

Ramon P. Cabrera  
Director, Product Safety and Compliance Division

August 12, 2015

Mr. Richard Struckmeyer  
c/o Chief, Materials Safety and Licensing Branch  
Mail Stop T-8-E-18  
Division of Material Safety, State, Tribal and Rulemaking Programs  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555  
E-Mail: [Hipolito.Gonzalez@nrc.gov](mailto:Hipolito.Gonzalez@nrc.gov)  
[Richard.Struckmeyer@nrc.gov](mailto:Richard.Struckmeyer@nrc.gov)

Dear Sir:

Enclosed is an amendment request for Panasonic Corporation of North America's E-Distribution License 29-27907-01E, to add the following:

- $^{14}\text{C}$
- 100 $\mu\text{Ci}$
- Used in calibration/standardization of detectors in Panasonic TLD readers
- Add a distribution site in Texas, with a possession license from Texas # LO6729, expiration date of 31 July, 2025
- New site in Texas

Since this is an amendment to our E-Distribution license, certain items within the application for amendment share a commonality to the renewal and will be so noted in the attached documents.

We wish to thank you for your assistance throughout this process. It is much appreciated.

If you have questions, please contact myself (information is on the application form itself) or our radiation consultant, Sue Engelhardt, at 262-227-2341 or you may email her at [sue@radexperts.com](mailto:sue@radexperts.com).

Sincerely,



Ramon P. Cabrera  
Director, Product Safety & Regulatory Compliance  
Corporate RSO

(07-2015)  
10 CFR 30, 32, 33, 34  
35, 36, 37, 39, and 40



## 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, NE08-10202, (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 29-27907-01E
- ☐ C. RENEWAL OF LICENSE NUMBER \_\_\_\_\_

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

Panasonic Corporation of North America  
Product Safety and Compliance Division  
Two Riverfront Plaza  
Newark, NJ 07102

### 3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

3527 Snead Drive  
Georgetown, TX 78627

### 4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Ramon P. Cabrera

BUSINESS TELEPHONE NUMBER  
(201) 348-7759

BUSINESS CELLULAR TELEPHONE NUMBER

BUSINESS EMAIL ADDRESS

ramon.cabrera@us.panasonic.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

Ramon P. Cabrera, Corporate RSO

SIGNATURE

DATE

8/12/2015

### FOR NRC USE ONLY

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

**Accompanying Page 2 of NRC Form 313**

<b>ITEM 5:</b> Radioactive Material	$^{14}\text{C}$ (Carbon-14)
Chemical/Physical Form	$\text{BaCO}_3$ /Bound in a Silicone resin
Quantity	100 $\mu\text{Ci}$

**ITEM 6:** Purpose for which material will be used: The radioactive material is used as a light source to calibrate the photomultiplier tube (PMT). This is done by comparing current counting of the light source with the initial counts at the time of shipping. The products associated with this are Thermoluminescent Detector (TLD) readers, model numbers UD-716AGL and UD-7900M, Automatic TLD reader.

**ITEM 7:** Individuals responsible for the radiation safety program and their training and experience. The individual responsible for radiation safety is Ramon P. Cabrera, Corporate RSO for Panasonic Corporation of North America. His training and experience documents are already part of this E-Distribution license.

**ITEM 8:** Training for individuals working in or frequenting restricted areas. This has also been addressed in the current E- Distribution license.

**ITEM 9:** Facilities and Equipment: The facilities and equipment are described as part of the possession license issued by the State of Texas.

**ITEM 10:** Radiation safety program. This has not changed from the original renewal of the E-Distribution license.

**ITEM 11:** Waste Management: For this product, the end user will be instructed to properly dispose of the source through licensed vendors.

The rest of this application is devoted to compliance with the requirements set forth in 10CFR 32.14 and 10CFR32.15.

## INFORMATION FOR 10CFR32.14

The conditions set forth in 10CFR32.14 mandate that the following be included:

1. Details of construction and design for each product
2. Chemical and physical form and maximum quantity of byproduct material in each product
3. Method of containment or binding of each byproduct material in the product
4. Method of marking each unit and its container with the identification of the manufacturer or initial transferor and the byproduct material in the product
5. Condition set forth in 30.15 (9)(i) and (ii): Ionizing radiation measuring instruments containing, for purposes of internal calibration or standardization, one or more sources of byproduct material, provided that: each source contains no more than one exempt quantity set forth in 10CFR30.71 Schedule B. (These readers contain a single source with 100 $\mu$ Ci of  $^{14}\text{C}$ )

### DETAILS OF CONSTRUCTION

The details of construction are shown on the Attachment A (for model UD-716AGL), and Attachment B (for model UD-7900M). The UD-716AGL and the UD-7900M effectively provides the same functionality for dosimetry reading services. The difference is in the size of the equipment and the volume and rate of badges which can be tested. The UD-716AGL is designed for small to medium dosimetry services for single badge or multiple badge readings (by addition of the UD736 badge magazine changer), whereas the UD7-900M is design for large volume/rate badge testing for large industrial users. The automated badge magazine is integrated into the UD-7900M. The reader assembly is exactly the same for UD-716AGL and UD-7900M.

