

FEB 25 1997

Robert A. Donovan  
Chief Executive Officer/President  
Lowell General Hospital  
295 Varnum Avenue  
Lowell, Massachusetts 01854-2195

SUBJECT: INSPECTION NO. 030-01811/96-001

Dear Mr. Donovan:

This refers to your letter dated January 10, 1997, in response to our letter dated December 10, 1996.

Thank you for informing us of the corrective and preventive actions you documented in response to our correspondence. However, your letter has been reviewed and additional information is still needed.

In regard to Violation C, the NRC cannot waive the license commitment you made to follow the survey meter calibration procedures detailed in Appendix B to Regulatory Guide 10.8, Revision 2. If you wish to revise your instrument calibration procedure, please request amendment of your license. In the interim, you must comply with the current requirements of your license. Please describe your corrective actions which will ensure compliance with these requirements.

Please submit to this office within seven (7) days of receipt of this letter a written statement containing the requested information.

Sincerely,

Original Signed By:  
James P. Dwyer

*for*

Mohamed M. Shanbaky, Chief  
Nuclear Materials Safety Branch 1  
Division of Nuclear Materials Safety

Docket No. 030-01811  
License No. 20-00506-03

cc:  
George B. Inglis, Ph.D., Radiation Safety Officer  
Commonwealth of Massachusetts

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Lowell General Hospital

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OFFICE	DNMS/RI	DNMS/RI		
NAME	RMcKinley	MShanbaky		
DATE	02/25/97	02/24/97	02/ /97	02/ /97

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January 10, 1997

Mohamed M. Shanbaky, Chief  
Nuclear Materials Safety Branch 1  
Division of Nuclear Materials Safety  
NRC Region 1  
475 Allendale Road  
King of Prussia, PA 19406-1415



Dear Dr. Shanbaky,

This is a "Reply to a Notice of Violation" from the inspection performed by Richard McKinley on October 28 and 29, 1996.

- A. The patient implanted with Iridium-192 on November 7, 1995 was not surveyed with a radiation detection survey instrument to confirm that all sources had been removed. The sources were counted after removal. The sources were encased in plastic strands and a count was confirmed after removal and again before returning the strands to the supplier. In the future, the source count will be accompanied by a survey of the patient as required by 10CFR35.404(a).
- B. The thyroid survey of the physicist administering I-131 on August 12, 1996 was overlooked. Another administration was performed in September 1996 and the survey was done within 3 days. In the future, the thyroid burden of any individual preparing or administering iodine dosages requiring hospitalization will be surveyed within 3 days.
- C. We wish to seek information regarding this violation. Appendix B of the Regulatory Guide 10.8 has several requirements. The model procedure agreed to in our license application dated November 24, 1993 has traceability as Item 2 and a source strength as Item 4.

Item 3 states that "a source that has approximately the same photon energy as the environment in which the calibrated device will be employed should be used for the calibration." The survey meter in question is used in our Nuclear Medicine Department where 95 % of our procedures are done with Tc-99m. The energy of Tc-99m is 140KeV.

The 2 isotopes suggested in Item 4 have energies of 662KeV for Cs-137 and 1.25MeV for Co-60. The physicist made the judgement that the energy response criterion of Item 3 was more important than the dose rate criterion of Item 4.

295 Varnum Ave.

Lowell, MA

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A licensee is required to have a meter to measure the range of background of 0.02mR/hr to 1000 mR/hr. The survey meter in question has 3 scales; 0-0.5 mR/hr, 0-5 mR/hr, and 0-50 mR/hr. It is only the highest of these scales which uses the 30 mR/hr at 1m. To calibrate the 0.5 mR/hr at the 1/3 and 2/3 full scale points, the distance from the source to the meter would be a factor of 10 greater. In order to read an exposure of 0.3 mR/hr, the distance would be 10m or 33 feet. Such a great distance in any normal or slightly larger room leaves the question of scatter from the room objects casting doubt on the value of the calibration conditions.


The question of traceability of Tc-99m is a problem with this isotope. NIST does not offer a standard. The isotope is, however, the dominant one used in the Nuclear Medicine Department. Patients are injected in thousands of studies annually and in each case, we think we know the activity by cross reference to sources which are NIST traceable. It seems curious to demand more of a survey meter than we demand of devices which measure patient dose.

In summary, it appears well advised to calibrate a survey meter used for Tc-99m at 140 KeV on a scale for 0.2 and 0.4 (1/3 and 2/3 points) with an activity such that the source is approximately 2m (6 ft) away, instead of one so active that it must be 10m (33 ft) away to calibrate this scale.

The RSO does not recommend possession of either of these sources for the single purpose of calibrating a meter. We look forward to your guidance on this issue.

License No. 20-00506-03  
Docket No. 030-01811

Sincerely,

  
Robert A. Donovan  
CEO, President

295 Varnum Ave.  
Lowell, MA  
01854-2193

cc: U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

508-937-6000