RESULTS OF
LIMITED SOIL SAMPLING

RANCHO SIMI PROPERTY
APN 6850-130-180
SIMI VALLEY, CALIFORNIA

NOVEMBER 3, 2000

PREPARED ON BEHALF OF:

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PROJECT # 660033.0500

This report, including all related activities, was prepared and/or conducted by Harding ESE under the direct supervision of John Kim, Chief Engineer and Certified Environmental Manager (CEM), for the exclusive use of the client as it pertains to the Rancho Simi Property (APN 6850-130-180). Our professional services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by other hydrogeologists and engineers practicing in this field. No other warranty, expressed or implied is made as to the professional advice in this report. *Any use of or reliance on these reports by a third party shall be at such a party's sole risk.*

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1.0 INTRODUCTION AND PROJECT OBJECTIVE

This final report is being submitted by Harding ESE to GreenPark Ranch, LLC (GreenPark). Specifically, this report provides results of a limited soil sampling site investigation activities performed at the Rancho Simi Property; APN 6850-130-180 (Property) in Simi Valley, California. The purpose of the investigation was to determine if operations conducted at the adjacent "Rocketdyne" facility had impacted on-site soils, based on surface run-off carrying radionuclides to the site. Results of the investigation would determine if further site investigation is necessary for the subject site.

2.0 SITE INFORMATION

2.1 SITE LOCATION AND DESCRIPTION

The Property consists of approximately 720 acres within Sections 27, 35, and 36, Township 2 North, Range 18 West in Simi Valley, Ventura County, California (Figure 1). The Property is bounded by the Runkle Ranch property on the north, the Rocketdyne Santa Susana Field Laboratory (Rocketdyne) facility on the east, and vacant lands on the south and west boundaries. The Rocketdyne facility was used for research on rocket engines, and nuclear reactor development and applications. Rocketdyne has reported using radionuclides including: strontium - 90 (SR-90); cesium-137 (CS-137), and tritium (H-3). Review of topographic maps has shown that there is a potential for surface water run -off from the Rocketdyne facility to flow through the northeast portion of the Property. The Property itself is vacant and undeveloped, with limited access dirt roads and hiking trails.

2.2 SITE GEOLOGY

The Property is located on the Simi Hills, and ranges in elevation from 1,400 to 2,000 feet above mean sea level (msl). The Property's lowest elevation is the northern portion of the site that form rolling hills and valleys, which increases in elevation towards the south.

The Simi Hills consist of a thick sequence of marine sedimentary rocks that range from Upper Cretaceous to Lower Tertiary in age (Dibblee, 1982). These rocks are composed of predominately clastic marine shales and sandstones with some conglom erate. The oldest unit is the Cretaceous Chatsworth Formation, which consists of a sequence of thick arkosic sandstone interbedded with thin intervals of micaceous shale. Above the Chatsworth is the Lower Tertiary units which includes (in ascending order): the Simi Conglomerate; Las Virgenes Sandstone; Santa Susana Formation; Llajas Formation; and the non-marine Sespe Formation. This Tertiary sequence is composed if alternating micaceous shales and sandstones, with some interbedded siltstones and clay shales. Both units are exposed through out the Property.

Along the northern portion of the Simi Hills, the entire units dip north to northwest at approximately 20 to 30 degrees, towards the Simi Valley. It is not known whether these rocks were uplifted along a fault or anticlinally. No major faults have been identified in the northern portion of the Simi Hills, although the Boney Mountain -Simi fault has been identified along the southern margin (Campbell and Yerkes, 1966).

2.3 SITE BACKGROUND INFORMATION

Based on limited information provided by GreenPark, no known on -site activity has been conducted at the site that would suggest any potential manmade environmental condition to exist at the Property. However, because the Property is adjacent to the Rocketdyne facility, there was a concern that operations conducted at the facility may have impacted on -site soils, based on surface run-off transporting radionuclides to the Property. Based on this concern, GreenPark retained Harding ESE to conduct a limited surface soil sampling program, that would evaluate certain areas of the Property with the highest probability of being impacted by run -off from the Rocketdyne facility. The radionuclides of concern for this soil sampling program consisted of isotopes most consistently used and detected at the Rocketdyne facility, as follows: SR -90; CS-137; and H-3.

