



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

WASHINGTON, D.C. 20555-0001

November 23, 1999

DOCKET: 70-398

**LICENSEE: U.S. Department of Commerce
National Institute of Standards
and Technology (NIST)**

SUBJECT: SAFETY EVALUATION REPORT: EXEMPTIONS FROM 10 CFR PART 36

BACKGROUND

By application dated March 24, 1999, which superseded submissions dated May 20, 1998, and December 23, 1998, the licensee requested that Materials License SNM-362 be exempted from certain requirements contained in 10 CFR Part 36 and that other minor changes be made. The licensee's application requested that:

1. NIST's vertical beam irradiation facility (VBIF) be exempted from certain requirements contained in the following 8 sections of 10 CFR Part 36: 36.23(a), 36.23(b), 36.23(c), 36.23(d), 36.27(a), 36.27(b), 36.31(a), and 36.67(a).
2. License Condition 9 be revised to authorize the use of radioactive material at offsite locations under U.S. Nuclear Regulatory Commission jurisdiction, subject to the controls of Section 1.8.a of the license application.
3. The Chief of the Fire Protection Services be replaced by the NIST Fire Protection Specialist as the individual responsible for the review of any proposed laboratory or facility construction or modification.
4. The .05 microcurie contamination action level requiring removal of teletherapy sealed sources from use be deleted. Consequently, teletherapy sealed sources would be subject to the .005 microcurie contamination level applied to all sealed sources.

DISCUSSION

1. Exemption from 10 CFR Part 36

The licensee uses three teletherapy-style source heads (one Cs-137 and two Co-60 irradiators) in the VBIF, for research and development projects. The VBIF was built in the early 1960s; thus, certain safety features associated with VBIF operations do not meet the current regulatory requirements of Part 36, "Licenses and Radiation Safety Requirements for Irradiators." By application dated March 24, 1999, the licensee requested that the VBIF operation be exempted from certain requirements in Part 36. The safety review of the licensee's requests was performed by the Division of Industrial and Medical Nuclear Safety (IMNS). The staff's review has concluded that all the licensee's exemption requests meet the requirements of Part 36.17 and are acceptable. IMNS's detailed safety review dated September 8, 1999, is attached to this report. A brief discussion of each exemption follows:

a. Exemption from 10 CFR 36.23(a)

According to 10 CFR 36.23(a), "The personnel entrance door or barrier must have a lock that is operated by the same key used to move the sources." NIST has compensated for its inability to meet this requirement with a number of comparable safety measures including enhanced security equipment and procedures and installation of additional radiation monitors. The staff thus concludes that the licensee's exemption request meets the requirements of Part 36.17 and should be granted.

b. Exemption from 10 CFR 36.23(b)

According to 10 CFR 36.23(b), "Detection of entry while the sources are exposed must cause the sources to return to their fully shielded position and must also activate a visible and audible alarm to make the individual entering the room aware of the hazard. The alarm must also alert at least one other individual who is onsite of the entry." NIST has compensated for its inability to meet these requirements with a number of comparable safety measures including multiple door interlocks, multiple radiation monitors, and an independent backup control system that, when armed, notifies the security console. Furthermore, NIST will be required to arm the independent backup control system when an operator is not present. The staff thus concludes that the licensee's exemption request meets the requirements of Part 36.17 and should be granted.

b. Exemption from 10 CFR 36.23(c)

According to 10 CFR 36.23(c), "Attempted personnel entry while the monitor measures high radiation levels, must activate the alarm described in paragraph (b) of this section." NIST has compensated for its inability to meet this requirement with a number of comparable safety measures including additional radiation monitors, entrance controls, and security measures. Also, according to NIST, the facility meets the requirements of 10 CFR 35.615(b), "Safety Precautions" for teletherapy units. The staff thus concludes that the licensee's exemption request meets the requirements of Part 36.17 and should be granted.

c. Exemption from 10 CFR 36.23(d)

