

**Alan J. Blotcky Reactor Facility
Omaha Veterans Administration Medical Center
Omaha, Nebraska**

Characterization Survey Data Packages

APPENDIX B

(Book 2 of 2)



Alan J. Blotcky Research Reactor

Characterization Survey Package N0002

Outside Areas

Alan J. Blotcky Reactor Facility
CHARACTERIZATION SURVEY PACKAGE N0002
(Outside Areas)

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Section 1

Survey Package Worksheet for the Outside Areas

ATTACHMENT 6.2
CHARACTERIZATION SURVEY PACKAGE WORKSHEET

PACKAGE ID NO.: N0002	PREPARED BY: Paul Jones	DATE: 11/20/02
LOCATION: Veterans Affairs Medical Center	APPROVED BY: Doug Schult	DATE: 11/21/02
FLOOR/ELEVATION: Outside Grounds	BUILDING: Research	AREA: Outside Areas

Area Description

This package includes the building exterior, sidewalks, paved areas, and outside, soils.

Historical Information

The Alan J. Blotcky Reactor was used to support nuclear medicine and research programs conducted at the medical center. The total reactor operation was approximately 515,000 kilowatt hours from 1959 to 2001.

Survey Instructions

For the survey, perform measurements according to the Final Survey Plan Section 5.0 and applicable project procedures.

Non-Impacted Survey Units

1. Collect 1 direct beta or alpha measurement at each survey measurement location (SML), as appropriate.
2. Mark the location of the direct beta or alpha measurements on a survey map.
3. Obtain 1 smear (approximately 100 cm²) at each direct beta SML for removable alpha and beta surface activity.

Survey Instructions (continued)

General Survey Instructions (Non-Impacted Areas)

1. Use LMI Data Logger M2350-1 with M43-68 style Gas Flow Proportional for direct beta survey measurements.
2. Perform one 5 minute pre-survey shielded background and one 5 minute post-survey shielded background for each detector used for the survey.
3. Verify that the direct measurement MDA is less than 25% of the expected DCGL ($<1,250 \text{ dpm}/100\text{cm}^2$) for direct beta measurements. If the field background is less than 1000 CPM, use 10-second count time for each direct beta measurement. If the field background is greater than 1000 CPM, obtain further directions from the Project Manager or designee.
4. Download each M2350-1 at completion of the survey, shift and/or prior to performing surveys in another survey area (before changing L1 codes).
4. Use location codes provided below for direct beta measurements, as appropriate.
5. Use the Package L1, L2, and L8 codes when labeling smears samples for counting.
6. When all measurements, samples or scans are collected, initial and date the "MEASUREMENT TYPE" block on the survey package to indicate the measurements or samples were collected.
7. Note any problems, comments, or other information pertinent to the data or sample collection under the "NOTES" section.

Survey performance (Initial and date as each survey is complete)													
Location Code					General Description	Area Classification	Direct Beta	Direct Alpha	Beta Scan	γ Scan	Smear Gross B/γ	Smear H-3	Other (e.g. soil samples)
L1	L2	L3	L7	L8									
Outside Areas													
N0002	01OL1	TAC01	ZZZZZ	1 thru 30	Soil Sample Locations	Non-Impacted	N/A	N/A	N/A	RC7 for P.S.D	N/A	N/A	60
N0002	01WE1	TAC01	ZZZZZ	1 thru 30	Building Exterior	Non-Impacted	30 RC7 for J.M.	↓	↓	RC7 for J.M.	30 J.M.	↓	N/A
N0002	01FE1	TAC01	ZZZZZ	1 thru 30	Paved areas & Sidewalks	Non-Impacted	30 RC7 for J.M.	↓	↓	RC7 for J.M.	30 J.M.	↓	↓
N0002	01FE2	TAC01	ZZZZZ	1 thru 15	Roof	Non-Impacted	RC7 15 (*)	↓	↓	RC7 for J.M.	15 RC7	↓	↓
~													
A													
~													
~													
~													
~													

(*) - See notes section

Package Review

Date Package Completed

12/21/02

Package Reviewed by and Date

Polo Jones 1/10/03

Notes

(*) Initial 15 Direct Beta measurements were elevated. 30 additional measurements taken. see download file 48 for these additional 30 measurements. One roof material sample taken and analyzed by gamma spec. No licensed radioactive material detected in roof sample. P. Jones

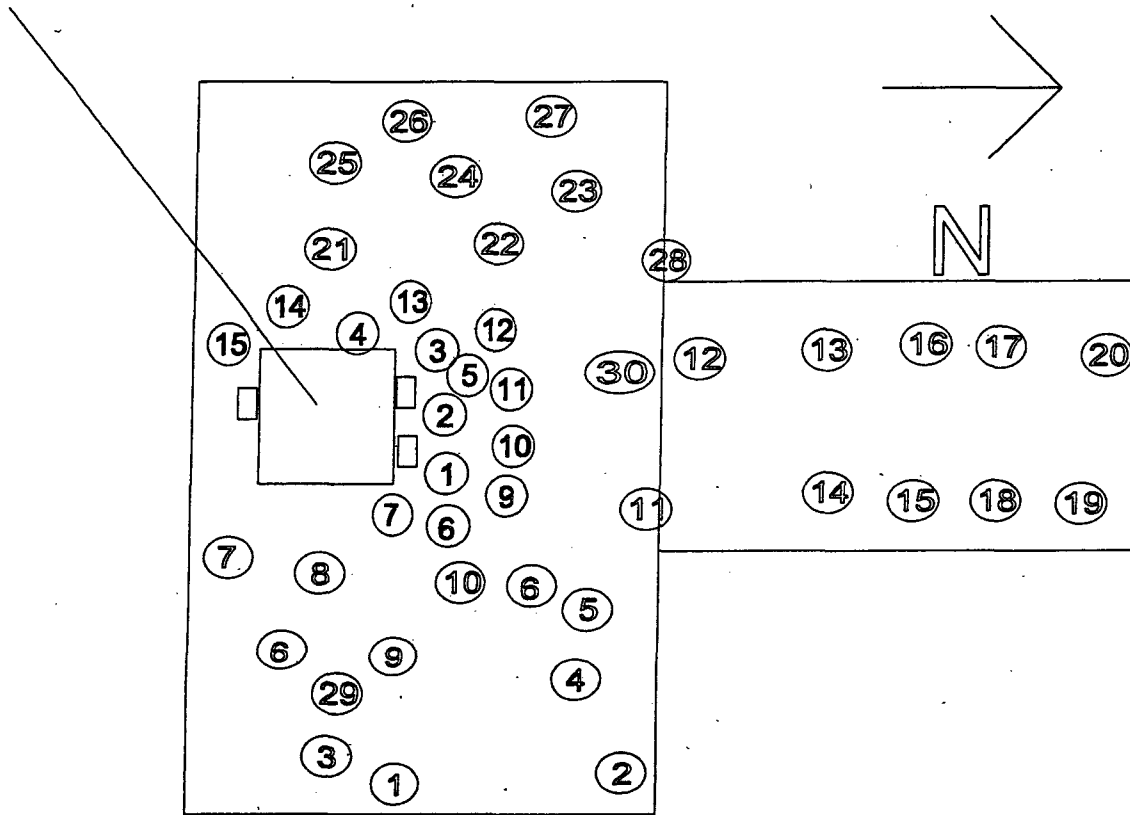
Section 2

Maps of the Survey Area

Package N0002

Roof (01FE2)

Ventilation Unit Exhaust Doghouse

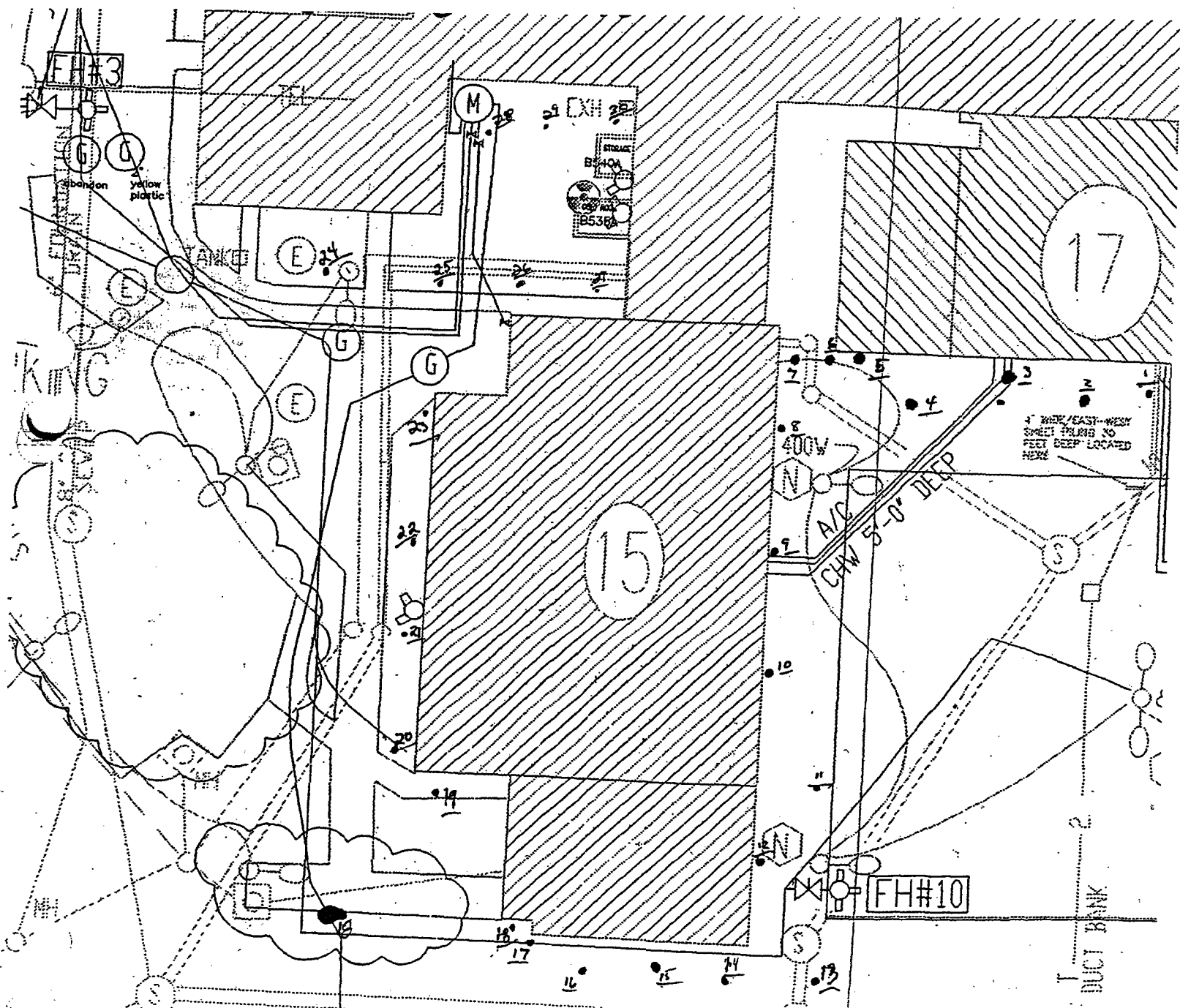


- ⊙ # Denotes Measurement Locations 1-15 for File #38
- ⊙ # Denotes Measurement Locations 1-30 for file #48

Note: Drawing not to scale

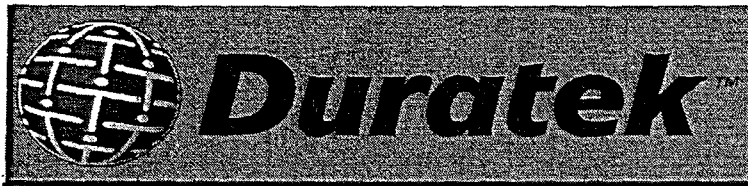
Package N0002

Soil Sample Locations



Section 3

M2350 Download Beta Report(s)



M2350-1 Download BETA Report

File Name : 00000038		Survey Description : N0002 Roof 01FE2 Pre S/C	
Survey Reason : Characterization			
User ID : JLM9424		Technician Name :	
Instrument Model : 2350-1	Instrument S/N : 95340	Instrument Cal. Due : 1/22/03	
Detector Model : 43-68B	Detector S/N : 133988	Detector Cal. Due : 4/9/03	
Measurement Type : BETA	Detector Type : 02200 : 126 cm2 Gas Proportional Detector		
Detector Area : 126	Efficiency : 0.218	Survey Date : 12/3/02	

Jaed Murcia
Print Name

Print Name

N/A

Print Name

[Signature]
Signature

Signature

N/A

Signature

12/3/02
Date

Date

N/A

Date

Comments:

Sign-Off

Paul Jones
Print Name

[Signature]
Signature

12/3/02
Date

Duratek Beta Survey Report

Download File Name: 00000038

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
N0002	01FE2	5	129.0	10	FLDCT	B9999	ZZZZZ	1	305	1.707
N0002	01FE2	6	121.0	10	FLDCT	B9999	ZZZZZ	2	305	1.533
N0002	01FE2	7	108.0	10	FLDCT	B9999	ZZZZZ	3	305	1.249
N0002	01FE2	8	103.0	10	FLDCT	B9999	ZZZZZ	4	305	1.140
N0002	01FE2	9	92.0	10	FLDCT	B9999	ZZZZZ	5	305	899
N0002	01FE2	10	90.0	10	FLDCT	B9999	ZZZZZ	6	305	856
N0002	01FE2	11	114.0	10	FLDCT	B9999	ZZZZZ	7	305	1.380
N0002	01FE2	12	123.0	10	FLDCT	B9999	ZZZZZ	8	305	1.576
N0002	01FE2	13	89.0	10	FLDCT	B9999	ZZZZZ	9	305	834
N0002	01FE2	14	90.0	10	FLDCT	B9999	ZZZZZ	10	305	856
N0002	01FE2	15	98.0	10	FLDCT	B9999	ZZZZZ	11	305	1,030
N0002	01FE2	16	111.0	10	FLDCT	B9999	ZZZZZ	12	305	1.314
N0002	01FE2	17	108.0	10	FLDCT	B9999	ZZZZZ	13	305	1,249
N0002	01FE2	18	112.0	10	FLDCT	B9999	ZZZZZ	14	305	1.336
N0002	01FE2	19	99.0	10	FLDCT	B9999	ZZZZZ	15	305	1,052

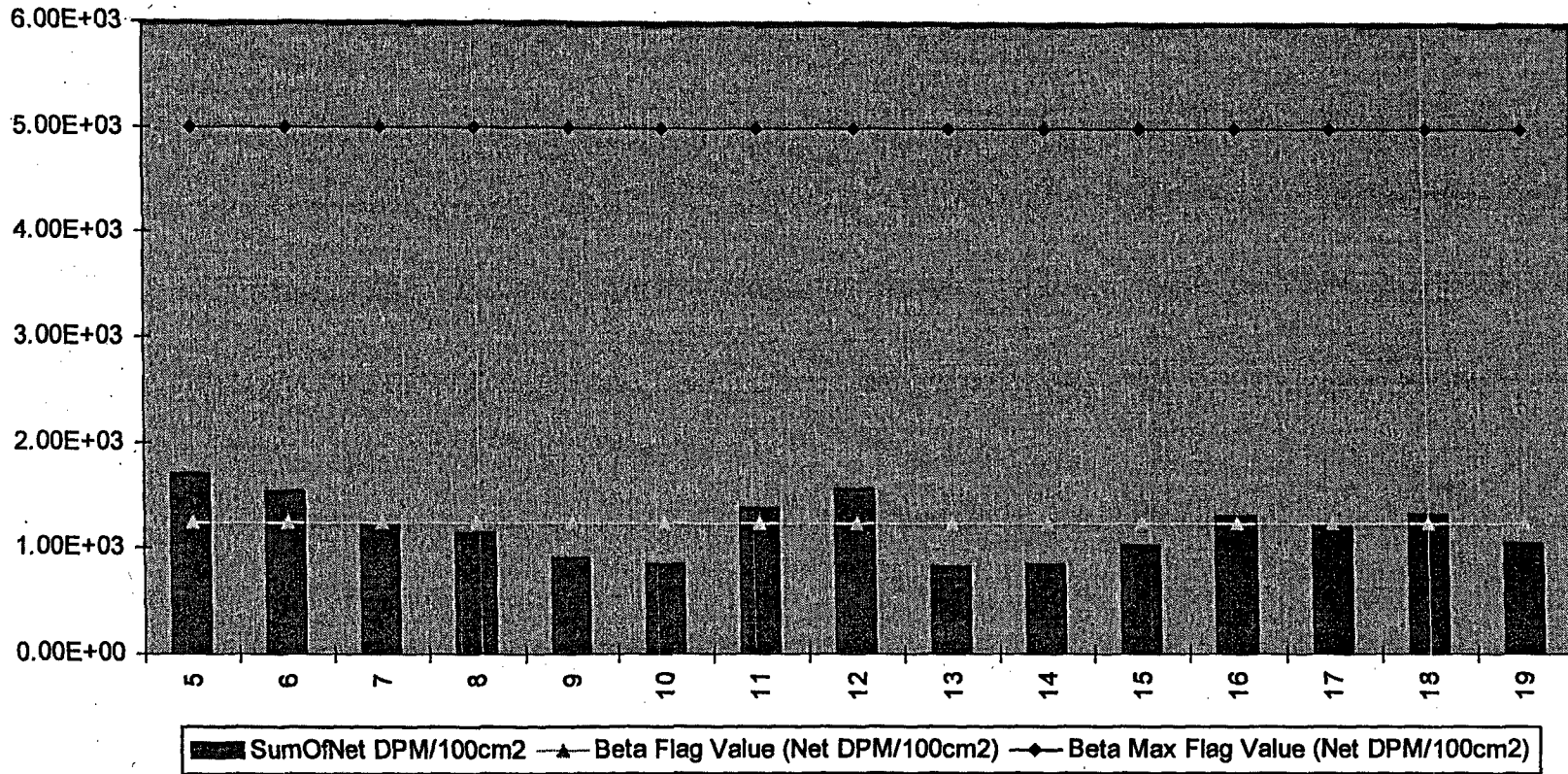
Beta Flag

1250 - _____

Beta Max Flag

5000. ██████████

M2350-1 Sample Results



Page 3 of 3

Duratek Beta Survey Report

Download File Name: 00000024

Package ID(L1)	Surface (L2)	Sampl e #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
N0002	01FE1	5	95.0	10	FLDCT	B0002	ZZZZZ	1	306	903
N0002	01FE1	6	91.0	10	FLDCT	B0002	ZZZZZ	2	306	821
N0002	01FE1	7	80.0	10	FLDCT	B0002	ZZZZZ	3	306	595
N0002	01FE1	8	90.0	10	FLDCT	B0002	ZZZZZ	4	306	800
N0002	01FE1	9	85.0	10	FLDCT	B0002	ZZZZZ	5	306	698
N0002	01FE1	11	64.0	10	FLDCT	B0005	ZZZZZ	6	343	140
N0002	01FE1	12	85.0	10	FLDCT	B0005	ZZZZZ	7	343	571
N0002	01FE1	13	94.0	10	FLDCT	B0005	ZZZZZ	8	343	756
N0002	01FE1	14	115.0	10	FLDCT	B0005	ZZZZZ	9	343	1,187
N0002	01FE1	15	93.0	10	FLDCT	B0005	ZZZZZ	10	343	735
N0002	01FE1	16	89.0	10	FLDCT	B0005	ZZZZZ	11	343	653
N0002	01FE1	17	95.0	10	FLDCT	B0005	ZZZZZ	12	343	777
N0002	01FE1	18	95.0	10	FLDCT	B0005	ZZZZZ	13	343	777
N0002	01FE1	19	102.0	10	FLDCT	B0005	ZZZZZ	14	343	920
N0002	01FE1	20	98.0	10	FLDCT	B0005	ZZZZZ	15	343	838
N0002	01WE1	22	95.0	10	FLDCT	B0010	ZZZZZ	1	357	729
N0002	01WE1	23	81.0	10	FLDCT	B0010	ZZZZZ	2	357	441
N0002	01WE1	24	82.0	10	FLDCT	B0010	ZZZZZ	3	357	462
N0002	01WE1	25	102.0	10	FLDCT	B0010	ZZZZZ	4	357	872
N0002	01WE1	26	92.0	10	FLDCT	B0010	ZZZZZ	5	357	667
N0002	01WE1	27	80.0	10	FLDCT	B0010	ZZZZZ	6	357	421
N0002	01WE1	28	97.0	10	FLDCT	B0010	ZZZZZ	7	357	770
N0002	01WE1	29	104.0	10	FLDCT	B0010	ZZZZZ	8	357	913
N0002	01WE1	30	94.0	10	FLDCT	B0010	ZZZZZ	9	357	708
N0002	01WE1	31	83.0	10	FLDCT	B0010	ZZZZZ	10	357	482
N0002	01WE1	32	88.0	10	FLDCT	B0010	ZZZZZ	11	357	585
N0002	01WE1	33	94.0	10	FLDCT	B0010	ZZZZZ	12	357	708
N0002	01WE1	34	84.0	10	FLDCT	B0010	ZZZZZ	13	357	503
N0002	01WE1	35	108.0	10	FLDCT	B0010	ZZZZZ	14	357	995
N0002	01WE1	36	99.0	10	FLDCT	B0010	ZZZZZ	15	357	811
N0002	01WE1	37	87.0	10	FLDCT	B0010	ZZZZZ	16	357	564
N0002	01WE1	38	70.0	10	FLDCT	B0010	ZZZZZ	17	357	216
N0002	01WE1	39	57.0	10	FLDCT	B0010	ZZZZZ	18	357	-51
N0002	01WE1	40	31.0	10	FLDCT	B0010	ZZZZZ	19	357	-585
N0002	01WE1	41	41.0	10	FLDCT	B0010	ZZZZZ	20	357	-380
N0002	01WE1	42	38.0	10	FLDCT	B0010	ZZZZZ	21	357	-441
N0002	01WE1	43	65.0	10	FLDCT	B0010	ZZZZZ	22	357	113
N0002	01WE1	44	86.0	10	FLDCT	B0010	ZZZZZ	23	357	544
N0002	01WE1	45	90.0	10	FLDCT	B0010	ZZZZZ	24	357	626


Beta Flag

1250 - _____

Beta Max Flag

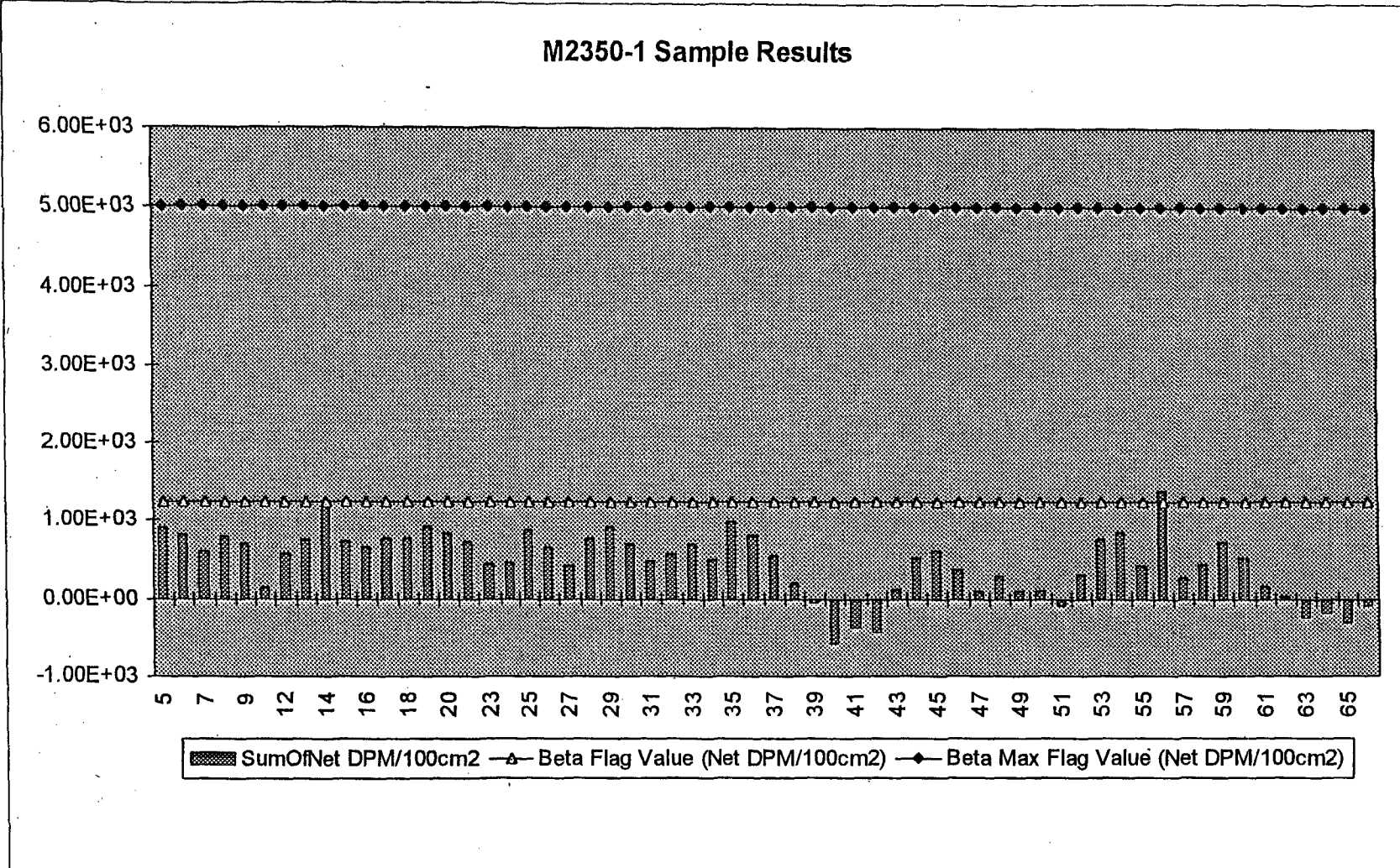
5000 

Package ID(L1)	Surface (L2)	Sampl e#	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
N0002	01WE1	46	78.0	10	FLDCT	B0010	ZZZZZ	25	357	380
N0002	01WE1	47	64.0	10	FLDCT	B0010	ZZZZZ	26	357	92
N0002	01WE1	48	74.0	10	FLDCT	B0010	ZZZZZ	27	357	298
N0002	01WE1	49	64.0	10	FLDCT	B0010	ZZZZZ	28	357	92
N0002	01WE1	50	64.0	10	FLDCT	B0010	ZZZZZ	29	357	92
N0002	01WE1	51	55.0	10	FLDCT	B0010	ZZZZZ	30	357	-92
N0002	01FE1	52	73.0	10	FLDCT	B0005	ZZZZZ	16	343	325
N0002	01FE1	53	89.0	10	FLDCT	B0002	ZZZZZ	17	306	780
N0002	01FE1	54	93.0	10	FLDCT	B0002	ZZZZZ	18	306	862
N0002	01FE1	55	72.0	10	FLDCT	B0002	ZZZZZ	19	306	431
N0002	01FE1	56	119.0	10	FLDCT	B0002	ZZZZZ	20	306	1396
N0002	01FE1	57	64.0	10	FLDCT	B0002	ZZZZZ	21	306	267
N0002	01FE1	58	73.0	10	FLDCT	B0002	ZZZZZ	22	306	452
N0002	01FE1	59	86.0	10	FLDCT	B0002	ZZZZZ	23	306	718
N0002	01FE1	60	77.0	10	FLDCT	B0002	ZZZZZ	24	306	534
N0002	01FE1	61	59.0	10	FLDCT	B0002	ZZZZZ	25	306	164
N0002	01FE1	62	53.0	10	FLDCT	B0002	ZZZZZ	26	306	41
N0002	01FE1	63	45.0	10	FLDCT	B0005	ZZZZZ	27	343	-250
N0002	01FE1	64	48.0	10	FLDCT	B0005	ZZZZZ	28	343	-188
N0002	01FE1	65	42.0	10	FLDCT	B0005	ZZZZZ	29	343	-311
N0002	01FE1	66	53.0	10	FLDCT	B0005	ZZZZZ	30	343	-86

Beta Flag	1250 - _____
Beta Max Flag	5000 

Download Name: 00000024

Survey Description: 01we1,01fe1 bldg ext,park lot,sidewalks pre-post.



