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

U.S. Department of Transportation

Pipeline and Hazardous Materials Safety Administration

**IAEA CERTIFICATE OF COMPETENT AUTHORITY**
**SPECIAL FORM RADIOACTIVE MATERIALS**

**CERTIFICATE USA/0353/S-96, REVISION 10**

This certifies that the sources described have been demonstrated to meet the regulatory requirements for special form radioactive material as prescribed in the regulations of the International Atomic Energy Agency[1] and the United States of America[2] for the transport of radioactive material.

1. Source Identification - Eckert & Ziegler Isotope Products Model Model No. 193 Series (Capsules A3011-1, A3011-2, A3011-4, and A3011-5). Certificate printed manually.

2. Source Description - Cylindrical double encapsulations with a hexagonal and cylindrical extension made of Type 304 or 304L stainless steel and fusion seal welded. Approximate exterior dimensions are 9.53 mm (0.375 in.) maximum diameter and 36.5 mm (1.437 in.) in length. Construction shall be in accordance with either attached Eckert & Ziegler Isotope Products Drawing No. 3011, Rev. O, Sheet 4, 5, 7, or 8 of 14.

3. Radioactive Contents - The sources described by this certificate are authorized to contain any one of the following radionuclides in the chemical form identified and limited to the activity shown:

| Radionuclide | Form | Activity |
|---|---|---|
| Na-22 | NaCl in gold or ceramic | 3.7 GBq (0.10 Ci) |
| Co-57 | Co metal plated on Ni foil or CoCl2 in ceramic | 11.1 GBq (0.30 Ci) |
| Co-58 | CoCl2 in ceramic | 11.1 GBq (0.30 Ci) |
| Co-60 | Ni clad Co pellets or CoCl2 in ceramic | 11.1 GBq (0.30 Ci) |
| Ge-68 | GeO2 in silver or ceramic | 1.85 GBq (0.05 Ci) |

[1] "Regulations for the Safe Transport of Radioactive Material, 2012 Edition, No. SSR-6" published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

[2] Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

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| Radionuclide (Cont'd) | Form | Activity |
|---|---|---|
| Ba-133 | BaSO4 or BaCl2 in ceramic | 3.7 GBq (0.10 Ci) |
| Cs-137 | CsCl in gold or ceramic | 11.1 GBq (0.30 Ci) |
| Eu-152 | Eu(NO3)3 or Eu2O3 in ceramic | 0.74 GBq (0.02 Ci) |
| Ra-226 | Sintered RaSO4 in platinum sheath | 1.85 GBq (0.05 Ci) |
| Actinides* | Oxides in gold or ceramic | 1.85 GBq (0.05 Ci) |

* Isotopes of Ac, Th, Pa, Np, U, Pu, Am, and Cm

4. Management System Activities - Records of Management System activities required by Paragraph 306 of the IAEA regulations 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 requirements of Subpart H of 10 CFR 71.

5. Expiration Date - This certificate expires on April 30, 2029. Previous editions which have not reached their expiration date may continue to be used.