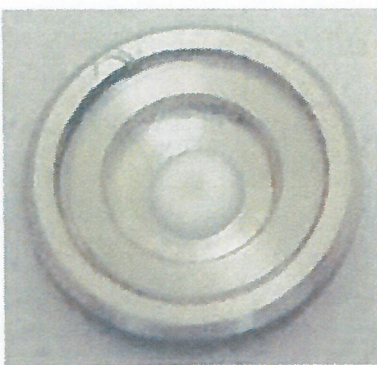
### SOURCE INFORMATION

The source ( $^{14}\text{C}$ , 100 $\mu$ Ci) is used as a calibration standard for the detector in TLD readers manufactured by Panasonic. In general, the light source ( $^{14}\text{C}$ ) is what is used to calibrate the PMT (Photo Multiplier Tube). This is done by comparing current counting of the light source with the initial one at the time of shipping. This allows one to see if there is detector fading. Since the PMT's do fade over time, this allows for correction of the readings for the TLD reader itself.

Details are shown on the Attachment C.

### FORM AND SHAPE OF THE $^{14}\text{C}$

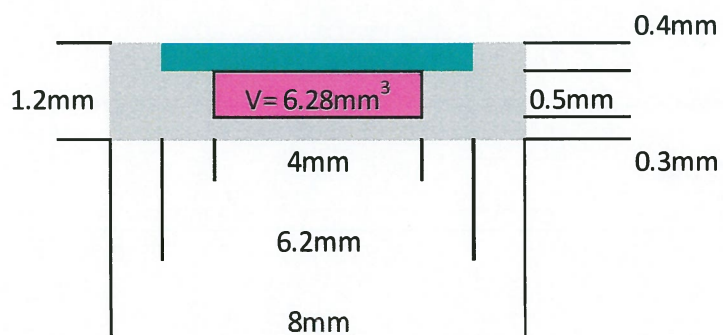
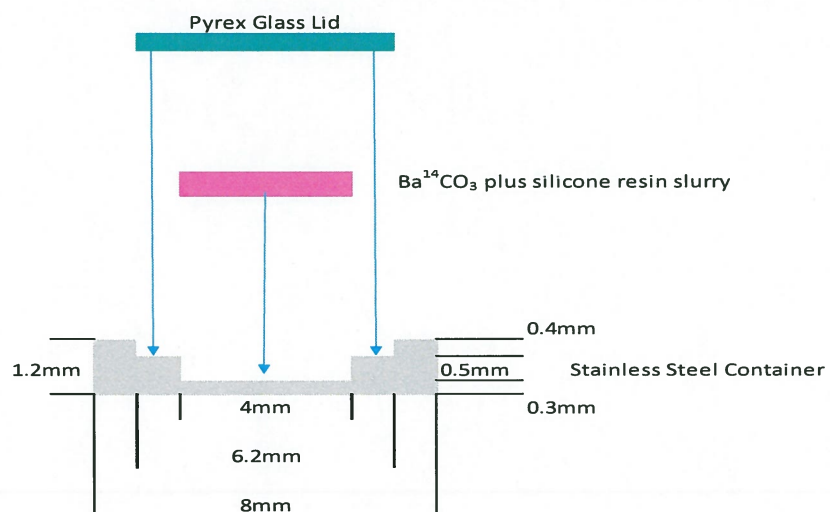
6.28mm<sup>3</sup> of a Ba $^{14}\text{CO}_3$  plus silicone resin slurry is uniformly deposited in a highly machined stainless steel container and sealed with a Pyrex glass lid. See below photograph.



Light Source( $\phi 8\text{mm}$ )

