

ALCOA PERMANENT MOLD FACILITY  
Th-232 REMEDIATION  
PROJECT #91307  
DATA SUMMARY  
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TABULATED VERIFICATION DATA

TABLE 1  
ALCOA - NORM REMEDIATION  
VERIFICATION SURVEY RESULTS

LOCATION	NaI (CPM)		AVG	DOSE (uR)	SOIL SAMPLE ID	COMPOSITE SOIL SAMPLE RESULTS (pCi/g)	
	MAX	MIN				TH-232	U-238
C1-A	9120	8080	8500	2.6	C1-S1	1.2	11.1
C1-B	11500	8500	8900	2.5	RC1-S1	0.8	9.9
C1-C	11700	8400	9200	2.5			
C1-D	10400	6140	9000	2.8			
CENTROID	-	-	-	2.6			
D1-A	10080	7000	7800	3.2	D1-S1	2.2	6.2
D1-B	11800	8500	9500	2.9	RD1-S1	1.6	5.1
D1-C	14000	8090	10000	3.6			
D1-D	15000	7400	9400	3.3			
CENTROID	-	-	-	3.7			
E1-A	14700	10200	12000	4.4	E1-S1	2.4	5.5
E1-B	13200	8200	9000	3.1	RE1-S1	2.5	7.1
E1-C	12200	7300	8000	3.1			
E1-D	17500	8500	9500	3.1			
CENTROID	-	-	-	3.2			
F1-A	10000	8500	9400	3.6	F1-S2	2.1	6
F1-B	10400	6500	7700	2.7	RF1-S2	2.2	6.9
F1-C	9700	5100	7200	2.6			
F1-D	11500	9000	10100	2.6			
CENTROID	-	-	-	3.0			
G1-A	11000	7390	9700	2.9	G12-F2-S1	5.6	11.7
G2-B	11000	7200	8900	2.7	RG12-F2-S	5.8	12.5
F2-B	18000	7400	9800	3.6			
F2-C	20000	9800	10000	3.5			
CENT. F2	-	-	-	3.2			
E2-B	12200	7500	9500	3.6	E2-D2-S1	2.7	5.5
E2-C	13200	8000	9000	3.6	RE2-D2-S1	1.8	4.4
D2-B	11000	9000	10000	3.0			
D2-C	11000	8000	10000	3.2			
CENT. E2	-	-	-	3.1			
CENT. D2	-	-	-	3.0			
I2-A	11500	11300	13000				
I2-B	11500	11300	13000	3.0	I2-S1	0.6	4.6
I2-C	12000	11300	13000	3.0	RI2-S1	0.8	4.1
I2-D	15800	11300					

LABORATORY DATA  
AND CHAIN OF CUSTODY FORMS



HILBERT ASSOCIATES, INC.  
RADIOLOGICAL ENGINEERS

SUMMARY OF SOIL SAMPLE RESULTS  
REMCOR / ALCOA, CLEVELAND, OHIO

SAMPLE RESULTS IN pCi PER GRAM

SAMPLE IDENTIFICATION	SAMPLE DATE	U238 (1)	Th232 (2)
RAC-PS-01	10/14	11.7 +/- 2.8	1.7 +/- 0.3
RAC-PS-04	10/14	2.8 +/- 0.9	0.4 +/- 0.2
RAC-PS-05	10/14	2.8 +/- 2.1	1.8 +/- 0.4
RAC-PS-06	10/14	<12.6	91.0 +/- 3.0
RAC-PS-07	10/14	< 5.6	14.0 +/- 1.0
RAC-PS-08	10/14	< 2.4	2.2 +/- 0.5
RAC-PS-09	10/14	< 3.7	3.7 +/- 0.5
RAC-J1-01	10/14	12.7 +/- 2.1	1.9 +/- 0.3
RAC-J1S-01	10/14	12.9 +/- 2.5	1.3 +/- 0.4
C1-S1-C	10/15	11.1 +/- 1.9	1.2 +/- 0.3
RC1-S1-C	10/15	9.9 +/- 1.6	0.8 +/- 0.2
D1-S1-C	10/15	6.2 +/- 1.8	2.2 +/- 0.3
RD1-S1-C	10/15	5.1 +/- 1.6	1.6 +/- 0.3
E1-S1-C	10/15	5.5 +/- 0.5	2.4 +/- 0.1
RE1-S1-C	10/15	7.1 +/- 1.9	2.5 +/- 0.4
F1-S1-C	10/15	<5.6	14.2 +/- 1.0
RF1-S1-C	10/15	<5.5	12.4 +/- 1.0
G12-F2-S1-C	10/15	11.7 +/- 2.8	5.6 +/- 0.6
RG12-F2-S1-C	10/15	12.5 +/- 2.9	5.8 +/- 0.8
I2-S1-C	10/15	4.6 +/- 1.6	0.6 +/- 0.4
R12-S1-C	10/15	4.1 +/- 1.1	0.8 +/- 0.4
#1	10/17	<6.8	21.4 +/- 1.2
M-1-C	10/17	6.3 +/- 1.7	0.7 +/- 0.2
M-2-C	10/17	4.8 +/- 1.5	0.5 +/- 0.2
M-3-C	10/17	7.5 +/- 1.7	0.6 +/- 0.2
M-4-C	10/17	16.3 +/- 2.2	0.9 +/- 0.3
F1-S2-C	10/17	6.0 +/- 2.7	2.1 +/- 0.5
RF1-S2-C	10/17	6.9 +/- 2.1	2.2 +/- 0.4
E2-D2-S1-C	10/17	5.5 +/- 2.9	2.7 +/- 0.4
RE2-D2-S1-C	10/17	4.4 +/- 2.1	1.8 +/- 0.4

- (1) U238 ACTIVITY CONCENTRATION BASED ON ANALYSIS OF TH234 PHOTOPEAK AT 0.093 MeV AND CONFIRMING PHOTOPEAK AT 0.063 MeV.
- (2) Th232 ACTIVITY CONCENTRATION BASED ON ANALYSIS OF Ac228 PHOTOPEAK AT 0.911 MeV AND CONFIRMING PHOTOPEAK AT 0.0933 MeV IN ABSENCE OF U238.

\*\*\*\*\*  
RADIOACTIVITY CONCENTRATIONS AND MDAC VALUES  
FOR  
REMCOR CORPORATION AT ALCOA, CLEVELAND, OHIO  
\*\*\*\*\*

\*\*\*\*\*  
SAMPLE IDENTIFICATION IS C1-S1-C  
SAMPLE VOLUME IS 495 GMS  
SAMPLE COUNT TIME IS 1000 SEC  
SAMPLE TYPE IS MARINELLI/SOIL  
\*\*\*\*\*

NUCLIDE AND ENERGY	pCi/gram	MDAC (pCi/gm)
Th234* AT 0.093 MEV	11.1 +/- 1.9647	2.454358
Ac228** AT 0.0933MEV	12.7 +/- 2.2479	2.804981
Ra226* AT 0.186 MEV	2.2 +/- 1.1836	1.78727
Ac228** AT 0.911 MEV	1.2 +/- .3036	.0910001
Ac228** AT 0.969 MEV	0 +/- 0	.1638002
K40 AT 1.460 MEV	9 +/- 1.665	.3818186

Ac228 PHOTOPEAK AT 0.911 MeV FOR Th232 CONFIRMATION  
\* URANIUM SERIES(U238) / \*\* THORIUM SERIES(Th232)

\*\*\*\*\*  
SAMPLE IDENTIFICATION IS RC1-S1-C  
SAMPLE VOLUME IS 610 GMS  
SAMPLE COUNT TIME IS 1000 SEC  
SAMPLE TYPE IS MARINELLI/SOIL  
\*\*\*\*\*

NUCLIDE AND ENERGY	pCi/gram	MDAC (pCi/gm)
Th234* AT 0.093 MEV	9.8 +/- 1.6464	2.092825
-Ac228** AT 0.0933MEV	11.3 +/- 1.8984	2.3918
Ra226* AT 0.186 MEV	2.3 +/- .7935	1.450325
Ac228** AT 0.911 MEV	.85 +/- .2057	.4357947
Ac228** AT 0.969 MEV	0 +/- 0	.1329198
K40 AT 1.460 MEV	5.9 +/- 1.1918	.3098364

Ac228 PHOTOPEAK AT 0.911 MeV FOR Th232 CONFIRMATION  
\* URANIUM SERIES(U238) / \*\* THORIUM SERIES(Th232)

\*\*\*\*\*  
RADIOACTIVITY CONCENTRATIONS AND MDAC VALUES  
FOR  
REMCOR CORPORATION AT ALCOA, CLEVELAND, OHIO  
\*\*\*\*\*

\*\*\*\*\*  
SAMPLE IDENTIFICATION IS D1-S1-C  
SAMPLE VOLUME IS 645 GMS  
SAMPLE COUNT TIME IS 1000 SEC  
SAMPLE TYPE IS MARINELLI/SOIL  
\*\*\*\*\*

NUCLIDE AND ENERGY	pCi/gram	MDAC (pCi/gm)
Th234* AT 0.093 MEV	6.2 +/- 1.8166	2.565214
Ac228** AT 0.0933MEV	7.1 +/- 2.0803	2.931673
Ra226* AT 0.186 MEV	.9 +/- .9	1.969206
Ac228** AT 0.911 MEV	2.2 +/- .3454	1.119339
Ac228** AT 0.969 MEV	0 +/- 0	.1257071
K40 AT 1.460 MEV	4.7 +/- 1.128	.2930236

Ac228 PHOTOPEAK AT 0.911 MeV FOR Th232 CONFIRMATION  
\* URANIUM SERIES(U238) / \*\* THORIUM SERIES(Th232)

\*\*\*\*\*  
SAMPLE IDENTIFICATION IS RD1-S1-C  
SAMPLE VOLUME IS 621 GMS  
SAMPLE COUNT TIME IS 1000 SEC  
SAMPLE TYPE IS MARINELLI/SOIL  
\*\*\*\*\*

NUCLIDE AND ENERGY	pCi/gram	MDAC (pCi/gm)
Th234* AT 0.093 MEV	5.1 +/- 1.6422	2.303936
Ac228** AT 0.0933MEV	5.8 +/- 1.8676	2.63307
Ra226* AT 0.186 MEV	.8 +/- .8	1.890189
Ac228** AT 0.911 MEV	1.6 +/- .3104	7.253631E-02
Ac228** AT 0.969 MEV	0 +/- 0	.1305654
K40 AT 1.460 MEV	4 +/- 1.012	.3043482

Ac228 PHOTOPEAK AT 0.911 MeV FOR Th232 CONFIRMATION  
\* URANIUM SERIES(U238) / \*\* THORIUM SERIES(Th232)

DATE OF REPORT: 10-23-1991

HILBERT ASSOCIATES, INC.

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RADIOACTIVITY CONCENTRATIONS AND MDAC VALUES

FOR

REMCOR CORPORATION AT ALCOA, CLEVELAND, OHIO

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SAMPLE IDENTIFICATION IS F1-S2-C

SAMPLE VOLUME IS 545 GMS

SAMPLE COUNT TIME IS 1000 SEC

SAMPLE TYPE IS MARINELLI/SOIL

\*\*\*\*\*

NUCLIDE AND ENERGY		pCi/gram		MDAC(pCi/gm)
Th234* AT 0.093 MEV	6	+/-	1.932	2.746728
Ac228** AT 0.0933MEV	8	+/-	2.576	3.139117
Ra226* AT 0.186 MEV	1.5	+/-	1.2705	2.059352
Ac228** AT 0.911 MEV	2.1	+/-	.4998	.5264368
Ac228** AT 0.969 MEV	0	+/-	0	.1487726
K40 AT 1.460 MEV	3.5	+/-	.9624999	.3467893

Ac228 PHOTOPeAK AT 0.911 MeV FOR Th232 CONFIRMATION

\* URANIUM SERIES(U238) / \*\* THORIUM SERIES(Th232)

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## RADIOACTIVITY CONCENTRATIONS AND MDAC VALUES

FOR

REMCOR CORPORATION AT ALCOA, CLEVELAND, OHIO

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\*\*\*\*\*

SAMPLE IDENTIFICATION IS RF1-S2-C

SAMPLE VOLUME IS 554 GMS

SAMPLE COUNT TIME IS 1000 SEC

SAMPLE TYPE IS MARINELLI/SOIL

\*\*\*\*\*

NUCLIDE AND ENERGY	pCi/gram	MDAC (pCi/gm)
Th234* AT 0.093 MEV	6.9 +/- 2.1252	2.963962
Ac228** AT 0.0933MEV	9.2 +/- 2.8336	3.387385
Ra226* AT 0.186 MEV	1.6 +/- 1.2528	2.025897
Ac228** AT 0.911 MEV	2.2 +/- .3916	8.130875E-02
Ac228** AT 0.969 MEV	0 +/- 0	.1463557
K40 AT 1.460 MEV	4.3 +/- 1.118	.3411556

Ac228 PHOTOPEAK AT 0.911 MeV FOR Th232 CONFIRMATION

\* URANIUM SERIES(U238) / \*\* THORIUM SERIES(Th232)

\*\*\*\*\*

## RADIOACTIVITY CONCENTRATIONS AND MDAC VALUES

FOR

REMCOR CORPORATION AT ALCOA, CLEVELAND, OHIO

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\*\*\*\*\*

SAMPLE IDENTIFICATION IS E2-D2-S1-C

SAMPLE VOLUME IS 560 GMS

SAMPLE COUNT TIME IS 1000 SEC

SAMPLE TYPE IS MARINELLI/SOIL

\*\*\*\*\*

NUCLIDE AND ENERGY	pCi/gram	MDAC (pCi/gm)
Th234* AT 0.093 MEV	5.5 +/- 2.0295	2.932206
Ac228** AT 0.0933MEV	7.3 +/- 2.6937	3.351092
Ra226* AT 0.186 MEV	1.6 +/- 1.2864	2.096085
Ac228** AT 0.911 MEV	2.7 +/- .4401	8.043759E-02
Ac228** AT 0.969 MEV	0 +/- 0	.1447876
K40 AT 1.460 MEV	7.5 +/- 1.4775	.3375003

Ac228 PHOTOPeAK AT 0.911 MeV FOR Th232 CONFIRMATION

\* URANIUM SERIES(U238) / \*\* THORIUM SERIES(Th232)



DATE OF REPORT: 10-23-1991

HILBERT ASSOCIATES, INC.

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RADIOACTIVITY CONCENTRATIONS AND MDAC VALUES

FOR

REMCOR CORPORATION AT ALCOA, CLEVELAND, OHIO

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\*\*\*\*\*

SAMPLE IDENTIFICATION IS RE2-D2-S1-C

SAMPLE VOLUME IS 553 GMS

SAMPLE COUNT TIME IS 1000 SEC

SAMPLE TYPE IS MARINELLI/SOIL

\*\*\*\*\*

NUCLIDE AND ENERGY	pCi/gram	MDAC(pCi/gm)
Th234* AT 0.093 MEV	4.4 +/- 2.1252	3.131482
Ac228** AT 0.0933MEV	5.8 +/- 2.8014	3.578836
Ra226* AT 0.186 MEV	2 +/- 1.306	1.931723
Ac228** AT 0.911 MEV	1.8 +/- .3546	8.145579E-02
Ac228** AT 0.969 MEV	0 +/- 0	.1466204
K40 AT 1.460 MEV	5.2 +/- 1.8356	2.323906

Ac228 PHOTOPEAK AT 0.911 MeV FOR Th232 CONFIRMATION

\* URANIUM SERIES(U238) / \*\* THORIUM SERIES(Th232)

\*\*\*\*\*  
RADIOACTIVITY CONCENTRATIONS AND MDAC VALUES  
FOR  
REMCOR CORPORATION AT ALCOA, CLEVELAND, OHIO  
\*\*\*\*\*

\*\*\*\*\*  
SAMPLE IDENTIFICATION IS E1-S1-C  
SAMPLE VOLUME IS 718 GMS  
SAMPLE COUNT TIME IS 15000 SEC  
SAMPLE TYPE IS MARINELLI/SOIL  
\*\*\*\*\*

NUCLIDE AND ENERGY	pCi/gram	MDAC (pCi/gm)
Th234* AT 0.093 MEV	5.5 +/- .462	.6345874
Ac228** AT 0.0933MEV	6.3 +/- .5292	.7252427
Ra226* AT 0.186 MEV	1.4 +/- .2856	.433029
Ac228** AT 0.911 MEV	2.4 +/- .12	9.115842E-02
Ac228** AT 0.969 MEV	0 +/- 0	7.52842E-03
K40 AT 1.460 MEV	6.8 +/- .4216	.3155163

Ac228 PHOTOPEAK AT 0.911 MeV FOR Th232 CONFIRMATION  
\* URANIUM SERIES(U238) / \*\* THORIUM SERIES(Th232)

\*\*\*\*\*  
SAMPLE IDENTIFICATION IS RE1-S1-C  
SAMPLE VOLUME IS 635 GMS  
SAMPLE COUNT TIME IS 1000 SEC  
SAMPLE TYPE IS MARINELLI/SOIL  
\*\*\*\*\*

NUCLIDE AND ENERGY	pCi/gram	MDAC (pCi/gm)
Th234* AT 0.093 MEV	7 +/- 1.967	2.727101
Ac228** AT 0.0933MEV	8 +/- 2.248	3.116687
Ra226* AT 0.186 MEV	2.5 +/- 1.22	1.848516
Ac228** AT 0.911 MEV	2.5 +/- .3925	7.093708E-02
Ac228** AT 0.969 MEV	0 +/- 0	.1276867
K40 AT 1.460 MEV	7.3 +/- 1.2994	.2976381

Ac228 PHOTOPEAK AT 0.911 MeV FOR Th232 CONFIRMATION  
\* URANIUM SERIES(U238) / \*\* THORIUM SERIES(Th232)



DATE OF REPORT: 10-17-1991

HILBERT ASSOCIATES, INC.

