Sorry about that

HEWLETT-PACKARD

AVONDALE DIVISION • Route 41, Post Office Box 900, Avondale, Pennsylvania 19311-0900, Telephone 215-268-2281

Received 11/84

October 12, 1992

Director of Nuclear Materials & Safe Guards
US Nuclear Regulatory Comm.
Washington, DC 20555

Dear Sir:

The purpose of this letter is to inform your agency that the Hewlett-Packard Avondale Division is in the process of moving to a new site. This move should be completed by November 6, 1992. The new address will be:

Hewlett-Packard Company
Little Falls Site
2850 Centerville Road
Wilmington, DE 19808-1610

In conjunction with the move, there will be a change in Radiation Safety Officer from Paul A. Larson to Brian Donnelly.

Brian can be reached at (302) 633-8120 after October 19, 1992.

Sincerely,

Paul A. Larson

Paul A. Larson

PAL:cbm

c:\amipro\docs\plchg

JUPITER CORPORATION TECHNICAL REPORT

HEWLETT-PACKARD CORPORATION

See Jupiter's Draft SSD's for comments

GAS CHROMATOGRAPHY DETECTOR CELLS - VARIOUS MODELS

SUMMARY

By letter dated July 23, 1991, Hewlett-Packard Corporation requested that its registry of a number of devices be terminated. The Registry numbers and devices are as follows:

- NR-0348-D-101U, Model 2-6195, used in system Model 7620
- NR-0348-D-102U, Model 18803A, used in system Model 5800
- NR-0348-D-105U, Models 2-2830 and 2-2837, used in system Model 7620

All the material submitted by the applicant relative to these devices since the 1960's was reviewed, and it was determined that the information was sufficiently complete to terminate the registration certificates for these devices as requested by the applicant. Accordingly, termination Registries for all the devices above have been prepared. This package of cases has Assign #91-51.

In the case of the Model 18803A, the only information available consisted of a few old drawings of the device resubmitted with the applicant's letter dated August 31, 1993. Since these confirmed that the device was very similar to those in the other two registries, it was assumed that the description and data in the original registry was accurate, and the termination was processed on that basis.

DESCRIPTION

All the devices involve foil beta sources, either tritium or nickel-63, entirely enclosed and sealed in metal heat-sink structures which provide excellent shielding and containment. They do, however, have provisions for flowing sample gases to be analyzed through the volume in which the foils are located. The source containers are maintained at elevated temperatures to obtain the desired device operating conditions. Hence there is a recommendation that the tritium-loaded devices, Models 2-2830 and 2-2837, should be connected to laboratory hoods for proper venting of the very small quantities of tritium that will evaporate from the sources.

LABELING

All the devices included labels which were in conformance with Section 20.203 of 10 CFR Part 20.

How can you make this statement?

PROTOTYPE TESTING

All the devices have been manufactured and distributed by Hewlett-Packard under NRC specific licenses since the 1960's.

SAFETY ANALYSIS SUMMARY

what does this imply ?

These devices have been distributed since the 1960's without significant changes to their use or structural design. Therefore, it is concluded that the devices continue to be acceptable for licensing purposes. It is noted that in the case of the tritium source devices (Models 2-2830 and 2-2837) the foil life was estimated by Hewlett-Packard to be 1 or 2 years evidently because of source evaporation.

REFERENCES

The documentation contained in the files dating back to approximately 1960 was reviewed. In most cases, the documentation was complete and satisfactory. As noted above, in the case of Model 18803A, Registry #NR-0348-D-102U, the only correspondence provided was the applicant's letter of August 31, 1993, enclosing a few old drawings of the device. This was sufficient to determine its similarity to the other devices on which more complete information was provided, and it was concluded the termination could be processed on this basis.

Detailed lists of the available documentation for each device is included in the termination Registries.

In addition, requirements for safety reviews of such ion generator devices are contained in the following NRC regulations and regulatory Guides:

- Sections 32.26 and 32.210 of 10 CFR 32, Specific Domestic Licenses to Manufacture or Transfer Certain Items Containing Byproduct Material
- R.G. 10.10, Guide for the Preparation of Applications for Radiation Safety Evaluation and Registration of Devices Containing Byproduct Material

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: NR-0348-D-801U DATE: PAGE 1 OF 5

DEVICE TYPE: Gas Chromatography Detector Cell

MODEL: 2-6195

MANUFACTURER/DISTRIBUTOR: Hewlett-Packard
Little Falls Site
2850 Centerville Rd.
Wilmington, DE 19808

SEALED SOURCE MODEL DESIGNATION: U.S. Radium Corporation Model LAB-784 ~~foil~~ Nuclear Radiation Developments Model N-1002 foil

why was this removed?

