

## FACSIMILE TRANSMISSION HEADER

FROM

ALUMINUM COMPANY OF AMERICA

CLEVELAND WORKS

WORKS ENGINEERING DEPT.

FAX. NO. (216) 641-5333 or ACT 243-5333

TO Ken Lambert  
LOCATION NRC  
DATE 10/19/92  
NO. OF PAGES (INCLUDING COVER PAGE) 34  
SENDER'S NAME Dan Ryan  
SENDER'S PHONE 216-641-4290

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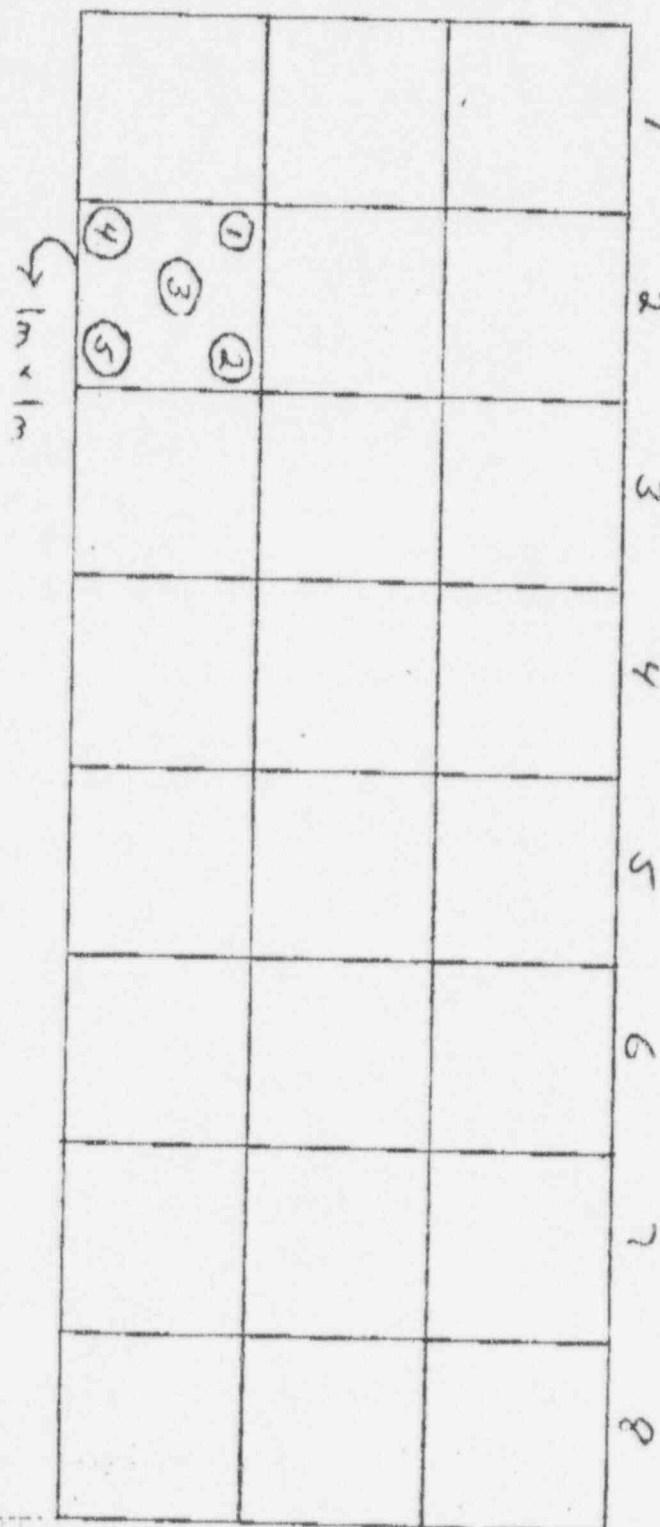
INTEGRATED ENVIRONMENTAL SERVICES  
A DIVISION OF NESBY \_\_\_\_\_ DATE \_\_\_\_\_ PROJ \_\_\_\_\_ TASK \_\_\_\_\_  
CHKD. \_\_\_\_\_ DATE \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_

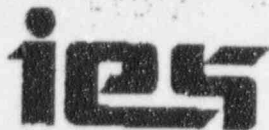
ALCOA Bldg 25 - Mezzanine Floor (EAST SECTION)

REF

← N

D W N



INTEGRATED ENVIRONMENTAL SERVICES  
A DIVISION OF TRESBY \_\_\_\_\_ DATE \_\_\_\_\_ PROJ \_\_\_\_\_ TASK \_\_\_\_\_  
CHKD \_\_\_\_\_ DATE \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_

ALCOA Bldg 25 - Mezzanine Floor (center section)

← N

D W N

← 1 in 3

			9
4	1		10
5	2		11
			12
			13
			14
			15
			16

INTEGRATED ENVIRONMENTAL SERVICES  
A DIVISION OF nesBY \_\_\_\_\_ DATE \_\_\_\_\_ PROJ. \_\_\_\_\_ TASK \_\_\_\_\_  
CHKD. \_\_\_\_\_ DATE \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_

ALCOA Bldg 25 - Mezzanine Floor (West Section)

REF

← N

D W N

3  
1  
2  
3  
4

			17
4	1		18
5	3	2	19
			20
			21
			22
			23
			24



## AVERAGE CONTAMINATION SURVEY RESULTS

DPH/100cm Beta/gamma

DATE: 10-17-92LOCATION: ALCOR B2S-Mezz-FloorINSTRUMENT: L-2221  
Model94981  
NumberPROBE: 44-9  
Model090479  
NumberGRID NUMBER A-1

1. 168  
2. 224  
3. 336  
4. 224  
5. 112  
 $\bar{x}$  213

GRID NUMBER A-2

1. 56  
2. 168  
3. 168  
4. 224  
5. 280  
 $\bar{x}$  174

GRID NUMBER A-3

1. 168  
2. 560  
3. 952  
4. 168  
5. 224  
 $\bar{x}$  414

GRID NUMBER A-4

1. 56  
2. 112  
3. 56  
4. 336  
5. 168  
 $\bar{x}$  146

GRID NUMBER A-5

1. 168  
2. 112  
3. 56  
4. 616  
5. 112  
 $\bar{x}$  213

GRID NUMBER A-6

1. 56  
2. 112  
3. 112  
4. 168  
5. 224  
 $\bar{x}$  134

GRID NUMBER A-7

1. 112  
2. 336  
3. 280  
4. 168  
5. 112  
 $\bar{x}$  202

GRID NUMBER A-8

1. 784  
2. 560  
3. 168  
4. 280  
5. 616  
 $\bar{x}$  482

GRID NUMBER A-9

1. 168  
2. 728  
3. 448  
4. 952  
5. 336  
 $\bar{x}$  526

GRID NUMBER A-10

1. 280  
2. 168  
3. 280  
4. 22448  
5. 616  
 $\bar{x}$  358

GRID NUMBER A-11

1. 868  
2. 784  
3. 336  
4. 168  
5. 728  
 $\bar{x}$  577

GRID NUMBER A-12

1. 224  
2. 336  
3. 616  
4. 1120  
5. 336  
 $\bar{x}$  526

Average Background counts per 30 sec. 28

NOTE: Results recorded  
in DPM/100cm<sup>2</sup> using the  
formula:

(gross counts per 30 sec - background per 30 sec) X 2

eff X 15 cm<sup>2</sup> / 100 cm<sup>2</sup>

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SURVEYOR W. N. Smith

SUPERVISOR \_\_\_\_\_

## AVERAGE CONTAMINATION SURVEY RESULTS

DPM/100cm Beta/gamma

DATE: 10-17-92LOCATION: Alcoa B25 Mezz FloorINSTRUMENT: L-2221  
Model94981  
NumberPROBE: 44-9  
Model050479  
NumberGRID NUMBER A-131. 5602. 3363. 9524. 5605. 448 $\bar{x}$  571GRID NUMBER A-141. 1682. 3363. 2804. 1685. 112 $\bar{x}$  213GRID NUMBER A-151. 1122. 2803. 564. 3925. 280 $\bar{x}$  224GRID NUMBER A-161. 3362. 2243. <sup>B<sub>N</sub></sup> 8 1124. 1125. 168 $\bar{x}$  190GRID NUMBER A-171. 2242. 1123. 2244. 1685. 336 $\bar{x}$  213GRID NUMBER A-181. 1122. 3363. 2244. 1685. 336 $\bar{x}$  235GRID NUMBER A-191. 1682. 2803. 564. 2245. 112 $\bar{x}$  168GRID NUMBER A-201. 2242. 1123. 1684. 3365. 448 $\bar{x}$  258GRID NUMBER A-211. 3922. 4483. 1124. 3365. 56 $\bar{x}$  269GRID NUMBER A-221. 1122. 3363. 1684. 565. 672 $\bar{x}$  269GRID NUMBER A-231. 1682. 2803. 1124. 7745. 392 $\bar{x}$  235GRID NUMBER A-241. 3362. 2803. 3924. 1125. 1120 $\bar{x}$  448Average Background counts per 30 sec. 28NOTE: Results recorded  
in DPM/100cm<sup>2</sup> using the  
formula:

