State of Missouri
Department of Natural Resources

DEQ/HWP/FFS

STANDARD LEVEL IV
REPORT OF ANALYSIS

WORK ORDER #05-09117-OR

October 18, 2005

EBERLINE SERVICES/OAK RIDGE LABORATORY
OAK RIDGE, TN

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Eberline Services – Oak Ridge Laboratory

LABORATORY DATA SUPPORT CHECKLIST
MP-001-3

Eberline Services Work Order # 05-09117

The checklist items listed below are to be initialed by appropriate staff upon completion/verification.

Date for Partial	Initials	Date	Initials	Checklist Items
		9/30/05	KCAB	Sample Log-In
		10/10/05	KBS	Data Compilation
		10-11-05	MLT	Technical Data Review MLT 10/15/05
		10/17/05	JP	Data Entry/Electronic Deliverable
		10/17/05	JP	Case Narrative
		10/18/05	[illegible]	Electronic Deliverable Proof
		10/18/05	[illegible]	Samples Analyzed within Holding Time YES
		10/18/05	[illegible]	QA/QC Review
				Invoiced by Laboratory

Technical/Clerical Corrections, Signatures Needed, Problems,Etc	Date/Initials

Date package approved by: [signature] 10/18/05

Laboratory Manager Date

SECTION I

CHAIN OF CUSTODY

05-09117

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Collector's Name (Please Print): **Eric Gilstrap**

Affiliation (Division/Program/Section): DEQ ~~ALPD~~/HWP/FFS

Description of Shipment
X Shipped-Carrier: UPS
X Tape sealed and initialed
__ Hand Delivered
No. Of Containers: 4

	Sample Number	Sample Collected	Analyses	Sample Type	For Lab Use Only: Matrix	Container	Preserved
4	VPBR092705SL01	Date: 09/27/05	Iso Th, Iso U, Ra_{226}	X Grab	Water	1L amber	H_2SO_4
				Composite	X Soil	Cubitainer	HNO_3
				Modified	Organic	2 oz glass	NAOH
		Time:		Other:	Sludge	8 oz glass	HCL
	For Lab Use Only	9:30 AM	pH / Temp. / Spec. Cond. / D.O. / Flow / Other:		Other:	VOA vial	X None
						Encore	Disinfected
						X Other:	
5	VPBR092705SL02	Date: 09/27/05	Iso Th, Iso U, Ra_{226}	X Grab	Water	1L amber	H_2SO_4
				Composite	X Soil	Cubitainer	HNO_3
				Modified	Organic	2 oz glass	NAOH
		Time:		Other:	Sludge	8 oz glass	HCL
	For Lab Use Only	9:34 AM	pH / Temp. / Spec. Cond. / D.O. / Flow / Other:		Other:	VOA vial	X None
						Encore	Disinfected
						X Other:	
6	VPBR092705SL03	Date: 09/27/05	Iso Th, Iso U, Ra_{226}	X Grab	Water	1L amber	H_2SO_4
				Composite	X Soil	Cubitainer	HNO_3
				Modified	Organic	2 oz glass	NAOH
		Time:		Other:	Sludge	8 oz glass	HCL
	For Lab Use Only	9:37 AM	pH / Temp. / Spec. Cond. / D.O. / Flow / Other:		Other:	VOA vial	X None
						Encore	Disinfected
						X Other:	
7	VPBR092705SL04	Date: 09/27/05	Iso Th, Iso U, Ra_{226}	X Grab	Water	1L amber	H_2SO_4
				Composite	X Soil	Cubitainer	HNO_3
				Modified	Organic	2 oz glass	NAOH
		Time:		Other:	Sludge	8 oz glass	HCL
	For Lab Use Only	9:40 AM	pH / Temp. / Spec. Cond. / D.O. / Flow / Other:		Other:	VOA vial	X None
						Encore	Disinfected
						X Other:	

Relinquished By:	Received By:	Date:	Time:
Eric Gilstrap via UPS		9/29/05	
UPS	K Bannister	9/30/05	0935

SEP 30 2005
TMA/Ebenline
OAK RIDGE LAB

05-09117

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Collector's Name (Please Print): **Eric Gilstrap**

Affiliation (Division/Program/Section): DEQ ~~ALPD~~/HWP/FFS

Description of Shipment
X Shipped-Carrier: UPS
X Tape sealed and initialed
Hand Delivered
No. Of Containers: 4

	Sample Number	Sample Collected	Analyses	Sample Type	For Lab Use Only: Matrix	Container	Preserved
8	VPBR092705SL05	Date: 09/27/05	Iso Th, Iso U, Ra_{226}	X Grab	Water	1L amber	H_2SO_4
				Composite	X Soil	Cubitainer	HNO_3
		Time:		Modified	Organic	2 oz glass	NAOH
	For Lab Use Only	9:44 AM	pH / Temp. / Spec. Cond. / D.O. / Flow / Other:	Other:	Sludge	8 oz glass	HCL
					Other:	VOA vial	X None
						Encore	Disinfected
						X Other:	
9	VPBR092705SL06	Date: 09/27/05	Iso Th, Iso U, Ra_{226}	X Grab	Water	1L amber	H_2SO_4
				Composite	X Soil	Cubitainer	HNO_3
		Time:		Modified	Organic	2 oz glass	NAOH
	For Lab Use Only	9:50 AM	pH / Temp. / Spec. Cond. / D.O. / Flow / Other:	Other:	Sludge	8 oz glass	HCL
					Other:	VOA vial	X None
						Encore	Disinfected
						X Other:	
10	VPBR092705SL07	Date: 09/27/05	Iso Th, Iso U, Ra_{226}	X Grab	Water	1L amber	H_2SO_4
				Composite	X Soil	Cubitainer	HNO_3
		Time:		Modified	Organic	2 oz glass	NAOH
	For Lab Use Only	9:52 AM	pH / Temp. / Spec. Cond. / D.O. / Flow / Other:	Other:	Sludge	8 oz glass	HCL
					Other:	VOA vial	X None
						Encore	Disinfected
						X Other:	
11	VPBR092705SL08	Date: 09/27/05	Iso Th, Iso U, Ra_{226}	X Grab	Water	1L amber	H_2SO_4
				Composite	X Soil	Cubitainer	HNO_3
		Time:		Modified	Organic	2 oz glass	NAOH
	For Lab Use Only	9:56 AM	pH / Temp. / Spec. Cond. / D.O. / Flow / Other:	Other:	Sludge	8 oz glass	HCL
					Other:	VOA vial	X None
						Encore	Disinfected
						X Other:	

Relinquished By:	Received By:	Date:	Time:
Eric Gilstrap via UPS		9/29/05	
UPS	K Bannister	9/30/05	0935

RECEIVED SEP 30 2005 IMAC Energy Oak Ridge Lab

05-09117

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Collector's Name (Please Print): **Eric Gilstrap**

Affiliation (Division/Program/Section): DEQ ~~ALPD~~/HWP/FFS

Description of Shipment
X Shipped-Carrier: UPS
X Tape sealed and initialed
__ Hand Delivered
No. Of Containers: 4

	Sample Number	Sample Collected	Analyses						Sample Type	For Lab Use Only: Matrix	Container	Preserved
12	VPBR092705SL09	Date: 09/27/05	Iso Th, Iso U, Ra_{226}						X Grab	Water	1L amber	H_2SO_4
									Composite	X Soil	Cubitainer	HNO_3
		Time:							Modified	Organic	2 oz glass	NAOH
	For Lab Use Only	11:30 AM	pH	Temp.	Spec. Cond.	D.O.	Flow	Other:	Other:	Sludge	8 oz glass	HCL
										Other:	VOA vial	X None
											Encore	Disinfected
											X Other:	
13	VPBR092705SL10	Date: 09/27/05	Iso Th, Iso U, Ra_{226}						X Grab	Water	1L amber	H_2SO_4
									Composite	X Soil	Cubitainer	HNO_3
		Time:							Modified	Organic	2 oz glass	NAOH
	For Lab Use Only	11:36 AM	pH	Temp.	Spec. Cond.	D.O.	Flow	Other:	Other:	Sludge	8 oz glass	HCL
										Other:	VOA vial	X None
											Encore	Disinfected
											X Other:	
14	VPBR092705SL11	Date: 09/27/05	Iso Th, Iso U, Ra_{226}						X Grab	Water	1L amber	H_2SO_4
									Composite	X Soil	Cubitainer	HNO_3
		Time:							Modified	Organic	2 oz glass	NAOH
	For Lab Use Only	11:25 AM	pH	Temp.	Spec. Cond.	D.O.	Flow	Other:	Other:	Sludge	8 oz glass	HCL
										Other:	VOA vial	X None
											Encore	Disinfected
											X Other:	
15	VPBR092705SL12	Date: 09/27/05	Iso Th, Iso U, Ra_{226}						X Grab	Water	1L amber	H_2SO_4
									Composite	X Soil	Cubitainer	HNO_3
		Time:							Modified	Organic	2 oz glass	NAOH
	For Lab Use Only	11:23 AM	pH	Temp.	Spec. Cond.	D.O.	Flow	Other:	Other:	Sludge	8 oz glass	HCL
										Other:	VOA vial	X None
											Encore	Disinfected
											X Other:	

Relinquished By:	Received By:	Date:	Time:
Eric Gilstrap via UPS		9/29/05	
UPS	R Bannister	9/30/05	0935

SEP 30 2005
TMA/Eberline
OAK RIDGE LAB

05-09117

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Collector's Name (Please Print): **Eric Gilstrap**

Affiliation (Division/Program/Section): DEQ ~~ALPD~~/HWP/FFS

Description of Shipment
X Shipped-Carrier: UPS
X Tape sealed and initialed
__ Hand Delivered
No. Of Containers: 4

	Sample Number	Sample Collected	Analyses						Sample Type	For Lab Use Only: Matrix	Container	Preserved
16	VPBR092705SL13	Date: 09/27/05	Iso Th, Iso U, Ra_{226}						X Grab	Water	1L amber	H_2SO_4
		Time: 11:18 AM							__ Composite	X Soil	Cubitainer	HNO_3
									__ Modified	Organic	2 oz glass	NAOH
	For Lab Use Only		pH	Temp.	Spec. Cond.	D.O.	Flow	Other:	__ Other:	Sludge	8 oz glass	HCL
										Other:	VOA vial	X None
											Encore	Disinfected
											X Other:	
17	VPBR092705SL14	Date: 09/27/05	Iso Th, Iso U, Ra_{226}						X Grab	Water	1L amber	H_2SO_4
		Time: 11:15 AM							__ Composite	X Soil	Cubitainer	HNO_3
									__ Modified	Organic	2 oz glass	NAOH
	For Lab Use Only		pH	Temp.	Spec. Cond.	D.O.	Flow	Other:	__ Other:	Sludge	8 oz glass	HCL
										Other:	VOA vial	X None
											Encore	Disinfected
											X Other:	
19	VPBR092705SL15	Date: 09/27/05	Iso Th, Iso U, Ra_{226}						X Grab	Water	1L amber	H_2SO_4
		Time: 11:13 AM							__ Composite	X Soil	Cubitainer	HNO_3
									__ Modified	Organic	2 oz glass	NAOH
	For Lab Use Only		pH	Temp.	Spec. Cond.	D.O.	Flow	Other:	__ Other:	Sludge	8 oz glass	HCL
										Other:	VOA vial	X None
											Encore	Disinfected
											X Other:	
19	VPBR092705SL16	Date: 09/27/05	Iso Th, Iso U, Ra_{226}						X Grab	Water	1L amber	H_2SO_4
		Time: 11:05 AM							__ Composite	X Soil	Cubitainer	HNO_3
									__ Modified	Organic	2 oz glass	NAOH
	For Lab Use Only		pH	Temp.	Spec. Cond.	D.O.	Flow	Other:	__ Other:	Sludge	8 oz glass	HCL
										Other:	VOA vial	X None
											Encore	Disinfected
											X Other:	

Relinquished By:	Received By:	Date:	Time:
Eric Mikty via UPS		9/29/05	
UPS	K Bannister	9/30/05	0935

SEP 30 2005
MO-DNR Expedite
JAK SIDE LAB

EBERLINE SERVICES Oak Ridge Laboratory	Internal Chain of Custody	Work Order #	05-09117
		Lab Deadline	10/20/2005
		Analysis	UUISO - Level 4
		Sample Matrix	Soil/Solid

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	37	H1.4
	05	40	H1.4
	06	41	H1.4
	07	51	H1.4
	08	46	H1.4
	09	50	H1.4
	10	40	H1.4
	11	46	H1.4
	12	49	H1.4
	13	48	H1.4
	14	51	H1.4
	15	34	H1.4
	16	51	H1.4
	17	44	H1.4
	18	41	H1.4
	19	53	H1.4

	Location (circle one)					Initials	Date
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1300	Kenny Selling	9-30-05
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1450	Kenny Selling	10-3-05
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	10/3/05 1450
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	10/3/05 2050
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	10/3/05 1050
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	10-7-05 0700
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	10-7-05 0700
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	10-7-05 1110
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

EBERLINE SERVICES Oak Ridge Laboratory	Internal Chain of Custody	Work Order #	05-09117
		Lab Deadline	10/20/2005
		Analysis	ThISO - Level 4
		Sample Matrix	Soil/Solid

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	37	H1.4
	05	40	H1.4
	06	41	H1.4
	07	51	H1.4
	08	46	H1.4
	09	50	H1.4
	10	40	H1.4
	11	46	H1.4
	12	49	H1.4
	13	48	H1.4
	14	51	H1.4
	15	34	H1.4
	16	51	H1.4
	17	44	H1.4
	18	41	H1.4
	19	53	H1.4

	Location (circle one)					Initials	Date
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1300	Kenny Sellers	9-30-05
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1450	Kenny Sellers	10-3-05
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	10/3/05 1450
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	10/4/05 0730
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	10-6-05 0730
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	10-10-05 0700
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	10-10-05 0700
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	10-10-05 1030
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

Printed: 9/30/2005 10:56 AM

EBERLINE SERVICES Oak Ridge Laboratory	Internal Chain of Custody	Work Order #	05-09117
		Lab Deadline	10/20/2005
		Analysis	Ra226 - Level 4
		Sample Matrix	Soil/Solid

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	37	H1.4
	05	40	H1.4
	06	41	H1.4
	07	51	H1.4
	08	46	H1.4
	09	50	H1.4
	10	40	H1.4
	11	46	H1.4
	12	49	H1.4
	13	48	H1.4
	14	51	H1.4
	15	34	H1.4
	16	51	H1.4
	17	44	H1.4
	18	41	H1.4
	19	53	H1.4

	Location (circle one)					Initials	Date
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1300	Kenny Sellers	9-30-05
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 1450	Kenny Sellers	10-3-05
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	J Barnard	10/3/05 1450
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		10/5/05 16:00
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 0600		10/6/05
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 0940		10/6/05
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	10-6-05 0940
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	10-6-05 1948
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

SECTION II

SAMPLE ACKNOWLEDGEMENT

Client Name	Contract/PO	Project Type	Date Received	Required Turnaround Days	Eberline Services Work Order
Missouri Dept. of Natural Resources	C302092001	Environmental	09/30/2005	28	05-09117
Project Name	**Client WO**	**Sample Disp**	**Lab Deadline**	**Internal Deadline**	**Client Deadline**
B3Z02092	DEQ/HWP/FFS	R	10/20/2005	10/26/2005	10/27/2005

Internal ID	Client ID	Sample Date	Matrix	Storage	Ra226	ThISO	UUISO																					Ttl
01	LCS	09/30/05	SO	H1.4	X	X	X																					3
02	BLANK	09/30/05	SO	H1.4	X	X	X																					3
03	DUP	09/30/05	SO	H1.4	X	X	X																					3
04	VPBR092705SL01	09/27/05 09:30	SO	H1.4	X	X	X																					3
05	VPBR092705SL02	09/27/05 09:34	SO	H1.4	X	X	X																					3
06	VPBR092705SL03	09/27/05 09:37	SO	H1.4	X	X	X																					3
07	VPBR092705SL04	09/27/05 09:40	SO	H1.4	X	X	X																					3
08	VPBR092705SL05	09/27/05 09:44	SO	H1.4	X	X	X																					3
09	VPBR092705SL06	09/27/05 09:50	SO	H1.4	X	X	X																					3
10	VPBR092705SL07	09/27/05 09:52	SO	H1.4	X	X	X																					3
11	VPBR092705SL08	09/27/05 09:56	SO	H1.4	X	X	X																					3
12	VPBR092705SL09	09/27/05 11:30	SO	H1.4	X	X	X																					3
13	VPBR092705SL10	09/27/05 11:36	SO	H1.4	X	X	X																					3
14	VPBR092705SL11	09/27/05 11:25	SO	H1.4	X	X	X																					3
15	VPBR092705SL12	09/27/05 11:23	SO	H1.4	X	X	X																					3
16	VPBR092705SL13	09/27/05 11:18	SO	H1.4	X	X	X																					3
17	VPBR092705SL14	09/27/05 11:15	SO	H1.4	X	X	X																					3
18	VPBR092705SL15	09/27/05 11:13	SO	H1.4	X	X	X																					3
19	VPBR092705SL16	09/27/05 11:05	SO	H1.4	X	X	X																					3
																												0
		Totals Per Analysis (non QA samples)			16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

EBERLINE SERVICES

Sample Log In Report

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830

Voice: (865) 481-0683
Fax: (865) 483-4621

Invoice	Accounts Payable
	Missouri Dept. of Natural Resources
	917 Hwy 67 North #104
	Florissant, MO 63031
Voice	314-877-3252
Fax	314-877-3254
Contact	Steve Lang
Voice	314-877-3252
Fax	314-877-3254

Report Data	Steve Lang
	Missouri Dept. of Natural Resources
	917 Hwy. 67 North #104
	Florissant, MO 63031
Voice	314-877-3252
Fax	314-877-3254

Printed: 9/30/2005 10:56 AM

Eberline Services – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST

MP-001-2

WORK ORDER # 05-09117

SAMPLE MATRIX/MATRICES: (CIRCLE ONE OR BOTH)

AQUEOUS NON-AQUEOUS

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	Y	OR	N	
If aqueous, properly preserved	Y	OR	N	N/A

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	Y	OR	N
Unbroken on outside of package?	Y	OR	N
Present on samples?	Y	OR	N
Unbroken on samples?	Y	OR	N

Was chain of custody present upon sample receipt? yes

IF ANY OF THE ABOVE ARE CIRCLED, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: _____

SIGNATURE: JC Bannister DATE: 9/30/05

05-09117

Electronic copy
of letterhead

STATE OF MISSOURI Matt Blunt, Governor • Doyle Childers, Director

DEPARTMENT OF NATURAL RESOURCES

www.dnr.mo.gov

September 29, 2005

Ms. Kathy Shaulis
Eberline Services
601 Scarboro Rd.
Oak Ridge, TN 37830

Dear Ms. Shaulis:

Accompanying this letter are 43 soil samples (VPBR092705SL01, VPBR092705SL02, VPBR092705SL03, VPBR092705SL04, VPBR092705SL05, VPBR092705SL06, VPBR092705SL07, VPBR092705SL08, VPBR092705SL09, VPBR092705SL10, VPBR092705SL11, VPBR092705SL12, VPBR092705SL13, VPBR092705SL14, VPBR092705SL15, VPBR092705SL16, VPBR092705SL17, VPBR092705SL18, VPBR092705SL19, VPBR092705SL20, VPTR092805SL0A, VPTR092805SL0B, VPTR092805SL0C, VPTR092805SL0D, VPTR092805SL0E, VPTR092805SL0F, VPTR092805SL0G, VPTR092805SL0H, VPTR092805SL0I, VPTR092805SL0J, VPTR092805SL0K, VPTR092805SL0L, VPTR092805SL0M, VPTR092805SL0N, VPTR092805SL0P, VPTR092805SL0Q, VPTR092805SL0R, VPTR092805SL0S, VPTR092805SL0T, VPMR092805SL*, VPSR092805SL**, and VPSR092805SL***) that pertain to the FUSRAP St. Louis project and were obtained on September 27 and September 28, 2005 from the shoulders and drainage ditches bordering Boenker, Taussig, Mallinckrodt, and Salisbury Roads at the locations listed on the enclosed chain-of-custody records. We are requesting analysis for the following parameters:

Isotopic Thorium (Th-228, 230, 232), Isotopic Uranium (U-234, 235, 238), and Radium-226

Please fax us confirmation of having received these samples. This will help us complete our documentation needed to comply with our FY05 funding agreements. You can contact me at (314)877-3250, if you have any questions.

Sincerely,
HAZARDOUS WASTE PROGRAM
Eric Gilstrap
Eric Gilstrap, P.E.
Environmental Engineer

cc: Darrick Steen, Environmental Engineer
Jo Anne Wade, Environmental Specialist
Steve Lang, Environmental Engineer

Attachments: Chain-of-custody records.

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SECTION III

CASE NARRATIVE

EBERLINE SERVICES

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EBS-OR-23101

October 18, 2005

Steve Lang
Missouri Dept. of Natural Resources
St. Louis Field Office
917 Hwy 67 N #104
Florissant, MO 63031

CASE NARRATIVE
Work Order# 05-09117-OR

SAMPLE RECEIPT

This work order contains sixteen soil samples received 9/30/2005. These samples were analyzed for Radium-226, Isotopic Thorium and Isotopic Uranium.

CLIENT ID	LAB ID	CLIENT ID	LAB ID
VPBR092705SL01	05-09117-04	VPBR092705SL09	05-09117-12
VPBR092705SL02	05-09117-05	VPBR092705SL10	05-09117-13
VPBR092705SL03	05-09117-06	VPBR092705SL11	05-09117-14
VPBR092705SL04	05-09117-07	VPBR092705SL12	05-09117-15
VPBR092705SL05	05-09117-08	VPBR092705SL13	05-09117-16
VPBR092705SL06	05-09117-09	VPBR092705SL14	05-09117-17
VPBR092705SL07	05-09117-10	VPBR092705SL15	05-09117-18
VPBR092705SL08	05-09117-11	VPBR092705SL16	05-09117-19

The file name for these samples is 0509117.xls.

ANALYTICAL METHODS

Radium-226 was analyzed using EPA Method 903.0 Modified. Isotopic Thorium was analyzed using Method EML Th-01 Modified. Isotopic Uranium was analyzed using Method EML U-02 Modified.

ANALYTICAL RESULTS

ISOTOPIC URANIUM

Samples were prepared by removing a representative aliquot from each sample followed by mixed acid digestions as appropriate. Uranium was selectively extracted by ion exchange. Uranium was eluted, micro-precipitated and mounted on micro-porous filter media. Sample activities were then determined by alpha spectroscopy using energy specific regions of interest for Uranium-234, Uranium-235 and Uranium-238. Chemical recovery was determined by the use of a Uranium-232 tracer. Activity of the Uranium-232 tracer was determined by alpha spectroscopy using an energy specific region of interest.

ANALYTICAL RESULTS CONTINUED

ISOTOPIC URANIUM continued

Samples demonstrated slightly positive results for Uranium-234 and Uranium-238 activity, and background equivalent results for Uranium-235 activity. Chemical recovery was acceptable for all samples. Results for the Uranium-234, Uranium-235 and Uranium-238 method blank demonstrated background or non-detect equivalent activity. Results for the Uranium-234, Uranium-235 and Uranium-238 replicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Uranium-234, Uranium-235 and Uranium-238 laboratory control sample demonstrated an acceptable percent recovery.

ISOTOPIC THORIUM

Samples were prepared by removing a representative aliquot from each sample followed by mixed acid digestions as appropriate. Thorium was selectively extracted by ion exchange. Thorium was eluted, micro-precipitated and mounted on micro-porous filter media. Sample activities were then determined by alpha spectroscopy using energy specific regions of interest for Thorium-228, Thorium-230 and Thorium-232. Chemical recovery was determined by the use of a Thorium-229 tracer. Activity of the Thorium-229 tracer was determined by alpha spectroscopy using an energy specific region of interest.

Samples demonstrated near background equivalent to only slightly positive results for Thorium-228, Thorium-230 and Thorium-232 activity. Chemical recovery was acceptable for all samples. Results for the Thorium-228, Thorium-230 and Thorium-232 method blank demonstrated background equivalent activity. Results for the Thorium-228, Thorium-230 and Thorium-232 replicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Thorium-228, Thorium-230 and Thorium-232 laboratory control sample demonstrated an acceptable percent recovery.

RADIUM-226

Samples were prepared by drying, pulverizing and homogenization. Representative aliquots of samples were removed and digested using mixed acids. Radium-226 was precipitated as Radium sulfate using elemental Barium and Lead as carriers. Sulfates were dissolved in alkaline EDTA. Radium-226 was selectively precipitated from slightly acidic EDTA. Precipitates were then mounted by semi-micro-precipitation onto micro-porous filters. The samples were counted by alpha spectroscopy using an energy specific region of interest for Radium-226. Chemical recovery was calculated by the use of a Barium-133 tracer, which was determined by HPGe gamma spectroscopy.

Samples demonstrated near background equivalent to only slightly positive results for Radium-226 activity. Chemical recovery was acceptable for all samples. Results for the Radium-226 method blank demonstrated background or non-detect equivalent activity. Results for the Radium-226 replicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Radium-226 laboratory control sample demonstrated an acceptable percent recovery.

CERTIFICATION OF ACCURACY

I certify that this data report is in compliance with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.

M.R. McDougall
Laboratory Manager

Date: 10/18/2005

SECTION IV

ANALYTICAL RESULTS SUMMARY

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Affiliation: DEQ/HWP/FFS
SDG: 0509117
Matrix: Soil

Final Report of Analysis
Date Reported: 10/18/2005

Client ID	Lab ID	Date Analyzed	Analyte	Method	Result	Error	MDA	Unit	Qualifer
KNOWN	0509117-01	10/06/05	Radium-226	EPA 903.0 Modified	10.30	0.47	0.25	pCi/g	
KNOWN	0509117-01	10/10/05	Thorium-228	EML Th-01 Modified	4.51	0.16	0.13	pCi/g	
KNOWN	0509117-01	10/10/05	Thorium-230	EML Th-01 Modified	5.33	0.14	0.08	pCi/g	
KNOWN	0509117-01	10/10/05	Thorium-232	EML Th-01 Modified	4.51	0.16	0.08	pCi/g	
KNOWN	0509117-01	10/07/05	Uranium-234	EML U-02 Modified	7.97	0.29	0.06	pCi/g	
KNOWN	0509117-01	10/07/05	Uranium-235	EML U-02 Modified	0.36	0.01	0.05	pCi/g	
KNOWN	0509117-01	10/07/05	Uranium-238	EML U-02 Modified	7.76	0.28	0.04	pCi/g	J
SPIKE	0509117-01	10/06/05	Radium-226	EPA 903.0 Modified	10.98	1.44	0.25	pCi/g	
SPIKE	0509117-01	10/10/05	Thorium-228	EML Th-01 Modified	4.56	0.86	0.13	pCi/g	
SPIKE	0509117-01	10/10/05	Thorium-230	EML Th-01 Modified	4.91	0.92	0.08	pCi/g	
SPIKE	0509117-01	10/10/05	Thorium-232	EML Th-01 Modified	4.39	0.83	0.08	pCi/g	
SPIKE	0509117-01	10/07/05	Uranium-234	EML U-02 Modified	8.01	1.34	0.06	pCi/g	
SPIKE	0509117-01	10/07/05	Uranium-235	EML U-02 Modified	0.42	0.18	0.05	pCi/g	
SPIKE	0509117-01	10/07/05	Uranium-238	EML U-02 Modified	9.17	1.51	0.04	pCi/g	U
BLANK	0509117-02	10/06/05	Radium-226	EPA 903.0 Modified	0.04	0.09	0.29	pCi/g	U
BLANK	0509117-02	10/10/05	Thorium-228	EML Th-01 Modified	0.01	0.05	0.14	pCi/g	
BLANK	0509117-02	10/10/05	Thorium-230	EML Th-01 Modified	0.16	0.12	0.12	pCi/g	
BLANK	0509117-02	10/10/05	Thorium-232	EML Th-01 Modified	0.10	0.09	0.11	pCi/g	
BLANK	0509117-02	10/07/05	Uranium-234	EML U-02 Modified	0.14	0.09	0.08	pCi/g	
BLANK	0509117-02	10/07/05	Uranium-235	EML U-02 Modified	0.02	0.04	0.05	pCi/g	
BLANK	0509117-02	10/07/05	Uranium-238	EML U-02 Modified	0.05	0.06	0.07	pCi/g	U
VPBR092705SL01 DUP	0509117-03	10/06/05	Radium-226	EPA 903.0 Modified	1.02	0.32	0.16	pCi/g	
VPBR092705SL01 DUP	0509117-03	10/10/05	Thorium-228	EML Th-01 Modified	0.75	0.26	0.14	pCi/g	U
VPBR092705SL01 DUP	0509117-03	10/10/05	Thorium-230	EML Th-01 Modified	2.07	0.51	0.13	pCi/g	J
VPBR092705SL01 DUP	0509117-03	10/10/05	Thorium-232	EML Th-01 Modified	0.78	0.26	0.12	pCi/g	
VPBR092705SL01 DUP	0509117-03	10/07/05	Uranium-234	EML U-02 Modified	0.86	0.23	0.05	pCi/g	
VPBR092705SL01 DUP	0509117-03	10/07/05	Uranium-235	EML U-02 Modified	0.07	0.06	0.04	pCi/g	
VPBR092705SL01 DUP	0509117-03	10/07/05	Uranium-238	EML U-02 Modified	0.79	0.22	0.07	pCi/g	

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Matrix: Soil

Client ID	Lab ID	Date Analyzed	Analyte	Method	Result	Error	MDA	Unit	Qualifer
VPBR092705SL01	0509117-04	10/06/05	Radium-226	EPA 903.0 Modified	1.46	0.44	0.15	pCi/g	
VPBR092705SL01	0509117-04	10/10/05	Thorium-228	EML Th-01 Modified	0.85	0.27	0.14	pCi/g	
VPBR092705SL01	0509117-04	10/10/05	Thorium-230	EML Th-01 Modified	2.00	0.48	0.07	pCi/g	
VPBR092705SL01	0509117-04	10/10/05	Thorium-232	EML Th-01 Modified	0.69	0.23	0.08	pCi/g	J
VPBR092705SL01	0509117-04	10/07/05	Uranium-234	EML U-02 Modified	1.02	0.28	0.07	pCi/g	J
VPBR092705SL01	0509117-04	10/07/05	Uranium-235	EML U-02 Modified	0.08	0.07	0.09	pCi/g	
VPBR092705SL01	0509117-04	10/07/05	Uranium-238	EML U-02 Modified	0.90	0.25	0.04	pCi/g	
VPBR092705SL02	0509117-05	10/06/05	Radium-226	EPA 903.0 Modified	1.48	0.51	0.22	pCi/g	
VPBR092705SL02	0509117-05	10/10/05	Thorium-228	EML Th-01 Modified	0.66	0.24	0.13	pCi/g	
VPBR092705SL02	0509117-05	10/10/05	Thorium-230	EML Th-01 Modified	3.29	0.72	0.11	pCi/g	
VPBR092705SL02	0509117-05	10/10/05	Thorium-232	EML Th-01 Modified	0.66	0.24	0.11	pCi/g	
VPBR092705SL02	0509117-05	10/07/05	Uranium-234	EML U-02 Modified	0.89	0.27	0.04	pCi/g	
VPBR092705SL02	0509117-05	10/07/05	Uranium-235	EML U-02 Modified	0.04	0.05	0.05	pCi/g	U
VPBR092705SL02	0509117-05	10/07/05	Uranium-238	EML U-02 Modified	1.06	0.30	0.07	pCi/g	U
VPBR092705SL03	0509117-06	10/06/05	Radium-226	EPA 903.0 Modified	1.26	0.38	0.17	pCi/g	
VPBR092705SL03	0509117-06	10/10/05	Thorium-228	EML Th-01 Modified	1.13	0.34	0.13	pCi/g	
VPBR092705SL03	0509117-06	10/10/05	Thorium-230	EML Th-01 Modified	1.74	0.45	0.09	pCi/g	
VPBR092705SL03	0509117-06	10/10/05	Thorium-232	EML Th-01 Modified	1.36	0.38	0.10	pCi/g	
VPBR092705SL03	0509117-06	10/07/05	Uranium-234	EML U-02 Modified	0.99	0.27	0.06	pCi/g	
VPBR092705SL03	0509117-06	10/07/05	Uranium-235	EML U-02 Modified	0.06	0.07	0.07	pCi/g	J
VPBR092705SL03	0509117-06	10/07/05	Uranium-238	EML U-02 Modified	1.03	0.28	0.04	pCi/g	
VPBR092705SL04	0509117-07	10/06/05	Radium-226	EPA 903.0 Modified	1.10	0.33	0.14	pCi/g	
VPBR092705SL04	0509117-07	10/10/05	Thorium-228	EML Th-01 Modified	0.69	0.23	0.14	pCi/g	
VPBR092705SL04	0509117-07	10/10/05	Thorium-230	EML Th-01 Modified	1.09	0.31	0.12	pCi/g	
VPBR092705SL04	0509117-07	10/10/05	Thorium-232	EML Th-01 Modified	0.65	0.22	0.11	pCi/g	
VPBR092705SL04	0509117-07	10/07/05	Uranium-234	EML U-02 Modified	0.76	0.23	0.06	pCi/g	
VPBR092705SL04	0509117-07	10/07/05	Uranium-235	EML U-02 Modified	0.08	0.07	0.07	pCi/g	J
VPBR092705SL04	0509117-07	10/07/05	Uranium-238	EML U-02 Modified	0.75	0.23	0.03	pCi/g	

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Matrix: Soil

Client ID	Lab ID	Date Analyzed	Analyte	Method	Result	Error	MDA	Unit	Qualifer
VPBR092705SL05	0509117-08	10/06/05	Radium-226	EPA 903.0 Modified	0.92	0.30	0.07	pCi/g	
VPBR092705SL05	0509117-08	10/10/05	Thorium-228	EML Th-01 Modified	0.80	0.23	0.10	pCi/g	
VPBR092705SL05	0509117-08	10/10/05	Thorium-230	EML Th-01 Modified	1.40	0.33	0.06	pCi/g	
VPBR092705SL05	0509117-08	10/10/05	Thorium-232	EML Th-01 Modified	0.88	0.24	0.05	pCi/g	
VPBR092705SL05	0509117-08	10/07/05	Uranium-234	EML U-02 Modified	0.82	0.25	0.08	pCi/g	
VPBR092705SL05	0509117-08	10/07/05	Uranium-235	EML U-02 Modified	0.04	0.05	0.05	pCi/g	U
VPBR092705SL05	0509117-08	10/07/05	Uranium-238	EML U-02 Modified	0.72	0.23	0.07	pCi/g	
VPBR092705SL06	0509117-09	10/06/05	Radium-226	EPA 903.0 Modified	1.65	0.46	0.17	pCi/g	
VPBR092705SL06	0509117-09	10/10/05	Thorium-228	EML Th-01 Modified	1.10	0.31	0.13	pCi/g	
VPBR092705SL06	0509117-09	10/10/05	Thorium-230	EML Th-01 Modified	1.17	0.31	0.12	pCi/g	
VPBR092705SL06	0509117-09	10/10/05	Thorium-232	EML Th-01 Modified	1.04	0.29	0.10	pCi/g	
VPBR092705SL06	0509117-09	10/07/05	Uranium-234	EML U-02 Modified	0.70	0.21	0.03	pCi/g	
VPBR092705SL06	0509117-09	10/07/05	Uranium-235	EML U-02 Modified	0.04	0.05	0.04	pCi/g	U
VPBR092705SL06	0509117-09	10/07/05	Uranium-238	EML U-02 Modified	0.91	0.24	0.05	pCi/g	
VPBR092705SL07	0509117-10	10/06/05	Radium-226	EPA 903.0 Modified	1.34	0.40	0.13	pCi/g	
VPBR092705SL07	0509117-10	10/10/05	Thorium-228	EML Th-01 Modified	0.93	0.31	0.14	pCi/g	
VPBR092705SL07	0509117-10	10/10/05	Thorium-230	EML Th-01 Modified	1.88	0.49	0.12	pCi/g	
VPBR092705SL07	0509117-10	10/10/05	Thorium-232	EML Th-01 Modified	1.12	0.34	0.11	pCi/g	
VPBR092705SL07	0509117-10	10/07/05	Uranium-234	EML U-02 Modified	0.73	0.23	0.11	pCi/g	
VPBR092705SL07	0509117-10	10/07/05	Uranium-235	EML U-02 Modified	0.05	0.06	0.04	pCi/g	J
VPBR092705SL07	0509117-10	10/07/05	Uranium-238	EML U-02 Modified	0.95	0.26	0.07	pCi/g	
VPBR092705SL08	0509117-11	10/06/05	Radium-226	EPA 903.0 Modified	1.08	0.35	0.14	pCi/g	
VPBR092705SL08	0509117-11	10/10/05	Thorium-228	EML Th-01 Modified	1.24	0.35	0.13	pCi/g	
VPBR092705SL08	0509117-11	10/10/05	Thorium-230	EML Th-01 Modified	2.11	0.50	0.10	pCi/g	
VPBR092705SL08	0509117-11	10/10/05	Thorium-232	EML Th-01 Modified	1.68	0.43	0.08	pCi/g	
VPBR092705SL08	0509117-11	10/07/05	Uranium-234	EML U-02 Modified	0.83	0.25	0.04	pCi/g	
VPBR092705SL08	0509117-11	10/07/05	Uranium-235	EML U-02 Modified	0.09	0.08	0.05	pCi/g	U
VPBR092705SL08	0509117-11	10/07/05	Uranium-238	EML U-02 Modified	1.15	0.30	0.04	pCi/g	

Client ID	Lab ID	Date Analyzed	Analyte	Method	Result	Error	MDA	Unit	Qualifer
VPBR092705SL09	0509117-12	10/06/05	Radium-226	EPA 903.0 Modified	1.26	0.37	0.07	pCi/g	
VPBR092705SL09	0509117-12	10/10/05	Thorium-228	EML Th-01 Modified	0.82	0.24	0.11	pCi/g	
VPBR092705SL09	0509117-12	10/10/05	Thorium-230	EML Th-01 Modified	1.34	0.33	0.11	pCi/g	
VPBR092705SL09	0509117-12	10/10/05	Thorium-232	EML Th-01 Modified	0.87	0.24	0.06	pCi/g	
VPBR092705SL09	0509117-12	10/07/05	Uranium-234	EML U-02 Modified	0.91	0.25	0.03	pCi/g	
VPBR092705SL09	0509117-12	10/07/05	Uranium-235	EML U-02 Modified	0.06	0.06	0.04	pCi/g	U
VPBR092705SL09	0509117-12	10/07/05	Uranium-238	EML U-02 Modified	0.93	0.25	0.03	pCi/g	
VPBR092705SL10	0509117-13	10/06/05	Radium-226	EPA 903.0 Modified	2.06	0.64	0.40	pCi/g	
VPBR092705SL10	0509117-13	10/10/05	Thorium-228	EML Th-01 Modified	0.92	0.27	0.10	pCi/g	
VPBR092705SL10	0509117-13	10/10/05	Thorium-230	EML Th-01 Modified	1.33	0.35	0.11	pCi/g	
VPBR092705SL10	0509117-13	10/10/05	Thorium-232	EML Th-01 Modified	1.35	0.35	0.10	pCi/g	
VPBR092705SL10	0509117-13	10/07/05	Uranium-234	EML U-02 Modified	0.98	0.27	0.04	pCi/g	
VPBR092705SL10	0509117-13	10/07/05	Uranium-235	EML U-02 Modified	0.05	0.06	0.08	pCi/g	U
VPBR092705SL10	0509117-13	10/07/05	Uranium-238	EML U-02 Modified	1.01	0.28	0.07	pCi/g	
VPBR092705SL11	0509117-14	10/06/05	Radium-226	EPA 903.0 Modified	0.77	0.22	0.07	pCi/g	
VPBR092705SL11	0509117-14	10/10/05	Thorium-228	EML Th-01 Modified	0.56	0.20	0.11	pCi/g	
VPBR092705SL11	0509117-14	10/10/05	Thorium-230	EML Th-01 Modified	1.62	0.39	0.09	pCi/g	
VPBR092705SL11	0509117-14	10/10/05	Thorium-232	EML Th-01 Modified	0.74	0.23	0.06	pCi/g	
VPBR092705SL11	0509117-14	10/07/05	Uranium-234	EML U-02 Modified	0.70	0.22	0.09	pCi/g	
VPBR092705SL11	0509117-14	10/07/05	Uranium-235	EML U-02 Modified	0.08	0.07	0.04	pCi/g	J
VPBR092705SL11	0509117-14	10/07/05	Uranium-238	EML U-02 Modified	0.94	0.26	0.07	pCi/g	
VPBR092705SL12	0509117-15	10/06/05	Radium-226	EPA 903.0 Modified	0.85	0.27	0.10	pCi/g	
VPBR092705SL12	0509117-15	10/10/05	Thorium-228	EML Th-01 Modified	0.63	0.21	0.09	pCi/g	
VPBR092705SL12	0509117-15	10/10/05	Thorium-230	EML Th-01 Modified	1.57	0.39	0.09	pCi/g	
VPBR092705SL12	0509117-15	10/10/05	Thorium-232	EML Th-01 Modified	0.52	0.19	0.07	pCi/g	
VPBR092705SL12	0509117-15	10/07/05	Uranium-234	EML U-02 Modified	0.74	0.24	0.07	pCi/g	
VPBR092705SL12	0509117-15	10/07/05	Uranium-235	EML U-02 Modified	0.03	0.05	0.08	pCi/g	U
VPBR092705SL12	0509117-15	10/07/05	Uranium-238	EML U-02 Modified	0.71	0.23	0.07	pCi/g	

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Affiliation: DEQ/HWP/FFS
SDG: 0509117
Matrix: Soil

Client ID	Lab ID	Date Analyzed	Analyte	Method	Result	Error	MDA	Unit	Qualifer
VPBR092705SL13	0509117-16	10/06/05	Radium-226	EPA 903.0 Modified	1.08	0.32	0.10	pCi/g	
VPBR092705SL13	0509117-16	10/10/05	Thorium-228	EML Th-01 Modified	0.92	0.27	0.08	pCi/g	
VPBR092705SL13	0509117-16	10/10/05	Thorium-230	EML Th-01 Modified	1.29	0.34	0.07	pCi/g	
VPBR092705SL13	0509117-16	10/10/05	Thorium-232	EML Th-01 Modified	0.81	0.25	0.04	pCi/g	
VPBR092705SL13	0509117-16	10/07/05	Uranium-234	EML U-02 Modified	1.12	0.29	0.09	pCi/g	
VPBR092705SL13	0509117-16	10/07/05	Uranium-235	EML U-02 Modified	0.11	0.09	0.09	pCi/g	U
VPBR092705SL13	0509117-16	10/07/05	Uranium-238	EML U-02 Modified	1.12	0.29	0.10	pCi/g	
VPBR092705SL14	0509117-17	10/06/05	Radium-226	EPA 903.0 Modified	1.15	0.33	0.17	pCi/g	
VPBR092705SL14	0509117-17	10/10/05	Thorium-228	EML Th-01 Modified	0.80	0.25	0.06	pCi/g	
VPBR092705SL14	0509117-17	10/10/05	Thorium-230	EML Th-01 Modified	1.68	0.41	0.08	pCi/g	
VPBR092705SL14	0509117-17	10/10/05	Thorium-232	EML Th-01 Modified	0.50	0.19	0.06	pCi/g	
VPBR092705SL14	0509117-17	10/07/05	Uranium-234	EML U-02 Modified	0.91	0.27	0.09	pCi/g	
VPBR092705SL14	0509117-17	10/07/05	Uranium-235	EML U-02 Modified	0.11	0.09	0.05	pCi/g	J
VPBR092705SL14	0509117-17	10/07/05	Uranium-238	EML U-02 Modified	1.25	0.33	0.07	pCi/g	
VPBR092705SL15	0509117-18	10/06/05	Radium-226	EPA 903.0 Modified	1.21	0.38	0.17	pCi/g	
VPBR092705SL15	0509117-18	10/10/05	Thorium-228	EML Th-01 Modified	0.80	0.26	0.11	pCi/g	
VPBR092705SL15	0509117-18	10/10/05	Thorium-230	EML Th-01 Modified	1.31	0.35	0.07	pCi/g	
VPBR092705SL15	0509117-18	10/10/05	Thorium-232	EML Th-01 Modified	0.64	0.22	0.04	pCi/g	
VPBR092705SL15	0509117-18	10/07/05	Uranium-234	EML U-02 Modified	0.91	0.28	0.12	pCi/g	
VPBR092705SL15	0509117-18	10/07/05	Uranium-235	EML U-02 Modified	0.02	0.04	0.09	pCi/g	U
VPBR092705SL15	0509117-18	10/07/05	Uranium-238	EML U-02 Modified	1.03	0.30	0.09	pCi/g	
VPBR092705SL16	0509117-19	10/06/05	Radium-226	EPA 903.0 Modified	1.20	0.46	0.30	pCi/g	
VPBR092705SL16	0509117-19	10/10/05	Thorium-228	EML Th-01 Modified	0.64	0.23	0.11	pCi/g	
VPBR092705SL16	0509117-19	10/10/05	Thorium-230	EML Th-01 Modified	2.01	0.48	0.08	pCi/g	
VPBR092705SL16	0509117-19	10/10/05	Thorium-232	EML Th-01 Modified	0.72	0.24	0.04	pCi/g	
VPBR092705SL16	0509117-19	10/07/05	Uranium-234	EML U-02 Modified	0.96	0.28	0.10	pCi/g	
VPBR092705SL16	0509117-19	10/07/05	Uranium-235	EML U-02 Modified	0.07	0.07	0.09	pCi/g	J
VPBR092705SL16	0509117-19	10/07/05	Uranium-238	EML U-02 Modified	1.14	0.31	0.12	pCi/g	

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SECTION V

ANALYTICAL STANDARD

QA/QC REVIEWED
Date 1/16/95 Initials MA

U-8

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Radionuclide:	U-238NAT	Customer:	TMA EBERLINE
Half Life:	(4.468 ± 0.005) x 10^9 years	P.O.No.:	OR2778
Catalog No.:	7338	Reference Date:	January 1 1995 12:00 PST.
Source No.:	479-50	Contained Radioactivity:	(Total U) 8.016 μCi
		Contained Radioactivity:	(Total U) 297 kBq

Description of Solution

a. Mass of solution: 65.2896 g in a 50 ml flame sealed ampoule

b. Chemical form: Uranyl Nitrate in H2O

c. Carrier content: None

d. Density: Approximately 1.3202 g/ml @ 20°C.

Radioimpurities

Refer to attached technical data sheet

Radioactive Daughters

Refer to attached technical data sheet

Radionuclide Concentration

(Total U) 0.1228 μCi/g.

Method of Calibration

Activity calculations are based upon known specific activity and mass.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration: ±3.0%

b. Random uncertainty in assay: ±0.0%

c. Random uncertainty in weighing(s): ±2.0%

d. Total uncertainty at the 99% confidence level: ±3.6%

NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

Leak Test(s)

See reverse side for Leak Test(s) applied to this source.

Notes

1. Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia S. Shirley, 1986.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).

ERIC ALLAS
QUALITY CONTROL

29 DECEMBER 1994
Date Signed

ISOTOPE PRODUCTS LABORATORIES
3017 N. SAN FERNANDO BLVD.
BURBANK, CALIFORNIA 91504
818·843·7000 FAX 818·843·6168

EBERLINE SERVICES

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MP-009

Rev.8; 11/01/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
PRIMARY DILUTION RECERTIFICATION
MP 009

CURRENT DATE: 1/4/2005 0:00

SOLUTION REFERENCE #: IPL 479-50 SOLUTION #: U-8

Principal Radionuclide	Half Life, Years	Half Life, Days
$^{234, 235, 238}U$	4.468E+09	1.632E+12

Radionuclide: $^{234, 235, 238}U$ Reference Date: 1/1/1995 0:00

Certified Activity: 8.016E+00 µCi

Certified Concentration: µCi per gram

Ampoule /Solution Gross	97.6400	Weight, Grams
Empty Ampoule	32.5020	Weight, Grams
Solution Net	65.1380	Weight, Grams
Total Activity in Ampoule	8.0160	µCi

Chemical Composition of Standard Solution

Uranyl nitrate in dilute HNO_3

Dilution Instructions: Dilution Solvent Used: 1M HNO_3

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 8.0160 µCi Which Equals 1.780E+07 dpm at the date listed above

And after dilution the activity of this solution is 1.77955E+04 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: January 4, 2006

Recertified By _____ Date: 1/18/2005 11:55

Verified & Approved By _____ Date: 1/18/2005 11:55

QC Approval _____ Date: 1/18/2005 11:55

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RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

MP-009

Solution Reference # IPL 479-50

Date 1/4/2005 0:00

Solution # U-8a

Principal Radionuclide	Half Life, Years	Half Life, Days
$^{234, 235, 238}U$	4.468E+09	1.632E+12

Radionuclide of Interest $^{234, 235, 238}U$

Parent Solution Conc. 1.7796E+04 dpm/ml

Reference Date 1/1/1995 0:00

Chemical Composition of Standard Solution

Uranly Nitrate in 1M HNO_3

Dilution Instructions:

Dilution Solvent Used 1M HNO_3

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 4.0000 ml
Total Activity: 7.1182E+04 dpm
Final Volume: 1000.00 ml

Final Activity Concentration: 7.1182E+01 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

NOTES:

Isotopic Distribution as:
U-238 Atom % = 48.239 U-238 = 71.182 dpm/ml X 0.48249 = 34.345 dpm/ml
U-235 Atom % = 2.25 U-235 = 71.182 dpm/ml X 0.0225 = 1.602 dpm/ml
U-234 Atom % = 49.501 U-238 = 71.182 dpm/ml X 0.49501 = 35.236 dpm/ml
All values +/- 3.6%

Isotopic ratios from manufacturer's data sheet

Expiration Date: January 4, 2006

Recertified By _____ Date: 1/18/2005 11:54

Verified & Approved By _____ Date: 1/18/2005 11:54

QC Approval _____ Date: 1/18/2005 11:54

RECORD COPY

Tracer Solution for Environmental Analysis & Disequilibrium Studies

Product Description & Measurement Certificate

Description	Principal radionuclide:	**uranium 232** (U-232)	Product code: **UDP10050**
	Daughter Nuclide:	Th-228	Batch Number: 92/232/67
Measurement	Reference date:		01 March 2000
	Radioactive concentration U-232		6.739E+03 becquerels per gram of solution
	which is equivalent to		1.821E-01 microcuries per gram of solution
	Mass of solution		5.356 grams
	Volume of solution		5.035 millilitres
	Total activity of U-232		3.61E+04 becquerels
	which is equivalent to		9.76E-01 microcuries

Accuracy

Method of measurement (see reverse of this certificate)
Random uncertainty is: ± 0.7% Systematic uncertainty: ± 0.5%
Overall uncertainty in the radioactive concentration quoted above: ± 1.7%
Overall uncertainty is defined on the reverse of this certificate.

Radionuclidic Purity

Any radioactive impurities measured are listed below, expressed as percentages of the activity of the principle radionuclide at the reference date .

Th-228 and daughter activity removed 2 Feb 2000
U-232 daughters activity will increase with time. By alpha 88% U-232, 12% daughters on 1/3/00

Isotopic Purity

The isotopic composition, expressed as atom per cent at the reference date .

Not measured

Chemical Composition

Calculated weight of U-232, 4.42E-08 grams, as 2M HNO3 solution in a flame sealed glass vial.
This Tracer solution has been produced 'carrier free'.

Physical Data

Recommended half life of uranium 232: 6.980E+01 years
Principle energies of alpha emissions (MeV): 5.263 31.7%, 5.320 68.0%
Branching ratio for alpha emission: 100%
Calculated specific activity of uranium 232: 8.167E+05 Bq per microgram U-232.

Remarks

For safety information and notes to ensure correct usage by all persons handling this radioactive Tracer solution please read the instructions accompanying the package.

AEA Technology operates a quality management system which has been independently audited and approved to ISO 9001.

Approved Signatory

Roger Wiltshire

Project Ref. AE2315

Roger Wiltshire

Prepared and characterised in the UK, for world wide distribution by **Isotrak, AEA Technology, QSA.**

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PRIMARY DILUTION RECERTIFICATION
MP 009

CURRENT DATE: 1/4/2005 0:00

SOLUTION REFERENCE #: AEA/Amersham 92/232/67

SOLUTION #: U-10

Principal Radionuclide	Half Life, Years	Half Life, Days
^{232}U	7.200E+01	2.630E+04

Radionuclide: ^{232}U

Reference Date: 3/1/2000 0:00

Certified Activity: 9.760E-01 µCi

Certified Concentration: µCi per gram

Ampoule /Solution Gross: Weight, Grams

Empty Ampoule: Weight, Grams

Solution Net: Weight, Grams

Total Activity in Ampoule: 0.9760 µCi

Chemical Composition of Standard Solution

$^{232}U(NO_3)_6$ in 2M HNO_3

Dilution Instructions:

Dilution Solvent Used: 2M HNO_3

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 0.9760 µCi Which Equals 2.167E+06 dpm at the date listed above

And after dilution the activity of this solution is 2.167E+03 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: January 4, 2006

Recertified By _____ Date: 1/18/2005 10:37

Verified & Approved By _____ Date: 1/~~18~~19/2005 10:37

QC Approval _____ Date: 1/18/2005 10:37

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SECONDARY DILUTION RECERTIFICATION

MP-009

Solution Reference # AEA/Amersham 92/232/67

Date 1/4/2005 0:00

Solution # U-10a

Principal Radionuclide	Half Life, Years	Half Life, Days
^{232}U	7.200E+01	2.630E+04

Radionuclide of Interest ^{232}U

Parent Solution Conc. 2.167E+03 dpm/ml

Reference Date 3/1/2000 0:00

Chemical Composition of Standard Solution

$^{232}U(NO_3)_6$ in 2M HNO_3

Dilution Instructions:

Dilution Solvent Used 2M HNO_3

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 10.0000 ml

Total Activity: 2.1670E+04 dpm

Final Volume: 1000.00 ml

Final Activity Concentration: 2.1670E+01 dpm/ml

NOTES:

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: January 4, 2006

Recertified By _____ Date: 1/18/2005 10:37

Verified & Approved By _____ Date: 1/18/2005 10:37

QC Approval _____ Date: 1/18/2005 10:37

QA/QC REVIEWED
Date 10/14/91 Initials ut

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Received
OCT 14 1991
TMA/Eberline
Oak Ridge Lab

Radionuclide	Th-230	Customer:	TMA EBERLINE
Half Life:	(7.54 ± 0.03) x 10^4 years	P.O.No.:	TT4944
Catalog No.:	7230	Reference Date:	November 1 1991 12:00 PST.
Source No.:	388-116	Contained Radioactivity:	1.036 µCi.

Description of Solution

a. Mass of solution: 5.0042 grams.
b. Chemical form: Th(NO3)4 in 0.1N HNO3
c. Carrier content: None added
d. Density: 1.0016 gram/ml @ 20°C.

Radioimpurities

See attached technical data sheet

Radioactive Daughters

See attached technical data sheet

Radionuclide Concentration

0.207 µCi/gram.

Method of Calibration

Weighed aliquots of the solution were assayed using a liquid scintillation counter.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration: ±2.0%
b. Random uncertainty in assay: ±0.5%
c. Random uncertainty in weighing(s): ±0.2%
d. Total uncertainty at the 99% confidence level: ±2.7%

NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

Notes

1. Nuclear data were taken from "Table of Isotopes", Seventh Edition, edited by Virginia S. Shirley.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay(and later NIST certification) of Standard Reference Materials. (As in NRC Regulatory Guide 4.15)

QUALITY CONTROL

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PRIMARY DILUTION RECERTIFICATION
MP 009

CURRENT DATE: 1/5/2005 0:00

SOLUTION REFERENCE #: IPL 388-116

SOLUTION #: Th-1

Principal Radionuclide	Half Life, Years	Half Life, Days
^{230}Th	7.540E+04	2.754E+07

Radionuclide: ^{230}Thorium

Reference Date: 11/1/1991 0:00

Certified Activity: 1.036E+00 µCi

Certified Concentration: µCi per gram

Ampoule /Solution Gross	9.2660	Weight, Grams
Empty Ampoule	4.6218	Weight, Grams
Solution Net	4.6442	Weight, Grams
Total Activity in Ampoule	1.0360	µCi

Chemical Composition of Standard Solution

$^{230}Th(NO_3)_4$ in 0.1N HNO_3

Dilution Instructions:

Dilution Solvent Used: 0.1N HNO_3

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 1.0360 µCi Which Equals 2.300E+06 dpm at the date listed above

And after dilution the activity of this solution is 2.300E+03 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: January 5, 2006

Recertified By _____ Date: 1/18/2005 9:42

Verified & Approved By _____ Date: 1/19/05

QC Approval _____ Date: _____

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SECONDARY DILUTION RECERTIFICATION

MP-009

Solution Reference # IPL 388-116

Date 1/5/2005 0:00

Solution # Th-1b

Principal Radionuclide: ^{230}Th

Half Life, Years: 7.540E+04

Half Life, Days: 2.754E+07

Radionuclide of Interest: ^{230}Thorium

Parent Solution Conc. 2.30E+03 dpm/ml

Reference Date 11/1/1991 0:00

Chemical Composition of Standard Solution

$^{230}Th(NO_3)_4$ in 0.1N HNO_3

Dilution Instructions:

Dilution Solvent Used 0.1N HNO_3

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 10.0000 ml
Total Activity: 2.2999E+04 dpm
Final Volume: 1000.00 ml

Final Activity Concentration: 2.2999E+01 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

NOTES:

Expiration Date: January 5, 2006

Recertified By _____ Date: 1/18/2005 0:00

Verified & Approved By _____ Date: 1/19/05

QC Approval _____ Date: 1/19/05

Th-8

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Radionuclide:	Th-232	Customer:	TMA EBERLINE
Half Life:	(1.405± 0.006) x 10^10 years	P.O.No.:	VH1632
Catalog No.:	7232	Reference Date:	November 1 1993 12:00 PST.
Source No.:	435-104-2	Contained Radioactivity:	(Th-232) 0.0933 μCi.
		Contained Radioactivity:	(Th-232) 3.45 kBq.

Description of Solution

a. Mass of solution: 11.9712 g (in a 10 ml flame sealed ampoule)

b. Chemical form: Th(NO3)4 in water

c. Carrier content: None added

d. Density: Approx. 1.21 g/ml @ 20°C.

Radioimpurities None detected (other than daughters).

Radioactive Daughters

Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Po-212, Tl-208

Radionuclide Concentration

(Th-232) 0.00779 μCi/g.

Method of Calibration

Activity calculations are based upon known specific activity and mass.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration: ±3.0%

b. Random uncertainty in assay: ±0.0%

c. Random uncertainty in weighing(s): ±2.0%

d. Total uncertainty at the 99% confidence level: ±3.6%

NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

Leak Test(s)

See reverse side for Leak Test(s) applied to this source.

Notes

1. Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia S. Shirley, 1986.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).

Anna U. Khan
QUALITY CONTROL

Nov. 8, 1993
Date Signed

ISOTOPE PRODUCTS LABORATORIES
1800 North Keystone Street
Burbank, California 91504
(818) 843 - 7000

EBERLINE SERVICES

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RADIOACTIVE REFERENCE SOLUTIONS
PRIMARY DILUTION RECERTIFICATION
MP 009

CURRENT DATE: 1/13/2005 0:00

SOLUTION REFERENCE #: IPL 435-104-2

SOLUTION #: Th-8

Principal Radionuclide	Half Life, Years	Half Life, Days
^{232}Th, ^{228}Th	1.405E+10	5.132E+12

Radionuclide: $^{232\&228}Th$

Reference Date: 11/1/1993 0:00

Certified Activity: 9.330E-02 µCi

Certified Concentration: µCi per gram

Ampoule /Solution Gross: 18.8415 Weight, Grams

Empty Ampoule: 6.9296 Weight, Grams

Solution Net: 11.9119 Weight, Grams

Total Activity in Ampoule: 0.0933 µCi

Chemical Composition of Standard Solution

$Th(NO_3)_4$ in H2O

Dilution Instructions:

Dilution Solvent Used: 1% Nitric Acid

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 0.0933 µCi Which Equals 2.071E+05 dpm at the date listed above

And after dilution the activity of this solution is 2.071E+02 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: January 13, 2006

Recertified By _____ Date: 1/13/2005 0:00

Verified & Approved By _____ Date: 1/~~13~~ 18/2005 0:00

QC Approval _____ Date: 1/13/2005 0:00

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RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

MP-009

Solution Reference # IPL 435-104-2

Date 1/13/2005 0:00

Solution # Th-8b

Principal Radionuclide	Half Life, Years	Half Life, Days
$^{228\&232}Th$	1.405E+10	5.132E+12

Radionuclide of Interest $^{228\&232}Th$

Parent Solution Conc. 2.07E+02 dpm/ml

Reference Date 11/1/1993 0:00

Chemical Composition of Standard Solution

$Th(NO_3)_4$ in 1% HNO_3

Dilution Instructions:

Dilution Solvent Used 1% Nitric Acid

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 500.0000 ml

Total Activity: 1.0355E+05 dpm

Final Volume: 1000.00 ml

Final Activity Concentration: 1.0355E+02 dpm/ml

NOTES:

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: January 13, 2006

Recertified By _____ Date: 1/13/2005 12:19

Verified & Approved By _____ Date: 1/18/05

QC Approval _____ Date: _____

Th-18

Isotope Products Laboratories
An Eckert & Ziegler Company

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661•309•1010
Fax 661•257•8303

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Radionuclide:	Th-229	**Customer:**	EBERLINE SERVICES
Half-life:	7340 ± 160 years	**P.O. No.:**	00009633
Catalog No.:	7229	**Reference Date:**	15-Jan-02 12:00 PST
Source No.:	867-54	**Contained Radioactivity: (Th-229 only)**	1.013 **µCi** 37.48 **kBq**

Physical Description:

A. Mass of solution: 5.0147 g in 5 mL flame-sealed ampoule
B. Chemical form: $Th(NO_3)_4$ in 0.1M HNO_3
C. Carrier content: 10µg Th/mL
D. Density: 1.0016 g/mL @ 20°C.

Radioimpurities:

None detected (daughters in equilibrium)

Radionuclide Concentration: 0.2020 µCi/g, 7.474 kBq/g

Method of Calibration:

This source was prepared from a weighed aliquot of solution whose activity in µCi/g was determined using gamma ray spectrometry.
Peak energy used for integration: 193.5 keV
Branching ratio used: 0.0441 gammas per decay

Uncertainty of Measurement:

A. Type A (random) uncertainty: ± 0.7 %
B. Type B (systematic) uncertainty: ± 3.0 %
C. Uncertainty in aliquot weighing: ± 0.0 %
D. Total uncertainty at the 99% confidence level: ± 3.1 %

Notes:

- See reverse side for leak test(s) performed on this source.
- IPL participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).
- Nuclear data was taken from IAEA Technical Report Series No. 261.
- This solution has a working life of 5 years.

[signature] — **Quality Control**

9-Jan-02 — **Date Signed**

IPL Ref. No.: 867-54

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RADIOACTIVE REFERENCE SOLUTIONS
PRIMARY DILUTION RECERTIFICATION
MP 009

CURRENT DATE: 1/12/2005 0:00

SOLUTION REFERENCE #: IPL 867-54

SOLUTION #: Th-18

Principal Radionuclide	Half Life, Years	Half Life, Days
^{229}Th	7.340E+03	2.681E+06

Radionuclide: ^{229}Th

Reference Date: 1/15/2002 0:00

Certified Activity: 1.013E+00 µCi

Certified Concentration: µCi per gram

Ampoule /Solution Gross	8.7752	Weight, Grams
Empty Ampoule	3.7591	Weight, Grams
Solution Net	5.0161	Weight, Grams
Total Activity in Ampoule	1.0130	µCi

Chemical Composition of Standard Solution

$^{229}Th(NO_3)_4$ in 0.1M HNO_3

Dilution Instructions:

Dilution Solvent Used: 0.1 M HNO_3

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 1.0130 µCi Which Equals 2.249E+06 dpm at the date listed above

And after dilution the activity of this solution is 2.249E+03 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: January 12, 2006

Recertified By: [signature] Date: 1/12/2005 7:53

Verified & Approved By: [signature] Date: 1/19/05

QC Approval: [signature] Date: 1/19/05

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Rev.8; 1/10/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

MP-009

Solution Reference # IPL 867-54

Date 1/12/2005 0:00

Solution # Th-18a

Principal Radionuclide	Half Life, Years	Half Life, Days
^{229}Th	7.340E+03	2.681E+06

Radionuclide of Interest ^{229}Th

Reference Date 1/15/2002 0:00

Parent Solution Conc. 2.25E+03 dpm/ml

Chemical Composition of Standard Solution

$TH(NO_3)_4$ in 0.1M HNO_3

Dilution Instructions:

Dilution Solvent Used 0.1M HNO_3

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 10.0000 ml
Total Activity: 2.2490E+04 dpm
Final Volume: 1000.00 ml

Final Activity Concentration: 2.2490E+01 dpm/ml

NOTES:

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: January 12, 2006

Recertified By _____ Date: 1/12/2005 7:53

Verified & Approved By _____ Date: 1/19/05

QC Approval _____ Date: 1/19/05

Ba-6
(# 6a)

National Institute of Standards & Technology

Certificate

Standard Reference Material 4251C
Barium-133 Radioactivity Standard

This Standard Reference Material (SRM) consists of radioactive barium-133 chloride, non-radioactive barium chloride, and hydrochloric acid dissolved in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass ampoule. The SRM is intended for the calibration of ionization chambers and solid-state gamma-ray spectrometry systems.

Radiological Hazard

The SRM ampoule contains barium-133 with a total activity of approximately 2.5 MBq. Barium-133 decays by electron capture and during the decay process X-rays and gamma rays with energies from 4 to 400 keV are emitted. Most of these photons escape from the SRM ampoule and can represent a radiation hazard. Approximate unshielded dose rates at several distances (as of the reference time) are given in note [a]*. Appropriate shielding and/or distance should be used to minimize personnel exposure. The SRM should be used only by persons qualified to handle radioactive material.

Chemical Hazard

The SRM ampoule contains hydrochloric acid (HCl) with a concentration of 1 mole per liter of water. The solution is corrosive and represents a health hazard if it comes in contact with eyes or skin. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2. The ampoule should be opened only by persons qualified to handle both radioactive material and strong acid solution.

Storage and Handling

The SRM should be stored and used at a temperature between 5 and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least June 2004.

The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) both because of the radioactivity and because of the strong acid.

Preparation

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, J.M.R. Hutchinson, Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas of the Radioactivity Group and D.B. Golas, Nuclear Energy Institute Research Associate.

The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by N.M. Trahey.

Gaithersburg, Maryland 20899
October 1994

Thomas E. Gills, Chief
Standard Reference Materials Program

*Notes and references are on pages 5 and 6.

EBERLINE SERVICES

QUALITY CONTROL PROGRAM

QCP-009

Rev.8; 11/10/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
PRIMARY DILUTION RECERTIFICATION
QCP 009-1

CURRENT DATE: 11/6/2004 0:00

SOLUTION REFERENCE #: NIST SRM4251C

SOLUTION #: Ba-6

Principal Radionuclide	Half Life, Years	Half Life, Days
^{133}Barium	1.048E+01	3.828E+03

Radionuclide: ^{133}Barium

Reference Date: 9/1/1993 0:00

Certified Activity: µCi

Certified Concentration: 1.318E+01 µCi per gram

Ampoule /Solution Gross	9.3081	Weight, Grams
Empty Ampoule	4.2582	Weight, Grams
Solution Net	5.0499	Weight, Grams
Total Activity in Ampoule	66.5577	µCi

Chemical Composition of Standard Solution

$^{133}BaCl_2$ in 1M HCl

Dilution Instructions:

Dilution Solvent Used: 1M HCl

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 66.5577 µCi Which Equals 1.478E+08 dpm at the date listed above

And after dilution the activity of this solution is 1.478E+05 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: November 6, 2005

Diluted By _____ Date: 11/6/04

Verified & Approved By _____ Date: 11/6/04

QC Approval _____ Date: 11/6/04

EBERLINE SERVICES

QUALITY CONTROL PROGRAM

QCP-009

Rev.8; 11/10/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

QCP-009-1-A

Solution Reference # NIST SRM4251C

Date 11/6/2004 0:00

Solution # Ba-6a

Principal Radionuclide	Half Life, Years	Half Life, Days
^{133}Ba	1.048E+01	3.828E+03

Radionuclide of Interest ^{133}Ba

Parent Solution Conc. 1.48E+05 dpm/ml

Reference Date 9/1/1993 0:00

Chemical Composition of Standard Solution

$^{133}BaCl_2$ in 1M HCl

Dilution Instructions:

Dilution Solvent Used 1M HCl

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 25.0000 ml

Total Activity: 3.6950E+06 dpm

Final Volume: 1000.00 ml

Final Activity Concentration: 3.6950E+03 dpm/ml

NOTES:

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: November 6, 2005

Diluted By _____ Date: 11/6/04

Verified & Approved By _____ Date: 11/6/04

QC Approval _____ Date: 11/6/04

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Ra-5
QA/QC REVIEWED
Date 2/8/94 Initials MT

Radionuclide:	Ra-226	Customer:	TMA EBERLINE
Half Life:	1600 ± 7 years	P.O.No.:	VH1888
Catalog No.:	7226	Reference Date:	February 1 1994 12:00 PST.
Source No.:	453-26	Contained Radioactivity: (Ra-226)	1.001 μCi.
		Contained Radioactivity: (Ra-226)	37.0 kBq.

Description of Solution

a. Mass of solution: 5.1864 g (in a 5 ml Flame Sealed Ampoule)

b. Chemical form: Ra(NO3)2 in 1 N HNO3

c. Carrier content: None added

d. Density: 1.0318 g/ml @ 20°C.

Radioimpurities None detected(other than daughters)

Radioactive Daughters

Rn-222, Po-218, At-218, Pb-214, Bi-214, Po-214, Tl-210, Pb-210, Bi-210, Po-210 and Tl-206.

Radionuclide Concentration

(Ra-226) 0.1929 μCi/g.

Method of Calibration

Weighed aliquots of the solution were assayed using gamma spectrometry:
Energy peak(s) integrated under: 186 keV.
Branching ratio(s) used: 0.0351 gamma rays per decay.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration: ±3.4%

b. Random uncertainty in assay: ±3.1%

c. Random uncertainty in weighing(s): ±0.2%

d. Total uncertainty at the 99% confidence level: ±4.6%

NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

Leak Test(s)

See reverse side for Leak Test(s) applied to this source.

Notes

1. Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia S. Shirley, 1986.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).

Ann U. Kuen
QUALITY CONTROL

Feb. 3, 1994
Date Signed

ISOTOPE PRODUCTS LABORATORIES
1800 North Keystone Street
Burbank, California 91504
(818) 843 - 7000

EBERLINE SERVICES

QUALITY CONTROL PROGRAM

MP 009

Rev.8; 11/01/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
PRIMARY DILUTION RECERTIFICATION
MP 009

CURRENT DATE: 1/3/2005 0:00

SOLUTION REFERENCE #: IPL 453-26

SOLUTION #: Ra-5

Principal Radionuclide	Half Life, Years	Half Life, Days
^{228}Radium	1.600E+03	5.844E+05

Radionuclide: ^{228}Radium

Reference Date: 2/1/1994 0:00

Certified Activity: 1.001E+00 µCi

Certified Concentration: µCi per gram

Ampoule /Solution Gross: Weight, Grams

Empty Ampoule: Weight, Grams

Solution Net: Weight, Grams

Total Activity in Ampoule: 1.0010 µCi

Chemical Composition of Standard Solution

$^{228}Ra(NO_3)_2$ in 1M HNO_3

Dilution Instructions:

Dilution Solvent Used: 1M HNO_3

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 1.0010 µCi Which Equals 2.222E+06 dpm at the date listed above

And after dilution the activity of this solution is 2.222E+03 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: January 3, 2006

Diluted By _____ Date: 1/3/2005

Verified & Approved By _____ Date: 1/3/2005

QC Approval _____ Date: 1/3/2005

EBERLINE SERVICES

QUALITY CONTROL PROGRAM

MP 009

Rev.8; 11/01/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

MP 009

Solution Reference # IPL-453-26

Date 1/3/2005 0:00

Solution # Ra-5b

Principal Radionuclide	Half Life, Years	Half Life, Days
^{228}Radium	1.600E+03	5.844E+05

Radionuclide of Interest ^{228}Radium

Parent Solution Conc. 2.22E+03 dpm/ml

Reference Date 2/1/1994 0:00

Chemical Composition of Standard Solution

$^{228}Ra(NO_3)_2$ in 1M HNO_3

Dilution Instructions:

Dilution Solvent Used 1M HNO_3

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 20.0000 ml

Total Activity: 4.4440E+04 dpm

Final Volume: 1000.00 ml

Final Activity Concentration: 4.4440E+01 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

NOTES:

Expiration Date: January 3, 2006

Diluted By _____ Date: 1/3/2005 0:00

Verified & Approved By _____ Date: 1/3/2005 0:00

QC Approval _____ Date: 1/24/05 38356

R49

SECTION VI

QUALITY CONTROL SAMPLE RESULTS SUMMARY

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
05-09117	UUISO	1	pCi	g	Missouri Dept. of Natural Resources

Laboratory Control Sample

Analyte	Normalized Difference	LCS Measured	TPU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	TPU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
U-234	0.06	100.57%	17.95%	100.00%	3.60%	7.97E+00	2.87E-01	8.01E+00	1.44E+00	U-8a	3.52E+01	3.60E+00	5.02E-01
U-235	0.62	115.83%	43.06%	100.00%	3.60%	3.62E-01	1.30E-02	4.19E-01	1.80E-01	U-8a	1.60E+00	3.60E+00	5.02E-01
U-238	1.69	118.09%	17.70%	100.00%	3.60%	7.76E+00	2.80E-01	9.17E+00	1.62E+00	U-8a	3.44E+01	3.60E+00	5.02E-01

Matrix Spike

Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS TPU	Sample Result	Sample TPU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

Replicate Sample

Analyte	Normalized Difference	RPD	Original Result	Original TPU	Replicate Result	Replicate TPU
U-234	0.82	16.45	1.02E+00	2.84E-01	8.61E-01	2.36E-01
U-235	0.18	12.21	7.61E-02	7.45E-02	6.74E-02	6.11E-02
U-238	0.62	12.86	8.96E-01	2.61E-01	7.88E-01	2.23E-01

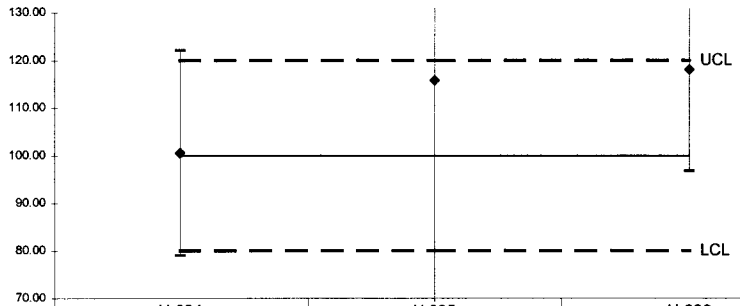
QC Summary

Analyte	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
U-234	1.01	OK	OK			OK	OK
U-235	1.16	OK	OK			OK	OK
U-238	1.18	OK	OK			OK	OK

Version

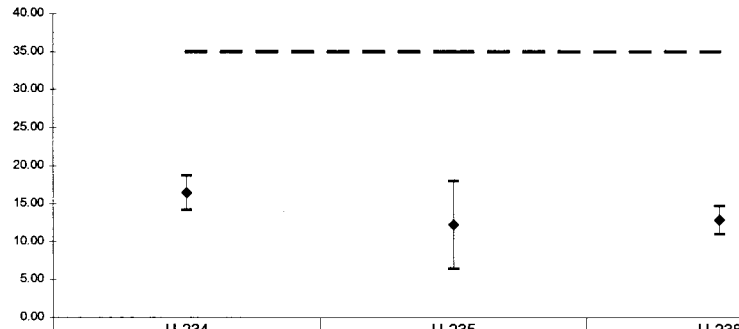
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
05-09117	UUISO	1	pCi	g	Missouri Dept. of Natural Resources

LCS % Recovery



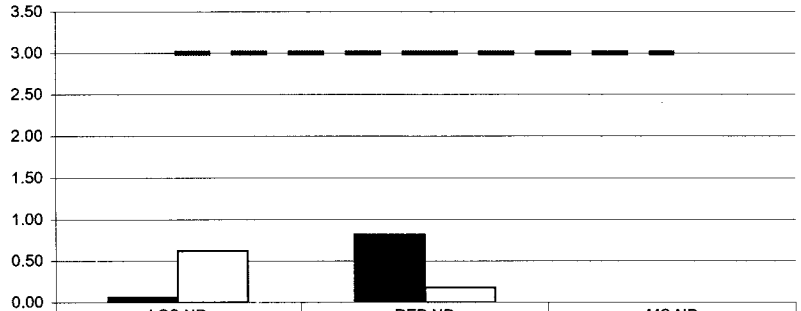
	U-234	U-235	U-238
Lower Error	79.02	69.17	96.79
Upper Error	122.12	162.48	139.39
%R	100.57	115.83	118.09
LCL	80	80	80
Mean	100	100	100
UCL	120	120	120

Replicate Sample RPD



	U-234	U-235	U-238
Lower Error	18.73	17.99	14.70
Upper Error	14.17	6.44	11.01
RPD	16.45	12.21	12.86
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
U-234	0.06	0.82	0.00
U-235	0.62	0.18	0.00
UCL	3	3	3

No Matrix Spike

Version

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
05-09117	ThISO	1	pCi	g	Missouri Dept. of Natural Resources

Laboratory Control Sample

Analyte	Normalized Difference	LCS Measured	TPU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	TPU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
TH-228	0.11	101.15%	19.51%	100.00%	3.60%	4.51E+00	1.62E-01	4.56E+00	8.89E-01	Th-8b	1.04E+02	3.60E+00	9.66E-02
TH-230	0.87	92.07%	19.29%	100.00%	2.70%	5.33E+00	1.44E-01	4.91E+00	9.46E-01	Th-1b	2.35E+01	2.70E+00	5.03E-01
TH-232	0.27	97.35%	19.60%	100.00%	3.60%	4.51E+00	1.62E-01	4.39E+00	8.60E-01	Th-8b	1.04E+02	3.60E+00	9.66E-02

Matrix Spike

Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS TPU	Sample Result	Sample TPU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

Replicate Sample

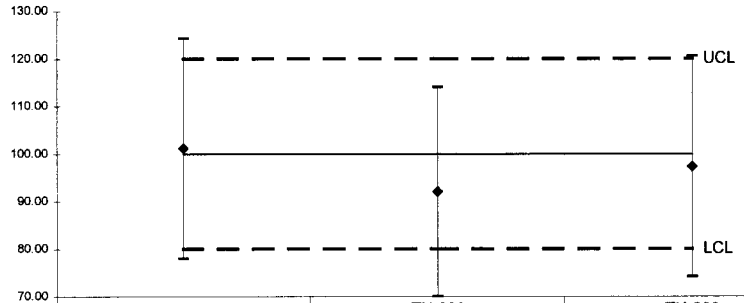
Analyte	Normalized Difference	RPD	Original Result	Original TPU	Replicate Result	Replicate TPU
TH-228	0.54	13.03	8.50E-01	2.73E-01	7.46E-01	2.60E-01
TH-230	0.21	3.79	2.00E+00	4.86E-01	2.07E+00	5.15E-01
TH-232	0.50	12.24	6.89E-01	2.35E-01	7.79E-01	2.64E-01

QC Summary

LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
1.01	OK	OK			OK	OK
0.92	OK	OK			OK	OK
0.97	OK	OK			OK	OK

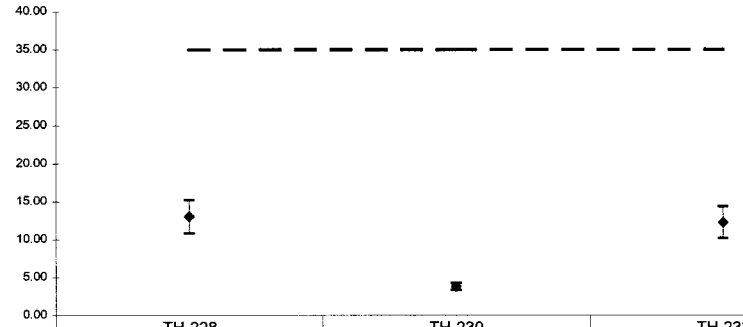
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
05-09117	ThISO	1	pCi	g	Missouri Dept. of Natural Resources

LCS % Recovery



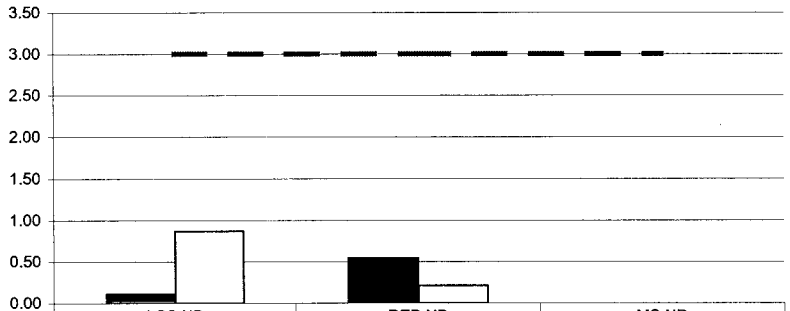
	TH-228	TH-230	TH-232
Lower Error	78.04	70.08	74.16
Upper Error	124.26	114.06	120.55
%R	101.15	92.07	97.35
LCL	80	80	80
Mean	100	100	100
UCL	120	120	120

Replicate Sample RPD



	TH-228	TH-230	TH-232
Lower Error	15.20	4.25	14.31
Upper Error	10.85	3.32	10.16
RPD	13.03	3.79	12.24
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
TH-228	0.11	0.54	0.00
TH-230	0.87	0.21	0.00
UCL	3	3	3

No Matrix Spike

Version

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
05-09117	Ra226	1	pCi	g	Missouri Dept. of Natural Resources

Laboratory Control Sample

Analyte	Normalized Difference	LCS Measured	TPU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	TPU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
RA-226	0.86	106.63%	13.93%	100.00%	4.60%	1.03E+01	4.74E-01	1.10E+01	1.53E+00	Ra-5b	4.42E+01	4.60E+00	5.17E-01

Matrix Spike

Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS TPU	Sample Result	Sample TPU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

Replicate Sample

Analyte	Normalized Difference	RPD	Original Result	Original TPU	Replicate Result	Replicate TPU
RA-226	1.58	35.97	1.46E+00	4.50E-01	1.02E+00	3.22E-01

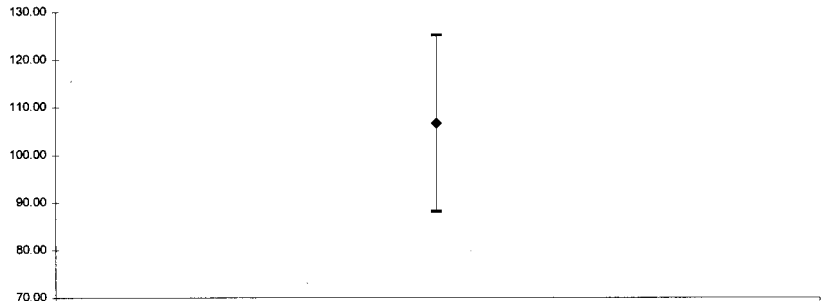
QC Summary

LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
1.07	OK	OK			INV	OK

Version

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
05-09117	Ra226	1	pCi	g	Missouri Dept. of Natural Resources

LCS % Recovery

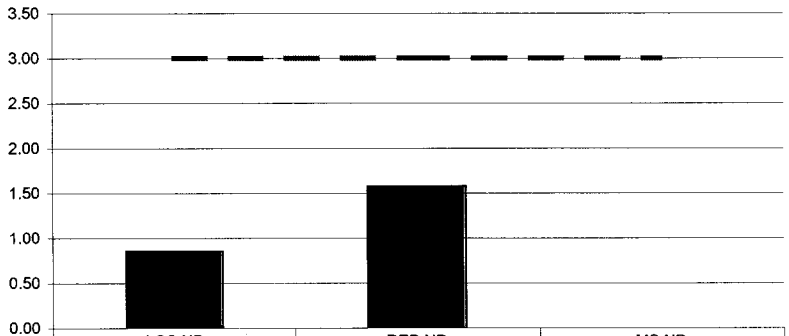


	RA-226
Lower Error	88.10
Upper Error	125.16
%R	106.63
LCL	80
Mean	100
UCL	120

Replicate Sample RPD

	RA-226
Lower Error	41.56
Upper Error	30.37
RPD	35.97
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
RA-226	0.86	1.58	0.00
UCL	3	3	3

No Matrix Spike

Version

SECTION VII

LABORATORY TECHNICIAN'S NOTES & RUN LOGS

ISO-U NOTES

EBERLINE SERVICES **Work Order Analysis Notes**	**Oak Ridge Laboratory** **601 Scarboro Rd.** **Oak Ridge, TN 37830** **Voice: 865.481.0683** **www.eberlineservices.com**	Internal Work Order	05-09117
		Analysis Code	UUISO
		Run Number	1

#	Date	Dept	User	Notes
1	10/04/05 13:44	PREP	JBARNARD	ALIQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN UNTIL NEAR DRY- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS

JBarnard
10/4/05

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	05-09117
Analysis Code	UUISO
Run Number	1

#	Date	Dept	User	Notes
1	10/04/05 13:44	PREP	JBARNARD	ALIQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN UNTIL NEAR DRY- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS
2	10/06/05 13:33	CHEM	TSMITH	Followed steps 12.2 to 12.2.7 in AP-005 rev. 9 . (Column separation for Uranium)
3	10/07/05 05:46	CHEM	TSMITH	Followed steps 12.2.7 to 12.5.5 in AP-005 rev. 9 . (Precipitated and filtered samples)

10-7-05

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
05-09117	
Analysis Code	Run
UUISO	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
003367P	Nitric Acid	Reagent Grade	JBARNARD	10/4/2005
002930P	Perchloric Acid	Reagent Grade	JBARNARD	10/4/2005
000059P	Sulfuric Acid	Reagent Grade	JBARNARD	10/4/2005
003397P	Hydrofluoric Acid	Reagent Grade	JBARNARD	10/4/2005
003338P	Anion Exchange Resin	Reagent Grade	BNEWTON	10/5/2005
003366D03	Hydrochloric Acid	0.5N	TSMITH	10/6/2005
003210S	Hydrochloric Acid	6.5N	TSMITH	10/6/2005
003416S	HCl - HF	6.5N - 0.04N	TSMITH	10/6/2005
003440S	HCl - NH4l	8N - 0.1M	TSMITH	10/6/2005
003428S	Hydrochloric Acid	8N	TSMITH	10/6/2005
003409S	Carbon substrate	Solution	TSMITH	10/7/2005
003116P	Hydrofluoric Acid	Reagent Grade	TSMITH	10/7/2005
003184P	Reagent Alcohol	Reagent Grade	TSMITH	10/7/2005
002985P	Titanous Chloride	Reagent Grade	TSMITH	10/7/2005
003393S	Neodymium Carrier	1 mg/ml	TSMITH	10/7/2005

Alpha 3

DATE	SAMPLE#	CLIENT	LOAD TIME	CT. TIME	ANALYSIS	TECH
9.29.05	Daily Pulsers	LAB	0608	10m	NA	MR
9.29.05	0509066A (3-11)	Weston	0908	2HR 50min	UU	MR
9.29.05	0509086A (1-7)	CAS	0908	2HR 50min	UU	MR
9.29.05	Calibrations	LAB	1653	2 1/2 HR	α-iso	MR
9/30/05	Daily Pulser	LAB	07:40	10min	NA	AG
9.30.05	0509096A (4-18)	CAS	1035	2HR 50min	UU	MR
10.1.05	Weekly Blkgd	LAB	1005	16HR 50min	α-iso	MR
10.3.05	Daily Pulser	LAB	0454	10min	NA	JDP
10.3.05	0509110A (2-4,6)	CAS	0843	2HR. 50MIN.	UU	JDP
10.3.05	0509110ANT (4,6)	CAS	0843	2HR. 50MIN	UU(NT)	JDP
10.3.05	0509109A (1-10)	CAS	0843	2HR. 50min	Pu	JDP
10.4.05	Daily Pulser	LAB	0419	10min	NA	JDP
10.4.05	0509109ANT (1,2,4-12)	CAS	0801	2HR. 50min.	Th (NT)	JDP
10.4.05	0509092A (1-5)	LIONVILLE	0801	2HR. 50min.	Th	JDP
10.4.05	0509109A (7-12)	CAS	1105	2HR. 50min.	Am/Cm	JDP
10.4.05	0509081A (1-10)	Sherry	1537	5HR 35min	Ra	MR
10.5.05	Daily Pulser	LAB	0444	60m	NA	JDP
10.5.05	0509120A (3,4)	LIONVILLE	0723	2HR 50min.	Th	JDP
10.5.05	0509113A (1-10)	CAS	0723	2HR. 50min.	UU	JDP
10.5.05	0509102A (1-4)	CAS	0723	2HR. 50m	UU	JDP
10.5.05	0509096A (16-18)	CAS	1030	2HR. 50MIN.	Cm	JDP
10.5.05	0510005A (1-8)	ICON	1149	5HR. 35min.	Ra	JDP
10.6.05	Daily Pulser	LAB	0408	10min.	NA	JDP
10.6.05	0509104A (1-4)	Duratek	0452	5HR 35min	NP	JDP
10.6.05	0509104A (1-4)	Duratek	0452	5HR. 35m	Th	JDP
10.6.05	0509111A (1-7)	CAS	0802	5HR 35min.	UU	JDP
10.6.05	0509111A (1)	CAS	0802	5HR. 35min	Pu	JDP
10.6.05	0509117A (4-19)	MDN	1430	2HR 50min	Ra	MR
10.7.05	Daily Pulser	LAB	0414	10min.	NA	JDP
10.7.05	Calibrations	LAB	0444	2 1/2HR	α-iso	JDP
10.7.05	0509117A (1-16)	MDN	0728	2HR. 50min	UU	JDP

ALPHA #2

Date	Sample #	Client	Load time	Ct. time	Analysis	Tech.
10-7-05	0509118A (15-19)	MON	0452	2HR. 50MIN.	Ra	JP
10-7-05	0509117A (17-19)	MON	0758	2HR. 56MIN.	Un	JP
10-7-05	0509118A (1-12)	MON	0758	2HR-56MIN	Un	JP

ISO-TH NOTES

EBERLINE SERVICES **Work Order Analysis Notes**	**Oak Ridge Laboratory** **601 Scarboro Rd.** **Oak Ridge, TN 37830** **Voice: 865.481.0683** **www.eberlineservices.com**	Internal Work Order	05-09117
		Analysis Code	ThISO
		Run Number	1

#	Date	Dept	User	Notes
1	10/04/05 13:46	PREP	JBARNARD	ALIQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN UNTIL NEAR DRY- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- PRECIPITATED WITH POTASSIUM SULFATE AND BA CARRIER- DECANTED SAMPLES AND CENTRIFUGED- ADDED .25M EDTA TO PRECIP, VORTEXED AND PUT SAMPLES IN A HOT WATER BATH- ADDED 10M KOH AND TICL3 AND PUT SAMPLES BACK IN THE HOT WATER BATH- VORTEXED AND CENTRIFUGED- ADDED 30MLS OF 8N HNO3 TO THE THORIUM PRECIP, VORTEXED AND SUBMITTED TO SEPARATIONS

JBarnard
10/4/05

EBERLINE SERVICES **Work Order Analysis Notes**	**Oak Ridge Laboratory** **601 Scarboro Rd.** **Oak Ridge, TN 37830** **Voice: 865.481.0683** **www.eberlineservices.com**	Internal Work Order	05-09117
		Analysis Code	ThISO
		Run Number	1

#	Date	Dept	User	Notes
1	10/04/05 13:46	PREP	JBARNARD	ALIQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN UNTIL NEAR DRY- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- PRECIPITATED WITH POTASSIUM SULFATE AND BA CARRIER- DECANTED SAMPLES AND CENTRIFUGED- ADDED .25M EDTA TO PRECIP, VORTEXED AND PUT SAMPLES IN A HOT WATER BATH- ADDED 10M KOH AND TICL3 AND PUT SAMPLES BACK IN THE HOT WATER BATH- VORTEXED AND CENTRIFUGED- ADDED 30MLS OF 8N HNO3 TO THE THORIUM PRECIP, VORTEXED AND SUBMITTED TO SEPARATIONS
2	10/07/05 11:43	CHEM	TSMITH	Followed steps 12.3 to 12.3.4 in AP-005 rev. 9 . (Column separation for Thorium)
3	10/10/05 05:35	CHEM	TSMITH	Followed steps 12.3.4 to 12.5.5 in AP-005 rev. 9 . (Precipitated and filtered samples)

10-10-05

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
05-09117	
Analysis Code	Run
ThISO	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
003255D02	Barium Carrier	50 mg/ml	JBARNARD	10/4/2005
003415S	EDTA	0.25M	JBARNARD	10/4/2005
003397P	Hydrofluoric Acid	Reagent Grade	JBARNARD	10/4/2005
003367P	Nitric Acid	Reagent Grade	JBARNARD	10/4/2005
002930P	Perchloric Acid	Reagent Grade	JBARNARD	10/4/2005
001365D02	Potassium Hydroxide	10M	JBARNARD	10/4/2005
000059P	Sulfuric Acid	Reagent Grade	JBARNARD	10/4/2005
002985P	Titanous Chloride	Reagent Grade	JBARNARD	10/4/2005
003425P	Potassium Sulfate	Reagent Grade	JBARNARD	10/4/2005
003367D03	Nitric Acid	8N	JBARNARD	10/4/2005
003338P	Anion Exchange Resin	Reagent Grade	BNEWTON	10/5/2005
003420S	Nitric Acid	8N	TSMITH	10/7/2005
003428S	Hydrochloric Acid	8N	TSMITH	10/7/2005
000051D07	Cerium Carrier (Alpha iso)	Solution	TSMITH	10/10/2005
003116P	Hydrofluoric Acid	Reagent Grade	TSMITH	10/10/2005
003184P	Reagent Alcohol	Reagent Grade	TSMITH	10/10/2005
003424S	Carbon substrate	Solution	TSMITH	10/10/2005

ALPHA #2

Date	Sample #	Client	Load time	Ct. time	Analysis	Tech.
10-7-05	0509118A (15-19)	MON	0452	2HR. 50MIN.	Ra	[illegible]
10-7-05	0509117A (17-19)	MON	0758	2HR. 58MIN.	UU	[illegible]
10-7-05	0509118A (1-12)	MON	0758	2HR. 58MIN	UU	[illegible]
10-7-05	0509118A (13-19)	MON	1059	2HR. 50MIN.	UU	[illegible]
10-7-05	Weekly Bkgd	LAB	1707	16HR 48MIN	α-SU	[illegible]
10-8-05	Daily Pulser	LAB	1600	10 MIN.	NA	[illegible]
10-10-05	Daily Pulser	LAB	0407	10 MIN.	NA	[illegible]
10-10-05	0509117A (1-15)	MON	0646	2HR. 58MIN	TH	[illegible]

ALPHA #3

DATE	SAMPLE#	CLIENT	LOAD TIME	CT. TIME	ANALYSIS	TECH
10-8-05	DAILY PULSER	LAB	1100	10 min.	NA	[illegible]
10-8-05	0510018A (1-6)	SHERRY	1154	5HR 35 m	Ra	[illegible]
10-10-05	DAILY PULSER	LAB	0408	10 MIN.	NA	[illegible]
10-10-05	0509117A (16-19)	MON	0704	2HR 50 MIN.	Th	[illegible]
10-10-05	0510023A (1-4)	PCC	0704	2HR 50 m	Th	[illegible]

RA-226 NOTES

EBERLINE SERVICES **Work Order Analysis Notes**	**Oak Ridge Laboratory** **601 Scarboro Rd.** **Oak Ridge, TN 37830** **Voice: 865.481.0683** **www.eberlineservices.com**	Internal Work Order	05-09117
		Analysis Code	Ra226
		Run Number	1

#	Date	Dept	User	Notes
1	10/04/05 13:48	PREP	JBARNARD	ALIQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN UNTIL NEAR DRY- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- PH'D SAMPLES TO 2.8-3.0- PRECIPITATED WITH POTASSIUM SULFATE AND BA AND PB CARRIERS- DECANTED SAMPLES AND CENTRIFUGED- ADDED .25M EDTA AND PHENOLPTHALIEN TO PRECIP-VORTEXED AND PUT SAMPLES IN A HOT WATER BATH- VORTEXED AND CHECKED PH- CENTRIFUGED AND TRANSFERRED SUPERNATE INTO CLEAN C-TUBES AND SUBMITTED TO SEPARATIONS

JBarnard 10/4/05

TP - 16:00 10/5/05

EBERLINE SERVICES

Work Order Analysis Notes

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830
Voice: 865.481.0683
www.eberlineservices.com

Internal Work Order	05-09117
Analysis Code	Ra226
Run Number	1

#	Date	Dept	User	Notes
1	10/04/05 13:48	PREP	JBARNARD	ALIQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN UNTIL NEAR DRY- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- PH'D SAMPLES TO 2.8-3.0- PRECIPITATED WITH POTASSIUM SULFATE AND BA AND PB CARRIERS- DECANTED SAMPLES AND CENTRIFUGED- ADDED .25M EDTA AND PHENOLPTHALIEN TO PRECIP-VORTEXED AND PUT SAMPLES IN A HOT WATER BATH- VORTEXED AND CHECKED PH- CENTRIFUGED AND TRANSFERRED SUPERNATE INTO CLEAN C-TUBES AND SUBMITTED TO SEPARATIONS
2	10/06/05 09:35	CHEM	DJOHNSON	Received samples from prep lab in EDTA. Re-precipitated samples with glacial acetic acid and ammonium sulfate. Filtered samples on tarred filters.Rinsed c-tubes and funnels with diH2O and filtered. Dried and reweighed sample filters. Submitted samples to the count room.