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RADIOACTIVITY CONCENTRATIONS AND MDAC VALUES  
FOR  
REMCOR CORPORATION AT ALCOA, CLEVELAND, OHIO  
\*\*\*\*\*

\*\*\*\*\*  
SAMPLE IDENTIFICATION IS G12-F2-SIC  
SAMPLE VOLUME IS 550 GMS  
SAMPLE COUNT TIME IS 1000 SEC  
SAMPLE TYPE IS MARINELLI/SOIL  
\*\*\*\*\*

NUCLIDE AND ENERGY	pCi/gram	MDAC (pCi/gm)
Th234* AT 0.093 MEV	11.7 +/- 2.808	3.921853
Ac228** AT 0.0933MEV	13.4 +/- 3.216	4.482118
Ra226* AT 0.186 MEV	1.8 +/- 1.6866	2.695542
Ac228** AT 0.911 MEV	5.6 +/- .6216	8.190009E-02
Ac228** AT 0.969 MEV	0 +/- 0	.1474201
K40 AT 1.460 MEV	6.2 +/- 1.3206	.3436367

Ac228 PHOTOPEAK AT 0.911 MeV FOR Th232 CONFIRMATION  
\* URANIUM SERIES(U238) / \*\* THORIUM SERIES(Th232)

\*\*\*\*\*  
SAMPLE IDENTIFICATION IS RG12-F2-S1C  
SAMPLE VOLUME IS 574 GMS  
SAMPLE COUNT TIME IS 1000 SEC  
SAMPLE TYPE IS MARINELLI/SOIL  
\*\*\*\*\*

NUCLIDE AND ENERGY	pCi/gram	MDAC (pCi/gm)
Th234* AT 0.093 MEV	12.5 +/- 2.9	3.992239
Ac228** AT 0.0933MEV	14.3 +/- 3.3176	4.562558
Ra226* AT 0.186 MEV	2 +/- 1.98	2.910206
Ac228** AT 0.911 MEV	5.8 +/- .8120001	.7447108
Ac228** AT 0.969 MEV	0 +/- 0	.1412562
K40 AT 1.460 MEV	4.2 +/- 2.0034	2.433563

Ac228 PHOTOPEAK AT 0.911 MeV FOR Th232 CONFIRMATION  
\* URANIUM SERIES(U238) / \*\* THORIUM SERIES(Th232)

DATE OF REPORT: 10-17-1991

HILBERT ASSOCIATES, INC.

\*\*\*\*\*  
RADIOACTIVITY CONCENTRATIONS AND MDAC VALUES  
FOR  
REMCOR CORPORATION AT ALCOA, CLEVELAND, OHIO  
\*\*\*\*\*

\*\*\*\*\*  
SAMPLE IDENTIFICATION IS I2-S1-C  
SAMPLE VOLUME IS 558 GMS  
SAMPLE COUNT TIME IS 1000 SEC  
SAMPLE TYPE IS MARINELLI/SOIL  
\*\*\*\*\*

NUCLIDE AND ENERGY	pCi/gram	MDAC (pCi/gm)
Th234* AT 0.093 MEV	4.6 +/- 1.6744	2.393052
Ac228** AT 0.0933MEV	5.3 +/- 1.9292	2.734916
Ra226* AT 0.186 MEV	3.9 +/- 1.2597	1.811898
Ac228** AT 0.911 MEV	.6 +/- .4242	.8209763
Ac228** AT 0.969 MEV	0 +/- 0	.1453066
K40 AT 1.460 MEV	3.8 +/- .9196	.33871

Ac228 PHOTOPEAK AT 0.911 MeV FOR Th232 CONFIRMATION  
\* URANIUM SERIES(U238) / \*\* THORIUM SERIES(Th232)

\*\*\*\*\*  
SAMPLE IDENTIFICATION IS RI2-S1-C  
SAMPLE VOLUME IS 566 GMS  
SAMPLE COUNT TIME IS 1000 SEC  
SAMPLE TYPE IS MARINELLI/SOIL  
\*\*\*\*\*

NUCLIDE AND ENERGY	pCi/gram	MDAC (pCi/gm)
Th234* AT 0.093 MEV	4.1 +/- 1.8491	2.611952
Ac228** AT 0.0933MEV	4.7 +/- 2.1197	2.985088
Ra226* AT 0.186 MEV	3.7 +/- 1.2469	1.786288
Ac228** AT 0.911 MEV	.8 +/- .412	.5573429
Ac228** AT 0.969 MEV	0 +/- 0	.1432528
K40 AT 1.460 MEV	4 +/- 1.1	.3339226

Ac228 PHOTOPEAK AT 0.911 MeV FOR Th232 CONFIRMATION  
\* URANIUM SERIES(U238) / \*\* THORIUM SERIES(Th232)

**REMCOR**

## CHAIN OF CUSTODY RECORD

No 3663

RFA 840 : 841

PROJECT NO.:

71062

PROJECT NAME:

Ranch

SAMPLERS:

JAS 10BG

NO.  
OF  
CON-  
TAINERS

REMARKS

SAMPLE	DATE	TIME	SAMPLE MEDIUM	SAMPLE LOCATION
CI-S1-L	10/15/84	1300	Soil	
RI-S1-L		1300		
DI-S1-L		1310		
RO-S1-L		1310		
SI-S1-L		1315		
RE-S1-L		1315		
FI-S1-L		1330		
RF-S1-L		1330		
G12-F2-S1-L		1415		25 ft. ground to 1.5 ft. ground 10 ft. Soil to 2 ft. ground
R12-F2-S1-L		1415		" "
I2-S1-L		1430		
RI2-S1-L		1430		

6 kg = 111000000 15 sec (cont.)

&lt; 1000 cpm

&lt; 1000 cpm

&lt; 1000 cpm

&lt; 1000 cpm

11300 cpm

11120 cpm

14400 cpm

14500 cpm

11100 cpm

12300 cpm

&lt; 1000 cpm

&lt; 1000 cpm

RELINQUISHED BY:

Joe Smith

DATE/TIME

10/15/84 5:40

RECEIVED BY: Fedra

3394695242

RELINQUISHED BY:

DATE/TIME

RECEIVED BY:

RELINQUISHED BY:

DATE/TIME

RECEIVED BY:

RELINQUISHED BY:

DATE/TIME

RECEIVED BY:

RELINQUISHED BY:

DATE/TIME

RECEIVED FOR LAB BY:

DATE/TIME

POSSIBLE HAZARD:

**REMCOR**

## CHAIN OF CUSTODY RECORD

112 3654

PROJECT NO.: 91367		PROJECT NAME: Remcor			NO. OF CONTAINERS	REMARKS										
SAMPLERS: Joe Smith / Dave Gill																
SAMPLE	DATE	TIME	SAMPLE MEDIUM	SAMPLE LOCATION												
Sample #1	10/12/81	1423	Soil		1	X										
20251C	10/12/81	0415			1											
20254	10/12/81	0515			1											
F152C	10/12/81	1200			1											
F152C		1200			1											
M1C		1400	Dust		1											
M2C		1423			1											
M3C		1430			1											
M4C		1500			1											
1			File gland													
2			File													
3			Block													

RELINQUISHED BY: Joe Smith	DATE/TIME 10/12/81 4:00	RECEIVED BY: Foster 314 6687692	RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
RELINQUISHED BY:	DATE/TIME	RECEIVED BY:	RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
RELINQUISHED BY:	DATE/TIME	RECEIVED FOR LAB BY:	DATE/TIME	POSSIBLE HAZARD:	





CHAIN OF CUSTODY RECORD

No 3653

PROJECT NO: 91307 PROJECT NAME: Alcon - Cleveland

SAMPLERS: D. Gill / E. Rothman

REMARKS

SAMPLE	DATE	TIME	SAMPLE MEDIUM	SAMPLE LOCATION	NO. OF CON-TAINERS				
RAC-P3-04	10-11-91	0900	Soil	East Side - Small	1	X			Marinelli Becker
RAC-P3-05	10-11-91	0905	Soil	South Side - Small	1	X			" "
RAC-P3-06	10-11-91	0910	Soil	West Side - Small	1	X			" "
RAC-P3-07	10-11-91	0915	Soil	East End - Large	1	X			" "
RAC-P3-08	10-11-91	0920	Soil	Middle - Large	1	X			" "
RAC-P3-09	10-11-91	0925	Soil	West End - Large	1	X			" "
RAC-P3-01	10-11-91	0945	Soil	Hot Spot Pile	1	X			" "
RAC-33-001	10-11-91	1000	Soil	Hot Spot at Fence	1	X			See Grid Map for Location
RAC-335-001	10-11-91	1015	Soil	Hot Spot at Pipe	1	X			" " " "

RELINQUISHED BY: E. Rothman	DATE/TIME: 10-11-91 15:00A	RECEIVED BY: [Signature]	DATE/TIME: [ ]	RECEIVED BY: [ ]
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:	RECEIVED BY:

RELINQUISHED BY:	DATE/TIME:	RECEIVED FOR LAB BY:	DATE/TIME:	POSSIBLE HAZARD:
------------------	------------	----------------------	------------	------------------

FINAL SODIUM IODIDE (NaI) SURVEY DATA  
BY GRID

DRAWN  
BYC.E.B.  
10-7-91CHECKED  
APPROVEDDRAWING  
NUMBER

91307-A1

REMCOR

NOTES

GRID TITLE: C1NOTES: NAI data in CPM  
& Sample locations

SAMPLE No.

SAMPLE ANALYSIS INSTRUCTIONS

C1-S1-C

Gamma Spect 11-23

RC1-S1-C

TL 232

INSTRUMENT No.:

INSTRUMENT TYPE:

CALIBRATION:

FIELD RECORD FOR MEASUREMENTS AND  
SAMPLE COLLECTION - 20 FOOT GRIDBY: Joe SenitzDATE: 10/15/94SAMPLE LOCATION  
N-S E-W DEPTH

\*DEPTH RELATIVE TO:

SAMPLE NUMBER

C1-S1-C

RC1-S1-C

Random  
LocationAvg - 9000  
min - 6140Avg - 8500  
min - 8080

10400

Avg - 9200  
min - 8400Avg - 8900  
min - 8500

11700

19.2

11500

6.3'

14.2'

1.8'

14.8'

13.3'

11'

14.7'

10.3'

9120

6'

C-1

C-0

D1

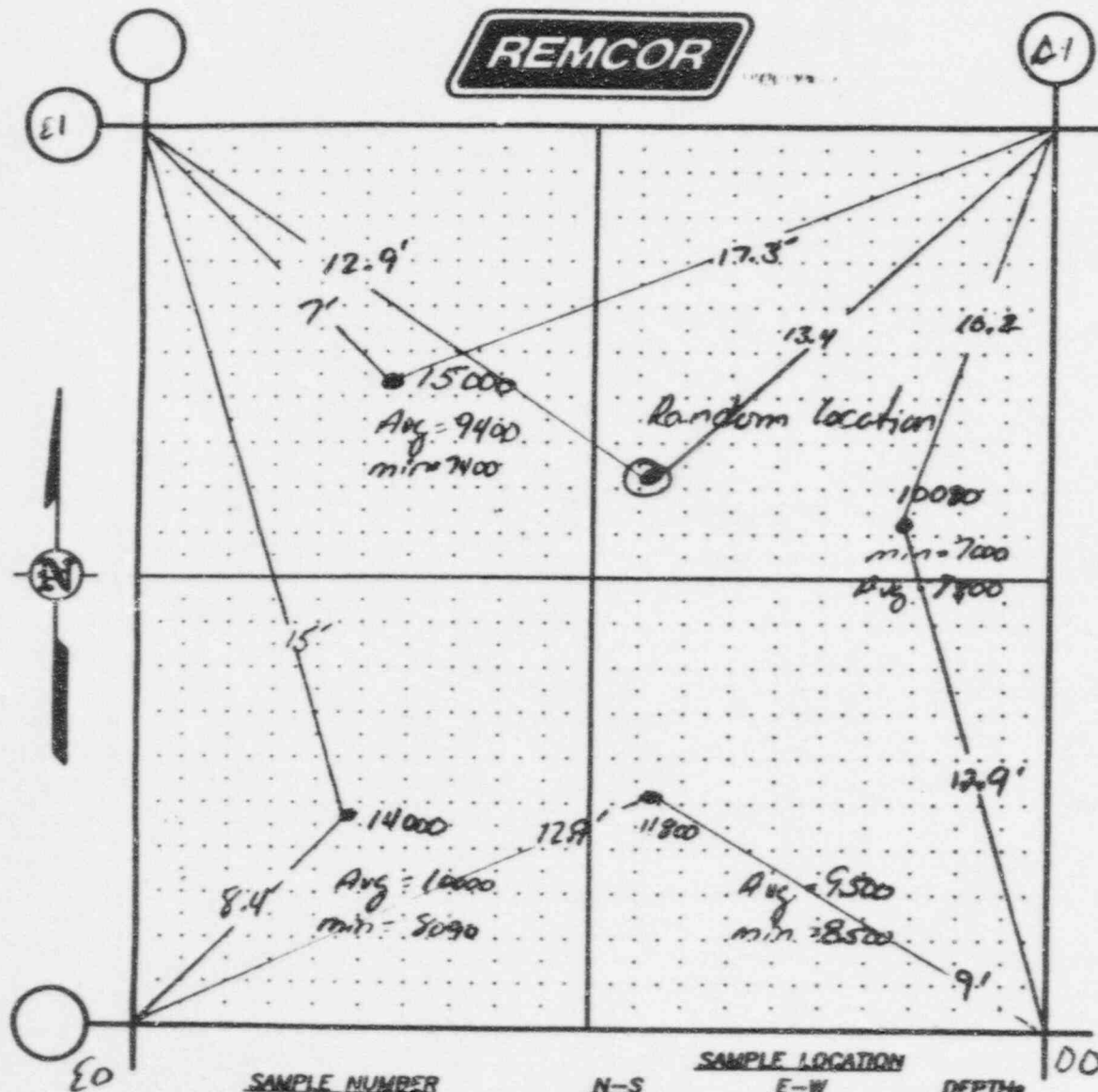
N

D0

DRAWN  
BYC.E.B.  
10\*7\*91CHECKED  
APPROVEDDRAWING  
NUMBER

91307-A1

REMCOR

GRID TITLE: D1NOTES: No. 1 data in CPM  
1 Sample locations

SAMPLE No.