(gross counts per 30 sec - background per 30 sec) X 2

eff X 15 cm<sup>2</sup>/100 cm<sup>2</sup>SURVEYOR W. Naudt

SUPERVISOR \_\_\_\_\_

## AVERAGE CONTAMINATION SURVEY RESULTS

DPM/100cm Beta/gamma

DATE: 10-17-92LOCATION: ALCOA B25-Mezz FloorINSTRUMENT: L-2221  
Model94981  
NumberPROBE: 44-2  
Model090472  
NumberGRID NUMBER B-11. 2242. 1123. 2244. 2805. 168 $\bar{x}$  202GRID NUMBER B-21. 1122. 2243. 1124. 2805. 112 $\bar{x}$  168GRID NUMBER B-31. 1682. 2243. 2804. 2805. 112 $\bar{x}$  213GRID NUMBER B-41. 2802. 2803. 2244. 1685. 336 $\bar{x}$  258GRID NUMBER B-51. 2242. 1123. 1124. 1685. 280 $\bar{x}$  179GRID NUMBER B-61. 1122. 3363. 7284. 1685. 224 $\bar{x}$  314GRID NUMBER B-71. 1682. 6723. 3924. 3365. 280 $\bar{x}$  370GRID NUMBER B-81. 11762. 4483. 5044. 10645. 784 $\bar{x}$  795GRID NUMBER B-91. 7842. 17923. 4484. 21285. 2016 $\bar{x}$  1434GRID NUMBER B-101. 4482. 3363. 12884. 10645. 560 $\bar{x}$  739GRID NUMBER B-111. 17922. 11763. 12324. 14005. 1680 $\bar{x}$  1456GRID NUMBER B-121. 3362. 3923. 9524. 7845. 952 $\bar{x}$  683NOTE: Results recorded  
in DPM/100cm<sup>2</sup> using the  
formula:

(gross counts per 30 sec - background per 30 sec) X 2

eff X 15 cm<sup>2</sup>/100 cm<sup>2</sup>Average Background counts per 30 sec. 28SURVEYOR W. N. Nudis

SUPERVISOR \_\_\_\_\_

## AVERAGE CONTAMINATION SURVEY RESULTS

DPM/100cm Beta/gamma

DATE: 10-17-92LOCATION: ALCOA B25 MEZZ. FloorINSTRUMENT: L-2221  
Model94981  
NumberPROBE: 44-4  
Model090478  
Number

GRID NUMBER <u>B-13</u>	GRID NUMBER <u>B-14</u>	GRID NUMBER <u>B-15</u>	GRID NUMBER <u>B-16</u>
1. <u>840</u>	1. <u>112</u>	1. <u>280</u>	1. <u>280</u>
2. <u>1064</u>	2. <u>224</u>	2. <u>224</u>	2. <u>224</u>
3. <u>392</u>	3. <u>336</u>	3. <u>336</u>	3. <u>280</u>
4. <u>672</u>	4. <u>224</u>	4. <u>112</u>	4. <u>112</u>
5. <u>448</u>	5. <u>896</u>	5. <u>224</u>	5. <u>224</u>
$\bar{X}$ <u>683</u>	$\bar{X}$ <u>358</u>	$\bar{X}$ <u>235</u>	$\bar{X}$ <u>224</u>

GRID NUMBER <u>B-17</u>	GRID NUMBER <u>B-18</u>	GRID NUMBER <u>B-19</u>	GRID NUMBER <u>B-20</u>
1. <u>280</u>	1. <u>112</u>	1. <u>224</u>	1. <u>112</u>
2. <u>336</u>	2. <u>224</u>	2. <u>280</u>	2. <u>112</u>
3. <u>224</u>	3. <u>168</u>	3. <u>168</u>	3. <u>168</u>
4. <u>392</u>	4. <u>224</u>	4. <u>336</u>	4. <u>224</u>
5. <u>168</u>	5. <u>336</u>	5. <u>280</u>	5. <u>112</u>
$\bar{X}$ <u>280</u>	$\bar{X}$ <u>213</u>	$\bar{X}$ <u>258</u>	$\bar{X}$ <u>146</u>

GRID NUMBER <u>B-21</u>	GRID NUMBER <u>B-22</u>	GRID NUMBER <u>B-23</u>	GRID NUMBER <u>B-24</u>
1. <u>112</u>	1. <u>168</u>	1. <u>504</u>	1. <u>168</u>
2. <u>168</u>	2. <u>112</u>	2. <u>224</u>	2. <u>112</u>
3. <u>168</u>	3. <u>336</u>	3. <u>280</u>	3. <u>112</u>
4. <u>336</u>	4. <u>224</u>	4. <u>168</u>	4. <u>728</u>
5. <u>224</u>	5. <u>280</u>	5. <u>112</u>	5. <u>168</u>
$\bar{X}$ <u>202</u>	$\bar{X}$ <u>224</u>	$\bar{X}$ <u>258</u>	$\bar{X}$ <u>258</u>

Average Background counts per 30 sec. 28NOTE: Results recorded  
in DPM/100cm<sup>2</sup> using the  
formula:SURVEYOR W. Nudritz

(gross counts per 30 sec - background per 30 sec) X 2

eff X 15 cm<sup>2</sup>/100 cm<sup>2</sup>

SUPERVISOR \_\_\_\_\_



## AVERAGE CONTAMINATION SURVEY RESULTS

DPM/100cm Beta/gamma

DATE: 10-17-92 LOCATION: ALCOA B25 - MEZZ FLOOR  
 INSTRUMENT: 6-2221 94981 PROBE: 44-9 090479  
 Model Number Model Number

GRID NUMBER C-1	GRID NUMBER C-2	GRID NUMBER C-3	GRID NUMBER C-4
1. <u>280</u>	1. <u>376</u>	1. <u>168</u>	1. <u>560</u>
2. <u>112</u>	2. <u>224</u>	2. <u>112</u>	2. <u>280</u>
3. <u>168</u>	3. <u>168</u>	3. <u>336</u>	3. <u>336</u>
4. <u>112</u>	4. <u>112</u>	4. <u>224</u>	4. <u>448</u>
5. <u>224</u>	5. <u>112</u>	5. <u>448</u>	5. <u>448</u>
$\bar{x}$ <u>179</u>	$\bar{x}$ <u>190</u>	$\bar{x}$ <u>258</u>	$\bar{x}$ <u>414</u>

GRID NUMBER C-5	GRID NUMBER C-6	GRID NUMBER C-7	GRID NUMBER C-8
1. <u>168</u>	1. <u>616</u>	1. <u>448</u>	1. <u>392</u>
2. <u>392</u>	2. <u>504</u>	2. <u>1568</u>	2. <u>1064</u>
3. <u>280</u>	3. <u>280</u>	3. <u>336</u>	3. <u>616</u>
4. <u>392</u>	4. <u>728</u>	4. <u>392</u>	4. <u>896</u>
5. <u>504</u>	5. <u>336</u>	5. <u>224</u>	5. <u>1176</u>
$\bar{x}$ <u>347</u>	$\bar{x}$ <u>493</u>	$\bar{x}$ <u>594</u>	$\bar{x}$ <u>829</u>