Previous detailed site investigation performed within the adjacent property to the north (Runkle Ranch) for these radionuclides of concern (Foster Wheeler, 1999), concluded that the concentrations of the three radionuclides and the annual dose attributed to them were determined to be insignificant. In addition, the study also concluded that the three radionuclides together would not cause a dose in excess of the 15 mrem/year limit. Based on these findings, a determination was made that the site was considered to be non -contaminated for the radionuclides of concern.

3.0 SITE INVESTIGATION ACTIVITIES

3.1 DETERMINATION OF SOIL SAMPLE LOCATIONS

Prior to conducting the site investigation, GreenPark, with some support from Harding ESE, determined the locations in which limited surface soil samples would be collected within the Property. These limited discrete sample locations were selected on their highest probability of being impacted with radionuclides from the Rocketdyne facility. Consequently, areas that were selected for sampling included, on-site drainage washes originating near the Rocketdyne facility, access road drainage ditches, and low lying areas. Because this limited sampling program was not designed to characterize the entire Property, systematic sample collection was not conducted in accordance with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) methodology. MARSSIM is a set of guidelines used to identify a statistical approach to evaluate potential radionuclide contamination in soils. This guideline usually requires that a significant amount of samples be collected from a given area, which was well beyond the scope of this limited investigation.

Based on the sample selection criteria, a total of seventeen soil samples locations were selected; three of which were located outside of the Property boundary again, at GreenPark's discretion. The locations of these seventeen soil samples (SS-1 to SS-17) are depicted in Figure 2.

3.2 SITE INVESTIGATION FIELD ACTIVITIES

On September 6, 2000, Harding ESE completed the limited site investigation activities at the Property. The limited site investigation activities consisted of collecting surface soil samples at seventeen locations shown in Figure 2.

At each sampling location, a hand spade was used to dig down approximately 6 inches below ground surface. The soil sample was then collected and placed into an 8 -ounce wide mouth jar, which was labeled, recorded, and placed in transport box for shipment to the analytical laboratory. Prior to proceeding to the next sampling location, the hand spade was thoroughly

decontaminated by first washing the spade with non-phosphate soap followed by a double tap water rinse, and a final rinse with distilled water. At a sampling location in which a duplicate sample was collected, an appropriate amount of sample was first placed in a stainless steel bowl and mixed together, prior to placement into the appropriate original and duplicate sample containers.

Upon conclusion of the sampling program, a total of 17 original soil samples were collected, which were given the following sample identifications; SS-1 through SS-17. In addition, Harding ESE collected duplicate samples at locations SS-3 and SS-7, which were labeled as SS-18 and SS-19, respectively, and submitted blind to the analytical laboratory. As previously stated all collected samples were properly logged, labeled, and placed into a transport box for shipment to the analytical laboratory with appropriate chain-of-custody.

3.3 SOIL SAMPLE ANALYTICAL PARAMETERS

Based on the above soil investigation program including field QA/QC sampling, a total of 19 soil samples were submitted to Thermo Nutech Oak Ridge Laboratory to be analyzed for the following radionuclides:

- strontium-90 (EIChroM Method SRW01);
- cesium-137 (Method LANL ER-130 Modified); and
- tritium (Method LANL ER-210).

Per GreenPark's request, an accelerated 14-day analytical turnaround time was requested from the laboratory for all of the samples submitted.

4.0 INVESTIGATION RESULTS

4.1 SOIL SAMPLE ANALYTICAL RESULTS

Review of the applicable radionuclides results (Table 1) indicated that the concentrations of tritium in all of the samples collected were below the minimum detectable activity (MDA). In addition, the concentrations of cesium-137 in all of the samples, except SS-1, were also below the MDA. The cesium-137 concentration in sample SS-1 at 0.09 pCi/g just exceeded the MDA of 0.077 pCi/g. In terms of strontium-90 results, six of the seventeen original samples submitted exceeded the MDA in concentrations that ranged from 4.756 pCi/g in SS -6 to 0.686 pCi/g in SS-16.