10/6/05

EBERLINE SERVICES

Reagents Used in an Analysis

Internal Work Order	
05-09117	
Analysis Code	Run
Ra226	1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
001772P	Ammonium Hydroxide	Reagent Grade	JBARNARD	10/4/2005
003255D01	Barium Carrier	1 mg/ml	JBARNARD	10/4/2005
001848D10	Lead Carrier	40 mg/ml	JBARNARD	10/4/2005
002930P	Perchloric Acid	Reagent Grade	JBARNARD	10/4/2005
001755S	Phenolphthalein Indicator	0.1%	JBARNARD	10/4/2005
000059P	Sulfuric Acid	Reagent Grade	JBARNARD	10/4/2005
003397P	Hydrofluoric Acid	Reagent Grade	JBARNARD	10/4/2005
003367P	Nitric Acid	Reagent Grade	JBARNARD	10/4/2005
003425P	Potassium Sulfate	Reagent Grade	JBARNARD	10/4/2005
003415S	EDTA	0.25M	JBARNARD	10/4/2005
000868P	Acetic Acid	Reagent Grade	DJOHNSON	10/6/2005
002851D02	Ammonium Sulfate	200 mg/ml	DJOHNSON	10/6/2005

Alpha 2

Date	Sample #	Client	Load time	Ct. time	Analysis	Tech
9.29.05	0509087A (2-4)	CAS	0841	2HR 50m	UU	MR
9.29.05	0509092A (1-10)	Lionville	0852	2HR 50m	UU	MR
9.29.05	0509066A (1,2)	Weston	0853	2HR 50m	UU	MR
9.29.05	Calibrations	LAB	1320	2 1/2 HR	α 30	MR
9/30/05	Daily Pulser	LAB	07:39	10 min	NA	AG
9.30.05	0509108A (1-4)	PCC	1029	2HR 50min	Th	MR
9.30.05	0509105A (1-3,5)	NFT	1029	2HR 50min	UU	MR
9.30.05	0509105A (1-3,5)	NFT	1029	2HR 50min	Am	MR
9.30.05	0509096A (1-3)	CAS	1029	2HR 50min	UU	MR
10.1.05	Weekly Bkgd	LAB	1005	16HR 40min	α-HU	MR
10.3.05	Daily Pulser	LAB	0454	10min.	NA	JS
10.3.05	0509109A (4-12)	CAS	0754	2HR. 50min.	UU(NT)	JS
10.3.05	0509110A (1-4.6)	CAS	0754	2HR. 50min	Pu	JS
10.3.05	0509110A (1-41)	CAS	0754	2HR. 50min.	UU	JS
10.4.05	Daily Pulser	LAB	0419	10min.	NA	JS
10.4.05	0509110A (3,4.6)	CAS	0743	2HR 50min.	NP	JS
10.4.05	0509109A (1-12)	CAS	0743	2HR. 50min	Th	JS
10.4.05	0509096A (10-18)	CAS	1105	2HR. 50min.	Th	JS
10.4.05	0509109A (1-6)	CAS	1105	2HR. 50min	Am/Cm	JS
10.5.05	Daily Pulser	LAB	0465	10min.	NA	JS
10.5.05	0509095A (1-9)	Parsons	0655	2HR. 50min.	UU	JS
10.5.05	0510004A (1-4)	PCC	0655	2HR. 50min.	Th	JS
10.5.05	0509120A (1,2)	Lionville	0655	2HR. 50m	Th	JS
10.5.05	0509096A (1-15)	CAS	0959	2HR. 50min.	Cm	JS
10.6.05	Daily Pulser	LAB	0408	10min.	NA	JS
10.6.05	Calibrations	LAB	0440	2 1/2 HR	α 130	JS
10.6.05	0510010A (1-5)	USG	0741	2HR. 50min.	UU	JS
10.6.05	0509098A (1-3,5,15)	CAS	0741	2HR. 50min.	UU	JS
10.6.05	0509103A (1-4)	CAS	0741	2HR. 50min.	UU	JS
10.6.05	0509095A (1)	Parsons	0741	2HR. 50min.	Th	JS
10.6.05	0509095A (2.9)	Parsons	1057	2HR. 50min	Th	JS
10.6.05	0507101A (1-3.8)	CT	1057	2HR. 50min	UU	JS
10.6.05	0509117A (1-3)	MPN	1057	2HR. 50min	Ra	JS

Alpha 3

DATE	SAMPLE#	CLIENT	LOAD TIME	CT. TIME	ANALYSIS	TECH
9.29.05	Daily Pulsers	LAB	0608	10m	NA	MR
9.29.05	0509066A (3-11)	Weston	0908	2HR 50min	UU	MR
9.29.05	0509086A (1-7)	CAS	0908	2HR 50min	UU	MR
9.29.05	Calibrations	LAB	1653	2 1/2 HR	α-iso	MR
9/30/05	DAILY PULSER	LAB	07:40	10MIN	NA	AG
9.30.05	0509096A (4-18)	CAS	1035	2HR 50min	UU	MR
10.1.05	Weekly Blkgd	LAB	1005	16HR 40min	α-iso	MR
10.3.05	Daily Pulser	LAB	0454	10min	NA	JSP
10.3.05	0509110A (2-4,6)	CAS	0843	2HR. 50MIN.	UU	JSP
10.3.05	0509110ANT (4,6)	CAS	0843	2HR. 50MIN	UU(NT)	JSP
10.3.05	0509109A (1-10)	CAS	0843	2HR. 50min.	Pu	JSP
10.4.05	Daily Pulser	LAB	0419	10min	NA	JSP
10.4.05	0509109ANT (1,2,4-12)	CAS	0801	2HR. 50min.	Th (NT)	JSP
10.4.05	0509092A (1-5)	LIONVILLE	0801	2HR. 50min.	Th	JSP
10.4.05	0509109A (7-12)	CAS	1105	2HR. 50min.	Am/cm	JSP
10.4.05	0509081A (1-10)	Sherry	1537	5HR 35min	Ra	MR
10.5.05	Daily Pulser	LAB	0444	10min	NA	JSP
10.5.05	0509120A (3,4)	LIONVILLE	0723	2HR 50min	Th	JSP
10.5.05	0509113A (1-10)	CAS	0723	2HR. 50min.	UU	JSP
10.5.05	0509102A (1-4)	CAS	0723	2HR. 50min	UU	JSP
10.5.05	0509096A (16-18)	CAS	1030	2HR. 50MIN.	Cm	JSP
10.5.05	0510005A (1-8)	ICN	1148	5HR. 35min.	Ra	JSP
10.6.05	Daily Pulser	LAB	0408	10MIN.	NA	JSP
10.6.05	0509104A (1-4)	DURATEK	0452	5HR 35min	NP	JSP
10.6.05	0509104A (1-4)	DURATEK	0452	5HR. 35min	Th	JSP
10.6.05	0509111A (1-7)	CAS	0802	5HR 35min.	UU	JSP
10.6.05	0509111A (1)	CAS	0802	5HR. 35min	Pu	JSP
10.6.05	0509117A (4-19)	MDN	1430	2HR 50min	Ra	MR

SECTION VIII

ANALYTICAL DATA (ISOTOPIC URANIUM)

Eberline Services
Oak Ridge Laboratory
Analysis Sheet

05-09117
UUISO
Run 1

Work Order	05-09117
Analysis Code	UUISO
Run	1
Date Received	9/30/2005
Lab Deadline	10/20/2005
Client	Missouri Dept. of Natural Resources
Project	B3Z02092
Report Level	4
Activity Units	pCi
Aliquot Units	g
Matrix	SO
Method	EML U-02 Modified
Instrument Type	Alpha Spectroscopy
Radiometric Tracer	U-232
Radiometric Sol#	U-10a
Tracer Act (dpm/g)	20.732
Carrier	
Carrier Conc (mg/ml)	

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		09/30/05 00:00	1.0000E+00
02	MBL	BLANK		09/30/05 00:00	1.0000E+00
03	DUP	VPBR092705SL01	37	09/27/05 09:30	1.0980E+00
04	DO	VPBR092705SL01	37	09/27/05 09:30	1.0490E+00
05	TRG	VPBR092705SL02	40	09/27/05 09:34	1.0044E+00
06	TRG	VPBR092705SL03	41	09/27/05 09:37	9.9730E-01
07	TRG	VPBR092705SL04	51	09/27/05 09:40	1.0753E+00
08	TRG	VPBR092705SL05	46	09/27/05 09:44	1.0879E+00
09	TRG	VPBR092705SL06	50	09/27/05 09:50	1.0316E+00
10	TRG	VPBR092705SL07	40	09/27/05 09:52	1.0051E+00
11	TRG	VPBR092705SL08	46	09/27/05 09:56	1.0042E+00
12	TRG	VPBR092705SL09	49	09/27/05 11:30	1.0165E+00
13	TRG	VPBR092705SL10	48	09/27/05 11:36	1.0312E+00
14	TRG	VPBR092705SL11	51	09/27/05 11:25	1.0996E+00
15	TRG	VPBR092705SL12	34	09/27/05 11:23	1.0338E+00
16	TRG	VPBR092705SL13	51	09/27/05 11:18	1.1139E+00
17	TRG	VPBR092705SL14	44	09/27/05 11:15	1.0695E+00
18	TRG	VPBR092705SL15	41	09/27/05 11:13	1.0354E+00
19	TRG	VPBR092705SL16	53	09/27/05 11:05	1.0139E+00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

05-09117
UUISO
Run 1

Internal Fraction	Sample Desc	Tracer Aliquot (g)	Tracer Total ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	Grav Carrier Added (ml)	Grav Filter Tare (g)	Grav Filter Final (g)	Grav Filter Net (g)	Grav % Rec	Mean % Rec	SAF 1*	SAF 2*
01	LCS	0.6179	12.8										
02	MBL	0.6141	12.7										
03	DUP	0.6081	12.6										
04	DO	0.6068	12.6										
05	TRG	0.6095	12.6										
06	TRG	0.6094	12.6										
07	TRG	0.6040	12.5										
08	TRG	0.6031	12.5										
09	TRG	0.6087	12.6										
10	TRG	0.6021	12.5										
11	TRG	0.6053	12.5										
12	TRG	0.6052	12.5										
13	TRG	0.6029	12.5										
14	TRG	0.6067	12.6										
15	TRG	0.6025	12.5										
16	TRG	0.6017	12.5										
17	TRG	0.6048	12.5										
18	TRG	0.6102	12.7										
19	TRG	0.6057	12.6										

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

05-09117
UUISO
Run 1

Internal Fraction	Sample Desc	Rough Prep Date	Rough Prep By	Prep Date	Prep By	Sep t0 Date/Time	Sep t0 By	Sep t1 Date/Time	Sep t1 By
01	LCS			10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
02	MBL			10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
03	DUP			10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
04	DO	10/03/05 13:29	KSALLINGS	10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
05	TRG	10/03/05 13:29	KSALLINGS	10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
06	TRG	10/03/05 13:29	KSALLINGS	10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
07	TRG	10/03/05 13:29	KSALLINGS	10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
08	TRG	10/03/05 13:29	KSALLINGS	10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
09	TRG	10/03/05 13:29	KSALLINGS	10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
10	TRG	10/03/05 13:29	KSALLINGS	10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
11	TRG	10/03/05 13:29	KSALLINGS	10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
12	TRG	10/03/05 13:29	KSALLINGS	10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
13	TRG	10/03/05 13:29	KSALLINGS	10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
14	TRG	10/03/05 13:29	KSALLINGS	10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
15	TRG	10/03/05 13:29	KSALLINGS	10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
16	TRG	10/03/05 13:29	KSALLINGS	10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
17	TRG	10/03/05 13:29	KSALLINGS	10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
18	TRG	10/03/05 13:29	KSALLINGS	10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		
19	TRG	10/03/05 13:29	KSALLINGS	10/05/05 08:10	JBARNARD	10/07/05 05:49	TSMITH		

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Preliminary Data Report & Analytical Calculations

Work Order: 05-09117-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	U-234	LCS	LCS	pCi/g	8.01E+00	1.34E+00	6.29E-02	7.97E+00	100.57	OK		OK	
02	U-234	MBL	BLANK	pCi/g	1.37E-01	9.23E-02	7.70E-02					OK	OK
03	U-234	DUP	VPBR092705SL01	pCi/g	8.61E-01	2.30E-01	5.05E-02				OK	OK	
04	U-234	DO	VPBR092705SL01	pCi/g	1.02E+00	2.76E-01	7.18E-02					OK	
05	U-234	TRG	VPBR092705SL02	pCi/g	8.89E-01	2.67E-01	4.08E-02					OK	
06	U-234	TRG	VPBR092705SL03	pCi/g	9.93E-01	2.70E-01	6.06E-02					OK	
07	U-234	TRG	VPBR092705SL04	pCi/g	7.63E-01	2.29E-01	6.00E-02					OK	
08	U-234	TRG	VPBR092705SL05	pCi/g	8.24E-01	2.55E-01	8.03E-02					OK	
09	U-234	TRG	VPBR092705SL06	pCi/g	6.98E-01	2.07E-01	3.21E-02					OK	
10	U-234	TRG	VPBR092705SL07	pCi/g	7.33E-01	2.28E-01	1.14E-01					OK	
11	U-234	TRG	VPBR092705SL08	pCi/g	8.35E-01	2.48E-01	3.77E-02					OK	
12	U-234	TRG	VPBR092705SL09	pCi/g	9.11E-01	2.49E-01	3.34E-02					OK	
13	U-234	TRG	VPBR092705SL10	pCi/g	9.81E-01	2.73E-01	3.69E-02					OK	
14	U-234	TRG	VPBR092705SL11	pCi/g	6.99E-01	2.20E-01	9.21E-02					OK	
15	U-234	TRG	VPBR092705SL12	pCi/g	7.43E-01	2.37E-01	6.76E-02					OK	
16	U-234	TRG	VPBR092705SL13	pCi/g	1.12E+00	2.94E-01	9.02E-02					OK	
17	U-234	TRG	VPBR092705SL14	pCi/g	9.13E-01	2.69E-01	9.44E-02					OK	
18	U-234	TRG	VPBR092705SL15	pCi/g	9.13E-01	2.80E-01	1.23E-01					OK	
19	U-234	TRG	VPBR092705SL16	pCi/g	9.59E-01	2.81E-01	1.05E-01					OK	

Preliminary Data Report & Analytical Calculations
Work Order: 05-09117-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	U-234	LCS	09/30/05 00:00	1.00E+00	95.70				10/7/2005 5:49	
02	U-234	MBL	09/30/05 00:00	1.00E+00	92.60				10/7/2005 5:49	
03	U-234	DUP	09/27/05 09:30	1.10E+00	106.89				10/7/2005 5:49	
04	U-234	DO	09/27/05 09:30	1.05E+00	89.23				10/7/2005 5:49	
05	U-234	TRG	09/27/05 09:34	1.00E+00	86.55				10/7/2005 5:49	
06	U-234	TRG	09/27/05 09:37	9.97E-01	104.68				10/7/2005 5:49	
07	U-234	TRG	09/27/05 09:40	1.08E+00	95.97				10/7/2005 5:49	
08	U-234	TRG	09/27/05 09:44	1.09E+00	78.64				10/7/2005 5:49	
09	U-234	TRG	09/27/05 09:50	1.03E+00	105.81				10/7/2005 5:49	
10	U-234	TRG	09/27/05 09:52	1.01E+00	90.19				10/7/2005 5:49	
11	U-234	TRG	09/27/05 09:56	1.00E+00	88.43				10/7/2005 5:49	
12	U-234	TRG	09/27/05 11:30	1.02E+00	104.97				10/7/2005 5:49	
13	U-234	TRG	09/27/05 11:36	1.03E+00	90.86				10/7/2005 5:49	
14	U-234	TRG	09/27/05 11:25	1.10E+00	89.46				10/7/2005 5:49	
15	U-234	TRG	09/27/05 11:23	1.03E+00	86.65				10/7/2005 5:49	
16	U-234	TRG	09/27/05 11:18	1.11E+00	95.58				10/7/2005 5:49	
17	U-234	TRG	09/27/05 11:15	1.07E+00	88.78				10/7/2005 5:49	
18	U-234	TRG	09/27/05 11:13	1.04E+00	82.09				10/7/2005 5:49	
19	U-234	TRG	09/27/05 11:05	1.01E+00	92.32				10/7/2005 5:49	

Preliminary Data Report & Analytical Calculations
Work Order: 05-09117-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	U-234	LCS	10/07/05 07:23		A_Spec	33	170	5.90 E+02	1.00 E-03	20.4
02	U-234	MBL	10/07/05 07:23		A_Spec	34	170	9.66 E+00	2.00 E-03	20.2
03	U-234	DUP	10/07/05 07:24		A_Spec	35	170	7.88 E+01	1.00 E-03	20.7
04	U-234	DO	10/07/05 07:24		A_Spec	36	170	7.67 E+01	2.00 E-03	21.4
05	U-234	TRG	10/07/05 07:24		A_Spec	37	170	5.90 E+01	0.00 E+00	20.3
06	U-234	TRG	10/07/05 07:25		A_Spec	38	170	7.58 E+01	1.00 E-03	19.4
07	U-234	TRG	10/07/05 07:25		A_Spec	39	170	5.88 E+01	1.00 E-03	19.8
08	U-234	TRG	10/07/05 07:25		A_Spec	40	170	5.57 E+01	2.00 E-03	21
09	U-234	TRG	10/07/05 07:26		A_Spec	41	170	5.90 E+01	0.00 E+00	20.6
10	U-234	TRG	10/07/05 07:26		A_Spec	42	170	5.45 E+01	9.00 E-03	21.8
11	U-234	TRG	10/07/05 07:26		A_Spec	43	170	6.00 E+01	0.00 E+00	21.5
12	U-234	TRG	10/07/05 07:27		A_Spec	44	170	7.40 E+01	0.00 E+00	20.2
13	U-234	TRG	10/07/05 07:27		A_Spec	45	170	7.20 E+01	0.00 E+00	20.8
14	U-234	TRG	10/07/05 07:27		A_Spec	46	170	5.32 E+01	5.00 E-03	20.5
15	U-234	TRG	10/07/05 07:28		A_Spec	47	170	5.08 E+01	1.00 E-03	20.3
16	U-234	TRG	10/07/05 07:28		A_Spec	48	170	8.72 E+01	5.00 E-03	19.3
17	U-234	TRG	10/07/05 07:52		A_Spec	17	170.15	6.33 E+01	4.00 E-03	19.4
18	U-234	TRG	10/07/05 07:53		A_Spec	18	170.02	5.78 E+01	7.00 E-03	19.8
19	U-234	TRG	10/07/05 07:53		A_Spec	19	170.13	6.42 E+01	5.00 E-03	19

Preliminary Data Report & Analytical Calculations
Work Order: 05-09117-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	U-235	LCS	LCS	pCi/g	4.19E-01	1.78E-01	4.54E-02	3.62E-01	115.83	OK		OK	
02	U-235	MBL	BLANK	pCi/g	1.75E-02	3.51E-02	4.75E-02					OK	OK
03	U-235	DUP	VPBR092705SL01	pCi/g	6.74E-02	6.10E-02	3.65E-02				OK	OK	
04	U-235	DO	VPBR092705SL01	pCi/g	7.61E-02	7.43E-02	8.86E-02					OK	
05	U-235	TRG	VPBR092705SL02	pCi/g	3.72E-02	5.29E-02	5.04E-02					OK	
06	U-235	TRG	VPBR092705SL03	pCi/g	6.19E-02	6.55E-02	7.48E-02					OK	
07	U-235	TRG	VPBR092705SL04	pCi/g	7.72E-02	7.26E-02	7.40E-02					OK	
08	U-235	TRG	VPBR092705SL05	pCi/g	3.65E-02	5.20E-02	4.95E-02					OK	
09	U-235	TRG	VPBR092705SL06	pCi/g	4.38E-02	5.10E-02	3.96E-02					OK	
10	U-235	TRG	VPBR092705SL07	pCi/g	4.98E-02	5.79E-02	4.50E-02					OK	
11	U-235	TRG	VPBR092705SL08	pCi/g	8.58E-02	7.78E-02	4.65E-02					OK	
12	U-235	TRG	VPBR092705SL09	pCi/g	6.07E-02	6.13E-02	4.11E-02					OK	
13	U-235	TRG	VPBR092705SL10	pCi/g	4.76E-02	5.89E-02	7.78E-02					OK	
14	U-235	TRG	VPBR092705SL11	pCi/g	8.11E-02	7.36E-02	4.40E-02					OK	
15	U-235	TRG	VPBR092705SL12	pCi/g	3.30E-02	5.16E-02	8.34E-02					OK	
16	U-235	TRG	VPBR092705SL13	pCi/g	1.06E-01	8.60E-02	8.63E-02					OK	
17	U-235	TRG	VPBR092705SL14	pCi/g	1.07E-01	8.86E-02	4.82E-02					OK	
18	U-235	TRG	VPBR092705SL15	pCi/g	1.62E-02	3.96E-02	9.02E-02					OK	
19	U-235	TRG	VPBR092705SL16	pCi/g	7.06E-02	7.48E-02	8.53E-02					OK	

Preliminary Data Report & Analytical Calculations
Work Order: 05-09117-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	U-235	LCS	09/30/05 00:00	1.00E+00	95.70				10/7/2005 5:49	
02	U-235	MBL	09/30/05 00:00	1.00E+00	92.60				10/7/2005 5:49	
03	U-235	DUP	09/27/05 09:30	1.10E+00	106.89				10/7/2005 5:49	
04	U-235	DO	09/27/05 09:30	1.05E+00	89.23				10/7/2005 5:49	
05	U-235	TRG	09/27/05 09:34	1.00E+00	86.55				10/7/2005 5:49	
06	U-235	TRG	09/27/05 09:37	9.97E-01	104.68				10/7/2005 5:49	
07	U-235	TRG	09/27/05 09:40	1.08E+00	95.97				10/7/2005 5:49	
08	U-235	TRG	09/27/05 09:44	1.09E+00	78.64				10/7/2005 5:49	
09	U-235	TRG	09/27/05 09:50	1.03E+00	105.81				10/7/2005 5:49	
10	U-235	TRG	09/27/05 09:52	1.01E+00	90.19				10/7/2005 5:49	
11	U-235	TRG	09/27/05 09:56	1.00E+00	88.43				10/7/2005 5:49	
12	U-235	TRG	09/27/05 11:30	1.02E+00	104.97				10/7/2005 5:49	
13	U-235	TRG	09/27/05 11:36	1.03E+00	90.86				10/7/2005 5:49	
14	U-235	TRG	09/27/05 11:25	1.10E+00	89.46				10/7/2005 5:49	
15	U-235	TRG	09/27/05 11:23	1.03E+00	86.65				10/7/2005 5:49	
16	U-235	TRG	09/27/05 11:18	1.11E+00	95.58				10/7/2005 5:49	
17	U-235	TRG	09/27/05 11:15	1.07E+00	88.78				10/7/2005 5:49	
18	U-235	TRG	09/27/05 11:13	1.04E+00	82.09				10/7/2005 5:49	
19	U-235	TRG	09/27/05 11:05	1.01E+00	92.32				10/7/2005 5:49	

Preliminary Data Report & Analytical Calculations

Work Order: 05-09117-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	U-235	LCS	10/07/05 07:23		A_Spec	33	170	2.50 E+01	0.00 E+00	20.4
02	U-235	MBL	10/07/05 07:23		A_Spec	34	170	1.00 E+00	0.00 E+00	20.2
03	U-235	DUP	10/07/05 07:24		A_Spec	35	170	5.00 E+00	0.00 E+00	20.7
04	U-235	DO	10/07/05 07:24		A_Spec	36	170	4.66 E+00	2.00 E-03	21.4
05	U-235	TRG	10/07/05 07:24		A_Spec	37	170	2.00 E+00	0.00 E+00	20.3
06	U-235	TRG	10/07/05 07:25		A_Spec	38	170	3.83 E+00	1.00 E-03	19.4
07	U-235	TRG	10/07/05 07:25		A_Spec	39	170	4.83 E+00	1.00 E-03	19.8
08	U-235	TRG	10/07/05 07:25		A_Spec	40	170	2.00 E+00	0.00 E+00	21
09	U-235	TRG	10/07/05 07:26		A_Spec	41	170	3.00 E+00	0.00 E+00	20.6
10	U-235	TRG	10/07/05 07:26		A_Spec	42	170	3.00 E+00	0.00 E+00	21.8
11	U-235	TRG	10/07/05 07:26		A_Spec	43	170	5.00 E+00	0.00 E+00	21.5
12	U-235	TRG	10/07/05 07:27		A_Spec	44	170	4.00 E+00	0.00 E+00	20.2
13	U-235	TRG	10/07/05 07:27		A_Spec	45	170	2.83 E+00	1.00 E-03	20.8
14	U-235	TRG	10/07/05 07:27		A_Spec	46	170	5.00 E+00	0.00 E+00	20.5
15	U-235	TRG	10/07/05 07:28		A_Spec	47	170	1.83 E+00	1.00 E-03	20.3
16	U-235	TRG	10/07/05 07:28		A_Spec	48	170	6.66 E+00	2.00 E-03	19.3
17	U-235	TRG	10/07/05 07:52		A_Spec	17	170.15	6.00 E+00	0.00 E+00	19.4
18	U-235	TRG	10/07/05 07:53		A_Spec	18	170.02	8.30 E-01	1.00 E-03	19.8
19	U-235	TRG	10/07/05 07:53		A_Spec	19	170.13	3.83 E+00	1.00 E-03	19

Preliminary Data Report & Analytical Calculations
Work Order: 05-09117-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	U-238	LCS	LCS	pCi/g	9.17E+00	1.51E+00	3.67E-02	7.76E+00	118.09	OK		OK	
02	U-238	MBL	BLANK	pCi/g	5.41E-02	5.73E-02	6.54E-02					OK	OK
03	U-238	DUP	VPBR092705SL01	pCi/g	7.88E-01	2.17E-01	6.56E-02				OK	OK	
04	U-238	DO	VPBR092705SL01	pCi/g	8.96E-01	2.54E-01	3.57E-02					OK	
05	U-238	TRG	VPBR092705SL02	pCi/g	1.06E+00	2.99E-01	6.94E-02					OK	
06	U-238	TRG	VPBR092705SL03	pCi/g	1.03E+00	2.76E-01	3.53E-02					OK	
07	U-238	TRG	VPBR092705SL04	pCi/g	7.49E-01	2.25E-01	3.50E-02					OK	
08	U-238	TRG	VPBR092705SL05	pCi/g	7.20E-01	2.34E-01	6.82E-02					OK	
09	U-238	TRG	VPBR092705SL06	pCi/g	9.05E-01	2.44E-01	5.45E-02					OK	
10	U-238	TRG	VPBR092705SL07	pCi/g	9.46E-01	2.65E-01	7.26E-02					OK	
11	U-238	TRG	VPBR092705SL08	pCi/g	1.15E+00	3.04E-01	3.76E-02					OK	
12	U-238	TRG	VPBR092705SL09	pCi/g	9.31E-01	2.52E-01	3.32E-02					OK	
13	U-238	TRG	VPBR092705SL10	pCi/g	1.01E+00	2.79E-01	7.35E-02					OK	
14	U-238	TRG	VPBR092705SL11	pCi/g	9.39E-01	2.62E-01	7.10E-02					OK	
15	U-238	TRG	VPBR092705SL12	pCi/g	7.10E-01	2.30E-01	6.73E-02					OK	
16	U-238	TRG	VPBR092705SL13	pCi/g	1.12E+00	2.93E-01	9.51E-02					OK	
17	U-238	TRG	VPBR092705SL14	pCi/g	1.25E+00	3.27E-01	6.65E-02					OK	
18	U-238	TRG	VPBR092705SL15	pCi/g	1.03E+00	3.00E-01	9.48E-02					OK	
19	U-238	TRG	VPBR092705SL16	pCi/g	1.14E+00	3.14E-01	1.21E-01					OK	

Preliminary Data Report & Analytical Calculations
Work Order: 05-09117-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	U-238	LCS	09/30/05 00:00	1.00E+00	95.70				10/7/2005 5:49	
02	U-238	MBL	09/30/05 00:00	1.00E+00	92.60				10/7/2005 5:49	
03	U-238	DUP	09/27/05 09:30	1.10E+00	106.89				10/7/2005 5:49	
04	U-238	DO	09/27/05 09:30	1.05E+00	89.23				10/7/2005 5:49	
05	U-238	TRG	09/27/05 09:34	1.00E+00	86.55				10/7/2005 5:49	
06	U-238	TRG	09/27/05 09:37	9.97E-01	104.68				10/7/2005 5:49	
07	U-238	TRG	09/27/05 09:40	1.08E+00	95.97				10/7/2005 5:49	
08	U-238	TRG	09/27/05 09:44	1.09E+00	78.64				10/7/2005 5:49	
09	U-238	TRG	09/27/05 09:50	1.03E+00	105.81				10/7/2005 5:49	
10	U-238	TRG	09/27/05 09:52	1.01E+00	90.19				10/7/2005 5:49	
11	U-238	TRG	09/27/05 09:56	1.00E+00	88.43				10/7/2005 5:49	
12	U-238	TRG	09/27/05 11:30	1.02E+00	104.97				10/7/2005 5:49	
13	U-238	TRG	09/27/05 11:36	1.03E+00	90.86				10/7/2005 5:49	
14	U-238	TRG	09/27/05 11:25	1.10E+00	89.46				10/7/2005 5:49	
15	U-238	TRG	09/27/05 11:23	1.03E+00	86.65				10/7/2005 5:49	
16	U-238	TRG	09/27/05 11:18	1.11E+00	95.58				10/7/2005 5:49	
17	U-238	TRG	09/27/05 11:15	1.07E+00	88.78				10/7/2005 5:49	
18	U-238	TRG	09/27/05 11:13	1.04E+00	82.09				10/7/2005 5:49	
19	U-238	TRG	09/27/05 11:05	1.01E+00	92.32				10/7/2005 5:49	

Preliminary Data Report & Analytical Calculations

Work Order: 05-09117-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	U-238	LCS	10/07/05 07:23		A_Spec	33	170	6.78 E+02	0.00 E+00	20.4
02	U-238	MBL	10/07/05 07:23		A_Spec	34	170	3.83 E+00	1.00 E-03	20.2
03	U-238	DUP	10/07/05 07:24		A_Spec	35	170	7.25 E+01	3.00 E-03	20.7
04	U-238	DO	10/07/05 07:24		A_Spec	36	170	6.80 E+01	0.00 E+00	21.4
05	U-238	TRG	10/07/05 07:24		A_Spec	37	170	7.08 E+01	1.00 E-03	20.3
06	U-238	TRG	10/07/05 07:25		A_Spec	38	170	7.90 E+01	0.00 E+00	19.4
07	U-238	TRG	10/07/05 07:25		A_Spec	39	170	5.80 E+01	0.00 E+00	19.8
08	U-238	TRG	10/07/05 07:25		A_Spec	40	170	4.88 E+01	1.00 E-03	21
09	U-238	TRG	10/07/05 07:26		A_Spec	41	170	7.68 E+01	1.00 E-03	20.6
10	U-238	TRG	10/07/05 07:26		A_Spec	42	170	7.07 E+01	2.00 E-03	21.8
11	U-238	TRG	10/07/05 07:26		A_Spec	43	170	8.30 E+01	0.00 E+00	21.5
12	U-238	TRG	10/07/05 07:27		A_Spec	44	170	7.60 E+01	0.00 E+00	20.2
13	U-238	TRG	10/07/05 07:27		A_Spec	45	170	7.47 E+01	2.00 E-03	20.8
14	U-238	TRG	10/07/05 07:27		A_Spec	46	170	7.17 E+01	2.00 E-03	20.5
15	U-238	TRG	10/07/05 07:28		A_Spec	47	170	4.88 E+01	1.00 E-03	20.3
16	U-238	TRG	10/07/05 07:28		A_Spec	48	170	8.70 E+01	6.00 E-03	19.3
17	U-238	TRG	10/07/05 07:52		A_Spec	17	170.15	8.68 E+01	1.00 E-03	19.4
18	U-238	TRG	10/07/05 07:53		A_Spec	18	170.02	6.55 E+01	3.00 E-03	19.8
19	U-238	TRG	10/07/05 07:53		A_Spec	19	170.13	7.66 E+01	8.00 E-03	19

Eberline Services
Oak Ridge Laboratory

Preliminary Data Report & Analytical Calculations

Work Order: 05-09117-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
02	U-236	MBL	BLANK	pCi/g	1.57E-02	3.15E-02	4.26E-02					OK	OK
03	U-236	DUP	VPBR092705SL01	pCi/g	3.42E-02	4.24E-02	5.60E-02				INV	OK	
04	U-236	DO	VPBR092705SL01	pCi/g	1.22E-02	2.98E-02	6.79E-02					OK	
05	U-236	TRG	VPBR092705SL02	pCi/g	3.34E-02	4.75E-02	4.52E-02					OK	
06	U-236	TRG	VPBR092705SL03	pCi/g	1.45E-02	2.91E-02	3.93E-02					OK	
07	U-236	TRG	VPBR092705SL04	pCi/g	0.00E+00	0.00E+00	3.89E-02					OK	
08	U-236	TRG	VPBR092705SL05	pCi/g	0.00E+00	0.00E+00	4.44E-02					OK	
09	U-236	TRG	VPBR092705SL06	pCi/g	5.24E-02	5.30E-02	3.55E-02					OK	
10	U-236	TRG	VPBR092705SL07	pCi/g	4.47E-02	5.20E-02	4.04E-02					OK	
11	U-236	TRG	VPBR092705SL08	pCi/g	4.62E-02	5.38E-02	4.18E-02					OK	
12	U-236	TRG	VPBR092705SL09	pCi/g	1.13E-02	2.77E-02	6.31E-02					OK	
13	U-236	TRG	VPBR092705SL10	pCi/g	1.51E-02	3.03E-02	4.09E-02					OK	
14	U-236	TRG	VPBR092705SL11	pCi/g	5.58E-02	5.91E-02	6.74E-02					OK	
15	U-236	TRG	VPBR092705SL12	pCi/g	-5.50E-03	7.83E-03	8.77E-02					OK	
16	U-236	TRG	VPBR092705SL13	pCi/g	1.43E-02	2.87E-02	3.87E-02					OK	
17	U-236	TRG	VPBR092705SL14	pCi/g	2.92E-02	4.57E-02	7.39E-02					OK	
18	U-236	TRG	VPBR092705SL15	pCi/g	3.20E-02	5.01E-02	8.09E-02					OK	
19	U-236	TRG	VPBR092705SL16	pCi/g	3.03E-02	4.74E-02	7.66E-02					OK	

Preliminary Data Report & Analytical Calculations

Work Order: 05-09117-UUISO-1

Run	Analysis Code	Eberline Services Work Order	Client
1	UUISO	05-09117	Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
02	U-236	MBL	09/30/05 00:00	1.00E+00	92.60				10/7/2005 5:49	
03	U-236	DUP	09/27/05 09:30	1.10E+00	106.89				10/7/2005 5:49	
04	U-236	DO	09/27/05 09:30	1.05E+00	89.23				10/7/2005 5:49	
05	U-236	TRG	09/27/05 09:34	1.00E+00	86.55				10/7/2005 5:49	
06	U-236	TRG	09/27/05 09:37	9.97E-01	104.68				10/7/2005 5:49	
07	U-236	TRG	09/27/05 09:40	1.08E+00	95.97				10/7/2005 5:49	
08	U-236	TRG	09/27/05 09:44	1.09E+00	78.64				10/7/2005 5:49	
09	U-236	TRG	09/27/05 09:50	1.03E+00	105.81				10/7/2005 5:49	
10	U-236	TRG	09/27/05 09:52	1.01E+00	90.19				10/7/2005 5:49	
11	U-236	TRG	09/27/05 09:56	1.00E+00	88.43				10/7/2005 5:49	
12	U-236	TRG	09/27/05 11:30	1.02E+00	104.97				10/7/2005 5:49	
13	U-236	TRG	09/27/05 11:36	1.03E+00	90.86				10/7/2005 5:49	
14	U-236	TRG	09/27/05 11:25	1.10E+00	89.46				10/7/2005 5:49	
15	U-236	TRG	09/27/05 11:23	1.03E+00	86.65				10/7/2005 5:49	
16	U-236	TRG	09/27/05 11:18	1.11E+00	95.58				10/7/2005 5:49	
17	U-236	TRG	09/27/05 11:15	1.07E+00	88.78				10/7/2005 5:49	
18	U-236	TRG	09/27/05 11:13	1.04E+00	82.09				10/7/2005 5:49	
19	U-236	TRG	09/27/05 11:05	1.01E+00	92.32				10/7/2005 5:49	

Preliminary Data Report & Analytical Calculations

Work Order: 05-09117-UUISO-1

Run: 1
Analysis Code: UUISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
02	U-236	MBL	10/07/05 07:23		A_Spec	34	170	1.00 E+00	0.00 E+00	20.2
03	U-236	DUP	10/07/05 07:24		A_Spec	35	170	2.83 E+00	1.00 E-03	20.7
04	U-236	DO	10/07/05 07:24		A_Spec	36	170	8.30 E-01	1.00 E-03	21.4
05	U-236	TRG	10/07/05 07:24		A_Spec	37	170	2.00 E+00	0.00 E+00	20.3
06	U-236	TRG	10/07/05 07:25		A_Spec	38	170	1.00 E+00	0.00 E+00	19.4
07	U-236	TRG	10/07/05 07:25		A_Spec	39	170	0.00 E+00	0.00 E+00	19.8
08	U-236	TRG	10/07/05 07:25		A_Spec	40	170	0.00 E+00	0.00 E+00	21
09	U-236	TRG	10/07/05 07:26		A_Spec	41	170	4.00 E+00	0.00 E+00	20.6
10	U-236	TRG	10/07/05 07:26		A_Spec	42	170	3.00 E+00	0.00 E+00	21.8
11	U-236	TRG	10/07/05 07:26		A_Spec	43	170	3.00 E+00	0.00 E+00	21.5
12	U-236	TRG	10/07/05 07:27		A_Spec	44	170	8.30 E-01	1.00 E-03	20.2
13	U-236	TRG	10/07/05 07:27		A_Spec	45	170	1.00 E+00	0.00 E+00	20.8
14	U-236	TRG	10/07/05 07:27		A_Spec	46	170	3.83 E+00	1.00 E-03	20.5
15	U-236	TRG	10/07/05 07:28		A_Spec	47	170	-3.40 E-01	2.00 E-03	20.3
16	U-236	TRG	10/07/05 07:28		A_Spec	48	170	1.00 E+00	0.00 E+00	19.3
17	U-236	TRG	10/07/05 07:52		A_Spec	17	170.15	1.83 E+00	1.00 E-03	19.4
18	U-236	TRG	10/07/05 07:53		A_Spec	18	170.02	1.83 E+00	1.00 E-03	19.8
19	U-236	TRG	10/07/05 07:53		A_Spec	19	170.13	1.83 E+00	1.00 E-03	19

Count Room Report
Client: Missouri Dept. of Natural

05-09117-UUISO-1 (pCi/g) in SO
Tracer ID: U-10a

33-48, 17-19

Internal Fraction	Sample Desc	Client ID	Sample Date	Sample Aliquot	Tracer Aliquot (g)	Tracer ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	SAF 1*	SAF 2*
01	LCS	LCS	09/30/05 00:00	1.0000	0.6179	12.8103				
02	MBL	BLANK	09/30/05 00:00	1.0000	0.6141	12.7315				
03	DUP	VPBR092705SL01	09/27/05 09:30	1.0980	0.6081	12.6071				
04	DO	VPBR092705SL01	09/27/05 09:30	1.0490	0.6068	12.5802				
05	TRG	VPBR092705SL02	09/27/05 09:34	1.0044	0.6095	12.6362				
06	TRG	VPBR092705SL03	09/27/05 09:37	0.9973	0.6094	12.6341				
07	TRG	VPBR092705SL04	09/27/05 09:40	1.0753	0.6040	12.5221				
08	TRG	VPBR092705SL05	09/27/05 09:44	1.0879	0.6031	12.5035				
09	TRG	VPBR092705SL06	09/27/05 09:50	1.0316	0.6087	12.6196				
10	TRG	VPBR092705SL07	09/27/05 09:52	1.0051	0.6021	12.4827				
11	TRG	VPBR092705SL08	09/27/05 09:56	1.0042	0.6053	12.5491				
12	TRG	VPBR092705SL09	09/27/05 11:30	1.0165	0.6052	12.5470				
13	TRG	VPBR092705SL10	09/27/05 11:36	1.0312	0.6029	12.4993				
14	TRG	VPBR092705SL11	09/27/05 11:25	1.0996	0.6067	12.5781				
15	TRG	VPBR092705SL12	09/27/05 11:23	1.0338	0.6025	12.4910				
16	TRG	VPBR092705SL13	09/27/05 11:18	1.1139	0.6017	12.4744				
17	TRG	VPBR092705SL14	09/27/05 11:15	1.0695	0.6048	12.5387				
18	TRG	VPBR092705SL15	09/27/05 11:13	1.0354	0.6102	12.6507				
19	TRG	VPBR092705SL16	09/27/05 11:05	1.0139	0.6057	12.5574				

Eberline Services
Oak Ridge Laboratory

Spike and Tracer Worksheet

Printed: 10/5/2005 8:10 AM

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
05-09117	1	UUISO	10/5/2005 7:55	JBARNARD		

LCS & Matrix Spikes					LCS	MS	LCSD	MSD	LCS		MS		LCSD		MSD	
Isotope	*Sol #*	*Activity dpm/g*	*Solution Date*	*Approx Addition*	*Volume Used (g)*	*Volume Used (g)*	*Volume Used (g)*	*Volume Used (g)*	*Known pCi*	*Error Estimate*	*Added pCi*	*Error Estimate*	*Known pCi*	*Error Estimate*	*Added pCi*	*Error Estimate*
U-234	U-8a	35.240	10/5/2005	**0.500**	**0.5018**				7.97	0.287	0.00	0.000	0.00	0.000	0.00	0.000
U-235	U-8a	1.600	10/5/2005	**0.500**	**0.5018**				0.36	0.013	0.00	0.000	0.00	0.000	0.00	0.000
U-238	U-8a	34.350	10/5/2005	**0.500**	**0.5018**				7.76	0.280	0.00	0.000	0.00	0.000	0.00	0.000

Tracers

fraction	*Isotope*	*Sol #*	*Activity dpm/g*	*Solution Date*	*Volume Used (g)*	*Approx Addition*
01	**U-232**	U-10a	20.732	10/5/2005	**0.6179**	**0.5800**
02	**U-232**	U-10a	20.732	10/5/2005	**0.6141**	**0.5800**
03	**U-232**	U-10a	20.732	10/5/2005	**0.6081**	**0.5800**
04	**U-232**	U-10a	20.732	10/5/2005	**0.6068**	**0.5800**
05	**U-232**	U-10a	20.732	10/5/2005	**0.6095**	**0.5800**
06	**U-232**	U-10a	20.732	10/5/2005	**0.6094**	**0.5800**
07	**U-232**	U-10a	20.732	10/5/2005	**0.6040**	**0.5800**
08	**U-232**	U-10a	20.732	10/5/2005	**0.6031**	**0.5800**
09	**U-232**	U-10a	20.732	10/5/2005	**0.6087**	**0.5800**
10	**U-232**	U-10a	20.732	10/5/2005	**0.6021**	**0.5800**
11	**U-232**	U-10a	20.732	10/5/2005	**0.6053**	**0.5800**
12	**U-232**	U-10a	20.732	10/5/2005	**0.6052**	**0.5800**
13	**U-232**	U-10a	20.732	10/5/2005	**0.6029**	**0.5800**
14	**U-232**	U-10a	20.732	10/5/2005	**0.6067**	**0.5800**
15	**U-232**	U-10a	20.732	10/5/2005	**0.6025**	**0.5800**
16	**U-232**	U-10a	20.732	10/5/2005	**0.6017**	**0.5800**
17	**U-232**	U-10a	20.732	10/5/2005	**0.6048**	**0.5800**
18	**U-232**	U-10a	20.732	10/5/2005	**0.6102**	**0.5800**
19	**U-232**	U-10a	20.732	10/5/2005	**0.6057**	**0.5800**

Balance Printer Tapes

Tracer

0.6179 g
-0.6141 g
-0.6081 g
-0.6068 g
-0.6095 g
-0.6094 g
-0.6040 g
-0.6031 g
-0.6087 g
-0.6021 g
-0.6053 g
-0.6052 g
-0.6029 g
-0.6067 g
-0.6025 g
-0.6017 g
-0.6048 g
-0.6102 g
-0.6057 g

LCS

0.5018 g

Matrix Spike

Eberline Services - Oak Ridge
Version 2.0 8/1999

Aliquot Worksheet

Printed: 10/4/2005 1:37 PM

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
05-09117	1	UUISO	grams	10/20/2005	JBARNARD

Lab Fraction	Missouri Dept. of Natural Resources Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	VPBR092705SL01	DUP					1.0980E+00	1.0980E+00				
04	VPBR092705SL01	DO					1.0490E+00	1.0490E+00				
05	VPBR092705SL02	TRG					1.0044E+00	1.0044E+00				
06	VPBR092705SL03	TRG					9.9730E-01	9.9730E-01				
07	VPBR092705SL04	TRG					1.0753E+00	1.0753E+00				
08	VPBR092705SL05	TRG					1.0879E+00	1.0879E+00				
09	VPBR092705SL06	TRG					1.0316E+00	1.0316E+00				
10	VPBR092705SL07	TRG					1.0051E+00	1.0051E+00				
11	VPBR092705SL08	TRG					1.0042E+00	1.0042E+00				
12	VPBR092705SL09	TRG					1.0165E+00	1.0165E+00				
13	VPBR092705SL10	TRG					1.0312E+00	1.0312E+00				
14	VPBR092705SL11	TRG					1.0996E+00	1.0996E+00				
15	VPBR092705SL12	TRG					1.0338E+00	1.0338E+00				
16	VPBR092705SL13	TRG					1.1139E+00	1.1139E+00				
17	VPBR092705SL14	TRG					1.0695E+00	1.0695E+00				
18	VPBR092705SL15	TRG					1.0354E+00	1.0354E+00				
19	VPBR092705SL16	TRG					1.0139E+00	1.0139E+00				

1.0980 g
1.0490 g
1.0044 g
0.9973 g
1.0753 g
1.0879 g
1.0316 g
1.0051 g
1.0042 g
1.0165 g
1.0312 g
1.0996 g
1.0338 g
1.1139 g
1.0695 g
1.0354 g
1.0139 g
~~0.9992~~ g

Comments	

Technician: JBarnard Date: 10/4/05

Eberline Services - Oak Ridge
Prep Logbook
Version 2.0 8/1999

Rough Sample Preparation Log Book

Work Order	Lab Deadline	Date Received in Prep	Date Sealed	Date Returned	Technician
05-09117	10/20/2005	10/2/2005	10/3/2005	10/4/2005	KSALLINGS

Eberline	Missouri Dept. of Natural Resources	Tare (g)	Gross (g)		Net (g)		Percent		Gamma		Special
Fraction	Client ID	Pan Wt	Wet Wt.	Dry Wt.	Wet Wt.	Dry Wt.	Liquid	Solid	Dry Wt.	LEPS Wt.	Info
04	VPBR092705SL01	13.7700	473.6900	378.5700	459.9200	364.8000	20.68%	79.32%			
05	VPBR092705SL02	13.7800	516.5600	447.7100	502.7800	433.9300	13.69%	86.31%			
06	VPBR092705SL03	13.8100	476.1600	367.8400	462.3500	354.0300	23.43%	76.57%			
07	VPBR092705SL04	13.8500	479.1200	387.7100	465.2700	373.8600	19.65%	80.35%			
08	VPBR092705SL05	13.8500	425.7700	350.8500	411.9200	337.0000	18.19%	81.81%			
09	VPBR092705SL06	13.7900	374.2300	294.7500	360.4400	280.9600	22.05%	77.95%			
10	VPBR092705SL07	13.9000	403.2800	322.5000	389.3800	308.6000	20.75%	79.25%			
11	VPBR092705SL08	13.7700	298.0700	242.3800	284.3000	228.6100	19.59%	80.41%			
12	VPBR092705SL09	13.9100	494.9100	420.0800	481.0000	406.1700	15.56%	84.44%			
13	VPBR092705SL10	13.7600	442.0500	356.7400	428.2900	342.9800	19.92%	80.08%			
14	VPBR092705SL11	13.7000	389.5500	339.9000	375.8500	326.2000	13.21%	86.79%			
15	VPBR092705SL12	13.9900	395.4000	345.8700	381.4100	331.8800	12.99%	87.01%			
16	VPBR092705SL13	13.6800	418.1800	346.7600	404.5000	333.0800	17.66%	82.34%			
17	VPBR092705SL14	14.0500	346.1800	256.6900	332.1300	242.6400	26.94%	73.06%			
18	VPBR092705SL15	13.8900	441.4800	373.6800	427.5900	359.7900	15.86%	84.14%			
19	VPBR092705SL16	13.8100	435.1000	327.1400	421.2900	313.3300	25.63%	74.37%			

Comments	
Special Codes	**H: Hot, O: Organic Hazard, P: PCB Hazard, R: Rush, T: Other (see comments)**

Technician: Kenny Sallings

Date: **Analysis: Rough Prep Logbook**

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:06:28

****
Spectral File: ND_AMS_ARCHIVE_C:C_0509117A-UU$01_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	01
SAMPLE DATE:	7-OCT-2005 00:00	ALIQUOT:	1.000E+00 gram
SAMPLE TITLE:	SPIKE	DETECTOR NUMBER:	033
ACQ DATE:	7-OCT-2005 07:23	AVERAGE EFFICIENCY:	20.43%
ELAPSED LIVE TIME:	10200.	RECOVERY:	95.70%
TRACER ID:	UU-10A	TRACER FWHM (kev):	78.81
LAMBDA VALUE:	618.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.810	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_033_1OCT05	BKG ELAPSED TIME:	60000.

****

NUCLIDE ACTIVITY SUMMARY

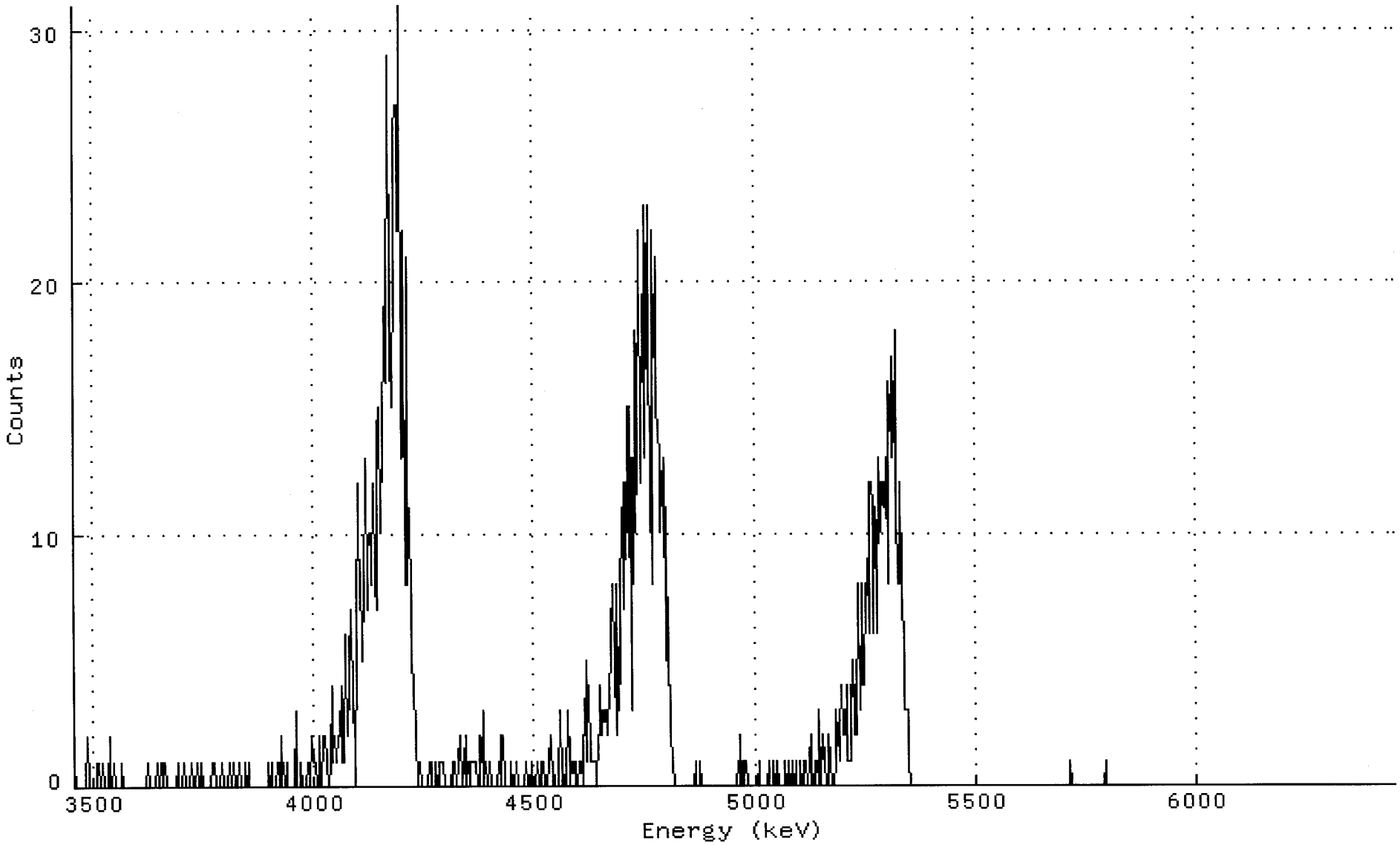
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	424.83	0.17	99.8	5.770E+00	7.384E-01	6.285E-02
U-234	4761.5	589.83	0.17	99.8	8.011E+00	1.341E+00	6.285E-02
U-235	4385.5	25.00	0.00	80.9	4.189E-01	1.783E-01	4.541E-02
U-236	4485.2	7.00	0.00	90.1	1.053E-01	8.107E-02	4.077E-02
U-238	4184.4	678.00	0.00	100.2	9.169E+00	1.510E+00	3.665E-02

****

Analyst: [signature] Date: 10-7-05

Reviewer: [signature] Date: 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.C]C_0509117A-UU$01_UU.CNF;1
Title : 033
Sample Title: SPIKE
Start Time: 7-OCT-2005 07:23: Sample Time: 7-OCT-2005 00:00: Energy Offset: 3.44682E+03
Real Time : 0 02:50:00.40 Sample ID : 01 Energy Slope : 3.12376E+00
Live Time : 0 02:50:00.00 Sample Type: UU Energy Quad : -1.92284E-04



Channel Contents for ND_AMS_ARCHIVE_C:C_0509117A-UU$01_UU

Channel

1:	0	0	1	0	0	0	0	0	0	0	0	0	2	0
15:	0	0	0	0	0	1	1	0	0	1	0	0	0	0
29:	2	0	0	1	0	0	0	0	0	1	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	1	0	0	0	0	0	0	1	0	0	1	1	0	1
71:	0	0	0	0	0	0	0	0	1	0	0	0	0	1
85:	0	0	0	0	1	1	0	0	1	1	0	0	1	0
99:	0	0	0	0	0	0	1	1	0	0	0	0	0	1
113:	0	0	0	0	1	1	0	1	0	0	0	1	1	0
127:	0	0	1	0	1	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	1	0	1	0	0	0	1	1	0
155:	2	0	1	0	1	0	0	0	0	0	0	3	0	0
169:	0	1	0	0	0	0	1	0	0	2	1	1	1	0
183:	0	2	0	2	2	2	1	1	0	1	4	1	2	1
197:	1	2	2	4	1	1	6	5	2	4	5	7	3	2
211:	0	6	12	9	9	5	8	7	13	7	9	10	10	8
225:	12	8	7	14	15	10	11	13	19	18	16	29	18	17
239:	15	21	26	27	27	22	31	13	22	18	8	21	8	11
253:	7	5	4	2	0	0	1	0	0	0	0	0	0	1
267:	1	0	0	0	1	0	0	1	1	1	0	0	0	0
281:	0	0	1	0	1	0	1	1	2	0	0	1	2	0
295:	1	0	1	1	1	1	1	0	0	2	1	3	0	1
309:	0	1	1	0	0	0	0	0	0	1	0	2	2	0
323:	0	0	0	0	1	0	0	0	1	0	0	0	0	0
337:	0	1	0	0	0	1	0	0	0	0	1	0	1	0
351:	1	0	0	0	1	1	2	0	1	0	0	0	0	3
365:	0	1	0	0	0	3	1	0	1	1	0	1	0	1
379:	1	1	0	2	2	5	1	4	1	1	1	1	1	0
393:	2	2	4	2	3	3	3	2	2	4	5	6	8	5
407:	2	8	3	5	7	11	7	12	9	15	10	15	3	13
421:	8	18	10	13	22	12	17	16	23	13	20	23	18	12
435:	8	22	17	21	15	14	13	10	12	13	5	11	4	4
449:	2	1	0	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	1	0	0	0	1	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	0	0	0	0	0	0	0	1	0	2	0	0
505:	1	1	0	0	0	0	0	0	0	0	0	1	0	0
519:	0	0	0	0	1	0	0	0	1	0	0	1	0	0
533:	0	0	0	1	0	0	1	0	1	0	0	1	0	0
547:	0	1	0	0	1	1	0	0	1	2	0	0	1	0
561:	1	0	3	0	2	2	1	0	0	2	1	0	0	0
575:	1	3	2	1	2	4	2	2	2	4	1	1	1	3
589:	5	2	4	2	8	8	3	8	4	4	8	6	9	6
603:	12	12	11	6	11	10	6	13	11	10	12	11	11	13
617:	8	16	14	17	13	14	18	11	8	8	12	8	5	3
631:	3	3	1	0	0	0	0	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:06:22.91

Detector ID: 33 Acquisition Start: 7-OCT-2005 07:23:40.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.40
Batch Id: 0509117A-UU Sample Id: 01
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4162.43	678	0	56.11	232.41	179	90	6.65E-02	3.8	
2	0	4362.67	25	0	56.18	298.68	278	42	2.45E-03	20.0	
3	0	4488.81	7	0	0.00	340.71	323	29	6.86E-04	37.8	
4	0	4739.42	590	0	94.58	424.91	378	82	5.78E-02	4.1	
5	0	5279.48	425	0	78.81	609.55	565	76	4.17E-02	4.9	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:06:26.18

Acquisition Start: 1-OCT-2005 10:07:02.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4135.38	0	0	0.00	223.50	179	90	0.00E+00	0.0	
2	0	4362.13	0	0	0.00	298.50	278	42	0.00E+00	0.0	
3	0	4477.69	0	0	0.00	337.00	323	29	0.00E+00	0.0	
4	0	4720.44	1	0	3.12	418.50	378	82	1.67E-05	100.0	
5	0	5259.09	1	0	3.12	602.50	565	76	1.67E-05	100.0	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:06:26.51

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4162.43*	678	0	56.11	232.41	179	90	6.65E-02	3.8	
2	0	4362.67*	25	0	56.18	298.68	278	42	2.45E-03	20.0	
3	0	4488.81*	7	0	0.00	340.71	323	29	6.86E-04	37.8	
4	0	4739.42*	590	0	94.58	424.91	378	82	5.78E-02	4.1	
5	0	5279.48*	425	0	78.81	609.55	565	76	4.16E-02	4.9	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:06:27

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : SPIKE
Sample date : 7-OCT-2005 00:00:00 Acquisition date : 7-OCT-2005 07:23:40
Sample ID : 01 Sample quantity : 1.0000 gram
Sample type : UU Sample geometry :
Detector name : 033 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.40 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4162.43*	678	56.11	232.41	179	90	7.7		U-238	8.77
0	4362.67*	25	56.18	298.68	278	42	40.0		U-235	0.401
0	4488.81*	7	0.00	340.71	323	29	75.6		U-236	0.101
0	4739.42*	590	94.58	424.91	378	82	8.2		U-234	7.67
0	5279.48*	425	78.81	609.55	565	76	9.7		U232	5.52

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:06:47

****
Spectral File: ND_AMS_ARCHIVE_R:R_0509117A-UU$02_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	02
SAMPLE DATE:	7-OCT-2005 00:00	ALIQUOT:	1.000E+00 gram
SAMPLE TITLE:	BLANK	DETECTOR NUMBER:	034
ACQ DATE:	7-OCT-2005 07:23	AVERAGE EFFICIENCY:	20.20%
ELAPSED LIVE TIME:	10200.	RECOVERY:	92.60%
TRACER ID:	UU-10A	TRACER FWHM (kev):	69.65
LAMBDA VALUE:	614.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.731	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_034_1OCT05	BKG ELAPSED TIME:	60000.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	404.00	0.00	99.8	5.735E+00	7.446E-01	3.847E-02
U-234	4761.5	9.66	0.34	99.8	1.371E-01	9.227E-02	7.695E-02
U-235	4385.5	1.00	0.00	80.9	1.751E-02	3.512E-02	4.745E-02
U-236	4485.2	1.00	0.00	90.1	1.572E-02	3.153E-02	4.261E-02
U-238	4184.4	3.83	0.17	100.2	5.413E-02	5.730E-02	6.540E-02

****

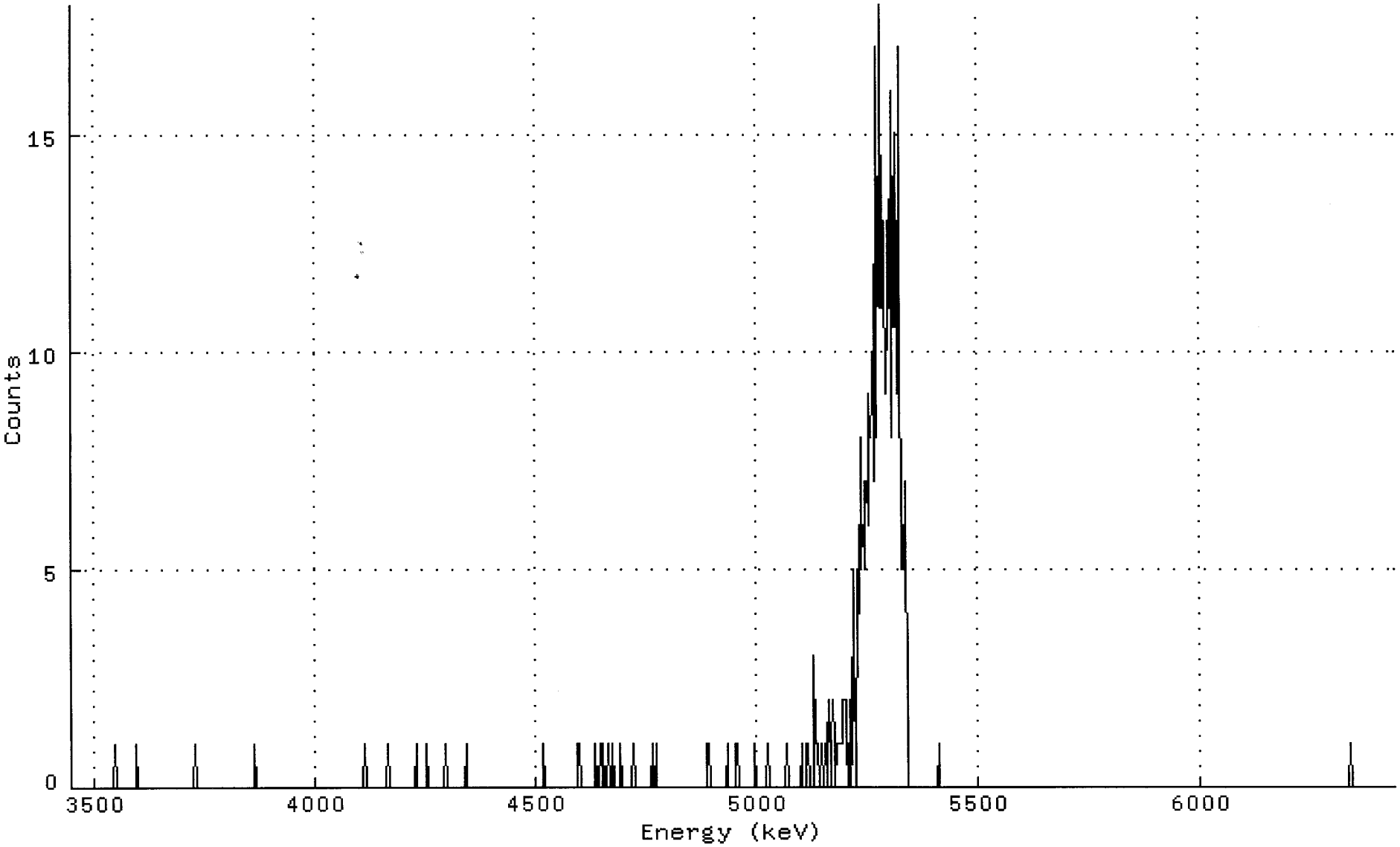
Jeff Price
Analyst

10-7-05
Date

Dean Gregley
Reviewer

10/7/05
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.R]R_0509117A-UU$02_UU.CNF;1
Title : 034
Sample Title: BLANK
Start Time: 7-OCT-2005 07:23: Sample Time: 7-OCT-2005 00:00: Energy Offset: 3.43713E+03
Real Time : 0 02:50:00.40 Sample ID : 02 Energy Slope : 3.11877E+00
Live Time : 0 02:50:00.00 Sample Type: UU Energy Quad : -1.81823E-04



Channel Contents for ND_AMS_ARCHIVE_R:R_0509117A-UU$02_UU

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
225:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
239:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
253:	0	0	0	0	0	1	0	0	0	0	0	0	0	1
267:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
365:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
379:	0	1	1	0	0	0	0	0	0	0	0	0	0	0
393:	1	0	0	0	1	0	1	0	0	0	1	0	0	1
407:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
421:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
435:	0	1	0	0	1	0	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
477:	0	1	1	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	1	0	0	0	0	0	0	1	1	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
519:	0	0	0	0	0	1	1	0	0	0	0	0	0	0
533:	0	0	0	0	0	0	1	1	0	0	0	0	0	0
547:	0	0	0	0	1	0	0	0	1	1	0	0	0	0
561:	3	1	1	0	0	1	0	0	1	0	1	2	0	1
575:	2	1	0	1	1	1	1	1	2	2	2	1	0	2
589:	0	1	5	3	0	5	4	4	8	5	6	5	7	7
603:	6	9	8	9	10	7	17	8	14	11	18	11	13	12
617:	9	11	13	11	16	8	13	15	12	9	17	11	5	6
631:	5	7	1	0	0	0	0	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:06:40.75

Detector ID: 34 Acquisition Start: 7-OCT-2005 07:23:55.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.40
Batch Id: 0509117A-UU Sample Id: 02
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4191.08	4	0	146.58	245.25	182	90	3.92E-04	50.0	
2	0	4341.35	1	0	3.12	295.00	281	43	9.80E-05	100.0	
3	0	4518.39	1	0	3.12	354.00	326	30	9.80E-05	100.0	
4	0	4681.70	10	0	0.00	408.80	381	82	9.80E-04	31.6	
5	0	5278.67	404	0	69.65	612.33	568	76	3.96E-02	5.0	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:06:44.83

Acquisition Start: 1-OCT-2005 10:07:05.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4134.21	1	0	3.12	226.50	182	90	1.67E-05	100.0	
2	0	4362.42	0	0	0.00	302.00	281	43	0.00E+00	0.0	
3	0	4477.99	0	0	0.00	340.50	326	30	0.00E+00	0.0	
4	0	4719.39	2	0	121.63	421.50	381	82	3.33E-05	70.7	
5	0	5258.89	0	0	0.00	605.50	568	76	0.00E+00	0.0	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:06:45.16

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4191.08*	4	0	146.58	245.25	182	90	3.75E-04	52.4	
2	0	4341.35*	1	0	3.12	295.00	281	43	9.80E-05	100.0	
3	0	4518.39*	1	0	3.12	354.00	326	30	9.80E-05	100.0	
4	0	4681.70*	10	0	0.00	408.80	381	82	9.47E-04	32.8	
5	0	5278.67*	404	0	69.65	612.33	568	76	3.96E-02	5.0	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:06:46

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BLANK
Sample date : 7-OCT-2005 00:00:00 Acquisition date : 7-OCT-2005 07:23:55
Sample ID : 02 Sample quantity : 1.0000 gram
Sample type : UU Sample geometry :
Detector name : 034 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.40 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4191.08*	4	146.58	245.25	182	90104.8			U-238	5.013E-02
0	4341.35*	1	3.12	295.00	281	43200.0			U-235	1.622E-02
0	4518.39*	1	3.12	354.00	326	30200.0			U-236	1.456E-02
0	4681.70*	10	0.00	408.80	381	82	65.7		U-234	0.127
0	5278.67*	404	69.65	612.33	568	76	10.0		U232	5.31

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:07:06

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$03_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	03
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.098E+00 gram
SAMPLE TITLE:	VPBR092705SL01	DETECTOR NUMBER:	035
ACQ DATE:	7-OCT-2005 07:24	AVERAGE EFFICIENCY:	20.72%
ELAPSED LIVE TIME:	10200.	RECOVERY:	106.89%
TRACER ID:	UU-10A	TRACER FWHM (kev):	76.44
LAMBDA VALUE:	608.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.610	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_035_1OCT05	BKG ELAPSED TIME:	60000.

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NUCLIDE ACTIVITY SUMMARY

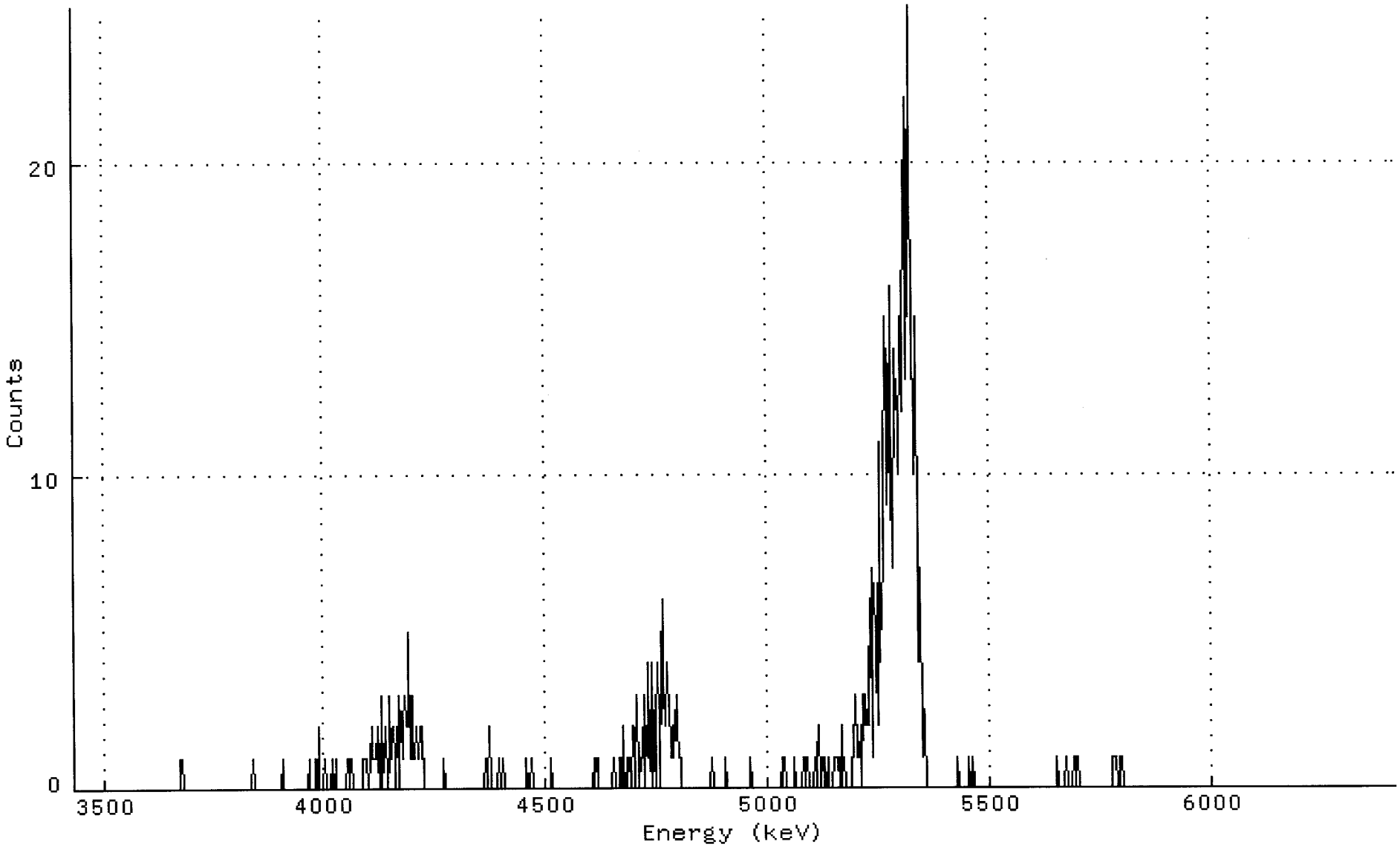
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	473.66	0.34	99.8	5.173E+00	6.419E-01	5.919E-02
U-234	4761.5	78.83	0.17	99.8	8.607E-01	2.295E-01	5.052E-02
U-235	4385.5	5.00	0.00	80.9	6.735E-02	6.099E-02	3.650E-02
U-236	4485.2	2.83	0.17	90.1	3.423E-02	4.238E-02	5.596E-02
U-238	4184.4	72.49	0.51	100.2	7.881E-01	2.171E-01	6.557E-02

****

Jay Price — Analyst — 10-7-05 — Date

Alan Gregley — Reviewer — 10/7/05 — Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$03_UU.CNF;1
Title : 035
Sample Title: VPBR092705SL01
Start Time: 7-OCT-2005 07:24: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.42336E+03
Real Time : 0 02:50:00.40 Sample ID : 03 Energy Slope : 3.09606E+00
Live Time : 0 02:50:00.00 Sample Type: UU Energy Quad : -1.73898E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$03_UU

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	1	1	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	1	0	0	0	0	1
183:	0	2	0	0	0	0	1	0	0	0	0	1	0	0
197:	1	0	0	0	0	0	0	0	0	1	0	1	1	0
211:	0	0	0	0	0	0	0	1	1	1	0	0	1	2
225:	1	1	1	2	1	0	3	0	1	2	2	0	1	3
239:	1	2	1	0	2	0	3	2	1	2	3	2	2	5
253:	1	3	1	1	2	2	1	2	1	2	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	1	0	0	2	0	0	0	0	0	0	1	0	0	1
323:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
337:	0	0	0	1	0	0	0	1	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
365:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
379:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
393:	1	1	0	0	0	0	0	0	0	0	0	0	0	1
407:	1	0	0	0	1	0	2	0	0	1	0	1	0	0
421:	2	0	1	3	0	0	1	1	3	0	2	1	4	1
435:	0	4	1	0	2	4	2	0	4	6	3	2	4	2
449:	3	1	2	1	2	3	2	1	1	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
477:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
491:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	0	0	1	0	1	0	0	0	0	0	0	0	1	0
547:	0	0	0	0	0	1	0	1	1	0	0	0	0	0
561:	1	0	1	2	0	0	1	1	0	0	1	0	0	0
575:	0	1	1	1	1	0	2	0	1	0	0	0	0	0
589:	0	2	1	3	1	2	1	2	0	3	2	3	2	2
603:	3	6	1	7	6	5	4	2	11	4	6	7	9	15
617:	13	9	11	16	10	7	14	12	13	11	10	15	12	15
631:	18	22	13	17	25	19	16	10	11	15	6	4	7	1
645:	3	2	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
673:	0	0	0	0	0	0	0	0	1	0	0	1	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
757:	0	1	0	0	0	0	0	1	1	0	1	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	1	1	1	1
799:	0	1	0	1	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

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Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:06:52.88

Detector ID: 35 Acquisition Start: 7-OCT-2005 07:24:15.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.40
Batch Id: 0509117A-UU Sample Id: 03
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4156.90	73	0	72.48	240.16	188	91	7.16E-03	11.7	
2	0	4380.77	5	0	3.10	314.80	288	43	4.90E-04	44.7	
3	0	4478.74	3	0	61.92	347.67	333	30	2.94E-04	57.7	
4	0	4741.94	79	0	45.89	436.59	389	82	7.75E-03	11.3	
5	0	5288.39	474	0	76.44	624.27	576	77	4.65E-02	4.6	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:07:04.53

Acquisition Start: 1-OCT-2005 10:07:08.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.20

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4135.31	3	0	133.13	233.00	188	91	5.00E-05	57.7	
2	0	4363.44	0	0	0.00	309.00	288	43	0.00E+00	0.0	
3	0	4478.25	1	0	3.10	347.50	333	30	1.67E-05	100.0	
4	0	4721.04	1	0	3.10	429.50	389	82	1.67E-05	100.0	
5	0	5258.79	2	0	15.48	614.00	576	77	3.33E-05	70.7	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:07:04.84

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4156.90*	72	0	72.48	240.16	188	91	7.11E-03	11.8	
2	0	4380.77*	5	0	3.10	314.80	288	43	4.90E-04	44.7	
3	0	4478.74*	3	0	61.92	347.67	333	30	2.77E-04	61.5	
4	0	4741.94*	79	0	45.89	436.59	389	82	7.73E-03	11.3	
5	0	5288.39*	474	0	76.44	624.27	576	77	4.64E-02	4.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:07:05

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL01
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 7-OCT-2005 07:24:15
Sample ID : 03 Sample quantity : 1.0980 gram
Sample type : UU Sample geometry :
Detector name : 035 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.40 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4156.90*	72	72.48	240.16	188	91	23.6		U-238	0.842
0	4380.77*	5	3.10	314.80	288	43	89.4		U-235	7.198E-02
0	4478.74*	3	61.92	347.67	333	30	123.0		U-236	3.658E-02
0	4741.94*	79	45.89	436.59	389	82	22.6		U-234	0.920
0	5288.39*	474	76.44	624.27	576	77	9.2		U232	5.53

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:07:15

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$04_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	04
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.049E+00 gram
SAMPLE TITLE:	VPBR092705SL01	DETECTOR NUMBER:	036
ACQ DATE:	7-OCT-2005 07:24	AVERAGE EFFICIENCY:	21.43%
ELAPSED LIVE TIME:	10200.	RECOVERY:	89.23%
TRACER ID:	UU-10A	TRACER FWHM (kev):	99.52
LAMBDA VALUE:	607.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.583	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_036_1OCT05	BKG ELAPSED TIME:	60000.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	408.00	0.00	99.8	5.403E+00	6.992E-01	3.588E-02
U-234	4761.5	76.66	0.34	99.8	1.015E+00	2.761E-01	7.178E-02
U-235	4385.5	4.66	0.34	80.9	7.611E-02	7.431E-02	8.855E-02
U-236	4485.2	0.83	0.17	90.1	1.217E-02	2.980E-02	6.786E-02
U-238	4184.4	68.00	0.00	100.2	8.964E-01	2.542E-01	3.573E-02

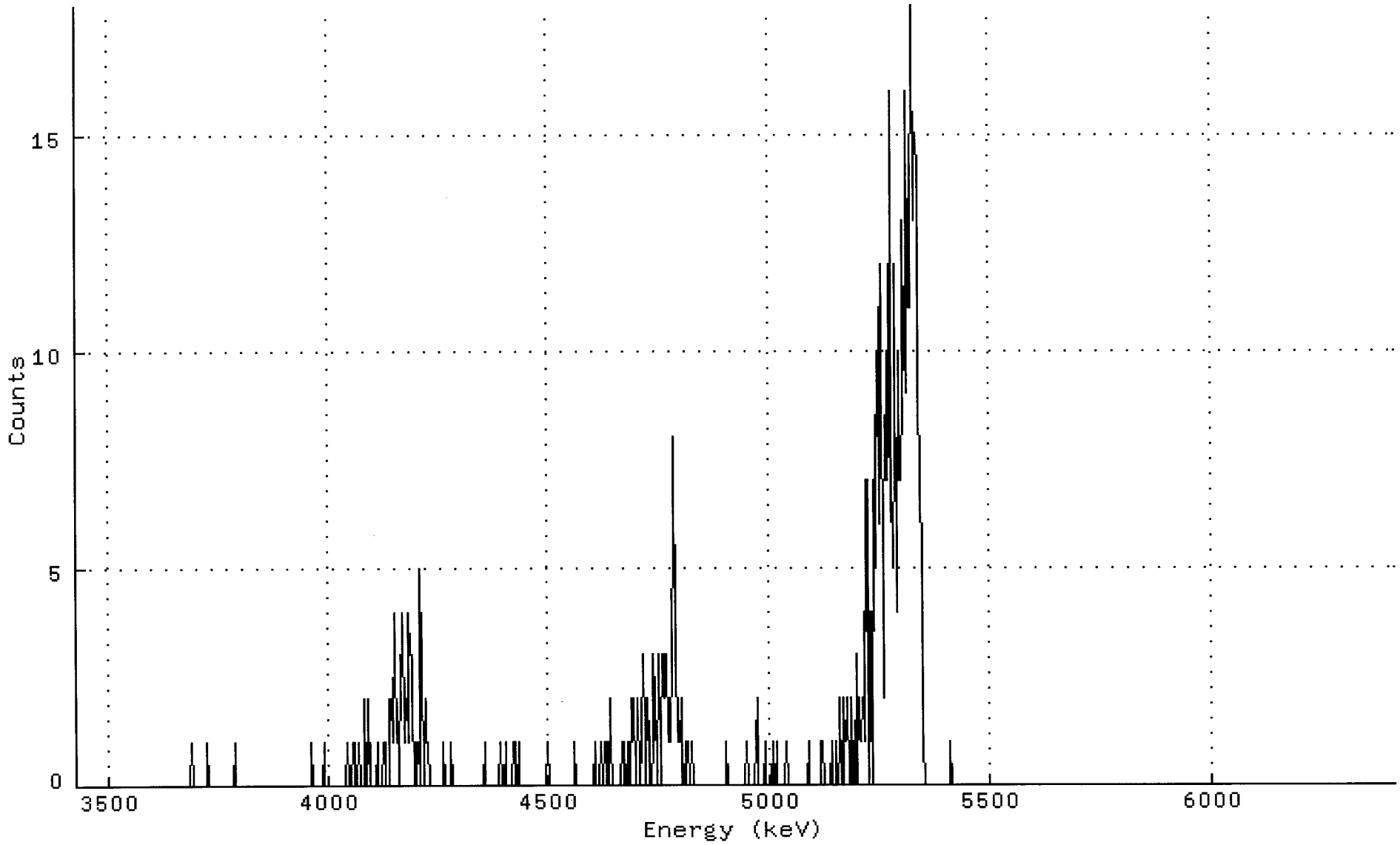
****

*** Tracer FWHM > 80.0 Kev ***

Analyst _____ Date 10-7-05

Reviewer _____ Date 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$04_UU.CNF;1
Title : 036
Sample Title: VPBR092705SL01
Start Time: 7-OCT-2005 07:24: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.41730E+03
Real Time : 0 02:50:00.40 Sample ID : 04 Energy Slope : 3.07834E+00
Live Time : 0 02:50:00.00 Sample Type: UU Energy Quad : -1.50571E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$04_UU

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
99:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
183:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	1	0	0	0	1
211:	0	1	0	1	1	0	0	0	2	0	1	2	0	0
225:	0	0	0	1	0	0	0	0	1	1	0	0	0	2
239:	2	1	4	3	1	1	0	3	3	4	1	2	1	4
253:	3	3	2	0	1	0	1	0	5	3	0	2	1	1
267:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
281:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	1	0	0	0	0	0	0	0	0	0	0	0	1	0
323:	0	0	1	0	0	0	0	0	1	1	0	0	1	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
365:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
379:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
393:	1	0	0	0	0	1	0	0	1	0	1	0	2	1
407:	0	0	0	0	0	0	0	1	1	0	0	1	0	0
421:	2	1	2	0	0	2	0	0	1	3	1	0	2	1
435:	0	0	1	3	2	0	0	3	0	1	3	2	3	3
449:	1	1	1	3	6	8	3	1	1	1	2	0	0	1
463:	0	1	0	0	1	0	0	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	1	1	0	0	0	0	0	0	1	2
519:	0	0	0	0	0	1	0	0	0	0	0	1	0	0
533:	1	0	0	0	0	0	0	0	1	0	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
561:	0	0	0	0	0	0	0	1	1	0	0	0	0	0
575:	0	1	0	0	0	1	0	1	2	0	0	2	1	2
589:	2	0	0	2	0	0	3	0	2	1	1	2	2	1
603:	7	0	7	1	4	0	7	5	7	10	6	10	12	2
617:	7	7	10	7	8	16	7	5	8	12	4	10	9	7
631:	9	13	10	9	16	11	11	12	18	13	15	15	14	9
645:	7	5	1	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:07:11.22

Detector ID: 36 Acquisition Start: 7-OCT-2005 07:24:36.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.40
Batch Id: 0509117A-UU Sample Id: 04
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4163.34	68	0	66.53	245.29	191	91	6.67E-03	12.1	
2	0	4397.69	5	0	73.88	323.60	291	43	4.90E-04	44.7	
3	0	4497.08	1	0	3.08	357.00	336	30	9.80E-05	100.0	
4	0	4742.77	77	0	7.46	440.05	392	82	7.55E-03	11.4	
5	0	5285.20	408	0	99.52	625.95	579	77	4.00E-02	5.0	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:07:13.74

Acquisition Start: 1-OCT-2005 10:07:11.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4135.40	0	0	0.00	236.00	191	91	0.00E+00	0.0	
2	0	4363.09	2	0	15.39	312.00	291	43	3.33E-05	70.7	
3	0	4477.76	1	0	3.08	350.50	336	30	1.67E-05	100.0	
4	0	4720.52	2	0	163.15	432.50	392	82	3.33E-05	70.7	
5	0	5259.32	0	0	0.00	617.00	579	77	0.00E+00	0.0	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:07:14.08

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4163.34*	68	0	66.53	245.29	191	91	6.67E-03	12.1	
2	0	4397.69*	5	0	73.88	323.60	291	43	4.57E-04	48.3	
3	0	4497.08*	1	0	3.08	357.00	336	30	8.14E-05	122.2	
4	0	4742.77*	77	0	7.46	440.05	392	82	7.52E-03	11.5	
5	0	5285.20*	408	0	99.52	625.95	579	77	4.00E-02	5.0	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:07:14

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL01
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 7-OCT-2005 07:24:36
Sample ID : 04 Sample quantity : 1.0490 gram
Sample type : UU Sample geometry :
Detector name : 036 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.40 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4163.34*	68	66.53	245.29	191	91	24.3		U-238	0.800
0	4397.69*	5	73.88	323.60	291	43	96.5		U-235	6.791E-02
0	4497.08*	1	3.08	357.00	336	30	244.4		U-236	1.086E-02
0	4742.77*	77	7.46	440.05	392	82	22.9		U-234	0.906
0	5285.20*	408	99.52	625.95	579	77	9.9		U232	4.82

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:07:26

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$05_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	05
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.004E+00 gram
SAMPLE TITLE:	VPBR092705SL02	DETECTOR NUMBER:	037
ACQ DATE:	7-OCT-2005 07:24	AVERAGE EFFICIENCY:	20.26%
ELAPSED LIVE TIME:	10200.	RECOVERY:	86.55%
TRACER ID:	UU-10A	TRACER FWHM (kev):	85.77
LAMBDA VALUE:	609.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.639	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_037_1OCT05	BKG ELAPSED TIME:	60000.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	376.00	0.00	99.8	5.668E+00	7.519E-01	4.084E-02
U-234	4761.5	59.00	0.00	99.8	8.892E-01	2.671E-01	4.084E-02
U-235	4385.5	2.00	0.00	80.9	3.718E-02	5.288E-02	5.038E-02
U-236	4485.2	2.00	0.00	90.1	3.339E-02	4.748E-02	4.524E-02
U-238	4184.4	70.83	0.17	100.2	1.063E+00	2.989E-01	6.944E-02

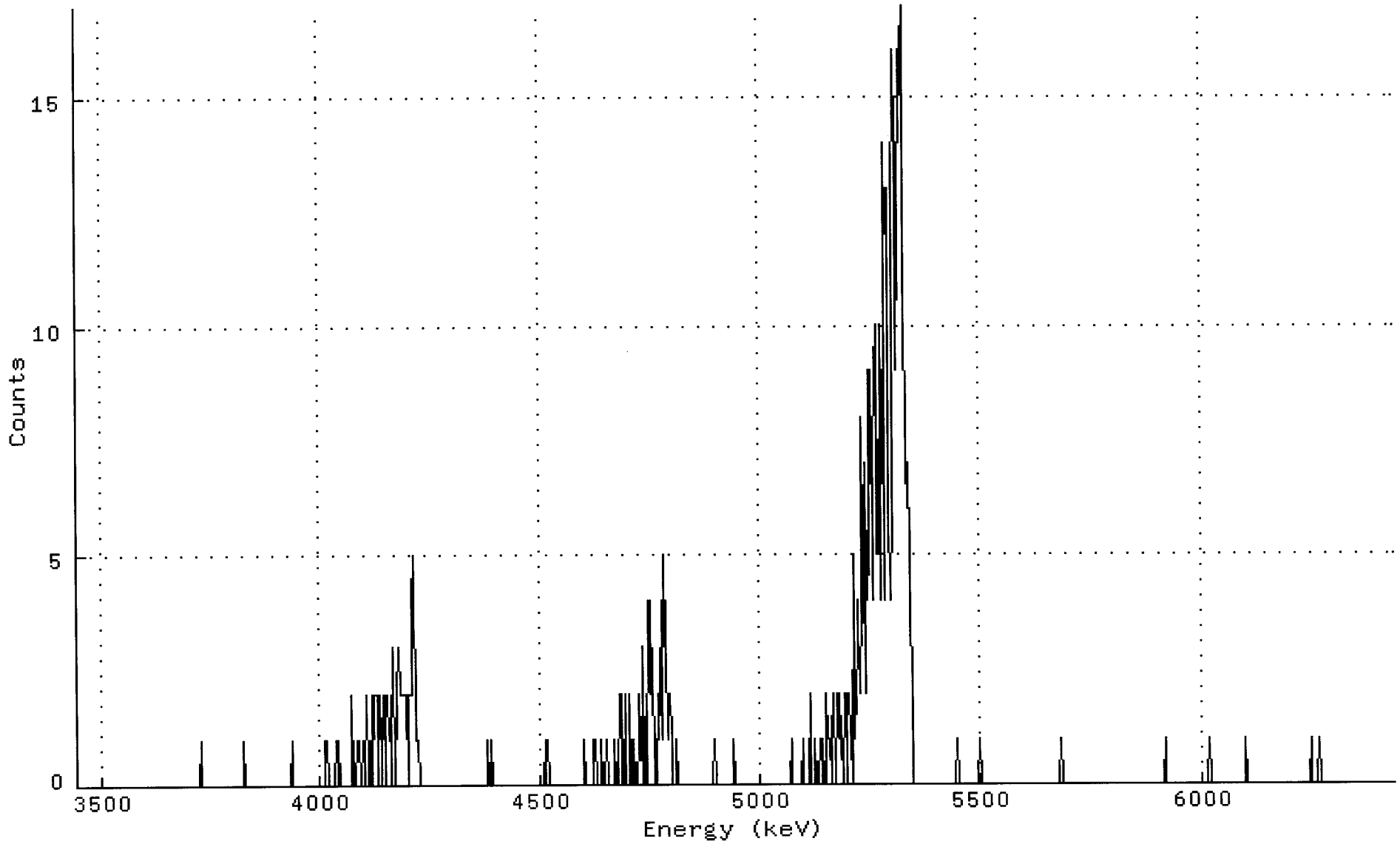
****

*** Tracer FWHM > 80.0 Kev ***

Jeff Price — Analyst — 10-7-05 — Date

Alan Gregley — Reviewer — 10/7/05 — Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$05_UU.CNF;1
Title : 037
Sample Title: VPBR092705SL02
Start Time: 7-OCT-2005 07:24: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.43519E+03
Real Time : 0 02:50:00.30 Sample ID : 05 Energy Slope : 3.10315E+00
Live Time : 0 02:50:00.00 Sample Type: UU Energy Quad : -1.69534E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$05_UU

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	0	0	0	0	0	1	1	0	0	0	0	0	0	1
197:	0	1	0	0	0	0	0	0	0	0	0	2	0	0
211:	0	1	1	1	0	1	0	0	2	0	0	0	2	0
225:	2	2	2	0	2	0	1	2	0	2	2	1	2	0
239:	3	0	0	2	3	3	2	2	2	2	2	0	2	2
253:	2	4	5	1	1	1	0	0	0	0	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	1	0	0	1	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	1	0	1	0	0	0	0	0	0	0	0
365:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
379:	0	0	0	0	0	1	0	0	0	0	0	0	1	1
393:	0	0	0	0	1	0	0	0	1	0	0	0	0	0
407:	1	0	0	0	2	2	0	0	2	0	0	0	2	0
421:	0	1	0	0	1	2	1	0	3	0	0	0	4	2
435:	4	2	1	0	0	2	1	2	4	1	5	3	1	1
449:	2	1	0	0	0	1	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
491:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
547:	0	0	0	0	0	1	0	0	0	0	0	2	0	0
561:	0	1	0	0	0	1	0	1	0	0	2	1	1	0
575:	1	2	0	0	2	1	2	1	0	0	2	0	2	2
589:	1	1	0	5	1	2	3	4	2	4	8	5	2	7
603:	4	5	9	9	4	7	9	10	5	5	10	4	9	4
617:	14	12	13	6	4	6	12	16	14	9	12	16	14	16
631:	17	11	7	6	7	5	1	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	1	0	0	0	0	0	0	1	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:07:20.35

Detector ID: 37 Acquisition Start: 7-OCT-2005 07:24:56.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.30
Batch Id: 0509117A-UU Sample Id: 05
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4159.50	71	0	51.90	236.46	184	90	6.96E-03	11.9	
2	0	4385.38	2	0	12.41	311.50	283	43	1.96E-04	70.7	
3	0	4515.45	2	0	9.31	355.00	328	30	1.96E-04	70.7	
4	0	4741.16	59	0	53.94	431.00	383	82	5.78E-03	13.0	
5	0	5283.13	376	0	85.77	616.25	570	77	3.69E-02	5.2	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:07:24.66

Acquisition Start: 1-OCT-2005 10:07:14.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4135.41	1	0	3.10	228.50	184	90	1.67E-05	100.0	
2	0	4362.88	0	0	0.00	304.00	283	43	0.00E+00	0.0	
3	0	4478.14	0	0	0.00	342.50	328	30	0.00E+00	0.0	
4	0	4718.97	0	0	0.00	423.50	383	82	0.00E+00	0.0	
5	0	5259.24	0	0	0.00	608.00	570	77	0.00E+00	0.0	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:07:24.97

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4159.50*	71	0	51.90	236.46	184	90	6.94E-03	11.9	
2	0	4385.38*	2	0	12.41	311.50	283	43	1.96E-04	70.7	
3	0	4515.45*	2	0	9.31	355.00	328	30	1.96E-04	70.7	
4	0	4741.16*	59	0	53.94	431.00	383	82	5.78E-03	13.0	
5	0	5283.13*	376	0	85.77	616.25	570	77	3.69E-02	5.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:07:25

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL02
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 7-OCT-2005 07:24:56
Sample ID : 05 Sample quantity : 1.0044 gram
Sample type : UU Sample geometry :
Detector name : 037 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.30 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4159.50*	71	51.90	236.46	184	90	23.8		U-238	0.920
0	4385.38*	2	12.41	311.50	283	43	141.4		U-235	3.218E-02
0	4515.45*	2	9.31	355.00	328	30	141.4		U-236	2.890E-02
0	4741.16*	59	53.94	431.00	383	82	26.0		U-234	0.770
0	5283.13*	376	85.77	616.25	570	77	10.3		U232	4.91

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:07:53

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$06_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	06
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	9.973E-01 gram
SAMPLE TITLE:	VPBR092705SL03	DETECTOR NUMBER:	038
ACQ DATE:	7-OCT-2005 07:25	AVERAGE EFFICIENCY:	19.42%
ELAPSED LIVE TIME:	10200.	RECOVERY:	104.68%
TRACER ID:	UU-10A	TRACER FWHM (kev):	67.30
LAMBDA VALUE:	609.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.637	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_038_1OCT05	BKG ELAPSED TIME:	60000.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	435.66	0.34	99.8	5.708E+00	7.255E-01	7.101E-02
U-234	4761.5	75.83	0.17	99.8	9.932E-01	2.700E-01	6.061E-02
U-235	4385.5	3.83	0.17	80.9	6.188E-02	6.548E-02	7.476E-02
U-236	4485.2	1.00	0.00	90.1	1.451E-02	2.909E-02	3.932E-02
U-238	4184.4	79.00	0.00	100.2	1.030E+00	2.758E-01	3.534E-02

****

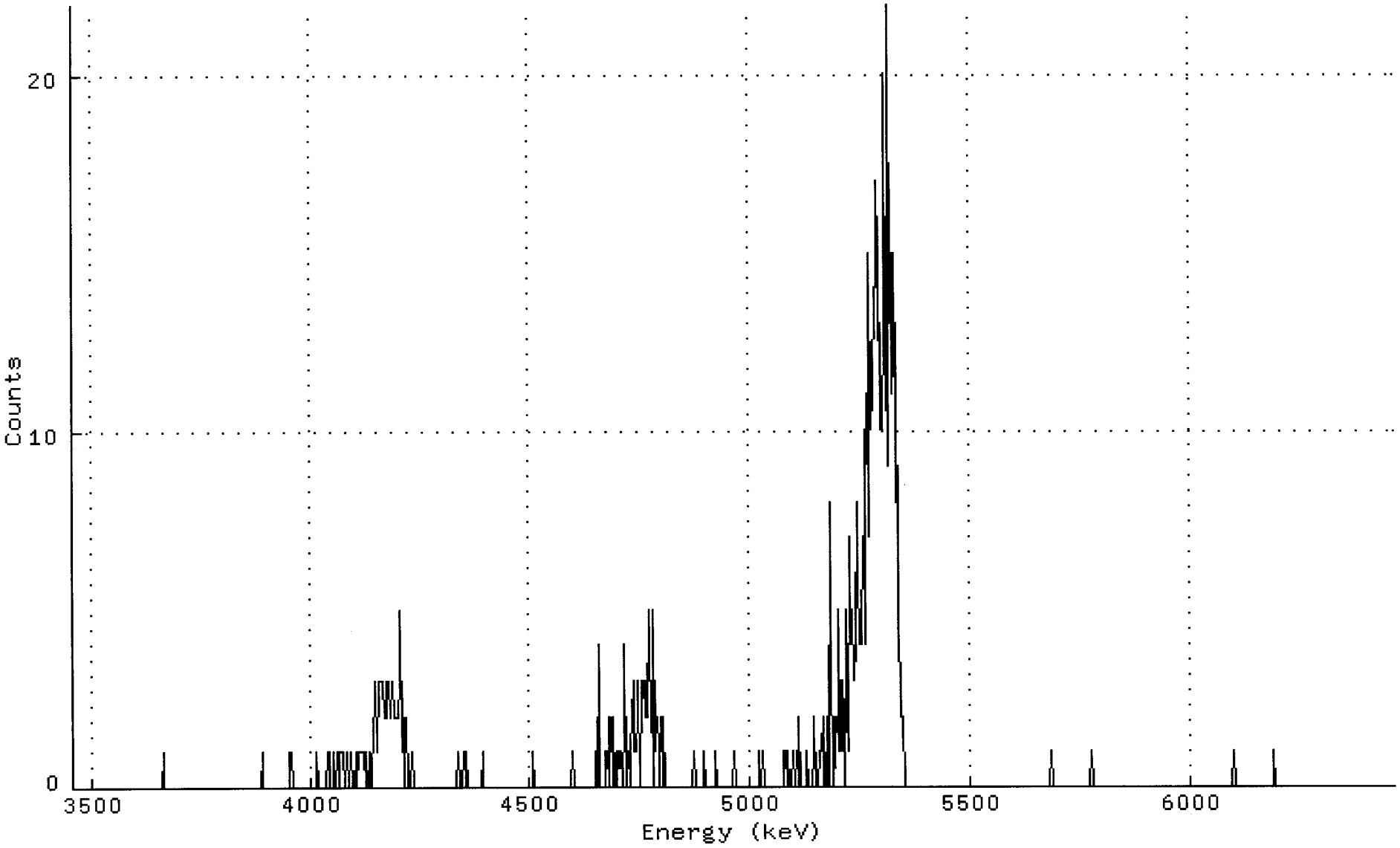
Jay Price
Analyst

10-7-05
Date

Alan Gregley
Reviewer

10/7/05
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$06_UU.CNF;1
Title : 038
Sample Title: VPBR092705SL03
Start Time: 7-OCT-2005 07:25: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.44817E+03
Real Time : 0 02:50:00.40 Sample ID : 06 Energy Slope : 3.09586E+00
Live Time : 0 02:50:00.00 Sample Type: UU Energy Quad : -1.48570E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$06_UU

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	1	1	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	0	0	1	0	0	0	0	0	0	0	1	1	0	0
197:	0	1	0	1	0	1	1	1	1	0	1	1	0	1
211:	0	0	0	1	0	1	1	1	1	1	0	1	0	0
225:	1	0	2	1	3	1	1	3	3	3	3	2	2	3
239:	3	2	2	3	2	2	2	2	3	5	1	2	0	2
253:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
295:	1	0	1	0	0	0	0	0	0	0	0	0	0	0
309:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
351:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
379:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
393:	0	0	0	1	0	4	0	0	0	0	1	1	0	2
407:	2	0	2	0	1	0	1	1	1	0	2	4	0	1
421:	0	1	2	3	1	1	2	3	0	3	2	3	2	3
435:	2	5	3	3	0	5	1	2	1	0	2	0	2	0
449:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
477:	0	1	0	0	0	0	0	0	0	0	1	0	0	0
491:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
519:	0	0	1	0	1	0	0	0	0	0	0	0	0	0
533:	0	0	0	0	0	0	0	1	1	0	1	0	0	0
547:	1	0	0	1	0	2	0	0	0	0	0	1	0	0
561:	0	0	1	2	0	0	1	1	1	2	0	0	2	0
575:	0	8	4	0	1	2	2	1	5	1	3	2	0	5
589:	2	1	7	4	5	3	3	4	8	6	4	4	4	7
603:	4	9	11	7	15	10	11	11	14	14	17	15	10	13
617:	10	13	20	12	9	22	13	15	11	15	8	13	5	2
631:	2	2	0	0	0	0	0	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:07:31.42

Detector ID: 38 Acquisition Start: 7-OCT-2005 07:25:17.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.40
Batch Id: 0509117A-UU Sample Id: 06
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4157.45	79	0	61.43	231.68	180	90	7.75E-03	11.3	
2	0	4357.54	4	0	58.82	298.00	279	42	3.92E-04	50.0	
3	0	4507.53	1	0	3.10	348.00	324	29	9.80E-05	100.0	
4	0	4740.59	76	0	133.10	426.18	379	82	7.45E-03	11.5	
5	0	5282.32	436	0	67.30	610.33	565	76	4.27E-02	4.8	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:07:50.96

Acquisition Start: 1-OCT-2005 10:07:17.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4135.70	0	0	0.00	224.50	180	90	0.00E+00	0.0	
2	0	4362.05	1	0	3.10	299.50	279	42	1.67E-05	100.0	
3	0	4477.59	0	0	0.00	338.00	324	29	0.00E+00	0.0	
4	0	4720.73	1	0	3.10	419.50	379	82	1.67E-05	100.0	
5	0	5259.49	2	0	213.61	602.50	565	76	3.33E-05	70.7	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:07:51.30

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4157.45*	79	0	61.43	231.68	180	90	7.75E-03	11.3	
2	0	4357.54*	4	0	58.82	298.00	279	42	3.75E-04	52.4	
3	0	4507.53*	1	0	3.10	348.00	324	29	9.80E-05	100.0	
4	0	4740.59*	76	0	133.10	426.18	379	82	7.43E-03	11.5	
5	0	5282.32*	436	0	67.30	610.33	565	76	4.27E-02	4.8	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:07:52

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL03
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 7-OCT-2005 07:25:17
Sample ID : 06 Sample quantity : 0.99730 gram
Sample type : UU Sample geometry :
Detector name : 038 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.40 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4157.45*	79	61.43	231.68	180	90	22.5		U-238	1.08
0	4357.54*	4	58.82	298.00	279	42	104.8		U-235	6.478E-02
0	4507.53*	1	3.10	348.00	324	29	200.0		U-236	1.519E-02
0	4740.59*	76	133.10	426.18	379	82	23.0		U-234	1.04
0	5282.32*	436	67.30	610.33	565	76	9.6		U232	5.98

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:08:28

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$07_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	07
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.075E+00 gram
SAMPLE TITLE:	VPBR092705SL04	DETECTOR NUMBER:	039
ACQ DATE:	7-OCT-2005 07:25	AVERAGE EFFICIENCY:	19.85%
ELAPSED LIVE TIME:	10200.	RECOVERY:	95.97%
TRACER ID:	UU-10A	TRACER FWHM (kev):	77.64
LAMBDA VALUE:	604.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.525	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_039_1OCT05	BKG ELAPSED TIME:	60000.

