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FLORIDA INSTITUTE OF TECHNOLOGY
150 W. UNIVERSITY BOULEVARD
MELBOURNE, FLORIDA 32901-6988
PHYSICS AND SPACE SCIENCES
PHONE: 305 768-8098

April 2, 1985

Material Licensing Branch
Division of Fuel Cycle and Material Safety
United States Nuclear Regulatory Commission
Washington, DC 20555

Dear Sir:

This is an application for renewal of License Number SNM-844 (ZCE) for Florida Institute of Technology, 150 West University Boulevard, Melbourne, Florida 32901, hereinafter designated as "applicant" or "the applicant".

1. The corporate officers of the applicant are:

   Jerome P. Keuper, President, 201 Oak Street, Melbourne Beach, Florida - USA Citizenship,

   David C. Latham, Vice President, P. O. Box 17711, Orlando, Florida - USA Citizenship,

   John W. Simmons, Vice President, 405 Banyan Way, Melbourne Beach, Florida - USA Citizenship

   Perry F. Clendenin, Treasurer and Assistant Secretary, 400 Banyan Way, Melbourne Beach, Florida - USA Citizenship

   John E. Miller, Secretary, 1105 South Riverside Drive, Indialantic, Florida - USA Citizenship.

   No ownership or control of the applicant by any foreign corporation or government exists.

2. The nuclear material will be used by the applicant in Nuclear Physics and Engineering courses. All material will be kept in Room B-2 of the Crawford Science Building located on the campus of the applicant. The material will be used in the education and training of graduate and undergraduate students, and in research by authorized faculty members. Use of the nuclear material will be in conjunction with a Lockheed sub-critical spur assembly manufactured in 1961.

25108

The sub-critical assembly will be primarily used for neutron activation and the studies of neutron diffusion.

3. The applicant requests that the license be renewed for a period of five years.

4. The quantities on hand, and being used, are:

SNM	Quantity	Isotope Percentage of Element
PU-239	14.21 grams	93.02%
U-235	458.53 grams	19.85%

5. (a) The applicant does not now foresee a need for additional SNM.

(b) No significant consumption or production of SNM is expected in this sub-critical assembly.

(c) No need for transfer of SNM is expected.

The program of utilization will be under the general direction of Dr. Jerome P. Keuper, President of Florida Institute of Technology, and Dr. Jay Burns, Head of Physics and Space Sciences Department. Dr. Rong-sheng Jin will supervise the use of the special nuclear material and the sub-critical assembly. Dr. Jin received his Ph.D. in Physics (specialization: nuclear physics) from the Ohio State University in 1965. He has been supervising the sub-critical assembly at Florida Institute of Technology since 1973. Dr. Gary N. Wells will be responsible for radiation safety at Florida Institute of Technology. Dr. Wells received his Ph.D. degree from the University of Illinois in 1971. He is an Assistant Professor in the Biological Sciences Department at Florida Institute of Technology. His experience in isotope usage is as follows:

Formal Instruction:

Lecture and laboratory course in Radiation Biology at Western Illinois University. Instruction included chemical and physical properties of radioisotopes, use of radiation measuring instruments, monitoring techniques, radiation health protection, handling, decontamination techniques, effect of radiation on biological systems and use of radioisotope as a research tool in biological sciences.

Research Qualifications:

Experience in the handling, use and disposal of liquid and solid radionuclides and labeled biological compounds. Radioisotopes used include ^{14}C, ^{3}H, ^{32}P, ^{35}S, ^{45}Ca, ^{131}I, ^{59}Fe and ^{86}Rb.

The radionuclides, Ca, I, Fe, and Rb were used as radio tracers in environmental studies at Western Illinois University and University of Oklahoma. The ^{14}C, ^{3}H, ^{32}P, and ^{35}S labeled

biological compounds were used in conjunction with research on nitrogen metabolism and protein synthesis at the University of Illinois and University of Oklahoma.

6. Among the radiation measuring and protection instruments available and being used are:

   -Multichannel Analyzer (Northern NS600)
   -A rack mounted discriminator and digital counting system
   -Four scintillator detectors (sodium iodide with thallium)
   -Two Geiger-Mueller detectors
   -One portable survey meter (Elscint, Model GSM-1), one portable survey meter (Nuclear Chicago Model 2112) with Neutron Detector (DN-3)
   -Pocket Dosimeters (Vitoreen 541/A)
   -R.S. Landauer, Jr., & Co. film badge service (neutron and gamma) Film badges are checked by Landauer monthly, and reported for monthly, quarterly, and permanent dosages.

7. The uranium-containing assembly core is stored in a sealed fifty gallon steel drum when not in use.

   The Pu-Be source (No. M-1146) is stored in a steel drum. The drum has an eight-inch radius. A one and one-half inch pipe holds the neutron source in the center of the drum. The space between the pipe and the drum is filled with paraffin. There are approximately seven inches of paraffin around the source.

   The Pu-Be source will be leak tested every six months for alpha contamination to be less than 0.0005 microcurie. All tests to date have been negative.

8. No additional SNM has been or will be allowed in the vicinity of the SNM of this license without prior permission from the cognizant federal and/or state authorities.

There is no credible accident that could cause criticality of this sub-critical assembly.

Sincerely yours,

Jerome P. Keuper
President

JPK/RSF/cu

DOCKET NO. 70-893

CONTROL NO. 25108

DATE OF DOC. 04/02/85

DATE RCVD. 07/30/85

FCUF ✓ PDR ✓

FCAF _____ LPDR _____

WM _____ I&E REF. ✓

WMUR _____ SAFEGUARDS _____

FCTC _____ OTHER _____

DESCRIPTION:

application for
Renewal

07/30/85 INITIAL Cec