The analytical report of the on-site soil samples along with laboratory QA/QC data, and chain-of-custody documentation is provided in *Appendix A*.

4.2 SOIL DATA INTERPRETATION

Review of the soil sample analytical results (Section 4.1) indicated that cesium -137 and strontium-90 required further evaluation because they were detected in appropriate samples that exceeded their respective MDAs. In conducting this evaluation, Harding ESE referred to the Derived Concentration Guide Levels (DCGLs) for cesium-137 and strontium-90 that were previously computed during the investigation of the Runkle Ranch property (Foster Wheeler, 1999). The DCGLs calculations were based on an annual dose of radiation of 15 mrem/year, which is regarded to be an acceptable conservative level proposed by EPA in 1993, that is protective of human health and the environment. Applying the annual dose into the U.S. Department of Energy (DOE) Residual Radioactive (RESRAD) material guideline computer program for the radionuclides of concern resulted in DCGLs of 2.867 pCi/g and 1.23 p Ci/g, for cesium-137 and strontium-90, respectively.

When comparing the detected concentrations of the radionuclides in the soil samples with the applicable DCGLs, the concentration of cesium-137 in sample SS-1 was below the DCGL. This

would provide good indication that the soil is considered not to be contaminated with cesium - 137. However, the concentrations of strontium-90 in samples SS-3, SS-5, SS-6, and SS-8, (four out of seventeen samples) exceeded the DCGL (See Table 1). Normally the ratio of the exceedence (negatives) and the non-exceedences (positives) would have been compared to the calculated critical value. However, because insufficient amount of random samples were collected, per GreenPark's instructions, the critical value could not be pro perly calculated. The critical value calculated for the Runkle Ranch property, based on the collection of 58 random samples, was 38 (Foster Wheeler, 1999). If one were to assume that, the ratio of the critical value to the total samples collected, for the Rancho Simi Property would be similar to Runkle Ranch; the critical value could be estimated to be 11 for the 17 original samples collected. When comparing the ratio of negatives to positives to the estimated critical value, because the total number of positives (i.e., 13) is greater than the critical value, this would provide a good indication that the site is not contaminated with strontium -90. However, Harding ESE cannot make a definitive conclusion regarding the presence or absence of strontium -90 in the soil, without additional data. When examining the locations of the samples that exceeded the DCGL, the only pattern that could be established, was that all of these samples were collected along man-made trails, which lead to, or are in close proximity to, the Rocketdyne facility (See Figure 2). However, there is no definitive conclusion that run-off from the Rocketdyne facility may have impacted these locations.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Overall, the limited soil sampling data did verify that the Property is more than likely not contaminated with tritium or cesium-137. In addition, when comparing the ratio of negatives to positives to the estimated critical value, the total number of positives (13) is greater than the critical value, which provides some indication (but non-conclusive) that the site is not contaminated with strontium-90. In order to make a definitive conclusion on the absence of strontium-90 within the property, further systematic random soil sampling should be performed in accordance with MARSSIM guidelines.

6.0 REFERENCES

Campbell, R.H., Yerkes, R.F., and Wentworth, C.M., 1966. Detachment Faults in Central Santa Monica Mountains, California: in Geological Survey Research, 1966 U.S. Geological Survey Prof. Paper 550-C, p. C1-C11