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NUCLIDE ACTIVITY SUMMARY

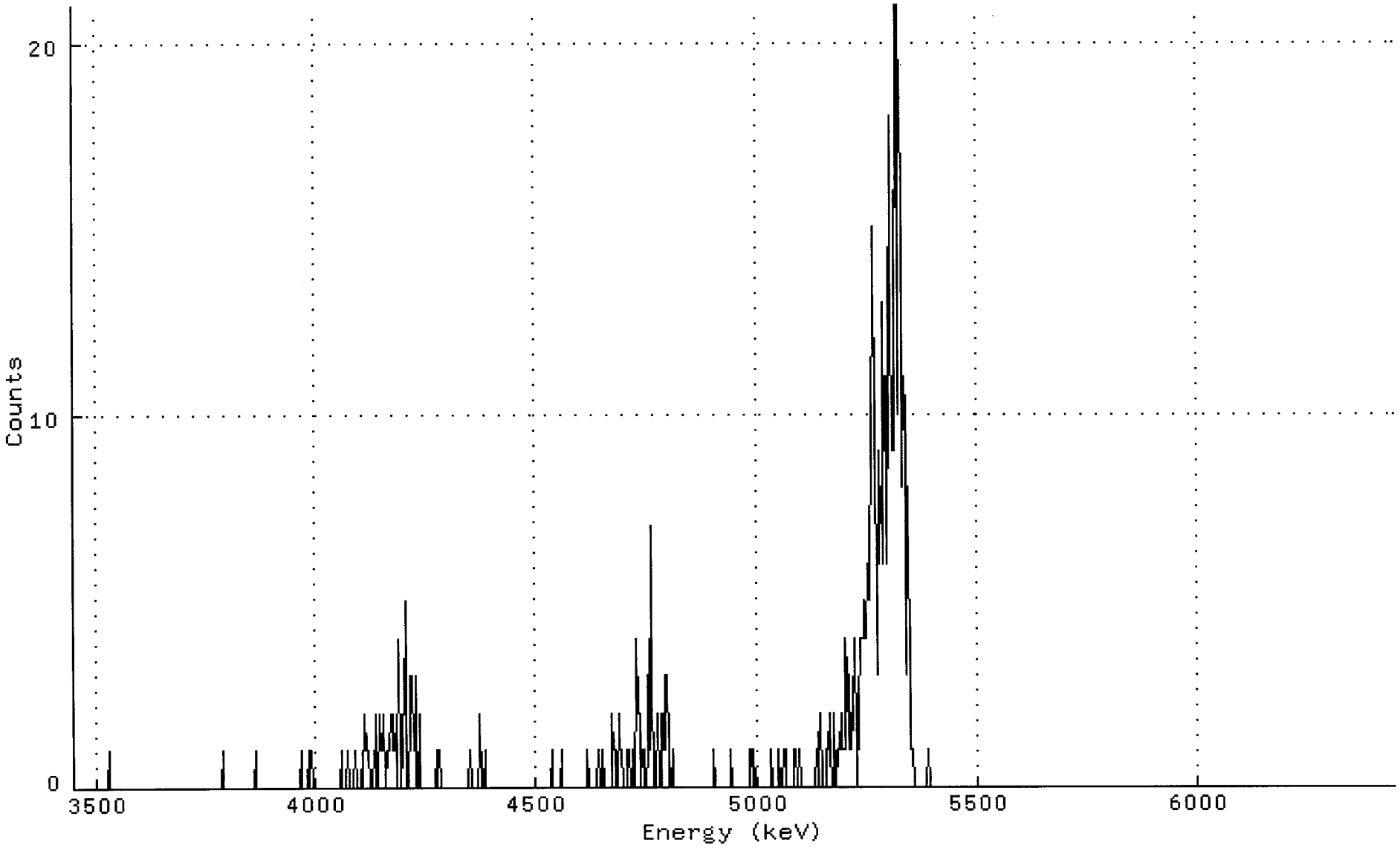
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	404.66	0.34	99.8	5.247E+00	6.813E-01	7.027E-02
U-234	4761.5	58.83	0.17	99.8	7.626E-01	2.287E-01	5.998E-02
U-235	4385.5	4.83	0.17	80.9	7.723E-02	7.262E-02	7.399E-02
U-236	4485.2	0.00	0.00	90.1	0.000E+00	0.000E+00	3.891E-02
U-238	4184.4	58.00	0.00	100.2	7.486E-01	2.254E-01	3.498E-02

****

Jay Price — Analyst — 10-7-05 — Date

Alan Gregley — Reviewer — 10/7/05 — Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$07_UU.CNF;1
Title : 039
Sample Title: VPBR092705SL04
Start Time: 7-OCT-2005 07:25: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.44059E+03
Real Time : 0 02:50:00.40 Sample ID : 07 Energy Slope : 3.08829E+00
Live Time : 0 02:50:00.00 Sample Type: UU Energy Quad : -1.54042E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$07_UU

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	1	0	0	0	0	0	1	0	1	0	0
183:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	0	0	0	1	0	0	0	0	1	0	0	0
211:	0	0	1	0	0	0	0	1	0	2	1	1	1	0
225:	0	0	1	0	2	0	2	2	1	2	0	0	1	1
239:	1	2	1	2	1	2	0	4	0	1	2	2	5	0
253:	0	2	3	3	1	3	0	0	2	0	0	0	0	0
267:	0	0	0	0	0	0	0	1	0	1	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	1	0	0	0	0	0	0	1	2	0
309:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
365:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
379:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
393:	0	0	0	1	1	0	0	1	0	0	0	0	0	0
407:	2	1	1	0	0	2	1	1	0	0	0	0	1	1
421:	0	1	0	0	3	4	2	2	0	1	0	1	0	1
435:	3	1	7	3	0	0	2	2	0	0	2	1	3	1
449:	3	1	0	0	1	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
491:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0	1	1	0	1	0	0
519:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
533:	0	0	1	0	0	0	1	1	0	0	0	0	0	0
547:	1	1	0	0	1	0	0	0	0	0	0	0	0	0
561:	0	0	0	1	0	1	2	0	0	0	0	1	1	2
575:	1	0	0	2	0	1	1	1	2	1	1	1	4	3
589:	1	3	1	2	2	4	1	0	2	4	4	4	4	5
603:	4	6	6	5	10	8	15	9	11	3	9	6	8	6
617:	13	9	11	6	11	18	13	9	9	11	21	10	21	18
631:	16	8	11	10	3	8	2	1	1	0	0	0	0	0
645:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:07:57.36

Detector ID: 39 Acquisition Start: 7-OCT-2005 07:25:34.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.40
Batch Id: 0509117A-UU Sample Id: 07
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4176.39	58	0	38.68	241.16	183	90	5.69E-03	13.1	
2	0	4370.59	5	0	4.54	305.80	282	43	4.90E-04	44.7	
3	0	4477.28	0	0	0.00	341.50	327	30	0.00E+00	0.0	
4	0	4739.77	59	0	38.12	429.90	383	82	5.78E-03	13.0	
5	0	5287.36	405	0	77.64	616.98	570	76	3.97E-02	5.0	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:08:25.54

Acquisition Start: 1-OCT-2005 10:07:20.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.20

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4135.20	0	0	0.00	227.50	183	90	0.00E+00	0.0	
2	0	4362.20	1	0	3.09	303.00	282	43	1.67E-05	100.0	
3	0	4477.28	0	0	0.00	341.50	327	30	0.00E+00	0.0	
4	0	4720.85	1	0	3.09	423.50	383	82	1.67E-05	100.0	
5	0	5259.88	2	0	61.77	607.50	570	76	3.33E-05	70.7	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:08:25.83

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4176.39*	58	0	38.68	241.16	183	90	5.69E-03	13.1	
2	0	4370.59*	5	0	4.54	305.80	282	43	4.74E-04	46.4	
3	0	4477.28*	0	0	0.00	341.50	327	30	0.00E+00	0.0	
4	0	4739.77*	59	0	38.12	429.90	383	82	5.77E-03	13.1	
5	0	5287.36*	405	0	77.64	616.98	570	76	3.97E-02	5.0	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:08:26

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL04		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 7-OCT-2005 07:25:34
Sample ID	: 07	Sample quantity	: 1.0753 gram
Sample type	: UU	Sample geometry	:
Detector name	: 039	Detector geometry	:
Elapsed live time	: 0 02:50:00.00	Elapsed real time	: 0 02:50:00.40 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4176.39*	58	38.68	241.16	183	90	26.3		U-238	0.718
0	4370.59*	5	4.54	305.80	282	43	92.9		U-235	7.412E-02
0	4477.28*	0	0.00	341.50	327	30	0.0		U-236	0.000E+00
0	4739.77*	59	38.12	429.90	383	82	26.1		U-234	0.732
0	5287.36*	405	77.64	616.98	570	76	9.9		U232	5.04

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:08:39

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$08_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	08
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.088E+00 gram
SAMPLE TITLE:	VPBR092705SL05	DETECTOR NUMBER:	040
ACQ DATE:	7-OCT-2005 07:25	AVERAGE EFFICIENCY:	20.96%
ELAPSED LIVE TIME:	10200.	RECOVERY:	78.64%
TRACER ID:	UU-10A	TRACER FWHM (kev):	82.76
LAMBDA VALUE:	603.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.506	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_040_1OCT05	BKG ELAPSED TIME:	60000.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	349.66	0.34	99.8	5.178E+00	7.024E-01	8.027E-02
U-234	4761.5	55.66	0.34	99.8	8.241E-01	2.548E-01	8.027E-02
U-235	4385.5	2.00	0.00	80.9	3.653E-02	5.196E-02	4.950E-02
U-236	4485.2	0.00	0.00	90.1	0.000E+00	0.000E+00	4.444E-02
U-238	4184.4	48.83	0.17	100.2	7.198E-01	2.338E-01	6.821E-02

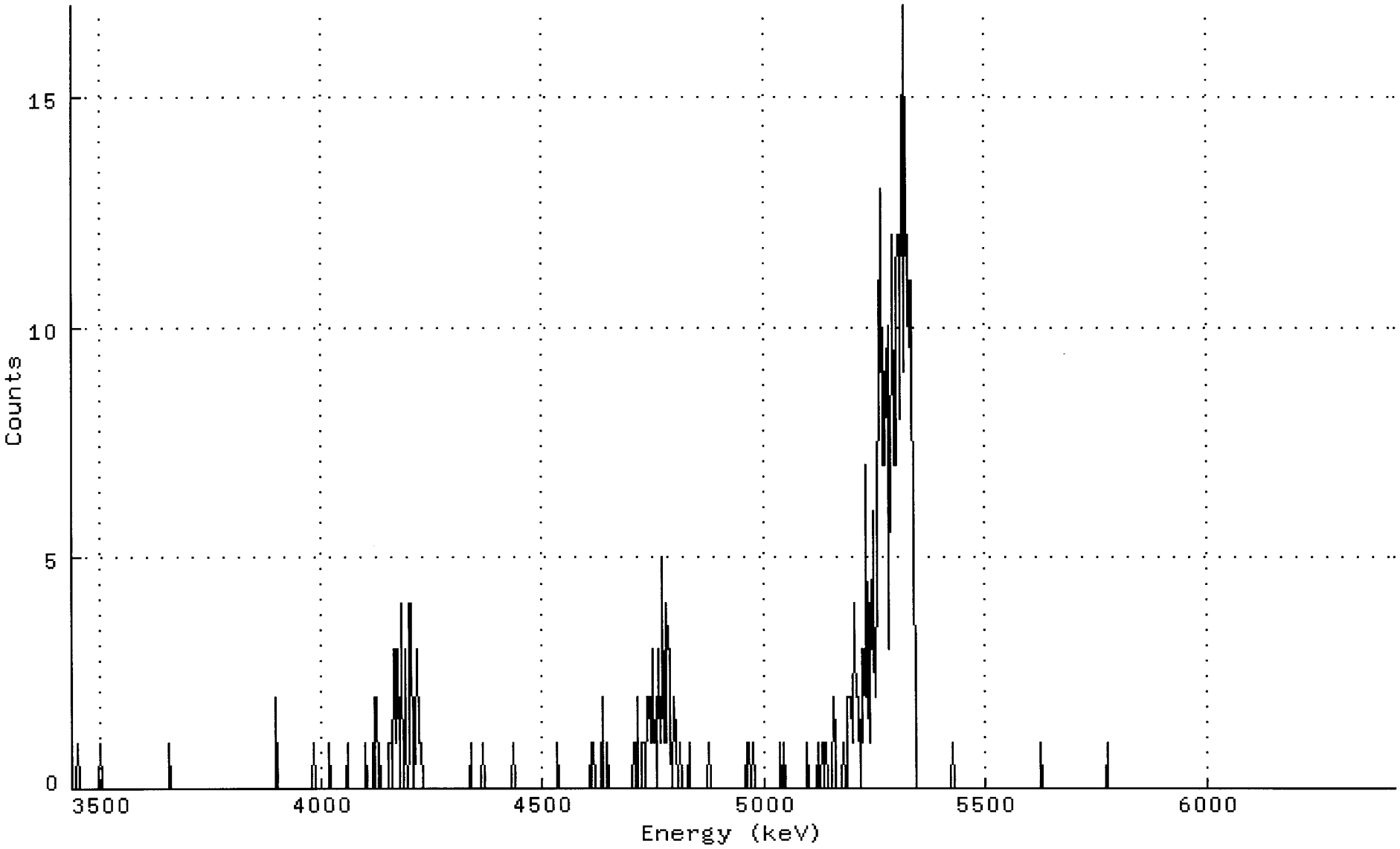
****

*** Tracer FWHM > 80.0 Kev ***

Jeff Price — 10-7-05
Analyst — Date

Alan Gregley — 10/7/05
Reviewer — Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$08_UU.CNF;1
Title : 040
Sample Title: VPBR092705SL05
Start Time: 7-OCT-2005 07:25: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.42420E+03
Real Time : 0 02:50:00.40 Sample ID : 08 Energy Slope : 3.10059E+00
Live Time : 0 02:50:00.00 Sample Type: UU Energy Quad : -1.69766E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$08_UU

Channel

1:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	2
155:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
183:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
197:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
211:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
225:	0	0	2	0	2	0	1	0	0	0	0	0	0	1
239:	1	1	0	3	1	3	3	0	4	3	0	3	1	0
253:	1	4	4	0	1	1	3	1	1	1	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	1	0	0	0	0	0	0	0	0	1
309:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
379:	0	0	0	0	0	0	0	0	0	0	0	1	0	1
393:	0	0	0	0	0	0	2	0	0	0	1	0	0	0
407:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
421:	0	0	1	0	2	0	0	0	1	1	1	0	2	2
435:	2	1	3	1	1	2	0	3	1	2	5	1	1	4
449:	3	3	1	0	2	2	1	0	0	1	0	0	0	0
463:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
477:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
491:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	1	0	1	0	0	1	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	0	0	1	0	0	1	0	0	0	0	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
561:	0	0	0	1	0	0	1	0	1	1	0	0	0	0
575:	0	2	1	0	0	0	0	0	1	1	0	0	2	2
589:	2	2	1	4	3	2	2	2	0	3	1	3	2	7
603:	2	1	4	3	6	3	2	5	4	11	9	13	7	9
617:	7	9	10	3	8	9	12	7	7	11	12	12	8	15
631:	9	17	13	10	12	10	9	11	4	3	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:08:32.80

Detector ID: 40 Acquisition Start: 7-OCT-2005 07:25:54.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.40
Batch Id: 0509117A-UU Sample Id: 08
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4174.27	49	0	55.00	245.20	188	90	4.80E-03	14.3	
2	0	4349.59	2	0	31.01	303.50	287	43	1.96E-04	70.7	
3	0	4478.17	0	0	0.00	346.50	332	30	0.00E+00	0.0	
4	0	4751.43	56	0	41.83	438.59	387	83	5.49E-03	13.4	
5	0	5282.71	350	0	82.76	620.49	575	76	3.43E-02	5.3	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:08:37.31

Acquisition Start: 1-OCT-2005 10:07:23.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4135.91	1	0	3.10	232.50	188	90	1.67E-05	100.0	
2	0	4363.08	0	0	0.00	308.00	287	43	0.00E+00	0.0	
3	0	4478.17	0	0	0.00	346.50	332	30	0.00E+00	0.0	
4	0	4720.16	2	0	15.50	428.00	387	83	3.33E-05	70.7	
5	0	5259.62	2	0	0.00	612.50	575	76	3.33E-05	70.7	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:08:37.59

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4174.27*	49	0	55.00	245.20	188	90	4.79E-03	14.3	
2	0	4349.59*	2	0	31.01	303.50	287	43	1.96E-04	70.7	
3	0	4478.17*	0	0	0.00	346.50	332	30	0.00E+00	0.0	
4	0	4751.43*	56	0	41.83	438.59	387	83	5.46E-03	13.5	
5	0	5282.71*	350	0	82.76	620.49	575	76	3.43E-02	5.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:08:38

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL05
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 7-OCT-2005 07:25:54
Sample ID : 08 Sample quantity : 1.0879 gram
Sample type : UU Sample geometry :
Detector name : 040 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.40 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4174.27*	49	55.00	245.20	188	90	28.7		U-238	0.566
0	4349.59*	2	31.01	303.50	287	43	141.4		U-235	2.872E-02
0	4478.17*	0	0.00	346.50	332	30	0.0		U-236	0.000E+00
0	4751.43*	56	41.83	438.59	387	83	26.9		U-234	0.648
0	5282.71*	350	82.76	620.49	575	76	10.7		U232	4.07

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:08:54

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$09_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	09
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.032E+00 gram
SAMPLE TITLE:	VPBR092705SL06	DETECTOR NUMBER:	041
ACQ DATE:	7-OCT-2005 07:26	AVERAGE EFFICIENCY:	20.56%
ELAPSED LIVE TIME:	10200.	RECOVERY:	105.81%
TRACER ID:	UU-10A	TRACER FWHM (kev):	77.46
LAMBDA VALUE:	609.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.622	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_041_1OCT05	BKG ELAPSED TIME:	60000.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	465.66	0.34	99.8	5.512E+00	6.872E-01	6.415E-02
U-234	4761.5	59.00	0.00	99.8	6.981E-01	2.073E-01	3.207E-02
U-235	4385.5	3.00	0.00	80.9	4.379E-02	5.095E-02	3.956E-02
U-236	4485.2	4.00	0.00	90.1	5.243E-02	5.296E-02	3.552E-02
U-238	4184.4	76.83	0.17	100.2	9.052E-01	2.439E-01	5.452E-02

****

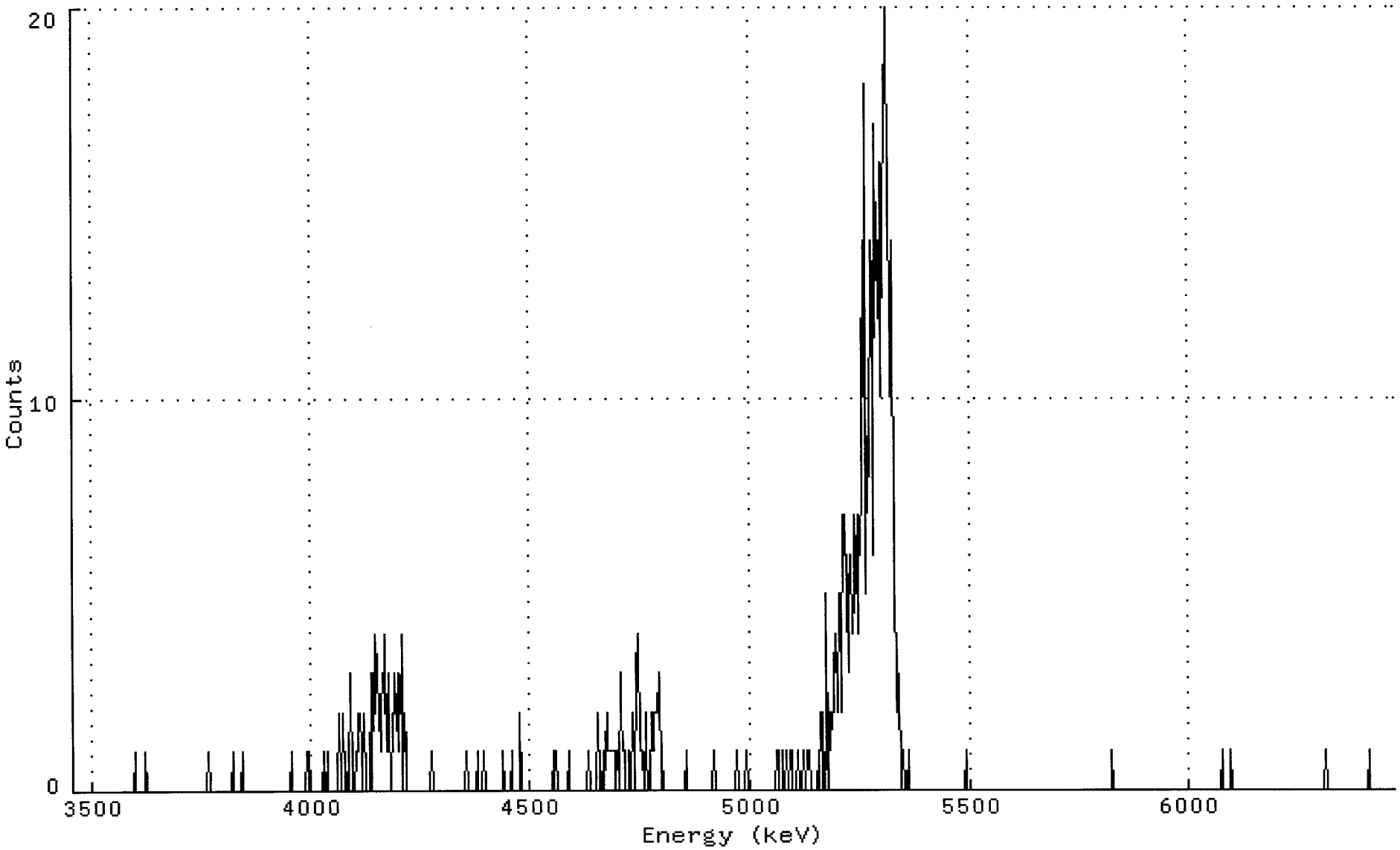
Jay Price
Analyst

10-7-05
Date

Dean Gregory
Reviewer

10/7/05
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$09_UU.CNF;1
Title : 041
Sample Title: VPBR092705SL06
Start Time: 7-OCT-2005 07:26: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.44666E+03
Real Time : 0 02:50:00.40 Sample ID : 09 Energy Slope : 3.10884E+00
Live Time : 0 02:50:00.00 Sample Type: UU Energy Quad : -1.57527E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$09_UU

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
57:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
127:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
169:	0	0	0	0	0	0	0	0	1	0	1	0	0	0
183:	0	0	0	0	0	0	1	0	0	1	0	0	0	0
197:	0	0	0	0	2	0	0	2	0	1	0	1	0	3
211:	0	0	0	1	1	2	2	1	0	2	0	0	0	0
225:	3	0	3	2	4	3	2	1	2	3	2	4	1	3
239:	2	0	2	2	3	2	1	3	2	4	0	2	1	0
253:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
267:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	1	0	0	0	0	0	0	0	1	0	0	0	0
309:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	1	0	0	0	0	0	1	0	0	0	0	0	0
337:	2	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	0	0	0	1	0	1
365:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
379:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
393:	0	0	0	2	0	1	0	1	0	1	2	1	1	1
407:	1	1	1	0	1	0	3	2	1	1	0	0	0	1
421:	0	2	2	0	3	3	4	1	1	1	0	2	1	0
435:	1	0	2	1	2	2	2	2	3	0	1	0	0	0
449:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
463:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
491:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
505:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	1	1	0	0	0	1	0	1	0	0	1	1	0	0
547:	0	0	1	0	0	0	1	1	0	1	1	1	0	0
561:	0	0	0	0	1	0	2	0	2	0	1	5	0	2
575:	1	2	2	3	4	2	2	5	2	3	7	6	7	5
589:	3	5	6	4	5	7	6	4	7	6	8	12	10	18
603:	5	9	8	8	14	13	6	17	13	15	12	16	10	15
617:	17	17	20	15	17	10	14	13	6	2	4	2	1	0
631:	1	0	0	0	1	0	0	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	1	0	0	0	0	0	0	1	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:08:43.85

Detector ID: 41 Acquisition Start: 7-OCT-2005 07:26:12.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.40
Batch Id: 0509117A-UU Sample Id: 09
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4153.52	77	0	120.69	230.05	180	89	7.55E-03	11.4	
2	0	4374.17	3	0	43.52	303.00	278	43	2.94E-04	57.7	
3	0	4461.43	4	0	3.11	332.00	323	30	3.92E-04	50.0	
4	0	4732.40	59	0	95.21	422.63	378	82	5.78E-03	13.0	
5	0	5274.51	466	0	77.46	606.60	564	76	4.57E-02	4.6	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:08:52.55

Acquisition Start: 1-OCT-2005 10:07:25.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.20

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4135.13	1	0	3.11	224.00	180	89	1.67E-05	100.0	
2	0	4362.12	0	0	0.00	299.00	278	43	0.00E+00	0.0	
3	0	4477.95	0	0	0.00	337.50	323	30	0.00E+00	0.0	
4	0	4720.12	0	0	0.00	418.50	378	82	0.00E+00	0.0	
5	0	5259.63	2	0	68.39	601.50	564	76	3.33E-05	70.7	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:08:52.85

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4153.52*	77	0	120.69	230.05	180	89	7.53E-03	11.4	
2	0	4374.17*	3	0	43.52	303.00	278	43	2.94E-04	57.7	
3	0	4461.43*	4	0	3.11	332.00	323	30	3.92E-04	50.0	
4	0	4732.40*	59	0	95.21	422.63	378	82	5.78E-03	13.0	
5	0	5274.51*	466	0	77.46	606.60	564	76	4.57E-02	4.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:08:53

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL06
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 7-OCT-2005 07:26:12
Sample ID : 09 Sample quantity : 1.0316 gram
Sample type : UU Sample geometry :
Detector name : 041 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.40 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4153.52*	77	120.69	230.05	180	89	22.8		U-238	0.958
0	4374.17*	3	43.52	303.00	278	43	115.5		U-235	4.634E-02
0	4461.43*	4	3.11	332.00	323	30	100.0		U-236	5.547E-02
0	4732.40*	59	95.21	422.63	378	82	26.0		U-234	0.739
0	5274.51*	466	77.46	606.60	564	76	9.3		U232	5.83

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:09:28

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$10_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	10
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.005E+00 gram
SAMPLE TITLE:	VPBR092705SL07	DETECTOR NUMBER:	042
ACQ DATE:	7-OCT-2005 07:26	AVERAGE EFFICIENCY:	21.78%
ELAPSED LIVE TIME:	10200.	RECOVERY:	90.19%
TRACER ID:	UU-10A	TRACER FWHM (kev):	66.42
LAMBDA VALUE:	602.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.485	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_042_1OCT05	BKG ELAPSED TIME:	60000.

****

NUCLIDE ACTIVITY SUMMARY

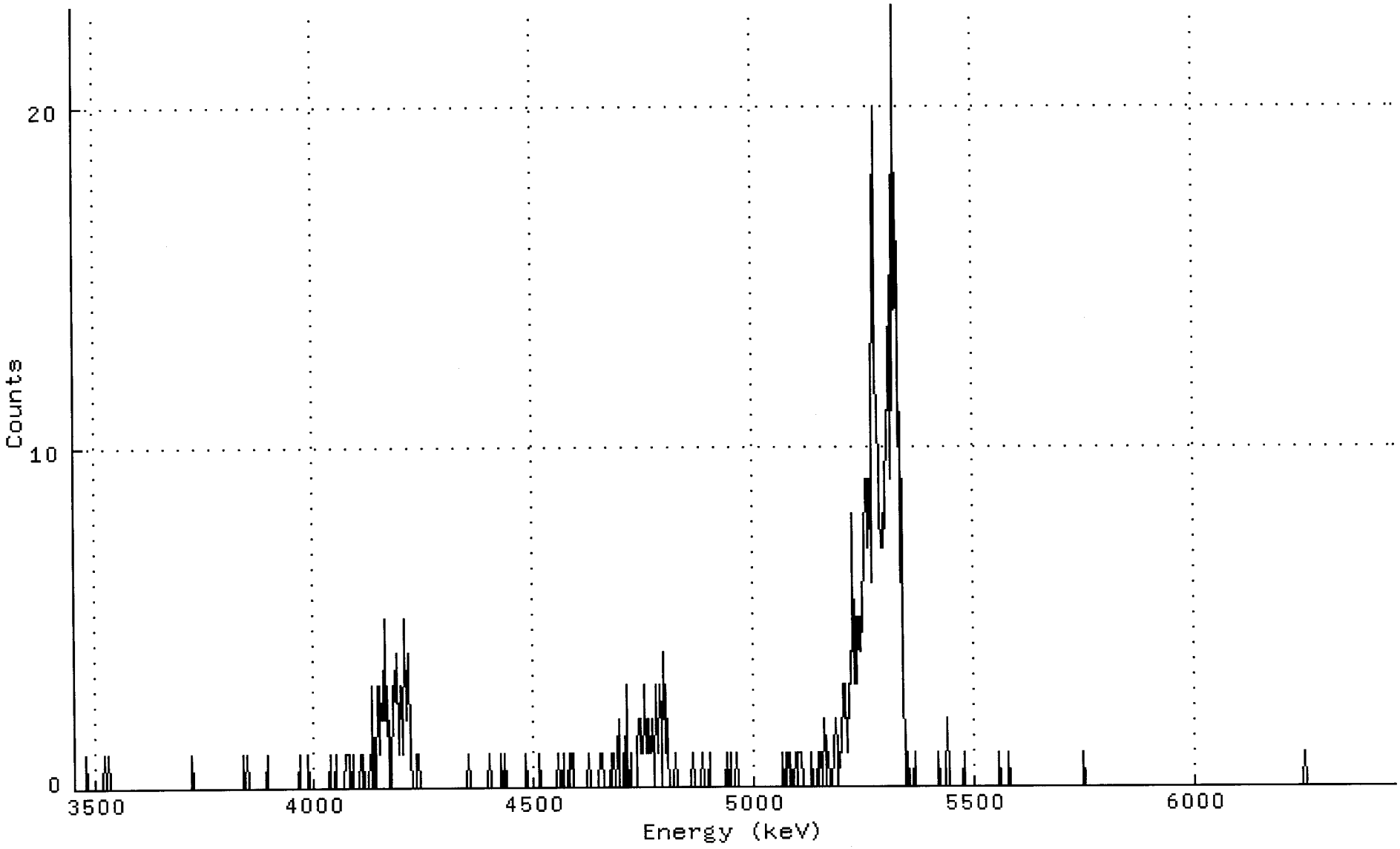
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	416.00	0.00	99.8	5.596E+00	7.199E-01	3.644E-02
U-234	4761.5	54.47	1.53	99.8	7.325E-01	2.284E-01	1.138E-01
U-235	4385.5	3.00	0.00	80.9	4.977E-02	5.792E-02	4.496E-02
U-236	4485.2	3.00	0.00	90.1	4.468E-02	5.201E-02	4.036E-02
U-238	4184.4	70.66	0.34	100.2	9.461E-01	2.647E-01	7.259E-02

****

Analyst _____ Date 10-7-05

Reviewer _____ Date 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$10_UU.CNF;1
Title : 042
Sample Title: VPBR092705SL07
Start Time: 7-OCT-2005 07:26: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.44183E+03
Real Time : 0 02:50:00.30 Sample ID : 10 Energy Slope : 3.13320E+00
Live Time : 0 02:50:00.00 Sample Type: UU Energy Quad : -1.88891E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$10_UU

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
15:	0	0	0	0	0	0	0	0	0	0	1	0	0	1
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	1	0	1	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	1	0	0	0	0	0	0	1	0	0	0	0	0	0
183:	0	0	0	0	0	0	0	0	0	1	0	0	0	1
197:	0	0	0	0	0	0	0	1	1	1	0	0	1	0
211:	0	0	0	0	1	0	1	0	0	0	0	1	0	3
225:	0	0	0	3	1	3	2	2	5	2	3	0	2	0
239:	3	2	3	4	1	2	3	1	1	5	2	2	4	1
253:	0	0	0	0	1	1	0	0	0	0	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	0	1	0	0	0	0	0	0	0	0	1	0	0
323:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
337:	0	0	1	0	0	0	0	0	0	0	0	0	1	0
351:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
365:	0	0	1	0	0	0	1	0	1	1	0	0	0	0
379:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
393:	0	0	1	1	1	0	0	0	0	0	1	0	1	0
407:	0	1	2	0	0	0	1	0	3	0	0	1	0	0
421:	0	0	1	2	2	1	1	2	3	1	2	1	1	2
435:	2	0	3	2	1	3	2	0	4	1	3	1	0	0
449:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
463:	0	0	1	0	0	0	0	0	0	1	1	0	0	0
477:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
491:	1	0	0	1	0	0	0	0	1	0	0	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	0	0	1	0	1	0	1	0	1	0	0	0	1	0
547:	1	1	1	1	0	0	0	0	0	0	1	0	0	0
561:	0	1	0	1	1	0	2	1	0	1	0	0	0	1
575:	1	2	1	0	1	1	1	3	2	3	1	3	2	4
589:	4	8	3	5	3	5	5	4	5	7	7	9	7	9
603:	9	6	10	16	20	12	11	9	8	7	8	7	8	11
617:	10	12	15	9	13	23	14	18	10	16	6	9	4	0
631:	0	1	0	0	0	0	1	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
659:	0	0	0	0	2	0	0	0	0	0	0	0	0	0
673:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	1	0	0	0	0	0	0	0	1	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
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Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:08:58.84

Detector ID: 42 Acquisition Start: 7-OCT-2005 07:26:33.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.30
Batch Id: 0509117A-UU Sample Id: 10
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4169.84	71	0	86.69	235.70	180	90	6.96E-03	11.9	
2	0	4390.95	3	0	0.00	308.67	279	42	2.94E-04	57.7	
3	0	4476.27	3	0	0.00	337.00	323	30	2.94E-04	57.7	
4	0	4748.50	56	0	96.58	428.09	378	82	5.49E-03	13.4	
5	0	5281.67	416	0	66.42	609.61	564	76	4.08E-02	4.9	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:09:26.67

Acquisition Start: 1-OCT-2005 10:07:29.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4135.71	2	0	250.66	224.50	180	90	3.33E-05	70.7	
2	0	4363.28	0	0	0.00	299.50	279	42	0.00E+00	0.0	
3	0	4477.77	0	0	0.00	337.50	323	30	0.00E+00	0.0	
4	0	4719.99	9	0	0.00	418.50	378	82	1.50E-04	33.3	
5	0	5258.11	0	0	0.00	601.50	564	76	0.00E+00	0.0	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:09:26.98

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4169.84*	71	0	86.69	235.70	180	90	6.93E-03	11.9	
2	0	4390.95*	3	0	0.00	308.67	279	42	2.94E-04	57.7	
3	0	4476.27*	3	0	0.00	337.00	323	30	2.94E-04	57.7	
4	0	4748.50*	54	0	96.58	428.09	378	82	5.34E-03	13.8	
5	0	5281.67*	416	0	66.42	609.61	564	76	4.08E-02	4.9	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:09:27

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL07
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 7-OCT-2005 07:26:33
Sample ID : 10 Sample quantity : 1.0051 gram
Sample type : UU Sample geometry :
Detector name : 042 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.30 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4169.84*	71	86.69	235.70	180	90	23.9		U-238	0.853
0	4390.95*	3	0.00	308.67	279	42	115.5		U-235	4.488E-02
0	4476.27*	3	0.00	337.00	323	30	115.5		U-236	4.030E-02
0	4748.50*	54	96.58	428.09	378	82	27.5		U-234	0.661
0	5281.67*	416	66.42	609.61	564	76	9.8		U232	5.05

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Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:09:51

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$11_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	11
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.004E+00 gram
SAMPLE TITLE:	VPBR092705SL08	DETECTOR NUMBER:	043
ACQ DATE:	7-OCT-2005 07:26	AVERAGE EFFICIENCY:	21.48%
ELAPSED LIVE TIME:	10200.	RECOVERY:	88.43%
TRACER ID:	UU-10A	TRACER FWHM (kev):	89.90
LAMBDA VALUE:	605.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.552	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_043_1OCT05	BKG ELAPSED TIME:	60000.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	404.49	0.51	99.8	5.630E+00	7.307E-01	8.392E-02
U-234	4761.5	60.00	0.00	99.8	8.349E-01	2.482E-01	3.771E-02
U-235	4385.5	5.00	0.00	80.9	8.583E-02	7.780E-02	4.652E-02
U-236	4485.2	3.00	0.00	90.1	4.624E-02	5.383E-02	4.177E-02
U-238	4184.4	83.00	0.00	100.2	1.150E+00	3.040E-01	3.755E-02

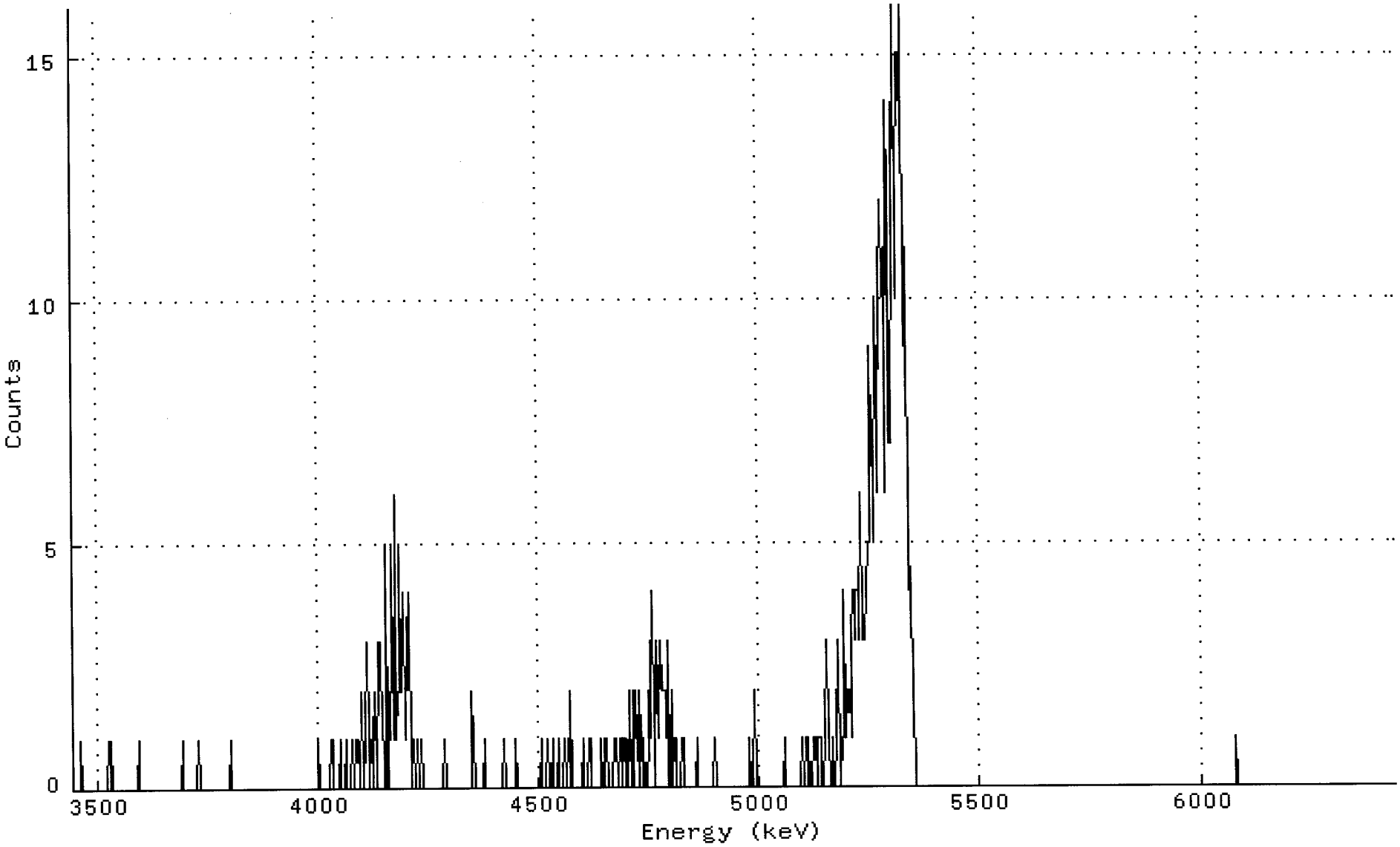
****

*** Tracer FWHM > 80.0 Kev ***

Jeff Price — 10-7-05
Analyst — Date

Alan Gregley — 10/7/05
Reviewer — Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$11_UU.CNF;1
Title : 043
Sample Title: VPBR092705SL08
Start Time: 7-OCT-2005 07:26: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.43255E+03
Real Time : 0 02:50:00.40 Sample ID : 11 Energy Slope : 3.13596E+00
Live Time : 0 02:50:00.00 Sample Type: UU Energy Quad : -1.98835E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$11_UU

Channel

1:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	1	0	1	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
85:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	0	1	0	0	0	0	0	0	0	0	1	1	0	0
197:	0	0	0	1	0	0	0	1	0	0	0	0	1	0
211:	1	1	1	0	0	2	0	0	1	3	1	0	1	0
225:	1	2	0	0	3	3	1	2	0	0	5	0	2	2
239:	5	1	6	1	2	2	5	2	4	1	1	3	4	4
253:	0	1	1	0	1	0	0	1	0	0	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	2	1	0	0	0	0	0	0	0	1	0
309:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
323:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
351:	0	0	0	0	1	0	0	0	1	0	0	0	1	0
365:	0	0	0	1	0	0	1	0	2	0	0	0	0	0
379:	0	0	0	1	0	0	0	0	1	1	0	0	0	0
393:	0	0	0	1	0	1	0	1	0	0	0	0	0	1
407:	1	0	0	1	1	0	1	0	1	0	2	1	0	2
421:	0	2	1	0	2	1	0	1	0	0	0	1	3	1
435:	4	1	0	3	2	1	3	2	2	2	2	0	3	0
449:	2	0	1	1	0	0	0	0	1	1	0	0	0	0
463:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
477:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
491:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	1	0	0	0	2	0	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
547:	0	0	0	1	0	0	1	0	1	0	0	0	1	1
561:	0	1	1	1	0	0	1	1	3	1	1	0	0	1
575:	0	1	1	3	0	0	1	1	4	1	2	2	2	1
589:	3	4	3	4	4	4	3	6	3	4	3	4	4	5
603:	5	9	7	6	5	10	8	6	11	11	12	10	11	6
617:	14	12	7	7	12	12	16	10	12	15	14	14	16	9
631:	10	11	4	5	4	2	2	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:09:33.23

Detector ID: 43 Acquisition Start: 7-OCT-2005 07:26:52.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.40
Batch Id: 0509117A-UU Sample Id: 11
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4159.66	83	0	55.35	235.37	183	90	8.14E-03	11.0	
2	0	4369.92	5	0	4.61	304.80	282	42	4.90E-04	44.7	
3	0	4491.79	3	0	0.00	345.33	326	30	2.94E-04	57.7	
4	0	4743.12	60	0	46.52	429.62	382	81	5.88E-03	12.9	
5	0	5283.33	405	0	89.90	614.09	568	76	3.97E-02	5.0	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:09:49.40

Acquisition Start: 1-OCT-2005 10:07:31.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4135.69	0	0	0.00	227.50	183	90	0.00E+00	0.0	
2	0	4362.99	0	0	0.00	302.50	282	42	0.00E+00	0.0	
3	0	4477.30	0	0	0.00	340.50	326	30	0.00E+00	0.0	
4	0	4720.52	0	0	0.00	422.00	382	81	0.00E+00	0.0	
5	0	5258.48	3	0	0.00	605.50	568	76	5.00E-05	57.7	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:09:49.75

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4159.66*	83	0	55.35	235.37	183	90	8.14E-03	11.0	
2	0	4369.92*	5	0	4.61	304.80	282	42	4.90E-04	44.7	
3	0	4491.79*	3	0	0.00	345.33	326	30	2.94E-04	57.7	
4	0	4743.12*	60	0	46.52	429.62	382	81	5.88E-03	12.9	
5	0	5283.33*	404	0	89.90	614.09	568	76	3.97E-02	5.0	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:09:50

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL08
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 7-OCT-2005 07:26:52
Sample ID : 11 Sample quantity : 1.0042 gram
Sample type : UU Sample geometry :
Detector name : 043 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.40 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4159.66*	83	55.35	235.37	183	90	22.0		U-238	1.02
0	4369.92*	5	4.61	304.80	282	42	89.4		U-235	7.591E-02
0	4491.79*	3	0.00	345.33	326	30	115.5		U-236	4.089E-02
0	4743.12*	60	46.52	429.62	382	81	25.8		U-234	0.738
0	5283.33*	404	89.90	614.09	568	76	10.0		U232	4.98

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:10:02

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$12_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	12
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.016E+00 gram
SAMPLE TITLE:	VPBR092705SL09	DETECTOR NUMBER:	044
ACQ DATE:	7-OCT-2005 07:27	AVERAGE EFFICIENCY:	20.22%
ELAPSED LIVE TIME:	10200.	RECOVERY:	104.97%
TRACER ID:	UU-10A	TRACER FWHM (kev):	95.95
LAMBDA VALUE:	605.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.550	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_044_1OCT05	BKG ELAPSED TIME:	60000.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	451.83	0.17	99.8	5.561E+00	6.995E-01	5.694E-02
U-234	4761.5	74.00	0.00	99.8	9.106E-01	2.489E-01	3.335E-02
U-235	4385.5	4.00	0.00	80.9	6.072E-02	6.134E-02	4.114E-02
U-236	4485.2	0.83	0.17	90.1	1.131E-02	2.770E-02	6.307E-02
U-238	4184.4	76.00	0.00	100.2	9.312E-01	2.521E-01	3.320E-02

****

*** Tracer FWHM > 80.0 Kev ***

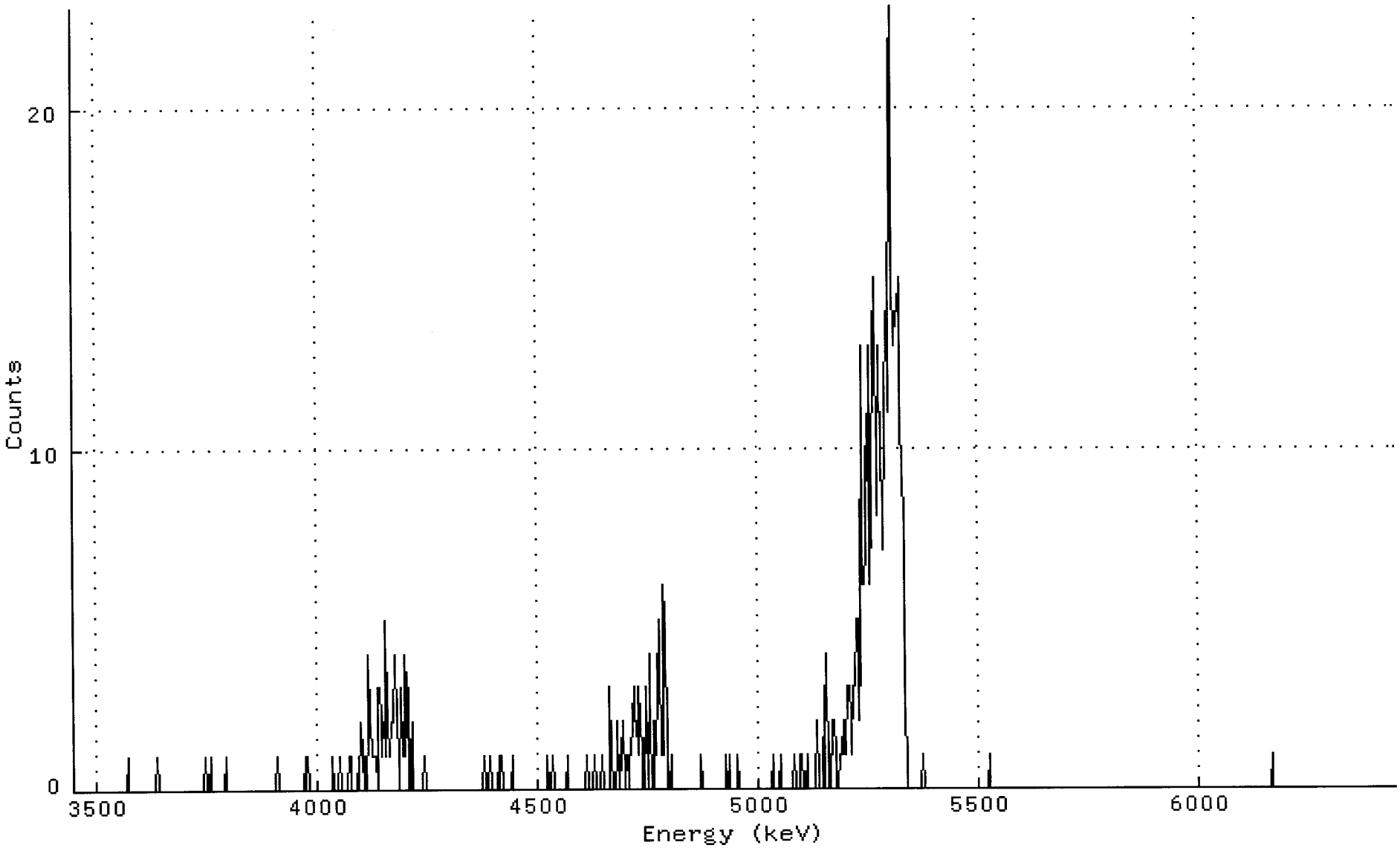
Jay Price
Analyst

10-7-05
Date

Alan Gregory
Reviewer

10/7/05
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$12_UU.CNF;1
Title : 044
Sample Title: VPBR092705SL09
Start Time: 7-OCT-2005 07:27: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.43662E+03
Real Time : 0 02:50:00.40 Sample ID : 12 Energy Slope : 3.09924E+00
Live Time : 0 02:50:00.00 Sample Type: UU Energy Quad : -1.59506E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$12_UU

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	1	0	0	0	1	0	0	0	0	0	0	0	0
113:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
155:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	1	0	1	0	0	0	0	0
183:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
197:	0	0	0	0	1	0	0	0	0	0	0	1	1	0
211:	0	0	0	0	1	0	2	1	0	1	0	2	4	2
225:	1	1	1	1	0	3	3	2	1	2	1	5	2	1
239:	2	2	2	4	4	2	1	0	3	1	1	4	3	0
253:	3	0	2	0	0	0	0	0	0	0	0	1	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	1	0	0	0	1	0	0	0	0	0	0	1	0	1
323:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	1	0	0	0	1	0	0	0
365:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
379:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
393:	1	0	0	0	0	0	1	0	0	0	0	0	3	1
407:	0	0	0	1	2	0	1	1	2	0	0	1	0	1
421:	1	2	3	2	2	1	3	2	1	0	0	3	2	0
435:	4	2	0	0	2	1	3	5	4	1	1	6	5	1
449:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
477:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	1	0	1	0	0	0	0	0	0	1	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
533:	0	0	1	0	0	0	0	0	0	0	0	0	0	1
547:	0	0	0	0	1	1	0	0	0	1	0	0	0	0
561:	0	0	0	2	0	0	0	0	3	0	4	0	0	0
575:	2	1	2	1	0	0	1	1	1	2	1	1	3	3
589:	3	2	1	3	3	3	5	5	2	4	13	6	6	7
603:	10	9	13	6	8	14	11	15	8	10	13	9	11	7
617:	11	12	13	15	11	21	23	15	13	14	14	14	15	11
631:	9	8	3	0	0	0	0	0	0	0	0	0	0	0
645:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:09:55.92

Detector ID: 44 Acquisition Start: 7-OCT-2005 07:27:09.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.40
Batch Id: 0509117A-UU Sample Id: 12
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4157.84	76	0	95.80	235.57	184	90	7.45E-03	11.5	
2	0	4400.05	4	0	43.39	316.00	283	42	3.92E-04	50.0	
3	0	4442.00	1	0	3.10	330.00	328	29	9.80E-05	100.0	
4	0	4740.88	74	0	39.26	430.36	383	82	7.25E-03	11.6	
5	0	5278.14	452	0	95.95	613.56	570	76	4.43E-02	4.7	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:10:00.31

Acquisition Start: 1-OCT-2005 10:07:34.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4136.47	0	0	0.00	228.50	184	90	0.00E+00	0.0	
2	0	4362.54	0	0	0.00	303.50	283	42	0.00E+00	0.0	
3	0	4477.90	1	0	3.10	342.00	328	29	1.67E-05	100.0	
4	0	4720.54	0	0	0.00	423.50	383	82	0.00E+00	0.0	
5	0	5260.54	1	0	3.10	607.50	570	76	1.67E-05	100.0	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:10:00.60

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4157.84*	76	0	95.80	235.57	184	90	7.45E-03	11.5	
2	0	4400.05*	4	0	43.39	316.00	283	42	3.92E-04	50.0	
3	0	4442.00*	1	0	3.10	330.00	328	29	8.14E-05	122.2	
4	0	4740.88*	74	0	39.26	430.36	383	82	7.25E-03	11.6	
5	0	5278.14*	452	0	95.95	613.56	570	76	4.43E-02	4.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:10:01

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL09
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 7-OCT-2005 07:27:09
Sample ID : 12 Sample quantity : 1.0165 gram
Sample type : UU Sample geometry :
Detector name : 044 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.40 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4157.84*	76	95.80	235.57	184	90	22.9		U-238	0.977
0	4400.05*	4	43.39	316.00	283	42	100.0		U-235	6.374E-02
0	4442.00*	1	3.10	330.00	328	29	244.4		U-236	1.187E-02
0	4740.88*	74	39.26	430.36	383	82	23.2		U-234	0.956
0	5278.14*	452	95.95	613.56	570	76	9.4		U232	5.84

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:10:12

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$13_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	13
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.031E+00 gram
SAMPLE TITLE:	VPBR092705SL10	DETECTOR NUMBER:	045
ACQ DATE:	7-OCT-2005 07:27	AVERAGE EFFICIENCY:	20.80%
ELAPSED LIVE TIME:	10200.	RECOVERY:	90.86%
TRACER ID:	UU-10A	TRACER FWHM (kev):	61.66
LAMBDA VALUE:	603.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.502	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_045_1OCT05	BKG ELAPSED TIME:	60000.

****

NUCLIDE ACTIVITY SUMMARY

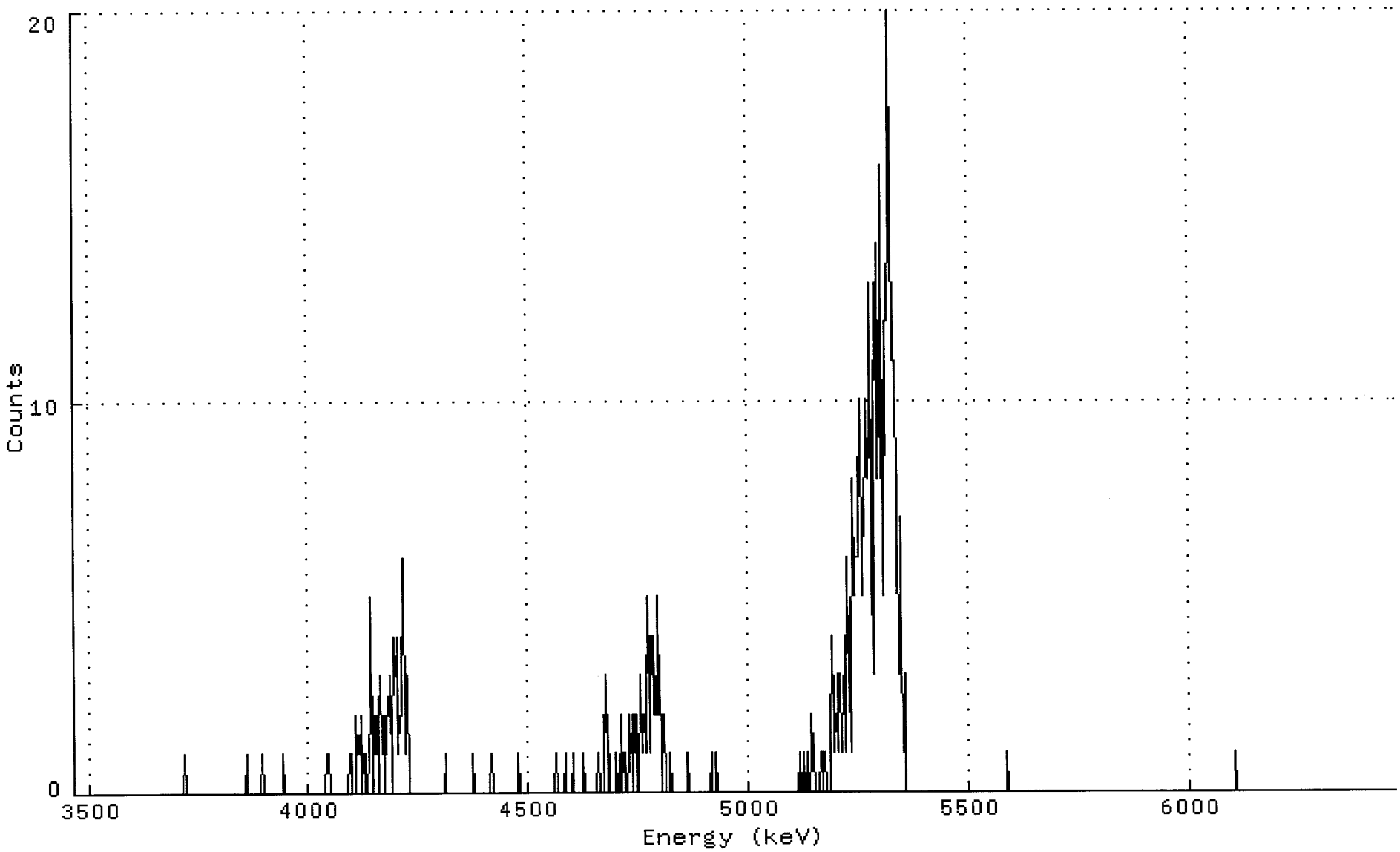
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	400.83	0.17	99.8	5.461E+00	7.108E-01	6.303E-02
U-234	4761.5	72.00	0.00	99.8	9.807E-01	2.727E-01	3.691E-02
U-235	4385.5	2.83	0.17	80.9	4.755E-02	5.891E-02	7.775E-02
U-236	4485.2	1.00	0.00	90.1	1.509E-02	3.026E-02	4.089E-02
U-238	4184.4	74.66	0.34	100.2	1.013E+00	2.785E-01	7.353E-02

****

Analyst _____ Date 10.7.05

Reviewer _____ Date 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$13_UU.CNF;1
Title : 045
Sample Title: VPBR092705SL10
Start Time: 7-OCT-2005 07:27: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.45621E+03
Real Time : 0 02:50:00.10 Sample ID : 13 Energy Slope : 3.12218E+00
Live Time : 0 02:50:00.00 Sample Type: UU Energy Quad : -1.80074E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$13_UU

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
141:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	0	0	0	0	0	0	0	1	1	1	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	0	1	1	0	0
211:	0	2	1	1	2	0	1	1	0	0	1	2	5	0
225:	2	1	2	0	2	3	1	2	0	2	2	2	3	0
239:	1	4	3	4	1	2	2	2	6	1	3	3	0	0
253:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
309:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
365:	0	0	0	0	1	0	0	0	0	0	1	0	0	0
379:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
393:	0	1	0	0	0	0	1	3	0	2	0	0	0	0
407:	0	1	0	0	2	0	1	1	0	0	1	2	1	2
421:	0	2	0	2	0	3	3	1	2	1	2	5	1	4
435:	4	2	4	2	2	5	2	2	0	2	0	0	0	0
449:	1	0	0	0	0	0	0	0	0	0	0	0	0	1
463:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
477:	0	0	0	1	0	0	0	1	0	0	0	0	0	0
491:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547:	0	1	0	0	1	0	0	1	0	0	1	2	1	0
561:	0	0	0	0	1	1	0	1	0	0	0	0	1	4
575:	2	1	2	1	3	3	1	2	2	4	1	6	3	1
589:	2	8	5	6	6	6	7	10	5	6	7	9	10	8
603:	9	13	6	3	9	13	8	14	10	8	16	5	12	12
617:	12	15	20	15	11	12	10	8	7	3	7	4	1	3
631:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:10:07.07

Detector ID: 45 Acquisition Start: 7-OCT-2005 07:27:29.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.10
Batch Id: 0509117A-UU Sample Id: 13
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4171.19	75	0	78.88	232.11	176	90	7.35E-03	11.5	
2	0	4366.61	3	0	112.40	296.67	275	42	2.94E-04	57.7	
3	0	4478.93	1	0	3.12	334.00	319	30	9.80E-05	100.0	
4	0	4754.69	72	0	128.25	426.37	374	82	7.06E-03	11.8	
5	0	5286.06	401	0	61.66	607.36	561	76	3.93E-02	5.0	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:10:10.45

Acquisition Start: 1-OCT-2005 10:07:37.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4135.89	2	0	9.37	220.50	176	90	3.33E-05	70.7	
2	0	4363.09	1	0	3.12	295.50	275	42	1.67E-05	100.0	
3	0	4477.43	0	0	0.00	333.50	319	30	0.00E+00	0.0	
4	0	4719.41	0	0	0.00	414.50	374	82	0.00E+00	0.0	
5	0	5260.33	1	0	3.12	598.50	561	76	1.67E-05	100.0	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:10:10.75

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4171.19*	75	0	78.88	232.11	176	90	7.32E-03	11.6	
2	0	4366.61*	3	0	112.40	296.67	275	42	2.77E-04	61.5	
3	0	4478.93*	1	0	3.12	334.00	319	30	9.80E-05	100.0	
4	0	4754.69*	72	0	128.25	426.37	374	82	7.06E-03	11.8	
5	0	5286.06*	401	0	61.66	607.36	561	76	3.93E-02	5.0	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:10:11

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL10
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 7-OCT-2005 07:27:29
Sample ID : 13 Sample quantity : 1.0312 gram
Sample type : UU Sample geometry :
Detector name : 045 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.10 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4171.19*	75	78.88	232.11	176	90	23.2		U-238	0.920
0	4366.61*	3	112.40	296.67	275	42	123.0		U-235	4.320E-02
0	4478.93*	1	3.12	334.00	319	30	200.0		U-236	1.371E-02
0	4754.69*	72	128.25	426.37	374	82	23.6		U-234	0.891
0	5286.06*	401	61.66	607.36	561	76	10.0		U232	4.96

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:10:40

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$14_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	14
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.100E+00 gram
SAMPLE TITLE:	VPBR092705SL11	DETECTOR NUMBER:	046
ACQ DATE:	7-OCT-2005 07:27	AVERAGE EFFICIENCY:	20.52%
ELAPSED LIVE TIME:	10200.	RECOVERY:	89.46%
TRACER ID:	UU-10A	TRACER FWHM (kev):	49.11
LAMBDA VALUE:	607.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.581	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:54	EFF CAL DATE:	29-SEP-2005 16:54
BKG FILENAME:	B_046_1OCT05	BKG ELAPSED TIME:	60000.

****

NUCLIDE ACTIVITY SUMMARY

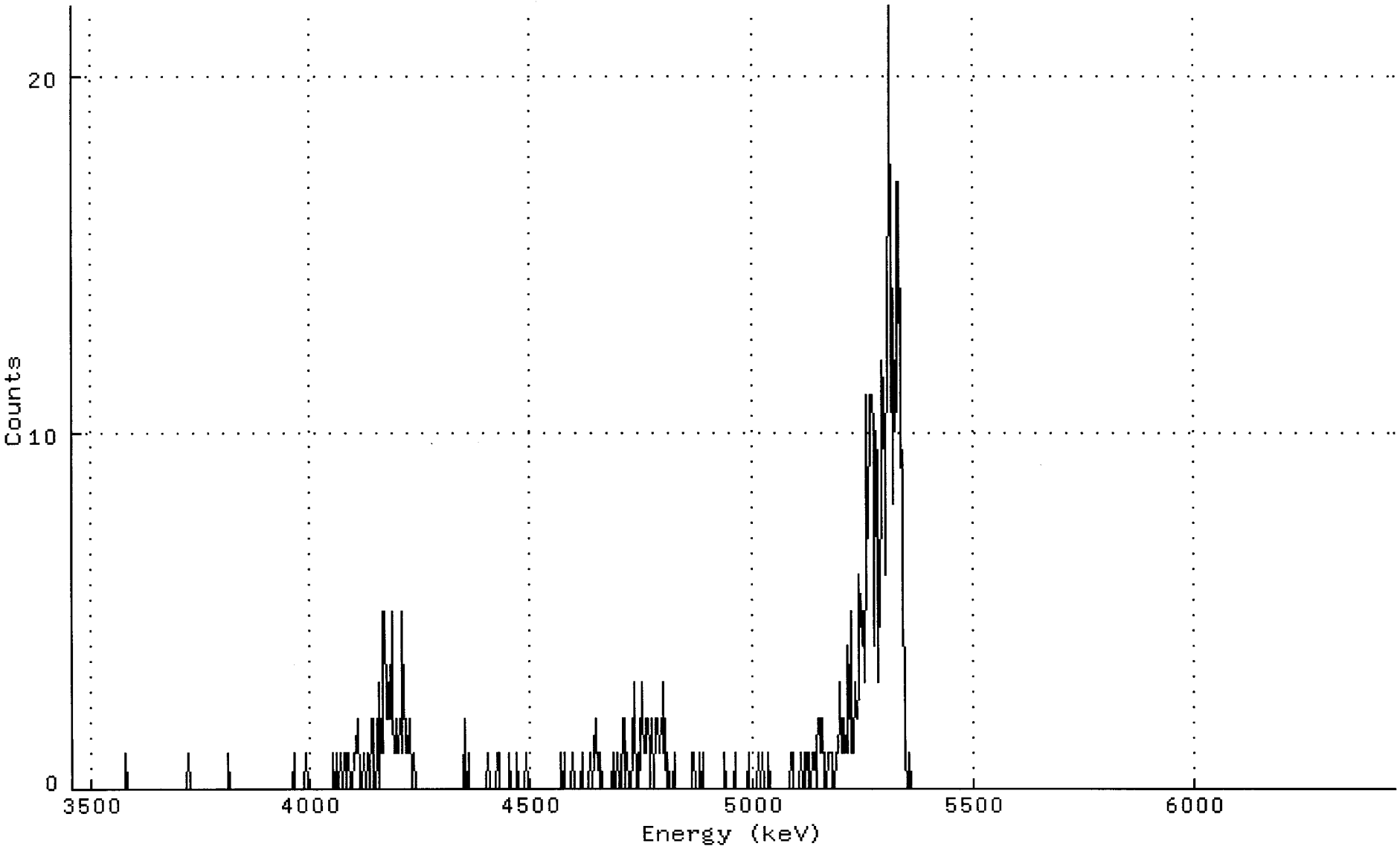
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	391.66	0.34	99.8	5.154E+00	6.755E-01	7.132E-02
U-234	4761.5	53.15	0.85	99.8	6.992E-01	2.196E-01	9.205E-02
U-235	4385.5	5.00	0.00	80.9	8.114E-02	7.357E-02	4.398E-02
U-236	4485.2	3.83	0.17	90.1	5.581E-02	5.908E-02	6.742E-02
U-238	4184.4	71.66	0.34	100.2	9.386E-01	2.624E-01	7.101E-02

****

Analyst: [signature] Date: 10-7-05

Reviewer: [signature] Date: 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$14_UU.CNF;1
Title : 046
Sample Title: VPBR092705SL11
Start Time: 7-OCT-2005 07:27: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.44911E+03
Real Time : 0 02:50:00.10 Sample ID : 14 Energy Slope : 3.15389E+00
Live Time : 0 02:50:00.00 Sample Type: UU Energy Quad : -2.18269E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$14_UU

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
169:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
183:	0	0	0	0	0	0	0	0	0	0	0	1	0	1
197:	0	0	1	0	0	1	0	1	1	0	0	0	1	1
211:	1	2	0	0	0	1	0	0	1	0	0	2	2	0
225:	0	1	3	0	2	1	5	5	2	2	3	2	5	2
239:	1	2	1	1	2	1	5	2	2	1	1	2	0	0
253:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	2	0	0	1
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	1	0	0	0	0	0	0	1	1	0	0	0	0	0
323:	0	0	1	0	0	0	0	0	1	0	0	0	0	0
337:	1	1	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
365:	0	1	0	0	0	0	0	1	0	0	0	0	0	0
379:	1	0	0	0	0	0	1	0	0	1	2	1	1	0
393:	1	0	0	0	0	0	0	0	0	1	0	0	1	1
407:	0	0	0	2	2	0	1	0	0	0	1	3	2	0
421:	1	0	1	3	2	1	1	2	2	1	0	2	0	2
435:	1	2	1	1	2	1	3	1	0	1	0	0	0	0
449:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
463:	1	1	0	0	0	0	1	0	1	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
491:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
505:	0	1	0	0	0	0	0	0	0	1	0	0	1	0
519:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
533:	0	0	0	0	0	0	1	1	0	0	0	0	0	1
547:	1	0	1	0	1	0	1	0	1	1	1	0	1	2
561:	1	2	2	0	1	0	1	1	1	1	0	0	1	1
575:	1	2	3	1	1	2	1	1	4	2	5	1	1	3
589:	3	2	3	6	5	4	5	3	7	11	7	11	11	11
603:	10	4	10	9	3	6	8	12	11	8	6	15	16	22
617:	13	8	14	10	11	17	17	9	14	5	3	1	0	0
631:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:10:17.09

Detector ID: 46 Acquisition Start: 7-OCT-2005 07:27:48.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.10
Batch Id: 0509117A-UU Sample Id: 14
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4166.95	72	0	59.53	231.31	177	89	7.06E-03	11.8	
2	0	4376.24	5	0	3.15	300.20	275	42	4.90E-04	44.7	
3	0	4474.40	4	0	44.15	332.75	320	29	3.92E-04	50.0	
4	0	4738.21	54	0	167.85	421.00	375	81	5.29E-03	13.6	
5	0	5285.19	392	0	49.11	607.72	561	76	3.84E-02	5.1	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:10:37.96

Acquisition Start: 1-OCT-2005 10:07:40.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4135.46	2	0	94.62	221.00	177	89	3.33E-05	70.7	
2	0	4362.03	0	0	0.00	295.50	275	42	0.00E+00	0.0	
3	0	4478.16	1	0	3.15	334.00	320	29	1.67E-05	100.0	
4	0	4720.38	5	0	179.38	415.00	375	81	8.33E-05	44.7	
5	0	5258.53	2	0	189.23	598.50	561	76	3.33E-05	70.7	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:10:38.25

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4166.95*	72	0	59.53	231.31	177	89	7.03E-03	11.8	
2	0	4376.24*	5	0	3.15	300.20	275	42	4.90E-04	44.7	
3	0	4474.40*	4	0	44.15	332.75	320	29	3.75E-04	52.4	
4	0	4738.21*	53	0	167.85	421.00	375	81	5.21E-03	13.8	
5	0	5285.19*	392	0	49.11	607.72	561	76	3.84E-02	5.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:10:39

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL11		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 7-OCT-2005 07:27:48
Sample ID	: 14	Sample quantity	: 1.0996 gram
Sample type	: UU	Sample geometry	:
Detector name	: 046	Detector geometry	:
Elapsed live time	: 0 02:50:00.00	Elapsed real time	: 0 02:50:00.10 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4166.95*	72	59.53	231.31	177	89	23.7		U-238	0.840
0	4376.24*	5	3.15	300.20	275	42	89.4		U-235	7.259E-02
0	4474.40*	4	44.15	332.75	320	29	104.8		U-236	4.993E-02
0	4738.21*	53	167.85	421.00	375	81	27.7		U-234	0.626
0	5285.19*	392	49.11	607.72	561	76	10.1		U232	4.61

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:10:52

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$15_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	15
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.034E+00 gram
SAMPLE TITLE:	VPBR092705SL12	DETECTOR NUMBER:	047
ACQ DATE:	7-OCT-2005 07:28	AVERAGE EFFICIENCY:	20.29%
ELAPSED LIVE TIME:	10200.	RECOVERY:	86.65%
TRACER ID:	UU-10A	TRACER FWHM (kev):	77.56
LAMBDA VALUE:	602.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.494	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:54	EFF CAL DATE:	29-SEP-2005 16:54
BKG FILENAME:	B_047_1OCT05	BKG ELAPSED TIME:	60000.

****

NUCLIDE ACTIVITY SUMMARY

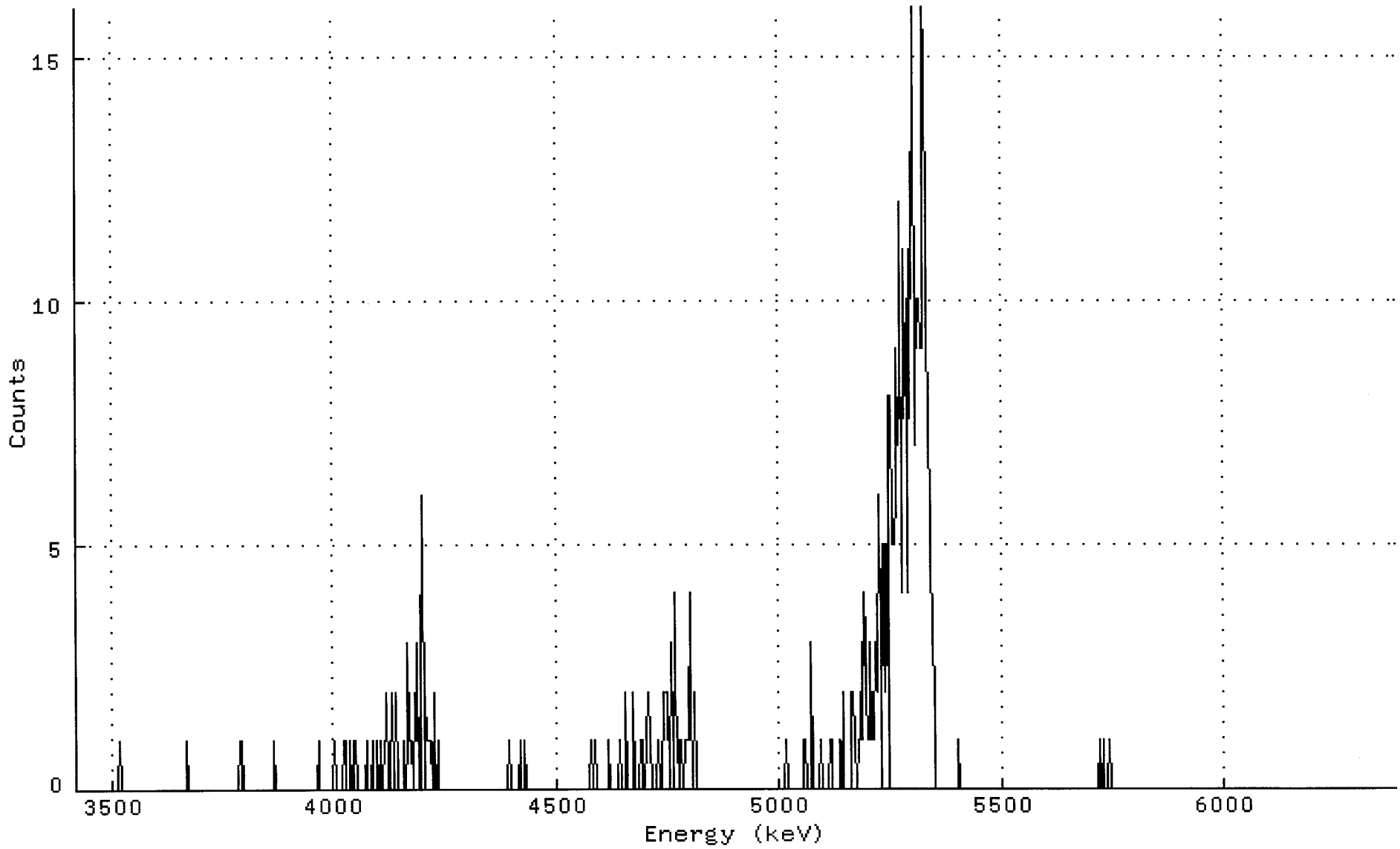
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	372.49	0.51	99.8	5.444E+00	7.246E-01	8.811E-02
U-234	4761.5	50.83	0.17	99.8	7.427E-01	2.367E-01	6.761E-02
U-235	4385.5	1.83	0.17	80.9	3.298E-02	5.158E-02	8.340E-02
U-236	4485.2	-0.34	0.34	90.1	-5.502E-03	7.825E-03	8.774E-02
U-238	4184.4	48.83	0.17	100.2	7.104E-01	2.300E-01	6.732E-02

****

Analyst _____ Date 10-7-05

Reviewer _____ Date 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$15_UU.CNF;1
Title : 047
Sample Title: VPBR092705SL12
Start Time: 7-OCT-2005 07:28: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.41102E+03
Real Time : 0 02:50:00.10 Sample ID : 15 Energy Slope : 3.06759E+00
Live Time : 0 02:50:00.00 Sample Type: UU Energy Quad : -1.62796E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$15_UU

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	1	0	1
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	1	0	0	0	0	0	0	0	0	0	0	0	1	0
197:	0	0	0	0	0	1	1	0	0	0	1	0	1	0
211:	1	0	0	0	0	0	0	0	1	0	0	0	1	0
225:	0	0	1	0	1	0	0	1	1	2	0	1	0	2
239:	0	0	2	0	0	0	0	0	1	0	1	3	1	1
253:	0	0	2	1	3	0	0	2	6	0	2	1	1	1
267:	1	0	2	0	0	1	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	1	0	0	0	0	0	0	0	1	0	0
337:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
379:	0	0	0	0	0	0	0	0	0	1	0	0	1	0
393:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
407:	0	0	0	1	0	0	0	0	2	0	0	0	0	0
421:	2	0	0	0	0	1	0	1	0	1	1	2	1	1
435:	0	0	0	0	1	1	0	0	0	2	2	2	2	0
449:	3	3	0	4	2	1	0	1	1	0	0	1	1	1
463:	1	4	2	0	2	0	0	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
547:	0	0	0	0	0	1	1	0	0	0	0	3	0	0
561:	0	0	0	0	1	0	0	0	0	0	0	1	1	0
575:	0	0	0	0	0	1	0	2	0	0	0	0	0	0
589:	2	2	1	1	0	1	1	1	3	1	4	3	2	1
603:	1	3	1	2	1	3	3	2	6	3	0	5	5	2
617:	5	0	8	8	5	6	5	6	9	7	8	12	4	11
631:	11	8	10	4	11	10	10	16	7	11	9	10	10	9
645:	9	16	15	11	9	8	5	5	3	2	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
785:	0	0	1	0	0	0	0	1	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:10:44.31

Detector ID: 47 Acquisition Start: 7-OCT-2005 07:28:05.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.10
Batch Id: 0509117A-UU Sample Id: 15
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4153.84	49	0	3.80	245.35	194	91	4.80E-03	14.3	
2	0	4405.60	2	0	27.61	330.00	294	44	1.96E-04	70.7	
3	0	4478.02	0	0	0.00	354.50	340	30	0.00E+00	0.0	
4	0	4745.12	51	0	50.00	445.43	396	83	5.00E-03	14.0	
5	0	5283.00	373	0	77.56	631.40	585	77	3.66E-02	5.2	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:10:49.38

Acquisition Start: 1-OCT-2005 10:07:43.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4134.88	1	0	3.07	239.00	194	91	1.67E-05	100.0	
2	0	4362.64	1	0	3.07	315.50	294	44	1.67E-05	100.0	
3	0	4478.02	2	0	15.34	354.50	340	30	3.33E-05	70.7	
4	0	4720.47	1	0	3.07	437.00	396	83	1.67E-05	100.0	
5	0	5258.94	3	0	180.99	623.00	585	77	5.00E-05	57.7	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:10:49.67

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4153.84*	49	0	3.80	245.35	194	91	4.79E-03	14.3	
2	0	4405.60*	2	0	27.61	330.00	294	44	1.79E-04	77.8	
3	0	4478.02*	0	0	0.00	354.50	340	30	-3.33E-05	70.7	
4	0	4745.12*	51	0	50.00	445.43	396	83	4.98E-03	14.1	
5	0	5283.00*	372	0	77.56	631.40	585	77	3.65E-02	5.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:10:50

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL12
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 7-OCT-2005 07:28:05
Sample ID : 15 Sample quantity : 1.0338 gram
Sample type : UU Sample geometry :
Detector name : 047 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.10 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4153.84*	49	3.80	245.35	194	91	28.7		U-238	0.616
0	4405.60*	2	27.61	330.00	294	44	155.7		U-235	2.858E-02
0	4478.02*	0	0.00	354.50	340	30	141.4		U-236	-4.768E-03
0	4745.12*	51	50.00	445.43	396	83	28.1		U-234	0.644
0	5283.00*	372	77.56	631.40	585	77	10.4		U232	4.72

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:11:17

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$16_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	16
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.114E+00 gram
SAMPLE TITLE:	VPBR092705SL13	DETECTOR NUMBER:	048
ACQ DATE:	7-OCT-2005 07:28	AVERAGE EFFICIENCY:	19.34%
ELAPSED LIVE TIME:	10200.	RECOVERY:	95.58%
TRACER ID:	UU-10A	TRACER FWHM (kev):	80.83
LAMBDA VALUE:	602.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.477	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:54	EFF CAL DATE:	29-SEP-2005 16:54
BKG FILENAME:	B_048_1OCT05	BKG ELAPSED TIME:	60000.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	391.15	0.85	99.8	5.046E+00	6.623E-01	9.023E-02
U-234	4761.5	87.15	0.85	99.8	1.124E+00	2.942E-01	9.023E-02
U-235	4385.5	6.66	0.34	80.9	1.060E-01	8.598E-02	8.625E-02
U-236	4485.2	1.00	0.00	90.1	1.428E-02	2.865E-02	3.871E-02
U-238	4184.4	86.98	1.02	100.2	1.117E+00	2.928E-01	9.510E-02

****

*** Tracer FWHM > 80.0 Kev ***

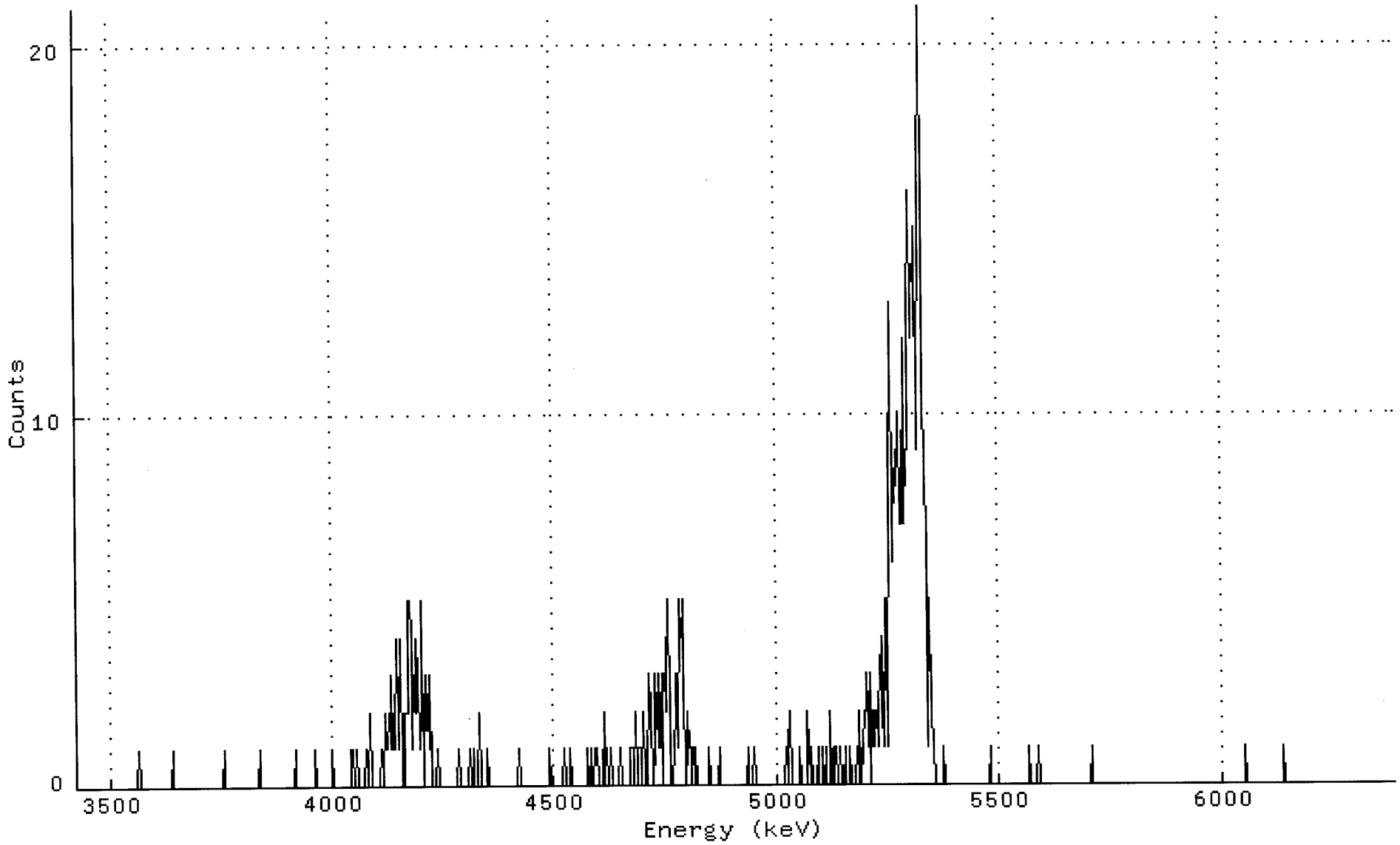
Jeff Price
Analyst

10-7-05
Date

Dean Gregory
Reviewer

10/7/05
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$16_UU.CNF;1
Title : 048
Sample Title: VPBR092705SL13
Start Time: 7-OCT-2005 07:28: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.41278E+03
Real Time : 0 02:50:00.10 Sample ID : 16 Energy Slope : 3.07147E+00
Live Time : 0 02:50:00.00 Sample Type: UU Energy Quad : -1.66471E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$16_UU

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
183:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
197:	0	0	0	0	0	0	0	0	0	0	0	1	1	0
211:	0	1	0	0	0	0	0	0	1	0	0	2	0	0
225:	0	0	0	0	0	1	1	0	2	1	1	2	1	3
239:	1	2	1	4	1	2	4	0	0	2	2	2	5	5
253:	4	1	3	2	4	3	1	2	5	0	3	3	2	1
267:	3	0	0	0	0	1	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
295:	0	1	1	0	1	0	0	0	0	2	0	0	0	0
309:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
365:	0	0	0	0	1	0	0	0	0	1	0	0	0	0
379:	0	0	0	0	0	0	0	0	1	0	1	0	0	1
393:	1	1	0	0	0	0	2	0	1	0	0	1	0	0
407:	0	0	0	0	1	0	0	0	0	0	0	0	1	1
421:	1	0	2	0	1	1	1	0	2	0	0	0	3	2
435:	2	0	1	3	2	1	3	2	0	3	3	2	3	5
449:	2	0	0	1	2	3	1	5	5	4	5	3	0	1
463:	2	1	1	0	1	0	1	0	0	0	0	0	0	0
477:	0	0	1	0	0	0	0	0	0	0	1	0	0	0
491:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	1	0	0	0	0	1	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	0	0	0	0	0	0	1	0	1	2	0	0	0	0
547:	0	0	0	1	0	0	0	0	0	2	1	0	1	0
561:	0	0	0	1	0	0	0	1	0	1	0	0	0	2
575:	0	1	0	1	0	0	1	0	0	0	1	0	0	0
589:	1	0	0	0	0	1	0	2	0	1	1	2	2	3
603:	2	0	3	1	2	1	2	1	2	3	4	2	1	5
617:	4	1	9	7	13	6	7	8	9	8	10	7	8	7
631:	12	7	9	9	12	16	12	13	14	13	15	9	17	15
645:	21	15	10	9	6	1	5	2	2	1	0	0	0	0
659:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	1	0	0	0	0	0	0	1	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:10:56.68

Detector ID: 48 Acquisition Start: 7-OCT-2005 07:28:23.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.10
Batch Id: 0509117A-UU Sample Id: 16
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4164.54	88	0	89.87	248.09	193	91	8.63E-03	10.7	
2	0	4337.91	7	0	3.07	306.29	294	43	6.86E-04	37.8	
3	0	4491.03	1	0	3.07	358.00	339	30	9.80E-05	100.0	
4	0	4744.86	88	0	83.93	444.40	395	83	8.63E-03	10.7	
5	0	5288.99	392	0	80.83	632.54	584	77	3.84E-02	5.1	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:11:15.73

Acquisition Start: 1-OCT-2005 10:07:46.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4134.36	6	0	196.57	238.00	193	91	1.00E-04	40.8	
2	0	4363.77	2	0	0.00	315.00	294	43	3.33E-05	70.7	
3	0	4477.74	0	0	0.00	353.50	339	30	0.00E+00	0.0	
4	0	4720.29	5	0	119.79	436.00	395	83	8.33E-05	44.7	
5	0	5258.83	5	0	113.64	622.00	584	77	8.33E-05	44.7	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:11:16.03

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4164.54*	87	0	89.87	248.09	193	91	8.53E-03	10.8	
2	0	4337.91*	7	0	3.07	306.29	294	43	6.53E-04	39.9	
3	0	4491.03*	1	0	3.07	358.00	339	30	9.80E-05	100.0	
4	0	4744.86*	87	0	83.93	444.40	395	83	8.54E-03	10.8	
5	0	5288.99*	391	0	80.83	632.54	584	77	3.83E-02	5.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:11:16

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL13
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 7-OCT-2005 07:28:23
Sample ID : 16 Sample quantity : 1.1139 gram
Sample type : UU Sample geometry :
Detector name : 048 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.10 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4164.54*	87	89.87	248.09	193	91	21.6		U-238	1.07
0	4337.91*	7	3.07	306.29	294	43	79.8		U-235	0.101
0	4491.03*	1	3.07	358.00	339	30	200.0		U-236	1.365E-02
0	4744.86*	87	83.93	444.40	395	83	21.5		U-234	1.07
0	5288.99*	391	80.83	632.54	584	77	10.1		U232	4.82

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:11:48

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$17_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	17
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.069E+00 gram
SAMPLE TITLE:	VPBR092705SL14	DETECTOR NUMBER:	017
ACQ DATE:	7-OCT-2005 07:52	AVERAGE EFFICIENCY:	19.37%
ELAPSED LIVE TIME:	10209.	RECOVERY:	88.78%
TRACER ID:	UU-10A	TRACER FWHM (kev):	96.77
LAMBDA VALUE:	605.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.541	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 13:20	EFF CAL DATE:	29-SEP-2005 13:20
BKG FILENAME:	B_017_1OCT05	BKG ELAPSED TIME:	60004.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	366.15	0.85	99.8	5.282E+00	7.073E-01	1.009E-01
U-234	4761.5	63.32	0.68	99.8	9.132E-01	2.690E-01	9.441E-02
U-235	4385.5	6.00	0.00	80.9	1.068E-01	8.864E-02	4.822E-02
U-236	4485.2	1.83	0.17	90.1	2.923E-02	4.572E-02	7.393E-02
U-238	4184.4	86.83	0.17	100.2	1.247E+00	3.274E-01	6.646E-02

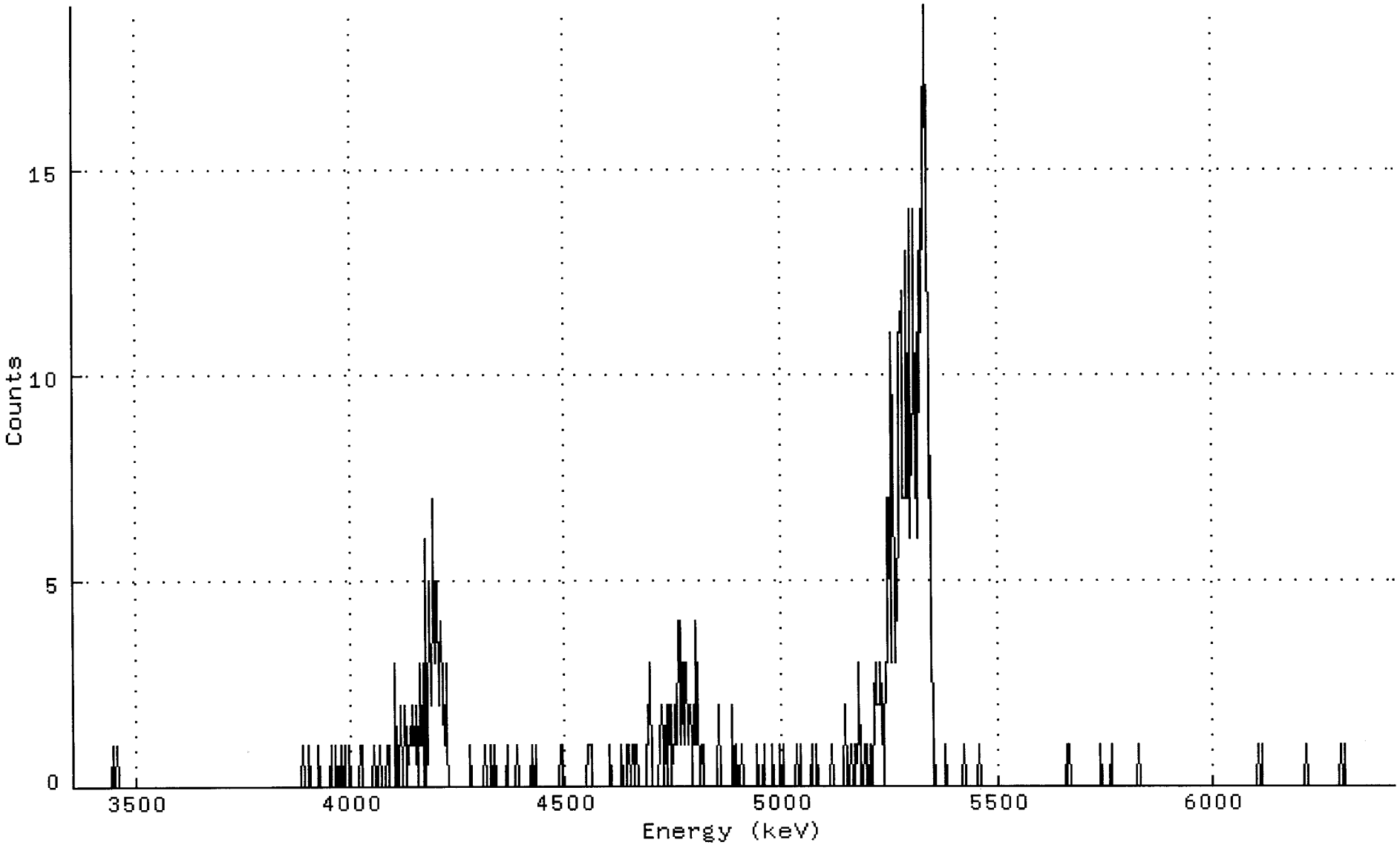
****

*** Tracer FWHM > 80.0 Kev ***

Analyst: Jay Price — Date: 10-7-05

Reviewer: Alan Gregory — Date: 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$17_UU.CNF;1
Title : 017
Sample Title: VPBR092705SL14
Start Time: 7-OCT-2005 07:52: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.34436E+03
Real Time : 0 02:50:09.00 Sample ID : 17 Energy Slope : 3.17970E+00
Live Time : 0 02:50:09.00 Sample Type: UU Energy Quad : -1.76830E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$17_UU

Channel

1:	10209	10209	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	1	0	0	1	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	1	0	0	0	0	1	0	0	0	0
183:	0	0	1	0	0	0	0	0	0	0	0	1	0	0
197:	0	1	0	0	1	0	0	1	0	0	0	1	0	0
211:	0	0	0	0	0	1	1	0	0	0	0	0	0	0
225:	0	1	0	0	0	1	0	0	0	0	0	1	1	0
239:	0	0	0	3	0	1	0	2	0	0	2	1	0	1
253:	1	2	1	1	2	1	0	3	1	2	0	6	0	1
267:	5	5	2	5	7	3	5	2	3	4	2	2	1	3
281:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
309:	1	0	0	0	0	1	0	0	1	0	0	0	0	0
323:	0	0	0	1	0	0	0	0	0	0	0	1	0	0
337:	0	0	0	0	0	0	0	0	1	0	0	1	0	0
351:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365:	0	0	1	1	0	0	0	0	0	0	0	0	0	0
379:	0	0	0	0	0	0	0	0	1	1	1	1	0	0
393:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
407:	0	0	0	0	0	0	1	0	0	0	1	1	0	0
421:	1	1	0	1	0	0	0	0	0	0	0	1	1	3
435:	0	0	0	0	0	0	1	1	2	1	0	1	2	0
449:	2	2	0	1	1	2	1	4	1	4	2	1	3	3
463:	1	2	2	1	0	2	1	4	2	0	0	1	1	0
477:	0	0	0	0	0	0	0	0	0	0	2	0	0	0
491:	0	0	0	0	0	0	0	2	0	0	1	0	0	0
505:	1	0	0	0	0	0	0	0	0	0	0	0	1	0
519:	0	0	0	1	0	0	0	0	0	0	1	0	0	0
533:	0	0	1	0	1	0	0	0	0	0	0	0	0	0
547:	1	1	0	1	0	0	0	0	0	0	0	0	1	0
561:	0	0	1	0	0	0	0	0	0	0	0	0	0	1
575:	1	0	0	0	0	0	0	0	0	0	2	0	0	0
589:	1	1	0	1	0	1	1	3	0	0	0	1	0	1
603:	0	1	0	0	2	3	2	2	2	3	2	0	1	3
617:	3	7	7	3	11	8	4	3	5	6	11	11	12	7
631:	7	7	13	7	14	6	9	9	14	7	11	6	12	14
645:	11	15	19	16	17	7	11	5	0	1	0	0	0	0
659:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
687:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	1	0	1	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	1	0	0	0	0	0	0	0	1	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	1	0	0	1	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
981:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:11:22.23

Detector ID: 17 Acquisition Start: 7-OCT-2005 07:52:55.01
Live Time: 0 02:50:09.00 Real Time: 0 02:50:09.00
Batch Id: 0509117A-UU Sample Id: 17
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4169.46	87	0	40.19	263.34	209	88	8.52E-03	10.7	
2	0	4356.53	6	0	117.65	324.17	306	42	5.88E-04	40.8	
3	0	4489.02	2	0	5.96	367.50	350	29	1.96E-04	70.7	
4	0	4745.46	64	0	119.24	452.00	404	80	6.27E-03	12.5	
5	0	5290.32	367	0	96.77	634.38	587	75	3.59E-02	5.2	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:11:46.57

Acquisition Start: 1-OCT-2005 10:06:19.01
Live Time: 0 16:40:04.00 Real Time: 0 16:40:04.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4135.96	1	0	3.18	252.50	209	88	1.67E-05	100.0	
2	0	4363.68	0	0	0.00	326.50	306	42	0.00E+00	0.0	
3	0	4478.34	1	0	3.18	364.00	350	29	1.67E-05	100.0	
4	0	4719.78	4	0	143.09	443.50	404	80	6.67E-05	50.0	
5	0	5259.64	5	0	3.18	624.00	587	75	8.33E-05	44.7	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:11:46.85

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4169.46*	87	0	40.19	263.34	209	88	8.51E-03	10.7	
2	0	4356.53*	6	0	117.65	324.17	306	42	5.88E-04	40.8	
3	0	4489.02*	2	0	5.96	367.50	350	29	1.79E-04	77.8	
4	0	4745.46*	63	0	119.24	452.00	404	80	6.20E-03	12.6	
5	0	5290.32*	366	0	96.77	634.38	587	75	3.59E-02	5.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:11:47

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL14
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 7-OCT-2005 07:52:55
Sample ID : 17 Sample quantity : 1.0695 gram
Sample type : UU Sample geometry :
Detector name : 017 Detector geometry:
Elapsed live time: 0 02:50:09.00 Elapsed real time: 0 02:50:09.00 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4169.46*	87	40.19	263.34	209	88	21.5		U-238	1.11
0	4356.53*	61	17.65	324.17	306	42	81.6		U-235	9.477E-02
0	4489.02*	2	5.96	367.50	350	29	155.7		U-236	2.595E-02
0	4745.46*	63	119.24	452.00	404	80	25.3		U-234	0.811
0	5290.32*	366	96.77	634.38	587	75	10.5		U232	4.69

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:11:58

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$18_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	18
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.035E+00 gram
SAMPLE TITLE:	VPBR092705SL15	DETECTOR NUMBER:	018
ACQ DATE:	7-OCT-2005 07:53	AVERAGE EFFICIENCY:	19.78%
ELAPSED LIVE TIME:	10201.	RECOVERY:	82.09%
TRACER ID:	UU-10A	TRACER FWHM (kev):	78.72
LAMBDA VALUE:	610.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.653	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 13:20	EFF CAL DATE:	29-SEP-2005 13:20
BKG FILENAME:	B_018_1OCT05	BKG ELAPSED TIME:	60001.

****

NUCLIDE ACTIVITY SUMMARY

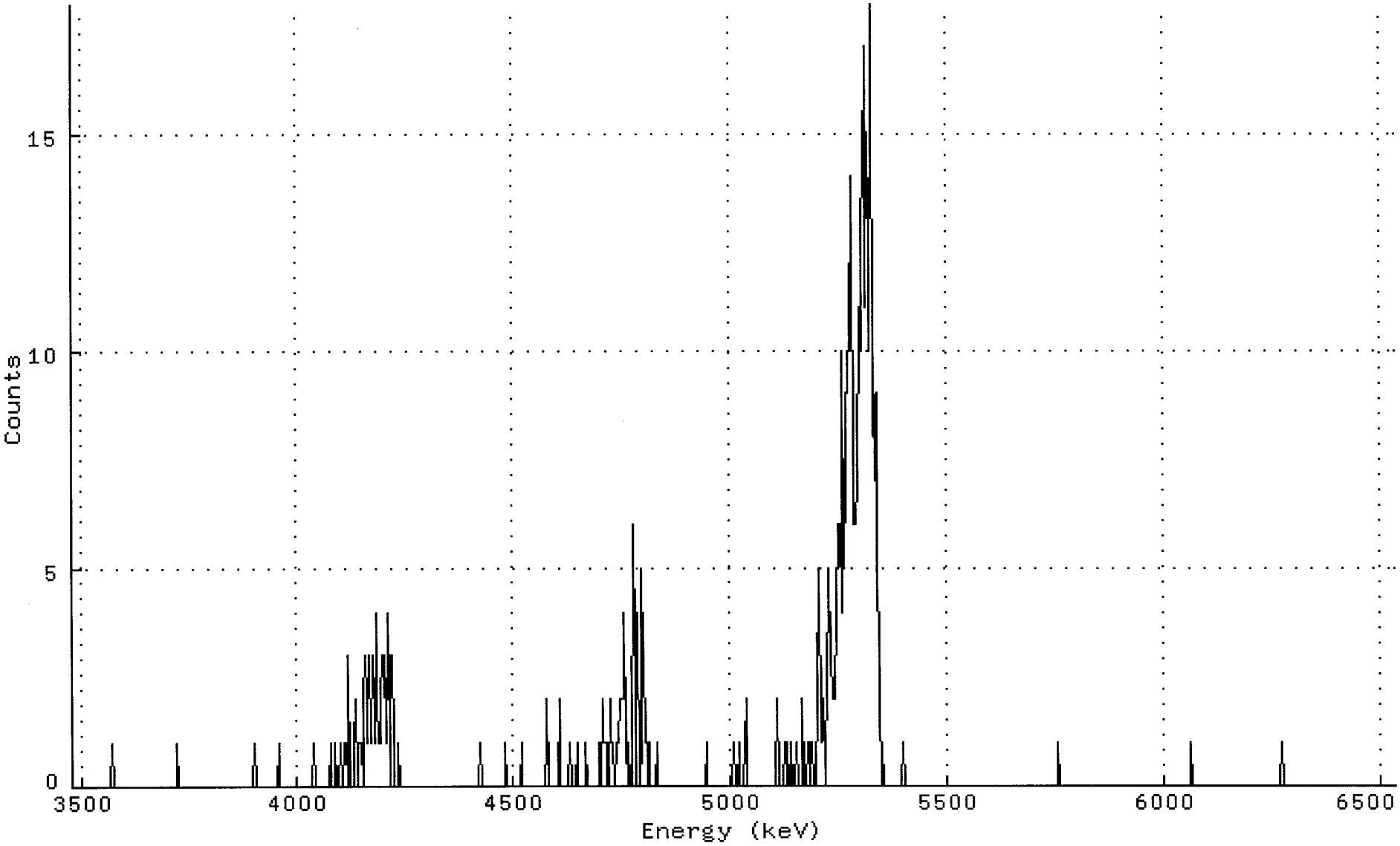
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	348.49	0.51	99.8	5.505E+00	7.480E-01	9.524E-02
U-234	4761.5	57.81	1.19	99.8	9.129E-01	2.802E-01	1.229E-01
U-235	4385.5	0.83	0.17	80.9	1.617E-02	3.960E-02	9.015E-02
U-236	4485.2	1.83	0.17	90.1	3.201E-02	5.007E-02	8.094E-02
U-238	4184.4	65.49	0.51	100.2	1.030E+00	3.001E-01	9.483E-02

****

Jeff Price — 10-7-05
Analyst — Date

Alan Gregley — 10/7/05
Reviewer — Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$18_UU.CNF;1
Title : 018
Sample Title: VPBR092705SL15
Start Time: 7-OCT-2005 07:53: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.46899E+03
Real Time : 0 02:50:01.00 Sample ID : 18 Energy Slope : 3.19213E+00
Live Time : 0 02:50:01.00 Sample Type: UU Energy Quad : -1.96300E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$18_UU

Channel

1:	10201	10201	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
183:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
197:	1	0	0	1	1	0	1	1	1	0	3	0	0	0
211:	1	2	0	1	1	1	0	2	3	2	1	3	1	1
225:	3	1	4	2	1	1	2	3	3	3	1	4	0	3
239:	3	1	0	0	0	1	0	0	0	0	0	0	0	0
253:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
309:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	1	0	0	0	0	0	0	0	0	0	0	0	1
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	1	2	0	0	0	0	0	0	0	0
365:	2	0	0	0	0	0	0	0	1	0	0	0	0	1
379:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
393:	0	0	1	0	2	1	1	1	0	0	2	1	1	0
407:	0	1	1	2	2	2	2	4	1	0	1	0	1	0
421:	6	3	0	4	0	1	5	3	1	2	0	1	0	0
435:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
477:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	0	0	0	0	1	0	0	0	1	0	0	0
505:	0	1	2	0	0	0	0	0	0	0	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	2	0
533:	0	0	0	0	1	0	1	0	0	1	0	0	0	1
547:	0	0	0	0	2	0	0	0	1	0	1	1	0	0
561:	0	2	2	5	1	2	2	0	3	2	5	3	3	2
575:	2	2	4	6	5	6	4	10	5	7	9	9	11	10
589:	14	6	6	6	7	7	11	10	13	14	17	11	15	12
603:	10	18	8	11	7	9	6	2	0	1	0	0	0	0
617:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
631:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:11:52.92

Detector ID: 18 Acquisition Start: 7-OCT-2005 07:53:13.01
Live Time: 0 02:50:01.00 Real Time: 0 02:50:01.00
Batch Id: 0509117A-UU Sample Id: 18
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4171.59	66	0	104.78	223.17	168	88	6.47E-03	12.3	
2	0	4362.81	1	0	0.00	285.00	265	41	9.80E-05	100.0	
3	0	4501.02	2	0	0.00	330.00	308	29	1.96E-04	70.7	
4	0	4754.27	59	0	46.09	413.14	362	80	5.78E-03	13.0	
5	0	5288.58	349	0	78.72	591.54	545	74	3.42E-02	5.4	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:11:56.80

Acquisition Start: 1-OCT-2005 10:06:21.01
Live Time: 0 16:40:01.00 Real Time: 0 16:40:01.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4135.35	3	0	124.49	211.50	168	88	5.00E-05	57.7	
2	0	4362.81	1	0	3.19	285.00	265	41	1.67E-05	100.0	
3	0	4476.51	1	0	0.00	322.00	308	29	1.67E-05	100.0	
4	0	4718.99	7	0	12.77	401.50	362	80	1.17E-04	37.8	
5	0	5258.84	3	0	25.54	581.50	545	74	5.00E-05	57.7	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:11:57.09

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4171.59*	65	0	104.78	223.17	168	88	6.42E-03	12.4	
2	0	4362.81*	1	0	0.00	285.00	265	41	8.14E-05	122.2	
3	0	4501.02*	2	0	0.00	330.00	308	29	1.79E-04	77.8	
4	0	4754.27*	58	0	46.09	413.14	362	80	5.67E-03	13.3	
5	0	5288.58*	348	0	78.72	591.54	545	74	3.42E-02	5.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:11:58

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL15
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 7-OCT-2005 07:53:13
Sample ID : 18 Sample quantity : 1.0354 gram
Sample type : UU Sample geometry :
Detector name : 018 Detector geometry:
Elapsed live time: 0 02:50:01.00 Elapsed real time: 0 02:50:01.00 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4171.59*	65	104.78	223.17	168	88	24.8		U-238	0.845
0	4362.81*	1	0.00	285.00	265	41	244.4		U-235	1.327E-02
0	4501.02*	2	0.00	330.00	308	29	155.7		U-236	2.628E-02
0	4754.27*	58	46.09	413.14	362	80	26.6		U-234	0.749
0	5288.58*	348	78.72	591.54	545	74	10.7		U232	4.52

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
7-OCT-2005 11:12:10

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-UU$19_UU.CNF
****

BATCH ID:	0509117A-UU	SAMPLE ID:	19
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.014E+00 gram
SAMPLE TITLE:	VPBR092705SL16	DETECTOR NUMBER:	019
ACQ DATE:	7-OCT-2005 07:53	AVERAGE EFFICIENCY:	18.97%
ELAPSED LIVE TIME:	10208.	RECOVERY:	92.32%
TRACER ID:	UU-10A	TRACER FWHM (kev):	81.62
LAMBDA VALUE:	606.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	12.560	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 13:20	EFF CAL DATE:	29-SEP-2005 13:20
BKG FILENAME:	B_019_1OCT05	BKG ELAPSED TIME:	60005.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
U232	5302.5	373.32	0.68	99.8	5.580E+00	7.427E-01	9.782E-02
U-234	4761.5	64.15	0.85	99.8	9.586E-01	2.809E-01	1.046E-01
U-235	4385.5	3.83	0.17	80.9	7.060E-02	7.476E-02	8.531E-02
U-236	4485.2	1.83	0.17	90.1	3.029E-02	4.737E-02	7.660E-02
U-238	4184.4	76.64	1.36	100.2	1.140E+00	3.141E-01	1.210E-01

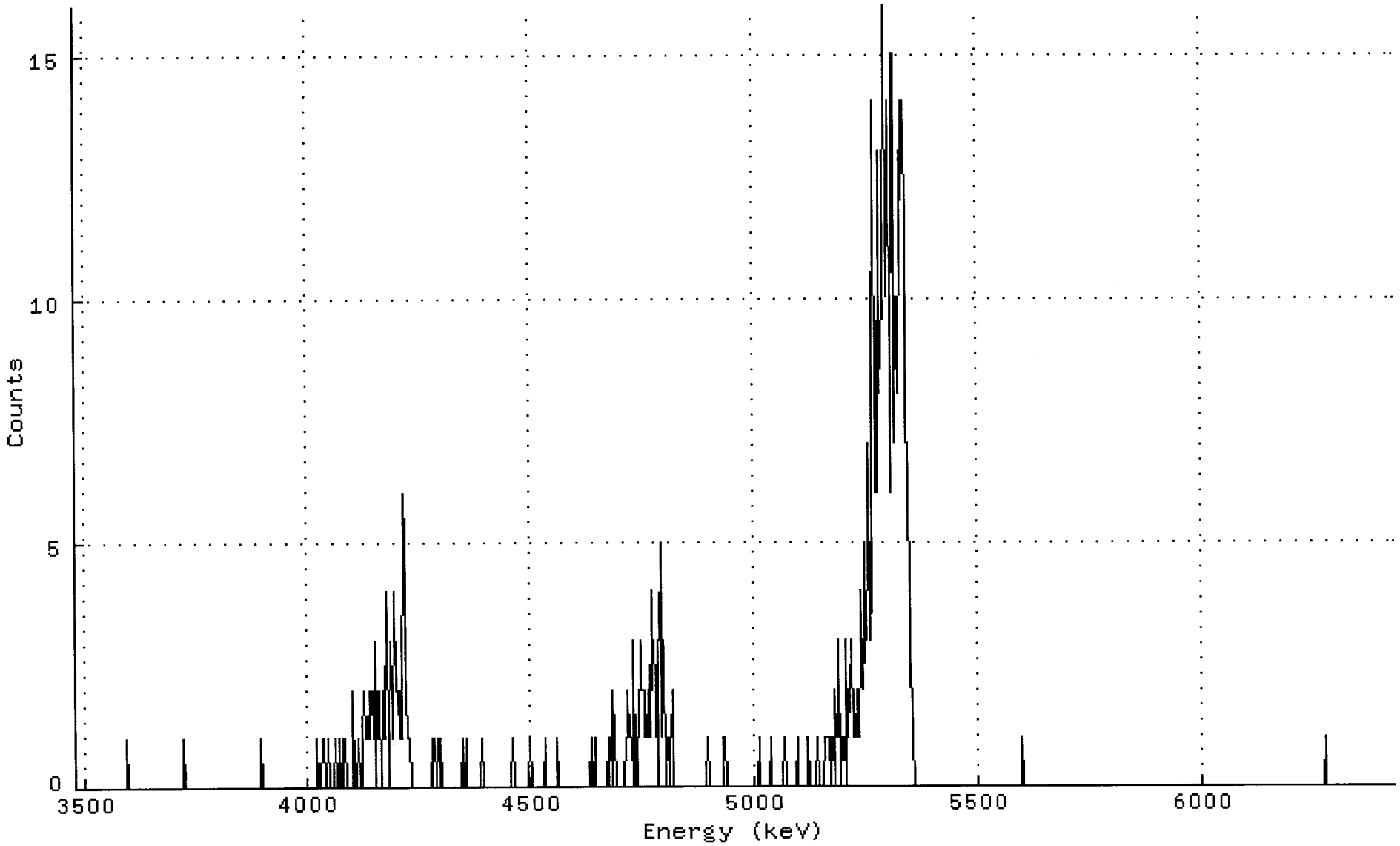
****

*** Tracer FWHM > 80.0 Kev ***

Analyst 10 7 05 Date

Reviewer 10/7/05 Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-UU$19_UU.CNF;1
Title : 019
Sample Title: VPBR092705SL16
Start Time: 7-OCT-2005 07:53: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.46966E+03
Real Time : 0 02:50:08.00 Sample ID : 19 Energy Slope : 3.06748E+00
Live Time : 0 02:50:08.00 Sample Type: UU Energy Quad : -1.74918E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-UU$19_UU

Channel

1:	10208	10208	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
183:	0	0	0	1	1	0	0	1	0	0	0	0	0	1
197:	0	0	1	0	0	1	1	0	0	0	0	0	2	0
211:	0	0	1	0	0	1	2	1	1	1	2	1	2	2
225:	0	3	1	2	2	0	2	1	1	4	0	1	3	2
239:	1	4	2	2	2	1	3	1	6	5	2	1	1	1
253:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
267:	0	1	0	1	0	0	1	0	1	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	1	0	0	1
295:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
309:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
337:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
351:	0	0	1	0	0	0	0	0	0	0	0	0	1	0
365:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
379:	0	0	0	0	0	0	0	0	0	1	0	0	1	0
393:	0	0	0	0	0	0	0	0	1	0	1	0	2	1
407:	0	0	0	0	0	0	0	0	1	1	2	1	1	0
421:	3	0	0	1	1	3	2	2	2	1	1	2	1	1
435:	4	2	3	2	0	3	3	5	1	3	0	1	1	0
449:	1	1	2	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
477:	0	1	0	0	0	0	0	0	0	0	0	0	0	1
491:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
519:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
533:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
547:	1	0	0	0	0	0	0	0	1	0	0	0	0	0
561:	0	1	0	0	0	0	0	1	1	1	1	0	1	1
575:	0	2	1	1	3	0	1	1	1	0	3	1	2	2
589:	3	1	1	1	2	1	1	3	4	2	3	5	3	5
603:	7	3	4	7	14	6	6	6	13	8	9	10	10	16
617:	10	10	14	8	6	15	15	7	10	9	8	12	14	12
631:	14	11	7	7	3	3	1	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:12:03.23

Detector ID: 19 Acquisition Start: 7-OCT-2005 07:53:36.01
Live Time: 0 02:50:08.00 Real Time: 0 02:50:08.00
Batch Id: 0509117A-UU Sample Id: 19
Sample Type: UU

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4168.03	78	0	45.67	230.71	175	91	7.64E-03	11.3	
2	0	4348.97	4	0	0.00	291.50	275	43	3.92E-04	50.0	
3	0	4479.11	2	0	42.94	335.50	321	29	1.96E-04	70.7	
4	0	4757.32	65	0	71.49	430.34	377	83	6.37E-03	12.4	
5	0	5290.78	374	0	81.62	615.27	566	77	3.66E-02	5.2	

Background Counts Within Peak Regions Generated: 7-OCT-2005 11:12:08.65

Acquisition Start: 1-OCT-2005 10:06:24.01
Live Time: 0 16:40:05.00 Real Time: 0 16:40:05.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4136.04	8	0	180.98	220.00	175	91	1.33E-04	35.4	
2	0	4362.31	1	0	3.07	296.00	275	43	1.67E-05	100.0	
3	0	4477.64	1	0	3.07	335.00	321	29	1.67E-05	100.0	
4	0	4721.30	5	0	134.97	418.00	377	83	8.33E-05	44.7	
5	0	5258.61	4	0	226.99	604.00	566	77	6.67E-05	50.0	

Net Sample Counts Within Peak Regions Generated: 7-OCT-2005 11:12:09.01

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4168.03*	77	0	45.67	230.71	175	91	7.51E-03	11.5	
2	0	4348.97*	4	0	0.00	291.50	275	43	3.75E-04	52.4	
3	0	4479.11*	2	0	42.94	335.50	321	29	1.79E-04	77.8	
4	0	4757.32*	64	0	71.49	430.34	377	83	6.28E-03	12.6	
5	0	5290.78*	373	0	81.62	615.27	566	77	3.66E-02	5.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 7-OCT-2005 11:12:09

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL16
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 7-OCT-2005 07:53:36
Sample ID : 19 Sample quantity : 1.0139 gram
Sample type : UU Sample geometry :
Detector name : 019 Detector geometry:
Elapsed live time: 0 02:50:08.00 Elapsed real time: 0 02:50:08.00 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4168.03*	77	45.67	230.71	175	91	23.1		U-238	1.05
0	4348.97*	4	0.00	291.50	275	43	104.8		U-235	6.518E-02
0	4479.11*	2	42.94	335.50	321	29	155.7		U-236	2.796E-02
0	4757.32*	64	71.49	430.34	377	83	25.2		U-234	0.885
0	5290.78*	373	81.62	615.27	566	77	10.4		U232	5.15

SECTION IX

ANALYTICAL DATA (ISOTOPIC THORIUM)

05-09117
ThISO
Run 1

Work Order	05-09117
Analysis Code	ThISO
Run	1
Date Received	9/30/2005
Lab Deadline	10/20/2005
Client	Missouri Dept. of Natural Resources
Project	B3Z02092
Report Level	4
Activity Units	pCi
Aliquot Units	g
Matrix	SO
Method	EML Th-01 Modified
Instrument Type	Alpha Spectroscopy
Radiometric Tracer	Th-229
Radiometric Sol#	Th-18a
Tracer Act (dpm/g)	22.482
Carrier	
Carrier Conc (mg/ml)	

