



10 November 2014

Licensing Assistance Team
Division of Nuclear Materials Safety
US Nuclear Regulatory Commission, Region I
2100 Renaissance Boulevard, Suite 100
King of Prussia, PA 19406-2713

Subject: Request for Renewal of Specific License NRC 04-35086-01 *1030-38664*

Dear Sir,

SRI International requests renewal of NRC radioactive material license 04-35086-01 which allows for possession and use of a Carbon-14 sealed source at the Arecibo Observatory, Esperanza, Puerto Rico. A completed NRC Form 313 and attachments are enclosed. If you need additional information please contact me.

Sincerely,

Jonathan Schluter
Radiation Safety Officer
SRI International
333 Ravenswood Avenue
Menlo Park, California 94025
650-859-6117
jonathan.schluter@sri.com

REC'D 11/17/14 14:07:15

584871
NRC/IRGMI MATERIALS-002

SRI International

333 Ravenswood Avenue • Menlo Park, California 94025-3493 • 650.859.2000



**APPLICATION FOR MATERIALS
LICENSE**

Estimated burden per response to comply with this mandatory collection request: 4.3 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the FOIA, Privacy, and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollections.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW. *AMENDMENTS/RENEWALS THAT INCREASE THE SCOPE OF THE EXISTING LICENSE TO A NEW OR HIGHER FEE CATEGORY WILL REQUIRE A FEE.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

OFFICE OF FEDERAL & STATE MATERIALS AND ENVIRONMENTAL MANAGEMENT PROGRAMS
DIVISION OF MATERIALS SAFETY AND STATE AGREEMENTS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA,

SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PA 19406-2713

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN,
SEND APPLICATIONS TO:

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING,

SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
1600 E. LAMAR BOULEVARD
ARLINGTON, TX 76011-4511

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

1. THIS IS AN APPLICATION FOR (Check appropriate item)

- A. NEW LICENSE
 B. AMENDMENT TO LICENSE NUMBER
 C. RENEWAL OF LICENSE NUMBER

04-35086-01

2. NAME AND MAILING ADDRESS OF APPLICANT (include ZIP code)

SRI International
333 Ravenswood Avenue
Menlo Park, CA 94025

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

Arecibo Observatory
Esperanza, Puerto Rico

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Jonathan Schluter

BUSINESS TELEPHONE NUMBER

(650) 859-6117

BUSINESS CELLULAR TELEPHONE NUMBER

(650) 444-2320

BUSINESS EMAIL ADDRESS

jonathan.schluter@sri.com

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL

- a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSE FEES (Fees required only for new applications, with few exceptions*)
(See 10 CFR 170 and Section 170.31)

FEE CATEGORY

AMOUNT ENCLOSED \$

13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 37, 39, AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

CERTIFYING OFFICER -- TYPED/PRINTED NAME AND TITLE

Jonathan Schluter
Radiation Safety Officer

SIGNATURE

Jonathan Schluter

DATE

10 Nov 2014

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
APPROVED BY				DATE	



5.
 - a. Carbon-14.
 - b. Sealed source registered pursuant to 10 CRF 30.32 and 32.210 or equivalent Agreement state regulation.
 - c. One source, 7.5 millicuries, United States Radium Corporation Model 759(s), see attachment 2.
6. Calibration of instrumentation.
7. Jonathan Schluter, Radiation Safety Officer
 - Training
 - MS Radiological Health Physics
 - Experience
 - Radiation Safety Officer for broad scope radioactive material license CA 0503-41, Menlo Park, CA, 1996-2014

Robert Kerr, Authorized User

Training

- PhD Atmospheric Science
- Course title: "Radiation Safety for C-14 Sealed Source Users"
 - Topics: What is radiation?, Sources of ionizing radiation, Sealed vs unsealed, Radioactivity, SI prefixes, Electron volt unit, Radioactive emissions, Properties of radiation, Radiation survey meter, Exposure, Absorbed dose, Dose equivalent, Effective dose, Traditional and SI dose units, Biological effects, Cancer, Genetic effects, Background dose, Example doses, Radiation dose limits, ALARA, Nuclear Regulatory Commission, SRI International Radiation Safety Program, Training, Security, Leak test, Standard Operating Procedures.
 - Instructor: Jonathan Schluter, RSO.
 - Duration: 1 hour.
 - Date: 4 November, 2014.

Experience

Use of the licensed 7.5 mCi carbon-14 sealed source at the Arecibo Observatory since 1983.

Shikha Raizada, Authorized User

Training:

- PhD Physics
- Course title: "Radiation Safety for C-14 Sealed Source Users"
 - Topics: What is radiation?, Sources of ionizing radiation, Sealed vs unsealed, Radioactivity, SI prefixes, Electron volt unit, Radioactive emissions, Properties of radiation, Radiation survey meter, Exposure,



Absorbed dose, Dose equivalent, Effective dose, Traditional and SI dose units, Biological effects, Cancer, Genetic effects, Background dose, Example doses, Radiation dose limits, ALARA, Nuclear Regulatory Commission, SRI International Radiation Safety Program, Training, Security, Leak test, Standard Operating Procedures.

