



Sensor Concepts & Applications, Inc.
5200 Glen Arm Rd., Suite 100
Glen Arm, MD 21057
(410) 593-9909 [voice]
(410) 593-9907 [fax]

August 18, 2010

Licensing Assistance Team
Division of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission, Region
475 Allendale Rd.
King of Prussia, PA 19406-1415

RE: Submittal of Application for Materials License

Background for request:

Sensor Concepts & Application, Inc. (SCA) has been subcontracted by the Transformational and Applied Research Directorate (TARD) division of the Domestic Nuclear Detection Office (DNDO, which is part of the Department of Homeland Security to conduct tests of new technology under its Shielded Nuclear Alarm Resolution program (SNAR, pronounced snare). Vendors are developing technology to demonstrate techniques to detect special nuclear materials and clear alarms that represent a non-threat that may be hidden in cargo containers. This is the first of programs of this type under development by U.S. agencies.

SCA currently posses a State of Maryland Radioactive Material License (MD-05-193-01, attached), but is requesting materials and quantities beyond the level of this license.

Thomas W. Cassidy
President
Sensor Concepts & Applications, Inc.
5200 Glen Arm Rd., Suite 100
Glen Arm, MD 21057
410-593-9909 X230

jfs
CC: James Spacco, RSO
jspacco@scainc.biz
410-593-9909 X227



MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Baltimore MD 21230

410-537-3000 • 1-800-633-6101

Martin O' Malley
Governor

Anthony G. Brown
Lieutenant Governor

Shari T. Wilson
Secretary

Robert M. Summers, Ph.D
Deputy Secretary

OCT 27 2009

James Spacco, Radiation Safety Officer
Sensor Concepts And Applications, Inc
5200 Glen Arm Road
Glen Arm, MD 21057

RE: Radioactive Material License #MD-05-193-01

Dear Mr. Spacco:

Your requested amendment to radioactive materials license number MD-05-193-01 is enclosed. Please review it carefully to ensure that it reflects all modifications included in your facsimile received in this office on October 19, 2009.

Should you require further assistance, please contact Mr. Raymond E. Manley at 410-537-3301. You may also reach our office toll-free by dialing 1-800-633-6101 and requesting extension 3301. Also, you may contact this office via facsimile at 410-537-3198.

Sincerely

Roland G. Fletcher, Manager IV
Radiological Health Program
Air and Radiation Management Administration

BJF
RGF/BJF/AAF/cc

Enclosure(s): License amendment (14)
Code (03620)



Department of the Environment
 RADIOLOGICAL HEALTH PROGRAM
 RADIOACTIVE MATERIAL LICENSE

Pursuant to the Maryland Radiation Act, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess and transfer radioactive material listed below; and to use such radioactive material for the purpose(s) and at the place(s) designated below. The license is subject to all applicable rules, regulations and orders of the Maryland State Department of the Environment, now or hereinafter in effect and to any conditions specified below.

