



DEPARTMENT OF THE ARMY
WATERVLIET ARSENAL
1 BUFFINGTON STREET
WATERVLIET, NY 12189-4000

REPLY TO
ATTENTION OF:

8 March 2016

Watervliet Arsenal Safety Office TAWV-XO-S
Docket Number #: 03015089

U.S. Nuclear Regulatory Commission
Licensing Assistant Team
Division of Nuclear Materials Safety
Region I ATTN: Dennis Lawyer
2100 Renaissance Blvd, Suite 100
King of Prussia, PA 19406-2713

SUBJECT: DEPARTMENT OF THE ARMY, ADDITIONAL INFORMATION FOR
LICENSE 31-07595-02 RENEWAL, CONTROL NO: 590072

Dear Sir,

The below information is in response of your inquiry letter dated 10 February 2016.

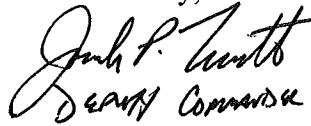
- 1) Attached you will find registration certificate numbers for the sealed sources for the tritium commodities that we have on the installation under control of the said license. The WVA is also utilizing the Sealed Source Devise Registry for material.
- 2) The training requirements follow the guidance listed in section 8.8 of the NUREG Vol 12. The individuals that handle the packages are given a training course in the safe work practices with tritium. The training session includes discussion on safe handling, emergency contacts, emergency procedures, medical effects, and more. With guidance from the above stated regulation the RSO or ARSO ensures to monitor their work practices so they are in compliance with the standard. The training course is held in their workplace setting and is not exceeding 12 month intervals as required. The personnel in the area are not expected to obtain doses of 100mrem.
- 3) The audit program that we have on the installation is specifically geared to address any faults in relation to licensed activities. The objective is to ensure that the program elements are in compliance with NRC and DA regulations. The scope is for buildings 119 and 130. The qualifications of the auditors is attached for reference. The audit includes sampling of swipe samples for different locations and also meter readings. The frequency is based off of Department of the ARMY guidance and is quarterly for the process



described in this license. We have maintained all records from inspections dating back to the mid 1990's. If there are deficiencies that we see in the inspections, or items that need to be replaced (i.e. gloves, etc.) we note that and when we are about to head back out to the location we review the previous months inspection record.

If you have any questions regarding this renewal application, the point of contact is Mr. Matthew Church, Radiation Safety Officer, phone number 518 266-5677.

Sincerely,

A handwritten signature in black ink, appearing to read "Lee H. Schiller Jr." with a stylized flourish at the end.A small, stylized handwritten signature or mark, possibly a monogram or initials.

LEE H. SCHILLER JR.
Colonel, LG
Commanding

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: CA1393D101S

DATE: March 25, 2015

PAGE 1 OF 6

DEVICE TYPE: Mortar Sight Unit

MODEL:

M244 Range Indicator
PN: 13026880

MANUFACTURER/
DISTRIBUTOR:

Connectec Company Incorporated
1701 Reynolds Avenue
Irvine, CA 92614
Ph. (949) 250-1299

SEALED SOURCE MODEL DESIGNATION:

SRB Technologies (Canada) Inc. Type AR
320 Boundary Road
Pembroke, Ontario, Canada
K8A 6W5
Ph. (613) 732-0055

ISOTOPE:

MAXIMUM ACTIVITY:

H-3

3.2 Ci (118.4 GBq)

LEAK TEST FREQUENCY:

Not required

PRINCIPAL USE:

(W) Self Luminous Applications

CUSTOM DEVICE: _____ YES X NO

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: CA1393D101S

DATE: March 25, 2015

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DEVICE TYPE: Mortar Sight Unit

DESCRIPTION:

The M224 60mm mortar incorporates radioactive Gaseous Tritium Light Source (GTLS) illuminated inclinometer. The Range Indicator has a fluid filled glass pellet level that indicates the angle of inclination of the mortar assembly. The GTLS illuminates the scales in the device. The GTLS are manufactured by SRB Technologies (Canada) Inc. and are registered under Sealed Source and Device registry number NC-585-S-102-S. Each Range Indicator contains 4 GTLS, each of which contains 0.8 Ci ($\pm 5\%$) of H-3, for a total activity of 3.2 Ci per Range Indicator assembly. All GTLS lamps incorporated in the Range Indicator are of a design where source prototype testing conforms to the British Ministry of Defense Standard DEF 62-4 Issue 3 and ANSI-N540 standards.