Duratek Beta Survey Report

Download File Name: 00000048

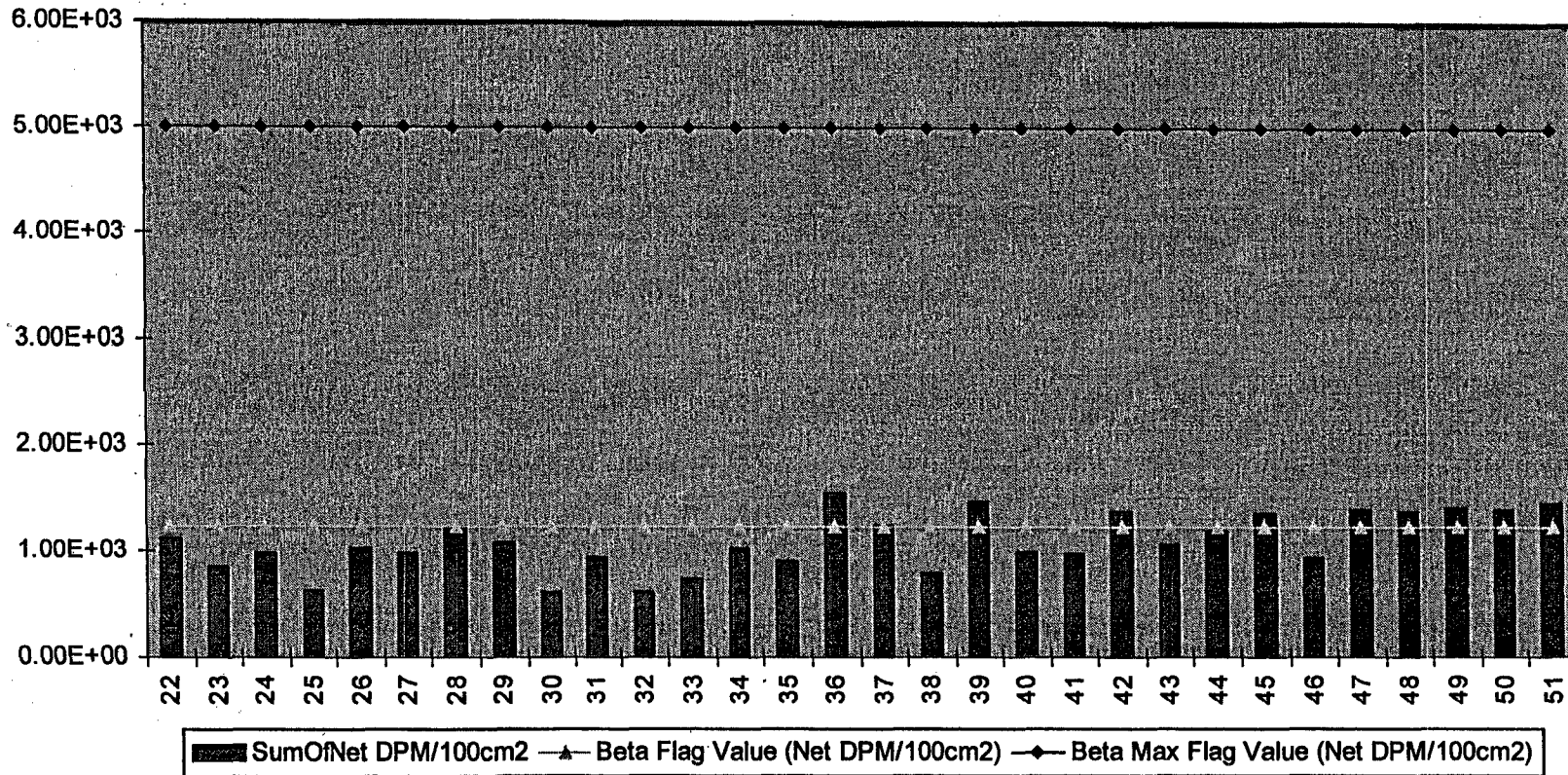
Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	Net (DPM/100cm2)
N0002	01FE1	22	104.0	10	FLDCT	B9999	ZZZZ	1	300	1,133
N0002	01FE1	23	91.0	10	FLDCT	B9999	ZZZZ	2	300	860
N0002	01FE1	24	97.0	10	FLDCT	B9999	ZZZZ	3	300	986
N0002	01FE1	25	80.0	10	FLDCT	B9999	ZZZZ	4	300	629
N0002	01FE1	26	99.0	10	FLDCT	B9999	ZZZZ	5	300	1,028
N0002	01FE1	27	97.0	10	FLDCT	B9999	ZZZZ	6	300	986
N0002	01FE1	28	108.0	10	FLDCT	B9999	ZZZZ	7	300	1,217
N0002	01FE1	29	102.0	10	FLDCT	B9999	ZZZZ	8	300	1,091
N0002	01FE1	30	79.0	10	FLDCT	B9999	ZZZZ	9	300	608
N0002	01FE1	31	95.0	10	FLDCT	B9999	ZZZZ	10	300	944
N0002	01FE1	32	79.0	10	FLDCT	B9999	ZZZZ	11	300	608
N0002	01FE1	33	85.0	10	FLDCT	B9999	ZZZZ	12	300	734
N0002	01FE1	34	99.0	10	FLDCT	B9999	ZZZZ	13	300	1,028
N0002	01FE1	35	93.0	10	FLDCT	B9999	ZZZZ	14	300	902
N0002	01FE1	36	124.0	10	FLDCT	B9999	ZZZZ	15	300	1,552
N0002	01FE1	37	110.0	10	FLDCT	B9999	ZZZZ	16	300	1,259
N0002	01FE1	38	88.0	10	FLDCT	B9999	ZZZZ	17	300	797
N0002	01FE1	39	121.0	10	FLDCT	B9999	ZZZZ	18	300	1,489
N0002	01FE1	40	98.0	10	FLDCT	B9999	ZZZZ	19	300	1,007
N0002	01FE1	41	97.0	10	FLDCT	B9999	ZZZZ	20	300	986
N0002	01FE1	42	116.0	10	FLDCT	B9999	ZZZZ	21	300	1,385
N0002	01FE1	43	101.0	10	FLDCT	B9999	ZZZZ	22	300	1,070
N0002	01FE1	44	107.0	10	FLDCT	B9999	ZZZZ	23	300	1,196
N0002	01FE1	45	115.0	10	FLDCT	B9999	ZZZZ	24	300	1,364
N0002	01FE1	46	95.0	10	FLDCT	B9999	ZZZZ	25	300	944
N0002	01FE1	47	117.0	10	FLDCT	B9999	ZZZZ	26	300	1,405
N0002	01FE1	48	116.0	10	FLDCT	B9999	ZZZZ	27	300	1,385
N0002	01FE1	49	118.0	10	FLDCT	B9999	ZZZZ	28	300	1,426
N0002	01FE1	50	117.0	10	FLDCT	B9999	ZZZZ	29	300	1,405
N0002	01FE1	51	120.0	10	FLDCT	B9999	ZZZZ	30	300	1,488

2

Database updated Apr 12/30/02 no reprint

Beta Flag	1250	-	_____
Beta Max Flag	5000		██████████

M2350-1 Sample Results



Section 4

M2350 Exposure Rate Measurement Report



M2350-1 Download Gamma Report

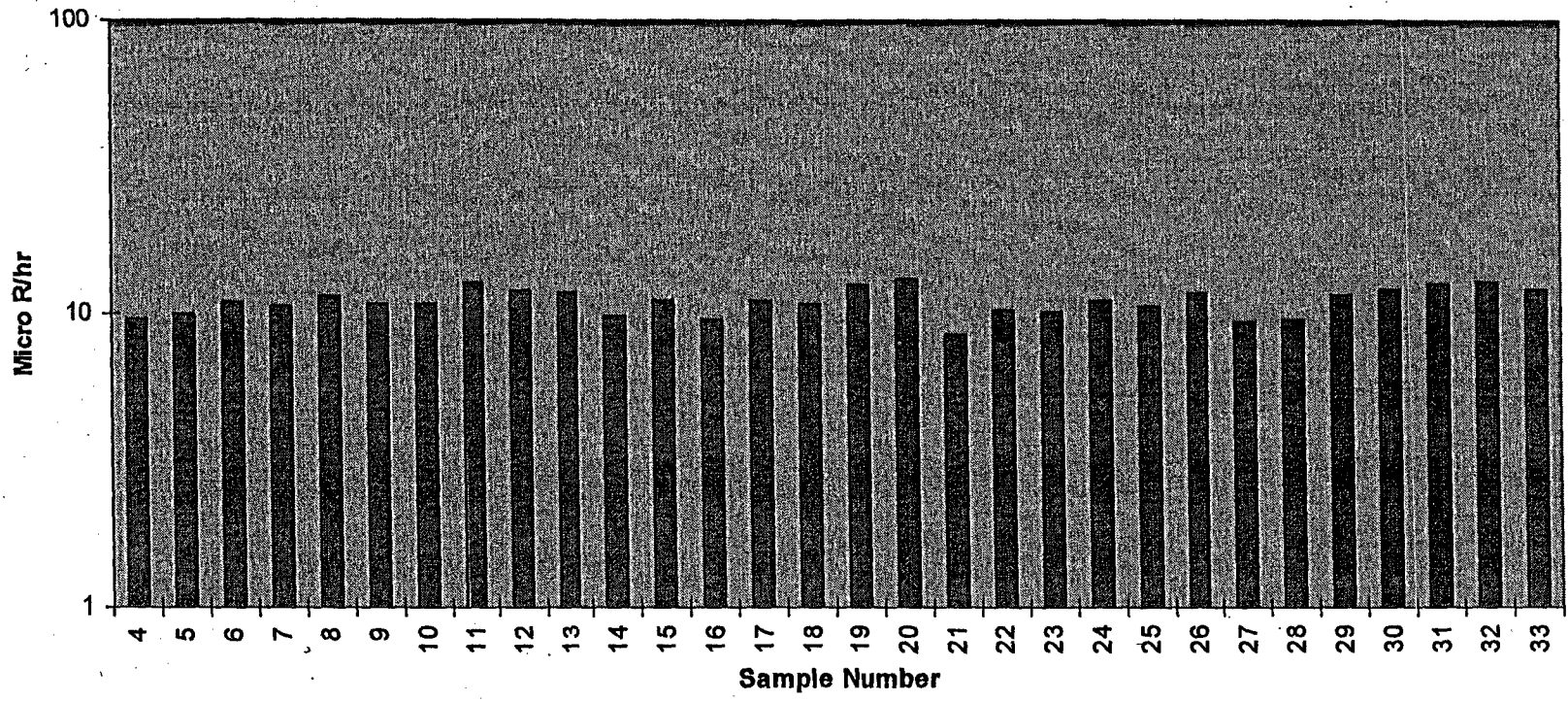
File Name : 00000023		Survey Description : 0101 surface sample points, pre-post s/c	
Survey Reason : Characterization			
User ID : JLM9424		Technician Name :	
Instrument Model : 2350-1	Instrument S/N : 95346	Instrument Cal. Due : 2/21/03	
Detector Model : LMI 44-10	Detector S/N : 162409	Detector Cal. Due : 4/8/03	
Measurement Type : Gamma	Detector Type : 03300 :		
Cal. Constant : 87769910000			Survey Date : 11/21/02

Jack Mucini [Signature] 11/22/02
 Print Name Signature Date
 _____ _____ _____
 Print Name Signature Date

Comments:

Sign-Off PAUL JONES [Signature] 11/26/02
 Print Name Signature Date

M2350-1 Sample Results



Micro R/hr ▲ Gamma Flag Value (Micro R/hr) ◆ Gamma Max Flag Value (Micro R/hr)

page 2 of 3

Duratek Gamma Survey Report

Package ID(L1)	Surface (L2)	Sample #	Counts	Time (sec)	Count Type(L5)	Material Type(L6)	Grid ID(L7)	Location # (L8)	Bkgd (cpm)	μ R/hr:
N000	01OL1	4	2,790.0	12	FLDCT	B0016	ZZZZ	1	0	9.54E+00
N000	01OL1	5	2,939.0	12	FLDCT	B0016	ZZZZ	2	0	1.00E+01
N000	01OL1	6	3,197.0	12	FLDCT	B0016	ZZZZ	3	0	1.09E+01
N000	01OL1	7	3,130.0	12	FLDCT	B0016	ZZZZ	4	0	1.07E+01
N000	01OL1	8	3,340.0	12	FLDCT	B0016	ZZZZ	5	0	1.14E+01
N000	01OL1	9	3,171.0	12	FLDCT	B0016	ZZZZ	6	0	1.08E+01
N000	01OL1	10	3,160.0	12	FLDCT	B0016	ZZZZ	7	0	1.08E+01
N000	01OL1	11	3,751.0	12	FLDCT	B0016	ZZZZ	8	0	1.28E+01
N000	01OL1	12	3,544.0	12	FLDCT	B0016	ZZZZ	9	0	1.21E+01
N000	01OL1	13	3,455.0	12	FLDCT	B0016	ZZZZ	10	0	1.18E+01
N000	01OL1	14	2,888.0	12	FLDCT	B0016	ZZZZ	11	0	9.87E+00
N000	01OL1	15	3,273.0	12	FLDCT	B0016	ZZZZ	12	0	1.12E+01
N000	01OL1	16	2,773.0	12	FLDCT	B0016	ZZZZ	13	0	9.48E+00
N000	01OL1	17	3,252.0	12	FLDCT	B0016	ZZZZ	14	0	1.11E+01
N000	01OL1	18	3,151.0	12	FLDCT	B0016	ZZZZ	15	0	1.08E+01
N000	01OL1	19	3,667.0	12	FLDCT	B0016	ZZZZ	16	0	1.25E+01
N000	01OL1	20	3,833.0	12	FLDCT	B0016	ZZZZ	17	0	1.31E+01
N000	01OL1	21	2,489.0	12	FLDCT	B0016	ZZZZ	18	0	8.51E+00
N000	01OL1	22	3,038.0	12	FLDCT	B0016	ZZZZ	19	0	1.04E+01
N000	01OL1	23	2,961.0	12	FLDCT	B0016	ZZZZ	20	0	1.01E+01
N000	01OL1	24	3,281.0	12	FLDCT	B0016	ZZZZ	21	0	1.12E+01
N000	01OL1	25	3,113.0	12	FLDCT	B0016	ZZZZ	22	0	1.06E+01
N000	01OL1	26	3,485.0	12	FLDCT	B0016	ZZZZ	23	0	1.19E+01
N000	01OL1	27	2,744.0	12	FLDCT	B0016	ZZZZ	24	0	9.38E+00
N000	01OL1	28	2,795.0	12	FLDCT	B0016	ZZZZ	25	0	9.55E+00
N000	01OL1	29	3,401.0	12	FLDCT	B0016	ZZZZ	26	0	1.16E+01
N000	01OL1	30	3,554.0	12	FLDCT	B0016	ZZZZ	27	0	1.21E+01
N000	01OL1	31	3,724.0	12	FLDCT	B0016	ZZZZ	28	0	1.27E+01
N000	01OL1	32	3,783.0	12	FLDCT	B0016	ZZZZ	29	0	1.29E+01
N000	01OL1	33	3,577.0	12	FLDCT	B0016	ZZZZ	30	0	1.22E+01

2

pg 12/30/02
Database updated No reprint.

Gamma Flag	-
Gamma Max Flag	

Text67:
#Error

Section 5

**Removable Alpha/Beta Activity Laboratory
Report(s)**

Omicron V.A. A/B SMEAR ANALYSIS

Survey Report

12/4/2002
11:47:50 AM

Batch ID: VA Smear Analysis - 200212040953	Acquisition Date: 12/4/2002	Alpha Bkg 0.25 cpm
Group: I Sample Location: <i>N0002 01 FE1</i>	Batch Key 6,537	Beta Bkg 1.95 cpm
Device: LB-5100 #15632	Operating Voltage: 1,417.0	Alpha Efficiency 0.2540
Selected Geometry: Swipe/Smear	Alpha to Beta Crosstalk 0.00	Beta Efficiency 0.2370

Sample ID	Count Time (Min)	Alpha Count Rate (CPM)	Alpha DPM	Alpha MDA (DPM)	Flag	Beta Count Rate (CPM)	Beta DPM	Beta MDA (DPM)	Flag
20021204095408-I1	1.00	-0.25	-0.99	17.32	<MDA	0.05	0.21	31.33	<MDA
20021204110622-I2	1.00	-0.25	-0.99	17.32	<MDA	2.05	8.66	31.33	<MDA
20021204110742-I3	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204110912-I4	1.00	-0.25	-0.99	17.32	<MDA	0.05	0.21	31.33	<MDA
20021204111042-I5	1.00	0.75	2.96	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204111202-I6	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204111332-I7	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204111452-I8	1.00	-0.25	-0.99	17.32	<MDA	-1.95	-8.24	31.33	<MDA
20021204111622-I9	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204111742-I10	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204111912-I11	1.00	-0.25	-0.99	17.32	<MDA	-1.95	-8.24	31.33	<MDA
20021204112032-I12	1.00	-0.25	-0.99	17.32	<MDA	-1.95	-8.24	31.33	<MDA
20021204112202-I13	1.00	0.75	2.96	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204112323-I14	1.00	-0.25	-0.99	17.32	<MDA	0.05	0.21	31.33	<MDA
20021204112453-I15	1.00	-0.25	-0.99	17.32	<MDA	0.05	0.21	31.33	<MDA
20021204112613-I16	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204112743-I17	1.00	0.75	2.96	17.32	<MDA	-1.95	-8.24	31.33	<MDA
20021204112903-I18	1.00	-0.25	-0.99	17.32	<MDA	-1.95	-8.24	31.33	<MDA
20021204113033-I19	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204113153-I20	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204113323-I21	1.00	-0.25	-0.99	17.32	<MDA	1.05	4.44	31.33	<MDA
20021204113453-I22	1.00	-0.25	-0.99	17.32	<MDA	-1.95	-8.24	31.33	<MDA
20021204113613-I23	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204113743-I24	1.00	0.75	2.96	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204113903-I25	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204114033-I26	1.00	-0.25	-0.99	17.32	<MDA	0.05	0.21	31.33	<MDA
20021204114154-I27	1.00	-0.25	-0.99	17.32	<MDA	-1.95	-8.24	31.33	<MDA
20021204114324-I28	1.00	-0.25	-0.99	17.32	<MDA	-1.95	-8.24	31.33	<MDA
20021204114444-I29	1.00	-0.25	-0.99	17.32	<MDA	0.05	0.21	31.33	<MDA

Performed By: D. Schumaker Date 12/4/02

N 0002 01 FEL

Omnia V.A. A/B SMEAR ANALYSIS

Survey Report

12/02

11:47:56AM

<u>Sample ID</u>	<u>Count Time (Min)</u>	<u>Alpha Count Rate (CPM)</u>	<u>Alpha DPM</u>	<u>Alpha MDA (DPM)</u>	<u>Flag</u>	<u>Beta Count Rate (CPM)</u>	<u>Beta DPM</u>	<u>Beta MDA (DPM)</u>	<u>Flag</u>
20021204114614-I30	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA

Performed By: D. Schuman Date 12/4/02

Omicron V.A. A/B SMEAR ANALYSIS

Survey Report

12/9/2002

2:28 PM

Batch ID: VA Smear Analysis - 200212091406	Acquisition Date: 12/9/2002	Alpha Bkg 0.15 cpm
Group: E Sample Location: N0002 01 FE2	Batch Key 6,585	Beta Bkg 1.60 cpm
Device: LB-5100 #15632	Operating Voltage: 1,417.0	Alpha Efficiency 0.2540
Selected Geometry: Swipe/Smear	Alpha to Beta Crosstalk 0.00	Beta Efficiency 0.2370

Sample ID	Count Time (Min)	Alpha Count Rate (CPM)	Alpha DPM	Alpha MDA (DPM)	Flag	Beta Count Rate (CPM)	Beta DPM	Beta MDA (DPM)	Flag
20021209140651-E1	1.00	-0.15	-0.59	15.82	<MDA	0.40	1.69	29.45	<MDA
20021209140831-E2	1.00	-0.15	-0.59	15.82	<MDA	-1.60	-6.76	29.45	<MDA
20021209141001-E3	1.00	-0.15	-0.59	15.82	<MDA	0.40	1.69	29.45	<MDA
20021209141121-E4	1.00	0.85	3.35	15.82	<MDA	0.40	1.69	29.45	<MDA
20021209141251-E5	1.00	-0.15	-0.59	15.82	<MDA	-1.60	-6.76	29.45	<MDA
20021209141411-E6	1.00	-0.15	-0.59	15.82	<MDA	0.40	1.69	29.45	<MDA
20021209141541-E7	1.00	0.85	3.35	15.82	<MDA	0.40	1.69	29.45	<MDA
20021209141701-E8	1.00	-0.15	-0.59	15.82	<MDA	-1.60	-6.76	29.45	<MDA
20021209141831-E9	1.00	0.85	3.35	15.82	<MDA	-1.60	-6.76	29.45	<MDA
20021209141952-E10	1.00	-0.15	-0.59	15.82	<MDA	-0.60	-2.54	29.45	<MDA
20021209142122-E11	1.00	-0.15	-0.59	15.82	<MDA	2.40	10.14	29.45	<MDA
20021209142242-E12	1.00	-0.15	-0.59	15.82	<MDA	0.40	1.69	29.45	<MDA
20021209142412-E13	1.00	-0.15	-0.59	15.82	<MDA	-0.60	-2.54	29.45	<MDA
20021209142542-E14	1.00	0.85	3.35	15.82	<MDA	-0.60	-2.54	29.45	<MDA
20021209142702-E15	1.00	1.85	7.30	15.82	<MDA	-1.60	-6.76	29.45	<MDA

Performed By: D. Schenker Date 12/9/02

Omicron V.A. A/B SMEAR ANALYSIS

Survey Report

12/11/2002
12:30:20PM

Batch ID: VA Smear Analysis - 200212041010	Acquisition Date: 12/4/2002	Alpha Bkg 0.25 cpm
Group: J Sample Location: <i>N0002 01 WE1</i>	Batch Key 6,539	Beta Bkg 1.95 cpm
Device: LB-5100 #15632	Operating Voltage: 1,417.0	Alpha Efficiency 0.2540
Selected Geometry: Swipe/Smear	Alpha to Beta Crosstalk 0.00	Beta Efficiency 0.2370

Sample ID	Count Time (Min)	Alpha Count Rate (CPM)	Alpha DPM	Alpha MDA (DPM)	Flag	Beta Count Rate (CPM)	Beta DPM	Beta MDA (DPM)	Flag
20021204101019-J1	1.00	0.75	2.96	17.32	<MDA	-1.95	-8.24	31.33	<MDA
20021204114905-J2	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204115025-J3	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204115155-J4	1.00	-0.25	-0.99	17.32	<MDA	-1.95	-8.24	31.33	<MDA
20021204115315-J5	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204115445-J6	1.00	-0.25	-0.99	17.32	<MDA	4.05	17.11	31.33	<MDA
20021204115615-J7	1.00	-0.25	-0.99	17.32	<MDA	0.05	0.21	31.33	<MDA
20021204115735-J8	1.00	-0.25	-0.99	17.32	<MDA	1.05	4.44	31.33	<MDA
20021204115905-J9	1.00	-0.25	-0.99	17.32	<MDA	0.05	0.21	31.33	<MDA
20021204120025-J10	1.00	0.75	2.96	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204120155-J11	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204120315-J12	1.00	-0.25	-0.99	17.32	<MDA	-1.95	-8.24	31.33	<MDA
20021204120445-J13	1.00	0.75	2.96	17.32	<MDA	2.05	8.66	31.33	<MDA
20021204120606-J14	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204120736-J15	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204120856-J16	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204121026-J17	1.00	0.75	2.96	17.32	<MDA	-1.95	-8.24	31.33	<MDA
20021204121146-J18	1.00	-0.25	-0.99	17.32	<MDA	-1.95	-8.24	31.33	<MDA
20021204121316-J19	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204121436-J20	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204121606-J21	1.00	-0.25	-0.99	17.32	<MDA	0.05	0.21	31.33	<MDA
20021204121726-J22	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204121856-J23	1.00	-0.25	-0.99	17.32	<MDA	0.05	0.21	31.33	<MDA
20021204122016-J24	1.00	-0.25	-0.99	17.32	<MDA	1.05	4.44	31.33	<MDA
20021204122146-J25	1.00	-0.25	-0.99	17.32	<MDA	-1.95	-8.24	31.33	<MDA
20021204122306-J26	1.00	-0.25	-0.99	17.32	<MDA	0.05	0.21	31.33	<MDA
20021204122437-J27	1.00	0.75	2.96	17.32	<MDA	3.05	12.89	31.33	<MDA
20021204122557-J28	1.00	-0.25	-0.99	17.32	<MDA	-0.95	-4.01	31.33	<MDA
20021204122727-J29	1.00	0.75	2.96	17.32	<MDA	-1.95	-8.24	31.33	<MDA

Performed By: *D. Schumaker* Date: *12/4/02*

P31

N000201 WEL

Omnia V.A. A/B SMEAR ANALYSIS

Survey Report

12/11/2002
12:30:20PM

<u>Sample ID</u>	<u>Count Time (Min)</u>	<u>Alpha Count Rate (CPM)</u>	<u>Alpha DPM</u>	<u>Alpha MDA (DPM)</u>	<u>Flag</u>	<u>Beta Count Rate (CPM)</u>	<u>Beta DPM</u>	<u>Beta MDA (DPM)</u>	<u>Flag</u>
20021204122847-J30	1.00	-0.25	-0.99	17.32	<MDA	-1.95	-8.24	31.33	<MDA

Performed By: D. Schumaker Date 12/11/02

Section 6

Gamma Spectroscopy Soil Sample Reports

*** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/6/02 1:30:06 PM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0116.CNF
Spectrum Number VA020116.CNF
Sample Description O/S Surface @ 0-6"#1
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.543E+002 g
Sample Collection Date 11/20/02 10:50:00 AM
Spectrum Collection Date 12/6/02 1:01:21 PM
Decay Corrected To 11/20/02 10:50:00 AM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
Dead Time 0.04 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/06/02

Supervisory Review PLA J Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0116.CNF
Spectrum Number VA020116.CNF
Sample Description O/S Surface @ 0-6"#1
Sample Type Soil

Peak Locate Performed on 12/6/02 1:30:05 PM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	743.57	0.2830	186.12	4.04	0.6171
2	953.72	0.1945	238.66	6.99	1.0292
3	1181.07	0.2554	295.47	3.79	1.2784
4	1408.47	0.2071	352.28	5.72	0.8008
5	2333.89	0.2019	583.58	5.30	1.2212
6	2439.39	0.1922	609.91	5.51	1.3348
7	3649.46	0.2248	912.12	3.64	1.4737
8	5850.86	0.1313	1462.38	7.80	2.2819