GRID NUMBER C-9	GRID NUMBER C-10	GRID NUMBER C-11	GRID NUMBER C-12
1. <u>896</u>	1. <u>1512</u>	1. <u>616</u>	1. <u>376</u>
2. <u>504</u>	2. <u>448</u>	2. <u>224</u>	2. <u>224</u>
3. <u>1288</u>	3. <u>1232</u>	3. <u>280</u>	3. <u>1680</u>
4. <u>1680</u>	4. <u>840</u>	4. <u>1960</u>	4. <u>504</u>
5. <u>1848</u>	5. <u>448</u>	5. <u>392</u>	5. <u>280</u>
$\bar{x}$ <u>1243</u>	$\bar{x}$ <u>896</u>	$\bar{x}$ <u>694</u>	$\bar{x}$ <u>605</u>

Average Background counts per 30 sec. 28

NOTE: Results recorded  
 in DPM/100cm<sup>2</sup> using the  
 formula:

SURVEYOR W. Anderson

(gross counts per 30 sec - background per 30 sec) X 2  
 eff X 15 cm<sup>2</sup>/100 cm<sup>2</sup>

SUPERVISOR \_\_\_\_\_

## AVERAGE CONTAMINATION SURVEY RESULTS

DPM/100cm Beta/gamma

DATE: 10.17.92LOCATION: ALCOA B25 Mezz. FloorINSTRUMENT: L-2221  
Model9498.1  
NumberPROBE: 44-E  
Model090478  
NumberGRID NUMBER C-13GRID NUMBER C-14GRID NUMBER C-15GRID NUMBER C-161. 7281. 6161. 3921. 5042. 3362. 7842. 2802. 3363. 10083. 4483. 2803. 4484. 11204. 3364. 2244. 6725. 6725. 3925. 168 <sup>DN</sup> 4485. 280 $\bar{x}$  773 $\bar{x}$  515 $\bar{x}$  325 $\bar{x}$  448GRID NUMBER C-17GRID NUMBER C-18GRID NUMBER C-19GRID NUMBER C-201. 2801. 1681. 1681. 1122. 4482. 3922. 2242. 4483. 3363. 5043. 1123. 2244. 2244. 2244. 2804. 2805. 6165. 2805. 1125. 616 $\bar{x}$  381 $\bar{x}$  314 $\bar{x}$  179 $\bar{x}$  336GRID NUMBER C-21GRID NUMBER C-22GRID NUMBER C-23GRID NUMBER C-241. 1681. 3921. 1121. 2242. 2802. 2242. 2802. 3363. 2243. 1123. 4483. 4484. 1684. 1684. 1684. 1125. 3365. 1125. 2245. 280 $\bar{x}$  235 $\bar{x}$  202 $\bar{x}$  246 $\bar{x}$  280Average Background counts per 30 sec. 28NOTE: Results recorded  
in DPM/100cm<sup>2</sup> using the  
formula:SURVEYOR: W. Nudrich(gross counts per 30 sec - background per 30 sec) X 2  
eff X 15 cm<sup>2</sup> / 100 cm<sup>2</sup>

SUPERVISOR: \_\_\_\_\_



## REMOVABLE CONTAMINATION

DATE: 10-18-92LOCATION: ALCOA B25-Mezz FloorCOUNTER: 6292991245EFFICIENCY:  $\alpha = .39$   $\beta = .19$ 

MODEL

NUMBER

BKG =  $\beta \times 53 \text{ cpm}$  $\alpha = 0.13 \text{ cpm}$ SMEAR# DPM/100cm<sup>2</sup>SMEAR# DPM/100cm<sup>2</sup>SMEAR# DPM/100cm<sup>2</sup>

A-1 #2	11	0	A-10 #4	BKG	2.23	A-19 #2	21	0
3	26	0	<sup>8N</sup> A-11 #5	BKG	0	4	16	0
A-2 #4	BKG	0	A-11 #1	6	0	A-20 #4	BKG	0
5	16	0	2	16	0	5	BKG	0
A-3 #2	11	0	A-12 #3	BKG	0	A-21 #1	BKG	2.23
3	26	0	4	21	0	2	BKG	0
A-4 #4	6	0	A-13 #3	BKG	0	A-22 #2	BKG	0
5	6	2.23	4	BKG	0	5	11	0
A-5 #4	11	0	A-14 #2	11	0	A-23 #2	BKG	0
1	BKG	0	3	47	0	5	BKG	0
A-6 #5	BKG	0	A-15 #4	BKG	2.23	A-24 #3	21	0
4	BKG	0	5	53	0	5	32	2.23
A-7 #2	21	2.23	A-16 #1	42	0	B-1 #1	BKG	0
3	37	0	2	11	0	4	6	0
A-8 #1	42	0	A-17 #1	BKG	0	B-2 #2	11	0
5	26	0	5	BKG	0	4	21	0
A-9 #2	11	0	A-18 #2	6	0	B-3 #3	BKG	0
4	32	0	5	6	0	4	BKG	0
B $\beta$	$\alpha$		B $\beta$	$\alpha$		B $\beta$	$\alpha$	

SIGNED: W. Nuck

REVISOR: \_\_\_\_\_

ATTACHMENT III

## REMOVABLE CONTAMINATION

DATE: 10-18-92LOCATION: ALCOA 825 M&E FloorCOUNTER: L-292991245EFFICIENCY:  $\alpha = .39$   $\beta = .19$ 

MODEL

NUMBER

BK6 =  $\beta = 53$  CPM $\alpha = .18$  CPM

SMEAR# DPM/100cm <sup>2</sup>			SMEAR# DPM/100cm <sup>2</sup>			SMEAR# DPM/100cm <sup>2</sup>		
B-4 *1	BK6	0	B-13 *1	53	0	B-22 *2	21	0
5	BK6	0	2	BK6	2.23	5	16	0
B-5 *1	BK6	0	B-14 *3	32	0	B-23 *1	21	0
5	37	0	5	<del>37</del> 63	0	3	21	0
B-6 *2	16	0	B-15 *1	BK6	0	B-24 *4	11	0
3	BK6	0	3	37	2.23	5	BK6	0
B-7 *2	11	0	B-16 *1	11	0	C-1 *1	BK6	0
3	26	0	3	16	0	5	BK6	0
B-8 *1	26	2.23	B-17 *2	21	0	C-2 *1	11	2.23
4	21	0	4	11	0	2	26	0
B-9 *4	11	0	B-18 *2	BK6	0	C-3 *3	37	0
5	BK6	0	5	BK6	0	5	16	0
B-10 *3	BK6	0	B-19 *2	BK6	0	C-4 *1	BK6	0
4	72	0	4	32	0	4	11	0
B-11 *1	68	0	B-20 *3	53	0	C-5 *2	21	0
5	74	0	4	BK6	2.23	5	32	0
B-12 *3	BK6	0	B-21 *4	11	0	C-6 *1	47	0
5	21	0	5	BK6	0	4	BK6	0
BK	$\alpha$		BK	$\alpha$		BK	$\alpha$	

W. N. Nicks

F. D. Nicks

ATTACHMENT III

## REMOVABLE CONTAMINATION

DATE: 10-18-92LOCATION: ALCOA B25-Mc322 FloorCOUNTER: 6292991245EFFICIENCY:  $\alpha = .79$   $\beta = .19$ 

MODEL

NUMBER

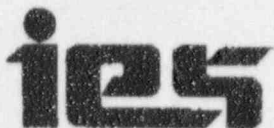
BK6 = BK-53 cpm $\alpha = .13$  cpmSMEAR# DPM/100cm<sup>2</sup>SMEAR# DPM/100cm<sup>2</sup>SMEAR# DPM/100cm<sup>2</sup>

C-7 *1	21	O	C-16 *1	11	2.23	N		
2	37	O	4	11	O			
C-8 *2	47	O	C-17 *2	21	O			
5	63	O	5	11	O			
C-9 *4	11	O	C-18 *2	BK6	O			
5	BK6	O	3	16	2.23			
C-10 *1	21	O	C-19 *2	26	O			
3	2	O	4	11	O			
C-11 *1	2	O	C-20 *2	21	O			
4	16	O	5	16	O			
C-12 *3	BK6	O	C-21 *2	16	O			N.A.
4	BK6	2.23	5	16	O			
C-13 *3	58	O	C-22 *1	21	O			
4	42	O	2	16	4.79			
C-14 *1	26	O	C-23 *2	11	O			
2	26	O	3	BK6	O			
C-15 *1	32	O	C-24 *2	BK6	O			
5	26	O	3	BK6	O			
BK		$\alpha$	BK		$\alpha$		BK	$\alpha$

