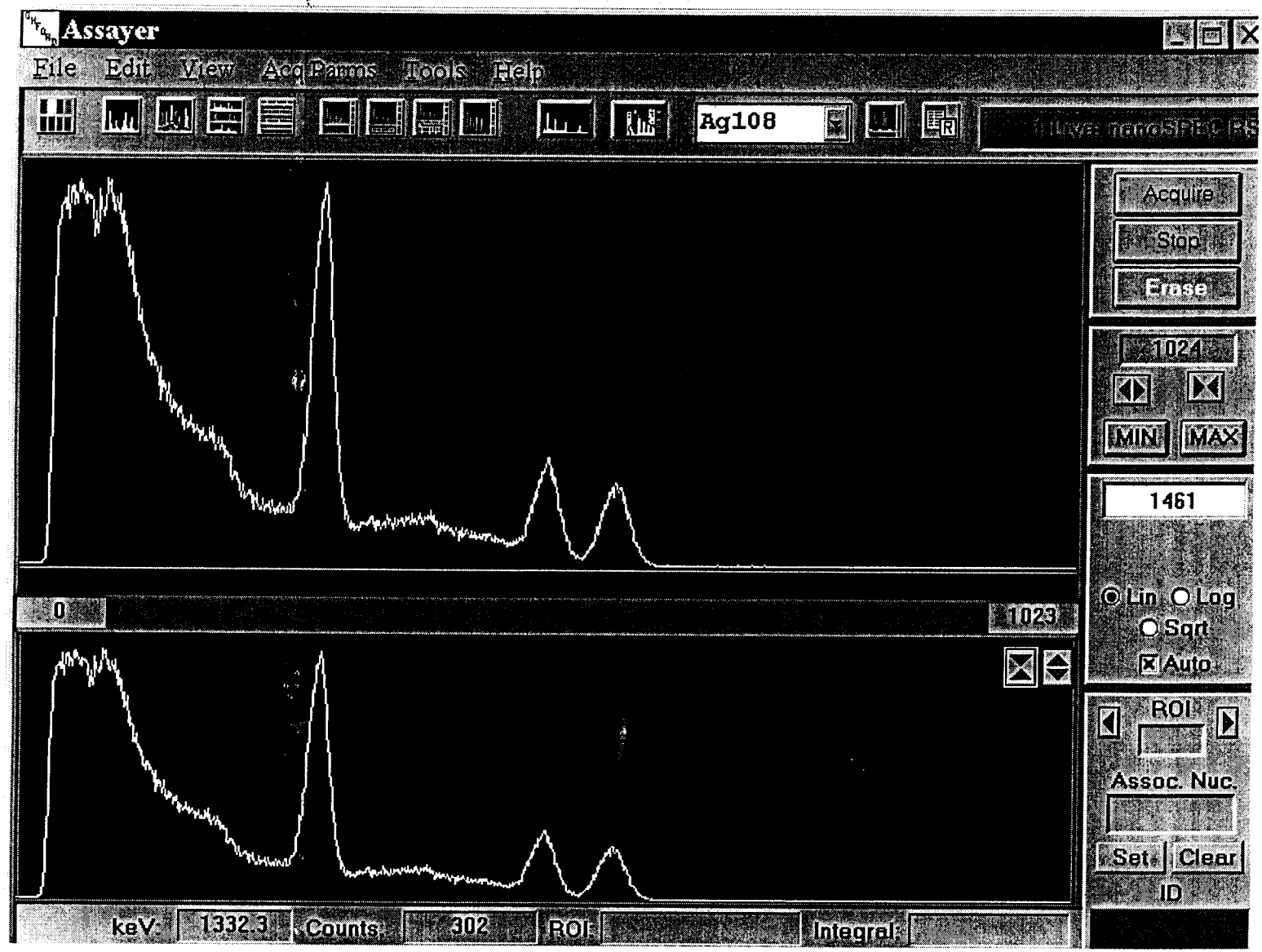
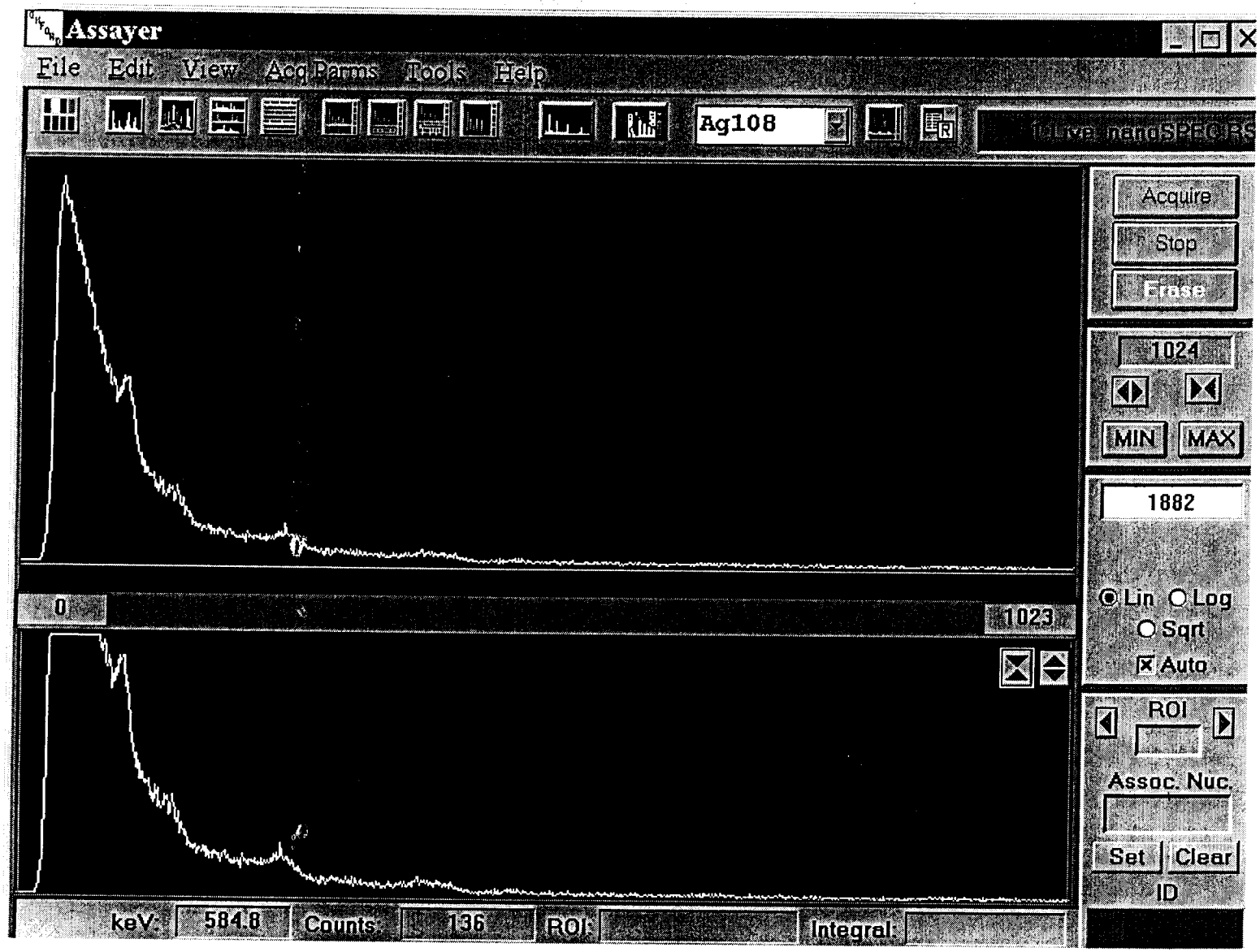
APPENDIX F