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0116.CNF
 Spectrum Number VA020116.CNF
 Sample Description O/S Surface @ 0-6"#1

Peak Analysis Performed on 12/6/02 1:30:06 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	738-	748	743.54	186.12	2.97E+001	14.23	3.96E+001
F	2	947-	958	953.80	238.66	1.01E+002	22.74	4.50E+001
F	3	1175-	1188	1181.15	295.47	4.67E+001	15.10	2.41E+001
F	4	1402-	1414	1408.50	352.28	5.87E+001	16.15	1.44E+001
F	5	2328-	2342	2334.15	583.58	4.83E+001	15.23	1.28E+001
F	6	2432-	2448	2439.54	609.91	6.15E+001	15.72	6.54E+000
F	7	3643-	3656	3648.93	912.12	2.11E+001	11.35	9.33E+000
F	8	5839-	5862	5851.01	1462.38	1.78E+002	25.73	0.00E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0116.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.906	1460.81*	10.67	2.944E-005	4.627E-006
TL-208	0.432	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	4.692E-007	1.515E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.681E-007	2.304E-007
BI-214	0.263	300.09	3.41		
		609.31*	46.30	1.125E-006	3.012E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
PB-214	0.459	53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
RA-226	1.000	295.21*	19.20	1.196E-006	3.996E-007
		351.92*	37.20	8.792E-007	2.518E-007
		186.21*	3.28	3.411E-006	1.650E-006
U-235	0.681	89.95	2.70		
		143.76	10.50		
		185.71*	54.00	2.072E-007	1.001E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0116.CNF
 VA020116.CNF

Performed & Reviewed By

LC. Lenn

Date

12/06/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.906	2.94E-005	4.63E-006	15.7
TL-208 @	0.432	4.69E-007	1.51E-007	32.3
PB-212	0.313	9.68E-007	2.30E-007	23.8
BI-214	0.263	1.13E-006	3.01E-007	26.8
PB-214 @	0.459	9.69E-007	2.13E-007	22.0
? RA-226	1.000	3.41E-006	1.65E-006	48.4
? U-235	0.681	2.07E-007	1.00E-007	48.3

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 7	912.12	3.5187E-002	53.74 <i>As-228 807</i>

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/6/02 1:33:40 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0117.CNF
 Spectrum Number VA020117.CNF
 Sample Description O/S Sub-Surf@ 6-12" #1
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.878E+002 g
 Sample Collection Date 11/20/02 10:50:00 AM
 Spectrum Collection Date 12/6/02 1:15:44 PM
 Decay Corrected To 11/20/02 10:50:00 AM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By RC. Finn Date 12/06/02

Supervisory Review PLA Gos Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0117.CNF
Spectrum Number VA020117.CNF
Sample Description O/S Sub-Surf@ 6-12" #1
Sample Type Soil

Peak Locate Performed on 12/6/02 1:33:39 PM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	369.43	0.2907	92.63	4.17	0.6421
2	953.77	0.2075	238.59	6.40	0.9338
3	1180.72	0.2439	295.34	3.98	1.1492
4	1407.88	0.1939	352.14	6.59	1.0048
5	2334.86	0.2129	583.76	4.69	1.1442
6	2439.42	0.1910	609.86	5.29	1.3944
7	5850.97	0.1320	1462.32	8.07	2.0940

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0117.CNF
Spectrum Number VA020117.CNF
Sample Description O/S Sub-Surf@ 6-12" #1

Peak Analysis Performed on 12/6/02 1:33:39 PM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	366-	374	369.40	92.63	3.20E+001	15.51	4.35E+001
F	2	943-	959	953.51	238.59	8.86E+001	21.73	6.48E+001
F	3	1174-	1187	1180.66	295.34	4.44E+001	14.39	1.71E+001
F	4	1401-	1415	1407.97	352.14	7.38E+001	17.61	1.11E+001
F	5	2329-	2341	2334.89	583.76	3.92E+001	14.25	1.47E+001
F	6	2432-	2448	2439.32	609.86	6.31E+001	16.56	1.32E+001
F	7	5840-	5862	5850.78	1462.32	1.57E+002	24.45	2.03E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0117.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.913	1460.81*	10.67	2.285E-005	3.840E-006
TL-208	0.427	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.363E-007	1.245E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	7.513E-007	1.930E-007
BI-214	0.264	300.09	3.41		
		609.31*	46.30	1.020E-006	2.797E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
PB-214	0.461	1377.67	4.11		
		1764.49	15.80		
		53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
TH-234	0.513	241.98	7.49		
		295.21*	19.20	1.005E-006	3.362E-007
		351.92*	37.20	9.759E-007	2.457E-007
		63.29	3.80		
		92.59*	5.41	2.407E-006	1.196E-006

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0117.CNF
 Spectrum Number VA020117.CNF

Performed & Reviewed By LC. Linn Date 12/06/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.913	2.28E-005	3.84E-006	16.8
TL-208 @	0.427	3.36E-007	1.24E-007	37.0
PB-212	0.313	7.51E-007	1.93E-007	25.7
BI-214	0.264	1.02E-006	2.80E-007	27.4
PB-214 @	0.461	9.86E-007	1.98E-007	20.1
TH-234	0.513	2.41E-006	1.20E-006	49.7

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
----------	--------------	--------------------------------	------------------------

All peaks were identified.

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/16/02 8:07:56 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0118.CNF
 Spectrum Number VA020118.CNF
 Sample Description O/S Surface @ 0-6" #2
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 3.237E+002 g
 Sample Collection Date 11/20/02 11:00:00 AM
 Spectrum Collection Date 12/6/02 1:28:31 PM
 Decay Corrected To 11/20/02 11:00:00 AM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.3 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By *L. Finn* Date 12/16/02

Supervisory Review *PLG* Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0118.CNF
Spectrum Number VA020118.CNF
Sample Description O/S Surface @ 0-6" #2
Sample Type Soil

Peak Locate Performed on 12/16/02 8:07:55 PM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	954.37	0.1976	238.78	6.30	1.1917
2	1181.05	0.2417	295.44	3.65	1.3630
3	1354.19	0.2628	338.72	3.75	0.8888
4	1407.21	0.1973	352.00	5.67	1.3011
5	2334.17	0.2129	583.56	4.46	1.3497
6	2439.66	0.1804	609.94	6.56	1.0056
7	3648.57	0.2054	912.01	3.77	1.8197
8	5850.86	0.1230	1462.31	9.40	2.0361

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0118.CNF
Spectrum Number VA020118.CNF
Sample Description O/S Surface @ 0-6" #2

Peak Analysis Performed on 12/16/02 8:07:55 PM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F 1	947-	962	954.29	238.78	1.24E+002	24.35	6.72E+001
F 2	1174-	1186	1181.04	295.44	5.03E+001	15.48	2.28E+001
F 3	1349-	1359	1354.24	338.72	2.48E+001	13.46	2.72E+001
F 4	1401-	1416	1407.39	352.00	9.02E+001	20.50	3.59E+001
F 5	2327-	2341	2334.08	583.56	4.26E+001	14.25	1.39E+001
F 6	2432-	2447	2439.65	609.94	6.56E+001	17.02	1.46E+001
F 7	3642-	3655	3648.47	912.01	3.41E+001	12.86	5.91E+000
F 8	5839-	5862	5850.74	1462.31	2.05E+002	28.23	8.00E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0118.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.914	1460.81*	10.67	2.661E-005	4.019E-006
TL-208	0.433	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.249E-007	1.110E-007
		763.13	1.64		
		860.37	12.46		
PB-212	0.313	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.383E-007	1.970E-007
		300.09	3.41		
BI-214	0.262	609.31*	46.30	9.429E-007	2.558E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
PB-214	0.462	53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	1.013E-006	3.227E-007
		351.92*	37.20	1.060E-006	2.555E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0118.CNF
 Spectrum Number VA020118.CNF

Performed & Reviewed By *For L. Finn* Date 12/16/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.914	2.66E-005	4.02E-006	15.1
TL-208 @	0.433	3.25E-007	1.11E-007	34.2
PB-212	0.313	9.38E-007	1.97E-007	21.0
BI-214	0.262	9.43E-007	2.56E-007	27.1
PB-214 @	0.462	1.04E-006	2.00E-007	19.2

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 3	338.72	4.1402E-002	54.17 AC-228
F 7	912.01	5.6832E-002	37.73 AC-228

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/6/02 1:57:03 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0119.CNF
 Spectrum Number VA020119.CNF
 Sample Description O/S Sub- Surface @ 6-12"#2
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 3.048E+002 g
 Sample Collection Date 11/20/02 11:00:00 AM
 Spectrum Collection Date 12/6/02 1:39:52 PM
 Decay Corrected To 11/20/02 11:00:00 AM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/06/02

Supervisory Review PLA JES Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0119.CNF
 Spectrum Number VA020119.CNF
 Sample Description O/S Sub- Surface @ 6-12"#2
 Sample Type Soil

Peak Locate Performed on 12/6/02 1:57:02 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.78	0.1910	238.62	7.31	0.9803
2	1180.01	0.2468	295.18	4.63	0.8302
3	1408.04	0.2068	352.22	5.28	1.3662
4	2334.94	0.2087	583.83	4.59	1.4797
5	2438.95	0.1868	609.74	5.66	1.3416
6	3649.43	0.2117	912.19	3.94	1.6049
7	5851.70	0.1291	1462.55	8.80	2.0801

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0119.CNF
Spectrum Number VA020119.CNF
Sample Description O/S Sub- Surface @ 6-12"#2

Peak Analysis Performed on 12/6/02 1:57:02 PM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	947-	962	953.65	238.62	1.16E+002	23.47	6.04E+001
F	2	1175-	1186	1180.00	295.18	3.98E+001	14.61	2.27E+001
F	3	1400-	1417	1408.26	352.22	8.44E+001	19.14	2.96E+001
F	4	2326-	2343	2335.16	583.83	5.75E+001	15.93	1.78E+001
F	5	2430-	2446	2438.83	609.74	6.37E+001	16.24	9.94E+000
F	6	3643-	3656	3649.21	912.19	2.95E+001	11.18	2.33E+000
F	7	5839-	5862	5851.70	1462.55	1.73E+002	25.65	2.09E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0119.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.886	1460.81*	10.67	2.379E-005	3.831E-006
TL-208	0.425	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	4.657E-007	1.331E-007
		763.13	1.64		
		860.37	12.46		
PB-212	0.313	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.284E-007	2.008E-007
		300.09	3.41		
BI-214	0.266	609.31*	46.30	9.719E-007	2.596E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
PB-214	0.461	53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	8.493E-007	3.199E-007
		351.92*	37.20	1.054E-006	2.534E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0119.CNF
 VA020119.CNF

Performed & Reviewed By

Dr. Lenn

Date

12/06/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.886	2.38E-005	3.83E-006	16.1
TL-208	@ 0.425	4.66E-007	1.33E-007	28.6
PB-212	0.313	9.28E-007	2.01E-007	21.6
BI-214	0.266	9.72E-007	2.60E-007	26.7
PB-214	@ 0.461	9.75E-007	1.99E-007	20.4

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 6	912.19	4.9240E-002	37.85 AC228 RCY

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/6/02 2:06:37 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0120.CNF
 Spectrum Number VA020120.CNF
 Sample Description O/S Surface @ 0- 6"#3
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.961E+002 g
 Sample Collection Date 11/20/02 11:10:00 AM
 Spectrum Collection Date 12/6/02 1:53:42 PM
 Decay Corrected To 11/20/02 11:10:00 AM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/06/02

Supervisory Review P. Co J Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0120.CNF
Spectrum Number VA020120.CNF
Sample Description O/S Surface @ 0- 6"#3
Sample Type Soil

Peak Locate Performed on 12/6/02 2:06:36 PM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	954.68	0.2031	238.67	6.10	1.2888
2	1180.60	0.2242	295.30	5.28	0.8001
3	1407.80	0.2074	352.11	4.93	1.4048
4	2334.02	0.2311	583.61	3.68	1.7011
5	2438.32	0.2033	609.76	4.53	1.6040
6	5851.95	0.1294	1462.57	8.28	2.1489

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0120.CNF
Spectrum Number VA020120.CNF
Sample Description O/S Surface @ 0- 6"#3

Peak Analysis Performed on 12/6/02 2:06:36 PM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F 1	945-	961	953.84	238.67	1.03E+002	23.20	7.51E+001
F 2	1175-	1186	1180.47	295.30	5.09E+001	16.43	2.87E+001
F 3	1400-	1416	1407.81	352.11	8.41E+001	18.41	2.01E+001
F 4	2329-	2342	2334.27	583.61	3.81E+001	12.99	5.16E+000
F 5	2430-	2447	2438.91	609.76	5.88E+001	15.71	1.05E+001
F 6	5840-	5862	5851.78	1462.57	1.75E+002	25.78	1.96E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma.

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0120.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.883	1460.81*	10.67	2.485E-005	3.971E-006
TL-208	0.431	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.174E-007	1.105E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	8.468E-007	2.018E-007
BI-214	0.266	300.09	3.41		
		609.31*	46.30	9.233E-007	2.573E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
PB-214	0.461	1764.49	15.80		
		53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	1.120E-006	3.733E-007
		351.92*	37.20	1.080E-006	2.519E-007

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy tolerance used was 2.000
 Nuclide confidence index threshold = 0.10
 Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0120.CNF
 Spectrum Number VA020120.CNF

Performed & Reviewed By RC. Fenn Date 12/06/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.883	2.49E-005	3.97E-006	16.0
TL-208 @	0.431	3.17E-007	1.11E-007	34.8
PB-212	0.313	8.47E-007	2.02E-007	23.8
BI-214	0.266	9.23E-007	2.57E-007	27.9
PB-214 @	0.461	1.09E-006	2.09E-007	19.1

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
----------	--------------	--------------------------------	------------------------

All peaks were identified.

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 **** GAMMA SPECTRUM ANALYSIS ****

Report Generated On 12/6/02 2:18:39 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0121.CNF
 Spectrum Number VA020121.CNF
 Sample Description O/S Sub-Surface @ 6-12" #3
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 3.429E+002 g
 Sample Collection Date 11/20/02 11:10:00 AM
 Spectrum Collection Date 12/6/02 2:05:28 PM
 Decay Corrected To 11/20/02 11:10:00 AM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/06/02

Supervisory Review PLG Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0121.CNF
 Spectrum Number VA020121.CNF
 Sample Description O/S Sub-Surface @ 6-12" #3
 Sample Type Soil

Peak Locate Performed on 12/6/02 2:18:38 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.95	0.1907	238.66	6.64	1.0993
2	1408.33	0.1879	352.28	5.90	1.3700
3	2439.15	0.2060	609.79	4.57	1.5400
4	3649.83	0.2072	912.44	4.07	1.5703
5	5852.39	0.1280	1462.79	8.70	2.0885

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0121.CNF
Spectrum Number VA020121.CNF
Sample Description O/S Sub-Surface @ 6-12" #3

Peak Analysis Performed on 12/6/02 2:18:38 PM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	947-	959	953.81	238.66	1.27E+002	24.54	4.90E+001
F	2	1401-	1416	1408.49	352.28	1.14E+002	20.97	1.65E+001
F	3	2430-	2446	2439.03	609.79	5.80E+001	16.01	1.70E+001
F	4	3643-	3657	3650.23	912.44	3.32E+001	12.42	6.00E+000
F	5	5840-	5864	5852.65	1462.79	1.85E+002	26.61	4.15E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0121.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.855	1460.81*	10.67	2.272E-005	3.553E-006
PB-212	0.313	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.030E-007	1.877E-007
		300.09	3.41		
BI-214	0.265	609.31*	46.30	7.869E-007	2.259E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
1377.67	4.11				
		1764.49	15.80		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0121.CNF
 VA020121.CNF

Performed & Reviewed By

RL Linn

Date

12/06/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.855	2.27E-005	3.55E-006	15.6
PB-212	0.313	9.03E-007	1.88E-007	20.8
BI-214	0.265	7.87E-007	2.26E-007	28.7

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	352.28	1.8948E-001	18.44 <i>Pb 214</i> <i>RC7</i>
F 4	912.44	5.5330E-002	37.41 <i>Ac-228</i> <i>RC7</i>

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/6/02 2:37:13 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0122.CNF
 Spectrum Number VA020122.CNF
 Sample Description O/S Surface @ 0- 6"#4
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.771E+002 g
 Sample Collection Date 11/20/02 11:55:00 AM
 Spectrum Collection Date 12/6/02 2:16:52 PM
 Decay Corrected To 11/20/02 11:55:00 AM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/06/02

Supervisory Review Dal C. Gs Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0122.CNF
Spectrum Number VA020122.CNF
Sample Description O/S Surface @ 0- 6"#4
Sample Type Soil

Peak Locate Performed on 12/6/02 2:37:12 PM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	307.36	0.2804	77.16	4.45	0.7170
2	954.33	0.2065	238.72	5.76	1.1961
3	1407.96	0.2389	352.18	3.52	1.5471
4	2439.44	0.2280	609.98	3.68	1.9301
5	3649.87	0.1999	912.09	4.18	1.5663
6	5852.27	0.1312	1462.69	7.47	2.3417

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0122.CNF
 Spectrum Number VA020122.CNF
 Sample Description O/S Surface @ 0- 6"#4

Peak Analysis Performed on 12/6/02 2:37:12 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F 1	302-	311	307.48	77.16	4.77E+001	18.04	5.97E+001
F 2	945-	961	954.04	238.72	1.10E+002	23.29	6.86E+001
F 3	1401-	1417	1408.09	352.18	5.79E+001	16.09	2.55E+001
F 4	2431-	2447	2439.78	609.98	4.68E+001	13.00	2.83E+000
F 5	3643-	3657	3648.79	912.09	3.28E+001	12.64	6.38E+000
F 6	5840-	5865	5852.27	1462.69	1.91E+002	26.52	0.00E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0122.CNF
Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.868	1460.81*	10.67	2.895E-005	4.405E-006
PB-212	0.613	74.82	10.70		
		77.11*	18.00	1.574E-006	6.200E-007
		87.30	8.00		
		238.63*	44.60	9.695E-007	2.180E-007
		300.09	3.41		
BI-214	0.261	609.31*	46.30	7.854E-007	2.270E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
PB-214	0.264	1764.49	15.80		
		53.23 @	1.11		
		74.81	6.21		
		77.11*	10.50	2.698E-006	1.062E-006
		87.30	4.67		
		241.98	7.49		
		295.21	19.20		
		351.92*	37.20	7.958E-007	2.300E-007

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy tolerance used was 2.000
Nuclide confidence index threshold = 0.10
Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0122.CNF
 VA020122.CNF

Performed & Reviewed By

R. Linn

Date

12/06/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.868	2.89E-005	4.40E-006	15.2
PB-212	0.613	9.84E-007	2.02E-007	20.5
BI-214	0.261	7.85E-007	2.27E-007	28.9
PB-214 @	0.264	8.05E-007	2.21E-007	27.4

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 5	912.09	5.4644E-002	38.55 <i>Al-228 807</i>

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 *** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/16/02 8:13:49 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0123.CNF
 Spectrum Number VA020123.CNF
 Sample Description O/S Sub-Surf@ 6-12"#4
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.750E+002 g
 Sample Collection Date 11/20/02 11:55:00 AM
 Spectrum Collection Date 12/6/02 2:35:45 PM
 Decay Corrected To 11/20/02 11:55:00 AM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By *L. Finn* Date 12/16/02

Supervisory Review *Pla. Joe* Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0123.CNF
Spectrum Number VA020123.CNF
Sample Description O/S Sub-Surf@ 6-12"#4
Sample Type Soil

Peak Locate Performed on 12/16/02 8:13:48 PM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.96	0.1909	238.64	6.93	1.1835
2	1180.84	0.2621	295.40	3.63	1.3174
3	1353.60	0.2441	338.56	4.13	0.9515
4	1409.06	0.2114	352.40	4.66	1.2253
5	2335.00	0.2046	583.77	4.90	1.6435
6	2648.78	0.2275	662.26	4.03	1.3071
7	3864.77	0.2328	966.14	3.51	1.6321
8	3881.48	0.2248	970.12	3.53	1.6353
9	5852.67	0.1309	1462.78	7.96	2.2326

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0123.CNF
 Spectrum Number VA020123.CNF
 Sample Description O/S Sub-Surf@ 6-12"#4

Peak Analysis Performed on 12/16/02 8:13:48 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	946-	961	953.74	238.64	1.39E+002	25.26	6.66E+001
F	2	1175-	1191	1180.88	295.40	4.68E+001	14.78	2.55E+001
F	3	1347-	1358	1353.59	338.56	3.10E+001	13.02	1.49E+001
F	4	1403-	1415	1409.00	352.40	6.47E+001	17.65	2.41E+001
F	5	2326-	2342	2334.90	583.77	6.54E+001	16.00	8.42E+000
F	6	2643-	2655	2649.02	662.26	2.92E+001	11.92	7.26E+000
M	7	3858-	3888	3865.13	966.14	2.28E+001	9.80	0.00E+000
m	8	3858-	3888	3881.03	970.12	2.63E+001	10.39	0.00E+000
F	9	5842-	5864	5852.62	1462.78	1.71E+002	25.30	0.00E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0123.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.856	1460.81*	10.67	2.611E-005	4.192E-006
CS-137	0.985	661.65*	85.12	2.872E-007	1.185E-007
TL-208	0.427	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	5.871E-007	1.494E-007
		763.13	1.64		
		860.37	12.46		
PB-212	0.313	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.230E-006	2.429E-007
		300.09	3.41		
PB-214	0.458	53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	1.108E-006	3.622E-007
		351.92*	37.20	8.957E-007	2.546E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0123.CNF
 VA020123.CNF

Performed & Reviewed By APK For L. Finn Date 12/16/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.856	2.61E-005	4.19E-006	16.1
CS-137	0.985	2.87E-007	1.19E-007	41.3
TL-208 @	0.427	5.87E-007	1.49E-007	25.4
PB-212	0.313	1.23E-006	2.43E-007	19.7
PB-214 @	0.458	9.66E-007	2.08E-007	21.6

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 3	338.56	5.1641E-002	42.01 AC-228
M 7	966.14	3.7918E-002	43.07 AC-228
m 8	970.12	4.3846E-002	39.49 AC-228

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

** GAMMA SPECTRUM ANALYSIS **

Report Generated On 12/6/02 4:04:58 PM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0124.CNF
Spectrum Number VA020124.CNF
Sample Description O/S Surface@ 0-6" #5
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.569E+002 g
Sample Collection Date 11/20/02 12:15:00 PM
Spectrum Collection Date 12/6/02 2:54:15 PM
Decay Corrected To 11/20/02 12:15:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.04 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By *L. Finn* Date 12/06/02

Supervisory Review *Pol O G* Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0124.CNF
Spectrum Number VA020124.CNF
Sample Description O/S Surface@ 0-6" #5
Sample Type Soil

Peak Locate Performed on 12/6/02 4:04:57 PM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	954.22	0.2169	238.70	4.49	1.3430
2	1181.01	0.2404	295.40	4.36	1.0405
3	1408.09	0.2158	352.19	4.80	1.2132
4	2334.54	0.2263	583.73	4.11	0.9372
5	2439.12	0.2308	609.80	3.54	1.5349
6	3648.23	0.2171	911.93	3.82	1.5645
7	5852.16	0.1297	1462.68	8.65	2.0774

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0124.CNF
Spectrum Number VA020124.CNF
Sample Description O/S Surface@ 0-6" #5

Peak Analysis Performed on 12/6/02 4:04:57 PM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	946-	961	953.98	238.70	9.78E+001	21.04	4.80E+001
F	2	1175-	1186	1180.88	295.40	3.93E+001	14.71	2.09E+001
F	3	1400-	1415	1408.16	352.19	6.26E+001	16.34	1.70E+001
F	4	2328-	2342	2334.75	583.73	3.06E+001	12.04	1.06E+001
F	5	2431-	2446	2439.07	609.80	3.62E+001	13.24	1.47E+001
F	6	3642-	3655	3648.16	911.93	2.80E+001	11.36	3.59E+000
F	7	5840-	5863	5852.22	1462.68	1.63E+002	24.95	1.98E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0124.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.869	1460.81*	10.67	2.658E-005	4.401E-006
TL-208	0.428	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	2.940E-007	1.175E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.292E-007	2.121E-007
BI-214	0.265	300.09	3.41		
		609.31*	46.30	6.549E-007	2.452E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
PB-214	0.461	53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	9.963E-007	3.821E-007
351.92*	37.20	9.280E-007	2.532E-007		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0124.CNF
 Spectrum Number VA020124.CNF

Performed & Reviewed By RC. Fern Date 12/06/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.869	2.66E-005	4.40E-006	16.6
TL-208 @	0.428	2.94E-007	1.18E-007	40.0
PB-212	0.313	9.29E-007	2.12E-007	22.8
BI-214	0.265	6.55E-007	2.45E-007	37.4
PB-214 @	0.461	9.49E-007	2.11E-007	22.2

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 6	911.93	4.6635E-002	40.62 AC-228 RC7

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

** GAMMA SPECTRUM ANALYSIS **

Report Generated On 12/6/02 4:06:08 PM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0125.CNF
Spectrum Number VA020125.CNF
Sample Description O/S Sub-Surf@ ~~0-6"~~ ^{12/14/02} #5
Sample Type Soil 6-12"
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.694E+002 g
Sample Collection Date 11/20/02 12:15:00 PM
Spectrum Collection Date 12/6/02 3:05:34 PM
Decay Corrected To 11/20/02 12:15:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.04 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/06/02

Supervisory Review P. La Jr Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0125.CNF
Spectrum Number VA020125.CNF
Sample Description O/S Sub-Surf@ 0-6" #5
Sample Type Soil

Peak Locate Performed on 12/6/02 4:06:07 PM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	298.36	0.3135	74.76	3.74	0.4420
2	954.28	0.1978	238.78	6.44	1.0650
3	1181.03	0.2399	295.46	4.76	0.9219
4	1408.94	0.2143	352.37	4.84	1.2363
5	2439.09	0.2082	609.85	4.52	1.4626
6	5852.48	0.1374	1462.76	7.33	2.3070

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector . DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0125.CNF
 Spectrum Number VA020125.CNF
 Sample Description O/S Sub-Surf@ 0-6" #5

Peak Analysis Performed on 12/6/02 4:06:07 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	295-	302	297.89	74.76	2.30E+001	14.63	6.13E+001
F	2	949-	960	954.30	238.78	1.02E+002	22.60	4.60E+001
F	3	1177-	1188	1181.12	295.46	4.35E+001	14.87	1.85E+001
F	4	1403-	1416	1408.87	352.37	6.10E+001	16.91	2.20E+001
F	5	2433-	2447	2439.27	609.85	4.49E+001	13.85	7.50E+000
F	6	5841-	5864	5852.52	1462.76	1.51E+002	23.87	1.93E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0125.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.859	1460.81*	10.67	2.359E-005	4.000E-006
PB-212	0.484	74.82*	10.70	1.424E-006	9.201E-007
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.229E-007	2.166E-007
		300.09	3.41		
BI-214	0.264	609.31*	46.30	7.757E-007	2.468E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
PB-214	0.560	53.23 @	1.11		
		74.81*	6.21	2.453E-006	1.579E-006
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	1.052E-006	3.702E-007
351.92*	37.20	8.615E-007	2.487E-007		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy tolerance used was 2.000
 Nuclide confidence index threshold = 0.10
 Errors quoted at 1.960 sigma

 ** INTERFERENCE CORRECTED REPORT **

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0125.CNF
 VA020125.CNF

Performed & Reviewed By

RC. Fenn

Date

12/06/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.859	2.36E-005	4.00E-006	17.0
PB-212	0.484	9.21E-007	2.07E-007	22.5
BI-214	0.264	7.76E-007	2.47E-007	31.8
PB-214 @	0.560	9.19E-007	2.01E-007	21.9

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
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All peaks were identified.