The four GTLSs are bonded into a cushion sub-assembly made of Alcryn 2250 using a class adhesive per MIL-A-46106 group I, Type I. A scale, vial with glass pellet and retainer are secured into the Lexan 123R clear plastic body with adhesive. The cushion sub-assembly with the installed GTLSs is then secured into the body using adhesive. An adjustment knob is attached to the body to calibrate the scale.

LABELING:

Each completed M224 Range Indicator has two adhesive backed foil labels with information engraved or etched and affixed to the device.

The first label includes "CAUTION-RADIOACTIVE MATERIAL, ISOTOPE H-3 with trefoil, total activity, reference date, serial number, model number, device manufacturer and license number and the safety instruction "If broken or found turn in IAW DP PAM 385-24"

The second label includes "CAUTION-RADIOACTIVE" with trefoil, Isotope H-3, total activity, reference date.

The labels are designed to be durable, to remain affixed on the M224 device, and to remain legible under normal conditions of use throughout the working life of the device. The labels are in a readily visible location.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: CA1393D101S

DATE: March 25, 2015

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DEVICE TYPE: Mortar Sight Unit

DIAGRAMS:

There are five (5) attachments.

Attachment 1: Complete M224 Range Indicator attached to 60 mm Mortar

Attachment 2: Range Indicator assembly

Attachment 3: Range Indicator As Fit Into Handle (expanded view)

Attachment 4: Range Indicator As Fit Into Handle (assembled)

Attachment 5: Warning Labels

CONDITIONS OF NORMAL USE:

The M224 Range Indicator devices are intended for use by United States and Allied Armed Forces in combat conditions. An Operations Manual has been prepared by and is to be maintained by the user.

As the device is contained in an industrial-type aluminum alloy 6061-T6, the components are protected from most reasonably encountered environmental conditions. The device is intended to be operated, handled, or stored under harsh battlefield conditions in which the device will be subjected to extreme conditions of corrosion, vibration, impact, puncture, compressive loads, explosion, flooding, excessive high and low temperatures, and change in temperature. In addition, the M224 Range Indicator will be subjected to intense shock each time the mortar is fired.

The estimated working life of the device is 10 years in which no spare parts or maintenance is required.

PROTOTYPE TESTING:

The SRB Technologies, Inc., GTLS capsule used in this device meets ANSI-N540 standards. Historical data indicates that since SRB Technologies started producing these GTLS capsule in the early 1980's, there has been no incidence of failure. Various agencies of the U.S. Government have used thousands of these capsules in Range Indicators and other similar devices under the same conditions of normal use with no failure. No prototype testing was performed on the complete M224 Range Indicator.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: CA1393D101S

DATE: March 25, 2015

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DEVICE TYPE: Mortar Sight Unit

EXTERNAL RADIATION LEVELS:

The low energy beta radiation from the tritium gas will not penetrate the glass capsule containing the gas. The amount of bremsstrahlung radiation from the low energy betas interacting with the low-Z boro-silicate glass wall is negligible and is calculated to be less than 1 μ rem/hr at 25 cm.

QUALITY ASSURANCE AND CONTROL:

Connectec maintains a quality assurance and control program in accordance with AS 9100 "Quality Management Systems – Requirements". Connectec shall maintain their AS 9100 certification as a requisite to perform receipt, inspection, installation, testing and distribution tasks for this device. A copy of Connectec's AS 9100 certification is on record at the California Department of Public Health.

Installation of the sealed source into the Range Indicator assembly shall be performed at Connectec. The details of Connectec Quality Assurance Program are found in Connectec 9100, Rev C, Quality Manual. This manual details the QA program that will be implemented to ensure that the product is manufactured and distributed in accordance with the representations made in the application, and the statements contained in the registration certificate for the product.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- The Range Indicator unit is intended for use on a M224 60 mm mortar system in harsh battle field condition. These are intended to be used in all global conflict environments with outdoor temperature ranges across all climate zones. These devices will be subjected to extreme conditions of corrosion, vibration, impact, puncture, compressive loads, explosions, flooding, poor air quality, excessive high and low temperatures and thermal cycling.
- All maintenance, repair, calibration, necessary training and final disposal shall be performed by specific licensee. At no time shall any of the maintenance require access to the source capsule or compromise the source protection.
- The devices shall be distributed to persons specifically licensed by the NRC, Agreement State, or Licensing State.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: CA1393D101S

DATE: March 25, 2015

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DEVICE TYPE: Mortar Sight Unit

- Handling, storage, use, transfer, and disposal: To be determined by the licensing authority.
- The device shall be leak tested prior to distribution using techniques capable of detecting 0.005 microcurie (185 Bq) of removable contamination. Periodic leak testing is not required.
- This registration sheet and the information contained within the references shall not be changed without the written consent of the California Department of Public Health.