- Instructor: Jonathan Schluter, RSO.
- Duration: 1 hour.
- Date: 4 November, 2014.

Eva Robles, Authorized User

Training

- BA Physics and Child Psychology & Development
- Course title: "Radiation Safety for C-14 Sealed Source Users"
 - Topics: What is radiation?, Sources of ionizing radiation, Sealed vs unsealed, Radioactivity, SI prefixes, Electron volt unit, Radioactive emissions, Properties of radiation, Radiation survey meter, Exposure, Absorbed dose, Dose equivalent, Effective dose, Traditional and SI dose units, Biological effects, Cancer, Genetic effects, Background dose, Example doses, Radiation dose limits, ALARA, Nuclear Regulatory Commission, SRI International Radiation Safety Program, Training, Security, Leak test, Standard Operating Procedures.
 - Instructor: Jonathan Schluter, RSO.
 - Duration: 1 hour.
 - Date: 4 November, 2014.

Experience

Use of the licensed 7.5 mCi carbon-14 sealed source at the Arecibo Observatory since 2003.

Christiano Brum, Authorized User

Training:

- PhD Space Geophysics
- Course title: "Radiation Safety for C-14 Sealed Source Users"
 - Topics: What is radiation?, Sources of ionizing radiation, Sealed vs unsealed, Radioactivity, SI prefixes, Electron volt unit, Radioactive emissions, Properties of radiation, Radiation survey meter, Exposure, Absorbed dose, Dose equivalent, Effective dose, Traditional and SI dose units, Biological effects, Cancer, Genetic effects, Background dose, Example doses, Radiation dose limits, ALARA, Nuclear Regulatory Commission, SRI International Radiation Safety Program, Training, Security, Leak test, Standard Operating Procedures.
 - Instructor: Jonathan Schluter, RSO.
 - Duration: 1 hour.
 - Date: 7 November, 2014.



Raul Garcia, Authorized User

Training:

- US Marine Corp, Aviation Ordnance Technician 1965-1969, training included instruction in nuclear weapons handling, and detection and control of radioactive contamination.
- Course title: "Radiation Safety for C-14 Sealed Source Users"
 - Topics: What is radiation?, Sources of ionizing radiation, Sealed vs unsealed, Radioactivity, SI prefixes, Electron volt unit, Radioactive emissions, Properties of radiation, Radiation survey meter, Exposure, Absorbed dose, Dose equivalent, Effective dose, Traditional and SI dose units, Biological effects, Cancer, Genetic effects, Background dose, Example doses, Radiation dose limits, ALARA, Nuclear Regulatory Commission, SRI International Radiation Safety Program, Training, Security, Leak test, Standard Operating Procedures.
 - Instructor: Jonathan Schluter, RSO.
 - Duration: 1 hour.
 - Date: 7 November, 2014.

Experience

Use of the licensed 7.5 mCi carbon-14 sealed source at the Arecibo Observatory since 1973.

8. Although a radiation dose in excess of 10 percent of the occupational limits is highly unlikely, all individuals handling licensed sealed sources receive radiation safety instruction conducted by the RSO. Topics covered in the training include: radioactivity, properties of radiation, occupational dose limits, ALARA, handling and use procedures, and security.
9. The source is stored in a lockable desk within a laboratory. Given the nature of the source, no other engineering controls are applicable.
10. The only licensed source possessed under this license produces zero dose rate at a distance of 1 foot, therefore periodic sealed source leak testing is the only form of monitoring performed.

We will develop, implement, and maintain procedures for ensuring accountability of licensed materials at all times.

Physical inventories will be conducted at intervals not to exceed 6 months, to account for all sealed sources received and possessed under the license. Records of inventory shall be maintained for a period of 5 years from the date of each inventory, and shall include the radionuclides, quantities, manufacturer's name and model numbers, and the date of the inventory.

