



PENNRUN CORPORATION

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PITTSBURGH, PA 15208
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HOWARD E. RUNION
PRESIDENT

P2
MS16

August 24, 1987

Docket No. 030-30027
Control No. 107285

Mr. John E. Glenn, Ph.D.
United States Nuclear Regulatory
Commission
Region 1
631 Park Avenue
King of Prussia, PA 19406

Dear Mr. Glenn:

Mr. Donald L. Gibb, an instrumentation technician formerly with Gulf Research and now employed in the same capacity by the University of Pittsburgh Applied Research Center, will perform wipe tests and cleaning services on our Hewlett Packard ECD Gas Chromatograph. While working for that institution, Mr. Gibb performed these same tasks on this instrument when it was owned by Gulf Research. It was at that time that wipe samples were sent to the University of Pittsburgh Radiation Safety Office. As previously indicated, the HP kits and wipe samples will be used and sent to HP for analysis.

Sincerely,

Howard E. Runion CIH, CSP
President

HER:srs

Attachment

8801280653 870923
REG1 LIC30
37-28039-01 PDR

"OFFICIAL RECORD COPY"

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ML18

ROUTINE MAINTENANCE

The electron capture detector itself requires occasional cleaning in order to remain in normal operating condition. The frequency of cleaning is completely dependent on the type of samples being analyzed.

The major emphasis in routine maintenance should be that of prevention, reconditioning the molecular sieve traps, and thermal cleaning.

1. Reconditioning traps (every 2-3 cylinders)

Remove the external Molecular Sieve trap from the carrier line. Remove the two 6" steel traps attached to the flow controller module in the right side of the instrument.

Pour the contents of the traps into a wide flat bottom container, and heat in an air oven at 300 - 350°C for at least three hours and preferably overnight.

Reassemble the traps using the same glass wool that originally held the pellets in place.

2. Leaks in external plumbing (after cleaning traps)

Apply Snoop or comparable leak detection fluid to all external fittings, including those on the cylinder and regulator. A leak anywhere in these lines can produce loss of sensitivity and drift.

3. Detector cleaning (after reconditioning traps)

Raise the temperature of the detector to 300 - 350°C while maintaining normal oven temperature and carrier flow rate. Thermal cleaning for several hours, or overnight, is recommended.

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Before resorting to this method of disassembly and solvent bath, the thermal cleaning technique described under routine maintenance should have previously been attempted.

SOLVENT
CLEANING
FOR CELL

NOTE: The disassembly and solvent cleaning procedure listed below must be performed by holders of NRC or appropriate state licenses to handle radioactive materials.

- set front panel POWER MODE switch to STANDBY
- set rear panel LINE ON/OFF switch to OFF
- disconnect the power cord from the power source
- shut off all gases at the cylinders or sources
- allow the detector to cool then remove columns
- remove the detector cover assembly by lifting the hinged part of the assembly and removing the screws which attach the front flange to the mainframe of the instrument, followed by easing the whole assembly forward and upward to release the rear flange.
- remove the three screws and lift top cover plate exposing detector assembly.
- disconnect anode lead and Tygon® tubing from detector assembly
- remove the four screws holding detector assembly in place, and lift out assembly
- remove retaining ring and push anode lead with insulator inside enclosure
- remove two screws (one on each side) of enclosure and lift off upper enclosure
- carefully remove the upper pieces of insulation exposing the upper block assembly

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WARNING

The lower block of this sub-assembly contains a 15 mCi plating of Ni^{63} . Once exposed, do not handle this block with bare hands, especially the flange or internal cavity. Wear gloves and/or handle the block with tweezers, grasping a mounting hole.

- remove the two screws on each side of the lower enclosure and lift center plate with the block assembly from the lower enclosure
- remove the sensors and heaters from the block. Also any remaining insulation
- remove the three hex head screws holding the upper and lower blocks together
- pry the two halves apart, using a small screwdriver inserted in the slot provided in the retainer plate
- dispose of both the retainer plate and the metal O-ring in accordance with NRC regulations
- soak upper and lower block assemblies in a 250 ml beaker of 100 ml of pure acetone, then benzene, then hexane, then methanol

CAUTION

Use only the cleaning liquids listed and for not longer than 10 to 15 minutes each.

While gentle stirring is acceptable, care must be taken NOT to scratch nor abrade the interiors of the assemblies.

Do not use ultra-sonic cleaning.

- after cleaning, let the assemblies air dry.

WARNING

Dispose of the cleaning solvents in accordance with NRC regulations since they contain a trace of radioactive material.