ISOTOPE: MAXIMUM ACTIVITY:

Nickel-63 2 millicuries (74 MBq)

LEAK TEST FREQUENCY: Six months

PRINCIPAL USE: (N) Ion Generators, Chromatography

CUSTOM DEVICE: _____ YES ___X___ NO

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: NR-0348-D-101U DATE: PAGE 2 OF 5

DEVICE TYPE: Gas Chromatography Detector Cell

DESCRIPTION:

The nickel-63 foil is secured between the stainless steel cathode and the boron nitride electrode spacer within the outer stainless steel body. The outer stainless steel cell body has a minimum wall thickness of about 0.0625 inch (0.159 cm). The assembly is secured by a stainless steel retaining nut which threads into one end of the cell body. The outer dimensions of the cylindrical cell are approximately 1.0 inch in diameter and 1.38 inches in length (2.54 cm x 3.51 cm).

The cell assembly is placed in an aluminum heat-sink block and secured by four blind rivets. The rivets would have to be drilled out to remove the cell and gain access to the foil source. The cell heat-sink assembly is approximately 2.38 inches square and 1.25 inches high (6.05 cm x 6.05 cm x 3.18 cm). Insulation is wrapped around the assembly, which is then covered by a thin metal outer container measuring 6 x 3 x 2 inches (15.2 x 7.6 x 5.1 cm).

Each cell assembly is equipped with a temperature control that is not adjustable outside the cell heat-sink assembly. The control is factory-set for a temperature of 680°F (360°C). The heating circuit is also balanced with the heat load so as to allow a maximum sink temperature of 680°F (360°C).

LABELING:

The devices ~~are~~ labeled in conformance with Section 20.203 of 10 CFR 20. The labels contain the radiation symbol, isotope, activity, date of assay, model number, serial number, name of manufacturer, and the words "CAUTION-RADIOACTIVE MATERIAL."

The labels ~~are~~ made of 0.032 inch (0.081 cm) thick aluminum and are permanently attached to the devices with rivets.

DIAGRAM:

Attachments

Hewlett-Packard no longer manufactures, distributes, or reconditions these detectors. Approximately 2200 detectors were shipped during the product life.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: NR-0348-D-101U DATE: PAGE 3 OF 5

DEVICE TYPE: Gas Chromatography Detector Cell

CONDITIONS OF NORMAL USE:

The devices ~~are~~ used in gas chromatographs and will experience maximum temperatures of 680°F (360°C) due to their own internal heaters.

PROTOTYPE TESTING:

These devices have been manufactured and distributed ~~under an NRC~~ specific license by Hewlett-Packard since 1970. Any reported incidents?

EXTERNAL RADIATION LEVELS:

Radiation survey measurements indicated the dose rate at 0.5 inch (1.27 cm) from any surface of the device was less than 0.1 mr/hr (1 μSv/hr).

QUALITY ASSURANCE AND CONTROL:

The Hewlett-Packard Corporation maintains a quality assurance and control program which has been deemed acceptable for licensing purposes by NRC. A copy of the program is on file at NRC Headquarters.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- The device ~~has been distributed to~~ may be used by persons specifically licensed by the NRC or an Agreement State.
- Handling, storage, use, transfer, and disposal are to be determined by the licensing authority.
- The devices shall not be subject to temperatures exceeding 680°F (360°C).
- The device shall be leak tested at intervals not to exceed 6 months using techniques capable of detecting 0.005 μCi (185 Bq) of removable contamination.
- This registration sheet and the information contained within the references shall not be changed without the written consent of the NRC.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: NR-0348-D-101U DATE: PAGE 4 OF 5

DEVICE TYPE: Gas Chromatography Detector Cell

SAFETY ANALYSIS SUMMARY:

~~Since the effective date of this document, the Model 2-6195 devices are not current products manufactured by the Hewlett-Packard Corporation.~~ No longer manufactured, distributed, or recommended by Hewlett Packard Corporation.

