

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICE
SAFETY EVALUATION OF DEVICE

NO: NR-476-S-149-S

DATE:

OCT 25 1983

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SOURCE TYPE: Beta Radiation Source

MODEL: NER-8170

MANUFACTURER/DISTRIBUTOR:

New England Nuclear
331 Treble Cove Road
North Billerica, MA 01862

MANUFACTURER/DISTRIBUTOR:

ISOTOPE: Krypton-85

MAXIMUM ACTIVITY: 1150 millicuries

LEAK TEST FREQUENCY: Not Required (see Limitations)

PRINCIPAL USE: (E) Beta Gauging

CUSTOM DEVICE: ☐ YES ☒ NO

8403020208 840209
PDR FOIA
HAMMITT84-74 PDR

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DESCRIPTION:

The source assembly is cylindrical in shape and having dimensions of 0.866 inch diameter and 0.472 inch in height. The source assembly is made of titanium and has a cavity 0.717 inch in diameter and 0.181 in height that is covered by a titanium window 0.001 inch thick. The Kr-85 is introduced into the source cavity via the copper fill tube. The internal pressure of the gas does not exceed three atomspheres. The tube is crimped shut and dip soldered to effect a seal.

LABELING:

The source is engraved with the isotope, the activity in millicuries, the manufacturers unique serial number (XF-xxx) and the data of assay.

DIAGRAM:

See Attachment 1 for diagram of the source and a diagram of the storage/shipping container.

CONDITIONS OF NORMAL USE:

The source is to be used in industrial gauging applications wherein it will be secured in a shielded and shuttered holder bearing appropriate labeling. The manufacturer reports the useful life of the source to be 20 years.

PROTOTYPE TESTING:

The manufacturer tested the sources to ANSI N542 requirements. The source achieved a classification of 77C33232.

EXTERNAL RADIATION LEVELS:

The manufacturer reported the dose rates contained in Attachment 2.

QUALITY ASSURANCE AND CONTROL:

New England Nuclear has previously submitted an acceptable quality assurance and control program.

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LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- o The source shall be distributed only to persons specifically licensed by the NRC or an Agreement State.
- o The source/device combination should be checked for proper operation of the shutter mechanism at six month intervals.
- o Handling, storage, use, transfer, and disposal to be determined by the licensing authority.
- o The source shall not be subjected to environmental conditions in excess of ANSI N542 77C33232.
- 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 and the achieved ANSI N542 classification meets the minimal performance requirement for typical usage as defined in ANSI N542, we conclude that the Model NER-8170 sealed source design is acceptable for licensing purposes.

Furthermore, we conclude that the source design would be expected to maintain it's 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 Model NER-8170 sealed source is hereby incorporated by reference and is made a part of this registry document:

- o New England Nuclear letter dated August 19, 1983.

ISSUING AGENCY:

U.S. Nuclear Regulatory Commission

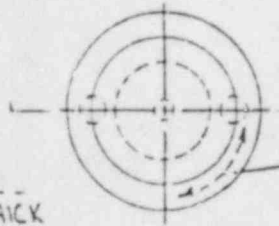
Date: OCT 25 1983

Reviewer: 