Photograph of  $^{14}\text{C}$  Source in Stainless Steel Container

### $^{14}\text{C}$ SOURCE DEPOSITION and CONTAINER CONSTRUCTION

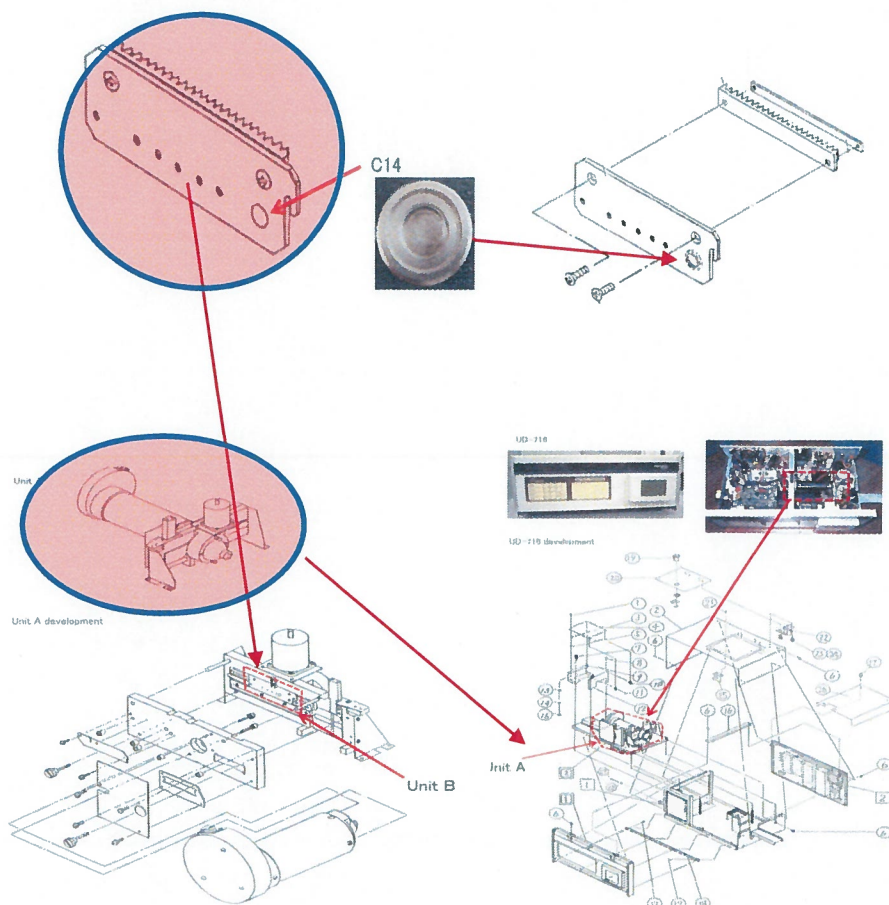


## SOURCE FABRICATION

$\text{Ba}^{14}\text{CO}_3$  powder is thoroughly mixed with 2 cc of silicone resin creating the  $\text{Ba}^{14}\text{CO}_3$  plus silicone resin slurry. A maximum volume ( $V=3.14 \times R^2 \times H$ )  $6.28\text{mm}^3$  of the  $\text{Ba}^{14}\text{CO}_3$  plus silicone resin slurry is deposited into the stainless steel container's innermost cavity and sealed with a Pyrex glass lid. The stainless steel innermost cavity cylindrical dimensions are constant with a radius of 2mm and height of 0.5mm, filling this space and sealing with the Pyrex glass lid provided a consistent volume of  $6.28\text{mm}^3$  of the  $\text{Ba}^{14}\text{CO}_3$  plus silicone resin slurry yielding a consistent  $100\mu\text{Ci}$  of C14 maximum. Note any failure to fully fill this cylinder will result in  $<6.28\text{mm}^3$  of the  $\text{Ba}^{14}\text{CO}_3$  plus silicone resin slurry, hence  $<100\mu\text{Ci}$  of  $^{14}\text{C}$ .

## $^{14}\text{C}$ SOURCE INTEGRATION IN TLD READER

The  $^{14}\text{C}$  in its stainless steel container is then permanently mounted on a card carrying unit which is then integrated into the TLD reader housing unit (unit A) and finally integrated into the full TLD reader assembly.



## **CONDITIONS OF USE**

The TLD readers designed for indoor use in a controlled environment with an operating temperature range of 0 to 40°C (preferably, however, use at the ambient temperature of 15 to 25°C) and relative humidity of 20% to 70%. The environment should be clean and dust free. The  $^{14}\text{C}$  source is integrated internally in the TLD reader and is not accessible to operators. It can only be accessed by authorized, highly trained and qualified service technicians. There is very little external environmental insults possible due to the design of the readers.

## **TESTING**

Each Panasonic TLD is fully characterized and tested as a fully integrated assembly prior to shipping over its full specified operating range and functionality. Included in our standard operational testing is a leakage and contamination test where radioactive levels are measured and must not exceed 0.2kBq.

## **LABELS**

The external surface (cabinet) of the TLD reader will have a label that states:

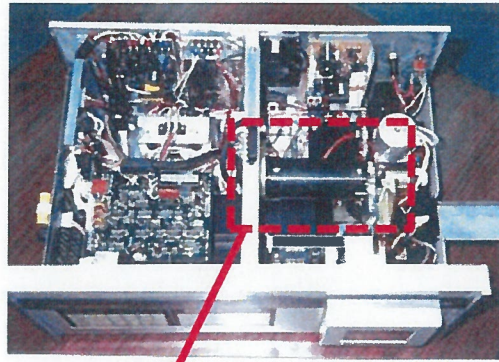
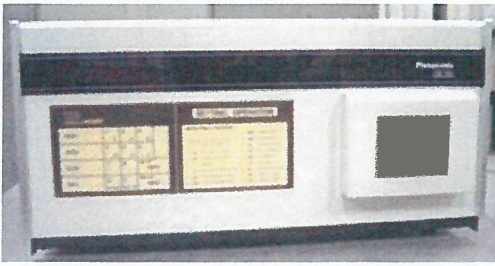
Caution Radioactive Materials