SAMPLE ANALYSIS INSTRUCTIONS

D1-S1-C

Gamma score 11.238

RDI-S1-C

1.232

INSTRUMENT No.:

INSTRUMENT TYPE:

CALIBRATION:

FIELD RECORD FOR MEASUREMENTS AND  
SAMPLE COLLECTION - 20 FOOT GRID

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

SAMPLE NUMBER

D1-S1-C

RDI-S1-C

N-S

SAMPLE LOCATION

E-W

DEPTH:

DEPTH RELATIVE TO:





D2

GRID TITLE: E2-D2

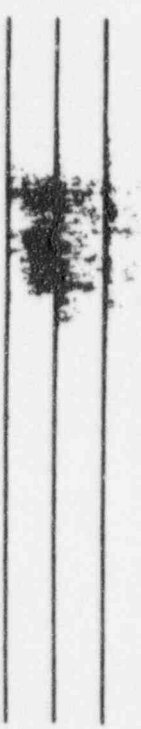
NOTES: Composite

Net data CPM & sample locations

SAMPLE No. E2-D2-51 SAMPLE ANALYSIS INSTRUCTIONS Gratic Scale U-258-TA-22

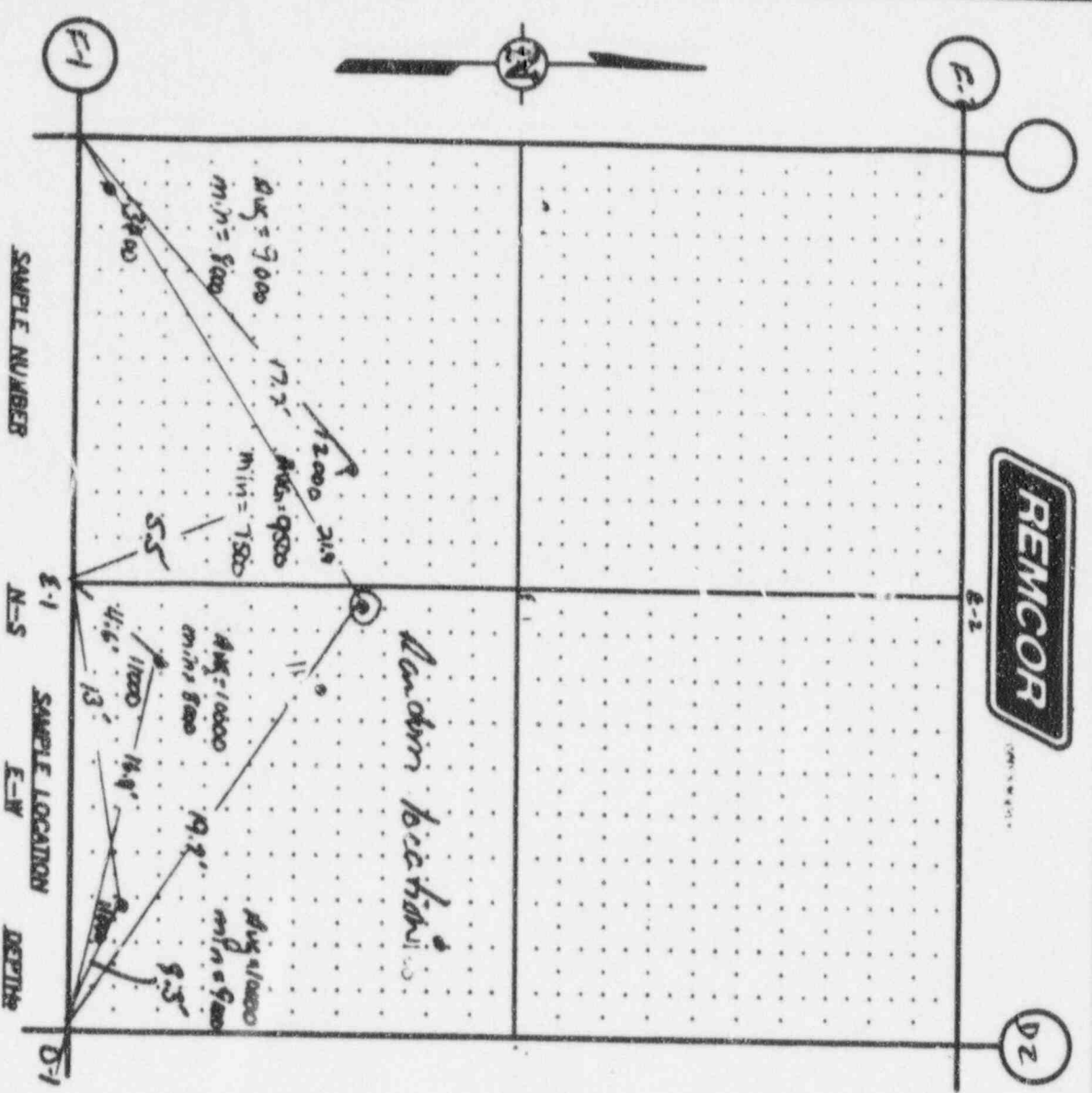
E2-D2-51

INSTRUMENT No.                       
 INSTRUMENT Type                       
 CALIBRATION                     



FIELD RECORD FOR MEASUREMENTS AND SAMPLE COLLECTION - 20 FOOT GRID

BY: W. Smith DATE: 10/16/91



SAMPLE NUMBER E2-D2-51  
E2-D2-51

SAMPLE LOCATION E-1 N-S E-W D-1  
 DEPTH                       
 DEPTH RELATIVE TO:

DRAWN  
BYC.E.B.  
10°7'91CHECKED  
APPROVEDDRAWING  
NUMBER

91307-A1

REMCOR

S-1

GRID TITLE: C1

NOTES:

CompositeNo data: sample locations

SAMPLE No.

SAMPLE ANALYSIS INSTRUCTIONS

E1-S1-CGamma Spec 4-238-TA-250REL-S1-C

INSTRUMENT No.

INSTRUMENT TYPE

CALIBRATION

FIELD RECORD FOR MEASUREMENTS AND  
SAMPLE COLLECTION - 20 FOOT GRID

BY:

Va. Smith

DATE:

10/15/91

SAMPLE NUMBER

E1-S1-CREL-S1-C

SAMPLE LOCATION

N-S

E-W

DEPTH

\*DEPTH RELATIVE TO:



DATE: 10/15/81



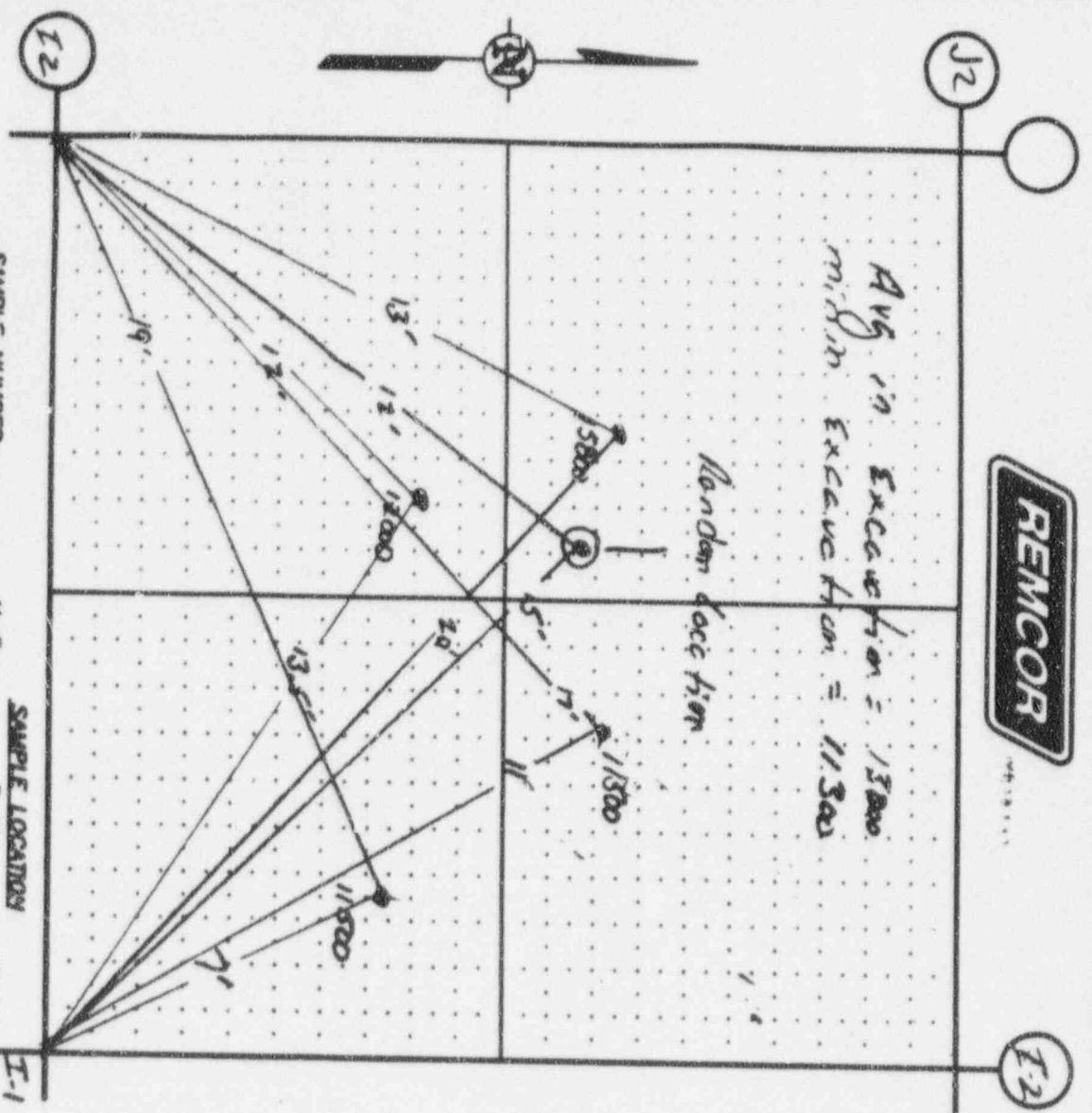


GRID TITLE: 22

NOTES: all data CPM  
+ sample locations

Avg in Excavation = 11300  
 min Excavation = 11300

Random Excavation



SAMPLE NUMBER

12-51-C  
12-51-C

N-S

SAMPLE LOCATION

E-W

DEPTH

I-1

\*DEPTH RELATIVE TO:

SAMPLE No.

12-51-C  
12-51-C

SAMPLE ANALYSIS INSTRUCTIONS

Gamma Spec Th-232  
11-238

INSTRUMENT No.:

INSTRUMENT TYPE:

CALIBRATION:

FIELD RECORD FOR MEASUREMENTS AND  
 SAMPLE COLLECTION - 20 FOOT GRID

BY: W. Seale

DATE: 10/15/91

FINAL RADIATION (uR/HR) SURVEY DATA  
BY GRID

DRAWN  
BYC.E.B.  
10\*7\*91CHECKED  
APPROVEDDRAWING  
NUMBER

91307-A1

REMCOR

I2

GRID TITLE: I2NOTES: ur / r

SAMPLE No.

SAMPLE ANALYSIS INSTRUCTIONS

INSTRUMENT No.:

INSTRUMENT TYPE:

CALIBRATION:

SAMPLE NUMBER

N-S

SAMPLE LOCATION

E-W

DEPTH

\*DEPTH RELATIVE TO:

FIELD RECORD FOR MEASUREMENTS AND  
SAMPLE COLLECTION - 20 FOOT GRIDBY: Steve SealeDATE: 10/11/91

DRAWN  
BYC.E.B.  
10\*7\*91CHECKED  
APPROVEDDRAWING  
NUMBER 91307-A1

REMCOR

02

GRID TITLE: D-2

NOTES: *HR/10*

SAMPLE No.

SAMPLE ANALYSIS INSTRUCTIONS

INSTRUMENT No.:

INSTRUMENT TYPE:

CALIBRATION:

FIELD RECORD FOR MEASUREMENTS AND  
SAMPLE COLLECTION - 20 FOOT GRIDBY: *for Smith*DATE: *10/15/91*

SAMPLE NUMBER

N-S

SAMPLE LOCATION

E-W

DEPTH

\*DEPTH RELATIVE TO:



DRAWN  
BYC.E.B.  
10\*7\*91CHECKED  
APPROVEDDRAWING  
NUMBER

91307-A1

REMCOR

E2

GRID TITLE: E2

NOTES: H.R./ac

SAMPLE No.

SAMPLE ANALYSIS INSTRUCTIONS

INSTRUMENT No.:

INSTRUMENT TYPE:

CALIBRATION:

FIELD RECORD FOR MEASUREMENTS AND  
SAMPLE COLLECTION - 20 FOOT GRID

BY:

J. E. Smith

DATE:

1-15/91

\*DEPTH RELATIVE TO:

DRAWN  
BY

C.E.B.  
10-7-91

CHECKED  
APPROVED

DRAWING  
NUMBER

91307-A1

**REMCOR**

C1

GRID TITLE: C1

NOTES: u R / ac

SAMPLE No.

SAMPLE ANALYSIS INSTRUCTIONS

INSTRUMENT No.:

INSTRUMENT TYPE:

CALIBRATION:

FIELD RECORD FOR MEASUREMENTS AND  
SAMPLE COLLECTION - 20 FOOT GRID

BY: Joe Miller

DATE: 10/15/94

SAMPLE NUMBER

N-S

SAMPLE LOCATION

E-W

DEPTH

\*DEPTH RELATIVE TO:

DRAWN  
BYC.B.B.  
10\*7\*91CHECKED  
APPROVEDDRAWING  
NUMBER

91307-A1

REMCOR

D-1

GRID TITLE: D-1

NOTES:

H.R. / H.

SAMPLE No.

SAMPLE ANALYSIS INSTRUCTIONS

INSTRUMENT No.:

INSTRUMENT TYPE:

CALIBRATION:

FIELD RECORD FOR MEASUREMENTS AND  
SAMPLE COLLECTION - 20 FOOT GRID

BY:

V. Senik

DATE:

10/15/91

\*DEPTH RELATIVE TO:

DRAWN  
BYC.E.B.  
10\*7\*91CHECKED  
APPROVEDDRAWING  
NUMBER

91307-A1

REMCOR

E1

GRID TITLE: E1

NOTES:

HR/LC

SAMPLE No.

SAMPLE ANALYSIS INSTRUCTIONS

INSTRUMENT No.:

INSTRUMENT TYPE:

CALIBRATION:

FIELD RECORD FOR MEASUREMENTS AND  
SAMPLE COLLECTION - 20 FOOT GRID

BY:

J. S. A.

DATE:

10/15/91

SAMPLE LOCATION  
N-S E-W DEPTH

SAMPLE NUMBER

\*DEPTH RELATIVE TO:

DRAWN  
BYC.E.B.  
10\*7\*91CHECKED  
APPROVEDDRAWING  
NUMBER

91307-A1

REMCOR

F1

GRID TITLE:

F1

NOTES:

UR/LR

SAMPLE No.

SAMPLE ANALYSIS INSTRUCTIONS

INSTRUMENT No.:

INSTRUMENT TYPE:

CALIBRATION:

FIELD RECORD FOR MEASUREMENTS AND  
SAMPLE COLLECTION - 20 FOOT GRID

BY:

Joe S. S. / 10

DATE:

10/15/91

SAMPLE NUMBER

N-S

SAMPLE LOCATION

E-W

DEPTH

\*DEPTH RELATIVE TO:



DRAWN  
BY

C.E.B.  
10\*7\*91

CHECKED  
APPROVED

DRAWING  
NUMBER

91307-A1

REMCOR

GRID TITLE: G1, G2, F2

NOTES: HR/6

SAMPLE No.

SAMPLE ANALYSIS INSTRUCTIONS

INSTRUMENT No.:

INSTRUMENT TYPE:

CALIBRATION:

SAMPLE NUMBER

N-S

SAMPLE LOCATION

E-W

DEPTH

\*DEPTH RELATIVE TO:

FIELD RECORD FOR MEASUREMENTS AND  
SAMPLE COLLECTION - 20 FOOT GRID

BY: Vol Smith

DATE: 10/1/61

INSTRUMENT CALIBRATION CERTIFICATES

**Instrument  
Services Inc.**

# CALIBRATION CERTIFICATE

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION	INSTRUMENT INFORMATION
Customer Name: <u>ABG Measurements, Inc.</u>	Instrument Manufacturer: <u>Eberline</u>
Customer Address: <u>640 Maple Avenue</u>	Model: <u>RO-2</u> Serial Number: <u>3184</u>
<u>Saratoga Springs, NY 12866</u>	External Probe(s): _____ Serial #: _____
Customer P.O. #: <u>1510</u>	Calibration Method: <u>137Cs s/n 107</u>
Work Order #: <u>1-91-08-207</u>	<u>137Cs s/n 20020</u>
	Depleted Uranium s/n <u>013</u>

## INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comment
		Before Calib.	After Calib.	
1 5 mR/hr	1 mR/hr		1 mR/hr	All Calibrations Btn. + & - 10%
2	2		2	
3	4		3.95	Beta Factor = 3.7
4				
5 50	10		10	(Open Window-Closed Window)
6	20		20	
7	40		40	X 3.7 = True Beta
8				
9 500	100		100	
10	200		200	
11	400		405	
12				
13 5000	1 R/hr		1 R/hr	
14	2		2	
15	4		3.8	
16				
17				
18				
19				
20				
21				
22				
23				

## STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all of the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated by: William Owen  
(Signed)  
Calibration Date: 08-01-91  
Next Calibration Due: 02-01-92

I certify that the above information is correct:

Theresa M. Vella 08-01-91  
Administrative Coordinator Date



# CALIBRATION CERTIFICATE

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION	INSTRUMENT INFORMATION
Customer Name: <u>ABG Measurements, Inc.</u>	Instrument Manufacturer: <u>Ludlum</u>
Customer Address: <u>640 Maple Avenue</u>	Model: <u>19</u> Serial Number: <u>56726</u>
<u>Saratoga Springs, NY 12866</u>	External Probe(s): _____ Serial #: _____
Customer P.O. #: _____	Calibration Method: <u>137 Cs s/n 107</u>
Work Order #: <u>I-91-09-207</u>	

## INSTRUMENT CALIBRATION INFORMATION

	Instrument Range	Calibration Standard Value	Instrument Response		Comment
			Before Calib.	After Calib.	
1	25 uR/hr	0.015 mR/hr		16 uR/hr	All Calibrations Btn. + & - 10%
2		0.020		20	
3					
4	50 uR/hr	0.015		16	
5		0.02		20	
6		0.04		36	
7					
8	250 uR/hr	0.05		50	
9		0.1		100	
10		0.2		190	
11					
12	500 uR/hr	0.1		110	
13		0.2		200	
14		0.4		370	
15					
16	5000 uR/hr	1		1,100	
17		2		2,000	
18		4		3,900	
19					
20					
21					
22					
23					

## STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all of the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology (We are not responsible for damage incurred during shipment or use of this instrument)

Instrument Calibrated by: <u>James Christopher</u> (Signed)	I certify that the above information is correct:
Calibration Date: <u>09-27-91</u>	<u>Heeresa M. Cas</u> 09-27-91
Next Calibration Due: <u>03-27-92</u>	Administrative Coordinator Date