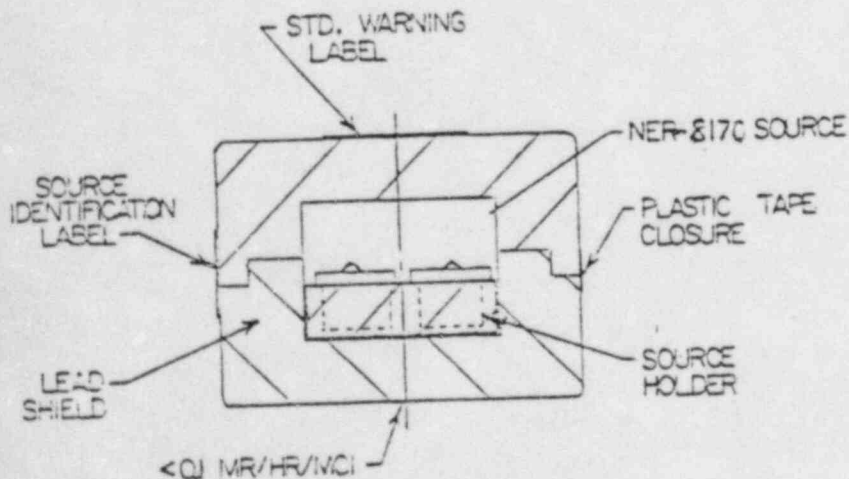
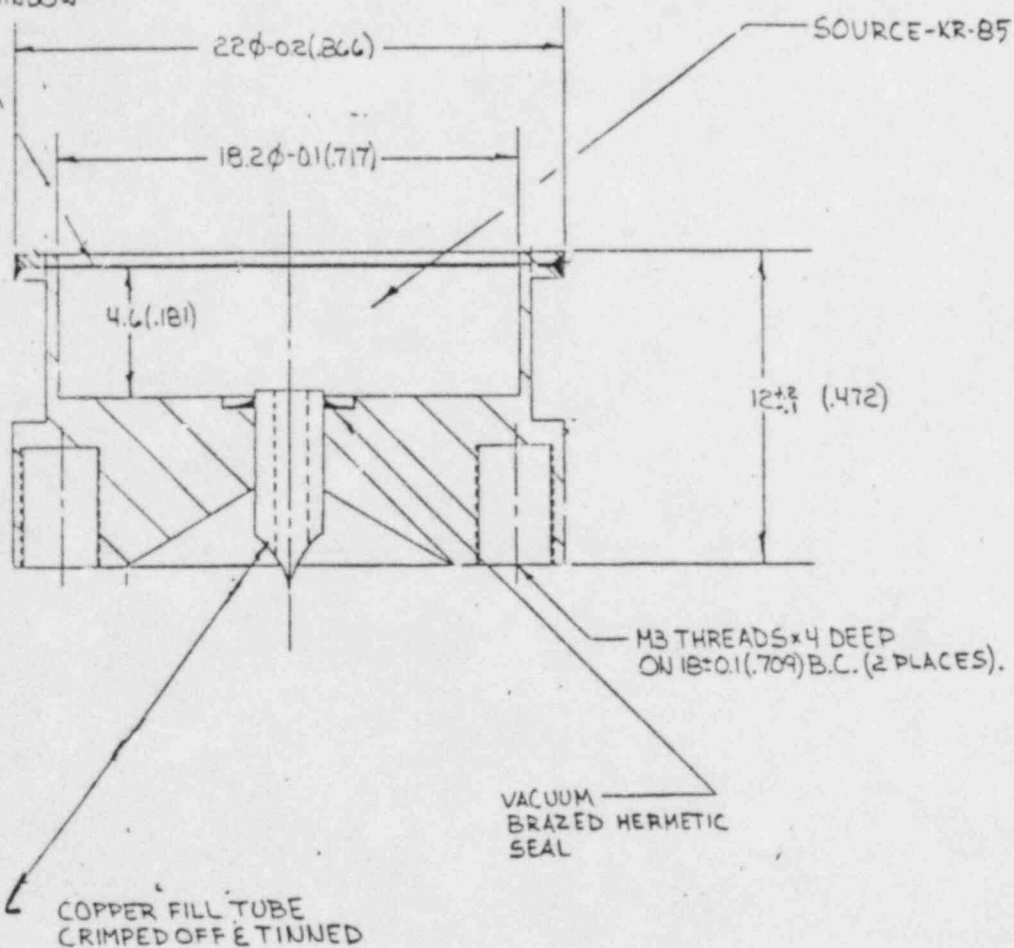
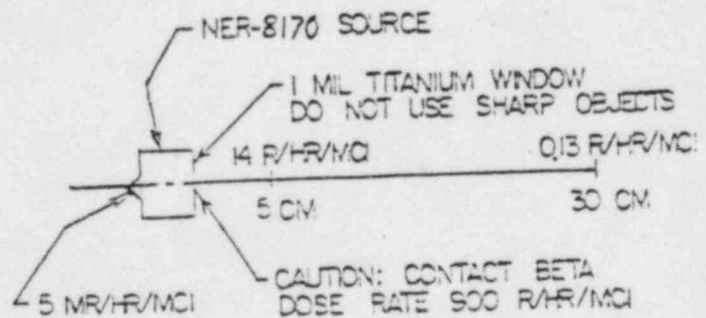
Date: OCT 25 1983

Concurrence: Joseph M. Brown, Jr.

