CERTIFICATE HOLDER</b> <b>The Regents of the University of Michigan</b> <b>Radiation Safety Service Occupational Safety</b> <b>and Environmental Health</b>  Location Inspected: <b>multiple locations</b> <b>1239 Kipke Drive</b> <b>Ann Arbor, MI 48109</b>		<b>2. REGIONAL OFFICE</b> <b>US NRC - Region III</b> <b>2443 Warrenville Road</b> <b>Lisle, IL 60532</b>	
<b>REPORT NUMBER(S) 2007-001</b>			
<b>3. DOCKET NUMBER(S)</b> <b>030-01988</b>		<b>4. LICENSE/CERTIFICATE NUMBER(S)</b> <b>21-00215-04 (Life Sciences Buildings)</b>	
<b>Inspection Procedures Used:</b> <b>87134</b>		<b>5. DATE(S) OF INSPECTION</b> <b>January 22-26, 2007</b>	
<b>Inspection Focus Areas: 02.03 thru 02.11; 02.12e, 02.13 thru 02.14; 02.16 thru 02.19; and 02.21.</b>			

**LICENSEE/CERTIFICATE HOLDER:**

The inspection was an examination of the activities conducted under your license/certificate as they relate to radiation safety and to compliance with the Nuclear Regulatory Commission (NRC) rules and regulations and the conditions of your license/certificate. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector. The inspection findings are as follows:

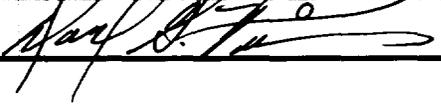
1. Based on the inspection findings, no violations were identified.
2. Previous Violation(s) Closed
3. The violation(s), specifically described to you by the inspector as non-cited violations, are not being cited because they were self-identified, non-repetitive, and corrective action was or is being taken, and the remaining criteria in the NRC Enforcement Policy, NUREG-1600, to exercise discretion, were satisfied.

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**STATEMENT OF CORRECTIVE ACTIONS**

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TITLE	PRINTED NAME	SIGNATURE	DATE
LICENSEE/ CERTIFICATE HOLDER	<b>Mark Driscoll, RSO</b>		1/22-26/2007
NRC INSPECTOR	<b>Darrel G. Wiedeman</b>		1/22-26/2007

SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION

1. LICENSEE/CERTIFICATE HOLDER **University of Michigan**

2. REGIONAL OFFICE **Region III, Lisle, IL 60532**

REPORT NUMBER(S) **2007-001**

3. DOCKET NUMBER(S) **030-01988**

4. LICENSE/CERTIFICATE NUMBER(S)  
**21-00215-04 (Life Sciences Building)**

5. DATE(S) OF INSPECTION  
**1/22-26/2007**

Supplemental Inspection Information

Program Code(s):  
**02110**

Priority: **2**

Licensee Contact: **Mark Driscoll, RSO**

Telephone No. :  
**734-647-2251**

- Main Office Inspection                      Next Inspection Date: **01/2008**
- Field Office **see this report for locations inspected**
- Temporary Job Site Inspection

### Program Scope

The inspector toured the Life Sciences Building and observed the self-shielded, self-contained irradiator. The irradiator is used to irradiate small mammals (mice) and human tissue for research purposes. The Life Sciences irradiator is used by 19 researchers that have been approved by the Radiation Safety Committee. The irradiator was leak tested at 6-month intervals (every April and October) and the leak test records showed <.005 microcuries of removable contamination. In conjunction of this routine inspection the inspector conducted an inspection of the Increased Controls (ICs) for licenses Nos. 21-00215-04, 21-00215-06 and SNM-179 (see Report No. 2007-004).

During this inspection the inspector interviewed researchers, medical technologists and observed licensed activities in the Life Sciences building. The inspector performed independent radiation surveys of certain selected research laboratories. No contamination or unexpected radiation levels were identified in the 10+ laboratories that were surveyed. It was the inspectors view that the licensee provided an adequate level of security in these facilities.

**No violations of NRC requirements were identified.**

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(11-2001) 10 CFR 2.201

U.S. NUCLEAR REGULATORY COMMISSION

**SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION**

<b>1. LICENSEE/CERTIFICATE HOLDER</b> The Regents of the University of Michigan Radiation Safety Service Occupational Safety and Environmental Health Location Inspected: <b>multiple</b> 1239 Kipke Drive locations Ann Arbor, MI 48109		<b>2. REGIONAL OFFICE</b> US NRC - Region III 2443 Warrenville Road Lisle, IL 60532	
<b>REPORT NUMBER(S) 2007-001</b>			
<b>3. DOCKET NUMBER(S)</b> <b>030-01988</b>		<b>4. LICENSE/CERTIFICATE NUMBER(S)</b> 21-00215-04 (MSRB & BSRB Buildings)	
<b>Inspection Procedures Used:</b> <b>87134</b>		<b>5. DATE(S) OF INSPECTION</b> January 22-26, 2007	
<b>Inspection Focus Areas: 02.03 thru 02.11; 02.12e, 02.13 thru 02.14; 02.16 thru 02.19; and 02.21.</b>			

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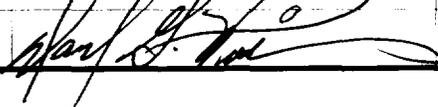
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SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION

1. LICENSEE/CERTIFICATE HOLDER <b>University of Michigan</b>		2. REGIONAL OFFICE <b>Region III, Lisle, IL 60532</b>	
REPORT NUMBER(S) <b>2007-001</b>			
3. DOCKET NUMBER(S) <b>030-01988</b>		5. DATE(S) OF INSPECTION	
		<b>1/22-26/2007</b>	

4. LICENSE/CERTIFICATE NUMBER(S) <b>21-00215-04 (MSRB &amp; BSRB Buildings)</b>	
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Supplemental Inspection Information

Program Code(s): <b>02110</b>	Priority: <b>2</b>	Licensee Contact: <b>Mark Driscoll, RSO</b>	Telephone No. : <b>734-647-2251</b>
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- Main Office Inspection                      Next Inspection Date: 01/2008
- Field Office    **see this report for locations inspected**
- Temporary Job Site Inspection

### Program Scope

The inspector toured the Medical Science Research Building (MSRB) and the Biological Medical Science Research Buildings (BSRB) and observed the self-shielded, self-contained irradiators. Both irradiators are used to irradiate small mammals (mice) and human tissue for research purposes. The MSRB irradiator is used by 74 researchers and the BSRB is used by 60 researchers that have been approved by the Radiation Safety Committee. Both irradiators were leak tested at 6-month intervals (every April and October) and the leak tests showed <.005 microcuries of removable contamination. In conjunction of this routine inspection the inspector conducted an inspection of the Increased Controls (ICs) for licenses Nos. 21-00215-04, 21-00215-06 and SNM-179 (see Report No. 2007-004).

During this inspection the inspector interviewed researchers, medical technologists and observed licensed activities in the MSRB and BSRB buildings. The inspector performed independent radiation surveys of certain selected research laboratories. No contamination or unexpected radiation levels were identified in the 20+ laboratories that were surveyed. It was the inspectors view that the licensee provided an adequate level of security in these facilities.

**No violations of NRC requirements were identified.**