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 *** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/6/02 4:07:13 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0125A.CNF
 Spectrum Number VA020125.ACNF
 Sample Description O/S Sub-Surf@ 6-12" #5(QC)
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.710E+002 g
 Sample Collection Date 11/20/02 12:15:00 PM
 Spectrum Collection Date 12/6/02 3:19:21 PM
 Decay Corrected To 11/20/02 12:15:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/06/02

Supervisory Review Pala G Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0125A.CNF
Spectrum Number VA020125.ACNF
Sample Description O/S Sub-Surf@ 6-12" #5(QC)
Sample Type Soil

Peak Locate Performed on 12/6/02 4:07:13 PM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.78	0.2099	238.62	5.87	1.0446
2	1179.79	0.2729	295.06	3.57	0.8411
3	1407.88	0.2132	352.18	5.38	0.9102
4	2333.70	0.2348	583.47	3.60	1.3162
5	2440.27	0.1932	610.06	5.45	1.3796
6	5851.53	0.1350	1462.56	7.68	2.3183

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0125A.CNF
Spectrum Number VA020125.ACNF
Sample Description O/S Sub-Surf@ 6-12" #5(QC)

Peak Analysis Performed on 12/6/02 4:07:13 PM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	947-	959	953.66	238.62	8.76E+001	21.26	4.74E+001
F	2	1173-	1186	1179.53	295.06	3.12E+001	13.15	2.37E+001
F	3	1401-	1415	1408.10	352.18	5.88E+001	16.54	2.10E+001
F	4	2328-	2341	2333.72	583.47	2.89E+001	11.62	6.64E+000
F	5	2432-	2447	2440.12	610.06	5.54E+001	15.15	6.38E+000
F	6	5840-	5863	5851.73	1462.56	1.63E+002	24.70	2.04E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0125A.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.885	1460.81*	10.67	2.524E-005	4.137E-006
TL-208	0.434	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	2.628E-007	1.074E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	7.893E-007	2.007E-007
BI-214	0.259	300.09	3.41		
		609.31*	46.30	9.513E-007	2.708E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
PB-214	0.461	1377.67	4.11		
		1764.49	15.80		
		53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	7.494E-007	3.220E-007
351.92*	37.20	8.263E-007	2.415E-007		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0125A.CNF
 VA020125.ACNF

Performed & Reviewed By

SP. Lima

Date 12/06/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.885	2.52E-005	4.14E-006	16.4
TL-208 @	0.434	2.63E-007	1.07E-007	40.9
PB-212	0.313	7.89E-007	2.01E-007	25.4
BI-214	0.259	9.51E-007	2.71E-007	28.5
PB-214 @	0.461	7.99E-007	1.93E-007	24.2

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
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All peaks were identified.

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

** GAMMA SPECTRUM ANALYSIS **

Report Generated On 12/6/02 4:08:29 PM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0126.CNF
Spectrum Number VA020126.CNF
Sample Description O/S Surface@ 0-6" #6
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.770E+002 g
Sample Collection Date 11/20/02 12:20:00 PM
Spectrum Collection Date 12/6/02 3:33:23 PM
Decay Corrected To 11/20/02 12:20:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.04 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By Lo. Finn Date 12/06/02

Supervisory Review Pat A. Jes Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0126.CNF
 Spectrum Number VA020126.CNF
 Sample Description O/S Surface@ 0-6" #6
 Sample Type Soil

Peak Locate Performed on 12/6/02 4:08:28 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.79	0.2013	238.62	6.33	1.0670
2	1180.41	0.2535	295.31	3.93	1.4585
3	1353.78	0.2497	338.51	3.76	1.2762
4	1408.45	0.2094	352.24	5.37	1.1181
5	5852.05	0.1298	1462.67	8.00	2.2141

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0126.CNF
Spectrum Number VA020126.CNF
Sample Description O/S Surface@ 0-6" #6

Peak Analysis Performed on 12/6/02 4:08:28 PM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	947-	960	953.63	238.62	1.02E+002	23.23	6.88E+001
F	2	1174-	1190	1180.52	295.31	5.95E+001	16.22	2.71E+001
F	3	1346-	1359	1353.42	338.51	3.91E+001	13.22	1.28E+001
F	4	1398-	1414	1408.36	352.24	6.56E+001	17.50	2.96E+001
F	5	5841-	5864	5852.18	1462.67	1.83E+002	26.36	3.70E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0126.CNF
Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.871	1460.81*	10.67	2.770E-005	4.352E-006
PB-212	0.313	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.031E-007	2.159E-007
		300.09	3.41		
PB-214	0.460	53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	1.398E-006	3.988E-007
	351.92*	37.20	9.011E-007	2.511E-007	

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy tolerance used was 2.000
Nuclide confidence index threshold = 0.10
Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0126.CNF
 VA020126.CNF

Performed & Reviewed By

Re. Lenn

Date

12/06/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.871	2.77E-005	4.35E-006	15.7
PB-212	0.313	9.03E-007	2.16E-007	23.9
PB-214 @	0.460	1.04E-006	2.12E-007	20.4

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 3	338.51	6.5186E-002	33.80 <u>AC-228 809</u>

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** G A M M A S P E C T R U M A N A L Y S I S *****

Report Generated On 12/6/02 5:04:23 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0127.CNF
 Spectrum Number VA020127.CNF
 Sample Description O/S Sub- Surface@ 6-12" #6
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.833E+002 g
 Sample Collection Date 11/20/02 12:20:00 PM
 Spectrum Collection Date 12/6/02 4:49:46 PM
 Decay Corrected To 11/20/02 12:20:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/06/02

Supervisory Review PLA Geo Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0127.CNF
 Spectrum Number VA020127.CNF
 Sample Description O/S Sub- Surface@ 6-12" #6
 Sample Type Soil

Peak Locate Performed on 12/6/02 5:04:22 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.35	0.1934	238.50	6.38	1.1315
2	1406.76	0.2083	351.80	4.93	1.4845
3	2332.46	0.2099	583.21	4.63	1.3381
4	2437.02	0.2090	609.31	3.91	1.6894
5	3645.78	0.2122	911.38	3.93	1.5496
6	5847.37	0.1301	1461.42	8.13	2.2193

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0127.CNF
Spectrum Number VA020127.CNF
Sample Description O/S Sub- Surface@ 6-12" #6

Peak Analysis Performed on 12/6/02 5:04:22 PM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	947-	960	953.18	238.50	1.17E+002	23.99	5.99E+001
F	2	1399-	1415	1406.59	351.80	9.13E+001	19.27	2.42E+001
F	3	2327-	2340	2332.66	583.21	3.94E+001	13.42	7.99E+000
F	4	2430-	2445	2437.13	609.31	5.15E+001	14.92	1.07E+001
F	5	3638-	3652	3645.98	911.38	3.09E+001	11.85	6.17E+000
F	6	5836-	5859	5847.16	1461.42	1.81E+002	26.26	4.27E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0127.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.985	1460.81*	10.67	2.688E-005	4.234E-006
		84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.432E-007	
TL-208	0.437	763.13	1.64		1.193E-007
		860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
PB-212	0.313	238.63*	44.60	1.006E-006	2.204E-007
		300.09	3.41		
		609.31*	46.30	8.449E-007	2.539E-007
BI-214	0.269	768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy tolerance used was 2.000
 Nuclide confidence index threshold = 0.10
 Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0127.CNF
 Spectrum Number VA020127.CNF

Performed & Reviewed By SP. Linn Date 12/06/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.985	2.69E-005	4.23E-006	15.8
TL-208 @	0.437	3.43E-007	1.19E-007	34.8
PB-212	0.313	1.01E-006	2.20E-007	21.9
BI-214	0.269	8.45E-007	2.54E-007	30.1

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.80	1.5220E-001	21.10 Pb214 807
F 5	911.38	5.1538E-002	38.31 Ac-228 807

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/7/02 6:03:15 AM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0128.CNF
 Spectrum Number VA020128.CNF
 Sample Description O/S Surface@ 0-6" #7
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.489E+002 g
 Sample Collection Date 11/20/02 12:30:00 PM
 Spectrum Collection Date 12/6/02 5:05:01 PM
 Decay Corrected To 11/20/02 12:30:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By RC. Lynn Date 12/07/02

Supervisory Review Pat O'G Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0128.CNF
 Spectrum Number VA020128.CNF
 Sample Description O/S Surface@ 0-6" #7
 Sample Type Soil

Peak Locate Performed on 12/7/02 6:03:14 AM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.39	0.2203	238.49	5.34	1.1234
2	1179.20	0.2558	295.01	3.88	1.5245
3	1406.93	0.2201	351.82	5.03	1.1961
4	2332.50	0.2287	583.16	3.92	1.0609
5	2437.32	0.2093	609.35	4.80	1.0608
6	5847.08	0.1299	1461.41	7.64	2.1816

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0128.CNF
Spectrum Number VA020128.CNF
Sample Description O/S Surface@ 0-6" #7

Peak Analysis Performed on 12/7/02 6:03:14 AM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	944-	959	953.14	238.49	7.90E+001	20.48	5.66E+001
F	2	1172-	1186	1179.30	295.01	5.19E+001	14.18	1.01E+001
F	3	1399-	1412	1406.67	351.82	5.97E+001	16.12	1.51E+001
F	4	2326-	2339	2332.46	583.16	2.88E+001	11.92	1.04E+001
F	5	2431-	2444	2437.29	609.35	3.95E+001	13.36	9.09E+000
F	6	5835-	5859	5847.14	1461.41	1.77E+002	26.39	8.33E+000

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0128.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES					
Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.986	1460.81*	10.67	2.981E-005	4.821E-006
TL-208	0.437	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	2.859E-007	1.198E-007
		763.13	1.64		
		860.37	12.46		
PB-212	0.313	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	7.746E-007	2.093E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	7.371E-007	2.563E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
PB-214	0.462	53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	1.358E-006	3.878E-007
		351.92*	37.20	9.122E-007	2.569E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.

C:\GENIE2K\CAMFILES\VA-02-0128.CNF

Spectrum Number

VA020128.CNF

Performed & Reviewed By

Dr. Linn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.986	2.98E-005	4.82E-006	16.2
TL-208 @	0.437	2.86E-007	1.20E-007	41.9
PB-212	0.313	7.75E-007	2.09E-007	27.0
BI-214	0.269	7.37E-007	2.56E-007	34.8
PB-214 @	0.462	1.05E-006	2.14E-007	20.4

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
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All peaks were identified.

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/7/02 8:42:49 AM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0129.CNF
Spectrum Number VA020129.CNF
Sample Description O/S Sub-Surf 6-12" #7
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.715E+002 g
Sample Collection Date 11/20/02 12:30:00 PM
Spectrum Collection Date 12/7/02 7:10:12 AM
Decay Corrected To 11/20/02 12:30:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.04 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By L.C. Finn Date 12/07/02

Supervisory Review PLA Jas Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0129.CNF
 Spectrum Number VA020129.CNF
 Sample Description O/S Sub-Surf 6-12" #7
 Sample Type Soil

Peak Locate Performed on 12/7/02 8:42:48 AM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	952.34	0.1967	238.31	6.62	1.1670
2	1179.01	0.2513	295.12	3.98	1.1943
3	1405.94	0.1966	351.72	5.99	1.1240
4	2332.98	0.2227	583.32	3.99	1.5070
5	2436.99	0.1930	609.28	5.36	1.2938
6	3645.78	0.2009	911.35	4.27	1.5635
7	5846.31	0.1230	1461.18	9.26	2.0322

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0129.CNF
 Spectrum Number VA020129.CNF
 Sample Description O/S Sub-Surf 6-12" #7

Peak Analysis Performed on 12/7/02 8:42:48 AM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	944-	961	952.40	238.31	1.28E+002	23.99	6.35E+001
F	2	1174-	1188	1179.76	295.12	4.16E+001	14.53	2.02E+001
F	3	1400-	1413	1406.27	351.72	7.59E+001	18.12	1.51E+001
F	4	2326-	2340	2333.09	583.32	3.70E+001	13.63	1.36E+001
F	5	2430-	2446	2437.01	609.28	5.56E+001	15.42	1.01E+001
F	6	3639-	3652	3645.84	911.35	3.87E+001	13.22	6.82E+000
F	7	5835-	5858	5846.23	1461.18	2.06E+002	28.38	8.00E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0129.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.994	1460.81*	10.67	3.182E-005	4.812E-006
TL-208	0.437	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.368E-007	1.261E-007
		763.13	1.64		
PB-212	0.311	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.150E-006	2.326E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	9.512E-007	2.746E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
PB-214	0.461	53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	9.966E-007	3.582E-007
		351.92*	37.20	1.064E-006	2.676E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

*** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0129.CNF
VA020129.CNF

Performed & Reviewed By

JC. Finn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.994	3.18E-005	4.81E-006	15.1
TL-208 @	0.437	3.37E-007	1.26E-007	37.5
PB-212	0.311	1.15E-006	2.33E-007	20.2
BI-214	0.269	9.51E-007	2.75E-007	28.9
PB-214 @	0.461	1.04E-006	2.14E-007	20.6

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 6	911.35	6.4513E-002	34.16 AC. 228 RC7

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

**** G A M M A S P E C T R U M A N A L Y S I S ****

Report Generated On 12/7/02 8:43:46 AM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0130.CNF
Spectrum Number VA020130.CNF
Sample Description O/S Surface 0-6" #8
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.596E+002 g
Sample Collection Date 11/20/02 12:40:00 PM
Spectrum Collection Date 12/7/02 7:23:19 AM
Decay Corrected To 11/20/02 12:40:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.04 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By sp. Finn Date 12/07/02

Supervisory Review PLC Yes Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0130.CNF
Spectrum Number VA020130.CNF
Sample Description O/S Surface 0-6" #8
Sample Type Soil

Peak Locate Performed on 12/7/02 8:43:45 AM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	952.95	0.2171	238.39	5.51	1.2131
2	2333.21	0.2189	583.37	3.94	1.5322
3	2437.60	0.2000	609.30	4.79	1.5852
4	5846.71	0.1398	1461.28	7.06	2.3290

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0130.CNF
 Spectrum Number VA020130.CNF
 Sample Description O/S Surface 0-6" #8

Peak Analysis Performed on 12/7/02 8:43:45 AM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F 1	945-	961	952.75	238.39	9.58E+001	21.50	6.32E+001
F 2	2327-	2340	2333.30	583.37	4.01E+001	13.47	9.33E+000
F 3	2429-	2445	2437.08	609.30	6.03E+001	15.89	1.16E+001
F 4	5835-	5858	5846.62	1461.28	1.50E+002	23.82	1.91E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0130.CNF
Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40 TL-208	0.991 0.436	1460.81*	10.67	2.426E-005	4.135E-006
		84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.813E-007	1.308E-007
PB-212	0.312	763.13	1.64		
		860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
BI-214	0.269	238.63*	44.60	9.001E-007	2.133E-007
		300.09	3.41		
		609.31*	46.30	1.079E-006	2.971E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
1155.19	1.70				
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy tolerance used was 2.000
Nuclide confidence index threshold = 0.10
Errors quoted at 1.960 sigma

*** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0130.CNF
VA020130.CNF

Performed & Reviewed By

SC. Furr

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.991	2.43E-005	4.14E-006	17.0
TL-208 @	0.436	3.81E-007	1.31E-007	34.3
PB-212	0.312	9.00E-007	2.13E-007	23.7
BI-214	0.269	1.08E-006	2.97E-007	27.5

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
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All peaks were identified.

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 *** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/7/02 8:46:33 AM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0131.CNF
 Spectrum Number VA020131.CNF
 Sample Description O/Sub-Surface 6-12" #8
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.501E+002 g
 Sample Collection Date 11/20/02 12:40:00 PM
 Spectrum Collection Date 12/7/02 7:34:57 AM
 Decay Corrected To 11/20/02 12:40:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By SC. Finn Date 12/07/02

Supervisory Review Pol A Gys Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0131.CNF
 Spectrum Number VA020131.CNF
 Sample Description O/Sub-Surface 6-12" #8
 Sample Type Soil

Peak Locate Performed on 12/7/02 8:46:32 AM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.05	0.2040	238.45	6.06	1.1559
2	1180.11	0.2516	295.23	3.63	1.4885
3	1406.46	0.2109	351.74	4.38	1.2452
4	2331.48	0.2297	583.07	3.57	1.7678
5	2437.00	0.2140	609.30	4.40	1.3839
6	5846.50	0.1428	1461.12	6.89	2.2829

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0131.CNF
 Spectrum Number VA020131.CNF
 Sample Description O/Sub-Surface 6-12" #8

Peak Analysis Performed on 12/7/02 8:46:32 AM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	944-	959	952.95	238.45	1.14E+002	23.62	6.54E+001
F	2	1173-	1188	1180.21	295.23	5.64E+001	15.10	1.56E+001
F	3	1399-	1412	1406.34	351.74	5.95E+001	16.64	1.87E+001
F	4	2325-	2338	2332.11	583.07	3.85E+001	12.41	4.67E+000
F	5	2430-	2446	2437.07	609.30	4.71E+001	14.74	1.33E+001
F	6	5835-	5857	5845.99	1461.12	1.27E+002	21.92	2.01E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0131.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.996	1460.81*	10.67	2.137E-005	3.910E-006
TL-208	0.437	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.798E-007	1.252E-007
		763.13	1.64		
		860.37	12.46		
PB-212	0.313	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.112E-006	2.454E-007
		300.09	3.41		
BI-214	0.269	609.31*	46.30	8.758E-007	2.826E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
PB-214	0.462	53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	1.469E-006	4.120E-007
		351.92*	37.20	9.041E-007	2.632E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0131.CNF
 VA020131.CNF

Performed & Reviewed By

SGC. Gunn

Date 12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.996	2.14E-005	3.91E-006	18.3
TL-208 @	0.437	3.80E-007	1.25E-007	33.0
PB-212	0.313	1.11E-006	2.45E-007	22.1
BI-214	0.269	8.76E-007	2.83E-007	32.3
PB-214 @	0.462	1.07E-006	2.22E-007	20.8

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
----------	--------------	--------------------------------	------------------------

All peaks were identified.

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/7/02 8:50:57 AM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0132.CNF
Spectrum Number VA020132.CNF
Sample Description O/Surface 0-6" #9
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.631E+002 g
Sample Collection Date 11/20/02 12:55:00 PM
Spectrum Collection Date 12/7/02 7:48:10 AM
Decay Corrected To 11/20/02 12:55:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.04 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By *RC. Finn* Date 12/07/02

Supervisory Review *PLA J* Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0132.CNF
Spectrum Number VA020132.CNF
Sample Description O/Surface 0-6" #9
Sample Type Soil

Peak Locate Performed on 12/7/02 8:50:56 AM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.10	0.2070	238.45	5.73	1.2319
2	1179.53	0.2467	295.13	3.82	1.2935
3	1406.69	0.2041	351.77	5.66	1.2356
4	2331.59	0.2187	582.98	3.94	1.5358
5	2436.47	0.2058	609.16	4.66	1.2832
6	5845.29	0.1430	1461.04	6.36	2.4484

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0132.CNF
Spectrum Number VA020132.CNF
Sample Description O/Surface 0-6" #9

Peak Analysis Performed on 12/7/02 8:50:56 AM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	945-	961	952.95	238.45	1.20E+002	23.81	7.05E+001
F	2	1172-	1187	1179.80	295.13	5.08E+001	15.00	1.99E+001
F	3	1399-	1413	1406.48	351.77	7.89E+001	18.58	2.26E+001
F	4	2324-	2338	2331.76	582.98	4.18E+001	13.37	7.50E+000
F	5	2430-	2443	2436.53	609.16	3.93E+001	13.47	9.11E+000
F	6	5834-	5857	5845.64	1461.04	1.39E+002	22.75	4.00E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0132.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.998	1460.81*	10.67	2.211E-005	3.880E-006
TL-208	0.437	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.915E-007	1.283E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.111E-006	2.364E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	6.931E-007	2.441E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
PB-214	0.462	1377.67	4.11		
		1764.49	15.80		
		53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
295.21*	19.20	1.257E-006	3.858E-007		
351.92*	37.20	1.141E-006	2.836E-007		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.

C:\GENIE2K\CAMFILES\VA-02-0132.CNF

Spectrum Number

VA020132.CNF

Performed & Reviewed By

RC. Lenn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.998	2.21E-005	3.88E-006	17.6
TL-208 @	0.437	3.92E-007	1.28E-007	32.8
PB-212	0.313	1.11E-006	2.36E-007	21.3
BI-214	0.269	6.93E-007	2.44E-007	35.2
PB-214 @	0.462	1.18E-006	2.29E-007	19.3

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis.

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
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All peaks were identified.

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 *** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/7/02 8:52:01 AM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0133.CNF
 Spectrum Number VA020133.CNF
 Sample Description O/Sub-Surface 6-12" #9
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.470E+002 g
 Sample Collection Date 11/20/02 12:55:00 PM
 Spectrum Collection Date 12/7/02 8:00:57 AM
 Decay Corrected To 11/20/02 12:55:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By SC. Finn Date 12/07/02

Supervisory Review PLA JES Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0133.CNF
 Spectrum Number VA020133.CNF
 Sample Description O/Sub-Surface 6-12" #9
 Sample Type Soil

Peak Locate Performed on 12/7/02 8:52:00 AM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	742.36	0.2862	185.85	3.56	0.8529
2	953.37	0.2026	238.50	6.28	1.0807
3	1179.23	0.2721	295.03	3.58	1.0000
4	1405.86	0.2156	351.61	4.77	1.3712
5	2331.41	0.2233	582.89	3.80	1.4763
6	2436.17	0.2131	609.10	4.23	1.4396
7	5846.28	0.1324	1461.16	8.15	1.8562

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0133.CNF
 Spectrum Number VA020133.CNF
 Sample Description O/Sub-Surface 6-12" #9

Peak Analysis Performed on 12/7/02 8:52:00 AM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F 1	737-	747	742.46	185.85	3.49E+001	15.32	3.68E+001
F 2	945-	960	953.16	238.50	1.04E+002	23.12	7.00E+001
F 3	1175-	1184	1179.41	295.03	2.35E+001	11.24	2.09E+001
F 4	1399-	1413	1405.84	351.61	6.87E+001	16.74	1.47E+001
F 5	2324-	2338	2331.39	582.89	3.95E+001	13.50	1.25E+001
F 6	2429-	2444	2436.27	609.10	4.26E+001	14.04	1.19E+001
F 7	5834-	5857	5846.14	1461.16	1.39E+002	23.78	1.19E+001

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0133.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.995	1460.81*	10.67	2.355E-005	4.297E-006
TL-208	0.436	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.942E-007	1.376E-007
		763.13	1.64		
		860.37	12.46		
PB-212	0.313	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.032E-006	2.415E-007
		300.09	3.41		
BI-214	0.268	609.31*	46.30	8.021E-007	2.717E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
		PB-214	0.460	53.23 @	1.11
74.81	6.21				
77.11	10.50				
87.30	4.67				
241.98	7.49				
RA-226	0.995	295.21*	19.20	6.188E-007	3.007E-007
		351.92*	37.20	1.058E-006	2.712E-007
U-235	0.685	186.21*	3.28	4.132E-006	1.831E-006
		89.95	2.70		
		143.76	10.50		
		185.71*	54.00	2.509E-007	1.111E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0133.CNF
 VA020133.CNF

Performed & Reviewed By

RC. Fourn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.995	2.35E-005	4.30E-006	18.2
TL-208 @	0.436	3.94E-007	1.38E-007	34.9
PB-212	0.313	1.03E-006	2.41E-007	23.4
BI-214	0.268	8.02E-007	2.72E-007	33.9
PB-214 @	0.460	8.61E-007	2.01E-007	23.4
? RA-226	0.995	4.13E-006	1.83E-006	44.3
? U-235	0.685	2.51E-007	1.11E-007	44.3

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
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All peaks were identified.

