NRC FORM 591M
(04-2022)

U.S. NUCLEAR REGULATORY COMMISSION

Materials Inspection Report

1. Licensee/Location Inspected:	2. NRC/Regional Office
Missouri Baptist Medical Center 3015 N. Ballas Rd. St. Louis, Missouri 63131 Report Number(s) 2023001	Region III U. S. Nuclear Regulatory Commission 2443 Warrenville Road, Suite 210 Lisle, IL 60532-4352

3. Docket Number(s)	4. License Number(s)	5. Date(s) of Inspection
030-08325	24-11128-02	Nov. 1-3, 2023

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. During this inspection, certain of your activities, as described below and/or attached, were in violation of NRC requirements, and were assessed at Severity Level IV, in accordance with the NRC Enforcement Policy.

A. 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, corrective action was or is being taken, and the remaining criteria in the NRC Enforcement Policy were satisfied.
(Non-cited violation(s) was/were discussed involving the following requirement(s)

B. The following violation(s) is/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 AND DATE
LICENSEE'S REPRESENTATIVE		
NRC INSPECTOR	Geoffrey Warren, Sr. HP	11/3/23
BRANCH CHIEF	Rhex Edwards	Digitally signed by Rhex A. Edwards Date: 2023.11.15 09:14:38 -06'00'

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NRC FORM 592M
(10-04-2022)

U.S. NUCLEAR REGULATORY COMMISSION

Materials Inspection Record

1. Licensee Name:	2. Docket Number(s):	3. License Number(s)
Missouri Baptist Medical Center	030-08325	24-11128-02

4. Report Number(s):	5. Date(s) of Inspection:
2023001	November 1-3, 2023

6. Inspector(s):	7. Program Code(s):	8. Priority:	9. Inspection Guidance Used:
Geoffrey Warren	02230	2	IP 87130, 87132

10. Licensee Contact Name(s):	11. Licensee E-mail Address:	12. Licensee Telephone Number(s):
Maxwell Amurao, Ph.D.	maxwell.amurao@wustl.edu	314-362-2988

13. Inspection Type:	14. Locations Inspected:	15. Next Inspection Date (MM/DD/YYYY):
☐ Initial	☐ Hybrid	
☑ Routine	☑ Main Office	09/01/2025
☐ Announced	☑ Field Office	☑ Normal
☐ Non-Routine	☐ Temporary Job Site	☐ Extended
☑ Unannounced	☐ Remote	☐ Reduced
		☐ No change

16. Location(s) Inspected List:
Main hospital: 3015 N. Ballas Rd., St. Louis MO
Building D: 3023 N. Ballas Rd.

17. Scope and Observations:

This was an unannounced routine inspection. The licensee was a 420-bed hospital located in St. Louis, Missouri, with authorization to perform diagnostic and therapeutic nuclear medicine procedures, HDR procedures using iridium-192 sources, and microspheres procedures using yttrium-90. While authorized to perform brachytherapy procedures under 10 CFR 35.400, the licensee had not performed any such procedures since before the previous inspection and had no plans to resume such procedures. Audits of each area were performed by radiation safety staff from Washington University in St. Louis since early 2023.

The licensee operated four nuclear medicine areas - Main nuclear medicine, PET clinic, cardiology, and outpatient cardiology. Six technologists from Main, PET, and cardiology rotated through those facilities; outpatient cardiology was staffed independently with two technologists. The main area performed a wide spectrum of diagnostic procedures (including xenon-133 lung scans) and performed non-cancer treatments using iodine-131 (I-131) in capsule form. The PET clinic performed PET imaging, and cardiology and outpatient cardiology performed only cardiac stress tests. The four areas combined typically performed around 800 procedures monthly. All doses were received as unit doses from a licensed radiopharmacy. Main nuclear medicine performed around six whole-body scans monthly and five hyperthyroid treatments annually using iodine-131. All waste was held for decay-in-storage (DIS).

The radiation oncology department was staffed with two physician authorized users and two medical physicists. The radiation therapy staff treated approximately six to eight patients annually with around six high dose rate (HDR) fractions each, limited to gynecological treatments; and around 15 therapeutic radiopharmaceutical procedures monthly. Radiopharmaceutical therapies included I-131 ablations, lutetium-177 (Lu-177) therapies, and occasional radium-226 dichloride procedures. Radiopharmaceutical doses were received at the main nuclear medicine hot lab.

Microspheres procedures were performed primarily by staff from Washington University in St. Louis. Two such procedures had been performed to date in 2023 and seven in 2022. Materials were received at the main nuclear

Materials Inspection Record (Continued)

medicine hot lab.

Performance Observations: The inspector observed one HDR fraction including plan verification, a Lu-177 therapy procedure, six diagnostic administrations of licensed material including dose preparation and disposal, and package receipt surveys. Licensee staff demonstrated daily checks for HDR and nuclear medicine (well counter QC, survey meter QC, and dose calibrator constancy), daily and weekly contamination surveys, I-131 therapy procedures, and a variety of diagnostic procedures; and described spill procedures, waste handling, and other procedures. The inspector reviewed written directives for radiopharmaceutical therapies, HDR treatments, and microspheres procedures, and identified no concerns. Interviews with licensee personnel indicated adequate knowledge of radiation safety concepts and procedures. Review of radiation dosimetry records indicated no exposures of concern. Review of Radiation Safety Committee minutes indicated good attendance and discussion of appropriate topics. The inspector performed independent and confirmatory radiation measurements with a calibrated survey instrument that were consistent with licensee survey records and postings.

No violations were identified as a result of this inspection.

In Inspection Report 2018002, the licensee was cited for improperly disposing of gadolinium-153 sources through decay in storage. Because the half life exceeded 120 days, such disposal was not authorized. The inspector determined that corrective actions were taken as described, that licensee staff have a good understanding of decay in storage limitations, and that the violation has not recurred. Based on this, the violation is closed.

Signature and Date - Branch Chief

Digitally signed by Rhex A. Edwards
Date: 2023.11.15 09:13:56 -06'00'