

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO: CA254D102G

DATE: June 17, 1983

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DEVICE TYPE: Electron Capture Cell

MODEL: 4015

MANUFACTURER/DISTRIBUTOR:

Delphi Instruments, Inc.
3030 Red Hat Lane
Whittier, California 90601

SEALED SOURCE MODEL DESIGNATION:

Safety Light Corp. Model 20203 or U.S. Radium LAB-508-3

ISOTOPE: Hydrogen-3

MAXIMUM ACTIVITY: 50 millicuries

LEAK TEST FREQUENCY: Not required

PRINCIPAL USE: Ion generators, chromatography

CUSTOM DEVICE: No

8403020232 840209
PDR FOIA
HAMMITT84-74 PDR

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DESCRIPTION:

The Model 4015 electron capture cell is a sealed (press fit) brass cylinder (.065 wall thickness) approximately one inch in diameter and two inches in length, with an inlet and outlet port. The foil source (titanium tritide) is mounted on the end of the electrode, which is insulated by a glass tube extending the length of the cell. The cell is incorporated into a Model D Ion Mobility Analyzer.

The foil is a Safety Light Corporation, Model 20203 (formerly U.S. Radium LAB-508-3), which is a copper foil plated with titanium tritide.

A temperature limiting circuit holds the temperature to 50 degrees centigrade during normal operation.

LABELING:

The device is labeled with the standard symbol and "Caution, Radioactive Material" (10 CFR 20.203) along with the appropriate instructions for repair, transfer, and disposal of generally licensed devices. The maximum temperature of 225 degrees centigrade is also specified on this label. The detector cell is similarly labeled and both labels are specified under California License No. 4144-70GL (generally in accordance with 10 CFR 32.51). Another label indicates the type and quantity of radioactive material.

DIAGRAM: See Figure 1 (page 3)

CONDITIONS OF NORMAL USE:

The Model 4015 is used as part of a Model D Ion Mobility Analyzer which is placed on-line (sealed to outside air) for continuous monitoring of nitrogen in argon gas (in ppm). The users are generally compressed gas manufacturers.

PROTOTYPE TESTING:

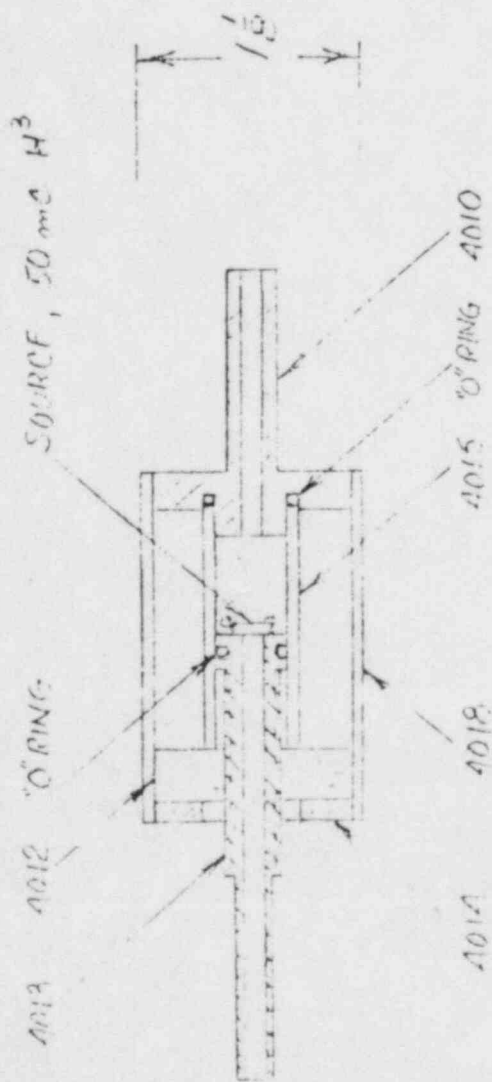
The device has been distributed under California and Texas general distribution licenses for fifteen years. The manufacturer states that there have been no reported failures other than source replacement as required.


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DEVICE TYPE: Electron Capture Cell



REV	DESCRIPTION	DATE	BY	DCS	ENGR.	PROD.	QA	T
 Delphi Instruments Division								
SCALE 1:1		DRAWN BY		CHECKED BY		APPROVED BY		
DATE 10 APR 83		DATE 29 APR 83		DATE 29 APR 83		DATE 29 APR 83		
TITLE: MODEL "D" CELL ASSEMBLY								
DRAWING NUMBER								

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EXTERNAL RADIATION LEVELS:

Due to the low energy emission of Hydrogen-3, no external radiation is expected.

QUALITY ASSURANCE AND CONTROL:

The units are inspected visually for adequate press fit, attachment of all labels, and performance tested for operation. The system must be vacuum tight to pass the final test (performance) prior to distribution.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

1. The Model 4015 will be distributed to generally licensed recipients.
2. Servicing and replacement of foils will be done only by the manufacturer or individuals specifically authorized by the NRC or Agreement States.

SAFETY ANALYSIS SUMMARY:

This device has a temperature limiting circuit which holds the temperature at 50 degrees centigrade. If the switch fails, the manufacturer states that the heaters (30 watt) have only enough power to heat the cell to 100 degrees centigrade. The heaters have to be on 80 percent of the time to maintain the 50 degree temperature. No exposure due to evolution of Hydrogen-3 is possible due to the on-line (sealed) installation and the lack of moisture (for hydrogen exchange) in the gases to be analyzed.

REFERENCES:

This certificate of registration is based on information and test data contained in the following supporting documents which are hereby incorporated by reference and made a part of this registry document:

1. Delphi Instruments, Inc. letter with attachments dated May 2, 1983.
2. Delphi Instruments, Inc. letter with attachments (quality assurance included) dated June 8, 1983.

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DEVICE TYPE: Electron Capture Cell

Date:

6/28/83

Reviewed by:

[Signature]

Date:

6/24/83

Concurred by:

[Signature]

Issuing Agency: California Department of Health Services