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 *** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/7/02 8:29:11 AM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0134.CNF
 Spectrum Number VA020134.CNF
 Sample Description O/Surface 0-6" #10
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.153E+002 g
 Sample Collection Date 11/20/02 1:10:00 PM
 Spectrum Collection Date 12/7/02 8:14:28 AM
 Decay Corrected To 11/20/02 1:10:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By RC. Finn Date 12/09/02

Supervisory Review Pol O Jus Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0134.CNF
 Spectrum Number VA020134.CNF
 Sample Description O/Surface 0-6" #10
 Sample Type Soil

Peak Locate Performed on 12/7/02 8:29:10 AM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.14	0.2220	238.42	5.02	1.2835
2	1406.19	0.2308	351.70	3.91	1.4725
3	2436.57	0.2070	609.21	4.59	1.3920
4	5845.74	0.1351	1461.06	7.58	2.1409

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0134.CNF
Spectrum Number VA020134.CNF
Sample Description O/Surface 0-6" #10

Peak Analysis Performed on 12/7/02 8:29:10 AM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F 1	945-	959	952.83	238.42	8.66E+001	20.61	4.89E+001
F 2	1399-	1415	1406.20	351.70	6.26E+001	16.63	2.51E+001
F 3	2429-	2445	2436.73	609.21	4.66E+001	14.16	9.84E+000
F 4	5835-	5858	5845.72	1461.06	1.46E+002	23.46	0.00E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0134.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.998	1460.81*	10.67	2.850E-005	4.905E-006
PB-212	0.312	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.811E-007	2.452E-007
		300.09	3.41		
BI-214	0.269	609.31*	46.30	1.007E-006	3.159E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy tolerance used was 2.000
 Nuclide confidence index threshold = 0.10
 Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0134.CNF
 Spectrum Number VA020134.CNF

Performed & Reviewed By SC Fern Date 12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.998	2.85E-005	4.90E-006	17.2
PB-212	0.312	9.81E-007	2.45E-007	25.0
BI-214	0.269	1.01E-006	3.16E-007	31.4

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.70	1.0433E-001	26.56 Pb-214 817

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

*** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/7/02 8:40:13 AM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0135.CNF
Spectrum Number VA020135.CNF
Sample Description O/S Sub-Surface 6-12" #10
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.639E+002 g
Sample Collection Date 11/20/02 1:10:00 PM
Spectrum Collection Date 12/7/02 8:26:53 AM
Decay Corrected To 11/20/02 1:10:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
& Dead Time 0.04 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By R. Finn Date 12/07/02

Supervisory Review Paula Jo Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0135.CNF
 Spectrum Number VA020135.CNF
 Sample Description O/S Sub-Surface 6-12" #10
 Sample Type Soil

Peak Locate Performed on 12/7/02 8:40:12 AM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	306.43	0.3049	76.92	3.67	0.5938
2	952.75	0.1975	238.40	6.49	1.2299
3	1180.28	0.2509	295.12	3.93	1.4136
4	1406.15	0.2344	351.60	3.58	1.6457
5	2436.20	0.2126	609.11	4.59	1.1672
6	3645.98	0.1939	911.36	4.75	1.5056
7	5846.97	0.1329	1461.46	8.03	1.9895

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0135.CNF
 Spectrum Number VA020135.CNF
 Sample Description O/S Sub-Surface 6-12" #10

Peak Analysis Performed on 12/7/02 8:40:12 AM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	302-	313	306.53	76.92	4.02E+001	18.59	9.47E+001
F	2	944-	959	952.77	238.40	1.37E+002	24.72	5.84E+001
F	3	1170-	1187	1179.76	295.12	5.56E+001	15.93	2.72E+001
F	4	1398-	1415	1405.78	351.60	6.95E+001	16.80	2.33E+001
F	5	2430-	2443	2436.33	609.11	3.93E+001	14.83	2.10E+001
F	6	3638-	3655	3645.89	911.36	4.09E+001	13.18	4.69E+000
F	7	5837-	5858	5847.35	1461.46	1.50E+002	24.47	6.83E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0135.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.983	1460.81*	10.67	2.383E-005	4.166E-006
PB-212	0.611	74.82	10.70		
		77.11*	18.00	1.405E-006	6.672E-007
		87.30	8.00		
		238.63*	44.60	1.263E-006	2.479E-007
		300.09	3.41		
BI-214	0.269	609.31*	46.30	6.926E-007	2.669E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
		PB-214	0.639	53.23 @	1.11
74.81	6.21				
77.11*	10.50			2.408E-006	1.143E-006
87.30	4.67				
241.98	7.49				
295.21*	19.20			1.371E-006	4.092E-007
351.92*	37.20			1.002E-006	2.549E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0135.CNF
 VA020135.CNF

Performed & Reviewed By

Dr. Linn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.983	2.38E-005	4.17E-006	17.5
PB-212	0.611	1.21E-006	2.27E-007	18.9
BI-214	0.269	6.93E-007	2.67E-007	38.5
PB-214 @	0.639	1.08E-006	2.08E-007	19.3

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 6	911.36	6.8209E-002	32.22 AC-228 RC7

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 *** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/7/02 8:57:34 AM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0136.CNF
 Spectrum Number VA020136.CNF
 Sample Description O/S Surface 0-6" #11
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.439E+002 g
 Sample Collection Date 11/20/02 1:25:00 PM
 Spectrum Collection Date 12/7/02 8:38:23 AM
 Decay Corrected To 11/20/02 1:25:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By SC. Finn Date 12/07/02

Supervisory Review PLG J Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0136.CNF
Spectrum Number VA020136.CNF
Sample Description O/S Surface 0-6" #11
Sample Type Soil

Peak Locate Performed on 12/7/02 8:57:33 AM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.66	0.2033	238.57	5.56	1.2110
2	1407.00	0.2235	351.89	4.84	1.3926
3	2333.83	0.2319	583.54	3.56	1.4114
4	2436.83	0.2033	609.25	5.01	1.2384
5	5845.93	0.1346	1461.16	7.64	2.2681

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0136.CNF
Spectrum Number VA020136.CNF
Sample Description O/S Surface 0-6" #11

Peak Analysis Performed on 12/7/02 8:57:33 AM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	946-	960	953.46	238.57	1.13E+002	23.42	5.91E+001
F	2	1398-	1414	1406.94	351.89	6.95E+001	17.03	2.13E+001
F	3	2326-	2340	2333.97	583.54	3.69E+001	13.62	1.50E+001
F	4	2429-	2445	2436.86	609.25	4.79E+001	14.49	1.07E+001
F	5	5835-	5857	5846.13	1461.16	1.58E+002	24.27	0.00E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0136.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.995	1460.81*	10.67	2.714E-005	4.504E-006
TL-208	0.433	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.731E-007	1.403E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.132E-006	2.497E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	9.124E-007	2.854E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
1238.11	5.94				
		1377.67	4.11		
		1764.49	15.80		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

*** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0136.CNF
Spectrum Number VA020136.CNF

Performed & Reviewed By RC. Finov Date 12/02/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.995	2.71E-005	4.50E-006	16.6
TL-208 @	0.433	3.73E-007	1.40E-007	37.6
PB-212	0.313	1.13E-006	2.50E-007	22.1
BI-214	0.269	9.12E-007	2.85E-007	31.3

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.89	1.1580E-001	24.50 Pb214 207

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 *** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/7/02 8:58:29 AM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0136A.CNF
 Spectrum Number VA020136A.CNF
 Sample Description O/S Surface 0-6" #11(QC)
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 3.492E+002 g
 Sample Collection Date 11/20/02 1:25:00 PM
 Spectrum Collection Date 12/7/02 8:49:57 AM
 Decay Corrected To 11/20/02 1:25:00 PM
 Collected By L. Finn

Live Time 602.6 seconds
 Real Time 602.8 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By Lo. Finn Date 12/07/02

Supervisory Review PLG J Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0136A.CNF
Spectrum Number VA020136A.CNF
Sample Description O/S Surface 0-6" #11(QC)
Sample Type Soil

Peak Locate Performed on 12/7/02 8:58:28 AM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.66	0.2033	238.57	5.56	1.2110
2	1407.00	0.2235	351.89	4.84	1.3926
3	2333.83	0.2319	583.54	3.56	1.4114
4	2436.83	0.2033	609.25	5.01	1.2384
5	5845.91	0.1338	1461.15	7.76	2.2523

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0136A.CNF
 Spectrum Number VA020136A.CNF
 Sample Description O/S Surface 0-6" #11(QC)

Peak Analysis Performed on 12/7/02 8:58:28 AM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	946-	960	953.46	238.57	1.13E+002	23.42	5.91E+001
F	2	1398-	1414	1406.94	351.89	6.95E+001	17.03	2.13E+001
F	3	2326-	2340	2333.97	583.54	3.69E+001	13.62	1.50E+001
F	4	2429-	2445	2436.86	609.25	4.79E+001	14.49	1.07E+001
F	5	5835-	5857	5846.11	1461.15	1.59E+002	24.41	0.00E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0136A.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.995	1460.81*	10.67	1.905E-005	3.153E-006
TL-208	0.433	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	2.595E-007	9.758E-008
		763.13	1.64		
		860.37	12.46		
PB-212	0.313	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	7.871E-007	1.737E-007
		300.09	3.41		
BI-214	0.269	609.31*	46.30	6.345E-007	1.985E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0136A.CNF
 Spectrum Number VA020136A.CNF

Performed & Reviewed By JA. Fenn Date 12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.995	1.91E-005	3.15E-006	16.5
TL-208 @	0.433	2.59E-007	9.76E-008	37.6
PB-212	0.313	7.87E-007	1.74E-007	22.1
BI-214	0.269	6.35E-007	1.99E-007	31.3

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.89	1.1531E-001	24.50 <i>Pb 214 809</i>

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 *** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/7/02 9:10:29 AM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0137.CNF
 Spectrum Number VA020137.CNF
 Sample Description O/S Sub-Surface6-12"#11
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.623E+002 g
 Sample Collection Date 11/20/02 1:25:00 PM
 Spectrum Collection Date 12/7/02 8:57:03 AM
 Decay Corrected To 11/20/02 1:25:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/07/02

Supervisory Review PLA JS Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0137.CNF
 Spectrum Number VA020137.CNF
 Sample Description O/S Sub-Surface6-12"#11
 Sample Type Soil

Peak Locate Performed on 12/7/02 9:10:28 AM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.17	0.2019	238.45	6.62	1.0686
2	1179.77	0.2321	295.18	4.62	0.8380
3	1407.34	0.2053	351.99	5.65	1.0484
4	2331.68	0.2128	582.96	4.67	1.0904
5	2436.38	0.2021	609.08	5.00	1.2097
6	3646.37	0.2271	911.62	3.51	0.9150
7	5846.14	0.1373	1461.22	7.25	2.3226

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0137.CNF
 Spectrum Number VA020137.CNF
 Sample Description O/S Sub-Surface6-12"#11

Peak Analysis Performed on 12/7/02 9:10:28 AM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	942-	959	952.95	238.45	1.10E+002	23.37	6.92E+001
F	2	1173-	1185	1180.00	295.18	3.93E+001	14.06	2.04E+001
F	3	1400-	1413	1407.35	351.99	5.99E+001	16.39	1.73E+001
F	4	2326-	2339	2331.65	582.96	3.37E+001	12.84	1.11E+001
F	5	2430-	2443	2436.19	609.08	5.05E+001	16.15	1.84E+001
F	6	3640-	3654	3646.95	911.62	2.21E+001	10.80	1.05E+001
F	7	5835-	5857	5846.39	1461.22	1.47E+002	23.75	3.70E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0137.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.993	1460.81*	10.67	2.354E-005	4.073E-006
TL-208	0.436	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.173E-007	1.227E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.021E-006	2.308E-007
BI-214	0.268	300.09	3.41		
		609.31*	46.30	8.950E-007	2.947E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
PB-214	0.462	53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	9.759E-007	3.583E-007
		351.92*	37.20	8.692E-007	2.476E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

*** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0137.CNF
Spectrum Number VA020137.CNF

Performed & Reviewed By RB Linn Date 12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.993	2.35E-005	4.07E-006	17.3
TL-208 @	0.436	3.17E-007	1.23E-007	38.7
PB-212	0.313	1.02E-006	2.31E-007	22.6
BI-214	0.268	8.95E-007	2.95E-007	32.9
PB-214 @	0.462	9.04E-007	2.04E-007	22.5

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 6	911.62	3.6792E-002	48.92 40-228 209

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

*** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/7/02 9:23:24 AM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0138.CNF
Spectrum Number VA020138.CNF
Sample Description O/S Surface 0-6" #12
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.455E+002 g
Sample Collection Date 11/20/02 1:35:00 PM
Spectrum Collection Date 12/7/02 9:08:18 AM
Decay Corrected To 11/20/02 1:35:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.03 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By RC. Finn Date 12/07/02

Supervisory Review Paul A Jones Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0138.CNF
Spectrum Number VA020138.CNF
Sample Description O/S Surface 0-6" #12
Sample Type Soil

Peak Locate Performed on 12/7/02 9:23:23 AM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.17	0.1869	238.47	7.65	1.0247
2	1406.48	0.1979	351.78	5.89	1.2164
3	5845.43	0.1363	1461.04	7.79	2.0864

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0138.CNF
 Spectrum Number VA020138.CNF
 Sample Description O/S Surface 0-6" #12

Peak Analysis Performed on 12/7/02 9:23:23 AM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	947-	960	953.05	238.47	1.26E+002	24.60	5.92E+001
F	2	1400-	1416	1406.49	351.78	8.18E+001	18.23	1.69E+001
F	3	5835-	5856	5845.67	1461.04	1.38E+002	23.36	7.17E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0138.CNF
Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.998	1460.81*	10.67	2.363E-005	4.257E-006
PB-212	0.313	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.258E-006	2.625E-007
		300.09	3.41		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0138.CNF
 VA020138.CNF

Performed & Reviewed By

RC. Luna

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.998	2.36E-005	4.26E-006	18.0
PB-212	0.313	1.26E-006	2.63E-007	20.9

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.78	1.3641E-001	22.27 Pb 214 RC

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

*** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/7/02 9:32:59 AM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0139.CNF
Spectrum Number VA020139.CNF
Sample Description O/S Sub-Surface 6-12 " #12
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.676E+002 g
Sample Collection Date 11/20/02 1:35:00 PM
Spectrum Collection Date 12/7/02 9:20:15 AM
Decay Corrected To 11/20/02 1:35:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.04 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/09/02

Supervisory Review PL. G Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0139.CNF
 Spectrum Number VA020139.CNF
 Sample Description O/S Sub-Surface 6-12 " #12
 Sample Type Soil

Peak Locate Performed on 12/7/02 9:32:59 AM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.11	0.1949	238.42	6.82	1.0918
2	1351.99	0.2604	338.19	3.78	0.6908
3	1406.32	0.2143	351.77	4.45	1.3986
4	2436.65	0.2024	609.27	4.57	1.5680
5	5846.21	0.1403	1461.09	7.40	2.1706

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0139.CNF
 Spectrum Number VA020139.CNF
 Sample Description O/S Sub-Surface 6-12 " #12

Peak Analysis Performed on 12/7/02 9:32:59 AM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	946-	958	952.86	238.42	1.14E+002	23.69	5.06E+001
F	2	1346-	1357	1352.10	338.19	2.24E+001	11.65	2.02E+001
F	3	1398-	1414	1406.45	351.77	6.97E+001	17.24	2.24E+001
F	4	2429-	2445	2436.94	609.27	6.25E+001	16.17	1.29E+001
F	5	5835-	5855	5845.87	1461.09	1.31E+002	22.69	7.00E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0139.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.997	1460.81*	10.67	2.060E-005	3.783E-006
PB-212	0.312	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.039E-006	2.300E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	1.085E-006	2.938E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.

C:\GENIE2K\CAMFILES\VA-02-0139.CNF

Spectrum Number

VA020139.CNF

Performed & Reviewed By

RC. Linn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.997	2.06E-005	3.78E-006	18.4
PB-212	0.312	1.04E-006	2.30E-007	22.1
BI-214	0.269	1.09E-006	2.94E-007	27.1

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	338.19	3.7344E-002	51.98 AC-228 RC7
F 3	351.77	1.1623E-001	24.72 PB-214 RC7

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

*** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/7/02 12:23:23 PM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0140.CNF
Spectrum Number VA020140.CNF
Sample Description O/S Surface@ 0-6" #13
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.489E+002 g
Sample Collection Date 11/20/02 1:55:00 PM
Spectrum Collection Date 12/7/02 12:10:18 PM
Decay Corrected To 11/20/02 1:55:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.03 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/07/02

Supervisory Review PLA J Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0140.CNF
 Spectrum Number VA020140.CNF
 Sample Description O/S Surface@ 0-6" #13
 Sample Type Soil

Peak Locate Performed on 12/7/02 12:23:22 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.40	0.1933	238.55	6.50	1.2127
2	1351.58	0.2703	338.05	3.69	0.6432
3	1406.49	0.2071	351.86	5.17	1.3247
4	2333.42	0.2125	583.43	3.80	1.6103
5	2436.75	0.2160	609.14	3.84	1.6983
6	5845.88	0.1395	1461.08	7.59	2.0973

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0140.CNF
Spectrum Number VA020140.CNF
Sample Description O/S Surface@ 0-6" #13

Peak Analysis Performed on 12/7/02 12:23:23 PM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	945-	962	953.39	238.55	1.39E+002	24.70	6.49E+001
F	2	1346-	1356	1351.55	338.05	2.08E+001	10.92	1.70E+001
F	3	1401-	1415	1406.81	351.86	7.27E+001	17.59	1.59E+001
F	4	2325-	2341	2333.53	583.43	4.86E+001	14.17	8.31E+000
F	5	2429-	2444	2436.45	609.14	4.95E+001	14.19	8.18E+000
F	6	5835-	5856	5845.81	1461.08	1.36E+002	23.13	7.26E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0140.CNF
Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.997	1460.81*	10.67	2.288E-005	4.152E-006
TL-208	0.435	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	4.821E-007	1.445E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.358E-006	2.633E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	9.235E-007	2.749E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
1377.67	4.11				
		1764.49	15.80		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy tolerance used was 2.000
Nuclide confidence index threshold = 0.10
Errors quoted at 1.960 sigma

*** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0140.CNF
Spectrum Number VA020140.CNF

Performed & Reviewed By RC. Lamm Date 12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.997	2.29E-005	4.15E-006	18.1
TL-208 @	0.435	4.82E-007	1.44E-007	30.0
PB-212	0.313	1.36E-006	2.63E-007	19.4
BI-214	0.269	9.23E-007	2.75E-007	29.8

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	338.05	3.4645E-002	52.55 Ac-228 RT
F 3	351.86	1.2118E-001	24.20 Pb-214 RT

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 *** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/7/02 11:21:56 AM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0141.CNF
 Spectrum Number VA020141.CNF
 Sample Description O/S Sub- Surface@ 6-12" #13
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.735E+002 g
 Sample Collection Date 11/20/02 1:55:00 PM
 Spectrum Collection Date 12/7/02 10:21:37 AM
 Decay Corrected To 11/20/02 1:55:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.4 seconds
 % Dead Time 0.06 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/07/02

Supervisory Review PLC J Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0141.CNF
 Spectrum Number VA020141.CNF
 Sample Description O/S Sub- Surface@ 6-12" #13
 Sample Type Soil

Peak Locate Performed on 12/7/02 11:21:55 AM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.85	0.2071	238.57	6.07	1.1525
2	1406.38	0.2079	351.76	5.37	1.1597
3	2332.63	0.2270	583.20	3.99	1.3557
4	2435.87	0.2133	609.01	4.37	1.7287
5	3645.57	0.2188	911.29	3.78	1.2650
6	5844.62	0.1225	1460.76	9.79	2.1131

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0141.CNF
Spectrum Number VA020141.CNF
Sample Description O/S Sub- Surface@ 6-12" #13

Peak Analysis Performed on 12/7/02 11:21:55 AM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	945-	960	953.44	238.57	1.11E+002	25.63	1.12E+002
F	2	1399-	1414	1406.44	351.76	7.29E+001	19.30	4.50E+001
F	3	2325-	2339	2332.63	583.20	4.66E+001	14.88	1.51E+001
F	4	2428-	2445	2435.91	609.01	6.38E+001	15.90	1.04E+001
F	5	3639-	3653	3645.60	911.29	2.85E+001	12.00	9.62E+000
F	6	5833-	5858	5844.55	1460.76	2.16E+002	28.68	4.33E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0141.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	1.000	1460.81*	10.67	3.316E-005	4.859E-006
TL-208	0.437	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	4.209E-007	1.374E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.944E-007	2.409E-007
BI-214	0.268	300.09	3.41		
		609.31*	46.30	1.085E-006	2.835E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
1377.67	4.11				
		1764.49	15.80		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy tolerance used was 2.000
 Nuclide confidence index threshold = 0.10
 Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0141.CNF
 VA020141.CNF

Performed & Reviewed By LC. Funn Date 12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	1.000	3.32E-005	4.86E-006	14.7
TL-208 @	0.437	4.21E-007	1.37E-007	32.6
PB-212	0.313	9.94E-007	2.41E-007	24.2
BI-214	0.268	1.08E-006	2.84E-007	26.1

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.76	1.2147E-001	26.48 <i>Pb-214 207</i>
F 5	911.29	4.7457E-002	42.14 <i>Ac-228</i>

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

*** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/7/02 11:21:20 AM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0142.CNF
Spectrum Number VA020142.CNF
Sample Description O/S Surface@ 0-6" #14
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.416E+002 g
Sample Collection Date 11/20/02 1:55:00 PM
Spectrum Collection Date 12/7/02 10:57:40 AM
Decay Corrected To 11/20/02 1:55:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.03 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/07/02

Supervisory Review PLC Jo Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0142.CNF
 Spectrum Number VA020142.CNF
 Sample Description O/S Surface@ 0-6" #14
 Sample Type Soil

Peak Locate Performed on 12/7/02 11:21:19 AM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	952.76	0.2135	238.38	5.86	1.2029
2	1405.87	0.2408	351.51	3.78	1.5270
3	3644.34	0.2224	910.89	3.76	0.6109
4	3875.39	0.2247	968.70	3.68	0.7720
5	5844.03	0.1322	1460.65	7.83	2.3820

Errors quoted at 1.96 sigma

***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0142.CNF
Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.999	1460.81*	10.67	3.266E-005	5.011E-006
PB-212	0.312	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.034E-006	2.369E-007
		300.09	3.41		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy tolerance used was 2.000
Nuclide confidence index threshold = 0.10
Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0142.CNF
 Spectrum Number VA020142.CNF

Performed & Reviewed By LC. Furin Date 12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.999	3.27E-005	5.01E-006	15.3
PB-212	0.312	1.03E-006	2.37E-007	22.9

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.51	9.8129E-002	27.09 <i>PB-214 807</i>
F 3	910.89	3.0847E-002	51.20 <i>Ac-228</i>
F 4	968.70	2.7115E-002	53.56 <i>Ac-228</i>

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

** GAMMA SPECTRUM ANALYSIS **

Report Generated On 12/7/02 11:58:17 AM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0143.CNF
Spectrum Number VA020143.CNF
Sample Description O/S Sub-Surface@ 6-12" #14
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance -2.00 keV

Sample Size 2.502E+002 g
Sample Collection Date 11/20/02 2:55:00 PM
Spectrum Collection Date 12/7/02 11:11:15 AM
Decay Corrected To 11/20/02 2:55:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.03 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/07/02

Supervisory Review PLC Date 12/16/02

**** P E A K L O C A T E R E P O R T ****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0143.CNF
Spectrum Number VA020143.CNF
Sample Description O/S Sub-Surface@ 6-12" #14
Sample Type Soil

Peak Locate Performed on 12/7/02 11:58:16 AM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.27	0.2040	238.49	5.96	1.1858
2	1406.60	0.2102	351.85	5.30	1.3474
3	2332.81	0.2209	583.26	4.20	0.8102
4	2436.16	0.2184	609.26	3.69	1.6045
5	5844.75	0.1360	1460.82	7.58	2.1301

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0143.CNF
Spectrum Number VA020143.CNF
Sample Description O/S Sub-Surface@ 6-12" #14

Peak Analysis Performed on 12/7/02 11:58:16 AM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	946-	960	953.14	238.49	1.12E+002	22.79	5.30E+001
F	2	1398-	1414	1406.78	351.85	7.10E+001	16.91	1.42E+001
F	3	2326-	2339	2332.86	583.26	3.02E+001	11.80	9.33E+000
F	4	2429-	2447	2436.92	609.26	4.33E+001	14.16	1.36E+001
F	5	5834-	5855	5844.76	1460.82	1.43E+002	23.42	3.55E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0143.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	1.000	1460.81*	10.67	2.398E-005	4.202E-006
		84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	2.977E-007	1.182E-007
PB-212	0.313	763.13	1.64		
		860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
BI-214	0.269	238.63*	44.60	1.089E-006	2.372E-007
		300.09	3.41		
		609.31*	46.30	8.041E-007	2.706E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
1238.11	5.94				
1377.67	4.11				
1764.49	15.80				

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy tolerance used was 2.000
 Nuclide confidence index threshold = 0.10
 Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0143.CNF
 VA020143.CNF

Performed & Reviewed By

BC. Yenn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	1.000	2.40E-005	4.20E-006	17.5
TL-208 @	0.437	2.98E-007	1.18E-007	39.7
PB-212	0.313	1.09E-006	2.37E-007	21.8
BI-214	0.269	8.04E-007	2.71E-007	33.7

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.85	1.1830E-001	23.83 <i>PB-214 RC7</i>

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

*** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/7/02 11:55:18 AM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0144.CNF
Spectrum Number VA020144.CNF
Sample Description O/S Surface@ 0-6" #15
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.106E+002 g
Sample Collection Date 11/20/02 2:55:00 PM
Spectrum Collection Date 12/7/02 11:23:58 AM
Decay Corrected To 11/20/02 2:55:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.03 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By L. Finn Date 12/07/02

Supervisory Review Pol A J Date 12/11/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0144.CNF
 Spectrum Number VA020144.CNF
 Sample Description O/S Surface@ 0-6" #15
 Sample Type Soil

Peak Locate Performed on 12/7/02 11:55:17 AM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.37	0.2252	238.50	5.47	0.9304
2	1406.46	0.2438	351.78	3.51	1.3808
3	2331.66	0.2172	582.96	4.37	1.2682
4	2436.43	0.2178	609.12	3.89	1.4008
5	5844.43	0.1465	1460.74	6.48	2.1689

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0144.CNF
Spectrum Number VA020144.CNF
Sample Description O/S Surface@ 0-6" #15

Peak Analysis Performed on 12/7/02 11:55:17 AM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	943-	959	953.16	238.50	6.98E+001	19.20	4.81E+001
F	2	1400-	1413	1406.50	351.78	4.43E+001	13.98	1.36E+001
F	3	2325-	2338	2331.67	582.96	3.41E+001	12.38	7.00E+000
F	4	2429-	2445	2436.35	609.12	3.72E+001	13.31	1.29E+001
F	5	5834-	5855	5844.45	1460.74	1.07E+002	20.28	1.91E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0144.CNF
Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	1.000	1460.81*	10.67	2.129E-005	4.251E-006
TL-208	0.436	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.991E-007	1.476E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	8.091E-007	2.308E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	8.201E-007	3.008E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
1238.11	5.94				
		1377.67	4.11		
		1764.49	15.80		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy tolerance used was 2.000
Nuclide confidence index threshold = 0.10
Errors quoted at 1.960 sigma

 ** INTERFERENCE CORRECTED REPORT **

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0144.CNF
 Spectrum Number VA020144.CNF

Performed & Reviewed By PLA J Date 12/16/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	1.000	2.13E-005	4.25E-006	20.0
TL-208 @	0.436	3.99E-007	1.48E-007	37.0
PB-212	0.313	8.09E-007	2.31E-007	28.5
BI-214	0.269	8.20E-007	3.01E-007	36.7

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.78	7.3867E-002	31.55 <u>Pb-214</u>

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 *** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/7/02 12:12:41 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0145.CNF
 Spectrum Number VA020145.CNF
 Sample Description O/S Sub- Surface@ 6-12" #15
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.810E+002 g
 Sample Collection Date 11/20/02 2:55:00 PM
 Spectrum Collection Date 12/7/02 11:58:56 AM
 Decay Corrected To 11/20/02 2:55:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By sc. Finn Date 12/07/02
 Supervisory Review PLA Gs Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0145.CNF
 Spectrum Number VA020145.CNF
 Sample Description O/S Sub- Surface@ 6-12" #15
 Sample Type Soil

Peak Locate Performed on 12/7/02 12:12:40 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	298.09	0.3286	74.79	3.79	0.3010
2	952.98	0.2177	238.51	5.68	1.2199
3	1179.74	0.2601	295.07	3.90	1.0011
4	1406.75	0.2240	351.82	4.10	1.5284
5	2436.62	0.2165	609.18	4.51	1.3324
6	5844.78	0.1293	1460.81	8.39	2.1493

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0145.CNF
 Spectrum Number VA020145.CNF
 Sample Description O/S Sub- Surface@ 6-12" #15

Peak Analysis Performed on 12/7/02 12:12:40 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	293-	302	298.00	74.79	2.50E+001	18.05	8.91E+001
F	2	945-	964	953.23	238.51	1.11E+002	22.62	7.22E+001
F	3	1171-	1186	1179.56	295.07	3.76E+001	13.94	2.40E+001
F	4	1398-	1414	1406.67	351.82	7.51E+001	17.82	2.69E+001
F	5	2429-	2445	2436.61	609.18	4.62E+001	14.02	9.13E+000
F	6	5833-	5856	5844.73	1460.81	1.74E+002	25.56	2.03E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0145.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	1.000	1460.81*	10.67	2.592E-005	4.142E-006
PB-212	0.484	74.82*	10.70	1.482E-006	1.083E-006
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.639E-007	2.097E-007
		300.09	3.41		
BI-214	0.269	609.31*	46.30	7.642E-007	2.396E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
PB-214	0.564	53.23 @	1.11		
		74.81*	6.21	2.553E-006	1.860E-006
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	8.713E-007	3.310E-007
351.92*	37.20	1.016E-006	2.546E-007		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

*** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0145.CNF
VA020145.CNF

Performed & Reviewed By

LC. Linn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	1.000	2.59E-005	4.14E-006	16.0
PB-212	0.484	9.62E-007	2.02E-007	21.0
BI-214	0.269	7.64E-007	2.40E-007	31.3
PB-214 @	0.564	9.63E-007	1.96E-007	20.4

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
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All peaks were identified.