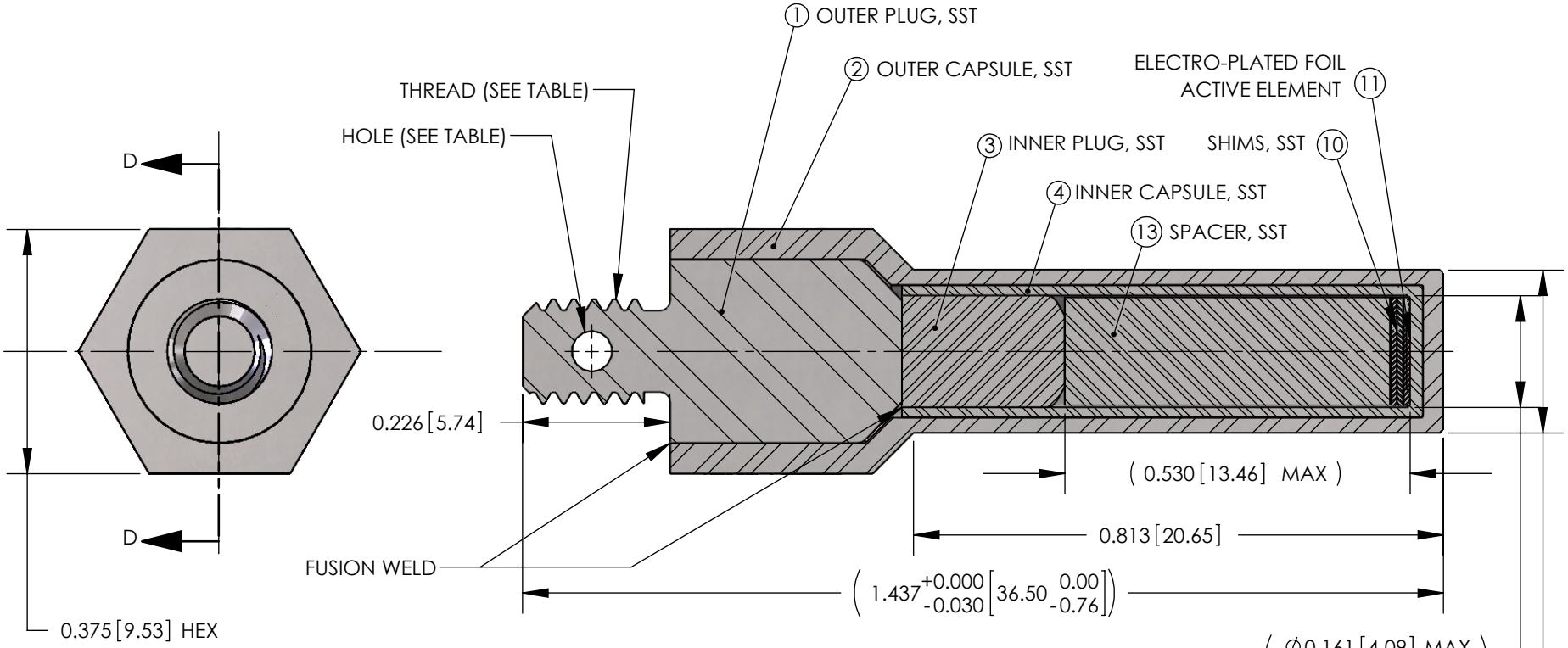
This certificate is issued in accordance with paragraph(s) 804 of the IAEA Regulations and Section 173.476 of Title 49 of the Code of Federal Regulations, in response to the March 18, 2024 petition by Eckert & Ziegler Isotope Products, Valencia, CA, and in consideration of other information on file in this Office.

Certified By:

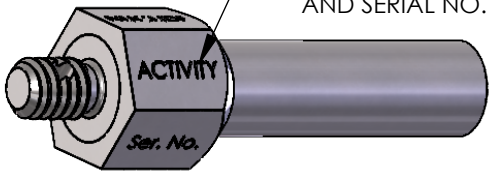
William Schoonover
Associate Administrator for Hazardous Materials Safety

April 30, 2024
(DATE)

Revision 10 - Issued to update drawings and to extend the expiration date.




SECTION D-D
SCALE 4 : 1




MODEL VIEW (NOT TO SCALE)

CONFIGURATION TABLE

| P/N | THREAD | HOLE |
|---|---|---|
| A3011-1-1 | 8-32 UNC-3A | ∅0.062 THRU |
| A3011-1-2 | 6-32 UNC-3A | NONE |

2. FUSION WELD AS REQUIRED
1. ASSEMBLE PER ENGINEERING DRAWING
NOTES: UNLESS OTHERWISE SPECIFIED

P/N A3011-1 SOURCE WITH FOIL

Eckert & Ziegler
Isotope Products
VALENCIA, CALIFORNIA 91355



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCH-SIZES. METRIC UNITS [mm] ARE IN MILLIMETERS.

TOLERANCES (UNLESS OTHERWISE SPECIFIED)

| | | | |
|---|---|---|---|
| X.XXX | ± .002 | INCH | ANGULAR TOLERANCE OF 0°±30' |
| X.XX | ± .005 | INCH | FRACTIONAL DIMENSIONS ± 1/32" |
| X.X | ± .03 | INCH | REFERENCE DIMENSIONS () N/A |
| X. | ± .1 | INCH | SURFACE ROUGHNESS µINCH MAX |

