

I-GANE-6



Georgia Institute of Technology

DOCKETED
USNRC

NEELY NUCLEAR RESEARCH CENTER
900 ATLANTIC DRIVE
ATLANTA, GEORGIA 30332-0425

'96 JUL 10 A10:18
(404)894-3600

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH
July 24, 1990

MEMORANDUM

To: R.A. Karam
From: B. Copcutt *B Copcutt*
Subject: Replacement of moving air particulate monitor detector

Yesterday the moving air particulate monitor (MAP-1) detector was replaced due to increased background pulses being generated by the system. Yesterday morning, operators noticed that the MAP background was approximately 6 cps instead of the usual 1 cps. Checks were made of the filter bank monitor and kanne chamber and both showed normal background levels. The MAP filter paper was hand monitored with a portable instrument and also showed no detectable activity levels. A check of system electronics revealed that spurious pulses were being generated by the detector/preamp assembly.

The detector was replaced with another thin end window type GM tube. Exact specifications for the old detector were not available. The old detector was manufactured by Nuclear Chicago, a company that has long been out of business. The new tube, a Ludlum Model 44-7 (see attached brochure) has identical end window dimensions and otherwise appears comparable to the old. The protective wire screen was removed before the tube was installed in the MAP1 system. A full annual calibration was carried out on the replacement detector and it was observed that the new system has an increased efficiency compared to the old (approximately 70% greater response for Ra-226 and 50% greater for Co-60).

cc: B.K. Revsin

9607180237 960520
PDR ADUCK 05000160
G PDR

NUCLEAR REGULATORY COMMISSION

Docket No. 50-160-REN EXHIBIT NO. 6
In the matter of Bo Job
 Staff Applicant Intervenor Other
 Identified Received Rejected Reporter W CW
Date 5/20/96 Witness BC

7/24/90
AR

Minor Change Number: By: Date: / /	NEELY NUCLEAR RESEARCH CENTER	Procedure 4200 Revision 00 Approved 04/28/88 Page 3 of 4
	<u>CHANGES IN GTRR DESIGN</u>	

APPENDIX A

10 CFR 50.59 SAFETY EVALUATION QUESTIONNAIRE

FACILITY MODIFICATION NO: N/A

TITLE: G.M. TUBE REPLACEMENT ON MAP1

1. Will the probability of the occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report be increased? [yes/no] NO
2. Will the possibility for an accident or malfunction of a different type than evaluated previously in the safety analysis report be created? [yes/no] NO
3. Will the margin of safety as defined in the basis for any technical specification be reduced? [yes/no] NO
4. Is the proposed change an unreviewed safety question? [yes/no] NO

NOTE: If additional space is needed to justify conclusion(s) please attach extra sheet(s).

Note: for further information see memo from B. Capent
to R.A. Karam on this subject (dated 7/24/90). BC

PREPARED BY: B. Capent DATE: 7/24/90

APPROVALS:

Director NNRC: R.A. Karam 7/24/90

Nuclear Safeguards Committee: _____

Ludlum BETA-GAMMA DETECTORS



**MODEL 44-6
THIN WALL GEIGER-MUELLER PROBE**

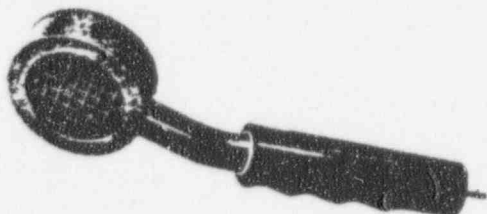
The Detector holder features a rotary beta shield with 1,000 mg/cm² stainless steel wall thickness.
 OPERATING POINT: 900 volts.
 DIMENSIONS: 1-3/16" diameter by 6 1/2" long.
 WEIGHT: 12 ozs.
 WALL THICKNESS: 30 mg/cm² stainless steel.
 EFFICIENCY FOR RADIUM 226: 1,700 counts per min. per MR/Hr.
 QUENCH: Halogen.



