1. Department of the Air Force
USAF Special Weapons Center
Kirtland Air Force Base
New Mexico 87117

2. SNM-597 (Docket No. 70-647) Category E, Priority II

3. March 11 and 12, 1968 Announced reinspection

4. Persons accompanying inspector: None

5. Persons contacted:

Capt. B. H. Sheets, Base Health Physicist and Chairman, Radioisotope Committee
Lt. Col. R. C. Wolff, Director, Base Medical Services
Col. William R. Morton, Vice Commander
Mr. Harry M. Murphy, Member, Radioisotope Committee and user

The only items of noncompliance noted during the inspection involved:

Failure to leak test the 10-curie Pu-Be neutron sealed source at intervals of six months or less and failure to maintain records of the sealed source leak tests in units of microcuries, as required by the license. (Para 14)

Form AEC-[illegible] (1-65)

Initials	James E. Hyder Inspector	Date 3/22/68
Initials	Glen D. Brown Reviewer	Date

Inspection History

9. The last inspection of the activities authorized by Special Nuclear Material License No. SNM-597 (Docket No. 70-647) was conducted on December 10, 1965. As a result of that inspection Form AEC-591indicating no items of noncompliance was issued.

Organization and Administration

10. The organization of the Air Force Special Weapons Center, Kirtland AFB, Albuquerque, New Mexico, is as described in paragraphs 11 → 13 of the inspection report for byproduct material License No. 30-03110-02, which was conducted on the same date.

Scope and Conditions of License

11. License No. SNM-597 authorizes the AFSWC to possess and use plutonium and uranium enriched in the U-235 isotope. The plutonium is authorized in the form of 160 grams encapsulated as a Pu-Be neutron source, and 120 grams encapsulated as threshold fission foils plus 10 grams in any form including 1 microgram of Pu-236. U-235 is authorized in the form of 6 grams encapsulated as threshold fission foils, 2 grams in any form, and 0.5 milligrams contained in neutron detectors. License Condition 11 specifies that the fission foils and the neutron source are to be leak tested at intervals of six months or less and results kept in units of microcuries. During the inspection it was determined that the licensee does indeed possess a 10-curie (160 grams) Pu-Be neutron source as well as a number of fission foils.

Facilities and Uses

12. The 10-curie Pu-Be neutron source is located in a water-filled tank which is approximately 5 feet deep and four feet in diameter. The source is located approximately in the middle of the tank and in an aluminum tube which is plugged with plastic to provide shielding. Mr. Harry Murphy, user of this source, explained that irradiations of small samples are accomplished by inserting the sample in small tubes which are positioned around the aluminum tube containing the neutron source. The water-filled tank is located in one side of the laboratory utilized by Mr. Murphy. According to both Murphy and Capt. Sheets, this lab is kept locked at all times when unattended.

13. In addition, all fission foils which include foils of Pu-239, U-238, and Np-237 are stored in a locked file cabinet located in Mr. Murphy's laboratory. It was explained that these foils are utilized for dosimetry studies which involves the exposure of large animals with the radiation from a reactor located on the Sandia Base which is immediately adjacent to the Kirtland AFB.

Leak Tests

14. Leak tests of the Pu-Be neutron source are performed by wiping the source with moistened wipes and counting them in a gas-flow proportional counter. A review of the leak test

records indicate the source was leak tested on 10/21/65, 7/15/66, and February, 1967 and September, 1967. The dates of the latter two leak tests were recorded only by month and year but do not include the day. It was also noted that these leak test records do not indicate the amount of removable activity detected in any fashion. Leak test records for the fission foils indicate that the foils Pu-239, U-238 and Np-237 were leak tested in May and September, 1966, and March and September, 1967, and the leak test of the sources had been initiated prior to the time of this inspection, however, all foils had not been wiped and all assays of wiped foils had not been completed. Capt. Sheets assured the inspector that leak tests of these foils would be completed before the end of March, 1968.

Storage and Security of Materials

15. It was noted during the inspection that all materials were adequately stored in a locked and properly labeled laboratory and the materials are used by and under the supervision of Mr. Harry Murphy.

Personnel Monitoring

16. Personnel monitoring is performed utilizing film badges obtained on a monthly frequency from the Wright Patterson AF Laboratory. Reports are submitted from Wright Patterson to the AFSWC quarterly. This information is transcribed onto Forms DD 1141 which are equivalent to Form AEC-5. A review of these forms indicated that no individuals have received more than 850 millirem in any calendar quarter since the date of the last inspection.

Exit Interview with Management

17. At the conclusion of the inspection, the results were reviewed with Col. William Morton, Vice Commander of the AFSWC at Kirtland AFB. At this time it was pointed out that the only apparent noncompliance noted during the inspection involved failure to leak test the Pu-Be source at intervals of six months or less and failure to maintain results of leak tests that had been performed in units of microcuries. Col. Morton was informed that the procedures for leak testing the sealed sources through the license had been reviewed and that they should have no difficulty in meeting the requirements of leak testing sources at the prescribed six month intervals. Capt. Sheets acknowledged that the requirements to possess the monitored results in microcuries had been an oversight on his part and that he would correct the deficiency immediately. Col. Morton stated that under these conditions he would take whatever steps