NRC FORM 591M PART 1
(07-2012)
10 CFR 2.201

U.S. NUCLEAR REGULATORY COMMISSION

SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION

1. LICENSEE/LOCATION INSPECTED:	2. NRC/REGIONAL OFFICE
Missouri Baptist Medical Center 3015 N. Ballas Rd St. Louis, MO 63131 REPORT NUMBER(S) 2021001	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	August 4 & 12, 2021

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 violations(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			
NRC INSPECTOR	Zahid Sulaiman, Health Physicist	Zahid M. Sulaiman Digitally signed by Zahid M. Sulaiman Date: 2021.08.20 18:32:26 -05'00'	
BRANCH CHIEF	Michael Kunowski, Chief, MIB	Michael A. Kunowski Digitally signed by Michael A. Kunowski Date: 2021.08.23 04:59:06 -05'00'	

NRC FORM 592M
(10-2020)

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:
2021001	August 4 & 12, 2021

6. Inspector(s):	7. Program Code(s):	8. Priority:	9. Inspection Guidance Used:
Zahid Sulaiman, Health Physicist	2230	2	87131, 87132

10. Licensee Contact Name(s):	11. Licensee E-mail Address:	12. Licensee Telephone Number(s):
Thomas Moenster, RSO	thomas.moenster@bjc.org	Office 314-996-5397 Cell 314-574-7039

13. Inspection Type:	14. Locations Inspected:	15. Next Inspection Date (MM/DD/YYYY):
☐ Initial ☑ Routine ☑ Announced ☐ Non-Routine ☐ Unannounced	☑ Main Office ☐ Field Office ☐ Temporary Job Site ☑ Remote	08/04/2023 ☑ Normal ☐ Extended ☐ Reduced ☐ No change

16. Scope and Observations:

This was an announced remote routine inspection of a 480-bed hospital, authorized to use byproduct materials for medical purposes permitted by 10 CFR 35.100, 35.200, 35.300, 35.400, 35.600, and 35.1000. The nuclear medicine department was staffed with seven full-time nuclear medicine technologists (NMTs) and two PRNs who covers four nuclear medicine areas: the main hospital, the cardiovascular diagnostic center, the outpatient cardiology center, and the PET clinic. The NMTs performed approximately 450-500 diagnostic doses monthly, primarily cardiac stress tests, HIDA, bone scans, lung scans using xenon-133, gastric emptying, gall bladder, renal scan, and PET imaging using flourine-18 and gallium-68. The licensee performed approximately 6 radium-223 (Ra-223) Xofigo therapy, 60+ iodine-131 (I-131) hyperthyroid and cancer therapy treatments, 4 lutetium-177 (Lu-177) dotatate, and 3 yittrium-90 (Y-90) TheraSphere microspheres procedures annually. The licensee received unit doses, bulk technetium-99m (Tc-99m), and I-131 in capsule form from a licensed radiopharmacy. The licensee consultant physicist conducted radiation safety program audits on a quarterly basis.

The radiation oncology department was staffed with two oncologists, two authorized medical physicists (AMPs), seven therapists, and two dosimetrists who performed approximately 20 -30 high dose rate remote afterloader (HDR) treatments annually, mostly gynecological and breast (SAVI) cancer treatments and one manual brachytherapy procedures using iodine-125 (I-125) prostate seed implants annually. The oncology department also performed the Ra-223, I-131, and Lu-177 therapy procedures.

PERFORMANCE OBSERVATIONS

This inspection was conducted virtually through Microsoft Teams, and consisted of interview with select licensee personnel, a review of select records, and an observation of security of the materials. Through Microsoft Team meetings, the inspector observed the NMT conduct a physical inventory of sealed sources, and all sources were accounted for. The inspector had the NMT demonstrate the dose calibrator constancy check, package receipt procedures, the end of the day daily and weekly area surveys, proper handling of radioactive waste and disposal procedures, with no issue noted. The inspector had the NMT describe the Y-90 dose preparation, assay, and personnel and area survey procedures.

The inspector had the AMP demonstrate the HDR unit's: (1) security; (2) daily spot checks; (3) emergency equipment and procedures; (4) safety procedures and instructions; (5) door interlock system; and (6) radiation monitoring equipment checks. The inspector reviewed select HDR, I-125 seeds implant, I-131, Y-90, and Ra-223 written directives and treatment plans. Through these demonstrations and other discussion, the inspector found that

Materials Inspection Record (Continued)

the licensee personnel was knowledgeable of radiation protection principles, licensee procedures, and regulatory requirements.

The inspector reviewed the following records: radiation safety committee minutes, quarterly program audits, package receipts, waste disposal records, DOT Hazmat training, linearity and accuracy of the dose calibrator, instrument calibration, sealed source leak tests and inventory, daily area surveys, and weekly wipe tests. The inspector reviewed dosimetry records for 2019 through May 31, 2021, indicating the maximum annual dose to be 379 mrem - DDE, and 2,997 mrem - SDE.

No violations of NRC requirements were identified as a result of this inspection.