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

**** GAMMA SPECTRUM ANALYSIS ****

Report Generated On 12/7/02 12:35:27 PM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0146.CNF
Spectrum Number VA020146.CNF
Sample Description O/S Surface@ 0-6" #16
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.252E+002 g
Sample Collection Date 11/20/02 3:15:00 PM
Spectrum Collection Date 12/7/02 12:21:44 PM
Decay Corrected To 11/20/02 3:15:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.03 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By SC. Lina Date 12/07/02

Supervisory Review PLA JES Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0146.CNF
 Spectrum Number VA020146.CNF
 Sample Description O/S Surface@ 0-6" #16
 Sample Type Soil

Peak Locate Performed on 12/7/02 12:35:26 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.00	0.2094	238.35	4.48	1.4277
2	1406.91	0.2238	351.85	4.60	1.3451
3	2331.76	0.2295	582.94	3.91	1.2805
4	2436.11	0.2188	609.05	4.11	1.4988
5	5845.16	0.1412	1460.88	6.81	2.1689

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0146.CNF
Spectrum Number VA020146.CNF
Sample Description O/S Surface@ 0-6" #16

Peak Analysis Performed on 12/7/02 12:35:26 PM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F 1	942-	959	952.56	238.35	1.13E+002	21.72	3.97E+001
F 2	1399-	1413	1406.79	351.85	6.16E+001	16.10	1.63E+001
F 3	2326-	2339	2331.58	582.94	3.12E+001	11.55	5.02E+000
F 4	2429-	2443	2436.08	609.05	3.93E+001	12.92	6.08E+000
F 5	5833-	5857	5845.02	1460.88	1.31E+002	22.46	2.02E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0146.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	1.000	1460.81*	10.67	2.444E-005	4.452E-006
TL-208	0.436	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.416E-007	1.288E-007
		763.13	1.64		
PB-212	0.312	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.225E-006	2.531E-007
BI-214	0.268	300.09	3.41		
		609.31*	46.30	8.103E-007	2.743E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
1377.67	4.11				
		1764.49	15.80		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at .1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0146.CNF
 VA020146.CNF

Performed & Reviewed By LL, Finn Date 12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	1.000	2.44E-005	4.45E-006	18.2
TL-208 @	0.436	3.42E-007	1.29E-007	37.7
PB-212	0.312	1.23E-006	2.53E-007	20.7
BI-214	0.268	8.10E-007	2.74E-007	33.9

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.85	1.0267E-001	26.14 PB-214 RCY

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** G A M M A S P E C T R U M A N A L Y S I S *****

Report Generated On 12/7/02 12:45:37 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0147.CNF
 Spectrum Number VA020147.CNF
 Sample Description O/S Sub-Surface@ 6-12" #16
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.782E+002 g
 Sample Collection Date 11/20/02 3:15:00 PM
 Spectrum Collection Date 12/7/02 12:32:43 PM
 Decay Corrected To 11/20/02 3:15:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By SC. Finn Date 12/07/02

Supervisory Review PLA Joe Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0147.CNF
 Spectrum Number VA020147.CNF
 Sample Description O/S Sub-Surface@ 6-12" #16
 Sample Type Soil

Peak Locate Performed on 12/7/02 12:45:36 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.35	0.1984	238.49	5.82	1.3581
2	1178.29	0.2570	294.95	3.65	1.5493
3	1406.81	0.2056	351.83	5.02	1.2653
4	2331.75	0.2118	582.97	4.39	1.3862
5	2436.94	0.1906	609.29	5.72	1.0616
6	3644.05	0.2205	910.75	3.71	1.6309
7	5845.55	0.1342	1461.01	7.99	2.2364

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0147.CNF
Spectrum Number VA020147.CNF
Sample Description O/S Sub-Surface@ 6-12" #16

Peak Analysis Performed on 12/7/02 12:45:36 PM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F 1	945-	960	953.13	238.49	1.43E+002	24.61	5.17E+001
F 2	1172-	1187	1179.06	294.95	5.23E+001	15.10	1.96E+001
F 3	1401-	1414	1406.69	351.83	7.23E+001	18.14	2.33E+001
F 4	2325-	2338	2331.69	582.97	4.71E+001	14.25	8.19E+000
F 5	2430-	2445	2437.02	609.29	5.01E+001	15.50	1.79E+001
F 6	3638-	3651	3643.43	910.75	2.30E+001	10.77	6.19E+000
F 7	5834-	5857	5845.52	1461.01	1.61E+002	24.71	3.79E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma.

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0147.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.998	1460.81*	10.67	2.422E-005	4.020E-006
TL-208	0.437	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	4.177E-007	1.296E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.257E-006	2.361E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	8.371E-007	2.674E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
PB-214	0.461	1377.67	4.11		
		1764.49	15.80		
		53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	1.222E-006	3.676E-007
351.92*	37.20	9.880E-007	2.603E-007		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy tolerance used was 2.000
 Nuclide confidence index threshold = 0.10
 Errors quoted at 1.960 sigma

*** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0147.CNF
Spectrum Number VA020147.CNF

Performed & Reviewed By RC. Linn Date 12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.998	2.42E-005	4.02E-006	16.6
TL-208 @	0.437	4.18E-007	1.30E-007	31.0
PB-212	0.313	1.26E-006	2.36E-007	18.8
BI-214	0.269	8.37E-007	2.67E-007	31.9
PB-214 @	0.461	1.07E-006	2.12E-007	19.9

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 6	910.75	3.8350E-002	46.81 <i>Ac-228 AC7</i>

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** G A M M A S P E C T R U M A N A L Y S I S *****

Report Generated On 12/7/02 12:57:43 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0148.CNF
 Spectrum Number VA020148.CNF
 Sample Description O/S Surface@ 0-6" #17
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.676E+002 g
 Sample Collection Date 11/20/02 3:45:00 PM
 Spectrum Collection Date 12/7/02 12:44:24 PM
 Decay Corrected To 11/20/02 3:45:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By *L. Finn* Date 12/07/02

Supervisory Review *PLA* Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0148.CNF
Spectrum Number VA020148.CNF
Sample Description O/S Surface@ 0-6" #17
Sample Type Soil

Peak Locate Performed on 12/7/02 12:57:42 PM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	298.02	0.3166	74.78	4.19	0.5306
2	306.77	0.3085	77.06	3.65	0.5364
3	953.10	0.2008	238.49	5.63	1.2448
4	1352.37	0.2654	338.23	3.63	0.7533
5	1406.15	0.2208	351.70	4.48	1.4620
6	2331.88	0.2274	583.04	3.93	1.3371
7	2436.40	0.2075	609.13	4.48	1.4790
8	5846.59	0.1354	1461.25	7.50	2.1869

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0148.CNF
Spectrum Number VA020148.CNF
Sample Description O/S Surface@ 0-6" #17

Peak Analysis Performed on 12/7/02 12:57:43 PM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
M	1	295-	313	297.98	74.78	3.04E+001	14.17	3.60E+001
m	2	295-	313	307.09	77.06	3.38E+001	14.32	3.54E+001
F	3	946-	961	953.13	238.49	1.23E+002	23.58	5.69E+001
F	4	1348-	1358	1352.30	338.23	2.30E+001	11.14	1.28E+001
F	5	1399-	1412	1406.19	351.70	7.53E+001	17.81	1.98E+001
F	6	2324-	2338	2332.00	583.04	3.61E+001	12.89	1.00E+001
F	7	2428-	2444	2436.38	609.13	5.09E+001	14.66	9.92E+000
F	8	5834-	5857	5846.51	1461.25	1.49E+002	23.66	0.00E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0148.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.992	1460.81*	10.67	2.337E-005	3.986E-006
TL-208	0.437	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.326E-007	1.211E-007
		763.13	1.64		
PB-212	0.784	860.37	12.46		
		74.82*	10.70	1.886E-006	9.096E-007
		77.11*	18.00	1.158E-006	5.073E-007
		87.30	8.00		
		238.63*	44.60	1.122E-006	2.313E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	8.830E-007	2.640E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
PB-214	0.366	1377.67	4.11		
		1764.49	15.80		
		53.23 @	1.11		
		74.81*	6.21	3.250E-006	1.557E-006
		77.11*	10.50	1.985E-006	8.691E-007
		87.30	4.67		
		241.98	7.49		
295.21	19.20				
		351.92*	37.20	1.071E-006	2.672E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0148.CNF
 VA020148.CNF

Performed & Reviewed By

RC. Funn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.992	2.34E-005	3.99E-006	17.1
TL-208 @	0.437	3.33E-007	1.21E-007	36.4
PB-212	0.784	1.04E-006	2.03E-007	19.5
BI-214	0.269	8.83E-007	2.64E-007	29.9
PB-214 @	0.366	1.01E-006	2.48E-007	24.6

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 4	338.23	3.8294E-002	48.48 AC. 228 RC7

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/7/02 1:08:37 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0149.CNF
 Spectrum Number VA020149.CNF
 Sample Description O/S Sub- Surface@ 6-12" #17
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.797E+002 g
 Sample Collection Date 11/20/02 3:45:00 PM
 Spectrum Collection Date 12/7/02 12:55:43 PM
 Decay Corrected To 11/20/02 3:45:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/07/02

Supervisory Review PLC J Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0149.CNF
 Spectrum Number VA020149.CNF
 Sample Description O/S Sub- Surface@ 6-12" #17
 Sample Type Soil

Peak Locate Performed on 12/7/02 1:08:36 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	952.54	0.1964	238.37	6.10	1.1660
2	1177.88	0.2562	294.63	3.58	1.1527
3	1407.08	0.2116	351.92	4.61	1.3515
4	2332.03	0.2423	583.06	3.55	1.1835
5	2436.78	0.2107	609.28	4.43	1.4731
6	5845.37	0.1366	1461.08	7.09	2.2268

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0149.CNF
 Spectrum Number VA020149.CNF
 Sample Description O/S Sub- Surface@ 6-12" #17

Peak Analysis Performed on 12/7/02 1:08:36 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	946-	958	952.65	238.37	1.19E+002	23.49	4.43E+001
F	2	1172-	1184	1177.80	294.63	3.41E+001	13.44	1.97E+001
F	3	1401-	1414	1407.06	351.92	6.89E+001	17.29	1.60E+001
F	4	2326-	2339	2332.05	583.06	2.34E+001	11.70	1.38E+001
F	5	2429-	2445	2437.01	609.28	4.62E+001	13.77	6.72E+000
F	6	5834-	5858	5845.82	1461.08	1.50E+002	24.40	8.33E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0149.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.997	1460.81*	10.67	2.255E-005	3.921E-006
TL-208	0.437	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	2.065E-007	1.042E-007
		763.13	1.64		
PB-212	0.312	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.041E-006	2.196E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	7.681E-007	2.368E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
PB-214	0.459	53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	7.922E-007	3.195E-007
		351.92*	37.20	9.372E-007	2.468E-007

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy tolerance used was 2.000
 Nuclide confidence index threshold = 0.10
 Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0149.CNF
 VA020149.CNF

Performed & Reviewed By

SC. Linn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.997	2.26E-005	3.92E-006	17.4
TL-208 @	0.437	2.07E-007	1.04E-007	50.5
PB-212	0.312	1.04E-006	2.20E-007	21.1
BI-214	0.269	7.68E-007	2.37E-007	30.8
PB-214 @	0.459	8.83E-007	1.95E-007	22.1

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
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All peaks were identified.

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/7/02 1:24:14 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0150.CNF
 Spectrum Number VA020150.CNF
 Sample Description O/S Surface@ 0-6" #18
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.199E+002 g
 Sample Collection Date 11/20/02 4:40:00 PM
 Spectrum Collection Date 12/7/02 1:06:57 PM
 Decay Corrected To 11/20/02 4:40:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/07/02

Supervisory Review PLA Gos Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0150.CNF
Spectrum Number VA020150.CNF
Sample Description O/S Surface@ 0-6" #18
Sample Type Soil

Peak Locate Performed on 12/7/02 1:24:13 PM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	952.80	0.2230	238.41	5.09	1.1884
2	2332.20	0.2233	583.10	3.66	1.4882
3	5845.09	0.1423	1460.92	6.85	2.2229

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0150.CNF
Spectrum Number VA020150.CNF
Sample Description O/S Surface@ 0-6" #18

Peak Analysis Performed on 12/7/02 1:24:13 PM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	946-	961	952.82	238.41	8.26E+001	20.05	5.29E+001
F	2	2325-	2339	2332.22	583.10	3.58E+001	12.46	6.27E+000
F	3	5835-	5857	5845.17	1460.92	1.27E+002	22.02	1.75E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0150.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	1.000	1460.81*	10.67	2.426E-005	4.466E-006
TL-208	0.437	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	4.016E-007	1.426E-007
		763.13	1.64		
PB-212	0.312	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.166E-007	2.331E-007
		300.09	3.41		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy tolerance used was 2.000
 Nuclide confidence index threshold = 0.10
 Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0150.CNF
 Spectrum Number VA020150.CNF

Performed & Reviewed By Dr. Linn Date 12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	1.000	2.43E-005	4.47E-006	18.4
TL-208 @	0.437	4.02E-007	1.43E-007	35.5
PB-212	0.312	9.17E-007	2.33E-007	25.4

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
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All peaks were identified.

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/7/02 1:32:00 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0151.CNF
 Spectrum Number VA020151.CNF
 Sample Description O/S Sub-Surface@ ~~0-6"~~ #18
 Sample Type Soil 6-12"
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.794E+002 g
 Sample Collection Date 11/20/02 4:40:00 PM
 Spectrum Collection Date 12/7/02 1:18:41 PM
 Decay Corrected To 11/20/02 4:40:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/07/02

Supervisory Review PL O'Jas Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0151.CNF
 Spectrum Number VA020151.CNF
 Sample Description O/S Sub-Surface@ 0-6" #18
 Sample Type Soil

Peak Locate Performed on 12/7/02 1:31:59 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	297.69	0.3287	74.69	3.73	0.5731
2	307.30	0.3015	77.11	3.76	0.5795
3	952.53	0.2122	238.43	5.29	1.3598
4	1406.92	0.2142	351.84	4.78	1.3595
5	2332.11	0.2164	583.09	3.69	1.7078
6	3645.49	0.2194	911.31	3.56	1.3352
7	5845.34	0.1299	1460.93	8.22	2.1838

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0151.CNF
 Spectrum Number VA020151.CNF
 Sample Description O/S Sub-Surface@ 0-6" #18

Peak Analysis Performed on 12/7/02 1:31:59 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
M	1	289-	315	297.61	74.69	3.40E+001	14.74	4.06E+001
m	2	289-	315	307.30	77.11	3.80E+001	15.20	3.64E+001
F	3	945-	961	952.91	238.43	1.25E+002	23.42	5.95E+001
F	4	1398-	1415	1406.73	351.84	7.07E+001	17.54	2.56E+001
F	5	2325-	2340	2332.18	583.09	5.02E+001	14.44	1.07E+001
F	6	3639-	3652	3645.70	911.31	2.65E+001	11.26	6.69E+000
F	7	5834-	5857	5845.23	1460.93	1.74E+002	25.72	1.87E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0151.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.999	1460.81*	10.67	2.611E-005	4.190E-006
TL-208	0.437	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	4.435E-007	1.312E-007
		763.13	1.64		
PB-212	0.783	860.37	12.46		
		74.82*	10.70	2.030E-006	9.135E-007
		77.11*	18.00	1.247E-006	5.169E-007
		87.30	8.00		
		238.63*	44.60	1.090E-006	2.207E-007
PB-214	0.367	300.09	3.41		
		53.23 @	1.11		
		74.81*	6.21	3.499E-006	1.562E-006
		77.11*	10.50	2.138E-006	8.856E-007
		87.30	4.67		
		241.98	7.49		
		295.21	19.20		
		351.92*	37.20	9.626E-007	2.509E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0151.CNF
 VA020151.CNF

Performed & Reviewed By

Sp. Ferrer

Date 12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.999	2.61E-005	4.19E-006	16.0
TL-208 @	0.437	4.43E-007	1.31E-007	29.6
PB-212	0.783	1.05E-006	1.95E-007	18.6
PB-214 @	0.367	9.34E-007	2.35E-007	25.1

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 6	911.31	4.4245E-002	42.42 <i>At 228 AC7</i>

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 **** G A M M A S P E C T R U M A N A L Y S I S ****

Report Generated On 12/16/02 8:18:00 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0152.CNF
 Spectrum Number VA020152.CNF
 Sample Description O/S@Surface 0-6" #19
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.941E+002 ea
 Sample Collection Date 11/20/02 4:45:00 PM
 Spectrum Collection Date 12/7/02 1:43:57 PM
 Decay Corrected To 11/20/02 4:45:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By APL For L. Finn Date 12/16/02

Supervisory Review PLA Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0152.CNF
Spectrum Number VA020152.CNF
Sample Description O/S@Surface 0-6" #19
Sample Type Soil

Peak Locate Performed on 12/16/02 8:17:59 PM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	306.69	0.2711	77.01	4.52	0.7941
2	953.95	0.2148	238.63	5.12	1.4144
3	1351.45	0.2708	338.01	3.72	0.7162
4	1406.32	0.2083	351.77	5.48	1.1635
5	2334.57	0.2198	583.68	4.28	1.2869
6	2438.18	0.2168	609.49	3.88	1.7860
7	3647.61	0.2115	911.80	4.08	1.3731
8	5846.58	0.1416	1461.40	6.94	2.1254

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0152.CNF
Spectrum Number VA020152.CNF
Sample Description O/S@Surface 0-6" #19

Peak Analysis Performed on 12/16/02 8:17:59 PM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	303-	311	306.92	77.01	5.33E+001	19.18	5.45E+001
F	2	945-	961	953.70	238.63	1.27E+002	23.50	5.78E+001
F	3	1347-	1356	1351.40	338.01	2.21E+001	11.78	1.84E+001
F	4	1399-	1414	1406.47	351.77	6.91E+001	17.42	2.21E+001
F	5	2328-	2342	2334.53	583.68	4.04E+001	13.66	1.16E+001
F	6	2431-	2446	2437.85	609.49	4.85E+001	14.49	1.03E+001
F	7	3640-	3654	3647.66	911.80	2.99E+001	12.91	1.50E+001
F	8	5837-	5859	5847.08	1461.40	1.26E+002	22.36	5.01E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0152.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/ea)	Activity Uncertainty
K-40	0.986	1460.81*	10.67	1.802E-005	3.381E-006
TL-208	0.430	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.389E-007	1.171E-007
		763.13	1.64		
PB-212	0.613	860.37	12.46		
		74.82	10.70		
		77.11*	18.00	1.665E-006	6.264E-007
		87.30	8.00		
		238.63*	44.60	1.051E-006	2.107E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	7.664E-007	2.369E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
PB-214	0.264	53.23 @	1.11		
		74.81	6.21		
		77.11*	10.50	2.854E-006	1.073E-006
		87.30	4.67		
		241.98	7.49		
		295.21	19.20		
		351.92*	37.20	8.940E-007	2.364E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0152.CNF
 VA020152.CNF

Performed & Reviewed By

APK *F. L. Finn*

Date 12/16/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/ea)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.986	1.80E-005	3.38E-006	18.8
TL-208 @	0.430	3.39E-007	1.17E-007	34.5
PB-212	0.613	1.06E-006	1.95E-007	18.4
BI-214	0.269	7.66E-007	2.37E-007	30.9
PB-214 @	0.264	9.01E-007	2.26E-007	25.1

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 3	338.01	3.6772E-002	53.39 <i>AC-228</i>
F 7	911.80	4.9889E-002	43.12 <i>AC-228</i>

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 **** GAMMA SPECTRUM ANALYSIS ****

Report Generated On 12/7/02 3:20:44 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0153.CNF
 Spectrum Number VA020153.CNF
 Sample Description O/S Sub- Surface ~~0-6"~~#19
 Sample Type Soil 6-12"
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.900E+002 ea
 Sample Collection Date 11/20/02 4:45:00 PM
 Spectrum Collection Date 12/7/02 3:05:37 PM
 Decay Corrected To 11/20/02 4:45:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/07/02

Supervisory Review PLA Jes Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0153.CNF
 Spectrum Number VA020153.CNF
 Sample Description O/S Sub- Surface 0-6"#19
 Sample Type Soil

Peak Locate Performed on 12/7/02 3:20:43 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.67	0.2096	238.65	4.97	1.4727
2	1406.83	0.2293	352.00	4.09	1.3930
3	2332.76	0.2025	583.22	4.98	1.2124
4	5848.41	0.1294	1461.65	8.09	2.2165

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0153.CNF
 Spectrum Number VA020153.CNF
 Sample Description O/S Sub- Surface 0-6"#19

Peak Analysis Performed on 12/7/02 3:20:43 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	945-	963	953.75	238.65	1.47E+002	24.68	6.68E+001
F	2	1402-	1415	1407.40	352.00	5.72E+001	16.41	1.88E+001
F	3	2325-	2340	2332.70	583.22	4.49E+001	14.06	9.33E+000
F	4	5836-	5860	5848.08	1461.65	1.85E+002	26.43	2.02E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0153.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/ea)	Activity Uncertainty
K-40	0.972	1460.81*	10.67	2.679E-005	4.173E-006
TL-208	0.437	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.820E-007	1.225E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.237E-006	2.280E-007
		300.09	3.41		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy tolerance used was 2.000
 Nuclide confidence index threshold = 0.10
 Errors quoted at 1.960 sigma

*** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0153.CNF
VA020153.CNF

Performed & Reviewed By RC. Finn

Date 12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/ea)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.972	2.68E-005	4.17E-006	15.6
TL-208 @	0.437	3.82E-007	1.23E-007	32.1
PB-212	0.313	1.24E-006	2.28E-007	18.4

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	352.00	9.5381E-002	28.67 <i>PB-214 RC7</i>

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** G A M M A S P E C T R U M A N A L Y S I S *****

Report Generated On 12/7/02 2:14:24 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0154.CNF
 Spectrum Number VA020154.CNF
 Sample Description O/S Surface 0-6" #20
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.837E+002 ea
 Sample Collection Date 11/21/02 8:00:00 AM
 Spectrum Collection Date 12/7/02 2:00:18 PM
 Decay Corrected To 11/21/02 8:00:00 AM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By SC. Finn Date 12/07/02

Supervisory Review PLA J Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0154.CNF
Spectrum Number VA020154.CNF
Sample Description O/S Surface 0-6" #20
Sample Type Soil

Peak Locate Performed on 12/7/02 2:14:24 PM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.47	0.1977	238.50	5.78	1.3114
2	1179.90	0.2613	295.15	3.97	0.9682
3	1407.56	0.2275	352.00	4.22	1.4712
4	2332.36	0.2042	583.15	4.89	1.1272
5	2437.41	0.2065	609.40	4.31	1.3866
6	3648.07	0.2242	911.86	3.63	1.2827
7	3878.09	0.2163	969.31	3.69	1.5586
8	5847.29	0.1368	1461.45	7.85	2.1445

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0154.CNF
 Spectrum Number VA020154.CNF
 Sample Description O/S Surface 0-6" #20

Peak Analysis Performed on 12/7/02 2:14:24 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	943-	959	953.16	238.50	1.39E+002	25.12	6.31E+001
F	2	1173-	1186	1179.89	295.15	3.53E+001	13.66	2.22E+001
F	3	1400-	1416	1407.38	352.00	6.72E+001	16.72	1.98E+001
F	4	2325-	2338	2332.43	583.15	4.30E+001	14.63	1.51E+001
F	5	2429-	2445	2437.49	609.40	4.38E+001	14.14	1.27E+001
F	6	3642-	3655	3647.91	911.86	2.56E+001	11.47	8.03E+000
F	7	3872-	3885	3877.81	969.31	2.50E+001	11.80	7.98E+000
F	8	5836-	5858	5847.30	1461.45	1.49E+002	24.14	7.67E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0154.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/ea)	Activity Uncertainty
K-40	0.984	1460.81*	10.67	2.208E-005	3.826E-006
TL-208	0.437	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.738E-007	1.299E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.194E-006	2.344E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	7.173E-007	2.386E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
PB-214	0.462	1377.67	4.11		
		1764.49	15.80		
		53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
295.21*	19.20	8.106E-007	3.207E-007		
351.92*	37.20	9.012E-007	2.356E-007		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0154.CNF
 Spectrum Number VA020154.CNF

Performed & Reviewed By RC. Lenn Date 12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/ea)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.984	2.21E-005	3.83E-006	17.3
TL-208 @	0.437	3.74E-007	1.30E-007	34.7
PB-212	0.313	1.19E-006	2.34E-007	19.6
BI-214	0.269	7.17E-007	2.39E-007	33.3
PB-214 @	0.462	8.69E-007	1.90E-007	21.8

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 6	911.86	4.2598E-002	44.88 ac-228 RC7
F 7	969.31	4.1745E-002	47.10 ac-228 RC7

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 **** G A M M A S P E C T R U M A N A L Y S I S ****

Report Generated On 12/7/02 2:31:41 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0155.CNF
 Spectrum Number VA020155.CNF
 Sample Description O/S Sub-Surface 6-12" #20
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.519E+002 ea
 Sample Collection Date 11/21/02 8:00:00 AM
 Spectrum Collection Date 12/7/02 2:13:24 PM
 Decay Corrected To 11/21/02 8:00:00 AM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By LC Finn Date 12/07/02

Supervisory Review RLA Date 12/16/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0155.CNF
Spectrum Number VA020155.CNF
Sample Description O/S Sub-Surface 6-12" #20
Sample Type Soil

Peak Locate Performed on 12/7/02 2:31:40 PM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	954.04	0.2034	238.68	5.89	1.1356
2	966.77	0.2635	241.92	3.97	1.1403
3	1406.45	0.2228	351.77	3.83	1.6870
4	2332.88	0.2139	583.26	4.61	1.1097
5	2437.15	0.2027	609.38	4.66	1.7100
6	5847.85	0.1379	1461.46	7.31	2.1118

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0155.CNF
 Spectrum Number VA020155.CNF
 Sample Description O/S Sub-Surface 6-12" #20

Peak Analysis Performed on 12/7/02 2:31:40 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
M	1	945-	972	953.88	238.68	1.18E+002	22.57	3.75E+001
m	2	945-	972	966.86	241.92	2.64E+001	13.69	3.89E+001
F	3	1398-	1415	1406.47	351.77	7.95E+001	16.92	1.05E+001
F	4	2327-	2340	2332.88	583.26	3.53E+001	12.52	7.00E+000
F	5	2429-	2446	2437.41	609.38	5.94E+001	14.82	3.00E+000
F	6	5836-	5859	5847.34	1461.46	1.34E+002	23.34	1.04E+001

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0155.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/ea)	Activity Uncertainty
K-40	0.983	1460.81*	10.67	2.240E-005	4.130E-006
TL-208	0.437	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.456E-007	1.250E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.148E-006	2.355E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	1.097E-006	2.871E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
PB-214	0.242	1377.67	4.11		
		1764.49	15.80		
		53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98*	7.49	1.534E-006	8.067E-007
295.21	19.20				
	351.92*	37.20	1.200E-006	2.729E-007	

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy tolerance used was 2.000
 Nuclide confidence index threshold = 0.10
 Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0155.CNF
 VA020155.CNF

Performed & Reviewed By

SC. Lunn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/ea)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.983	2.24E-005	4.13E-006	18.4
TL-208 @	0.437	3.46E-007	1.25E-007	36.2
PB-212	0.313	1.15E-006	2.36E-007	20.5
BI-214	0.269	1.10E-006	2.87E-007	26.2
PB-214 @	0.242	1.23E-006	2.58E-007	20.9

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
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All peaks were identified.