1. Name: Sensor Concepts and Applications, Inc.		3. License No.: MD-05-193-01
2. Address: 5200 Glen Arm Road Glen Arm, Maryland 21057		4. Amendment No.: 14 Code 03620
		5. Expiration Date: November 30, 2010
6. Radioactive material (element and mass number)	7. Chemical and/or physical form	8. Maximum amount of activity which licensee may possess at any one time
A. Cobalt-60	A. Sealed source (IPL Model HEG-060)	A. No source to exceed 5 millicuries
B. Cesium-137	B. Sealed source (IPL Model HEG-137)	B. No source to exceed 10 millicuries
C. Germanium-68	C. Sealed source (IPL Model HEG-068)	C. No source to exceed 10 millicuries
D. Sodium-22	D. Sealed source (IPL Model HEG-060)	D. No source to exceed 5 millicuries
E. Hydrogen-3	E. Sealed source-Transitional Metal Tritide Deuteride thin films plated on copper or molybdenum substrates. The transitional metals include scandium, titanium, zirconium. Sources may be procured from US Dept. of Energy, Safetylight Corp. and Thermo MF Physics Corp.	E. No neutron generator tube to exceed 3.5 curies
F. Hydrogen-3	F. Gas in Sodern NEM Series	F. Not to exceed 3.5 curies
G. Nickel-63	G. Sealed sources (Amersham Corp. Model NBC Nuclear Radiation Development, Source Model N1001)	G. No source to exceed 30 millicuries; total possession not to exceed 0.2 curies
H. Nickel-63	H. Sealed Source (IPL Model NER-004)	H. No source to exceed 10 millicuries; total possession not to exceed 0.2 curies
I. Barium-133	I. Sealed source (AEA Technology QSA, Inc. model BDC.A1, IPL Model HEG1)	I. No source to exceed 20 millicuries; Total possession not to exceed 40 millicuries
J. Depleted Uranium	J. Solid	J. Not to exceed 450 kilograms



Department of the Environment

RADIOLOGICAL HEALTH PROGRAM
RADIOACTIVE MATERIAL LICENSE

License Number: MD-05-193-01

Amendment Number: 14 CODE 03620

Conditions

K. Californium-252	K. Sealed source (IPL Model HEG-252)	K. No source to exceed 1 millicurie; total possession not to exceed 5 millicuries
L. Americium-241-(Be) neutron source	L. Sealed source (IPL Model Am1.N02)	L. No source to exceed 100 millicurie; total possession not to exceed 500 millicuries
M. Yellowcake (U3O8)	M. Sealed Source(Sealed in an aluminum canister and surrounded by concrete)	M. 100 kilograms
N. Uranyl Oxide (UO3)	N. Sealed Source (Encapsulated in paraffin and sealed in an aluminum canister)	N. 100 kilograms

Conditions

9. Authorized Use(s):

- A.-D. Research and development.
- E. Controlled field-testing for A-3000 Series Neutron Generator Tubes to detect contraband material. Distribution or modification of device is prohibited.
- F. Possession and use of the NEM 16 series for testing in conjunction with the SeaPODDS system. Distribution & modification of NEM 16 series devices is prohibited.
- G. Demonstrations of the following models at temporary job sites of the licensee:
 - Ionscan models: 100, 200, 250, 350, 400, 500DT, LS
 - Sabre 2000, 4000; Sabre Centurion, Sabre Centurion; Sentinel IIDistribution & modification of 9G items is prohibited.
- H. Demonstrations of the following models at temporary job sites of the licensee:
 - Itemiser, product nr. P0007004; Itemiser III, P0007018
 - Vapor Trace, product nr. P0007007; Vapor Trace 2, P0007014
 - VTEX, P0007016
 - Entryscan III, P0007017Distribution & modification of 9H items is prohibited.
- I. Research, development & testing at temporary job sites of portable x-ray systems for the detection of contraband material. Distribution of is prohibited.
- J. Research, development and testing at temporary job sites of portable systems to detect contraband material.
- K.-L. Research, development & testing of systems that detect special nuclear material.
- M.-N. Research, development and testing at temporary job sites of portable systems to detect contraband material.



Department of the Environment

RADIOLOGICAL HEALTH PROGRAM
RADIOACTIVE MATERIAL LICENSE

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License Number: MD-05-193-01