ALL DIMENSIONS ARE FINISHED DIMENSIONS

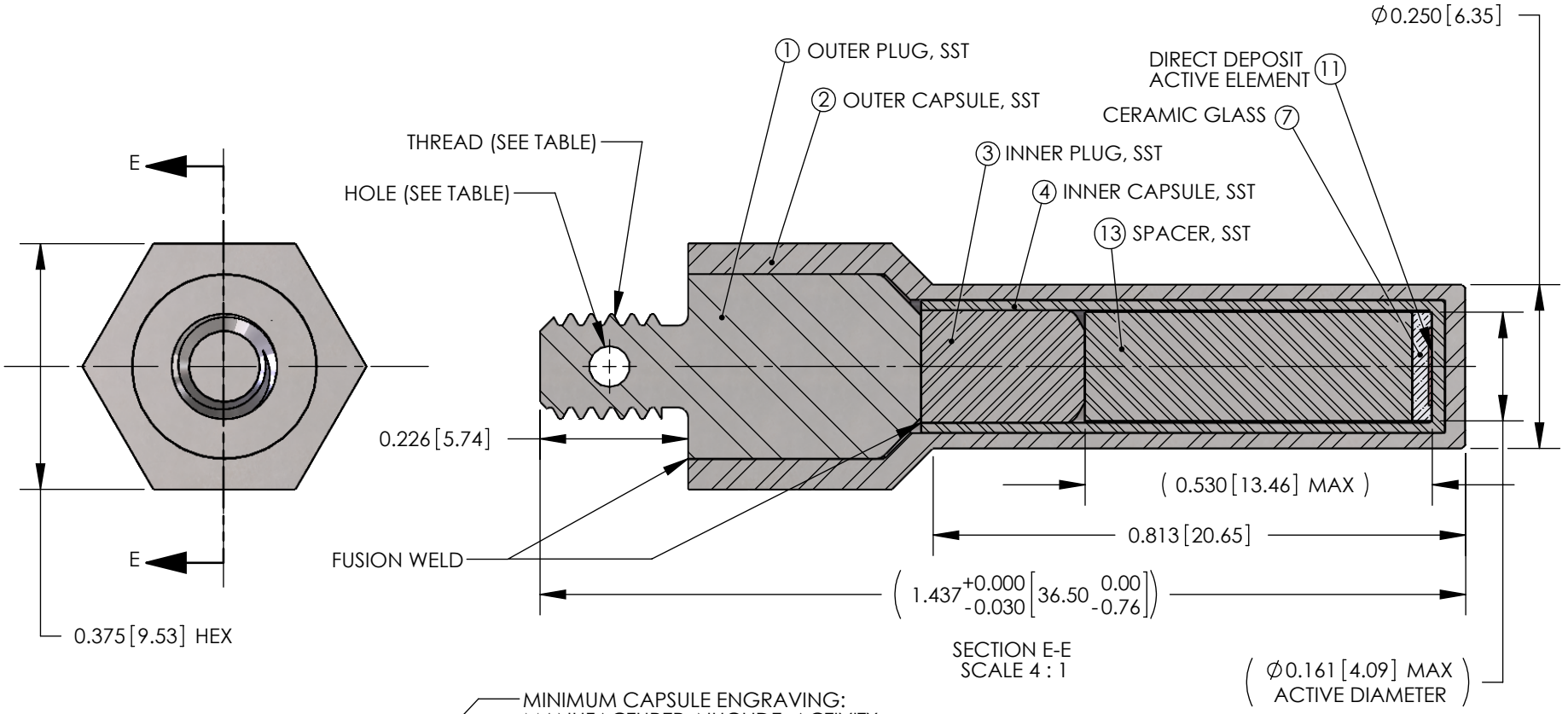
THIRD ANGLE PROJECTION

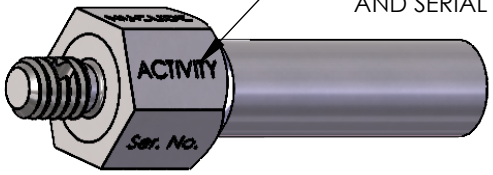
DRAWN KP/RLT
ME/CHECKER LF/GG
ENGINEER JMD/RT
SCALE NONE
SIZE A

TITLE
HIGH INTENSITY GAMMA SOURCE MODEL HEG

SERIES TITLE
HIGH INTENSITY GAMMA AND NEUTRON SOURCES (HEG SERIES CAPSULES 193, 225 AND N-252)

| CAGE CODE | DRAWING NO. | REV | SHEET |
|---|---|---|---|
| 32993 | 3011 | O | 4 OF 14 |




MODEL VIEW (NOT TO SCALE)

CONFIGURATION TABLE

| P/N | THREAD | HOLE |
|---|---|---|
| A3011-2-1 | 8-32 UNC-3A | Ø0.062 THRU |
| A3011-2-2 | 6-32 UNC-3A | NONE |

2. FUSION WELD AS REQUIRED
1. ASSEMBLE PER ENGINEERING DRAWING
NOTES: UNLESS OTHERWISE SPECIFIED

# P/N A3011-2 SOURCE WITH CERAMIC MATRIX

Eckert & Ziegler
Isotope Products
VALENCIA, CALIFORNIA 91355



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCH-SIZES. METRIC UNITS [mm] ARE IN MILLIMETERS.