SAFETY ANALYSIS SUMMARY:

Based upon review of the GTLS illuminated M224 Range Indicator, and the information and test data cited herein, we conclude that this device is acceptable for licensing purposes.

Furthermore, we conclude that the device would be expected to maintain its containment integrity for normal conditions of use and accident conditions, other than hot fire and explosion, that might occur during uses specified in this certificate.

REFERENCES:

The following supporting documents for the M224 Range Indicator are hereby incorporated by reference and are made a part of this registry document.

- Connectec Company, Inc.'s application dated December 18, 2014, and letter dated March 4, 2015, with enclosures thereto.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: CA1393D101S

DATE: March 25, 2015

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DEVICE TYPE: Mortar Sight Unit

ISSUING AGENCY:

California Department of Public Health

Date: March 25, 2015

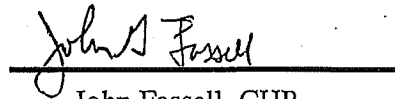
Reviewer:



Hugh Alsworth

Date: March 25, 2015

Concurrence:



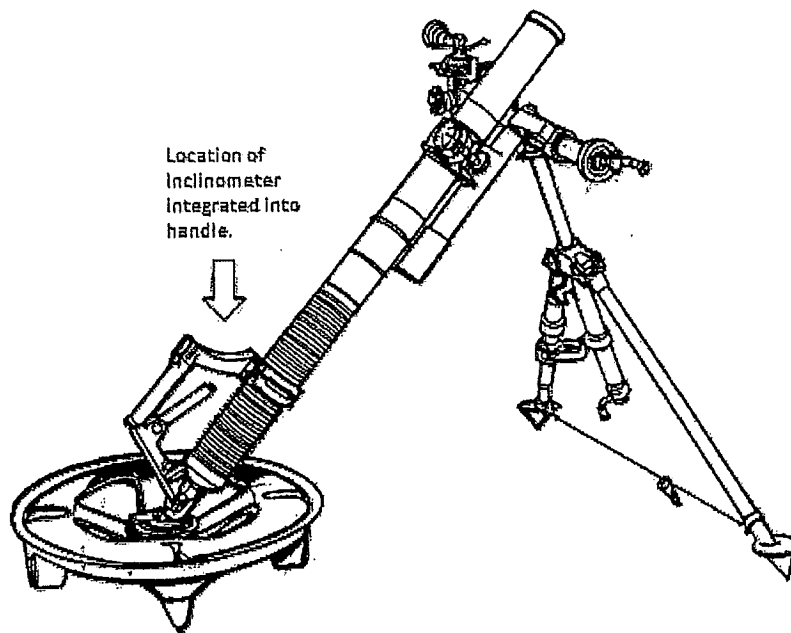
John Fassell, CHP

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: CA1259D101S

DATE: March 25, 2015

ATTACHMENT 1



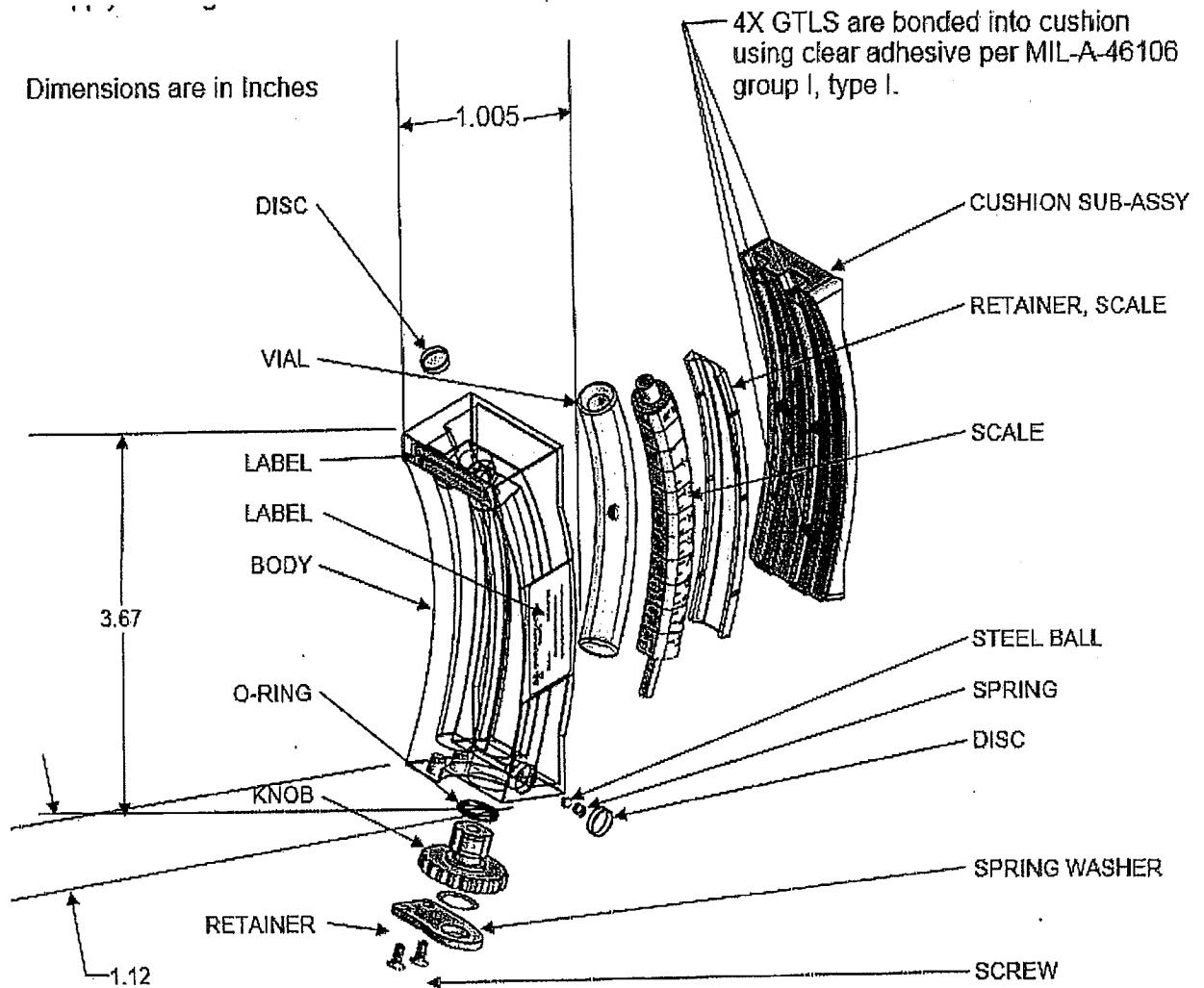
Drawing of complete 60 mm Mortar with M224 Range Indicator (Inclinometer).