$^{14}\text{C}$  radioactive source

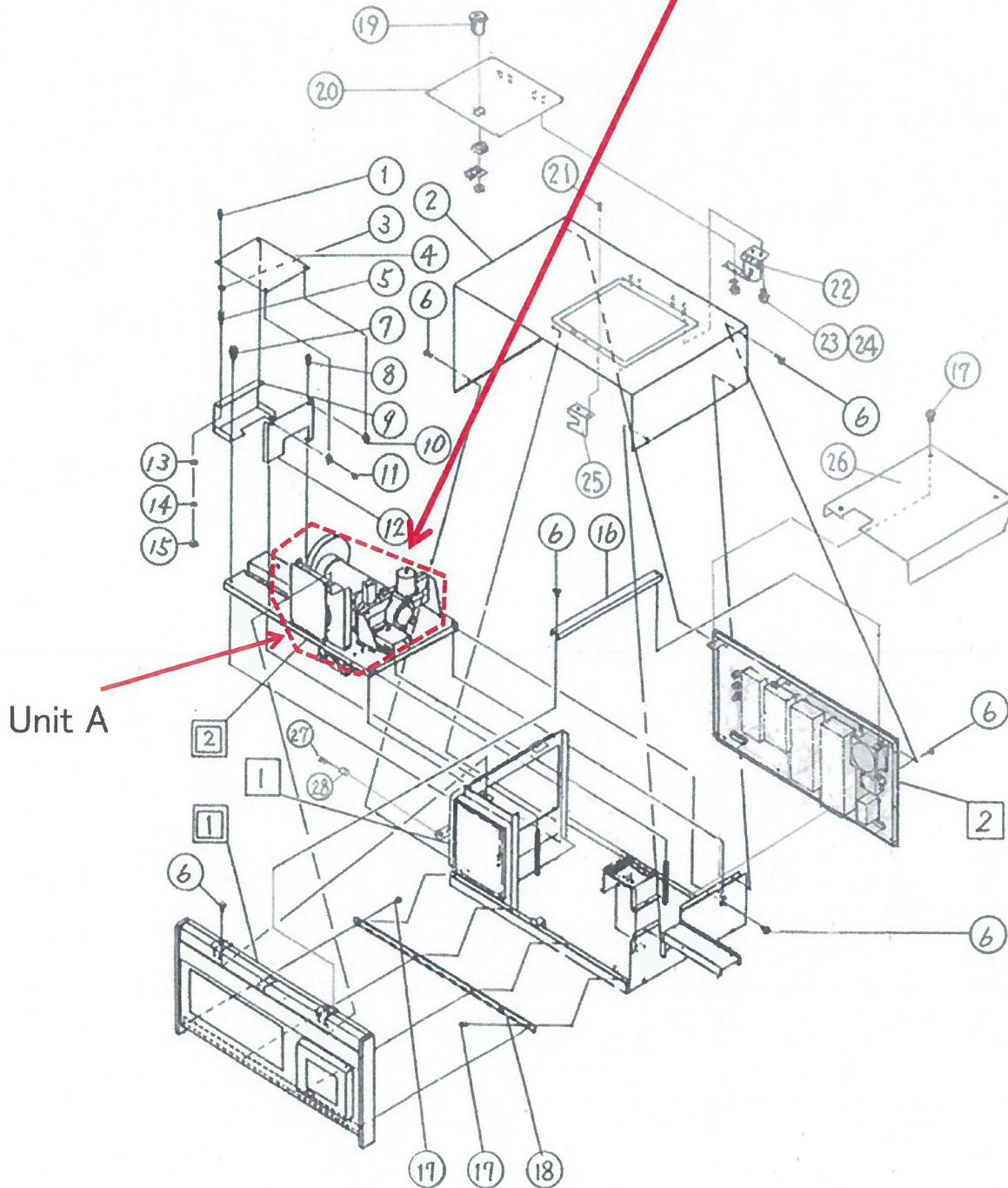
100 $\mu\text{Ci}$  (exempt quantity source)

