

**SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION**

1. LICENSEE/LOCATION INSPECTED:

*Curators of the University  
 of Missouri  
 311 Jesse Hall  
 Columbia, MO.*

2. NRC/REGIONAL OFFICE

Region III  
 U. S. Nuclear Regulatory Commission  
 2443 Warrenville Road, Suite 210  
 Lisle, IL 60532-4352

REPORT NUMBER(S) *2012-002*

3. DOCKET NUMBER(S)

*030-02278*

4. LICENSE NUMBER(S)

*24-00513-32*

5. DATE(S) OF INSPECTION

*11/26-30/12*

**LICENSEE:**

The inspection was an examination of the activities conducted under your license as they relate to radiation safety and to compliance with the Nuclear Regulatory Commission (NRC) rules and regulations and the conditions of your license. 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, 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 below and/or attached, were in violation of NRC requirements and are being cited in accordance with NRC Enforcement Policy. This form is a NOTICE OF VIOLATION, which may be subject to posting in accordance with 10 CFR 19.11.

(Violations and Corrective Actions)

**Statement of Corrective Actions**

I hereby state that, within 30 days, the actions described by me to the Inspector 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'S REPRESENTATIVE | <i>JACK CRAWFORD</i> | <i>[Signature]</i> | <i>11/30/12</i> |
| NRC INSPECTOR             | Ken Lambert          | <i>[Signature]</i> | <i>11/30/12</i> |
| BRANCH CHIEF              | Tamara E. Bloomer    | <i>[Signature]</i> | <i>12/13/12</i> |

**Docket File Information**  
**SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION**

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| 1. LICENSEE/LOCATION INSPECTED:<br><br>The Curators of the University of Missouri<br><br>Columbia, MO<br><br>REPORT NUMBER(S) 2012-002 | 2. NRC/REGIONAL OFFICE<br><br>Region III<br>U. S. Nuclear Regulatory Commission<br>2443 Warrenville Road, Suite 210<br>Lisle, IL 60532-4352 |
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| 3. DOCKET NUMBER(S)<br><br>030-02278 | 4. LICENSE NUMBER(S)<br><br>24-00513-32 | 5. DATE(S) OF INSPECTION<br><br>November 26-30, 2012 |
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| 6. INSPECTION PROCEDURES USED<br><br>87131, 87132, 87134 | 7. INSPECTION FOCUS AREAS<br><br>03.01-08 |
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**SUPPLEMENTAL INSPECTION INFORMATION**

|                                |                      |   |   |
|--------------------------------|----------------------|---|---|
| 1. PROGRAM CODE(S)<br><br>2110 | 2. PRIORITY<br><br>2 | 3. LICENSEE CONTACT<br><br>Jack Crawford, RSO | 4. TELEPHONE NUMBER<br><br>(573) 882-7221 |
|--------------------------------|----------------------|---|---|

- Main Office Inspection                      Next Inspection Date: 11/30/2014
- Field Office Inspection    Health Science Cntr ; Ellis Fischel Cancer Cntr;
- Temporary Job Site Inspection    and Women's & Children's Hospital

**PROGRAM SCOPE**

This large medical broad scope licensee has three medical facilities associated with the license and authorized for 35,100-500 radioactive materials. The Health Science Center (HSC) employees 4 full time technologists and 2 students, and performs 5-10 procedures/day, primarily cardiac, bone, gastric emptying and HIDA scans. The hospital performs 1-2 I-131 carcinoma treatments/year. The hospital also performs 1-2 prostate permanent seed implants/month using Pd-103. The Women's & Children's hospital employed 1 full time technologist until August of 2012. Currently a technologist from the HSC performs procedures on Wednesdays and Fridays. This hospital currently performs 1-2 procedures/week with most being gastric emptying or HIDA scans. The hospital also performs approximately 1 I-123 scan/month. The Ellis Fischel Cancer Center employees 1 full time technologists and a second technologist from the HSC assists on Tuesdays and Thursdays. The cancer center performs approximately 30 PET scans/week, with an occasional bone, MUGA, or lymphoscintigraphy (sentinel node). Material is received as unit doses from a commercial nuclear pharmacy. The radiation safety staff perform monthly audits at each facility.

**Performance Observations**

The inspector reviewed, observed or had demonstrated by university staff: (1) dose calibrator daily constancy, quarterly linearity and annual accuracy checks; (2) survey instruments and required surveys; (3) package receipt surveys; (4) wipe test counting; (5) waste handling; (6) sealed source inventories and leak testing; (7) security and storage of licensed material; (8) instrument calibration; (9) patient administrations; (10) RSC meeting minutes; (11) outside consultant audits; (12) radiation safety staff monthly audits; (13) Waste disposal records; (14) instrument daily checks, quarterly linearity and annual calibration records; (15) leak test records; and (16) training records. The inspector also reviewed permanent seed implant written directives, and pre and post treatment plans for 14 of the 36 treatments performed in 2011 and 2012; no issues were identified. The inspector performed independent and confirmatory radiation measurements, which indicated results consistent with licensee survey data and instrument comparisons. Maximum personnel exposure were 949 mrem DDE and 6840 mrem SDE for 2010; 1536 mrem DDE and 7727 mrem SDE for 2011; and 1041 mrem DDE and 1310 mrem SDE for 2012 through October.

No violations were identified.