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		09/30/05 00:00	1.0000E+00
02	MBL	BLANK		09/30/05 00:00	1.0000E+00
03	DUP	VPBR092705SL01	37	09/27/05 09:30	1.0312E+00
04	DO	VPBR092705SL01	37	09/27/05 09:30	1.0581E+00
05	TRG	VPBR092705SL02	40	09/27/05 09:34	1.0020E+00
06	TRG	VPBR092705SL03	41	09/27/05 09:37	1.0023E+00
07	TRG	VPBR092705SL04	51	09/27/05 09:40	1.0162E+00
08	TRG	VPBR092705SL05	46	09/27/05 09:44	1.0227E+00
09	TRG	VPBR092705SL06	50	09/27/05 09:50	1.0111E+00
10	TRG	VPBR092705SL07	40	09/27/05 09:52	1.0379E+00
11	TRG	VPBR092705SL08	46	09/27/05 09:56	1.0003E+00
12	TRG	VPBR092705SL09	49	09/27/05 11:30	1.1940E+00
13	TRG	VPBR092705SL10	48	09/27/05 11:36	9.9840E-01
14	TRG	VPBR092705SL11	51	09/27/05 11:25	1.0595E+00
15	TRG	VPBR092705SL12	34	09/27/05 11:23	1.1352E+00
16	TRG	VPBR092705SL13	51	09/27/05 11:18	1.0936E+00
17	TRG	VPBR092705SL14	44	09/27/05 11:15	1.0538E+00
18	TRG	VPBR092705SL15	41	09/27/05 11:13	1.0236E+00
19	TRG	VPBR092705SL16	53	09/27/05 11:05	1.1563E+00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

05-09117
ThISO
Run 1

Internal Fraction	Sample Desc	Tracer Aliquot (g)	Tracer Total ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	Grav Carrier Added (ml)	Grav Filter Tare (g)	Grav Filter Final (g)	Grav Filter Net (g)	Grav % Rec	Mean % Rec	SAF 1*	SAF 2*
01	LCS	0.4637	10.4										
02	MBL	0.4584	10.3										
03	DUP	0.4506	10.1										
04	DO	0.4532	10.2										
05	TRG	0.4566	10.3										
06	TRG	0.4534	10.2										
07	TRG	0.4585	10.3										
08	TRG	0.4531	10.2										
09	TRG	0.4550	10.2										
10	TRG	0.4520	10.2										
11	TRG	0.4536	10.2										
12	TRG	0.4532	10.2										
13	TRG	0.4603	10.3										
14	TRG	0.4530	10.2										
15	TRG	0.4643	10.4										
16	TRG	0.4520	10.2										
17	TRG	0.4514	10.1										
18	TRG	0.4535	10.2										
19	TRG	0.4560	10.3										

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

05-09117
ThISO
Run 1

Internal Fraction	Sample Desc	Rough Prep Date	Rough Prep By	Prep Date	Prep By	Sep t0 Date/Time	Sep t0 By	Sep t1 Date/Time	Sep t1 By
01	LCS			10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
02	MBL			10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
03	DUP			10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
04	DO	10/03/05 13:29	KSALLINGS	10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
05	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
06	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
07	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
08	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
09	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
10	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
11	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
12	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
13	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
14	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
15	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
16	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
17	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
18	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		
19	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:54	JBARNARD	10/10/05 05:38	TSMITH		

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Preliminary Data Report & Analytical Calculations

Work Order: 05-09117-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	TH-228	LCS	LCS	pCi/g	4.56E+00	8.61E-01	1.29E-01	4.51E+00	101.15	OK		OK	
02	TH-228	MBL	BLANK	pCi/g	1.43E-02	5.24E-02	1.37E-01					OK	OK
03	TH-228	DUP	VPBR092705SL01	pCi/g	7.46E-01	2.58E-01	1.45E-01				OK	OK	
04	TH-228	DO	VPBR092705SL01	pCi/g	8.50E-01	2.70E-01	1.42E-01					OK	
05	TH-228	TRG	VPBR092705SL02	pCi/g	6.63E-01	2.39E-01	1.31E-01					OK	
06	TH-228	TRG	VPBR092705SL03	pCi/g	1.13E+00	3.39E-01	1.30E-01					OK	
07	TH-228	TRG	VPBR092705SL04	pCi/g	6.87E-01	2.34E-01	1.35E-01					OK	
08	TH-228	TRG	VPBR092705SL05	pCi/g	7.97E-01	2.32E-01	9.86E-02					OK	
09	TH-228	TRG	VPBR092705SL06	pCi/g	1.10E+00	3.06E-01	1.30E-01					OK	
10	TH-228	TRG	VPBR092705SL07	pCi/g	9.28E-01	3.06E-01	1.38E-01					OK	
11	TH-228	TRG	VPBR092705SL08	pCi/g	1.24E+00	3.49E-01	1.27E-01					OK	
12	TH-228	TRG	VPBR092705SL09	pCi/g	8.23E-01	2.40E-01	1.09E-01					OK	
13	TH-228	TRG	VPBR092705SL10	pCi/g	9.19E-01	2.73E-01	1.03E-01					OK	
14	TH-228	TRG	VPBR092705SL11	pCi/g	5.60E-01	1.97E-01	1.10E-01					OK	
15	TH-228	TRG	VPBR092705SL12	pCi/g	6.29E-01	2.13E-01	9.41E-02					OK	
16	TH-228	TRG	VPBR092705SL13	pCi/g	9.25E-01	2.73E-01	8.28E-02					OK	
17	TH-228	TRG	VPBR092705SL14	pCi/g	8.04E-01	2.49E-01	6.35E-02					OK	
18	TH-228	TRG	VPBR092705SL15	pCi/g	8.02E-01	2.59E-01	1.11E-01					OK	
19	TH-228	TRG	VPBR092705SL16	pCi/g	6.44E-01	2.27E-01	1.10E-01					OK	

Preliminary Data Report & Analytical Calculations
Work Order: 05-09117-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	TH-228	LCS	09/30/05 00:00	1.00E+00	105.20				10/10/2005 5:38	
02	TH-228	MBL	09/30/05 00:00	1.00E+00	81.29				10/10/2005 5:38	
03	TH-228	DUP	09/27/05 09:30	1.03E+00	97.03				10/10/2005 5:38	
04	TH-228	DO	09/27/05 09:30	1.06E+00	85.11				10/10/2005 5:38	
05	TH-228	TRG	09/27/05 09:34	1.00E+00	89.00				10/10/2005 5:38	
06	TH-228	TRG	09/27/05 09:37	1.00E+00	89.49				10/10/2005 5:38	
07	TH-228	TRG	09/27/05 09:40	1.02E+00	93.76				10/10/2005 5:38	
08	TH-228	TRG	09/27/05 09:44	1.02E+00	108.88				10/10/2005 5:38	
09	TH-228	TRG	09/27/05 09:50	1.01E+00	102.76				10/10/2005 5:38	
10	TH-228	TRG	09/27/05 09:52	1.04E+00	71.75				10/10/2005 5:38	
11	TH-228	TRG	09/27/05 09:56	1.00E+00	82.63				10/10/2005 5:38	
12	TH-228	TRG	09/27/05 11:30	1.19E+00	95.80				10/10/2005 5:38	
13	TH-228	TRG	09/27/05 11:36	9.98E-01	94.55				10/10/2005 5:38	
14	TH-228	TRG	09/27/05 11:25	1.06E+00	96.78				10/10/2005 5:38	
15	TH-228	TRG	09/27/05 11:23	1.14E+00	90.86				10/10/2005 5:38	
16	TH-228	TRG	09/27/05 11:18	1.09E+00	84.17				10/10/2005 5:38	
17	TH-228	TRG	09/27/05 11:15	1.05E+00	91.10				10/10/2005 5:38	
18	TH-228	TRG	09/27/05 11:13	1.02E+00	83.41				10/10/2005 5:38	
19	TH-228	TRG	09/27/05 11:05	1.16E+00	73.32				10/10/2005 5:38	

Preliminary Data Report & Analytical Calculations
Work Order: 05-09117-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	TH-228	LCS	10/10/05 06:42		A_Spec	17	170.1	3.58 E+02	1.50 E-02	19.8
02	TH-228	MBL	10/10/05 06:42		A_Spec	18	170.03	8.10 E-01	7.00 E-03	18.5
03	TH-228	DUP	10/10/05 06:43		A_Spec	19	170.07	4.61 E+01	1.10 E-02	16.6
04	TH-228	DO	10/10/05 06:43		A_Spec	20	170.12	5.68 E+01	1.30 E-02	19.9
05	TH-228	TRG	10/10/05 06:43		A_Spec	21	170.17	4.06 E+01	8.00 E-03	18.5
06	TH-228	TRG	10/10/05 06:43		A_Spec	22	170.05	6.68 E+01	7.00 E-03	17.6
07	TH-228	TRG	10/10/05 06:44		A_Spec	23	170.03	4.70 E+01	1.20 E-02	19.3
08	TH-228	TRG	10/10/05 06:44		A_Spec	25	170.13	6.75 E+01	9.00 E-03	20.4
09	TH-228	TRG	10/10/05 06:44		A_Spec	26	170.12	8.08 E+01	1.30 E-02	18.9
10	TH-228	TRG	10/10/05 06:45		A_Spec	27	170.1	5.18 E+01	7.00 E-03	20.1
11	TH-228	TRG	10/10/05 06:45		A_Spec	28	170.08	7.86 E+01	8.00 E-03	20.6
12	TH-228	TRG	10/10/05 06:45		A_Spec	29	170.03	7.00 E+01	1.20 E-02	20
13	TH-228	TRG	10/10/05 06:46		A_Spec	30	170.02	6.50 E+01	6.00 E-03	20.1
14	TH-228	TRG	10/10/05 06:46		A_Spec	31	170.12	4.25 E+01	9.00 E-03	19.8
15	TH-228	TRG	10/10/05 06:46		A_Spec	32	170.05	4.62 E+01	5.00 E-03	19.1
16	TH-228	TRG	10/10/05 07:02		A_Spec	33	170	6.65 E+01	3.00 E-03	21
17	TH-228	TRG	10/10/05 07:02		A_Spec	34	170	5.78 E+01	1.00 E-03	20.1
18	TH-228	TRG	10/10/05 07:03		A_Spec	35	170	5.30 E+01	6.00 E-03	20.8
19	TH-228	TRG	10/10/05 07:03		A_Spec	36	170	4.30 E+01	6.00 E-03	21.1

Preliminary Data Report & Analytical Calculations

Work Order: 05-09117-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	TH-230	LCS	LCS	pCi/g	4.91E+00	9.16E-01	7.68E-02	5.33E+00	92.07	OK		OK	
02	TH-230	MBL	BLANK	pCi/g	1.62E-01	1.16E-01	1.24E-01					OK	OK
03	TH-230	DUP	VPBR092705SL01	pCi/g	2.07E+00	5.05E-01	1.30E-01				OK	OK	
04	TH-230	DO	VPBR092705SL01	pCi/g	2.00E+00	4.76E-01	6.85E-02					OK	
05	TH-230	TRG	VPBR092705SL02	pCi/g	3.29E+00	7.16E-01	1.13E-01					OK	
06	TH-230	TRG	VPBR092705SL03	pCi/g	1.74E+00	4.50E-01	9.09E-02					OK	
07	TH-230	TRG	VPBR092705SL04	pCi/g	1.09E+00	3.10E-01	1.18E-01					OK	
08	TH-230	TRG	VPBR092705SL05	pCi/g	1.40E+00	3.35E-01	6.33E-02					OK	
09	TH-230	TRG	VPBR092705SL06	pCi/g	1.17E+00	3.15E-01	1.19E-01					OK	
10	TH-230	TRG	VPBR092705SL07	pCi/g	1.88E+00	4.89E-01	1.24E-01					OK	
11	TH-230	TRG	VPBR092705SL08	pCi/g	2.11E+00	5.04E-01	1.02E-01					OK	
12	TH-230	TRG	VPBR092705SL09	pCi/g	1.34E+00	3.31E-01	1.05E-01					OK	
13	TH-230	TRG	VPBR092705SL10	pCi/g	1.33E+00	3.47E-01	1.09E-01					OK	
14	TH-230	TRG	VPBR092705SL11	pCi/g	1.62E+00	3.90E-01	9.12E-02					OK	
15	TH-230	TRG	VPBR092705SL12	pCi/g	1.57E+00	3.87E-01	8.81E-02					OK	
16	TH-230	TRG	VPBR092705SL13	pCi/g	1.29E+00	3.40E-01	7.45E-02					OK	
17	TH-230	TRG	VPBR092705SL14	pCi/g	1.68E+00	4.09E-01	8.28E-02					OK	
18	TH-230	TRG	VPBR092705SL15	pCi/g	1.31E+00	3.54E-01	6.92E-02					OK	
19	TH-230	TRG	VPBR092705SL16	pCi/g	2.01E+00	4.84E-01	8.03E-02					OK	

Preliminary Data Report & Analytical Calculations
Work Order: 05-09117-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	TH-230	LCS	09/30/05 00:00	1.00E+00	105.20				10/10/2005 5:38	
02	TH-230	MBL	09/30/05 00:00	1.00E+00	81.29				10/10/2005 5:38	
03	TH-230	DUP	09/27/05 09:30	1.03E+00	97.03				10/10/2005 5:38	
04	TH-230	DO	09/27/05 09:30	1.06E+00	85.11				10/10/2005 5:38	
05	TH-230	TRG	09/27/05 09:34	1.00E+00	89.00				10/10/2005 5:38	
06	TH-230	TRG	09/27/05 09:37	1.00E+00	89.49				10/10/2005 5:38	
07	TH-230	TRG	09/27/05 09:40	1.02E+00	93.76				10/10/2005 5:38	
08	TH-230	TRG	09/27/05 09:44	1.02E+00	108.88				10/10/2005 5:38	
09	TH-230	TRG	09/27/05 09:50	1.01E+00	102.76				10/10/2005 5:38	
10	TH-230	TRG	09/27/05 09:52	1.04E+00	71.75				10/10/2005 5:38	
11	TH-230	TRG	09/27/05 09:56	1.00E+00	82.63				10/10/2005 5:38	
12	TH-230	TRG	09/27/05 11:30	1.19E+00	95.80				10/10/2005 5:38	
13	TH-230	TRG	09/27/05 11:36	9.98E-01	94.55				10/10/2005 5:38	
14	TH-230	TRG	09/27/05 11:25	1.06E+00	96.78				10/10/2005 5:38	
15	TH-230	TRG	09/27/05 11:23	1.14E+00	90.86				10/10/2005 5:38	
16	TH-230	TRG	09/27/05 11:18	1.09E+00	84.17				10/10/2005 5:38	
17	TH-230	TRG	09/27/05 11:15	1.05E+00	91.10				10/10/2005 5:38	
18	TH-230	TRG	09/27/05 11:13	1.02E+00	83.41				10/10/2005 5:38	
19	TH-230	TRG	09/27/05 11:05	1.16E+00	73.32				10/10/2005 5:38	

Preliminary Data Report & Analytical Calculations
Work Order: 05-09117-ThISO-1

Run	Analysis Code	Eberline Services Work Order	Client
1	ThISO	05-09117	Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	TH-230	LCS	10/10/05 06:42		A_Spec	17	170.1	3.86 E+02	3.00 E-03	19.8
02	TH-230	MBL	10/10/05 06:42		A_Spec	18	170.03	9.15 E+00	5.00 E-03	18.5
03	TH-230	DUP	10/10/05 06:43		A_Spec	19	170.07	1.30 E+02	8.00 E-03	16.6
04	TH-230	DO	10/10/05 06:43		A_Spec	20	170.12	1.35 E+02	1.00 E-03	19.9
05	TH-230	TRG	10/10/05 06:43		A_Spec	21	170.17	2.04 E+02	5.00 E-03	18.5
06	TH-230	TRG	10/10/05 06:43		A_Spec	22	170.05	1.04 E+02	2.00 E-03	17.6
07	TH-230	TRG	10/10/05 06:44		A_Spec	23	170.03	7.56 E+01	8.00 E-03	19.3
08	TH-230	TRG	10/10/05 06:44		A_Spec	25	170.13	1.20 E+02	2.00 E-03	20.4
09	TH-230	TRG	10/10/05 06:44		A_Spec	26	170.12	8.63 E+01	1.00 E-02	18.9
10	TH-230	TRG	10/10/05 06:45		A_Spec	27	170.1	1.06 E+02	5.00 E-03	20.1
11	TH-230	TRG	10/10/05 06:45		A_Spec	28	170.08	1.35 E+02	4.00 E-03	20.6
12	TH-230	TRG	10/10/05 06:45		A_Spec	29	170.03	1.15 E+02	1.10 E-02	20
13	TH-230	TRG	10/10/05 06:46		A_Spec	30	170.02	9.48 E+01	7.00 E-03	20.1
14	TH-230	TRG	10/10/05 06:46		A_Spec	31	170.12	1.24 E+02	5.00 E-03	19.8
15	TH-230	TRG	10/10/05 06:46		A_Spec	32	170.05	1.16 E+02	4.00 E-03	19.1
16	TH-230	TRG	10/10/05 07:02		A_Spec	33	170	9.37 E+01	2.00 E-03	21
17	TH-230	TRG	10/10/05 07:02		A_Spec	34	170	1.23 E+02	3.00 E-03	20.1
18	TH-230	TRG	10/10/05 07:03		A_Spec	35	170	8.78 E+01	1.00 E-03	20.8
19	TH-230	TRG	10/10/05 07:03		A_Spec	36	170	1.36 E+02	2.00 E-03	21.1

Eberline Services
Oak Ridge Laboratory

Preliminary Data Report & Analytical Calculations

Work Order: 05-09117-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	TH-232	LCS	LCS	pCi/g	4.39E+00	8.33E-01	8.32E-02	4.51E+00	97.35	OK		OK	
02	TH-232	MBL	BLANK	pCi/g	9.68E-02	8.85E-02	1.06E-01					OK	OK
03	TH-232	DUP	VPBR092705SL01	pCi/g	7.79E-01	2.61E-01	1.24E-01				OK	OK	
04	TH-232	DO	VPBR092705SL01	pCi/g	6.89E-01	2.32E-01	8.01E-02					OK	
05	TH-232	TRG	VPBR092705SL02	pCi/g	6.62E-01	2.36E-01	1.13E-01					OK	
06	TH-232	TRG	VPBR092705SL03	pCi/g	1.36E+00	3.81E-01	1.01E-01					OK	
07	TH-232	TRG	VPBR092705SL04	pCi/g	6.47E-01	2.23E-01	1.12E-01					OK	
08	TH-232	TRG	VPBR092705SL05	pCi/g	8.83E-01	2.45E-01	5.39E-02					OK	
09	TH-232	TRG	VPBR092705SL06	pCi/g	1.04E+00	2.90E-01	1.05E-01					OK	
10	TH-232	TRG	VPBR092705SL07	pCi/g	1.12E+00	3.43E-01	1.07E-01					OK	
11	TH-232	TRG	VPBR092705SL08	pCi/g	1.68E+00	4.26E-01	8.45E-02					OK	
12	TH-232	TRG	VPBR092705SL09	pCi/g	8.66E-01	2.44E-01	6.29E-02					OK	
13	TH-232	TRG	VPBR092705SL10	pCi/g	1.35E+00	3.51E-01	1.03E-01					OK	
14	TH-232	TRG	VPBR092705SL11	pCi/g	7.40E-01	2.30E-01	6.02E-02					OK	
15	TH-232	TRG	VPBR092705SL12	pCi/g	5.19E-01	1.88E-01	7.28E-02					OK	
16	TH-232	TRG	VPBR092705SL13	pCi/g	8.09E-01	2.49E-01	3.72E-02					OK	
17	TH-232	TRG	VPBR092705SL14	pCi/g	5.05E-01	1.86E-01	6.34E-02					OK	
18	TH-232	TRG	VPBR092705SL15	pCi/g	6.42E-01	2.22E-01	4.05E-02					OK	
19	TH-232	TRG	VPBR092705SL16	pCi/g	7.24E-01	2.40E-01	4.01E-02					OK	

Preliminary Data Report & Analytical Calculations

Work Order: 05-09117-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	TH-232	LCS	09/30/05 00:00	1.00E+00	105.20				10/10/2005 5:38	
02	TH-232	MBL	09/30/05 00:00	1.00E+00	81.29				10/10/2005 5:38	
03	TH-232	DUP	09/27/05 09:30	1.03E+00	97.03				10/10/2005 5:38	
04	TH-232	DO	09/27/05 09:30	1.06E+00	85.11				10/10/2005 5:38	
05	TH-232	TRG	09/27/05 09:34	1.00E+00	89.00				10/10/2005 5:38	
06	TH-232	TRG	09/27/05 09:37	1.00E+00	89.49				10/10/2005 5:38	
07	TH-232	TRG	09/27/05 09:40	1.02E+00	93.76				10/10/2005 5:38	
08	TH-232	TRG	09/27/05 09:44	1.02E+00	108.88				10/10/2005 5:38	
09	TH-232	TRG	09/27/05 09:50	1.01E+00	102.76				10/10/2005 5:38	
10	TH-232	TRG	09/27/05 09:52	1.04E+00	71.75				10/10/2005 5:38	
11	TH-232	TRG	09/27/05 09:56	1.00E+00	82.63				10/10/2005 5:38	
12	TH-232	TRG	09/27/05 11:30	1.19E+00	95.80				10/10/2005 5:38	
13	TH-232	TRG	09/27/05 11:36	9.98E-01	94.55				10/10/2005 5:38	
14	TH-232	TRG	09/27/05 11:25	1.06E+00	96.78				10/10/2005 5:38	
15	TH-232	TRG	09/27/05 11:23	1.14E+00	90.86				10/10/2005 5:38	
16	TH-232	TRG	09/27/05 11:18	1.09E+00	84.17				10/10/2005 5:38	
17	TH-232	TRG	09/27/05 11:15	1.05E+00	91.10				10/10/2005 5:38	
18	TH-232	TRG	09/27/05 11:13	1.02E+00	83.41				10/10/2005 5:38	
19	TH-232	TRG	09/27/05 11:05	1.16E+00	73.32				10/10/2005 5:38	

Preliminary Data Report & Analytical Calculations

Work Order: 05-09117-ThISO-1

Run: 1
Analysis Code: ThISO
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	TH-232	LCS	10/10/05 06:42		A_Spec	17	170.1	3.45 E+02	4.00 E-03	19.8
02	TH-232	MBL	10/10/05 06:42		A_Spec	18	170.03	5.49 E+00	3.00 E-03	18.5
03	TH-232	DUP	10/10/05 06:43		A_Spec	19	170.07	4.88 E+01	7.00 E-03	16.6
04	TH-232	DO	10/10/05 06:43		A_Spec	20	170.12	4.67 E+01	2.00 E-03	19.9
05	TH-232	TRG	10/10/05 06:43		A_Spec	21	170.17	4.12 E+01	5.00 E-03	18.5
06	TH-232	TRG	10/10/05 06:43		A_Spec	22	170.05	8.15 E+01	3.00 E-03	17.6
07	TH-232	TRG	10/10/05 06:44		A_Spec	23	170.03	4.48 E+01	7.00 E-03	19.3
08	TH-232	TRG	10/10/05 06:44		A_Spec	25	170.13	7.58 E+01	1.00 E-03	20.4
09	TH-232	TRG	10/10/05 06:44		A_Spec	26	170.12	7.68 E+01	7.00 E-03	18.9
10	TH-232	TRG	10/10/05 06:45		A_Spec	27	170.1	6.35 E+01	3.00 E-03	20.1
11	TH-232	TRG	10/10/05 06:45		A_Spec	28	170.08	1.08 E+02	2.00 E-03	20.6
12	TH-232	TRG	10/10/05 06:45		A_Spec	29	170.03	7.47 E+01	2.00 E-03	20
13	TH-232	TRG	10/10/05 06:46		A_Spec	30	170.02	9.70 E+01	6.00 E-03	20.1
14	TH-232	TRG	10/10/05 06:46		A_Spec	31	170.12	5.68 E+01	1.00 E-03	19.8
15	TH-232	TRG	10/10/05 06:46		A_Spec	32	170.05	3.87 E+01	2.00 E-03	19.1
16	TH-232	TRG	10/10/05 07:02		A_Spec	33	170	5.90 E+01	0.00 E+00	21
17	TH-232	TRG	10/10/05 07:02		A_Spec	34	170	3.68 E+01	1.00 E-03	20.1
18	TH-232	TRG	10/10/05 07:03		A_Spec	35	170	4.30 E+01	0.00 E+00	20.8
19	TH-232	TRG	10/10/05 07:03		A_Spec	36	170	4.90 E+01	0.00 E+00	21.1

Count Room Report
Client: Missouri Dept. of Natural

05-09117-ThISO-1 (pCi/g) in SO
Tracer ID: Th-18a

17-32, 33-36

Internal Fraction	Sample Desc	Client ID	Sample Date	Sample Aliquot	Tracer Aliquot (g)	Tracer ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	SAF 1*	SAF 2*
01	LCS	LCS	09/30/05 00:00	1.0000	0.4637	10.4249				
02	MBL	BLANK	09/30/05 00:00	1.0000	0.4584	10.3057				
03	DUP	VPBR092705SL01	09/27/05 09:30	1.0312	0.4506	10.1304				
04	DO	VPBR092705SL01	09/27/05 09:30	1.0581	0.4532	10.1888				
05	TRG	VPBR092705SL02	09/27/05 09:34	1.0020	0.4566	10.2653				
06	TRG	VPBR092705SL03	09/27/05 09:37	1.0023	0.4534	10.1933				
07	TRG	VPBR092705SL04	09/27/05 09:40	1.0162	0.4585	10.3080				
08	TRG	VPBR092705SL05	09/27/05 09:44	1.0227	0.4531	10.1866				
09	TRG	VPBR092705SL06	09/27/05 09:50	1.0111	0.4550	10.2293				
10	TRG	VPBR092705SL07	09/27/05 09:52	1.0379	0.4520	10.1619				
11	TRG	VPBR092705SL08	09/27/05 09:56	1.0003	0.4536	10.1978				
12	TRG	VPBR092705SL09	09/27/05 11:30	1.1940	0.4532	10.1888				
13	TRG	VPBR092705SL10	09/27/05 11:36	0.9984	0.4603	10.3485				
14	TRG	VPBR092705SL11	09/27/05 11:25	1.0595	0.4530	10.1843				
15	TRG	VPBR092705SL12	09/27/05 11:23	1.1352	0.4643	10.4384				
16	TRG	VPBR092705SL13	09/27/05 11:18	1.0936	0.4520	10.1619				
17	TRG	VPBR092705SL14	09/27/05 11:15	1.0538	0.4514	10.1484				
18	TRG	VPBR092705SL15	09/27/05 11:13	1.0236	0.4535	10.1956				
19	TRG	VPBR092705SL16	09/27/05 11:05	1.1563	0.4560	10.2518				

2144

Eberline Services
Oak Ridge Laboratory

Spike and Tracer Worksheet

Printed: 10/5/2005 7:54 AM

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
05-09117	1	ThISO	10/5/2005 7:39	JBARNARD		

LCS & Matrix Spikes					LCS	MS	LCSD	MSD	LCS		MS		LCSD		MSD	
Isotope	Sol #	Activity dpm/g	Solution Date	Approx Addition	Volume Used (g)	Volume Used (g)	Volume Used (g)	Volume Used (g)	Known pCi	Error Estimate	Added pCi	Error Estimate	Known pCi	Error Estimate	Added pCi	Error Estimate
Th-228	Th-8b	103.560	10/5/2005	0.100	0.0966				4.51	0.162	0.00	0.000	0.00	0.000	0.00	0.000
Th-230	Th-1b	23.527	10/5/2005	0.500	0.5028				5.33	0.144	0.00	0.000	0.00	0.000	0.00	0.000
Th-232	Th-8b	103.560	10/5/2005	0.100	0.0966				4.51	0.162	0.00	0.000	0.00	0.000	0.00	0.000

Tracers

fraction	Isotope	Sol #	Activity dpm/g	Solution Date	Volume Used (g)	Approx Addition
01	Th-229	Th-18a	22.482	10/5/2005	0.4637	0.4600
02	Th-229	Th-18a	22.482	10/5/2005	0.4584	0.4600
03	Th-229	Th-18a	22.482	10/5/2005	0.4506	0.4600
04	Th-229	Th-18a	22.482	10/5/2005	0.4532	0.4600
05	Th-229	Th-18a	22.482	10/5/2005	0.4566	0.4600
06	Th-229	Th-18a	22.482	10/5/2005	0.4534	0.4600
07	Th-229	Th-18a	22.482	10/5/2005	0.4585	0.4600
08	Th-229	Th-18a	22.482	10/5/2005	0.4531	0.4600
09	Th-229	Th-18a	22.482	10/5/2005	0.4550	0.4600
10	Th-229	Th-18a	22.482	10/5/2005	0.4520	0.4600
11	Th-229	Th-18a	22.482	10/5/2005	0.4536	0.4600
12	Th-229	Th-18a	22.482	10/5/2005	0.4532	0.4600
13	Th-229	Th-18a	22.482	10/5/2005	0.4603	0.4600
14	Th-229	Th-18a	22.482	10/5/2005	0.4530	0.4600
15	Th-229	Th-18a	22.482	10/5/2005	0.4643	0.4600
16	Th-229	Th-18a	22.482	10/5/2005	0.4520	0.4600
17	Th-229	Th-18a	22.482	10/5/2005	0.4514	0.4600
18	Th-229	Th-18a	22.482	10/5/2005	0.4535	0.4600
19	Th-229	Th-18a	22.482	10/5/2005	0.4560	0.4600

Balance Printer Tapes

Tracer

0.4637 g
-0.4584 g
-0.4506 g
-0.4532 g
-0.4566 g
-0.4534 g
-0.4585 g
-0.4531 g
-0.4550 g
-0.4520 g
-0.4536 g
-0.4532 g
-0.4603 g
-0.4530 g
-0.4643 g
-0.4520 g
-0.4514 g
-0.4535 g
-0.4560 g

LCS

0.5028 g
0.0966 g

Matrix Spike

2965

Version 2.0 08/99

Eberline Services - Oak Ridge
Version 2.0 8/1999

Aliquot Worksheet

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
05-09117	1	ThISO	grams	10/20/2005	JBARNARD

Lab Fraction	Missouri Dept. of Natural Resources Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	VPBR092705SL01	DUP					1.0312E+00	1.0312E+00				
04	VPBR092705SL01	DO					1.0581E+00	1.0581E+00				
05	VPBR092705SL02	TRG					1.0020E+00	1.0020E+00				
06	VPBR092705SL03	TRG					1.0023E+00	1.0023E+00				
07	VPBR092705SL04	TRG					1.0162E+00	1.0162E+00				
08	VPBR092705SL05	TRG					1.0227E+00	1.0227E+00				
09	VPBR092705SL06	TRG					1.0111E+00	1.0111E+00				
10	VPBR092705SL07	TRG					1.0379E+00	1.0379E+00				
11	VPBR092705SL08	TRG					1.0003E+00	1.0003E+00				
12	VPBR092705SL09	TRG					1.1940E+00	1.1940E+00				
13	VPBR092705SL10	TRG					9.9840E-01	9.9840E-01				
14	VPBR092705SL11	TRG					1.0595E+00	1.0595E+00				
15	VPBR092705SL12	TRG					1.1352E+00	1.1352E+00				
16	VPBR092705SL13	TRG					1.0936E+00	1.0936E+00				
17	VPBR092705SL14	TRG					1.0538E+00	1.0538E+00				
18	VPBR092705SL15	TRG					1.0236E+00	1.0236E+00				
19	VPBR092705SL16	TRG					1.1563E+00	1.1563E+00				

1.0312 g
1.0581 g
1.0020 g
1.0023 g
1.0162 g
1.0227 g
1.0111 g
1.0379 g
1.0003 g
1.1940 g
0.9984 g
1.0595 g
1.1352 g
1.0936 g
1.0538 g
1.0236 g
1.1563 g

Comments	

Technician: JBarnard Date: 10/1/05

Eberline Services - Oak Ridge
Prep Logbook
Version 2.0 8/1999

Rough Sample Preparation Log Book

Work Order	Lab Deadline	Date Received in Prep	Date Sealed	Date Returned	Technician
05-09117	10/20/2005	10/2/2005	10/3/2005	10/4/2005	KSALLINGS

Eberline	Missouri Dept. of Natural Resources	Tare (g)	Gross (g)		Net (g)		Percent		Gamma		Special
Fraction	Client ID	Pan Wt	Wet Wt.	Dry Wt.	Wet Wt.	Dry Wt.	Liquid	Solid	Dry Wt.	LEPS Wt.	Info
04	VPBR092705SL01	13.7700	473.6900	378.5700	459.9200	364.8000	20.68%	79.32%			
05	VPBR092705SL02	13.7800	516.5600	447.7100	502.7800	433.9300	13.69%	86.31%			
06	VPBR092705SL03	13.8100	476.1600	367.8400	462.3500	354.0300	23.43%	76.57%			
07	VPBR092705SL04	13.8500	479.1200	387.7100	465.2700	373.8600	19.65%	80.35%			
08	VPBR092705SL05	13.8500	425.7700	350.8500	411.9200	337.0000	18.19%	81.81%			
09	VPBR092705SL06	13.7900	374.2300	294.7500	360.4400	280.9600	22.05%	77.95%			
10	VPBR092705SL07	13.9000	403.2800	322.5000	389.3800	308.6000	20.75%	79.25%			
11	VPBR092705SL08	13.7700	298.0700	242.3800	284.3000	228.6100	19.59%	80.41%			
12	VPBR092705SL09	13.9100	494.9100	420.0800	481.0000	406.1700	15.56%	84.44%			
13	VPBR092705SL10	13.7600	442.0500	356.7400	428.2900	342.9800	19.92%	80.08%			
14	VPBR092705SL11	13.7000	389.5500	339.9000	375.8500	326.2000	13.21%	86.79%			
15	VPBR092705SL12	13.9900	395.4000	345.8700	381.4100	331.8800	12.99%	87.01%			
16	VPBR092705SL13	13.6800	418.1800	346.7600	404.5000	333.0800	17.66%	82.34%			
17	VPBR092705SL14	14.0500	346.1800	256.6900	332.1300	242.6400	26.94%	73.06%			
18	VPBR092705SL15	13.8900	441.4800	373.6800	427.5900	359.7900	15.86%	84.14%			
19	VPBR092705SL16	13.8100	435.1000	327.1400	421.2900	313.3300	25.63%	74.37%			

Comments	
Special Codes	H: Hot, O: Organic Hazard, P: PCB Hazard, R: Rush, T: Other (see comments)

Technician: Kenny Sallings Date: Analysis: Rough Prep Logbook

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:26:31

****
Spectral File: ND_AMS_ARCHIVE_C:C_0509117A-TH$01_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	01
SAMPLE DATE:	10-OCT-2005 00:00	ALIQUOT:	1.000E+00 gram
SAMPLE TITLE:	SPIKE	DETECTOR NUMBER:	017
ACQ DATE:	10-OCT-2005 06:42	AVERAGE EFFICIENCY:	19.81%
ELAPSED LIVE TIME:	10206.	RECOVERY:	105.20%
TRACER ID:	TH-18A	TRACER FWHM (kev):	269.07
LAMBDA VALUE:	464.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.424	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	6-OCT-2005 04:40	EFF CAL DATE:	6-OCT-2005 04:40
BKG FILENAME:	B_017_7OCT05	BKG ELAPSED TIME:	60001.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	12.13	1.87	97.5	1.581E-01	1.017E-01	1.182E-01
TH-228	5400.0	358.45	2.55	99.9	4.558E+00	8.610E-01	1.289E-01
TH229	4872.0	367.83	0.17	99.5	4.696E+00	6.570E-01	5.908E-02
TH-230	4672.0	385.49	0.51	99.8	4.906E+00	9.155E-01	7.677E-02
TH-232	3997.0	345.32	0.68	100.0	4.387E+00	8.328E-01	8.316E-02

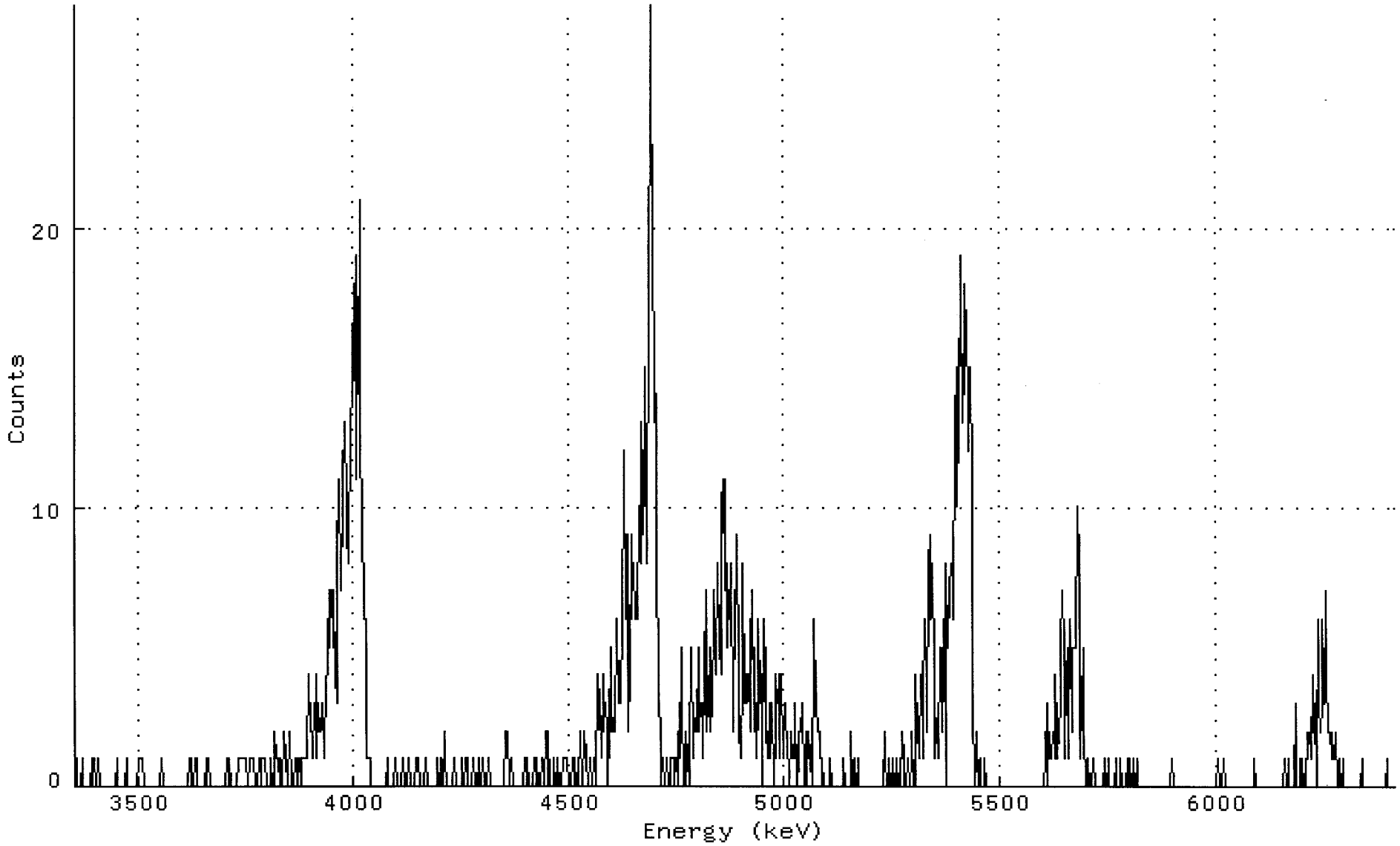
****

*** Tracer FWHM > 80.0 Kev ***

Analyst: Jeff Price — Date: 10-10-05

Reviewer: Allen Gregley — Date: 10/10/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.C]C_0509117A-TH$01_TH.CNF;1
Title : 017
Sample Title: SPIKE
Start Time: 10-OCT-2005 06:42 Sample Time: 10-OCT-2005 00:00 Energy Offset: 3.34321E+03
Real Time : 0 02:50:06.00 Sample ID : 01 Energy Slope : 3.18081E+00
Live Time : 0 02:50:06.00 Sample Type: TH Energy Quad : -1.78915E-04



Channel Contents for ND_AMS_ARCHIVE_C:C_0509117A-TH$01_TH

Channel

1:	10206	10206	0	1	0	0	0	1	0	0	0	0	0	0
15:	1	0	1	0	0	1	0	0	0	0	0	0	0	0
29:	0	0	0	0	1	0	0	0	0	0	0	1	0	0
43:	0	0	0	0	0	0	1	1	1	1	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	1	1	0	0	1	1	0	0	0	0	0	0
99:	1	0	1	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	1	0	1	0	0	0	0	0	1	1	1	1
127:	1	1	1	0	0	1	1	1	1	0	0	0	1	0
141:	1	1	1	1	0	0	0	1	0	0	2	1	1	0
155:	1	0	2	2	1	0	0	2	0	0	0	1	0	1
169:	1	0	1	1	1	1	1	4	2	3	1	3	1	4
183:	2	2	2	3	1	2	3	5	7	5	7	5	7	4
197:	3	8	11	7	10	11	13	10	9	8	13	12	15	18
211:	11	19	14	21	12	10	6	6	1	1	1	0	0	0
225:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
239:	0	1	0	0	0	0	0	1	0	0	0	1	0	0
253:	0	0	0	1	1	1	0	0	0	0	1	0	0	0
267:	0	0	0	0	0	1	0	0	1	0	2	1	0	0
281:	0	0	0	1	1	0	0	0	0	0	1	0	1	1
295:	0	0	0	0	1	0	0	0	1	0	0	1	0	0
309:	0	1	1	0	0	0	0	0	0	0	0	0	0	0
323:	2	1	2	0	0	1	0	0	0	0	0	0	0	0
337:	0	1	0	1	0	0	0	0	1	0	1	0	0	0
351:	1	0	0	2	0	2	0	0	0	1	0	0	1	0
365:	0	0	1	1	1	1	0	0	0	1	0	1	0	1
379:	0	2	0	0	2	1	1	0	1	1	0	1	0	0
393:	4	3	3	1	4	2	3	2	0	2	5	2	2	3
407:	2	6	3	3	3	6	11	12	6	9	2	4	9	6
421:	8	6	6	6	10	8	13	9	15	12	8	18	15	28
435:	18	21	13	14	9	3	2	0	1	0	0	1	0	0
449:	1	1	1	0	1	0	2	1	5	3	0	0	2	1
463:	0	1	5	1	3	2	2	5	2	3	3	1	4	7
477:	2	3	5	2	3	6	7	4	8	8	5	4	10	11
491:	7	11	5	7	6	8	2	7	5	9	4	2	1	4
505:	8	3	3	4	4	2	5	7	2	5	1	3	6	3
519:	4	0	6	4	2	1	3	1	3	0	2	4	3	4
533:	1	4	1	2	3	1	2	0	2	2	1	1	3	0
547:	1	2	2	3	3	0	2	0	2	1	1	0	5	6
561:	3	2	2	2	0	1	0	0	0	0	0	1	0	0
575:	0	0	0	0	0	0	0	1	0	0	0	0	0	2
589:	0	0	1	0	1	0	0	0	0	0	0	0	0	0
603:	0	0	0	0	0	0	0	0	0	0	0	2	1	0
617:	1	0	0	1	0	0	1	0	0	1	0	2	1	0
631:	0	1	1	0	1	2	0	0	4	2	1	1	4	1
645:	3	6	4	2	8	9	6	8	4	1	2	3	1	5
659:	2	4	6	0	8	5	7	7	8	7	6	13	15	10
673:	13	19	17	13	18	14	17	13	12	15	11	3	0	1
687:	2	0	1	0	0	0	1	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	1	3
743:	0	2	1	1	2	1	4	2	1	2	3	5	7	5
757:	1	4	5	1	6	2	5	5	5	5	10	8	1	3
771:	5	2	0	0	1	0	0	0	1	0	0	0	0	0
785:	0	0	0	1	0	0	1	0	0	0	0	0	1	0
799:	0	0	1	0	0	0	0	1	0	0	1	0	1	0
813:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
883:	1	1	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	1	1	0	1	0	0
939:	0	0	0	3	0	0	0	1	1	0	0	1	0	2
953:	2	2	1	4	2	3	0	1	6	3	2	3	6	3
967:	7	4	2	2	2	1	2	1	1	2	0	0	1	0
981:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:26:27.37

Detector ID: 17 Acquisition Start: 10-OCT-2005 06:42:33.01
Live Time: 0 02:50:06.00 Real Time: 0 02:50:06.00
Batch Id: 0509117A-TH Sample Id: 01
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3976.70	346	0	53.77	201.44	145	97	3.39E-02	5.4	
2	0	4651.28	386	0	25.56	421.22	347	100	3.78E-02	5.1	
3	0	4898.44	368	0	269.07	503.18	446	126	3.61E-02	5.2	
4	0	5382.16	361	0	43.43	665.96	587	103	3.54E-02	5.3	
5	0	5826.84	14	0	0.00	818.50	775	122	1.37E-03	26.7	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:26:29.68

Acquisition Start: 7-OCT-2005 17:06:14.01
Live Time: 0 16:40:01.00 Real Time: 0 16:40:01.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3951.46	4	0	3.18	193.00	145	97	6.67E-05	50.0	
2	0	4577.31	3	0	203.50	396.50	347	100	5.00E-05	57.7	
3	0	4915.52	1	0	3.18	508.50	446	126	1.67E-05	100.0	
4	0	5301.03	15	0	23.75	638.00	587	103	2.50E-04	25.8	
5	0	5877.56	11	0	85.85	835.50	775	122	1.83E-04	30.2	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:26:30.01

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3976.70*	345	0	53.77	201.44	145	97	3.38E-02	5.4	
2	0	4651.28*	385	0	25.56	421.22	347	100	3.78E-02	5.1	
3	0	4898.44*	368	0	269.07	503.18	446	126	3.60E-02	5.2	
4	0	5382.16*	358	0	43.43	665.96	587	103	3.51E-02	5.3	
5	0	5826.84*	12	0	0.00	818.50	775	122	1.19E-03	31.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:26:30

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : SPIKE
Sample date : 10-OCT-2005 00:00:00 Acquisition date : 10-OCT-2005 06:42:33
Sample ID : 01 Sample quantity : 1.0000 gram
Sample type : TH Sample geometry :
Detector name : 017 Detector geometry:
Elapsed live time: 0 02:50:06.00 Elapsed real time: 0 02:50:06.00 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3976.70*	345	53.77	201.44	145	97	10.8		TH-232	4.62
0	4651.28*	385	25.56	421.22	347	100	10.2		TH-230	5.16
0	4898.44*	368	269.07	503.18	446	126	10.4		TH229	4.94
0	5382.16*	358	43.43	665.96	587	103	10.6		TH-228	4.80
0	5826.84*	12	0.00	818.50	775	122	62.4		TH-227	0.166

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:26:51

****
Spectral File: ND_AMS_ARCHIVE_R:R_0509117A-TH$02_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	02
SAMPLE DATE:	10-OCT-2005 00:00	ALIQUOT:	1.000E+00 gram
SAMPLE TITLE:	BLANK	DETECTOR NUMBER:	018
ACQ DATE:	10-OCT-2005 06:42	AVERAGE EFFICIENCY:	18.49%
ELAPSED LIVE TIME:	10202.	RECOVERY:	81.29%
TRACER ID:	TH-18A	TRACER FWHM (kev):	18.50
LAMBDA VALUE:	458.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.305	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	6-OCT-2005 04:40	EFF CAL DATE:	6-OCT-2005 04:40
BKG FILENAME:	B_018_7OCT05	BKG ELAPSED TIME:	60005.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	4.98	1.02	97.5	9.001E-02	9.111E-02	1.339E-01
TH-228	5400.0	0.81	1.19	99.9	1.429E-02	5.241E-02	1.372E-01
TH229	4872.0	262.15	0.85	99.5	4.642E+00	7.196E-01	1.239E-01
TH-230	4672.0	9.15	0.85	99.8	1.615E-01	1.158E-01	1.235E-01
TH-232	3997.0	5.49	0.51	100.0	9.675E-02	8.850E-02	1.063E-01

****

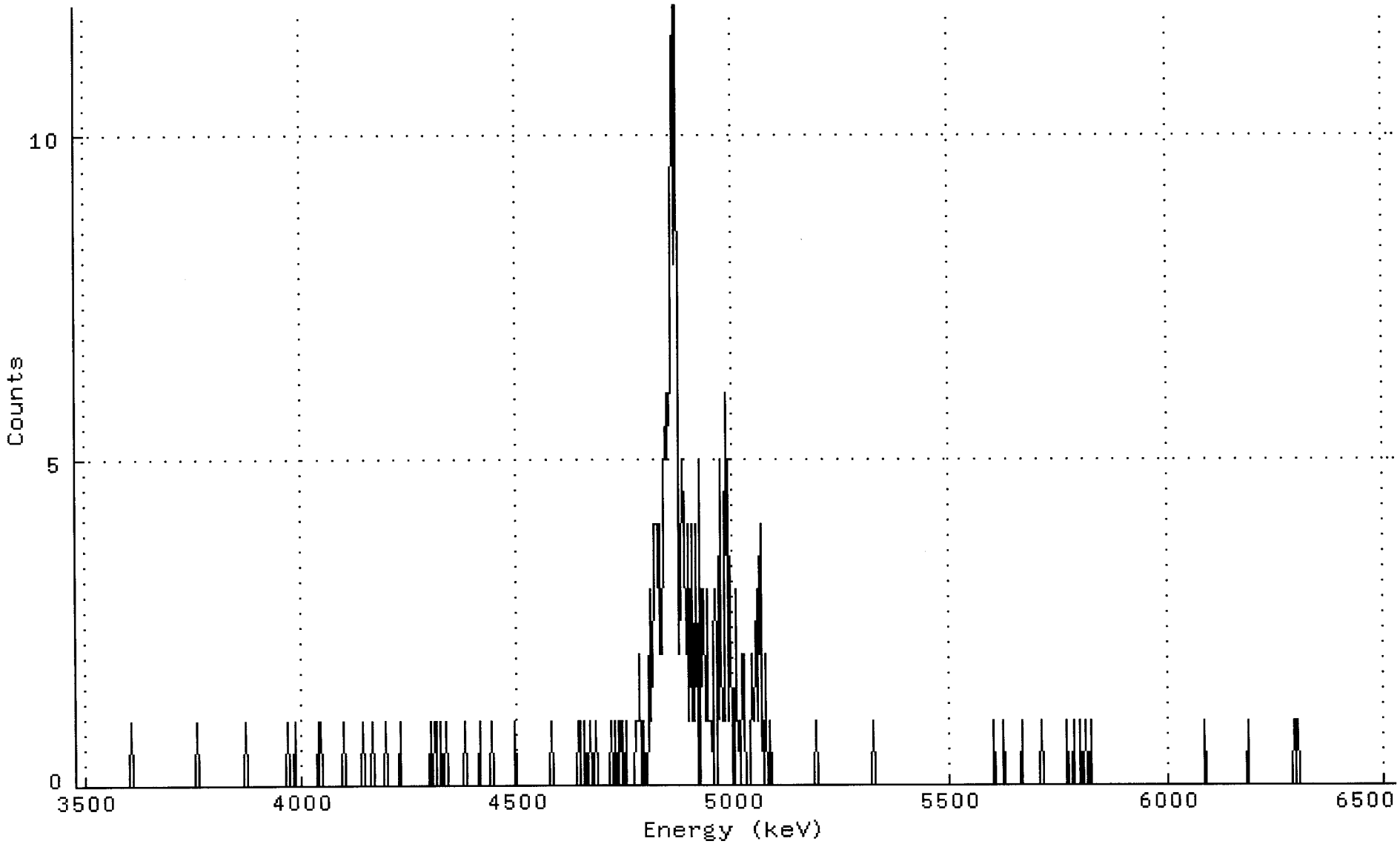
Jay Price
Analyst

10-10-05
Date

Alan Gregley
Reviewer

10/10/05
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.R]R_0509117A-TH$02_TH.CNF;1
Title : 018
Sample Title: BLANK
Start Time: 10-OCT-2005 06:42 Sample Time: 10-OCT-2005 00:00 Energy Offset: 3.46743E+03
Real Time : 0 02:50:02.00 Sample ID : 02 Energy Slope : 3.19808E+00
Live Time : 0 02:50:02.00 Sample Type: TH Energy Quad : -2.09915E-04



Channel Contents for ND_AMS_ARCHIVE_R:R_0509117A-TH$02_TH

Channel

1:	10202	10202	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	1	0	0	0	0	1	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
183:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
211:	0	0	0	1	0	0	0	0	0	0	1	0	0	0
225:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
239:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
253:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
267:	0	1	1	0	0	0	1	0	0	0	1	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
295:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
309:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
365:	0	0	0	0	0	0	0	0	0	0	0	1	1	0
379:	0	0	1	0	0	0	1	0	0	0	1	0	0	0
393:	0	0	0	0	0	0	0	0	1	0	1	0	0	1
407:	0	1	1	0	0	1	0	0	0	0	0	0	1	1
421:	1	1	2	0	0	1	0	0	0	1	3	1	2	3
435:	4	4	4	2	4	2	4	5	5	6	5	6	6	8
449:	11	12	8	12	5	2	3	5	4	4	2	4	1	2
463:	4	1	1	4	3	0	5	0	3	3	3	1	3	1
477:	1	1	0	2	3	2	0	2	5	2	1	1	3	6
491:	1	5	2	1	0	0	3	1	1	0	0	2	2	1
505:	0	0	0	0	2	1	1	2	3	1	3	4	1	0
519:	2	1	0	0	1	0	0	0	0	0	0	0	0	0
533:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
561:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
603:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
631:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
701:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
757:	0	0	0	0	1	0	0	0	0	0	1	0	0	0
771:	1	0	0	0	1	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	1	0	1	1	1	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:26:45.53

Detector ID: 18 Acquisition Start: 10-OCT-2005 06:42:46.01
Live Time: 0 02:50:02.00 Real Time: 0 02:50:02.00
Batch Id: 0509117A-TH Sample Id: 02
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4002.43	6	0	0.00	169.17	105	96	5.88E-04	40.8	
2	0	4624.41	10	0	297.42	370.80	306	99	9.80E-04	31.6	
3	0	4900.15	263	0	18.50	462.00	404	126	2.58E-02	6.2	
4	0	5253.17	2	0	147.11	580.50	546	102	1.96E-04	70.7	
5	0	5779.60	6	0	127.92	761.00	733	124	5.88E-04	40.8	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:26:49.69

Acquisition Start: 7-OCT-2005 17:06:17.01
Live Time: 0 16:40:05.00 Real Time: 0 16:40:04.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3951.23	3	0	127.69	152.50	105	96	5.00E-05	57.7	
2	0	4577.46	5	0	245.79	355.00	306	99	8.33E-05	44.7	
3	0	4915.40	5	0	264.95	466.50	404	126	8.33E-05	44.7	
4	0	5303.25	7	0	300.06	596.50	546	102	1.17E-04	37.8	
5	0	5881.23	6	0	0.00	794.50	733	124	1.00E-04	40.8	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:26:49.99

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4002.43*	5	0	0.00	169.17	105	96	5.38E-04	44.9	
2	0	4624.41*	9	0	297.42	370.80	306	99	8.97E-04	34.8	
3	0	4900.15*	262	0	18.50	462.00	404	126	2.57E-02	6.2	
4	0	5253.17*	1	0	147.11	580.50	546	102	7.94E-05	183.2	
5	0	5779.60*	5	0	127.92	761.00	733	124	4.88E-04	49.9	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:26:50

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: BLANK		
Sample date	: 10-OCT-2005 00:00:00	Acquisition date	: 10-OCT-2005 06:42:46
Sample ID	: 02	Sample quantity	: 1.0000 gram
Sample type	: TH	Sample geometry	:
Detector name	: 018	Detector geometry	:
Elapsed live time	: 0 02:50:02.00	Elapsed real time	: 0 02:50:02.00 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4002.43*	5	0.00	169.17	105	96	89.9		TH-232	7.864E-02
0	4624.41*	9	297.42	370.80	306	99	69.6		TH-230	0.131
0	4900.15*	262	18.50	462.00	404	126	12.4		TH229	3.77
0	5253.17*	1	147.11	580.50	546	102	366.5		TH-228	1.161E-02
0	5779.60*	5	127.92	761.00	733	124	99.8		TH-227	7.317E-02

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:27:02

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$03_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	03
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.031E+00 gram
SAMPLE TITLE:	VPBR092705SL01	DETECTOR NUMBER:	019
ACQ DATE:	10-OCT-2005 06:43	AVERAGE EFFICIENCY:	16.59%
ELAPSED LIVE TIME:	10204.	RECOVERY:	97.03%
TRACER ID:	TH-18A	TRACER FWHM (kev):	70.18
LAMBDA VALUE:	451.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.130	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	6-OCT-2005 04:40	EFF CAL DATE:	6-OCT-2005 04:40
BKG FILENAME:	B_019_7OCT05	BKG ELAPSED TIME:	60002.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	7.64	1.36	97.5	1.252E-01	1.018E-01	1.331E-01
TH-228	5400.0	46.13	1.87	99.9	7.463E-01	2.575E-01	1.448E-01
TH229	4872.0	275.98	1.02	99.5	4.425E+00	6.756E-01	1.188E-01
TH-230	4672.0	129.64	1.36	99.8	2.072E+00	5.053E-01	1.300E-01
TH-232	3997.0	48.81	1.19	100.0	7.788E-01	2.612E-01	1.242E-01

****

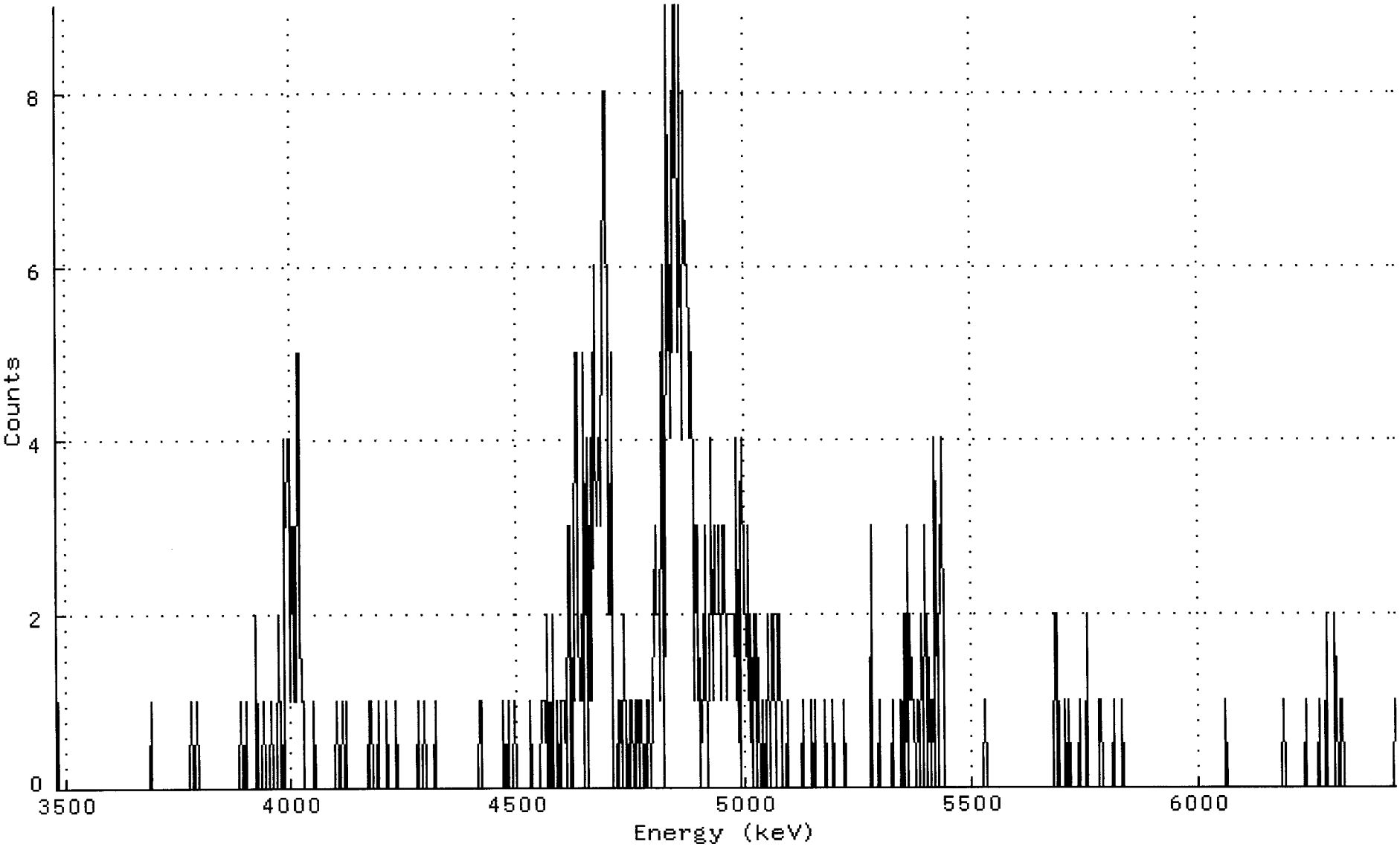
Jeff Price
Analyst

10-10-05
Date

Alan Gregley
Reviewer

10/10/05
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$03_TH.CNF;1
Title : 019
Sample Title: VPBR092705SL01
Start Time: 10-OCT-2005 06:43 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.47163E+03
Real Time : 0 02:50:04.00 Sample ID : 03 Energy Slope : 3.05112E+00
Live Time : 0 02:50:04.00 Sample Type: TH Energy Quad : -1.58602E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$03_TH

Channel

1:	10204	10204	0	1	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	1	0	0	0	1	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
141:	0	1	0	0	0	0	0	0	0	2	0	0	0	0
155:	1	0	0	0	0	1	1	0	0	0	0	2	0	1
169:	0	0	4	3	4	4	1	3	3	1	1	5	5	2
183:	1	1	0	0	0	0	0	0	0	1	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	0	0	1	1	0
211:	0	0	1	0	1	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	1	0	1	0	0	0	0
239:	1	0	0	0	0	0	0	1	0	0	0	0	0	0
253:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
267:	0	0	1	0	0	0	0	1	0	0	0	0	0	0
281:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	0	0	0	0	0	1	1	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	0	1	0	0	1
337:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
351:	0	0	1	0	0	0	0	0	0	0	1	1	1	1
365:	0	2	0	0	2	0	0	0	1	0	0	1	1	1
379:	0	0	3	0	3	0	2	2	5	5	2	1	2	0
393:	5	2	4	0	2	4	1	4	6	4	3	4	4	3
407:	6	7	8	8	4	2	2	5	0	0	0	1	0	1
421:	1	0	2	0	1	0	0	1	1	0	0	1	1	0
435:	1	1	0	0	0	1	0	1	0	1	1	2	3	2
449:	2	2	1	4	6	0	3	6	9	6	4	8	5	9
463:	7	9	5	9	7	4	8	7	6	6	5	4	5	3
477:	1	3	1	3	0	1	1	1	3	2	0	2	2	4
491:	1	3	2	2	2	3	1	3	2	3	1	2	2	2
505:	2	2	2	1	4	1	0	3	4	2	2	2	1	3
519:	1	0	1	2	0	2	1	0	1	0	0	1	0	2
533:	0	0	2	2	2	0	2	1	2	0	0	0	0	1
547:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
561:	0	0	0	0	1	0	1	0	0	0	0	0	0	0
575:	1	0	0	0	0	0	1	0	0	0	0	0	0	0
589:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
603:	0	0	0	0	0	0	0	0	3	0	0	0	0	0
617:	1	0	0	0	0	0	0	0	0	0	1	0	0	0
631:	0	0	0	1	0	2	0	1	3	0	2	1	1	1
645:	0	0	1	0	0	2	0	0	3	0	2	1	0	1
659:	1	0	4	3	0	2	2	4	1	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	2	0	2	0
757:	0	0	0	0	1	0	0	1	0	0	0	0	0	0
771:	0	1	0	0	0	0	0	2	0	0	0	0	0	0
785:	0	0	0	1	1	0	0	0	0	0	0	0	0	0
799:	1	0	0	0	0	0	0	1	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
953:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
967:	0	2	0	0	0	0	0	0	2	1	0	0	1	0
981:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:26:57.01

Detector ID: 19 Acquisition Start: 10-OCT-2005 06:43:05.01
Live Time: 0 02:50:04.00 Real Time: 0 02:50:04.00
Batch Id: 0509117A-TH Sample Id: 03
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3995.98	50	0	33.75	173.42	108	101	4.90E-03	14.1	
2	0	4655.38	131	0	83.91	396.13	318	103	1.28E-02	8.7	
3	0	4892.59	277	0	70.18	477.57	420	130	2.71E-02	6.0	
4	0	5368.28	48	0	170.63	643.12	567	106	4.70E-03	14.4	
5	0	5759.68	9	0	3.05	781.67	760	127	8.82E-04	33.3	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:27:00.60

Acquisition Start: 7-OCT-2005 17:06:19.01
Live Time: 0 16:40:02.00 Real Time: 0 16:40:02.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3949.95	7	0	180.98	158.00	108	101	1.17E-04	37.8	
2	0	4577.74	8	0	257.67	369.00	318	103	1.33E-04	35.4	
3	0	4914.79	6	0	315.95	484.50	420	130	1.00E-04	40.8	
4	0	5302.83	11	0	279.14	619.50	567	106	1.83E-04	30.2	
5	0	5875.72	8	0	0.00	823.00	760	127	1.33E-04	35.4	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:27:00.90

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3995.98*	49	0	33.75	173.42	108	101	4.78E-03	14.5	
2	0	4655.38*	130	0	83.91	396.13	318	103	1.27E-02	8.8	
3	0	4892.59*	276	0	70.18	477.57	420	130	2.70E-02	6.0	
4	0	5368.28*	46	0	170.63	643.12	567	106	4.52E-03	15.1	
5	0	5759.68*	8	0	3.05	781.67	760	127	7.49E-04	39.8	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:27:01

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL01
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 10-OCT-2005 06:43:05
Sample ID : 03 Sample quantity : 1.0312 gram
Sample type : TH Sample geometry :
Detector name : 019 Detector geometry:
Elapsed live time: 0 02:50:04.00 Elapsed real time: 0 02:50:04.00 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3995.98*	49	33.75	173.42	108	101	29.0		TH-232	0.756
0	4655.38*	130	83.91	396.13	318	103	17.7		TH-230	2.01
0	4892.59*	276	70.18	477.57	420	130	12.1		TH229	4.29
0	5368.28*	46	170.63	643.12	567	106	30.1		TH-228	0.724
0	5759.68*	8	3.05	781.67	760	127	79.5		TH-227	0.121

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:27:10

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$04_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	04
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.058E+00 gram
SAMPLE TITLE:	VPBR092705SL01	DETECTOR NUMBER:	020
ACQ DATE:	10-OCT-2005 06:43	AVERAGE EFFICIENCY:	19.91%
ELAPSED LIVE TIME:	10207.	RECOVERY:	85.11%
TRACER ID:	TH-18A	TRACER FWHM (kev):	248.57
LAMBDA VALUE:	453.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.188	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	6-OCT-2005 04:40	EFF CAL DATE:	6-OCT-2005 04:40
BKG FILENAME:	B_020_7OCT05	BKG ELAPSED TIME:	60005.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	10.98	1.02	97.5	1.665E-01	1.093E-01	1.122E-01
TH-228	5400.0	56.79	2.21	99.9	8.503E-01	2.701E-01	1.422E-01
TH229	4872.0	292.32	0.68	99.5	4.337E+00	6.494E-01	9.712E-02
TH-230	4672.0	134.83	0.17	99.8	1.995E+00	4.761E-01	6.846E-02
TH-232	3997.0	46.66	0.34	100.0	6.890E-01	2.324E-01	8.007E-02

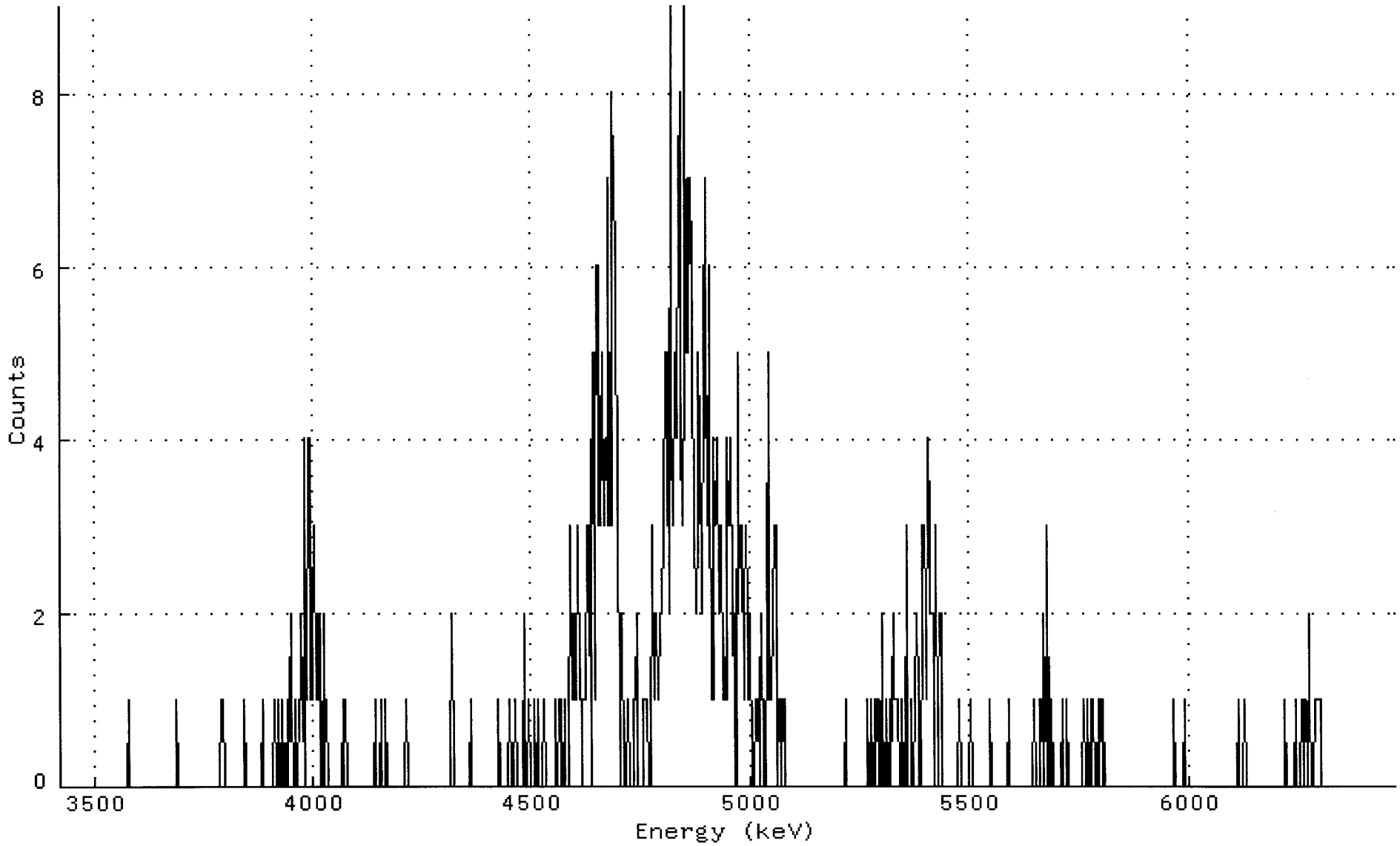
****

*** Tracer FWHM > 80.0 Kev ***

Analyst 10-10-05 Date

Reviewer 10/10/05 Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$04_TH.CNF;1
Title : 020
Sample Title: VPBR092705SL01
Start Time: 10-OCT-2005 06:43 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.41005E+03
Real Time : 0 02:50:07.00 Sample ID : 04 Energy Slope : 3.17224E+00
Live Time : 0 02:50:07.00 Sample Type: TH Energy Quad : -1.80074E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$04_TH

Channel

1:	10207	10207	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	1	1	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
141:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
155:	0	0	0	0	0	1	0	0	1	0	0	1	0	0
169:	1	0	1	2	1	0	0	1	0	1	1	2	1	0
183:	4	1	4	1	4	1	3	3	1	2	0	2	0	2
197:	0	1	0	0	0	0	0	0	0	0	0	0	0	1
211:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0	0	1	0	0	0	1
239:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
253:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	2	0	0	0
295:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
309:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	1	0	0	0	0	0	0	0	1	0	0
337:	0	1	0	0	0	0	0	0	2	0	0	1	0	0
351:	0	0	1	0	1	0	0	0	0	1	0	0	0	0
365:	0	0	0	0	1	0	1	0	1	0	1	0	0	0
379:	0	3	1	1	2	1	3	2	2	0	1	1	1	1
393:	3	3	0	3	5	1	4	6	3	6	3	4	5	3
407:	4	3	7	3	3	8	7	6	5	4	0	1	2	0
421:	0	0	1	0	0	0	0	1	1	2	0	0	0	0
435:	1	1	1	1	0	0	0	3	1	1	2	1	2	2
449:	2	3	3	5	3	5	2	9	4	3	5	4	4	7
463:	8	4	3	5	9	5	7	5	7	6	5	3	2	3
477:	5	4	2	2	5	7	5	3	6	4	1	1	4	3
491:	4	2	3	3	1	2	1	1	4	3	4	3	3	0
505:	2	0	5	2	3	3	1	2	3	2	1	2	0	0
519:	0	1	1	1	0	1	2	0	1	0	2	5	1	1
533:	2	2	3	3	0	1	1	0	1	1	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
589:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
603:	0	0	0	1	0	0	1	0	1	0	1	0	1	0
617:	2	0	0	1	0	0	1	0	1	2	1	1	1	1
631:	0	0	1	0	0	3	0	0	0	1	0	1	1	2
645:	1	0	0	2	3	3	2	1	4	3	2	2	2	0
659:	3	0	1	2	2	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	1	0	0	0	0	0	0	0	0	1
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	1	0	0	0	0	1	1	0
743:	2	1	0	3	0	0	1	0	0	0	0	0	0	0
757:	1	0	0	0	1	0	0	0	0	0	0	0	0	0
771:	0	0	0	1	1	0	1	0	0	1	0	1	0	0
785:	0	1	0	1	0	1	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	1	0	0	0	0	0	0	0	1
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	1	0	0	0	0	1	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
939:	0	0	0	0	1	0	0	0	0	1	0	1	1	0
953:	0	2	1	0	0	0	1	1	1	1	1	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:27:06.83

Detector ID: 20 Acquisition Start: 10-OCT-2005 06:43:22.01
Live Time: 0 02:50:07.00 Real Time: 0 02:50:07.00
Batch Id: 0509117A-TH Sample Id: 04
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3984.41	47	0	25.36	182.96	124	97	4.60E-03	14.6	
2	0	4645.33	135	0	61.07	398.41	326	100	1.32E-02	8.6	
3	0	4891.92	293	0	248.57	480.23	425	126	2.87E-02	5.8	
4	0	5371.26	59	0	74.94	641.61	567	102	5.78E-03	13.0	
5	0	5801.33	12	0	310.88	789.17	754	123	1.18E-03	28.9	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:27:08.60

Acquisition Start: 7-OCT-2005 17:06:22.01
Live Time: 0 16:40:05.00 Real Time: 0 16:40:05.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3952.45	2	0	282.41	172.00	124	97	3.33E-05	70.7	
2	0	4578.21	1	0	3.17	375.50	326	100	1.67E-05	100.0	
3	0	4916.26	4	0	276.07	487.50	425	126	6.67E-05	50.0	
4	0	5303.00	13	0	14.28	617.50	567	102	2.17E-04	27.7	
5	0	5878.93	6	0	3.17	815.00	754	123	1.00E-04	40.8	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:27:08.91

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3984.41*	47	0	25.36	182.96	124	97	4.57E-03	14.7	
2	0	4645.33*	135	0	61.07	398.41	326	100	1.32E-02	8.6	
3	0	4891.92*	292	0	248.57	480.23	425	126	2.86E-02	5.9	
4	0	5371.26*	57	0	74.94	641.61	567	102	5.56E-03	13.6	
5	0	5801.33*	11	0	310.88	789.17	754	123	1.08E-03	31.8	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:27:09

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL01		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 10-OCT-2005 06:43:22
Sample ID	: 04	Sample quantity	: 1.0581 gram
Sample type	: TH	Sample geometry	:
Detector name	: 020	Detector geometry	:
Elapsed live time	: 0 02:50:07.00	Elapsed real time	: 0 02:50:07.00 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3984.41*	47	25.36	182.96	124	97	29.4		TH-232	0.586
0	4645.33*	135	61.07	398.41	326	100	17.2		TH-230	1.70
0	4891.92*	292	248.57	480.23	425	126	11.7		TH229	3.69
0	5371.26*	57	74.94	641.61	567	102	27.1		TH-228	0.724
0	5801.33*	113	10.88	789.17	754	123	63.6		TH-227	0.142

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:27:19

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$05_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	05
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.002E+00 gram
SAMPLE TITLE:	VPBR092705SL02	DETECTOR NUMBER:	021
ACQ DATE:	10-OCT-2005 06:43	AVERAGE EFFICIENCY:	18.45%
ELAPSED LIVE TIME:	10210.	RECOVERY:	89.00%
TRACER ID:	TH-18A	TRACER FWHM (kev):	111.11
LAMBDA VALUE:	457.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.265	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	6-OCT-2005 04:40	EFF CAL DATE:	6-OCT-2005 04:40
BKG FILENAME:	B_021_7OCT05	BKG ELAPSED TIME:	60001.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	9.49	0.51	97.5	1.567E-01	1.081E-01	9.953E-02
TH-228	5400.0	40.64	1.36	99.9	6.628E-01	2.389E-01	1.309E-01
TH229	4872.0	285.49	0.51	99.5	4.615E+00	6.961E-01	9.751E-02
TH-230	4672.0	204.15	0.85	99.8	3.290E+00	7.156E-01	1.128E-01
TH-232	3997.0	41.15	0.85	100.0	6.619E-01	2.361E-01	1.126E-01

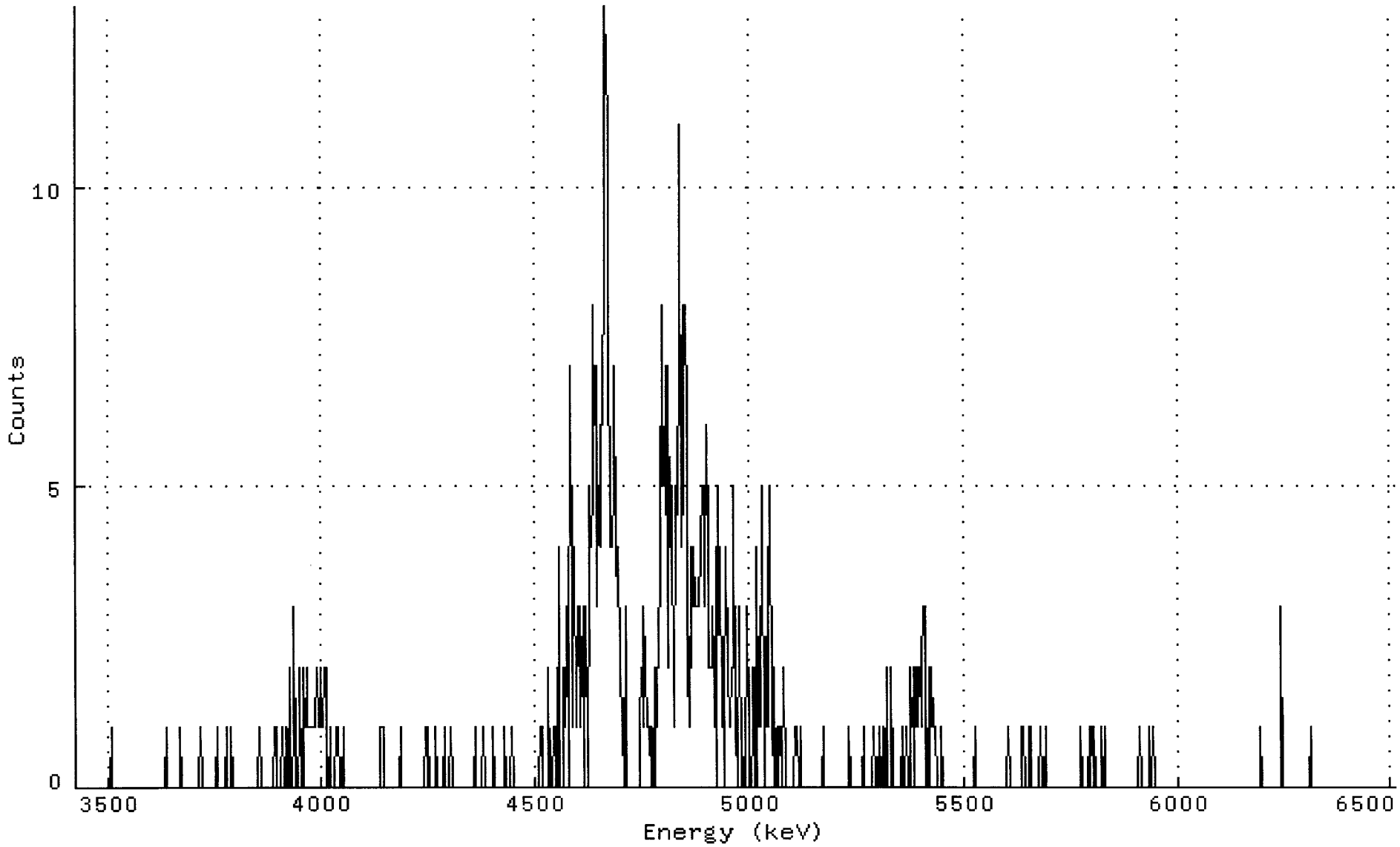
****

*** Tracer FWHM > 80.0 Kev ***

Analyst _____ Date 10-10-05

Reviewer _____ Date 10/10/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$05_TH.CNF;1
Title : 021
Sample Title: VPBR092705SL02
Start Time: 10-OCT-2005 06:43 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.41222E+03
Real Time : 0 02:50:10.00 Sample ID : 05 Energy Slope : 3.18935E+00
Live Time : 0 02:50:10.00 Sample Type: TH Energy Quad : -1.63113E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$05_TH

Channel

1:	10210	10210	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
71:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
99:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
113:	0	0	1	0	0	0	1	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
141:	0	0	0	0	0	0	0	0	0	0	1	1	0	0
155:	0	0	1	0	0	1	0	2	0	0	1	3	0	0
169:	1	2	0	0	2	1	2	1	1	1	1	1	1	2
183:	2	1	1	2	1	2	2	0	0	1	0	0	0	0
197:	1	1	0	0	0	1	0	0	0	0	0	0	0	0
211:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	1	1	1	0	0	0	0	0	0
239:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
253:	0	0	0	0	0	0	0	0	0	0	0	1	0	1
267:	0	0	0	0	0	1	0	0	0	0	0	1	0	0
281:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	1	0	0	0	0	0	1	1
309:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
323:	0	1	0	0	0	0	1	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	1	1	0	0	0	0	2	0	0	0	1	0	1	0
365:	4	0	0	0	2	1	3	0	1	7	3	1	4	1
379:	1	3	3	1	2	3	0	3	0	4	5	4	5	8
393:	6	7	3	5	4	6	6	9	13	12	11	8	4	4
407:	5	7	4	3	4	2	1	1	0	3	0	0	0	0
421:	0	0	0	0	0	0	1	2	1	3	2	1	1	1
435:	0	1	0	2	0	2	2	2	4	8	5	5	7	2
449:	7	4	5	5	1	5	4	5	7	11	4	5	8	8
463:	6	2	1	4	2	4	3	3	3	3	4	4	5	5
477:	3	6	4	2	2	2	3	1	4	0	5	3	3	2
491:	0	1	4	2	2	1	2	2	5	1	0	0	3	0
505:	1	0	0	0	3	1	0	0	1	2	0	4	0	2
519:	3	1	5	0	1	1	4	1	5	1	0	2	0	1
533:	0	1	1	0	2	0	0	0	0	0	0	0	0	1
547:	1	1	0	1	0	0	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
575:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
589:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
603:	0	0	0	0	1	0	0	0	1	0	0	1	0	0
617:	2	0	0	0	2	0	0	0	0	0	0	0	1	0
631:	0	1	1	0	0	2	1	2	0	2	2	1	2	1
645:	2	3	3	0	0	2	0	2	1	1	1	0	0	0
659:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
715:	0	0	0	0	0	0	0	0	1	1	0	0	0	0
729:	1	1	0	0	0	0	0	0	0	1	0	0	0	1
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
771:	0	0	0	0	0	0	1	0	1	0	1	0	0	0
785:	0	0	1	0	1	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	1	0	0	0	0	0	0	0	1	0
827:	1	1	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	3	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:27:14.96

Detector ID: 21 Acquisition Start: 10-OCT-2005 06:43:40.01
Live Time: 0 02:50:10.00 Real Time: 0 02:50:10.00
Batch Id: 0509117A-TH Sample Id: 05
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3968.94	42	0	87.67	176.14	122	97	4.11E-03	15.4	
2	0	4641.24	205	0	109.06	393.26	323	99	2.01E-02	7.0	
3	0	4883.26	286	0	111.11	472.66	421	124	2.80E-02	5.9	
4	0	5371.76	42	0	113.72	635.02	561	101	4.11E-03	15.4	
5	0	5853.45	10	0	188.17	798.00	746	120	9.79E-04	31.6	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:27:17.03

Acquisition Start: 7-OCT-2005 17:06:26.01
Live Time: 0 16:40:01.00 Real Time: 0 16:40:01.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3951.17	5	0	4.68	170.00	122	97	8.33E-05	44.7	
2	0	4577.25	5	0	175.39	372.00	323	99	8.33E-05	44.7	
3	0	4914.04	3	0	328.45	482.50	421	124	5.00E-05	57.7	
4	0	5300.61	8	0	280.62	611.00	561	101	1.33E-04	35.4	
5	0	5875.37	3	0	357.15	805.50	746	120	5.00E-05	57.7	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:27:17.29

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3968.94*	41	0	87.67	176.14	122	97	4.03E-03	15.8	
2	0	4641.24*	204	0	109.06	393.26	323	99	2.00E-02	7.0	
3	0	4883.26*	285	0	111.11	472.66	421	124	2.80E-02	5.9	
4	0	5371.76*	41	0	113.72	635.02	561	101	3.98E-03	16.0	
5	0	5853.45*	9	0	188.17	798.00	746	120	9.29E-04	33.5	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:27:18

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL02
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 10-OCT-2005 06:43:40
Sample ID : 05 Sample quantity : 1.0020 gram
Sample type : TH Sample geometry :
Detector name : 021 Detector geometry:
Elapsed live time: 0 02:50:10.00 Elapsed real time: 0 02:50:10.00 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3968.94*	41	87.67	176.14	122	97	31.6		TH-232	0.589
0	4641.24*	204	109.06	393.26	323	99	14.0		TH-230	2.93
0	4883.26*	285	111.11	472.66	421	124	11.8		TH229	4.11
0	5371.76*	41	113.72	635.02	561	101	32.0		TH-228	0.590
0	5853.45*	9	188.17	798.00	746	120	66.9		TH-227	0.140

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:27:30

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$06_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	06
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.002E+00 gram
SAMPLE TITLE:	VPBR092705SL03	DETECTOR NUMBER:	022
ACQ DATE:	10-OCT-2005 06:43	AVERAGE EFFICIENCY:	17.64%
ELAPSED LIVE TIME:	10203.	RECOVERY:	89.49%
TRACER ID:	TH-18A	TRACER FWHM (kev):	35.79
LAMBDA VALUE:	453.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.193	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	6-OCT-2005 04:40	EFF CAL DATE:	6-OCT-2005 04:40
BKG FILENAME:	B_022_7OCT05	BKG ELAPSED TIME:	60005.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	16.64	1.36	97.5	2.860E-01	1.545E-01	1.397E-01
TH-228	5400.0	66.81	1.19	99.9	1.134E+00	3.392E-01	1.304E-01
TH229	4872.0	272.32	0.68	99.5	4.581E+00	7.017E-01	1.101E-01
TH-230	4672.0	103.66	0.34	99.8	1.738E+00	4.503E-01	9.093E-02
TH-232	3997.0	81.49	0.51	100.0	1.364E+00	3.805E-01	1.010E-01

****

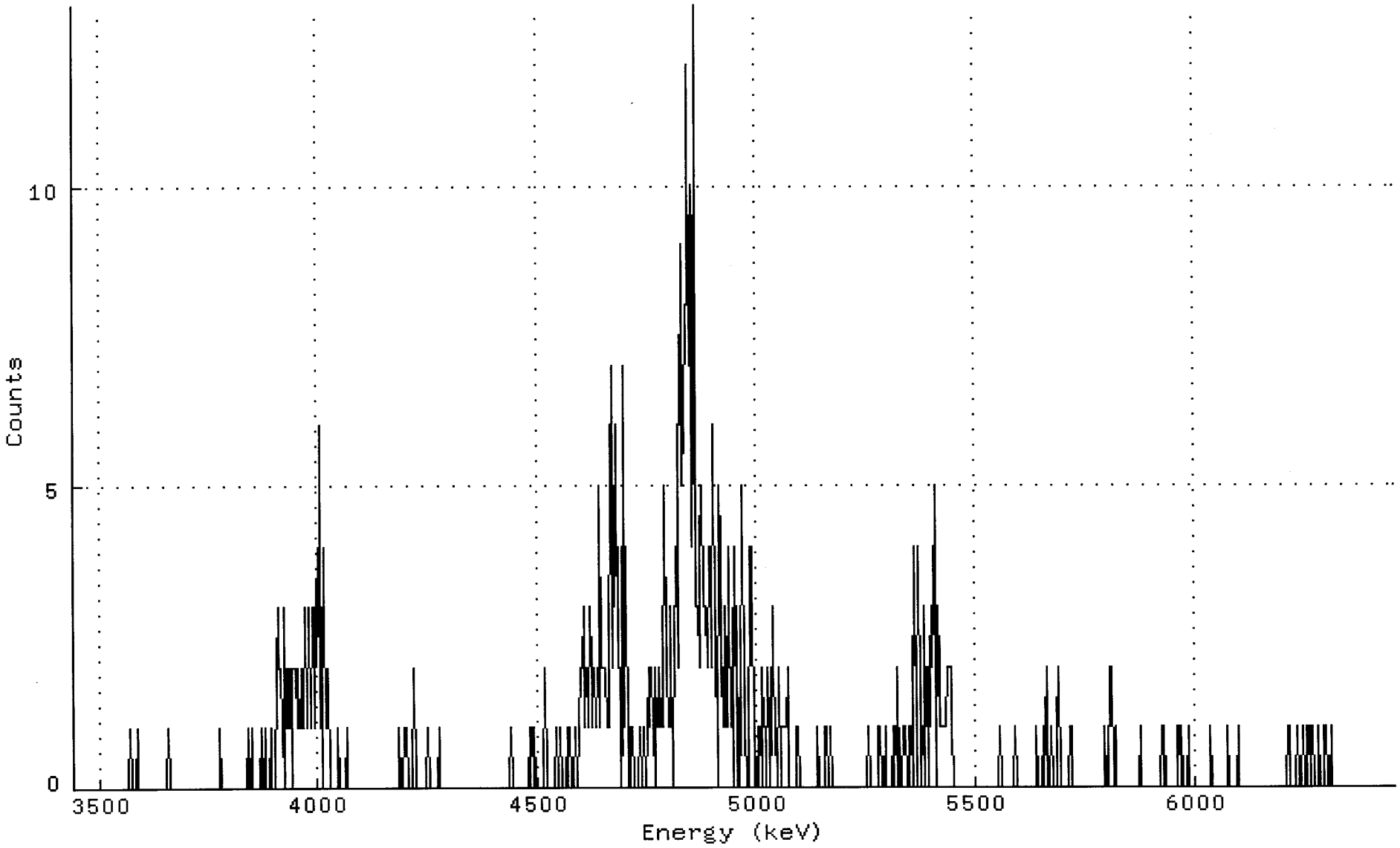
Jay Price
Analyst

10-10-05
Date

Alan Gregory
Reviewer

10/10/05
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$06_TH.CNF;1
Title : 022
Sample Title: VPBR092705SL03
Start Time: 10-OCT-2005 06:43 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.42953E+03
Real Time : 0 02:50:03.00 Sample ID : 06 Energy Slope : 3.12026E+00
Live Time : 0 02:50:03.00 Sample Type: TH Energy Quad : -1.61352E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$06_TH

Channel

1:	10203	10203	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	1	0	0	0	0	1	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	1	0	0	1	0	0	0	0	0
141:	0	1	0	0	1	0	0	0	1	0	0	0	0	2
155:	3	2	2	1	0	3	1	2	1	2	0	2	2	2
169:	1	2	1	1	2	1	3	1	1	3	1	1	3	3
183:	1	3	4	1	6	0	4	3	1	1	2	0	0	0
197:	0	0	0	1	0	0	0	0	0	1	0	0	0	0
211:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
239:	0	0	0	0	0	0	0	1	0	0	1	1	1	0
253:	0	0	0	0	2	0	0	0	0	0	0	0	0	0
267:	1	0	0	0	0	0	0	0	1	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	1	0	1	0	1	0	0	0
351:	0	0	0	0	2	0	0	0	0	0	0	0	0	1
365:	0	1	1	0	0	0	0	1	0	1	0	0	0	1
379:	1	0	1	1	2	2	3	1	2	1	1	3	2	1
393:	2	1	1	2	1	5	2	2	2	2	1	2	1	6
407:	2	7	3	4	6	2	2	0	1	7	1	4	0	1
421:	0	1	0	0	0	0	0	1	0	0	1	0	0	1
435:	2	1	2	1	0	2	1	1	2	1	1	1	5	2
449:	2	1	1	3	0	3	2	4	2	6	6	9	5	6
463:	8	8	12	7	10	4	6	13	3	3	2	4	5	3
477:	3	3	2	2	4	2	2	6	2	3	0	5	4	2
491:	1	3	1	1	4	2	2	0	2	4	0	3	0	1
505:	1	5	1	1	0	0	0	4	3	4	0	0	1	0
519:	1	0	2	1	1	0	2	1	0	1	3	2	1	0
533:	0	2	0	1	1	1	1	1	2	0	0	0	0	0
547:	0	1	1	0	0	0	0	0	0	0	0	0	0	0
561:	0	0	0	1	0	0	0	0	0	1	1	0	0	1
575:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
603:	0	1	0	0	0	0	0	0	0	1	1	0	0	0
617:	1	0	0	0	0	0	1	0	1	0	2	0	0	0
631:	1	1	1	0	1	0	1	0	1	4	0	1	4	1
645:	0	1	0	3	1	2	0	2	3	2	3	5	0	3
659:	2	1	1	1	1	1	2	2	2	2	1	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
715:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	1	0	0	0	0	1	0	1
743:	2	0	0	0	1	0	0	0	0	1	2	0	0	0
757:	0	0	0	0	0	1	1	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	1	0	1	0	2	1	2	0	1
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	1	0	1	0	0	0
841:	0	0	0	0	0	0	0	1	1	0	1	0	0	0
855:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	1	0	0	0	0	0	0	0	1
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	1	1
939:	0	0	0	0	0	1	1	0	0	0	1	0	0	1
953:	0	1	1	0	1	0	0	0	0	1	0	0	0	0
967:	1	1	0	0	0	1	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:27:22.65

Detector ID: 22 Acquisition Start: 10-OCT-2005 06:43:57.01
Live Time: 0 02:50:03.00 Real Time: 0 02:50:03.00
Batch Id: 0509117A-TH Sample Id: 06
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3966.30	82	0	18.69	173.59	119	99	8.04E-03	11.0	
2	0	4643.99	104	0	63.95	397.38	324	101	1.02E-02	9.8	
3	0	4883.30	273	0	35.79	477.71	425	127	2.68E-02	6.1	
4	0	5374.37	68	0	58.95	644.79	568	104	6.66E-03	12.1	
5	0	5861.88	18	0	9.30	813.78	757	124	1.76E-03	23.6	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:27:28.33

Acquisition Start: 7-OCT-2005 17:06:29.01
Live Time: 0 16:40:05.00 Real Time: 0 16:40:05.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3951.73	3	0	3.12	168.00	119	99	5.00E-05	57.7	
2	0	4576.71	2	0	5.85	374.00	324	101	3.33E-05	70.7	
3	0	4916.76	4	0	156.01	488.00	425	127	6.67E-05	50.0	
4	0	5303.88	7	0	305.78	619.50	568	104	1.17E-04	37.8	
5	0	5879.23	8	0	0.00	818.50	757	124	1.33E-04	35.4	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:27:28.59

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3966.30*	81	0	18.69	173.59	119	99	7.99E-03	11.1	
2	0	4643.99*	104	0	63.95	397.38	324	101	1.02E-02	9.8	
3	0	4883.30*	272	0	35.79	477.71	425	127	2.67E-02	6.1	
4	0	5374.37*	67	0	58.95	644.79	568	104	6.55E-03	12.4	
5	0	5861.88*	17	0	9.30	813.78	757	124	1.63E-03	25.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:27:29

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL03
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 10-OCT-2005 06:43:57
Sample ID : 06 Sample quantity : 1.0023 gram
Sample type : TH Sample geometry :
Detector name : 022 Detector geometry:
Elapsed live time: 0 02:50:03.00 Elapsed real time: 0 02:50:03.00 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3966.30*	81	18.69	173.59	119	99	22.2		TH-232	1.22
0	4643.99*	104	63.95	397.38	324	101	19.7		TH-230	1.56
0	4883.30*	272	35.79	477.71	425	127	12.1		TH229	4.10
0	5374.37*	67	58.95	644.79	568	104	24.7		TH-228	1.01
0	5861.88*	17	9.30	813.78	757	124	51.3		TH-227	0.256

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:27:44

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$07_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	07
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.016E+00 gram
SAMPLE TITLE:	VPBR092705SL04	DETECTOR NUMBER:	023
ACQ DATE:	10-OCT-2005 06:44	AVERAGE EFFICIENCY:	19.27%
ELAPSED LIVE TIME:	10202.	RECOVERY:	93.76%
TRACER ID:	TH-18A	TRACER FWHM (kev):	123.69
LAMBDA VALUE:	458.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.308	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	6-OCT-2005 04:40	EFF CAL DATE:	6-OCT-2005 04:40
BKG FILENAME:	B_023_7OCT05	BKG ELAPSED TIME:	60002.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	11.30	1.70	97.5	1.674E-01	1.114E-01	1.298E-01
TH-228	5400.0	46.96	2.04	99.9	6.870E-01	2.339E-01	1.350E-01
TH229	4872.0	315.13	1.87	99.5	4.569E+00	6.698E-01	1.315E-01
TH-230	4672.0	75.64	1.36	99.8	1.093E+00	3.099E-01	1.176E-01
TH-232	3997.0	44.81	1.19	100.0	6.466E-01	2.225E-01	1.123E-01

****

*** Tracer FWHM > 80.0 Kev ***

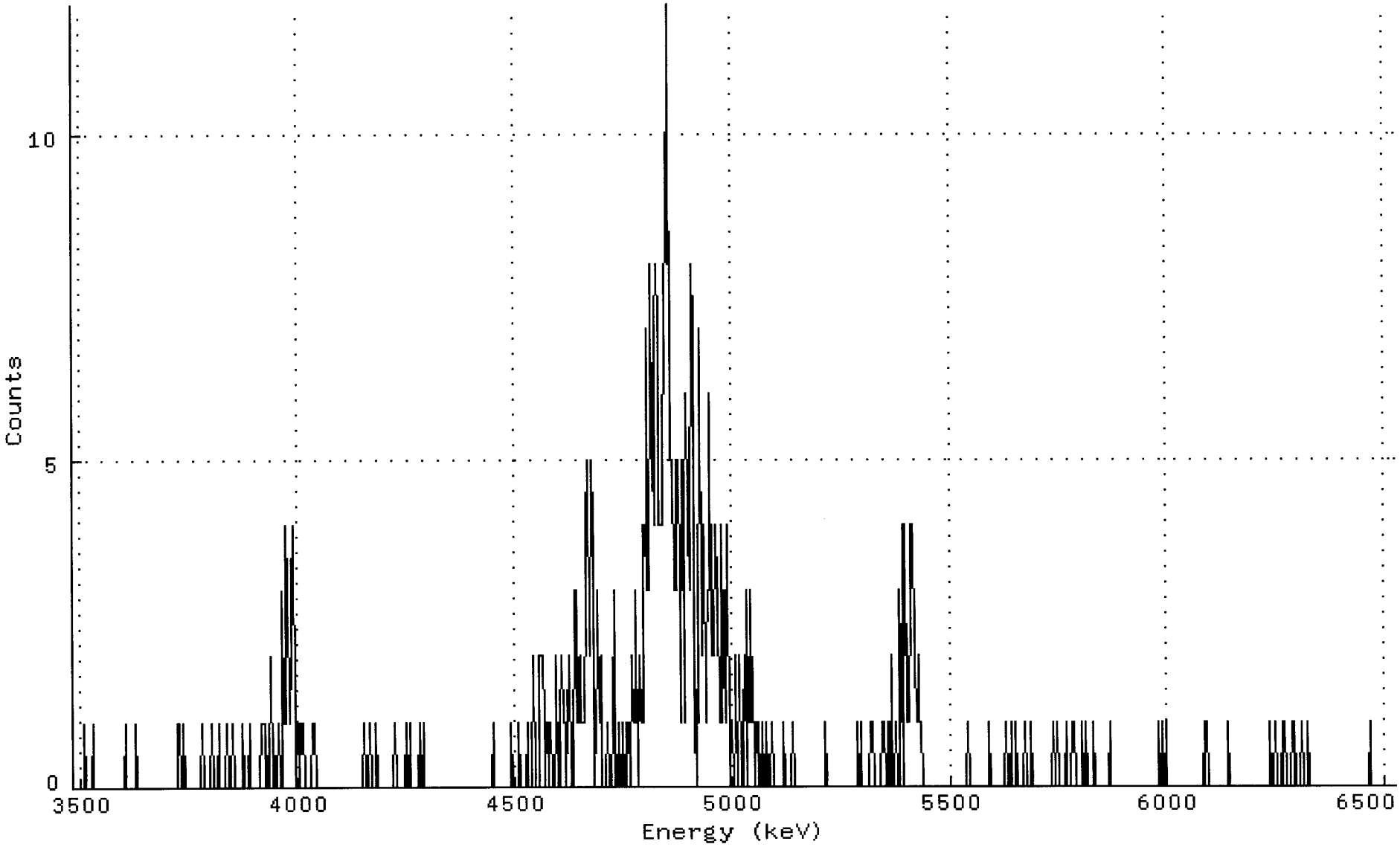
Jeff Thee
Analyst

10-10-05
Date

Alan Gregley
Reviewer

10/10/05
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$07_TH.CNF;1
Title : 023
Sample Title: VPBR092705SL04
Start Time: 10-OCT-2005 06:44 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.47282E+03
Real Time : 0 02:50:02.00 Sample ID : 07 Energy Slope : 3.13720E+00
Live Time : 0 02:50:02.00 Sample Type: TH Energy Quad : -1.55135E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$07_TH

Channel

1:	10202	10202	0	0	0	0	0	0	0	0	0	1	0	0
15:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
43:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	1	1	0	0
85:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	1	0	0	0	0	0	0	1	0	0	0	0	1	0
113:	0	0	0	0	1	0	0	0	1	1	0	0	0	0
127:	0	0	1	0	0	0	0	1	0	0	0	0	0	0
141:	0	0	1	1	1	0	0	1	0	2	0	1	0	0
155:	1	1	0	0	3	1	1	4	3	1	2	3	4	1
169:	0	1	1	0	1	1	0	0	0	0	0	0	1	1
183:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211:	0	0	0	0	0	0	0	0	0	1	0	0	0	1
225:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
239:	0	0	0	0	1	0	0	0	0	0	0	0	1	0
253:	0	1	0	0	0	0	0	0	1	0	0	1	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	1	0	0	0	0	0	1
337:	0	0	0	0	0	1	0	0	0	0	2	0	0	0
351:	0	2	2	2	1	0	1	1	0	1	0	0	0	1
365:	2	0	0	1	2	1	1	0	1	2	2	0	0	0
379:	3	1	3	1	2	1	1	1	3	4	5	2	2	5
393:	4	0	1	2	3	1	2	0	0	0	0	1	0	0
407:	0	1	3	0	0	1	0	0	1	0	0	1	0	1
421:	1	0	2	1	1	3	0	2	2	1	1	4	4	3
435:	7	3	7	8	5	4	7	8	7	4	4	4	8	6
449:	10	8	12	5	5	5	3	5	3	5	3	1	5	1
463:	4	6	4	4	3	8	7	1	0	3	1	7	2	4
477:	4	1	2	3	3	6	2	2	2	4	3	3	1	1
491:	4	2	1	2	4	0	1	1	0	1	2	0	2	2
505:	0	0	1	2	0	3	1	1	3	1	1	0	1	0
519:	1	0	0	1	0	0	1	0	0	0	1	0	0	0
533:	0	0	0	0	0	1	0	0	0	0	0	0	1	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
575:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	1	0	1	0	0	0	0
603:	0	0	0	1	1	1	0	0	0	0	0	0	1	1
617:	1	0	0	1	0	2	0	0	1	1	0	0	3	1
631:	4	0	4	1	1	1	3	4	4	2	2	1	2	1
645:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
701:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
715:	1	0	0	0	1	0	0	0	0	0	0	1	0	0
729:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	1	0	0	1	0	0	0	0
757:	0	0	1	0	0	0	0	1	1	1	0	0	0	0
771:	0	1	0	0	1	0	0	0	0	0	1	0	0	0
785:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	1	0	1	0	0	1	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	1	0	1	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
925:	0	1	0	0	0	0	0	1	0	1	0	0	0	0
939:	0	1	0	1	0	0	0	0	0	1	0	0	0	0
953:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:27:33.86

Detector ID: 23 Acquisition Start: 10-OCT-2005 06:44:14.01
Live Time: 0 02:50:02.00 Real Time: 0 02:50:02.00
Batch Id: 0509117A-TH Sample Id: 07
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3958.72	46	0	28.10	156.09	105	98	4.51E-03	14.7	
2	0	4635.15	77	0	57.61	377.55	308	100	7.55E-03	11.4	
3	0	4882.95	317	0	123.69	459.95	408	126	3.11E-02	5.6	
4	0	5384.98	49	0	35.53	629.08	550	102	4.80E-03	14.3	
5	0	5835.03	13	0	282.35	783.31	737	122	1.27E-03	27.7	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:27:42.01

Acquisition Start: 7-OCT-2005 17:06:32.01
Live Time: 0 16:40:02.00 Real Time: 0 16:40:02.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3950.60	7	0	284.99	153.50	105	98	1.17E-04	37.8	
2	0	4577.05	8	0	3.17	357.50	308	100	1.33E-04	35.4	
3	0	4917.34	11	0	345.15	470.50	408	126	1.83E-04	30.2	
4	0	5302.92	12	0	0.00	600.50	550	102	2.00E-04	28.9	
5	0	5875.14	10	0	4.65	797.50	737	122	1.67E-04	31.6	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:27:42.32

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3958.72*	45	0	28.10	156.09	105	98	4.39E-03	15.2	
2	0	4635.15*	76	0	57.61	377.55	308	100	7.41E-03	11.6	
3	0	4882.95*	315	0	123.69	459.95	408	126	3.09E-02	5.7	
4	0	5384.98*	47	0	35.53	629.08	550	102	4.60E-03	15.0	
5	0	5835.03*	11	0	282.35	783.31	737	122	1.11E-03	32.3	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:27:43

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL04		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 10-OCT-2005 06:44:14
Sample ID	: 07	Sample quantity	: 1.0162 gram
Sample type	: TH	Sample geometry	:
Detector name	: 023	Detector geometry	:
Elapsed live time	: 0 02:50:02.00	Elapsed real time	: 0 02:50:02.00 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3958.72*	45	28.10	156.09	105	98	30.3		TH-232	0.606
0	4635.15*	76	57.61	377.55	308	100	23.2		TH-230	1.03
0	4882.95*	315	123.69	459.95	408	126	11.3		TH229	4.28
0	5384.98*	47	35.53	629.08	550	102	29.9		TH-228	0.644
0	5835.03*	11	282.35	783.31	737	122	64.5		TH-227	0.157