W. N. Nader

RECEIVED

ATTACHMENT III

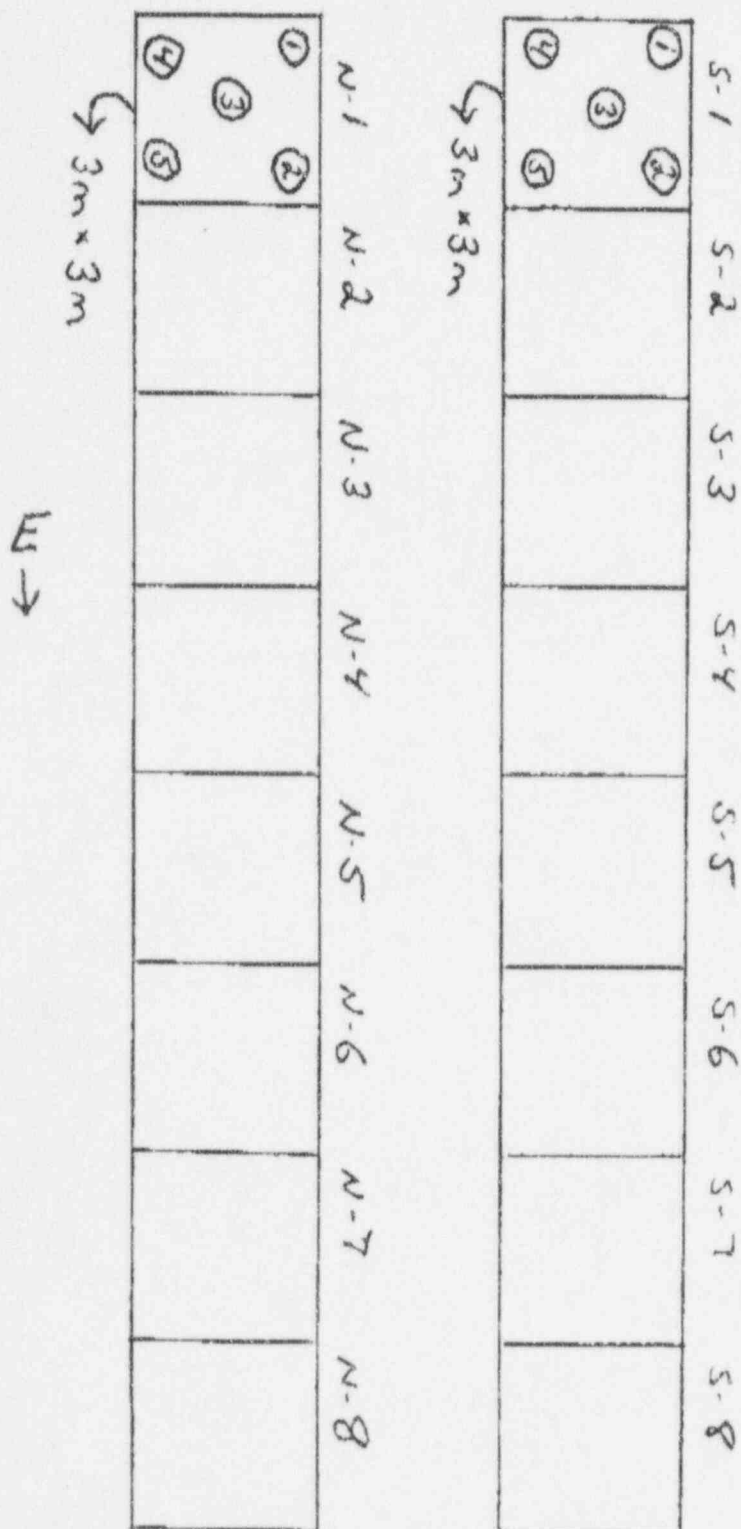
INTEGRATED ENVIRONMENTAL SERVICES  
A DIVISION OF IESBY \_\_\_\_\_ DATE \_\_\_\_\_ PROJ \_\_\_\_\_ TASK \_\_\_\_\_  
CHKD. \_\_\_\_\_ DATE \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_

## ALCOA - Bldg 25 - Mezzanine - WALLS

REF.

North Wall

South Wall



↑ E

EAST WALL

E-1



3m x 3m

WEST WALL

W-1



3m x 3m

## AVERAGE CONTAMINATION SURVEY RESULTS

DPM/100cm Beta/gamma

DATE: 10-18-92LOCATION: ALCOA-B25 MGR WALLSINSTRUMENT: L-2221  
Model94981  
NumberPROBE: 44-9  
Model090479  
Number

GRID NUMBER <u>W-1</u>	GRID NUMBER <u>E-1</u>	GRID NUMBER <u>N-1</u>	GRID NUMBER <u>N-2</u>
1. <u>728</u>	1. <u>448</u>	1. <u>896</u>	1. <u>448</u>
2. <u>952</u>	2. <u>336</u>	2. <u>784</u>	2. <u>672</u>
3. <u>504</u>	3. <u>280</u>	3. <u>1232</u>	3. <u>1008</u>
4. <u>616</u>	4. <u>448</u>	4. <u>840</u>	4. <u>504</u>
5. <u>672</u>	5. <u>280</u>	5. <u>560</u>	5. <u>504</u>
$\bar{x}$ <u>694</u>	$\bar{x}$ <u>358</u>	$\bar{x}$ <u>862</u>	$\bar{x}$ <u>627</u>

GRID NUMBER <u>N-3</u>	GRID NUMBER <u>N-4</u>	GRID NUMBER <u>N-5</u>	GRID NUMBER <u>N-6</u>
1. <u>560</u>	1. <u>616</u>	1. <u>448</u>	1. <u>392</u>
2. <u>1064</u>	2. <u>1288</u>	2. <u>224</u>	2. <u>392</u>
3. <u>1176</u>	3. <u>896</u>	3. <u>672</u>	3. <u>560</u>
4. <u>448</u>	4. <u>504</u>	4. <u>784</u>	4. <u>728</u>
5. <u>280</u>	5. <u>336</u>	5. <u>952</u>	5. <u>1008</u>
$\bar{x}$ <u>706</u>	$\bar{x}$ <u>728</u>	$\bar{x}$ <u>616</u>	$\bar{x}$ <u>616</u>

GRID NUMBER <u>N-7</u>	GRID NUMBER <u>N-8</u>	GRID NUMBER <u>S-1</u>	GRID NUMBER <u>S-2</u>
1. <u>336</u>	1. <u>336</u>	1. <u>280</u>	1. <u>112</u>
2. <u>504</u>	2. <u>504</u>	2. <u>392</u>	2. <u>336</u>
3. <u>1008</u>	3. <u>616</u>	3. <u>224</u>	3. <u>112</u>
4. <u>1120</u>	4. <u>840</u>	4. <u>392</u>	4. <u>280</u>
5. <u>1288</u>	5. <u>1176</u>	5. <u>336</u>	5. <u>224</u>
$\bar{x}$ <u>851</u>	$\bar{x}$ <u>694</u>	$\bar{x}$ <u>325</u>	$\bar{x}$ <u>213</u>

Average Background counts per 30 sec. 26NOTE: Results recorded  
in DPM/100cm<sup>2</sup> using the  
formula:SURVEYOR W. Nudrith

(gross counts per 30 sec - background per 30 sec) X 2

eff X 15 cm<sup>2</sup> / 100 cm<sup>2</sup>

SUPERVISOR \_\_\_\_\_



## AVERAGE CONTAMINATION SURVEY RESULTS

DFM/100cm BeLa/gamma

DATE: 10-18-92LOCATION: Alcoa B25-Mem. WallsINSTRUMENT: L-2221 94981  
Model NumberPROBE: 44-P 090479  
Model Number

