

OCT 22 1982

Docket Nos. 30-00763
30-09177
30-10685
70-00089
40-05577

License Nos. 20-01537-02
20-01537-10
20-01537-11
SNM-81
SUD-687

Massachusetts Institute of Technology
ATTN: Kenneth R. Wadleigh
Vice President and
Dean of the Graduate School
Room 3-136
Cambridge, Massachusetts 01239

Gentlemen:

Subject: Inspection No. 82-01

This refers to the routine safety inspection conducted by J. Johansen and J. McGinness of this office on July 27-28, 1982, at the Cambridge Campus and Bates Linear Accelerator facility in Middleton, Massachusetts, of activities authorized by NRC License Nos. 20-01537-02, 20-01537-10, 20-01537-11, SNM-81, and SUD-687 and to the discussions of our findings held by J. Johansen with yourself and Messrs. Bolton and Masse of your staff at the conclusion of the inspection.

The inspection was an examination of activities conducted under your licenses as they relate to radiation safety and to compliance with the Commission's rules and regulations and the conditions of your licenses. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, measurements made by the inspector, and observations by the inspector.

The inspectors also took smear samples in your preparation and storage areas which were analyzed in our Regional Office Laboratory in King of Prussia, Pennsylvania. The basic purpose of these independent measurements is to verify your capability for analyzing removable contamination in your preparation and storage areas. The results of our analyses were in agreement with your results and indicate levels were below minimum detectable activities.

In addition, the inspectors reviewed your use of plutonium/beryllium (PuBe) sealed sources. The Department of Energy has identified PuBe sources with end caps not welded in place and has recommended appropriate nondestructive examination of the outer end cap welds of all PuBe sources. The inspectors visually examined the welds of your PuBe sources. No apparent defects were identified; however, the inspectors also discussed the advantages of conducting additional nondestructive tests by qualified personnel and appropriate radiation safety precautions during such tests. A wipe sample was taken from each end cap weld area and was analyzed in our Regional Office Laboratory. Our analysis

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OCT 22 1982

revealed small quantities of removable contamination on two of the sources, source 54 housed in the reactor building and the 5 curie source in 6-017, with removable contamination of 2.9×10^{-4} microcuries, and 1.25×10^{-4} microcuries, respectively. This is in agreement with your leak test report of June 4, 1982, which indicates removable contamination less than 0.005 microcuries on each source. Sources with traces of removable contamination have, in the past, been found to have improperly welded end caps. Therefore, closer monitoring of your PuBe sources is recommended. This may be achieved by employment of the non-destructive testing technique discussed during the inspection, performance of more frequent leak tests, or return of the sources to the manufacturer for inspection and repair.

Our inspector also verified the steps you have taken to correct the violation and deviation brought to your attention in a letter and enclosure dated April 25, 1980. We have no further questions regarding your action at this time.

Based on the results of this inspection, it appears that certain of your activities were not conducted in full compliance with NRC requirements, as set forth in the Notice of Violation, enclosed herewith as Appendix A. These violations have been categorized by severity level in accordance with the NRC Enforcement policy (10 CFR 2, Appendix C) published in the Federal Register Notice (47 FR 9987) dated March 9, 1982. You are required to respond to this letter; and, in preparing your response, you should follow the instructions in Appendix A.

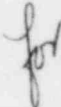
The responses directed by this letter and the accompanying Notice are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and your reply will be placed in the Public Document Room.

Your cooperation with us in this matter is appreciated.

Sincerely,

Original Signed By:
John D. Kinneman

 Thomas T. Martin, Director
Division of Engineering and Technical
Programs

Enclosure:
Appendix A, Notice of Violation

Massachusetts Institute of Technology 3

OCT 22 1982

cc w/encl:
Public Document Room (PDR)
Nuclear Safety Information Center (NSIC)
Commonwealth of Massachusetts (2)

Massachusetts Institute of Technology
ATTN: Mr. F. Masse, R.P.O.
Room 20B-238
Cambridge, Massachusetts 02139

bcc w/encl:
Region I Docket Room (with concurrences)
Chief, Operational Support Section (w/o encl)

[Signature]
RI:DETP
Johansen/lp
10/15/82

[Signature]
RI:DETP
McGinness
10/21/82

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Kinneman
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