# CALIBRATION CERTIFICATE

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION	INSTRUMENT INFORMATION
Customer Name: <u>ABG Measurements, Inc.</u>	Instrument Manufacturer <u>Eberline</u>
Customer Address: <u>640 Maple Avenue</u>	Model <u>RAS-1</u> Serial Number <u>0881</u>
<u>Saratoga Springs, NY 12866</u>	External Probe(s) _____ Serial # _____
Customer P.O. # _____	Calibration Method: <u>Kurz Model 505-8 s/n ME-27</u>
Work Order # <u>I-91-09-207</u>	

## INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comment
		Before Calib.	After Calib.	
1 <u>N/A</u>	<u>1 CFM</u>	<u>1.1 CFM</u>	<u>1 CFM</u>	<u>All Calibrations Btn. + &amp; - 10%</u>
2 _____	_____	_____	_____	<u>28 LPM = 1 CFM</u>
3 _____	_____	_____	_____	_____
4 _____	_____	_____	_____	_____
5 _____	_____	_____	_____	_____
6 _____	_____	_____	_____	_____
7 _____	_____	_____	_____	_____
8 _____	_____	_____	_____	_____
9 _____	_____	_____	_____	_____
10 _____	_____	_____	_____	_____
11 _____	_____	_____	_____	_____
12 _____	_____	_____	_____	_____
13 _____	_____	_____	_____	_____
14 _____	_____	_____	_____	_____
15 _____	_____	_____	_____	_____
16 _____	_____	_____	_____	_____
17 _____	_____	_____	_____	_____
18 _____	_____	_____	_____	_____
19 _____	_____	_____	_____	_____
20 _____	_____	_____	_____	_____
21 _____	_____	_____	_____	_____
22 _____	_____	_____	_____	_____
23 _____	_____	_____	_____	_____

## STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all of the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated by: <u>William Owen</u>	I certify that the above information is correct:
(Signed)	<u>Herminia Bas</u>
Calibration Date: <u>09-27-91</u>	<u>09-27-91</u>
Next Calibration Due: <u>03-27-92</u>	Administrative Coordinator Date

# CALIBRATION CERTIFICATE

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name	ABG Measurements, Inc.	Instrument Manufacturer	Ludlum
Customer Address	640 Maple Avenue Saratoga Springs, NY 12866	Model	19
		Serial Number	49661
		External Probe(s)	Serial #
Customer P.O. #	1029		137
Work Order #	I-90-12-207	Calibration Method	Cs s/n 107

## INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comment
		Before Calib	After Calib	
1 25	0.015 mR/hr		16 uR/hr	All Calibrations Btn. + & - 10%
2	0.020		20	
3				
4 50	0.015		16	
5	0.020		20.5	
6	0.040		36	
7				
8 250	0.05		50	
9	0.1		105	
10	0.2		195	
11				
12 500	0.1		105	
13	0.2		210	
14	0.4		390	
15				
16 5000	1		1,100	
17	2		2,050	
18	4		3,750	
19				
20				
21				
22				
23				

## STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all of the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Bureau of Standards (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated by: William Owens  
 Calibration Date: 12-12-90 (Signed)  
 Next Calibration Due: 12-12-91

I certify that the above information is correct.

Administrative Coordinator

Date

12-12-90

**Instrument  
Services Inc.**

# CALIBRATION CERTIFICATE

This Certificate will be accompanied by Calibration Charts or Readings where applicable

**CUSTOMER INFORMATION**

Customer Name: ABG Measurements, Inc.  
 Customer Address: 640 Maple Avenue  
Saratoga Springs, NY 12866  
 Customer P.O. #: 1029  
 Work Order #: I-90-12-207

**INSTRUMENT INFORMATION**

Instrument Manufacturer: Staplex  
 Model: TF-1A Serial Number: 17578N  
 External Probe(s): \_\_\_\_\_ Serial #: \_\_\_\_\_  
 Calibration Method: Kurz Model 505-10 s/n ME-2763

**INSTRUMENT CALIBRATION INFORMATION**

Instrument Range	Calibration Standard Value	Instrument Response		Comment
		Before Calib.	After Calib.	
N/A	22.5 CFM		22.5 CFM	All Calibrations Btn. + & - 10%
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				

**STATEMENT OF CERTIFICATION**

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all of the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Bureau of Standards (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated by: William Owens (Signed)

Calibration Date: 12-12-90

Next Calibration Due: 12-12-91

I certify that the above information is correct:

Administrative Coordinator

12-12-90

Date





# CALIBRATION CERTIFICATE

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name:	ARG Measurements, Inc.	Instrument Manufacturer:	Ludlum
Customer Address:	640 Maple Avenue Saratoga Springs, NY 12866	Model:	18
		Serial Number:	34282
		External Probe(s):	44-10
		Serial #:	025933
Customer P.O.#:	1513	Calibration Method:	MP-1 s/n 298
Work Order #:	I-91-08-207		

## INSTRUMENT CALIBRATION INFORMATION

	Instrument Range	Calibration Standard Value	Instrument Response		Comment
			Before Calib.	After Calib.	
1	X1	100 CPM		100 CPM	All Calibrations Btn. + & - 10%
2		200		200	
3		400		385	Window pot has been set
4					Window = IN
5	X10	1K		1K	
6		2K		2K	High Voltage 1 - <sup>133</sup> Ba
		4K		4.1K	High Voltage = 1250 Volts
9	X100	10K		10K	High Voltage 2 - <sup>137</sup> Cs
10		20K		20K	High Voltage = 880 Volts
11		40K		40K	
12					High Voltage 3 - <sup>60</sup> Co
13	X1000	100K		100K	High Voltage = 800 Volts
14		200K		200K	
15		400K		400K	
16					
17					
18					
19					
20					
21					
22					
23					

## STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all of the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated by:

*James Christy*  
(Signed)

I certify that the above information is correct:

*Theresa M. Deas*  
Administrative Coordinator

Calibration Date: 08-29-91

Next Calibration Due: 02-29-92

08-29-91

Date





# CALIBRATION CERTIFICATE

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION	INSTRUMENT INFORMATION
Customer Name: <u>ABG Measurements, Inc.</u>	Instrument Manufacturer: <u>Ludlum</u>
Customer Address: <u>640 Maple Avenue</u>	Model: <u>2</u> Serial Number: <u>40812</u>
<u>Saratoga Springs, NY 12866</u>	External Probe(s): <u>43-65</u> Serial #: <u>060145</u>
Customer P.O. #: <u>1501</u>	Calibration Method: <u>MP-1 s/n 318</u>
Work Order #: <u>I-91-06-207</u>	<u>230Th s/n 11623</u>

## INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comment
		Before Calib.	After Calib.	
1 <u>X0.1</u>	<u>100 CPM</u>		<u>100 CPM</u>	<u>All Calibrations Btn. + &amp; - 10%</u>
2	<u>200</u>		<u>200</u>	
3	<u>400</u>		<u>395</u>	
4				<u>230Th Efficiency = 19.5%</u>
5 <u>X1</u>	<u>1K</u>		<u>1K</u>	
6	<u>2K</u>		<u>2K</u>	
7	<u>4K</u>		<u>3.95K</u>	
8				
9 <u>X10</u>	<u>10K</u>		<u>10K</u>	
10	<u>20K</u>		<u>19.5K</u>	
11	<u>40K</u>		<u>37K</u>	
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				

## STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all of the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated by: William Owens  
(Signed)  
Calibration Date: 06-10-91  
Next Calibration Due: 12-10-91

I certify that the above information is correct:

Theresa M. DeB...  
Administrative Coordinator

06-10-91  
Date

# CALIBRATION CERTIFICATE

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name:	ABG Measurements, Inc.	Instrument Manufacturer:	Eberline
Customer Address:	640 Maple Avenue Saratoga Springs, NY 12866	Model:	ESP-1
		Serial Number:	3027
		External Probe(s):	44-9 Serial # 048271
			44-10 074139
Customer P.O. #	1513	Calibration Method:	99 MP-1 s/n 318
Work Order #	1-91-08-207		137 Tc s/n 1256
			Cs s/n 107

## INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comment
		Before Calib.	After Calib.	
1 N/A	200 CPM		2.00 + 02 CPM	All Calibrations Btn. + & - 10%
2	400		3.97 + 02	
3	800		7.95 + 02	44-9 Probe
4				High Voltage = 900 Volts
5	2K		1.99 + 03	99Tc Efficiency = 13.6%
6	4K		3.98 + 03	
	8K		7.97 + 03	Instrument was calibrated in Scaler Mode
9	20K		1.99 + 04	
10	40K		3.98 + 04	
11	80K		7.97 + 04	44-10 Probe
12				High Voltage = 900 Volts
13	200K		1.99 + 05	.1 mR/hr = 104,000 CPM in 137Cs file
14	400K		3.98 + 05	Reading was based on 1 minute count
15	800K		7.96 + 05	
16				DT = 1.73 - 06
17				CC = 1.00 + 00
18				
19				
20				
21				
22				
23				

## STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all of the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated by:

*James Christopher*  
(Signed)

Calibration Date: 08-28-91

Next Calibration Due: 02-28-92

I certify that the above information is correct:

*Theresa M. DeBar*  
Administrative Coordinator

08-28-91

Date



## 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 A B Y Measurements ORDER NO. 91-4483  
Mfg. Ludlum Model 2221 Serial No. 86313  
Mfg. Ludlum Det. Model 43-68 Serial No. PR082372  
Cal. Date 9-24-91 Cal. Due Date 9-24-92 Cal. Interval 1yr METERFACE 242-157  
Check mark (✓) applies to applicable instr. and/or detector LAW mfg. spec. a. ☒ New Instrument  
☐ Det. (Alpha) Bkgnd.        opm ☒ Det. Oper. V<sub>500</sub> Gamma at 4 MV  
T. 25 °F RH 65 % Alt 706.8 mm Hg ☒ F/B Resp. ok ☒ Zero Reset ok ☒ Audio ck. ☒ Meter Zeroed  
☒ Bat. ck. (Min. Volt) 4.4 VDC ☐ Bat. Volt        VDC Instrument Volt Set V<sub>500</sub> Gamma V  
☒ Threshold Dial 100  $\pm$  10 mV Input Sens 4 mV ☒ Input Sens Linearity  
☒ HV Readout (2 points) Ref./Inst. 497, 500 V Ref./Inst. 1998, 2000 V  
☐ Alarm Setting ck. ☒ Window Operation ☐ Background subtract ☒ Mechanical ck.  
Repair Instrument Received: ☐ Within Toler. + -10% ☐ 10-20% ☐ Out Toler. ☐ Requiring Repair

COMMENTS: Alpha H.V.  $\approx$  1300V  
Beta Gamma H.V.  $\approx$  1750V

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

RANGE MULTIPLIER	REFERENCE CAL POINT	INSTRUMENT METER READING *	INSTRUMENT REC'D "AS FOUND READING"
X 1000	400 Kcpm	400	
X "	100 "	100	
X 100	40 V	400	
X "	10 "	100	
X 10	4 "	400	
X "	1 "	100	
X 1	400 Cpm	400	
X "	100 "	100	
X			
X			
X			

\*Uncertainty within + -10% C. F. within + -5% ALL Range(s) Calibrated Electronically

Digital Readout	Reference Cal. Point	Instrument Meter Reading	"As Found Reading"
400 Kcpm	400 Kcpm	400	400
40 V	40 V	400	400
400 Cpm	400 Cpm	400	400
100 "	100 "	100	100

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 ratio type of calibration technique. The calibration system conforms to the requirements of NIST-STD-600-A and ANSI Z39-1970.

☐ Cs137 Gamma s/n 1182, G112, M585,5105 ☐ Neutron Am-241 Be s/n T-304 State of Texas Calibration License No. LO-1282  
☒ Alpha s/n Ln 239 13,702cpm ☐ Beta s/n        ☒ Other Cs137  $\approx$  5 uCi  
☒ M-500 s/n 57885 ☐ Oscilloscope s/n        ☐ Multimeter s/n A34153  
Calibrated By Thomas J. Kores Date 9-24-91  
Reviewed By Patricia Brand Date 9-24-91



## CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.

POST OFFICE BOX 810

PH. 915-236-6494

501 OAK STREET

FAX NO. (915) 236-4672

SWEETWATER, TEXAS 79556, U. S. A.

CUSTOMER ABD Measurements ORDER NO. 91-4483  
Mfg Ludlum Model 2221 Serial No. 86314  
Mfg Ludlum Det. Model 43-68 Serial No. PRO 82373  
Cal. Date 9-24-91 Cal. Due Date 9-24-92 Cal. Interval 1yr METERFACE 202-159  
Check mark (✓) applies to applicable instr. and/or detector IAW mfg. spec. & ☒ New Instrument  
☐ Det. (Alpha) Bkgnd 75 cpm ☒ Det. Oper. SEE COMMENTS V at 4 MV  
T 75 °F RH 65 % Alt 706.8 mm Hg ☒ F/B Resp. ok ☒ Zero Reset ok ☒ Audio ok ☒ Meter Zeroed  
☒ Bat. ok. (Min. Volt) 4.4 VDC ☐ Bat. Volt 4 VDC Instrument Volt Set SEE COMMENTS V  
☒ Threshold Dial 100 ± 10 mV Input Sens 4 mV ☒ Input Sens Linearity  
☒ HV Readout (2 points) Ref./Inst. 500 / 500 V Ref./Inst. 1998 / 2000 V  
☐ Alarm Setting ok ☒ Window Operation ☐ Background subtract ☒ Mechanical ok  
Repair Instrument Received: ☐ Within Toler. + -10% ☐ 10-30% ☐ Out Toler. ☐ Requiring Repair

## COMMENTS:

H.V. - Alpha  $\approx 1300V$ H.V. - Beta-Gamma  $\approx 1700V$ 

Gamma Calibration: GM detectors positioned perpendicular to source except for M. 44-6 in which the front of probe faces source.

RANGE MULTIPLIER	REFERENCE CAL POINT	INSTRUMENT METER READING	INSTRUMENT REC'D "AS FOUND READING"
x 1000	400K cpm	400	
x "	100K "	100	
x 100	40K "	400	
x "	10K "	100	
x 10	4K "	400	
x "	1K "	100	
x 1	400 cpm	400	
x "	100 "	100	
x			
x			
x			
x			

Range(s) Calibrated Electronically  
"As Found Reading"

Digital Readout	400K cpm	400K cpm	40K cpm	400 cpm	40 cpm
Log Scale	400K cpm	40K cpm	400 cpm	40 cpm	400 cpm

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 national physical constants or have been derived by the ratio type of calibrative technique. The calibration system conforms to the requirements of NIST, STD-400A and ANSI Z39-2070.

☐ Cs137 Gamma s/n 1162, G112, M565 ☐ Neutron Am-241 Be s/n T-304 State of Texas Calibration License No. LC-2003

☒ Alpha s/n 4337-Pu239 ☐ Beta s/n                      ☒ Other Cs137  $\approx 5\mu Ci$

☒ M-500 s/n 29956 ☐ Oscilloscope s/n                      ☒ Multimeter s/n A61065

Calibrated By: Elvis Chavez Jr. Date: 9-24-91

Reviewed By: Patrick Brown Date: 9-25-91



DAILY INSTRUMENT CHECKS



HILBERT ASSOCIATES, INC.  
RADIOLOGICAL ENGINEERS

INSTRUMENT RESPONSE CHECK & EFFICIENCY DETERMINATION FORM

DATE	INSTRUMENT/DETECTOR DESCRIPTION & S/N	RADIATION SOURCE IDENTIFICATION	RADIATION TYPE	EFFICIENCY CPM/DPH	RESPONSE RESULT
10/3/91	2221/43-68 86314/82372	Tc 99 # 639/83	<input type="checkbox"/> ALPHA <input checked="" type="checkbox"/> BETA <input type="checkbox"/> BETA-GAMMA	.258	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/3/91	ESP1/SPA3 3027/74139	Cs 137 # HA 009	<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input checked="" type="checkbox"/> BETA-GAMMA	900,000 cpm	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/4/91	2221/43-68 86314/82372	Tc 99 # 639/83	<input type="checkbox"/> ALPHA <input checked="" type="checkbox"/> BETA <input type="checkbox"/> BETA-GAMMA	.258	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/4/91	ESP1/SPA3 3027/74139	Cs 137 # HA 009	<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input checked="" type="checkbox"/> BETA-GAMMA	900,000	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/8/91	2221 # 86314 43-68 # 82372	Tc 99 # 639/83	<input type="checkbox"/> ALPHA <input checked="" type="checkbox"/> BETA <input type="checkbox"/> BETA-GAMMA	.262	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/8/91	ESP1/SPA3 3027/74139	Cs 137 # HA 009	<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input checked="" type="checkbox"/> BETA-GAMMA	920,000	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/8/91	2221 # 86314 43-68 # 82372	Tc 99 # 639/83	<input type="checkbox"/> ALPHA <input checked="" type="checkbox"/> BETA <input type="checkbox"/> BETA-GAMMA	.252	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT

INSTRUMENT RESPONSE CHECK & EFFICIENCY DETERMINATION FORM

DATE	INSTRUMENT/DETECTOR DESCRIPTION & S/N	RADIATION SOURCE IDENTIFICATION	RADIATION TYPE	EFFICIENCY CPH/DPH	RESPONSE RESULT
10/8	ESP 2/SPA 3027 / 74139 D38 <del>#82373</del>	Cs 137	<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input checked="" type="checkbox"/> BETA-GAMMA	95,000	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/8	2221 / 43-68 #82373	Tc 99	<input type="checkbox"/> ALPHA <input checked="" type="checkbox"/> BETA <input type="checkbox"/> BETA-GAMMA	.253	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/9	Model 2 #40812 43-65 #2060145	Th 230	<input checked="" type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input type="checkbox"/> BETA-GAMMA	.19	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/10	2221 / 43-68 #82373 / #82373	Tc 99	<input type="checkbox"/> ALPHA <input checked="" type="checkbox"/> BETA <input type="checkbox"/> BETA-GAMMA	.269	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/10	43-68 #82372	Tc 99	<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input type="checkbox"/> BETA-GAMMA	.29	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/11	43-68 #82373	Tc 99	<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input checked="" type="checkbox"/> BETA-GAMMA	.254	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/11	ESP1/SPA3 3027/74139	Cs 137	<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input checked="" type="checkbox"/> BETA-GAMMA	940,000	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

INSTRUMENT RESPONSE CHECK & EFFICIENCY DETERMINATION FORM

DATE	INSTRUMENT/DETECTOR DESCRIPTION & S/N	RADIATION SOURCE IDENTIFICATION	RADIATION TYPE	EFFICIENCY CPM/DPH	RESPONSE RESULT
10/15	ESP 1/SM 3027/74139	Cs 137	<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input checked="" type="checkbox"/> BETA-GAMMA	940,000	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/15	2221/43-68 86314/82373	Tc 99	<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input checked="" type="checkbox"/> BETA-GAMMA	.255 6990/27400	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/16	2221/43-68 86314/82373	Tc 99	<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input checked="" type="checkbox"/> BETA-GAMMA	.266	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/16	ESP 1/SPA3 3027/74139	Cs 137	<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input checked="" type="checkbox"/> BETA-GAMMA	880,000	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/16	Model 19/SPA3 34282/25933	Cs 137	<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input checked="" type="checkbox"/> BETA-GAMMA	880,000	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/15 *Lab setting	Model A ul meter # 56726	Cs 137	<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input checked="" type="checkbox"/> BETA-GAMMA	Source: 100 $\mu$ R read: 100 $\mu$ R	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/16	Model 19 56726	Cs 137	<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input checked="" type="checkbox"/> BETA-GAMMA	Source 100 $\mu$ R read: 100 $\mu$ R	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

HILBERT ASSOCIATES, INC.  
RADIOLOGICAL ENGINEERS

INSTRUMENT RESPONSE CHECK & EFFICIENCY DETERMINATION FORM

DATE	INSTRUMENT/DETECTOR DESCRIPTION & S/N	RADIATION SOURCE IDENTIFICATION	RADIATION TYPE	EFFICIENCY CPH/DPH	RESPONSE RESULT
10/17	Model 19 56726	Cs 137	<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input checked="" type="checkbox"/> BETA-GAMMA	source 100 $\mu$ C read 100 $\mu$ R	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT
10/17	Endura 2221/43-68 86314/82373	Tc 99	<input type="checkbox"/> ALPHA <input checked="" type="checkbox"/> BETA <input type="checkbox"/> BETA-GAMMA	.25	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT
			<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input type="checkbox"/> BETA-GAMMA		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT
			<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input type="checkbox"/> BETA-GAMMA		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT
			<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input type="checkbox"/> BETA-GAMMA		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT
			<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input type="checkbox"/> BETA-GAMMA		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT
			<input type="checkbox"/> ALPHA <input type="checkbox"/> BETA <input type="checkbox"/> BETA-GAMMA		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

SOURCE CALIBRATION CERTIFICATES



TMA/Eberline Albuquerque Laboratory  
7021 Pan American Hwy. NE  
Albuquerque, NM 87109  
(505) 345-3461 • FAX # (505) 761-5416

## CERTIFICATE OF CALIBRATION

### Electroplated Alpha Standard

S.O. # S-02209  
P.O. # 1028

#### Description of Standard:

Model No. DNS-11 Serial No. 2222/90 Isotope Thorium-230

Electroplated on polished stainless steel disc, 0.79 mm thick.

Total diameter of 4.77 cm and an active diameter of 4.45 cm.

Radioactive material permanently fixed to the disc by heat treatment, without any covering over the active surface.

#### Measurement Method:

The 2 $\pi$  alpha emission rate was measured using an internal gas flow proportional chamber. Absolute counting of alpha particles emitted in the hemisphere above the active surface was verified by counting above, below and at the operating voltage. The calibration is traceable to NIST by reference to an NIST calibrated alpha source  
SN 11478.

#### Measurement Result:

The total number of alpha particles emitted from the surface of the disc per minute (cpm) on the calibration date was

1,600  $\pm$  160

The total disintegration rate (dpm) assuming 1.5% backscatter of alpha particles from the surface of the disc, was

3,190  $\pm$  319 (0.00144  $\mu$ Ci)

The uncertainty of the measurement is 10 % which is the sum of random counting error at the 99% confidence level and the estimated upper limit of systematic error in this measurement.

Calibrated by: Kathryn J. Hicks Reviewed by: Donald L. Taylor

Kathryn J. Hicks  
Calibration Technician

Donald L. Taylor QC  
Q.A. Representative

Calibration Date: 12/31/90

Reviewed Date: 01-02-91

# REPORT OF CALIBRATION

Electroplated Beta Source

S# 639/83

## Description of Source:

Principal radionuclide Technetium 99

Electroplated on polished S.S. disc, approximately 0.79 mm thick.  
(type of metal)

Diameter, 4.45 cm active, 4.77 cm total.

Radioactive material permanently fixed to the disc by heat treatment, without any covering over the active surface.

Calibration Date: September 7, 1983

## Measurement Method:

The 2 $\pi$  beta emission rate was measured using an internal gas flow proportional chamber. Traceability to NBS has been demonstrated, the most recent intercomparison with NBS being June and July 1974 when the EIC-NBS agreement was within 0.3%.

## Measurement Result:

The total number of beta particles emitted from the surface of the disc per minute on the above date was

17,100  $\pm$  500

The total disintegration rate, assuming 25 % backscatter of beta particles from the surface of the disc, was

27,400  $\pm$  800 (0.0123  $\mu$ Ci)

The uncertainty of the measurement is 3% which is the sum of random counting error at the 99% confidence level and the estimated upper limit of conceivable systematic error in this measurement.

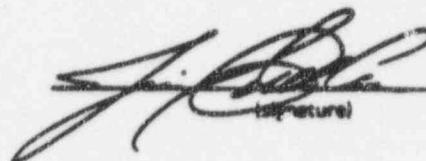
Information on isotopic composition or radioactive impurities:

Calibrated by: Jim Arellano

(stemon print or type)

**eberline**

Eberline Instrument Corporation  
P.O. Box 3874  
Albuquerque, New Mexico 87110

  
(signature)

BACKGROUND DATA  
(NaI & uR/HR)

## ENTRY

NaI  
background determination

This is a summation of readings

in cpu for background determinati in

The area surveyed WAS along the upper

railway area, to the west of the

remediation area about 200 feet.

Readings were integrated on the instrument

(ESP-1/SPA-3) for 15 seconds, and multiplied by

4 Times

8000

$$\bar{Y} = 7990 \pm 1050$$

107-81

DRAWN  
NUMBERCHECKED  
APPROVEDC.E.B.  
10-7-91DRAWN  
BY

N

M

L

K

J

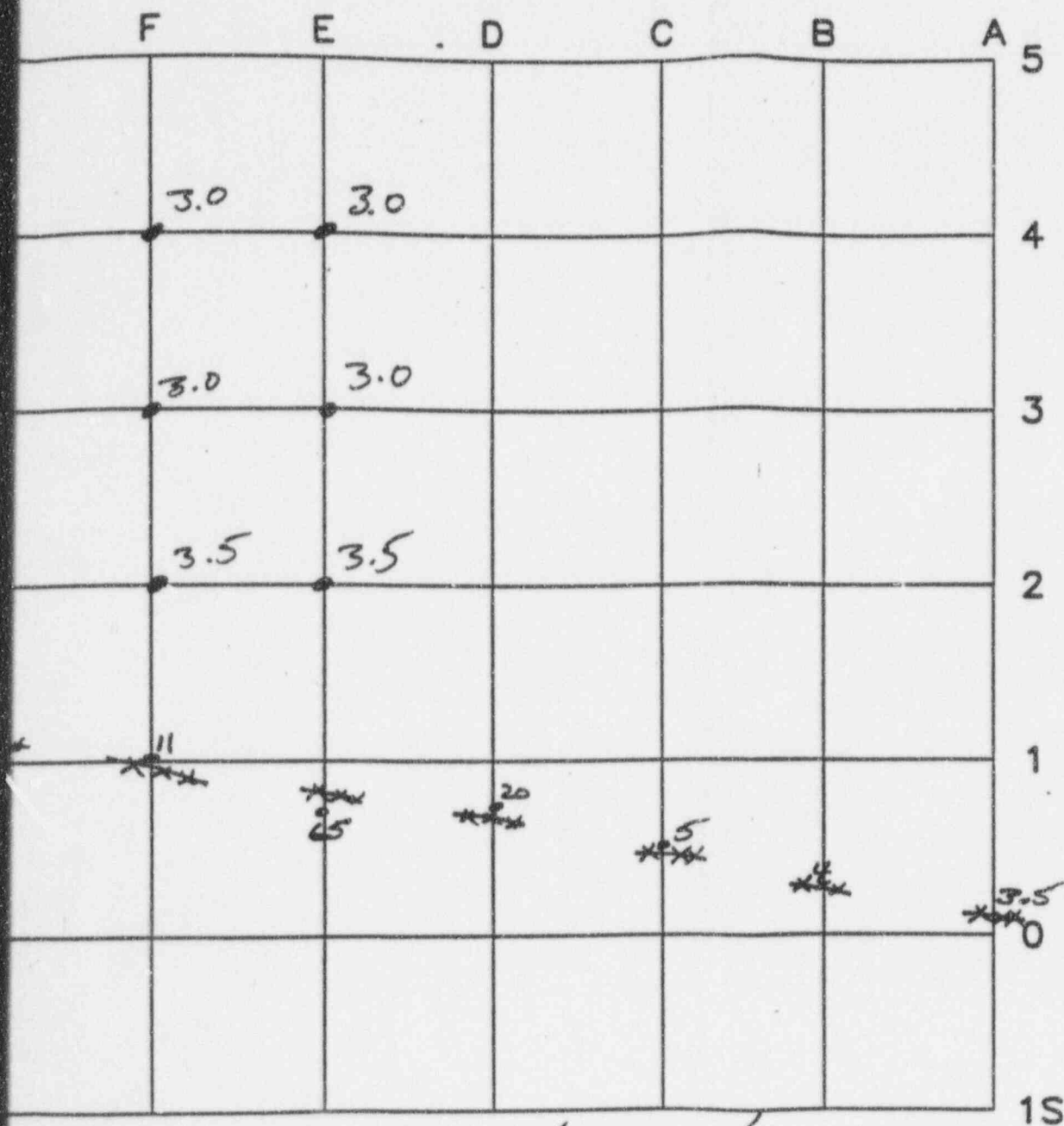
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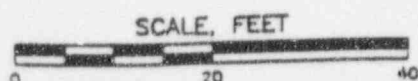


**ANSTEC  
APERTURE  
CARD**

Also Available on  
Aperture Card

uR/hr Background  
measurements - pre remediation

9707030082-01



**FIGURE**

THORIUM AREA  
BASE MAP

ALCOA  
CLEVELAND, OHIO

PREPARED FOR  
ALCOA  
CLEVELAND WORKS



HEALTH AND SAFETY TRAINING RECORDS  
AND  
AUDITS



# TRAINING SESSION DOCUMENTATION RECORD

Project Name: TADQUIN AREA REMEDIATION - ALCON

By: RUSS PALCHAK Project Number: 91307

Date: OCTOBER 1, 1991 Sheet 200 1 of 1

Time: Start 2:30pm Finish 3:35p

Instructor: RUSS PALCHAK & STEPHEN MILLER

Material Covered: HEALTH & SAFETY PLAN AND RADIOLOGICAL CONTROL PLAN

## ATTENDEES

NAME (Print)	SIGNATURE
<u>MIKE CLURTON</u>	<u>Mike Clurton</u>
<u>JEFF DAULTON</u>	<u>Jeff Daulton</u>
<u>STEPHEN E MILLER</u>	<u>Stephen E Miller</u>
<u>David B. Gill</u>	<u>David B. Gill</u>
<u>Joe Senitz</u>	<u>Joe A. Senitz</u>
<u>Tim NEWMAN</u>	<u>T.E. Newman</u>
<u>Earl Rothfuss</u>	<u>Earl H. Rothfuss</u>
<u>RUSS PALCHAK</u>	<u>Russ Palchak</u>

Reviewed by: Corp. H&S [Signature]

Proj. Mgr. \_\_\_\_\_

T.E. Newman  
Site Superintendent or Foreman

# REMCOR

## TRAINING SESSION DOCUMENTATION RECORD

Project Name: ALCOA

By: T.E. NEWMAN

Project Number: 91307

Date: 10-11-91

Sheet 1 of 1  
Time: Start 7:35a Finish 7:40a

Instructor: T.E. NEWMAN

Material Covered: FIVE-MINUTE SAFETY TALK # 34 "You're Responsible"

### ATTENDEES

NAME (print)

JEFF DAVEN

MIKE CLIXTON

DAVID GILL

Earl Rothfuss

SIGNATURE

Jeff Daven

Mike Clixon

David Gill

Earl H. Rothfuss

Reviewed by: Corp. H&S \_\_\_\_\_

Proj. Mgr. \_\_\_\_\_

T.E. Newman

Site Superintendent or Foreman

REMCOR, INC.  
701 ALPHA DRIVE  
P.O. BOX 38310  
PITTSBURGH, PENNSYLVANIA 15238-8310

HEALTH AND SAFETY PLAN AUDIT

CONDUCTED BY THE DEPARTMENT OF  
HEALTH, SAFETY, AND INDUSTRIAL HYGIENE

DATE OF AUDIT: 11/1/91  
PROJECT NAME: Alces-Thorin Remediation Cleveland  
PROJECT NO.: ~~91307~~ 91307  
PROJECT (SITE) LOCATION: Norwood Ave. Cleveland, OH  
PROJECT MANAGER: E. Rathjens  
SITE HEALTH AND SAFETY OFFICER (SHSO): J. Senita  
SITE TELEPHONE NO.: \_\_\_\_\_  
SURVEYOR: R. B. Palchuk  
SITE PERSONNEL:  

<u>Tom Skowron - Superintendent</u>	<u>Mike Cluston</u>
<u>Joe Senita - SHSO</u>	<u>Jeff Daulton</u>
<u>Stephen Miller - Helmet</u>	
<u>David Gill - Helmet</u>	

1. General (Check)

- ☒ Work/process agrees with health and safety plan (HASP) document
- ☒ Site hazards concur with HASP
- ☒ Task-specific risks concur with HASP *check individual work*
- ☒ Individuals specified in HASP on site  
*verify Superintendent responsibilities*



## 2. Procedure Manuals Present at Site

- ☒ Site HASP
- ☒ Corporate Health and Safety Manual
- ☒ Remcor, Inc. (Remcor) Material Safety Data Sheet binder
- ☒ U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) regulations

### 3. Items Posted at Site

- ✓ OSHA poster *needs posted in trailer when ready*
- ✓ Equal Employment Opportunity poster ' ' '
- ✓ Visitors' Log (HS-11) *used*

#### 4. Emergency Response

- ☒ Emergency numbers posted and/or readily available  
*need to post in trailer when ready*
- ☒ Map to hospital readily available  
*need to post in trailer when ready J. Santa*
- ☒ Evacuation route proposed
- ☒ Emergency medical treatment and first aid available  
*will be available at CRZ*
- ☒ First-aid kit provided/adequate supplies present  
*yes*
- ☐ All accidents reported  
*N/A*
- ☐ Residents properly documented (HS-2, HS-18)  
*N/A*
- ☒ Site personnel trained in cardiopulmonary resuscitation (CPR)/first aid  
*J. Santa; Tim O'Brien*
- ☐ Site personnel trained in use of fire extinguishers  
*N/A*
- ☐ Fire extinguishers tested monthly (if appropriate)  
*need to check*

## 5. Training

- ✓ Initial HASP training provided to all site personnel  
 ✓ Training record form, HS-3, properly filled out  
 Weekly training session held *will be held*  
*by T. Newman*

6. Medical File

- OSHA 40-hour certificate maintained on site in file
- N/A Respirator fit certificate maintained on site in file (HS-15)
- ✓ Site-specified medical surveillance performed as specified in HASP *will be implemented by Stephen Miller*

7. Monitoring

- WBD Form HS-12 accurately filled out
- WBD Monitoring performed on site concurs with HASP specifications
- WBD Calibration of monitoring equipment performed daily; if other, list frequency: \_\_\_\_\_

8. Personal Protective Equipment (PPE)

- WBD Site personnel wear PPE as specified in HASP
- ✓ Personnel appropriately trained in PPE
- ✓ Documentation of PPE training in file