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: CA1259D101S

DATE: March 25, 2015

ATTACHMENT 2



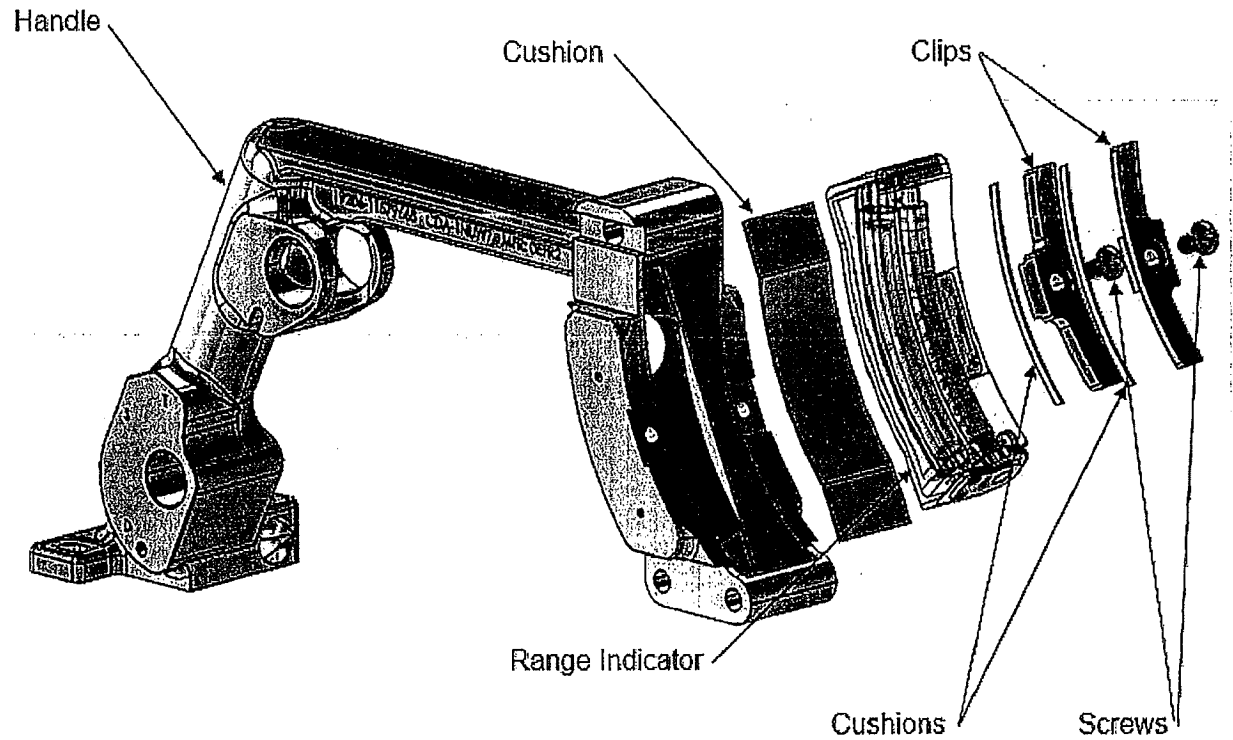
Range Indicator Assembly

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: CA1259D101S

DATE: March 25, 2015

ATTACHMENT 3



Handle Material: Aluminum Alloy 6061-T6

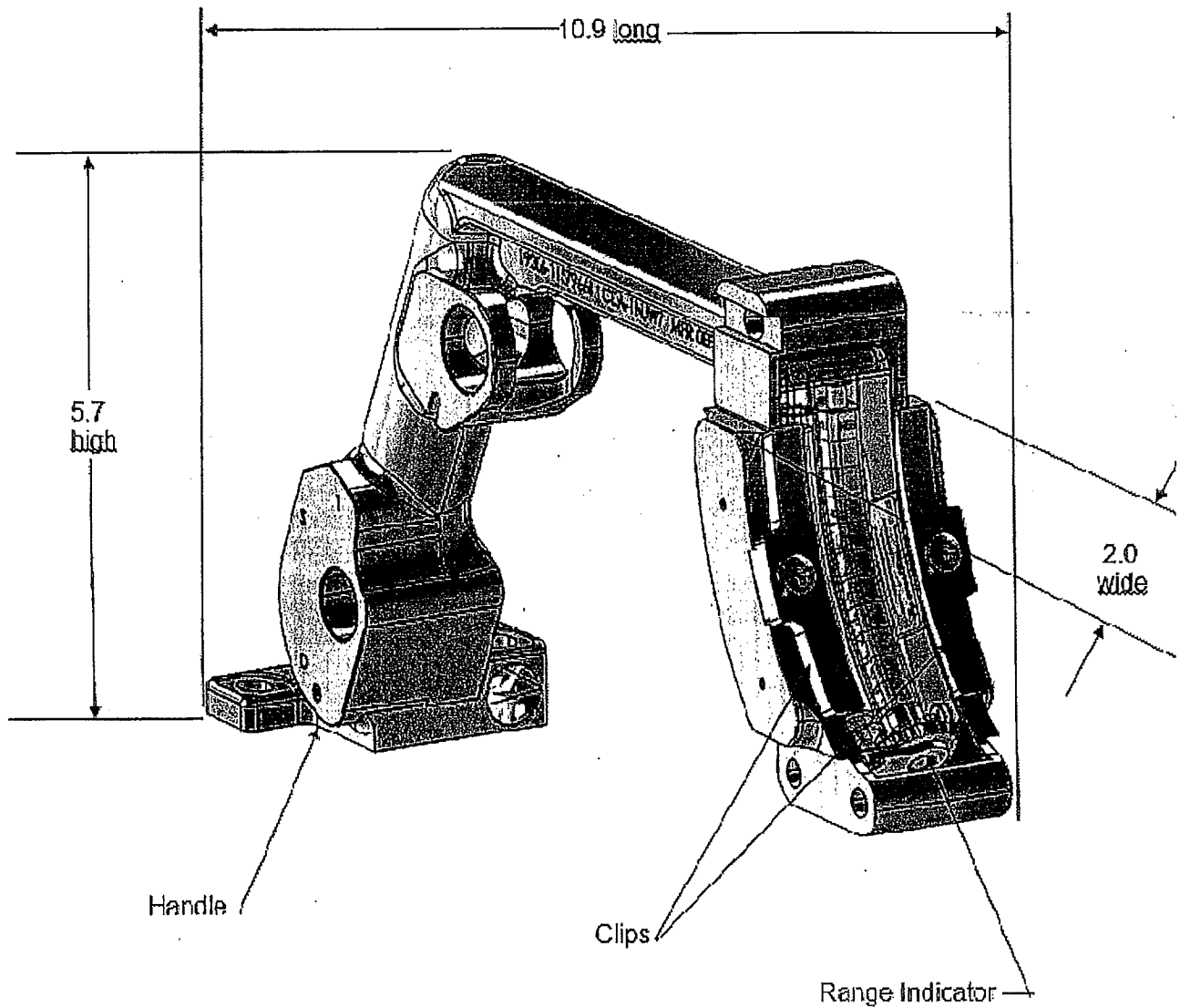
Range Indicator As Fit Into Handle (expanded view)

