70-1050

LORETTO, PENNSYLVANIA 15940 · TE[illegible]14/472-7000

SAINT FRANCIS COLLEGE

THE COLLEGE AMONG THE PINES

OFFICE OF THE PRESIDENT

March 11, 1980

United States Nuclear Regulatory Commission
License Management Branch
Division of Fuel Cycle and Material Safety
Washington, D. C. 20555

Gentlemen:

Saint Francis College, Loretto, Pennsylvania, hereby makes application for renewal of special nuclear material license number SNM-1003 which expires April 30, 1980.

The following information is submitted in fulfillment of the requirements of Section 70.33, Title 10, Code of Federal Regulations, Part 70, "Special Nuclear Material."

1. Saint Francis College, Loretto, Pennsylvania, is an accredited four-year liberal arts coeducational college, accredited by the Middle States Association of Colleges and Secondary Schools, and by the Pennsylvania State Department of Education.

   The address of this institution is Loretto, Pennsylvania, 15940 (telephone 814-472-7000)

   The principal officers of the institution are:

Name	Title	Address	Citizenship
Rev. Christian R. Oravec, T.O.R.	President	St. Francis College	U.S.
Rev. Gervase Cain, T.O.R.	Executive Vice Pres.	St. Francis College	U.S.
Dr. John W. Willoughby	Vice Pres., Academic Affairs	St. Francis College	U.S.

   There is no control or ownership exercised over the applicant by any alien, foreign corporation, or foreign government.

8004110436 5PP.

2. The neutron source is being used in the Physics Department Laboratory located in Sullivan Hall on the College campus. The source is used in an introductory Physics laboratory course in the training of undergraduate science majors. Experiments include the study of the half life of In 116, complex nuclear decay, neutron detection and shielding.

3. The license renewal is requested for a five (5) year period.

4. Thirty-two (32) grams of plutonium enclosed in a cylinder as a two curie Pu-Be source is being used. This two curie source was obtained from Nuclear Materials and Equipment Corporation (NUMEC), Apollo, Pennsylvania and is their Pu 239-Be Neutron source NUMEC-C.

5. There will be no production, consumption, transfer or further acquisition of special nuclear material during the period of this license.

6. The neutron source will be used by the following personnel in laboratory experiments for physics students at Saint Francis College:

   Mr. Carl F. Kwadrat, Assistant Professor of Physics. He possesses an M.S. degree in Physics from Southern Illinois University, Carbondale-Edwardsville, Illinois (1968) and a B.S. in Physics from Saint Francis College, Loretto, Pennsylvania (1965). He has taken several courses in Atomic and Nuclear Physics including a course in Nuclear Physics and Radioactivity at the University of Missouri at Rolla.

7. The neutron source cylinder is stored in a Neutron howitzer (24" diameter by 24" high). It is constructed of 18-gauge steel with a hinged lid, four horizontal emission ports, and a vertical neutron source cavity. The hinged lid and beam ports are locked by a master key. A red warning light is energized when the lid is unlocked. The container is filled with 6.28 cubic feet of low-oil paraffin to within 1½" of the top. The Neutron Beam Irradiation Container is manufactured by Central Scientific Corporation of Chicago, Illinois. The calculated maximum neutron flux on the surface of the container area is 9 n/9cm^2-sec). The neutron source cylinder will only be removed from this container for leak testing.

   The following radiation protection instrumentation is available to monitor and detect radiation.

Model Number and Description	Radiation Detected	Range
463A with Alpha Probe Portable transistorized count rate meter and area monitor, Universal Transistor Products Corp.	Alpha (energies over 2 mev)	500, 5000, 50,000 CPM
Above instrument with different probe	Beta and Gamma	0-1,10,100 mr/hr
6B GM Survey Meter Victoreen Instrument	Beta and Gamma	0-.5,5,50 mr/hr
541/A dosimeters Victoreen Instrument	Beta and Gamma	0-200 mr

Calibration of the radiation protection instruments is accomplished semiannually and after any repairs to the instrument.

The neutron howitzer is stored in Sullivan Hall on the campus of Saint Francis College in the Physics Department storeroom. The container and room are properly posted to indicate the presence of radioactive material.

8. The source is stored in the Cenco Neutron Howitzer. The lid and the four horizontal emission ports are secured by locks. The keys are available only to the above mentioned personnel to prevent unauthorized use or removal of the source from the neutron howitzer.

   The manipulation of the source cylinder will be accomplished by the above individuals only for leak testing and by using a threaded handling rod of at least one meter in length. The exposure time to the unshielded source is less than 15 minutes per year.

   The neutron howitzer and the storage area are labled with official radiation signs.

   The neutron source is leak tested every six months or oftener. The test is made by performing a wipe of the cylinder (on the 1 meter handling rod) on a moist filter pad. The 463A survey meter with the alpha probe is then used to detect alpha radiation on the filter pad. The results are recorded. If 0.005 microcurie or more of removable alpha contamination (11,000 dpm) is found, personnel and the area will be

investigated for contamination and the source will be considered leaking unless proven otherwise.

The source would then be placed in a leak-proof container and returned to the manufacturer for repair or replacement. The Director, Materials Branch, United States Nuclear Regulatory Commission, Washington, D. C., 20555, will be notified with a description of the test results and action taken. A copy will also be sent to the Director, Region I, Nuclear Regulatory Commission, 631 Park Avenue, King of Prussia, Pennsylvania, 19406.

Sincerely,

Christian R. Oravec, T.O.R.

(Rev.) Christian R. Oravec, T.O.R.
President

CRO:ak

BETWEEN: William O. Miller, Chief
License Fee Management Branch
Office of Administration

John E. Glenn, Chief
Nuclear Materials Section B
Division of Engineering and
Technical Programs

Fee Exempt

LICENSE FEE TRANSMITTAL

A. REGION I

1. APPLICATION ATTACHED

Applicant/Licensee: St. Francis College

Application Dated: 4-26-85

Control No.: 03744

License No.: SNM-1003

2. FEE ATTACHED

Amount: 0

Check No.: 0

3. COMMENTS

Glenda Renewal then termination 22120

Signed SLJ

Date 5-2-85

B. LICENSE FEE MANAGEMENT BRANCH

1. Fee Category and Amount: EX 1K FEE EXEMPT 4/85

2. Correct Fee Paid. Application may be processed for:

Amendment _____

Renewal _____

License _____

Signed Frayce Brown

Date 5/8/85 for 5/14/85

REGION I FORM 213
(MARCH 1983)