Amendment Number: 14 CODE 03620

Conditions

10. The authorized place of use is the warehouse at Warehouse at 5200 Glen Arm, Glen Arm, Maryland 21057. The licensee must notify the Radiological Health Program 30 days prior to vacating a permanent use address.
- 11A. The radiation protection program shall be under the supervision of James Spacco, assisted by Robert J. Shiner
- 11B. Radioactive material shall be used by, or under the supervision of James Spacco, Robert J. Shiner, Tom Cassidy, Forrest Scott, **Brandon Garzel, Alex Mendoza, Jim Mrozack, Carl Wiggins, Nick Wojtowycz and Steven Wojtowycz.**
12. The licensee shall comply with all appropriate provisions of COMAR 26.12.01.01 "Regulations for Control of Ionizing Radiation," and possesses a copy of these regulations.
13. Leak Testing of sealed sources shall be conducted in accordance with COMAR 26.12.01.01 §D.401
14. The licensee shall not use radioactive material in or on human beings or in field applications except as provided otherwise by specific conditions of this license.
15. The licensee shall conduct a physical inventory every six (6) months to account for all sealed sources received and possessed under the license. The records of the inventories shall be maintained for three (3) years from the date of the inventory for inspection by the Department, and shall include the quantities and kinds of radioactive material, location of sealed sources, and the date of the inventory.
16. Food and beverage containers shall not be discarded in radioactive or normal trash containers in licensee's areas utilizing radioactive materials.
- 17A. The licensee shall not make any false statement, representation, or certification in any application, record, report, plan, or other document regarding radiation levels, tests performed or radiation safety conditions or practices. Additionally, the licensee shall not falsify, tamper with, or render inaccurate any monitoring device or method.
- 17B. Violation of any term, condition, or regulation could subject the licensee to administrative or civil penalty or criminal prosecution, as specified in Title 8, Radiation, of the Article Environment of the Annotated Code of Maryland.
18. The licensee shall not transfer ownership and/or control of this license to any person or entity without providing required information regarding the transfer for the Agency's review and without receiving written authorization for the transfer by the Agency.



Department of the Environment

RADIOLOGICAL HEALTH PROGRAM
RADIOACTIVE MATERIAL LICENSE

License Number: MD-05-193-01

Amendment Number: 14 CODE 03620

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Conditions

19. Except as specifically provided otherwise by this license, the licensee shall possess and use radioactive material authorized by this license in accordance with statements representations, and procedures contained in:

- Application dated September 16, 2003;
- Letter dated facsimile received October 30, 2003;
- Email received November 12, 2003.
- Facsimile dated February 12, 2004, Emails dated: February 19, 2004, February 27, 2004, March 4, 2004.
- Email dated January 3, 2006, with attached SSD sheet, requesting possession of neutron generator/tubes.
- Letter dated May 5, 2006, with attachments, adding devices to be used for demonstrations.
- Letter dated September 19, 2006, requesting addition of Barium-133 & removal of Dan Shiller.
- Letter dated January 15, 2007, adding depleted uranium.
- Letter dated March 21, 2007, with attached revised layouts A & B of 'Facilities and Equipment'
- Facsimile received April 18, 2007, adding sealed source.
- Letter dated September 28, 2007 requesting addition of sources.
- Facsimile received December 2, 2008, detailing new storage facility at 5200 Glen Arm Road, Glen Arm, Maryland.
- Letter with closeout survey received January 14, 2009 for 5234 Glen Arm Rd., Glen Arm, Md. 21057.
- Letter dated March 16, 2009, requesting address change and modifications to items 9I & 9J.
- Letter dated May 27, 2009, requesting change in possession limit for item 6J.
- Facsimiles dated June 24, and July 6, 2009, adding U3O8 and UO3 sources.
- **Letter dated September 30, 2009 and facsimile dated October 19, 2009, adding Brandon Garzel, Alex Mendoza, Jim Mrozack, Carl Wiggins, Nick Wojtowycz and Steven Wojtowycz adding as authorized users.**

COMAR 26.12.01.01 "Regulations for Control of Ionizing Radiation" shall govern the licensee's statements in applications or letters, unless the statements are more restrictive than the regulations.

FOR THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

Roland G. Fletcher, Manager IV
Radiological Health Program

October 19, 2009

AAF

[Handwritten initials and dates]
10/19/2009
10/23/09

NRC FORM 313
(3-2009)
10 CFR 30, 32, 33,
34, 35, 36, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0120

EXPIRES: 3/31/2012

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 Records and FOIA/Privacy Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.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.

