

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO: NR-474-S-107-S

DATE: FEB 9 1984

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SOURCE TYPE: Sealed Cobalt Source

MODEL: Drawing No. A200257

MANUFACTURER/DISTRIBUTOR:

Neutron Products, Inc.
22301 Mt. Ephraim Road
P.O. Box 68
Dickerson, MD 20842

MANUFACTURER/DISTRIBUTOR:

ISOTOPE: Cobalt-60

MAXIMUM ACTIVITY: 1500 curies

LEAK TEST FREQUENCY: 6 months

PRINCIPAL USE: (J) Gamma Irradiator, Category I

CUSTOM SOURCE: ☒ YES ☐ NO

CUSTOM USER:

United States Department of Commerce
National Bureau of Standards
Washington, D.C. 20234

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PDR FOIA
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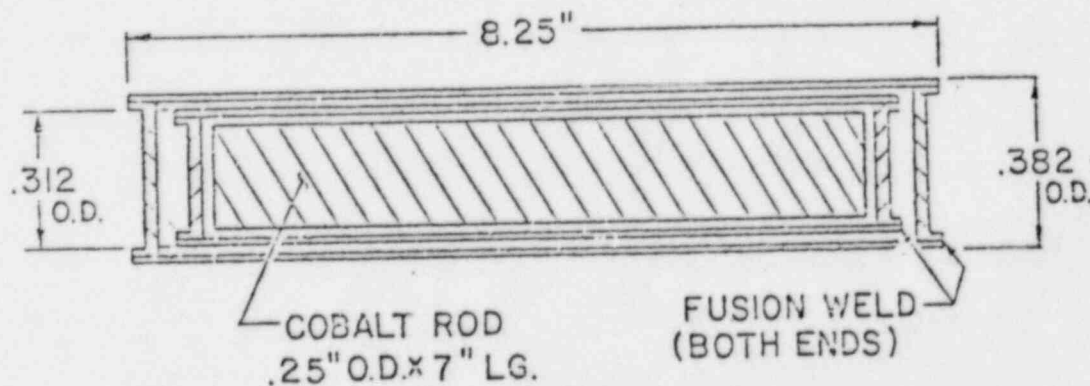
DESCRIPTION:

The Cobalt-60 rod, .25" diameter x 7" length is double encapsulated with 316SS and sealed by fusion weld. This yields a source with dimensions of .382" diameter x 8.25" long. Neutron Products, Inc. (NPI) installed the custom built sources into an AECL Model 220 irradiator for the National Bureau of Standards.

LABELING:

A unique serial number is etched on each completed source. Additionally, the device is labeled in accordance with Section 20.203, 10 CFR 20.

DIAGRAM:



CONDITIONS OF NORMAL USE:

The 24 custom built sources will be used in an AECL Gammacell 220 self-contained irradiator. The irradiator will be loaded to a maximum of 20,840 curies.

PROTOTYPE TESTING:

NPI did not test a prototype source. However, they used an identical source with the exception of length that was tested to determine an ANSI classification of 77E53524 for the Drawing No. A200257. The custom sources are installed in the irradiator and operated to check compatibility.

EXTERNAL RADIATION LEVELS:

National Bureau of Standards conducted a survey of the Gammacell 220 after it was loaded by NPI. These readings do not differ significantly from these original provided by AECL. The maximum reading at 1 meter was 2.4 mr/hr. The maximum reading of 1.5 cm from the surface was 26 mr/hr in the on or irradiate position.

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QUALITY ASSURANCE AND CONTROL:

The sources were assembled under NPI quality control program which has been deemed acceptable by the State of Maryland.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- o The sources shall be distributed only to the specific licensee referred to in this document (National Bureau of Standards).
- o The device shall be leak tested at six month intervals using techniques capable of detecting 0.005 microcuries of removable contamination.
- o Handling, storage, use, transfer, and disposal: To be determined by the licensing authority.
- o This registration sheet and the information contained within the references shall not be changed or transferred without the written consent of the NRC.

SAFETY ANALYSIS SUMMARY:

Based on our review of the information and test data cited below, we conclude that the Drawing No. A200257 sealed cobalt source design is compatible with a Gammacell 220 source design and thus is acceptable for custom licensing purposes. Furthermore, we conclude that the source would be expected to maintain its containment integrity for normal conditions of use and accidental conditions which might occur during uses specified in this certificate.

REFERENCES:

The following supporting documents for the Drawing No. A200257 source design are hereby incorporated by reference and are made a part of this registry document:

- o United States Department of Commerce letters dated November 10, 1982, July 26, 1983, and January 26, 1984, with enclosures thereto.

ISSUING AGENCY:

U.S. Nuclear Regulatory Commission

Date: FEB 1 1984

Reviewer:

Ken B. Begg

Date: _____

Concurrence:

James R. K... ..