

Pyrotronics

8 Ridgedale Avenue, Cedar Knolls, New Jersey 07927
(201) 267-1300 FAX (201) 397-7008 RCA Telex 219343 Pyro UR

July 28, 1989.

United States Nuclear Regulatory Commission,
Division of Radiation Safety & Safeguards,
Region 1,
475 Allendale Road,
King of Prussia, PA 19406.

Attention: Mr. Malcolm R. Knapp, Director.

Ref: License Nos. 029-08864-03 Docket Nos. 030-05354.
 029-08864-04E 030-05355.

Gentlemen:

The following is a status report on and suggested revised schedule for the above referenced investigation. This response is based on the contents of your letter dated June 5, 1989 and subsequent telephone discussions with members of your staff on June 30, 1989, July 7, 1989 and July 24, 1989, respectively.

ITEM #1. (USNRC LETTER dd 6/05/89)

A. The manufacturers and model numbers for the sources used in the High Voltage (HV) Americium-241 (Am-241) type detectors were as follows:

U. S. Radium Corp.	Lab-204-1A
The Radiochemical Center Ltd./ Amersham.	AMM & AMM-1001
EAD Metallurgical Inc.	AMX-1100
Nuclear Radiation Development Inc.	A-1001

A drawing with specifications of the foils is attached.

The above foils were and are still installed in the following Models:

Model	Maximum uCi	Comments
F3.5A	80	
DIS-3/5A	80	Dsgn. & Op. same as F3.5A
F5B	80	
F5BD	80	Dsgn. & Op. same as F5B.
DIS-5B	80	" " " "
DIS-5BD	80	" " " "
F50	80	" " " "

RECEIVED - ROOM 1
AUG - 29 1989

8910190020 890908
REG1 LIC30
29-08864-03 PDC

ITEM #1B (cont'd)

B.1 The detectors listed in A above are no longer in current production, by Cerberus AG, (Switzerland) for all models except F50 and by Thorn EMI Minerva (UK) for the F50. When the detectors were in production, the foil material was shipped to the manufacturers in approximately 1 meter length strips. These were then cut to the required length for each of the detectors and were ultrasonically cleaned to remove any Am-241 particulate freed during the cutting process. See attachments 1 & 3 for the cutting directions. Further information on the cleaning process is being translated in Switzerland for later submission to Pyrotronics.

Thorn EMI Minerva made the F50 detector under license from Cerberus AG when the latter had ceased production of the other models.. New production of the F50 was finished in 1983.

Although Pyrotronics distributed and continues to distribute the above detectors(refurbished), none of them were assembled nor manufactured at or by Pyrotronics.

B.2 Detectors(HV) being distributed are those that have been refurbished by Cerberus AG or Thorn EMI Minerva. Refurbishing as reported by Cerberus, consists of a full disassembly, inspection, cleaning (ultrasonic for the parts containing the foils), re assembly and wipe test of the detectors returned from the field. All assemblies that do not meet the design and/or performance specifications are rejected and set aside for approved disposal. Additional information is being translated at Cerberus AG for latter transmittal to Pyrotronics.

C. A request for amendment to our licenses referenced above will be made as follows:

1. Amend License 029-08864-03 (Possession and Use) based on the review and response to this letter by your staff, as per the H. Lee/J. Kinnelman telephone Conversation on 7/18/89.
2. Amend License No. 029-08864-04E (Distribution) to include a 5th series "Series 5" Max. Activity "100 uCi".. This would cover the distribution of those detectors not presently covered.

ITEM #2. (USNRC LETTER dd 6/05/89)

A. All branch locations were contacted by telephone and letter to verify that the HV detectors were being cleaned in accordance with Service Bulletin #30. The leak testing of the detectors is in progress and will be completed by August 31, 1989. The wipe tests have been evaluated, on a Nuclear Chicago Scintillation Detector, with the following results.

Pyrotronics Limit = 31 CPM (.0001uCi)
NRC Limit = 1550 CPM (.005uCi)

F3.5A Type Inventory.

Total number of detectors wipe tested as of 7/28/89
Maximum contamination reading CPM

500
50

ITEM #2A (cont'd)

No. of detectors exceeding Pyrotronics 31 CPM(.0001uCi)	2
No. of detectors exceeding NRC 1550 CPM(.005uCi) limit	0
Detectors still to be wipe tested	576

F5B Type Inventory.