GRID NUMBER <u>S-3</u>	GRID NUMBER <u>S-4</u>	GRID NUMBER <u>S-5</u>	GRID NUMBER <u>S-6</u>
1. <u>448</u>	1. <u>560</u>	1. <u>448</u>	1. <u>448</u>
2. <u>336</u>	2. <u>392</u>	2. <u>224</u>	2. <u>280</u>
3. <u>448</u>	3. <u>280</u>	3. <u>392</u>	3. <u>280</u>
4. <u>280</u>	4. <u>168</u>	4. <u>280</u>	4. <u>336</u>
5. <u>504</u>	5. <u>448</u>	5. <u>336</u>	5. <u>448</u>
$\bar{X}$ <u>403</u>	$\bar{X}$ <u>370</u>	$\bar{X}$ <u>336</u>	$\bar{X}$ <u>358</u>

GRID NUMBER <u>S-7</u>	GRID NUMBER <u>S-8</u>	GRID NUMBER _____	GRID NUMBER _____
1. <u>616</u>	1. <u>448</u>	1. <u>/</u>	1. <u>/</u>
2. <u>280</u>	2. <u>112</u>	2. <u>/</u>	2. <u>/</u>
3. <u>392</u>	3. <u>560</u>	3. <u>/</u>	3. <u>/</u>
4. <u>448</u>	4. <u>280</u>	4. <u>/</u>	4. <u>/</u>
5. <u>224</u>	5. <u>504</u>	5. <u>/</u>	5. <u>/</u>
$\bar{X}$ <u>392</u>	$\bar{X}$ <u>381</u>	$\bar{X}$ <u>/</u>	$\bar{X}$ <u>/</u>

GRID NUMBER _____	GRID NUMBER _____	GRID NUMBER _____	GRID NUMBER _____
1. <u>/</u>	1. <u>/</u>	1. <u>/</u>	1. <u>/</u>
2. <u>/</u>	2. <u>/</u>	2. <u>/</u>	2. <u>/</u>
3. <u>/</u>	3. <u>/</u>	3. <u>/</u>	3. <u>/</u>
4. <u>/</u>	4. <u>/</u>	4. <u>/</u>	4. <u>/</u>
5. <u>/</u>	5. <u>/</u>	5. <u>/</u>	5. <u>/</u>
$\bar{X}$ <u>/</u>	$\bar{X}$ <u>/</u>	$\bar{X}$ <u>/</u>	$\bar{X}$ <u>/</u>

Average Background counts per 30 sec. 26NOTE: Results recorded  
in DFM/100cm<sup>2</sup> using the  
formula:SURVEYOR W. N. Smith

(gross counts per 30 sec - background per 30 sec) X 2

eff X 15 cm<sup>2</sup>/100 cm<sup>2</sup>

SUPERVISOR \_\_\_\_\_



## REMOVABLE CONTAMINATION

DATE: 10-18-92LOCATION: ALCOA B-25 Mezz. Floor WallsCOUNTER: 62929 91245  
MODEL NUMBEREFFICIENCY:  $\alpha = .39$  BY 1.19BKG = BY - 53 cpm $\alpha = .13$  cpm

SHEAR# DPM/100cm <sup>2</sup>			SHEAR# DPM/100cm <sup>2</sup>			SHEAR# DPM/100cm <sup>2</sup>		
E1 "1	BKG	0	N-4 "4	37	0			
4	BKG	0	5	BKG	0			
W-1 "1	BKG	0	S-1 "2	11	223			
2 <sup>BY</sup>	11	0	4	11	0			
N-1 "1	21	0	S-2 "2	21	0			
3	21	0	4	21	0			
N-2 "2	21	0	S-3 "1	21	0			
3	11	0	5	BKG	0			
N-3 "2	BKG	0	S-4 "1	11	0			
3	11	2.23	5	BKG	0			
N-4 "2	21	0	S-5 "1	BKG	0			
3	21	0	3	BKG	0			
N-5 "4	BKG	0	S-6 "1	BKG	0			
5	32	0	5	11	0			
N-6 "4	11	0	S-7 "1	11	0			
5	BKG	0	4	BKG	2.23			
N-7 "4	BKG	0	S-8 "3	BKG	0			
5	11	0	5	BKG	0			
BY	$\alpha$		BY	$\alpha$		BY	$\alpha$	

APPROVED W. N. Under

REVIEWER \_\_\_\_\_

ATTACHMENT III



INTEGRATED ENVIRONMENTAL SERVICES  
A DIVISION OF NES

BY \_\_\_\_\_ DATE \_\_\_\_\_ PROJ \_\_\_\_\_ TASK \_\_\_\_\_  
CHKD. \_\_\_\_\_ DATE \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_

ALGOA - Bldg. 25 - Mezzanine Ceiling		REF.
C-1	<div style="display: flex; align-items: center;"><div style="border: 1px solid black; padding: 5px; margin-right: 10px;"><div style="display: flex; justify-content: space-around;"><div>①</div><div>②</div></div><div style="display: flex; justify-content: space-around;"><div>③</div><div>④</div></div><div style="display: flex; justify-content: space-around;"><div>⑤</div><div>⑥</div></div></div><div style="display: flex; align-items: center;"><div style="margin-right: 10px;">→</div><div>3m x 3m</div></div><div style="margin-left: 20px; text-align: center;">↑ E</div></div>	
C-2		
C-3		
C-4		
C-5		
C-6		
C-7		
C-8		

## AVERAGE CONTAMINATION SURVEY RESULTS

DPM/100cm Beta/gamma

DATE: 10-18-92LOCATION: ALCOA B25 Mezz. CeilingINSTRUMENT: L-2221 94981  
Model NumberPROBE: 44-9 090479  
Model Number

GRID NUMBER <u>C-1</u>	GRID NUMBER <u>C-2</u>	GRID NUMBER <u>C-3</u>	GRID NUMBER <u>C-4</u>
1. <u>280</u>	1. <u>112</u>	1. <u>397</u>	1. <u>336</u>
2. <u>448</u>	2. <u>448</u>	2. <u>616</u>	2. <u>672</u>
3. <u>336</u>	3. <u>336</u>	3. <u>448</u>	3. <u>504</u>
4. <u>280</u>	4. <u>504</u>	4. <u>336</u>	4. <u>280</u>
5. <u>504</u>	5. <u>280</u>	5. <u>728</u>	5. <u>448</u>
$\bar{X}$ <u>370</u>	$\bar{X}$ <u>336</u>	$\bar{X}$ <u>504</u>	$\bar{X}$ <u>448</u>

GRID NUMBER <u>C-5</u>	GRID NUMBER <u>C-6</u>	GRID NUMBER <u>C-7</u>	GRID NUMBER <u>C-8</u>
1. <u>448</u>	1. <u>280</u>	1. <u>392</u>	1. <u>448</u>
2. <u>280</u>	2. <u>392</u>	2. <u>336</u>	2. <u>392</u>
3. <u>392</u>	3. <u>224</u>	3. <u>280</u>	3. <u>336</u>
4. <u>560</u>	4. <u>336</u>	4. <u>280</u>	4. <u>280</u>
5. <u>336</u>	5. <u>448</u>	5. <u>168</u>	5. <u>168</u>
$\bar{X}$ <u>403</u>	$\bar{X}$ <u>336</u>	$\bar{X}$ <u>291</u>	$\bar{X}$ <u>325</u>

GRID NUMBER	GRID NUMBER	GRID NUMBER	GRID NUMBER
1. <u>/</u>	1. <u>/</u>	1. <u>/</u>	1. <u>/</u>
2. <u>/</u>	2. <u>/</u>	2. <u>/</u>	2. <u>/</u>
3. <u>/</u>	3. <u>/</u>	3. <u>/</u>	3. <u>/</u>
4. <u>/</u>	4. <u>/</u>	4. <u>/</u>	4. <u>/</u>
5. <u>/</u>	5. <u>/</u>	5. <u>/</u>	5. <u>/</u>
$\bar{X}$ <u>/</u>	$\bar{X}$ <u>/</u>	$\bar{X}$ <u>/</u>	$\bar{X}$ <u>/</u>

Average Background counts per 30 sec. 26NOTE: Results recorded  
in DPM/100cm<sup>2</sup> using the  
formula:SURVEYOR W. N. Smith

(gross counts per 30 sec - background per 30 sec) X 2

eff X 15 cm<sup>2</sup>/100 cm<sup>2</sup>

SUPERVISOR \_\_\_\_\_



1125

## Survey Record

Page 1 of 2

LOCATION: ALCOA B-25 Mezz. - CabinetsDATE 10-18-92REASON FOR SURVEY: ReleaseTIME 11:00FIGURE # N/A