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:27:54

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$08_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	08
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.023E+00 gram
SAMPLE TITLE:	VPBR092705SL05	DETECTOR NUMBER:	025
ACQ DATE:	10-OCT-2005 06:44	AVERAGE EFFICIENCY:	20.42%
ELAPSED LIVE TIME:	10208.	RECOVERY:	108.88%
TRACER ID:	TH-18A	TRACER FWHM (kev):	124.40
LAMBDA VALUE:	453.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.186	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	6-OCT-2005 04:40	EFF CAL DATE:	6-OCT-2005 04:40
BKG FILENAME:	B_025_7OCT05	BKG ELAPSED TIME:	60001.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	9.13	1.87	97.5	1.091E-01	8.220E-02	1.083E-01
TH-228	5400.0	67.47	1.53	99.9	7.965E-01	2.320E-01	9.861E-02
TH229	4872.0	383.49	0.51	99.5	4.487E+00	6.205E-01	7.057E-02
TH-230	4672.0	119.66	0.34	99.8	1.396E+00	3.347E-01	6.325E-02
TH-232	3997.0	75.83	0.17	100.0	8.829E-01	2.448E-01	5.388E-02

****

*** Tracer FWHM > 80.0 Kev ***

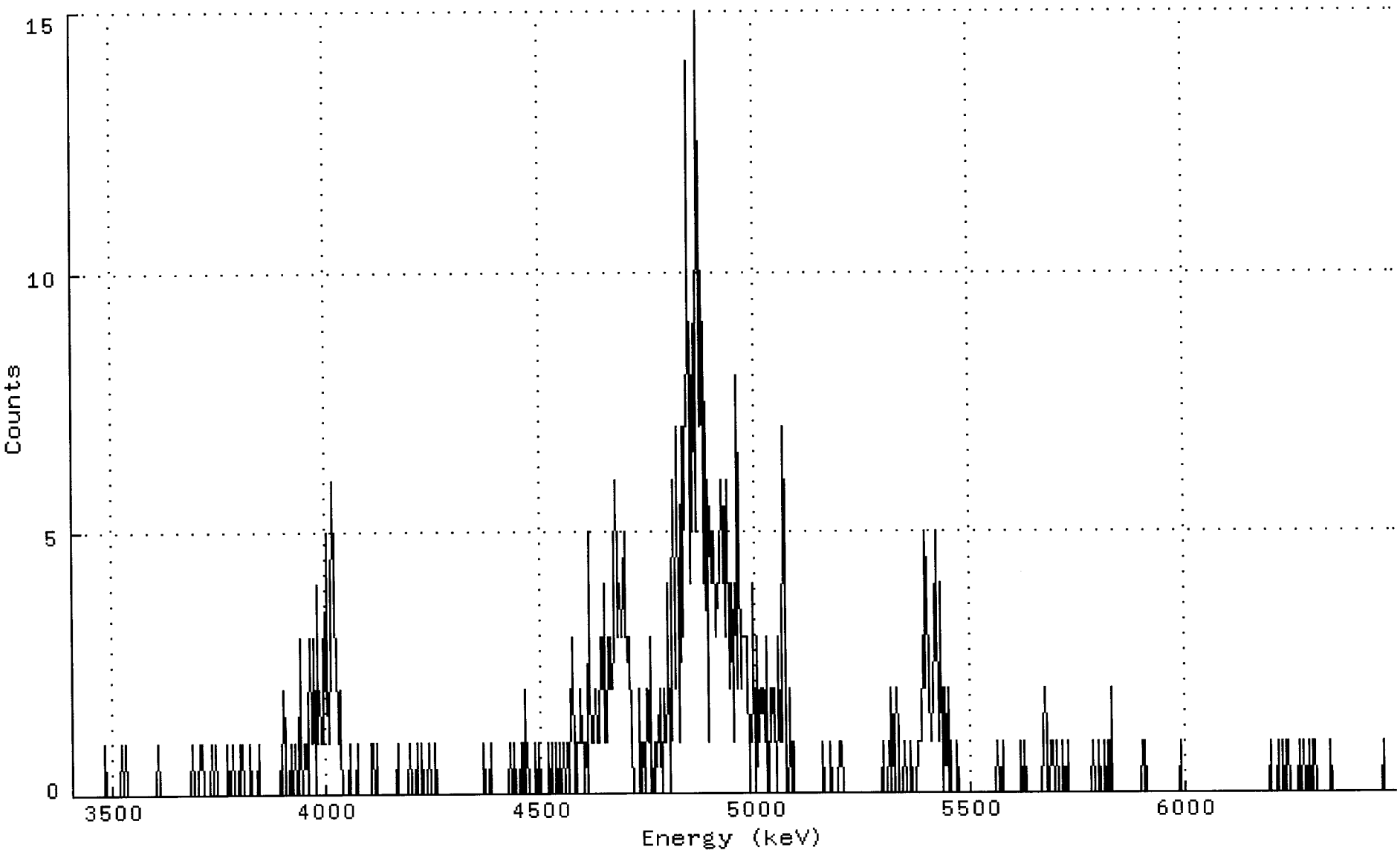
Jay Price
Analyst

10-10-05
Date

Alan Gregley
Reviewer

10/10/05
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$08_TH.CNF;1
Title : 025
Sample Title: VPBR092705SL05
Start Time: 10-OCT-2005 06:44 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.39483E+03
Real Time : 0 02:50:08.00 Sample ID : 08 Energy Slope : 3.20382E+00
Live Time : 0 02:50:08.00 Sample Type: TH Energy Quad : -1.81704E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$08_TH

Channel

1:	10208	10208	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
29:	0	0	0	0	0	0	0	0	0	0	1	0	0	1
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	1	0	0	0	0	0	1	1
99:	0	0	0	0	0	0	1	0	0	1	0	0	0	0
113:	0	0	0	0	1	0	0	0	1	0	0	0	0	1
127:	0	1	0	0	0	0	0	1	0	0	0	0	0	1
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	1	0	2	1	0	0	0	1	0	0	1	1
169:	0	0	3	1	0	1	1	1	0	1	3	1	3	2
183:	0	4	1	2	1	1	3	2	5	2	1	3	3	6
197:	4	2	3	1	2	1	0	0	0	0	0	1	0	0
211:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
225:	1	1	0	1	0	0	0	0	0	0	0	0	0	0
239:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
253:	1	0	0	0	0	1	0	0	0	1	0	0	0	0
267:	1	0	0	0	0	1	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
309:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	1	0	0	1	0	0	0	0	1
337:	0	0	2	0	1	0	0	0	0	0	1	0	0	1
351:	0	0	0	0	0	0	1	0	1	0	0	0	1	0
365:	1	0	0	1	1	0	1	0	0	2	2	3	0	0
379:	1	1	1	2	1	1	0	1	0	5	2	1	1	1
393:	2	1	1	1	3	3	2	4	1	1	3	3	2	2
407:	3	4	6	4	3	4	3	3	4	5	3	3	2	3
421:	1	0	0	0	0	0	2	0	1	1	0	2	2	1
435:	3	0	0	1	0	1	1	2	1	0	2	1	1	2
449:	4	0	2	3	6	3	2	7	2	1	4	7	3	7
463:	7	9	14	4	8	5	8	10	5	15	10	7	10	4
477:	9	6	1	6	5	4	5	5	3	3	4	4	6	6
491:	5	3	5	6	2	4	4	1	3	4	2	8	5	2
505:	3	3	3	3	3	0	1	1	2	4	0	1	3	1
519:	2	2	2	1	3	0	0	2	1	2	1	2	0	2
533:	3	1	3	1	7	5	0	0	1	2	0	1	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	1	0	0	0	0	0	1	0
575:	0	0	0	0	0	1	1	1	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
603:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
617:	0	0	1	0	2	1	0	1	2	1	0	0	0	0
631:	1	0	0	0	0	1	0	0	0	0	1	1	1	1
645:	1	3	2	5	4	2	2	1	2	2	3	5	4	1
659:	2	4	0	1	2	1	0	2	0	0	0	0	0	1
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	1	0	0	0	1	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	1	0	0	1	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	1	1	2	1
743:	0	0	1	1	1	0	0	1	0	0	0	0	1	0
757:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	1	0	0	0	0	1
785:	0	0	0	0	1	0	0	1	0	2	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	1	0	1	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
925:	0	0	0	1	0	0	0	1	0	0	1	1	1	0
939:	0	0	0	0	0	0	1	0	0	0	1	0	0	0
953:	1	0	0	1	0	1	0	0	0	0	0	0	0	0
967:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:27:48.34

Detector ID: 25 Acquisition Start: 10-OCT-2005 06:44:33.01
Live Time: 0 02:50:08.00 Real Time: 0 02:50:08.00
Batch Id: 0509117A-TH Sample Id: 08
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3980.70	76	0	44.02	184.80	127	97	7.45E-03	11.5	
2	0	4634.79	120	0	94.19	395.92	328	98	1.18E-02	9.1	
3	0	4897.45	384	0	124.40	482.20	426	124	3.76E-02	5.1	
4	0	5379.93	69	0	46.71	643.06	566	102	6.76E-03	12.0	
5	0	5824.37	11	0	3.20	794.09	752	121	1.08E-03	30.2	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:27:52.65

Acquisition Start: 7-OCT-2005 17:06:37.01
Live Time: 0 16:40:01.00 Real Time: 0 16:40:01.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3949.95	1	0	3.21	175.00	127	97	1.67E-05	100.0	
2	0	4575.98	2	0	269.79	376.50	328	98	3.33E-05	70.7	
3	0	4914.25	3	0	234.46	487.50	426	124	5.00E-05	57.7	
4	0	5301.48	9	0	4.72	616.50	566	102	1.50E-04	33.3	
5	0	5876.26	11	0	0.00	812.00	752	121	1.83E-04	30.2	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:27:52.93

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3980.70*	76	0	44.02	184.80	127	97	7.43E-03	11.5	
2	0	4634.79*	120	0	94.19	395.92	328	98	1.17E-02	9.2	
3	0	4897.45*	383	0	124.40	482.20	426	124	3.76E-02	5.1	
4	0	5379.93*	67	0	46.71	643.06	566	102	6.61E-03	12.3	
5	0	5824.37*	9	0	3.20	794.09	752	121	8.94E-04	36.9	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:27:53

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL05		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 10-OCT-2005 06:44:33
Sample ID	: 08	Sample quantity	: 1.0227 gram
Sample type	: TH	Sample geometry	:
Detector name	: 025	Detector geometry	:
Elapsed live time	: 0 02:50:08.00	Elapsed real time	: 0 02:50:08.00 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3980.70*	76	44.02	184.80	127	97	23.0		TH-232	0.961
0	4634.79*	120	94.19	395.92	328	98	18.3		TH-230	1.52
0	4897.45*	383	124.40	482.20	426	124	10.2		TH229	4.88
0	5379.93*	67	46.71	643.06	566	102	24.7		TH-228	0.867
0	5824.37*	9	3.20	794.09	752	121	73.7		TH-227	0.119

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:28:05

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$09_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	09
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.011E+00 gram
SAMPLE TITLE:	VPBR092705SL06	DETECTOR NUMBER:	026
ACQ DATE:	10-OCT-2005 06:44	AVERAGE EFFICIENCY:	18.91%
ELAPSED LIVE TIME:	10207.	RECOVERY:	102.76%
TRACER ID:	TH-18A	TRACER FWHM (kev):	156.17
LAMBDA VALUE:	455.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.229	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	6-OCT-2005 04:40	EFF CAL DATE:	6-OCT-2005 04:40
BKG FILENAME:	B_026_7OCT05	BKG ELAPSED TIME:	60004.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	10.32	0.68	97.5	1.428E-01	9.507E-02	9.049E-02
TH-228	5400.0	80.79	2.21	99.9	1.104E+00	3.056E-01	1.298E-01
TH229	4872.0	336.47	1.53	99.5	4.557E+00	6.550E-01	1.146E-01
TH-230	4672.0	86.30	1.70	99.8	1.165E+00	3.147E-01	1.185E-01
TH-232	3997.0	76.81	1.19	100.0	1.035E+00	2.902E-01	1.049E-01

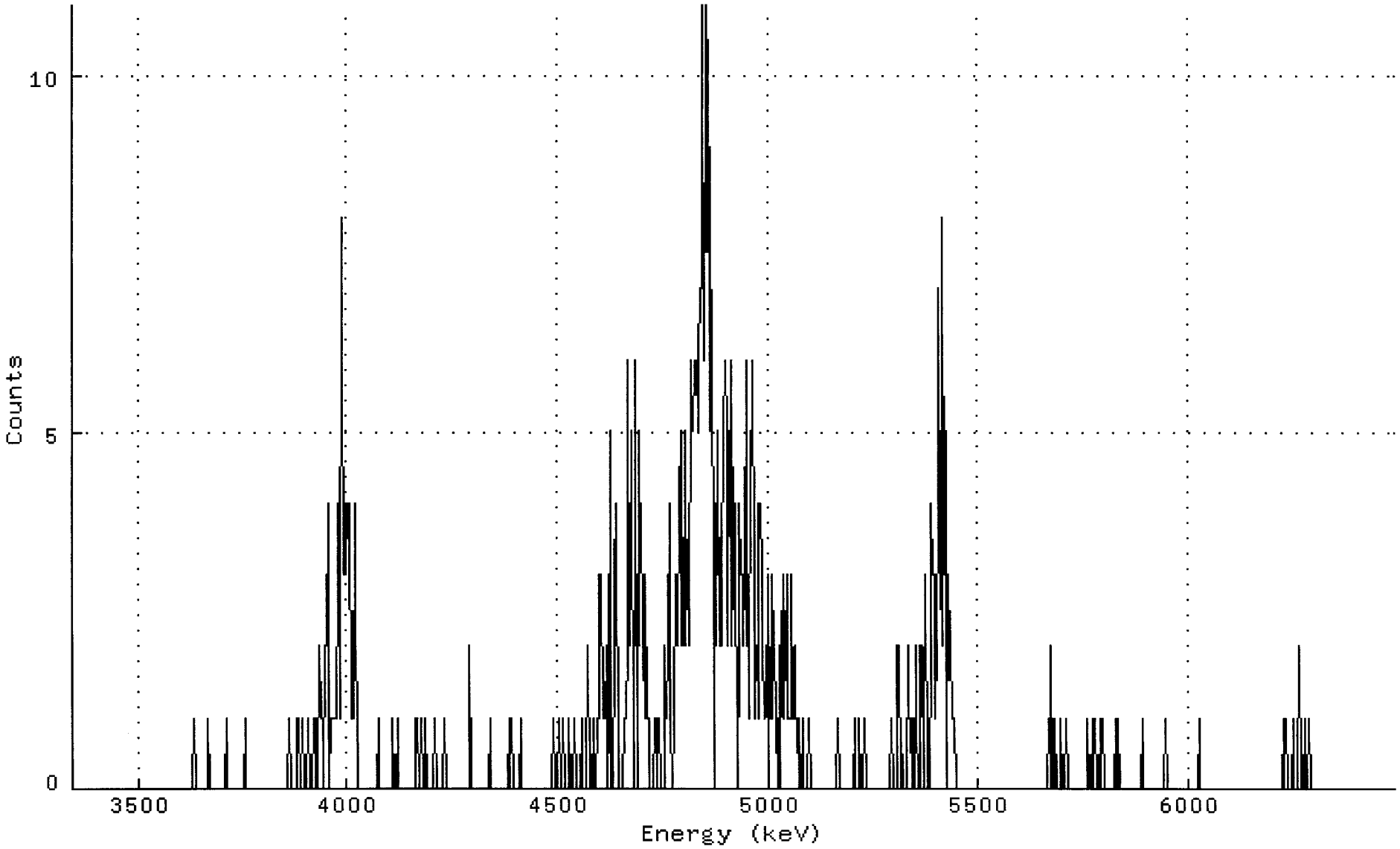
****

*** Tracer FWHM > 80.0 Kev ***

Analyst _____ Date 10-10-05

Reviewer _____ Date 10/10/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$09_TH.CNF;1
Title : 026
Sample Title: VPBR092705SL06
Start Time: 10-OCT-2005 06:44 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.33132E+03
Real Time : 0 02:50:08.00 Sample ID : 09 Energy Slope : 3.30255E+00
Live Time : 0 02:50:07.00 Sample Type: TH Energy Quad : -2.14295E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$09_TH

Channel

1:	10208	10207	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
99:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
113:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	1	0	0	0	0	0	1
169:	1	0	0	1	0	0	0	1	0	0	0	1	0	1
183:	0	2	2	1	1	0	2	2	4	0	1	1	1	1
197:	1	3	4	1	8	6	3	4	3	4	4	1	2	1
211:	4	3	0	0	0	0	0	0	0	0	0	0	0	0
225:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
239:	1	0	0	1	0	0	0	0	0	0	0	0	0	0
253:	0	0	0	1	1	0	0	1	0	0	1	0	0	0
267:	0	0	0	1	0	0	0	0	0	0	1	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	2	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	1	0	1	0	0	0	0	0	0	1	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	1	0	0	0	1	0
365:	0	1	0	0	0	0	1	0	0	0	1	0	0	0
379:	0	1	0	0	0	0	2	0	1	0	0	1	0	1
393:	1	3	3	1	1	1	2	0	1	5	0	0	2	3
407:	4	0	0	0	0	1	1	1	2	6	2	3	5	0
421:	4	6	0	5	2	4	2	1	3	1	1	0	0	0
435:	0	1	0	1	1	0	0	0	0	2	1	2	4	1
449:	0	1	1	3	2	2	4	5	2	2	5	2	3	4
463:	2	6	5	6	6	6	5	6	7	7	11	6	9	11
477:	10	5	9	5	4	0	4	3	5	2	2	3	5	6
491:	5	2	5	2	6	3	2	4	0	2	4	3	3	2
505:	3	6	3	1	5	4	6	3	1	2	1	4	4	3
519:	2	1	2	0	3	1	1	3	2	1	1	0	2	0
533:	2	3	1	2	3	1	1	1	3	1	2	1	1	0
547:	1	0	1	0	0	0	0	1	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
589:	1	0	0	0	1	0	0	0	1	0	0	0	0	0
603:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
617:	0	1	0	0	0	0	2	2	0	1	0	0	0	0
631:	2	1	1	0	1	0	2	1	0	0	2	2	0	1
645:	3	0	0	0	2	4	3	3	1	2	4	7	3	2
659:	8	3	5	0	3	2	2	1	1	1	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
743:	0	2	0	0	1	0	0	0	0	1	0	0	0	1
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	1	0	0	0	1	0	1	0	0	0	1	0
785:	1	0	0	0	0	0	0	0	0	0	1	0	0	1
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	1	0	1	0	0	0	0
939:	0	1	0	0	0	0	2	0	1	0	0	1	0	0
953:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:27:58.21

Detector ID: 26 Acquisition Start: 10-OCT-2005 06:44:49.01
Live Time: 0 02:50:07.00 Real Time: 0 02:50:08.00
Batch Id: 0509117A-TH Sample Id: 09
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3977.61	78	0	7.12	198.24	143	94	7.64E-03	11.3	
2	0	4647.81	88	0	82.56	409.51	339	96	8.62E-03	10.7	
3	0	4889.87	338	0	156.17	487.33	435	122	3.31E-02	5.4	
4	0	5381.39	83	0	20.47	648.00	572	100	8.13E-03	11.0	
5	0	5825.98	11	0	356.68	796.55	754	120	1.08E-03	30.2	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:28:03.08

Acquisition Start: 7-OCT-2005 17:06:40.01
Live Time: 0 16:40:04.00 Real Time: 0 16:40:04.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3952.07	7	0	240.17	189.50	143	94	1.17E-04	37.8	
2	0	4577.26	10	0	3.29	386.50	339	96	1.67E-04	31.6	
3	0	4916.44	9	0	3.29	495.50	435	122	1.50E-04	33.3	
4	0	5302.52	13	0	190.82	621.50	572	100	2.17E-04	27.7	
5	0	5878.50	4	0	0.00	813.50	754	120	6.67E-05	50.0	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:28:03.69

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3977.61*	77	0	7.12	198.24	143	94	7.53E-03	11.5	
2	0	4647.81*	86	0	82.56	409.51	339	96	8.45E-03	10.9	
3	0	4889.87*	336	0	156.17	487.33	435	122	3.30E-02	5.5	
4	0	5381.39*	81	0	20.47	648.00	572	100	7.92E-03	11.3	
5	0	5825.98*	10	0	356.68	796.55	754	120	1.01E-03	32.3	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:28:04

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL06
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 10-OCT-2005 06:44:49
Sample ID : 09 Sample quantity : 1.0111 gram
Sample type : TH Sample geometry :
Detector name : 026 Detector geometry:
Elapsed live time: 0 02:50:07.00 Elapsed real time: 0 02:50:08.00 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3977.61*	77	7.12	198.24	143	94	23.0		TH-232	1.06
0	4647.81*	86	82.56	409.51	339	96	21.8		TH-230	1.20
0	4889.87*	336	156.17	487.33	435	122	10.9		TH229	4.68
0	5381.39*	81	20.47	648.00	572	100	22.6		TH-228	1.13
0	5825.98*	10	356.68	796.55	754	120	64.6		TH-227	0.147

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:28:15

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$10_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	10
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.038E+00 gram
SAMPLE TITLE:	VPBR092705SL07	DETECTOR NUMBER:	027
ACQ DATE:	10-OCT-2005 06:45	AVERAGE EFFICIENCY:	20.13%
ELAPSED LIVE TIME:	10206.	RECOVERY:	71.75%
TRACER ID:	TH-18A	TRACER FWHM (kev):	100.05
LAMBDA VALUE:	452.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.161	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	6-OCT-2005 04:40	EFF CAL DATE:	6-OCT-2005 04:40
BKG FILENAME:	B_027_7OCT05	BKG ELAPSED TIME:	60002.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	9.83	0.17	97.5	1.783E-01	1.189E-01	8.383E-02
TH-228	5400.0	51.81	1.19	99.9	9.278E-01	3.063E-01	1.376E-01
TH229	4872.0	248.49	0.51	99.5	4.410E+00	6.949E-01	1.070E-01
TH-230	4672.0	106.15	0.85	99.8	1.878E+00	4.887E-01	1.238E-01
TH-232	3997.0	63.49	0.51	100.0	1.121E+00	3.425E-01	1.065E-01

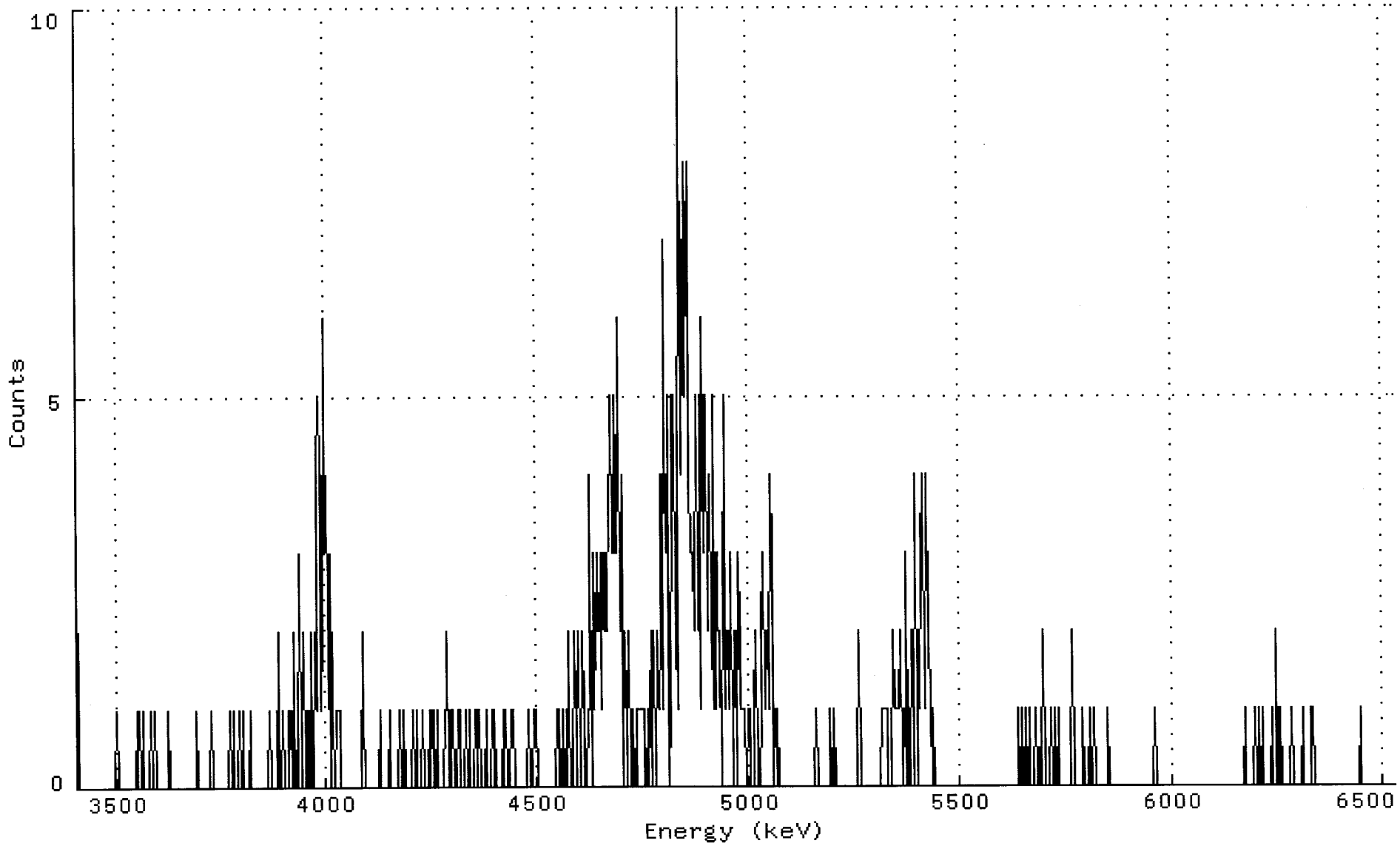
****

*** Tracer FWHM > 80.0 Kev ***

Analyst _____ Date 10-10-05

Reviewer _____ Date 10/10/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$10_TH.CNF;1
Title : 027
Sample Title: VPBR092705SL07
Start Time: 10-OCT-2005 06:45 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.39555E+03
Real Time : 0 02:50:06.00 Sample ID : 10 Energy Slope : 3.26635E+00
Live Time : 0 02:50:06.00 Sample Type: TH Energy Quad : -2.03839E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$10_TH

Channel

1:	10206	10206	0	2	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	1	0	1	0	1	0	0	0	0	0
57:	1	0	0	1	0	0	0	0	0	0	0	0	0	1
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
99:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	1	0	1	0	0	0	0	1	0	1	0
127:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	1	1	0	0	0	0	0	2	0	0
155:	1	0	0	0	0	1	1	0	2	0	0	1	0	3
169:	0	0	2	0	1	0	0	2	0	0	2	1	4	5
183:	4	1	2	6	3	4	2	0	3	1	0	0	1	1
197:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
211:	0	0	0	2	1	0	0	0	0	0	0	0	0	0
225:	0	0	1	0	0	0	0	0	0	1	0	0	0	0
239:	0	0	0	1	0	0	1	0	0	0	0	0	0	1
253:	0	1	0	0	0	0	1	0	0	0	0	1	0	1
267:	1	0	0	1	0	0	0	0	0	1	1	2	0	1
281:	0	1	0	0	0	1	1	0	0	0	0	1	0	1
295:	0	0	0	0	1	1	0	1	0	0	0	0	1	0
309:	0	0	0	1	0	1	0	0	0	0	0	1	0	1
323:	0	0	0	1	1	1	0	0	0	0	0	0	0	0
337:	0	0	1	1	0	0	1	1	1	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	0	0	1	0	1	0
365:	0	1	0	0	2	1	0	1	0	2	1	0	2	0
379:	0	2	1	0	0	1	1	4	0	3	1	2	3	2
393:	2	3	1	3	3	2	2	4	4	5	3	5	3	3
407:	6	5	2	4	0	2	1	0	2	0	0	1	0	0
421:	1	1	1	1	1	1	0	0	1	0	1	2	0	2
435:	0	2	2	1	2	4	1	7	4	3	5	0	1	4
449:	5	5	2	2	1	10	5	4	6	8	5	7	8	4
463:	3	3	3	2	5	5	2	5	1	6	3	5	5	2
477:	2	4	2	1	5	1	3	2	2	0	1	2	5	1
491:	2	2	1	3	0	0	2	2	0	3	2	1	1	1
505:	0	0	1	1	0	0	0	1	2	0	1	0	1	2
519:	3	1	1	2	1	1	4	3	0	1	0	1	0	0
533:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
561:	0	0	0	0	0	0	0	0	0	1	0	0	1	0
575:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
589:	0	0	0	2	0	0	0	0	0	0	0	0	0	0
603:	0	0	0	0	0	0	0	1	1	1	1	1	0	0
617:	0	0	2	1	1	1	1	1	2	0	0	1	0	3
631:	0	0	0	2	0	0	4	0	1	1	3	3	4	1
645:	1	4	2	2	1	0	1	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	1	0	0	1	0	0	1	0	1	0
729:	0	0	0	1	0	0	0	1	0	2	0	0	0	0
743:	0	1	0	0	0	1	0	1	0	0	0	0	0	0
757:	0	0	0	0	2	0	0	0	0	0	0	0	1	0
771:	0	0	0	1	0	0	0	1	0	0	0	0	0	0
785:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	1	0	0	0	0	0	0	0	1	0
911:	0	0	1	0	1	0	0	0	0	0	0	0	1	0
925:	0	0	2	0	0	1	0	0	0	0	0	0	0	0
939:	1	0	0	0	0	0	0	0	0	1	0	0	0	0
953:	0	0	1	1	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:28:09.13

Detector ID: 27 Acquisition Start: 10-OCT-2005 06:45:07.01
Live Time: 0 02:50:06.00 Real Time: 0 02:50:06.00
Batch Id: 0509117A-TH Sample Id: 10
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3973.44	64	0	25.56	178.92	125	95	6.27E-03	12.5	
2	0	4641.67	107	0	80.18	391.05	322	97	1.05E-02	9.7	
3	0	4882.61	249	0	100.05	469.00	418	123	2.44E-02	6.3	
4	0	5369.66	53	0	56.62	629.08	556	101	5.19E-03	13.7	
5	0	5790.07	10	0	3.27	770.10	740	120	9.80E-04	31.6	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:28:13.51

Acquisition Start: 7-OCT-2005 17:06:43.01
Live Time: 0 16:40:02.00 Real Time: 0 16:40:02.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3953.82	3	0	249.50	172.00	125	95	5.00E-05	57.7	
2	0	4576.56	5	0	239.78	370.00	322	97	8.33E-05	44.7	
3	0	4913.51	3	0	243.02	479.00	418	123	5.00E-05	57.7	
4	0	5300.85	7	0	4.02	606.00	556	101	1.17E-04	37.8	
5	0	5880.12	1	0	3.24	799.50	740	120	1.67E-05	100.0	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:28:13.79

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3973.44*	63	0	25.56	178.92	125	95	6.22E-03	12.6	
2	0	4641.67*	106	0	80.18	391.05	322	97	1.04E-02	9.8	
3	0	4882.61*	248	0	100.05	469.00	418	123	2.43E-02	6.4	
4	0	5369.66*	52	0	56.62	629.08	556	101	5.08E-03	14.1	
5	0	5790.07*	10	0	3.27	770.10	740	120	9.63E-04	32.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:28:14

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL07		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 10-OCT-2005 06:45:07
Sample ID	: 10	Sample quantity	: 1.0379 gram
Sample type	: TH	Sample geometry	:
Detector name	: 027	Detector geometry	:
Elapsed live time	: 0 02:50:06.00	Elapsed real time	: 0 02:50:06.00 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3973.44*	63	25.56	178.92	125	95	25.2		TH-232	0.805
0	4641.67*	106	80.18	391.05	322	97	19.5		TH-230	1.35
0	4882.61*	248	100.05	469.00	418	123	12.7		TH229	3.16
0	5369.66*	52	56.62	629.08	556	101	28.2		TH-228	0.666
0	5790.07*	10	3.27	770.10	740	120	64.4		TH-227	0.128

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:28:31

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$11_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	11
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.000E+00 gram
SAMPLE TITLE:	VPBR092705SL08	DETECTOR NUMBER:	028
ACQ DATE:	10-OCT-2005 06:45	AVERAGE EFFICIENCY:	20.57%
ELAPSED LIVE TIME:	10205.	RECOVERY:	82.63%
TRACER ID:	TH-18A	TRACER FWHM (kev):	130.94
LAMBDA VALUE:	454.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.197	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	6-OCT-2005 04:40	EFF CAL DATE:	6-OCT-2005 04:40
BKG FILENAME:	B_028_7OCT05	BKG ELAPSED TIME:	60003.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	13.64	1.36	97.5	2.182E-01	1.300E-01	1.300E-01
TH-228	5400.0	78.64	1.36	99.9	1.242E+00	3.494E-01	1.268E-01
TH229	4872.0	293.32	0.68	99.5	4.592E+00	6.866E-01	1.025E-01
TH-230	4672.0	135.32	0.68	99.8	2.112E+00	5.040E-01	1.022E-01
TH-232	3997.0	107.66	0.34	100.0	1.677E+00	4.260E-01	8.448E-02

****

*** Tracer FWHM > 80.0 Kev ***

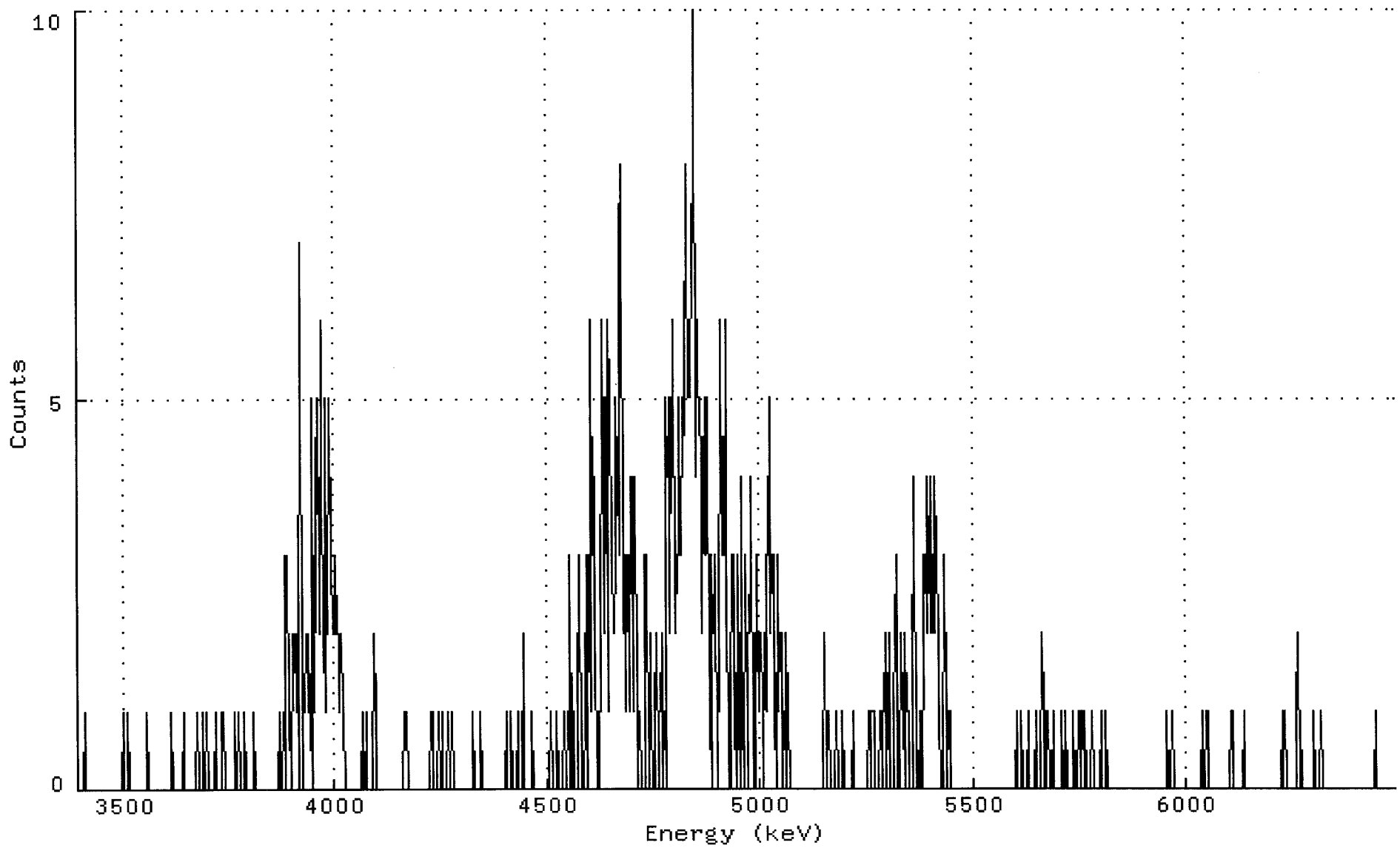
Jeff Price
Analyst

10-10-05
Date

Alan Gregsley
Reviewer

10/10/05
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$11_TH.CNF;1
Title : 028
Sample Title: VPBR092705SL08
Start Time: 10-OCT-2005 06:45 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.38307E+03
Real Time : 0 02:50:05.00 Sample ID : 11 Energy Slope : 3.21498E+00
Live Time : 0 02:50:05.00 Sample Type: TH Energy Quad : -1.79244E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$11_TH

Channel

1:	10205	10205	0	0	0	0	0	1	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	1	0	0	0	1	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	1	0	0	0	0	0	0	0	0	1	0	0	0
85:	0	0	0	0	0	0	1	0	0	0	0	1	0	1
99:	0	0	0	0	0	0	1	0	0	0	0	1	1	0
113:	0	0	0	0	0	0	0	1	0	1	0	0	0	0
127:	1	0	0	0	0	0	0	1	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
155:	0	1	0	3	3	1	1	0	2	2	2	1	3	0
169:	7	0	2	1	2	1	2	1	0	5	1	3	4	5
183:	2	6	4	2	1	5	2	5	3	3	2	2	3	2
197:	2	1	2	1	0	0	0	0	0	0	0	0	0	0
211:	0	0	0	1	0	0	1	0	0	0	0	0	2	1
225:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
239:	0	0	0	0	0	0	0	1	1	1	0	0	0	0
253:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
267:	1	0	0	0	0	1	0	1	0	0	0	0	1	0
281:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	1	0	0	0	0	0	1	0	0	0	0
309:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	1	0	0	0	1	0	0	0	0	1	0	0	0	2
337:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	1	0	0	0	0	1	0	0
365:	0	0	1	0	0	1	0	3	0	1	0	0	0	1
379:	3	0	0	0	1	3	0	3	1	6	3	4	2	0
393:	0	1	1	6	2	5	5	1	6	5	3	3	2	3
407:	5	4	3	7	8	2	3	1	3	1	2	4	1	4
421:	4	1	0	1	0	0	0	0	3	3	0	2	1	0
435:	0	1	2	0	1	1	2	0	1	0	5	4	5	2
449:	5	4	6	2	3	3	5	3	5	4	5	8	7	5
463:	6	5	7	8	10	4	6	5	5	4	2	4	5	3
477:	5	1	0	3	2	2	3	0	3	1	6	3	4	3
491:	6	3	0	0	1	3	3	1	0	3	1	0	4	1
505:	0	3	0	2	2	3	4	0	2	0	3	1	2	2
519:	1	0	2	1	3	3	5	2	3	3	1	0	3	1
533:	2	2	0	1	0	2	1	0	0	0	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	2	0	0	1	0	0	0	0
575:	0	1	0	0	0	0	1	0	0	0	0	0	0	0
589:	1	0	0	0	0	0	0	0	0	0	0	0	1	0
603:	1	1	1	0	0	0	0	1	0	1	1	2	0	1
617:	2	0	0	0	1	2	3	0	0	2	2	1	0	2
631:	1	1	0	0	0	1	4	0	0	0	1	0	0	2
645:	3	3	2	4	3	2	4	2	2	4	3	2	1	0
659:	0	0	3	1	0	1	1	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	1	0	0	0	1	0	0	0	0	1	0
729:	0	0	0	0	1	0	0	0	0	2	1	0	0	1
743:	1	0	0	0	1	0	0	0	0	0	0	1	0	0
757:	1	0	0	0	0	0	1	0	0	0	1	0	1	1
771:	0	1	0	0	0	0	0	1	0	0	0	0	0	0
785:	1	0	0	0	1	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
841:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
869:	0	1	1	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	1	1	0	0	0	0	0
897:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	1	0	1	1	0	0	0	0
939:	0	0	0	0	1	2	0	1	0	0	0	0	0	0
953:	0	0	0	0	1	0	0	0	0	0	1	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:28:18.95

Detector ID: 28 Acquisition Start: 10-OCT-2005 06:45:24.01
Live Time: 0 02:50:05.00 Real Time: 0 02:50:05.00
Batch Id: 0509117A-TH Sample Id: 11
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3960.05	108	0	71.53	181.30	131	96	1.06E-02	9.6	
2	0	4637.20	136	0	77.11	398.96	330	99	1.33E-02	8.6	
3	0	4878.35	294	0	130.94	477.83	428	124	2.88E-02	5.8	
4	0	5355.67	80	0	126.95	636.12	568	101	7.84E-03	11.2	
5	0	5838.59	15	0	379.37	799.40	752	121	1.47E-03	25.8	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:28:29.29

Acquisition Start: 7-OCT-2005 17:06:45.01
Live Time: 0 16:40:03.00 Real Time: 0 16:40:03.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3949.24	2	0	61.64	178.50	131	96	3.33E-05	70.7	
2	0	4576.03	4	0	158.96	379.00	330	99	6.67E-05	50.0	
3	0	4914.20	4	0	278.99	489.50	428	124	6.67E-05	50.0	
4	0	5300.95	8	0	256.28	618.00	568	101	1.33E-04	35.4	
5	0	5871.62	8	0	0.00	812.00	752	121	1.33E-04	35.4	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:28:29.59

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3960.05*	108	0	71.53	181.30	131	96	1.05E-02	9.7	
2	0	4637.20*	135	0	77.11	398.96	330	99	1.33E-02	8.6	
3	0	4878.35*	293	0	130.94	477.83	428	124	2.87E-02	5.8	
4	0	5355.67*	79	0	126.95	636.12	568	101	7.71E-03	11.4	
5	0	5838.59*	14	0	379.37	799.40	752	121	1.34E-03	28.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:28:30

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL08
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 10-OCT-2005 06:45:24
Sample ID : 11 Sample quantity : 1.0003 gram
Sample type : TH Sample geometry :
Detector name : 028 Detector geometry:
Elapsed live time: 0 02:50:05.00 Elapsed real time: 0 02:50:05.00 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3960.05*	108	71.53	181.30	131	96	19.3		TH-232	1.39
0	4637.20*	135	77.11	398.96	330	99	17.2		TH-230	1.75
0	4878.35*	293	130.94	477.83	428	124	11.7		TH229	3.79
0	5355.67*	79	126.95	636.12	568	101	22.8		TH-228	1.03
0	5838.59*	14	379.37	799.40	752	121	57.2		TH-227	0.180

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ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:28:54

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$12_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	12
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.194E+00 gram
SAMPLE TITLE:	VPBR092705SL09	DETECTOR NUMBER:	029
ACQ DATE:	10-OCT-2005 06:45	AVERAGE EFFICIENCY:	19.97%
ELAPSED LIVE TIME:	10202.	RECOVERY:	95.80%
TRACER ID:	TH-18A	TRACER FWHM (kev):	120.59
LAMBDA VALUE:	453.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.188	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	6-OCT-2005 04:40	EFF CAL DATE:	6-OCT-2005 04:40
BKG FILENAME:	B_029_7OCT05	BKG ELAPSED TIME:	60001.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	11.32	0.68	97.5	1.348E-01	8.568E-02	7.786E-02
TH-228	5400.0	69.96	2.04	99.9	8.227E-01	2.397E-01	1.085E-01
TH229	4872.0	329.81	1.19	99.5	3.844E+00	5.554E-01	9.071E-02
TH-230	4672.0	115.13	1.87	99.8	1.338E+00	3.307E-01	1.054E-01
TH-232	3997.0	74.66	0.34	100.0	8.659E-01	2.443E-01	6.288E-02

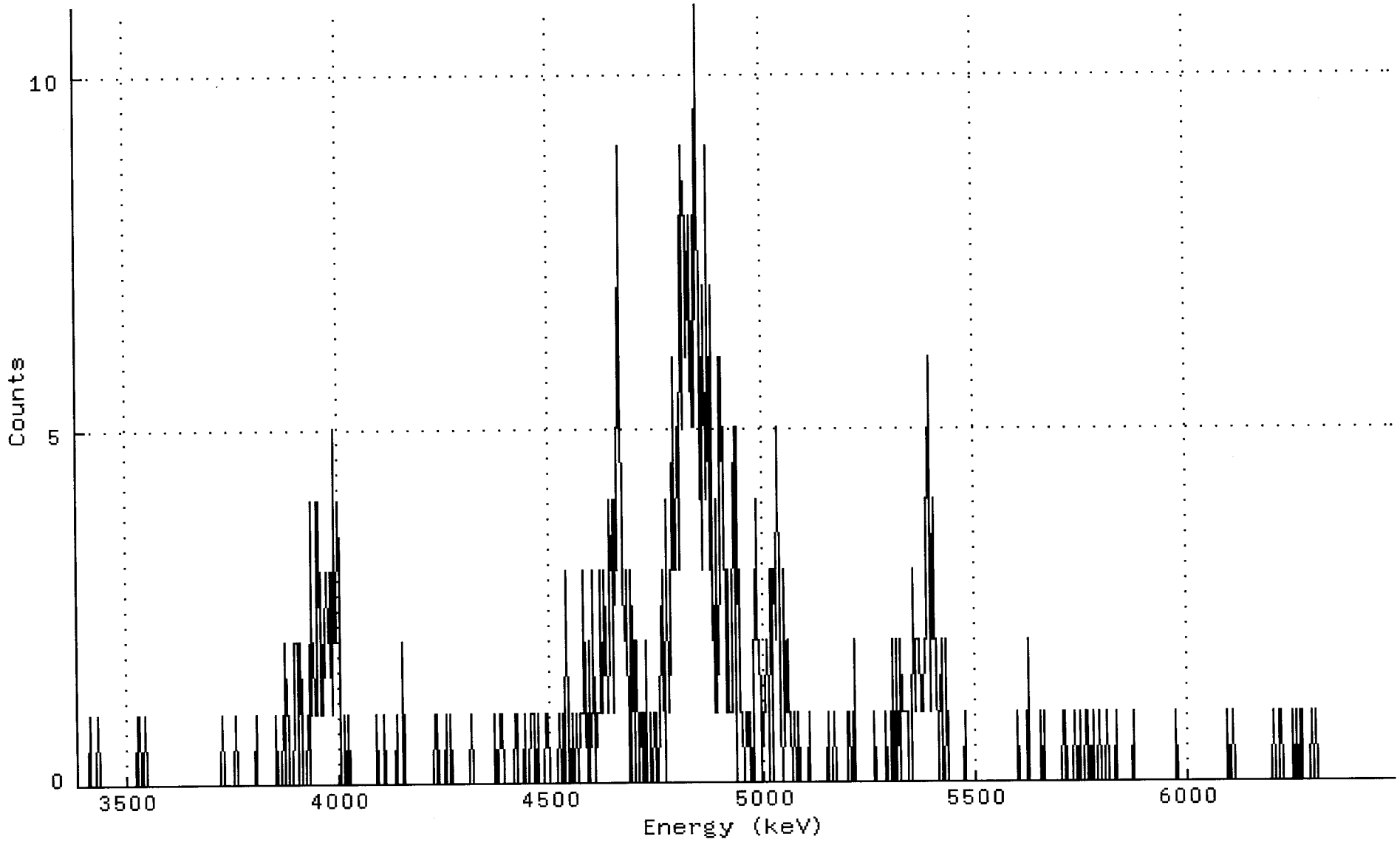
****

*** Tracer FWHM > 80.0 Kev ***

Analyst _____ Date 10-10-05

Reviewer _____ Date 10/10/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$12_TH.CNF;1
Title : 029
Sample Title: VPBR092705SL09
Start Time: 10-OCT-2005 06:45 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.37155E+03
Real Time : 0 02:50:02.00 Sample ID : 12 Energy Slope : 3.24083E+00
Live Time : 0 02:50:02.00 Sample Type: TH Energy Quad : -2.02314E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$12_TH

Channel

1:	10202	10202	0	0	0	0	0	0	0	0	0	1	0	0
15:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	1	0	1	0	0	0	1	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
113:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
155:	1	0	2	1	1	0	0	0	1	2	2	2	0	2
169:	1	0	0	0	1	1	0	4	1	2	1	1	4	4
183:	1	3	1	2	2	3	2	3	2	1	5	2	2	4
197:	3	0	0	0	1	0	0	1	0	0	0	0	0	0
211:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225:	1	0	0	0	0	0	1	0	0	0	0	0	0	0
239:	0	1	0	0	0	0	2	0	0	0	0	0	0	0
253:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
267:	0	0	1	0	1	0	0	0	0	0	1	0	0	0
281:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	0	0	0	0	1	0	0	1	1	1	0	0	0
323:	0	0	0	0	0	0	1	1	0	0	0	0	0	1
337:	0	0	0	0	1	1	1	0	0	1	0	0	0	0
351:	0	1	1	1	0	0	0	0	0	0	0	1	1	0
365:	0	1	0	3	0	0	0	1	0	0	1	1	0	1
379:	1	1	1	3	1	0	2	0	1	1	3	0	1	1
393:	1	1	3	1	2	3	2	1	2	4	3	4	1	4
407:	3	5	5	9	6	3	2	2	3	0	0	3	2	0
421:	2	2	0	0	1	0	1	0	2	0	0	0	1	0
435:	1	1	0	0	1	1	2	3	2	0	4	3	1	2
449:	3	3	6	3	3	5	4	3	8	5	9	8	8	6
463:	7	8	6	5	8	5	8	11	11	4	6	3	7	4
477:	5	9	3	7	3	1	4	1	2	3	6	6	3	5
491:	1	3	1	1	1	2	4	5	0	5	1	1	1	0
505:	1	1	1	0	1	0	0	2	2	4	2	2	1	0
519:	1	1	1	2	1	0	3	0	3	3	2	2	5	2
533:	1	0	1	3	1	2	1	1	0	1	1	0	0	1
547:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0	1	0	0	0	0	1
575:	0	0	0	0	0	0	0	0	0	0	1	1	0	0
589:	0	2	0	0	0	0	0	0	0	0	0	0	0	0
603:	0	0	0	1	0	0	0	0	0	0	0	0	1	0
617:	0	0	0	2	0	0	2	0	1	0	2	1	1	1
631:	1	1	0	0	0	0	3	1	2	2	2	2	1	1
645:	1	2	2	4	4	6	1	3	4	2	2	0	1	1
659:	2	0	0	1	2	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	1	0	0	0	0	0	0	0	2	0
729:	0	0	0	0	0	0	0	0	1	0	1	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
757:	1	0	0	0	0	0	0	1	0	0	0	1	0	0
771:	0	0	1	0	1	0	0	0	1	0	0	0	0	1
785:	0	0	0	0	0	1	0	0	0	0	0	0	1	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	1	0	0	0	1	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	1	0	0	0	0	1	1	0	0	0	0	0	0	0
939:	0	0	1	0	0	1	0	0	1	1	0	0	0	0
953:	0	0	0	1	0	0	1	1	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
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Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:28:35.01

Detector ID: 29 Acquisition Start: 10-OCT-2005 06:45:43.01
Live Time: 0 02:50:02.00 Real Time: 0 02:50:02.00
Batch Id: 0509117A-TH Sample Id: 12
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3953.58	75	0	69.80	181.65	133	96	7.35E-03	11.5	
2	0	4628.40	117	0	12.13	397.69	332	98	1.15E-02	9.2	
3	0	4875.91	331	0	120.59	478.48	429	124	3.24E-02	5.5	
4	0	5358.13	72	0	19.18	638.43	569	101	7.06E-03	11.8	
5	0	5785.81	12	0	298.16	783.25	754	121	1.18E-03	28.9	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:28:52.77

Acquisition Start: 7-OCT-2005 17:06:48.01
Live Time: 0 16:40:01.00 Real Time: 0 16:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3948.61	2	0	197.13	180.50	133	96	3.33E-05	70.7	
2	0	4573.87	11	0	3.23	380.50	332	98	1.83E-04	30.2	
3	0	4911.37	7	0	381.34	490.50	429	124	1.17E-04	37.8	
4	0	5299.87	12	0	3.23	619.00	569	101	2.00E-04	28.9	
5	0	5877.59	4	0	0.00	814.00	754	121	6.67E-05	50.0	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:28:53.09

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3953.58*	75	0	69.80	181.65	133	96	7.32E-03	11.6	
2	0	4628.40*	115	0	12.13	397.69	332	98	1.13E-02	9.4	
3	0	4875.91*	330	0	120.59	478.48	429	124	3.23E-02	5.5	
4	0	5358.13*	70	0	19.18	638.43	569	101	6.86E-03	12.2	
5	0	5785.81*	11	0	298.16	783.25	754	121	1.11E-03	30.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:28:53

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL09		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 10-OCT-2005 06:45:43
Sample ID	: 12	Sample quantity	: 1.1940 gram
Sample type	: TH	Sample geometry	:
Detector name	: 029	Detector geometry	:
Elapsed live time	: 0 02:50:02.00	Elapsed real time	: 0 02:50:02.00 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3953.58*	75	69.80	181.65	133	96	23.2		TH-232	0.830
0	4628.40*	115	12.13	397.69	332	98	18.8		TH-230	1.28
0	4875.91*	330	120.59	478.48	429	124	11.0		TH229	3.68
0	5358.13*	70	19.18	638.43	569	101	24.3		TH-228	0.788
0	5785.81*	11	298.16	783.25	754	121	61.5		TH-227	0.129

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ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:29:07

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$13_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	13
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	9.984E-01 gram
SAMPLE TITLE:	VPBR092705SL10	DETECTOR NUMBER:	030
ACQ DATE:	10-OCT-2005 06:46	AVERAGE EFFICIENCY:	20.12%
ELAPSED LIVE TIME:	10201.	RECOVERY:	94.55%
TRACER ID:	TH-18A	TRACER FWHM (kev):	106.39
LAMBDA VALUE:	460.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.348	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	6-OCT-2005 04:41	EFF CAL DATE:	6-OCT-2005 04:41
BKG FILENAME:	B_030_7OCT05	BKG ELAPSED TIME:	60002.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	10.15	0.85	97.5	1.454E-01	9.841E-02	1.001E-01
TH-228	5400.0	64.98	1.02	99.9	9.189E-01	2.731E-01	1.034E-01
TH229	4872.0	333.13	1.87	99.5	4.669E+00	6.729E-01	1.271E-01
TH-230	4672.0	94.81	1.19	99.8	1.325E+00	3.465E-01	1.087E-01
TH-232	3997.0	96.98	1.02	100.0	1.353E+00	3.511E-01	1.033E-01

****

*** Tracer FWHM > 80.0 Kev ***

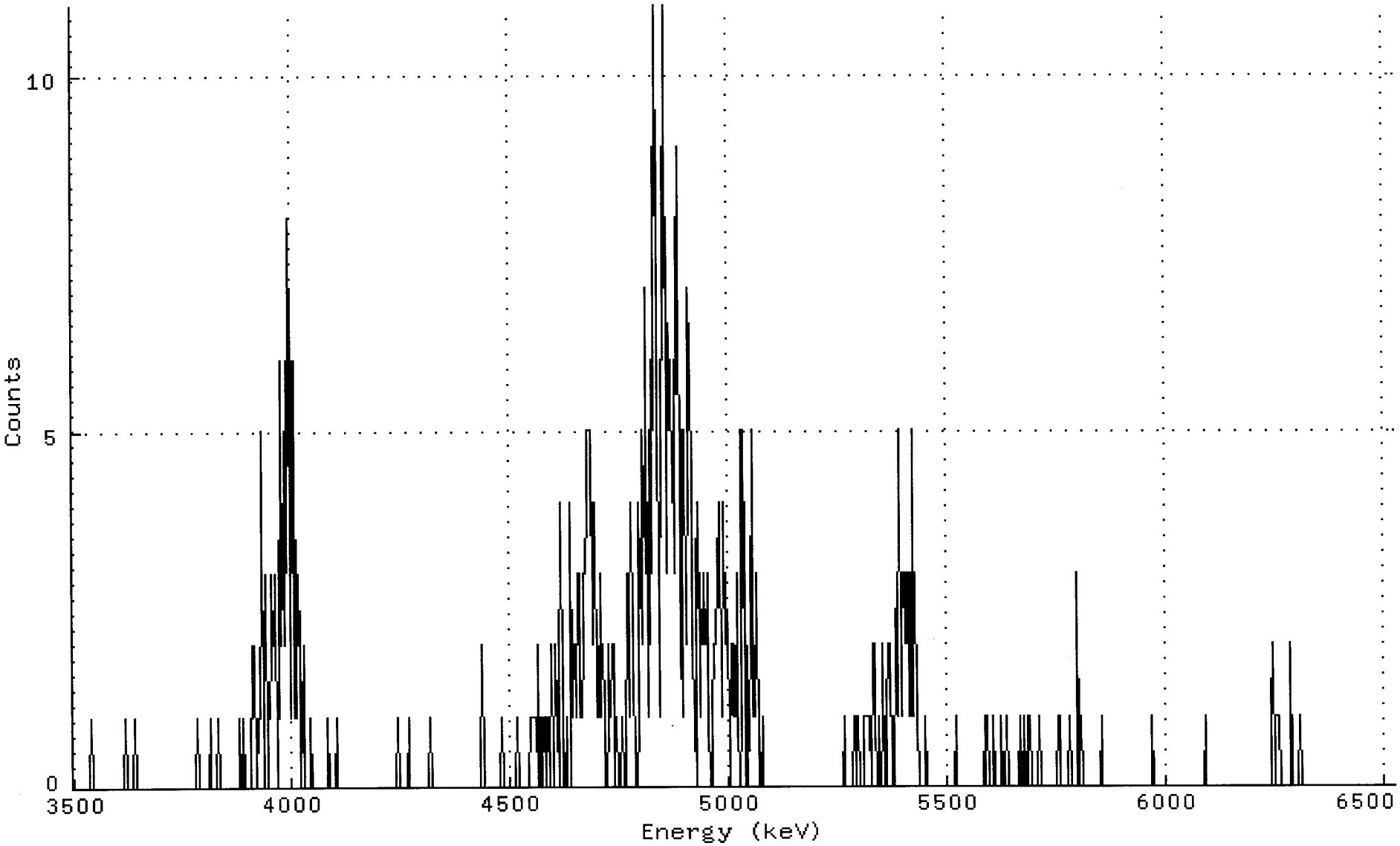
Jeff Price
Analyst

10-10-05
Date

Alan Gregory
Reviewer

10/10/05
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$13_TH.CNF;1
Title : 030
Sample Title: VPBR092705SL10
Start Time: 10-OCT-2005 06:46 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.48802E+03
Real Time : 0 02:50:01.00 Sample ID : 13 Energy Slope : 3.16831E+00
Live Time : 0 02:50:01.00 Sample Type: TH Energy Quad : -2.01309E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$13_TH

Channel

1:	10201	10201	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
43:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
99:	0	0	0	0	0	1	0	0	0	0	0	1	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
127:	0	0	1	0	0	0	0	0	2	1	2	0	1	1
141:	1	3	5	0	3	0	1	1	2	3	2	3	0	1
155:	1	6	2	3	5	2	4	8	1	7	5	1	6	1
169:	3	2	0	1	2	0	0	0	0	1	0	0	0	0
183:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
197:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
211:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
239:	0	0	0	0	1	0	0	0	0	0	0	0	1	0
253:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
267:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	0	0	0	2	0	0
309:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
323:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
337:	0	0	0	0	0	1	1	1	1	1	0	2	0	0
351:	1	1	0	1	1	0	0	2	0	2	2	1	0	1
365:	4	1	0	0	1	0	0	0	4	1	2	2	1	3
379:	3	1	1	2	3	3	4	5	5	5	2	4	4	1
393:	2	1	3	1	2	1	0	0	1	2	1	2	2	0
407:	1	0	0	0	1	1	0	0	0	3	1	2	4	2
421:	2	0	0	1	4	3	2	5	4	3	7	1	3	5
435:	3	9	5	11	8	7	1	6	6	7	11	3	8	5
449:	6	6	4	6	3	8	8	9	2	1	5	5	2	5
463:	7	6	4	2	1	0	3	4	1	3	2	3	2	2
477:	3	1	0	0	1	2	2	2	3	4	1	1	4	2
491:	3	2	1	0	2	1	2	1	3	1	0	1	5	5
505:	0	4	0	1	1	2	5	1	1	3	0	0	0	1
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
589:	0	1	1	0	1	0	0	0	0	1	1	1	1	1
603:	0	0	2	2	1	0	1	0	0	1	2	0	0	1
617:	2	1	2	0	0	0	2	3	1	5	1	2	3	2
631:	3	3	1	3	1	5	1	3	1	1	0	0	0	0
645:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	1	0	1	0	0	0	0	1	0
701:	0	0	0	0	1	0	0	0	1	0	0	0	0	0
715:	0	0	0	0	1	0	0	1	0	0	1	0	1	0
729:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	1	1	0	0	0	0	0
757:	0	0	1	0	0	0	0	0	0	3	0	1	1	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	1	2	0
925:	1	1	1	1	0	0	0	0	0	0	0	0	0	2
939:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:28:58.79

Detector ID: 30 Acquisition Start: 10-OCT-2005 06:46:00.01
Live Time: 0 02:50:01.00 Real Time: 0 02:50:01.00
Batch Id: 0509117A-TH Sample Id: 13
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3975.86	98	0	78.78	155.51	99	98	9.61E-03	10.1	
2	0	4648.02	96	0	97.26	375.06	302	100	9.41E-03	10.2	
3	0	4890.38	335	0	106.39	455.82	401	126	3.28E-02	5.5	
4	0	5381.01	66	0	46.73	622.06	543	104	6.47E-03	12.3	
5	0	5800.73	11	0	3.17	767.36	732	124	1.08E-03	30.2	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:29:04.88

Acquisition Start: 7-OCT-2005 17:06:51.01
Live Time: 0 16:40:02.00 Real Time: 0 16:40:02.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3945.60	6	0	206.40	147.50	99	98	1.00E-04	40.8	
2	0	4572.05	7	0	285.79	351.50	302	100	1.17E-04	37.8	
3	0	4908.57	11	0	339.77	463.50	401	126	1.83E-04	30.2	
4	0	5295.52	6	0	107.96	594.50	543	104	1.00E-04	40.8	
5	0	5869.56	5	0	276.26	793.50	732	124	8.33E-05	44.7	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:29:05.16

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3975.86*	97	0	78.78	155.51	99	98	9.51E-03	10.2	
2	0	4648.02*	95	0	97.26	375.06	302	100	9.29E-03	10.3	
3	0	4890.38*	333	0	106.39	455.82	401	126	3.27E-02	5.5	
4	0	5381.01*	65	0	46.73	622.06	543	104	6.37E-03	12.5	
5	0	5800.73*	10	0	3.17	767.36	732	124	9.95E-04	32.9	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:29:06

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL10		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 10-OCT-2005 06:46:00
Sample ID	: 13	Sample quantity	: 0.99840 gram
Sample type	: TH	Sample geometry	:
Detector name	: 030	Detector geometry	:
Elapsed live time	: 0 02:50:01.00	Elapsed real time	: 0 02:50:01.00 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3975.86*	97	78.78	155.51	99	98	20.4		TH-232	1.28
0	4648.02*	95	97.26	375.06	302	100	20.7		TH-230	1.25
0	4890.38*	333	106.39	455.82	401	126	11.0		TH229	4.41
0	5381.01*	65	46.73	622.06	543	104	25.0		TH-228	0.869
0	5800.73*	10	3.17	767.36	732	124	65.8		TH-227	0.137

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:29:19

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$14_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	14
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.059E+00 gram
SAMPLE TITLE:	VPBR092705SL11	DETECTOR NUMBER:	031
ACQ DATE:	10-OCT-2005 06:46	AVERAGE EFFICIENCY:	19.85%
ELAPSED LIVE TIME:	10207.	RECOVERY:	96.78%
TRACER ID:	TH-18A	TRACER FWHM (kev):	86.27
LAMBDA VALUE:	453.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.184	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	6-OCT-2005 04:41	EFF CAL DATE:	6-OCT-2005 04:41
BKG FILENAME:	B_031_7OCT05	BKG ELAPSED TIME:	60003.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	24.32	0.68	97.5	3.249E-01	1.437E-01	8.736E-02
TH-228	5400.0	42.47	1.53	99.9	5.603E-01	1.972E-01	1.102E-01
TH229	4872.0	331.15	0.85	99.5	4.330E+00	6.247E-01	9.150E-02
TH-230	4672.0	124.15	0.85	99.8	1.618E+00	3.902E-01	9.123E-02
TH-232	3997.0	56.83	0.17	100.0	7.395E-01	2.295E-01	6.022E-02

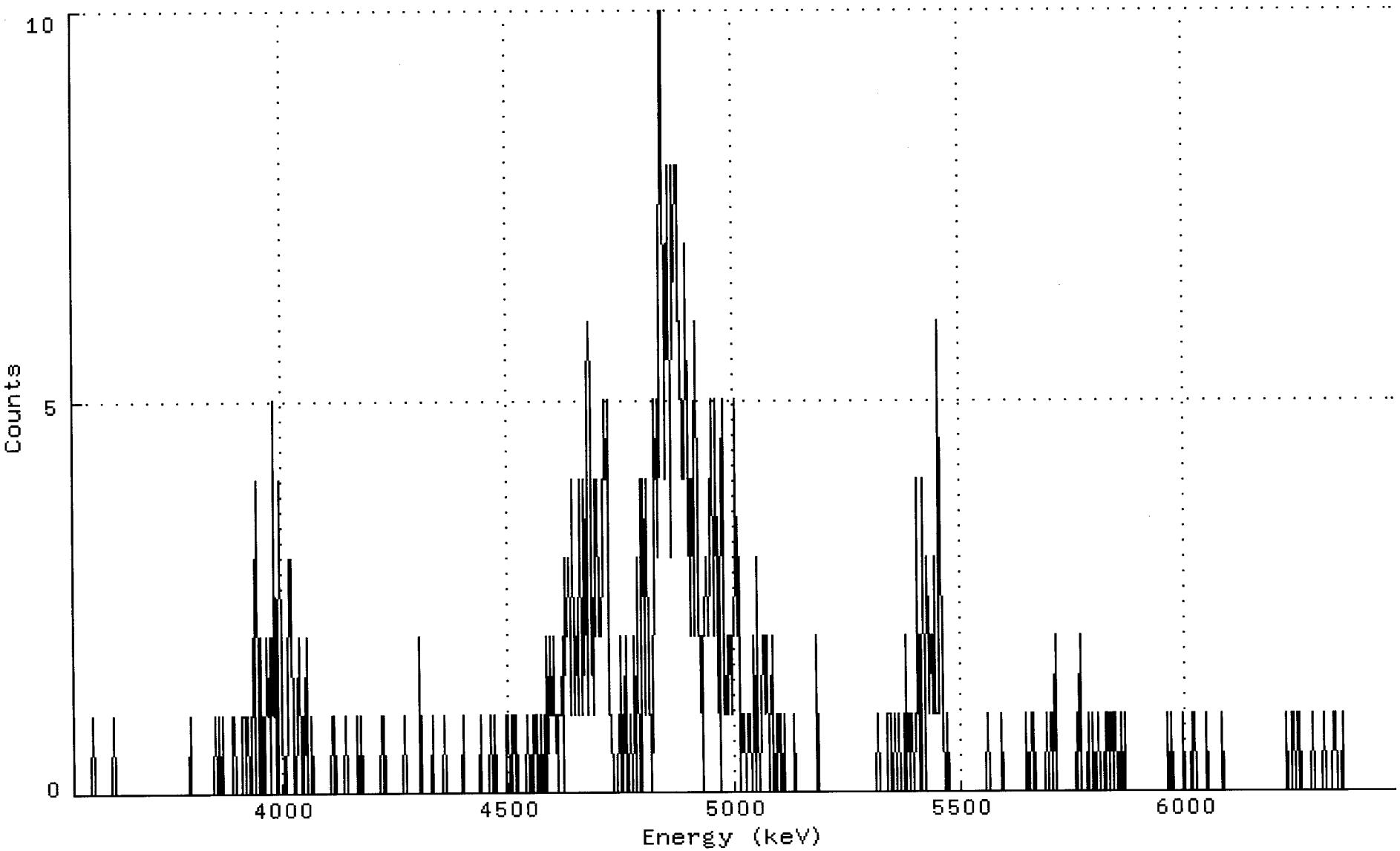
****

*** Tracer FWHM > 80.0 Kev ***

Analyst _____ Date 10-10-05

Reviewer _____ Date 10/10/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$14_TH.CNF;1
Title : 031
Sample Title: VPBR092705SL11
Start Time: 10-OCT-2005 06:46 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.52603E+03
Real Time : 0 02:50:06.00 Sample ID : 14 Energy Slope : 3.04949E+00
Live Time : 0 02:50:07.00 Sample Type: TH Energy Quad : -1.80019E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$14_TH

Channel

1:	10206	10207	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	1	0	0	1	0
113:	1	0	0	0	0	0	0	0	1	1	0	0	0	0
127:	0	1	1	1	0	1	0	0	1	1	3	0	4	0
141:	0	2	0	0	0	2	1	2	0	2	1	5	0	0
155:	1	4	1	0	0	0	1	1	3	3	0	1	0	1
169:	1	2	0	1	0	1	2	0	0	0	1	0	0	0
183:	0	0	0	0	0	0	0	0	0	0	0	1	0	1
197:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
211:	0	0	1	0	0	1	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	1	0	1	0	0	0	0	0
239:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
253:	0	0	0	0	0	0	0	2	0	0	0	0	0	0
267:	0	0	1	0	0	0	0	0	0	0	0	1	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
295:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
309:	0	0	0	0	1	0	0	1	0	0	0	0	0	0
323:	0	0	1	1	0	0	1	1	0	1	0	0	0	0
337:	0	0	0	1	0	0	0	1	0	1	0	1	0	0
351:	1	0	0	2	0	1	2	1	1	2	1	1	0	1
365:	1	1	2	0	3	2	2	3	2	1	4	1	1	2
379:	1	1	4	1	2	4	3	1	5	6	5	2	1	4
393:	2	4	2	3	2	3	5	4	4	5	1	1	0	0
407:	0	0	0	1	0	2	0	1	2	0	0	1	1	0
421:	1	2	0	3	2	0	0	4	4	1	3	4	1	1
435:	0	1	3	5	4	5	3	5	10	8	10	4	4	7
449:	7	8	3	8	6	7	8	8	6	6	4	5	4	6
463:	7	4	2	4	4	2	4	6	3	2	2	0	2	2
477:	3	2	2	3	5	5	2	4	5	2	0	2	4	5
491:	1	1	2	1	2	1	2	2	3	5	2	3	0	1
505:	1	0	0	1	1	1	0	1	2	0	3	1	0	1
519:	1	2	1	2	2	0	1	1	2	0	0	1	0	1
533:	1	0	0	1	0	0	0	0	0	0	0	1	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561:	0	2	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
603:	0	0	0	0	0	0	1	1	0	0	0	0	0	0
617:	1	1	1	0	0	1	1	0	1	1	0	0	0	0
631:	2	0	1	1	0	1	0	0	1	1	4	0	2	0
645:	4	0	1	3	2	1	2	1	1	3	1	1	1	6
659:	3	2	1	0	0	1	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
701:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
729:	0	1	0	1	0	0	0	0	0	0	0	0	0	1
743:	0	0	1	1	0	1	2	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	1	0	1	2	0
771:	0	0	0	0	1	0	0	0	1	0	0	0	1	0
785:	0	0	0	0	1	0	1	0	1	1	0	1	1	0
799:	0	0	1	0	0	1	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
841:	0	1	0	0	0	0	0	0	0	0	1	0	0	0
855:	0	0	0	1	0	1	0	0	0	0	0	0	0	0
869:	0	1	0	0	0	0	0	0	0	0	0	0	0	1
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
939:	0	1	1	0	0	1	0	1	0	0	0	0	0	0
953:	0	0	0	1	1	0	0	0	0	0	0	0	0	1
967:	0	0	0	0	0	0	1	1	1	0	0	0	0	0
981:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:29:10.53

Detector ID: 31 Acquisition Start: 10-OCT-2005 06:46:20.01
Live Time: 0 02:50:07.00 Real Time: 0 02:50:06.00
Batch Id: 0509117A-TH Sample Id: 14
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3977.83	57	0	83.59	149.47	90	101	5.58E-03	13.2	
2	0	4654.20	125	0	84.88	378.41	300	104	1.22E-02	8.9	
3	0	4900.11	332	0	86.27	463.26	403	131	3.25E-02	5.5	
4	0	5392.82	44	0	43.18	636.05	550	107	4.31E-03	15.1	
5	0	5837.81	25	0	65.47	795.44	746	128	2.45E-03	20.0	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:29:17.20

Acquisition Start: 7-OCT-2005 17:06:54.01
Live Time: 0 16:40:03.00 Real Time: 0 16:40:05.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3939.64	1	0	3.06	140.00	90	101	1.67E-05	100.0	
2	0	4566.17	5	0	177.56	351.50	300	104	8.33E-05	44.7	
3	0	4903.59	5	0	0.00	468.00	403	131	8.33E-05	44.7	
4	0	5287.74	9	0	3.06	603.00	550	107	1.50E-04	33.3	
5	0	5861.15	4	0	232.66	809.50	746	128	6.67E-05	50.0	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:29:17.49

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3977.83*	57	0	83.59	149.47	90	101	5.57E-03	13.3	
2	0	4654.20*	124	0	84.88	378.41	300	104	1.22E-02	9.0	
3	0	4900.11*	331	0	86.27	463.26	403	131	3.24E-02	5.5	
4	0	5392.82*	42	0	43.18	636.05	550	107	4.16E-03	15.7	
5	0	5837.81*	24	0	65.47	795.44	746	128	2.38E-03	20.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:29:18

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL11		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 10-OCT-2005 06:46:20
Sample ID	: 14	Sample quantity	: 1.0595 gram
Sample type	: TH	Sample geometry	:
Detector name	: 031	Detector geometry	:
Elapsed live time	: 0 02:50:07.00	Elapsed real time	: 0 02:50:06.00 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3977.83*	57	83.59	149.47	90	101	26.6		TH-232	0.716
0	4654.20*	124	84.88	378.41	300	104	18.0		TH-230	1.57
0	4900.11*	331	86.27	463.26	403	131	11.0		TH229	4.19
0	5392.82*	42	43.18	636.05	550	107	31.3		TH-228	0.542
0	5837.81*	24	65.47	795.44	746	128	41.2		TH-227	0.314

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:29:36

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$15_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	15
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.135E+00 gram
SAMPLE TITLE:	VPBR092705SL12	DETECTOR NUMBER:	032
ACQ DATE:	10-OCT-2005 06:46	AVERAGE EFFICIENCY:	19.12%
ELAPSED LIVE TIME:	10203.	RECOVERY:	90.86%
TRACER ID:	TH-18A	TRACER FWHM (kev):	113.26
LAMBDA VALUE:	464.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.438	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	6-OCT-2005 04:41	EFF CAL DATE:	6-OCT-2005 04:41
BKG FILENAME:	B_032_7OCT05	BKG ELAPSED TIME:	60002.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	11.32	0.68	97.5	1.562E-01	9.935E-02	9.018E-02
TH-228	5400.0	46.15	0.85	99.9	6.286E-01	2.133E-01	9.406E-02
TH229	4872.0	306.83	0.17	99.5	4.142E+00	6.109E-01	6.247E-02
TH-230	4672.0	116.32	0.68	99.8	1.565E+00	3.874E-01	8.808E-02
TH-232	3997.0	38.66	0.34	100.0	5.194E-01	1.881E-01	7.284E-02

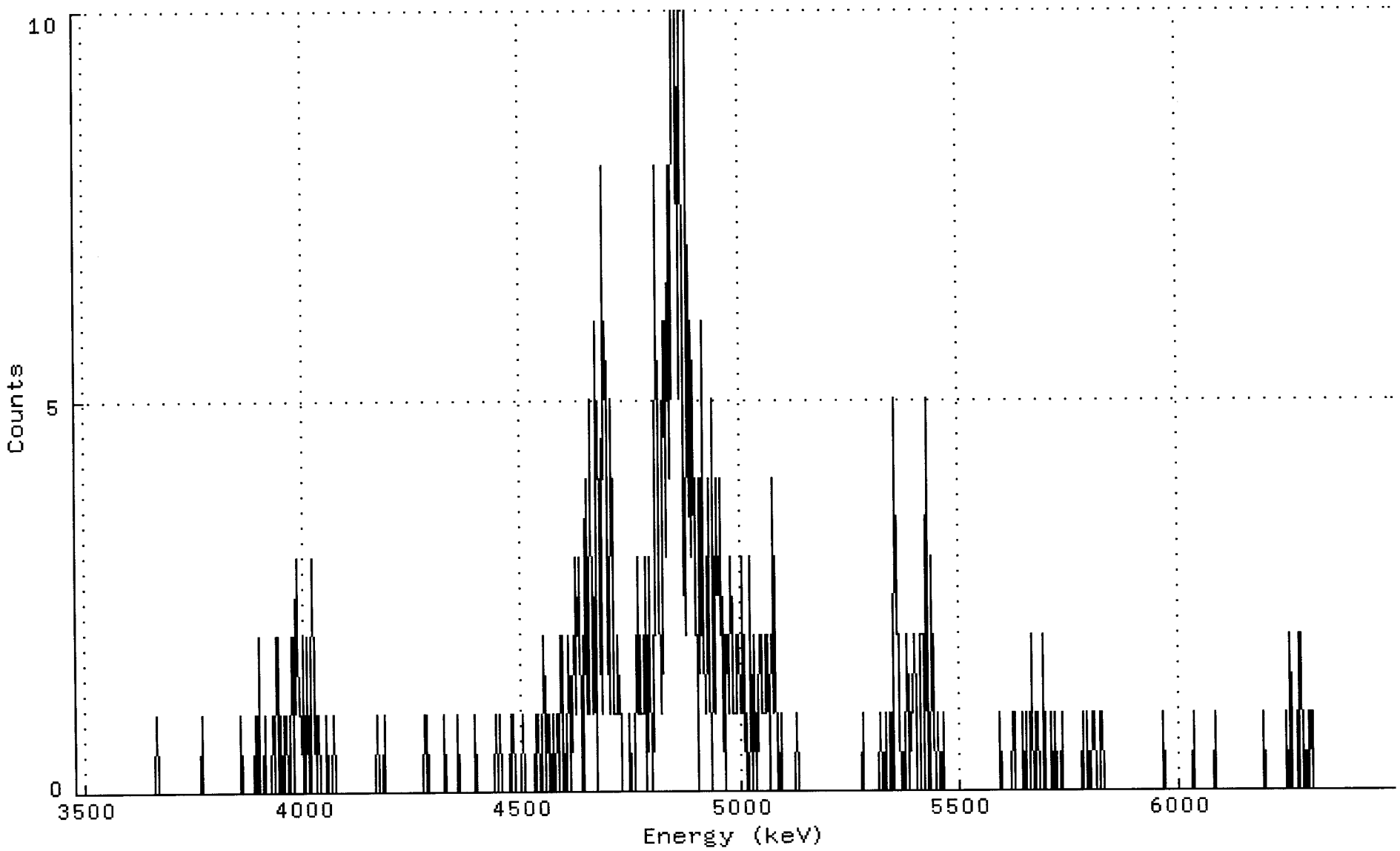
****

*** Tracer FWHM > 80.0 Kev ***

Analyst Jeff Price — Date 10-10-05

Reviewer Alan Gregley — Date 10/10/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$15_TH.CNF;1
Title : 032
Sample Title: VPBR092705SL12
Start Time: 10-OCT-2005 06:46 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.46705E+03
Real Time : 0 02:50:03.00 Sample ID : 15 Energy Slope : 3.17745E+00
Live Time : 0 02:50:03.00 Sample Type: TH Energy Quad : -2.20007E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$15_TH

Channel

1:	10203	10203	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
127:	0	0	0	0	0	0	0	1	0	0	2	0	0	0
141:	1	0	0	0	0	0	1	0	0	2	0	2	0	0
155:	1	0	1	0	0	0	2	2	0	2	3	2	1	1
169:	0	2	0	1	2	0	0	1	3	1	0	1	1	0
183:	0	0	0	0	1	0	0	0	0	1	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225:	1	0	0	0	0	1	0	0	0	0	0	0	0	0
239:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
253:	0	0	0	0	0	0	0	1	0	1	0	0	0	0
267:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
281:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
295:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
309:	0	0	0	0	1	0	0	1	0	0	0	0	0	0
323:	0	1	0	1	0	0	0	0	0	0	1	0	0	0
337:	0	0	0	0	0	0	1	0	1	0	0	0	2	1
351:	0	1	0	1	0	0	1	0	1	1	0	2	2	0
365:	0	1	0	2	1	0	1	2	1	3	2	3	3	0
379:	2	0	3	4	1	1	5	1	3	2	0	6	4	4
393:	2	1	8	4	6	5	2	1	5	3	1	1	1	2
407:	1	1	0	0	0	0	0	0	1	0	0	0	0	2
421:	1	3	1	1	1	1	3	0	1	3	2	0	1	3
435:	2	8	3	3	1	2	4	6	3	6	5	8	4	6
449:	10	10	10	10	5	8	10	5	3	2	6	10	4	3
463:	6	5	2	4	0	3	4	2	6	2	1	2	4	2
477:	0	2	5	1	4	3	3	2	4	1	0	2	2	1
491:	1	3	2	1	1	1	2	2	1	1	3	1	0	1
505:	0	1	3	0	1	2	0	1	1	2	2	1	1	1
519:	2	2	0	1	2	1	4	2	0	1	0	1	0	0
533:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
603:	0	0	0	0	0	1	0	0	0	1	0	0	0	1
617:	0	2	0	5	2	3	1	0	0	0	1	0	2	1
631:	0	1	1	1	2	1	0	0	0	2	2	2	0	2
645:	5	0	0	2	3	1	0	0	1	0	0	0	1	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	1	0	0	0	0	0	0	0	0	0	1	1	0
715:	0	0	0	0	0	1	0	1	0	0	0	0	2	1
729:	0	1	0	1	0	0	0	0	2	0	0	0	0	0
743:	1	0	0	1	0	0	0	0	1	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
771:	0	1	0	0	0	1	1	1	0	0	0	0	1	1
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	1	0	0	2	1
939:	0	0	0	0	0	2	0	2	0	1	0	0	0	1
953:	0	1	1	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:29:23.47

Detector ID: 32 Acquisition Start: 10-OCT-2005 06:46:40.01
Live Time: 0 02:50:03.00 Real Time: 0 02:50:03.00
Batch Id: 0509117A-TH Sample Id: 15
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3978.96	39	0	130.28	162.95	106	97	3.82E-03	16.0	
2	0	4649.45	117	0	53.10	382.24	308	100	1.15E-02	9.2	
3	0	4893.47	307	0	113.26	463.82	408	127	3.01E-02	5.7	
4	0	5388.43	47	0	94.46	632.38	551	104	4.61E-03	14.6	
5	0	5813.96	12	0	368.58	780.83	741	125	1.18E-03	28.9	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:29:34.24

Acquisition Start: 7-OCT-2005 17:06:56.01
Live Time: 0 16:40:02.00 Real Time: 0 16:40:02.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3955.96	2	0	9.39	154.00	106	97	3.33E-05	70.7	
2	0	4575.32	4	0	203.39	357.50	308	100	6.67E-05	50.0	
3	0	4914.75	1	0	3.13	471.00	408	127	1.67E-05	100.0	
4	0	5302.63	5	0	240.93	602.50	551	104	8.33E-05	44.7	
5	0	5882.91	4	0	347.32	803.00	741	125	6.67E-05	50.0	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:29:35.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3978.96*	39	0	130.28	162.95	106	97	3.79E-03	16.2	
2	0	4649.45*	116	0	53.10	382.24	308	100	1.14E-02	9.3	
3	0	4893.47*	307	0	113.26	463.82	408	127	3.01E-02	5.7	
4	0	5388.43*	46	0	94.46	632.38	551	104	4.52E-03	14.9	
5	0	5813.96*	11	0	368.58	780.83	741	125	1.11E-03	30.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:29:35

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL12		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 10-OCT-2005 06:46:40
Sample ID	: 15	Sample quantity	: 1.1352 gram
Sample type	: TH	Sample geometry	:
Detector name	: 032	Detector geometry	:
Elapsed live time	: 0 02:50:03.00	Elapsed real time	: 0 02:50:03.00 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3978.96*	39130.28	162.95	106	97	32.3			TH-232	0.472
0	4649.45*	116 53.10	382.24	308	100	18.6			TH-230	1.42
0	4893.47*	307113.26	463.82	408	127	11.4			TH229	3.76
0	5388.43*	46 94.46	632.38	551	104	29.8			TH-228	0.571
0	5813.96*	11368.58	780.83	741	125	61.5			TH-227	0.142

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:29:52

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$16_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	16
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT: 1.094E+00	gram
SAMPLE TITLE:	VPBR092705SL13	DETECTOR NUMBER:	033
ACQ DATE:	10-OCT-2005 07:02	AVERAGE EFFICIENCY:	20.99%
ELAPSED LIVE TIME:	10200.	RECOVERY:	84.17%
TRACER ID:	TH-18A	TRACER FWHM (kev):	37.05
LAMBDA VALUE:	452.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.161	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	7-OCT-2005 04:44	EFF CAL DATE:	7-OCT-2005 04:44
BKG FILENAME:	B_033_7OCT05	BKG ELAPSED TIME:	60000.

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NUCLIDE ACTIVITY SUMMARY

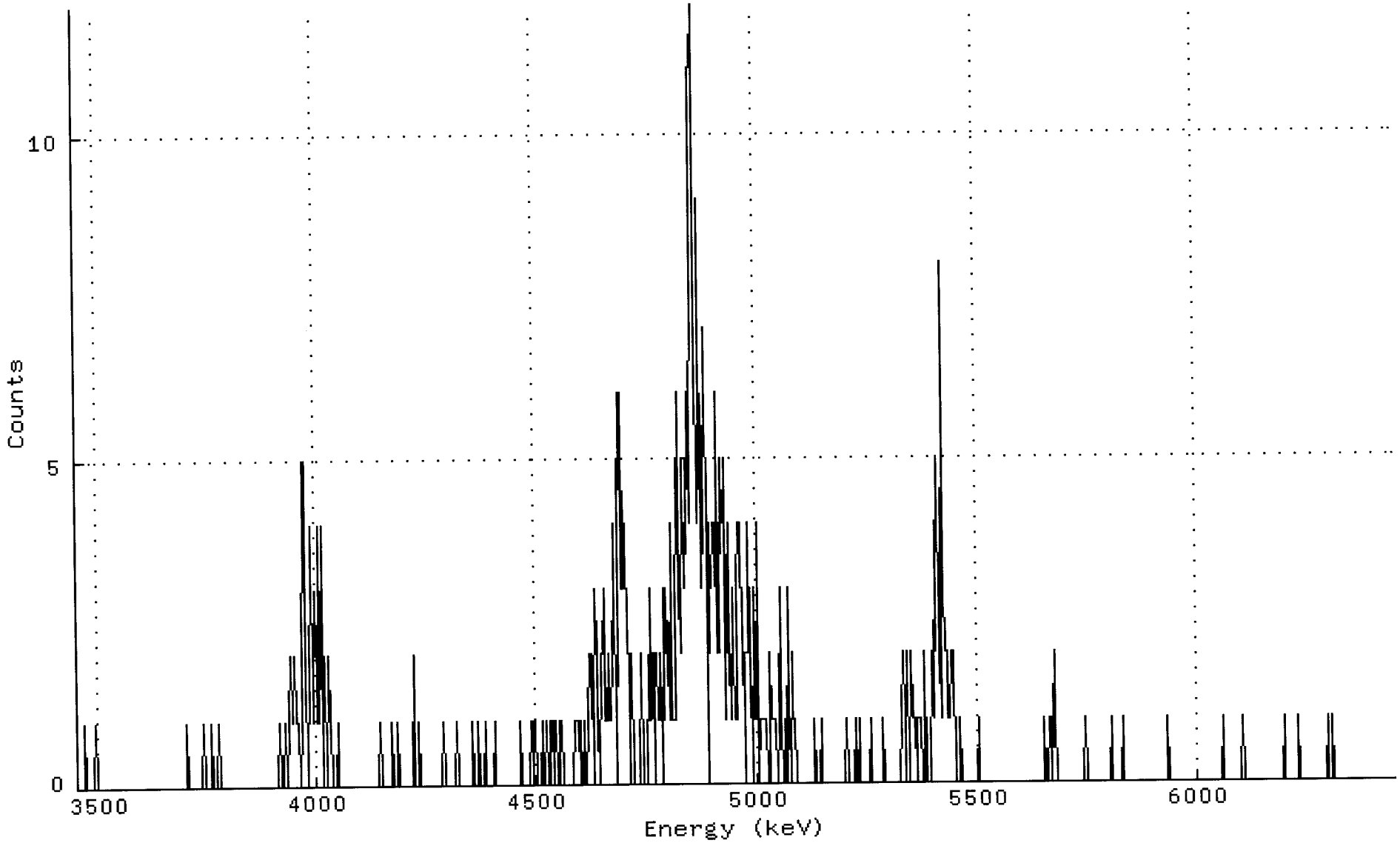
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	3.66	0.34	97.5	5.155E-02	5.737E-02	7.627E-02
TH-228	5400.0	66.49	0.51	99.9	9.248E-01	2.734E-01	8.278E-02
TH229	4872.0	303.66	0.34	99.5	4.185E+00	6.189E-01	7.473E-02
TH-230	4672.0	93.66	0.34	99.8	1.287E+00	3.395E-01	7.450E-02
TH-232	3997.0	59.00	0.00	100.0	8.093E-01	2.488E-01	3.717E-02

****

Analyst _____ Date 10-10-05

Reviewer _____ Date 10/10/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$16_TH.CNF;1
Title : 033
Sample Title: VPBR092705SL13
Start Time: 10-OCT-2005 07:02 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.44205E+03
Real Time : 0 02:50:00.30 Sample ID : 16 Energy Slope : 3.14681E+00
Live Time : 0 02:50:00.00 Sample Type: TH Energy Quad : -2.06068E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$16_TH

Channel

1:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
15:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
85:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
99:	0	0	0	1	0	0	0	0	1	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
155:	0	1	0	0	1	2	2	1	2	1	1	1	0	0
169:	1	5	5	2	0	2	1	4	1	2	3	1	4	1
183:	2	4	0	2	0	2	2	1	0	0	0	0	1	0
197:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225:	0	0	1	0	0	0	0	0	0	0	0	1	0	0
239:	0	1	0	0	0	0	0	0	0	0	0	0	0	2
253:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
267:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
281:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
295:	0	1	0	0	0	1	0	0	0	0	1	0	0	0
309:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
337:	0	0	0	1	0	1	1	0	0	0	0	1	0	0
351:	1	1	0	0	1	1	0	1	1	0	0	1	1	0
365:	0	0	0	0	0	0	0	0	1	1	1	1	0	1
379:	0	0	1	0	1	1	2	2	0	1	3	2	1	0
393:	2	2	2	3	1	1	2	1	1	2	3	4	0	3
407:	4	6	3	6	3	3	4	2	2	0	2	0	0	0
421:	0	0	0	2	0	0	0	0	1	1	3	1	2	0
435:	2	2	1	1	2	0	3	1	3	2	2	1	4	1
449:	1	1	3	4	6	3	2	5	5	3	4	6	5	4
463:	9	11	11	12	7	4	5	9	3	4	4	7	3	0
477:	4	3	3	4	4	2	6	2	5	4	4	5	1	3
491:	4	2	1	3	2	1	1	3	4	4	3	3	0	2
505:	2	2	4	2	0	3	1	1	4	0	1	1	1	1
519:	1	1	0	0	2	1	1	1	1	0	0	1	3	1
533:	0	0	1	0	3	1	0	2	1	1	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
561:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
589:	1	0	0	1	0	0	0	0	0	0	0	0	1	0
603:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
617:	0	0	0	0	0	0	0	0	1	1	2	1	0	2
631:	0	0	2	1	1	1	0	1	1	1	1	0	0	2
645:	0	0	0	0	2	2	1	4	2	5	2	2	1	8
659:	3	2	2	1	1	2	2	2	0	0	0	0	1	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	1	0	0	0	1
743:	1	0	1	2	1	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
799:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
939:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	1	0	0	0	1	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:29:41.21

Detector ID: 33 Acquisition Start: 10-OCT-2005 07:02:34.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.30
Batch Id: 0509117A-TH Sample Id: 16
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3985.44	59	0	46.81	174.68	115	98	5.78E-03	13.0	
2	0	4649.46	94	0	32.98	393.85	319	101	9.22E-03	10.3	
3	0	4893.43	304	0	37.05	476.06	420	127	2.98E-02	5.7	
4	0	5389.45	67	0	16.12	646.19	564	104	6.57E-03	12.2	
5	0	5829.02	4	0	213.98	800.50	755	125	3.92E-04	50.0	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:29:50.37

Acquisition Start: 7-OCT-2005 17:06:59.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3952.42	0	0	0.00	163.50	115	98	0.00E+00	0.0	
2	0	4573.31	2	0	218.66	369.00	319	101	3.33E-05	70.7	
3	0	4910.74	2	0	312.38	483.00	420	127	3.33E-05	70.7	
4	0	5296.65	3	0	0.00	615.50	564	104	5.00E-05	57.7	
5	0	5870.59	2	0	262.40	817.00	755	125	3.33E-05	70.7	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:29:50.68

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3985.44*	59	0	46.81	174.68	115	98	5.78E-03	13.0	
2	0	4649.46*	94	0	32.98	393.85	319	101	9.18E-03	10.4	
3	0	4893.43*	304	0	37.05	476.06	420	127	2.98E-02	5.7	
4	0	5389.45*	66	0	16.12	646.19	564	104	6.52E-03	12.3	
5	0	5829.02*	4	0	213.98	800.50	755	125	3.59E-04	55.0	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:29:51

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL13
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 10-OCT-2005 07:02:34
Sample ID : 16 Sample quantity : 1.0936 gram
Sample type : TH Sample geometry :
Detector name : 033 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.30 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3985.44*	59	46.81	174.68	115	98	26.0		TH-232	0.681
0	4649.46*	94	32.98	393.85	319	101	20.7		TH-230	1.08
0	4893.43*	304	37.05	476.06	420	127	11.5		TH229	3.52
0	5389.45*	66	16.12	646.19	564	104	24.6		TH-228	0.778
0	5829.02*	42	13.98	800.50	755	125	110.1		TH-227	4.339E-02

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:30:03

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$17_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	17
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.054E+00 gram
SAMPLE TITLE:	VPBR092705SL14	DETECTOR NUMBER:	034
ACQ DATE:	10-OCT-2005 07:02	AVERAGE EFFICIENCY:	20.14%
ELAPSED LIVE TIME:	10200.	RECOVERY:	91.10%
TRACER ID:	TH-18A	TRACER FWHM (kev):	64.44
LAMBDA VALUE:	451.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.148	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	7-OCT-2005 04:44	EFF CAL DATE:	7-OCT-2005 04:44
BKG FILENAME:	B_034_7OCT05	BKG ELAPSED TIME:	60000.

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NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	10.66	0.34	97.5	1.500E-01	9.670E-02	7.621E-02
TH-228	5400.0	57.83	0.17	99.9	8.036E-01	2.486E-01	6.346E-02
TH229	4872.0	314.98	1.02	99.5	4.338E+00	6.351E-01	1.020E-01
TH-230	4672.0	122.49	0.51	99.8	1.682E+00	4.088E-01	8.280E-02
TH-232	3997.0	36.83	0.17	100.0	5.048E-01	1.858E-01	6.342E-02

****

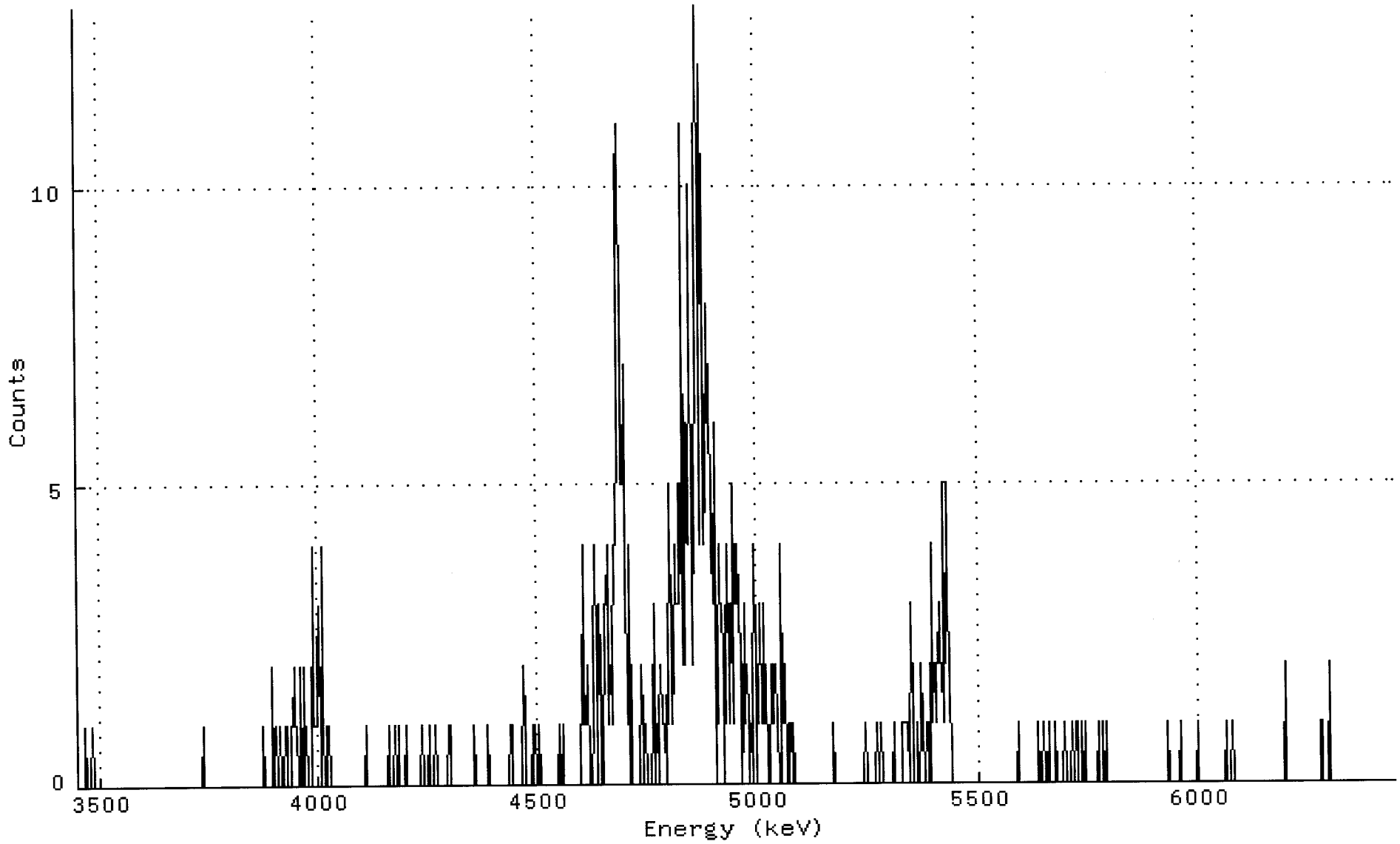
Jay Price
Analyst

10-10-05
Date

Alan Gregley
Reviewer

10/10/05
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$17_TH.CNF;1
Title : 034
Sample Title: VPBR092705SL14
Start Time: 10-OCT-2005 07:02 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.43992E+03
Real Time : 0 02:50:00.30 Sample ID : 17 Energy Slope : 3.11826E+00
Live Time : 0 02:50:00.00 Sample Type: TH Energy Quad : -1.81395E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$17_TH

Channel

1:	0	0	0	0	0	0	0	0	1	0	0	0	0	1
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	1	0	0	0	0	0	0	2	0	1	0	0	1	0
155:	0	0	1	1	0	0	0	1	1	2	1	1	0	0
169:	2	0	2	0	1	0	0	0	0	4	1	1	1	2
183:	3	0	4	1	0	0	1	1	0	0	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
239:	0	1	0	1	0	0	0	0	0	1	0	0	0	0
253:	0	0	0	0	0	0	0	1	0	0	0	0	1	0
267:	0	0	0	1	0	0	0	0	0	0	0	0	0	1
281:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
309:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	1	1	0	0	0	0	0	0	0	0	2
337:	1	0	0	0	0	0	1	0	1	0	0	1	0	0
351:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
365:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
379:	0	1	1	4	1	1	2	2	0	0	1	2	4	2
393:	0	3	2	0	0	3	3	3	4	1	2	1	2	4
407:	4	6	10	11	7	5	5	7	3	2	0	4	0	0
421:	0	0	0	0	0	2	1	0	1	0	0	0	0	0
435:	1	3	0	1	0	1	2	1	1	1	0	3	1	5
449:	2	1	2	4	3	3	3	5	5	2	11	2	6	5
463:	4	8	10	2	5	7	9	13	9	4	12	9	4	5
477:	8	6	7	4	4	3	6	0	2	4	3	3	2	0
491:	2	4	1	3	3	1	5	3	3	4	3	2	0	1
505:	3	1	2	1	0	1	0	1	4	2	0	2	2	3
519:	1	3	1	2	0	0	0	2	2	1	2	1	1	0
533:	0	4	1	2	2	0	0	1	1	0	1	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
575:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
603:	0	0	0	0	0	1	0	0	1	0	0	0	0	0
617:	0	0	0	0	1	0	0	0	0	0	0	1	1	1
631:	1	1	0	0	3	1	0	0	0	1	0	1	2	1
645:	0	0	1	1	0	0	4	1	2	1	2	2	3	2
659:	2	1	5	2	5	3	2	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	1	0	0	0	1	0	0	0
743:	1	0	0	0	0	0	1	0	0	0	0	0	0	1
757:	0	0	0	0	0	1	0	0	1	1	0	0	0	1
771:	0	1	0	0	0	0	0	0	0	0	0	0	1	0
785:	0	0	1	0	1	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
841:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	1	0	0	0	0	1	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	2	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	1	1	0	0
967:	0	0	0	2	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:29:56.73

Detector ID: 34 Acquisition Start: 10-OCT-2005 07:02:53.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.30
Batch Id: 0509117A-TH Sample Id: 17
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3970.73	37	0	25.45	171.95	116	99	3.63E-03	16.4	
2	0	4655.30	123	0	20.40	399.02	322	101	1.21E-02	9.0	
3	0	4890.51	316	0	64.44	478.51	423	128	3.10E-02	5.6	
4	0	5384.19	58	0	92.47	647.93	567	105	5.69E-03	13.1	
5	0	5804.29	11	0	318.06	795.00	758	125	1.08E-03	30.2	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:30:01.55

Acquisition Start: 7-OCT-2005 17:07:02.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3946.78	1	0	3.12	165.00	116	99	1.67E-05	100.0	
2	0	4572.15	3	0	115.39	372.00	322	101	5.00E-05	57.7	
3	0	4911.38	6	0	333.71	486.50	423	128	1.00E-04	40.8	
4	0	5297.99	1	0	3.12	619.00	567	105	1.67E-05	100.0	
5	0	5872.27	2	0	315.00	820.00	758	125	3.33E-05	70.7	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:30:01.84

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3970.73*	37	0	25.45	171.95	116	99	3.61E-03	16.5	
2	0	4655.30*	122	0	20.40	399.02	322	101	1.20E-02	9.1	
3	0	4890.51*	315	0	64.44	478.51	423	128	3.09E-02	5.6	
4	0	5384.19*	58	0	92.47	647.93	567	105	5.67E-03	13.2	
5	0	5804.29*	11	0	318.06	795.00	758	125	1.05E-03	31.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:30:02

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL14		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 10-OCT-2005 07:02:53
Sample ID	: 17	Sample quantity	: 1.0538 gram
Sample type	: TH	Sample geometry	:
Detector name	: 034	Detector geometry	:
Elapsed live time	: 0 02:50:00.00	Elapsed real time	: 0 02:50:00.30 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3970.73*	37	25.45	171.95	116	99	33.0		TH-232	0.460
0	4655.30*	122	20.40	399.02	322	101	18.1		TH-230	1.53
0	4890.51*	315	64.44	478.51	423	128	11.3		TH229	3.95
0	5384.19*	58	92.47	647.93	567	105	26.3		TH-228	0.732
0	5804.29*	11318.06		795.00	758	125	62.4		TH-227	0.137

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:30:14

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$18_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	18
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.024E+00 gram
SAMPLE TITLE:	VPBR092705SL15	DETECTOR NUMBER:	035
ACQ DATE:	10-OCT-2005 07:03	AVERAGE EFFICIENCY:	20.79%
ELAPSED LIVE TIME:	10200.	RECOVERY:	83.41%
TRACER ID:	TH-18A	TRACER FWHM (kev):	277.21
LAMBDA VALUE:	453.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.195	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	7-OCT-2005 04:44	EFF CAL DATE:	7-OCT-2005 04:44
BKG FILENAME:	B_035_7OCT05	BKG ELAPSED TIME:	60000.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	4.66	0.34	97.5	7.142E-02	6.992E-02	8.299E-02
TH-228	5400.0	52.98	1.02	99.9	8.018E-01	2.587E-01	1.106E-01
TH229	4872.0	299.15	0.85	99.5	4.487E+00	6.668E-01	1.049E-01
TH-230	4672.0	87.83	0.17	99.8	1.313E+00	3.538E-01	6.919E-02
TH-232	3997.0	43.00	0.00	100.0	6.418E-01	2.223E-01	4.045E-02

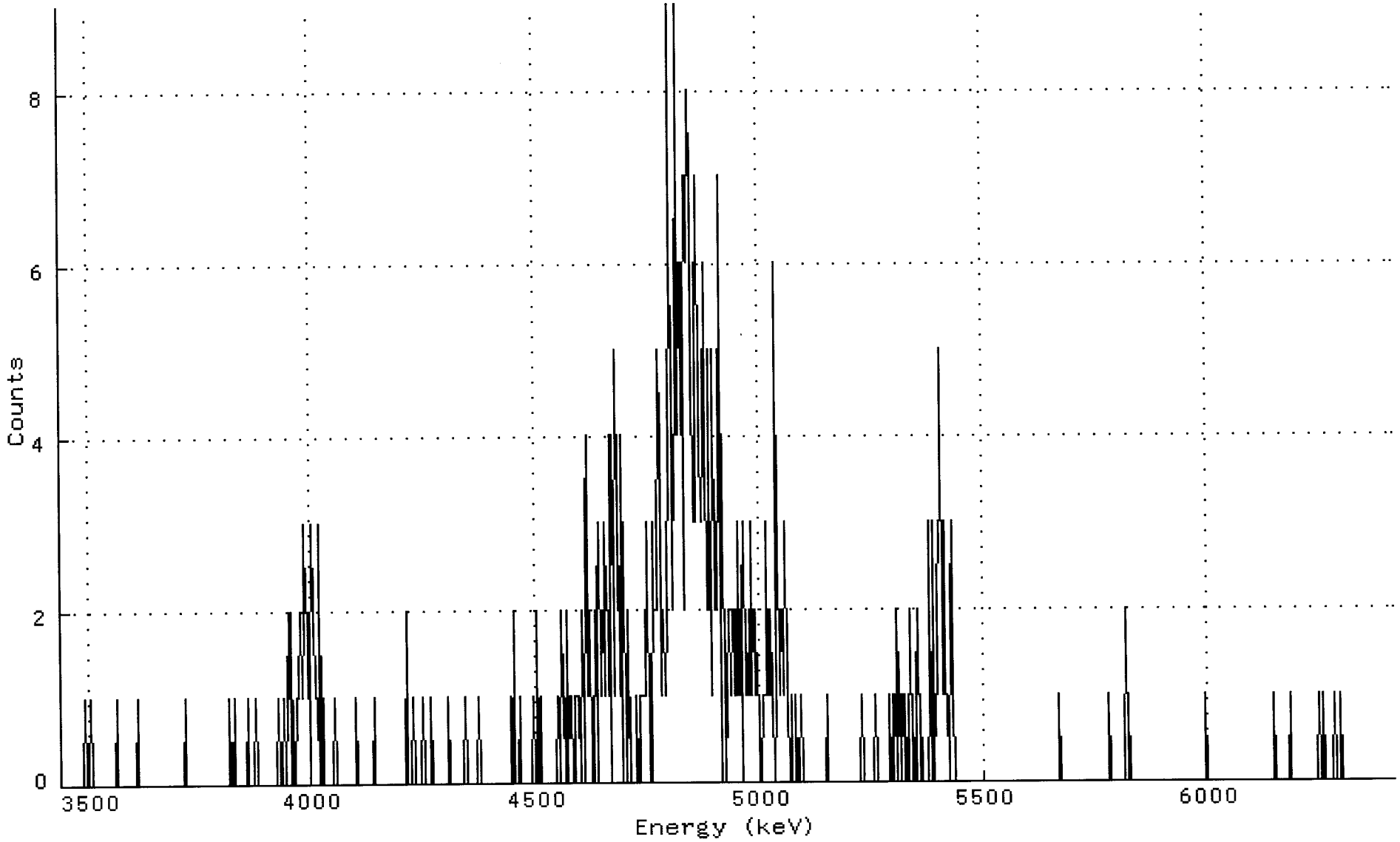
****

*** Tracer FWHM > 80.0 Kev ***

Jeff Price — Analyst — 10-10-05 Date

Alan Gregley — Reviewer — 10/10/05 Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$18_TH.CNF;1
Title : 035
Sample Title: VPBR092705SL15
Start Time: 10-OCT-2005 07:03 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.42495E+03
Real Time : 0 02:50:00.40 Sample ID : 18 Energy Slope : 3.09791E+00
Live Time : 0 02:50:00.00 Sample Type: TH Energy Quad : -1.73749E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$18_TH

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	1	0	0	0	1	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	1	0	0	1	0	0	0	0	0	0	0	0	0	1
141:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	1	0	0	0	1	0
169:	0	1	2	0	2	0	0	0	1	1	2	2	1	2
183:	3	2	2	0	1	3	2	2	1	1	0	3	0	1
197:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
211:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
225:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
239:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
253:	0	0	0	0	0	2	0	0	0	0	1	0	0	0
267:	0	0	0	1	0	0	0	0	0	1	0	0	0	0
281:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
295:	0	0	0	0	0	0	1	1	0	0	0	0	0	0
309:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
337:	0	2	0	0	0	1	0	0	0	0	0	0	0	0
351:	0	0	1	0	0	2	0	1	0	0	0	0	0	0
365:	0	0	0	0	0	0	1	1	0	2	1	1	0	2
379:	0	1	1	1	0	0	1	1	1	0	0	2	0	0
393:	3	4	1	2	0	1	0	2	0	2	3	1	2	2
407:	1	3	2	2	0	4	4	1	2	5	2	4	1	4
421:	0	3	0	1	2	0	0	0	0	0	1	0	0	1
435:	1	1	1	1	3	0	0	0	3	2	2	2	2	5
449:	4	1	2	1	2	2	4	6	9	2	4	4	4	9
463:	4	6	6	2	5	7	7	6	8	7	5	3	3	5
477:	7	4	4	3	4	6	4	2	2	5	1	5	5	2
491:	2	3	3	7	0	4	0	0	1	2	1	1	2	2
505:	1	1	3	1	2	0	2	3	1	2	1	1	3	1
519:	2	1	2	1	1	0	0	1	1	1	1	3	1	1
533:	2	1	0	1	6	2	2	1	2	1	1	3	1	1
547:	0	1	0	0	0	1	0	0	0	1	0	0	0	0
561:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
603:	1	0	0	0	0	0	0	0	0	0	1	0	0	0
617:	0	0	0	0	0	0	0	1	0	0	1	1	0	2
631:	1	0	1	1	0	1	0	1	0	2	0	1	0	0
645:	1	2	0	1	0	0	0	0	0	1	3	0	3	0
659:	1	1	2	3	3	5	1	3	1	1	0	0	2	3
673:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
799:	0	0	0	0	0	0	0	0	0	0	2	0	1	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
939:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	1	1	0	0
967:	1	0	0	0	0	0	0	0	0	1	0	0	0	0
981:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:30:07.56

Detector ID: 35 Acquisition Start: 10-OCT-2005 07:03:12.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.40
Batch Id: 0509117A-TH Sample Id: 18
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3976.38	43	0	74.35	179.81	122	100	4.22E-03	15.2	
2	0	4632.04	88	0	90.87	398.56	329	102	8.63E-03	10.7	
3	0	4878.82	300	0	277.21	482.36	430	129	2.94E-02	5.8	
4	0	5368.64	54	0	54.08	651.20	575	106	5.29E-03	13.6	
5	0	5846.72	5	0	3.10	819.40	767	126	4.90E-04	44.7	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:30:11.86

Acquisition Start: 7-OCT-2005 17:07:05.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3949.23	0	0	0.00	171.50	122	100	0.00E+00	0.0	
2	0	4573.28	1	0	3.10	379.50	329	102	1.67E-05	100.0	
3	0	4910.38	5	0	284.84	494.00	430	129	8.33E-05	44.7	
4	0	5297.67	6	0	244.59	627.50	575	106	1.00E-04	40.8	
5	0	5871.90	2	0	43.34	829.50	767	126	3.33E-05	70.7	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:30:12.14

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3976.38*	43	0	74.35	179.81	122	100	4.22E-03	15.2	
2	0	4632.04*	88	0	90.87	398.56	329	102	8.61E-03	10.7	
3	0	4878.82*	299	0	277.21	482.36	430	129	2.93E-02	5.8	
4	0	5368.64*	53	0	54.08	651.20	575	106	5.19E-03	13.9	
5	0	5846.72*	5	0	3.10	819.40	767	126	4.57E-04	48.3	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:30:13

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL15		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 10-OCT-2005 07:03:12
Sample ID	: 18	Sample quantity	: 1.0236 gram
Sample type	: TH	Sample geometry	:
Detector name	: 035	Detector geometry	:
Elapsed live time	: 0 02:50:00.00	Elapsed real time	: 0 02:50:00.40 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3976.38*	43	74.35	179.81	122	100	30.5		TH-232	0.535
0	4632.04*	88	90.87	398.56	329	102	21.4		TH-230	1.10
0	4878.82*	299	277.21	482.36	430	129	11.6		TH229	3.74
0	5368.64*	53	54.08	651.20	575	106	27.8		TH-228	0.669
0	5846.72*	5	3.10	819.40	767	126	96.5		TH-227	5.957E-02

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
10-OCT-2005 10:30:43

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-TH$19_TH.CNF
****

BATCH ID:	0509117A-TH	SAMPLE ID:	19
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.156E+00 gram
SAMPLE TITLE:	VPBR092705SL16	DETECTOR NUMBER:	036
ACQ DATE:	10-OCT-2005 07:03	AVERAGE EFFICIENCY:	21.14%
ELAPSED LIVE TIME:	10200.	RECOVERY:	73.32%
TRACER ID:	TH-18A	TRACER FWHM (kev):	99.33
LAMBDA VALUE:	456.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	10.251	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	7-OCT-2005 04:44	EFF CAL DATE:	7-OCT-2005 04:44
BKG FILENAME:	B_036_7OCT05	BKG ELAPSED TIME:	60000.