TOLERANCES (UNLESS OTHERWISE SPECIFIED)

| | | | |
|---|---|---|---|
| X.XXX | ± .002 | INCH | ANGULAR TOLERANCE OF 0°±30' |
| X.XX | ± .005 | INCH | FRACTIONAL DIMENSIONS ± 1/32" |
| X.X | ± .03 | INCH | REFERENCE DIMENSIONS () N/A |
| X. | ± .1 | INCH | SURFACE ROUGHNESS µINCH MAX |

ALL DIMENSIONS ARE FINISHED DIMENSIONS

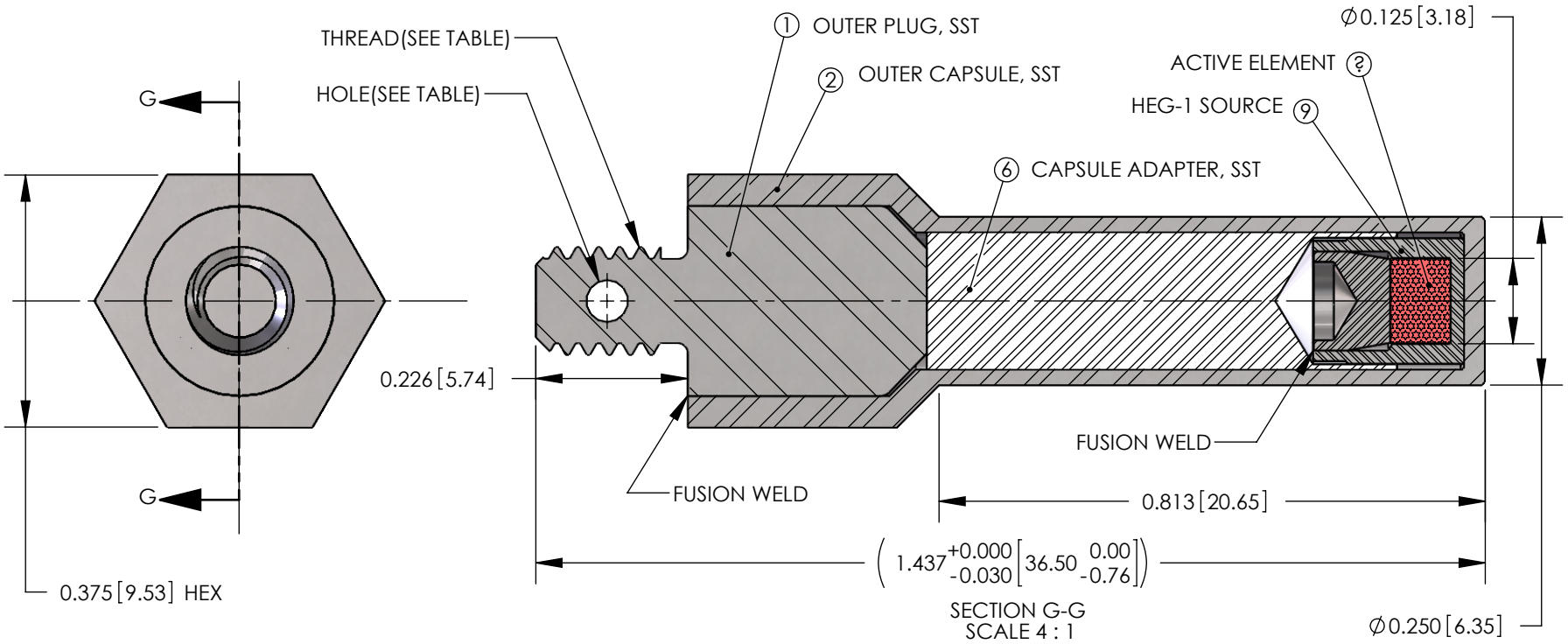
THIRD ANGLE PROJECTION

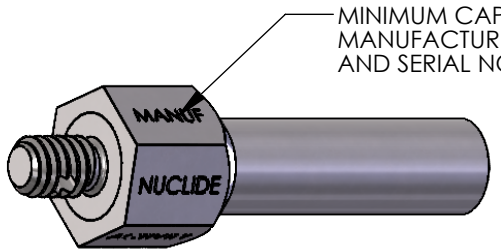
DRAWN KP/RLT
ME/CHECKER LF/GG
ENGINEER JMD/RT
SCALE NONE
SIZE A

TITLE
HIGH INTENSITY GAMMA SOURCE MODEL HEG

SERIES TITLE
HIGH INTENSITY GAMMA AND NEUTRON SOURCES (HEG SERIES CAPSULES 193, 225 AND N-252)

| CAGE CODE | DRAWING NO. | REV | SHEET |
|---|---|---|---|
| 32993 | 3011 | O | 5 OF 14 |




MODEL VIEW (NOT TO SCALE)

CONFIGURATION TABLE

| P/N | THREAD | HOLE |
|---|---|---|
| A3011-4-1 | 8-32 UNC-3A | ∅0.062 THRU |
| A3011-4-2 | 6-32 UNC-3A | NONE |

2. FUSION WELD AS REQUIRED
1. ASSEMBLE PER ENGINEERING DRAWING
NOTES: UNLESS OTHERWISE SPECIFIED

P/N A3011-4 SOURCE WITH S3000 INNER

Eckert & Ziegler
Isotope Products
VALENCIA, CALIFORNIA 91355



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCH-SIZES. METRIC UNITS [mm] ARE IN MILLIMETERS.

TOLERANCES (UNLESS OTHERWISE SPECIFIED)

| | | | |
|---|---|---|---|
| X.XXX | ± .002 | INCH | ANGULAR TOLERANCE OF 0°±30' |
| X.XX | ± .005 | INCH | FRACTIONAL DIMENSIONS ± 1/32" |
| X.X | ± .03 | INCH | REFERENCE DIMENSIONS () N/A |
| X. | ± .1 | INCH | SURFACE ROUGHNESS µINCH MAX |

