

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No.: 70-398/94-01

Docket No.: 70-398

License No.: SNM-362

Licensee: U. S. Department of Commerce
National Institute of Standards and Technology
Gaithersburg, Maryland 20899

Facility Name: National Institute of Standards and Technology

Inspection At: Gaithersburg, Maryland

Inspection Conducted: February 15-18, 1994

Inspector:

Thomas Dragoun
Thomas Dragoun, Project Scientist, Effluents
Radiation Protection Section (ERPS), Facilities
Radiological Safety and Safeguards Branch (FRSSB)

3/24/94
date

Approved By:

Judith A. Joustra
Judith Joustra, Chief, ERPS, FRSSB,
Division of Radiation Safety and Safeguards

3/24/94
date

Areas Reviewed: Implementation of revised radiation protection requirements in 10 CFR 20 and compliance with license conditions specified in the Materials License Document.

Results: No safety concerns or violations were observed. The revised regulatory requirements were properly implemented.

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Details

1.0 Individuals Contacted

1.1 Licensee Personnel

- *D. Eagleson, Supervisory Health Physicist, Laboratory
- *T. Hobbs, Chief, Health Physics Group
- *C. Kuyatt, Chairman, Radiation Safety Committee
- *L. Pevey, Chief, Occupational Health and Safety Division
- *R. Schwartz, Chairman, Ionizing Radiation Safety Review Subcommittee
- *L. Slaback, Supervisory Health Physicist, Reactor

1.2 NRC Visitor

D. Westall, Australian Safety Bureau

*Attended the Exit Interview on February 18, 1994. Other personnel were contacted or interviewed during the inspection.

2.0 Organization and Oversight

Since the previous NRC inspection of this area in 1990, only minor changes were made to the organization. An Environmental Compliance Group was added and some position titles were changed. The assignment of responsibilities within the organization remained the same and key positions were filled by trained, experienced personnel.

Areas of expertise of the members of the Radiation Safety Committee (RSC) have been slightly adjusted to account for a shift in licensed activities. For example, the quantity of fissile material was reduced thereby eliminating concerns about criticality safety. However, use of by-product material was added to the SNM license. Minutes of meetings indicated that the RSC met annually as required to review audits by the Ionizing Radiation Subcommittee and approve the annual summary report. Licensee policy specifies four audits per year while License Condition (LC) 2.8 only requires one audit. The licensee stated that, during 1992, management and the RSC focused continuous oversight on the decommissioning of the LINAC. No written audit report of these activities was filed. The inspector also noted that the number of audits for 1991 and 1993 was below expectations. The RSC Chairman stated that steps will be taken to re-establish the number and quality of audits. This matter will be reviewed in a future inspection (Followup Item 70-398/94-01-01). Workplace tours by supervisory health physicists were completed and documented each quarter as required. No off-normal occurrences were reported.

Training for workers was changed to a computer-based interactive program that is shared with the research reactor. During the training, an exam is given by the computer using

randomly selected questions from an exam bank. Incorrect answers result in a second presentation of the appropriate training material followed by a retest. All sessions are logged and printed for review by the Supervisory Health Physicist in charge of training. The inspector concluded that the training was very effective.

The licensee is required to develop health physics (HP) procedures in accordance with LC 2.7. Selected procedures were reviewed and found to provide good detail and specific information in a consistent format. Records of personnel exposures and building radiation surveys, required by LC 2.10, were readily retrievable. For personnel dosimetry, the Navy-supplied system is used, which is accredited by NVLAP in eight categories. The licensee stated that the dosimetry recordkeeping system was modified to comply with the new 10 CFR 20 requirements. However, internal exposures do not normally occur at this facility so exposure reports are not expected to change. The inspector also verified that personnel were provided with extremity monitoring as required.

Within the scope of this review, the inspector concluded that the licensee had effectively implemented the programs described in Chapter Two of the Materials Licensing Document (MLD).

3.0 Radiological Protection

The inspector toured the shipping and receiving area, the waste storage and processing area, and most of the on-site locations where radioactive material is routinely used. The inspector verified the radiation levels in selected areas using one of the licensee's calibrated ion chamber portable survey meters. All radioactive material was labeled with the additional information specified by the revised regulations. All areas were posted as required. There were no airborne activity areas. Access controls for high radiation areas were satisfactory. There was one area classified as a very high radiation area in accordance with the revised requirements in 10 CFR 20. The area was properly posted, controls specified in 20.1603 were in place and records required by 20.2109 were properly maintained.

The availability of radiation monitoring equipment was good. All equipment examined had been calibrated as required and was in good condition. The inspector reviewed the operation of a new stand-up whole body counter and a cart-mounted frisker for floor contamination that used a sensitive, large area, plastic scintillator probe (1,000 cm²). The licensee was commended for the quality and quantity of survey equipment on hand.

The program for maintaining radiation exposures as low as reasonably achievable (ALARA), which is specifically required by the revised regulations, is described in paragraph 3.1.2 of the MLD. The licensee has established administrative limits at 25% of the applicable NRC limits for worker and general population doses. A review of health physics summary reports shows a consistent decline in the cumulative exposure

in the facility. To demonstrate compliance with the new Part 20 limit of 100 mrem to the public, the licensee stated that the EPA computer program 'COMPLY' will be used to calculate off-site doses.

The need for personnel protective equipment is low during normal operation. Surface contamination is carefully controlled to prevent interference with the preparation of standard sources or calibration of existing sources. Lab coats and gloves were available and in use. Respirators were not required for routine operations. Automatic personnel friskers were available at the exits of the areas where surface contamination was possible. All of the multi-Curie sealed sources were contained in heavily shielded, specially designed enclosures that prevented personnel access.

Within the scope of this review, no deficiencies or safety concerns were identified.

4.0 Exit Interview

The inspector met with the licensee representatives indicated in Section 1.0 of this report on February 18, 1994, and summarized the scope and findings of this inspection. The licensee had no comments regarding the inspection findings.