This device has been distributed since 1970 without change to its use or structural design. Therefore, we conclude that the device continues to be acceptable for licensing purposes.

Has this been confirmed? What about incidents, failures etc.

Hewlett Packard has submitted sufficient information to provide reasonable assurance that:

- The device can be safely operated by persons not having training in radiological protection.
- Under ordinary conditions of handling, storage, and use of the device, the byproduct material contained in the device will not be released or inadvertently removed from the source housing. It is unlikely that any person will receive in any period of one calendar quarter a dose in excess of 10 percent of the limits specified in the table in Section 20.101(a) of 10 CFR Part 20.

Based on review of the Model 2-6195 Gas Chromatography Detector Cell, and the information and test data cited below, we continue to conclude that the device is acceptable for licensing purposes.

Furthermore, we continue to conclude that the device 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.

What test data?

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: NR-0348-D-101U DATE: PAGE 5 OF 5

DEVICE TYPE: Gas Chromatography Detector Cell

REFERENCES:

The following supporting documents for the Model 2-6195 are hereby incorporated by reference and are made a part of this registry document.

- Hewlett-Packard Corporation letters dated as follows with enclosures thereto:

  October 12, 1992 (advising of new company address)
  July 23, 1991 (requesting termination of registry)
  November 25, 1970, October 1, 1970, May 4, 1970,
  August 29, 1966, August 3, 1966, July 20, 1966

ISSUING AGENCY:

U.S. Nuclear Regulatory Commission

Date: _____ Reviewer: _____

Date: _____ Concurrence: _____

What about drawing of device?

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

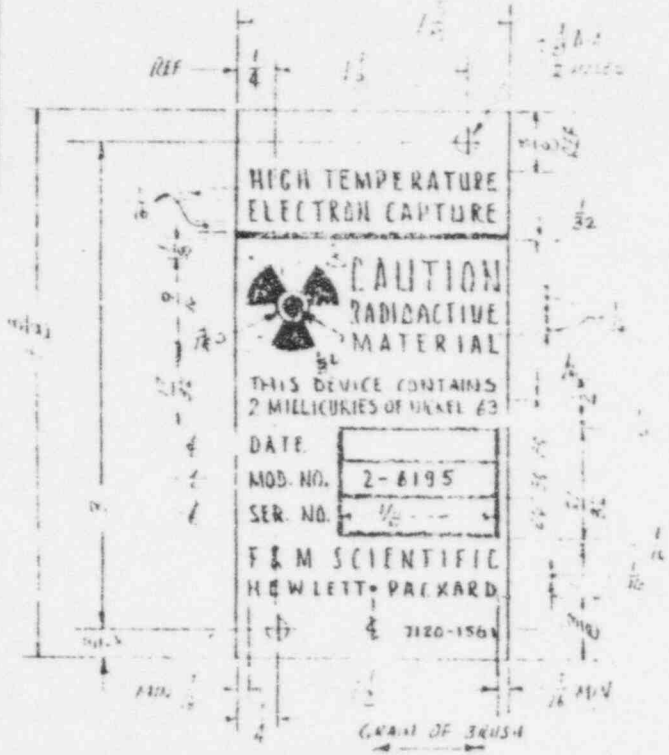
ATTACHMENT 1

NO.: NR-0348-D-101U DATE:

REVISIONS				
SYM	ECN	DATE	BY	CHK
B	5066	6-27-67	GA	
C				
D				
E				
F				
G				
H				
J				
K				

2691

A-7120-1581-1 B



NOTES 1. "CAUTION" 18 PT. ALT GOTHIC NO 2
"RADIOACTIVE MATERIAL", "F&M SCIENTIFIC" & HIGH TEMPERATURE ELECTRON CAPTURE" 12 PT. ALT GOTHIC NO. 2
PART NO. "7120-1581" 8 PT ALT GOTHIC NO. 2
ALL OTHERS 10 PT ALT GOTHIC NO 2.

2. NO. SOL LINES TO BE .020 APPROX WD.
3. MATL .032 GOLD ANODIZED ALUM PLATE WITH LEGEND IN MASKANTA. HORIZONTAL BRUSH FINISH
4. VENDOR TO FURNISH WITH STRIPPABLE PLAST PROTECTIVE COVERING.