ALL DIMENSIONS ARE FINISHED DIMENSIONS

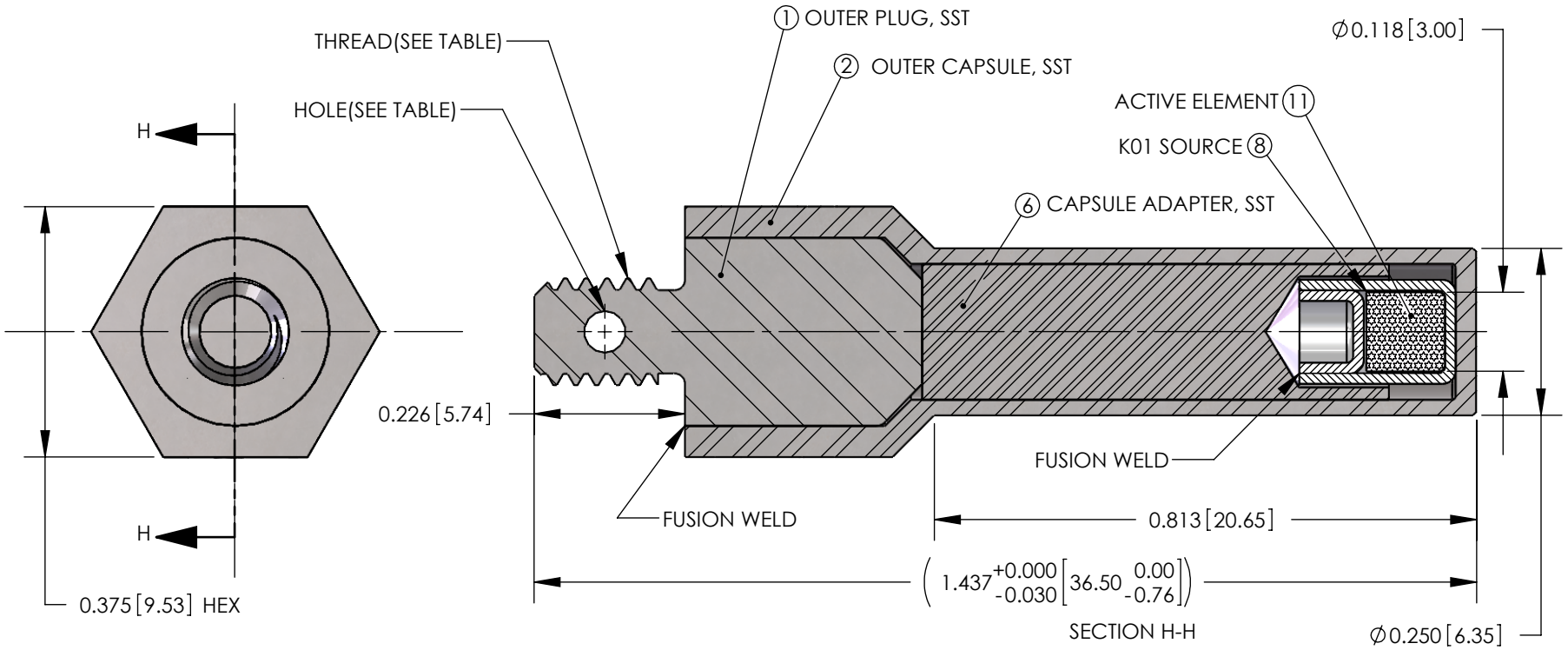
THIRD ANGLE PROJECTION

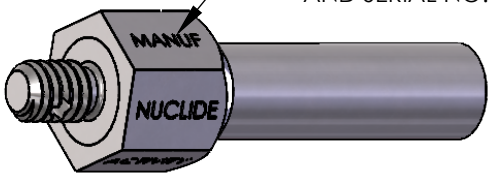
DRAWN KP/RLT
ME/CHECKER LF/GG
ENGINEER JMD/RT
SCALE NONE
SIZE A

TITLE
HIGH INTENSITY GAMMA SOURCE MODEL HEG

SERIES TITLE
HIGH INTENSITY GAMMA AND NEUTRON SOURCES
(HEG SERIES CAPSULES 193, 225 AND N-252)

| CAGE CODE | DRAWING NO. | REV | SHEET |
|---|---|---|---|
| 32993 | 3011 | O | 7 OF 14 |




MODEL VIEW (NOT TO SCALE)

CONFIGURATION TABLE

| P/N | THREAD | HOLE |
|---|---|---|
| A3011-5-1 | 8-32 UNC-3A | ∅0.062 THRU |
| A3011-5-2 | 6-32 UNC-3A | NONE |

2. FUSION WELD AS REQUIRED
1. ASSEMBLE PER ENGINEERING DRAWING
NOTES: UNLESS OTHERWISE SPECIFIED

P/N A3011-5 SOURCE WITH K01 INNER

Eckert & Ziegler
Isotope Products
VALENCIA, CALIFORNIA 91355



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCH-SIZES. METRIC UNITS [mm] ARE IN MILLIMETERS.

TOLERANCES (UNLESS OTHERWISE SPECIFIED)

| | | | |
|---|---|---|---|
| X.XXX | ± .002 | INCH | ANGULAR TOLERANCE OF 0°±30' |