IN SITU AND LABORATORY γ SPECTROMETRY RECORDS

In Situ Energy Calibration Check using $^{137}Cs(^{137m}Ba)$ and ^{60}Co Sources (August 1, 2000)



In Situ Analysis of Area of Soil Generating Elevated μR-Meter Readings (August 1, 2000)



ATG Catalytics, Inc.
Aug/25/2000 2:58:45PM

HEADER INFORMATION in SLD00171.S0 HOT SPOT SURFACE

Identification		Acquisition	
r	: KSW	Started	: Aug/25/2000 2:41:51PM
Board	: 1	Stopped	: Aug/25/2000 2:58:32PM
Detector	: GEM-20200	True Time	: 1000.753 sec
Geometry	: Soil Marinell	Live Time	: 1000.000 sec
Sample	: SS-01	Dead Time	: 0.08 %
Channels	: 8192	Gross Count	: 41824 counts
		Gross Rate	: 41.824 cps

Sample
Sample Quantity 743.7 ± 74.37 g

Energy Calibration Jun/21/2000 10:32:38AM 00D01G01.S0
Resolution Calibration Jun/21/2000 10:34:57AM 00D01G01.S0
Efficiency Calibration Aug/21/2000 2:57:32PM 00D01G03.S0
Isotope Library SOIL.LIB Jun/30/2000 12:08:34PM

Rn daughters were not in equilibrium.

8-25-00

ROI COUNT INFORMATION in SLD00171.SU HOT SPOT SURFACE

ROI (#)	Channels Start	-	Stop	Energy keV Start	-	Stop	Net Counts	Background Counts	Gross Counts
1	295	-	304	73.82	-	76.07	345	301	646
	304	-	314	76.07	-	78.57	556	307	863
	362	-	378	90.57	-	94.58	14	759	773
4	366	-	384	91.57	-	96.08	65	739	804
5	510	-	522	127.59	-	130.59	117	397	513
6	567	-	583	141.84	-	145.85	14	447	461
7	738	-	749	184.61	-	187.36	134	257	391
8	832	-	844	208.12	-	211.12	192	234	426
9	948	-	961	237.13	-	240.38	2245	240	2485
10	1073	-	1087	268.39	-	271.89	159	147	306
11	1105	-	1115	276.39	-	278.89	66	133	199
12	1173	-	1187	293.39	-	296.89	284	129	413
13	1195	-	1205	298.89	-	301.40	99	108	207
14	1305	-	1318	326.40	-	329.65	140	109	249
15	1345	-	1361	336.40	-	340.41	387	148	535
16	1401	-	1417	350.41	-	354.41	462	134	596
17	1632	-	1643	408.17	-	410.92	44	64	108
18	1846	-	1857	461.68	-	464.43	119	35	154
19	2035	-	2052	508.94	-	513.19	211	68	279
20	2324	-	2339	581.20	-	584.95	637	80	717
21	2431	-	2446	607.95	-	611.70	336	45	381
22	2900	-	2917	725.21	-	729.46	156	36	192
23	3018	-	3025	754.71	-	756.46	27	18	45
24	3173	-	3186	793.46	-	796.71	72	22	94
25	3339	-	3347	834.96	-	836.96	25	14	39
26	3436	-	3447	859.21	-	861.96	65	19	84
27	3635	-	3654	908.95	-	913.70	441	24	465
28	3853	-	3865	963.45	-	966.45	69	10	80
29	3868	-	3884	967.20	-	971.20	259	12	271
30	4480	-	4488	1120.17	-	1122.17	32	24	56
31	5825	-	5861	1456.32	-	1465.31	19	14	33

ROI STATISTICS INFORMATION in SLD001/1.S0 HOT SPOT SURFACE

ROI (#)	Error	Centroid keV	FWHM keV	FWTM keV	FWTM/FWHM ratio	H/L ratio
1	19.17 %	74.97	0.91	1.66	1.82	3.324/3.324
	13.98 %	77.24	0.91	1.67	1.82	3.332/3.332
	551.95 %	93.44	0.84			
4	121.38 %	93.44	0.84			
5	51.77 %	129.25	0.76	1.65	2.18	2.631/3.972
6	433.59 %	143.84				
7	37.93 %	186.27	0.97	2.11	2.16	3.536/4.892
8	26.76 %	209.45	0.88	1.52	1.74	3.151/2.944
9	11.61 %	238.84	1.07	1.96	1.82	3.912/3.912
10	26.77 %	270.43	1.05	1.98	1.89	3.415/4.515
11	55.31 %	277.65	0.41	1.58	3.83	2.553/3.757
12	16.39 %	295.32	1.02	1.86	1.83	4.227/3.201
13	35.77 %	300.20	0.70	1.63	2.33	3.662/2.837
14	27.08 %	328.19	1.41	2.08	1.48	4.115/4.211
15	13.50 %	338.44	0.93	1.94	2.09	4.238/3.530
16	11.71 %	352.03	1.11	1.92	1.72	4.175/3.498
17	59.01 %	409.21	0.33	2.35	7.12	5.974/3.438
18	23.05 %	463.07	1.11	2.40	2.16	4.850/4.745
19	17.70 %	510.94	0.78	2.33	2.97	5.200/4.109
20	8.86 %	583.30	1.32	2.26	1.71	4.586/4.464
21	12.28 %	609.42	1.44	2.44	1.70	4.833/4.927
22	19.36 %	727.31	1.53	2.92	1.91	6.736/4.943
23	59.87 %	755.58	1.04			
24	30.14 %	794.90	1.32	2.37	1.80	5.728/3.741
25	56.83 %	835.98	0.31	1.79	5.76	3.274/3.873
26	31.35 %	860.79	1.20	2.44	2.03	3.913/5.834
27	10.03 %	911.38	1.50	3.18	2.12	5.981/6.754
28	29.08 %	964.95	1.76	3.21	1.82	6.423/6.423
29	13.40 %	969.13	1.77	3.22	1.82	6.437/6.437
30	55.12 %	1120.99	0.53			
31	71.60 %	1461.20	0.53	2.26	4.30	1.869/7.180

Errors Quoted at 2 Sigma

ACTIVITY INFORMATION With MDA's for SLD00171.S0 HOT SPOT SURFACE

Name	Energy keV	Activity Flag	uCi/g	Error uCi/g	MDA uCi/g	Error uCi/g
Ac-228	93.35	<	5.701e-006	± 6.567e-007	5.701e-006	± 6.567
[illegible]8	129.03		7.300e-006	± 3.861e-006	5.975e-006	± 6.487
[illegible]8	209.39		9.442e-006	± 2.732e-006	3.633e-006	± 3.397
Ac-228	270.26		9.971e-006	± 2.879e-006	3.707e-006	± 4.01e
Ac-228	328.07		1.099e-005	± 3.2e-006	4.035e-006	± 4.319
Ac-228	338.42		8.793e-006	± 1.515e-006	1.347e-006	± 1.441
Ac-228	409.62		6.587e-006	± 3.951e-006	5.907e-006	± 6.366
Ac-228	463.10		9.325e-006	± 2.377e-006	2.359e-006	± 2.563
Ac-228	755.28		1.086e-005	± 6.602e-006	9.252e-006	± 9.794
Ac-228	794.79		8.765e-006	± 2.798e-006	3.027e-006	± 3.189
Ac-228	835.60		8.776e-006	± 5.072e-006	6.815e-006	± 7.158
Ac-228	911.16		9.662e-006	± 1.404e-006	5.587e-007	± 5.873
Ac-228	964.64	m	7.986e-006	± 2.471e-006	2.031e-006	± 2.146
Ac-228	968.97	m	9.995e-006	± 1.706e-006	7.230e-007	± 7.646
Weighted Average			9.351e-006	± 2.174e-006		
Bi-212	727.25		1.223e-005	± 2.702e-006	2.401e-006	± 2.553
Bi-214	609.31		3.277e-006	± 5.368e-007	3.300e-007	± 3.578
Bi-214	1120.27		1.652e-006	± 9.284e-007	1.292e-006	± 1.405
Weighted Average			2.878e-006	± 7.528e-007		
K-40	1460.75	*<	1.808e-006	± 2.01e-007	1.808e-006	± 2.01e
Pb-212	74.81	m	1.392e-005	± 3.135e-006	3.363e-006	± 3.973
Pb-212	77.11	m	1.212e-005	± 2.217e-006	1.836e-006	± 2.167
Pb-212	238.58	s	1.126e-005	± 1.796e-006	3.751e-007	± 4.098
Pb-212	300.03		7.641e-006	± 2.854e-006	3.929e-006	± 4.219
Weighted Average			1.168e-005	± 2.144e-006		
Pb-214	295.01		3.759e-006	± 7.369e-007	7.353e-007	± 7.902
Pb-214	351.87		3.613e-006	± 5.731e-007	4.431e-007	± 4.744
Weighted Average			3.663e-006	± 6.278e-007		
[illegible]26	185.99		7.770e-006	± 3.069e-006	4.474e-006	± 4.919
Th-234	92.58	*<	5.977e-006	± 6.884e-007	5.977e-006	± 6.884
Tl-208	277.28		2.354e-006	± 1.326e-006	2.014e-006	± 2.174
Tl-208	510.72		3.644e-006	± 7.575e-007	7.126e-007	± 7.771
Tl-208	583.02		3.211e-006	± 4.505e-007	2.234e-007	± 2.43e
Tl-208	860.30		3.261e-006	± 1.078e-006	1.162e-006	± 1.22e
Weighted Average			3.246e-006	± 6.259e-007		
U-235	143.79	*<	1.719e-006	± 1.865e-007	1.719e-006	± 1.865
Grand Total			5.082e-005	± 5.234e-006		

Activity (uCi) at Aug/25/2000 12:00:00PM
Divided by Sample Quantity 743.7 ± 74.37 g
Errors Quoted at 2 Sigma
MDA's Quoted at 1.645 Sigma

Flags	Meaning
s	Fitted Singlet
m	Fitted Multiplet
*	Forced MDA from identification
	MDA value

ATG Catalytics, Inc.
Aug/25/2000 3:21:03PM

HEADER INFORMATION in SLD00172.S0 HOT SPOT 3"

Identification		Acquisition	
r	: KSW	Started	: Aug/25/2000 3:04:07PM
ard	: 1	Stopped	: Aug/25/2000 3:20:48PM
Detector	: GEM-20200	True Time	: 1000.702 sec
Geometry	: Soil Marinell	Live Time	: 1000.000 sec
Sample	: SS-02	Dead Time	: 0.07 %
Channels	: 8192	Gross Count	: 38802 counts
		Gross Rate	: 38.802 cps

Sample
Sample Quantity 739 ± 73.9 g

Energy Calibration Jun/21/2000 10:32:38AM 00D01G01.S0
Resolution Calibration Jun/21/2000 10:34:57AM 00D01G01.S0
Efficiency Calibration Aug/21/2000 2:57:32PM 00D01G03.S0
Isotope Library SOIL.LIB Jun/30/2000 12:08:34PM

Rn daughters were not in equilibrium.
[signature] 8-25-00

ROI COUNT INFORMATION in SLD00172.S0 HOT SPOT 3"

ROI (#)	Channels Start	- Stop	Energy keV Start	- Stop	Net Counts	Background Counts	Gross Counts
1	295	304	73.82	76.07	349	269	618
	304	314	76.07	78.57	513	270	783
	345	354	86.32	88.57	202	294	495
4	356	364	89.07	91.07	172	246	418
5	362	378	90.57	94.58	308	416	724
6	369	378	92.32	94.58	179	248	427
7	509	522	127.34	130.59	152	358	510
8	567	583	141.84	145.85	20	398	418
9	738	752	184.61	188.11	158	310	468
10	830	843	207.62	210.87	180	249	429
11	949	961	237.38	240.38	2006	192	2199
12	960	970	240.13	242.63	238	147	385
13	1075	1090	268.89	272.64	148	160	308
14	1173	1187	293.39	296.89	239	130	369
15	1193	1206	298.39	301.65	104	113	217
16	1303	1316	325.90	329.15	105	122	227
17	1345	1359	336.40	339.91	413	122	534
18	1396	1415	349.16	353.91	471	104	575
19	1631	1644	407.92	411.17	72	76	148
20	1845	1860	461.43	465.18	123	62	185
21	2033	2049	508.44	512.44	202	75	277
22	2325	2341	581.45	585.45	624	56	680
23	2428	2443	607.20	610.95	327	46	373
24	2901	2916	725.46	729.21	115	51	166
25	3069	3077	767.46	769.46	31	18	49
26	3172	3186	793.21	796.71	64	27	91
27	3635	3654	908.95	913.70	386	32	418
28	3852	3865	963.20	966.45	65	12	76
29	3868	3883	967.20	970.95	180	13	193
30	5825	5861	1456.32	1465.31	21	9	30

ROI STATISTICS INFORMATION in SLD001/2.SO HOT SPOT 3"

ROI (#)	Error	Centroid keV	FWHM keV	FWTM keV	FWTM/FWHM ratio	H/L ratio
1	17.70 %	74.97	0.91	1.66	1.82	3.324/3.324
	13.81 %	77.27	0.91	1.67	1.82	3.332/3.332
	27.86 %	87.38	0.92	1.68	1.82	3.369/3.369
4	30.26 %	90.11	0.93	1.69	1.82	3.378/3.378
5	21.92 %	93.30	1.71			
6	27.84 %	93.37	0.93	1.70	1.82	3.390/3.390
7	38.88 %	129.12	0.95	2.50	2.64	3.524/6.489
8	282.79 %	143.68	0.46	1.59	3.46	3.398/2.968
9	35.43 %	186.04	0.68	1.93	2.86	4.304/3.411
10	28.97 %	209.48	0.89			
11	8.37 %	238.85	1.07	1.96	1.82	3.912/3.912
12	28.13 %	241.45	1.08	1.96	1.82	3.921/3.921
13	29.23 %	270.39	1.41	2.42	1.72	5.121/4.567
14	18.74 %	295.41	1.11	1.93	1.73	3.772/3.951
15	35.09 %	300.16	0.94	1.87	1.98	3.196/4.264
16	35.51 %	328.13	0.99	1.89	1.91	2.789/4.774
17	12.41 %	338.47	1.19	2.09	1.76	3.738/4.622
18	11.06 %	352.05	1.21	2.56	2.12	4.562/5.688
19	41.31 %	409.61	1.25	2.62	2.10	5.074/5.411
20	25.66 %	463.22	1.29	1.97	1.52	3.827/4.049
21	18.55 %	510.88	1.23	2.28	1.86	3.982/5.156
22	8.70 %	583.33	1.06	2.48	2.34	4.584/5.332
23	12.54 %	609.37	1.09	2.60	2.38	5.039/5.349
24	25.68 %	727.37	1.52	2.73	1.80	5.109/5.827
25	52.81 %	768.36	1.16			
26	33.95 %	794.87	0.75	2.95	3.93	6.756/5.055
27	10.99 %	911.28	1.49	2.90	1.94	5.651/5.967
28	32.50 %	964.83	1.76	3.21	1.82	6.423/6.423
29	16.29 %	969.05	1.77	3.22	1.82	6.437/6.437
30	60.39 %	1460.19	0.59	3.30	5.61	7.024/6.194

Errors Quoted at 2 Sigma

ACTIVITY INFORMATION with MDA's for SLD001/2.50 HOT SPOT 3"

Name	Energy keV	Activity Flag	uCi/g	Error uCi/g	MDA uCi/g	Error uCi/g
Ac-228	89.96	m	1.341e-005	± 4.345e-006	5.919e-006	± 6.867
A[illegible]8	93.35	m	7.956e-006	± 2.397e-006	3.378e-006	± 3.891
A[illegible]8	129.03		9.563e-006	± 3.86e-006	5.727e-006	± 6.218
Ac-228	209.39		8.900e-006	± 2.758e-006	3.769e-006	± 4.146
Ac-228	270.26		9.340e-006	± 2.911e-006	3.885e-006	± 4.201
Ac-228	328.07		8.322e-006	± 3.086e-006	4.276e-006	± 4.576
Ac-228	338.42		9.431e-006	± 1.546e-006	1.234e-006	± 1.321
Ac-228	409.62		1.082e-005	± 4.618e-006	6.449e-006	± 6.952
Ac-228	463.10		9.655e-006	± 2.69e-006	3.108e-006	± 3.376
Ac-228	794.79		7.884e-006	± 2.802e-006	3.312e-006	± 3.489
Ac-228	911.16		8.510e-006	± 1.294e-006	6.399e-007	± 6.727
Ac-228	964.64	m	7.498e-006	± 2.562e-006	2.161e-006	± 2.284
Ac-228	968.97	m	7.004e-006	± 1.36e-006	7.558e-007	± 7.993
Weighted Average			8.586e-006	± 2.021e-006		
Bi-212	727.25		9.060e-006	± 2.518e-006	2.841e-006	± 3.021
Bi-214	609.31		3.204e-006	± 5.311e-007	3.374e-007	± 3.659
Bi-214	768.35		3.495e-006	± 1.882e-006	2.531e-006	± 2.674
Weighted Average			3.232e-006	± 6.511e-007		
K-40	1460.75	*	1.883e-006	± 1.156e-006	1.529e-006	± 1.701
Pb-212	74.81	m	1.416e-005	± 3.013e-006	3.209e-006	± 3.792
Pb-212	77.11	m	1.123e-005	± 2.039e-006	1.735e-006	± 2.047
Pb-212	87.19	m	9.100e-006	± 2.748e-006	3.720e-006	± 4.339
Pb-212	238.58	m	1.013e-005	± 1.394e-006	3.393e-007	± 3.707
Pb-212	300.03		8.029e-006	± 2.947e-006	4.050e-006	± 4.348
Weighted Average			1.072e-005	± 1.919e-006		
Pb-214	241.92	m	7.075e-006	± 2.135e-006	1.755e-006	± 1.916
Pb-214	295.01		3.178e-006	± 6.865e-007	7.442e-007	± 7.997
Pb-214	351.87		3.709e-006	± 5.711e-007	3.950e-007	± 4.228
W[illegible]ted Average			3.943e-006	± 7.49e-007		
Ra-226	185.99		9.172e-006	± 3.403e-006	4.932e-006	± 5.423
Th-234	92.58	*	1.419e-005	± 3.515e-006	4.498e-006	± 5.182
Tl-208	510.72		3.520e-006	± 7.576e-007	7.477e-007	± 8.154
Tl-208	583.02		3.165e-006	± 4.407e-007	1.905e-007	± 2.072
Weighted Average			3.239e-006	± 5.02e-007		
U-235	143.79	*<	1.635e-006	± 1.773e-007	1.635e-006	± 1.773
Grand Total			6.403e-005	± 6.373e-006		

Activity (uCi) at Aug/25/2000 12:00:00PM
Divided by Sample Quantity 739 ± 73.9 g
Errors Quoted at 2 Sigma
MDA's Quoted at 1.645 Sigma

Flags	Meaning
m	Fitted Multiplet
*	Forced MDA from identification
<	MDA value

HEADER INFORMATION in SLD00169.S0 Hot Spot 6"

Identification		Acquisition	
r	: KSW	Started	: Aug/25/2000 12:11:01PM
rd	: 1	Stopped	: Aug/25/2000 12:27:41PM
Detector	: GEM-20200	True Time	: 1000.683 sec
Geometry	: Soil Marinell	Live Time	: 1000.000 sec
Sample	: SS-03	Dead Time	: 0.07 %
Channels	: 8192	Gross Count	: 37700 counts
		Gross Rate	: 37.7 cps

Sample
Sample Quantity 704.7 ± 70.47 g

Energy Calibration Jun/21/2000 10:32:38AM 00D01G01.S0
Resolution Calibration Jun/21/2000 10:34:57AM 00D01G01.S0
Efficiency Calibration Aug/21/2000 2:57:32PM 00D01G03.S0
Isotope Library SOIL.LIB Jun/30/2000 12:08:34PM

Rn: daughters were not in equilibrium 8-25-00

ROI COUNT INFORMATION in SLD00169.S0 Hot Spot 6"

ROI (#)	Channels Start	- Stop	Energy keV Start	- Stop	Net Counts	Background Counts	Gross Counts
1	295	304	73.82	76.07	345	269	614
	304	314	76.07	78.57	512	273	786
	356	364	89.07	91.07	173	229	402
4	362	378	90.57	94.58	190	466	656
5	369	377	92.32	94.33	183	215	398
6	510	522	127.59	130.59	97	342	439
7	567	583	141.84	145.85	-15	410	395
8	733	749	183.36	187.36	145	318	463
9	831	843	207.87	210.87	154	221	375
10	949	961	237.38	240.38	1834	163	1996
11	960	970	240.13	242.63	255	124	379
12	1074	1085	268.64	271.39	125	136	261
13	1104	1117	276.14	279.39	68	144	212
14	1175	1186	293.89	296.64	243	87	330
15	1196	1205	299.14	301.40	115	70	185
16	1307	1317	326.90	329.40	77	103	180
17	1345	1362	336.40	340.66	393	122	515
18	1400	1416	350.16	354.16	417	92	509
19	1844	1858	461.18	464.68	108	51	159
20	2034	2051	508.69	512.94	202	77	279
21	2324	2342	581.20	585.70	620	67	687
22	2428	2445	607.20	611.45	312	41	353
23	2901	2916	725.46	729.21	143	38	181
24	3175	3185	793.96	796.46	46	24	70
25	3436	3448	859.21	862.21	63	11	75
26	3633	3654	908.45	913.70	367	18	385
27	3853	3865	963.45	966.45	49	12	61
28	3868	3883	967.20	970.95	190	15	204
29	5825	5861	1456.32	1465.31	38	9	47

ROI STATISTICS INFORMATION in SLD00169.S0 Hot Spot 6"

ROI (#)	Error	Centroid keV	FWHM keV	FWTM keV	FWTM/FWHM ratio	H/L ratio
1	17.63 %	74.99	0.91	1.66	1.82	3.324/3.324
	13.48 %	77.26	0.91	1.67	1.82	3.332/3.332
	35.35 %	90.07	0.93	1.69	1.82	3.378/3.378
4	35.34 %	93.36	0.98	2.07	2.12	3.640/4.646
5	31.46 %	93.34	0.93	1.70	1.82	3.390/3.390
6	57.56 %	129.06	0.74	1.52	2.05	3.823/2.266
7	2000.00 %	143.84				
8	38.52 %	186.33	0.81	2.01	2.47	3.201/4.849
9	31.71 %	209.42	0.90	1.36	1.52	2.603/2.852
10	8.98 %	238.85	1.07	1.96	1.82	3.912/3.912
11	27.04 %	241.46	1.08	1.96	1.82	3.921/3.921
12	31.76 %	270.42	1.21	1.80	1.48	3.420/3.770
13	55.67 %	277.68	0.57	1.58	2.76	2.202/4.105
14	14.97 %	295.30	1.13	2.06	1.82	4.113/4.113
15	24.42 %	300.26	1.13	2.07	1.82	4.130/4.130
16	43.95 %	328.17	0.90	1.72	1.91	4.088/2.803
17	12.86 %	338.48	1.01	2.11	2.09	4.112/4.316
18	11.75 %	352.04	1.08	2.10	1.95	4.281/4.122
19	26.84 %	463.13	0.70	2.34	3.37	5.015/4.340
20	18.73 %	510.88	1.03	2.78	2.70	4.911/6.190
21	8.85 %	583.30	1.21	2.62	2.17	4.873/5.621
22	12.75 %	609.46	1.49	2.46	1.65	4.147/5.707
23	20.77 %	727.35	1.67	2.99	1.80	6.784/5.190
24	42.38 %	795.20	0.95	1.78	1.88	2.825/4.309
25	23.75 %	860.75	1.67	3.04	1.82	6.072/6.072
26	10.92 %	911.36	1.84	3.26	1.77	6.301/6.734
27	21.89 %	965.02	1.76	3.21	1.82	6.423/6.423
28	10.24 %	968.99	1.77	3.22	1.82	6.437/6.437
29	39.74 %	1462.06	1.64	2.74	1.67	6.473/4.474

Errors Quoted at 2 Sigma

ACTIVITY INFORMATION with MDA's for SLD00169.SO Hot Spot 6"

Name	Energy keV	Activity Flag	uCi/g	Error uCi/g	MDA uCi/g	Error uCi/g
Ac-228	89.96	m	1.421e-005	± 5.287e-006	5.999e-006	± 6.96e
Ac-228	93.35	m	8.548e-006	± 2.864e-006	3.306e-006	± 3.80e
Ac-228	129.03		6.424e-006	± 3.763e-006	5.871e-006	± 6.37e
Ac-228	209.39		7.992e-006	± 2.682e-006	3.730e-006	± 4.103
Ac-228	270.26		8.299e-006	± 2.785e-006	3.765e-006	± 4.072
Ac-228	328.07		6.355e-006	± 2.875e-006	4.149e-006	± 4.441
Ac-228	338.42		9.413e-006	± 1.575e-006	1.299e-006	± 1.39e
Ac-228	463.10		8.917e-006	± 2.582e-006	2.967e-006	± 3.223
Ac-228	794.79		5.919e-006	± 2.585e-006	3.308e-006	± 3.484
Ac-228	911.16		8.495e-006	± 1.288e-006	5.139e-007	± 5.402
Ac-228	964.64	m	6.022e-006	± 1.464e-006	2.283e-006	± 2.413
Ac-228	968.97	m	7.726e-006	± 1.137e-006	8.354e-007	± 8.834
Weighted Average			8.260e-006	± 1.944e-006		
Bi-212	727.25		1.180e-005	± 2.754e-006	2.610e-006	± 2.775
Bi-214	609.31		3.206e-006	± 5.365e-007	3.358e-007	± 3.641
K-40	1460.75	*	3.596e-006	± 1.484e-006	1.606e-006	± 1.785
Pb-212	238.58	m	9.706e-006	± 1.372e-006	3.287e-007	± 3.591
Pb-212	300.03	m	9.343e-006	± 2.492e-006	3.376e-006	± 3.624
Weighted Average			9.680e-006	± 1.455e-006		
Pb-214	74.84	m	2.365e-005	± 5.02e-006	5.416e-006	± 6.399
Pb-214	77.11	m	1.895e-005	± 3.394e-006	2.944e-006	± 3.474
Pb-214	241.92	m	7.933e-006	± 2.313e-006	1.700e-006	± 1.855
Pb-214	295.01	m	3.390e-006	± 6.247e-007	6.445e-007	± 6.926
Pb-214	351.87		3.446e-006	± 5.477e-007	3.905e-007	± 4.18e
Weighted Average			7.563e-006	± 1.392e-006		
Ra-226	185.99		8.867e-006	± 3.552e-006	5.235e-006	± 5.757
Th-234	92.58	*	9.151e-006	± 3.402e-006	4.981e-006	± 5.738
Tl-208	277.28		2.556e-006	± 1.449e-006	2.208e-006	± 2.383
Tl-208	510.72		3.681e-006	± 7.977e-007	7.968e-007	± 8.688
Tl-208	583.02		3.301e-006	± 4.628e-007	2.162e-007	± 2.352
Tl-208	860.30	s	3.371e-006	± 8.753e-007	9.804e-007	± 1.029
Weighted Average			3.335e-006	± 6.262e-007		
U-235	143.79	*<	1.739e-006	± 1.886e-007	1.739e-006	± 1.886
Grand Total			6.546e-005	± 6.519e-006		

Activity (uCi) at Aug/25/2000 12:00:00PM
Divided by Sample Quantity 704.7 ± 70.47 g
Errors Quoted at 2 Sigma
MDA's Quoted at 1.645 Sigma

Flags	Meaning
s	Fitted Singlet
m	Fitted Multiplet
*	Forced MDA from identification
	MDA value

ATG Catalytics, Inc.
Aug/25/2000 2:39:50PM

HEADER INFORMATION in SLD00170.S0 Hot Spot 8"

Identification		Acquisition	
r	: KSW	Started	: Aug/25/2000 2:22:56PM
rd	: 1	Stopped	: Aug/25/2000 2:39:37PM
Detector	: GEM-20200	True Time	: 1000.720 sec
Geometry	: Soil Marinell	Live Time	: 1000.000 sec
Sample	: SS-04	Dead Time	: 0.07 %
Channels	: 8192	Gross Count	: 40031 counts
		Gross Rate	: 40.031 cps

Sample
Sample Quantity 685 ± 68.5 g

Energy Calibration Jun/21/2000 10:32:38AM 00D01G01.S0
Resolution Calibration Jun/21/2000 10:34:57AM 00D01G01.S0
Efficiency Calibration Aug/21/2000 2:57:32PM 00D01G03.S0
Isotope Library SOIL.LIB Jun/30/2000 12:08:34PM

Rn daughters were not in equilibrium.
[signature] 8-25-00

ROI COUNT INFORMATION in SLD00170.S0 Hot Spot 8"

ROI (#)	Channels Start	Channels Stop	Energy keV Start	Energy keV Stop	Net Counts	Background Counts	Gross Counts
1	295	304	73.82	76.07	335	303	638
	304	314	76.07	78.57	528	300	828
	334	341	83.57	85.32	85	195	280
4	345	354	86.32	88.57	229	251	480
5	356	364	89.07	91.07	165	231	397
6	362	378	90.57	94.58	317	419	736
7	368	377	92.07	94.33	223	264	487
8	511	523	127.84	130.84	159	329	488
9	567	583	141.84	145.85	14	437	451
10	610	625	152.60	156.35	113	339	452
11	735	750	183.86	187.61	157	339	496
12	830	843	207.62	210.87	189	248	437
13	949	961	237.38	240.38	2153	162	2314
14	960	970	240.13	242.63	246	133	379
15	1075	1087	268.89	271.89	174	130	304
16	1102	1115	275.64	278.89	102	154	256
17	1175	1188	293.89	297.14	229	127	356
18	1194	1205	298.64	301.40	125	104	229
19	1303	1322	325.90	330.65	100	164	264
20	1345	1361	336.40	340.41	381	148	529
21	1400	1416	350.16	354.16	416	124	540
22	1847	1861	461.93	465.43	93	71	163
23	2035	2050	508.94	512.69	212	80	292
24	2324	2340	581.20	585.20	590	66	656
25	2429	2445	607.45	611.45	296	70	366
26	2901	2915	725.46	728.96	139	32	170
27	3173	3187	793.46	796.96	72	16	88
28	3339	3348	834.96	837.21	26	9	35
29	3439	3449	859.96	862.46	62	14	76
30	3635	3654	908.95	913.70	407	22	429
31	3853	3865	963.45	966.45	63	8	72
32	3868	3883	967.20	970.95	222	8	230
33	5825	5861	1456.32	1465.31	10	14	24

ROI STATISTICS INFORMATION in SLD001/0.50 Hot Spot 8"

ROI (#)	Error	Centroid keV	FWHM keV	FWTM keV	FWTM/FWHM ratio	H/L ratio
1	14.65 %	74.98	0.91	1.66	1.82	3.324/3.324
	10.77 %	77.28	0.91	1.67	1.82	3.332/3.332
	54.02 %	84.[illegible]	0.92	1.68	1.82	3.358/3.358
4	24.58 %	87.42	0.92	1.69	1.82	3.369/3.369
5	31.53 %	90.05	0.93	1.69	1.82	3.378/3.378
6	21.48 %	93.30	1.40			
7	25.81 %	93.26	0.93	1.70	1.82	3.390/3.390
8	35.93 %	129.23	0.94	1.55	1.65	3.094/3.113
9	422.66 %	143.84				
10	49.87 %	154.25	0.58	2.00	3.42	6.124/1.860
11	36.86 %	186.16	1.32	1.83	1.39	3.477/3.848
12	27.66 %	209.40	1.04	1.94	1.87	2.892/4.882
13	7.75 %	238.87	1.07	1.96	1.82	3.912/3.912
14	26.55 %	241.44	1.08	1.96	1.82	3.921/3.921
15	23.95 %	270.42	0.90	2.29	2.54	5.111/4.056
16	39.70 %	277.56	0.80	1.87	2.35	3.953/3.539
17	19.24 %	295.44	0.85	1.81	2.13	3.476/3.746
18	29.31 %	300.25	0.83	1.62	1.96	3.219/3.276
19	41.38 %	327.94	0.42	1.71	4.10	3.817/3.036
20	13.65 %	338.47	1.07	1.90	1.77	4.147/3.437
21	12.39 %	352.08	1.09	1.98	1.83	3.516/4.421
22	33.04 %	463.33	1.06	1.88	1.78	3.421/4.079
23	18.20 %	510.97	1.33	2.32	1.75	4.779/4.508
24	9.12 %	583.40	1.08	2.38	2.22	4.713/4.817
25	14.09 %	609.61	1.21	2.54	2.09	4.957/5.188
26	20.50 %	727.61	1.06	1.73	1.64	3.446/3.481
27	28.59 %	794.88	0.61	2.47	4.05	5.154/4.746
28	51.02 %	836.16	0.76	1.70	2.25	2.519/4.281
29	30.80 %	861.38	1.18			
30	10.44 %	911.43	1.60	3.02	1.89	5.722/6.348
31	31.22 %	964.99	1.76	3.21	1.82	6.423/6.423
32	14.60 %	969.11	1.77	3.22	1.82	6.437/6.437
33	121.57 %	1460.82				

s Quoted at 2 Sigma

"ACTIVITY INFORMATION with MDA's for SLD001/0.50 Hot Spot 8"

Name	Energy keV	Activity Flag	uCi/g	Error uCi/g	MDA uCi/g	Error uCi/g
Ac-228	89.96	m	1.397e-005	± 4.695e-006	6.201e-006	± 7.195
A[illegible]8	93.35	m	1.071e-005	± 3.028e-006	3.762e-006	± 4.335
[illegible]8	129.03		[illegible].082e-005	± 4.062e-006	5.924e-006	± 6.433
Ac-228	209.39		1.010e-005	± 3.007e-006	4.054e-006	± 4.46e
Ac-228	270.26		1.185e-005	± 3.113e-006	3.796e-006	± 4.105
Ac-228	328.07		8.530e-006	± 3.645e-006	5.313e-006	± 5.687
Ac-228	338.42		9.399e-006	± 1.631e-006	1.462e-006	± 1.565
Ac-228	463.10		7.860e-006	± 2.734e-006	3.549e-006	± 3.856
Ac-228	794.79		9.502e-006	± 2.896e-006	2.871e-006	± 3.025
Ac-228	835.60		9.717e-006	± 5.062e-006	6.228e-006	± 6.541
Ac-228	911.16		9.681e-006	± 1.434e-006	5.835e-007	± 6.134
Ac-228	964.64	m	7.920e-006	± 2.611e-006	2.016e-006	± 2.131
Ac-228	968.97	m	9.289e-006	± 1.674e-006	6.560e-007	± 6.937
Weighted Average			9.680e-006	± 2.245e-006		
Bi-212	727.25		1.180e-005	± 2.724e-006	2.454e-006	± 2.609
Bi-214	609.31		3.137e-006	± 5.577e-007	4.399e-007	± 4.769
K-40	1460.75	*<	1.962e-006	± 2.182e-007	1.962e-006	± 2.182
Pb-212	74.81	m	1.464e-005	± 2.756e-006	3.664e-006	± 4.329
Pb-212	77.11	m	1.248e-005	± 1.994e-006	1.967e-006	± 2.32e
Pb-212	87.19	m	1.116e-005	± 3.035e-006	3.716e-006	± 4.334
Pb-212	238.58	m	1.172e-005	± 1.57e-006	3.371e-007	± 3.682
Pb-212	300.03		1.042e-005	± 3.252e-006	4.202e-006	± 4.511
Weighted Average			1.217e-005	± 2.002e-006		
Pb-214	241.92	m	7.889e-006	± 2.265e-006	1.806e-006	± 1.971
Pb-214	295.01		3.286e-006	± 7.24e-007	7.938e-007	± 8.53e
Pb-214	351.87		3.534e-006	± 5.787e-007	4.634e-007	± 4.961
Weighted Average			3.969e-006	± 7.748e-007		
Ra-226	185.99		9.854e-006	± 3.791e-006	5.555e-006	± 6.109
Th-234	92.58	*	1.574e-005	± 3.836e-006	4.872e-006	± 5.614
Tl-208	84.79	m	2.330e-005	± 1.288e-005	1.861e-005	± 2.18e
Tl-208	277.28		3.954e-006	± 1.627e-006	2.343e-006	± 2.529
Tl-208	510.72		3.982e-006	± 8.448e-007	8.326e-007	± 9.079
Tl-208	583.02		3.227e-006	± 4.58e-007	2.222e-007	± 2.416
Weighted Average			3.622e-006	± 6.355e-007		
U-235	143.79	*<	1.846e-006	± 2.002e-007	1.846e-006	± 2.002
Grand Total			6.996e-005	± 6.845e-006		

Activity (uCi) at Aug/25/2000 12:00:00PM
Divided by Sample Quantity 685 ± 68.5 g
Errors Quoted at 2 Sigma
MDA's Quoted at 1.645 Sigma

PEAKS NOT IDENTIFIED in SLD001170.S0 Hot Spot 8"

ROI (#)	Centroid keV	Net Count Rate Flag	cps	Error cps	MDA Rate cps	Error cps
10	154.25		0.1128	± 0.05626	0.08840	
	861.38		0.06170	± 0.01901	0.02030	

Errors Quoted at 2 Sigma

Flags	Meaning
m	Fitted Multiplet
*	Forced MDA from identification
<	MDA value

ATG Catalytics, Inc.
Aug/25/2000 3:40:06PM

HEADER INFORMATION in SLD00173.S0 REFERENCE POINT #1

Identification
- ...r : KSW
- ...rd : 1
- Detector : GEM-20200
- Geometry : Soil Marinell
- Sample : SS-05
- Channels : 8192

Acquisition
- Started : Aug/25/2000 3:23:13PM
- Stopped : Aug/25/2000 3:39:53PM
- True Time : 1000.229 sec
- Live Time : 1000.000 sec
- Dead Time : 0.02 %
- Gross Count : 11269 counts
- Gross Rate : 11.269 cps

Sample
Sample Quantity 620 ± 62 g

Energy Calibration Jun/21/2000 10:32:38AM 00D01G01.S0
Resolution Calibration Jun/21/2000 10:34:57AM 00D01G01.S0
Efficiency Calibration Aug/21/2000 2:57:32PM 00D01G03.S0
Isotope Library SOIL.LIB Jun/30/2000 12:08:34PM

Radaughters were not in equilibrium
8-25-00

ROI COUNT INFORMATION in SLD00173.S0 REFERENCE POINT #1

ROI (#)	Channels Start	Stop	Energy keV Start	Stop	Net Counts	Background Counts	Gross Counts
1	295	303	73.82	75.82	112	52	164
[illegible]	305	313	76.32	78.32	154	48	202
	344	353	86.07	88.32	69	83	152
4	362	378	90.57	94.58	32	178	210
5	567	583	141.84	145.85	16	112	128
6	740	750	185.11	187.61	58	55	113
7	949	961	237.38	240.38	504	44	548
8	964	972	241.13	243.13	62	26	88
9	1174	1185	293.64	296.39	69	26	95
10	1196	1204	299.14	301.15	28	22	50
11	1346	1359	336.65	339.91	86	45	131
12	1402	1415	350.66	353.91	129	20	149
13	1849	1857	462.43	464.43	28	13	41
14	2039	2048	509.94	512.19	48	16	64
15	2325	2340	581.45	585.20	146	14	160
16	2431	2442	607.95	610.70	100	17	117
17	3639	3653	909.95	913.45	85	13	98
18	3871	3883	967.95	970.95	54	5	59
19	5825	5861	1456.32	1465.31	15	5	20

ROI STATISTICS INFORMATION in SLD001/3.SU REFERENCE POINT #1

ROI (#)	Error	Centroid keV	FWHM keV	FWTM keV	FWTM/FWHM ratio	H/L ratio
1	37.72 %	74.80	0.91	1.66	1.82	3.323/3.323
[illegible]	31.19 %	77.25	0.91	1.67	1.82	3.332/3.332
[illegible]	4[illegible].43 %	87.44	1.21	1.86	1.54	2.548/4.893
4	125.15 %	92.87	0.38	1.93	5.03	4.771/2.955
5	196.18 %	143.84				
6	44.69 %	186.15	0.80	1.73	2.16	3.841/3.060
7	15.42 %	238.86	1.07	1.96	1.82	3.912/3.912
8	50.67 %	242.20	1.08	1.96	1.82	3.924/3.924
9	32.12 %	295.36	0.94	1.86	1.98	3.233/4.191
10	59.59 %	300.25	1.09	1.71	1.57	3.326/3.531
11	30.76 %	338.54	0.75	1.94	2.57	3.441/4.300
12	20.07 %	352.05	1.09	2.16	1.98	5.104/3.522
13	51.56 %	463.19	1.22			
14	37.27 %	511.05	0.78	2.02	2.58	3.994/4.092
15	18.14 %	583.32	1.13	2.53	2.23	4.214/5.918
16	23.09 %	609.38	1.06	2.32	2.20	4.455/4.826
17	24.99 %	911.55	1.56	2.73	1.75	5.183/5.720
18	29.79 %	969.15	0.84	2.31	2.74	4.626/4.600
19	64.55 %	1460.36	0.36	2.59	7.12	3.635/6.732

Errors Quoted at 2 Sigma

ACTIVITY INFORMATION with MDA's for SLD001/3.SO REFERENCE POINT #1

Name	Energy keV	Activity Flag	uCi/g	Error uCi/g	MDA uCi/g	Error uCi/g
Ac-228	338.42		2.349e-006	± 7.652e-007	9.225e-007	± 9.871
A- `8	463.10		2.665e-006	± 1.404e-006	1.804e-006	± 1.96e
8	911.16		2.221e-006	± 6.022e-007	5.205e-007	± 5.472
Ac-228	968.97		2.490e-006	± 7.87e-007	6.163e-007	± 6.517
Weighted Average			2.352e-006	± 7.355e-007		
Bi-214	609.31		1.172e-006	± 2.988e-007	2.546e-007	± 2.761
K-40	1460.75	*	1.663e-006	± 1.089e-006	1.375e-006	± 1.529
Pb-212	238.58	m	3.032e-006	± 5.731e-007	2.024e-007	± 2.211
Pb-212	300.03		2.624e-006	± 1.589e-006	2.248e-006	± 2.414
Weighted Average			3.003e-006	± 6.566e-007		
Pb-214	74.84	m	8.824e-006	± 3.488e-006	2.846e-006	± 3.363
Pb-214	77.11	m	6.454e-006	± 2.152e-006	1.471e-006	± 1.735
Pb-214	87.19		5.989e-006	± 2.751e-006	3.914e-006	± 4.564
Pb-214	241.92	m	2.187e-006	± 1.134e-006	9.368e-007	± 1.022
Pb-214	295.01		1.089e-006	± 3.69e-007	4.226e-007	± 4.541
Pb-214	351.87		1.215e-006	± 2.763e-007	2.188e-007	± 2.342
Weighted Average			2.748e-006	± 8.661e-007		
Ra-226	185.99		4.027e-006	± 1.854e-006	2.584e-006	± 2.841
Th-234	92.58	*<	3.592e-006	± 4.143e-007	3.592e-006	± 4.143
Tl-208	510.72		9.963e-007	± 3.869e-007	4.425e-007	± 4.825
Tl-208	583.02		8.803e-007	± 1.862e-007	1.231e-007	± 1.339
Weighted Average			9.044e-007	± 2.244e-007		
U-235	143.79	*<	1.061e-006	± 1.151e-007	1.061e-006	± 1.151
Grand Total			1.587e-005	± 2.546e-006		

? itv (uCi) at Aug/25/2000 12:00:00PM
Divided by Sample Quantity 620 ± 62 g
Errors Quoted at 2 Sigma
MDA's Quoted at 1.645 Sigma

Flags	Meaning
m	Fitted Multiplet
*	Forced MDA from identification
<	MDA value

AIG Catalytics, Inc.
Aug/25/2000 3:59:15PM

HEADER INFORMATION in SLD00174.S0 REFERENCE POINT #2

Identification		Acquisition	
User	: KSW	Started	: Aug/25/2000 3:42:22PM
M[illegible]d	: 1	Stopped	: Aug/25/2000 3:59:03PM
[illegible]ctor	: GEM-20200	True Time	: 1000.218 sec
[illegible]etry	: Soil Marinell	Live Time	: 1000.000 sec
Sample	: SS-06	Dead Time	: 0.02 %
Channels	: 8192	Gross Count	: 10597 counts
		Gross Rate	: 10.597 cps

Sample
Sample Quantity 643 ± 64.3 g

Energy Calibration Jun/21/2000 10:32:38AM 00D01G01.S0
Resolution Calibration Jun/21/2000 10:34:57AM 00D01G01.S0
Efficiency Calibration Aug/21/2000 2:57:32PM 00D01G03.S0
Isotope Library SOIL.LIB Jun/30/2000 12:08:34PM

Rn daughters were not in equilibrium
KW 8-28-00

ROI (#)	Channels Start	- Stop	Energy keV Start	- Stop	Net Counts	Background Counts	Gross Counts
1	296	304	74.07	76.07	73	72	145
2	304	312	76.07	78.07	126	53	179
	345	353	86.32	88.32	66	48	115
	357	364	89.32	91.07	54	40	94
5	362	378	90.57	94.58	74	99	173
6	368	376	92.07	94.08	65	41	107
7	567	583	141.84	145.85	-15	128	113
8	736	752	184.11	188.11	45	85	130
9	948	962	237.13	240.63	349	167	516
10	1076	1085	269.14	271.39	38	33	71
11	1176	1186	294.14	296.64	69	31	100
12	1307	1315	326.90	328.90	27	17	44
13	1348	1359	337.15	339.91	90	30	120
14	1402	1414	350.66	353.66	126	33	158
15	2039	2049	509.94	512.44	41	20	61
16	2325	2341	581.45	585.45	147	17	164
17	2431	2442	607.95	610.70	68	16	84
18	2907	2914	726.96	728.71	25	10	35
19	3638	3653	909.70	913.45	98	10	108
20	3871	3882	967.95	970.70	52	7	59
21	5825	5861	1456.32	1465.31	16	0	16

ACTIVITY INFORMATION WITH MDA'S FOR SLD0017[illegible] REFERENCE POINT #2

Name	Energy keV	Activity Flag	uCi/g	Error uCi/g	MDA uCi/g	Error uCi/g
Ac-228	89.96	m	4.862e-006	± 1.87e-006	2.880e-006	± 3.341
[illegible]28	93.35	m	3.350e-006	± 1.121e-006	1.679e-006	± 1.935
[illegible]28	270.26		2.757e-006	± 1.509e-006	2.13[illegible]e-006	± 2.309
Ac-228	328.07		2.443e-006	± 1.444e-006	1.993e-006	± 2.133
Ac-228	338.42		2.364e-006	± 6.915e-007	7.406e-007	± 7.925
Ac-228	911.16		2.493e-006	± 6.089e-007	4.339e-007	± 4.561
Ac-228	968.97		2.311e-006	± 7.66e-007	6.777e-007	± 7.167
Weighted Average			2.612e-006	± 8.28e-007		
Bi-212	727.25		2.232e-006	± 1.246e-006	1.607e-006	± 1.708
Bi-214	609.31		7.710e-007	± 2.4e-007	2.376e-007	± 2.577
K-40	1460.75	*	1.669e-006	± 8.547e-007	2.822e-007	± 3.139
Pb-212	238.58		2.028e-006	± 3.755e-007	3.640e-007	± 3.977
Pb-214	74.84	m	5.500e-006	± 1.907e-006	3.163e-006	± 3.737
Pb-214	77.11	m	5.122e-006	± 1.267e-006	1.495e-006	± 1.764
Pb-214	87.19	m	5.577e-006	± 1.969e-006	2.946e-006	± 3.436
Pb-214	295.01		1.059e-006	± 3.682e-007	4.367e-007	± 4.693
Pb-214	351.87		1.136e-006	± 2.779e-007	2.646e-007	± 2.833
Weighted Average			2.269e-006	± 6.455e-007		
Ra-226	185.99	*<	3.054e-006	± 3.359e-007	3.054e-006	± 3.359
Th-234	92.58	*	3.920e-006	± 1.813e-006	2.610e-006	± 3.008
Tl-208	510.61		8.590e-007	± 3.864e-007	4.881e-007	± 5.322
Tl-208	583.02		8.570e-007	± 1.825e-007	1.276e-007	± 1.388
Weighted Average			8.574e-007	± 2.233e-007		
U-235	143.79	*<	1.087e-006	± 1.179e-007	1.087e-006	± 1.179
[illegible]d Total			1.636e-005	± 2.63e-006		

Activity (uCi) at Aug/25/2000 12:00:00PM
Divided by Sample Quantity 643 ± 64.3 g
Errors Quoted at 2 Sigma
MDA's Quoted at 1.645 Sigma

Flags	Meaning
m	Fitted Multiplet
*	Forced MDA from identification
<	MDA value