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
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

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
612 E. LAMAR BOULEVARD, SUITE 400
ARLINGTON, TX 76011-4125

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 _____

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

Sensor Concepts & Applications, Inc.
5200 Glen Arm Road, Suite A
Glen Arm, MD 21057-9475

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

Sensor Concepts & Applications, Inc.
5200 Glen Arm Road, Suite A
Glen Arm, MD 21057-9475

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

James (Jimmy) Spacco, Extension 227

TELEPHONE NUMBER

(410) 593-9909

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 (See 10 CFR 170 and Section 170.31)

FEE CATEGORY **1C** AMOUNT ENCLOSED **\$ 1,200.00**

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, 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

Thomas W. Cassidy, President

SIGNATURE



DATE

8/19/10

FOR NRC USE ONLY

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

SPECIAL NUCLEAR MATERIAL LICENSE APPLICATION

NRC License Request

Submitted to:

Licensing Assistance Team
Division of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission, Region 1
475 Allendale Road
King of Prussia, PA 19406-1415

By:

Sensor Concepts & Applications, Inc.
5200 Glen Arm Road, Suite A
Glen Arm, Maryland 21057

1) Applicant

Applicant:

Sensor Concepts & Applications, Inc., 5200 Glen Arm Rd., Suite A, Glen Arm, MD
21057
Incorporated in the State of Maryland

Principle Officers:

Thomas W. Cassidy, President, 5200 Glen Arm Road, Suite A, Glen Arm, Maryland
21057, U.S. Citizen

William E. Kuehne, Chief Financial Officer, 5200 Glen Arm Road, Suite A, Glen Arm,
Maryland 21057, U.S. Citizen

James F. Spacco, Radiation Safety Officer, 5200 Glen Arm Road, Suite A, Glen Arm,
Maryland 21057, U.S. Citizen

2) Activity and location for Special Nuclear Material

Activity and location for which Special Nuclear Material License is requested:

Sensor Concepts & Application, Inc. (SCA) seeks to possess less than formula quantities of special nuclear material (SNM). At no time will SCA possess any combination in excess of 5,000 grams of SNM computed by the formula, grams = (grams contained U-235) + 2.5 (grams U-233 + grams plutonium).

At no time will SCA possess any SNM in a quantity exceeding one effective kilogram.

SPECIAL NUCLEAR MATERIAL LICENSE APPLICATION

SCA has been subcontracted by the Transformational and Applied Research Directorate (TARD) division of the Domestic Nuclear Detection Office (DNDO, which is part of the Department of Homeland Security) to conduct tests of new technology under its Shielded Nuclear Alarm Resolution program (SNAR, pronounced snare). Vendors are developing technologies to demonstrate techniques to detect special nuclear materials and clear alarms that represent a non-threat that may be hidden in cargo containers.

It is anticipated that the SNAR program will be the first of many such programs conducted by U.S. Government agencies.

The licensed materials are to be used as test objects for concept demonstrations and characterization testing at vendor facilities.

The primary location for storage of the special nuclear material will be in SCA's warehouse facility. Facility layout and storage location are shown in Appendix A.

3) Duration of License

Requested duration of license:
10 years

4) Description of Special Nuclear Material

I. Description of SNM Test objects

The SNM Test Objects are U.S. Government owned and as such their possession and use will be under a loan agreement with the U.S. Government suppliers.

A. Low-enriched Uranium (LEU)

A nickel plated uranium block with a mass of It is enriched to %.

B. Plutonium (Pu)

Pacific Northwest National Laboratory designed, tested and built a plutonium sealed source for the Department of Homeland Security. This source was designed for use as either a calibration source in the development of new radiation detector systems or to test existing radiation detector systems. The plutonium sealed source ("puck") is in the shape of a diameter disk approximately deep. It is encapsulated in a tantalum liner that provides an inert barrier between the plutonium disk and the stainless steel outer housing. The mass of the plutonium puck is . See Appendix B for drawing.