| X.XX | ± .005 | INCH | FRACTIONAL DIMENSIONS ± 1/32" |
| X.X | ± .03 | INCH | REFERENCE DIMENSIONS () N/A |
| X. | ± .1 | INCH | SURFACE ROUGHNESS µINCH MAX |

ALL DIMENSIONS ARE FINISHED DIMENSIONS

THIRD ANGLE PROJECTION

DRAWN KP/RLT
ME/CHECKER LF/GG
ENGINEER JMD/RT
SCALE NONE
SIZE A

TITLE
HIGH INTENSITY GAMMA SOURCE MODEL HEG

SERIES TITLE
HIGH INTENSITY GAMMA AND NEUTRON SOURCES
(HEG SERIES CAPSULES 193, 225 AND N-252)

| CAGE CODE | DRAWING NO. | REV | SHEET |
|---|---|---|---|
| 32993 | 3011 | O | 8 OF 14 |

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1200 New Jersey Ave, SE
Washington, D.C. 20590

U.S. Department of Transportation

**Pipeline and Hazardous Materials Safety Administration**

**CERTIFICATE NUMBER:** USA/0353/S-96

**ORIGINAL REGISTRANT(S):**

Eckert & Ziegler Isotope Products
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Washington, DC, 20585
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Alberta, Canada, T8N 5C1
Canada

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