



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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DOCKET NO.: 70-267
(Docket No. 70-267 and No. 70-785 are combined into one docket file as the result of this licensing action.)

LICENSEE: State University of New York at Buffalo, New York

SUBJECT: REQUEST FOR LICENSE RENEWAL

I. Background

The licensee presently has two Materials Licenses: SNM-273 (Docket No. 70-267) and SNM-723 (Docket No. 70-785). Materials License SNM-273 authorizes the possession and use of 250 grams of Pu-Be neutron sources, 521 grams of U-235 and 100 mg of U-233 for teaching, research and development purposes. Materials License SNM-723 authorizes the possession of 3.8 kg U-235 in five fuel elements for use in destructive examination of fuel pins removed from the irradiated fuel element. The license history of these two licenses is described below:

Materials License No. SNM-273 was first issued to the University of Buffalo in 1959, to authorize possession and use of 16 grams of Pu-Be neutron source for teaching purposes in the Chemistry Department of the University. The license was subsequently renewed in 1961, in 1964, in 1967, and again in 1970. The current license has an expiration date of March 31, 1975. However, by letters dated February 10, 1975; July 14, 1976; and July 14, 1978, the licensee filed a renewal application for this license. Since March 31, 1975, the license has remained in effect in accordance with the timely renewal provisions pursuant to Subsection 70.33(b) of 10 CFR 70. Eight amendments were issued during the period of this license.

Materials License No. SNM-723 was first issued in 1963 to authorize the possession of 205 grams U-235, contained in one clad fuel element, to be used in the examination of irradiated fuel elements. The license was subsequently renewed in 1966, in 1969 and again in 1974; the current license has an expiration date of October 31, 1979. An application for renewal was filed by the licensee on August 27, 1979. Since October 31, 1979, the license has remained in effect in accordance with the timely renewal provisions of Subsection 70.33(b) of 10 CFR 70. Only one amendment was issued during the period of this license.

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The name of the licensee was changed from the University of Buffalo to Western New York Nuclear Research Center, Inc., in June 1961 and changed again to the State University of New York, Nuclear Science and Technology Facility (NSTF) in an amendment issued February 16, 1973. In the renewal application, the licensee requested NRC to combine the two licenses into one license.

The major research facility at the NSTF is a Pulstar research pool reactor, which is operated under NRC License R-77. The Materials License issued by FCUP does not authorize the removal from, or introduction into, a reactor of the licensed material. In other words, the utilization of Special Nuclear Material in the reactor will be conducted under the provisions of its reactor license and in accordance with the technical specifications for its reactor license. This requirement is reflected by license condition in the current licenses and it will be retained in the renewed license.

II. Scope of Review

The safety review of the NSTF's renewal application included a review of applications dated February 10, 1975; July 14, 1976; July 14, 1978; August 27, 1979; and supplements submitted August 29, 1980. The review also included a review of the compliance history of the two licenses, and a visit to the NSTF site was made by the staff on June 19, 1980.

On June 18, 1980, at the request of FCUP staff, the licensee's renewal application was discussed with the Region I inspector, Mr. J. Roth. His comments on the subject renewal application were discussed (Enclosure 1).

On June 19, 1980, FCUP staff made a site visit to the NSTF. The purpose of the visit was to familiarize the staff with the radiation safety aspect of the facility operation with the licensed material and to discuss the renewal application with NSTF representatives. Mr. Louis Henry, Assistant Director of the NSTF, told FCUP staff that since their submission of the renewal application dated July 14, 1976, some of the information contained therein is already obsolete, such as changes in NSTF's administrative organization; and NSTF does not need authorization under SNM-723 to possess 3.8 kgms of U-235 in five fuel elements, nor permission to conduct destructive testing of fuel pins. Therefore, NSTF submitted a revised renewal application to incorporate both Materials Licenses into one license.

Based on the results obtained from reviewing NSTF's renewal application and a review of the NSTF's radiation protection program, additional information was requested from the licensee. NSTF agreed to incorporate the additional information in a supplemental renewal application (details of discussion between NSTF representatives and staff can be seen in the staff's trip report which is enclosed in this report as Enclosure 2). NSTF submitted a revised renewal application dated August 29, 1980. The authorization was requested for possession and use of 240 grams Pu in the form of the

encapsulated Pu-Be as neutron sources in the subcritical assembly, one gram of sealed Pu as threshold detector, and 10 grams of U-235 in uranium enriched to less than 94 percent in the U-235 isotope for research, education and development purposes, as well as commercial service activities such as calibration of radiation detecting instruments.