9. Site Control/Decontamination

- WBD Site map present
- ✓ "Buddy" system used
- ✓ Contamination zones present as defined in HASP
- WBD Appropriate PPE, as specified in HASP, worn in zones
- ✓ External communication present; list: TELEPHONE
- WBD Decontamination performed as specified in HASP

10. Documentation/Recordkeeping

- WBD Appropriate Remcor forms filled out
- WBD Documentation filled out completely

\* WBD WILL BE DONE

11. Site Personnel Comments/Questions

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12. Site Personnel Feedback on HASP

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13. Additions to HASP

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14. Evaluation

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15. Recommendations

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16. Central File Review

- \_\_\_\_\_ HS-1, Jobsite Safety Checklist
- \_\_\_\_\_ HS-2, First Report of Injury
- \_\_\_\_\_ HS-3, Training Session Documentation Record
- \_\_\_\_\_ HS-4, Remcor Annual Surveillance Program
- \_\_\_\_\_ HS-6, Exit Exam Notification
- \_\_\_\_\_ HS-7, Confined Space Entry Permit
- \_\_\_\_\_ HS-8, Personnel Data Record
- \_\_\_\_\_ HS-9 Equipment Loss/Damage Report
- \_\_\_\_\_ HS-10, Personnel Entering Contaminated Areas
- \_\_\_\_\_ HS-11, Visitors' Log
- \_\_\_\_\_ HS-12, Real-Time Air Monitoring Log
- \_\_\_\_\_ HS-13, Hot Work Permit
- \_\_\_\_\_ HS-14, Safety Statistics Summary Report
- \_\_\_\_\_ HS-15, Fit-Test Record
- \_\_\_\_\_ HS-16, Respiratory Protection Program
- \_\_\_\_\_ HS-17, SCBA Checklist
- \_\_\_\_\_ HS-18, Accident Investigation Report
- \_\_\_\_\_ HS-19, Vehicle Accident Report
- \_\_\_\_\_ HS-20, Respirator Program Evaluation Checklist

Comments to Central File Review:

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NRC FORM 4  
FROM START OF PROJECT

# OCCUPATIONAL EXTERNAL RADIATION EXPOSURE HISTORY

See instructions on the back

IDENTIFICATION				
1. NAME (PRINT - LAST, FIRST, AND MIDDLE)  Cluxton, Mike			2. SOCIAL SECURITY NO.  298-50-7033	
3. DATE OF BIRTH (MONTH, DAY, YEAR)  5/23/51			4. AGE IN FULL YEARS (N)  40	
OCCUPATIONAL EXPOSURE - PREVIOUS HISTORY				
5. PREVIOUS EMPLOYMENTS INVOLVING RADIATION EXPOSURE - LIST NAME AND ADDRESS OF EMPLOYER	6. DATES OF EMPLOYMENT (FROM - TO)	7. PERIODS OF EXPOSURE	8. WHOLE BODY (REM)	9. RECORD OR CALCULATED (INSERT ONE)
None			0	0
10. REMARKS			11. ACCUMULATED OCCUPATIONAL DOSE - TOTAL  0	

## 13. CALCULATIONS - PERMISSIBLE DOSE WHOLE BODY:

(A) PERMISSIBLE ACCUMULATED DOSE = 5(N-18) 110 REM  
(B) TOTAL EXPOSURE TO DATE (FROM ITEM 11) 0 REM  
(C) UNUSED PART OF PERMISSIBLE ACCUMULATED DOSE (A-B) 110 REM

12. CERTIFICATION: I CERTIFY THAT THE EXPOSURE HISTORY LISTED IN COLUMNS 5, 6, AND 7 IS CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

EMPLOYEE'S SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

14. NAME OF LICENSEE \_\_\_\_\_

REPORT OF TERMINATING INDIVIDUAL'S OCCUPATIONAL EXPOSURE	Date of Report
	9/24/91
	NRC LICENSE NUMBER
	SNM-145

## PART I Licensee and Individual Identification Data

NAME AND ADDRESS OF REPORTING LICENSEE	NAME (FIRST, MI, LAST) AND ADDRESS
Babcock & Wilcox Pennsylvania Nuclear Service Operations 609 North Warren Avenue Apollo, PA 15613	Joseph A. Senita REMCOR 701 Alpha Drive, Pittsburgh, PA 15238
SOC. SEC. NO.	DATE OF BIRTH (MONTH DAY YEAR)
191-42-6789	

## PART II External Dose Data

PERSONNEL MONITORING FOR EXTERNAL EXPOSURE TO RADIATION WAS NOT PROVIDED					
PERIOD OF EXPOSURE	WHOLE BODY DOSE (REM)				EXT. DOSE (REM)
	DEEP		SHALLOW (SKIN)		SHALLOW (SKIN)
	TOTAL	NEUTRON	TOTAL	BETA	
5/6/91 to 6/30/91	0	-	0	0	
7/1/91 to 8/21/91	0	-	0	0	

## PART III Internal Exposures to Radioactive Materials

PERSONNEL MONITORING FOR EXPOSURE TO RADIOACTIVE MATERIAL WAS NOT PROVIDED			
DATE	TYPE OF EXAMINATION (U, F, IV)*	NUCLIDE(S) ANALYZED	CONCENTRATION OR QUANTITY
NA			

*Ronald D. Corridoni*  
 Ronald D. Corridoni  
 Supervisor, Health & Safety

\*Urinalysis, fecal analysis, or in-vivo count.

This report is furnished to you under the provision of the Nuclear Regulatory

U. S. NUCLEAR REGULATORY COMMISSION

# OCCUPATIONAL EXTERNAL RADIATION EXPOSURE HISTORY

See Instructions on the Back

## IDENTIFICATION

1. NAME (PRINT - LAST, FIRST, AND MIDDLE)  Daulton, Jeffrey, Duane	2. SOCIAL SECURITY NO.  280-68-0980
3. DATE OF BIRTH (MONTH, DAY, YEAR)  11-24-66	4. AGE IN FULL YEARS (N)  24

## OCCUPATIONAL EXPOSURE - PREVIOUS HISTORY

5. PREVIOUS EMPLOYMENTS INVOLVING RADIATION EXPOSURE - LIST NAME AND ADDRESS OF EMPLOYER	6. DATES OF EMPLOYMENT (FROM - TO)	7. PERIODS OF EXPOSURE	8. WHOLE BODY (REM)	9. RECORD OR CALCULATED (INSERT ONE)
REMCOR, INC. PO BOX 38310 701 ALPHA DRIVE PITTSBURGH PA 15238	4-3-89 TO PRESENT	Not Applicable	0	RECORD
10. REMARKS			11. ACCUMULATED OCCUPATIONAL DOSE - TOTAL  0	

## 13. CALCULATIONS - PERMISSIBLE DOSE WHOLE BODY:

(A) PERMISSIBLE ACCUMULATED DOSE = 5(N-18) 30 REM

(B) TOTAL EXPOSURE TO DATE (FROM ITEM 11) 0 0 REM

(C) UNUSED PART OF PERMISSIBLE ACCUMULATED DOSE (A-B) 30 REM

## 12. CERTIFICATION: I CERTIFY THAT THE EXPOSURE HISTORY LISTED IN COLUMNS 5, 6, AND 7 IS CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

EMPLOYEE'S SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

14. NAME OF LICENSEE \_\_\_\_\_

U. S. NUCLEAR REGULATORY COMMISSION

# OCCUPATIONAL EXTERNAL RADIATION EXPOSURE HISTORY

See instructions on the back

IDENTIFICATION				
1. NAME (PRINT - LAST, FIRST, AND MIDDLE)			2. SOCIAL SECURITY NO.	
NEWMAN, TIMOTHY E.			295-62-1489	
3. DATE OF BIRTH (MONTH, DAY, YEAR)			4. AGE IN FULL YEARS (N)	
03/12/60			31	
OCCUPATIONAL EXPOSURE - PREVIOUS HISTORY				
5. PREVIOUS EMPLOYMENTS INVOLVING RADIATION EXPOSURE - LIST NAME AND ADDRESS OF EMPLOYER	6. DATES OF EMPLOYMENT (FROM - TO)	7. PERIODS OF EXPOSURE	8. WHOLE BODY (REM)	9. RECORD OR CALCULATED (INSERT ONE)
REMCOR, INC. PO BOX 38310 701 ALPHA DRIVE PITTSBURGH PA 15238	03/27/87 TO PRESENT	1990	0	RECORD
10. REMARKS			11. ACCUMULATED OCCUPATIONAL DOSE - TOTAL	
			0	

## 13. CALCULATIONS - PERMISSIBLE DOSE WHOLE BODY:

(A) PERMISSIBLE ACCUMULATED DOSE = 5(N-18) 65.0 REM

(B) TOTAL EXPOSURE TO DATE (FROM ITEM 11) 0.0 REM

(C) UNUSED PART OF PERMISSIBLE ACCUMULATED DOSE (A-B) 65.0 REM

12. CERTIFICATION: I CERTIFY THAT THE EXPOSURE HISTORY LISTED IN COLUMNS 5, 6, AND 7 IS CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

EMPLOYEE'S SIGNATURE

DATE

14. NAME OF LICENSEE



# OCCUPATIONAL EXTERNAL RADIATION EXPOSURE HISTORY

See instructions on the back

## IDENTIFICATION

1. NAME (PRINT - LAST, FIRST, AND MIDDLE)		2. SOCIAL SECURITY NO.	
Michael P. Wehrle		179-42-2148	
3. DATE OF BIRTH (MONTH, DAY, YEAR) July 12, 1954		4. AGE IN FULL YEARS (N) 37	

## OCCUPATIONAL EXPOSURE - PREVIOUS HISTORY

5. PREVIOUS EMPLOYMENTS INVOLVING RADIATION EXPOSURE - LIST NAME AND ADDRESS OF EMPLOYER	6. DATES OF EMPLOYMENT (FROM - TO)	7. PERIODS OF EXPOSURE	8. WHOLE BODY (REM)	9. RECORD OR CALCULATED (INSERT ONE)
Remcor, Inc. P.O. Box 38310 701 Alpha Drive Pittsburgh, PA 15238	11/88 to Present	7/15/89 to 1/14/90	0	Record
10. REMARKS		11. ACCUMULATED OCCUPATIONAL DOSE - TOTAL		0

## 13. CALCULATIONS - PERMISSIBLE DOSE WHOLE BODY:

(A) PERMISSIBLE ACCUMULATED DOSE = 5(N-18)	95	REM
(B) TOTAL EXPOSURE TO DATE (FROM ITEM 11)	0	REM
(C) UNUSED PART OF PERMISSIBLE ACCUMULATED DOSE (A-B)	95	REM

## 12. CERTIFICATION: I CERTIFY THAT THE EXPOSURE HISTORY LISTED IN COLUMNS 5, 6, AND 7 IS CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

*Michael P. Wehrle* 8-23-91  
EMPLOYEE'S SIGNATURE DATE

14. NAME OF LICENSEE

# OCCUPATIONAL EXTERNAL RADIATION EXPOSURE HISTORY

See instructions on the Back

## IDENTIFICATION

1. NAME (PRINT - LAST, FIRST, AND MIDDLE)  Harry L. Owens		2. SOCIAL SECURITY NO.  377-86-0036
3. DATE OF BIRTH (MONTH, DAY, YEAR) July 29, 1963		4. AGE IN FULL YEARS (N) 28

## OCCUPATIONAL EXPOSURE - PREVIOUS HISTORY

5. PREVIOUS EMPLOYMENTS INVOLVING RADIATION EXPOSURE - LIST NAME AND ADDRESS OF EMPLOYER	6. DATES OF EMPLOYMENT (FROM, TO)	7. PERIODS OF EXPOSURE	8. WHOLE BODY (REM)	9. RECORD OR CALCULATED (INSERT ONE)
NONE				

10. REMARKS	11. ACCUMULATED OCCUPATIONAL DOSE - TOTAL:	0
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## 13. CALCULATIONS - PERMISSIBLE DOSE WHOLE BODY:

(A) PERMISSIBLE ACCUMULATED DOSE = 5(N-18) 50 REM

(B) TOTAL EXPOSURE TO DATE (FROM ITEM 11) 0 REM

(C) UNUSED PART OF PERMISSIBLE ACCUMULATED DOSE (A-B) 50 REM

12. CERTIFICATION: I CERTIFY THAT THE EXPOSURE HISTORY LISTED IN COLUMNS 5, 6, AND 7 IS CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

*Harry L. Owens* 9/3/91  
EMPLOYEE'S SIGNATURE DATE

14. NAME OF LICENSEE

DAILY VISITOR/SITE ACCESS LOGS



# VISITORS' LOG

PROJECT NUMBER: **91307**

SITE SUPERINTENDENT: T.E. Newman

DATE	TIME IN/OUT	NAME/REPRESENTING	PURPOSE OF VISIT	SAFETY BRIEFING Y/N : BY	PROTECTIVE EQUIPMENT ISSUED Y/N : LEVEL
10/1/91	1310 / 1700	Joe Senita Remcor	Remediation	Y : TEN	N :
10/1/91	0700 / 1700	STEPHEN E. MILLER / HAI	REMCOR PROJECT	Y : SEM	N :
10/1/91	0900 / 1700	David B. Gill / HAI	Remediation	Y : T.E.N.	N :
10/1/91	1350 / 1700	Russ Panchak / Remcor	HQS TRAINING	Y : SELF	N :
10/1/91	1550 / 1700	Earl Rothfuss / Remcor	Job Start	Y : self	N :
10/2/91	0700 / 0900	Joe Senita - Remcor	remediation/acc	Y :	Y : TLD
10/2/91	0700 / -	David Gill - Remcor	remediation	Y : Rem	Y : TLD
10/2/91	0700 / -	STEPHEN E. MILLER / HAI	REMCOR / REMEDIATION	Y : REM	Y : TLD
10-2-91	0925 / -	Earl Rothfuss - Remcor	Remediation	Y : Self	N :
10-3-91	0700 / -	Joe Senita	Remediate	Y : TEN	Y : TLD
10-3-91	0730 / -	David Gill	" "	Y : TEN	Y : TLD
10-4-91	0730 / -	David Gill	" "	Y : TEN	Y : TLD
	/			:	:
	/			:	:
	/			:	:
	/			:	:
	/			:	:
	/			:	:
	/			:	:



# PERSONNEL ENTERING CONTAMINATED AREAS

Protective Clothing Level	Employee	Time In	Time Out	Time In	Time Out	Time In	Time Out	Time In	Time Out
D "RCA"	Clinton M. KE	1040	1130						
D "RCA"	Daulton V. FF	1400	1500						

Level A - SCBA, Full Suit  
Level B - Supplied Air

Level C - Full/Half Face Mask  
Level D - Minimum Uniform

Project Number: 91307

Date: 10-3-91





# PERSONNEL ENTERING CONTAMINATED AREAS

Protective Clothing Level	Employee	Time In	Time Out	Time In	Time Out	Time In	Time Out	Time In	Time Out
D "RCR" ✓	Dutton, Jeff	11:20	11:50	1230	1330				

Level A - SCBA, Full Suit  
Level B - Supplied Air

Level C - Full/Half Face Mask  
Level D - Minimum Uniform

Project Number: 91307

Date: 10-4-91



Level A - SCBA, Full Suit  
Level B - Supplied Air

Level C - Full/Half Face Mask  
Level D - Minimum Uniform

Project Number: 9/307

Date: 10-8-91

## PERSONNEL ENTERING CONTAMINATED AREAS



# PERSONNEL ENTERING CONTAMINATED AREAS

Protective Clothing Level	Employee	Time In	Time Out	Time In	Time Out	Time In	Time Out	Time In	Time Out
D ✓	CLUSTON Mike	7:30 a	9:00 a	10:00 a	3:00 p				
D ✓	Daulton Jeff	7:30	9:00	10:00	3:00				
D ✓	NEWMAN Tim	7:30	9:00	10:00	3:00				

Level A - SCBA, Full Suit  
Level B - Supplied Air

Level C - Full/Half Face Mask  
Level D - Minimum Uniform

Project Number: 91307

Date: 10-10-91



# PERSONNEL ENTERING CONTAMINATED AREAS

Protective Clothing Level	Employee	Time In	Time Out	Time In	Time Out	Time In	Time Out	Time In	Time Out
D ✓	CLIXTON ALTE	7:30a	11:30a						
D ✓	DAULTON JEFF	7:30a	12:30						
D ✓	NEWMAN TIM	7:30a	11:30						