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 **** GAMMA SPECTRUM ANALYSIS ****

Report Generated On 12/7/02 2:42:56 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0156.CNF
 Spectrum Number VA020156.CNF
 Sample Description O/S Surface 0-6"#21
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.903E+002 ea
 Sample Collection Date 11/21/02 8:20:00 PM
 Spectrum Collection Date 12/7/02 2:28:41 PM
 Decay Corrected To 11/21/02 8:20:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By src. Finn Date 12/07/02

Supervisory Review PLD Jcs Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0156.CNF
 Spectrum Number VA020156.CNF
 Sample Description O/S Surface 0-6"#21
 Sample Type Soil

Peak Locate Performed on 12/7/02 2:42:55 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.37	0.2115	238.51	5.22	1.2405
2	1407.57	0.2244	352.05	4.51	1.3745
3	2437.86	0.2140	609.45	4.59	1.2485
4	5847.83	0.1370	1461.68	7.30	2.2397

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0156.CNF
 Spectrum Number VA020156.CNF
 Sample Description O/S Surface 0-6"#21

Peak Analysis Performed on 12/7/02 2:42:55 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	945-	960	953.20	238.51	1.02E+002	21.96	5.39E+001
F	2	1401-	1415	1407.58	352.05	6.10E+001	15.67	1.17E+001
F	3	2431-	2445	2437.68	609.45	4.30E+001	14.33	1.39E+001
F	4	5837-	5861	5848.20	1461.68	1.53E+002	24.42	7.89E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0156.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/ea)	Activity Uncertainty
K-40	0.970	1460.81*	10.67	2.217E-005	3.792E-006
PB-212	0.313	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	8.591E-007	1.958E-007
		300.09	3.41		
BI-214	0.269	609.31*	46.30	6.882E-007	2.358E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
	1764.49	15.80			

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

*** INTERFERENCE CORRECTED REPORT ***

Sample I.D.

C:\GENIE2K\CAMFILES\VA-02-0156.CNF

Spectrum Number

VA020156.CNF

Performed & Reviewed By

RC. Finn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/ea)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.970	2.22E-005	3.79E-006	17.1
PB-212	0.313	8.59E-007	1.96E-007	22.8
BI-214	0.269	6.88E-007	2.36E-007	34.3

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	352.05	1.0159E-001	25.71 Pb-214 RCY

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/16/02 8:19:43 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0156A.CNF
 Spectrum Number VA020156A.CNF
 Sample Description O/S Surface 0-6"#21(QC)
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 3.217E+002 ea
 Sample Collection Date 11/21/02 8:20:00 PM
 Spectrum Collection Date 12/7/02 2:41:41 PM
 Decay Corrected To 11/21/02 8:20:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By ASG For L. Finn Date 12/16/02

Supervisory Review PLA Jps Date 12/16/02

 ***** P.E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0156A.CNF
 Spectrum Number VA020156A.CNF
 Sample Description O/S Surface 0-6"#21(QC)
 Sample Type Soil

Peak Locate Performed on 12/16/02 8:19:42 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.90	0.1999	238.63	6.12	1.1993
2	1407.25	0.2197	351.96	4.47	1.6133
3	2332.69	0.2120	583.29	3.85	1.8509
4	2437.52	0.1982	609.46	4.84	1.4311
5	5847.61	0.1345	1461.58	7.75	2.2048

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0156A.CNF
 Spectrum Number VA020156A.CNF
 Sample Description O/S Surface 0-6"#21(QC)

Peak Analysis Performed on 12/16/02 8:19:42 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	944-	960	.953.70	238.63	1.20E+002	24.01	6.76E+001
F	2	1398-	1416	1407.23	351.96	8.45E+001	17.95	1.77E+001
F	3	2324-	2343	2333.00	583.29	6.85E+001	16.26	1.30E+001
F	4	2430-	2445	2437.72	609.46	5.49E+001	15.40	1.07E+001
F	5	5837-	5860	5847.81	1461.58	1.58E+002	24.52	3.59E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0156A.CNF
Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/ea)	Activity Uncertainty
K-40	0.977	1460.81*	10.67	2.066E-005	3.448E-006
		84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	5.254E-007	1.299E-007
PB-212	0.313	763.13	1.64		
		860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
BI-214	0.269	238.63*	44.60	9.099E-007	1.949E-007
		300.09	3.41		
		609.31*	46.30	7.938E-007	2.313E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
1238.11	5.94				
1377.67	4.11				
1764.49	15.80				

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy tolerance used was 2.000
Nuclide confidence index threshold = 0.10
Errors quoted at 1.960 sigma

*** INTERFERENCE CORRECTED REPORT ***

Sample I.D.

C:\GENIE2K\CAMFILES\VA-02-0156A.CNF

Spectrum Number

VA020156A.CNF

Performed & Reviewed By

APM For L. Finn

Date / /

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/ea)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.977	2.07E-005	3.45E-006	16.7
TL-208 @	0.437	5.25E-007	1.30E-007	24.7
PB-212	0.313	9.10E-007	1.95E-007	21.4
BI-214	0.269	7.94E-007	2.31E-007	29.1

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.96	1.4086E-001	21.24 <i>Pb-214</i>

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 *** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/7/02 3:06:16 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0157.CNF
 Spectrum Number VA020157.CNF
 Sample Description O/S ~~Sub-Surface 0-6" #21(QC)~~ ^{12/16/02} ~~20~~
 Sample Type Soil ~~Sub-Surface 6-12" #21~~
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.835E+002 ea
 Sample Collection Date 11/21/02 8:20:00 PM
 Spectrum Collection Date 12/7/02 2:54:24 PM
 Decay Corrected To 11/21/02 8:20:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By RC. Finn Date 12/07/02

Supervisory Review PLA J Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0157.CNF
 Spectrum Number VA020157.CNF
 Sample Description O/S Sub- Surface 0-6"#21(QC)
 Sample Type Soil

Peak Locate Performed on 12/7/02 3:06:15 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	742.37	0.2729	185.80	4.33	0.6804
2	953.62	0.2142	238.59	5.72	1.3461
3	1180.29	0.2643	295.29	3.56	1.0861
4	1407.00	0.2149	351.88	4.85	1.4999
5	2333.51	0.2070	583.30	4.14	1.6359
6	2437.21	0.2210	609.39	3.85	1.6295
7	5848.27	0.1321	1461.71	7.36	2.3384

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0157.CNF
 Spectrum Number VA020157.CNF
 Sample Description O/S Sub- Surface 0-6"#21(QC)

Peak Analysis Performed on 12/7/02 3:06:15 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F 1	738-	748	742.29	185.80	3.27E+001	14.00	2.73E+001
F 2	944-	963	953.51	238.59	1.15E+002	22.28	5.82E+001
F 3	1176-	1185	1180.43	295.29	2.57E+001	13.02	1.89E+001
F 4	1399-	1415	1406.89	351.88	7.84E+001	17.56	1.54E+001
F 5	2325-	2341	2333.02	583.30	5.14E+001	14.32	5.67E+000
F 6	2430-	2443	2437.44	609.39	3.77E+001	12.74	7.11E+000
F 7	5836-	5861	5848.32	1461.71	1.83E+002	26.07	2.06E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0157.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/ea)	Activity Uncertainty
K-40	0.968	1460.81*	10.67	2.705E-005	4.212E-006
TL-208	0.437	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	4.476E-007	1.285E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.898E-007	2.061E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	6.180E-007	2.145E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
PB-214	0.462	53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
RA-226	0.993	295.21*	19.20	5.906E-007	3.031E-007
		351.92*	37.20	1.052E-006	2.502E-007
		186.21*	3.28	3.367E-006	1.458E-006
U-235	0.685	89.95	2.70		
		143.76	10.50		
		185.71*	54.00	2.045E-007	8.850E-008

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0157.CNF
 VA020157.CNF

Performed & Reviewed By

LC. Funn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/ea)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.968	2.71E-005	4.21E-006	15.6
TL-208 @	0.437	4.48E-007	1.29E-007	28.7
PB-212	0.313	9.90E-007	2.06E-007	20.8
BI-214	0.269	6.18E-007	2.15E-007	34.7
PB-214 @	0.462	8.65E-007	1.93E-007	22.3
? RA-226	0.993	3.37E-006	1.46E-006	43.3
? U-235	0.685	2.05E-007	8.85E-008	43.3

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
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All peaks were identified.

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** G A M M A S P E C T R U M A N A L Y S I S *****

Report Generated On 12/7/02 3:30:44 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0158.CNF
 Spectrum Number VA020158.CNF
 Sample Description O/S Surface 0-6"#22
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.948E+002 ea
 Sample Collection Date 11/21/02 8:45:00 AM
 Spectrum Collection Date 12/7/02 3:17:55 PM
 Decay Corrected To 11/21/02 8:45:00 AM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By SC. Finn Date 12/07/02

Supervisory Review PLA Gos Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0158.CNF
 Spectrum Number VA020158.CNF
 Sample Description O/S Surface 0-6"#22
 Sample Type Soil

Peak Locate Performed on 12/7/02 3:30:43 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.81	0.2062	238.65	5.92	1.1581
2	1179.98	0.2422	295.19	3.71	1.3964
3	1408.46	0.2301	352.28	4.38	1.2323
4	2333.98	0.2163	583.56	4.17	1.3588
5	2437.84	0.1965	609.49	5.38	1.1414
6	5848.43	0.1266	1461.74	9.04	1.9605

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0158.CNF
 Spectrum Number VA020158.CNF
 Sample Description O/S Surface 0-6"#22

Peak Analysis Performed on 12/7/02 3:30:43 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	947-	962	953.78	238.65	1.05E+002	22.47	6.16E+001
F	2	1173-	1187	1180.04	295.19	5.36E+001	15.03	1.63E+001
F	3	1403-	1416	1408.51	352.28	5.81E+001	17.03	2.71E+001
F	4	2326-	2342	2334.08	583.56	4.24E+001	14.38	1.82E+001
F	5	2431-	2445	2437.84	609.49	5.31E+001	15.65	1.52E+001
F	6	5837-	5859	5848.47	1461.74	1.73E+002	25.73	1.92E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0158.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/ea)	Activity Uncertainty
K-40	0.966	1460.81*	10.67	2.458E-005	3.971E-006
TL-208	0.433	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.549E-007	1.230E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	8.657E-007	1.973E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	8.374E-007	2.555E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
PB-214	0.460	1377.67	4.11		
		1764.49	15.80		
		53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	1.184E-006	3.463E-007
351.92*	37.20	7.508E-007	2.280E-007		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

*** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0158.CNF
VA020158.CNF

Performed & Reviewed By

Dr. Lemm

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/ea)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.966	2.46E-005	3.97E-006	16.2
TL-208 @	0.433	3.55E-007	1.23E-007	34.7
PB-212	0.313	8.66E-007	1.97E-007	22.8
BI-214	0.269	8.37E-007	2.55E-007	30.5
PB-214 @	0.460	8.82E-007	1.90E-007	21.6

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
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All peaks were identified.

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/7/02 5:32:52 PM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0159.CNF
Spectrum Number VA020159.CNF
Sample Description O/S Sub-surface 6-12"#22
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 3.132E+002 ea
Sample Collection Date 11/21/02 8:45:00 AM
Spectrum Collection Date 12/7/02 3:30:18 PM
Decay Corrected To 11/21/02 8:45:00 AM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.03 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By *PLG* ^{for Linda Finn.} _{12/7/02} Date 12/7/02

Supervisory Review *PLG* Date 12/7/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0159.CNF
 Spectrum Number VA020159.CNF
 Sample Description O/S Sub-surface 6-12"#22
 Sample Type Soil

Peak Locate Performed on 12/7/02 5:32:51 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	954.01	0.1969	238.71	6.19	1.1816
2	1180.20	0.2316	295.23	4.66	1.0301
3	1407.22	0.2104	352.01	4.87	1.3677
4	2332.75	0.2161	583.27	4.27	1.3667
5	2437.63	0.2299	609.37	3.54	1.6342
6	3648.05	0.2147	911.95	3.66	1.5665
7	5848.79	0.1319	1461.75	8.28	2.0112

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0159.CNF
 Spectrum Number VA020159.CNF
 Sample Description O/S Sub-surface 6-12"#22

Peak Analysis Performed on 12/7/02 5:32:51 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F 1	947-	961	954.01	238.71	1.26E+002	24.26	6.04E+001
F 2	1174-	1186	1180.18	295.23	5.02E+001	15.91	2.41E+001
F 3	1402-	1415	1407.44	352.01	7.31E+001	17.65	1.73E+001
F 4	2325-	2339	2332.91	583.27	4.27E+001	13.70	1.01E+001
F 5	2431-	2444	2437.34	609.37	4.18E+001	14.29	1.54E+001
F 6	3642-	3656	3648.25	911.95	2.83E+001	11.53	5.46E+000
F 7	5836-	5860	5848.50	1461.75	1.59E+002	24.67	2.02E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0159.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/ea)	Activity Uncertainty
K-40	0.965	1460.81*	10.67	2.130E-005	3.562E-006
TL-208	0.437	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.364E-007	1.105E-007
		763.13	1.64		
		860.37	12.46		
PB-212	0.313	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.805E-007	2.033E-007
		300.09	3.41		
BI-214	0.269	609.31*	46.30	6.200E-007	2.176E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
PB-214	0.462	53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	1.044E-006	3.421E-007
		351.92*	37.20	8.875E-007	2.258E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0159.CNF
 Spectrum Number VA020159.CNF

Performed & Reviewed By RC. Fern Date 12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/ea)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.965	2.13E-005	3.56E-006	16.7
TL-208 @	0.437	3.36E-007	1.10E-007	32.8
PB-212	0.313	9.80E-007	2.03E-007	20.7
BI-214	0.269	6.20E-007	2.18E-007	35.1
PB-214 @	0.462	9.35E-007	1.88E-007	20.2

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 6	911.95	4.7145E-002	40.76 AC-228

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** G A M M A S P E C T R U M A N A L Y S I S *****

Report Generated On 12/7/02 5:46:45 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0160.CNF
 Spectrum Number VA020160.CNF
 Sample Description O/S Surface 0-6"#23
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.953E+002 g
 Sample Collection Date 11/21/02 9:35:00 AM
 Spectrum Collection Date 12/7/02 5:32:08 PM
 Decay Corrected To 11/21/02 9:35:00 AM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.03 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/07/02

Supervisory Review P. L. Jones Date 12/7/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0160.CNF
 Spectrum Number VA020160.CNF
 Sample Description O/S Surface 0-6"#23
 Sample Type Soil

Peak Locate Performed on 12/7/02 5:46:44 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	952.07	0.1979	238.20	5.99	1.1887
2	1405.04	0.2267	351.28	3.65	1.6902
3	2329.50	0.2134	582.40	3.84	1.8168
4	3639.85	0.2195	909.90	3.73	1.2649
5	5838.56	0.1376	1459.28	7.59	2.2751

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0160.CNF
Spectrum Number VA020160.CNF
Sample Description O/S Surface 0-6"#23

Peak Analysis Performed on 12/7/02 5:46:44 PM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F 1	946-	959	951.96	238.20	1.17E+002	23.47	5.44E+001
F 2	1394-	1411	1404.50	351.28	7.38E+001	16.61	1.50E+001
F 3	2321-	2338	2329.43	582.40	5.16E+001	14.05	4.59E+000
F 4	3633-	3646	3640.04	909.90	2.19E+001	10.73	7.00E+000
F 5	5827-	5851	5838.62	1459.28	1.28E+002	22.18	0.00E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0160.CNF
Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.911	1460.81*	10.67	1.813E-005	3.344E-006
TL-208	0.423	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	4.307E-007	1.210E-007
		763.13	1.64		
PB-212	0.309	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.633E-007	2.072E-007
		300.09	3.41		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy tolerance used was 2.000
Nuclide confidence index threshold = 0.10
Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0160.CNF
 VA020160.CNF

Performed & Reviewed By

RC. Linn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.911	1.81E-005	3.34E-006	18.4
TL-208 @	0.423	4.31E-007	1.21E-007	28.1
PB-212	0.309	9.63E-007	2.07E-007	21.5

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.28	1.2305E-001	22.50
F 4	909.90	3.6539E-002	48.92

*AC 228
 AC 228 911 keV*

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 **** G A M M A S P E C T R U M A N A L Y S I S ****

Report Generated On 12/7/02 6:03:22 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0161.CNF
 Spectrum Number VA020161.CNF
 Sample Description O/S Sub-Surface 6-12"#23
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 3.045E+002 g
 Sample Collection Date 11/21/02 9:35:00 AM
 Spectrum Collection Date 12/7/02 5:45:57 PM
 Decay Corrected To 11/21/02 9:35:00 AM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.3 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By

L. Finn

Date 12/07/02

Supervisory Review

RLB

Date 12/7/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0161.CNF
 Spectrum Number VA020161.CNF
 Sample Description O/S Sub-Surface 6-12"#23
 Sample Type Soil

Peak Locate Performed on 12/7/02 6:03:21 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	951.64	0.2077	238.10	5.04	1.2723
2	1178.24	0.2392	294.75	4.25	1.0687
3	1351.63	0.2631	338.02	3.63	1.0645
4	1405.68	0.2161	351.54	4.65	1.5846
5	2330.14	0.2023	582.62	5.25	1.0489
6	2433.87	0.2072	608.56	4.11	1.7736
7	5839.05	0.1368	1459.38	7.11	2.4246

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0161.CNF
 Spectrum Number VA020161.CNF
 Sample Description O/S Sub-Surface 6-12"#23

Peak Analysis Performed on 12/7/02 6:03:21 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	945-	957	951.59	238.10	1.07E+002	22.28	4.38E+001
F	2	1171-	1187	1178.30	294.75	4.46E+001	16.04	4.25E+001
F	3	1346-	1357	1351.46	338.02	3.26E+001	12.32	9.24E+000
F	4	1398-	1413	1405.56	351.54	8.21E+001	17.88	1.58E+001
F	5	2324-	2338	2330.32	582.62	3.77E+001	13.82	1.51E+001
F	6	2426-	2443	2434.10	608.56	6.10E+001	15.78	1.17E+001
F	7	5826-	5850	5839.01	1459.38	1.71E+002	25.17	3.95E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0161.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.921	1460.81*	10.67	2.353E-005	3.762E-006
TL-208	0.430	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.052E-007	1.139E-007
		763.13	1.64		
		860.37	12.46		
PB-212	0.308	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	8.571E-007	1.899E-007
		300.09	3.41		
BI-214	0.259	609.31*	46.30	9.302E-007	2.517E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
PB-214	0.458	53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	9.525E-007	3.516E-007
		351.92*	37.20	1.024E-006	2.377E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

*** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0161.CNF
VA020161.CNF

Performed & Reviewed By

RC. Fern

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.921	2.35E-005	3.76E-006	16.0
TL-208	@ 0.430	3.05E-007	1.14E-007	37.3
PB-212	0.308	8.57E-007	1.90E-007	22.2
BI-214	0.259	9.30E-007	2.52E-007	27.1
PB-214	@ 0.458	1.00E-006	1.97E-007	19.7

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 3	338.02	5.4362E-002	37.78 <i>AC-208</i>

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

***** G A M M A S P E C T R U M A N A L Y S I S *****

Report Generated On 12/7/02 6:11:13 PM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0162.CNF
Spectrum Number VA020162.CNF
Sample Description O/S Surface 0-6"#24
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 3.408E+002 g
Sample Collection Date 11/21/02 9:35:00 AM
Spectrum Collection Date 12/7/02 5:58:13 PM
Decay Corrected To 11/21/02 9:35:00 AM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.04 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/7/02

Supervisory Review PLC Jps Date 12/7/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0162.CNF
 Spectrum Number VA020162.CNF
 Sample Description O/S Surface 0-6"#24
 Sample Type Soil

Peak Locate Performed on 12/7/02 6:11:12 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	952.03	0.2022	238.11	5.19	1.3116
2	1178.55	0.2737	294.81	3.97	0.5912
3	1405.49	0.2212	351.59	4.69	1.2091
4	2433.83	0.2039	608.53	5.06	1.3437
5	5838.10	0.1343	1459.21	7.18	2.2512

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0162.CNF
 Spectrum Number VA020162.CNF
 Sample Description O/S Surface 0-6"#24

Peak Analysis Performed on 12/7/02 6:11:12 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	944-	959	951.63	238.11	1.19E+002	23.83	6.85E+001
F	2	1174-	1183	1178.51	294.81	2.66E+001	13.71	3.62E+001
F	3	1397-	1412	1405.73	351.59	5.70E+001	15.78	1.61E+001
F	4	2428-	2442	2434.00	608.53	4.37E+001	14.30	1.00E+001
F	5	5827-	5851	5838.33	1459.21	1.71E+002	25.97	8.33E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0162.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.903	1460.81*	10.67	2.106E-005	3.453E-006
PB-212	0.308	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	8.525E-007	1.824E-007
		300.09	3.41		
BI-214	0.258	609.31*	46.30	5.959E-007	2.005E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
PB-214	0.459	1764.49	15.80		
		53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	5.072E-007	2.650E-007
		351.92*	37.20	6.361E-007	1.832E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

*** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0162.CNF
VA020162.CNF

Performed & Reviewed By

LC Linn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.903	2.11E-005	3.45E-006	16.4
PB-212	0.308	8.52E-007	1.82E-007	21.4
BI-214	0.258	5.96E-007	2.00E-007	33.6
PB-214 @	0.459	5.94E-007	1.51E-007	25.4

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
----------	--------------	--------------------------------	------------------------

All peaks were identified.

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/7/02 6:25:13 PM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0163.CNF
Spectrum Number VA020163.CNF
Sample Description O/S Sub-Surface 6-12"#24
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.625E+002 g
Sample Collection Date 11/21/02 9:35:00 AM
Spectrum Collection Date 12/7/02 6:09:41 PM
Decay Corrected To 11/21/02 9:35:00 AM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.03 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/07/02

Supervisory Review PLG Date 12/7/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0163.CNF
Spectrum Number VA020163.CNF
Sample Description O/S Sub-Surface 6-12"#24
Sample Type Soil

Peak Locate Performed on 12/7/02 6:25:13 PM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	952.03	0.2190	238.13	5.75	1.2303
2	1404.73	0.2138	351.38	5.05	1.3624
3	2329.13	0.2113	582.34	4.80	0.9762
4	2433.65	0.2046	608.40	4.15	1.5343
5	3641.30	0.2132	910.24	3.80	1.5199
6	5838.54	0.1344	1459.26	7.75	2.0081

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0163.CNF
 Spectrum Number VA020163.CNF
 Sample Description O/S Sub-Surface 6-12"#24

Peak Analysis Performed on 12/7/02 6:25:13 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	944-	962	951.70	238.13	1.01E+002	22.11	7.49E+001
F	2	1398-	1412	1404.90	351.38	7.12E+001	16.76	1.05E+001
F	3	2323-	2336	2329.19	582.34	3.48E+001	12.91	1.17E+001
F	4	2426-	2442	2433.49	608.40	5.26E+001	15.00	1.16E+001
F	5	3634-	3648	3641.41	910.24	2.85E+001	11.11	3.67E+000
F	6	5828-	5849	5838.53	1459.26	1.44E+002	23.84	7.12E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0163.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.908	1460.81*	10.67	2.297E-005	4.067E-006
TL-208	0.421	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.268E-007	1.233E-007
		763.13	1.64		
PB-212	0.308	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.362E-007	2.174E-007
BI-214	0.254	300.09	3.41		
		609.31*	46.30	9.307E-007	2.753E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
1377.67	4.11				
		1764.49	15.80		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0163.CNF
 VA020163.CNF

Performed & Reviewed By LC. Fenn Date 12/09/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.908	2.30E-005	4.07E-006	17.7
TL-208 @	0.421	3.27E-007	1.23E-007	37.7
PB-212	0.308	9.36E-007	2.17E-007	23.2
BI-214	0.254	9.31E-007	2.75E-007	29.6

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.38	1.1861E-001	23.55 PB-214
F 5	910.24	4.7552E-002	38.95 AC-228

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/7/02 6:39:22 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0164.CNF
 Spectrum Number VA020164.CNF
 Sample Description O/S Surface 0-6"#25
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 2.930E+002 g
 Sample Collection Date 11/21/02 10:15:00 AM
 Spectrum Collection Date 12/7/02 6:22:11 PM
 Decay Corrected To 11/21/02 10:15:00 AM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By _____ Date / /

Supervisory Review *plag* Date 12/7/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0164.CNF
Spectrum Number VA020164.CNF
Sample Description O/S Surface 0-6"#25
Sample Type Soil

Peak Locate Performed on 12/7/02 6:39:21 PM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	951.90	0.2027	238.15	6.63	1.0405
2	1404.54	0.2349	351.26	4.32	1.3244
3	2329.01	0.2282	582.18	3.93	1.5525
4	2433.13	0.2079	608.35	4.40	1.5457
5	3640.63	0.1980	910.05	4.53	1.5904
6	5837.87	0.1377	1459.10	7.02	2.4767

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0164.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.889	1460.81*	10.67	2.494E-005	3.975E-006
TL-208	0.413	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.286E-007	1.088E-007
		763.13	1.64		
		860.37	12.46		
PB-212	0.309	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	8.759E-007	2.026E-007
BI-214	0.252	300.09	3.41		
		609.31*	46.30	8.505E-007	2.459E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
1377.67	4.11				
		1764.49	15.80		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0164.CNF
 VA020164.CNF

Performed & Reviewed By LC. Linn Date 12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.889	2.49E-005	3.97E-006	15.9
TL-208 @	0.413	3.29E-007	1.09E-007	33.1
PB-212	0.309	8.76E-007	2.03E-007	23.1
BI-214	0.252	8.51E-007	2.46E-007	28.9

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.26	9.8113E-002	27.26 PB-214
F 5	910.05	5.7131E-002	34.79 AC-228

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 *** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/7/02 6:47:53 PM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0165.CNF
 Spectrum Number VA020165.CNF
 Sample Description O/S Sub-Surface 6-12"#25
 Sample Type Soil
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 3.065E+002 g
 Sample Collection Date 11/21/02 10:15:00 AM
 Spectrum Collection Date 12/7/02 6:35:34 PM
 Decay Corrected To 11/21/02 10:15:00 AM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By

L. Finn

Date

12/7/02

Supervisory Review

[Signature]

Date

12/7/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0165.CNF
 Spectrum Number VA020165.CNF
 Sample Description O/S Sub-Surface 6-12"#25
 Sample Type Soil

Peak Locate Performed on 12/7/02 6:47:52 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	950.90	0.1884	237.97	6.75	1.3423
2	1405.06	0.2030	351.35	5.28	1.3646
3	2329.35	0.2029	582.32	4.73	1.4238
4	2433.05	0.1990	608.35	4.60	1.6516
5	5837.15	0.1347	1458.86	7.47	2.3001

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0165.CNF
 Spectrum Number VA020165.CNF
 Sample Description O/S Sub-Surface 6-12"#25

Peak Analysis Performed on 12/7/02 6:47:52 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	942-	959	951.03	237.97	1.67E+002	26.02	5.06E+001
F	2	1397-	1411	1404.77	351.35	8.55E+001	18.62	1.75E+001
F	3	2321-	2336	2329.12	582.32	5.17E+001	14.74	9.14E+000
F	4	2424-	2442	2433.29	608.35	6.64E+001	16.32	1.10E+001
F	5	5826-	5849	5836.92	1458.86	1.66E+002	25.00	2.18E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0165.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.859	1460.81*	10.67	2.267E-005	3.699E-006
TL-208	0.420	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	4.154E-007	1.220E-007
		763.13	1.64		
		860.37	12.46		
PB-212	0.304	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.327E-006	2.302E-007
		300.09	3.41		
BI-214	0.252	609.31*	46.30	1.005E-006	2.598E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.