III. Discussion on Review

NSTF's revised renewal application has demonstrated that they have the necessary technical staff with the proper qualifications to administer an effective and safe radiological safety program. The following sections contain a description of NSTF's organization and radiological safety program as conducted by NSTF, along with additional conditions developed by FCUP staff.

1. Management Organization

The State University of New York at Buffalo (SUNY/B) is one of the New York State-operated institutions within the SUNY system. The Nuclear Science and Technology Facility and Radiation Protection Department (RPD) are departments within the SUNY/B administrative structure and are controlled by the President of SUNY/B. Operation of the NSTF is the responsibility of the Director of the NSTF, who is assisted by the Assistant Director. The SUNY/B radiation protection program is the responsibility of the Radiation Safety Officer, and the Radiation Protection Department implements the radiation safety program under the direction of the Radiation Protection Manager. The NSTF Operating Committee is a subcommittee of the Nuclear Safety Committee which linked NSTF and RPD together. The Operating Committee is authorized to act for the Nuclear Safety Committee with regard to routine aspects of NSTF operations. The responsibilities of the Operating Committee include:

- a. Review and approval of the operating procedures,
- b. Review and approval of all experiment protocols or procedures, and
- c. The management audit function for SNM utilization and inspection of the NSTF, quarterly.

The members of the Operating Committee consist of the NSTF Director, the RPD Manager, and the NSTF Operation Manager.

2. Minimum Technical Qualification

Minimum technical qualifications have been established for the safety related staff position:

F Director: Ph.D in Science, related disciplines and two years of ... year experience; or M.S. degree in Science and 5 years' nuclear experience.

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Radiation Safety Officer: Ph.D in Nuclear Science and three years' experience in radiation protection; or M.S. or B.S. degree in Science, with 5 years' experience in radiation protection.

Radiation Protection Manager: B.S. in Science and 3 years' experience in radiation protection, or certified by the American Board of Health Physics.

3. Radiation Safety

The Radiation Protection Manager of the RPD reports to the Radiation Safety Officer, and is responsible for maintaining a radiation safety program which is established by the Radiation Safety Officer. He is also responsible for the protection of facility workers and the public.

The responsibilities of the Radiation Protection Department include the following:

- a. Control of personnel exposure.
- b. Conducting surface contamination surveys and leak testing of Pu-Be sources.
- c. Calibration of instruments.
- d. Waste disposal.
- e. Training program.

a. Control of Personnel Exposure: Neutron-sensitive personnel monitoring devices are used for Pu-Be source user. In order to ensure that the radiation workers at NSTF are being monitored adequately from all types of radiation, the staff has required the licensee by a license condition that appropriate personnel dosimeters should be issued to the radiation workers in accordance with regulations.

b. Control of Surface Contamination: At NSTF, contamination surveys will be conducted by the RPD when non-encapsulated SNM is used. The action levels and action to be taken for the controlling of surface contamination in the NSTF are specified in the renewal application. After reviewing the licensee's proposed surface contamination control program, the staff has proposed four modifications to the licensee's program to be incorporated as conditions of the license. The four modifications are described as follows:

(1) NSTF allows the contamination on personnel skin and clothing to have 500 dpm/100 cm² for alpha and 0.1 mr/hr for beta-gamma. The staff has added a license condition specifying that the permissible contamination level for the personnel skin and clothing be the same as background level, as specified in Regulatory Guide 8.24, Health Physics Surveys During Enriched Uranium-235 Processing and Fuel Fabrication.

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(2) At NSTF, once the contamination level is detected as exceeding the specified action level, decontamination action will commence immediately. However, if cleanup action cannot be started at once due to the temporary non-availability of personnel or equipment, control of contamination will start with area restrictions by posting or barricading, etc., followed by cleanup action. The Staff has added a license condition that if decontamination action cannot be started immediately due to the reasons described, decontamination action shall be started by the licensee within 24 hours after the measured contamination level was found to exceed the action level.