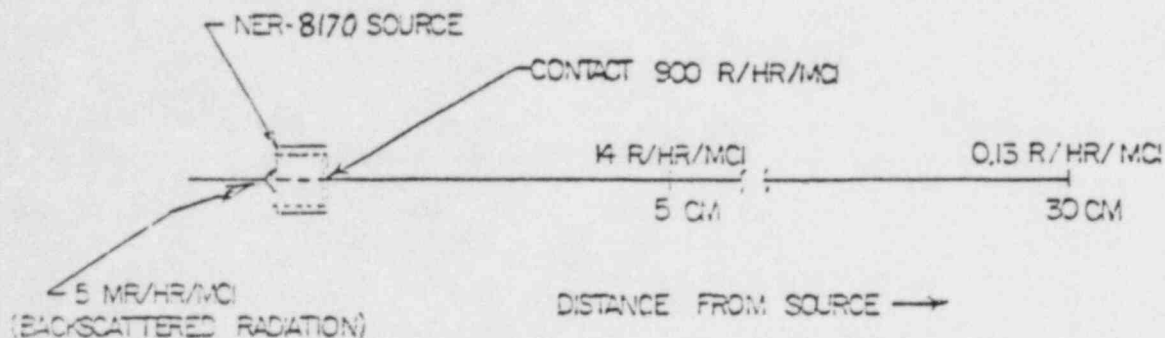
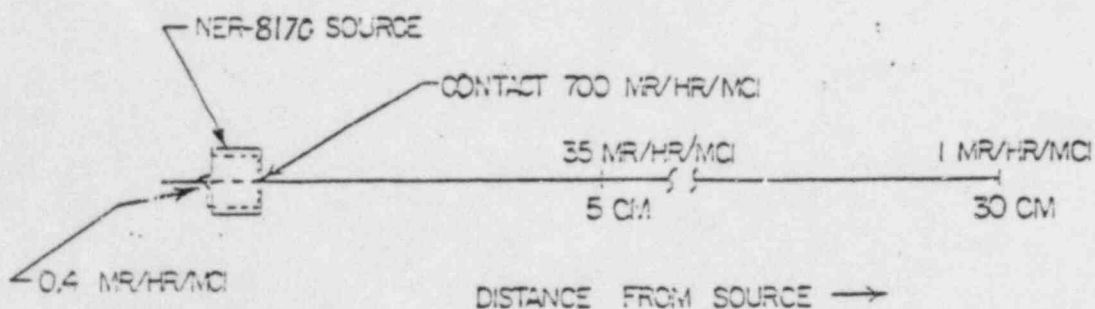
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NER-8170 KR-85 BETA GAUGING SOURCE

NOTE: ALL DIMENSIONS IN MM. (INCHES IN PARENTHESES).

ENGRAVE 'KR-85', 'mCi',
'KF-XXX', 'MO/YR', 1.6 (0.062) MIN. HGT.
X 0.13 (0.005) MAX. DEEP.025 (0.001) THICK
WINDOWSOURCE IN STORAGE/
SHIPPING CONTAINERSOURCE OUTSIDE STORAGE/
SHIPPING CONTAINER

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NER-8170 ^{85}Kr SOURCEDOSE RATE REPORTBETA RADIATION SURVEYGAMMA RADIATION SURVEYNOTES

1. Beta radiation dose rates are measured with a survey meter thru an aluminized mylar window which is less than 7 mg/cm^2 thick.
2. Gamma radiation dose rates are measured with a survey meter thru a plastic window which is 500 mg/cm^2 thick and filters all the beta radiation.
3. The survey meter is calibrated to $\pm 15\%$ and the test sources contain approximately 20 mCi Kr-85.