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: CA1259D101S

DATE: March 25, 2015

ATTACHMENT 4



Handle Material: Aluminum Alloy 6061-T6

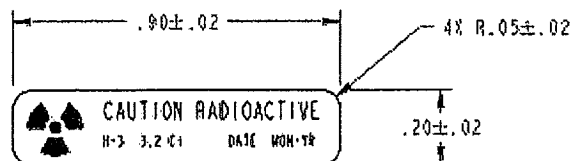
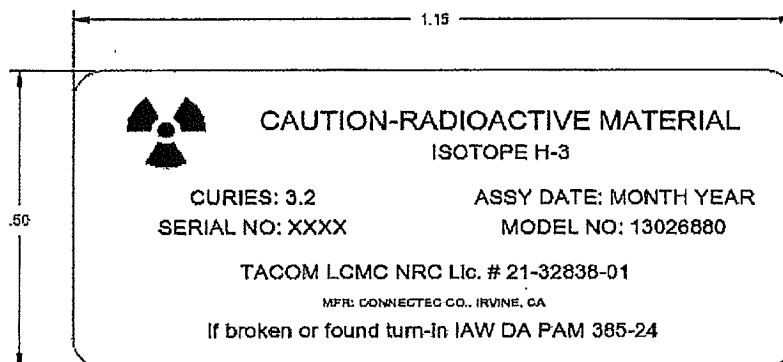
Range Indicator As Fit Into Handle (assembled)

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES SAFETY EVALUATION OF DEVICE

NO.: CA1259D101S

DATE: March 25, 2015

ATTACHMENT 5



NOTES:

1. MATERIAL: METAL FOIL PER MIL-DTL-19834, TYPE I, STYLE III (ALUMINUM TYPE 1100 DEAD ANNEALED WITH 3M 468 MP PSA WITH RELEASE PAPER.
2. SERIAL NUMBER TO START AT 0001.
3. LABEL CAN BE PLACED ON PACKAGING OR ON FINAL PRODUCT.

NOTE:

1. APPLICABLE STANDARDS/SPECIFICATIONS
 - A. ASME Y14.5-2009
 - B. ASME Y14.100
 - C. MIL-F-13926
2. MATERIAL: METAL FOIL PER MIL-DTL-19834, TYPE I, STYLE III (ALUM TYPE 1100 DEAD ANNEALED WITH 3M 468 MP PSA WITH RELEASE PAPER.)
3. GRAPHIC CONTENT PER SEPARATE ARTWORK
FILE OF SAME REVISION
4. DATE CODE TO MATCH DATE CODE OF TRITIUM VIALS

Warning Labels

Matthew K. Church

Radiation Training and Related Experience

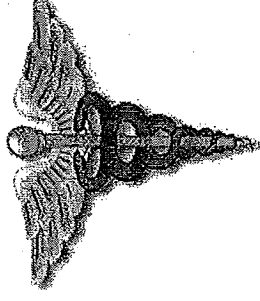
Since arriving at the Watervliet Arsenal first as a DA CP-12 (Career Program-12, Safety Management) Intern on 2 September 2008 and progressing into a 0018 Safety Specialist, I have had a strong focus on radiation safety. I accompanied the RSO and ARSO on every survey, leak test, TLD badge change, site visit, and all training classes. I became the ARSO in January of 2011. Since 2011 I have assisted and managed the shipment of over 3,000 mortar kits (tritium H-3 commodities) for the United States Army PM & TACOM mortar programs. I have also reviewed and processed the purchasing of radiological equipment, as well as waste operations and commodity/source removal and disposal. Also I was responsible for the maintenance of all meter calibrations and inventories to include storage and waste operations. In addition I assisted the RSO and ARSO at the time with all applicable NRC and higher command inspections and license amendments and renewals. I became the RSO on the installation on 22 September 2011.