Received With Letter Dated 11/25/70

NOV 24 1970

WAS- 1-6716

3-6606	5750
NEXT ASSY	MODEL
APPLICATION	

TOLERANCES UNLESS NOTED		
DIMENSION	LINEAR AND TURNED	HOLE C TO C
FRACTION	± 1/32	± 1/64
2 PLACE DEC	± .01	± .01
3 PLACE DEC	± .005	± .005
ANGLES ± 0° 30'	HOLES PER ES 2.9	
THREADS UNIFIED CL-2A-2B		CHAM ± 5°
BREAK CORNERS OR CHAM 1/64 MAX		

TITLE NAMEPLATE - HI TEMP E.C. DET

DWN S. R. NICHOLS

CHK [illegible] 7-20-66

ENG [illegible] 7-20-66

MFG S. Wagner 7-20-66

MAT'L SEE NOTE 3

SCALE 4/1

SH 1 OF 1

F-M
F&M SCIENTIFIC CORP.
AVONDALE, PA.

DWG NO. A-7120-1581-1 SYM B

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: NR348D101U DATE: December 29, 1970

DEVICE TYPE: Gas Chromatography Detector Cell

MODEL: 2-6195

MANUFACTURER/DISTRIBUTOR: Hewlett-Packard
Avondale Division
Route 41
Avondale, PA 19311

MANUFACTURER/DISTRIBUTOR:

SEALED SOURCE MODEL DESIGNATION: URRC Model LAB-784 foil
Nuclear Radiation Developments Model N-1002 foil

ISOTOPE: Nickel-63 MAXIMUM ACTIVITY: 2 millicuries

LEAK TEST FREQUENCY:

PRINCIPAL USE: Ion Generators, Chromatography

CUSTOM DEVICE: ___ YES _X_ NO

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: NR348D101U DATE: December 29, 1970

DEVICE TYPE: Gas Chromatography Detector Cell

DESCRIPTION:

The nickel-63 foil is secured between the stainless steel cathode and the boron nitride electrode spacer within the outer stainless steel body. The outer stainless steel cell body has a minimum wall thickness of about 1/16". The assembly is secured by a stainless steel retaining nut which threads into one end of the cell body. The outer dimensions of the cylindrical cell are approximately 1" in diameter and 1-3/8" in length.

The cell assembly is placed in an aluminum heat-sink block and secured by four blind rivets. The rivets would have to be drilled out to remove the cell and get to the foil. The cell heat-sink assembly is approximately 2-3/8" x 2-3/8" x 1-1/4". Insulation is wrapped around the assembly which is then covered by a thin metal outer container.

Each cell assembly is equipped with a temperature control that is not adjustable outside the cell heat-sink assembly. The control is factory set for a temperature of 360°C. The heating circuit is also balanced with the heat load so as to allow a maximum sink temperature of 360°C.

LABELING:

The cell heat-sink assembly is labeled as described in 20.203(f)(1) and (f)(4); and, in addition, the gas chromatography cabinet that houses the cell heat-sink assembly is labeled as described in 20.203(e)(1). The manufacturer has not requested an exemption from the color requirements of 20.203(a)(1).

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

Since the heater and temperature control units can be removed from the assembly, the license should be conditioned to prohibit operation above 360°C.

A manual is furnished covering cleaning of the nickel-63 foil within the cell, temperature limitations of the cell, and general handling precautions for the cell.

The Hewlett-Packard Company has informed the Atomic Energy Commission that it will use the Nuclear Radiation Developments N-1002 foil in place of the USRC LAB-784 foil specified on the September 14, 1966 catalogue sheet for the Model 2-6195 detector cell.

ISSUING AGENCY:

U.S. Atomic Energy Commission

DEVICE

MANUFACTURER & DISTRIBUTOR

Hewlett-Packard
Avondale Division
Avondale, Pennsylvania

The Hewlett-Packard Company has informed us that they will use the Nuclear Radiation Developments N-1002 foil in place of the USRC LAB-784 foil specified on the September 14, 1966 catalogue sheet for the Model 2-6195 detector cell.

All other information contained on the September 14, 1966 sheet remains the same.

December 29, 1970