****

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
TH-227	5850.0	17.49	0.51	97.5	2.655E-01	1.367E-01	9.144E-02
TH-228	5400.0	42.98	1.02	99.9	6.443E-01	2.269E-01	1.096E-01
TH229	4872.0	268.83	0.17	99.5	3.994E+00	6.131E-01	6.874E-02
TH-230	4672.0	135.66	0.34	99.8	2.009E+00	4.838E-01	8.029E-02
TH-232	3997.0	49.00	0.00	100.0	7.244E-01	2.403E-01	4.006E-02

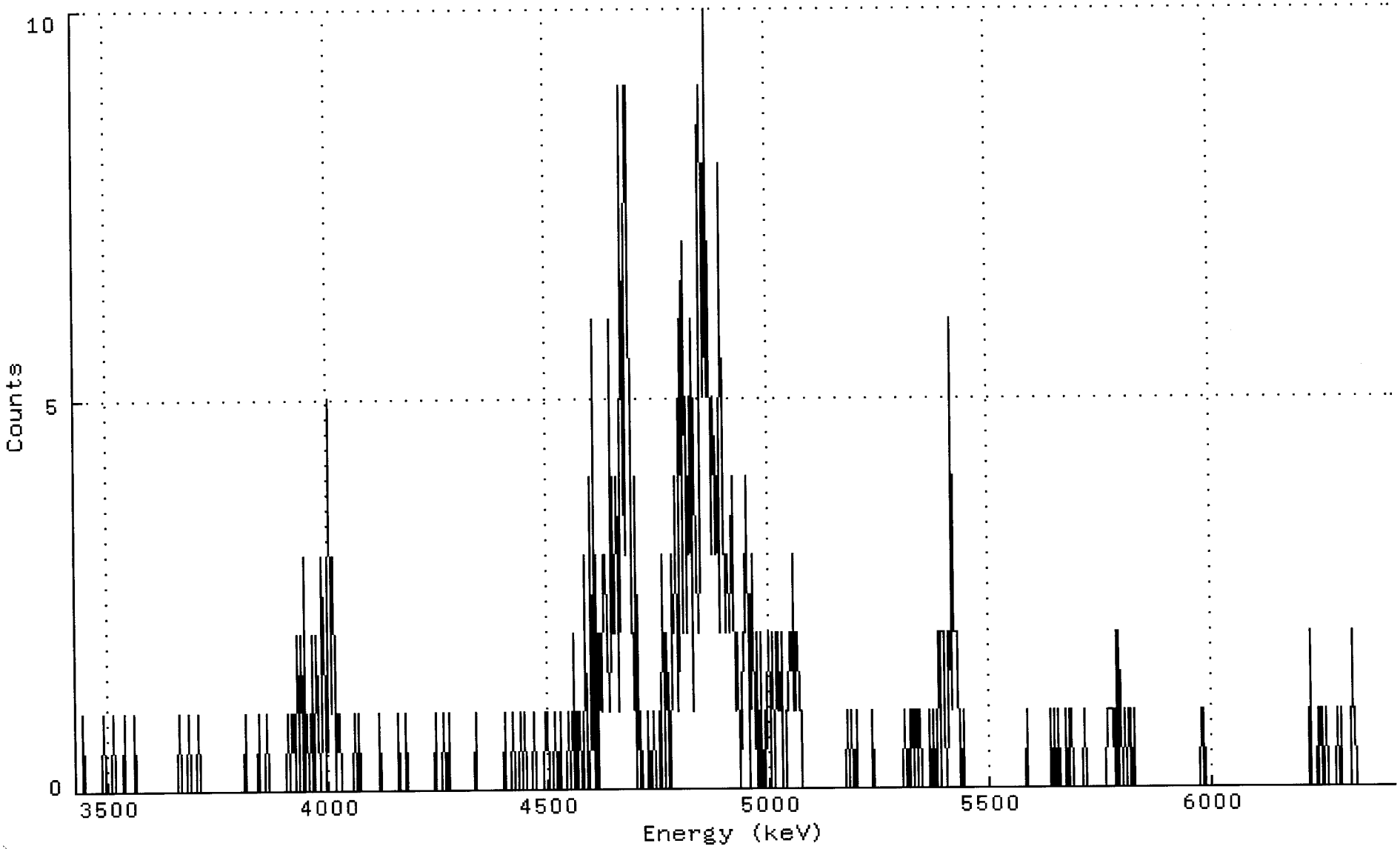
****

*** Tracer FWHM > 80.0 Kev ***

Jeff Price — Analyst — 10-10-05 Date

Alan Gregory — Reviewer — 10/10/05 Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-TH$19_TH.CNF;1
Title : 036
Sample Title: VPBR092705SL16
Start Time: 10-OCT-2005 07:03 Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.41540E+03
Real Time : 0 02:50:00.40 Sample ID : 19 Energy Slope : 3.09481E+00
Live Time : 0 02:50:00.00 Sample Type: TH Energy Quad : -1.64180E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-TH$19_TH

Channel

1:	0	1	0	0	0	0	0	0	1	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
29:	0	0	1	0	0	0	0	0	0	0	1	0	0	0
43:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
85:	0	0	1	0	0	0	0	0	0	1	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	1	0	0	0	0	0	0	0	0	0	1	0
141:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	1	0	1	1	1	0	0	2
169:	1	0	2	0	3	0	1	0	0	1	0	2	0	2
183:	1	1	0	1	3	2	1	0	1	5	1	3	3	1
197:	0	1	1	1	0	0	0	0	0	0	0	0	0	0
211:	1	0	0	1	0	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
239:	0	0	0	0	0	1	0	0	0	0	0	1	0	0
253:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
267:	0	0	0	0	0	1	0	0	0	0	0	1	0	0
281:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
309:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	1	0	0	0	0	0	1	0	0	0	0	0	1
337:	0	0	1	0	0	0	0	0	0	1	0	0	0	0
351:	0	0	0	0	1	1	0	0	0	0	0	1	0	0
365:	0	1	0	0	0	0	0	1	0	0	1	0	2	0
379:	1	0	1	0	0	0	2	3	0	0	1	4	1	0
393:	6	0	2	0	2	1	1	3	3	3	2	1	2	6
407:	2	2	2	4	3	1	3	7	9	4	3	6	9	6
421:	9	2	2	0	4	1	0	1	0	0	0	0	0	1
435:	0	0	0	1	0	0	0	0	1	0	3	1	0	2
449:	1	0	0	2	3	2	3	4	1	2	4	6	2	6
463:	7	2	5	3	5	1	6	4	3	3	2	3	8	9
477:	7	5	6	10	5	7	3	3	5	4	3	4	2	2
491:	8	3	3	2	3	2	2	3	4	3	1	2	2	0
505:	1	1	2	2	2	4	1	0	2	3	2	1	0	2
519:	0	2	0	0	1	0	1	2	1	0	2	0	0	2
533:	1	2	1	2	0	0	0	1	1	2	2	2	1	3
547:	1	2	2	1	1	0	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
589:	0	1	0	0	0	1	0	0	0	0	0	0	0	0
603:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
631:	0	1	0	0	0	1	0	1	0	1	1	0	1	1
645:	0	0	0	0	0	0	0	1	0	1	0	0	1	0
659:	2	0	2	2	2	1	0	1	2	2	1	6	2	2
673:	2	2	0	0	0	1	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	1	0	0	1	0	0	1	0	0	0
757:	0	0	1	0	1	0	1	0	0	0	0	0	0	0
771:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	1	1	1	1	1	1	0
799:	2	0	0	2	1	0	0	1	0	0	1	1	0	0
813:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
869:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	2	0	0	0	0	0	1	0	1	0	1	0
967:	1	1	0	0	0	0	0	0	0	0	1	0	0	1
981:	0	0	0	0	0	0	0	0	2	1	1	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:30:18.12

Detector ID: 36 Acquisition Start: 10-OCT-2005 07:03:30.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.40
Batch Id: 0509117A-TH Sample Id: 19
Sample Type: TH

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3973.16	49	0	69.38	181.98	125	100	4.80E-03	14.3	
2	0	4643.29	136	0	89.34	405.48	332	102	1.33E-02	8.6	
3	0	4882.74	269	0	99.33	486.70	433	129	2.64E-02	6.1	
4	0	5374.16	44	0	4.17	655.73	578	105	4.31E-03	15.1	
5	0	5805.05	18	0	13.93	806.67	770	125	1.76E-03	23.6	

Background Counts Within Peak Regions Generated: 10-OCT-2005 10:30:41.19

Acquisition Start: 7-OCT-2005 17:07:08.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.20

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3949.89	0	0	0.00	174.50	125	100	0.00E+00	0.0	
2	0	4572.74	2	0	80.04	382.50	332	102	3.33E-05	70.7	
3	0	4910.04	1	0	3.08	497.00	433	129	1.67E-05	100.0	
4	0	5296.89	6	0	283.21	630.00	578	105	1.00E-04	40.8	
5	0	5874.25	3	0	261.66	832.00	770	125	5.00E-05	57.7	

Net Sample Counts Within Peak Regions Generated: 10-OCT-2005 10:30:41.49

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3973.16*	49	0	69.38	181.98	125	100	4.80E-03	14.3	
2	0	4643.29*	136	0	89.34	405.48	332	102	1.33E-02	8.6	
3	0	4882.74*	269	0	99.33	486.70	433	129	2.64E-02	6.1	
4	0	5374.16*	43	0	4.17	655.73	578	105	4.21E-03	15.5	
5	0	5805.05*	17	0	13.93	806.67	770	125	1.71E-03	24.3	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 10-OCT-2005 10:30:42

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL16		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 10-OCT-2005 07:03:30
Sample ID	: 19	Sample quantity	: 1.1563 gram
Sample type	: TH	Sample geometry	:
Detector name	: 036	Detector geometry	:
Elapsed live time	: 0 02:50:00.00	Elapsed real time	: 0 02:50:00.40 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	3973.16*	49	69.38	181.98	125	100	28.6		TH-232	0.531
0	4643.29*	136	89.34	405.48	332	102	17.2		TH-230	1.47
0	4882.74*	269	99.33	486.70	433	129	12.2		TH229	2.93
0	5374.16*	43	4.17	655.73	578	105	30.9		TH-228	0.472
0	5805.05*	17	13.93	806.67	770	125	48.6		TH-227	0.195

SECTION X

ANALYTICAL DATA (RADIUM-226)

Eberline Services
Oak Ridge Laboratory
Analysis Sheet

05-09117
Ra226
Run 1

Work Order	05-09117
Analysis Code	Ra226
Run	1
Date Received	9/30/2005
Lab Deadline	10/20/2005
Client	Missouri Dept. of Natural Resources
Project	B3Z02092
Report Level	4
Activity Units	pCi
Aliquot Units	g
Matrix	SO
Method	EPA 903.0 Modified
Instrument Type	Alpha Spectroscopy
Radiometric Tracer	Ba-133
Radiometric Sol#	Ba-6a
Tracer Act (dpm/g)	1662.939
Carrier	
Carrier Conc (mg/ml)	

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		09/30/05 00:00	1.0000E+00
02	MBL	BLANK		09/30/05 00:00	1.0000E+00
03	DUP	VPBR092705SL01	37	09/27/05 09:30	1.0079E+00
04	DO	VPBR092705SL01	37	09/27/05 09:30	9.9320E-01
05	TRG	VPBR092705SL02	40	09/27/05 09:34	1.0375E+00
06	TRG	VPBR092705SL03	41	09/27/05 09:37	9.9580E-01
07	TRG	VPBR092705SL04	51	09/27/05 09:40	1.1835E+00
08	TRG	VPBR092705SL05	46	09/27/05 09:44	1.0106E+00
09	TRG	VPBR092705SL06	50	09/27/05 09:50	1.0332E+00
10	TRG	VPBR092705SL07	40	09/27/05 09:52	1.0075E+00
11	TRG	VPBR092705SL08	46	09/27/05 09:56	1.0825E+00
12	TRG	VPBR092705SL09	49	09/27/05 11:30	1.0615E+00
13	TRG	VPBR092705SL10	48	09/27/05 11:36	1.0151E+00
14	TRG	VPBR092705SL11	51	09/27/05 11:25	1.0670E+00
15	TRG	VPBR092705SL12	34	09/27/05 11:23	1.1141E+00
16	TRG	VPBR092705SL13	51	09/27/05 11:18	9.9990E-01
17	TRG	VPBR092705SL14	44	09/27/05 11:15	1.0261E+00
18	TRG	VPBR092705SL15	41	09/27/05 11:13	1.1188E+00
19	TRG	VPBR092705SL16	53	09/27/05 11:05	1.0649E+00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

05-09117
Ra226
Run 1

Internal Fraction	Sample Desc	Tracer Aliquot (g)	Tracer Total ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	Grav Carrier Added (ml)	Grav Filter Tare (g)	Grav Filter Final (g)	Grav Filter Net (g)	Grav % Rec	Mean % Rec	SAF 1*	SAF 2*
01	LCS	0.6081	1011.2	386.3	84.81		0.0239	0.0301	0.0062		84.81	2.23	1.00
02	MBL	0.6040	1004.4	414.4	91.59		0.0233	0.0295	0.0062		91.59	2.23	1.00
03	DUP	0.6009	999.3	468.1	104.00		0.0238	0.0288	0.0050		100.00	1.71	1.00
04	DO	0.6101	1014.6	374.6	81.97		0.0240	0.0296	0.0056		81.97	2.00	1.00
05	TRG	0.5982	994.8	434.6	96.99		0.0240	0.0336	0.0096		96.99	3.17	1.00
06	TRG	0.5994	996.8	408.1	90.89		0.0239	0.0294	0.0055		90.89	1.95	1.00
07	TRG	0.6041	1004.6	511.1	112.95		0.0240	0.0301	0.0061		100.00	2.20	1.00
08	TRG	0.6004	998.4	417.9	92.92		0.0239	0.0289	0.0050		92.92	1.73	1.00
09	TRG	0.6025	1001.9	412.5	91.40		0.0233	0.0292	0.0059		91.40	2.12	1.00
10	TRG	0.6113	1016.6	381.7	83.36		0.0235	0.0286	0.0051		83.36	1.76	1.00
11	TRG	0.5982	994.8	449.5	100.31		0.0230	0.0293	0.0063		100.00	2.27	1.00
12	TRG	0.6019	1000.9	395.8	87.79		0.0236	0.0289	0.0053		87.79	1.86	1.00
13	TRG	0.5938	987.5	393.4	88.44		0.0233	0.0340	0.0107		88.44	3.49	1.00
14	TRG	0.6095	1013.6	368.3	80.67		0.0235	0.0274	0.0039		80.67	1.04	1.00
15	TRG	0.6015	1000.3	423.7	94.04		0.0234	0.0283	0.0049		94.04	1.66	1.00
16	TRG	0.6033	1003.3	450.2	99.62		0.0234	0.0285	0.0051		99.62	1.76	1.00
17	TRG	0.5977	993.9	444.5	99.28		0.0233	0.0284	0.0051		99.28	1.76	1.00
18	TRG	0.5988	995.8	385.6	85.97		0.0231	0.0288	0.0057		85.97	2.04	1.00
19	TRG	0.6030	1002.8	388.8	86.08		0.0235	0.0320	0.0085		86.08	2.89	1.00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

05-09117
Ra226
Run 1

Internal Fraction	Sample Desc	Rough Prep Date	Rough Prep By	Prep Date	Prep By	Sep t0 Date/Time	Sep t0 By	Sep t1 Date/Time	Sep t1 By
01	LCS			10/05/05 07:38	JBARNARD				
02	MBL			10/05/05 07:38	JBARNARD				
03	DUP			10/05/05 07:38	JBARNARD				
04	DO	10/03/05 13:29	KSALLINGS	10/05/05 07:38	JBARNARD				
05	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:38	JBARNARD				
06	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:38	JBARNARD				
07	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:38	JBARNARD				
08	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:38	JBARNARD				
09	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:38	JBARNARD				
10	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:38	JBARNARD				
11	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:38	JBARNARD				
12	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:38	JBARNARD				
13	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:38	JBARNARD				
14	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:38	JBARNARD				
15	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:38	JBARNARD				
16	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:38	JBARNARD				
17	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:38	JBARNARD				
18	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:38	JBARNARD				
19	TRG	10/03/05 13:29	KSALLINGS	10/05/05 07:38	JBARNARD				

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

Eberline Services
Oak Ridge Laboratory

Preliminary Data Report & Analytical Calculations

Work Order: 05-09117-Ra226-1

Run: 1
Analysis Code: Ra226
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LCS Known	LCS %R	LCS Flag	RPD Flag	MDA Flag	Blank Flag
01	RA-226	LCS	LCS	pCi/g	1.10E+01	1.44E+00	2.49E-01	1.03E+01	106.63	OK		OK	
02	RA-226	MBL	BLANK	pCi/g	4.08E-02	9.45E-02	2.89E-01					OK	OK
03	RA-226	DUP	VPBR092705SL01	pCi/g	1.02E+00	3.18E-01	1.64E-01				INV	OK	
04	RA-226	DO	VPBR092705SL01	pCi/g	1.46E+00	4.44E-01	1.48E-01					OK	
05	RA-226	TRG	VPBR092705SL02	pCi/g	1.48E+00	5.07E-01	2.24E-01					OK	
06	RA-226	TRG	VPBR092705SL03	pCi/g	1.26E+00	3.84E-01	1.66E-01					OK	
07	RA-226	TRG	VPBR092705SL04	pCi/g	1.10E+00	3.28E-01	1.39E-01					OK	
08	RA-226	TRG	VPBR092705SL05	pCi/g	9.15E-01	3.04E-01	6.53E-02					OK	
09	RA-226	TRG	VPBR092705SL06	pCi/g	1.65E+00	4.65E-01	1.66E-01					OK	
10	RA-226	TRG	VPBR092705SL07	pCi/g	1.34E+00	3.99E-01	1.30E-01					OK	
11	RA-226	TRG	VPBR092705SL08	pCi/g	1.08E+00	3.48E-01	1.44E-01					OK	
12	RA-226	TRG	VPBR092705SL09	pCi/g	1.26E+00	3.71E-01	6.97E-02					OK	
13	RA-226	TRG	VPBR092705SL10	pCi/g	2.06E+00	6.44E-01	4.00E-01					OK	
14	RA-226	TRG	VPBR092705SL11	pCi/g	7.73E-01	2.22E-01	6.90E-02					OK	
15	RA-226	TRG	VPBR092705SL12	pCi/g	8.49E-01	2.72E-01	9.61E-02					OK	
16	RA-226	TRG	VPBR092705SL13	pCi/g	1.08E+00	3.21E-01	1.04E-01					OK	
17	RA-226	TRG	VPBR092705SL14	pCi/g	1.15E+00	3.32E-01	1.65E-01					OK	
18	RA-226	TRG	VPBR092705SL15	pCi/g	1.21E+00	3.77E-01	1.67E-01					OK	
19	RA-226	TRG	VPBR092705SL16	pCi/g	1.20E+00	4.65E-01	3.02E-01					OK	

Preliminary Data Report & Analytical Calculations

Work Order: 05-09117-Ra226-1

Run	Analysis Code	Eberline Services Work Order	Client
1	Ra226	05-09117	Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Sample Date	Sample Aliquot	Radiometric % Rec	Grav % Rec	Mean % Rec	SAF	Sep t0 Date/Time	Sep t1 Date/Time
01	RA-226	LCS	09/30/05 00:00	1.00E+00	84.81		84.81			
02	RA-226	MBL	09/30/05 00:00	1.00E+00	91.59		91.59			
03	RA-226	DUP	09/27/05 09:30	1.01E+00	100.00		100.00			
04	RA-226	DO	09/27/05 09:30	9.93E-01	81.97		81.97			
05	RA-226	TRG	09/27/05 09:34	1.04E+00	96.99		96.99			
06	RA-226	TRG	09/27/05 09:37	9.96E-01	90.89		90.89			
07	RA-226	TRG	09/27/05 09:40	1.18E+00	100.00		100.00			
08	RA-226	TRG	09/27/05 09:44	1.01E+00	92.92		92.92			
09	RA-226	TRG	09/27/05 09:50	1.03E+00	91.40		91.40			
10	RA-226	TRG	09/27/05 09:52	1.01E+00	83.36		83.36			
11	RA-226	TRG	09/27/05 09:56	1.08E+00	100.00		100.00			
12	RA-226	TRG	09/27/05 11:30	1.06E+00	87.79		87.79			
13	RA-226	TRG	09/27/05 11:36	1.02E+00	88.44		88.44			
14	RA-226	TRG	09/27/05 11:25	1.07E+00	80.67		80.67			
15	RA-226	TRG	09/27/05 11:23	1.11E+00	94.04		94.04			
16	RA-226	TRG	09/27/05 11:18	1.00E+00	99.62		99.62			
17	RA-226	TRG	09/27/05 11:15	1.03E+00	99.28		99.28			
18	RA-226	TRG	09/27/05 11:13	1.12E+00	85.97		85.97			
19	RA-226	TRG	09/27/05 11:05	1.06E+00	86.08		86.08			

Preliminary Data Report & Analytical Calculations
Work Order: 05-09117-Ra226-1

Run: 1
Analysis Code: Ra226
Eberline Services Work Order: 05-09117
Client: Missouri Dept. of Natural Resources

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	RA-226	LCS	10/06/05 10:57		A_Spec	30	170	7.28 E+02	6.00 E-03	20.7
02	RA-226	MBL	10/06/05 10:57		A_Spec	31	170.08	2.76 E+00	1.00 E-02	19.6
03	RA-226	DUP	10/06/05 10:57		A_Spec	32	170.03	7.44 E+01	5.00 E-03	19.2
04	RA-226	DO	10/06/05 14:24		A_Spec	33	170	9.18 E+01	1.00 E-03	20.4
05	RA-226	TRG	10/06/05 14:24		A_Spec	34	170	1.14 E+02	2.00 E-03	20.2
06	RA-226	TRG	10/06/05 14:24		A_Spec	35	170	8.92 E+01	3.00 E-03	20.7
07	RA-226	TRG	10/06/05 14:25		A_Spec	36	170	1.05 E+02	3.00 E-03	21.4
08	RA-226	TRG	10/06/05 14:25		A_Spec	37	170	6.57 E+01	0.00 E+00	20.3
09	RA-226	TRG	10/06/05 14:25		A_Spec	38	170	1.14 E+02	2.00 E-03	19.4
10	RA-226	TRG	10/06/05 14:26		A_Spec	39	170	8.43 E+01	1.00 E-03	19.8
11	RA-226	TRG	10/06/05 14:26		A_Spec	40	170	9.27 E+01	2.00 E-03	21
12	RA-226	TRG	10/06/05 14:26		A_Spec	41	170	9.11 E+01	0.00 E+00	20.6
13	RA-226	TRG	10/06/05 14:27		A_Spec	42	170	1.52 E+02	9.00 E-03	21.8
14	RA-226	TRG	10/06/05 14:27		A_Spec	43	170	5.39 E+01	1.00 E-03	21.5
15	RA-226	TRG	10/06/05 14:28		A_Spec	44	170	6.79 E+01	1.00 E-03	20.2
16	RA-226	TRG	10/06/05 14:29		A_Spec	45	170	8.43 E+01	1.00 E-03	20.8
17	RA-226	TRG	10/06/05 14:29		A_Spec	46	170	9.05 E+01	6.00 E-03	20.5
18	RA-226	TRG	10/06/05 14:30		A_Spec	47	170	8.93 E+01	3.00 E-03	20.3
19	RA-226	TRG	10/06/05 14:30		A_Spec	48	170	8.01 E+01	5.00 E-03	19.3

Count Room Report
Client: Missouri Dept. of Natural

05-09117-Ra226-1 (pCi/g) in SO
Tracer ID: Ba-6a

Internal Fraction	Sample Desc	Client ID	Sample Date	Sample Aliquot	Tracer Aliquot (g)	Tracer ACT (dpm)	Radiometric Tracer (pCi)	Radiometric % Rec	SAF 1*	SAF 2*
01	LCS	LCS	09/30/05 00:00	1.0000	0.6081	1011.2332	386.3000	84.81	2.23	1.00
02	MBL	BLANK	09/30/05 00:00	1.0000	0.6040	1004.4152	414.4000	91.59	2.23	1.00
03	DUP	VPBR092705SL01	09/27/05 09:30	1.0079	0.6009	999.2600	468.1000	104.00	1.71	1.00
04	DO	VPBR092705SL01	09/27/05 09:30	0.9932	0.6101	1014.5591	374.6000	81.97	2.00	1.00
05	TRG	VPBR092705SL02	09/27/05 09:34	1.0375	0.5982	994.7701	434.6000	96.99	3.17	1.00
06	TRG	VPBR092705SL03	09/27/05 09:37	0.9958	0.5994	996.7656	408.1000	90.89	1.95	1.00
07	TRG	VPBR092705SL04	09/27/05 09:40	1.1835	0.6041	1004.5814	511.1000	112.95	2.20	1.00
08	TRG	VPBR092705SL05	09/27/05 09:44	1.0106	0.6004	998.4286	417.9000	92.92	1.73	1.00
09	TRG	VPBR092705SL06	09/27/05 09:50	1.0332	0.6025	1001.9207	412.5000	91.40	2.12	1.00
10	TRG	VPBR092705SL07	09/27/05 09:52	1.0075	0.6113	1016.5546	381.7000	83.36	1.76	1.00
11	TRG	VPBR092705SL08	09/27/05 09:56	1.0825	0.5982	994.7701	449.5000	100.31	2.27	1.00
12	TRG	VPBR092705SL09	09/27/05 11:30	1.0615	0.6019	1000.9230	395.8000	87.79	1.86	1.00
13	TRG	VPBR092705SL10	09/27/05 11:36	1.0151	0.5938	987.4532	393.4000	88.44	3.49	1.00
14	TRG	VPBR092705SL11	09/27/05 11:25	1.0670	0.6095	1013.5613	368.3000	80.67	1.04	1.00
15	TRG	VPBR092705SL12	09/27/05 11:23	1.1141	0.6015	1000.2578	423.7000	94.04	1.66	1.00
16	TRG	VPBR092705SL13	09/27/05 11:18	0.9999	0.6033	1003.2511	450.2000	99.62	1.76	1.00
17	TRG	VPBR092705SL14	09/27/05 11:15	1.0261	0.5977	993.9386	444.5000	99.28	1.76	1.00
18	TRG	VPBR092705SL15	09/27/05 11:13	1.1188	0.5988	995.7679	385.6000	85.97	2.04	1.00
19	TRG	VPBR092705SL16	09/27/05 11:05	1.0649	0.6030	1002.7522	388.8000	86.08	2.89	1.00

Eberline Services
Oak Ridge Laboratory

Spike and Tracer Worksheet

Printed: 10/5/2005 7:39 AM

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
05-09117	1	Ra226	10/5/2005 7:09	JBARNARD		

LCS & Matrix Spikes					LCS	MS	LCSD	MSD	LCS		MS		LCSD		MSD	
Isotope	Sol #	Activity dpm/g	Solution Date	Approx Addition	Volume Used (g)	Volume Used (g)	Volume Used (g)	Volume Used (g)	Known pCi	Error Estimate	Added pCi	Error Estimate	Known pCi	Error Estimate	Added pCi	Error Estimate
Ra-226	Ra-5b	44.216	10/5/2005	0.500	0.5170				10.30	0.474	0.00	0.000	0.00	0.000	0.00	0.000

Tracers

fraction	Isotope	Sol #	Activity dpm/g	Solution Date	Volume Used (g)	Approx Addition
01	Ba-133	Ba-6a	1662.939	10/5/2005	0.6081	0.6100
02	Ba-133	Ba-6a	1662.939	10/5/2005	0.6040	0.6100
03	Ba-133	Ba-6a	1662.939	10/5/2005	0.6009	0.6100
04	Ba-133	Ba-6a	1662.939	10/5/2005	0.6101	0.6100
05	Ba-133	Ba-6a	1662.939	10/5/2005	0.5982	0.6100
06	Ba-133	Ba-6a	1662.939	10/5/2005	0.5994	0.6100
07	Ba-133	Ba-6a	1662.939	10/5/2005	0.6041	0.6100
08	Ba-133	Ba-6a	1662.939	10/5/2005	0.6004	0.6100
09	Ba-133	Ba-6a	1662.939	10/5/2005	0.6025	0.6100
10	Ba-133	Ba-6a	1662.939	10/5/2005	0.6113	0.6100
11	Ba-133	Ba-6a	1662.939	10/5/2005	0.5982	0.6100
12	Ba-133	Ba-6a	1662.939	10/5/2005	0.6019	0.6100
13	Ba-133	Ba-6a	1662.939	10/5/2005	0.5938	0.6100
14	Ba-133	Ba-6a	1662.939	10/5/2005	0.6095	0.6100
15	Ba-133	Ba-6a	1662.939	10/5/2005	0.6015	0.6100
16	Ba-133	Ba-6a	1662.939	10/5/2005	0.6033	0.6100
17	Ba-133	Ba-6a	1662.939	10/5/2005	0.5977	0.6100
18	Ba-133	Ba-6a	1662.939	10/5/2005	0.5988	0.6100
19	Ba-133	Ba-6a	1662.939	10/5/2005	0.6030	0.6100

Balance Printer Tapes

Tracer

0.6081 g
-0.6040 g
-0.6009 g
-0.6101 g
-0.5982 g
-0.5994 g
-0.6041 g
-0.6004 g
-0.6025 g
-0.6113 g
-0.5982 g
-0.6019 g
-0.5938 g
-0.6095 g
-0.6015 g
-0.6033 g
-0.5977 g
-0.5988 g
-0.6030 g

LCS

0.5170 g

Matrix Spike

Eberline Services - Oak Ridge
Version 2.0 8/1999

Aliquot Worksheet

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
05-09117	1	Ra226	grams	10/20/2005	JBARNARD

Lab Fraction	Missouri Dept. of Natural Resources Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data No of Dils	Dil Factor	Ratio	Aliquot Data Aliquot	Net Equiv	MS Aliquot Data Aliquot	Net Equiv	H-3 Solids Only Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000E+00	1.0000E+00				
02	BLANK	MBL					1.0000E+00	1.0000E+00				
03	VPBR092705SL01	DUP					1.0079E+00	1.0079E+00				
04	VPBR092705SL01	DO					9.9320E-01	9.9320E-01				
05	VPBR092705SL02	TRG					1.0375E+00	1.0375E+00				
06	VPBR092705SL03	TRG					9.9580E-01	9.9580E-01				
07	VPBR092705SL04	TRG					1.1835E+00	1.1835E+00				
08	VPBR092705SL05	TRG					1.0106E+00	1.0106E+00				
09	VPBR092705SL06	TRG					1.0332E+00	1.0332E+00				
10	VPBR092705SL07	TRG					1.0075E+00	1.0075E+00				
11	VPBR092705SL08	TRG					1.0825E+00	1.0825E+00				
12	VPBR092705SL09	TRG					1.0615E+00	1.0615E+00				
13	VPBR092705SL10	TRG					1.0151E+00	1.0151E+00				
14	VPBR092705SL11	TRG					1.0670E+00	1.0670E+00				
15	VPBR092705SL12	TRG					1.1141E+00	1.1141E+00				
16	VPBR092705SL13	TRG					9.9990E-01	9.9990E-01				
17	VPBR092705SL14	TRG					1.0261E+00	1.0261E+00				
18	VPBR092705SL15	TRG					1.1188E+00	1.1188E+00				
19	VPBR092705SL16	TRG					1.0649E+00	1.0649E+00				

1.0079 g
0.9932 g
1.0375 g
0.9958 g
1.1835 g
1.0106 g
1.0332 g
1.0075 g
1.0825 g
1.0615 g
1.0151 g
1.0670 g
1.1141 g
0.9999 g
1.0261 g
1.1188 g
1.0649 g

Comments	

Technician: JBarnard Date: 10/4/05

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Eberline Services - Oak Ridge
Version 1.0 9/1999

Gravimetric Worksheet

Work Order	Run	Analysis Code	Gravimetric Carrier	Carrier Conc (mg/ml)	Technician
05-09117	1	Ra226			DJOHNSON

TRetec Fraction	Missouri Dept. of Natural Resources Client ID	Sample Type	Carrier Data: Carrier Added (ml)	Filter Data: Filter Tare (g)	Filter Data: Filter Final (g)	Filter Data: Filter Net (g)	Gravimetric: % Recovery
01	LCS	LCS		0.0239	0.0301	0.0062	
02	BLANK	MBL		0.0233	0.0295	0.0062	
03	DUP	DUP		0.0238	0.0288	0.0050	
04	VPBR092705SL01	DO		0.0240	0.0296	0.0056	
05	VPBR092705SL02	TRG		0.0240	0.0336	0.0096	
06	VPBR092705SL03	TRG		0.0239	0.0294	0.0055	
07	VPBR092705SL04	TRG		0.0240	0.0301	0.0061	
08	VPBR092705SL05	TRG		0.0239	0.0289	0.0050	
09	VPBR092705SL06	TRG		0.0233	0.0292	0.0059	
10	VPBR092705SL07	TRG		0.0235	0.0286	0.0051	
11	VPBR092705SL08	TRG		0.0230	0.0293	0.0063	
12	VPBR092705SL09	TRG		0.0236	0.0289	0.0053	
13	VPBR092705SL10	TRG		0.0233	0.0340	0.0107	
14	VPBR092705SL11	TRG		0.0235	0.0274	0.0039	
15	VPBR092705SL12	TRG		0.0234	0.0283	0.0049	
16	VPBR092705SL13	TRG		0.0234	0.0285	0.0051	
17	VPBR092705SL14	TRG		0.0233	0.0284	0.0051	
18	VPBR092705SL15	TRG		0.0231	0.0288	0.0057	
19	VPBR092705SL16	TRG		0.0235	0.0320	0.0085	

Technician: _____ Date: 10/6/05

Eberline Services - Oak Ridge
Prep Logbook
Version 2.0 8/1999

Rough Sample Preparation Log Book

Work Order	Lab Deadline	Date Received in Prep	Date Sealed	Date Returned	Technician
05-09117	10/20/2005	10/2/2005	10/3/2005	10/4/2005	KSALLINGS

Eberline	Missouri Dept. of Natural Resources	Tare (g)	Gross (g)		Net (g)		Percent		Gamma		Special
Fraction	Client ID	Pan Wt	Wet Wt.	Dry Wt.	Wet Wt.	Dry Wt.	Liquid	Solid	Dry Wt.	LEPS Wt.	Info
04	VPBR092705SL01	13.7700	473.6900	378.5700	459.9200	364.8000	20.68%	79.32%			
05	VPBR092705SL02	13.7800	516.5600	447.7100	502.7800	433.9300	13.69%	86.31%			
06	VPBR092705SL03	13.8100	476.1600	367.8400	462.3500	354.0300	23.43%	76.57%			
07	VPBR092705SL04	13.8500	479.1200	387.7100	465.2700	373.8600	19.65%	80.35%			
08	VPBR092705SL05	13.8500	425.7700	350.8500	411.9200	337.0000	18.19%	81.81%			
09	VPBR092705SL06	13.7900	374.2300	294.7500	360.4400	280.9600	22.05%	77.95%			
10	VPBR092705SL07	13.9000	403.2800	322.5000	389.3800	308.6000	20.75%	79.25%			
11	VPBR092705SL08	13.7700	298.0700	242.3800	284.3000	228.6100	19.59%	80.41%			
12	VPBR092705SL09	13.9100	494.9100	420.0800	481.0000	406.1700	15.56%	84.44%			
13	VPBR092705SL10	13.7600	442.0500	356.7400	428.2900	342.9800	19.92%	80.08%			
14	VPBR092705SL11	13.7000	389.5500	339.9000	375.8500	326.2000	13.21%	86.79%			
15	VPBR092705SL12	13.9900	395.4000	345.8700	381.4100	331.8800	12.99%	87.01%			
16	VPBR092705SL13	13.6800	418.1800	346.7600	404.5000	333.0800	17.66%	82.34%			
17	VPBR092705SL14	14.0500	346.1800	256.6900	332.1300	242.6400	26.94%	73.06%			
18	VPBR092705SL15	13.8900	441.4800	373.6800	427.5900	359.7900	15.86%	84.14%			
19	VPBR092705SL16	13.8100	435.1000	327.1400	421.2900	313.3300	25.63%	74.37%			

Comments	
Special Codes	**H: Hot, O: Organic Hazard, P: PCB Hazard, R: Rush, T: Other (see comments)**

Technician: Kenny Sallings

Date: **Analysis: Rough Prep Logbook**

Analysis: Ra226 Page No. 5130

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:11:59

****
Spectral File: ND_AMS_ARCHIVE_C:C_0509117A-RA$01_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	01
SAMPLE DATE:	6-OCT-2005 00:00	ALIQUOT:	1.000E+00 gram
SAMPLE TITLE:	SPIKE	DETECTOR NUMBER:	030
ACQ DATE:	6-OCT-2005 10:57	AVERAGE EFFICIENCY:	20.73%
ELAPSED LIVE TIME:	10200.	RECOVERY:	84.81%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 13:20	EFF CAL DATE:	29-SEP-2005 13:20
BKG FILENAME:	B_030_1OCT05	BKG ELAPSED TIME:	60004.
		SAF:	2.23

****

NUCLIDE ACTIVITY SUMMARY

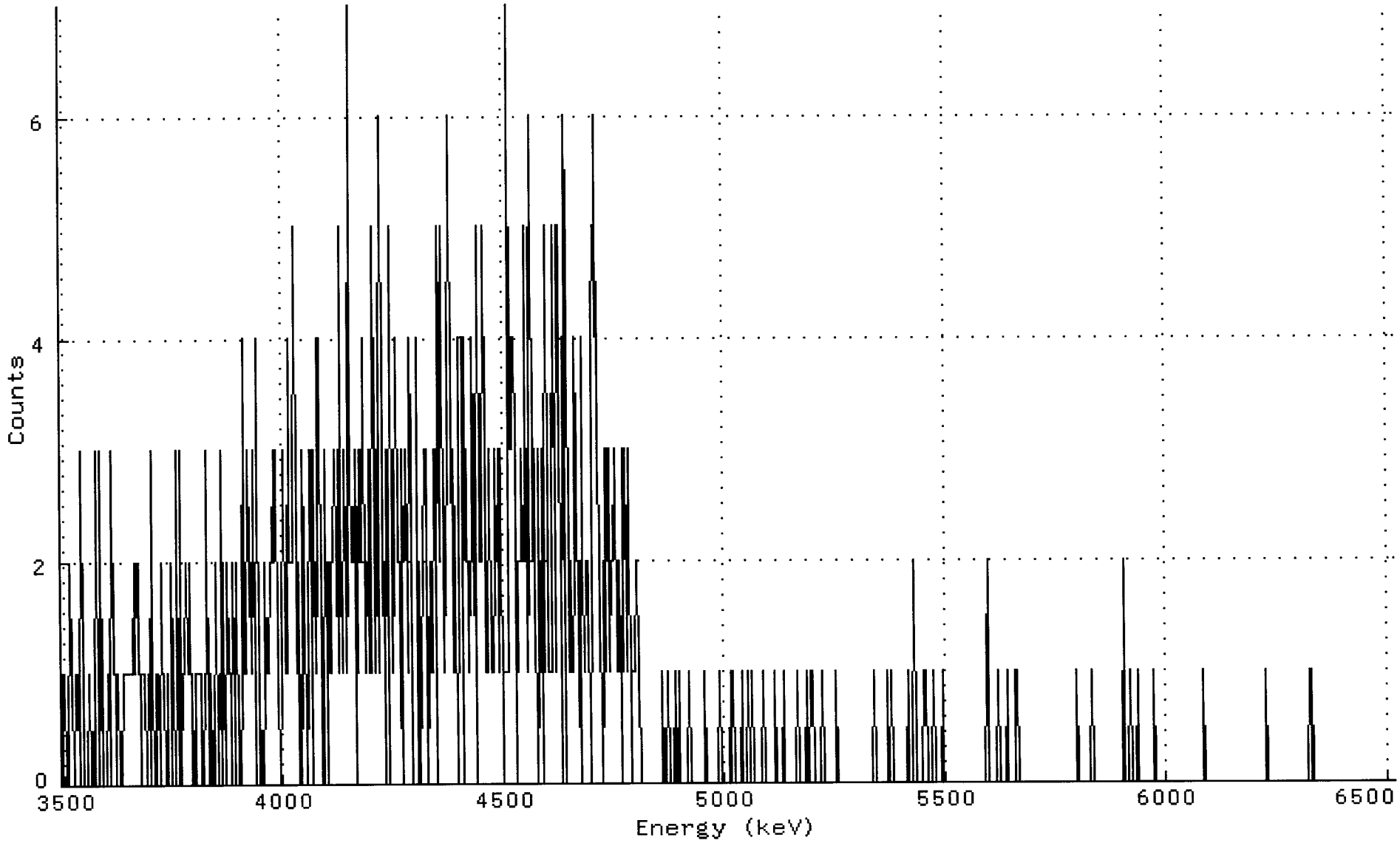
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	29.52	1.70	100.0	4.450E-01	2.540E-01	2.949E-01
RN-222	5490.0	53.88	1.87	99.9	8.128E-01	3.415E-01	3.051E-01
RA-226	4785.0	728.19	1.02	100.0	1.098E+01	1.435E+00	2.489E-01

****

Analyst _____ Date 10-6-05

Reviewer _____ Date 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.C]C_0509117A-RA$01_RA.CNF;1
Title : 030
Sample Title: SPIKE
Start Time: 6-OCT-2005 10:57: Sample Time: 6-OCT-2005 00:00: Energy Offset: 3.48178E+03
Real Time : 0 02:50:00.00 Sample ID : 01 Energy Slope : 3.17539E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -2.09487E-04



Channel Contents for ND_AMS_ARCHIVE_C:C_0509117A-RA$01_RA

Channel

1:	10200	10200	0	1	0	1	0	0	0	2	1	0	0	1
15:	1	0	0	3	1	0	0	0	1	1	0	0	1	0
29:	3	0	1	3	0	0	0	0	1	0	0	3	1	1
43:	0	1	0	0	0	1	1	1	1	1	1	1	1	2
57:	1	2	2	0	1	1	1	0	0	1	0	3	1	0
71:	1	0	1	0	2	1	1	0	1	0	0	0	2	1
85:	0	1	3	0	3	0	1	1	2	2	1	2	0	1
99:	0	0	1	1	1	1	0	0	1	1	3	0	0	1
113:	0	0	2	2	0	1	0	3	1	0	0	2	1	1
127:	0	2	1	0	2	0	0	0	1	4	1	1	3	2
141:	2	1	3	0	0	4	0	1	0	0	1	2	1	1
155:	1	2	2	3	2	3	1	1	0	1	3	3	1	1
169:	4	2	2	2	2	5	2	0	2	0	1	3	2	0
183:	1	1	3	3	0	3	1	2	4	4	1	0	0	3
197:	1	0	2	1	2	2	3	2	2	1	5	2	1	3
211:	2	1	2	7	3	2	2	3	0	2	3	2	2	4
225:	1	1	2	1	3	1	5	1	4	2	1	3	6	3
239:	0	1	3	0	1	5	1	2	2	4	2	3	1	0
253:	3	2	3	1	1	4	3	0	0	0	0	4	0	1
267:	1	2	3	3	0	1	2	1	1	3	3	0	5	2
281:	4	5	1	1	2	3	6	5	4	1	3	2	0	2
295:	4	4	4	0	4	2	3	1	2	2	4	3	0	2
309:	5	2	3	2	5	3	1	1	3	3	1	1	2	3
323:	2	3	1	3	0	1	1	1	1	7	3	3	4	4
337:	3	0	2	2	2	3	2	2	5	1	2	4	6	2
351:	3	2	0	1	3	1	3	0	2	5	2	1	1	1
365:	2	5	1	2	5	5	0	0	4	0	6	5	1	3
379:	1	1	2	4	3	1	1	0	4	2	1	2	1	2
393:	0	2	4	5	4	6	3	2	2	0	1	3	1	3
407:	3	1	2	2	2	3	1	2	2	0	3	1	3	2
421:	1	3	0	1	1	1	2	2	1	0	0	0	0	0
435:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
449:	0	0	1	0	0	0	0	1	0	0	1	0	0	0
463:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
477:	0	0	1	0	0	0	0	0	0	0	0	0	0	1
491:	0	0	0	0	0	0	0	1	0	1	0	0	0	0
505:	0	0	1	0	0	0	0	1	0	0	1	0	0	0
519:	0	0	0	0	1	1	0	0	0	0	0	0	0	0
533:	1	0	0	0	0	0	1	0	0	0	0	0	0	0
547:	0	0	0	1	0	0	0	0	0	0	1	0	0	1
561:	1	1	0	0	0	0	0	0	1	0	0	0	0	0
575:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
603:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
617:	0	0	0	1	0	1	0	0	0	0	0	0	0	0
631:	0	0	0	0	1	0	0	0	0	2	0	0	0	0
645:	0	0	1	1	1	0	0	0	0	0	1	0	0	0
659:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	1	2	0	0
701:	0	0	0	0	0	1	0	0	0	0	0	0	1	0
715:	0	0	0	0	0	1	1	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
771:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	2	0	0	0	0	1	0	0
813:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
827:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	1	0	1	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:11:48.46

Detector ID: 30 Acquisition Start: 6-OCT-2005 10:57:09.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.00
Batch Id: 0509117A-RA Sample Id: 01
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4577.40	327	0	0.00	353.27	287	153	3.21E-02	5.5	
2	0	5266.99	25	0	3.18	584.76	501	174	2.45E-03	20.0	
3	0	5758.97	14	0	344.43	754.71	694	162	1.37E-03	26.7	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:11:56.81

Acquisition Start: 1-OCT-2005 10:06:54.01
Live Time: 0 16:40:04.00 Real Time: 0 16:40:04.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4606.85	6	0	0.00	363.00	287	153	1.00E-04	40.8	
2	0	5275.02	11	0	22.23	587.50	501	174	1.83E-04	30.2	
3	0	5815.46	10	0	419.15	774.50	694	162	1.67E-04	31.6	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:11:57.09

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4577.40*	728	0	0.00	353.27	287	153	7.14E-02	5.5	
2	0	5266.99*	54	0	3.18	584.76	501	174	5.28E-03	20.7	
3	0	5758.97*	30	0	344.43	754.71	694	162	2.89E-03	28.3	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:11:58

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: SPIKE		
Sample date	: 6-OCT-2005 00:00:00	Acquisition date	: 6-OCT-2005 10:57:09
Sample ID	: 01	Sample quantity	: 1.0000 gram
Sample type	: RA	Sample geometry	:
Detector name	: 030	Detector geometry	:
Elapsed live time	: 0 02:50:00.00	Elapsed real time	: 0 02:50:00.00 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4577.40*	728	0.00	353.27	287	153	11.1		RA-226	9.31
0	5266.99*	54	3.18	584.76	501	174	41.4		RN-222	0.689
0	5758.97*	30344.43		754.71	694	162	56.6		PO-218	0.377

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:12:12

****
Spectral File: ND_AMS_ARCHIVE_R:R_0509117A-RA$02_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	02
SAMPLE DATE:	6-OCT-2005 00:00	ALIQUOT:	1.000E+00 gram
SAMPLE TITLE:	BLANK	DETECTOR NUMBER:	031
ACQ DATE:	6-OCT-2005 10:57	AVERAGE EFFICIENCY:	19.58%
ELAPSED LIVE TIME:	10205.	RECOVERY:	91.59%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 13:20	EFF CAL DATE:	29-SEP-2005 13:20
BKG FILENAME:	B_031_1OCT05	BKG ELAPSED TIME:	60003.
		SAF:	2.23

****

NUCLIDE ACTIVITY SUMMARY

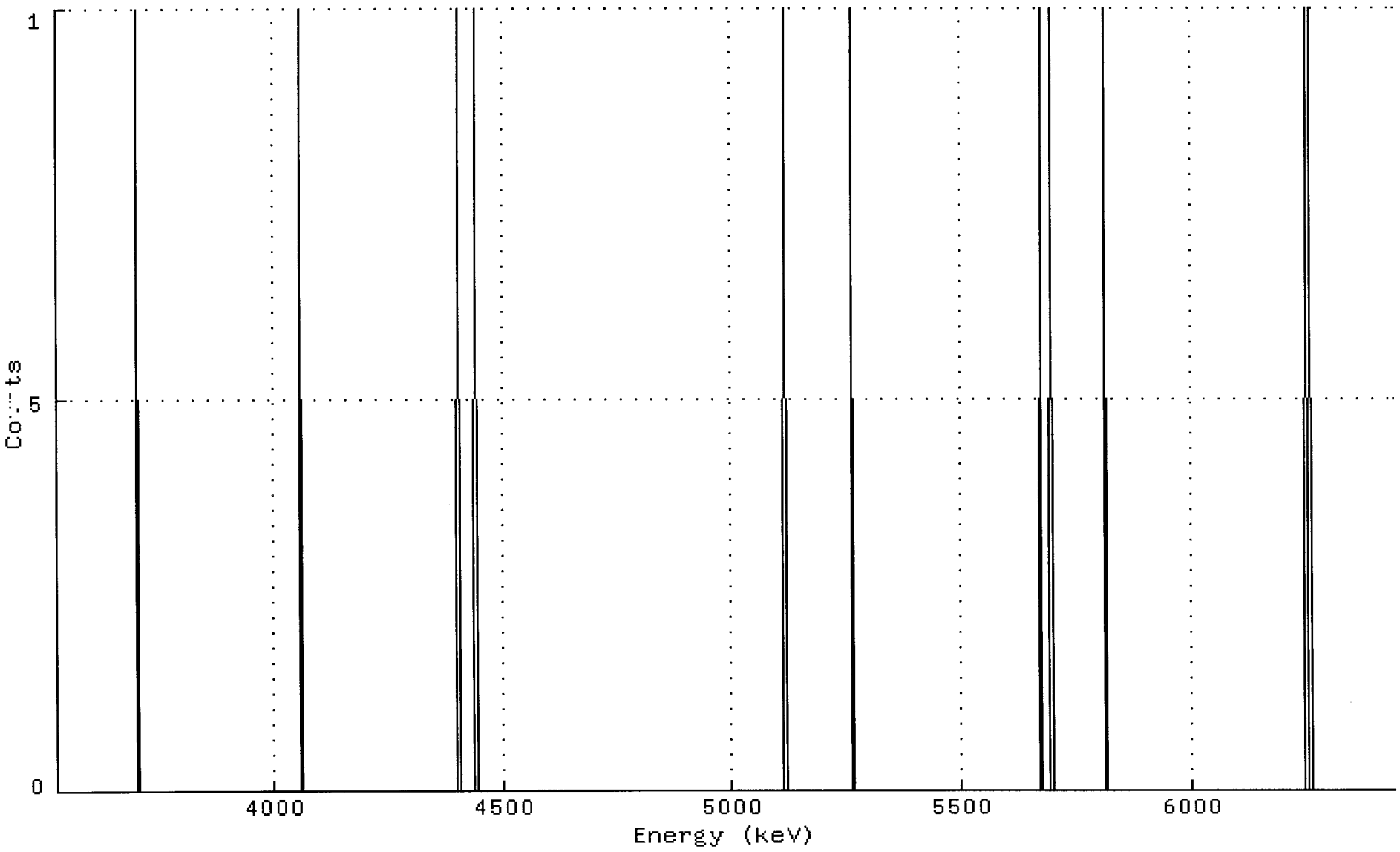
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	6.35	0.34	100.0	9.380E-02	1.145E-01	1.786E-01
RN-222	5490.0	2.76	1.70	99.9	4.078E-02	9.462E-02	2.892E-01
RA-226	4785.0	2.76	1.70	100.0	4.075E-02	9.454E-02	2.890E-01

****

Analyst — Date: 10-6-05

Reviewer — Date: 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.R]R_0509117A-RA$02_RA.CNF;1
Title : 031
Sample Title: BLANK
Start Time: 6-OCT-2005 10:57: Sample Time: 6-OCT-2005 00:00: Energy Offset: 3.51499E+03
Real Time : 0 02:50:05.00 Sample ID : 02 Energy Slope : 3.06137E+00
Live Time : 0 02:50:05.00 Sample Type: RA Energy Quad : -2.01462E-04



Channel Contents for ND_AMS_ARCHIVE_R:R_0509117A-RA$02_RA

Channel

1:	10205	10205	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
183:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
239:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
253:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
309:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
379:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
407:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
421:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
435:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
603:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
631:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
743:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
953:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:12:05.61

Detector ID: 31 Acquisition Start: 6-OCT-2005 10:57:21.01
Live Time: 0 02:50:05.00 Real Time: 0 02:50:05.00
Batch Id: 0509117A-RA Sample Id: 02
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4422.62	2	0	42.86	302.50	286	160	1.96E-04	70.7	
2	0	5186.02	2	0	162.25	567.00	509	181	1.96E-04	70.7	
3	0	5724.35	3	0	159.19	759.67	709	168	2.94E-04	57.7	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:12:10.53

Acquisition Start: 1-OCT-2005 10:06:57.01
Live Time: 0 16:40:03.00 Real Time: 0 16:40:03.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4607.01	10	0	0.00	365.50	286	160	1.67E-04	31.6	
2	0	5276.47	10	0	3.06	599.00	509	181	1.67E-04	31.6	
3	0	5814.60	2	0	174.50	792.50	709	168	3.33E-05	70.7	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:12:10.82

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4422.62*	3	0	42.86	302.50	286	160	2.70E-04	115.9	
2	0	5186.02*	3	0	162.25	567.00	509	181	2.70E-04	115.9	
3	0	5724.35*	6	0	159.19	759.67	709	168	6.22E-04	60.9	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:12:11

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BLANK
Sample date : 6-OCT-2005 00:00:00 Acquisition date : 6-OCT-2005 10:57:21
Sample ID : 02 Sample quantity : 1.0000 gram
Sample type : RA Sample geometry :
Detector name : 031 Detector geometry:
Elapsed live time: 0 02:50:05.00 Elapsed real time: 0 02:50:05.00 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4422.62*	3	42.86	302.50	286	160231.9			RA-226	3.732E-02
0	5186.02*	3162.25	567.00	509	181231.9				RN-222	3.735E-02
0	5724.35*	6159.19	759.67	709	168121.9				PO-218	8.591E-02

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:12:26

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$03_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	03
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.008E+00 gram
SAMPLE TITLE:	VPBR092705SL01	DETECTOR NUMBER:	032
ACQ DATE:	6-OCT-2005 10:57	AVERAGE EFFICIENCY:	19.23%
ELAPSED LIVE TIME:	10202.	RECOVERY:	100.00%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 13:20	EFF CAL DATE:	29-SEP-2005 13:20
BKG FILENAME:	B_032_1OCT05	BKG ELAPSED TIME:	60001.
		SAF:	1.71

****

NUCLIDE ACTIVITY SUMMARY

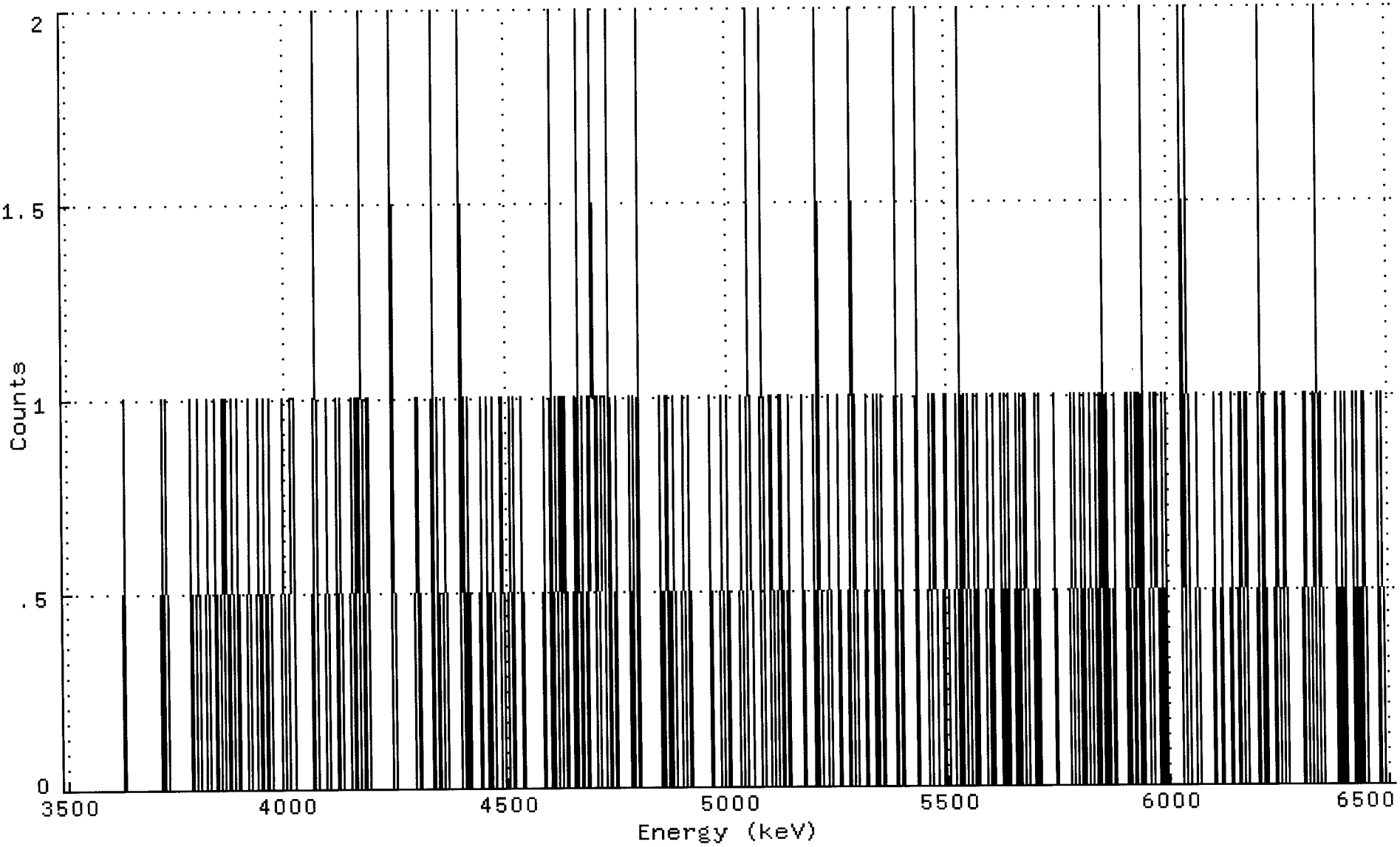
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	75.42	1.53	100.0	1.031E+00	3.220E-01	1.978E-01
RN-222	5490.0	73.88	1.36	99.9	1.011E+00	3.185E-01	1.902E-01
RA-226	4785.0	74.39	0.85	100.0	1.017E+00	3.182E-01	1.635E-01

****

Analyst _____ Date 10-6-05

Reviewer _____ Date 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$03_RA.CNF;1
Title : 032
Sample Title: VPBR092705SL01
Start Time: 6-OCT-2005 10:57: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.47806E+03
Real Time : 0 02:50:02.00 Sample ID : 03 Energy Slope : 3.12901E+00
Live Time : 0 02:50:02.00 Sample Type: RA Energy Quad : -1.67093E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$03_RA

Channel

1:	10202	10202	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	1	0	0	1	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
99:	0	0	0	0	1	0	0	0	0	0	0	1	0	0
113:	0	0	0	1	0	0	0	0	1	1	0	1	0	0
127:	0	1	0	0	0	0	1	0	0	0	0	0	0	0
141:	1	0	0	0	0	0	0	1	0	0	0	1	0	0
155:	0	1	0	0	0	0	0	0	0	0	0	1	0	0
169:	0	0	1	1	1	1	0	0	0	0	0	0	0	0
183:	0	0	0	0	0	1	0	2	0	0	0	0	0	0
197:	0	1	1	0	0	0	0	0	0	1	0	1	0	0
211:	0	0	0	0	0	0	1	0	1	0	1	1	0	2
225:	0	0	0	1	1	0	0	0	0	0	0	0	0	0
239:	0	0	0	0	0	0	0	0	2	1	0	0	0	0
253:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
267:	1	0	0	0	0	0	0	0	0	0	2	0	0	0
281:	1	0	0	0	0	1	0	0	0	0	0	0	0	0
295:	0	0	0	2	1	0	1	0	0	1	0	0	0	0
309:	0	0	0	0	1	0	0	0	0	1	0	0	0	1
323:	0	0	0	0	0	1	1	0	0	0	0	0	1	0
337:	1	0	0	0	0	0	0	1	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
365:	0	2	0	0	1	0	0	1	0	1	1	0	1	0
379:	0	0	0	0	1	0	0	2	1	0	1	0	0	0
393:	1	0	1	1	2	1	1	0	1	0	0	1	1	1
407:	0	0	0	2	0	0	0	0	1	0	0	0	0	0
421:	0	0	0	0	0	1	0	1	0	0	0	2	0	0
435:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
449:	1	0	0	0	1	0	1	0	0	0	1	0	0	0
463:	0	0	0	1	0	0	0	0	1	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
491:	0	0	0	0	1	0	0	0	0	1	0	0	0	0
505:	0	0	0	0	0	1	0	0	0	0	2	1	1	0
519:	0	0	0	0	0	0	0	2	0	0	0	0	0	1
533:	1	0	0	0	0	0	1	0	1	0	0	0	0	1
547:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
561:	0	0	0	0	0	1	0	0	2	1	0	0	0	0
575:	0	0	1	0	0	0	0	0	0	0	1	0	0	0
589:	0	0	0	0	1	0	2	1	0	1	0	0	0	0
603:	0	0	0	1	0	0	0	0	0	0	1	0	1	0
617:	0	0	1	0	0	0	0	0	0	0	0	0	0	2
631:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
645:	0	2	0	0	0	0	0	0	0	0	1	1	0	1
659:	1	1	0	0	0	0	0	0	1	0	1	0	0	0
673:	0	0	0	1	1	0	0	2	0	1	0	0	1	0
687:	0	0	0	1	0	1	0	0	0	0	0	0	0	1
701:	0	0	0	1	0	0	0	0	0	0	1	0	0	1
715:	0	1	0	0	0	0	0	1	0	0	1	0	0	0
729:	1	1	0	0	0	0	0	0	1	0	0	1	0	0
743:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
757:	0	0	0	0	0	0	0	0	0	1	0	0	1	0
771:	0	0	0	1	0	1	0	0	0	0	1	0	0	0
785:	0	1	0	1	0	1	0	2	0	0	1	0	0	0
799:	0	1	0	0	0	0	0	0	0	0	0	1	0	1
813:	0	1	1	0	0	1	1	0	1	0	2	0	0	0
827:	0	0	1	1	0	1	1	1	0	0	0	1	0	0
841:	1	0	0	0	0	0	0	0	0	0	0	0	0	2
855:	1	0	0	2	0	0	0	0	0	0	0	1	0	0
869:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
883:	0	0	1	0	0	0	0	0	0	0	1	0	0	0
897:	0	0	1	0	1	0	0	1	1	0	0	0	0	0
911:	0	0	0	1	0	2	0	0	0	1	0	0	0	0
925:	0	0	0	1	0	1	0	0	0	0	1	1	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
953:	1	0	0	0	0	0	1	0	0	2	0	0	1	1
967:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
981:	0	1	0	0	1	0	0	0	0	0	0	1	0	0
995:	1	0	0	0	1	0	1	0	0	0	0	0	0	0
1009:	0	0	0	1	0	1	1	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:12:17.86

Detector ID: 32 Acquisition Start: 6-OCT-2005 10:57:40.01
Live Time: 0 02:50:02.00 Real Time: 0 02:50:02.00
Batch Id: 0509117A-RA Sample Id: 03
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4618.38	44	0	422.35	371.82	291	155	4.31E-03	15.1	
2	0	5286.12	44	0	0.00	596.86	506	175	4.31E-03	15.1	
3	0	5846.39	45	0	209.64	790.24	699	161	4.41E-03	14.9	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:12:24.06

Acquisition Start: 1-OCT-2005 10:07:00.01
Live Time: 0 16:40:01.00 Real Time: 0 16:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4606.90	5	0	312.51	368.00	291	155	8.33E-05	44.7	
2	0	5274.80	8	0	3.13	593.00	506	175	1.33E-04	35.4	
3	0	5814.16	9	0	456.84	779.00	699	161	1.50E-04	33.3	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:12:24.32

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4618.38*	74	0	422.35	371.82	291	155	7.29E-03	15.3	
2	0	5286.12*	74	0	0.00	596.86	506	175	7.24E-03	15.4	
3	0	5846.39*	75	0	209.64	790.24	699	161	7.39E-03	15.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:12:25

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL01
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 6-OCT-2005 10:57:40
Sample ID : 03 Sample quantity : 1.0079 gram
Sample type : RA Sample geometry :
Detector name : 032 Detector geometry:
Elapsed live time: 0 02:50:02.00 Elapsed real time: 0 02:50:02.00 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4618.38*	74422.35	371.82		291	155	30.5		RA-226	1.02
0	5286.12*	74 0.00	596.86		506	175	30.7		RN-222	1.01
0	5846.39*	75209.64	790.24		699	161	30.4		PO-218	1.03

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:12:43

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$04_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	04
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	9.932E-01 gram
SAMPLE TITLE:	VPBR092705SL01	DETECTOR NUMBER:	033
ACQ DATE:	6-OCT-2005 14:24	AVERAGE EFFICIENCY:	20.43%
ELAPSED LIVE TIME:	10200.	RECOVERY:	81.97%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_033_1OCT05	BKG ELAPSED TIME:	60000.
		SAF:	2.00

****

NUCLIDE ACTIVITY SUMMARY

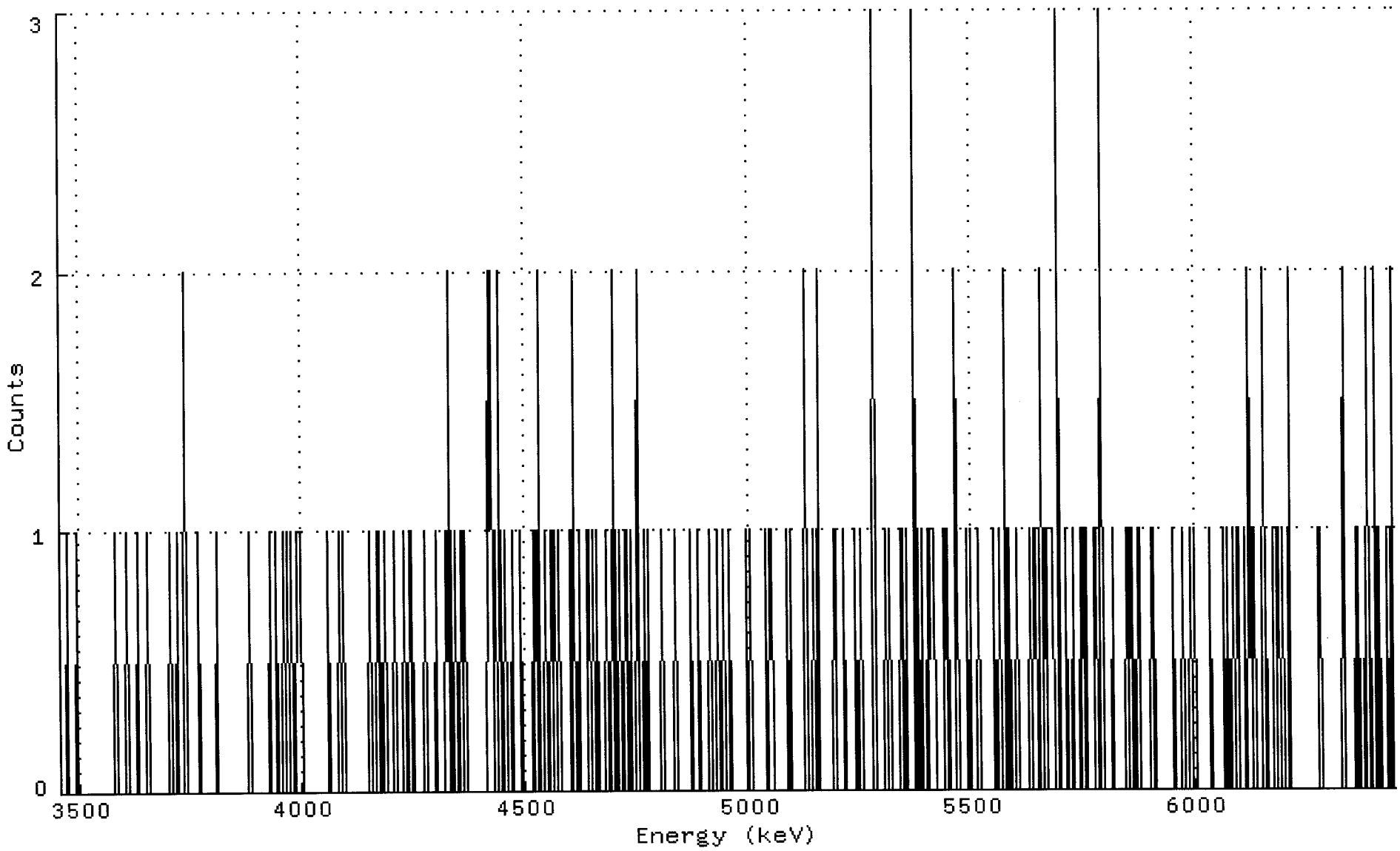
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	93.15	0.85	100.0	1.484E+00	4.492E-01	2.230E-01
RN-222	5490.0	87.49	0.51	99.9	1.395E+00	4.342E-01	1.923E-01
RA-226	4785.0	91.83	0.17	100.0	1.463E+00	4.441E-01	1.475E-01

****

Analyst _____ Date 10-6-05

Reviewer _____ Date 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$04_RA.CNF;1
Title : 033
Sample Title: VPBR092705SL01
Start Time: 6-OCT-2005 14:24: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.44682E+03
Real Time : 0 02:50:00.20 Sample ID : 04 Energy Slope : 3.12376E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.92284E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$04_RA

Channel

1:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
15:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	1	0	0	0	0	0	0	0	1	0	0	0	0	0
57:	0	0	1	0	0	0	0	0	0	1	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
85:	0	0	0	1	0	0	0	0	0	2	0	0	0	0
99:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
113:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	1	0	0	0	0	1	0	0	0	0	1	0	0
169:	1	0	0	1	0	0	0	1	1	1	1	0	0	0
183:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	1	0	0	0	0	0	0	0	1	0	1	1
211:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	1	0	0	0	0	0	1	0	1	0
239:	0	1	1	0	0	0	0	0	1	1	0	0	0	0
253:	0	1	1	0	0	0	1	0	1	0	0	0	0	0
267:	0	0	0	1	0	0	0	0	0	0	0	1	0	0
281:	0	0	0	0	0	1	1	0	2	0	0	0	1	0
295:	0	0	1	0	1	1	0	0	0	0	0	0	0	0
309:	0	0	0	0	0	0	0	0	1	2	1	2	0	0
323:	1	0	1	2	0	0	0	1	0	0	0	0	1	0
337:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
351:	1	0	1	0	2	0	0	0	0	1	0	0	0	1
365:	1	0	1	0	0	1	0	0	0	0	0	0	0	0
379:	1	0	2	1	0	0	1	0	0	0	0	0	0	1
393:	1	0	0	1	0	0	1	0	0	0	0	0	0	1
407:	0	0	0	1	0	2	0	0	0	1	0	0	0	1
421:	1	0	0	1	0	0	0	0	1	2	0	0	0	1
435:	0	0	1	0	0	0	0	0	0	0	0	0	0	1
449:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
463:	0	0	0	0	0	0	0	1	0	0	0	0	0	1
477:	0	0	0	0	0	0	0	1	0	0	0	0	0	1
491:	0	0	0	1	0	0	0	0	1	0	0	0	0	0
505:	0	0	0	0	0	0	0	1	0	1	1	0	0	0
519:	0	0	0	0	0	0	0	0	1	0	1	1	1	0
533:	0	0	0	0	0	0	0	0	0	0	1	0	1	0
547:	0	0	0	0	0	0	0	0	0	0	2	0	0	0
561:	0	0	1	0	0	0	2	0	0	0	0	0	0	0
575:	0	0	0	0	1	1	0	0	0	0	0	0	1	0
589:	0	0	0	0	0	0	0	1	0	0	0	1	0	0
603:	0	0	0	0	0	0	0	3	0	0	0	0	0	0
617:	0	0	1	0	0	1	0	0	0	0	0	0	0	0
631:	1	0	1	0	1	0	0	0	0	0	0	3	0	1
645:	0	0	1	0	0	0	1	0	1	1	1	1	0	0
659:	0	0	0	0	0	1	1	0	1	0	0	0	0	0
673:	2	1	0	0	0	0	0	0	0	1	0	1	0	0
687:	0	0	0	1	1	0	0	0	0	0	0	0	0	0
701:	0	0	1	0	0	0	1	0	0	0	0	2	0	0
715:	1	0	0	0	0	1	1	0	0	0	0	0	0	0
729:	0	0	1	0	0	1	1	1	0	0	0	2	0	0
743:	1	0	1	1	1	1	1	0	0	0	0	3	0	0
757:	0	0	0	1	0	0	0	0	1	0	0	0	0	0
771:	1	0	1	1	0	1	0	0	0	0	0	0	1	1
785:	0	0	0	3	2	0	0	0	0	0	0	0	1	0
799:	0	0	0	0	0	0	0	0	0	1	0	1	1	0
813:	1	0	0	0	1	1	0	0	0	0	0	0	0	0
827:	0	1	0	1	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	1	0	0	0	0	0	0	1	1	0
855:	0	0	0	1	1	0	1	1	0	0	0	0	0	0
869:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
883:	0	0	1	0	0	1	0	0	0	1	0	0	1	1
897:	0	0	0	0	0	1	0	1	2	1	0	1	1	0
911:	0	0	0	0	0	0	2	0	1	0	0	0	0	0
925:	1	1	1	0	1	0	0	1	0	0	0	0	0	2
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	1	1	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	1	2	0	0	0	0	0	0	0	0	1	0	0
995:	1	0	0	0	0	1	0	2	0	1	0	0	0	0
1009:	2	0	0	1	0	0	0	0	0	1	0	0	0	2
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:12:29.58

Detector ID: 33 Acquisition Start: 6-OCT-2005 14:24:02.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.20
Batch Id: 0509117A-RA Sample Id: 04
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4596.63	46	0	354.55	376.83	303	156	4.51E-03	14.7	
2	0	5302.89	44	0	364.70	617.66	520	177	4.31E-03	15.1	
3	0	5782.05	47	0	154.63	785.55	716	164	4.61E-03	14.6	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:12:41.93

Acquisition Start: 1-OCT-2005 10:07:02.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4607.58	1	0	3.12	380.50	303	156	1.67E-05	100.0	
2	0	5274.99	3	0	146.82	608.00	520	177	5.00E-05	57.7	
3	0	5815.73	5	0	381.10	797.50	716	164	8.33E-05	44.7	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:12:42.20

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4596.63*	92	0	354.55	376.83	303	156	9.00E-03	14.8	
2	0	5302.89*	87	0	364.70	617.66	520	177	8.58E-03	15.2	
3	0	5782.05*	93	0	154.63	785.55	716	164	9.13E-03	14.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:12:43

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL01		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 6-OCT-2005 14:24:02
Sample ID	: 04	Sample quantity	: 0.99320 gram
Sample type	: RA	Sample geometry	:
Detector name	: 033	Detector geometry	:
Elapsed live time	: 0 02:50:00.00	Elapsed real time	: 0 02:50:00.20 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4596.63*	92354.55	376.83	303	156	29.5			RA-226	1.20
0	5302.89*	87364.70	617.66	520	177	30.3			RN-222	1.14
0	5782.05*	93154.63	785.55	716	164	29.5			PO-218	1.22

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:13:04

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$05_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	05
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.038E+00 gram
SAMPLE TITLE:	VPBR092705SL02	DETECTOR NUMBER:	034
ACQ DATE:	6-OCT-2005 14:24	AVERAGE EFFICIENCY:	20.20%
ELAPSED LIVE TIME:	10200.	RECOVERY:	96.99%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_034_1OCT05	BKG ELAPSED TIME:	60000.
		SAF:	3.17

****

NUCLIDE ACTIVITY SUMMARY

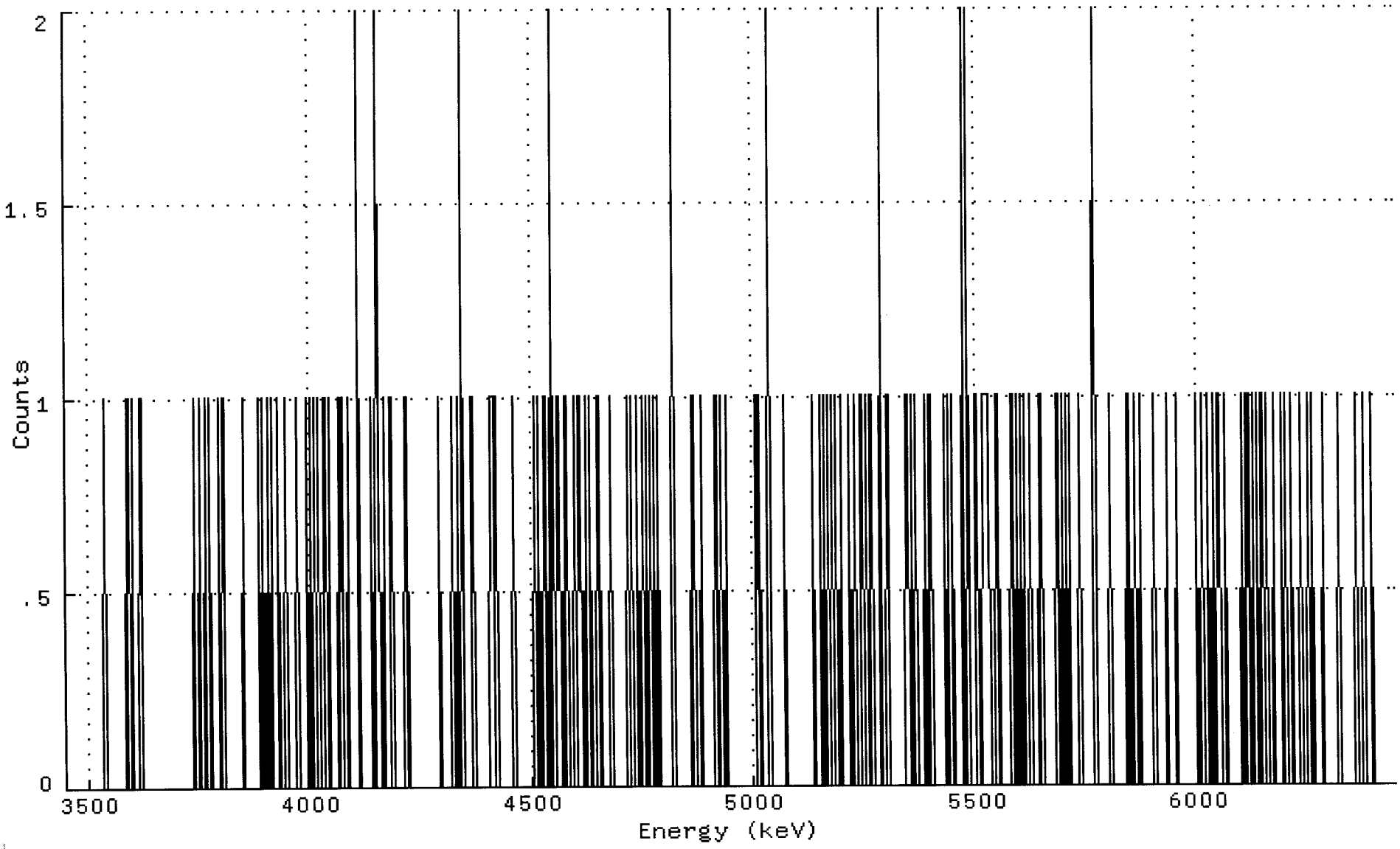
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	94.93	0.17	100.0	1.238E+00	4.609E-01	1.913E-01
RN-222	5490.0	142.65	0.00	99.9	1.861E+00	5.698E-01	1.121E-01
RA-226	4785.0	113.78	0.34	100.0	1.483E+00	5.066E-01	2.240E-01

****

Analyst _____ Date 10.06.05

Reviewer _____ Date 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$05_RA.CNF;1
Title : 034
Sample Title: VPBR092705SL02
Start Time: 6-OCT-2005 14:24: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.43713E+03
Real Time : 0 02:50:00.20 Sample ID : 05 Energy Slope : 3.11877E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.81823E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$05_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	1	0	1	0	1	0	0	0	0
57:	0	1	1	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
99:	0	0	0	1	0	0	0	1	0	0	0	1	0	0
113:	0	0	0	0	1	0	1	1	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
141:	0	0	0	0	0	1	0	0	1	0	0	1	0	0
155:	1	0	0	0	0	1	0	0	0	0	1	0	0	0
169:	0	0	0	0	1	1	0	0	0	0	0	0	1	0
183:	0	1	0	1	0	0	1	0	0	0	0	1	1	0
197:	1	0	0	0	0	0	0	1	0	1	1	0	0	0
211:	1	0	0	0	0	0	0	0	2	0	0	0	0	0
225:	0	0	0	0	1	0	0	0	2	1	0	0	0	1
239:	0	0	0	0	1	1	0	0	0	0	0	0	0	0
253:	0	1	0	1	0	0	0	0	0	0	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
281:	0	0	0	0	0	0	0	0	1	1	0	0	1	0
295:	0	1	2	0	0	0	0	0	0	1	1	0	0	0
309:	0	0	0	0	0	0	0	0	0	1	1	1	0	1
323:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	1	0	0	1	0	0	0	1	0	1	0	0	2	0
365:	1	0	0	1	1	1	0	0	1	0	1	0	0	0
379:	0	0	1	0	0	1	1	0	0	0	1	0	0	0
393:	1	0	0	0	0	1	0	1	0	0	0	0	0	0
407:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
421:	1	0	0	1	0	0	0	0	1	0	0	0	1	0
435:	1	0	0	1	1	0	0	1	0	0	1	0	0	0
449:	0	0	0	0	0	0	0	2	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	1	0	1	0	0	0	0
477:	1	0	0	0	0	0	0	0	0	0	0	1	1	0
491:	0	1	0	0	0	1	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
519:	1	1	0	1	0	0	0	0	0	0	2	0	0	0
533:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561:	0	0	1	0	0	0	0	0	1	0	1	0	0	1
575:	0	0	1	0	0	1	0	0	0	1	0	0	0	0
589:	0	0	1	0	0	0	1	0	0	0	0	1	1	0
603:	0	1	0	0	1	1	0	0	0	0	0	0	2	0
617:	0	0	0	1	1	0	0	0	0	0	0	0	0	0
631:	0	0	0	0	1	1	1	0	0	1	0	1	0	0
645:	0	0	0	0	1	0	0	1	0	1	0	0	0	0
659:	0	0	0	0	0	0	1	0	1	0	0	0	1	0
673:	0	0	0	0	0	0	2	0	0	1	2	0	0	0
687:	0	0	1	1	0	0	0	1	1	1	1	1	1	0
701:	0	0	0	0	1	0	1	0	0	0	0	0	0	0
715:	0	0	1	0	1	0	0	1	0	0	1	0	1	0
729:	0	0	0	1	0	0	0	0	0	0	1	0	1	0
743:	0	0	0	0	0	0	0	0	0	0	1	1	0	0
757:	1	0	0	1	0	0	1	0	0	0	0	0	0	0
771:	1	0	0	0	0	0	0	0	0	0	0	1	2	0
785:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
799:	0	0	0	0	0	0	0	0	0	1	0	0	1	0
813:	0	0	1	0	0	0	1	0	0	0	0	0	0	0
827:	0	0	0	1	0	0	0	0	0	0	0	0	0	1
841:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	1	0	0	0	1
869:	0	0	0	0	1	0	0	0	1	0	0	1	1	1
883:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
897:	0	0	0	1	0	0	1	0	1	0	1	0	1	0
911:	0	0	1	0	1	0	1	0	0	1	1	0	0	0
925:	0	1	0	0	0	0	0	0	1	0	1	1	0	0
939:	0	0	1	0	0	0	0	0	0	1	0	0	0	0
953:	0	1	0	0	0	1	0	0	0	0	0	0	0	1
967:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
995:	0	0	0	0	1	0	0	0	0	0	0	1	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:12:47.84

Detector ID: 34 Acquisition Start: 6-OCT-2005 14:24:25.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.20
Batch Id: 0509117A-RA Sample Id: 05
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4617.44	36	0	293.16	387.19	306	156	3.53E-03	16.7	
2	0	5333.39	45	0	483.41	631.24	524	176	4.41E-03	14.9	
3	0	5798.81	30	0	4.58	794.00	718	164	2.94E-03	18.3	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:13:01.82

Acquisition Start: 1-OCT-2005 10:07:05.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4606.44	2	0	121.63	383.50	306	156	3.33E-05	70.7	
2	0	5276.27	0	0	0.00	611.50	524	176	0.00E+00	0.0	
3	0	5814.37	1	0	3.12	799.50	718	164	1.67E-05	100.0	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:13:02.09

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4617.44*	114	0	293.16	387.19	306	156	1.12E-02	16.7	
2	0	5333.39*	143	0	483.41	631.24	524	176	1.40E-02	14.9	
3	0	5798.81*	95	0	4.58	794.00	718	164	9.31E-03	18.3	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:13:03

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL02		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 6-OCT-2005 14:24:25
Sample ID	: 05	Sample quantity	: 1.0375 gram
Sample type	: RA	Sample geometry	:
Detector name	: 034	Detector geometry	:
Elapsed live time	: 0 02:50:00.00	Elapsed real time	: 0 02:50:00.20 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4617.44*	114293.16		387.19	306	156	33.4		RA-226	1.44
0	5333.39*	143483.41		631.24	524	176	29.8		RN-222	1.81
0	5798.81*	95	4.58	794.00	718	164	36.6		PO-218	1.20

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:13:22

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$06_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	06
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	9.958E-01 gram
SAMPLE TITLE:	VPBR092705SL03	DETECTOR NUMBER:	035
ACQ DATE:	6-OCT-2005 14:24	AVERAGE EFFICIENCY:	20.72%
ELAPSED LIVE TIME:	10200.	RECOVERY:	90.89%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_035_1OCT05	BKG ELAPSED TIME:	60000.
		SAF:	1.95

****

NUCLIDE ACTIVITY SUMMARY

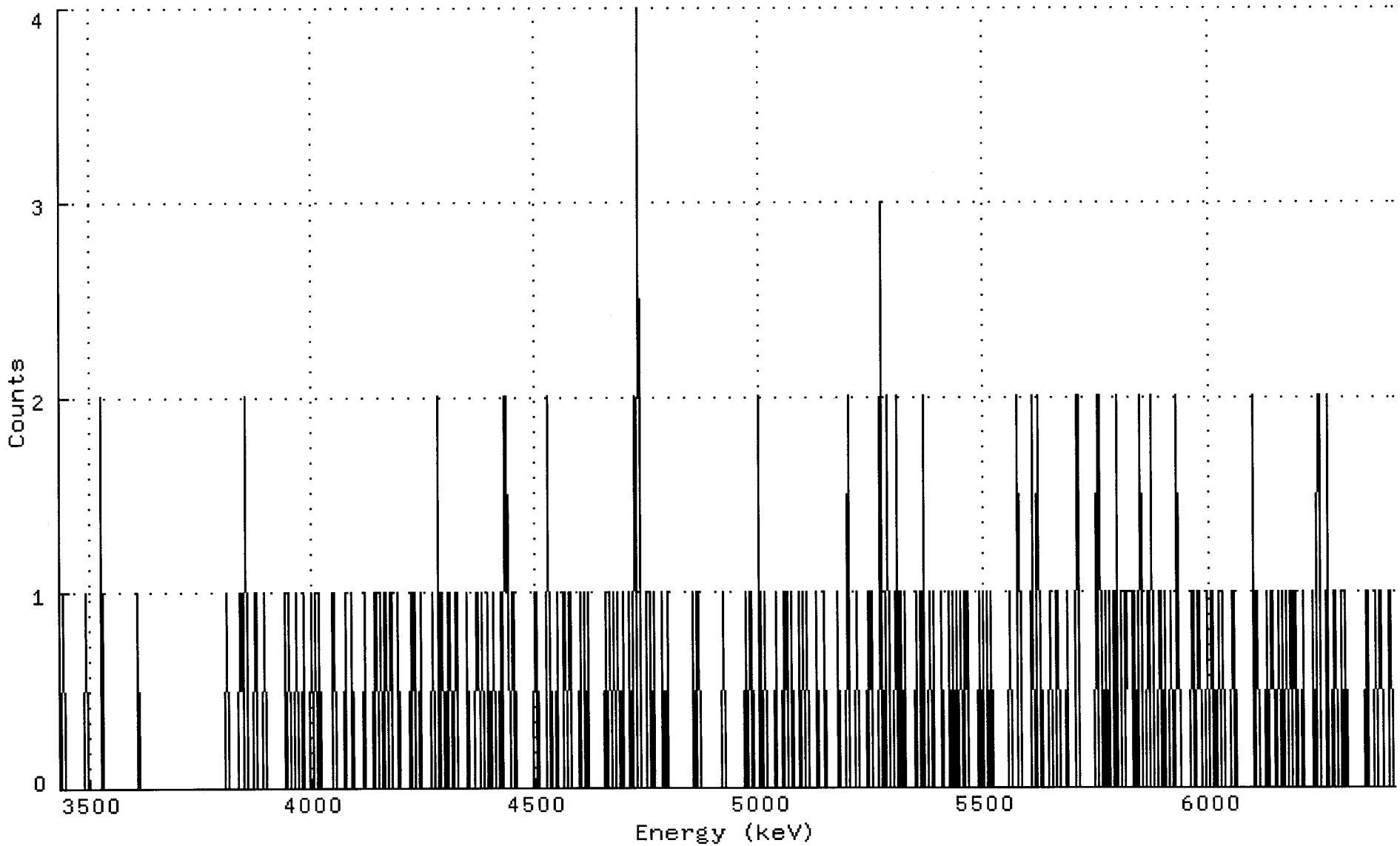
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	116.83	0.17	100.0	1.651E+00	4.421E-01	1.275E-01
RN-222	5490.0	97.75	1.70	99.9	1.382E+00	4.057E-01	2.419E-01
RA-226	4785.0	89.19	0.51	100.0	1.260E+00	3.840E-01	1.662E-01

****

Analyst _____ Date 10-6-05

Reviewer _____ Date 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$06_RA.CNF;1
Title : 035
Sample Title: VPBR092705SL03
Start Time: 6-OCT-2005 14:24: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.42336E+03
Real Time : 0 02:50:00.10 Sample ID : 06 Energy Slope : 3.09606E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.73898E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$06_RA

Channel

1:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
29:	0	0	0	0	0	2	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
127:	0	0	0	0	0	0	0	0	1	1	0	0	2	0
141:	0	0	0	0	0	1	1	0	0	0	0	0	1	0
155:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	1	0	1	0	0	0	0	0	1	0	0	0	0	1
183:	0	0	0	0	0	1	0	0	1	0	0	1	0	0
197:	0	0	0	0	0	0	0	1	1	0	0	0	0	0
211:	0	0	1	0	0	0	0	1	0	0	0	0	0	0
225:	0	0	1	0	0	0	0	0	0	1	0	1	0	0
239:	1	0	1	0	1	0	0	1	1	0	0	0	0	1
253:	0	0	0	0	0	0	0	0	1	0	1	1	0	0
267:	0	1	0	0	0	0	0	0	0	0	1	0	0	0
281:	0	2	0	1	0	0	0	1	0	1	0	0	0	1
295:	1	0	0	0	0	0	0	0	1	0	0	0	0	0
309:	0	1	1	0	0	1	0	0	0	0	1	0	0	1
323:	1	0	0	0	0	1	0	0	2	1	2	1	0	0
337:	1	0	1	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	1	0	1	0	0	0	0	0	0	0	2
365:	0	1	0	0	0	0	1	0	0	0	0	1	1	0
379:	0	1	1	0	0	0	0	0	0	1	0	0	0	1
393:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
407:	1	0	0	1	0	0	1	0	0	1	0	0	0	1
421:	0	0	0	0	1	0	1	0	2	0	0	4	1	0
435:	0	0	0	1	1	1	0	0	1	0	0	0	0	0
449:	0	1	0	0	1	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	0	0	1	0	0	1
477:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0	1	0	0	1	0	1
519:	0	0	0	0	0	2	0	0	0	1	0	0	0	0
533:	0	0	0	1	0	0	0	0	0	1	0	1	1	0
547:	0	0	1	0	0	0	0	0	1	0	1	0	0	1
561:	0	0	0	0	0	0	0	1	0	0	0	0	0	1
575:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
589:	0	0	1	2	0	0	0	0	0	1	1	0	0	0
603:	0	0	0	0	1	0	1	1	0	0	0	0	0	1
617:	3	0	0	1	0	2	0	0	0	0	0	1	0	2
631:	0	0	1	0	1	0	0	0	0	0	0	0	0	1
645:	0	0	0	1	0	2	0	0	0	1	1	0	1	0
659:	0	0	0	0	0	1	0	0	0	0	0	1	0	0
673:	1	0	1	0	0	1	1	0	1	0	1	1	0	0
687:	0	0	0	0	0	0	1	0	0	1	0	0	0	1
701:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	1	1	0	0	0	0	0	2	1	1	0	0
729:	0	0	0	0	0	0	2	1	0	0	1	2	0	1
743:	0	0	0	0	0	0	1	0	0	0	0	1	1	0
757:	0	0	0	0	0	1	0	0	0	0	0	0	0	2
771:	2	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	1	2	0	2	0	1	0	1	0	0	1	0	0	0
799:	1	0	2	0	0	0	1	1	1	0	1	1	1	1
813:	1	0	0	1	0	0	0	2	1	0	0	0	0	1
827:	0	0	2	0	0	0	0	0	1	0	1	0	1	0
841:	0	0	0	1	0	0	0	1	2	1	0	0	0	0
855:	0	0	0	0	0	0	1	0	1	0	1	1	1	0
869:	0	0	0	0	1	0	0	1	0	1	0	0	0	1
883:	0	0	1	1	0	0	0	0	0	0	1	0	1	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	2
911:	0	0	1	0	0	0	0	0	0	1	0	0	1	1
925:	1	0	0	0	1	1	0	1	0	0	0	1	0	0
939:	1	0	1	1	0	1	0	0	0	0	1	0	0	0
953:	0	0	0	0	0	1	0	0	1	2	2	0	0	0
967:	0	0	2	0	0	0	0	1	0	1	0	0	0	0
981:	1	0	0	1	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	1	0	1	0	0	0	0	0	1
1009:	1	0	1	1	1	0	0	0	0	0	0	1	1	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:13:08.49

Detector ID: 35 Acquisition Start: 6-OCT-2005 14:24:46.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.10
Batch Id: 0509117A-RA Sample Id: 06
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4591.44	46	0	3.60	385.63	313	157	4.51E-03	14.7	
2	0	5288.27	51	0	181.84	624.24	532	177	5.00E-03	14.0	
3	0	5815.53	60	0	357.50	809.45	728	164	5.88E-03	12.9	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:13:20.21

Acquisition Start: 1-OCT-2005 10:07:08.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.20

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4607.34	3	0	340.57	391.00	313	157	5.00E-05	57.7	
2	0	5276.08	10	0	439.64	620.00	532	177	1.67E-04	31.6	
3	0	5815.67	1	0	3.10	809.50	728	164	1.67E-05	100.0	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:13:20.47

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4591.44*	89	0	3.60	385.63	313	157	8.74E-03	14.8	
2	0	5288.27*	98	0	181.84	624.24	532	177	9.58E-03	14.3	
3	0	5815.53*	117	0	357.50	809.45	728	164	1.15E-02	12.9	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:13:21

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL03
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 6-OCT-2005 14:24:46
Sample ID : 06 Sample quantity : 0.99580 gram
Sample type : RA Sample geometry :
Detector name : 035 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.10 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4591.44*	89	3.60	385.63	313	157	29.7		RA-226	1.15
0	5288.27*	98	181.84	624.24	532	177	28.5		RN-222	1.26
0	5815.53*	117	357.50	809.45	728	164	25.9		PO-218	1.50

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:13:47

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$07_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	07
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.184E+00 gram
SAMPLE TITLE:	VPBR092705SL04	DETECTOR NUMBER:	036
ACQ DATE:	6-OCT-2005 14:25	AVERAGE EFFICIENCY:	21.43%
ELAPSED LIVE TIME:	10200.	RECOVERY:	100.00%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_036_1OCT05	BKG ELAPSED TIME:	60000.
		SAF:	2.20

****

NUCLIDE ACTIVITY SUMMARY

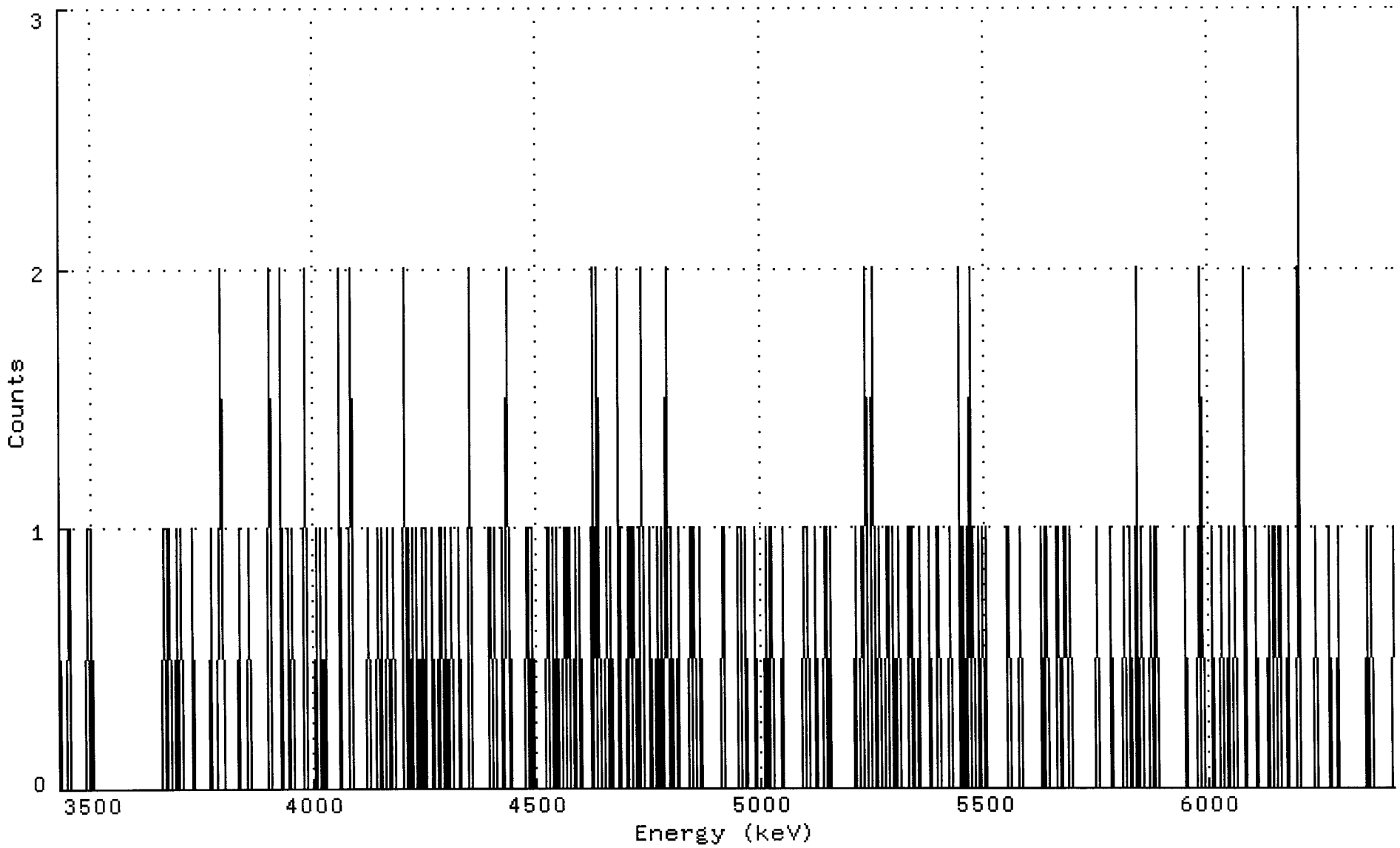
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	63.29	0.51	100.0	6.615E-01	2.520E-01	1.387E-01
RN-222	5490.0	89.86	0.34	99.9	9.398E-01	3.018E-01	1.247E-01
RA-226	4785.0	105.09	0.51	100.0	1.098E+00	3.276E-01	1.386E-01