- after the block assemblies are completely dry, using a new metal O-ring and retainer plate, reassemble the upper and lower blocks. Tighten the hex head screws until both blocks are flush with the retainer plate.
- reassemble the detector by reversing the disassembly procedure previously stated.

NOTE: Special attention should be given to the physical location of the sensors (illustrated in the replacement parts section). If reversed, the overheat protection circuit may be activated at a temperature lower than $370^{\circ} \pm 10^{\circ} \text{C}$. The zone temperature will not be controlled accurately.

WARNING

Ultrasonic cleaning must not be used, due to the possibility that hazardous amounts of radioactive material may be removed.

- if this cleaning does not satisfy your requirements, the detector can be returned to Hewlett-Packard for repair or overhaul.

RETURN OF
DETECTOR
TO
HEWLETT-
PACKARD

An electron capture detector (ECD) that is returned to Hewlett-Packard for any reason should include the entire EC detector assembly with the cable assembly. It must be accompanied by properly filled out RADIOACTIVE DETECTOR REPAIR RETURN CARD (HP No. 5959-8210). The card must include all data and be signed by the Radiation Safety Officer.

NOTE: Electron capture detector assemblies are identified by a special consecutive number stamped on the detector assembly name plate. This number is required to facilitate their location in compliance with U.S. Nuclear Regulatory Commission regulations.

In the United States, return the completed card with the properly packaged detector to:

HEWLETT-PACKARD COMPANY
AVONDALE DIVISION
ROUTE 41
AVONDALE, PENNSYLVANIA 19311

ATT: ELECTRON CAPTURE DETECTOR REPAIR FACILITY

Proper packaging, shipping, and labeling must comply with appropriate local, federal, and international laws and regulations. Consult your radiation safety officer or equivalent about local regulations.

WARNING

Read Manual Section on Solvent Cleaning for Cells (Electron Capture Detector) and add the following:

Solvents used to clean electron capture detectors will contain a trace of radioactive materials (Ni^{63}). These solvents shall be disposed in accordance with NRC regulations:

CFR Title 10, Part 20

Para. 20.301

(a) "By transfer to an authorized recipient"

OR

Para. 20.303

(a) and (b-2), (c), and (d) "Disposal by release into sanitary sewerage systems."

At the present time these regulations allow a maximum discharge of $100\mu\text{ Ci Ni}^{63}/\text{day}$ (into sanitary sewers) provided the quantity of Ni^{63} released in any one month, if diluted by the average monthly quantity of water (sewerage released by the licensee [user]), will not result in an average concentration exceeding $8 \times 10^{-4} \mu\text{ Ci Ni}^{63}/\text{ml}$, and the gross quantity not to exceed one curie per year. If there is discharge of other radioactive materials at your facility, these quantities should be revised in accordance with the CFR reference above. (NOTE: In as much as these regulations are periodically revised, the latest revision of the CFR, and any revisions in the Federal Register, should be reviewed by your radiation safety officer prior to disposal of radioactive wastes).

Assuming a removal of no more than $100 \mu\text{ Ci Ni}^{63}$ per detector wash per day, the regulations would require a sewerage discharge of 33 gallons of water/month/detector washing/licensee; subject to the qualifications above.

Disposal of the retainer plate and the metal O-ring (page 7-14) shall be in accordance with CFR Title 10, Part 20, para 20.301 (a) "By transfer to an authorized recipient"; or para. 20.304 " by burial in soil."

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RECEIVED-RECORDS
1987 AUG 31 PM 3:03

CONVERSATION RECORD

TIME
2:27am.

DATE
7-29-87

TYPE

☐ VISIT

☐ CONFERENCE

☒ TELEPHONE

☐ INCOMING

☒ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT
WITH YOU

Howard E. Runion, CIH, CSP

ORGANIZATION (Office, dept., bureau,
etc.)

Pennrun Corp.
Pittsburgh, PA

TELEPHONE NO.

(412)
826-5300

SUBJECT

030-30027 & 107285

ROUTING

NAME/SYMBOL INT

SUMMARY

Whose procedures do you intend to follow for cleaning
the detectors cells and for replacements of the Ni-63 foils?

Reply: Will follow Hewlett-Packard's procedures.

I suggested he mail a letter to us, ASAP, with
the above information.

- Called back on 8/19/87 (8:46am) -

Informed that we did not receive the information requested
above. Mr. Runion needs to submit this information in
another letter.

ACTION REQUIRED

MS-15

NAME OF PERSON DOCUMENTING CONVERSATION

M.A. Varela

SIGNATURE

M.A. Varela

DATE

7/29/87

ACTION TAKEN

"OFFICIAL RECORD COPY"

ML10

SIGNATURE

TITLE

DATE