Classroom Training in Radiation Safety:

Training Course	Training Location	Dates/Duration of Training
Radiological Safety Course (US ARMY RSO Qualification Course)	U.S. Army Chemical School, Fort Leonard Wood, MO	14 march 2011-01 April 2011 (120 Hours)
CECOM Radioactive Commodity Identification & Transportation Course (RCIT)	Albuquerque, NM CECOM	7 February 2012- 9 February 2012 (24 Hours)
Introduction to Radiation Safety	Oak Ridge Associated Universities Oak Ridge, TN	9 November 2009- 13 November 2009 (40 Hours)
DOT & NRC Shipping and Receiving of Radioactive Materials	Radiation Safety Academy Gaithersburg, MD	7 December 2009- 8 December 2009 (18 Hours)
Health Physics and Radiological Health	Ft. Rucker, AL (CP-12 Phase 1 Training)	5 February 2009 (16 Hours)
FEMA Radiological Emergency Management (IS-00003)	Duty Station-Watervliet Arsenal	31 October 2008 (8 Hours)
FEMA National Response Framework, An Introduction (IS00800.B)	Duty Station-Watervliet Arsenal	3 November 2008 (8 Hours)
OSHA 2015 Hazardous Materials	Ft. Rucker, AL (CP-12 Phase 1 Training) ECU OTI	19 February 2009- 21 February 2009 (20 Hours)
OSHA HAZWOPER	SUNY Buffalo Buffalo, NY	12- 16 April 2010 (40 Hours)
LIA Industrial Laser Safety Course	Duty Station-Watervliet Arsenal	3 March 2012 (8 Hours)
USARMY PHC Laser and Radio Frequency Hazards Course	Aberdeen, MD	30 April-4 May 2012 (40 hrs)
Radiological Emergency Planning: Terrorism and Security	Harvard SPH, Boston, MA	20-24 August 2012 (40 hrs)

RCIT Transportation Course	Aberdeen, MD	4-6 March 2014 (24 hrs)
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Certificate of Achievement



This Is to Certify That

Doug Baker

Has Attended the

40-Hour Radiation Science Course for Civil Support Teams

Given 29 July – 2 August, 2002 at Scotia, NY

**By Philip Hypes, Owner, Los Alamos Radiation
Consultants (LARC)**

And has successfully completed the requirements of the course

Signed

Defense Threat Reduction Agency

Defense Nuclear Weapons School



Civil Support Team Radiological Training Course

DNWS-NR005/4 Days (32 Hours)