SPECIAL NUCLEAR MATERIAL LICENSE APPLICATION

C. Highly Enriched Uranium (HEU)

A disc of % enriched uranium, approximately thick, is encapsulated in a titanium housing
See Appendix B for drawing.

II. Usage

These SNM Test Objects will be used for testing a variety of sensors under development or being considered for purchase by the U.S. Government to detect the presence of SNM in a variety of smuggling scenarios. These tests require signatures that are isotopically-sensitive (i.e. can differentiate U-235 from U-238). Depending on the source intensities and detector efficiencies there is a need to employ different amounts of SNM per unit volume hence LEU and HEU to test the sensitivity of various sensor configurations. Pu-239 has individually specific signatures as well.

Each SNM Test Object will be used in conjunction with research, development and testing for government organizations (e.g., The Department of Homeland Security, The Department of Defense Counter-Narcoterrorism Technology Program Office, U.S. Customs and Border Patrol, and The Domestic Nuclear Detection Office) of anti terrorism systems that detect contraband material.

All usage will be non-destructive. The SNM Test Objects will be used for research and development only.

5) Technical Qualifications of Applicant

The Radiation Safety Officer (RSO)

SCA's Radiation Safety Officer is: James F. Spacco

The Radiation Safety Officer is responsible for managing the day-to-day affairs of the Radiation Safety program and providing secretariat for the Radiation Safety Committee. The RSO will administer the special nuclear materials license.

Responsibilities include overseeing the use of radioactive materials, package receiving surveys and delivery, preparation of radioactive materials for shipment, personnel dosimetry, maintenance of radiation monitoring and survey equipment, closeout surveys, records management, and basic personnel training. The RSO also administers the SCA's radioactive materials license.

SPECIAL NUCLEAR MATERIAL LICENSE APPLICATION

SCA recognizes that the RSO has primary responsibility for assuring license and regulatory compliance at a working level for the State of Maryland Radioactive Materials license and this proposed SNM license.

Qualifications of Radiation Safety Officer

Mr. Spacco has successfully complete adequate training as put forth in the NUREG 1556, Volume 4 Guide. All future Radiation Safety Officers will also complete this training.

Mr. Spacco has held this position since June 2003. He has trained authorized users, general employees and others in radiation safety, maintained a radiation monitoring program and has been responsible for assuring license and regulatory compliance with the state of Maryland and the States of California and Nevada which SCA has had reciprocity agreements.

Mr. Spacco has been the RSO for programs conducted by the Domestic Nuclear Detection Office (DNDO). For DNDO he has conducted radiation surveys and other field measurements, worked with NIST personnel to develop survey techniques and appropriateness of survey equipment, and managed the control of 250 kilograms of depleted uranium at three test sites.

6) Facilities and Equipment for Handling Special Nuclear Material

I. Areas of Storage and Use

A. Glen Arm facility: The SNM Test Objects described in this license will be stored in a secure radioactive materials cabinet inside a secure woven wire storage cage. The caged area has a radiation monitor and is located inside a secure (alarmed), limited access concrete block warehouse.

B. Temporary Work Sites: When working at temporary work sites a survey will be conducted to determine a secure location. At a minimum this location will have limited access and a security system.

II. Shields, Equipment and Handling Devices

The low specific activity of the test objects and the fact that all materials will have appropriate cladding allows for direct handling of the material.

III. Measuring and Monitoring Devices

Personnel monitoring devices are required of all persons working with radiation sources if the individual is likely to exceed 10% of their allowable annual limits in accordance

SPECIAL NUCLEAR MATERIAL LICENSE APPLICATION

with 10 CFR 20.1502. Monitoring of additional individuals for a particular environments is at the discretion of the RSO. Personnel dosimetry appropriate for the material being used are provided by a NVLAP accredited vendor (currently Landauer, Inc.). Direct reading dosimeters such as ionization chambers, direct read dosimeters and electronic dosimeters are available for gamma radiation as needed.

The RSO oversees the use, maintenance and calibrations of these devices.

IV. Radioactive Waste Disposal

There is no waste associated with this license. The SNM Test Objects are encapsulated and will not be unsealed.

7) Safety Procedures to Protect Health and Minimize Danger to Life or Property

SCA has an established Radiation Protection Program that covers the safe conduct of activities with radioactive materials and radiation sources. These procedures in effect satisfy various requirements of the NRC and state licenses for radioactive materials. Procedures are reviewed and adjusted at regular intervals with updated training as required. See Appendix C for SCA's Radiation Protection Program.

A criticality safety plan should not be necessary as the SNM Test Objects will not be altered nor destructively tested.

The radiological hazards for the SNM Test Objects are minimal. HEU and plutonium will be inside containers designed for use as sealed sources. The LEU will be nickel plated. Although contamination monitoring will occur, it is extremely unlikely.

I. Monitoring Procedures

- A. Personnel dosimetry badges are required by all individuals working with SNM Test Objects.
- B. Status of special nuclear material will be verified by annual inventory (12 months).
- C. Leak test will be performed on the SNM Test Objects at a minimum of 6 month intervals.

II. Operating Procedures

All use of the SNM Test Objects will be under the direct supervision of an Authorized User or the RSO

III. Emergency Procedures

Emergency procedures are contained in SCA's Radiation Protection Program.

SPECIAL NUCLEAR MATERIAL LICENSE APPLICATION

IV. Training Program

Individuals working in or frequenting areas where the potential for dose rates above 50 mrem/hr must meet the following applicable training requirements. These training requirements shall be continually reviewed and revised in order to provide function-specific and need-specific training. Therefore these requirements may be modified. Training shall be conducted by the Radiation Safety Officer, or someone of similar training and experience.

A. Frequency of Training

As a rule, Radiation Safety training will be required:

1. Before assuming duties with, or work in the vicinity of, radioactive materials or radiation producing devices.
2. Whenever there is a significant change in duties, regulations, or the terms of the license.
3. Annually (refresher training).

B. Types of Training

In order to meet function specific training requirements, the following types of training will be offered, at a minimum:

1. General Employee Radiation Training (GERT), Initial
2. Radiation Worker Training, Initial
3. GERT, Refresher
4. Radiation Worker Training, Refresher

Passing a written examination is required for classification as a Radiation Worker.

V. As Low As Reasonably Achievable (ALARA) Program

All uses of radioactive source material are reviewed by the RSO for adherence to the fundamental principle that levels of radioactivity to be used, and exposures to all sources of ionizing radiation, are to be maintained **As Low As Reasonably Achievable (ALARA)**.

8) Material Control and Accountability

SCA will not possess and use at any one time and location special nuclear material in a quantity exceeding one effective kilogram.

The SNM in the test objects is not easily assessable without evidence of tampering. Material control and accounting will follow SCA's Nuclear Material Control plan, Appendix D. A report shall be made to the NRC within one hour of the discovery of a loss or theft of special nuclear material in accordance with 10 CFR 74.11.

9) Physical Protection of Materials

SPECIAL NUCLEAR MATERIAL LICENSE APPLICATION

The warehouse location where the SNM is secured is a limited access and alarmed area. The alarm system is monitored 24 hours a day. The RSO controls the keys to the storage cage and the radioactive material vault. SCA has duplicate keys stored in its security safe.

10) Financial Assurance and Recordkeeping for Decommissioning

The SNM test Objects are U. S. Government owned material. As such, the disposal costs for final disposition of these materials will be the responsibility of the U. S. Government. Any decommissioning or decontamination costs will be the responsibility of SCA.