According to 10 CFR 36.23(d), "Before the sources move from their shielded position..., the source control must automatically activate conspicuous visible and audible alarms to alert people in the radiation room that the sources will be moved from their shielded position." NIST has compensated for its inability to meet this requirement with a number of comparable safety measures including the availability of visible and audible alarms at the entrance to irradiation rooms and alarms in the room. The staff thus concludes that the licensee's exemption request meets the requirements of Part 36.17 and should be granted.

d. Exemption from 10 CFR 36.27(a)

According to 10 CFR 36.27(a), "The sources must automatically become fully shielded if a fire is detected." NIST has compensated for its inability to meet this requirement with comparable safety measures including notification of the Fire Protection Group when heat and smoke detectors are activated. The staff thus concludes that the licensee's exemption request meets the requirements of Part 36.17 and should be granted.

e. Exemption from 10 CFR 36.27(b)

According to 10 CFR 36.27(b), "The radiation room...must be equipped with a fire extinguishing system capable of extinguishing a fire without the entry of personnel into the room." NIST has compensated for its inability to meet this requirement with comparable safety measures including the presence of portable fire extinguishers in the control room and radiation room. The staff thus concludes that the licensee's exemption request meets the requirements of Part 36.17 and should be granted.

f. Exemption from 10 CFR 36.31(a)

According to 10 CFR 36.31(a), "The [console] key must be attached to a portable radiation survey meter by a chain or cable....The door to the radiation room must require the same key." NIST has compensated for its inability to meet the requirement with comparable safety measures including added radiation monitors, entrance controls, and security measures. The staff thus concludes that the licensee's exemption request meets the requirements of Part 36.17 and should be granted.

g. Exemption from 10 CFR 36.67(a)

According to 10 CFR 36.67(a), "Upon first entering the radiation room...after an irradiation, the irradiator operator shall use a survey meter to determine that the source has returned to its fully shielded position." To compensate for its inability to meet this requirement, the NIST facility, which is comparable in risk to teletherapy units, will be required to meet the radiation monitoring requirements of 10 CFR 35.615(d) under all conditions of operation. The staff thus concludes that the licensee's exemption request meets the requirements of Part 36.17 and should be granted.

2. Authorization for Offsite Operations

Since July 1997, the licensee has been authorized, under Materials License SNM-362, to use radioactive material at the licensee's existing facility at Gaithersburg, Maryland, and at offsite locations under NRC jurisdiction. The authorization for use at offsite locations is subject to the controls of Section 1.8.a of the license application. However, License Condition 9, which specifies the authorized places of use of radioactive material, does not include a reference to offsite locations. Therefore, staff has determined that the licensee's request to revise License Condition 9 to include a reference to the use of radioactive material at offsite locations is acceptable.

3. Fire Safety Review

The licensee has requested replacement of the Chief of the Fire Protection Services with a NIST Fire Protection Specialist, for review and approval of any proposed laboratory or facility construction or modification. The staff has determined that the requested changes will not adversely affect the public health and safety, and environment. Therefore, the licensee's request is acceptable.

4. Action Level

The licensee has requested that the .05 microcurie contamination action level for the leak test of teletherapy sealed sources be deleted. As a result, teletherapy sealed sources would be subject to the more stringent .005 microcurie contamination level applied to all sealed sources. The staff has determined that the requested change will not adversely affect the public health and safety, and environment. Therefore, the licensee's request is acceptable.

C. ENVIRONMENTAL REVIEW

The staff has determined that the proposed activities involving the use of radioactive materials for research and development or for education purposes do not adversely affect public health and safety or the environment and are, therefore, categorically excluded from the requirement to prepare a site-specific environmental assessment. Therefore, in accordance with 10 CFR 51.22(c)(14)(v), neither an environmental assessment nor an environmental impact statement is warranted for this action.

D. CONCLUSION

Based on the above discussion, the staff concludes that the proposed amendment can be issued without undue risk to the workers, public, or environment. The staff recommends that this amendment be approved.

Region I has no objections to this licensing action.

Principal Contributors

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*Attachment: IMNS 9/8/99 memo
on Proposed Exemption*