NO.	ITEM	DIRECT SURVEY MEASUREMENTS				EXPOSURE RATE	EXPOSURE DISTANCE	SMEARABLE CONTAMINATION	
		Q counter probe	Q Apr 128 400	B&Y Apr 128 400	B&Y Apr 128 400			B&Y Apr 128 400	Q Apr 128 400
	CABINET #1								
	1	N/A	N/A	18	504	N/A	N/A	32	0
	2			26	728			16	0
	3			32	864			53	0
	4			16	448			47	0
	5			12	336			68	0
	Cabinet #2								
	1			4	112			77	0
	2			12	336			26	0
	3			10	280			846	0
	4			10	280			58	0
	5			18	504			26	0
	Cabinet #3								
	1			22	616			16	0
	2			18	504			16	0
	3			16	448			11	0
	4			10	280			63	0
	5	✓	✓	6	168	✓	✓	37	0

## DIRECT SURVEY INSTRUMENTS

## SMEARABLE CONTAMINATION INSTRUMENTS

Q-INST.	B&Y INST. 6-22-21	Q-INST. 6-25-21	B&Y INST. 6-22-21
S.N.	S.N. 94981	S.N. 91245	S.N. 91245
CAL DUE	CAL DUE 6-24-93	CAL DUE 6-5-93	CAL DUE 6-5-93
EFF	EFF .24	EFF .38	EFF .18
BKG	BKG 52	BKG 217	BKG 53
REMARKS: Above represents highest reading on each cabinet including drawers.		EXPOSURE RATE INSTRUMENT	
		Y INST.	
		S.N. N/A	
		CAL DUE	

Surveyor (signature) W. N. NadeauDate 10-18-92

Reviewed by (signature) \_\_\_\_\_

Date \_\_\_\_\_



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2 of 2

## Survey Record

Page 1 of 2

LOCATION: ALCON 225 Mezz. CabinetsREASON FOR SURVEY: Release

DATE

10-15-92

TIME

11:00

FIGURE #

N/A

NO.	ITEM	DIRECT SURVEY MEASUREMENTS				EXPOSURE RATE	EXPOSURE DISTANCE	SMearable CONTAMINATION	
		Q	Q	B&Y	B&Y			B&Y	Q
		1000/1000	1000/1000	1000/1000	1000/1000	HR/IN	IN/FT	1000/1000	1000/1000
	Cabinet #4								
	1	N/A	N/A	12	504	N/A	N/A	16	0
	2			12	336			58	0
	3			16	448			47	0
	4			22	616			246	0
	5			10	280			21	0
	Cabinet #5								
	1			10	280			21	0
	2			8	224			11	223
	3			16	448			58	0
	4			12	336			26	0
	5	✓	✓	14	392	✓	✓	16	0

## DIRECT SURVEY INSTRUMENTS

## SMearable CONTAMINATION INSTRUMENTS

Q INST.	B & Y INST. 6-2221	Q INST. 6-2523	B & Y INST. 6-2525
S.N.	94941	S.N. 91245	S.N. 91245
CAL DUE	CAL DUE 6-24-93	CAL DUE 6-5-93	CAL DUE 6-5-93
EFF	EFF .24	EFF .37	EFF .12
BKG	BKG 52	BKG 112	BKG 53
REMARKS:		EXPOSURE RATE INSTRUMENT	
		Y INST.	
		S.N.	
		CAL DUE	

Surveyor (signature) W. N. [Signature]Date 10-15-92

Reviewed by (signature) \_\_\_\_\_

Date \_\_\_\_\_



1125

## Survey Record

Page 1 of 2

LOCATION: ALCOA B25 - MezzanineREASON FOR SURVEY: Release Shelving

DATE

10-18-92

TIME

10:00

FIGURE #

N/A

NO.	ITEM	DIRECT SURVEY MEASUREMENTS				EXPOSURE RATE	EXPOSURE DISTANCE	SMEARABLE CONTAMINATION	
		$\alpha$ cpm/100 cm <sup>2</sup>	$\alpha$ cpm/100 cm <sup>2</sup>	B & Y cpm/100 cm <sup>2</sup>	B & Y cpm/100 cm <sup>2</sup>			B & Y cpm/100 cm <sup>2</sup>	$\alpha$ cpm/100 cm <sup>2</sup>
	Shelving #6 #1	N/A	N/A	16	448	N/A	N/A	32	0
	2			22	616			21	0
	3			8	224			42	0
	4			14	292			21	0
	5			20	560			53	0
	6			10	280			16	0
	7			10	280			BKG	0
	8			6	168			11	0
	9			18	504			BKG	0
	10			14	392			16	2.23
	11			10	280			21	0
	12			16	448			21	0
	13			28	784			53	0
	14			14	392			16	0
	15			10	280			BKG	0
	16			12	336			42	0
	17			8	224			BKG	0
	18	↓	↓	4	112	↓	↓	BKG	0

## DIRECT SURVEY INSTRUMENTS

## SMEARABLE CONTAMINATION INSTRUMENTS

QINST.	B & Y INST. 6-2221	QINST. 6-2529	B & Y INST. 6-2427
S.N.	94981	S.N. 91245	S.N. 91245
CAL DUE	6-24-93	CAL DUE 6-5-93	CAL DUE 6-5-93
EFF	N/A	EFF .24	EFF .18
BKG	BKG 52 cpm	BKG .13	BKG 53 cpm
REMARKS:	Above represents highest reading on each shelf		
	EXPOSURE RATE INSTRUMENT		
	Y INST.		
	S.N. N/A		
	CAL DUE		

Surveyor (signature) W. NortonDate 10-18-92

Reviewed by (signature) \_\_\_\_\_

Date \_\_\_\_\_



**1125**GROSS ALPHA/BETA ANALYSIS OF AIR PARTICULATES  
ANALYSIS DATA SHEET

## SAMPLING DATA:

Location: Inside Machine  
 Collected by: Needlefish  
 Date/Time on: 10-15-92 / 12:35  
 Date/Time off: 10-15-92 / 12:00

SAMPLE NO.: ALC-01

Reason: ENTRY  
 Sampler ID: 7669  
 Flow Rate on: 4 cfm  
 Flow Rate off: 4 cfm

COUNTING DATA	ALPHA			BETA		
Counting System	6-2929	6-2929	6-2929	6-2929	6-2929	6-2929
Serial Number	91245	91245	91245	91245	91245	91245
Counting Date/Time	10/15-1315	10/15-1245	10/15-905	10/15-1315	10/15-1315	10/15-905
Gross Counts	3116	1788	49	6574	3720	770
Sample Count Time (Min)	10	10	10	10	10	10
Gross Counts (cpm)	311.6	178.8	4.9	657.4	372.0	77.0
Background Counts	4	4	4	2109	2109	2089
Bkg Count Time (Min)	30	30	30	30	30	30
Bkg Counts (cpm)	.13	.13	.13	.70	.70	.69
Net Counts (cpm)	308.5	178.67	4.77	587.4	362	8
Counter Efficiency	.39	.39	.39	.18	.18	.18
Conversion Factor	6.76E-7	6.76E-7	6.76E-7	4.5E-7	4.5E-7	4.5E-7
Volume (ml)	2.82E6	2.82E6	2.82E6	2.82E6	2.82E6	2.82E6
Activity (uCi/ml)	1.90E-10	1.09E-10	2.92E-12	5.18E-10	2.66E-10	7.06E-12
Counting Error (uCi/ml)						
MDA (uCi/ml)						

Comments:

Decay Rate =  $\alpha$  - 37.4 min.  
 $\beta$  - 31.2 min

Technician: AladdinDate: 10-15-92

Reviewed By: \_\_\_\_\_

Date: \_\_\_\_\_

$$\text{Activity (uCi/ml)} = ((\text{Net cpm}) (\text{Con Fac})) / ((\text{Eff}) (\text{Vol ml}))$$

$$\text{Vol ml} = (\text{CFM}) (\text{min}) (2.83E4) \quad \text{or} \quad \text{Vol ml} = (\text{LPM}) (\text{min}) (1.0E3)$$