****

Analyst _____ Date 10-6-05

Reviewer _____ Date 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$07_RA.CNF;1
Title : 036
Sample Title: VPBR092705SL04
Start Time: 6-OCT-2005 14:25: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.41730E+03
Real Time : 0 02:50:00.20 Sample ID : 07 Energy Slope : 3.07834E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.50571E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$07_RA

Channel

1:	0	0	1	0	0	0	0	0	0	1	1	0	0	0
15:	0	0	0	0	0	0	0	0	0	1	0	0	1	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	1	1	0	1	0	1
85:	0	0	0	0	1	0	0	1	0	0	0	0	0	0
99:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
113:	0	1	0	0	0	0	0	1	1	2	1	0	0	0
127:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
141:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	2	1	0	0	0	0	0	0	0	2	0
169:	0	0	0	0	1	0	1	0	0	0	0	0	0	0
183:	0	0	2	0	0	0	0	0	0	0	1	0	0	0
197:	1	0	0	1	0	0	0	0	0	0	0	0	0	0
211:	2	0	0	0	0	0	0	0	2	1	0	0	0	0
225:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
239:	1	0	1	0	0	0	0	1	0	0	0	1	0	0
253:	0	0	0	0	0	0	2	0	0	1	0	1	0	0
267:	0	1	0	0	1	0	0	1	0	0	0	0	1	0
281:	0	0	0	1	0	1	0	0	1	0	0	0	1	0
295:	0	0	0	0	1	0	0	0	0	0	0	0	2	0
309:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
323:	1	0	0	1	0	0	0	0	0	1	0	1	1	2
337:	0	1	0	0	0	0	0	0	0	0	0	0	0	1
351:	0	1	0	0	1	0	0	0	0	0	0	0	0	0
365:	0	1	1	0	0	0	1	0	0	1	0	0	0	0
379:	1	1	0	1	1	0	0	0	1	0	0	0	1	0
393:	0	0	0	0	0	0	0	2	0	1	0	2	1	0
407:	0	0	0	0	1	0	0	1	0	0	0	0	0	2
421:	0	0	0	0	0	1	0	1	1	0	1	0	0	0
435:	1	0	2	0	0	0	0	0	1	0	0	0	0	1
449:	0	0	1	0	0	1	2	1	0	0	1	0	0	0
463:	0	1	0	0	0	0	0	0	0	0	1	0	1	1
477:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
491:	0	0	0	0	0	0	0	1	1	0	0	0	0	0
505:	0	0	0	0	0	1	1	1	0	0	0	1	0	0
519:	0	0	0	0	1	0	0	0	0	0	0	0	1	0
533:	0	1	0	1	0	0	0	0	0	0	0	1	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561:	1	0	0	1	0	0	0	0	0	1	0	0	0	0
575:	0	0	1	0	1	0	1	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
603:	0	0	1	0	0	2	1	0	0	0	1	2	0	0
617:	0	1	0	0	0	0	0	1	1	0	0	0	1	0
631:	0	0	1	0	0	0	0	0	0	0	1	1	0	1
645:	0	0	0	0	1	0	0	0	0	0	0	0	1	0
659:	0	0	0	0	1	1	0	0	0	0	0	0	0	0
673:	1	0	0	0	0	0	0	0	2	0	0	1	0	1
687:	0	1	2	0	1	0	0	0	0	1	0	1	1	0
701:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	1	1	0	0	0	0	0	0	0	0	1
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	1	0	0	1	1	0	0	0	0	0	0	0
757:	1	1	0	0	0	1	1	1	0	0	1	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
799:	1	0	0	0	0	0	0	0	0	0	1	0	0	0
813:	0	1	0	0	0	0	2	0	0	1	1	0	0	0
827:	0	0	0	1	0	0	0	1	1	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	1	0	0	0	0	0	0	0	0	0	1
869:	0	2	1	0	0	0	0	0	0	0	1	0	0	0
883:	0	0	0	1	1	0	0	0	0	1	0	0	0	0
897:	1	0	0	0	0	0	0	0	2	0	0	0	0	0
911:	0	0	0	1	0	0	0	0	0	0	0	0	0	1
925:	0	0	0	1	1	0	0	1	1	0	0	0	0	0
939:	1	0	0	0	0	0	0	0	1	3	0	0	0	0
953:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
967:	0	0	0	0	0	1	0	0	0	0	0	0	1	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	1	0	0	1	1	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:13:26.01

Detector ID: 36 Acquisition Start: 6-OCT-2005 14:25:11.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.20
Batch Id: 0509117A-RA Sample Id: 07
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4612.65	48	0372.35		395.98	316	157	4.71E-03	14.4	
2	0	5310.84	41	0252.36		634.83	535	176	4.02E-03	15.6	
3	0	5831.11	29	0161.61		816.76	730	163	2.84E-03	18.6	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:13:45.87

Acquisition Start: 1-OCT-2005 10:07:11.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4606.79	3	0273.97		394.00	316	157	5.00E-05	57.7	
2	0	5275.22	2	0320.15		622.50	535	176	3.33E-05	70.7	
3	0	5814.80	3	0338.62		811.00	730	163	5.00E-05	57.7	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:13:46.12

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4612.65*	105	0372.35		395.98	316	157	1.03E-02	14.5	
2	0	5310.84*	90	0252.36		634.83	535	176	8.81E-03	15.7	
3	0	5831.11*	63	0161.61		816.76	730	163	6.20E-03	18.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:13:47

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL04		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 6-OCT-2005 14:25:11
Sample ID	: 07	Sample quantity	: 1.1835 gram
Sample type	: RA	Sample geometry	:
Detector name	: 036	Detector geometry	:
Elapsed live time	: 0 02:50:00.00	Elapsed real time	: 0 02:50:00.20 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4612.65*	105372.35	395.98	316	157	29.0			RA-226	1.10
0	5310.84*	90252.36	634.83	535	176	31.4			RN-222	0.940
0	5831.11*	63161.61	816.76	730	163	37.4			PO-218	0.661

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:14:05

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$08_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	08
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.011E+00 gram
SAMPLE TITLE:	VPBR092705SL05	DETECTOR NUMBER:	037
ACQ DATE:	6-OCT-2005 14:25	AVERAGE EFFICIENCY:	20.26%
ELAPSED LIVE TIME:	10200.	RECOVERY:	92.92%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_037_1OCT05	BKG ELAPSED TIME:	60000.
		SAF:	1.73

****

NUCLIDE ACTIVITY SUMMARY

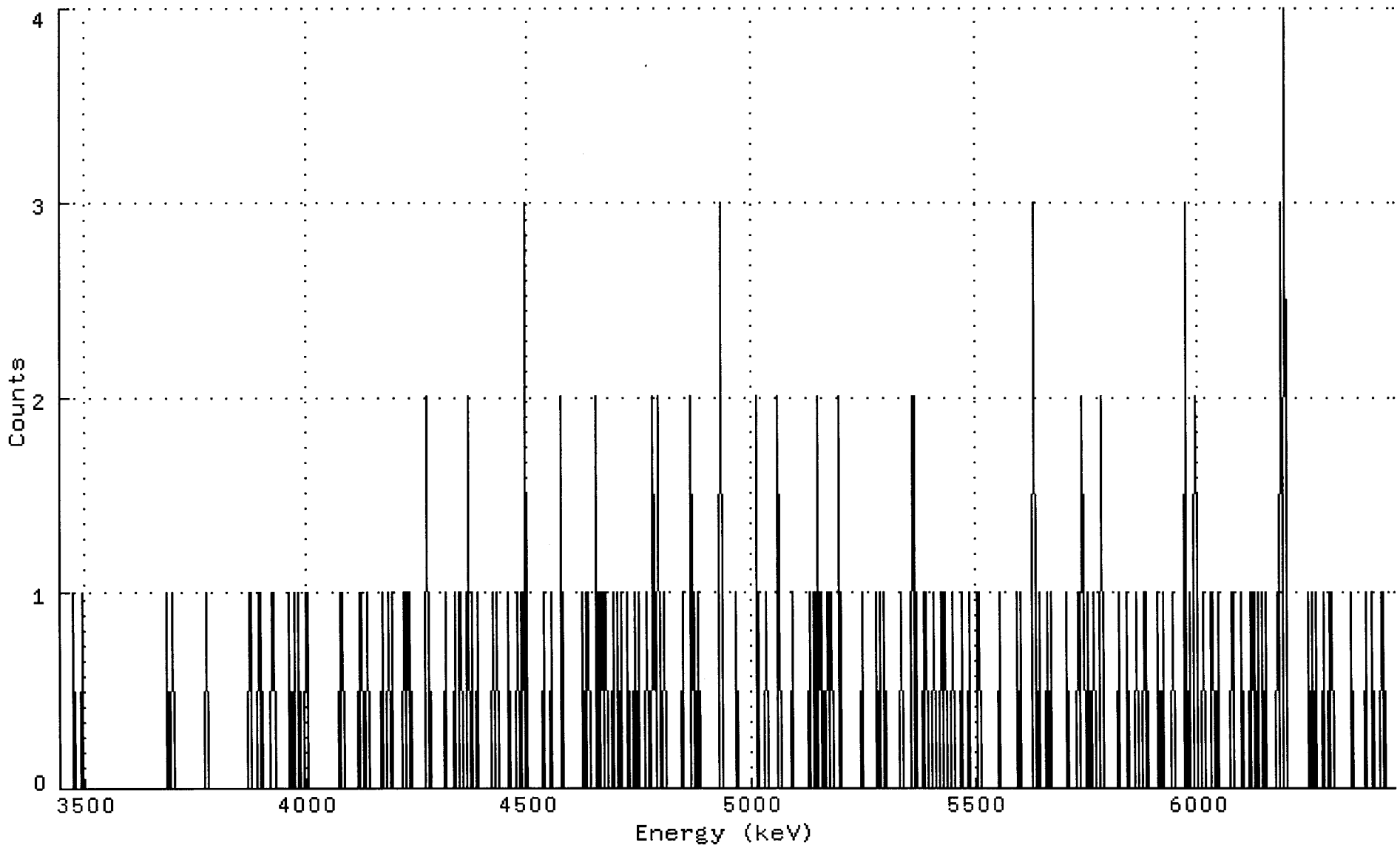
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	66.28	1.19	100.0	9.231E-01	3.080E-01	1.875E-01
RN-222	5490.0	62.11	0.17	99.9	8.655E-01	2.955E-01	1.116E-01
RA-226	4785.0	65.74	0.00	100.0	9.154E-01	3.037E-01	6.528E-02

****

Analyst _____ Date 10-6-05

Reviewer _____ Date 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$08_RA.CNF;1
Title : 037
Sample Title: VPBR092705SL05
Start Time: 6-OCT-2005 14:25: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.43519E+03
Real Time : 0 02:50:00.20 Sample ID : 08 Energy Slope : 3.10315E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.69534E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$08_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
15:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
85:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	1	1	0	0	0	0	0	1	0	1	0	0	0
155:	0	0	0	0	1	1	0	0	0	0	0	0	0	0
169:	0	0	0	1	0	0	1	0	0	0	1	0	0	0
183:	0	1	1	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
211:	1	0	0	0	0	0	0	0	0	0	0	0	1	0
225:	1	0	0	0	1	0	0	0	0	0	0	0	0	0
239:	0	1	0	0	0	0	1	0	1	0	0	0	0	0
253:	0	0	0	1	0	1	1	0	1	0	0	0	0	0
267:	0	0	0	0	0	0	2	0	1	0	0	0	0	0
281:	0	0	0	0	0	0	1	0	0	0	0	0	0	1
295:	0	0	0	1	1	0	0	0	0	2	1	0	1	0
309:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
323:	1	0	0	1	0	0	0	0	0	0	0	0	1	0
337:	0	0	0	0	1	1	0	1	0	1	0	3	0	0
351:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
365:	0	0	1	0	0	0	0	0	0	0	2	0	0	0
379:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
393:	0	1	1	0	0	0	0	0	2	0	1	0	1	0
407:	1	1	0	0	0	0	1	0	0	0	1	0	1	0
421:	0	0	0	1	0	0	0	0	1	0	0	1	0	0
435:	0	0	0	1	0	0	0	1	2	1	0	0	2	0
449:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	1	0	0	0	0	0	0	2	1	0	1	0
477:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	0	0	3	0	0	0	0	0	0	0	0	0
505:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
519:	0	0	0	0	2	0	0	0	0	0	0	1	0	0
533:	0	0	0	0	0	0	2	1	0	0	0	0	0	0
547:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
561:	0	0	1	0	0	0	1	0	2	0	1	0	1	0
575:	0	0	1	0	1	1	0	0	0	0	0	2	0	0
589:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
603:	1	0	0	0	0	0	0	0	0	0	0	1	0	1
617:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
631:	0	0	1	0	0	0	0	0	0	0	0	2	0	2
645:	0	0	0	0	0	1	0	1	0	0	0	0	0	1
659:	0	0	0	0	0	1	0	1	1	0	0	0	0	0
673:	1	0	0	0	0	0	0	1	0	0	0	0	0	1
687:	0	0	0	0	0	0	1	1	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	1	0	1	0	0
729:	0	0	0	0	0	0	0	0	3	0	1	0	1	0
743:	0	0	0	0	1	0	0	1	0	0	0	0	0	0
757:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
771:	0	1	0	0	2	1	1	0	0	1	0	0	0	1
785:	0	0	0	0	0	2	0	0	0	0	0	0	0	0
799:	0	0	0	0	1	0	0	0	0	0	0	1	0	0
813:	0	0	0	0	1	0	0	0	0	0	1	0	1	0
827:	0	0	0	0	0	0	0	1	0	0	0	1	0	0
841:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
855:	0	3	0	0	1	0	0	0	1	2	1	0	0	0
869:	0	1	0	0	0	0	0	0	1	1	0	0	0	1
883:	0	0	0	0	0	0	0	0	0	0	1	1	0	0
897:	0	0	0	0	1	0	0	0	0	0	0	1	0	1
911:	0	1	0	1	0	0	0	1	0	1	0	0	0	0
925:	0	0	0	0	0	1	0	0	3	0	0	4	1	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	1	0	0	1	0	1	0	0	0	0	0	1
967:	0	0	0	0	1	0	1	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
995:	0	0	0	0	0	1	0	0	0	0	0	1	0	0
1009:	0	0	0	0	1	0	1	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:13:51.36

Detector ID: 37 Acquisition Start: 6-OCT-2005 14:25:30.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.20
Batch Id: 0509117A-RA Sample Id: 08
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4624.64	38	0	309.54	391.68	308	156	3.73E-03	16.2	
2	0	5273.00	36	0	328.87	612.75	526	176	3.53E-03	16.7	
3	0	5824.17	39	0	397.20	805.28	721	163	3.82E-03	16.0	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:14:03.44

Acquisition Start: 1-OCT-2005 10:07:14.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4606.26	0	0	0.00	385.50	308	156	0.00E+00	0.0	
2	0	5275.17	1	0	3.10	613.50	526	176	1.67E-05	100.0	
3	0	5814.88	7	0	440.65	802.00	721	163	1.17E-04	37.8	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:14:03.68

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4624.64*	66	0	309.54	391.68	308	156	6.45E-03	16.2	
2	0	5273.00*	62	0	328.87	612.75	526	176	6.09E-03	16.7	
3	0	5824.17*	66	0	397.20	805.28	721	163	6.50E-03	16.3	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:14:04

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL05		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 6-OCT-2005 14:25:30
Sample ID	: 08	Sample quantity	: 1.0106 gram
Sample type	: RA	Sample geometry	:
Detector name	: 037	Detector geometry	:
Elapsed live time	: 0 02:50:00.00	Elapsed real time	: 0 02:50:00.20 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4624.64*	66309.54	391.68		308	156	32.4		RA-226	0.851
0	5273.00*	62328.87	612.75		526	176	33.4		RN-222	0.804
0	5824.17*	66397.20	805.28		721	163	32.6		PO-218	0.858

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Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:14:31

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$09_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	09
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.033E+00 gram
SAMPLE TITLE:	VPBR092705SL06	DETECTOR NUMBER:	038
ACQ DATE:	6-OCT-2005 14:25	AVERAGE EFFICIENCY:	19.42%
ELAPSED LIVE TIME:	10200.	RECOVERY:	91.40%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_038_1OCT05	BKG ELAPSED TIME:	60000.
		SAF:	2.12

****

NUCLIDE ACTIVITY SUMMARY

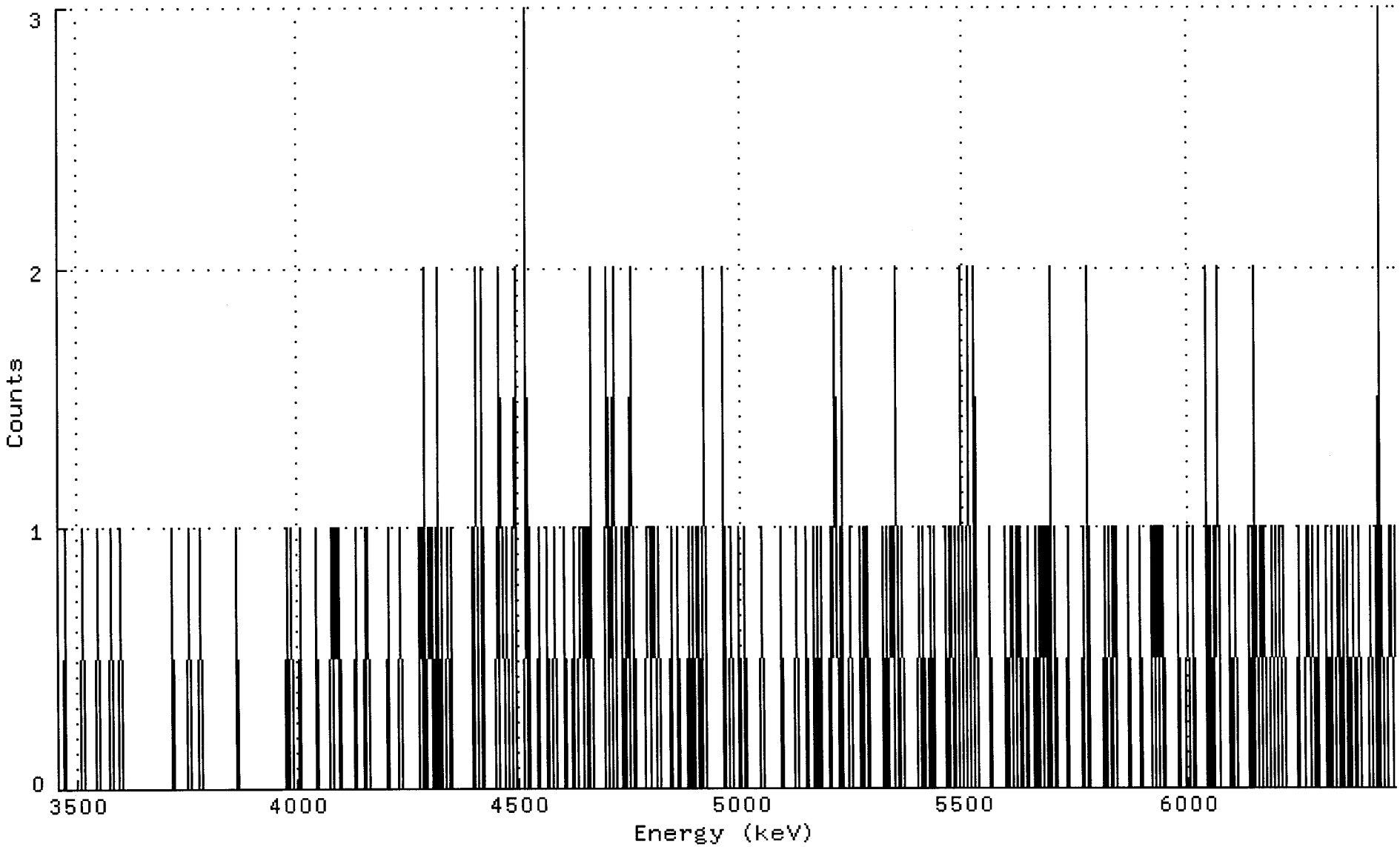
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	84.63	0.17	100.0	1.223E+00	3.969E-01	1.418E-01
RN-222	5490.0	94.72	0.68	99.9	1.370E+00	4.224E-01	2.007E-01
RA-226	4785.0	114.14	0.34	100.0	1.649E+00	4.647E-01	1.661E-01

****

Analyst — Date: 10-6-05

Reviewer — Date: 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$09_RA.CNF;1
Title : 038
Sample Title: VPBR092705SL06
Start Time: 6-OCT-2005 14:25: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.44817E+03
Real Time : 0 02:50:00.20 Sample ID : 09 Energy Slope : 3.09586E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.48570E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$09_RA

Channel

1:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
15:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
29:	0	0	0	1	0	0	0	0	0	0	0	0	0	1
43:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
99:	1	0	0	0	0	0	0	0	0	1	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	1	0	0	1	0	0	0	0	0	0	1
183:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
197:	0	0	0	0	0	0	0	0	1	1	0	1	1	0
211:	1	0	0	0	0	0	0	0	0	0	0	0	1	0
225:	0	0	0	0	0	1	0	1	0	0	0	0	0	0
239:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
253:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
267:	0	0	0	0	1	1	0	2	0	0	1	1	1	0
281:	1	0	0	2	0	0	1	0	0	0	0	1	0	1
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	0	1	0	2	0	0	0	0	2	0	0	0	0
323:	0	0	0	0	0	0	1	0	2	1	1	0	0	1
337:	0	0	0	0	1	1	2	0	0	0	0	0	0	1
351:	3	0	1	0	0	0	0	0	0	1	0	0	0	0
365:	0	0	1	0	0	0	0	1	0	0	0	0	0	0
379:	0	1	0	0	0	0	0	1	0	0	0	0	1	1
393:	1	0	1	1	0	0	2	1	0	0	0	0	0	0
407:	0	0	0	0	2	1	0	1	0	1	2	0	0	0
421:	0	0	1	0	0	1	1	0	1	2	0	1	0	0
435:	0	0	0	0	0	0	1	1	1	1	0	1	1	0
449:	0	1	0	0	0	0	0	0	0	0	0	1	0	0
463:	0	0	1	0	0	0	0	0	0	0	1	0	0	1
477:	0	0	1	0	1	0	1	0	2	0	0	0	0	0
491:	0	0	0	0	0	0	0	0	0	2	0	0	0	0
505:	1	1	0	0	0	0	0	1	0	0	0	1	0	0
519:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
533:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
547:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
561:	0	0	1	0	0	0	0	0	1	0	1	0	0	1
575:	0	0	0	0	0	0	1	0	1	1	2	1	0	0
589:	0	2	0	0	0	0	0	1	1	0	0	0	0	0
603:	0	1	0	1	0	1	0	1	0	0	0	0	0	0
617:	0	0	0	0	0	1	0	1	0	0	1	1	1	0
631:	0	2	0	0	0	1	0	0	0	0	0	0	0	0
645:	0	0	0	0	1	1	0	0	1	0	0	0	0	1
659:	0	0	1	0	0	0	0	0	0	0	0	0	1	0
673:	1	0	1	0	1	0	0	0	0	2	0	0	0	0
687:	0	2	0	0	0	0	2	1	0	0	0	0	0	0
701:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
715:	0	0	1	0	0	0	1	1	0	0	0	1	1	0
729:	1	0	0	0	0	1	0	0	0	0	0	1	0	0
743:	1	0	1	0	1	1	0	1	0	2	0	0	0	1
757:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
771:	0	0	0	0	0	0	1	0	0	0	2	0	0	0
785:	0	0	0	0	0	0	0	0	0	1	0	0	1	1
799:	0	1	0	1	1	0	0	0	0	0	0	0	0	0
813:	1	0	0	0	0	0	0	0	0	1	0	0	0	0
827:	0	0	0	0	1	1	0	1	1	0	1	1	0	1
841:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
855:	0	0	0	0	1	0	0	0	0	1	0	0	0	0
869:	0	0	0	0	0	0	2	0	1	0	0	1	0	1
883:	1	2	0	0	0	0	0	0	0	0	1	0	0	0
897:	1	0	0	0	0	0	0	0	0	0	0	1	0	0
911:	0	2	0	1	0	0	1	1	0	1	0	0	0	0
925:	0	1	0	0	1	0	0	1	0	0	1	0	0	0
939:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
953:	1	1	1	0	0	1	0	0	0	1	0	0	0	0
967:	0	0	1	0	0	0	1	0	0	0	0	1	1	0
981:	0	1	0	0	0	1	0	0	0	1	0	0	0	0
995:	1	0	0	0	0	0	0	0	0	1	0	0	0	0
1009:	1	0	3	0	1	0	0	0	0	0	1	1	1	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:14:09.04

Detector ID: 38 Acquisition Start: 6-OCT-2005 14:25:49.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.20
Batch Id: 0509117A-RA Sample Id: 09
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4614.63	54	0	363.72	383.85	304	155	5.29E-03	13.6	
2	0	5318.70	45	0	340.54	622.82	521	175	4.41E-03	14.9	
3	0	5795.02	40	0	0.00	787.85	714	162	3.92E-03	15.8	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:14:29.61

Acquisition Start: 1-OCT-2005 10:07:17.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4606.12	2	0	244.57	381.00	304	155	3.33E-05	70.7	
2	0	5275.53	4	0	0.00	608.00	521	175	6.67E-05	50.0	
3	0	5814.04	1	0	3.10	794.50	714	162	1.67E-05	100.0	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:14:29.88

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4614.63*	114	0	363.72	383.85	304	155	1.12E-02	13.7	
2	0	5318.70*	95	0	340.54	622.82	521	175	9.29E-03	15.0	
3	0	5795.02*	85	0	0.00	787.85	714	162	8.30E-03	15.8	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:14:30

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL06
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 6-OCT-2005 14:25:49
Sample ID : 09 Sample quantity : 1.0332 gram
Sample type : RA Sample geometry :
Detector name : 038 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.20 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4614.63*	114363.72		383.85	304	155	27.3		RA-226	1.51
0	5318.70*	95340.54		622.82	521	175	30.0		RN-222	1.25
0	5795.02*	85	0.00	787.85	714	162	31.7		PO-218	1.12

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:14:51

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$10_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	10
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.008E+00 gram
SAMPLE TITLE:	VPBR092705SL07	DETECTOR NUMBER:	039
ACQ DATE:	6-OCT-2005 14:26	AVERAGE EFFICIENCY:	19.85%
ELAPSED LIVE TIME:	10200.	RECOVERY:	83.36%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_039_1OCT05	BKG ELAPSED TIME:	60000.
		SAF:	1.76

****

NUCLIDE ACTIVITY SUMMARY

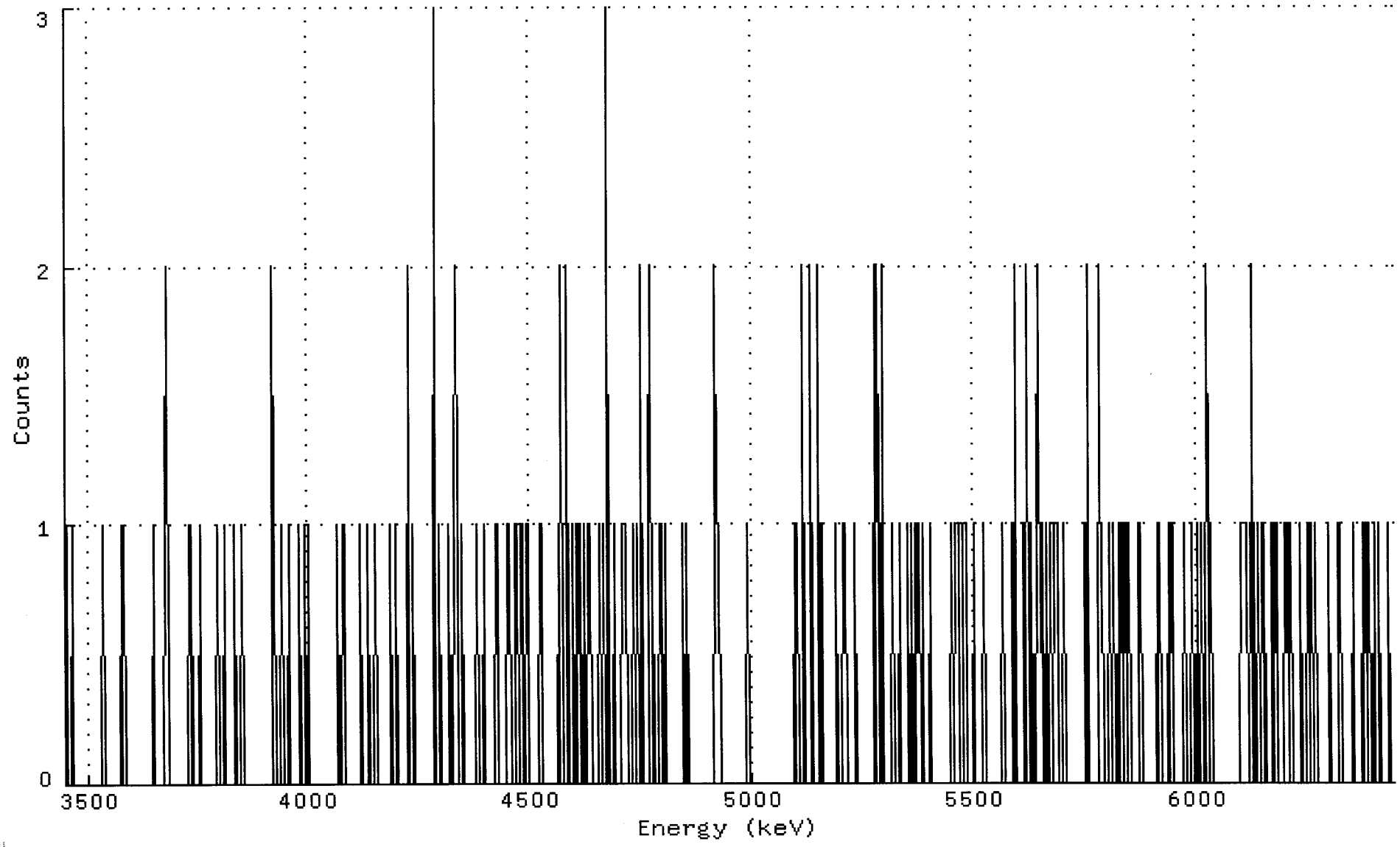
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	94.87	0.17	100.0	1.508E+00	4.245E-01	1.295E-01
RN-222	5490.0	70.63	1.53	99.9	1.124E+00	3.674E-01	2.369E-01
RA-226	4785.0	84.31	0.17	100.0	1.340E+00	3.988E-01	1.295E-01

****

Analyst — Date: 10-6-05

Reviewer — Date: 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$10_RA.CNF;1
Title : 039
Sample Title: VPBR092705SL07
Start Time: 6-OCT-2005 14:26: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.44059E+03
Real Time : 0 02:50:00.10 Sample ID : 10 Energy Slope : 3.08829E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.54042E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$10_RA

Channel

1:	0	0	0	1	0	0	0	1	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
43:	0	1	0	1	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
71:	0	0	0	0	0	0	1	2	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	1	0	1	0
99:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
113:	0	0	0	1	0	0	0	0	1	0	0	0	0	0
127:	0	0	1	0	0	0	0	1	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	2	1	0	0	0	0	0	1	0	0	0	0
169:	1	0	0	0	0	0	0	0	1	0	0	0	1	0
183:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	0	0	0	0	0	0	1	0	0	0	1	1
211:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
225:	0	0	0	1	0	0	0	0	1	0	0	0	0	0
239:	0	0	0	0	0	0	1	0	0	0	1	0	0	0
253:	0	0	0	0	0	2	0	0	0	1	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	3	0	0
281:	0	1	0	0	0	0	0	0	1	0	0	0	1	2
295:	1	0	0	0	1	0	0	0	0	0	0	0	0	0
309:	0	1	0	0	0	0	1	0	0	0	0	0	0	0
323:	0	1	1	0	0	0	0	0	0	0	1	1	0	0
337:	0	0	1	1	0	0	1	0	1	0	1	1	0	0
351:	0	0	0	0	0	0	1	1	0	0	0	0	0	0
365:	0	0	0	0	0	0	1	0	2	0	0	0	0	2
379:	0	0	0	1	0	0	1	1	0	1	0	1	0	0
393:	1	1	1	0	0	0	0	0	0	1	0	0	1	0
407:	0	3	0	0	0	0	1	0	0	0	0	0	1	1
421:	1	1	0	0	0	0	0	1	0	0	1	0	0	2
435:	0	0	0	0	0	1	2	0	1	0	0	0	0	1
449:	0	1	0	1	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	1	0	0	1	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
491:	2	1	1	0	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547:	0	0	0	0	1	0	1	0	0	0	0	2	0	0
561:	0	0	0	2	0	0	0	0	0	2	0	1	0	0
575:	0	0	0	0	0	0	0	0	1	0	0	0	0	1
589:	1	1	0	0	0	0	0	0	0	1	0	0	0	0
603:	0	0	0	0	0	0	0	0	0	0	2	0	2	1
617:	0	0	2	0	0	0	0	0	0	0	1	0	0	0
631:	0	1	0	0	0	0	0	0	1	0	1	0	0	1
645:	0	1	1	1	0	1	0	0	0	0	0	1	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	1	0	1	1	1	1	0	0	0	1	1	1	0	0
687:	0	0	0	1	0	0	0	0	0	0	0	1	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
715:	0	0	0	0	0	0	1	0	2	0	0	0	0	0
729:	0	1	0	2	2	0	0	1	0	0	0	1	2	1
743:	1	0	1	0	1	0	0	1	1	0	1	1	1	1
757:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	1	0	2	0	0	0	0
785:	0	0	0	0	2	1	1	0	0	0	0	0	1	0
799:	0	1	0	0	0	1	0	1	1	0	1	1	0	1
813:	0	0	0	0	0	0	0	1	1	0	0	0	0	0
827:	0	0	0	0	0	0	0	1	0	1	0	0	0	0
841:	0	0	1	0	1	1	0	0	0	0	0	0	0	0
855:	0	1	0	0	0	0	0	1	0	0	0	1	0	0
869:	1	1	0	0	0	2	1	0	1	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	1	1	1	1	1	1	0	0	1	0
911:	2	0	0	0	1	0	0	1	0	1	0	0	0	0
925:	0	1	1	0	1	1	0	0	0	0	0	1	1	1
939:	0	1	1	0	0	0	0	0	0	0	1	0	0	0
953:	0	0	1	0	1	1	0	0	1	0	0	0	0	0
967:	0	0	0	0	0	1	0	0	0	0	0	0	0	1
981:	1	0	0	0	0	0	0	0	0	0	1	0	0	0
995:	0	0	0	0	1	0	1	1	0	1	0	0	0	1
1009:	0	0	0	1	0	0	0	0	0	0	0	1	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:14:35.38

Detector ID: 39 Acquisition Start: 6-OCT-2005 14:26:16.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.10
Batch Id: 0509117A-RA Sample Id: 10
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4618.63	48	0	211.55	389.00	307	157	4.71E-03	14.4	
2	0	5306.29	41	0	191.47	623.51	525	176	4.02E-03	15.6	
3	0	5783.78	54	0	470.96	789.85	720	162	5.29E-03	13.6	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:14:48.90

Acquisition Start: 1-OCT-2005 10:07:20.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.20

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4606.75	1	0	3.09	385.00	307	157	1.67E-05	100.0	
2	0	5274.38	9	0	247.06	612.50	525	176	1.50E-04	33.3	
3	0	5814.06	1	0	3.09	800.50	720	162	1.67E-05	100.0	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:14:49.15

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4618.63*	84	0	211.55	389.00	307	157	8.27E-03	14.5	
2	0	5306.29*	71	0	191.47	623.51	525	176	6.92E-03	16.0	
3	0	5783.78*	95	0	470.96	789.85	720	162	9.30E-03	13.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:14:50

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL07
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 6-OCT-2005 14:26:16
Sample ID : 10 Sample quantity : 1.0075 gram
Sample type : RA Sample geometry :
Detector name : 039 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.10 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4618.63*	84211.55	389.00	307	157	28.9			RA-226	1.12
0	5306.29*	71191.47	623.51	525	176	31.9			RN-222	0.937
0	5783.78*	95470.96	789.85	720	162	27.3			PO-218	1.26

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:15:15

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$11_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	11
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.082E+00 gram
SAMPLE TITLE:	VPBR092705SL08	DETECTOR NUMBER:	040
ACQ DATE:	6-OCT-2005 14:26	AVERAGE EFFICIENCY:	20.96%
ELAPSED LIVE TIME:	10200.	RECOVERY:	100.00%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_040_1OCT05	BKG ELAPSED TIME:	60000.
		SAF:	2.27

****

NUCLIDE ACTIVITY SUMMARY

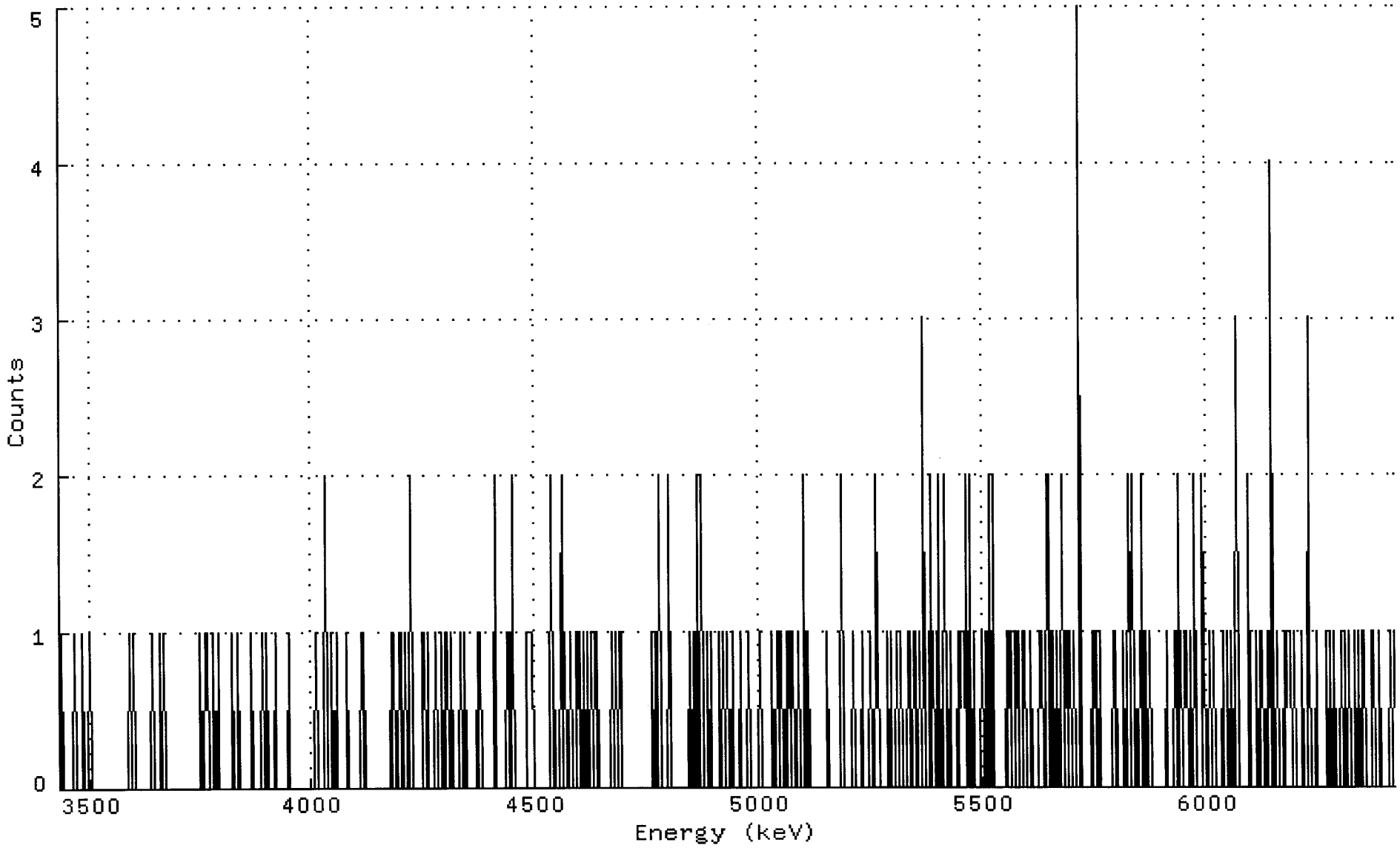
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	142.84	0.17	100.0	1.668E+00	4.366E-01	1.227E-01
RN-222	5490.0	139.04	1.70	99.9	1.625E+00	4.329E-01	2.327E-01
RA-226	4785.0	92.73	0.34	100.0	1.083E+00	3.477E-01	1.437E-01

****

Analyst _____ Date 10-6-05

Reviewer _____ Date 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$11_RA.CNF;1
Title : 040
Sample Title: VPBR092705SL08
Start Time: 6-OCT-2005 14:26: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.42420E+03
Real Time : 0 02:50:00.20 Sample ID : 11 Energy Slope : 3.10059E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.69766E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$11_RA

Channel

1:	0	0	0	0	1	0	0	0	0	0	0	0	0	1
15:	0	0	0	0	0	1	0	0	0	0	1	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
57:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	1	0	0	0	0	0	1	0	1	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	1	0	0	0	1	1	0
113:	0	0	0	1	0	0	1	0	0	0	0	0	0	0
127:	0	0	0	1	0	0	0	1	0	0	0	0	0	0
141:	0	0	0	1	0	0	0	0	0	0	0	1	0	0
155:	1	0	0	0	0	0	1	0	0	0	0	0	0	0
169:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
183:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
197:	0	2	0	0	0	0	1	0	0	1	0	0	0	0
211:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
225:	1	0	1	0	0	0	0	0	0	0	0	0	0	0
239:	0	0	0	0	0	0	0	0	1	0	1	0	0	0
253:	1	0	1	0	1	1	0	1	0	2	0	0	0	0
267:	0	0	0	0	1	1	0	1	0	0	0	0	0	1
281:	0	0	0	0	1	0	0	1	1	0	0	1	0	0
295:	0	0	0	0	1	0	0	1	0	0	0	0	0	0
309:	0	0	1	0	1	0	0	0	0	0	0	0	0	0
323:	0	2	0	0	0	0	0	0	0	0	1	0	1	0
337:	2	1	0	0	0	0	0	0	0	0	0	1	1	1
351:	1	1	0	0	0	0	0	0	0	0	0	0	0	0
365:	0	2	0	1	0	0	0	0	1	2	0	1	0	0
379:	0	1	1	0	0	0	1	1	0	1	0	1	0	0
393:	1	0	0	1	0	0	1	0	1	0	0	0	0	0
407:	0	0	0	0	0	1	0	0	1	0	0	1	1	0
421:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
435:	0	0	0	0	0	0	0	0	1	0	1	0	0	2
449:	0	0	0	0	0	0	1	2	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	1	0	0	1	0	0
477:	2	0	0	2	0	0	0	0	1	0	1	0	0	0
491:	0	0	0	1	0	1	0	0	1	0	0	0	1	0
505:	0	0	0	0	1	0	0	0	0	0	1	0	0	0
519:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
533:	1	0	0	0	1	1	0	1	0	0	0	1	0	1
547:	0	1	1	0	0	0	1	0	0	0	0	2	0	0
561:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	1	0	0	0	0	0	0	0	0	0	0	2	0
589:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
603:	1	0	0	0	0	0	1	0	0	0	1	2	1	0
617:	0	0	0	0	0	0	1	0	1	0	0	0	0	1
631:	0	0	1	0	0	0	0	0	1	1	0	0	1	0
645:	1	0	1	1	0	1	3	0	0	0	0	2	0	1
659:	0	0	0	2	0	0	1	0	2	0	0	0	1	0
673:	0	0	0	0	1	0	1	1	1	1	0	2	0	2
687:	0	0	1	0	0	0	0	0	1	1	0	0	1	0
701:	2	0	0	2	0	0	0	0	0	0	0	0	0	1
715:	0	1	0	1	1	1	0	1	1	0	0	0	1	1
729:	0	0	0	0	1	0	0	0	0	0	0	1	1	1
743:	0	0	0	2	0	2	0	0	1	0	0	1	0	1
757:	0	2	0	1	1	0	1	1	0	0	1	0	0	0
771:	0	5	0	0	0	0	0	0	0	0	0	1	0	1
785:	0	1	0	1	0	0	0	0	0	0	0	0	0	0
799:	1	0	1	0	0	0	0	0	1	0	0	0	2	1
813:	0	2	0	1	0	0	0	1	0	2	0	0	1	0
827:	1	1	0	0	0	0	0	0	0	0	0	0	0	0
841:	1	0	0	0	0	0	1	1	0	2	0	1	0	0
855:	1	1	1	0	0	1	0	1	2	0	0	0	0	0
869:	2	1	0	0	0	0	1	0	0	1	0	0	0	0
883:	0	0	1	0	0	0	1	0	0	1	0	0	0	3
897:	0	0	0	0	0	0	0	0	0	2	0	0	0	0
911:	0	1	0	0	1	1	0	0	0	1	0	1	0	4
925:	0	1	0	1	1	0	0	0	0	1	0	1	1	1
939:	1	0	0	1	0	0	0	0	0	0	1	0	0	0
953:	0	3	1	0	0	0	0	1	0	0	0	0	0	0
967:	0	0	1	0	0	1	0	0	1	0	0	0	0	1
981:	1	0	0	1	0	0	1	0	0	0	0	1	0	0
995:	1	0	1	0	1	0	0	0	0	0	0	1	1	0
1009:	0	0	0	1	0	0	0	0	0	0	0	0	1	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:14:55.62

Detector ID: 40 Acquisition Start: 6-OCT-2005 14:26:40.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.20
Batch Id: 0509117A-RA Sample Id: 11
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4586.75	41	0	412.38	382.98	312	156	4.02E-03	15.6	
2	0	5318.90	62	0	454.20	633.02	530	177	6.08E-03	12.7	
3	0	5803.66	63	0	3.10	802.70	725	164	6.18E-03	12.6	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:15:12.99

Acquisition Start: 1-OCT-2005 10:07:23.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4606.13	2	0	15.50	389.50	312	156	3.33E-05	70.7	
2	0	5275.53	10	0	434.08	618.00	530	177	1.67E-04	31.6	
3	0	5814.41	1	0	3.10	806.50	725	164	1.67E-05	100.0	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:15:13.24

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4586.75*	93	0	412.38	382.98	312	156	9.09E-03	15.7	
2	0	5318.90*	139	0	454.20	633.02	530	177	1.36E-02	12.9	
3	0	5803.66*	143	0	3.10	802.70	725	164	1.40E-02	12.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:15:14

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL08		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 6-OCT-2005 14:26:40
Sample ID	: 11	Sample quantity	: 1.0825 gram
Sample type	: RA	Sample geometry	:
Detector name	: 040	Detector geometry	:
Elapsed live time	: 0 02:50:00.00	Elapsed real time	: 0 02:50:00.20 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4586.75*	93412.38		382.98	312	156	31.4		RA-226	1.08
0	5318.90*	139454.20		633.02	530	177	25.7		RN-222	1.62
0	5803.66*	143	3.10	802.70	725	164	25.2		PO-218	1.67

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:15:26

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$12_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	12
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.061E+00 gram
SAMPLE TITLE:	VPBR092705SL09	DETECTOR NUMBER:	041
ACQ DATE:	6-OCT-2005 14:26	AVERAGE EFFICIENCY:	20.56%
ELAPSED LIVE TIME:	10200.	RECOVERY:	87.79%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_041_1OCT05	BKG ELAPSED TIME:	60000.
		SAF:	1.86

****

NUCLIDE ACTIVITY SUMMARY

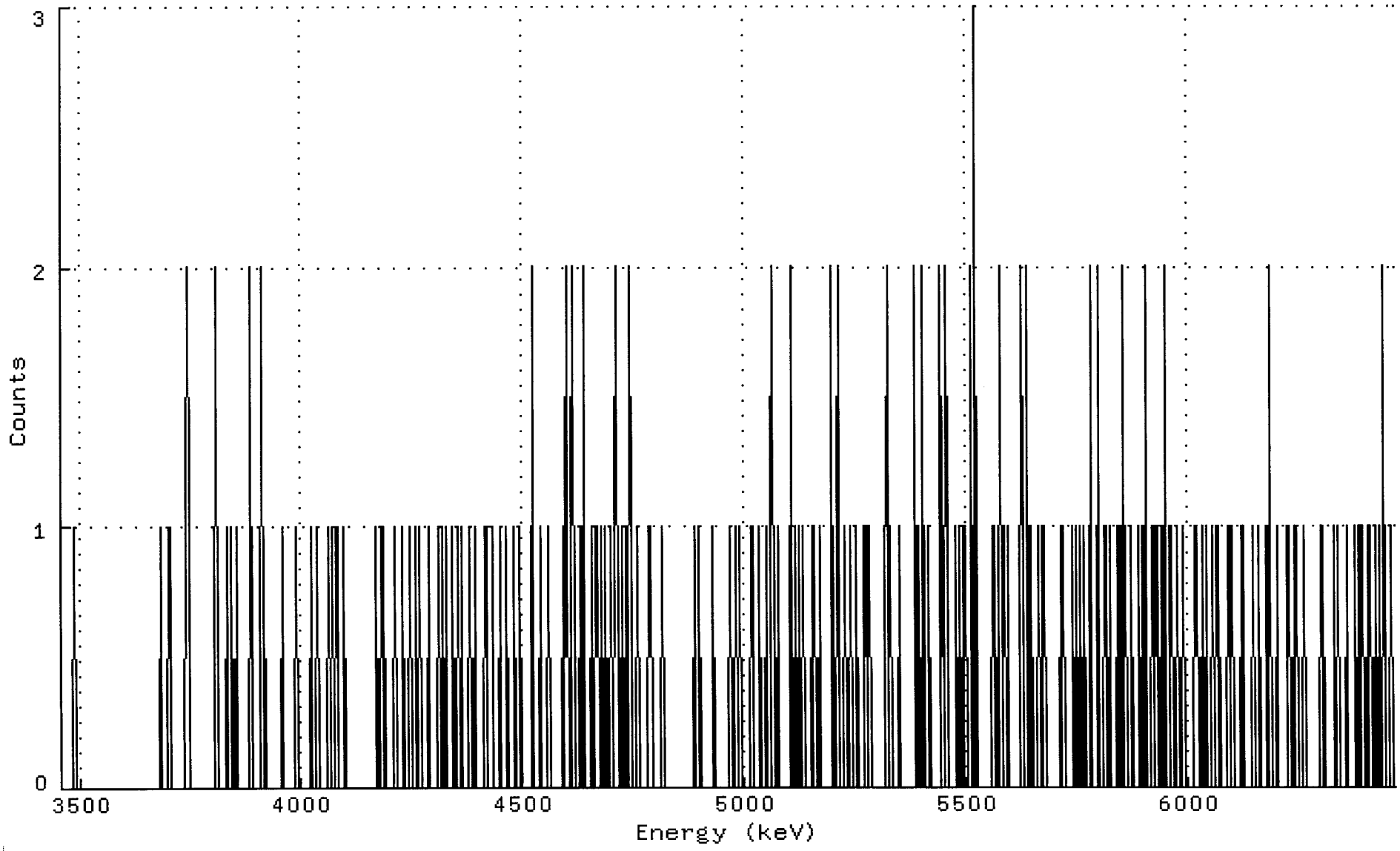
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	95.87	0.85	100.0	1.326E+00	3.826E-01	1.801E-01
RN-222	5490.0	101.45	0.85	99.9	1.404E+00	3.943E-01	1.802E-01
RA-226	4785.0	91.14	0.00	100.0	1.261E+00	3.707E-01	6.972E-02

****

Analyst — Date: 10·6·05

Reviewer — Date: 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$12_RA.CNF;1
Title : 041
Sample Title: VPBR092705SL09
Start Time: 6-OCT-2005 14:26: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.44666E+03
Real Time : 0 02:50:00.20 Sample ID : 12 Energy Slope : 3.10884E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.57527E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$12_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	1	0	0	0	0	0	1	1	0
85:	0	0	0	0	0	0	0	0	0	0	1	2	1	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	2	0	0	0	0	0	0	0	1	0
127:	0	0	1	0	0	1	0	0	0	0	0	0	0	0
141:	0	1	2	0	0	0	0	0	0	0	2	0	1	0
155:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
169:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
183:	0	0	0	0	1	0	0	0	0	1	0	0	0	0
197:	0	0	0	1	0	0	1	0	0	1	1	0	0	0
211:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
239:	0	1	0	1	0	0	0	0	0	0	0	1	0	0
253:	0	0	0	1	0	0	0	0	1	0	0	0	0	1
267:	0	1	1	0	0	0	0	0	1	0	0	0	0	0
281:	0	1	1	0	1	0	0	1	0	0	0	0	1	0
295:	0	0	1	0	1	0	0	0	0	0	1	1	0	0
309:	1	0	0	0	0	0	0	0	1	0	1	1	1	1
323:	0	0	0	0	0	1	0	0	0	0	1	0	0	0
337:	0	0	1	0	0	0	1	0	0	0	0	0	0	0
351:	0	2	0	0	0	0	0	1	0	0	0	0	0	1
365:	0	0	0	0	0	0	0	0	0	0	1	0	1	2
379:	1	0	0	1	2	0	0	0	0	1	0	0	2	0
393:	0	0	0	0	1	0	0	1	1	1	0	0	1	0
407:	0	1	0	0	0	1	0	1	1	2	0	1	0	1
421:	0	0	1	0	0	2	1	0	0	0	0	1	0	0
435:	0	0	0	0	0	1	1	1	0	0	0	0	0	0
449:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
477:	0	0	1	0	0	0	0	0	0	0	0	0	1	0
491:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
505:	0	1	0	0	1	0	0	0	0	0	0	0	0	1
519:	1	0	0	0	0	1	0	0	0	0	1	0	0	0
533:	1	2	0	0	0	1	0	0	0	0	0	0	0	0
547:	0	2	0	0	1	0	0	1	0	0	1	1	0	0
561:	0	0	0	1	0	1	0	0	0	1	0	0	0	0
575:	0	0	0	0	0	2	0	0	0	1	2	0	0	0
589:	1	1	0	0	0	1	0	0	0	0	1	0	0	0
603:	0	0	1	1	0	1	1	0	0	0	0	0	0	0
617:	0	0	0	0	1	1	2	0	1	0	0	0	0	0
631:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
645:	2	0	0	1	0	0	2	0	0	0	1	0	0	0
659:	0	0	0	0	0	2	1	0	0	2	1	0	0	0
673:	0	0	0	1	0	0	1	0	0	1	1	0	0	0
687:	0	2	0	0	3	0	0	0	0	0	0	0	0	0
701:	0	0	0	1	1	0	0	1	0	2	0	0	1	0
715:	1	0	0	0	0	0	0	0	0	0	0	2	1	0
729:	0	0	2	0	0	1	0	0	0	0	1	1	0	1
743:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
757:	1	0	1	0	0	0	0	0	0	0	1	0	0	1
771:	0	0	1	0	0	1	0	0	0	0	2	0	0	0
785:	0	0	2	0	0	0	0	1	1	0	0	1	0	0
799:	0	0	0	1	0	0	1	0	2	0	1	0	0	0
813:	0	1	0	0	0	0	0	1	0	1	0	0	2	0
827:	0	0	0	1	1	0	1	1	0	0	1	0	0	2
841:	0	0	0	1	1	0	0	0	1	1	0	0	0	1
855:	0	0	0	0	0	0	0	0	1	1	1	0	0	0
869:	1	0	0	1	0	0	0	0	1	0	0	1	0	1
883:	0	0	0	0	0	0	1	0	1	1	0	0	0	0
897:	0	0	1	0	1	0	0	0	0	0	0	0	1	0
911:	0	0	0	1	0	0	0	0	0	1	0	2	1	0
925:	0	0	0	1	0	0	0	0	0	0	0	0	1	1
939:	0	0	0	1	0	1	0	0	0	0	0	1	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	1	0	1
967:	0	0	0	0	0	0	0	0	1	0	0	1	0	0
981:	0	0	0	0	1	0	0	0	0	0	0	1	0	1
995:	0	1	0	1	0	0	0	1	0	1	0	0	0	1
1009:	0	0	1	0	0	1	2	0	0	0	0	0	1	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:15:18.70

Detector ID: 41 Acquisition Start: 6-OCT-2005 14:26:59.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.20
Batch Id: 0509117A-RA Sample Id: 12
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4611.67	49	0	234.72	382.14	303	156	4.80E-03	14.3	
2	0	5293.98	55	0	491.20	613.27	520	175	5.39E-03	13.5	
3	0	5824.29	52	0	357.45	796.98	713	162	5.10E-03	13.9	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:15:24.50

Acquisition Start: 1-OCT-2005 10:07:25.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.20

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4606.76	0	0	0.00	380.50	303	156	0.00E+00	0.0	
2	0	5275.68	5	0	183.42	607.00	520	175	8.33E-05	44.7	
3	0	5814.34	5	0	251.82	793.50	713	162	8.33E-05	44.7	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:15:24.76

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4611.67*	91	0	234.72	382.14	303	156	8.94E-03	14.3	
2	0	5293.98*	101	0	491.20	613.27	520	175	9.95E-03	13.6	
3	0	5824.29*	96	0	357.45	796.98	713	162	9.40E-03	14.0	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:15:25

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL09
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 6-OCT-2005 14:26:59
Sample ID : 12 Sample quantity : 1.0615 gram
Sample type : RA Sample geometry :
Detector name : 041 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.20 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4611.67*	91234.72	382.14	303	156	28.6			RA-226	1.11
0	5293.98*	101491.20	613.27	520	175	27.2			RN-222	1.23
0	5824.29*	96357.45	796.98	713	162	28.0			PO-218	1.16

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:15:37

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$13_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	13
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.015E+00 gram
SAMPLE TITLE:	VPBR092705SL10	DETECTOR NUMBER:	042
ACQ DATE:	6-OCT-2005 14:27	AVERAGE EFFICIENCY:	21.78%
ELAPSED LIVE TIME:	10200.	RECOVERY:	88.44%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_042_1OCT05	BKG ELAPSED TIME:	60000.
		SAF:	3.49

****

NUCLIDE ACTIVITY SUMMARY

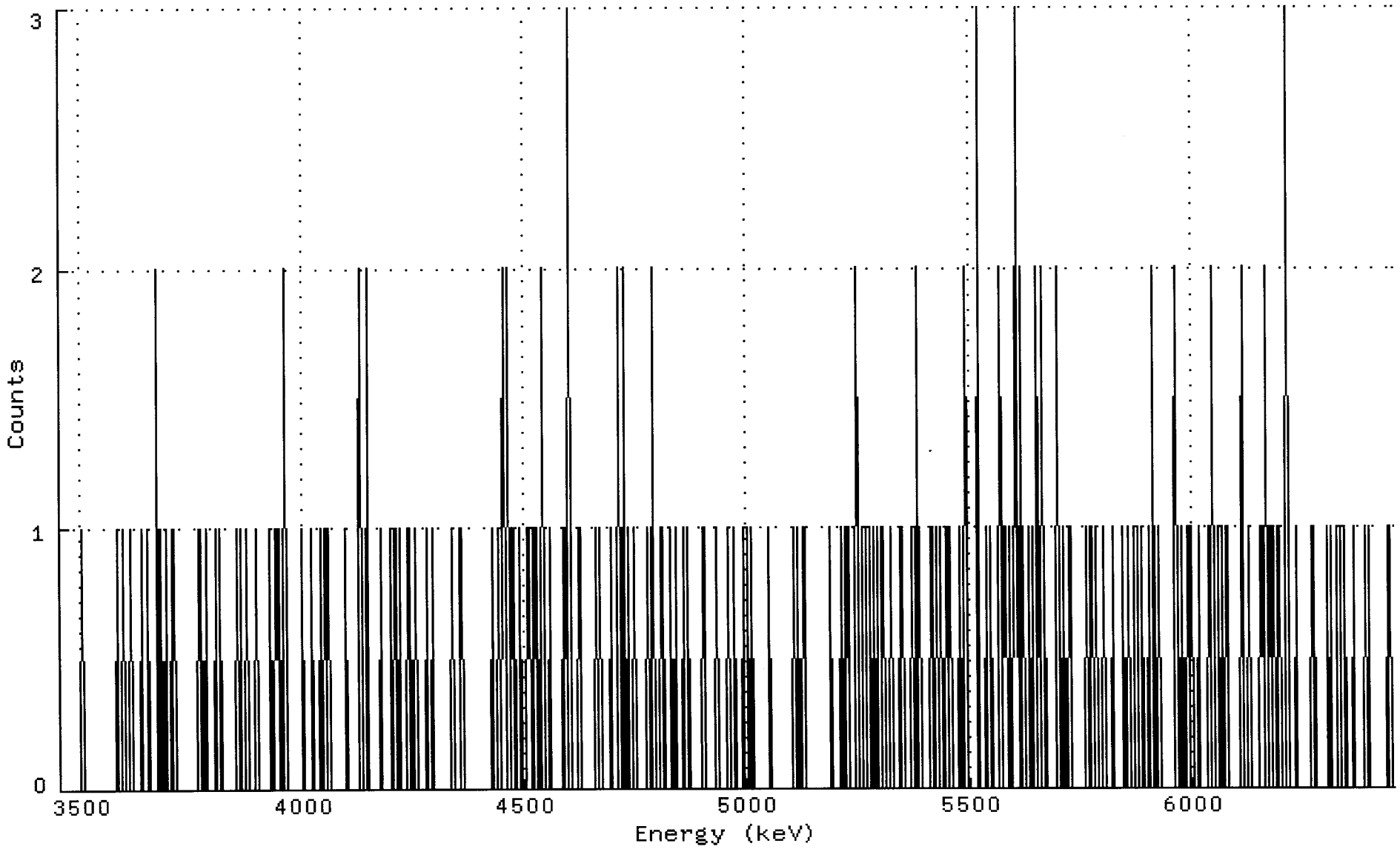
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	191.78	0.17	100.0	2.599E+00	7.245E-01	2.189E-01
RN-222	5490.0	160.20	0.34	99.9	2.173E+00	6.595E-01	2.566E-01
RA-226	4785.0	152.03	1.53	100.0	2.060E+00	6.437E-01	4.002E-01

****

Analyst _____ Date 10-6-05

Reviewer _____ Date 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$13_RA.CNF;1
Title : 042
Sample Title: VPBR092705SL10
Start Time: 6-OCT-2005 14:27: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.44183E+03
Real Time : 0 02:50:00.10 Sample ID : 13 Energy Slope : 3.13320E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.88891E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$13_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	1	1	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	1	0	0	0	0	1	0	0	0	0	1	0
57:	0	0	0	0	0	0	1	0	0	0	0	1	0	0
71:	0	0	0	0	2	0	0	1	0	0	1	0	0	0
85:	1	0	1	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	1	0	1	0	0	1	0	0
113:	0	0	0	0	1	0	0	0	1	0	0	0	0	0
127:	0	0	0	0	0	0	1	0	1	0	0	0	0	1
141:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
155:	0	0	1	0	0	0	1	1	0	1	0	0	0	2
169:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
183:	0	0	0	0	0	1	0	0	0	0	0	1	0	0
197:	1	1	0	1	0	0	0	0	0	0	0	0	0	0
211:	0	0	1	0	0	0	0	0	0	0	0	0	1	2
225:	0	0	0	0	2	0	0	0	0	0	0	0	0	0
239:	1	0	0	0	0	0	0	0	1	0	1	1	0	0
253:	1	0	0	0	0	0	1	0	1	0	0	0	1	0
267:	0	0	0	0	0	0	1	0	0	0	1	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
295:	0	0	0	1	1	0	0	0	0	0	0	0	0	0
309:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
323:	0	0	0	1	0	0	1	2	0	0	2	0	0	1
337:	0	1	0	0	0	1	0	0	0	0	1	1	1	0
351:	1	0	1	0	1	0	0	0	2	0	0	0	0	1
365:	0	0	0	0	0	0	0	0	0	1	0	1	0	0
379:	3	0	0	0	0	0	0	1	1	0	0	0	0	0
393:	0	0	0	0	0	0	1	0	0	1	0	0	0	0
407:	0	0	0	1	0	0	0	0	0	2	2	0	0	2
421:	0	0	1	0	0	0	0	1	0	0	0	0	0	0
435:	0	0	0	1	0	0	0	2	1	0	0	0	0	1
449:	0	1	0	0	0	0	0	1	0	0	1	0	0	0
463:	0	0	1	0	0	0	1	0	0	0	0	0	0	0
477:	0	0	0	1	1	0	0	0	0	0	0	0	0	1
491:	0	0	0	0	0	0	0	0	1	0	0	0	0	1
505:	0	0	0	0	0	1	0	0	0	1	0	0	1	0
519:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
533:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547:	0	1	1	0	0	1	0	0	0	1	1	0	0	0
561:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	1	0	0	0	0	0	0	0	1	0	0	1
589:	0	1	1	0	0	0	0	0	2	1	0	0	0	1
603:	1	1	0	0	0	1	0	1	0	0	1	0	0	0
617:	1	1	0	0	0	0	0	1	0	0	0	0	0	0
631:	1	0	1	0	0	0	0	0	0	1	0	0	0	2
645:	0	1	0	0	0	0	0	0	0	0	1	1	0	0
659:	1	1	0	1	1	0	0	0	1	0	1	1	0	0
673:	0	0	0	0	1	0	0	1	0	2	1	0	0	0
687:	0	0	0	0	0	3	0	0	0	0	0	1	0	0
701:	0	1	0	0	0	0	0	0	2	1	0	1	1	1
715:	0	0	1	0	1	1	1	3	1	0	2	0	1	0
729:	0	0	0	1	0	1	0	0	0	2	1	0	0	2
743:	0	1	0	0	0	0	0	0	0	0	0	2	0	1
757:	0	0	1	0	0	0	1	1	0	0	0	0	0	0
771:	0	0	0	0	0	1	1	0	1	0	1	0	0	1
785:	0	0	0	0	0	1	0	0	0	0	0	0	1	0
799:	0	0	0	0	0	0	0	1	0	0	0	1	0	0
813:	0	0	1	1	1	0	0	0	1	0	0	0	0	1
827:	0	0	0	2	0	0	0	1	0	0	0	0	0	0
841:	0	0	0	0	0	0	1	2	0	1	0	0	1	0
855:	0	0	1	0	1	1	0	0	0	0	0	1	0	0
869:	0	0	0	0	0	1	0	0	2	0	0	0	0	1
883:	0	0	1	0	1	1	1	0	0	0	0	0	0	0
897:	0	0	0	1	2	0	0	0	0	1	0	0	0	0
911:	0	0	0	0	1	1	1	0	0	2	0	0	1	0
925:	1	1	0	0	0	1	1	0	0	0	0	0	3	0
939:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
953:	0	0	0	0	1	0	1	0	0	0	0	0	0	0
967:	0	0	0	1	0	1	0	0	0	0	0	1	1	1
981:	0	0	0	1	0	0	0	0	0	0	1	0	0	0
995:	0	0	0	0	0	1	1	0	1	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	1	0	1	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:15:30.30

Detector ID: 42 Acquisition Start: 6-OCT-2005 14:27:19.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.10
Batch Id: 0509117A-RA Sample Id: 13
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4614.00	44	0	354.05	382.95	303	156	4.31E-03	15.1	
2	0	5329.00	46	0	300.00	625.93	520	176	4.51E-03	14.7	
3	0	5782.21	55	0	0.00	784.02	714	164	5.39E-03	13.5	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:15:35.87

Acquisition Start: 1-OCT-2005 10:07:29.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4606.66	9	0	247.52	380.50	303	156	1.50E-04	33.3	
2	0	5275.54	2	0	94.00	607.50	520	176	3.33E-05	70.7	
3	0	5814.75	1	0	3.13	795.50	714	164	1.67E-05	100.0	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:15:36.12

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4614.00*	152	0	354.05	382.95	303	156	1.49E-02	15.2	
2	0	5329.00*	160	0	300.00	625.93	520	176	1.57E-02	14.8	
3	0	5782.21*	192	0	0.00	784.02	714	164	1.88E-02	13.5	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:15:36

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL10
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 6-OCT-2005 14:27:19
Sample ID : 13 Sample quantity : 1.0151 gram
Sample type : RA Sample geometry :
Detector name : 042 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.10 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4614.00*	152354.05		382.95	303	156	30.5		RA-226	1.82
0	5329.00*	160300.00		625.93	520	176	29.6		RN-222	1.92
0	5782.21*	192	0.00	784.02	714	164	27.0		PO-218	2.30

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:15:58

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$14_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	14
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.067E+00 gram
SAMPLE TITLE:	VPBR092705SL11	DETECTOR NUMBER:	043
ACQ DATE:	6-OCT-2005 14:27	AVERAGE EFFICIENCY:	21.48%
ELAPSED LIVE TIME:	10200.	RECOVERY:	80.67%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_043_1OCT05	BKG ELAPSED TIME:	60000.
		SAF:	1.04

****

NUCLIDE ACTIVITY SUMMARY

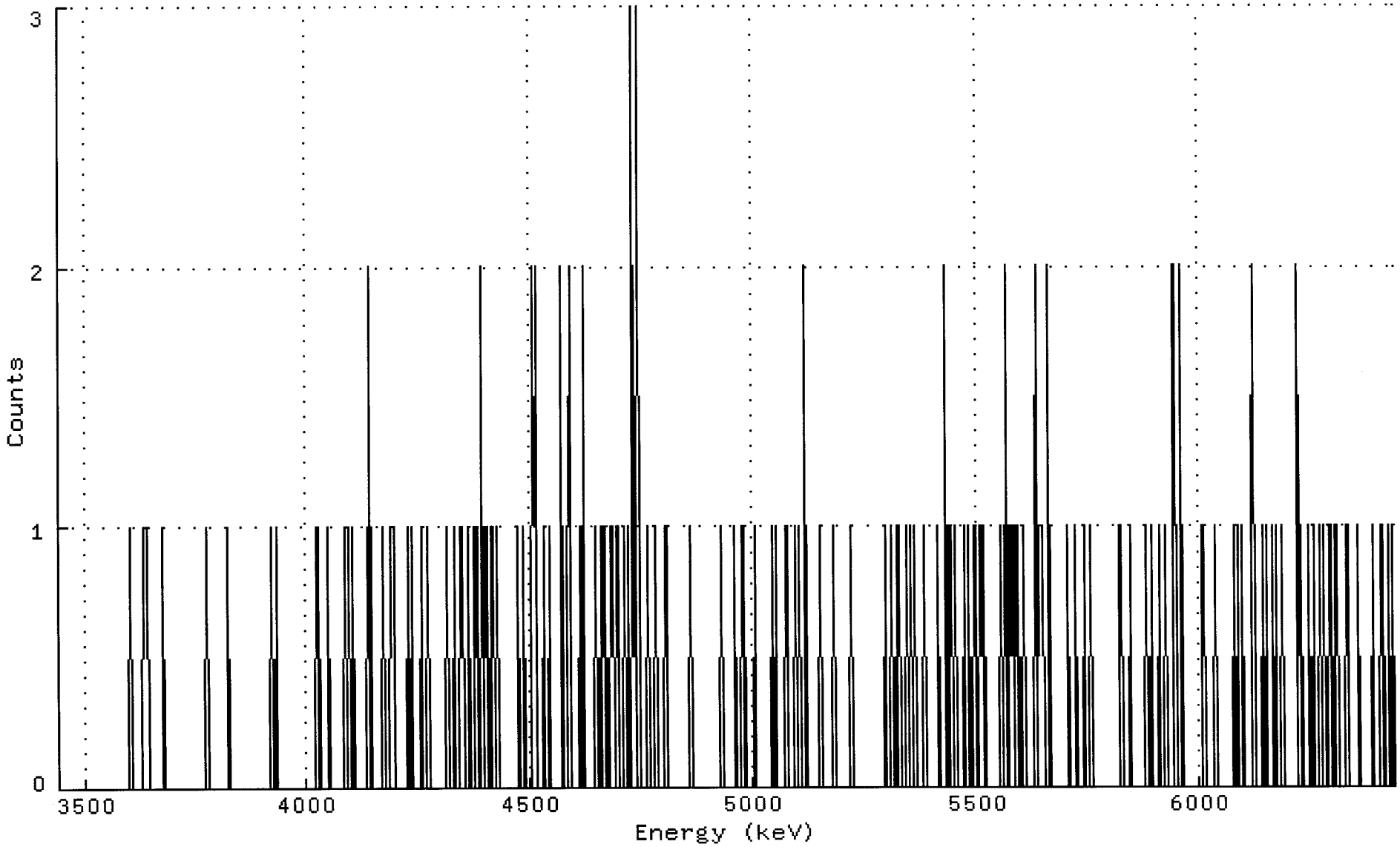
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	32.96	1.36	100.0	4.724E-01	1.749E-01	1.212E-01
RN-222	5490.0	35.55	0.85	99.9	5.098E-01	1.803E-01	1.044E-01
RA-226	4785.0	53.91	0.17	100.0	7.725E-01	2.216E-01	6.895E-02

****

Analyst _____ Date 10·6·05

Reviewer _____ Date 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$14_RA.CNF;1
Title : 043
Sample Title: VPBR092705SL11
Start Time: 6-OCT-2005 14:27: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.43255E+03
Real Time : 0 02:50:00.20 Sample ID : 14 Energy Slope : 3.13596E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.98835E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$14_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
57:	0	0	0	0	0	0	0	0	1	1	1	1	0	0
71:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	1	1	0	0	1	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	0	0	0	0	0	0	0	0	1	0	1	0	0	0
197:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
211:	0	1	0	0	1	0	0	1	0	0	0	0	0	0
225:	0	0	0	0	1	0	2	0	0	0	0	0	0	0
239:	0	1	0	0	0	0	0	1	1	1	0	0	0	0
253:	0	0	0	0	0	1	0	0	1	0	0	0	0	0
267:	0	1	0	0	0	1	1	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	1	0	0	0	0	1	0	0
295:	0	0	1	1	0	0	0	0	1	0	0	0	1	1
309:	0	1	0	1	2	0	1	0	1	0	1	0	1	0
323:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
337:	0	0	0	1	0	0	0	1	0	0	0	0	0	0
351:	2	1	2	0	0	0	0	0	1	0	0	0	1	0
365:	0	0	0	0	0	0	0	0	2	0	0	0	1	1
379:	2	0	0	0	0	0	0	1	0	0	2	0	0	0
393:	0	0	0	0	0	1	0	0	0	1	0	1	0	1
407:	0	0	1	1	1	0	0	1	1	0	0	0	0	1
421:	0	1	0	0	1	3	1	0	0	3	0	0	0	0
435:	0	0	1	0	0	0	0	0	1	0	0	0	0	0
449:	0	1	1	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	1	0	0	0	0	0	0	0	0	0	0	1	0
505:	0	0	0	1	0	1	0	0	0	0	0	0	0	1
519:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
533:	0	1	0	0	0	0	0	0	0	1	1	0	0	0
547:	0	0	1	0	0	1	0	0	0	0	2	0	0	0
561:	0	0	0	0	0	0	0	1	1	0	0	0	0	0
575:	0	0	0	1	1	0	0	0	0	0	0	0	0	0
589:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
603:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
617:	0	1	0	0	0	0	1	0	0	0	1	0	1	0
631:	0	0	0	0	1	0	0	1	0	0	1	0	0	0
645:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
659:	1	0	0	0	0	0	2	0	0	1	1	0	0	1
673:	0	0	0	0	0	0	1	0	0	0	1	0	0	0
687:	1	0	1	0	1	1	1	0	1	0	0	0	0	0
701:	0	0	0	0	0	0	0	1	0	0	1	0	2	0
715:	1	1	1	0	1	1	0	1	0	0	0	1	0	0
729:	0	0	0	0	0	0	1	2	0	1	1	1	1	0
743:	0	0	0	2	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	1	0	0	0	0	0	1	0	0	0
771:	0	0	0	1	0	0	0	0	1	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	1	1	0	0	0	0	0	0	1	0	0
813:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
827:	1	0	0	0	0	0	1	0	0	0	0	1	0	0
841:	0	0	0	0	2	2	0	0	0	0	2	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
869:	1	0	0	0	0	0	0	0	0	1	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	1	0	0	1
897:	0	0	0	1	0	0	0	0	0	0	0	1	2	0
911:	0	0	0	0	0	1	0	0	1	0	0	0	0	0
925:	1	0	1	0	0	0	0	1	0	0	0	0	0	0
939:	0	0	0	0	0	0	2	1	0	1	0	0	0	0
953:	0	1	0	0	0	1	0	0	0	0	1	0	0	1
967:	0	0	0	0	1	0	1	0	0	1	1	0	0	0
981:	0	0	0	0	1	1	0	0	0	0	0	0	0	0
995:	1	0	0	0	0	0	0	0	0	0	0	1	0	0
1009:	0	0	0	0	1	0	1	0	0	0	0	1	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:15:41.43

Detector ID: 43 Acquisition Start: 6-OCT-2005 14:27:37.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.20
Batch Id: 0509117A-RA Sample Id: 14
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4595.51	52	0	370.04	380.00	306	156	5.10E-03	13.9	
2	0	5310.07	35	0	341.82	623.34	524	176	3.43E-03	16.9	
3	0	5785.02	33	0	365.24	789.70	719	164	3.24E-03	17.4	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:15:56.94

Acquisition Start: 1-OCT-2005 10:07:31.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4605.95	1	0	3.14	383.50	306	156	1.67E-05	100.0	
2	0	5275.84	5	0	307.32	611.50	524	176	8.33E-05	44.7	
3	0	5815.48	8	0	3.14	800.50	719	164	1.33E-04	35.4	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:15:57.19

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4595.51*	54	0	370.04	380.00	306	156	5.29E-03	13.9	
2	0	5310.07*	36	0	341.82	623.34	524	176	3.49E-03	17.3	
3	0	5785.02*	33	0	365.24	789.70	719	164	3.23E-03	18.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:15:58

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL11		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 6-OCT-2005 14:27:37
Sample ID	: 14	Sample quantity	: 1.0670 gram
Sample type	: RA	Sample geometry	:
Detector name	: 043	Detector geometry	:
Elapsed live time	: 0 02:50:00.00	Elapsed real time	: 0 02:50:00.20 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4595.51*	54370.04	380.00		306	156	27.8		RA-226	0.623
0	5310.07*	36341.82	623.34		524	176	34.7		RN-222	0.411
0	5785.02*	33365.24	789.70		719	164	36.4		PO-218	0.381

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:16:09

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$15_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	15
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.114E+00 gram
SAMPLE TITLE:	VPBR092705SL12	DETECTOR NUMBER:	044
ACQ DATE:	6-OCT-2005 14:28	AVERAGE EFFICIENCY:	20.22%
ELAPSED LIVE TIME:	10200.	RECOVERY:	94.04%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_044_1OCT05	BKG ELAPSED TIME:	60000.
		SAF:	1.66

****

NUCLIDE ACTIVITY SUMMARY

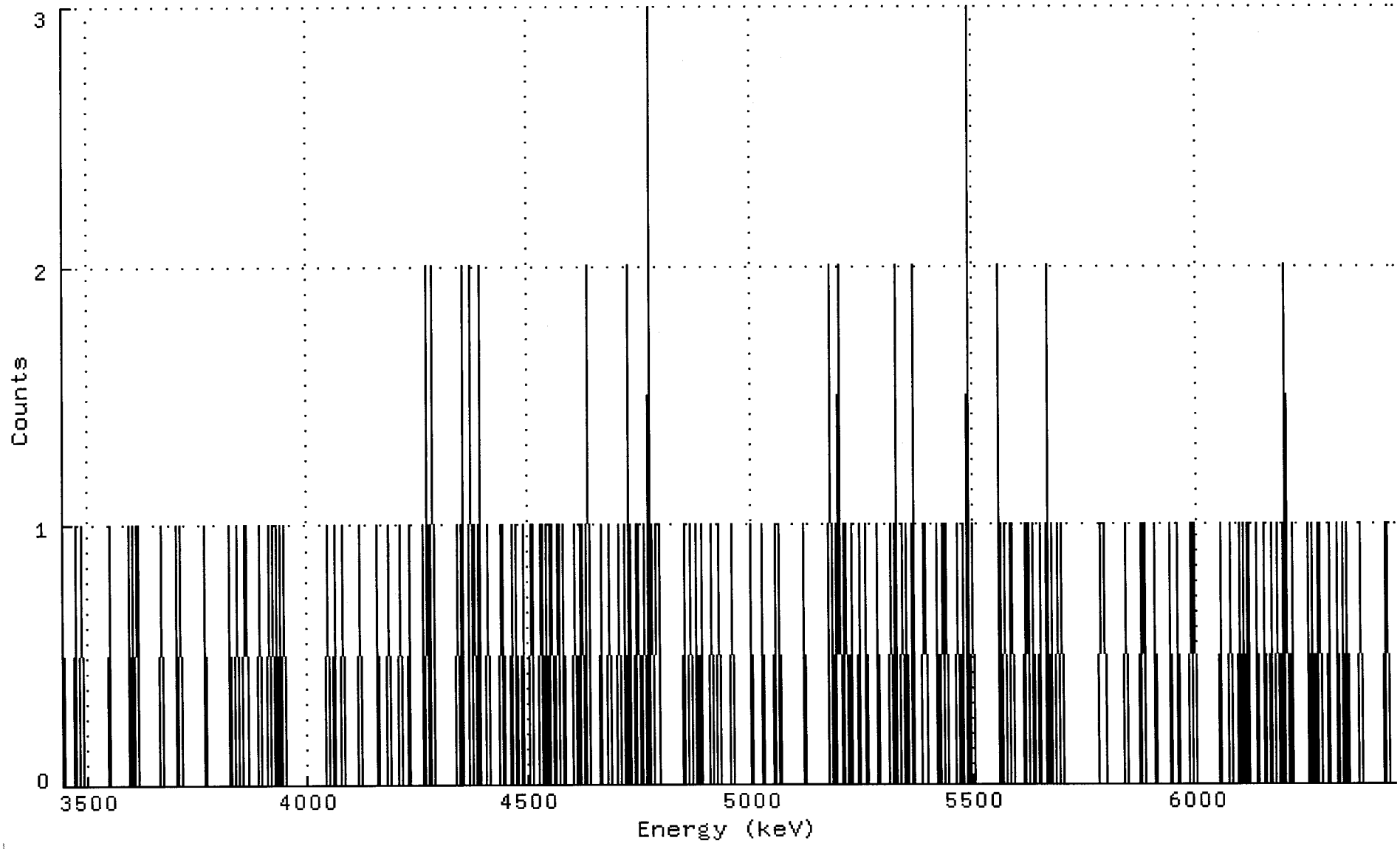
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	42.14	1.02	100.0	5.271E-01	2.152E-01	1.538E-01
RN-222	5490.0	62.74	0.34	99.9	7.853E-01	2.620E-01	1.126E-01
RA-226	4785.0	67.89	0.17	100.0	8.491E-01	2.724E-01	9.607E-02

****

Analyst _____ Date 10-6-05

Reviewer _____ Date 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$15_RA.CNF;1
Title : 044
Sample Title: VPBR092705SL12
Start Time: 6-OCT-2005 14:28: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.43662E+03
Real Time : 0 02:50:00.20 Sample ID : 15 Energy Slope : 3.09924E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.59506E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$15_RA

Channel

1:	1	0	1	0	0	0	0	0	0	0	0	1	0	0
15:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	1	0	0	1	0
57:	1	1	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
85:	0	0	1	0	1	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
127:	0	0	0	0	1	0	0	0	0	0	1	1	0	0
141:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
155:	1	0	0	1	0	0	1	0	1	0	0	1	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	1	0	0	0	0	1	0	0	0	0	0	1
211:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
225:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
239:	0	0	0	0	0	1	0	0	0	0	0	0	0	1
253:	1	0	0	0	0	0	1	0	0	0	0	0	0	0
267:	0	0	0	1	0	1	2	0	0	0	2	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	1	0	0	0	2	0	0	0	0	0	2	0	0	1
309:	0	0	0	2	0	0	0	0	0	1	0	0	0	0
323:	0	0	0	0	0	1	0	1	0	0	0	0	0	1
337:	0	0	0	1	0	0	0	0	1	0	0	0	0	0
351:	1	1	0	0	0	0	0	1	0	1	0	0	1	0
365:	1	0	1	0	0	0	1	1	0	0	0	1	0	0
379:	0	0	0	0	0	1	0	0	0	1	0	1	0	0
393:	0	2	0	0	0	0	0	0	0	0	0	1	0	0
407:	0	0	0	1	0	0	0	0	0	0	1	1	0	0
421:	0	1	0	0	2	0	0	0	0	1	0	1	0	0
435:	0	1	0	0	0	3	0	1	0	0	1	1	1	0
449:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	1	0	0	0	0	1	0	0	0	0	1
477:	0	0	1	0	0	0	0	0	0	0	1	0	0	0
491:	0	0	1	0	0	0	0	0	0	0	0	0	1	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
519:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
533:	0	0	0	1	0	0	0	1	0	0	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
561:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	2	0	0	0	1	0	1	2	1	0
589:	0	1	1	0	0	0	1	0	0	0	0	0	1	0
603:	0	0	0	1	0	0	0	0	0	0	0	0	1	0
617:	0	0	0	0	0	0	0	0	1	0	0	0	2	0
631:	0	0	0	1	0	0	1	0	0	0	0	2	0	0
645:	0	0	0	0	0	1	1	1	0	0	0	0	0	0
659:	0	0	1	0	0	0	1	1	0	1	0	0	0	0
673:	0	0	0	0	1	0	0	0	1	0	0	0	3	0
687:	0	1	1	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	2	0	0	0	1
715:	0	0	0	0	1	1	0	0	0	0	0	0	0	0
729:	0	1	0	1	1	0	0	0	1	0	0	0	0	1
743:	0	0	0	0	0	2	0	0	1	0	0	0	0	1
757:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	1	1	1	1	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	1	1	0	0	0
813:	0	0	0	0	0	0	0	1	0	1	1	0	0	0
827:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
841:	0	0	0	1	0	0	0	0	0	1	0	0	0	0
855:	0	0	0	0	0	1	0	1	1	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	1	0	0	0	0	0	0	0	1	0	0	0	0
897:	0	0	1	0	0	1	0	0	1	0	1	0	0	0
911:	0	0	0	1	0	0	0	0	0	1	0	0	0	0
925:	1	0	0	0	0	1	0	0	0	1	0	0	2	1
939:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
953:	0	0	1	0	0	1	0	0	0	1	0	1	0	0
967:	0	0	0	0	1	0	0	0	0	0	0	1	0	0
981:	0	0	1	0	0	1	0	0	0	0	0	0	0	0
995:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	1	0	1	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:16:02.66

Detector ID: 44 Acquisition Start: 6-OCT-2005 14:28:34.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.20
Batch Id: 0509117A-RA Sample Id: 15
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4609.67	41	0	399.03	386.17	308	156	4.02E-03	15.6	
2	0	5306.45	38	0	330.84	623.32	525	176	3.73E-03	16.2	
3	0	5782.30	26	0	3.10	788.88	720	162	2.55E-03	19.6	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:16:07.15

Acquisition Start: 1-OCT-2005 10:07:34.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4607.67	1	0	3.10	385.50	308	156	1.67E-05	100.0	
2	0	5275.06	2	0	207.65	612.50	525	176	3.33E-05	70.7	
3	0	5815.35	6	0	4.55	800.50	720	162	1.00E-04	40.8	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:16:07.43

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4609.67*	68	0	399.03	386.17	308	156	6.66E-03	15.7	
2	0	5306.45*	63	0	330.84	623.32	525	176	6.15E-03	16.3	
3	0	5782.30*	42	0	3.10	788.88	720	162	4.13E-03	20.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:16:08

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL12
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 6-OCT-2005 14:28:34
Sample ID : 15 Sample quantity : 1.1141 gram
Sample type : RA Sample geometry :
Detector name : 044 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.20 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4609.67*	68399.03	386.17		308	156	31.3		RA-226	0.798
0	5306.45*	63330.84	623.32		525	176	32.6		RN-222	0.739
0	5782.30*	42 3.10	788.88		720	162	40.2		PO-218	0.496

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:16:21

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$16_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	16
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	9.999E-01 gram
SAMPLE TITLE:	VPBR092705SL13	DETECTOR NUMBER:	045
ACQ DATE:	6-OCT-2005 14:29	AVERAGE EFFICIENCY:	20.80%
ELAPSED LIVE TIME:	10200.	RECOVERY:	99.62%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:53	EFF CAL DATE:	29-SEP-2005 16:53
BKG FILENAME:	B_045_1OCT05	BKG ELAPSED TIME:	60000.
		SAF:	1.76

****

NUCLIDE ACTIVITY SUMMARY

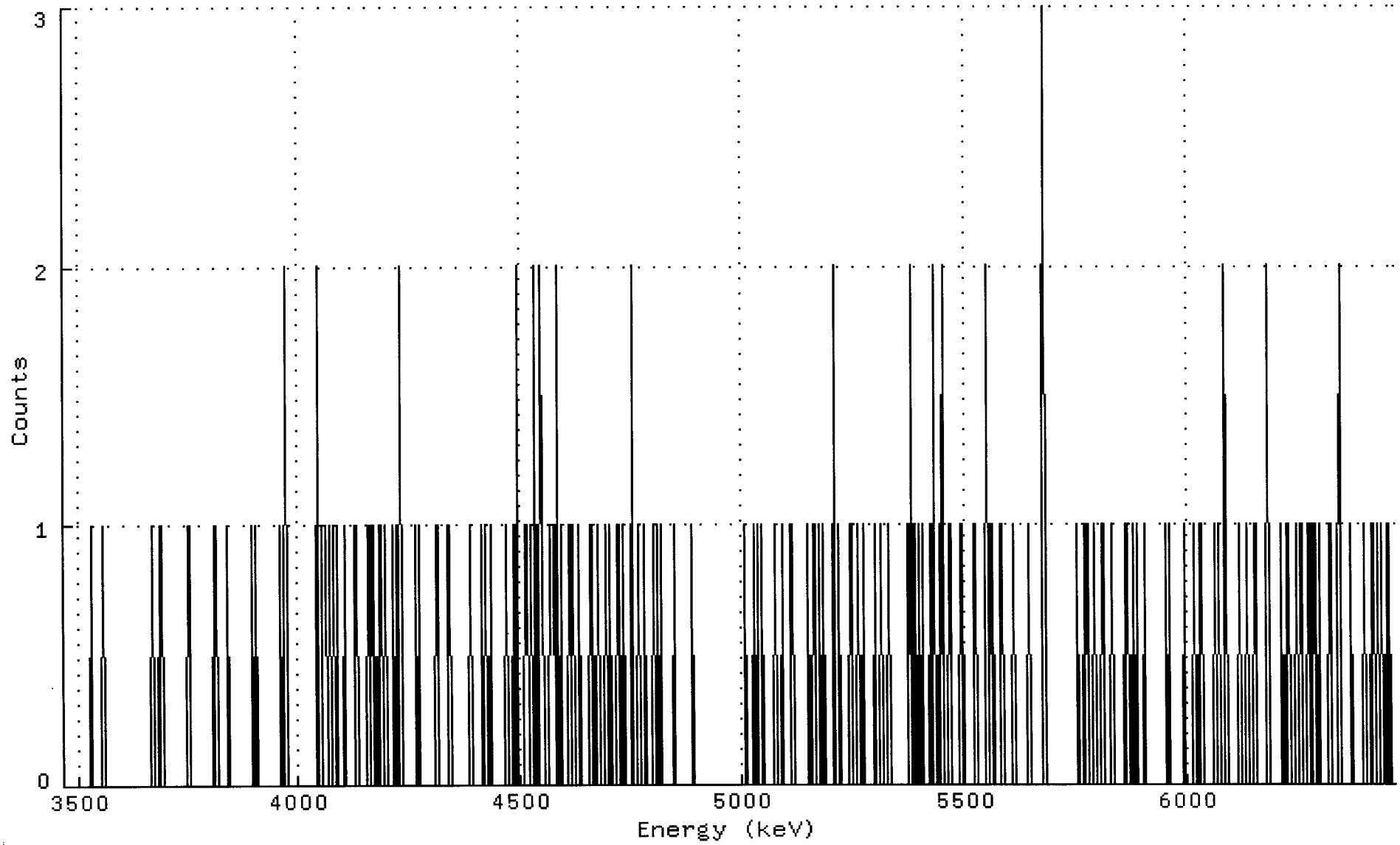
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	45.42	0.34	100.0	5.809E-01	2.331E-01	1.220E-01
RN-222	5490.0	77.10	0.34	99.9	9.866E-01	3.066E-01	1.221E-01
RA-226	4785.0	84.31	0.17	100.0	1.078E+00	3.207E-01	1.041E-01

****

Analyst 10-6-05 Date

Reviewer 10/7/05 Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$16_RA.CNF;1
Title : 045
Sample Title: VPBR092705SL13
Start Time: 6-OCT-2005 14:29: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.45621E+03
Real Time : 0 02:50:00.10 Sample ID : 16 Energy Slope : 3.12218E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.80074E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$16_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
29:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
71:	0	0	1	0	1	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	1	1	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	1	0	1	0	0	0	0	0	0	0	0	1	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	1	0	0	1	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	1	0	0	0	2	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	0	0	0	0	0	0	0	2	0	0	0	1	1	1
197:	0	0	1	0	0	1	0	1	0	0	0	0	0	1
211:	0	0	0	0	0	0	0	1	1	0	0	0	0	0
225:	0	0	1	1	0	1	0	1	0	0	1	0	1	0
239:	0	1	0	0	0	0	0	1	0	1	0	0	2	0
253:	0	0	0	0	0	0	0	0	0	0	1	0	1	0
267:	0	0	0	0	0	0	0	0	0	0	0	1	1	0
281:	0	0	0	0	0	0	1	1	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
309:	0	0	0	0	1	0	1	0	0	0	1	0	0	0
323:	0	0	0	0	0	0	0	0	1	0	0	0	0	1
337:	0	0	2	0	0	0	0	0	1	1	1	0	1	1
351:	0	0	2	0	0	2	2	1	0	0	0	0	0	1
365:	1	1	1	0	2	0	0	1	0	0	0	0	0	1
379:	0	1	1	0	0	0	0	1	0	0	0	0	0	0
393:	0	1	0	1	0	0	0	1	0	0	0	0	1	1
407:	0	0	1	0	0	0	0	1	0	1	0	0	1	0
421:	0	0	0	0	2	0	0	0	0	1	0	0	0	0
435:	1	0	0	0	0	0	1	1	0	1	0	0	1	0
449:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	1	0	0	0	0	0	1
519:	0	0	1	0	0	0	1	0	0	0	0	0	0	0
533:	0	0	1	0	0	0	0	1	0	0	0	0	0	0
547:	1	1	0	0	0	0	0	0	0	0	0	0	0	1
561:	0	0	0	1	1	0	0	0	1	0	0	1	0	0
575:	0	0	0	0	0	2	0	0	0	1	0	0	0	0
589:	0	0	0	1	1	0	0	0	0	1	0	0	0	1
603:	0	0	0	0	0	0	0	0	1	0	0	0	0	1
617:	0	0	0	0	1	1	0	0	0	0	0	0	0	0
631:	0	0	0	0	0	0	1	1	0	2	0	0	1	0
645:	1	0	0	1	0	0	0	0	0	1	0	0	2	1
659:	0	0	1	0	1	2	0	0	0	0	1	1	0	0
673:	0	0	0	0	0	1	0	1	0	0	0	0	0	0
687:	0	0	1	1	0	0	0	0	0	0	0	0	2	0
701:	0	1	0	1	0	0	0	0	0	1	1	0	0	0
715:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
729:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
743:	1	3	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
771:	0	0	0	0	1	0	1	1	0	0	0	0	1	0
785:	0	0	0	0	1	1	0	0	0	0	0	0	1	0
799:	0	0	0	0	0	0	0	0	1	0	1	0	0	0
813:	1	0	0	1	0	0	0	0	0	1	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
841:	0	1	0	0	0	0	0	0	0	0	0	0	0	1
855:	0	0	0	0	0	0	0	1	0	0	0	1	0	1
869:	0	0	0	0	0	0	0	0	0	0	1	0	0	1
883:	0	0	0	0	2	1	0	0	0	0	0	0	0	0
897:	0	0	1	0	0	0	0	0	1	0	0	0	0	0
911:	1	1	0	0	0	0	0	0	0	0	0	2	0	0
925:	0	0	0	0	0	0	0	0	1	0	0	0	1	0
939:	1	0	0	0	0	0	1	0	0	1	1	0	0	0
953:	0	1	0	1	0	1	1	0	1	0	1	0	0	0
967:	0	0	0	0	1	1	0	0	0	0	0	1	1	2
981:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
995:	0	0	0	0	1	0	0	0	0	0	1	0	1	0
1009:	0	1	0	0	1	0	0	0	1	0	0	1	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:16:13.52

Detector ID: 45 Acquisition Start: 6-OCT-2005 14:29:12.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.10
Batch Id: 0509117A-RA Sample Id: 16
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4605.93	48	0	271.63	376.42	299	156	4.71E-03	14.4	
2	0	5304.81	44	0	265.39	613.82	516	176	4.31E-03	15.1	
3	0	5816.46	26	0	3.87	792.15	711	162	2.55E-03	19.6	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:16:19.38

Acquisition Start: 1-OCT-2005 10:07:37.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4606.18	1	0	3.12	376.50	299	156	1.67E-05	100.0	
2	0	5274.86	2	0	252.90	603.50	516	176	3.33E-05	70.7	
3	0	5814.60	2	0	34.34	791.50	711	162	3.33E-05	70.7	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:16:19.66

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4605.93*	84	0	271.63	376.42	299	156	8.27E-03	14.5	
2	0	5304.81*	77	0	265.39	613.82	516	176	7.56E-03	15.1	
3	0	5816.46*	45	0	3.87	792.15	711	162	4.45E-03	19.8	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:16:20

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL13		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 6-OCT-2005 14:29:12
Sample ID	: 16	Sample quantity	: 0.99990 gram
Sample type	: RA	Sample geometry	:
Detector name	: 045	Detector geometry	:
Elapsed live time	: 0 02:50:00.00	Elapsed real time	: 0 02:50:00.10 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4605.93*	84271.63	376.42		299	156	28.9		RA-226	1.07
0	5304.81*	77265.39	613.82		516	176	30.3		RN-222	0.983
0	5816.46*	45 3.87	792.15		711	162	39.5		PO-218	0.579

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:16:36

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$17_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	17
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.026E+00 gram
SAMPLE TITLE:	VPBR092705SL14	DETECTOR NUMBER:	046
ACQ DATE:	6-OCT-2005 14:29	AVERAGE EFFICIENCY:	20.52%
ELAPSED LIVE TIME:	10200.	RECOVERY:	99.28%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:54	EFF CAL DATE:	29-SEP-2005 16:54
BKG FILENAME:	B_046_1OCT05	BKG ELAPSED TIME:	60000.
		SAF:	1.76

****

NUCLIDE ACTIVITY SUMMARY

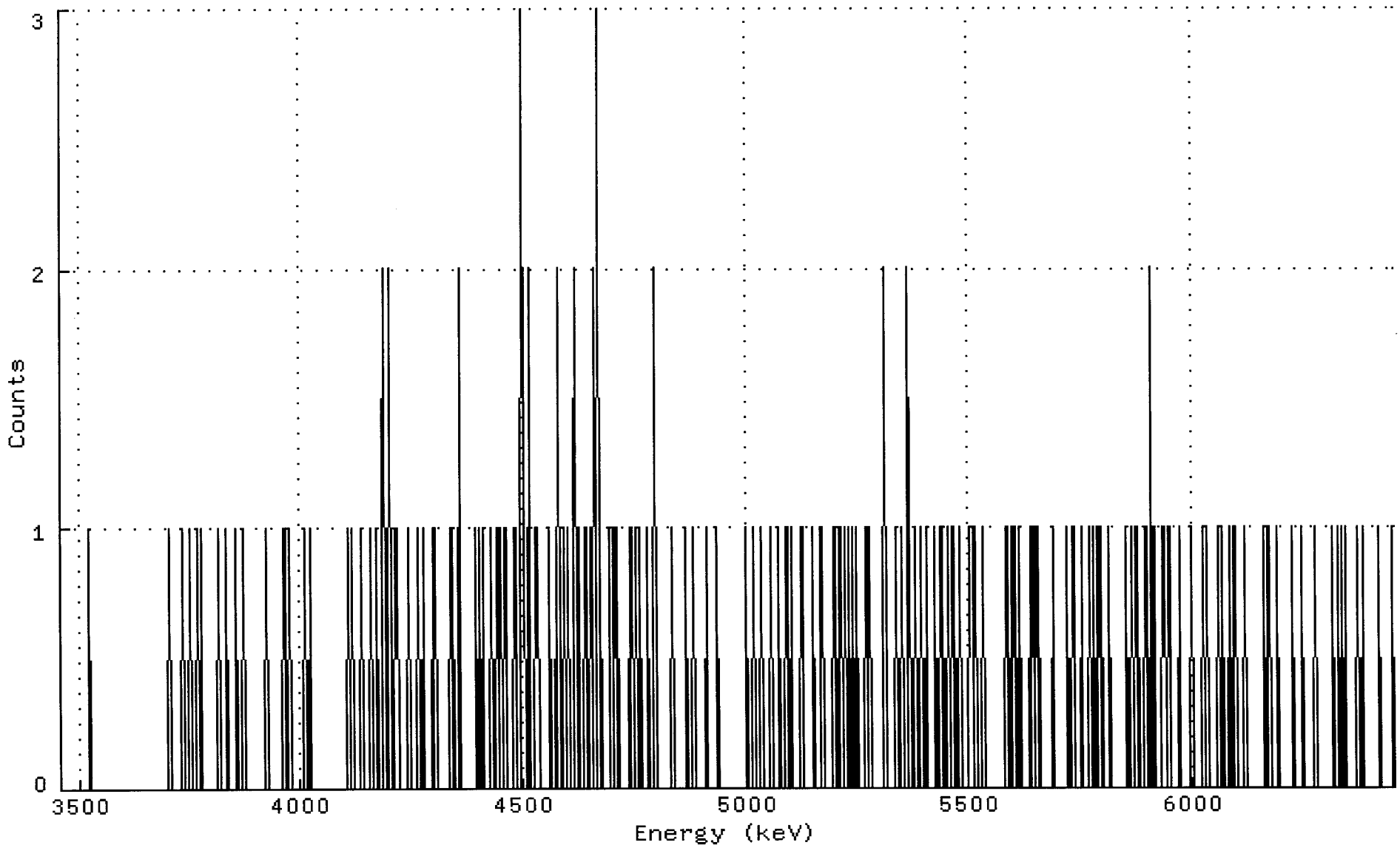
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	71.31	0.85	100.0	9.043E-01	2.928E-01	1.562E-01
RN-222	5490.0	80.45	0.51	99.9	1.021E+00	3.112E-01	1.347E-01
RA-226	4785.0	90.50	1.02	100.0	1.147E+00	3.317E-01	1.653E-01

****

Analyst — Date: 10-6-05

Reviewer — Date: 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$17_RA.CNF;1
Title : 046
Sample Title: VPBR092705SL14
Start Time: 6-OCT-2005 14:29: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.44911E+03
Real Time : 0 02:50:00.10 Sample ID : 17 Energy Slope : 3.15389E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -2.18269E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$17_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
85:	0	0	0	0	0	0	0	1	0	0	0	0	1	0
99:	0	0	0	0	1	0	1	0	0	0	0	0	0	0
113:	0	0	0	0	0	1	0	0	0	0	0	1	0	0
127:	0	0	0	0	1	0	0	0	0	1	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	1	1	0
155:	0	0	0	0	0	0	0	0	0	0	1	0	1	0
169:	1	0	0	0	0	0	0	0	0	0	0	1	0	0
183:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211:	0	1	1	0	1	0	0	0	0	0	0	1	0	0
225:	0	0	0	0	1	0	0	0	0	1	0	0	0	1
239:	2	0	0	0	2	0	0	0	1	1	1	0	0	0
253:	0	0	0	0	1	0	0	0	0	0	0	1	0	0
267:	0	1	0	0	0	0	0	0	1	0	1	0	0	0
281:	0	0	0	0	0	0	0	1	0	1	0	0	0	0
295:	2	0	0	0	0	0	0	0	0	0	0	0	1	0
309:	0	1	0	1	0	0	0	0	0	1	0	0	0	1
323:	0	1	1	0	0	1	1	0	0	0	0	0	1	1
337:	0	0	0	0	3	1	0	0	0	2	0	0	0	0
351:	1	1	0	0	0	0	0	0	0	0	1	0	0	0
365:	0	1	0	2	0	1	0	1	0	0	1	0	0	0
379:	0	1	2	0	1	0	0	0	0	1	1	0	0	1
393:	0	0	2	0	0	3	0	1	0	0	0	0	0	0
407:	1	1	1	0	1	0	1	0	0	0	0	0	0	0
421:	0	1	0	1	0	0	1	0	0	1	0	0	0	0
435:	0	1	0	0	0	0	2	0	0	0	0	0	0	0
449:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
463:	0	0	1	0	0	0	0	1	0	0	0	0	0	0
477:	0	0	0	1	0	0	0	0	0	0	0	1	0	0
491:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	1	0	0	0	0	1	0	0	0
519:	0	0	1	0	0	0	0	0	0	1	1	0	0	0
533:	0	0	1	0	0	0	0	1	1	0	0	1	0	0
547:	0	0	0	0	0	1	1	0	0	0	0	0	0	0
561:	1	0	0	0	0	0	1	1	0	0	0	0	0	0
575:	0	0	1	0	1	0	0	1	1	0	0	1	0	0
589:	1	0	0	1	0	0	1	0	0	0	0	0	0	1
603:	0	1	1	0	0	0	0	0	0	0	0	0	0	0
617:	2	0	0	0	0	0	0	0	0	1	0	0	0	1
631:	0	0	0	0	2	1	0	0	0	1	1	0	0	0
645:	1	0	0	0	1	0	0	0	0	0	0	1	0	0
659:	0	1	0	1	0	0	0	1	0	0	1	0	1	0
673:	0	0	1	0	0	0	0	0	0	1	1	1	1	0
687:	1	0	0	0	0	0	1	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	1	1	0	0
715:	1	0	1	0	1	0	0	1	0	0	0	0	0	0
729:	0	1	0	1	0	1	1	0	1	0	0	0	0	0
743:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
757:	0	0	0	1	0	0	0	1	1	0	0	0	0	0
771:	1	0	0	0	0	0	1	1	0	0	1	0	1	0
785:	1	0	1	0	0	0	0	0	1	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	1	0	0	0	1	0
813:	0	1	0	1	0	0	0	0	0	1	0	1	0	0
827:	2	0	1	0	0	0	0	0	1	1	1	0	0	1
841:	1	0	0	0	0	0	0	0	1	0	0	0	0	0
855:	0	0	0	1	1	0	0	0	0	0	0	0	0	1
869:	0	0	1	0	0	0	0	0	0	0	0	1	0	0
883:	0	1	0	0	0	0	1	0	0	1	0	1	0	0
897:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	1	0	1	0	1	0	0
925:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
939:	0	0	1	0	0	0	0	0	0	0	1	0	0	0
953:	0	0	0	0	0	0	1	1	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	1	0	0	0	0	1	0
981:	1	0	0	1	0	0	0	0	0	0	0	0	0	1
995:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:16:25.13

Detector ID: 46 Acquisition Start: 6-OCT-2005 14:29:39.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.10
Batch Id: 0509117A-RA Sample Id: 17
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4600.38	52	0	317.72	374.75	300	155	5.10E-03	13.9	
2	0	5293.27	46	0	61.50	610.52	517	176	4.51E-03	14.7	
3	0	5806.24	41	0	3.15	790.63	712	164	4.02E-03	15.6	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:16:35.04

Acquisition Start: 1-OCT-2005 10:07:40.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4607.10	6	0	387.93	377.00	300	155	1.00E-04	40.8	
2	0	5275.88	3	0	214.46	604.50	517	176	5.00E-05	57.7	
3	0	5814.29	5	0	0.00	793.50	712	164	8.33E-05	44.7	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:16:35.29