**MODEL 44-7
END WINDOW GEIGER-MUELLER PROBE**

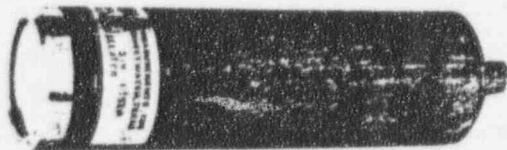
WINDOW: 1.4 to 2.0 mg/cm² mica.
 WINDOW DIAMETER: 1-3/32" diameter.
 WALL: 0.046 inches stainless steel, plus 0.062 aluminum holder.
 MOUNTING: Aluminum holder.
 DIMENSIONS: 1 1/2" diameter by 5 1/2" long.
 WEIGHT: 10 oz.

Replaceable GM tube
 Removable protective wire screen.



**MODEL 44-9
PANCAKE GEIGER-MUELLER PROBE**

WINDOW: 1.5 to 2 mg/cm² mica
 WINDOW DIAMETER: 1.75"
 MOUNTING: Aluminum holder, handle and window protector.
 DIMENSIONS: 2 3/4" wide, 11" long 1.050" dia. Handle.
 WEIGHT: 12 oz.



**MODEL 44-1
BETA SCINTILLATOR**

The beta scintillator is similar in performance to a 1.5 mg/cm² end window G. M. detector with the added advantage of lower gamma background and the ability to utilize discrimination. Carbon 14 detection is possible with reasonable gamma rejection.
 DETECTIVE: NE/102 plastic crystal, 0.01 thick. (thinner crystals on request)
 WINDOW: 1 mg/cm² aluminized mylar.
 EFFICIENCY: Function of discrimination setting.
 DIMENSIONS: 6 1/2" long by 2" diameter.
 WEIGHT: 12 oz.

LUDLUM MEASUREMENTS, INC.

501 Oak Street • Sweetwater, Texas 79556 • Telephone (915) 235-5494

CCPY
CALIBRATION DATA SHEET

MANUFACTURER/MODEL NUMBER: MAP-1

SERIAL NUMBER: N/A

LAST CALIBRATION DATE: 1-4-90 NEXT CALIBRATION DATE: 7-27-91

PULSER SERIAL NUMBER: 1) 0022767
2) 2714815245 VOLTMETER SERIAL NUMBER: N/A

BATTERY/BATTERIES REPLACED: N/A CHECKED: N/A

ZERO CHECK: OK GEOTROPISM CHECK: N/A

HIGH VOLTAGE: 900 volts

cps

RANGE	AS FOUND	AS LEFT	LIMITS
3.3	3.3	3.3	2.97 - 3.63
6.7	6.7	6.7	6.03 - 7.37
33	33	33	29.7 - 36.3
67	67	67	60.3 - 73.7
333	333	333	299.7 - 363
667	667	667	600.3 - 733.7
3334	3334	3334	3000.6 - 3667.4
6667	6667	6667	6000.3 - 7333.7
13333	13333	13333	11999.7 - 14666.3
26667	26667	26667	24000.3 - 29333.7

Readings must be $\pm 10\%$ of pulser.

Pass Fail

SOURCES USED: N/A ACTIVITY: N/A ASSAY DATE: N/A

SOURCES USED: N/A ACTIVITY: N/A ASSAY DATE: N/A

CALIBRATED BY: R. Row DATE: 7-27-90

CALIBRATED BY: _____ DATE: _____

COPY

PLATEAU DATA FORM

DATE 7-23-90 NEXT CAL. DUE 7-23-91

BETA SOURCE NO. 121-125-00 ALPHA SOURCE NO. N/A

(Give nuclide and source number)

GAMMA

BETA PLATEAU <small>GAMMA</small>		ALPHA PLATEAU	
VOLTAGE	COUNT (cpm) <small>cpm 7-23-90</small>	VOLTAGE	COUNT (cpm)
900	90		
950	98		
975	99		
900	91		
925	90		
950	90		
1000	98		

As Left Beta HV 900V₁₊₅ As Left Alpha HV N/A
 Performed By R. Barger Date 7-23-90
 Reviewed By B. C. [Signature] Date 7-24-90

Note. additional source check performed with Intl: Ra-22 (id: 171-020-00) ... reading of 160 cps obtained with source on normal spot for monthly check. B.C. [Signature]

COPY

cps

900 850 875 900 925 950 1000
Volts