2-1/2  
absorp

**1125**GROSS ALPHA/BETA ANALYSIS OF AIR PARTICULATES  
ANALYSIS DATA SHEET

## SAMPLING DATA:

Location: Inside Mezzanine  
 Collected by: Needham  
 Date/Time on: 10/16/92 - 0830  
 Date/Time off: 10/16/92 - 0855

SAMPLE NO.: ALC-02

Reason: Vacuuming  
 Sampler ID: 7669  
 Flow Rate on: 4  
 Flow Rate off: 4

COUNTING DATA	ALPHA			BETA		
Counting System	L-2929	L-2929		L-2929	L-2929	
Serial Number	91245	91245		91245	91245	
Counting Date/Time	10/16-92	10/16-10/10	10/18-0830	10/16-92	10/16-10/10	10/18-0830
Gross Counts	1358	650	3	3113	1792	
Sample Count Time (Min)	10	10	10	10	10	
Gross Counts (cpm)	135.8	65.0	2.7	311.3	179.2	
Background Counts	4	4	4	2083	2083	
Bkg Count Time (Min)	30	30	30	30	30	
Bkg Counts (cpm)	.13	.13	.13	.69	.69	
Net Counts (cpm)	135.67	64.9	.17	242.3	119.2	
Counter Efficiency	.39	.39	.39	.18	.18	
Conversion Factor	6.76E-7	6.76E-7	6.76E-7	4.5E-7	4.5E-7	4.5E-7
Volume (ml)	2.83E6	2.83E6	2.83E6	2.83E6	2.83E6	
Activity (uCi/ml)	8.30E-11	8.97E-11	1.07E-13	2.14E-10	9.93E-11	
Counting Error (uCi/ml)						
MDA (uCi/ml)						

## Comments:

\* Windows in Mezzanine were left open overnight  
 to ventilate Room

Decay Rate:  $\lambda = 42 \text{ min}$

Technician: NeedhamDate: 10-16-92

Reviewed By: \_\_\_\_\_

Date: \_\_\_\_\_

Activity (uCi/ml) = ((Net cpm) (Con Fac)) / ((Eff) (Vol ml))

Vol ml = (CFM) (min) (2.83E4) or Vol ml = (LPM) (min) (1.0E3)



1125

GROSS ALPHA/BETA ANALYSIS OF AIR PARTICULATES  
ANALYSIS DATA SHEET

## SAMPLING DATA:

Location: outside Bldg 25  
 Collected by: W. J. Smith  
 Date/Time on: 10-14-92 10:00  
 Date/Time off: 10-14-92 10:25

SAMPLE NO.: ALC-07

Reason: OUTSIDE AMBIENT  
 Sampler ID: 7662  
 Flow Rate on: 4 CFM  
 Flow Rate off: 4 CFM

COUNTING DATA	ALPHA		BETA	
Counting System	6-2524		6-2524	
Serial Number	81245		81245	
Counting Date/Time	10-14-1992		10-14-1992	
Gross Counts	16		570	
Sample Count Time (Min)	10		10	
Gross Counts (cpm)	1.6		57	
Background Counts	4		1570	
Bkg Count Time (Min)	20		30	
Bkg Counts (cpm)	.13		53	
Net Counts (cpm)	1.47		4	
Counter Efficiency	.89		.18	
Conversion Factor	6.76 E-7	6.76E-7	6.76E-7	6.76E-7
Volume (ml)	2.83 E6		2.83 E6	
Activity (uCi/ml)	9-13		2.34 E-12	
Counting Error (uCi/ml)				
MDA (uCi/ml)				

Comments: \_\_\_\_\_

Technician: W. J. Smith

Reviewed By: \_\_\_\_\_

Date: 10-14-92

Date: \_\_\_\_\_

$$\text{Activity (uCi/ml)} = ((\text{Net cpm}) (\text{Con Fac})) / ((\text{Eff}) (\text{Vol ml}))$$

$$\text{Vol ml} = (\text{CFM}) (\text{min}) (2.83E4) \quad \text{or} \quad \text{Vol ml} = (\text{LPM}) (\text{min}) (1.0E3)$$

N.D. = No Detectable

1125

GROSS ALPHA/BETA ANALYSIS OF AIR PARTICULATES  
ANALYSIS DATA SHEET

## SAMPLING DATA:

Location: Mexico  
 Collected by: W. J. J. J.  
 Date/Time on: 10-17-92 0800  
 Date/Time off: 10-17-92 0825

SAMPLE NO.: ALC-04

Reason: Determining  
 Sampler ID: 7669  
 Flow Rate on: 4 cfm  
 Flow Rate off: 4 cfm

COUNTING DATA	ALPHA			BETA		
Counting System	L2525			L2521		
Serial Number	91245			71245		
Counting Date/Time	10-17-1990			10-17-1990		
Gross Counts	11			530		
Sample Count Time (Min)	10			10		
Gross Counts (cpm)	1.1			52		
Background Counts	4			520		
Bkg Count Time (Min)	70			20		
Bkg Counts (cpm)	.13			52		
Net Counts (cpm)	.97					
Counter Efficiency	.38					
Conversion Factor	6.76 E-7	6.76E-7	6.76E-7	4.5E-7	4.5E-7	4.5E-7
Volume (ml)	2.83 E6			2.83 E6		
Activity (uCi/ml)	5.99 -13			N.D.		
Counting Error (uCi/ml)						
MDA (uCi/ml)						

Comments: \_\_\_\_\_

Technician: W. J. J. J.

Reviewed By: \_\_\_\_\_

Date: 10-17-92

Date: \_\_\_\_\_

Activity (uCi/ml) = ((Net cpm) (Con Fac)) / ((Eff) (Vol ml))

Vol ml = (CFM) (min) (2.83E4) or Vol ml = (LPM) (min) (1.0E3)

N.D. = No Detectable





## CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.

POST OFFICE BOX 810

PH. 815-235-5494

501 OAK STREET

FAX NO. (815) 235-4872

SWEETWATER, TEXAS 79556, U. S. A.

CUSTOMER McGraw Hill, Inc.ORDER NO. 92-2063Mfg. LUDLUM MEAS., INC.Model 2929Serial No. 91245Mfg. LUDLUM MEAS., INC.Det. Model 43-10-1Serial No. 78090564Cal. Date 6-5-92Cal. Due Date 6-5-93Cal. Interval 1 YEAR METERFACE 202-132Check mark ( ) Applies to applicable Instr. and/or detector IAW mfg. spec. T 76 OF RH 50 % Alt 701.8 mm Hg☐ P/S Resp. ck ☐ Reset ck.☒ Audio ck. ☒ Meter Zeroed☐ Window Operation☐ Background subtract☐ Alarm Setting ck. ☒ Mechanical ck.☐ Bat. ck. (Min. Volt)VDC Det. Oper. V 1025V at 102.5 V-50mVInstrument Volt Set 1025 V

Threshold Dial

Input Sens

mv. ☐ Input Sens Linearity☒ New Instrument☐ Repair Instrument Received:☐ Within Toler. + -10%☐ 10-20%☐ Out Toler.☐ Requiring Repair☒ HV Readout (2 points)Ref./Inst. 500500Ref./Inst. 20002000

COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M. 44-9 in which the front of probe faces source.

## RANGE MULTIPLIER

REFERENCE  
CAL. POINTINSTRUMENT  
METER READING \*INSTRUMENT REC'D  
"AS FOUND READING"

X  
X  
X  
X  
X  
X  
X  
X  
X  
X  
X

\*Uncertainty within + -10%

C. F. within + -20%

Range(s) Calibrated Electronically

Reference Cal. Point

Instrument Meter Reading

"As Found Reading"

Digital  
Readout

/ / / / /

/ / / / /

/ / / / /

Log  
Scale

/ / / / /

/ / / / /

/ / / / /

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the radio type of calibration techniques. The calibration system conforms to the requirements of MIL-STD-15603A and ANSI N323-1978

☐ Cs137 Gamma s/n 1162, G112, M565, S105, 5604 ☐ Neutron Am-241 Be s/n T-304

State of Texas Calibration License No. LO 1152

☒ Alpha s/n TH 230 3389 cm(6) ☒ Beta s/n C14 1165 μ ☒ Other Tc99 11670 cm(6)
☒ M-500 s/n 24797 ☐ Oscilloscope s/n ☐ Multimeters s/n A46210

 Calibrated By: Clair Wright Date 6-5-92

 Reviewed By: Edward S. Tynan Date 6-5-92



DESIGNER AND MANUFACTURER

Scientific and Industrial  
Instruments

LUDLUM MEASUREMENTS, INC.

