



MASSACHUSETTS INSTITUTE OF TECHNOLOGY
MEDICAL DEPARTMENT
ENVIRONMENTAL MEDICAL SERVICE

BATES LINAC RADIATION PROTECTION OFFICE

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April 12, 1991

US Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia PA 19406

RE: Docket Nos. 50-20, 70-938
Inspection Nos. 50-20/91-01
70-938/91-01
License Nos. R-37, SNM-986

Gentlemen:

Following is our response to your Notice of Violation arising from the above referenced inspection. Items are lettered in accordance with the identifying lettering in the Notice of Violation.

- A. The radiation protection programs at MIT include routine surveillance of all work areas in which byproduct or special nuclear materials work is conducted, with surveys conducted on a daily, weekly, or monthly basis. Routine survey records are kept on all such surveillance and significant problems are brought before the Radiation Protection Committee or the Reactor Safeguards Committee as appropriate. In recognition of the additional specific requirement in SNM-986 that quarterly inspections be conducted in accordance with a written procedure in areas in which SNM materials are used, a written procedure has been adopted to satisfy this requirement. The procedure requires that staff of the appropriate radiation protection office conduct such inspections and report their findings together with needed corrective action to the supervisor of the inspected area and to F.X. Massé, CHP, the Institute Radiation Protection Officer. Mr. Massé will ascertain that reports are filed in a timely manner, review the report for appropriateness of proposed corrective action, establish followup procedures as necessary, and report on all such issues to the Radiation Protection Committee or Reactor Safeguards Committee, as appropriate. Whereas in the past items involving SNM materials would only appear

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on the meeting agenda if there were problems, this subject will now be discussed at every future meeting.

- B. All three MIT radiation protection offices conduct routine refresher training for all health physics technicians on a routine frequency ranging from weekly to monthly. Issues pertaining to activities conducted under SNM-986 are included in that training as they may arise. Records of such training vary between the three offices. In recognition of the specific requirement in SNM-986, at least one such training session each year in each office will be specifically dedicated to refresher training on the requirements of SNM-986. Such training will be formally documented for NRC review.
- C. Arrangements have been made to contract for precise analysis of the contents of ^3H , ^{14}C , ^{99}Tc , and ^{129}I in applicable segments of the MITR radioactive waste stream (e.g. resins) prior to any future disposal shipments of such waste. All future burial site waste shipment manifests will include information on the total quantities of such radionuclides in the shipment. No shipments will be made until this information is complete.

The above changes in procedure should fully correct all deficiencies identified in the program, effective immediately. Records of such changes in procedure will be available for all future inspections and should adequately document full compliance in these areas.

In addition to the above referenced violation items, we offer the following information on additional areas of concern identified by the inspectors in the above referenced inspection.

Oversight of Radiation Protection Activities: As noted in the inspection report, radiation protection activities at the MITR are primarily the responsibility of the Reactor RPO, and radiation protection activities on campus are primarily the responsibility of the Campus RPO. Coordination of all such activities in which some overlap may occur (e.g. issues related to SNM-986 activities) will be provided by F.X. Massé, CHP, in his roll as Institute Radiation Protection Officer and correspondent on NRC license number SNM-986. As noted in the response to violation A above, the staff of the



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appropriate radiation protection office will conduct the necessary surveillance of all such activities and report the results to F.X. Massé. All such reports will be reviewed to assure compliance with all requirements and coordination as necessary between radiation protection offices.

Ventilation Stack Air Sampling. The location of the sampling point in the Engineering Laboratory ventilation system stack and the nature of the sampling hardware have been reviewed with the assistance of the ventilation engineers from the MIT-EMS Industrial Hygiene Office. Changes in the sampling system as appropriate to assure proper sampling of exhaust emissions will be undertaken in the near future. These changes will be fully documented and available for review on the next inspection.

Emergency Preparedness. The emergency preparedness program, including the contents of emergency preparedness kits located inside and outside the reactor restricted area, emergency instruments, the use of emergency respiratory protection equipment, and training of security response personnel are all being reviewed by appropriate members of the Reactor Operations staff and the Reactor RPO. The results of this review will be fully documented and available for review in future inspections.

Instrument Calibration. The two instrument calibration facilities operated by the campus and reactor radiation protection offices are being reviewed with respect to their compatibility and traceability to national standards and the adequacy of calibration accuracy at the upper and lower ranges of interest. The NBS calibrated 50 mg radium source on campus will be the reference source, and cross-calibration with the reactor calibration facility will be accomplished with an appropriate transfer standard instrument such as a Keithley digital ion chamber. Calibration accuracy at low dose rates will be investigated and verified for both facilities through the purchase of additional standard sources or cross-referencing properly documented low-dose-rate facilities elsewhere as appropriate. Full documentation on all such efforts will be available for review in future inspections.

The above actions are being implemented on a priority basis and should be fully implemented within three months. While we believe none of the additional issues raised represent significant deficiencies in the MIT program, action will be taken and documentation improved to justify and clarify and fully document



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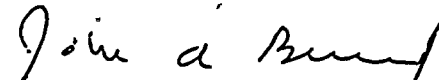
the procedures to be followed in all such areas.

We believe this response fully addresses all issues raised in the above referenced correspondence. Please don't hesitate to contact us if further information is required.

Yours truly,



Francis X. Massé, CHP
MIT Radiation Protection Officer



John A. Bernard, Jr., PhD
Director of Reactor Operations

/nlj