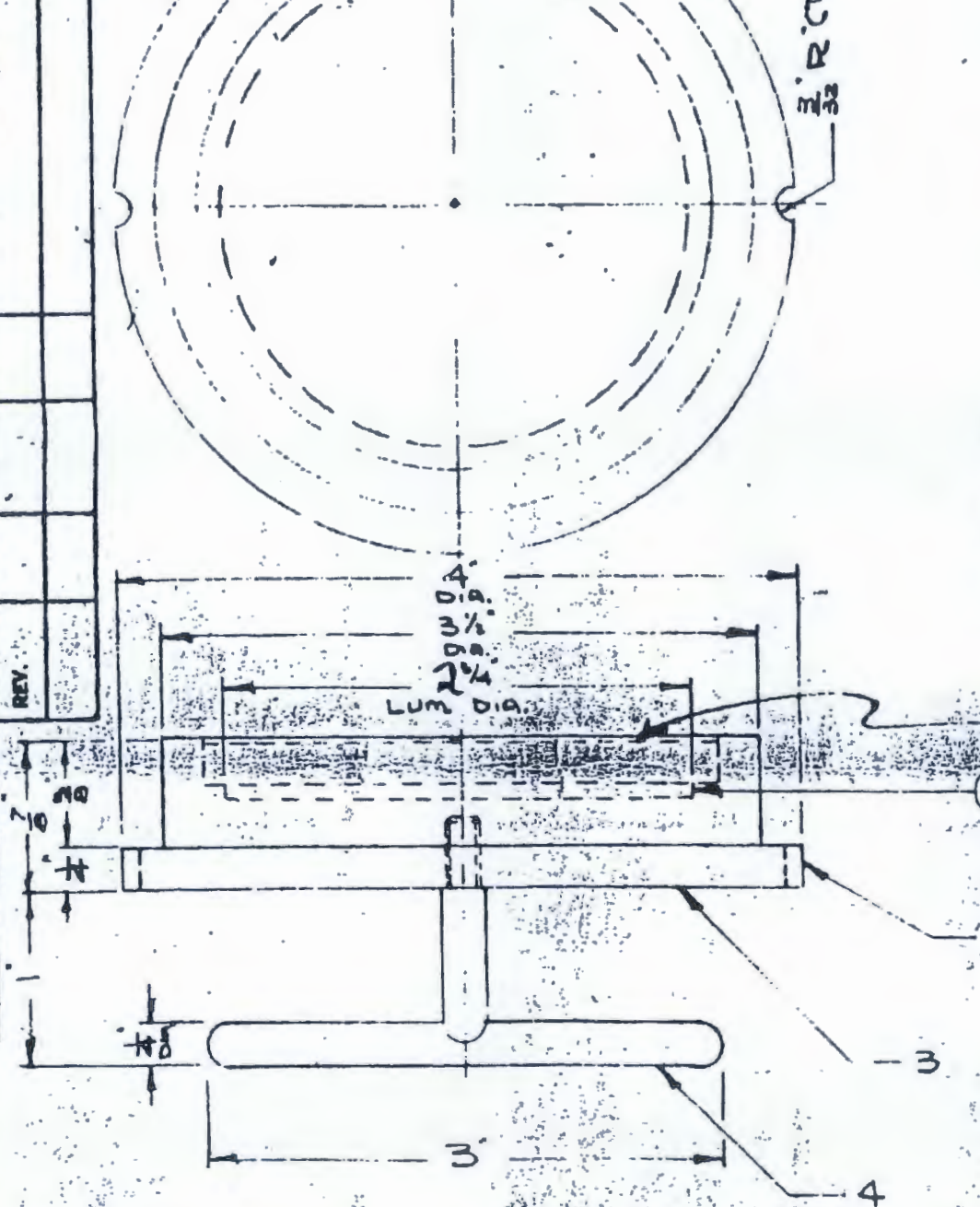
We have done a prospective evaluation and determined that unmonitored individuals are not likely to receive, in 1 year, a radiation dose in excess of 10 percent of the allowable limits in 10 CFR Part 20.



Procedures for safe use, security of materials, and emergencies have been developed, or will be developed before receipt of licensed material; and the procedures will be implemented and maintained.

Sealed source leak tests will be performed at the intervals approved by the NRC or an Agreement State and specified in the SSD registration certificate. Leak test samples will be analyzed by an organization authorized by the NRC or an Agreement State to provide leak testing services to other licensees. Leak tests may be collected by the applicant, using a leak test kit supplied by an organization authorized by the NRC or an Agreement State, to provide leak test kits to other licensees and according to the sealed source or plated foil manufacturer's (distributor's) and kit supplier's instructions.

DWG. NO. LAB 59(S)
 REV. 5
 DATE
 BY
 APRD



LEGEND:
 1. ACTIVE MATERIAL
 2. ALUMINUM
 3. LABEL DATA
 4. REMOVABLE-CADMIUM PLATED BRASS

Window recessed by 1/32 inch

LABEL DATA ACCORDING TO A.B.C. REG. USRC LABEL CODE W.
 SAFE OPERATING TEMP. 150°F (MAX.)

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LAB		DEPT. UNITED STATES RADIUM CORPORATION	
MATERIAL AS NOTED	TOLERANCES FRACTIONS ± 1/32" ANGLES ±	DWN BY FB	TITLE
	DECIMALS UNLESS OTHERWISE NOTED	CHK'D BY	C-14
	DECIMALS UNLESS OTHERWISE NOTED	APPR'D BY	ISOLITE
	DECIMALS UNLESS OTHERWISE NOTED	DATE 3/15/63	