Level A - SCBA, Full Suit  
Level B - Supplied Air

Level C - Full/Half Face Mask  
Level D - Minimum Uniform

Project Number: 91307

Date: 10-11-91





## VISITORS' LOG

PROJECT NUMBER: 91307  
SITE SUPERINTENDENT: T.E. Newman

DATE	TIME IN/OUT	NAME/REPRESENTING	PURPOSE OF VISIT	SAFETY BRIEFING Y/N : BY	PROTECTIVE EQUIPMENT ISSUED Y/N : LEVEL
10-8-91	7:00 / 11:30	JOE SENITA	—	Y : JS	N :
10-8-91	7:38 / 15:50	David Gill	Survey - Hillbert	Y : TEN	N :
10-8-91	9:00 / 15:30	Earl Rothfuss	Documentation	Yes : Self	N :
10-9-91	7:40 / 15:15	David Gill	Survey - Hillbert	:	:
10-9-91	7:30 / 15:15	Earl Rothfuss	Documents/Survey	Yes : Self	N :
10-10-91	7:20 / 13:45	David Gill	Survey Hillbert	Y : Self	N :
10-10-91	7:40 <sup>A</sup> / 14:00	Earl Rothfuss	Survey Documents	Y : Self	N :
10-10-91	11:20 / 14:00	Pete Hunter	Audit	Y : Self	N :
10-10-91	11:20 / 2:00	Colin Heath	Visit	Y : Self	N :
10-11-91	7:20 / N/A	Earl Rothfuss	Survey Documents	Y : Self	N :
10-11-91	7:10 / N/A	David Gill	Survey	Y : Self	N :
	/			:	:
	/			:	:
	/			:	:
	/			:	:
	/			:	:
	/			:	:
	/			:	:
	/			:	:



**M-10**

Level A - SCBA, Full Suit  
Level B - Supplied Air

Level C - Full Face Mask - Breathing Unit - Gasoline

Project Number: 91307

Date: 10/17/91

✓ or  $\frac{1}{2}$

REMCON, Inc. - 701 Alpha Drive - P. O. Box 36310 - Pittsburgh, PA 15238 - (412) 963-1106

06/8



PROJECT NUMBER:

**SITE SUPERINTENDENT:**

9/30/57  
The Seide - Gals  
22-11

55-116

[illegible]

AIR MONITORING RESULTS

# AIR SAMPLE ANALYSIS REPORT

\*\*\*\*\*

LOCATION OF AIR SAMPLE: REMCOR/ALCOA  
 DATE OF AIR SAMPLE: 10/09/91  
 VOLUME OF AIR SAMPLE: 296.6 FT3  
 SAMPLE IDENTIFICATION: Th232 CONTAMINATED SOIL EXCAVATION  
 DATE OF REPORT: 11-01-1991  
 TECHNICIAN: David Gill

\*\*\*\*\*

## INSTRUMENTATION

\*\*\*\*\*

	BETA-GAMMA	ALPHA
INSTRUMENT MODEL	M. 2221/M. 43-68	M. 2/M. 43-65
INSTRUMENT S/N	83614/082373	40812/060145
INSTRUMENT CAL DATE	09/26/91	06/10/91
ISOTOPE EFFICIENCY	Tc99	Th230
INSTRUMENT EFF (cpm/dpm)	.25	.19
GEOMETRY FACTOR	1	1
BACKGROUND COUNT TIME (min)	2	1
SAMPLE COUNT TIME (min)	1	1

\*\*\*\*\*

## ANALYSIS RESULTS

\*\*\*\*\*

	BETA-GAMMA	ALPHA
BACKGROUND COUNT RATE	250	5
SAMPLE COUNT RATE	242	5
NET SAMPLE COUNT RATE	-7	0
MIN DETECTABLE COUNT RATE	37.35524	6.198065
ACT CONC in uCi per cc	8.139291E-12	2.098643E-12
MDAC in uCi per cc	8.139291E-12	2.098643E-12

\*\*\*\*\*

U-238 not



# AIR SAMPLE ANALYSIS REPORT

\*\*\*\*\*

LOCATION OF AIR SAMPLE: REMGOR/ALCOA  
 DATE OF AIR SAMPLE: 10/10/91  
 VOLUME OF AIR SAMPLE: 222.5 FT3  
 SAMPLE IDENTIFICATION: Th232 CONTAMINATED SOIL EXCAVATION  
 DATE OF REPORT: 11-01-1991  
 TECHNICIAN: David Gill

\*\*\*\*\*

## INSTRUMENTATION

\*\*\*\*\*

	BETA-GAMMA	ALPHA
INSTRUMENT MODEL	M.2221/M.43-68	M.2/M.43-65
INSTRUMENT S/N	83614/082373	40812/060145
INSTRUMENT CAL DATE	09/26/91	06/10/91
ISOTOPE EFFICIENCY	Tc99	Th230
INSTRUMENT EFF(cpm/dpm)	.25	.19
GEOMETRY FACTOR	1	1
BACKGROUND COUNT TIME(min)	2	1
SAMPLE COUNT TIME(min)	1	1

\*\*\*\*\*

## ANALYSIS RESULTS

\*\*\*\*\*

	BETA-GAMMA	ALPHA
BACKGROUND COUNT RATE	740	5
SAMPLE COUNT RATE	735	5
NET SAMPLE COUNT RATE	-5	0
MIN DETECTABLE COUNT RATE	65.30066	6.198065
ACT CONC in uCi per cc	1.866696E-11	2.797563E-12
MDAC in uCi per cc	1.866696E-11	2.797563E-12

\*\*\*\*\*

MATERIAL RELEASE DATA

## RADIATION AND CONTAMINATION MEASUREMENT SURVEY FORM

#	LOCATION	SURVEY TYPE	GROSS CPM	BKGD CPM	NET CPM	ACTIVITY <sup>dpm</sup> /100cm <sup>2</sup>	ACTIVITY <sup>dpm</sup> /PROBE	GAMMA RADIATION mR/hr	uR/hr
33	concrete slab	B <sup>-</sup>	323	250	73	< 1K	< 1K	NA	NA
34			350		100				
35			360		110				
36			383		133				
37			412		162				
38			415		165				
39			400		150				
40			400		150				
41	concrete slab		315		65				
42	poly trash	B <sup>-</sup>	295	250	45	< 1K	< 1K	NA	NA
43	hoe bucket	B <sup>-</sup>	290	250	40	< 1K	< 1K	NA	NA

## SURVEY NOTES

- (1) Activity for contamination surveys are dpm/100cm<sup>2</sup>
- (2) Activity for direct survey are dpm/100cm<sup>2</sup> or dpm/probe area

## SURVEY TYPES

- (1) BETA-GAMMA CONTAMINATION
- (2) ALPHA CONTAMINATION
- (3) BETA-GAMMA DIRECT SURVEY
- (4) ALPHA DIRECT SURVEY
- (5) GAMMA RADIATION SURVEY

## SURVEY MAP CODE

- ① MEASUREMENT LOCATION
- \* ① B-G OR ALPHA DIRECT SURVEY
- \* mR/hr CONTACT GAMMA MEASURE
- mR/hr GENERAL AREA GAMMA

INSTRUMENT TYPE

Ludlum 2221/43-68

SERIAL NUMBER

314/82373

CAL DATE

10-11-91

SURVEY DATE: 10-11-91

PERFORMED BY: D3300/EHR.H.L.D.

PROJECT: Alcoa thorium

☐ SEE ATTACHED SURVEY MAP

## RADIATION AND CONTAMINATION MEASUREMENT SURVEY FORM

#	LOCATION	SURVEY TYPE	GROSS CPM	BKGD CPM	NET CPM	ACTIVITY $\mu\text{Ci}/100\text{cm}^2$	ACTIVITY $\mu\text{Ci}/\text{PROBE}$	GAMMA RADIATION mR/hr	GAMMA RADIATION uR/hr
17	concrete slab	$\beta^-$	352	295	57	< 1K	< 1K	NA	NA
18			411		116				
19			373		78				
20			384		89				
21			368		73				
22			350		55				
23			325		30				
24			300		5				
25			311		16				
26	concrete slab		300	295	5				
27	(3) rolls chain link fence		453	350	158				
28	(4) Fence rail (top)		360		65				
29	(8) Fence pole sections		383		88				
30	concrete slab		425		130				
31			443		148	< 1K	< 1K		
32	concrete slab	$\beta^-$	883	350	533	< 1K	< 1K	NA	NA

**SURVEY NOTES**

(1) Activity for contamination surveys are dpm/100cm<sup>2</sup>

(2) Activity for direct survey are dpm/100cm<sup>2</sup> or dpm/probe area

**SURVEY TYPES**

(1) BETA-GAMMA CONTAMINATION

(2) ALPHA CONTAMINATION

(3) BETA-GAMMA DIRECT SURVEY

(4) ALPHA DIRECT SURVEY

(5) GAMMA RADIATION SURVEY

**SURVEY MAP CODE**

① MEASUREMENT LOCATION

\* ② B-G OR ALPHA DIRECT SURVEY

\* mR/hr CONTACT GAMMA MEASURE

mR/hr GENERAL AREA GAMMA

INSTRUMENT TYPE	Lucas 2221/43-68	SURVEY DATE:	10-10-91
SERIAL NUMBER	86314/82323	PERFORMED BY:	D. J. D. / EARL H. C.
CAL DATE	10/10/91	PROJECT:	Alcoa - thorium

☐ SEE ATTACHED SURVEY MAP

## RADIATION AND CONTAMINATION MEASUREMENT SURVEY FORM

#	LOCATION	SURVEY TYPE	GROSS CPM	BKGD CPM	NET CPM	ACTIVITY $\mu\text{Ci}/100\text{cm}^2$	ACTIVITY $\mu\text{Ci}/\text{PROBE}$	GAMMA RADIATION mR/hr	GAMMA RADIATION $\mu\text{R}/\text{hr}$
1	trac-hoe	$\beta^-$	325	250	75	< 1K	< 1K	NA	NA
2	telephone pole		300	250	50				
3	telephone pole		300	250	50				
4	concrete slab		450	350	100				
5			586		124				
6			466		111				
7			372		22	< 1K	< 1K		
8			844		494	2K	2K		
9			535		185	< 1K	< 1K		
10			411		61				
11			352		2				
12			375		25				
13			466		116				
14			370		20				
15			350		0				
16	concrete slab	$\beta^-$	373	350	23	< 1K	< 1K	NA	NA

**SURVEY NOTES**

(1) Activity for contamination surveys are dpm/100cm<sup>2</sup>

(2) Activity for direct survey are dpm/100cm<sup>2</sup> or dpm/probe area

**SURVEY TYPES**

(1) BETA-GAMMA CONTAMINATION  
(2) ALPHA CONTAMINATION  
(3) BETA-GAMMA DIRECT SURVEY  
(4) ALPHA DIRECT SURVEY  
(5) GAMMA RADIATION SURVEY

**SURVEY MAP CODE**

① MEASUREMENT LOCATION  
\* ① B-G OR ALPHA DIRECT SURVEY  
\* mR/hr CONTACT GAMMA MEASURE  
mR/hr GENERAL AREA GAMMA

INSTRUMENT TYPE	Ludlum 2221 / 43-68			SURVEY DATE: 10-9-91
SERIAL NUMBER	816314 / 82373			PERFORMED BY: JSD / E.H. Roberts
CAL DATE	10/9/91			PROJECT: Alcoa - thorium

☐ SEE ATTACHED SURVEY MAP



SUPERINTENDENT DAILY REPORTS





PROJECT NO.: 91307 PROJECT NAME: ALCOA

DATE: 10-1-91 START TIME: 8:00 AM FINISH TIME: 5:00 P WEATHER: P. Cloudy 75°

FOREMAN SIGNATURE: N/A SUPERINTENDENT SIGNATURE: T.E. Newman

PROJECT MANAGER: Earl H. Rothfuss

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS: Task #1 Waited on Jeff Sample and Earl Rothfuss, From 8:00a till 1:00p. Russ Palchak and Earl Rothfuss arrived around 1:00p, Russ Palchak gave the H&S meeting, and Steve Miller gave the Radiological control plan.

ACCIDENTS: 1/1

IMPORTANT TELEPHONE CALLS: 1/1A

MATERIALS RECEIVED: *N/A*

VISITORS ON SITE: E. Rothfuss, R. Polchak, S. Miller-Hillbert, D. Gill-Hillbert

SITE DAILY TIME SHEET

[illegible]





PROJECT NO.: 91307 PROJECT NAME: ALCON  
DATE: 10-3-91 START TIME: 7:30a FINISH TIME: 6:30p WEATHER: P-Cloudy 75°  
FOREMAN SIGNATURE: N/A SUPERINTENDENT SIGNATURE: T. L. Newman  
PROJECT MANAGER: Earl Rothfuss

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS: TASK # 30 CLEARED OFF 200' x 30' OF  
WEEDS, ETC, ALONG ALCON BANK. TASK # 5 SET-UP WORK ZONES.  
TASK # 2 SURVEY AND STAGED DEBRIS FROM "RCA ZONE".

ACCIDENTS: 1/19

IMPORTANT TELEPHONE CALLS: *AK*

**MATERIALS RECEIVED:** 1. 6612 Trench/17015 Adon Exp.

VISITORS ON SITE: Jos Serrita, David Gill - Hillbert

### SITE DAILY TIME SHEET

[illegible]





PROJECT NO.: 91307 PROJECT NAME: ALCOA  
DATE: 10-4-91 START TIME: 7:30 A FINISH TIME: 6:30 P WEATHER: Rain till noon & Cloudy 74°  
FOREMAN SIGNATURE: N/A SUPERINTENDENT SIGNATURE: T.E. Newman  
PROJECT MANAGER: Earl Rothfuss

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS: TASK # 30 CLEARED ANOTHER 50'x30'  
OF BARK FOR ALCOA. TASK # 2 PULLED DOWN TWO ELK POLES, TOST  
DOWN 80' OF CHAIN FENCE. REMOVED THREE DRUMS FROM INSIDE  
THE "RCA ZONE".

ACCIDENTS: 11/12

IMPORTANT TELEPHONE CALLS: Earl Rothfuss, Jeff Sample.

MATERIALS RECEIVED: 2/14

VISITORS ON SITE: JOE SEVITA, David Gill - Hillcrest

# SITE DAILY TIME SHEET

[illegible]

PROJECT NO.: 91207 PROJECT NAME: ALCON

DATE: 10-5-91 START TIME: 7:00 A FINISH TIME: 12:00 p WEATHER: SHOWERS 68°

FOREMAN SIGNATURE: N/A SUPERINTENDENT SIGNATURE: T.E. Newman

PROJECT MANAGER: EARL ROTHFUSS

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS: Test # 30 Put-up APP 350' of Safety Fence  
and APP 350' of silt fence for ALCOA.

ACCIDENTE 11/14

IMPORTANT TELEPHONE CALLS None

MATERIALS RECEIVED: 1/14

VISITORS ON SITE: 2/14

### SITE DAILY TIME SHEET

[illegible]







PROJECT NO.: 91307 PROJECT NAME: ALCOA  
DATE: 10-10-81 START TIME: 7:30 A FINISH TIME: 3:30 p WEATHER: SHOWER 70°  
FOREMAN SIGNATURE: N/A SUPERINTENDENT SIGNATURE: T.E. Newman  
PROJECT MANAGER: EARL H. ROTHFUSS

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS: TASK #2 DICON AND SURVEYED DEBRIS - "FENCE  
"POSTS, CHAIN FENCE". TASK #30 SURVEYED CONCRETE PADS AND STARTED  
PLACING SOME OF THE DEBRIS INTO THE ROLL-OFF-BOX. \*NOTE; J. DANTON  
RETURNED THE CHAIN SAW AND GUN. TO ADON.

ACCIDENTE: N/A

IMPORTANT TELEPHONE CALLS: None

MATERIALS RECEIVED: 5/1/68

VISITORS ON SITE: Earl Rattfuss, David G. Hillberg

# SITE DAILY TIME SHEET

[illegible]



PROJECT NO.: 91307

PROJECT NAME: ALCOA

DATE: 10-11-91 START TIME: 7:30 a FINISH TIME: 11:30 p WEATHER: Showers 70°

FOREMAN SIGNATURE: N/A

SUPERINTENDENT SIGNATURE: T. E. Newman

PROJECT MANAGER: EARL H. Rothfuss

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS: TASK #2 SURVEYED TRASH. TASK #30  
"LOADED CONCRETE PADS INTO ROLL-OFF-BOX - TRAVELED HOME."

ACCIDENTS: N/A

IMPORTANT TELEPHONE CALLS *W*

MATERIALS RECEIVED: N/A

VISITORS ON SITE: E. Rothfuss, David Gill - Hillbert

## SITE DAILY TIME SHEET

[illegible]

SITE SAFETY CHECKLISTS

Alcoa - Remediation  
Project Name & Number

Joe Senita  
Person Making Inspection

Cleveland  
Jobsite Location

10/2/91  
Date of Inspection

A. Adequate at time of inspection. C. Item not applicable.  
B. Need immediate attention. N/A No items in section applicable.