(3) To ensure that Pu-Be sealed sources remain leak tight, the FCUF staff has added Annex A as a license condition for leak testing of sealed Pu-Be sources.

(4) The FCUF staff has added a condition which is a general requirement to all our licensees, requiring that the release of equipment and packages from the plant site for unrestricted use shall be in accordance with Annex B, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of License for Byproduct, Source or Special Nuclear Materials," which is an informal guide developed by NMSS staff.

c. Calibration of Instruments: The radiation detecting instruments shall be calibrated every 6 months to ensure that they are functioning properly.

d. Airborne Activity Level and Effluent Release: NSTF is authorized under this license to possess 9 grams of U-235 in a non-encapsulated form, of which 7 grams is stored in the can for utilization as a standard source in the calibration of gamma spectrometer instruments. The potential for generating airborne activity concentration by using this material to a significant level is unlikely. At NSTF, due to the characteristics of work that is being performed there, no liquid effluent will be generated by using the licensed material.

e. Waste Disposal: RPD checks the solid waste containers monthly for possible leaks and arranges for its disposal in accordance with NRC and DOT regulations.

f. Training: All persons who use radioactive material must be authorized by the Operating Committee or Radiation Safety Officer. RPD provides inhouse training programs for individuals applying for this authorization.

4. Nuclear Safety

The total 261 grams SNM possession limit authorized under this license is insufficient to achieve accident criticality.

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5. Compliance History and IE Comments

A review of the Inspection and Enforcement record of the license since the license was first issued shows that four safety inspections were made by IE resulting in 3 items of non-compliance. These items are: two for failing to perform leak test of Pu-Be source at the frequency specified in their procedure manual and one for failing to issue a film badge to a Pu-Be user. The record also indicates that NSTF has taken appropriate action satisfactory to IE to resolve the non-compliance items. None of the non-compliance items identified resulted in measurable adverse effects to the health of the workers, nor to the health and safety of the public. Therefore, it is this reviewer's opinion that non-compliance items identified in this review do not reflect basic weaknesses in NSTF's radiation safety program.

On September 25, 1980, I discussed the renewal license with Mr. J. Roth, IE Region I inspector, again. He foresaw no safety-related problems with the licensee's renewal request.

IV. Conclusion and Recommendation

Upon completion of the radiation safety review of the licensee's application and compliance history, the staff has concluded that NSTF has the necessary technical staff to administer an effective radiological safety program. Conformance by NSTF to their proposed conditions, as well as to those developed by the FCUF staff, should ensure a safe operation and the quick detection of unfavorable trends or effects by NSTF or IE with prompt corrective action. Based on this analysis, it is concluded that the proposed renewal application is non-substantive and insignificant from the standpoint of environmental impact and pursuant to subparagraph 51.5(c)(3)(d)(3) of 10 CFR 51, no environmental impact statement, negative declaration, or environmental impact appraisal need be prepared.

Based on the discussion above, it is therefore recommended that the license be renewed for a 5-year period in accordance with the application and subject to the following conditions:

1. This license does not authorize the removal from or introduction into a reactor of the special nuclear material held under this license.
2. Notwithstanding the words stated in section 8.2, page 9 of the license application dated August 29, 1980, the licensee shall issue personnel monitoring equipment to the individual in accordance with the regulations specified in 10 CFR 20.202(a) and 20.202(b)(1).
3. Notwithstanding the words in section 10.3, page 11 of the license application dated August 29, 1980, the licensee shall comply with the enclosed Annex A, dated September 1980, leak test condition for the Pu-Be source.

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4. Notwithstanding the action level given in page 11 of the license application dated August 29, 1980, for skin or personnel clothing, the licensee shall not allow personnel skin or clothing to be contaminated beyond the background level.

5. Notwithstanding the words in section 10.2, page 17 of the license application dated August 29, 1980, the licensee shall start to clean up the contamination area within 24 hours once the measured surface radioactivity level exceeds the action level specified in the license.

6. Release of equipment or materials from NSTF for unrestricted use shall be in accordance with the enclosed Annex B, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source or Special Nuclear Materials," published by the USNRC Division of Fuel Cycle and Material Safety, dated November 1976.

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