C:\GENIE2K\CAMFILES\VA-02-0165.CNF

Spectrum Number

VA020165.CNF

Performed & Reviewed By

W.C. Fenn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.859	2.27E-005	3.70E-006	16.3
TL-208 @	0.420	4.15E-007	1.22E-007	29.4
PB-212	0.304	1.33E-006	2.30E-007	17.3
BI-214	0.252	1.01E-006	2.60E-007	25.8

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.35	1.4244E-001	21.79 <u>PB-214</u>

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0166.CNF
 Spectrum Number VA020166.CNF
 Sample Description O/S Surface 0-6"#26
 Sample Type Soil

Peak Locate Performed on 12/7/02 6:58:39 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	950.98	0.2178	238.05	4.79	1.3616
2	1177.73	0.2565	294.68	3.97	1.1253
3	2329.92	0.2399	582.42	3.70	1.2881
4	2433.47	0.2103	608.42	4.37	1.6679
5	3639.54	0.2039	910.03	4.04	1.8447
6	5837.07	0.1344	1458.90	7.02	2.3671

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0166.CNF
 Spectrum Number VA020166.CNF
 Sample Description O/S Surface 0-6"#26

Peak Analysis Performed on 12/7/02 6:58:39 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	944-	960	951.35	238.05	1.12E+002	22.02	5.19E+001
F	2	1172-	1186	1178.00	294.68	4.04E+001	14.02	1.89E+001
F	3	2324-	2336	2329.49	582.42	2.32E+001	10.91	7.73E+000
F	4	2427-	2441	2433.56	608.42	5.74E+001	15.32	7.90E+000
F	5	3632-	3646	3640.55	910.03	3.53E+001	12.45	5.17E+000
F	6	5825-	5849	5837.09	1458.90	1.74E+002	25.65	6.33E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0166.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.864	1460.81*	10.67	2.700E-005	4.324E-006
TL-208	0.424	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	2.117E-007	1.007E-007
		763.13	1.64		
PB-212	0.306	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.007E-006	2.131E-007
BI-214	0.255	300.09	3.41		
		609.31*	46.30	9.879E-007	2.748E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
1238.11	5.94				
		1377.67	4.11		
		1764.49	15.80		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.

C:\GENIE2K\CAMFILES\VA-02-0166.CNF

Spectrum Number

VA020166.CNF

Performed & Reviewed By

LC Linn

Date

12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.864	2.70E-005	4.32E-006	16.0
TL-208 @	0.424	2.12E-007	1.01E-007	47.6
PB-212	0.306	1.01E-006	2.13E-007	21.2
BI-214	0.255	9.88E-007	2.75E-007	27.8

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	294.68	6.7267E-002	34.74
F 5	910.03	5.8846E-002	35.26

*- P 239
AC-208*

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/7/02 7:14:11 PM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0167.CNF
Spectrum Number VA020167.CNF
Sample Description O/S Sub-Surface 6-12"#26
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 3.429E+002 g
Sample Collection Date 11/21/02 10:40:00 AM
Spectrum Collection Date 12/7/02 6:57:52 PM
Decay Corrected To 11/21/02 10:40:00 AM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.04 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/7/02

Supervisory Review PLG J Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0167.CNF
 Spectrum Number VA020167.CNF
 Sample Description O/S Sub-Surface 6-12"#26
 Sample Type Soil

Peak Locate Performed on 12/7/02 7:14:10 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	741.27	0.2585	185.51	3.81	1.1191
2	951.63	0.2013	238.11	6.21	1.2038
3	1404.60	0.2222	351.25	4.15	1.5917
4	2328.66	0.2069	582.16	4.35	1.7330
5	2432.16	0.1911	608.11	4.96	1.4906
6	3639.92	0.2033	909.78	4.03	1.5942
7	5838.15	0.1397	1459.04	6.62	2.4360

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0167.CNF
 Spectrum Number VA020167.CNF
 Sample Description O/S Sub-Surface 6-12"#26

Peak Analysis Performed on 12/7/02 7:14:10 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	733-	747	741.12	185.51	5.58E+001	16.46	3.11E+001
F	2	943-	960	951.61	238.11	1.28E+002	24.95	8.81E+001
F	3	1395-	1412	1404.41	351.25	8.10E+001	17.67	1.94E+001
F	4	2320-	2337	2328.47	582.16	6.19E+001	15.08	4.60E+000
F	5	2423-	2441	2432.33	608.11	6.60E+001	16.99	1.74E+001
F	6	3633-	3648	3639.57	909.78	3.39E+001	13.03	9.54E+000
F	7	5825-	5850	5837.66	1459.04	1.56E+002	24.19	6.40E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0167.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.882	1460.81*	10.67	1.902E-005	3.184E-006
TL-208	0.413	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	4.447E-007	1.127E-007
		763.13	1.64		
		860.37	12.46		
PB-212	0.308	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.132E-007	1.905E-007
		300.09	3.41		
BI-214	0.243	609.31*	46.30	8.934E-007	2.405E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
RA-226	0.981	186.21*	3.28	4.747E-006	1.434E-006
U-235	0.684	89.95	2.70		
		143.76	10.50		
		185.71*	54.00	2.883E-007	8.693E-008

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.

C:\GENIE2K\CAMFILES\VA-02-0167.CNF

Spectrum Number

VA020167.CNF

Performed & Reviewed By

RC. Linn

Date

12/7/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.882	1.90E-005	3.18E-006	16.7
TL-208 @	0.413	4.45E-007	1.13E-007	25.3
PB-212	0.308	9.13E-007	1.91E-007	20.9
BI-214	0.243	8.93E-007	2.41E-007	26.9
? RA-226	0.981	4.75E-006	1.43E-006	30.2
? U-235	0.684	2.88E-007	8.69E-008	30.1

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 3	351.25	1.3499E-001	21.81
F 6	909.78	5.6521E-002	38.43

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

*** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/7/02 7:24:29 PM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0168.CNF
Spectrum Number VA020168.CNF
Sample Description O/S Surface 0-6"#27
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.591E+002 g
Sample Collection Date 11/21/02 10:40:00 AM
Spectrum Collection Date 12/7/02 7:12:34 PM
Decay Corrected To 11/21/02 10:40:00 AM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.03 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/7/02

Supervisory Review PLAges Date 12/7/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0168.CNF
 Spectrum Number VA020168.CNF
 Sample Description O/S Surface 0-6"#27
 Sample Type Soil

Peak Locate Performed on 12/7/02 7:24:28 PM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	951.26	0.2001	238.01	6.15	1.2677
2	1404.87	0.2289	351.40	3.98	1.4091
3	2329.49	0.2038	582.44	4.71	1.4253
4	2433.58	0.2246	608.49	3.71	1.4704
5	5837.95	0.1462	1459.09	5.85	2.4710

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0168.CNF
 Spectrum Number VA020168.CNF
 Sample Description O/S Surface 0-6"#27

Peak Analysis Performed on 12/7/02 7:24:28 PM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	943-	959	951.22	238.01	1.30E+002	23.55	5.00E+001
F	2	1399-	1412	1405.01	351.40	5.99E+001	16.14	1.58E+001
F	3	2323-	2337	2329.58	582.44	5.01E+001	14.23	5.72E+000
F	4	2425-	2442	2433.83	608.49	4.03E+001	14.05	1.61E+001
F	5	5826-	5850	5837.86	1459.09	1.29E+002	21.75	0.00E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0168.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.889	1460.81*	10.67	2.095E-005	3.754E-006
TL-208	0.425	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	4.766E-007	1.394E-007
		763.13	1.64		
		860.37	12.46		
PB-212	0.305	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.222E-006	2.402E-007
BI-214	0.257	300.09	3.41		
		609.31*	46.30	7.214E-007	2.581E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
1377.67	4.11				
		1764.49	15.80		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0168.CNF
 Spectrum Number VA020168.CNF

Performed & Reviewed By LC. Lunn Date 12/07/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.889	2.09E-005	3.75E-006	17.9
TL-208 @	0.425	4.77E-007	1.39E-007	29.2
PB-212	0.305	1.22E-006	2.40E-007	19.7
BI-214	0.257	7.21E-007	2.58E-007	35.8

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.40	9.9815E-002	26.95 <i>PB-214</i>

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

*** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/8/02 7:19:33 AM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0169.CNF
Spectrum Number VA020169.CNF
Sample Description O/S Sub-Surface 6-12"#27
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.713E+002 g
Sample Collection Date 11/21/02 10:40:00 AM
Spectrum Collection Date 12/7/02 7:23:27 PM
Decay Corrected To 11/21/02 10:40:00 AM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.03 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By

PLG

Date

12/8/02

Supervisory Review

L. Finn

Date

12/8/02

***** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0169.CNF
Spectrum Number VA020169.CNF
Sample Description O/S Sub-Surface 6-12"#27
Sample Type Soil

Peak Locate Performed on 12/8/02 7:19:32 AM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	951.34	0.1929	238.05	6.42	1.2464
2	1177.78	0.2488	294.64	3.63	1.1977
3	1405.22	0.2295	351.36	3.88	1.4153
4	2329.07	0.2167	582.34	4.76	1.1447
5	2432.81	0.1939	608.21	4.35	1.6597
6	5838.11	0.1316	1459.20	8.16	2.1509

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0169.CNF
 Spectrum Number VA020169.CNF
 Sample Description O/S Sub-Surface 6-12"#27

Peak Analysis Performed on 12/8/02 7:19:33 AM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	945-	957	951.38	238.05	1.41E+002	24.63	4.23E+001
F	2	1170-	1185	1177.83	294.64	4.29E+001	14.58	2.52E+001
F	3	1398-	1413	1404.84	351.36	5.87E+001	16.41	2.36E+001
F	4	2322-	2335	2329.18	582.34	3.46E+001	12.79	9.19E+000
F	5	2424-	2441	2432.70	608.21	6.41E+001	16.47	1.36E+001
F	6	5827-	5850	5838.30	1459.20	1.68E+002	25.28	3.72E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0169.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.902	1460.81*	10.67	2.589E-005	4.224E-006
TL-208	0.421	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	3.142E-007	1.183E-007
		763.13	1.64		
		860.37	12.46		
PB-212	0.306	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.264E-006	2.413E-007
		300.09	3.41		
BI-214	0.247	609.31*	46.30	1.096E-006	2.949E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		
PB-214	0.454	53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	1.029E-006	3.597E-007
		351.92*	37.20	8.218E-007	2.390E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

**** GAMMA SPECTRUM ANALYSIS ****

Report Generated On 12/8/02 7:01:41 AM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0170.CNF
Spectrum Number VA020170.CNF
Sample Description O/S Surface 0-6"#28
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.488E+002 g
Sample Collection Date 11/21/02 10:40:00 AM
Spectrum Collection Date 12/7/02 7:35:28 PM
Decay Corrected To 11/21/02 10:40:00 AM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.03 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By *[Signature]* For L. Finn Date 12/12/02

Supervisory Review *[Signature]* Date 12/8/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0170.CNF
 Spectrum Number VA020170.CNF
 Sample Description O/S Surface 0-6"#28
 Sample Type Soil

Peak Locate Performed on 12/8/02 7:01:40 AM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	951.41	0.2156	238.04	5.23	1.4541
2	1178.11	0.2377	294.73	4.00	1.1902
3	1404.40	0.2152	351.37	4.32	1.5642
4	2328.08	0.2377	582.12	3.70	1.1511
5	3638.26	0.2187	909.49	3.81	1.3148
6	5838.28	0.1334	1459.17	7.78	2.1830

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0170.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.898	1460.81*	10.67	2.700E-005	4.454E-006
TL-208	0.410	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	2.911E-007	1.221E-007
		763.13	1.64		
PB-212	0.306	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.266E-006	2.470E-007
PB-214	0.455	300.09	3.41		
		53.23 @	1.11		
		74.81	6.21		
		77.11	10.50		
		87.30	4.67		
		241.98	7.49		
		295.21*	19.20	1.186E-006	4.090E-007
		351.92*	37.20	1.287E-006	2.878E-007

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.

C:\GENIE2K\CAMFILES\VA-02-0170.CNF

Spectrum Number

VA020170.CNF

Performed & Reviewed By

APK For L. Finn

Date

12/12/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.898	2.70E-005	4.45E-006	16.5
TL-208 @	0.410	2.91E-007	1.22E-007	41.9
PB-212	0.306	1.27E-006	2.47E-007	19.5
PB-214 @	0.455	1.25E-006	2.35E-007	18.8

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 5	909.49	3.9782E-002	46.79 AC-208

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

***** GAMMA SPECTRUM ANALYSIS *****

Report Generated On 12/8/02 7:16:10 AM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0171.CNF
Spectrum Number VA020171.CNF
Sample Description O/S Sub-Surface 6-12"#28
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.512E+002 g
Sample Collection Date 11/21/02 10:40:00 AM
Spectrum Collection Date 12/8/02 6:59:25 AM
Decay Corrected To 11/21/02 10:40:00 AM
Collected By L. Finn

Live Time 600.6 seconds
Real Time 600.9 seconds
% Dead Time 0.03 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By *L. Finn* Date 12/12/02
Supervisory Review *PLB* Date 12/8/02

 **** P E A K L O C A T E R E P O R T ****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0171.CNF
 Spectrum Number VA020171.CNF
 Sample Description O/S Sub-Surface 6-12"#28
 Sample Type Soil

Peak Locate Performed on 12/8/02 7:16:09 AM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.92	0.2216	238.66	3.72	1.5039
2	1407.23	0.2261	352.00	4.16	1.5313
3	2333.48	0.2140	583.40	4.01	1.6296
4	2437.18	0.2121	609.31	4.61	1.0010
5	5849.27	0.1330	1461.93	7.98	2.1665

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0171.CNF
 Spectrum Number VA020171.CNF
 Sample Description O/S Sub-Surface 6-12"#28

Peak Analysis Performed on 12/8/02 7:16:09 AM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	946-	963	953.80	238.66	1.11E+002	21.91	5.44E+001
F	2	1399-	1415	1407.41	352.00	7.42E+001	17.33	2.12E+001
F	3	2326-	2340	2333.41	583.40	4.88E+001	13.89	6.22E+000
F	4	2431-	2444	2437.12	609.31	3.83E+001	13.40	1.05E+001
F	5	5837-	5861	5849.20	1461.93	1.60E+002	24.54	2.02E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0171.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.951	1460.81*	10.67	2.666E-005	4.420E-006
TL-208	0.436	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	4.788E-007	1.404E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.081E-006	2.280E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	7.077E-007	2.539E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
1238.11	5.94				
		1377.67	4.11		
		1764.49	15.80		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0171.CNF
 VA020171.CNF

Performed & Reviewed By

[Signature]
 Fu L. Fann

Date 12/12/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.951	2.67E-005	4.42E-006	16.6
TL-208 @	0.436	4.79E-007	1.40E-007	29.3
PB-212	0.313	1.08E-006	2.28E-007	21.1
BI-214	0.269	7.08E-007	2.54E-007	35.9

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	352.00	1.2359E-001	23.35 PB-214

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

*** G A M M A S P E C T R U M A N A L Y S I S *****

Report Generated On 12/8/02 7:37:34 AM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0172.CNF
Spectrum Number VA020172.CNF
Sample Description O/S Surface 0-6"#29
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.565E+002 g
Sample Collection Date 11/21/02 12:45:00 PM
Spectrum Collection Date 12/8/02 7:15:46 AM
Decay Corrected To 11/21/02 12:45:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.03 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By L. Finn Date 12/08/02

Supervisory Review R. O. Jones Date 12/16/02

 **** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0172.CNF
 Spectrum Number VA020172.CNF
 Sample Description O/S Surface 0-6"#29
 Sample Type Soil

Peak Locate Performed on 12/8/02 7:37:33 AM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.29	0.2173	238.56	5.51	1.1098
2	1407.00	0.2274	351.83	3.76	1.5610
3	2333.82	0.2169	583.49	4.05	1.5111
4	2437.65	0.2217	609.42	3.98	1.3494
5	3647.87	0.2161	911.85	3.92	1.4179
6	5848.88	0.1412	1461.96	6.65	2.2604

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0172.CNF
Spectrum Number VA020172.CNF
Sample Description O/S Surface 0-6"#29

Peak Analysis Performed on 12/8/02 7:37:33 AM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F 1	947-	961	953.40	238.56	8.43E+001	20.86	5.73E+001
F 2	1398-	1413	1406.72	351.83	6.66E+001	16.12	1.46E+001
F 3	2326-	2342	2333.77	583.49	4.40E+001	13.60	8.21E+000
F 4	2431-	2444	2437.56	609.42	3.71E+001	13.26	1.06E+001
F 5	3641-	3654	3647.87	911.85	2.76E+001	11.40	5.86E+000
F 6	5838-	5861	5849.33	1461.96	1.29E+002	22.05	0.00E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0172.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.949	1460.81*	10.67	2.110E-005	3.841E-006
TL-208	0.434	84.90	1.52		
		277.35	6.80		
		510.84 @	21.60		
		583.14*	84.20	4.236E-007	1.342E-007
		763.13	1.64		
PB-212	0.313	860.37	12.46		
		74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	8.028E-007	2.077E-007
BI-214	0.269	300.09	3.41		
		609.31*	46.30	6.728E-007	2.461E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
1238.11	5.94				
		1377.67	4.11		
		1764.49	15.80		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0172.CNF
 VA020172.CNF

Performed & Reviewed By

SC. Fenn

Date

12/08/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.949	2.11E-005	3.84E-006	18.2
TL-208 @	0.434	4.24E-007	1.34E-007	31.7
PB-212	0.313	8.03E-007	2.08E-007	25.9
BI-214	0.269	6.73E-007	2.46E-007	36.6

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.83	1.1100E-001	24.20 PB-214 807
F 5	911.85	4.5944E-002	41.34 AC-228 807

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

*** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/8/02 7:48:32 AM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0173.CNF
Spectrum Number VA020173.CNF
Sample Description O/S Sub-Surface 6-12"#29
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.735E+002 g
Sample Collection Date 11/21/02 12:45:00 PM
Spectrum Collection Date 12/8/02 7:35:39 AM
Decay Corrected To 11/21/02 12:45:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.03 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By LC. Finn Date 12/08/02

Supervisory Review PL & J Date 12/16/02

**** P E A K L O C A T E R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0173.CNF
Spectrum Number VA020173.CNF
Sample Description O/S Sub-Surface 6-12"#29
Sample Type Soil

Peak Locate Performed on 12/8/02 7:48:30 AM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.58	0.2268	238.40	4.71	1.4632
2	1406.29	0.2378	351.93	3.74	1.7508
3	2438.82	0.2139	609.67	4.34	1.4726
4	5850.93	0.1446	1462.17	6.13	2.4751

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0173.CNF
 Spectrum Number VA020173.CNF
 Sample Description O/S Sub-Surface 6-12"#29

Peak Analysis Performed on 12/8/02 7:48:31 AM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F 1	943-	960	952.78	238.40	1.03E+002	22.18	6.34E+001
F 2	1398-	1415	1407.12	351.93	7.14E+001	16.78	2.10E+001
F 3	2431-	2447	2438.56	609.67	4.23E+001	13.59	8.50E+000
F 4	5838-	5861	5850.18	1462.17	1.36E+002	22.69	3.97E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0173.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.929	1460.81*	10.67	2.093E-005	3.718E-006
PB-212	0.312	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	9.218E-007	2.099E-007
		300.09	3.41		
BI-214	0.267	609.31*	46.30	7.197E-007	2.380E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
		1377.67	4.11		
		1764.49	15.80		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0173.CNF
 Spectrum Number VA020173.CNF

Performed & Reviewed By SC. Linn Date 12/08/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.929	2.09E-005	3.72E-006	17.8
PB-212	0.312	9.22E-007	2.10E-007	22.8
BI-214	0.267	7.20E-007	2.38E-007	33.1

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.93	1.1899E-001	23.51 PB 214 RCY

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.96 sigma

*** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/8/02 7:59:36 AM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0174.CNF
Spectrum Number VA020174.CNF
Sample Description O/S Surface 0-6" #30
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.621E+002 g
Sample Collection Date 11/21/02 1:00:00 PM
Spectrum Collection Date 12/8/02 7:47:01 AM
Decay Corrected To 11/21/02 1:00:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.03 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By L. Finn Date 12/08/02

Supervisory Review P. L. G. Date 12/16/02

 ***** P E A K L O C A T E R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0174.CNF
 Spectrum Number VA020174.CNF
 Sample Description O/S Surface 0-6" #30
 Sample Type Soil

Peak Locate Performed on 12/8/02 7:59:35 AM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.06	0.2199	238.48	4.11	1.3797
2	1406.04	0.2527	351.68	3.76	0.3779
3	2437.58	0.1993	609.41	5.30	1.1290
4	5849.84	0.1397	1462.03	7.03	2.1723

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0174.CNF
 Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.942	1460.81*	10.67	2.073E-005	3.779E-006
PB-212	0.313	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.002E-006	2.183E-007
		300.09	3.41		
BI-214	0.269	609.31*	46.30	7.982E-007	2.663E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
	1377.67	4.11			
	1764.49	15.80			

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0174.CNF
 Spectrum Number VA020174.CNF

Performed & Reviewed By SP. Linn Date 12/08/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.942	2.07E-005	3.78E-006	18.2
PB-212	0.313	1.00E-006	2.18E-007	21.8
BI-214	0.269	7.98E-007	2.66E-007	33.4

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.68	4.7972E-002	40.26 <i>Pb-214 92%</i>

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

*** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/8/02 8:13:58 AM

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0175.CNF
Spectrum Number VA020175.CNF
Sample Description O/S Sub-Surface 6-12" #30
Sample Type Soil
Sample Geometry 2

Peak Locate Threshold 3.50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 2.00 keV

Sample Size 2.745E+002 g
Sample Collection Date 11/21/02 1:00:00 PM
Spectrum Collection Date 12/8/02 7:58:34 AM
Decay Corrected To 11/21/02 1:00:00 PM
Collected By L. Finn

Live Time 600.0 seconds
Real Time 600.2 seconds
% Dead Time 0.03 %
Background Type STEP

Energy Calibration Performed On 11/13/02
Efficiency Calibration Performed On 11/13/02
Calibration Geometry Used 2

Performed & Reviewed By Dr. Finn Date 12/08/02

Supervisory Review P. C. G. Date 12/16/02

 **** P E A K L O C A T E R E P O R T ****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0175.CNF
 Spectrum Number VA020175.CNF
 Sample Description O/S Sub-Surface 6-12" #30
 Sample Type Soil

Peak Locate Performed on 12/8/02 8:13:57 AM
 Peak Locate From Channel 100
 Peak Locate To Channel 8192
 Peak Search Sensitivity 3.50
 MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	953.65	0.2223	238.56	4.74	1.5032
2	2438.01	0.1997	609.54	4.85	1.5185
3	5849.72	0.1462	1462.01	5.80	2.5241

Errors quoted at 1.96 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0175.CNF
Spectrum Number VA020175.CNF
Sample Description O/S Sub-Surface 6-12" #30

Peak Analysis Performed on 12/8/02 8:13:57 AM
Peak Analysis From Channel 100
Peak Analysis To Channel 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F 1	945-	960	953.40	238.56	1.26E+002	23.60	6.12E+001
F 2	2431-	2446	2438.02	609.54	5.55E+001	15.13	8.00E+000
F 3	5838-	5861	5849.54	1462.01	1.36E+002	22.41	1.91E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.96 sigma

***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0175.CNF
Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.944	1460.81*	10.67	2.085E-005	3.665E-006
PB-212	0.313	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	1.118E-006	2.264E-007
BI-214	0.268	300.09	3.41		
		609.31*	46.30	9.393E-007	2.669E-007
		768.36	5.04		
		806.17	1.23		
		934.06	3.21		
		1120.29	15.10		
		1155.19	1.70		
		1238.11	5.94		
1377.67	4.11				
		1764.49	15.80		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy tolerance used was 2.000
Nuclide confidence index threshold = 0.10
Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0175.CNF
 Spectrum Number VA020175.CNF

Performed & Reviewed By SC. Lenn Date 12/08/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.944	2.09E-005	3.67E-006	17.6
PB-212	0.313	1.12E-006	2.26E-007	20.2
BI-214	0.268	9.39E-007	2.67E-007	28.4

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
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All peaks were identified.

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 *** GAMMA SPECTRUM ANALYSIS ***

Report Generated On 12/8/02 9:16:52 AM

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0181.CNF
 Spectrum Number VA020181.CNF
 Sample Description Pkg.N0002 (Roof Pepples)
 Sample Type Pebbles
 Sample Geometry 2

Peak Locate Threshold 3.50
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 2.00 keV

Sample Size 4.307E+002 g
 Sample Collection Date 12/6/02 3:00:00 PM
 Spectrum Collection Date 12/8/02 8:47:15 AM
 Decay Corrected To 12/6/02 3:00:00 PM
 Collected By L. Finn

Live Time 600.0 seconds
 Real Time 600.2 seconds
 % Dead Time 0.04 %
 Background Type STEP

Energy Calibration Performed On 11/13/02
 Efficiency Calibration Performed On 11/13/02
 Calibration Geometry Used 2

Performed & Reviewed By L. Finn Date 12/08/02

Supervisory Review P. A. Jes Date 12/16/02

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*****  
***** P E A K   L O C A T E   R E P O R T *****  
*****
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Detector DET01
Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0181.CNF
Spectrum Number VA020181.CNF
Sample Description Pkg.N0002 (Roof Pepples)
Sample Type Pebbles

Peak Locate Performed on 12/8/02 9:16:51 AM
Peak Locate From Channel 100
Peak Locate To Channel 8192
Peak Search Sensitivity 3.50
MDA Confidence 5.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance	FWHM (keV)
1	950.62	0.2327	237.89	4.28	1.4266
2	1404.73	0.2363	351.29	3.55	1.5703
3	5839.19	0.1190	1459.38	9.28	2.2552

Errors quoted at 1.96 sigma

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector DET01
 Sample I.D. C:\GENIE2K\CAMFILES\VA-02-0181.CNF
 Spectrum Number VA020181.CNF
 Sample Description Pkg.N0002 (Roof Pepples)

Peak Analysis Performed on 12/8/02 9:16:51 AM
 Peak Analysis From Channel 100
 Peak Analysis To Channel 8192

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	942-	960	950.71	237.89	9.92E+001	21.28	6.56E+001
F	2	1396-	1414	1404.54	351.29	6.07E+001	16.17	2.50E+001
F	3	5826-	5852	5839.03	1459.38	2.69E+002	31.87	8.55E+000

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample I.D.

C:\GENIE2K\CAMFILES\VA-02-0181.CNF

Nuclide Library Used C:\GENIE2K\CAMFILES\MYAP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.922	1460.81*	10.67	2.617E-005	3.504E-006
PB-212	0.302	74.82	10.70		
		77.11	18.00		
		87.30	8.00		
		238.63*	44.60	5.613E-007	1.277E-007
		300.09	3.41		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy tolerance used was 2.000

Nuclide confidence index threshold = 0.10

Errors quoted at 1.960 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Sample I.D.
 Spectrum Number

C:\GENIE2K\CAMFILES\VA-02-0181.CNF
 VA020181.CNF

Performed & Reviewed By Jo. Linn Date 12/08/02

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty	Wt mean Activity % Uncertainty
K-40	0.922	2.62E-005	3.50E-006	13.4
PB-212	0.302	5.61E-007	1.28E-007	22.8

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.96 sigma

***** UNIDENTIFIED PEAKS *****

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
F 2	351.29	1.0119E-001	26.64 PB-214 RCY

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 1.96 sigma