Manufactured by Panasonic

UD-716

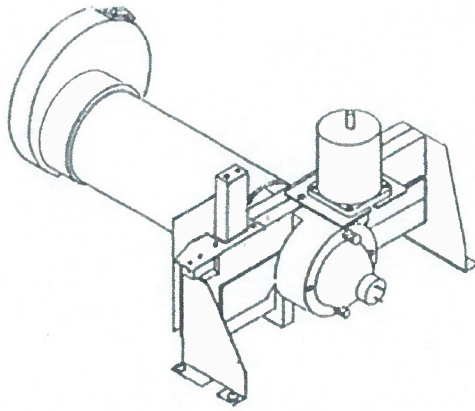


UD-716 development

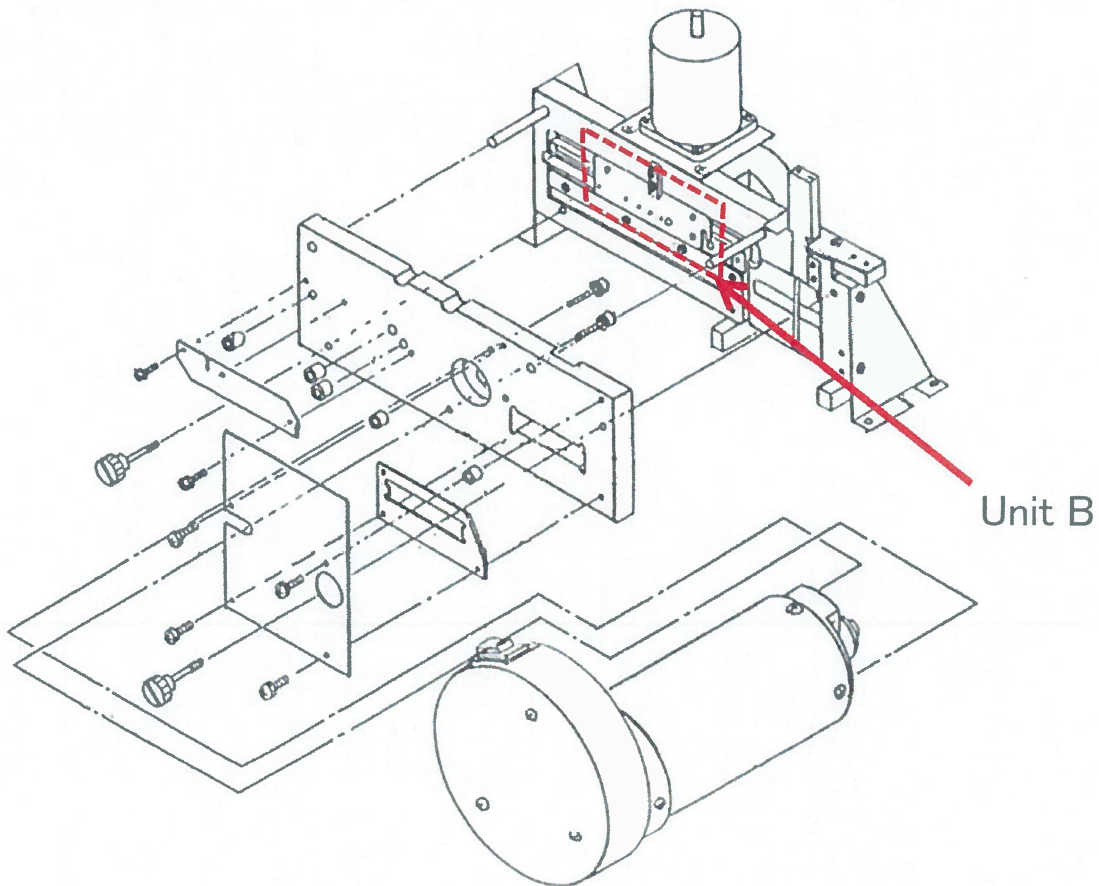


Unit A

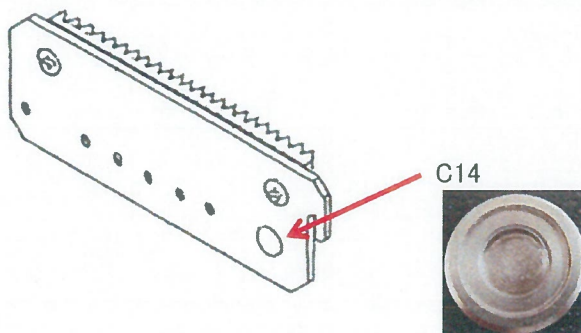
Unit A



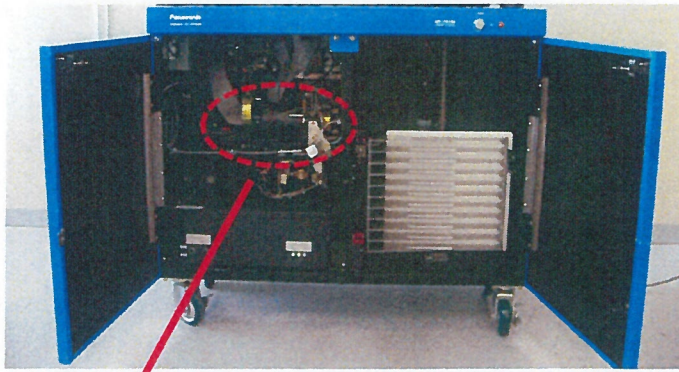
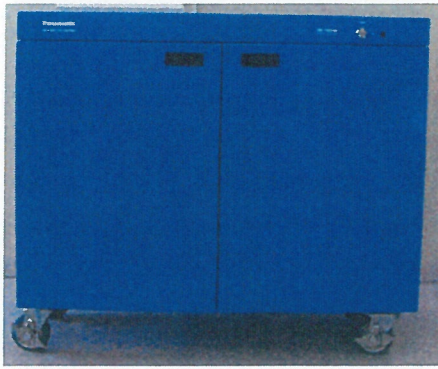
Unit A development



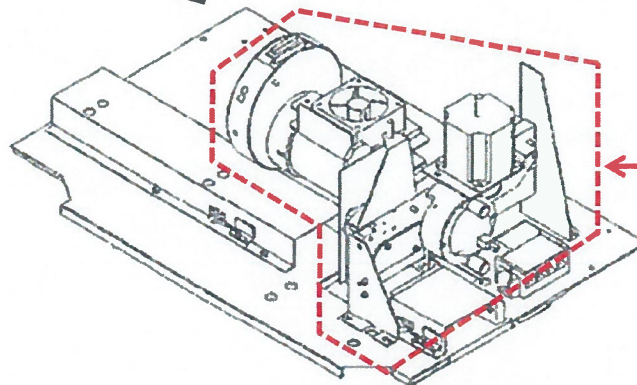
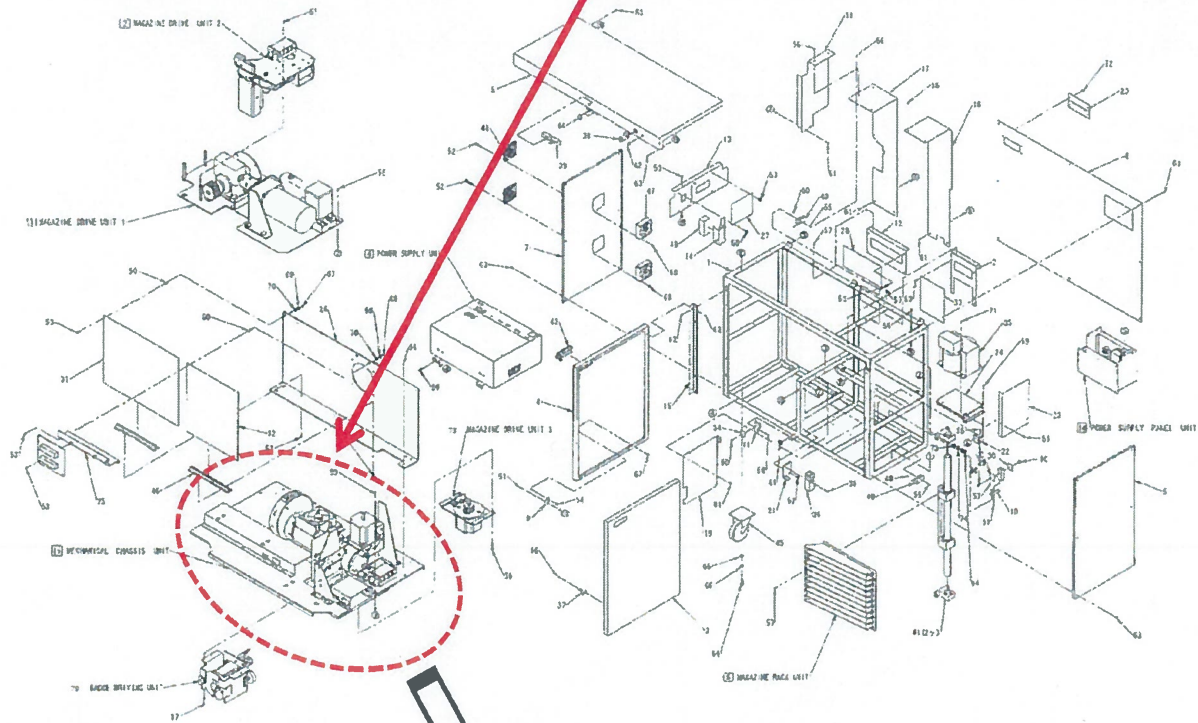
Unit B



UD-7900

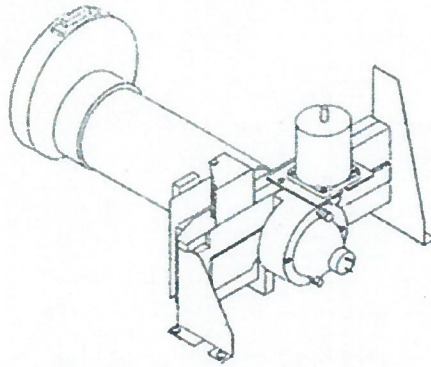


UD-7900 development

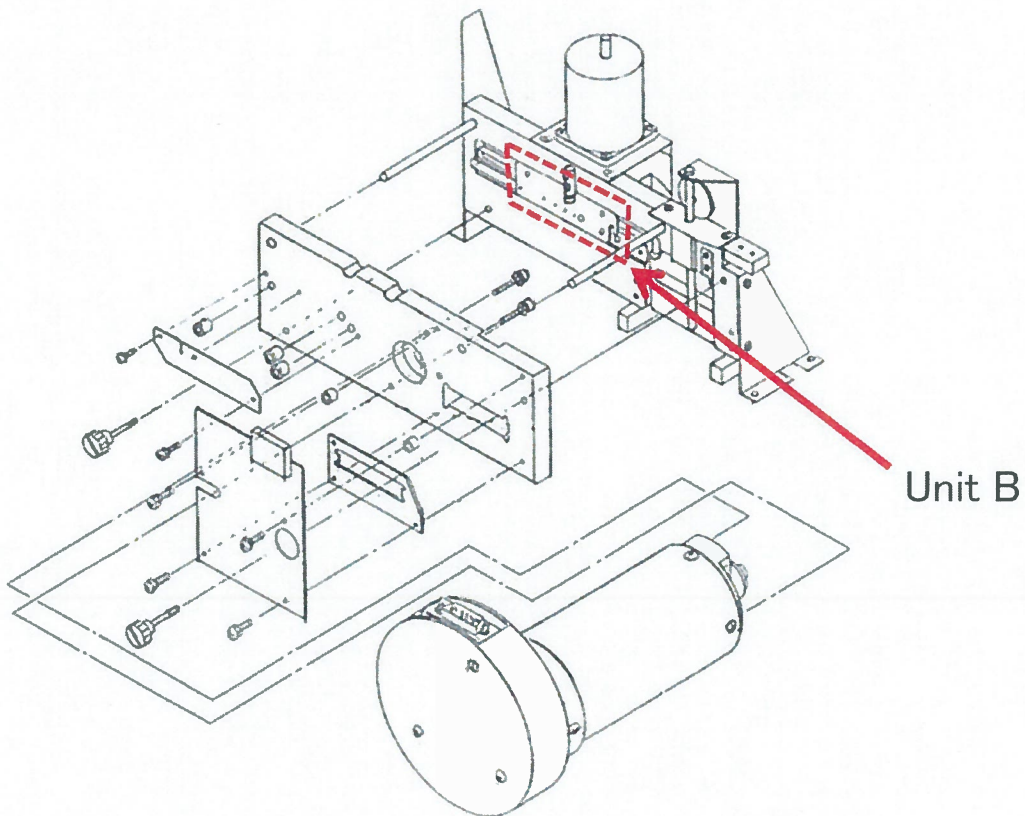


Unit A

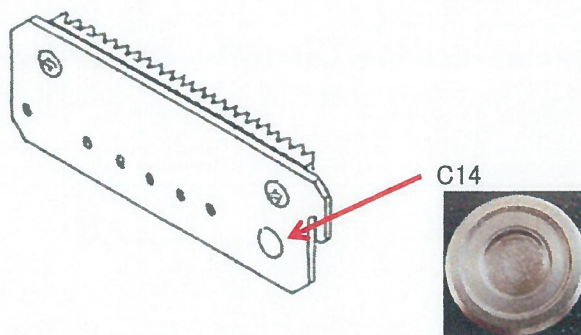
Unit A



Unit A development

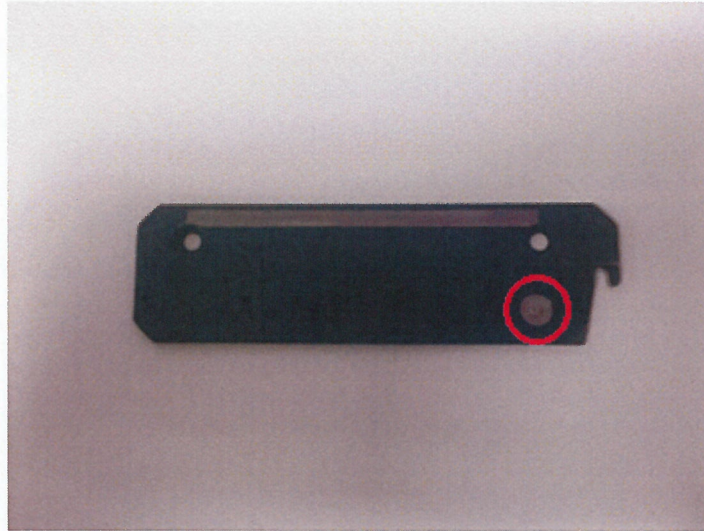


Unit B

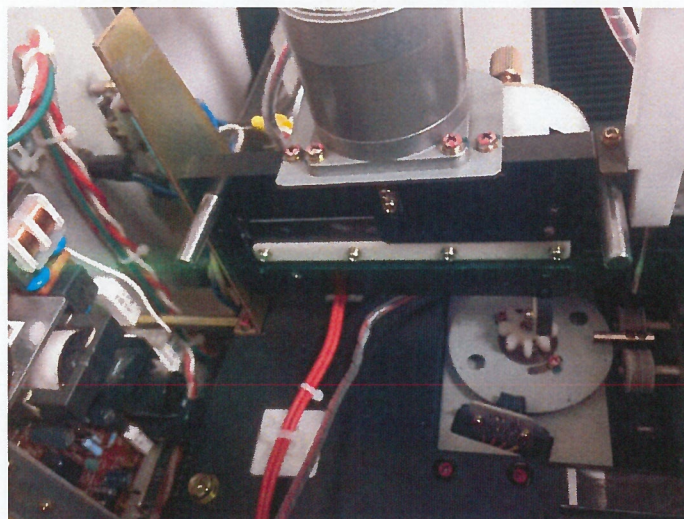


## ATTACHMENT C (1/2)

The C-14 source in question is a sealed source used as a light reference within all Panasonic TLD readers. This source ensures that the sensitivity of the photomultiplier tube (PMT) has not gone down due to dirt or electronics failure. If the read value of the C-14 varies more than 10% of the expected value, the reader will automatically stop. In the image below, you can see the C-14 source circled in red.

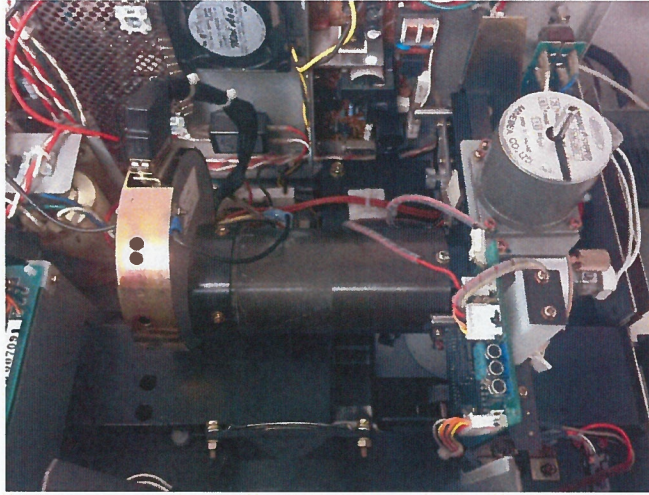


The C-14 source is mounted within an anodized aluminum bracket. This bracket is driven back and forth in front of the PMT by an automated motor. This bracket is also used to pull the phosphors within our TLD badges into the correct position between the heating element and the PMT during the read process. In the image below, you can see the bracket in the correct position seated above a white plastic runner.



## ATTACHMENT C (2/2)

With the PMT in place, this C-14 source is completely hidden (enclosed). It presents no risk of exposure to the phosphors within a TLD badge, and is not accessible without dismantling the reader. The image below is the reader with the PMT securely in place.





## Department of State Health Services

**RADIOACTIVE MATERIAL LICENSE**

Pursuant to the Texas Radiation Control Act and Texas Department of State Health Services (Agency) regulations on radiation, 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. This license is subject to all applicable rules, regulations and orders of the Agency now or hereafter in effect and to any conditions specified below.

<b>LICENSEE</b>			This license is issued in response to an application	
1. Name	PANASONIC CORPORATON OF NORTH AMERICA C/O RADIATION DETECTION COMPANY ATTN RON SMITH		Dated: May 19, 2015	
2. Address	PO BOX 9000 GEORGETOWN TX 78627		Signed by: Ramon P. Cabrera, Director	
			3. License Number L06729	Amendment Number 00
<b>PREVIOUS AMENDMENTS ARE VOID</b>				
			4. Expiration Date July 31, 2025	
<b>RADIOACTIVE MATERIAL AUTHORIZED</b>				
5. Radioisotope	6. Form of Material	7. Maximum Activity	8. Authorized Use	
A. C-14	A. BaCO <sub>3</sub> Silicone Resin Source (Panasonic Model 716AU14)	A. 15 sources not to exceed 100 microcuries each Total: 1.5 millicuries	A. Possession only of Panasonic Model UD-716 AGL TLD Reader pursuant to U.S.NRC Exempt Distribution License No. 29-27907-01E.	
B. C-14	B. BaCO <sub>3</sub> Silicone Resin Source (Panasonic Model 790015)	B. 15 sources not to exceed 100 microcuries each Total: 1.5 millicuries	B. Possession only of Panasonic Model UD-7900M Automatic TLD Reader pursuant to U.S.NRC Exempt Distribution License No. 29-27907-01E.	

9. Radioactive material shall only be stored and used at:

Site Number  
000

Location  
Georgetown - 3527 Snead Drive

10. Each site shall maintain documents and records pertinent to the operations at that site. Copies of all documents and records required by this license shall be maintained for Agency review at Site 000.
11. This license does not authorize the assembly, manufacturing and/or distribution of radioactive material or radiation-source-containing devices.
12. The individual designated to perform the functions of Radiation Safety Officer (RSO) for activities covered by this license is Ron Smith.
13. Radioactive material shall be used by, or under the direct supervision of, individuals designated by the RSO only after each worker has successfully completed a training course determined by the Agency as appropriate. Documentation verifying the successful completion of the training for each worker shall be maintained by the licensee for inspection by the Agency.
14. The licensee shall comply with the provisions (as amended) of Title 25 Texas Administrative Code (TAC) §289.201, §289.202, §289.203, §289.204, §289.205, §289.251, §289.252 and §289.257.



Department of State Health Services

## RADIOACTIVE MATERIAL LICENSE

LICENSE NUMBER	AMENDMENT NUMBER
L06729	00

15. Sealed sources containing radioactive material shall not be opened.
16. The licensee shall conduct a physical inventory every six months to account for all sealed sources received, transferred and possessed under the license. The records of the inventories shall be maintained for inspection by the Agency for three years from the date of the inventory and shall include the radionuclide, number of curies, unique identifying number or serial number, location of each source of radiation, the name of the individual making the inventory, and the date of the inventory.
17. This license does not authorize the distribution of exempt quantities of byproduct or source material.
18. The licensee shall comply with the radioactive material import/export requirements specified in Title 10 Code of Federal Regulations (10 CFR) Part 110.
19. Except as specifically provided otherwise by this license, the licensee shall possess and use the radioactive material authorized by this license in accordance with statements, representations, and procedures contained in the following:

application dated May 19, 2015,  
electronic correspondence dated July 7, 2015, and  
letter dated July 16, 2015, and

Title 25 TAC §289 shall prevail over statements contained in the above documents unless such statements are more restrictive than the regulations.

SEG:seg

FOR THE DEPARTMENT OF STATE HEALTH SERVICES

Date

July 22, 2015

A handwritten signature in black ink, appearing to read "Jason M Kelly", written over a horizontal line.

Jason M Kelly, MPH, CPH, Program Coordinator  
Advanced Technology Licensing Program