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4600.38*	91	0	317.72	374.75	300	155	8.87E-03	14.0	
2	0	5293.27*	80	0	61.50	610.52	517	176	7.89E-03	14.8	
3	0	5806.24*	71	0	3.15	790.63	712	164	6.99E-03	15.8	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:16:36

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL14
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 6-OCT-2005 14:29:39
Sample ID : 17 Sample quantity : 1.0261 gram
Sample type : RA Sample geometry :
Detector name : 046 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.10 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4600.38*	91317.72		374.75	300	155	28.1		RA-226	1.14
0	5293.27*	80	61.50	610.52	517	176	29.7		RN-222	1.01
0	5806.24*	71	3.15	790.63	712	164	31.6		PO-218	0.898

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:16:53

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$18_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	18
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.119E+00 gram
SAMPLE TITLE:	VPBR092705SL15	DETECTOR NUMBER:	047
ACQ DATE:	6-OCT-2005 14:30	AVERAGE EFFICIENCY:	20.29%
ELAPSED LIVE TIME:	10200.	RECOVERY:	85.97%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:54	EFF CAL DATE:	29-SEP-2005 16:54
BKG FILENAME:	B_047_1OCT05	BKG ELAPSED TIME:	60000.
		SAF:	2.04

****

NUCLIDE ACTIVITY SUMMARY

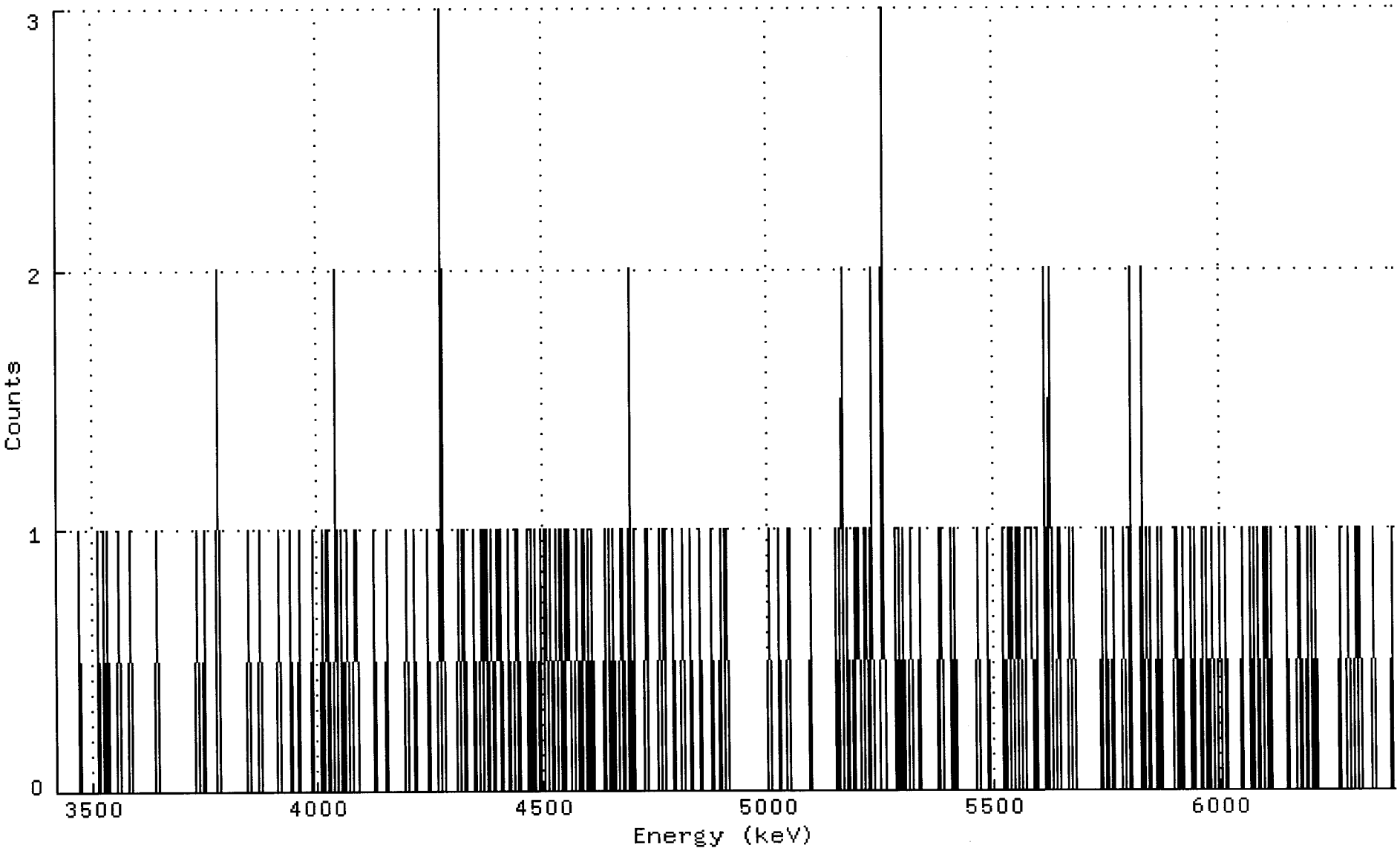
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	68.85	0.51	100.0	9.352E-01	3.297E-01	1.671E-01
RN-222	5490.0	72.42	1.02	99.9	9.843E-01	3.399E-01	2.053E-01
RA-226	4785.0	89.25	0.51	100.0	1.212E+00	3.772E-01	1.671E-01

****

Analyst _____ Date 10-6-05

Reviewer _____ Date 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$18_RA.CNF;1
Title : 047
Sample Title: VPBR092705SL15
Start Time: 6-OCT-2005 14:30: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.41102E+03
Real Time : 0 02:50:00.10 Sample ID : 18 Energy Slope : 3.06759E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.62796E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$18_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	1	0	0	0	1	0	0	1	0
43:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
57:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	1	1	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	1	0	0	0	0	1	0
113:	0	0	0	0	0	0	0	0	2	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	1	1	0	0	0	0	0	0	0	1	0	0
155:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
169:	0	0	0	0	0	0	1	0	0	0	0	0	1	0
183:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
197:	0	1	0	0	1	0	1	0	0	0	0	1	2	0
211:	0	0	1	0	0	0	1	0	0	0	0	1	1	1
225:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
239:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
253:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
267:	1	0	0	0	0	0	0	0	0	0	1	0	0	0
281:	0	0	0	0	1	0	3	1	0	0	0	0	0	0
295:	0	0	0	0	1	0	0	1	0	1	0	0	0	0
309:	0	0	1	0	0	0	0	1	1	0	1	0	1	0
323:	1	1	0	0	0	1	1	0	1	0	0	0	0	0
337:	1	0	0	0	0	1	0	1	0	0	0	0	0	0
351:	1	0	1	0	0	1	0	0	0	1	0	0	0	1
365:	1	0	0	1	0	0	0	1	0	0	1	1	0	0
379:	1	0	1	1	0	0	0	0	0	1	0	0	0	1
393:	0	1	0	0	1	0	0	1	0	0	0	0	0	0
407:	0	0	1	0	0	0	1	0	0	1	0	0	0	0
421:	1	0	1	0	0	0	0	2	0	0	1	0	0	0
435:	0	0	0	0	0	1	1	0	0	0	0	0	0	0
449:	0	1	0	0	1	1	0	0	0	0	0	0	1	0
463:	0	0	0	0	1	1	0	0	0	0	0	1	0	0
477:	0	0	0	0	1	0	0	0	0	0	0	0	0	1
491:	0	0	0	0	0	1	0	0	0	1	1	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	1	0	0	0	0	0	0	0	1	0	0	0	0	0
547:	0	1	1	0	0	0	0	0	0	0	0	0	0	0
561:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	0	0	0	0	0	0	1	0	0	1
589:	1	2	0	0	0	1	0	0	0	0	1	0	1	1
603:	1	0	0	0	1	1	0	0	0	2	1	0	0	0
617:	0	0	0	1	3	1	0	0	0	0	0	0	0	0
631:	1	0	0	1	0	0	1	0	0	0	0	1	0	0
645:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	1	0	1	0	0	0	0	0	0
673:	0	1	0	0	1	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
701:	0	1	0	0	0	0	0	0	0	0	0	0	0	1
715:	0	0	0	1	1	0	1	0	0	1	1	0	1	0
729:	0	0	0	1	1	1	1	1	0	0	0	1	0	0
743:	0	0	0	0	2	0	0	1	2	0	0	0	0	0
757:	1	1	0	0	0	0	0	0	0	1	0	0	1	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	1	0	0	0	1	0	0	0
799:	0	1	0	0	0	0	0	0	0	1	1	0	0	0
813:	0	2	0	0	0	0	0	0	0	0	2	0	0	1
827:	1	0	1	0	0	0	0	0	1	0	0	1	0	0
841:	0	0	0	0	0	0	0	0	1	0	1	0	0	0
855:	1	0	0	0	0	0	0	1	0	1	0	0	0	0
869:	0	1	0	0	0	1	0	0	0	1	0	0	0	0
883:	0	1	0	0	0	0	1	0	0	0	0	0	0	0
897:	0	0	0	0	0	1	0	0	0	0	0	0	1	0
911:	1	0	0	0	1	0	0	0	0	1	1	0	1	0
925:	1	0	0	0	0	0	0	0	0	0	0	0	0	1
939:	0	0	0	0	0	0	0	0	1	0	1	0	0	0
953:	0	1	0	0	0	1	0	0	1	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
981:	0	0	0	0	0	0	1	0	0	0	0	0	1	0
995:	1	1	0	0	0	0	0	0	0	0	0	0	1	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:16:40.78

Detector ID: 47 Acquisition Start: 6-OCT-2005 14:30:02.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.10
Batch Id: 0509117A-RA Sample Id: 18
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4585.89	44	0	3.07	391.11	320	158	4.31E-03	15.1	
2	0	5247.56	36	0	98.93	619.03	540	178	3.53E-03	16.7	
3	0	5797.54	34	0	236.20	813.06	737	165	3.33E-03	17.1	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:16:51.23

Acquisition Start: 1-OCT-2005 10:07:43.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4607.60	3	0	291.42	398.50	320	158	5.00E-05	57.7	
2	0	5274.70	6	0	0.00	628.50	540	178	1.00E-04	40.8	
3	0	5814.18	3	0	97.78	819.00	737	165	5.00E-05	57.7	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:16:51.47

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4585.89*	89	0	3.07	391.11	320	158	8.75E-03	15.2	
2	0	5247.56*	72	0	98.93	619.03	540	178	7.10E-03	16.9	
3	0	5797.54*	69	0	236.20	813.06	737	165	6.75E-03	17.3	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:16:52

Configuration : MCA0:[AMSCOUNT]0000C192$1
Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : VPBR092705SL15
Sample date : 27-SEP-2005 00:00:00 Acquisition date : 6-OCT-2005 14:30:02
Sample ID : 18 Sample quantity : 1.1188 gram
Sample type : RA Sample geometry :
Detector name : 047 Detector geometry:
Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.10 0.0%
Energy tolerance : 100.00 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 3.00 %
Efficiency type : Average value Efficiencies at : Peak Energy
Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4585.89*	89	3.07	391.11	320	158	30.3		RA-226	1.04
0	5247.56*	72	98.93	619.03	540	178	33.8		RN-222	0.846
0	5797.54*	69	236.20	813.06	737	165	34.6		PO-218	0.804

Eberline Services
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT
6-OCT-2005 19:17:05

****
Spectral File: ND_AMS_ARCHIVE_S:S_0509117A-RA$19_RA.CNF
****

BATCH ID:	0509117A-RA	SAMPLE ID:	19
SAMPLE DATE:	27-SEP-2005 00:00	ALIQUOT:	1.065E+00 gram
SAMPLE TITLE:	VPBR092705SL16	DETECTOR NUMBER:	048
ACQ DATE:	6-OCT-2005 14:30	AVERAGE EFFICIENCY:	19.34%
ELAPSED LIVE TIME:	10200.	RECOVERY:	86.08%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	SOIL	LLD CONSTANT:	2.71
ENERGY CAL DATE:	29-SEP-2005 16:54	EFF CAL DATE:	29-SEP-2005 16:54
BKG FILENAME:	B_048_1OCT05	BKG ELAPSED TIME:	60000.
		SAF:	2.89

****

NUCLIDE ACTIVITY SUMMARY

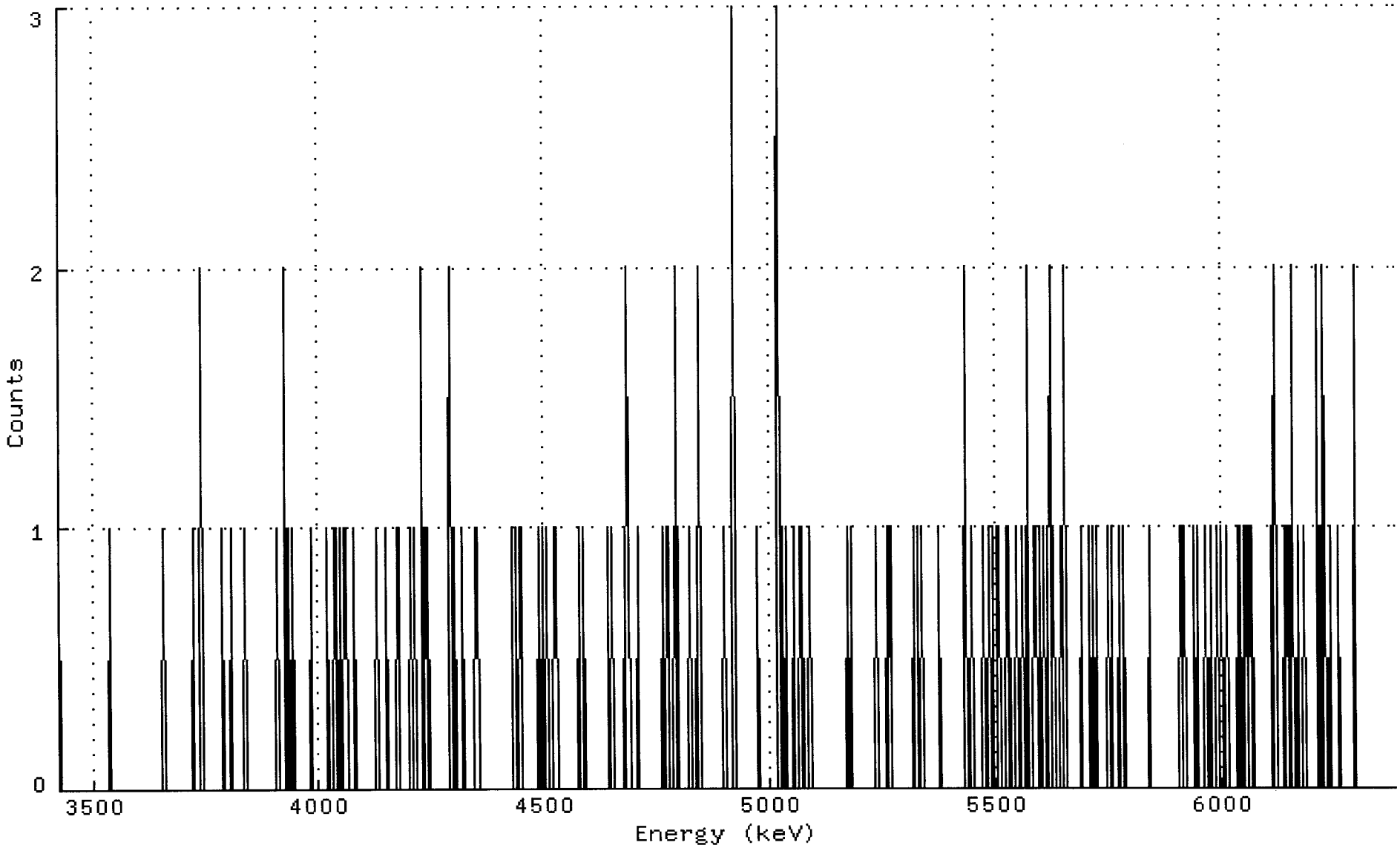
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ gram	TPU/ERROR 2-SIGMA	MDC pCi/ gram
PO-218	6003.0	109.14	0.68	100.0	1.632E+00	5.448E-01	2.828E-01
RN-222	5490.0	87.21	2.38	99.9	1.305E+00	4.903E-01	4.273E-01
RA-226	4785.0	80.07	0.85	100.0	1.197E+00	4.649E-01	3.023E-01

****

Analyst — Date: 10.6.05

Reviewer — Date: 10/7/05

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S_0509117A-RA$19_RA.CNF;1
Title : 048
Sample Title: VPBR092705SL16
Start Time: 6-OCT-2005 14:30: Sample Time: 27-SEP-2005 00:00 Energy Offset: 3.41278E+03
Real Time : 0 02:50:00.10 Sample ID : 19 Energy Slope : 3.07147E+00
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.66471E-04



Channel Contents for ND_AMS_ARCHIVE_S:S_0509117A-RA$19_RA

Channel

1:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	1	0	0	0	0	0	2	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
127:	0	0	1	0	0	0	0	0	0	0	0	0	1	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
169:	2	0	0	1	0	0	1	0	0	0	0	0	0	0
183:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
197:	0	0	0	1	0	0	0	0	1	1	0	0	1	0
211:	0	1	1	1	0	0	0	0	0	1	0	0	0	0
225:	0	0	0	0	0	0	0	0	0	0	0	1	1	0
239:	0	0	0	0	0	1	0	0	0	0	0	0	0	1
253:	1	0	0	0	0	0	0	0	0	1	0	0	1	0
267:	0	0	0	0	2	0	1	0	1	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	1	2	0	0
295:	1	0	0	0	0	0	1	0	0	0	0	0	0	0
309:	0	1	1	1	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
337:	0	1	1	1	0	0	1	1	0	0	0	0	0	0
351:	0	0	0	0	0	0	1	0	0	1	0	0	1	0
365:	0	0	0	0	1	1	1	0	0	0	0	0	0	0
379:	0	0	0	0	0	0	0	0	1	0	0	0	1	0
393:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
407:	0	0	0	1	0	1	0	0	0	0	0	0	0	0
421:	0	1	0	2	1	0	0	0	0	0	0	1	0	0
435:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
449:	0	0	1	0	0	1	1	0	0	0	0	1	0	2
463:	0	0	0	0	0	0	0	0	1	1	0	0	0	0
477:	1	0	2	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
505:	3	0	0	0	0	0	0	0	0	0	0	0	0	0
519:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
533:	0	0	0	0	0	2	3	0	1	0	0	1	0	0
547:	0	0	0	1	0	0	0	0	1	0	1	0	0	0
561:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
589:	0	0	1	0	0	1	0	0	0	0	0	0	0	0
603:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
617:	0	0	0	0	0	1	0	1	1	0	0	0	0	0
631:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
645:	0	0	1	0	1	1	0	0	0	0	0	0	0	0
659:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	2	1	0	0
687:	0	1	0	0	0	0	0	0	0	0	1	0	0	0
701:	1	1	0	1	0	0	0	1	1	0	0	0	0	0
715:	1	0	1	0	0	0	0	1	1	0	0	0	1	0
729:	0	0	2	0	0	0	0	1	1	1	0	1	0	0
743:	1	1	0	0	1	1	2	0	1	0	0	0	0	0
757:	1	1	0	2	0	0	0	0	0	0	0	0	0	0
771:	0	0	1	0	0	0	0	0	0	1	0	1	0	0
785:	1	0	0	0	0	0	0	0	0	1	1	0	1	0
799:	0	0	0	0	1	0	0	0	1	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	1	1	0
855:	1	0	0	0	0	0	0	0	1	0	1	0	0	0
869:	0	0	0	1	0	0	0	1	0	0	0	0	1	0
883:	0	1	0	0	0	1	1	0	0	0	0	0	0	0
897:	1	0	0	1	0	0	1	1	0	1	1	0	1	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
925:	0	1	2	0	0	0	0	0	0	1	0	1	1	0
939:	0	2	1	0	0	0	1	0	0	0	0	1	0	0
953:	0	0	0	0	0	0	0	0	2	0	0	1	0	2
967:	1	0	0	0	1	0	0	0	0	0	0	1	0	0
981:	0	0	0	0	0	0	0	0	0	0	2	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0												

Eberline Services
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:16:56.79

Detector ID: 48 Acquisition Start: 6-OCT-2005 14:30:23.01
Live Time: 0 02:50:00.00 Real Time: 0 02:50:00.10
Batch Id: 0509117A-RA Sample Id: 19
Sample Type: RA

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4626.06	28	0	119.72	403.86	319	158	2.75E-03	18.9	
2	0	5280.99	31	0	0.00	629.74	539	178	3.04E-03	18.0	
3	0	5773.37	38	0	38.30	803.55	736	165	3.73E-03	16.2	

Background Counts Within Peak Regions Generated: 6-OCT-2005 19:17:03.15

Acquisition Start: 1-OCT-2005 10:07:46.01
Live Time: 0 16:40:00.00 Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4607.38	5	0	119.79	397.50	319	158	8.33E-05	44.7	
2	0	5274.58	14	0	433.08	627.50	539	178	2.33E-04	26.7	
3	0	5813.85	4	0	138.22	818.00	736	165	6.67E-05	50.0	

Net Sample Counts Within Peak Regions Generated: 6-OCT-2005 19:17:03.40

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4626.06*	80	0	119.72	403.86	319	158	7.85E-03	19.1	
2	0	5280.99*	87	0	0.00	629.74	539	178	8.55E-03	18.5	
3	0	5773.37*	109	0	38.30	803.55	736	165	1.07E-02	16.3	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 6-OCT-2005 19:17:04

Configuration	: MCA0:[AMSCOUNT]0000C192$1		
Analyses by	: ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: VPBR092705SL16		
Sample date	: 27-SEP-2005 00:00:00	Acquisition date	: 6-OCT-2005 14:30:23
Sample ID	: 19	Sample quantity	: 1.0649 gram
Sample type	: RA	Sample geometry	:
Detector name	: 048	Detector geometry	:
Elapsed live time	: 0 02:50:00.00	Elapsed real time	: 0 02:50:00.10 0.0%
Energy tolerance	: 100.00 keV	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 3.00 %
Efficiency type	: Average value	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/gram
0	4626.06*	80	119.72	403.86	319	158	38.2		RA-226	1.03
0	5280.99*	87	0.00	629.74	539	178	36.9		RN-222	1.12
0	5773.37*	109	38.30	803.55	736	165	32.7		PO-218	1.40

JB 10/6/05

VAX/VMS Peak Search Report Generated 6-OCT-2005 09:48:52.71

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911701_GE5_BAFIL_88854.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : SPIKE
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 09:38:30.
Sample ID : 0509117-01 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.82 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4.09	8	19	0.28	36.64	28	11	1.27E-02	122.6	
2	0	21.08	60	28	0.58	200.34	192	17	9.94E-02	22.3	
3	0	30.92	1435	47	0.74	295.11	282	30	2.39E+00	2.9	
4	4	35.13	408	21	0.73	335.73	322	29	6.80E-01	5.3	4.05E+00
5	4	35.99	36	7	0.74	344.01	322	29	6.04E-02	43.2	
6	0	53.64	16	21	0.38	514.06	502	16	2.61E-02	61.8	
7	1	61.71	98	19	0.79	591.87	580	24	1.64E-01	16.5	3.79E+00
8	1	62.14	95	11	0.72	596.00	580	24	1.58E-01	14.2	
9	1	65.67	67	15	0.73	630.00	621	24	1.11E-01	18.3	3.52E+00
10	1	66.50	58	14	0.73	638.00	621	24	9.66E-02	18.6	
11	0	81.12	535	68	0.75	778.87	764	24	8.91E-01	5.4	
12	0	112.00	126	35	0.47	1076.45	1065	21	2.10E-01	13.4	
13	0	116.10	39	17	0.81	1115.99	1105	20	6.55E-02	26.9	
14	5	302.67	45	0	1.05	2913.92	2903	24	7.45E-02	22.5	1.70E+00
15	5	303.65	26	0	0.57	2923.28	2903	24	4.28E-02	21.7	
16	0	333.78	35	10	0.61	3213.69	3199	25	5.90E-02	24.3	
17	0	356.00	269	5	0.97	3427.78	3413	25	4.48E-01	6.4	
18	0	383.95	69	10	0.79	3697.10	3682	26	1.15E-01	15.3	
19	0	386.89	132	7	0.91	3725.44	3711	26	2.19E-01	9.6	

Summary of Nuclide Activity
Sample ID : 0509117-01 Acquisition date : 6-OCT-2005 09:38:30

Total number of lines in spectrum	19	
Number of unidentified lines	13	
Number of lines tentatively identified by NID	6	31.58%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	3.862E+02	3.863E+02	0.684E+02	17.70	
		Total Activity :	3.862E+02	3.863E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	1.125E+03	1.125E+03	0.348E+03	30.90	
		Total Activity :	1.125E+03	1.125E+03			

Grand Total Activity : 1.511E+03 1.512E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide Line Activity Report
Sample ID : 0509117-01 Acquisition date : 6-OCT-2005 09:38:30

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	3.969E+02	3.969E+02	18.76	OK
	302.84	17.80	3.440E+00	3.288E+02	3.289E+02	52.50	OK
	356.01	60.00	1.579E+00	1.278E+03	1.278E+03	32.35	<<WM N-Sigma

Final Mean for 2 Valid Peaks = 3.863E+02+/- 6.838E+01 (17.70%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	1.125E+03	1.125E+03	30.90	OK

Final Mean for 1 Valid Peaks = 1.125E+03+/- 3.476E+02 (30.90%)

Flag: "*" = Keyline

Sample ID : 0509117-01
Acquisition date : 6-OCT-2005 09:38:30

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	3.863E+02	6.838E+01	1.806E+01	2.667E+00	21.383
TH-234	1.125E+03	3.476E+02	2.380E+02	2.778E+01	4.728

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	1.232E-01		2.268E+00	4.332E+00	1.803E-01	0.028
CD-109	-3.391E+01		6.667E+01	1.151E+02	6.289E+00	-0.295
PA-231	1.126E+07		3.189E+12	5.530E+07	1.566E+13	0.204
PA-234	1.694E+04	+	8.080E+05	1.190E+04	5.677E+05	1.423
NP-237	-1.502E+01		2.053E+01	3.401E+01	1.912E+00	-0.442
AM-241	-7.014E+00		3.036E+01	4.382E+01	6.223E+00	-0.160

JB 10-6-05

VAX/VMS Peak Search Report Generated 6-OCT-2005 10:00:00.87

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911702_GE5_BAFIL_88855.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : BLANK
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 09:49:38.
Sample ID : 0509117-02 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.83 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	7.60	17	4	0.60	70.44	67	14	2.89E-02	19.3	1.77E+00
2	1	8.24	15	5	0.53	76.57	67	14	2.56E-02	29.9	
3	0	21.03	73	20	0.52	199.83	189	20	1.22E-01	17.3	
4	0	30.94	1582	78	0.77	295.35	283	28	2.64E+00	2.9	
5	4	35.11	317	13	0.78	335.56	325	26	5.28E-01	6.3	1.55E+00
6	4	36.21	41	6	0.44	346.07	325	26	6.90E-02	20.9	
7	0	53.25	46	13	0.57	510.37	502	19	7.72E-02	21.5	
8	0	61.79	176	24	0.73	592.60	581	24	2.93E-01	9.8	
9	5	65.99	102	4	1.17	633.10	618	29	1.70E-01	11.2	1.93E+00
10	5	67.07	10	0	0.43	643.46	618	29	1.71E-02	41.0	
11	0	81.11	558	52	0.68	778.77	768	21	9.30E-01	5.0	
12	0	111.95	161	19	0.80	1075.95	1064	26	2.69E-01	10.3	
13	0	136.99	11	10	0.50	1317.33	1309	15	1.83E-02	61.7	
14	0	302.88	68	11	0.54	2915.87	2902	24	1.13E-01	15.8	
15	0	333.57	41	2	0.43	3211.62	3197	24	6.77E-02	17.7	
16	2	355.11	15	1	0.81	3419.23	3414	28	2.52E-02	52.3	4.49E+00
17	2	355.99	329	13	0.99	3427.74	3414	28	5.49E-01	5.7	
18	2	356.54	10	13	1.00	3433.00	3414	28	1.70E-02	163.0	
19	0	383.91	56	3	0.92	3696.76	3682	27	9.33E-02	15.0	
20	2	386.42	81	6	1.01	3720.90	3711	25	1.36E-01	12.4	4.37E+00
21	2	387.05	49	7	1.02	3727.00	3711	25	8.22E-02	21.9	

Summary of Nuclide Activity
Sample ID : 0509117-02 Acquisition date : 6-OCT-2005 09:49:38

Total number of lines in spectrum	21	
Number of unidentified lines	13	
Number of lines tentatively identified by NID	8	38.10%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	4.144E+02	4.144E+02	0.759E+02	18.33	
			---	---			
Total Activity :			4.144E+02	4.144E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
PA-231	3.28E+04Y	1.00	4.000E+07	4.000E+07	**********		
PA-234	4.47E+09Y	1.00	7.068E+02	7.068E+02	7.988E+02	113.01	
TH-234	4.47E+09Y	1.00	2.089E+03	2.089E+03	0.483E+03	23.12	
			---	---			
Total Activity :			4.001E+07	4.001E+07			

Grand Total Activity :	4.001E+07	4.001E+07

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 0509117-02
Acquisition date : 6-OCT-2005 09:49:38

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	4.144E+02	4.144E+02	18.33	OK
	302.84	17.80	3.440E+00	4.983E+02	4.984E+02	41.68	<<WM Interf
	356.01	60.00	1.579E+00	1.566E+03	1.566E+03	31.87	<<WM N-Sigma

Final Mean for 1 Valid Peaks = 4.144E+02+/- 7.595E+01 (18.33%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
PA-231	9.28	42.00*	4.117E-06	4.000E+07	4.000E+07	******	OK
	10.11	20.20	1.155E-05	2.964E+07	2.964E+07	******	<<WM Interf
	283.67	1.60	4.548E+00	----- Line Not Found		-----	Absent
	302.67	2.30	3.449E+00	3.847E+03	3.847E+03	40.40	<<WM Interf

Final Mean for 1 Valid Peaks = 4.000E+07+/- 1.133E+13 (******%)

PA-234	9.89	89.00	8.893E-06	8.739E+06	8.739E+06	******	<<WM Interf
	21.72	64.90*	2.444E-02	2.072E+04	2.072E+04	4770.01	OK
	37.93	23.75	1.111E+00	7.068E+02	7.068E+02	113.01	OK
	131.42	20.40	2.613E+01	----- Line Not Found		-----	Absent

Final Mean for 2 Valid Peaks = 7.068E+02+/- 7.988E+02 (113.01%)

TH-234	63.29	3.80*	9.987E+00	2.089E+03	2.089E+03	23.12	OK

Final Mean for 1 Valid Peaks = 2.089E+03+/- 4.830E+02 (23.12%)

Flag: "*" = Keyline

Combined Activity-MDA Report
Sample ID : 0509117-02

Acquisition date : 6-OCT-2005 09:49:38

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	4.144E+02	7.595E+01	2.393E+01	3.533E+00	17.319
PA-231	4.000E+07	1.133E+13	6.226E+07	1.763E+13	0.642
PA-234	7.068E+02	7.988E+02	4.359E+03	2.079E+05	0.162
TH-234	2.089E+03	4.830E+02	3.410E+02	3.980E+01	6.127

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	-1.533E+00		2.175E+00	3.662E+00	1.524E-01	-0.419
CD-109	9.677E+01		6.977E+01	1.535E+02	8.386E+00	0.630
NP-237	-2.016E+01		2.302E+01	3.717E+01	2.090E+00	-0.542
AM-241	-2.381E+00		2.539E+01	3.815E+01	5.418E+00	-0.062

JS 10-6-05

VAX/VMS Peak Search Report Generated 6-OCT-2005 10:11:26.39

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911703_GE5_BAFIL_88856.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : VPBR092705SL01
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 10:01:10.
Sample ID : 0509117-03 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.80 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	21.05	62	27	0.70	200.03	191	16	1.04E-01	20.3	
2	0	30.92	1508	34	0.75	295.19	281	33	2.51E+00	2.8	
3	4	35.16	333	39	0.89	336.00	325	26	5.54E-01	6.8	8.25E+00
4	4	35.99	108	7	0.67	344.00	325	26	1.81E-01	15.4	
5	0	51.78	15	9	0.39	496.12	484	18	2.58E-02	46.2	
6	0	53.59	17	13	0.28	513.58	505	13	2.84E-02	44.7	
7	0	61.78	159	31	0.93	592.52	580	23	2.65E-01	11.0	
8	1	65.56	33	17	0.73	629.00	619	28	5.52E-02	38.6	1.36E+00
9	1	66.19	46	23	0.73	635.00	619	28	7.60E-02	28.9	
10	0	81.01	613	38	0.88	777.84	757	33	1.02E+00	4.7	
11	0	111.91	145	19	0.82	1075.63	1063	23	2.41E-01	10.7	
12	0	116.00	35	23	0.63	1114.99	1104	20	5.87E-02	33.1	
13	5	276.01	10	2	0.94	2657.00	2652	16	1.60E-02	40.7	1.69E+00
14	5	276.42	35	2	1.14	2660.88	2652	16	5.89E-02	17.1	
15	0	302.95	74	4	0.87	2916.54	2902	25	1.24E-01	12.6	
16	0	333.67	47	4	0.63	3212.62	3198	25	7.92E-02	16.4	
17	0	356.03	299	4	0.81	3428.11	3414	32	4.98E-01	6.0	
18	4	383.62	89	5	1.01	3694.00	3684	24	1.48E-01	9.6	5.27E+00
19	4	384.65	15	2	0.69	3703.85	3684	24	2.57E-02	28.3	
20	3	385.95	12	3	0.91	3716.38	3713	25	2.02E-02	26.3	4.38E+00
21	3	386.53	102	6	1.12	3721.98	3713	25	1.69E-01	10.2	
22	3	387.10	36	4	0.74	3727.50	3713	25	5.96E-02	31.1	
23	0	414.87	18	2	0.77	3995.09	3982	21	2.97E-02	29.1	

Summary of Nuclide Activity
Sample ID : 0509117-03 Acquisition date : 6-OCT-2005 10:01:10

Total number of lines in spectrum	23	
Number of unidentified lines	17	
Number of lines tentatively identified by NID	6	26.09%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	4.680E+02	4.681E+02	0.758E+02	16.19	
			---	---			
Total Activity :			4.680E+02	4.681E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	1.887E+03	1.887E+03	0.477E+03	25.28	
			---	---			
Total Activity :			1.887E+03	1.887E+03			

Grand Total Activity :	2.355E+03
	2.355E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide Line Activity Report
Sample ID : 0509117-03
Acquisition date : 6-OCT-2005 10:01:10

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	4.550E+02	4.551E+02	17.96	OK
	302.84	17.80	3.440E+00	5.478E+02	5.478E+02	36.99	OK
	356.01	60.00	1.579E+00	1.419E+03	1.419E+03	32.05	<<WM N-Sigma

Final Mean for 2 Valid Peaks = 4.681E+02+/- 7.580E+01 (16.19%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	1.887E+03	1.887E+03	25.28	OK

Final Mean for 1 Valid Peaks = 1.887E+03+/- 4.770E+02 (25.28%)

Flag: "*" = Keyline

Combined Activity-MDA Report
Sample ID : 0509117-03 Acquisition date : 6-OCT-2005 10:01:10

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	4.681E+02	7.580E+01	1.693E+01	2.499E+00	27.647
TH-234	1.887E+03	4.770E+02	3.208E+01	3.745E+00	58.821

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	9.932E-01		2.014E+00	4.174E+00	1.737E-01	0.238
CD-109	1.147E+01		6.462E+01	1.251E+02	6.835E+00	0.092
PA-231	1.090E+07		3.086E+12	5.359E+07	1.517E+13	0.203
PA-234	1.770E+04	+	8.444E+05	1.192E+04	5.686E+05	1.485
NP-237	-9.035E+00		2.095E+01	3.662E+01	2.059E+00	-0.247
AM-241	2.936E+01		2.242E+01	4.339E+01	6.161E+00	0.677

JP 10.6.05

VAX/VMS Peak Search Report Generated 6-OCT-2005 10:30:01.70

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911704_GE5_BAFIL_88857.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : VPBR092705SL01
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 10:19:38.
Sample ID : 0509117-04 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.84 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	20.63	24	4	0.64	196.00	188	22	4.02E-02	35.4	1.53E+00
2	1	21.46	32	1	0.64	204.00	188	22	5.36E-02	22.8	
3	0	25.57	11	14	0.20	243.61	230	16	1.90E-02	68.4	
4	2	29.66	45	7	0.66	283.00	281	29	7.48E-02	9.5	3.11E+00
5	2	30.95	1389	42	0.74	295.46	281	29	2.31E+00	2.9	
6	0	35.20	356	18	0.72	336.36	324	29	5.94E-01	6.1	
7	0	51.53	26	13	0.21	493.72	484	19	4.40E-02	33.7	
8	0	53.28	36	7	0.68	510.57	503	14	5.99E-02	21.4	
9	0	61.76	174	27	0.58	592.35	578	27	2.90E-01	10.3	
10	0	65.96	104	0	0.68	632.83	620	28	1.73E-01	9.8	
11	0	81.10	505	74	0.69	778.71	767	20	8.41E-01	5.6	
12	1	111.93	141	48	0.87	1075.76	1062	26	2.34E-01	13.7	2.95E+00
13	1	112.47	29	13	0.79	1081.00	1062	26	4.82E-02	42.6	
14	2	302.47	37	9	0.96	2912.00	2903	23	6.11E-02	26.1	1.36E+00
15	2	303.07	12	8	0.78	2917.76	2903	23	2.04E-02	78.9	
16	0	356.02	284	10	0.95	3427.98	3413	28	4.74E-01	6.4	
17	1	383.73	11	4	1.01	3695.00	3684	24	1.85E-02	82.9	1.04E+00
18	1	384.22	50	5	0.91	3699.71	3684	24	8.39E-02	17.0	
19	3	386.43	82	9	1.02	3721.00	3710	29	1.37E-01	13.7	4.50E+00
20	3	387.15	40	8	1.10	3728.03	3710	29	6.58E-02	30.3	
21	0	391.11	21	10	0.53	3766.16	3753	21	3.53E-02	36.1	

Summary of Nuclide Activity
Sample ID : 0509117-04 Acquisition date : 6-OCT-2005 10:19:38

Total number of lines in spectrum	21	
Number of unidentified lines	15	
Number of lines tentatively identified by NID	6	28.57%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	3.746E+02	3.746E+02	0.712E+02	19.02	
			---	---			
Total Activity :			3.746E+02	3.746E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	2.065E+03	2.065E+03	0.497E+03	24.05	
			---	---			
Total Activity :			2.065E+03	2.065E+03			

Grand Total Activity :	2.440E+03	2.440E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide Line Activity Report
Sample ID : 0509117-04

Acquisition date : 6-OCT-2005 10:19:38

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	3.746E+02	3.746E+02	19.02	OK
	302.84	17.80	3.440E+00	8.994E+01	8.995E+01	160.06	<<WM N-Sigma
	356.01	60.00	1.579E+00	1.352E+03	1.352E+03	32.36	<<WM N-Sigma

Final Mean for 1 Valid Peaks = 3.746E+02+/- 7.124E+01 (19.02%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	2.065E+03	2.065E+03	24.05	OK

Final Mean for 1 Valid Peaks = 2.065E+03+/- 4.967E+02 (24.05%)

Flag: "*" = Keyline

Combined Activity-MDA Report
Sample ID : 0509117-04 Acquisition date : 6-OCT-2005 10:19:38

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	3.746E+02	7.124E+01	2.446E+01	3.611E+00	15.319
TH-234	2.065E+03	4.967E+02	3.208E+01	3.745E+00	64.377

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	-4.686E-01		1.945E+00	3.607E+00	1.501E-01	-0.130
CD-109	2.313E+01		5.605E+01	1.151E+02	6.290E+00	0.201
PA-231	1.585E+07		4.487E+12	6.061E+07	1.716E+13	0.261
PA-234	9.140E+03	+	4.360E+05	1.030E+04	4.912E+05	0.887
NP-237	-2.143E+01		1.945E+01	2.958E+01	1.663E+00	-0.724
AM-241	3.426E+01		2.322E+01	4.540E+01	6.447E+00	0.755

JP 10 6 05

VAX/VMS Peak Search Report Generated 6-OCT-2005 10:40:38.72

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911705_GE5_BAFIL_88858.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : VPBR092705SL02
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 10:30:20.
Sample ID : 0509117-05 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.81 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	6.71	4	9	1.06	61.88	50	15	7.44E-03	143.7	
2	0	21.12	68	16	0.22	200.66	190	21	1.13E-01	17.7	
3	0	30.93	1438	42	0.77	295.24	281	26	2.40E+00	2.8	
4	1	35.11	277	29	0.70	335.48	323	31	4.61E-01	7.5	8.31E-01
5	1	36.13	77	14	0.74	345.35	323	31	1.28E-01	20.3	
6	0	61.67	186	23	0.73	591.47	581	20	3.10E-01	9.1	
7	0	66.05	77	21	0.45	633.68	623	21	1.28E-01	17.0	
8	0	81.11	546	35	0.64	778.76	769	20	9.10E-01	4.9	
9	1	111.33	14	20	0.79	1070.00	1059	27	2.29E-02	106.3	1.92E+00
10	1	111.95	147	10	0.79	1076.00	1059	27	2.46E-01	9.1	
11	0	115.90	38	3	0.36	1114.05	1103	21	6.29E-02	19.3	
12	0	276.47	35	2	0.57	2661.41	2651	19	5.81E-02	18.7	
13	0	302.93	72	9	0.96	2916.34	2902	24	1.21E-01	14.3	
14	0	333.71	42	3	0.51	3213.00	3198	26	7.03E-02	17.7	
15	1	355.71	159	10	1.00	3425.00	3413	28	2.65E-01	10.6	2.69E+00
16	1	356.23	131	13	1.00	3430.00	3413	28	2.19E-01	12.5	
17	0	383.92	50	0	0.56	3696.86	3684	25	8.33E-02	14.1	
18	4	386.82	75	8	1.36	3724.79	3711	25	1.26E-01	15.5	2.85E+00
19	4	387.45	75	6	0.82	3730.90	3711	25	1.25E-01	10.8	

Summary of Nuclide Activity
Sample ID : 0509117-05 Acquisition date : 6-OCT-2005 10:30:20

Total number of lines in spectrum	19	
Number of unidentified lines	13	
Number of lines tentatively identified by NID	6	31.58%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	4.346E+02	4.346E+02	0.667E+02	15.34	
			---	---			
Total Activity :			4.346E+02	4.346E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	2.210E+03	2.210E+03	0.486E+03	21.98	
			---	---			
Total Activity :			2.210E+03	2.210E+03			

Grand Total Activity :	2.644E+03	2.644E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide Line Activity Report
Sample ID : 0509117-05

Acquisition date : 6-OCT-2005 10:30:20

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	4.052E+02	4.053E+02	18.12	OK
	302.84	17.80	3.440E+00	5.332E+02	5.332E+02	39.46	OK
	356.01	60.00	1.579E+00	6.242E+02	6.242E+02	38.88	OK

Final Mean for 3 Valid Peaks = 4.346E+02+/- 6.667E+01 (15.34%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	2.210E+03	2.210E+03	21.98	OK

Final Mean for 1 Valid Peaks = 2.210E+03+/- 4.858E+02 (21.98%)

Flag: "*" = Keyline

Combined Activity-MDA Report
Sample ID : 0509117-05

Acquisition date : 6-OCT-2005 10:30:20

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	4.346E+02	6.667E+01	2.366E+01	3.493E+00	18.370
TH-234	2.210E+03	4.858E+02	3.083E+02	3.599E+01	7.167

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	-6.221E-01		1.914E+00	3.498E+00	1.455E-01	-0.178
CD-109	-5.389E+00		6.156E+01	1.151E+02	6.290E+00	-0.047
PA-231	-1.543E+07		4.370E+12	5.125E+07	1.451E+13	-0.301
PA-234	1.931E+04	+	9.213E+05	1.136E+04	5.420E+05	1.700
NP-237	-2.253E+01		2.104E+01	3.248E+01	1.826E+00	-0.694
AM-241	2.207E+01		2.121E+01	4.019E+01	5.707E+00	0.549

JS 10-6-05

VAX/VMS Peak Search Report Generated 6-OCT-2005 10:52:56.77

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911706_GE5_BAFIL_88859.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : VPBR092705SL03
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 10:42:36.
Sample ID : 0509117-06 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.77 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4.83	5	15	0.16	43.69	32	13	9.00E-03	158.0	
2	1	20.80	36	7	0.70	197.61	186	22	5.98E-02	29.9	2.09E+00
3	1	21.30	37	4	0.57	202.46	186	22	6.11E-02	21.6	
4	0	25.27	11	11	0.37	240.65	229	15	1.82E-02	66.9	
5	0	28.33	15	21	0.70	270.19	264	12	2.56E-02	56.9	
6	0	30.96	1372	52	0.70	295.49	280	33	2.29E+00	3.0	
7	5	35.07	326	19	0.77	335.14	321	30	5.43E-01	6.5	2.01E+00
8	5	36.24	25	6	0.40	346.41	321	30	4.12E-02	33.2	
9	0	52.81	51	9	1.47	506.11	492	26	8.54E-02	19.3	
10	5	61.10	21	7	0.72	586.00	581	25	3.52E-02	47.0	1.88E+00
11	5	61.88	80	15	0.78	593.51	581	25	1.33E-01	19.8	
12	1	65.56	26	27	0.73	629.00	620	23	4.29E-02	51.7	8.13E-01
13	1	65.98	22	31	0.73	633.00	620	23	3.59E-02	62.3	
14	0	81.11	530	40	0.60	778.85	769	21	8.84E-01	5.0	
15	0	112.02	108	43	0.68	1076.64	1061	26	1.79E-01	17.1	
16	0	276.32	31	7	0.76	2659.95	2645	22	5.14E-02	26.8	
17	0	302.97	71	6	0.30	2916.74	2902	25	1.18E-01	13.9	
18	1	332.98	23	1	0.98	3206.00	3198	24	3.89E-02	22.6	2.28E+00
19	1	333.81	45	3	0.98	3214.00	3198	24	7.52E-02	14.0	
20	0	356.10	241	17	0.89	3428.77	3412	30	4.01E-01	7.5	
21	1	383.42	35	3	1.01	3692.00	3681	25	5.90E-02	24.2	1.18E+00
22	1	384.25	32	5	1.01	3700.00	3681	25	5.28E-02	23.7	
23	2	386.42	41	2	1.01	3720.90	3711	28	6.77E-02	25.2	2.54E+00
24	2	387.05	86	7	1.02	3727.00	3711	28	1.43E-01	13.2	

Summary of Nuclide Activity
Sample ID : 0509117-06 Acquisition date : 6-OCT-2005 10:42:36

Total number of lines in spectrum	24	
Number of unidentified lines	17	
Number of lines tentatively identified by NID	7	29.17%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	4.081E+02	4.081E+02	0.680E+02	16.65	
			---	---			
Total Activity :			4.081E+02	4.081E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	9.481E+02	9.481E+02	3.930E+02	41.45	
AM-241	432.20Y	1.00	3.225E+01	3.225E+01	3.070E+01	95.22	
			---	---			
Total Activity :			9.804E+02	9.804E+02			

Grand Total Activity :	1.388E+03	1.389E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide Line Activity Report
Sample ID : 0509117-06
Acquisition date : 6-OCT-2005 10:42:36

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	3.938E+02	3.938E+02	18.33	OK
	302.84	17.80	3.440E+00	5.205E+02	5.205E+02	38.81	OK
	356.01	60.00	1.579E+00	1.144E+03	1.144E+03	33.33	<<WM N-Sigma

Final Mean for 2 Valid Peaks = 4.081E+02+/- 6.797E+01 (16.65%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	9.481E+02	9.481E+02	41.45	OK

Final Mean for 1 Valid Peaks = 9.481E+02+/- 3.930E+02 (41.45%)

AM-241	59.54	35.90*	8.208E+00	3.225E+01	3.225E+01	95.22	OK

Final Mean for 1 Valid Peaks = 3.225E+01+/- 3.070E+01 (95.22%)

Flag: "*" = Keyline

Combined Activity-MDA Report
Sample ID : 0509117-06 Acquisition date : 6-OCT-2005 10:42:36

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	4.081E+02	6.797E+01	2.366E+01	3.493E+00	17.251
TH-234	9.481E+02	3.930E+02	3.887E+02	4.537E+01	2.439
AM-241	3.225E+01	3.070E+01	3.497E+01	4.966E+00	0.922

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	-1.222E+00		1.946E+00	3.335E+00	1.388E-01	-0.366
CD-109	2.800E+01		5.227E+01	1.110E+02	6.063E+00	0.252
PA-231	-1.419E+06		4.019E+11	5.372E+07	1.521E+13	-0.026
PA-234	1.040E+04	+	4.963E+05	1.088E+04	5.190E+05	0.956
NP-237	2.181E+00		1.869E+01	3.612E+01	2.030E+00	0.060

JB 10.6.05

VAX/VMS Peak Search Report Generated 6-OCT-2005 11:11:41.38

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911707_GE5_BAFIL_88863.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : VPBR092705SL04
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 11:01:24.
Sample ID : 0509117-07 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.81 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	21.19	69	32	0.53	201.33	189	22	1.14E-01	21.7	
2	0	28.61	15	30	0.42	272.93	263	15	2.46E-02	74.1	
3	0	30.94	1443	87	0.79	295.35	281	27	2.40E+00	3.0	
4	0	35.14	340	63	0.48	335.83	324	25	5.67E-01	7.6	
5	0	53.13	41	9	0.26	509.13	499	19	6.89E-02	21.7	
6	1	61.21	32	22	0.72	587.00	582	22	5.32E-02	33.6	2.51E+00
7	1	61.81	147	29	0.79	592.77	582	22	2.46E-01	11.6	
8	0	65.93	97	21	0.71	632.55	620	25	1.62E-01	14.7	
9	0	81.02	681	26	0.65	777.94	761	29	1.13E+00	4.2	
10	1	111.82	157	17	0.87	1074.76	1057	31	2.61E-01	10.0	4.43E+00
11	1	112.34	59	11	0.86	1079.76	1057	31	9.87E-02	22.5	
12	0	121.91	6	4	0.32	1171.93	1164	12	1.06E-02	67.0	
13	0	276.38	33	5	0.72	2660.52	2647	23	5.51E-02	22.4	
14	1	302.37	12	4	0.96	2911.00	2903	25	1.99E-02	65.9	2.46E+00
15	1	303.10	74	5	0.96	2918.00	2903	25	1.23E-01	12.6	
16	0	333.66	30	14	1.24	3212.52	3195	26	5.03E-02	32.6	
17	4	356.01	247	11	1.06	3427.85	3413	30	4.11E-01	7.1	6.22E-01
18	4	356.64	15	10	1.00	3434.00	3413	30	2.53E-02	95.9	
19	1	383.94	39	10	1.01	3697.00	3682	24	6.53E-02	23.2	1.60E+00
20	1	384.50	12	6	1.06	3702.47	3682	24	1.98E-02	35.8	
21	6	386.29	33	10	1.04	3719.70	3711	26	5.43E-02	29.8	1.61E+00
22	6	387.04	47	5	0.58	3726.88	3711	26	7.77E-02	23.0	
23	6	387.57	10	1	1.02	3732.00	3711	26	1.73E-02	78.0	

Summary of Nuclide Activity
Sample ID : 0509117-07 Acquisition date : 6-OCT-2005 11:01:24

Total number of lines in spectrum	23	
Number of unidentified lines	15	
Number of lines tentatively identified by NID	8	34.78%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CO-57	270.90D	1.00	1.253E+00	1.254E+00	1.682E+00	134.10	
BA-133	10.50Y	1.00	5.111E+02	5.111E+02	0.808E+02	15.80	
			---	---			
	Total Activity :		5.123E+02	5.124E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	1.749E+03	1.749E+03	0.461E+03	26.34	
AM-241	432.20Y	1.00	4.880E+01	4.880E+01	3.355E+01	68.75	
			---	---			
	Total Activity :		1.798E+03	1.798E+03			

Grand Total Activity :	2.310E+03	2.310E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide Line Activity Report
Sample ID : 0509117-07

Acquisition date : 6-OCT-2005 11:01:24

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
CO-57	122.06	85.51*	2.663E+01	1.253E+00	1.254E+00	134.10	OK
	136.48	10.60	2.562E+01	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 1.254E+00+/- 1.682E+00 (134.10%)

BA-133	81.00	33.00*	1.839E+01	5.053E+02	5.053E+02	17.47	OK
	302.84	17.80	3.440E+00	5.408E+02	5.408E+02	36.98	OK
	356.01	60.00	1.579E+00	1.173E+03	1.173E+03	32.92	<<WM N-Sigma

Final Mean for 2 Valid Peaks = 5.111E+02+/- 8.075E+01 (15.80%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	1.749E+03	1.749E+03	26.34	OK

Final Mean for 1 Valid Peaks = 1.749E+03+/- 4.607E+02 (26.34%)

AM-241	59.54	35.90*	8.208E+00	4.880E+01	4.880E+01	68.75	OK

Final Mean for 1 Valid Peaks = 4.880E+01+/- 3.355E+01 (68.75%)

Flag: "*" = Keyline

Combined Activity-MDA Report
Sample ID : 0509117-07 Acquisition date : 6-OCT-2005 11:01:24

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	1.254E+00	1.682E+00	3.795E+00	1.579E-01	0.331
BA-133	5.111E+02	8.075E+01	1.693E+01	2.500E+00	30.191
TH-234	1.749E+03	4.607E+02	2.843E+02	3.318E+01	6.153
AM-241	4.880E+01	3.355E+01	2.363E+01	3.356E+00	2.065

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CD-109	1.693E+01		5.709E+01	1.148E+02	6.273E+00	0.147
PA-231	1.682E+07		4.762E+12	5.844E+07	1.655E+13	0.288
PA-234	1.947E+04	+	9.288E+05	1.255E+04	5.986E+05	1.552
NP-237	-8.482E+00		1.863E+01	3.265E+01	1.835E+00	-0.260

JB 10-6-05

VAX/VMS Peak Search Report Generated 6-OCT-2005 11:22:16.49

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911708_GE5_BAFIL_88864.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : vpbr092705sl05
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 11:12:00.
Sample ID : 0509117-08 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.81 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4.60	9	12	0.38	41.55	34	11	1.46E-02	87.3	
2	0	21.04	83	28	0.79	199.96	188	20	1.39E-01	17.0	
3	0	30.95	1383	79	0.75	295.47	280	29	2.31E+00	3.1	
4	3	35.06	309	15	0.77	335.01	321	31	5.15E-01	6.5	7.92E-01
5	3	36.19	33	9	0.52	345.89	321	31	5.53E-02	30.4	
6	0	53.47	27	22	0.37	512.43	500	19	4.44E-02	41.0	
7	0	61.82	164	28	0.83	592.91	577	29	2.73E-01	11.1	
8	0	65.92	81	16	0.91	632.37	620	24	1.35E-01	15.7	
9	0	81.07	542	40	0.57	778.42	767	22	9.03E-01	5.0	
10	0	111.95	148	15	0.72	1075.97	1067	18	2.47E-01	9.7	
11	0	302.93	75	9	0.69	2916.34	2903	23	1.25E-01	13.9	
12	9	333.40	37	0	0.98	3210.00	3196	27	6.18E-02	18.3	5.87E-01
13	9	334.33	13	0	0.40	3219.00	3196	27	2.19E-02	33.2	
14	0	356.07	248	7	1.05	3428.49	3414	26	4.12E-01	6.7	
15	0	383.88	54	5	0.60	3696.49	3683	23	9.04E-02	16.0	
16	0	387.02	102	15	1.29	3726.77	3711	27	1.69E-01	13.0	

Summary of Nuclide Activity
Sample ID : 0509117-08 Acquisition date : 6-OCT-2005 11:12:00

Total number of lines in spectrum	16	
Number of unidentified lines	10	
Number of lines tentatively identified by NID	6	37.50%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	4.179E+02	4.179E+02	0.695E+02	16.62	
			---	---			
Total Activity :			4.179E+02	4.179E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	1.944E+03	1.944E+03	0.495E+03	25.45	
			---	---			
Total Activity :			1.944E+03	1.944E+03			

Grand Total Activity :	2.362E+03	2.362E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide Line Activity Report
Sample ID : 0509117-08
Acquisition date : 6-OCT-2005 11:12:00

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	4.021E+02	4.022E+02	18.26	OK
	302.84	17.80	3.440E+00	5.521E+02	5.522E+02	38.82	OK
	356.01	60.00	1.579E+00	1.177E+03	1.177E+03	32.61	<<WM N-Sigma

Final Mean for 2 Valid Peaks = 4.179E+02+/- 6.948E+01 (16.62%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	1.944E+03	1.944E+03	25.45	OK

Final Mean for 1 Valid Peaks = 1.944E+03+/- 4.947E+02 (25.45%)

Flag: "*" = Keyline

Sample ID : 0509117-08 Acquisition date : 6-OCT-2005 11:12:00

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	4.179E+02	6.948E+01	2.339E+01	3.453E+00	17.869
TH-234	1.944E+03	4.947E+02	2.843E+02	3.318E+01	6.838

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	-5.290E-01		1.501E+00	2.791E+00	1.162E-01	-0.190
CD-109	6.265E+01		6.961E+01	1.456E+02	7.957E+00	0.430
PA-231	2.213E+06		6.267E+11	5.729E+07	1.622E+13	0.039
PA-234	2.368E+04	+	1.130E+06	1.273E+04	6.073E+05	1.860
NP-237	-1.182E+01		2.049E+01	3.494E+01	1.964E+00	-0.338
AM-241	8.315E+00		2.018E+01	3.480E+01	4.942E+00	0.239

JB 10-6-05

VAX/VMS Peak Search Report Generated 6-OCT-2005 11:33:14.92

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911709_GE5_BAFIL_88865.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : VPBR092705SL06
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 11:22:53.
Sample ID : 0509117-09 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.78 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	21.09	55	26	0.63	200.43	192	17	9.13E-02	23.2	
2	0	30.94	1279	87	0.77	295.31	282	26	2.13E+00	3.3	
3	1	35.11	245	27	0.64	335.47	325	28	4.08E-01	7.9	8.19E-01
4	1	35.99	48	17	0.67	344.00	325	28	8.06E-02	38.1	
5	0	51.96	22	17	1.09	497.89	484	20	3.68E-02	44.0	
6	0	53.35	33	2	0.43	511.30	505	13	5.50E-02	19.1	
7	0	61.76	158	19	1.11	592.37	580	22	2.64E-01	9.9	
8	0	81.09	509	40	0.61	778.62	766	25	8.48E-01	5.3	
9	0	112.00	132	19	0.86	1076.46	1067	20	2.20E-01	11.2	
10	0	116.10	44	23	1.22	1116.02	1102	27	7.41E-02	29.2	
11	4	302.73	91	14	0.94	2914.48	2904	20	1.51E-01	11.6	2.06E+00
12	4	303.41	13	6	0.63	2920.96	2904	20	2.15E-02	40.6	
13	4	355.61	65	2	1.00	3424.00	3414	26	1.09E-01	23.6	5.33E+00
14	4	356.18	114	3	0.80	3429.52	3414	26	1.89E-01	14.1	
15	4	356.81	68	2	0.81	3435.64	3414	26	1.14E-01	13.5	
16	2	386.63	77	51	1.12	3722.98	3696	44	1.28E-01	24.4	2.82E+00
17	2	386.93	16	38	1.23	3725.90	3696	44	2.60E-02	110.5	

Summary of Nuclide Activity
Sample ID : 0509117-09 Acquisition date : 6-OCT-2005 11:22:53

Total number of lines in spectrum	17	
Number of unidentified lines	11	
Number of lines tentatively identified by NID	6	35.29%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	4.125E+02	4.125E+02	0.644E+02	15.62	
			---	---			
Total Activity :			4.125E+02	4.125E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	1.879E+03	1.879E+03	0.437E+03	23.28	
			---	---			
Total Activity :			1.879E+03	1.879E+03			

Grand Total Activity :	2.292E+03	2.292E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide Line Activity Report
Sample ID : 0509117-09 Acquisition date : 6-OCT-2005 11:22:53

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	3.776E+02	3.776E+02	18.59	OK
	302.84	17.80	3.440E+00	6.680E+02	6.681E+02	35.74	OK
	356.01	60.00	1.579E+00	5.398E+02	5.399E+02	41.03	OK

Final Mean for 3 Valid Peaks = 4.125E+02+/- 6.444E+01 (15.62%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	1.879E+03	1.879E+03	23.28	OK

Final Mean for 1 Valid Peaks = 1.879E+03+/- 4.375E+02 (23.28%)

Flag: "*" = Keyline

Combined Activity-MDA Report
Sample ID : 0509117-09 Acquisition date : 6-OCT-2005 11:22:53

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	4.125E+02	6.444E+01	2.137E+01	3.156E+00	19.299
TH-234	1.879E+03	4.375E+02	4.486E+02	5.236E+01	4.190

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	-7.518E-01		2.246E+00	4.044E+00	1.683E-01	-0.186
CD-109	4.019E+01		6.371E+01	1.315E+02	7.183E+00	0.306
PA-231	5.327E+06		1.508E+12	5.325E+07	1.508E+13	0.100
PA-234	1.556E+04	+	7.424E+05	1.109E+04	5.290E+05	1.403
NP-237	-2.380E+00		2.032E+01	3.748E+01	2.107E+00	-0.064
AM-241	3.974E+01		2.304E+01	4.643E+01	6.593E+00	0.856

JDL
10-6-05

VAX/VMS Peak Search Report Generated 6-OCT-2005 11:43:47.62

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911710_GE5_BAFIL_88866.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : VPBR092705SL07
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 11:33:24.
Sample ID : 0509117-10 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.85 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	21.21	53	24	0.74	201.59	189	20	8.79E-02	23.6	
2	0	30.94	1449	70	0.76	295.34	282	24	2.42E+00	2.9	
3	1	35.02	282	21	0.74	334.65	322	30	4.70E-01	7.3	1.12E+00
4	1	36.09	41	15	0.67	345.00	322	30	6.86E-02	32.9	
5	4	52.00	13	0	0.46	498.31	496	23	2.11E-02	24.2	8.13E-01
6	4	53.13	37	7	1.03	509.15	496	23	6.24E-02	23.0	
7	1	61.10	67	27	0.72	586.00	578	28	1.12E-01	20.4	2.95E+00
8	1	62.04	90	19	0.72	595.00	578	28	1.50E-01	17.9	
9	0	81.12	525	58	0.67	778.88	767	25	8.74E-01	5.5	
10	0	111.93	151	42	0.56	1075.85	1063	23	2.51E-01	12.5	
11	1	302.47	32	5	0.96	2912.00	2903	24	5.35E-02	28.4	1.10E+00
12	1	303.10	46	5	0.96	2918.00	2903	24	7.73E-02	20.8	
13	0	333.61	48	4	1.47	3212.01	3197	26	8.07E-02	16.3	
14	0	356.02	239	34	1.01	3428.04	3413	25	3.99E-01	8.4	
15	0	384.13	59	10	0.55	3698.83	3682	28	9.85E-02	17.4	
16	1	386.22	33	8	0.99	3719.02	3712	27	5.56E-02	24.6	2.24E+00
17	1	387.01	64	16	1.12	3726.65	3712	27	1.07E-01	19.5	

Summary of Nuclide Activity
Sample ID : 0509117-10 Acquisition date : 6-OCT-2005 11:33:24

Total number of lines in spectrum	17	
Number of unidentified lines	9	
Number of lines tentatively identified by NID	8	47.06%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	3.817E+02	3.817E+02	0.675E+02	17.67	
			---	---			
Total Activity :			3.817E+02	3.817E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	1.065E+03	1.065E+03	0.404E+03	37.91	
AM-241	432.20Y	1.00	1.029E+02	1.029E+02	0.446E+02	43.35	
			---	---			
Total Activity :			1.168E+03	1.168E+03			

Grand Total Activity : 1.550E+03 1.550E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide Line Activity Report
Sample ID : 0509117-10
Acquisition date : 6-OCT-2005 11:33:24

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	3.894E+02	3.894E+02	18.88	OK
	302.84	17.80	3.440E+00	3.410E+02	3.410E+02	49.68	OK
	356.01	60.00	1.579E+00	1.138E+03	1.138E+03	34.10	<<WM N-Sigma

Final Mean for 2 Valid Peaks = 3.817E+02+/- 6.746E+01 (17.67%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	1.065E+03	1.065E+03	37.91	OK

Final Mean for 1 Valid Peaks = 1.065E+03+/- 4.038E+02 (37.91%)

AM-241	59.54	35.90*	8.208E+00	1.029E+02	1.029E+02	43.35	OK

Final Mean for 1 Valid Peaks = 1.029E+02+/- 4.460E+01 (43.35%)

Flag: "*" = Keyline

Combined Activity-MDA Report
Sample ID : 0509117-10 Acquisition date : 6-OCT-2005 11:33:24

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	3.817E+02	6.746E+01	2.137E+01	3.156E+00	17.861
TH-234	1.065E+03	4.038E+02	4.198E+02	4.900E+01	2.537
AM-241	1.029E+02	4.460E+01	4.190E+01	5.950E+00	2.456

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	9.874E-01		2.155E+00	4.389E+00	1.827E-01	0.225
CD-109	3.371E+01		6.849E+01	1.370E+02	7.486E+00	0.246
PA-231	1.051E+07		2.975E+12	5.180E+07	1.467E+13	0.203
PA-234	1.498E+04	+	7.147E+05	1.102E+04	5.257E+05	1.359
NP-237	-8.091E+00		2.110E+01	3.717E+01	2.090E+00	-0.218

28
10-6-05

VAX/VMS Peak Search Report Generated 6-OCT-2005 11:54:09.57

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911711_GE5_BAFIL_88867.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : VPBR092705SL08
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 11:43:55.
Sample ID : 0509117-11 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.79 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	5.74	10	12	0.66	52.50	39	16	1.69E-02	82.5	
2	0	20.98	85	20	0.57	199.31	186	22	1.42E-01	15.4	
3	0	30.94	1380	63	0.79	295.35	282	25	2.30E+00	3.0	
4	4	35.04	319	24	0.68	334.87	324	28	5.32E-01	6.4	1.34E+00
5	4	35.89	71	20	0.67	343.00	324	28	1.18E-01	27.6	
6	0	53.39	25	18	0.20	511.69	502	16	4.09E-02	39.3	
7	0	61.71	162	16	0.90	591.85	580	24	2.70E-01	9.6	
8	1	65.36	29	7	0.73	627.00	621	27	4.82E-02	32.0	2.63E+00
9	1	65.98	93	18	0.73	633.00	621	27	1.55E-01	13.6	
10	0	70.04	15	8	0.71	672.15	664	13	2.48E-02	43.4	
11	0	81.03	582	31	0.68	778.02	761	30	9.70E-01	4.7	
12	4	111.66	19	37	1.15	1073.17	1063	23	3.13E-02	84.7	1.19E+00
13	4	112.07	100	26	0.77	1077.15	1063	23	1.66E-01	15.6	
14	3	115.89	31	14	0.79	1114.00	1103	22	5.20E-02	31.7	1.18E+00
15	3	116.60	19	5	0.71	1120.83	1103	22	3.12E-02	30.2	
16	0	276.48	31	2	0.62	2661.48	2649	21	5.14E-02	20.5	
17	0	302.87	77	0	0.46	2915.82	2904	22	1.28E-01	11.4	
18	0	333.85	36	6	0.62	3214.36	3199	24	6.00E-02	21.5	
19	0	356.04	247	13	0.89	3428.20	3413	28	4.12E-01	7.1	
20	0	383.89	58	0	0.53	3696.57	3683	23	9.67E-02	13.1	
21	1	386.84	85	6	1.12	3724.98	3711	26	1.42E-01	14.0	9.78E+00
22	1	387.46	84	3	1.02	3731.00	3711	26	1.40E-01	11.0	

Summary of Nuclide Activity
Sample ID : 0509117-11 Acquisition date : 6-OCT-2005 11:43:55

Total number of lines in spectrum	22	
Number of unidentified lines	17	
Number of lines tentatively identified by NID	5	22.73%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	4.495E+02	4.495E+02	0.725E+02	16.13	
			---	---			
Total Activity :			4.495E+02	4.495E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	1.923E+03	1.923E+03	0.439E+03	22.83	
			---	---			
Total Activity :			1.923E+03	1.923E+03			

Grand Total Activity :	2.372E+03	2.372E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide Line Activity Report
Sample ID : 0509117-11

Acquisition date : 6-OCT-2005 11:43:55

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	4.319E+02	4.320E+02	18.00	OK
	302.84	17.80	3.440E+00	5.664E+02	5.665E+02	35.42	OK
	356.01	60.00	1.579E+00	1.176E+03	1.176E+03	32.95	<<WM N-Sigma

Final Mean for 2 Valid Peaks = 4.495E+02+/- 7.251E+01 (16.13%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	1.923E+03	1.923E+03	22.83	OK

Final Mean for 1 Valid Peaks = 1.923E+03+/- 4.389E+02 (22.83%)

Flag: "*" = Keyline

Combined Activity-MDA Report
Sample ID : 0509117-11
Acquisition date : 6-OCT-2005 11:43:55

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	4.495E+02	7.251E+01	1.732E+01	2.557E+00	25.959
TH-234	1.923E+03	4.389E+02	1.777E+02	2.074E+01	10.822

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	-1.029E+00		2.391E+00	4.220E+00	1.756E-01	-0.244
CD-109	-5.801E+00		5.232E+01	9.947E+01	5.434E+00	-0.058
PA-231	1.357E+07		3.843E+12	5.215E+07	1.477E+13	0.260
PA-234	2.415E+04	+	1.152E+06	1.190E+04	5.676E+05	2.030
NP-237	2.400E+00		1.671E+01	3.301E+01	1.856E+00	0.073
AM-241	1.578E+01		2.137E+01	3.859E+01	5.480E+00	0.409

VAX/VMS Peak Search Report Generated 6-OCT-2005 12:04:47.72 ML 10-6-05

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911712_GE5_BAFIL_88868.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : VPBR092705SL09
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 11:54:22.
Sample ID : 0509117-12 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.85 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	20.78	28	25	0.66	197.39	192	19	4.61E-02	34.2	6.92E+00
2	1	21.36	55	20	0.64	203.00	192	19	9.09E-02	22.5	
3	0	30.91	1444	54	0.80	295.05	280	33	2.41E+00	2.9	
4	3	34.97	303	20	0.89	334.14	319	33	5.05E-01	7.0	5.66E+00
5	3	35.89	109	5	0.67	343.00	319	33	1.82E-01	17.0	
6	1	61.21	28	24	0.72	587.00	580	25	4.67E-02	47.6	1.45E+00
7	1	61.85	142	25	0.79	593.22	580	25	2.37E-01	12.2	
8	0	65.95	56	31	0.61	632.75	621	19	9.27E-02	25.2	
9	1	79.52	43	8	0.82	763.48	753	38	7.11E-02	27.4	8.94E-01
10	1	81.08	544	11	0.72	778.56	753	38	9.07E-01	4.7	
11	1	111.84	112	19	0.87	1074.95	1063	21	1.86E-01	13.2	1.18E+00
12	1	112.47	36	5	0.71	1081.02	1063	21	5.99E-02	16.3	
13	1	160.62	37	8	0.84	1545.00	1535	21	6.20E-02	20.3	1.12E+00
14	1	161.12	12	4	0.76	1549.81	1535	21	2.02E-02	52.1	
15	0	276.40	35	2	0.72	2660.73	2648	22	5.78E-02	19.2	
16	1	302.68	47	6	0.96	2914.00	2901	25	7.86E-02	21.9	1.06E+00
17	1	303.20	65	4	0.96	2919.00	2901	25	1.08E-01	14.2	
18	0	333.96	29	13	1.18	3215.39	3199	23	4.90E-02	29.5	
19	0	356.16	236	11	1.00	3429.33	3415	26	3.94E-01	7.1	
20	0	384.03	60	4	1.34	3697.90	3683	26	1.01E-01	14.3	
21	0	386.97	94	6	0.52	3726.28	3713	24	1.57E-01	11.6	
22	0	414.66	25	5	0.75	3993.06	3979	23	4.23E-02	26.9	

Summary of Nuclide Activity
Sample ID : 0509117-12 Acquisition date : 6-OCT-2005 11:54:22

Total number of lines in spectrum	22	
Number of unidentified lines	16	
Number of lines tentatively identified by NID	6	27.27%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	3.958E+02	3.958E+02	0.673E+02	16.99	
			---	---			
Total Activity :			3.958E+02	3.958E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	1.685E+03	1.685E+03	0.459E+03	27.27	
AM-241	432.20Y	1.00	4.280E+01	4.280E+01	4.125E+01	96.36	
			---	---			
Total Activity :			1.728E+03	1.728E+03			

Grand Total Activity :	2.123E+03	2.123E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide Line Activity Report
Sample ID : 0509117-12
Acquisition date : 6-OCT-2005 11:54:22

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	4.039E+02	4.039E+02	17.97	OK
	302.84	17.80	3.440E+00	3.468E+02	3.468E+02	51.59	OK
	356.01	60.00	1.579E+00	1.124E+03	1.124E+03	32.91	<<WM N-Sigma

Final Mean for 2 Valid Peaks = 3.958E+02+/- 6.725E+01 (16.99%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	1.685E+03	1.685E+03	27.27	OK

Final Mean for 1 Valid Peaks = 1.685E+03+/- 4.594E+02 (27.27%)

AM-241	59.54	35.90*	8.208E+00	4.280E+01	4.280E+01	96.36	OK

Final Mean for 1 Valid Peaks = 4.280E+01+/- 4.125E+01 (96.36%)

Flag: "*" = Keyline

Sample ID : 0509117-12
Acquisition date : 6-OCT-2005 11:54:22

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	3.958E+02	6.725E+01	1.653E+01	2.441E+00	23.944
TH-234	1.685E+03	4.594E+02	2.380E+02	2.778E+01	7.079
AM-241	4.280E+01	4.125E+01	4.190E+01	5.950E+00	1.022

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	-2.947E-01		1.981E+00	3.726E+00	1.550E-01	-0.079
CD-109	5.976E+00		5.484E+01	1.077E+02	5.886E+00	0.055
PA-231	2.193E+07		6.210E+12	5.985E+07	1.695E+13	0.366
PA-234	1.549E+04	+	7.388E+05	1.162E+04	5.542E+05	1.333
NP-237	-1.428E+01		1.820E+01	2.977E+01	1.673E+00	-0.480

VAX/VMS Peak Search Report Generated 6-OCT-2005 12:15:31.62 Mr 10.6.05

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911713_GE5_BAFIL_88869.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : VPBR092705SL10
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00.
Sample ID : 0509117-13
Sample type : FILTER
Detector name : GE5
Elapsed live time: 0 00:10:00.00
Start channel : 25
Sensitivity : 3.00000
Critical level : No

Acquisition date : 6-OCT-2005 12:05:15.
Sample Quantity : 1.00000E+00 FILTER
Sample Geometry : 0
Detector Geometry: BAFIL
Elapsed real time: 0 00:10:00.77 0.1%
End channel : 4096
Gaussian : 10.00000

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	19.91	28	2	0.63	189.00	186	20	4.74E-02	14.5	4.66E+00
2	3	20.53	15	9	0.52	195.00	186	20	2.55E-02	62.7	
3	3	20.96	31	10	0.69	199.12	186	20	5.19E-02	29.9	
4	0	25.11	23	3	0.77	239.14	229	20	3.79E-02	26.8	
5	0	30.94	1277	56	0.72	295.36	284	25	2.13E+00	3.1	
6	2	35.07	247	26	0.58	335.15	325	25	4.12E-01	7.9	1.08E+00
7	2	35.96	59	14	0.71	343.73	325	25	9.80E-02	22.6	
8	6	53.01	43	11	0.71	508.00	503	14	7.17E-02	16.9	1.14E+00
9	6	53.51	13	2	0.44	512.82	503	14	2.15E-02	42.3	
10	0	61.78	142	31	0.68	592.54	581	21	2.36E-01	11.9	
11	0	65.99	70	17	0.67	633.06	622	21	1.17E-01	17.4	
12	0	81.11	521	65	0.65	778.85	768	20	8.69E-01	5.4	
13	0	112.06	105	42	0.60	1077.09	1065	21	1.75E-01	16.4	
14	0	192.02	6	16	0.20	1847.56	1828	21	1.04E-02	127.3	
15	0	276.54	35	0	0.34	2662.03	2650	21	5.83E-02	16.9	
16	3	302.68	59	3	0.96	2914.00	2903	23	9.84E-02	16.4	2.84E+00
17	3	303.25	13	1	0.70	2919.47	2903	23	2.10E-02	72.0	
18	1	333.30	14	3	1.08	3209.05	3201	23	2.34E-02	36.7	1.29E+00
19	1	334.02	45	2	0.98	3216.00	3201	23	7.48E-02	14.6	
20	8	355.75	115	2	0.81	3425.41	3414	28	1.91E-01	13.6	2.27E+00
21	8	356.12	10	3	1.00	3429.00	3414	28	1.70E-02	155.6	
22	8	356.60	62	3	0.48	3433.55	3414	28	1.04E-01	20.6	
23	4	383.62	75	5	1.01	3694.00	3678	28	1.26E-01	11.3	1.91E+00
24	4	384.51	15	3	0.67	3702.49	3678	28	2.52E-02	28.5	
25	1	386.43	47	4	1.02	3721.00	3711	28	7.78E-02	20.4	5.07E+00
26	1	387.26	86	2	1.02	3729.00	3711	28	1.43E-01	12.4	

Summary of Nuclide Activity
Sample ID : 0509117-13 Acquisition date : 6-OCT-2005 12:05:15

Total number of lines in spectrum	26	
Number of unidentified lines	20	
Number of lines tentatively identified by NID	6	23.08%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	3.934E+02	3.934E+02	0.675E+02	17.16	
			---	---			
Total Activity :			3.934E+02	3.934E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	1.682E+03	1.682E+03	0.450E+03	26.77	
			---	---			
Total Activity :			1.682E+03	1.682E+03			

Grand Total Activity :	2.075E+03	2.075E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide Line Activity Report
Sample ID : 0509117-13
Acquisition date : 6-OCT-2005 12:05:15

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	3.870E+02	3.871E+02	18.74	OK
	302.84	17.80	3.440E+00	4.343E+02	4.344E+02	42.52	OK
	356.01	60.00	1.579E+00	4.837E+01	4.837E+01	312.68	<<WM N-Sigma

Final Mean for 2 Valid Peaks = 3.934E+02+/- 6.752E+01 (17.16%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	1.682E+03	1.682E+03	26.77	OK

Final Mean for 1 Valid Peaks = 1.682E+03+/- 4.502E+02 (26.77%)

Flag: "*" = Keyline

Combined Activity-MDA Report
Sample ID : 0509117-13

Acquisition date : 6-OCT-2005 12:05:15

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	3.934E+02	6.752E+01	2.167E+01	3.200E+00	18.150
TH-234	1.682E+03	4.502E+02	3.140E+02	3.666E+01	5.356

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	-1.210E+00		2.298E+00	3.997E+00	1.663E-01	-0.303
CD-109	2.884E+01		5.489E+01	1.151E+02	6.290E+00	0.251
PA-231	-3.266E+07		9.249E+12	4.639E+07	1.314E+13	-0.704
PA-234	8.837E+03	+	4.215E+05	1.080E+04	5.150E+05	0.818
NP-237	-1.196E+01		1.730E+01	2.890E+01	1.625E+00	-0.414
AM-241	2.954E+01		2.245E+01	4.346E+01	6.172E+00	0.680

VAX/VMS Peak Search Report Generated 6-OCT-2005 12:27:19.36 MR 10.6.05

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911714_GE5_BAFIL_88870.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : VPB092705SL11
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 12:17:00.
Sample ID : 0509117-14 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.81 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	20.74	23	19	0.64	197.00	187	24	3.81E-02	49.5	2.72E+00
2	1	21.25	56	16	0.64	202.00	187	24	9.40E-02	19.8	
3	0	30.95	1193	40	0.68	295.47	282	27	1.99E+00	3.2	
4	1	35.02	261	29	0.74	334.65	322	28	4.35E-01	7.5	2.88E+00
5	1	35.78	72	19	0.67	342.00	322	28	1.20E-01	24.4	
6	1	61.31	42	20	0.72	588.00	580	25	6.93E-02	32.5	2.48E+00
7	1	61.93	57	14	0.72	594.00	580	25	9.46E-02	26.6	
8	2	65.93	82	5	0.88	632.51	619	30	1.37E-01	12.6	4.71E+00
9	2	66.40	26	3	0.73	637.00	619	30	4.33E-02	38.4	
10	0	81.14	483	53	0.62	779.10	767	22	8.05E-01	5.6	
11	0	112.02	106	34	0.66	1076.66	1065	21	1.76E-01	15.3	
12	0	116.15	34	6	0.64	1116.50	1108	18	5.67E-02	22.4	
13	0	276.56	19	0	0.69	2662.26	2652	19	3.17E-02	22.9	
14	0	303.01	60	8	0.55	2917.19	2903	23	9.99E-02	16.1	
15	4	332.78	10	0	0.98	3204.00	3196	25	1.67E-02	46.8	9.71E+00
16	4	333.28	94	2	1.44	3208.85	3196	25	1.56E-01	7.6	
17	4	333.71	10	2	0.98	3213.00	3196	25	1.67E-02	64.7	
18	0	356.09	222	3	0.63	3428.65	3414	26	3.70E-01	6.9	
19	3	383.62	61	6	1.01	3694.00	3683	23	1.02E-01	13.8	2.40E+00
20	3	384.30	15	6	0.75	3700.52	3683	23	2.44E-02	39.6	
21	1	386.63	16	4	1.02	3723.00	3712	24	2.59E-02	57.8	1.01E+00
22	1	387.05	39	5	1.02	3727.00	3712	24	6.45E-02	23.4	

Summary of Nuclide Activity
Sample ID : 0509117-14 Acquisition date : 6-OCT-2005 12:17:00

Total number of lines in spectrum	22	
Number of unidentified lines	16	
Number of lines tentatively identified by NID	6	27.27%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	3.683E+02	3.683E+02	0.637E+02	17.30	
			---	---			
Total Activity :			3.683E+02	3.683E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	6.736E+02	6.736E+02	3.682E+02	54.65	
AM-241	432.20Y	1.00	6.358E+01	6.358E+01	4.242E+01	66.72	
			---	---			
Total Activity :			7.372E+02	7.372E+02			

Grand Total Activity :	1.105E+03	1.106E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide Line Activity Report
Sample ID : 0509117-14

Acquisition date : 6-OCT-2005 12:17:00

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	3.586E+02	3.586E+02	18.92	OK
	302.84	17.80	3.440E+00	4.411E+02	4.411E+02	42.04	OK
	356.01	60.00	1.579E+00	1.056E+03	1.056E+03	32.78	<<WM N-Sigma

Final Mean for 2 Valid Peaks = 3.683E+02+/- 6.373E+01 (17.30%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	6.736E+02	6.736E+02	54.65	OK

Final Mean for 1 Valid Peaks = 6.736E+02+/- 3.682E+02 (54.65%)

AM-241	59.54	35.90*	8.208E+00	6.358E+01	6.358E+01	66.72	OK

Final Mean for 1 Valid Peaks = 6.358E+01+/- 4.242E+01 (66.72%)

Flag: "*" = Keyline

Combined Activity-MDA Report
Sample ID : 0509117-14 Acquisition date : 6-OCT-2005 12:17:00

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	3.683E+02	6.373E+01	2.076E+01	3.065E+00	17.744
TH-234	6.736E+02	3.682E+02	2.104E+02	2.456E+01	3.201
AM-241	6.358E+01	4.242E+01	2.594E+01	3.683E+00	2.451

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	-9.789E-01		1.919E+00	3.376E+00	1.405E-01	-0.290
CD-109	5.502E+00		5.707E+01	1.112E+02	6.075E+00	0.049
PA-231	-2.663E+07		7.540E+12	5.050E+07	1.430E+13	-0.527
PA-234	1.602E+04	+	7.643E+05	1.086E+04	5.179E+05	1.476
NP-237	-1.363E+01		2.076E+01	3.489E+01	1.961E+00	-0.391

464a

VAX/VMS Peak Search Report Generated 6-OCT-2005 12:38:12.33 MR 10-6-05

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911715_GE5_BAFIL_88872.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : VPBR092705SL12
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 12:27:47.
Sample ID : 0509117-15 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.80 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	11.57	19	9	0.72	108.68	98	18	3.17E-02	43.6	
2	1	20.42	29	18	0.64	194.00	186	23	4.86E-02	36.5	1.74E+00
3	1	21.05	34	11	0.64	200.00	186	23	5.60E-02	34.4	
4	0	28.22	23	29	0.32	269.15	260	17	3.89E-02	50.8	
5	0	30.94	1404	100	0.77	295.33	281	27	2.34E+00	3.1	
6	3	35.09	317	23	0.80	335.34	321	31	5.29E-01	6.7	1.25E+00
7	3	36.27	41	10	0.55	346.74	321	31	6.76E-02	20.6	
8	0	53.47	19	10	0.15	512.46	505	13	3.12E-02	38.7	
9	2	60.99	30	24	0.71	584.93	580	24	5.04E-02	33.2	2.91E+00
10	2	61.83	172	33	0.72	593.00	580	24	2.87E-01	10.3	
11	1	65.46	40	38	0.73	628.00	616	27	6.73E-02	36.8	1.99E+00
12	1	65.88	14	39	0.73	632.00	616	27	2.40E-02	103.5	
13	0	81.13	545	61	0.63	779.00	764	26	9.09E-01	5.3	
14	5	110.73	10	6	0.57	1064.26	1062	25	1.70E-02	32.0	1.82E+00
15	5	111.43	35	24	0.79	1071.00	1062	25	5.77E-02	39.7	
16	5	112.00	71	19	0.70	1076.49	1062	25	1.19E-01	20.1	
17	5	112.46	12	7	0.57	1080.92	1062	25	2.05E-02	85.6	
18	4	115.89	41	5	0.79	1114.00	1102	20	6.77E-02	18.0	1.62E+00
19	4	116.48	17	2	0.52	1119.60	1102	20	2.77E-02	25.1	
20	0	276.57	24	10	0.14	2662.36	2650	21	3.99E-02	32.8	
21	0	302.93	78	5	0.77	2916.35	2903	23	1.30E-01	12.8	
22	0	333.75	32	4	1.00	3213.35	3198	23	5.40E-02	20.5	
23	0	356.12	291	4	0.59	3428.93	3413	33	4.85E-01	6.1	
24	0	383.94	48	2	0.83	3697.00	3683	23	7.96E-02	16.0	
25	8	386.43	25	7	1.02	3721.00	3712	25	4.20E-02	38.5	1.60E+00
26	8	387.06	93	4	0.90	3727.09	3712	25	1.56E-01	12.1	

Summary of Nuclide Activity
Sample ID : 0509117-15 Acquisition date : 6-OCT-2005 12:27:47

Total number of lines in spectrum	26	
Number of unidentified lines	18	
Number of lines tentatively identified by NID	8	30.77%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	4.236E+02	4.237E+02	0.712E+02	16.82	
			---	---			
Total Activity :			4.236E+02	4.237E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
PA-234	4.47E+09Y	1.00	6.922E+02	6.922E+02	7.805E+02	112.76	
TH-234	4.47E+09Y	1.00	2.045E+03	2.045E+03	0.490E+03	23.95	
AM-241	432.20Y	1.00	4.623E+01	4.623E+01	3.141E+01	67.96	
			---	---			
Total Activity :			2.783E+03	2.783E+03			

Grand Total Activity : 3.207E+03 3.207E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 0509117-15
Acquisition date : 6-OCT-2005 12:27:47

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	4.047E+02	4.048E+02	18.66	OK
	302.84	17.80	3.440E+00	5.754E+02	5.755E+02	37.22	OK
	356.01	60.00	1.579E+00	1.384E+03	1.384E+03	32.11	<<WM N-Sigma

Final Mean for 2 Valid Peaks = 4.237E+02+/- 7.125E+01 (16.82%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
PA-234	9.89	89.00	8.893E-06	1.081E+07	1.081E+07	*******	OK
	21.72	64.90*	2.444E-02	9.543E+03	9.543E+03	4770.38	OK
	37.93	23.75	1.111E+00	6.922E+02	6.922E+02	112.76	OK
	131.42	20.40	2.613E+01	----- Line Not Found -----			Absent

Final Mean for 3 Valid Peaks = 6.922E+02+/- 7.805E+02 (112.76%)

TH-234	63.29	3.80*	9.987E+00	2.045E+03	2.045E+03	23.95	OK

Final Mean for 1 Valid Peaks = 2.045E+03+/- 4.897E+02 (23.95%)

AM-241	59.54	35.90*	8.208E+00	4.623E+01	4.623E+01	67.96	OK

Final Mean for 1 Valid Peaks = 4.623E+01+/- 3.141E+01 (67.96%)

Flag: "*" = Keyline

Combined Activity-MDA Report
Sample ID : 0509117-15 Acquisition date : 6-OCT-2005 12:27:47

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	4.237E+02	7.125E+01	2.255E+01	3.329E+00	18.789
PA-234	6.922E+02	7.805E+02	6.446E+03	3.075E+05	0.107
TH-234	2.045E+03	4.897E+02	3.410E+02	3.980E+01	5.997
AM-241	4.623E+01	3.141E+01	3.929E+01	5.580E+00	1.176

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	1.736E+00		1.861E+00	4.163E+00	1.732E-01	0.417
CD-109	3.983E+01		5.941E+01	1.250E+02	6.830E+00	0.319
PA-231	-2.046E+06		5.794E+11	5.630E+07	1.594E+13	-0.036
NP-237	-2.681E+01		1.913E+01	2.664E+01	1.498E+00	-1.006

VAX/VMS Peak Search Report Generated 6-OCT-2005 12:48:42.27 MR 10.6.05

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911716_GE5_BAFIL_88873.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : VPBR092705SL13
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 12:38:24.
Sample ID : 0509117-16 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.78 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	21.32	35	32	0.65	202.67	192	18	5.82E-02	37.9	
2	0	30.94	1405	48	0.72	295.34	281	32	2.34E+00	3.0	
3	1	35.12	257	15	0.74	335.65	325	27	4.29E-01	7.3	8.46E-01
4	1	36.09	61	2	0.67	345.00	325	27	1.02E-01	21.2	
5	0	53.13	44	6	0.44	509.13	498	19	7.28E-02	19.2	
6	0	61.85	164	27	0.53	593.22	581	23	2.74E-01	10.4	
7	0	66.42	81	37	1.40	637.21	618	32	1.35E-01	21.9	
8	2	79.96	37	9	0.84	767.77	761	31	6.16E-02	28.5	9.56E-01
9	2	81.13	568	13	0.71	778.95	761	31	9.47E-01	4.5	
10	0	92.92	10	5	0.44	892.62	884	14	1.71E-02	49.5	
11	0	111.86	139	11	0.84	1075.16	1064	22	2.32E-01	9.9	
12	0	116.04	46	13	0.80	1115.43	1101	25	7.71E-02	22.8	
13	0	276.31	26	6	0.47	2659.85	2646	22	4.27E-02	28.8	
14	0	302.88	79	8	0.82	2915.91	2903	23	1.31E-01	13.4	
15	0	333.72	56	0	0.25	3213.11	3199	26	9.33E-02	13.4	
16	4	355.70	125	12	0.98	3424.89	3414	25	2.09E-01	14.2	4.64E+00
17	4	356.33	205	16	1.00	3431.00	3414	25	3.42E-01	7.8	
18	0	383.86	49	5	1.10	3696.31	3682	24	8.20E-02	17.2	
19	8	386.74	125	2	1.02	3724.00	3712	26	2.08E-01	8.6	9.71E+00
20	8	387.41	33	3	0.93	3730.46	3712	26	5.44E-02	29.7	
21	0	414.92	18	4	1.00	3995.56	3978	23	3.03E-02	30.2	

Summary of Nuclide Activity
Sample ID : 0509117-16

Acquisition date : 6-OCT-2005 12:38:24

Total number of lines in spectrum	21	
Number of unidentified lines	15	
Number of lines tentatively identified by NID	6	28.57%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	4.502E+02	4.502E+02	0.682E+02	15.15	
			---	---			
Total Activity :			4.502E+02	4.502E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	1.949E+03	1.949E+03	0.473E+03	24.26	
			---	---			
Total Activity :			1.949E+03	1.949E+03			

Grand Total Activity :	2.399E+03	2.399E+03

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Nuclide Line Activity Report
Sample ID : 0509117-16

Acquisition date : 6-OCT-2005 12:38:24

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	4.217E+02	4.217E+02	17.79	OK
	302.84	17.80	3.440E+00	5.787E+02	5.787E+02	38.18	OK
	356.01	60.00	1.579E+00	5.951E+02	5.952E+02	41.06	OK

Final Mean for 3 Valid Peaks = 4.502E+02+/- 6.823E+01 (15.15%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	1.949E+03	1.949E+03	24.26	OK

Final Mean for 1 Valid Peaks = 1.949E+03+/- 4.727E+02 (24.26%)

Flag: "*" = Keyline

Combined Activity-MDA Report
Sample ID : 0509117-16 Acquisition date : 6-OCT-2005 12:38:24

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	4.502E+02	6.823E+01	1.878E+01	2.773E+00	23.975
TH-234	1.949E+03	4.727E+02	3.887E+02	4.537E+01	5.013

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	-6.764E-01		2.053E+00	3.726E+00	1.551E-01	-0.182
CD-109	-2.858E+01		6.152E+01	1.075E+02	5.875E+00	-0.266
PA-231	0.000E+00		0.000E+00	5.745E+07	1.627E+13	0.000
PA-234	9.920E+03	+	4.732E+05	1.044E+04	4.980E+05	0.950
NP-237	-1.192E+01		1.988E+01	3.379E+01	1.900E+00	-0.353
AM-241	1.493E+01		2.350E+01	4.086E+01	5.803E+00	0.365

VAX/VMS Peak Search Report Generated 6-OCT-2005 13:00:33.07 MR 10.6.05

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911717_GE5_BAFIL_88876.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : VPBR092705SL14
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 12:50:14.
Sample ID : 0509117-17 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.87 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	20.63	37	20	0.64	196.00	189	22	6.19E-02	30.4	3.05E+00
2	1	21.25	77	19	0.64	202.00	189	22	1.28E-01	17.0	
3	0	30.93	1387	46	0.81	295.26	281	27	2.31E+00	2.9	
4	3	35.08	270	33	0.70	335.20	324	26	4.50E-01	7.8	7.27E-01
5	3	36.02	61	20	0.49	344.28	324	26	1.01E-01	22.0	
6	0	61.66	151	30	0.94	591.33	579	23	2.52E-01	11.4	
7	0	65.78	99	12	0.84	631.06	619	24	1.66E-01	12.7	
8	2	79.73	47	0	0.86	765.51	755	39	7.81E-02	25.0	5.41E+00
9	2	81.02	599	4	0.84	777.97	755	39	9.98E-01	4.0	
10	0	112.12	128	36	0.63	1077.68	1062	24	2.14E-01	13.3	
11	0	161.15	11	16	0.15	1550.15	1534	18	1.82E-02	72.5	
12	0	276.58	25	8	0.87	2662.44	2650	21	4.22E-02	28.9	
13	1	302.59	24	4	0.86	2913.08	2905	20	4.05E-02	32.8	4.47E+00
14	1	303.20	59	6	0.96	2919.00	2905	20	9.86E-02	12.4	
15	0	333.89	18	16	0.91	3214.75	3200	21	2.98E-02	50.8	
16	0	356.11	234	22	1.05	3428.88	3414	29	3.91E-01	7.8	
17	0	383.84	47	13	0.99	3696.06	3681	24	7.78E-02	22.9	
18	7	386.04	11	0	0.52	3717.31	3712	25	1.83E-02	46.3	3.80E+00
19	7	386.74	75	2	1.02	3724.00	3712	25	1.25E-01	15.0	
20	7	387.49	81	2	0.91	3731.28	3712	25	1.35E-01	11.1	

Summary of Nuclide Activity
Sample ID : 0509117-17 Acquisition date : 6-OCT-2005 12:50:14

Total number of lines in spectrum	20	
Number of unidentified lines	14	
Number of lines tentatively identified by NID	6	30.00%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	4.445E+02	4.445E+02	0.768E+02	17.27	
			---	---			
Total Activity :			4.445E+02	4.445E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	1.797E+03	1.797E+03	0.466E+03	25.95	
			---	---			
Total Activity :			1.797E+03	1.797E+03			

Grand Total Activity :	2.241E+03	2.241E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide Line Activity Report
Sample ID : 0509117-17

Acquisition date : 6-OCT-2005 12:50:14

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	4.445E+02	4.445E+02	17.27	OK
	302.84	17.80	3.440E+00	1.788E+02	1.788E+02	70.98	<<WM N-Sigma
	356.01	60.00	1.579E+00	1.114E+03	1.115E+03	33.58	<<WM N-Sigma

Final Mean for 1 Valid Peaks = 4.445E+02+/- 7.678E+01 (17.27%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	1.797E+03	1.797E+03	25.95	OK

Final Mean for 1 Valid Peaks = 1.797E+03+/- 4.663E+02 (25.95%)

Flag: "*" = Keyline

Combined Activity-MDA Report
Sample ID : 0509117-17 Acquisition date : 6-OCT-2005 12:50:14

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	4.445E+02	7.678E+01	1.482E+01	2.188E+00	30.001
TH-234	1.797E+03	4.663E+02	4.308E+02	5.029E+01	4.170

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	1.848E+00		2.037E+00	4.444E+00	1.849E-01	0.416
CD-109	3.432E+01		6.263E+01	1.283E+02	7.010E+00	0.267
PA-231	4.501E+06		1.274E+12	5.855E+07	1.658E+13	0.077
PA-234	2.173E+04	+	1.036E+06	1.282E+04	6.115E+05	1.695
NP-237	-1.886E+01		1.865E+01	2.890E+01	1.625E+00	-0.653
AM-241	1.205E+01		2.519E+01	4.214E+01	5.984E+00	0.286

VAX/VMS Peak Search Report Generated 6-OCT-2005 13:13:46.76 MR 10.6.05

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911718_GE5_BAFIL_88879.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : VPBR092705SL15
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 13:03:30.
Sample ID : 0509117-18 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.84 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	20.84	61	12	0.64	198.00	185	23	1.02E-01	18.7	1.72E+00
2	1	21.36	38	7	0.64	203.00	185	23	6.33E-02	22.2	
3	0	30.97	1360	84	0.77	295.60	283	27	2.27E+00	3.2	
4	6	35.11	262	31	0.76	335.51	324	30	4.37E-01	7.9	2.99E+00
5	6	36.30	54	3	0.67	347.00	324	30	9.08E-02	22.0	
6	0	51.85	14	6	0.30	496.82	490	13	2.31E-02	42.2	
7	0	53.41	27	10	0.59	511.89	503	14	4.51E-02	28.3	
8	2	61.21	35	15	0.72	587.00	580	24	5.77E-02	36.4	1.57E+00
9	2	61.87	119	21	0.85	593.37	580	24	1.98E-01	13.3	
10	2	65.87	87	26	0.79	631.93	623	22	1.44E-01	15.6	3.57E+00
11	2	66.47	24	18	0.80	637.70	623	22	3.95E-02	49.2	
12	0	81.14	489	67	0.60	779.05	767	21	8.15E-01	5.7	
13	4	110.51	25	6	0.72	1062.12	1058	32	4.19E-02	24.1	1.43E+00
14	4	111.90	140	35	1.01	1075.50	1058	32	2.33E-01	13.4	
15	0	116.27	26	32	0.17	1117.64	1099	25	4.30E-02	54.4	
16	0	203.17	8	9	0.11	1955.01	1946	14	1.33E-02	71.2	
17	0	276.93	18	10	0.17	2665.82	2647	24	3.06E-02	40.4	
18	0	302.95	79	0	0.61	2916.53	2904	23	1.32E-01	11.3	
19	0	333.82	26	13	0.49	3214.08	3196	25	4.25E-02	34.4	
20	0	356.10	265	11	0.91	3428.79	3413	27	4.42E-01	6.6	
21	0	384.06	61	7	0.68	3698.21	3684	28	1.02E-01	15.8	
22	5	386.74	21	18	1.02	3724.00	3712	24	3.45E-02	63.0	1.51E+00
23	5	387.00	52	18	1.05	3726.56	3712	24	8.65E-02	23.9	

Summary of Nuclide Activity
Sample ID : 0509117-18 Acquisition date : 6-OCT-2005 13:03:30

Total number of lines in spectrum	23	
Number of unidentified lines	16	
Number of lines tentatively identified by NID	7	30.43%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	3.855E+02	3.856E+02	0.656E+02	17.02	
			---	---			
Total Activity :			3.855E+02	3.856E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	1.409E+03	1.409E+03	0.413E+03	29.33	
AM-241	432.20Y	1.00	5.291E+01	5.291E+01	3.927E+01	74.22	
			---	---			
Total Activity :			1.462E+03	1.462E+03			

Grand Total Activity :	1.847E+03	1.847E+03

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide Line Activity Report
Sample ID : 0509117-18

Acquisition date : 6-OCT-2005 13:03:30

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	3.631E+02	3.632E+02	19.07	OK
	302.84	17.80	3.440E+00	5.812E+02	5.812E+02	35.23	OK
	356.01	60.00	1.579E+00	1.261E+03	1.262E+03	32.56	<<WM N-Sigma

Final Mean for 2 Valid Peaks = 3.856E+02+/- 6.562E+01 (17.02%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	1.409E+03	1.409E+03	29.33	OK

Final Mean for 1 Valid Peaks = 1.409E+03+/- 4.133E+02 (29.33%)

AM-241	59.54	35.90*	8.208E+00	5.291E+01	5.291E+01	74.22	OK

Final Mean for 1 Valid Peaks = 5.291E+01+/- 3.927E+01 (74.22%)

Flag: "*" = Keyline

Combined Activity-MDA Report
Sample ID : 0509117-18 Acquisition date : 6-OCT-2005 13:03:30

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	3.856E+02	6.562E+01	2.255E+01	3.329E+00	17.099
TH-234	1.409E+03	4.133E+02	3.887E+02	4.537E+01	3.625
AM-241	5.291E+01	3.927E+01	3.647E+01	5.180E+00	1.451

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	-8.213E-02		2.165E+00	4.103E+00	1.707E-01	-0.020
CD-109	5.722E+00		6.152E+01	1.185E+02	6.471E+00	0.048
PA-231	1.794E+07		5.080E+12	6.297E+07	1.783E+13	0.285
PA-234	1.079E+04	+	5.148E+05	1.172E+04	5.590E+05	0.921
NP-237	-9.538E+00		1.778E+01	3.071E+01	1.727E+00	-0.311

MR 10-6-05

VAX/VMS Peak Search Report Generated 6-OCT-2005 13:24:47.64

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_050911719_GE5_BAFIL_88882.CNF
Analyses by : PEAK V16.9 PEAKEFF V2.2
Client ID : VPBR092705SL16
Deposition Date :
Sample Date : 6-OCT-2005 00:00:00. Acquisition date : 6-OCT-2005 13:14:30.
Sample ID : 0509117-19 Sample Quantity : 1.00000E+00 FILTER
Sample type : FILTER Sample Geometry : 0
Detector name : GE5 Detector Geometry: BAFIL
Elapsed live time: 0 00:10:00.00 Elapsed real time: 0 00:10:00.80 0.1%
Start channel : 25 End channel : 4096
Sensitivity : 3.00000 Gaussian : 10.00000
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	21.19	54	25	0.77	201.42	191	23	8.99E-02	25.0	
2	0	30.94	1424	88	0.81	295.38	280	34	2.37E+00	3.2	
3	2	35.13	353	12	0.81	335.70	324	28	5.88E-01	5.9	2.96E+00
4	2	35.89	56	8	0.67	343.06	324	28	9.34E-02	34.0	
5	0	53.29	30	22	1.11	510.72	495	23	4.93E-02	40.0	
6	1	61.52	138	27	0.72	590.00	577	29	2.30E-01	12.1	3.18E+00
7	1	62.04	30	30	0.72	595.00	577	29	4.93E-02	56.6	
8	0	66.00	54	40	0.49	633.18	620	24	9.00E-02	29.5	
9	0	81.10	507	57	0.67	778.69	768	20	8.44E-01	5.4	
10	0	111.99	119	31	0.92	1076.34	1066	21	1.99E-01	13.5	
11	0	302.93	66	6	1.02	2916.35	2902	25	1.10E-01	14.6	
12	1	333.29	24	4	0.98	3209.00	3199	27	3.98E-02	29.1	3.28E+00
13	1	334.02	64	2	0.98	3216.00	3199	27	1.07E-01	11.6	
14	0	356.11	257	8	0.65	3428.84	3414	31	4.28E-01	6.7	
15	0	383.90	51	6	1.11	3696.70	3681	28	8.48E-02	17.7	
16	2	386.52	20	8	1.01	3721.90	3713	23	3.38E-02	50.5	3.64E+00
17	2	387.05	109	13	1.02	3727.00	3713	23	1.81E-01	10.2	

Summary of Nuclide Activity
Sample ID : 0509117-19 Acquisition date : 6-OCT-2005 13:14:30

Total number of lines in spectrum	17	
Number of unidentified lines	11	
Number of lines tentatively identified by NID	6	35.29%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	3.888E+02	3.888E+02	0.662E+02	17.02	
			---	---			
Total Activity :			3.888E+02	3.888E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/FILTER	Wtd Mean Decay Corr pCi/FILTER	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	3.508E+02	3.508E+02	3.996E+02	113.90	
AM-241	432.20Y	1.00	2.112E+02	2.112E+02	0.599E+02	28.36	
			---	---			
Total Activity :			5.620E+02	5.620E+02			

Grand Total Activity :	9.508E+02	9.509E+02

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : 0509117-19
Acquisition date : 6-OCT-2005 13:14:30

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.839E+01	3.760E+02	3.761E+02	18.74	OK
	302.84	17.80	3.440E+00	4.837E+02	4.837E+02	39.77	OK
	356.01	60.00	1.579E+00	1.222E+03	1.222E+03	32.60	<<WM N-Sigma

Final Mean for 2 Valid Peaks = 3.888E+02+/- 6.619E+01 (17.02%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/FILTER	Decay Corr pCi/FILTER	2-Sigma %Error	Status
TH-234	63.29	3.80*	9.987E+00	3.508E+02	3.508E+02	113.90	OK

Final Mean for 1 Valid Peaks = 3.508E+02+/- 3.996E+02 (113.90%)

AM-241	59.54	35.90*	8.208E+00	2.112E+02	2.112E+02	28.36	OK

Final Mean for 1 Valid Peaks = 2.112E+02+/- 5.990E+01 (28.36%)

Flag: "*" = Keyline

Sample ID : 0509117-19 Acquisition date : 6-OCT-2005 13:14:30

---- Identified Nuclides ----

Nuclide	Activity (pCi/FILTER)	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
BA-133	3.888E+02	6.619E+01	2.366E+01	3.493E+00	16.434
TH-234	3.508E+02	3.996E+02	3.410E+02	3.980E+01	1.029
AM-241	2.112E+02	5.990E+01	4.190E+01	5.950E+00	5.041

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/FILTER)	K.L. Ided	Act error	MDA (pCi/FILTER)	MDA error	Act/MDA
CO-57	-6.837E-01		1.978E+00	3.591E+00	1.494E-01	-0.190
CD-109	1.628E+01		6.936E+01	1.339E+02	7.317E+00	0.122
PA-231	2.151E+05		6.091E+10	5.164E+07	1.462E+13	0.004
PA-234	1.532E+04	+	7.308E+05	1.118E+04	5.331E+05	1.371
NP-237	3.414E+00		2.072E+01	3.973E+01	2.234E+00	0.086