Total number of detectors wipe tested as of 7/28/89	500
Maximum contamination reading CPM	13,351
No. of detectors exceeding Pyrotronics 31 CPM(.0001uCi) limit	215
No. of detectors exceeding NRC 1550 CPM(.005uCi) limit*	4
Detectors still to be wipe tested	346

*The individual CPM readings for the 4 detectors were:

Unit 1	13,351
Unit 2	5,555
Unit 3	4,611
Unit 4	1,996

Some detectors exceeding Pyrotronics/ NRC limit were cleaned as per Bulletin #30 and re measured, with the following results.

No. of detectors cleaned	12
No. of detectors within 31 CPM limit	6
No. of detectors still in excess of 31 CPM limit	6
No. of detectors still in excess of 1550 CPM limit	0

*Individual CPM readings of the 4 in excess of the 1550 CPM limit after cleaning were:

Unit 1	176
Unit 2	60
Unit 3	25
Unit 4	120

All detectors in excess of .0001uCi removable contamination levels are on hold at their respective locations.

CORRECTIVE ACTION

The units with leakage in excess of a .0001uCi removable contamination level will be cleaned and re tested. Those that continue to have readings that exceed this limit will be returned to the factory for proper (approved) disposal.

ITEM #3 (USNRC LETTER dd 6/05/89)

A. This evaluation is continuing. Some of the required data has to be translated by Cerberus AG, Switzerland. They have indicated, that they will have this information available by September 1, 1989. Preliminary data indicate the following:

ITEM #3 (cont'd)

1. The foil construction is well protected against the corrosive influence of salty ocean air. However, corrosion is aided in environments containing SO₂, H₂S or SO₃ and may lead to the crystallization of Am-241 material.
2. Regular cleaning by Cerberus AG, Switzerland, done each 2 years on detectors in the field results in a 98% of the units with post cleaning levels less than or equal to .001 uCi. The remaining units have levels less than or equal to .005 uCi. These percentages are based on a batch basis.
3. Infrequent and/or improper cleaning may result in higher leakages in environments listed in C1 above.
4. Total number of HV detectors of the F3.5A and F5B type estimated as being distributed between 1970 and 1983 is 940,000. Some of the original installations have replaced the HV units with Low Voltage (Lower Activity) detectors.

ITEM #4 (USNRC LETTER dd 6/05/89)

- A. The Pyrotronics/Cerberus Norcross, GA facility has been decontaminated. Urine analyses performed on the two individuals who were involved in the cleaning of the NASA/KSC detectors. The results were negative for alpha radiation contamination. See attachments 5, 6 & 7.

ITEM #5 (USNRC LETTER dd 6/05/89)

- A. No other detectors were cleaned during the time frame as those from NASA/KSC.

SUGGESTED RE SCHEDULE:

- A. An extension of the submittal date from August 7, 1989 to August 31, 1989 for the following item:
 1. Submission of completed wipe test data on remaining 922 HV detectors.
- B. An extension of the submittal date from August 7, 1989 to September 30, 1989 for the following items:
 1. Additional and specific information on the cleaning of the foils during original production of the detectors.
 2. Additional and specific information on the refurbishing of the detectors returned from the field.
 3. Completed evaluation of the long term effects of aging, the environment and cleaning of the detectors.

PROPOSED ACTIONS UNDER CONSIDERATION

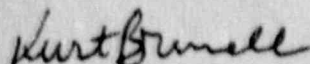
Actions being considered include but are not limited to:

1. Expand the data base for the wipe tests of the HV Am-241 units by conducting a similar exercise at two major installations which are presently protected by these units.
2. Require that cleaning be performed at regular intervals regardless of the electrical and smoke sensitivity of the units.
3. Restrict the cleaning to certain field locations only.
4. Restrict the cleaning to the factory only.
5. Encourage end users to replace HV systems with those utilizing Low Voltage detectors.

Pyrotronics will continue to cooperate fully with this investigation until all actions required are identified and completed to the satisfaction the parties involved.

Thank you.

Sincerely,



Kurt Brunell.
President.

cc: D. Hislip CTI
 F. Datwyler Cerberus AG
 R. Byrnes
 E. Ingrassia
 R. Salamone
 h. Corson
 W. Olson
 H. Lee