Check one of the following:

A B C

A. Posters & Records

N/A

- |  |   |  |   |
|--|---|--|---|
| 1. OSHA poster displayed?                              |   |  |   |
| 2. Foremen holding weekly safety meetings - recording? | X |  |   |
| 3. Emergency medical numbers posted?                   | X |  |   |
| 4. Explosives inventory current?                       | X |  |   |
| 5. Copy of OSHA regulation on jobsite?                 | X |  |   |
| 6. Have utility contacts been made/recorded?           | X |  |   |
| 7. Are safety talk subjects available?                 | X |  |   |
| 8. Blank accident report forms available?              | X |  |   |
| 9. Using employment applications before hiring?        |   |  | X |
| 10. Are safety posters being displayed?                |   |  | X |

Housekeeping & Sanitation

N/A

- |  |   |   |   |
|--|---|---|---|
| 11. General housekeeping of jobsite?                                     | X |   |   |
| 12. Passageways and walkways clear?                                      | X |   |   |
| 13. Nails removed from lumber?   |   |   | X |
| 14. Materials of all types properly stockpiled?                          | X |   |   |
| 15. Is an area provided for waste and trash and is it removed regularly? |   | X |   |
| 16. Adequate lighting in passageways, stairways, and work areas?         |   |   | X |
| 17. Toilet facilities adequate and clean?                                | X |   |   |
| 18. Sanitary supply of drinking water?                                   | X |   |   |
| 19. Disposable drinking cups and refuse container available?             |   |   | X |
| 20. Means provided for sanitizing personal protective equipment?         |   | X |   |

C. Fire Protection

N/A

- |  |   |   |   |
|--|---|---|---|
| 21. Are "No Smoking" or "Flammable" signs posted at all storage and fueling locations? |   | X |   |
| 22. Clear access provided to all fire fighting equipment/are inspections recorded?     | X |   |   |
| 23. Location of all fire fighting equipment prominently marked?                        |   | X |   |
| 24. Are flammable liquids stored in approved containers?                               | X |   |   |
| 25. Fire extinguishers adequate size?  | X |   |   |
| 26. Large fuel tanks properly diked and separated?                                     |   |   | X |

First Aid

N/A

- |                                      |   |  |  |
|--------------------------------------|---|--|--|
| 27. First aid kits well stocked?     |   |  |  |
| 28. Trained first-aiders on jobsite? | X |  |  |

Check one of the following:

A B C

E. Electrical

N/A

- |  |  |  |  |
|--|--|--|--|
| 29. Distribution boxes covered or marked?          |  |  |  |
| 30. OFls in use or positive grounding been tested? |  |  |  |
| 31. Temporary lighting protected?                  |  |  |  |

F. Tools

N/A

- |   |   |  |  |
|---|---|--|--|
| 32. Damaged or broken tools tagged out of service?    |   |  |  |
| 33. Proper storage space provided?                    | X |  |  |
| 34. Operating guards on all power tools?              | X |  |  |
| 35. Persons using power actuated tools certified?     | X |  |  |
| 36. Are guards provided on grinders?                  |   |  |  |
| 37. Airhose couplers secured or safety valve in line? |   |  |  |
| 38. Tools being properly used?                        | X |  |  |
| 39. Correct personal protection being used?           | X |  |  |
| 40. Extension cords tested for assured ground?        |   |  |  |

G. Structures

N/A

- |  |  |  |  |
|--|--|--|--|
| 41. Floor opening covered or guardrailed?  |  |  |  |
| 42. Standard guardrailing on scaffolds, bridge decks, floors of buildings, work platforms, and walkways? |  |  |  |
| 43. Work areas clear of debris, snow, ice, and grease?   |  |  |  |
| 44. Adequate fire protection?  |  |  |  |
| 45. Stairways provided with handrails?   |  |  |  |
| 46. Hollow pan-treads filled with solid material?  |  |  |  |
| 47. Ladders properly constructed?  |  |  |  |
| 48. Side rails of ladders extend 36" above landing?  |  |  |  |
| 49. Scaffolds properly anchored, braced, and plum?   |  |  |  |
| 50. Protection provided over vertical rebars when working above?   |  |  |  |
| 51. Safety belts in use when guardrails are absent?  |  |  |  |
| 52. Employees clear of swinging crane loads?   |  |  |  |
| 53. Tag lines used on suspended crane loads?   |  |  |  |
| 54. Gas cylinders separated, secured upright, and capped if not in use?                                  |  |  |  |
| 55. Safety lines in use on suspended scaffolds?  |  |  |  |
| 56. Heating devices properly ventilated?   |  |  |  |
| 57. Gates functioning on all levels when materials or personnel hoist units used?                        |  |  |  |
| 58. Safe procedures being used to wreck forms?   |  |  |  |

A. Adequate at time of inspection.

C. Item not applicable.

B. Need immediate attention. N/A No items in section applicable.

Check one of the following:

A B C

**Traffic Control**

N/A ☒

59. Advance signing at approaches to work areas? ☒ ☐ ☐
60. Correct message on signs? ☐ ☐ ☐
61. Traffic control set-up on highways meet DOT regulations? ☐ ☐ ☐
62. Flag persons properly dressed and equipped? ☐ ☐ ☐
63. Flag persons performing properly ☐ ☐ ☐

**I. Welding & Cutting**

N/A ☒

64. Using right type of eye protection? ☐ ☐ ☐
65. Gauges, valves, torches, and lines in good condition and free of oil and grease? ☐ ☐ ☐
66. Cylinders not in use capped? ☐ ☐ ☐
67. Cylinders in use or storage secured upright? ☐ ☐ ☐
68. Anti-flashback valves at torch? ☐ ☐ ☐
69. Stored oxygen separated from acetylene by 20 ft. ☐ ☐ ☐
70. Fire extinguisher near welding or cutting operations? ☐ ☐ ☐
71. Adequate ventilation provided? ☐ ☐ ☐
72. Grounding for arc welding machine? ☐ ☐ ☐
73. All parts of arc welding outfits properly insulated? ☐ ☐ ☐

**J. Heavy Equipment**

N/A ☒

74. Operators wearing hard hats? ☐ ☐ ☐
75. Hearing protection being used? ☐ ☐ ☐
76. Dust control? ☐ ☐ ☐
77. Haul road adequate and maintained? ☐ ☐ ☐
78. Equipment speeds excessive for safety? ☐ ☐ ☐
79. Horns and back-up alarms functioning? ☐ ☐ ☐
80. Clearing cake on machines when clearing? ☐ ☐ ☐
81. Engines shut-down when refueling or lubricating? ☐ ☐ ☐
82. Seat belts on machines with ROPS? ☐ ☐ ☐
83. Steps and hand holds adequate and safe condition? ☐ ☐ ☐
84. Adequate lighting of haul roads at night? ☐ ☐ ☐
85. Parked or unattended equipment have blade lowered to the ground? ☐ ☐ ☐
86. No hitchhikers riding on equipment ☐ ☐ ☐
87. Full fire extinguisher near refueling tank? ☐ ☐ ☐
88. Dump man prominently located? ☐ ☐ ☐
89. Overhead guard on fork lift truck? ☐ ☐ ☐
90. Vehicles with restricted rear visibility equipped with operating back-up alarms? ☐ ☐ ☐

**K. CRANES**

N/A ☒

91. Power line distance from machines? ☐ ☐ ☐
92. Annual inspection? ☐ ☐ ☐
93. Cables in safe condition? ☐ ☐ ☐
94. Rear swing protection and pinch point guarding? ☐ ☐ ☐
95. Exposed gears, shaft, and belts guarded? ☐ ☐ ☐
96. Fire extinguisher, boom angle indicator, load capacity chart and hand signal poster in crane? ☐ ☐ ☐
97. Signs and/or flags on cranes in transit? ☐ ☐ ☐
98. Operator making daily inspections and tests? ☐ ☐ ☐

**L. Trenching & Excavations**

N/A ☒

99. Trench side shored, layed back or boxed? ☐ ☐ ☐
100. Utilities contacted and located before digging? ☐ ☐ ☐
101. Ladder in trench? ☐ ☐ ☐
102. Stop logs placed where necessary along top of trench? ☐ ☐ ☐

Check one of the following:

A B

103. Excavated material stockpiled far enough from the edge of the trench? ☐ ☐
104. Laser warning signs in place? ☐ ☐
105. Adequate ventilation in pipe? ☐ ☐
106. Traffic control adequate? ☐ ☐
107. Sides of excavation for building shored or protected? ☐ ☐
108. Oxygen level tested in tunnel, shafts or confined space? ☐ ☐
109. Public protected from exposure to open excavation? ☐ ☐
- M. Miscellaneous** N/A ☐
110. Sufficient quantities of approved personal protective equipment? ☒ ☐
111. Procedures established to handle toxic and carcinogenic materials? ☐ ☒
112. Sewers, vaults, tanks, and bins tested for adequate oxygen levels before employees are permitted to enter? ☐ ☐
113. Everyone wearing hard hat? ☒ ☐
114. Fall protection being used on steel erection? ☐ ☐
115. Walls properly braced (concrete and block construction)? ☐ ☐
116. If toxic fumes, vapors, and dusts present, is ventilation adequate? ☐ ☐
117. Guards in place and used on woodworking machines? ☐ ☐
118. Explosives being used, transported, and stored in compliance with regulations? ☐ ☐
119. Blaster following all safety precautions? ☐ ☒
120. Tunneling operations/lighting, and ventilation adequate? ☐ ☐
121. Bolts, pulleys, shafts, gears, and chains guarded on all machinery and equipment? ☐ ☐
122. Masonary save grounded and personal protective equipment being used? ☐ ☐
123. Exit signs over doors in offices, and storage buildings? ☐ ☐

\* This checklist does not include all hazards on every job, but is intended to remind you of the most common hazards.

Unsafe acts and/or practices observed.

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I, the undersigned superintendent, have reviewed the indicated hazards and will take the necessary action to immediately correct them.

*T.E. Newman*

Signature of Project Supervisor





## JOBSITE SAFETY CHECKLIST

HS

ALCOA 9/307  
Project Name & NumberT.E. NEWMAN  
Person Making Inspection

Jobsite Location

10-9-91  
Date of Inspection

A. Adequate at time of inspection. C. Item not applicable.  
E. Need immediate attention. N/A No items in section applicable.

Check one of the following:

## A. Posters / Records

N/A ☐ A ☒ B ☐ C ☐

- |  |                                     |                                     |                          |
|--|-------------------------------------|-------------------------------------|--------------------------|
| 1. OSHA poster displayed?                              | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 2. Foremen holding weekly safety meetings - recording? | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 3. Emergency medical numbers posted?                   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 4. Explosives inventory current?                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 5. Copy of OSHA regulation on jobsite?                 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 6. Have utility contacts been made/recorded?           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 7. Are safety talk subjects available?                 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 8. Blank accident report forms available?              | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 9. Using employment applications before hiring?        | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 10. Are safety posters being displayed?                | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

## B. Housekeeping &amp; Sanitation

N/A ☐

- |  |                                     |                                     |                          |
|--|-------------------------------------|-------------------------------------|--------------------------|
| 11. General housekeeping of jobsite?                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 12. Passageways and walkways clear?                                      | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 13. Nails removed from lumber?   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 14. Materials of all types properly stockpiled?                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 15. Is an area provided for waste and trash and is it removed regularly? | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 16. Adequate lighting in passageways, stairways, and work areas?         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 17. Toilet facilities adequate and clean?                                | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 18. Sanitary supply of drinking water?                                   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 19. Disposable drinking cups and refuse container available?             | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 20. Means provided for sanitizing personal protective equipment?         | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |

## C. Fire Protection

N/A ☐

- |  |                                     |                                     |                                     |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| 21. Are "No Smoking" or "Flammable" signs posted at all storage and fueling locations? | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 22. Clear access provided to all fire fighting equipment/are inspections recorded?     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 23. Location of all fire fighting equipment prominently marked?                        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 24. Are flammable liquids stored in approved containers?                               | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 25. Fire extinguishers adequate size?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 26. Large fuel tanks properly diked and separated?                                     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

## D. First Aid

N/A ☐

- |                                     |                                     |                          |                          |
|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| 1. First aid kits well stocked?     | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Trained first-aiders on jobsite? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Check one of the following:

## E. Electrical

N/A ☐ A ☐ B ☒

- |   |                          |                                     |                          |
|---|--------------------------|-------------------------------------|--------------------------|
| 29. Distribution boxes covered or marked?           | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 30. GFI's in use or positive grounding been tested? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 31. Temporary lighting protected?                   | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |

## F. Tools

N/A ☐

- |  |                                     |                                     |                          |
|--|-------------------------------------|-------------------------------------|--------------------------|
| 32. Damaged or broken tools tagged out of service?     | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 33. Proper storage space provided?                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 34. Operating guards on all power tools?               | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 35. Persons using power actuated tools certified?      | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 36. Are guards provided on grinders?                   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 37. Air hose couplers secured or safety valve in line? | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 38. Tools being properly used?                         | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 39. Correct personal protection being used?            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 40. Extension cords tested for assured ground?         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |

## G. Structures

N/A ☐

- |  |                                     |                                     |                          |
|--|-------------------------------------|-------------------------------------|--------------------------|
| 41. Floor opening covered or guardrailed?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 42. Standard guardrailing on scaffolds, bridge decks, floors of buildings, work platforms, and walkways? | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 43. Work areas clear of debris, snow, ice, and grease?   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 44. Adequate fire protection?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 45. Stairways provided with handrails?   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 46. Hollow pan-treads filled with solid material?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 47. Ladders properly constructed?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 48. Side rails of ladders extend 36" above landing?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 49. Scaffolds properly anchored, braced, and plumb?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 50. Protection provided over vertical rebar when working above?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 51. Safety belts in use when guardrails are absent?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 52. Employees clear of swinging crane loads?   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 53. Tag lines used on suspended crane loads?   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 54. Gas cylinders separated, secured upright, and capped if not in use?                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 55. Safety lines in use on suspended scaffolds?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 56. Heating devices properly ventilated?   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 57. Gates functioning on all levels when materials or personnel hoist units used?                        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| 58. Safe procedures being used to wreck forms?   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |



A. Adequate at time of inspection.

B. Need immediate attention. N/A No items in section applicable.

C. Item not applicable.

Check one of the following:

### H. Traffic Control

N/A ☒ A B C

- 59. Advance signing at approaches to work areas?
- 60. Correct message on signs?
- 61. Traffic control set-up on highways meet DOT regulations?
- 62. Flag persons properly dressed and equipped?
- 63. Flag persons performing properly?


### I. Welding & Cutting

N/A ☒ A B C

- 64. Using right type of eye protection?
- 65. Gauges, valves, torches, and lines in good condition and free of oil and grease?
- 66. Cylinders not in use capped?
- 67. Cylinders in use or storage secured upright?
- 68. Anti-flashback valves at torch?
- 69. Stored oxygen separated from acetylene by 20 ft.
- 70. Fire extinguisher near welding or cutting operations?
- 71. Adequate ventilation provided?
- 72. Grounding for arc welding machine?
- 73. All parts of arc welding outfits properly insulated?


### J. Heavy Equipment

N/A ☐ A B C

- 74. Operators wearing hard hats?
- 75. Hearing protection being used?
- 76. Dust control?
- 77. Haul road adequate and maintained?
- 78. Equipment speeds excessive for safety?
- 79. Horns and back-up alarms functioning?
- 80. Clearing cuts on machines when clearing?
- 81. Engines shut-down when refueling or lubricating?
- 82. Seat belts on machines with ROPS?
- 83. Steps and hand holds adequate and safe condition?
- 84. Adequate lighting of haul roads at night?
- 85. Parked or unattended equipment have blade lowered to the ground?
- 86. No hitchhikers riding on equipment?
- 87. Full fire extinguisher near refueling tank?
- 88. Dump man prominently located?
- 89. Overhead guard on fork lift truck?
- 90. Vehicles with restricted rear visibility equipped with operating back-up alarms?


### K. Cranes

N/A ☒ A B C

- 91. Power line distance from machines?
- 92. Annual inspection?
- 93. Cables in safe condition?
- 94. Rear swing protection and pinch point guarding?
- 95. Exposed gears, shaft, and belts guarded?
- 96. Fire extinguisher, boom angle indicator, load capacity chart and hand signal poster in crane?
- 97. Signs and/or flags on cranes in transit?
- 98. Operator making daily inspections and tests?


### L. Trenching & Excavations

N/A ☐ A B C

- 99. Trench side shored, lagged back or benched?
- 100. Utilities contacted and located before digging?
- 101. Ladder in trench?
- 102. Stop logs placed where necessary along top of trench?


Check one of the following:

- 103. Excavated material stockpiled far enough from the edge of the trench?
- 104. Laser warning signs in place?
- 105. Adequate ventilation in pipe?
- 106. Traffic control adequate?
- 107. Sides of excavation for building shored or protected?
- 108. Oxygen level tested in tunnel, shafts or confined space?
- 109. Public protected from exposure to open excavation?


### M. Miscellaneous

N/A ☐ A B C

- 110. Sufficient quantities of approved personal protective equipment?
- 111. Procedures established to handle toxic and carcinogenic materials?
- 112. Sewers, vaults, tanks, and bins tested for adequate oxygen levels before employees are permitted to enter?
- 113. Everyone wearing hard hat?
- 114. Fall protection being used on steel erection?
- 115. Walls properly braced (concrete and block construction)?
- 116. If toxic fumes, vapors, and dusts present, is ventilation adequate?
- 117. Guards in place and used on woodworking machines?
- 118. Explosives being used, transported, and stored in compliance with regulations?
- 119. Blaster following all safety precautions?
- 120. Tunneling operations/lighting, and ventilation adequate?
- 121. Belts, pulleys, shafts, gears, and chains guarded on all machinery and equipment?
- 122. Machinery safe grounded and personal protective equipment being used?
- 123. Exit signs over doors in offices, and storage buildings?


\* This checklist does not include all hazards on every job, but is intended to remind you of the most common hazards.

Unsafe acts and/or practices observed.

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I, the undersigned superintendent, have reviewed the indicated hazards and will take the necessary action to immediately correct them.

*T.E. Newman*

Signature of Project Supervisor