918 • 232-6484 • 232-6947 TELE. NO. 408832 UD  
POST OFFICE BOX 818 FAX NO. (918) 232-6272

801 OAK STREET

SWEETWATER, TEXAS, U.S.A. 75686

LUDLUM MODEL 2929  
ATTACHMENT TO CALIBRATION CERTIFICATE  
DIGITAL READOUTSERIAL NUMBER 91245

ALPHA CHANNEL

REFERENCE CAL POINT	INST METER READING	AS FOUND READING
400 K CPM	<u>400206</u>	<u>400206</u>
40 K CPM	<u>40040</u>	<u>40040</u>
4 K CPM	<u>4003</u>	<u>4003</u>
400 CPM	<u>400</u>	<u>400</u>
40 CPM	<u>40</u>	<u>40</u>

BETA/GAMMA CHANNEL

REFERENCE CAL POINT	INST METER READING	AS FOUND READING
400 K CPM	<u>400244</u>	<u>400244</u>
40 K CPM	<u>40009</u>	<u>40009</u>
4 K CPM	<u>4001</u>	<u>4001</u>
400 CPM	<u>400</u>	<u>400</u>
40 CPM	<u>40</u>	<u>40</u>

CALIBRATED BY Elaine Wright DATE 6-5-92REVIEWED BY Donald S. Murphy DATE 6-8-92

FORM #25 3/90



## CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.

POST OFFICE BOX 810

PH. 815-235-5464

501 OAK STREET

FAX NO. (815) 235-4972

SWEETWATER, TEXAS 79556, U. S. A.

CUSTOMER Mc Graw-Hill, Inc.Mfg. LUDLUMModel 2221ORDER NO. 158779Mfg. \_\_\_\_\_ Del. Model \_\_\_\_\_ Serial No. 94981Cal. Date 6-24-92 Cal. Due Date 6-24-93 Cal. Interval 1yr METERFACE 200-159Check mark ☒ applies to applicable Instr. and/or detector IAW mfg. spec. T 75 °F RH 50 % Alt 700.8 mm Hg☒ F/S Resp. ck ☒ Reset ck. ☒ Audio ck. ☒ Meter Zeroed ☒ Window Operation ☐ Background subtract☐ Alarm Setting ck. ☒ Mechanical ck. ☒ Bat. ck. (Min. Volt) 4.4 VDC Det. Oper. V \_\_\_\_\_ V at \_\_\_\_\_ MVInstrument Volt Set 900 V Threshold Dial 100 Input Sens 10 mV ☒ Input Sens Linearity☐ New Instrument ☒ Repair Instrument Received: ☐ Within Toler. + -10% ☐ 10-20% ☐ Out Toler. ☒ Requiring Repair☒ HV Readout (2 points) Ref./Inst. 500 / 500 V Ref./Inst. 2000 / 2000 V

## COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M. 444 in which the front of probe faces source

## RANGE MULTIPLIER

REFERENCE  
CAL. POINTINSTRUMENT  
METER READING \*INSTRUMENT REC'D  
"AS FOUND READING"

X	1K
X	"
X	100
X	"
X	10
X	"
X	1
X	"
X	
X	
X	

400K cpm
100K "
40K "
10K "
4K "
1K "
400 "
100 "

400
100
400
100
400
100
400
100

N/A

\*Uncertainty within + -10%

C. F. within + -20%

ALL

Range(s) Calibrated Electronically

Digital  
Readout

1400Kcpm
40Kcpm
4Kcpm
400cpm

Instrument Meter Reading

1400.365
40.032
4.006
400

"As Found Reading"

N/A

Log  
Scale

1500Kcpm
50Kcpm
5Kcpm
500cpm

1500K
50K
5K
500

N/A

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or in the calibration facilities of other Ludlum Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques. The calibration system conforms to the requirements of MIL-STD-45662A and ANSI N13.1973

☐ Cs137 Gamma s/n 1162, G112, M565 5105, 5804☐ Neutron Am-241 Be s/n T-304

State of Texas Calibration License No. 121003

☐ Alpha s/n \_\_\_\_\_☐ Beta s/n \_\_\_\_\_☐ Other \_\_\_\_\_☒ M-500 s/n 54668☒ Oscilloscope s/n 0060519☒ Multimeter s/n 35060861Calibrated By: Bill HensonDate 6-24-92Reviewed By: Keith A. SchipperDate 6/24/92

LUDLUM MEASUREMENTS, INC.

JUN 22

WORK ORDER No. 158779Customer Name McLean - Robert Inc.Condition Received New - goodAddress 2910 Howard Ave. Cleveland, OH 44105

Special Instructions

☐ YES☐ Call customer with Est.☒ Other Repair / Physical

1. Mod. No. \_\_\_\_\_ S/N \_\_\_\_\_ 4. Mod. No. \_\_\_\_\_ S/N \_\_\_\_\_ 7. Mod. No. \_\_\_\_\_ S/N \_\_\_\_\_  
2. Mod. No. \_\_\_\_\_ S/N \_\_\_\_\_ 5. Mod. No. \_\_\_\_\_ S/N \_\_\_\_\_ 8. Mod. No. \_\_\_\_\_ S/N \_\_\_\_\_  
3. Mod. No. \_\_\_\_\_ S/N \_\_\_\_\_ 6. Mod. No. \_\_\_\_\_ S/N \_\_\_\_\_ 9. Mod. No. \_\_\_\_\_ S/N \_\_\_\_\_

ITEM	PART NO.	DESCRIPTION	AMOUNT	PRICE/EA.	COST

Total Parts Cost \_\_\_\_\_

REMARKS: Pin on ROM chip bent underneath chip instead of being in socket. Straightened pin and plugged back in socket.

Number Calibrated \_\_\_\_\_ No. of Probes \_\_\_\_\_

Labor \_\_\_\_\_ hr (s) at \$ \_\_\_\_\_ per hour

Sub Total \_\_\_\_\_

Shipping Charges \_\_\_\_\_

TOTAL CHARGES \_\_\_\_\_

Signed Bill HensonDate 6-24-92Q/C Released Kurt A. SchaeferDate 6/24/92

Contacted \_\_\_\_\_

Phone No. \_\_\_\_\_

P O No. 40-17302Return Ship UPS

By \_\_\_\_\_



**RADCO**A Division of Science Applications  
An Employee-Owned Company International Corporation**CERTIFICATE OF CALIBRATION**

DATE OF CALIBRATION: July 20, 1992

SAIC JOB NO.: 11478

CUSTOMER: McGean &amp; Rohco

P.O. NO.: 40-17564

MODEL NO.: H-809VI

SERIAL NO.: 7669

BAROMETRIC PRESSURE: Actual: 29.88"Hg CORRECTED TO: 29.92"Hg

TEMPERATURE: Actual: 74°F

CORRECTED TO: 70°F

FILTER PAPER USED: Gelman A/E 47mm

CARTRIDGE USED: N/A

LAMINAR FLOW ELEMENT: 50MW20-1-1/2

SERIAL NO.: 728600-D1-R2

MANOMETER MODEL NO.: 530

SERIAL NO.: LM4054

NIST TEST REFERENCE NOS.: 2.6/167716A &amp; B, 232.08/209275-B

FLOW CFM	REFERENCE Pascals	CALIBRATION DATA AS LEFT Pascals	CALIBRATION DATA AS FOUND Pascals
0.5	41.60	42	
1.0	83.32	83	
1.5	125.16	125	
2.0	167.12	167	
2.5	209.20	209	
3.0	251.40	251	
3.5	293.73	294	
4.0	336.18	336	
4.5	378.75	379	
5.0	421.46	421	

This is to certify that SAIC RADCO in San Diego, California, has on this date, certified this instrument to be within  $\pm 5\%$  accuracy at each calibration point. The laminar flow element referenced above bears Letters of Certification traceable to the National Institute of Standards and Technology. The accuracy of the standards used is more than four times that of the items being calibrated.

CALIBRATED BY:

QUALITY ASSURANCE: