



U.S. Department  
of Transportation  
**Pipeline and  
Hazardous Materials  
Safety Administration**

**IAEA CERTIFICATE OF COMPETENT AUTHORITY  
SPECIAL FORM RADIOACTIVE MATERIALS  
CERTIFICATE USA/0159/S-96, REVISION 8**

East Building, PHH-23  
1200 New Jersey Avenue Southeast  
Washington, D.C. 20590

This certifies that the source described has been demonstrated to meet the regulatory requirements for special form radioactive material as prescribed in the regulations of the International Atomic Energy Agency<sup>1</sup> and the United States of America<sup>2</sup> for the transport of radioactive material.

1. Source Identification - E.I. Dupont/NEN Model NER-478C.
2. Source Description - Cylindrical single encapsulation containing a tungsten insert to which the vitreous ceramic source material is fused. Capsule, including window, is constructed of CRES Type 316L stainless steel, with tungsten inert gas welding. Capsules are 7.9 mm (0.31 in.) to 15.2 mm (0.60 in.) in diameter and 5.1 mm (0.20 in.) to 8.1 mm (0.32 in.) in length. Gamma window thickness is approximately 0.25 mm (0.010 in.). Sources must conform to attached New England Nuclear Corp. Drawing No. 313-301.
3. Radioactive Contents - No more than 0.074 TBq (2.0 Ci) of Americium-241 as a vitreous ceramic.
4. Quality Assurance - Records of Quality Assurance activities required by Paragraph 310 of the IAEA regulations<sup>1</sup> shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors in the United States exporting shipments under this certificate shall satisfy the applicable requirements of Subpart H of 10 CFR 71.
5. Expiration Date - This certificate expires on August 31, 2021.

---

<sup>1</sup> "Regulations for the Safe Transport of Radioactive Material, 1996 Edition (Revised), No. TS-R-1 (ST-1, Revised)," published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

<sup>2</sup> Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

**CERTIFICATE USA/0159/S-96, REVISION 8**


This certificate is issued in accordance with paragraph 804 of the IAEA Regulations and Section 173.476 of Title 49 of the Code of Federal Regulations, in response to the August 09, 2016 petition by J.L. Shepherd & Associates, San Fernando, CA, and in consideration of other information on file in this Office.

Certified By:



**Aug 23 2016**

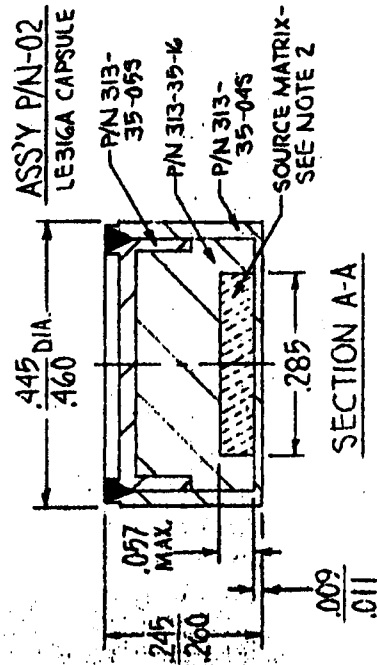
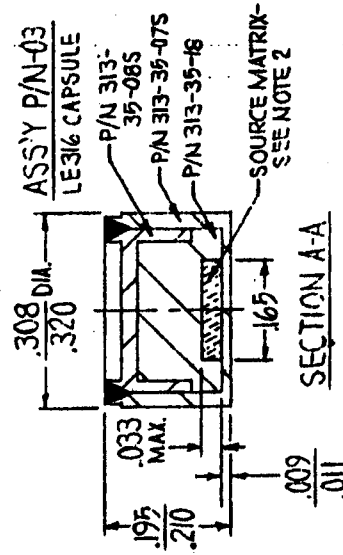
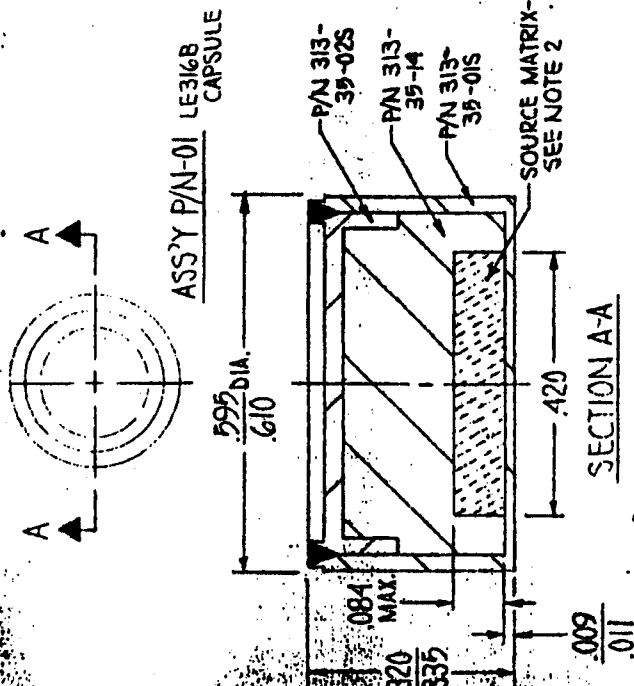
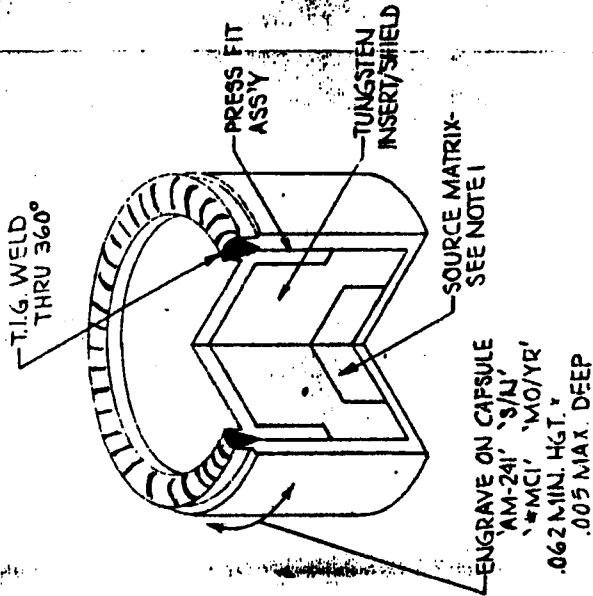
(DATE)

 \_\_\_\_\_  
William Schoonover  
Acting Associate Administrator for Hazardous Materials Safety

Revision 8 - Issued to extend the expiration date.

**NOTES**

- SOURCE MATRIX CONSISTS OF AM-241 AS A VITREOUS CERAMIC AND FUSED TO THE TUNGSTEN INSERT, FORMING A CERAMIC GLAZE.
- MAXIMUM ACTIVITY CONTENT:  
LE316 2000 MCI.  
LE316A 2000 MCI.  
LE316B 2000 MCI.
- NOMINAL ACTIVITY TOLERANCE +15%, -10%.
- LEAK TEST PER ANSI N542-1977 PROCEDURES, A2.1.1 SMEAR TEST, A2.1.3 IMMERSION TEST, AND A2.2.1 BUBBLE TEST. SEE NSQA TEST DIRECTIVE 003. LIMIT  $1 \times 10^{-3}$  /CI.
- ANSI N542-1977 PERFORMANCE CLASSIFICATION: CG 444.
- D.O.T. 'SPECIAL FORM' MAT'L PER 10CFR71.4.



NEW ENGLAND NUCLEAR CORP.

MATERIAL SPECIFICATIONS		FRACTIONAL	DECIMAL	ANGULAR
CRES 316L STN. STL.		$\frac{1}{64}$	.005	$\pm 30'$
DRAWN	J. SUMARES	REV.	DATE	SCALE
CHECKED			8-29-78	N.T.S.
APPROV.		DO NOT SCALE DRAWING		
NEW ENGLAND NUCLEAR CORP. BOSTON, MASS.		DRAWING NO. NER-478C AM-241 L.E. PHOTON SOURCE		
		313-301		



U.S. Department  
of Transportation

East Building, PHH-23  
1200 New Jersey Avenue SE  
Washington, D.C. 20590

**Pipeline and  
Hazardous Materials  
Safety Administration**

**CERTIFICATE NUMBER:** USA/0159/S-96, Revision 8

**ORIGINAL REGISTRANT(S):**

Ms. Mary Shepherd  
Vice President  
J.L. Shepherd & Associates  
1010 Arroyo Ave.  
San Fernando, 91340-1822  
USA

**REGISTERED USER(S):**

Ms. Frida Tan  
Regulatory Affairs Manager  
Eckert & Ziegler Isotope Products  
24937 Avenue Tibbitts  
Valencia, 91355  
USA

Sean Hunt  
Stuart Hunt & Associates Ltd  
20 Rayborn Crescent St.  
Alberta, Canada T8N 5C1  
Canada

Cameron Musgrave  
Senior Radiation Safety Technician, Quality Management Representative  
Stuart Hunt & Associates Ltd  
5949 Ambler Drive  
Mississauga, Ontario L4W 2K2  
Canada