Stratton Air National Guard Base, Scotia, NY 12303

Charles A. Pyda

Commandant

27 April 2006

Date

United States Air Force

SCHOOL OF AEROSPACE MEDICINE

Be it known

TECHNICAL SERGEANT DOUGLAS F BAKER

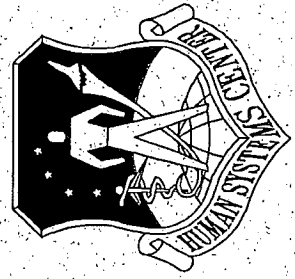
090-52-8064

has completed

IONIZING RADIATION MEASUREMENTS COURSE

B3AZY4B0X1 006, PDS CODE XRX, 5 DAYS

This 1st Day of November 1996

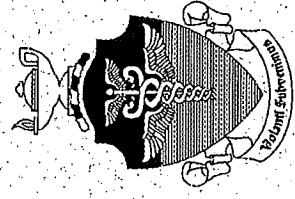


Tom Church

TOMMIE G. CHURCH, Col, USAF, MC, CFS
Dean, USAF School of Aerospace Medicine

Clay A. Roberts

Clay A. Roberts, SSgt, USAF
Course Supervisor





**UNIFORMED SERVICES UNIVERSITY
OF THE HEALTH SCIENCES (USUHS)**

4301 Jones Bridge Road
Bethesda, MD 20814-4799
Tel: DSN/(301) 295-0962
Fax: DSN/(301) 295-1700



USUHS certifies that

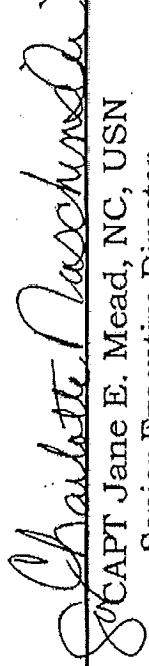
1LT DOUGLAS BAKER

has participated in the educational activity entitled

Medical Effects of Ionizing Radiation

held March 6-8, 2002, in National Naval Medical Center, Bethesda

This activity was designated for 15.75 hours of AMA PRA category 1 credit.


CAPT Jane E. Mead, NC, USN

Senior Executive Director

Continuing Education for Health Professionals, USUHS

United States Air Force

SCHOOL OF AEROSPACE MEDICINE

Be it known

TECHNICAL SERGEANT DOUGLAS F BAKER

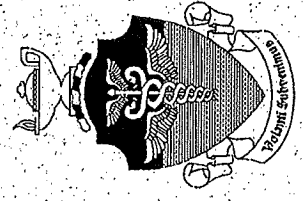
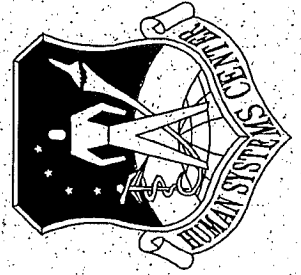
090-52-8064

has completed

NON-IONIZING RADIATION MEASUREMENTS COURSE

B3AZY4B0X1 005, PDS CODE XRW, 5 DAYS

This 25th Day of October 1996



Tom Church

TOMMIE G. CHURCH, Col, USAF, MC, CFS
Dean, USAF School of Aerospace Medicine

Rebecca A. Pena

Rebecca A. Pena, SSgt, USAF
Course Supervisor

NEW YORK CBRNE ENHANCED RESPONSE FORCE

NY-CERF

DMNA Joint Force Headquarters
Homeland Defense Directorate

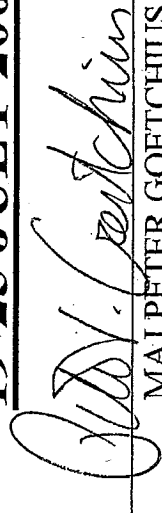
CPT DOUGLAS BAKER

has completed

Chemical Biological Radiological Nuclear
Mass Decontamination Training

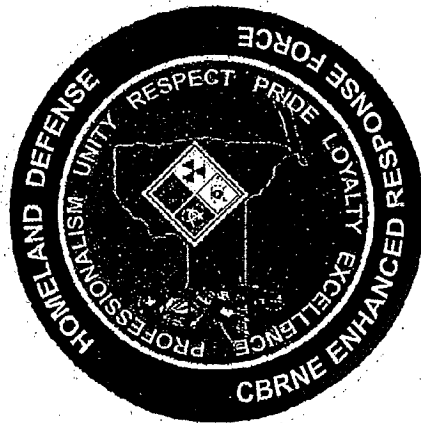


19-25 JULY 2004


MAJ PETER GOETCHIUS
OIC NY-CERF


COL DONALD BRITTEN

Homeland Defense and WMD Program Director



United States Air Force

SCHOOL OF AEROSPACE MEDICINE

Be it known

TECHNICAL SERGEANT DOUGLAS F BAKER

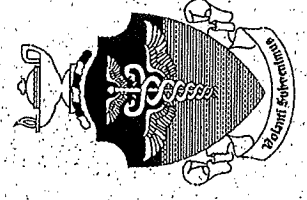
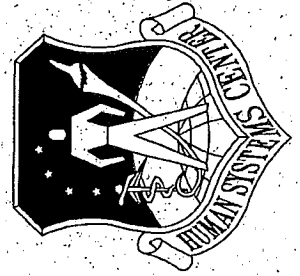
090-52-8064

has completed

RADIATION SAFETY OFFICER

B3AZY4B0X1 007, PDS CODE XRY, 5 DAYS

This 8th Day of November 1996



Tom Church

TOMMIE G. CHURCH, Col, USAF, MC, CFS
Dean, USAF School of Aerospace Medicine

Karan Charisse-Piercy

Karan Charisse-Piercy, Maj, USAF, BSC
Course Supervisor