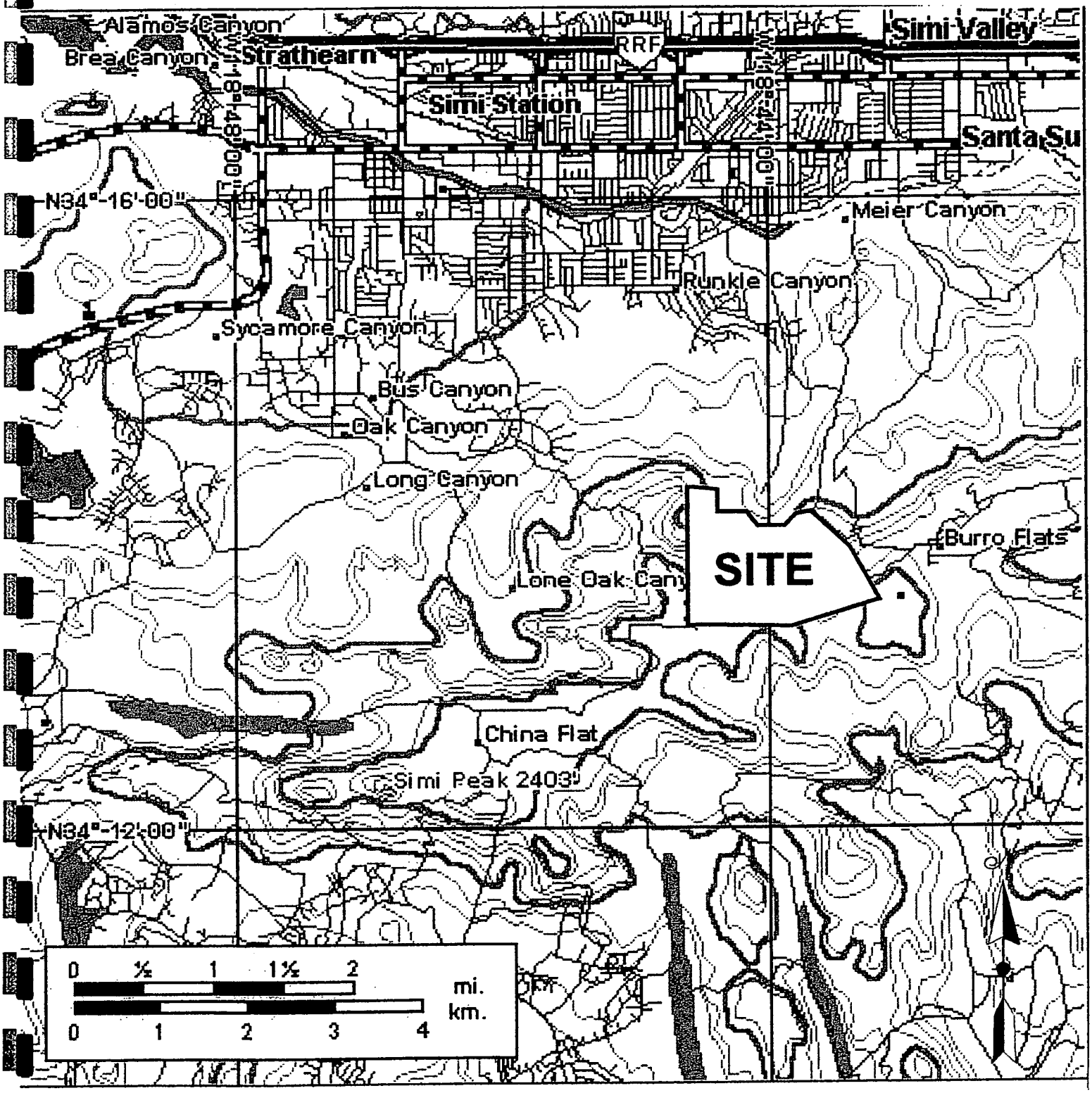
Dibblee, T.W., Jr., 1982. Geology of the Santa Monica Mountains and Simi Hills, Southern California, in Fife, D.L. and Minch, J.A., eds. Geology and Mineral Wealth of the California Traverse Ranges, South Coast Geological Society Annual Symposium and Guidebook Number 10, p. 94-129.

Foster Wheeler Environmental Corporation, 1999. Final Report Runkle Ranch Site Investigation, Simi Valley, California. October 1999.

Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), 1997. NUREG 1575 & EPA-402-R-97-016. December 1997.

U.S. Environmental Protection Agency, 2000. Guidance for Data Quality Assessment, Practical Methods for Data Analysis, EPA QA/G-9, QA00 Update, July 2000. EPA/600/R-96/084

FIGURES



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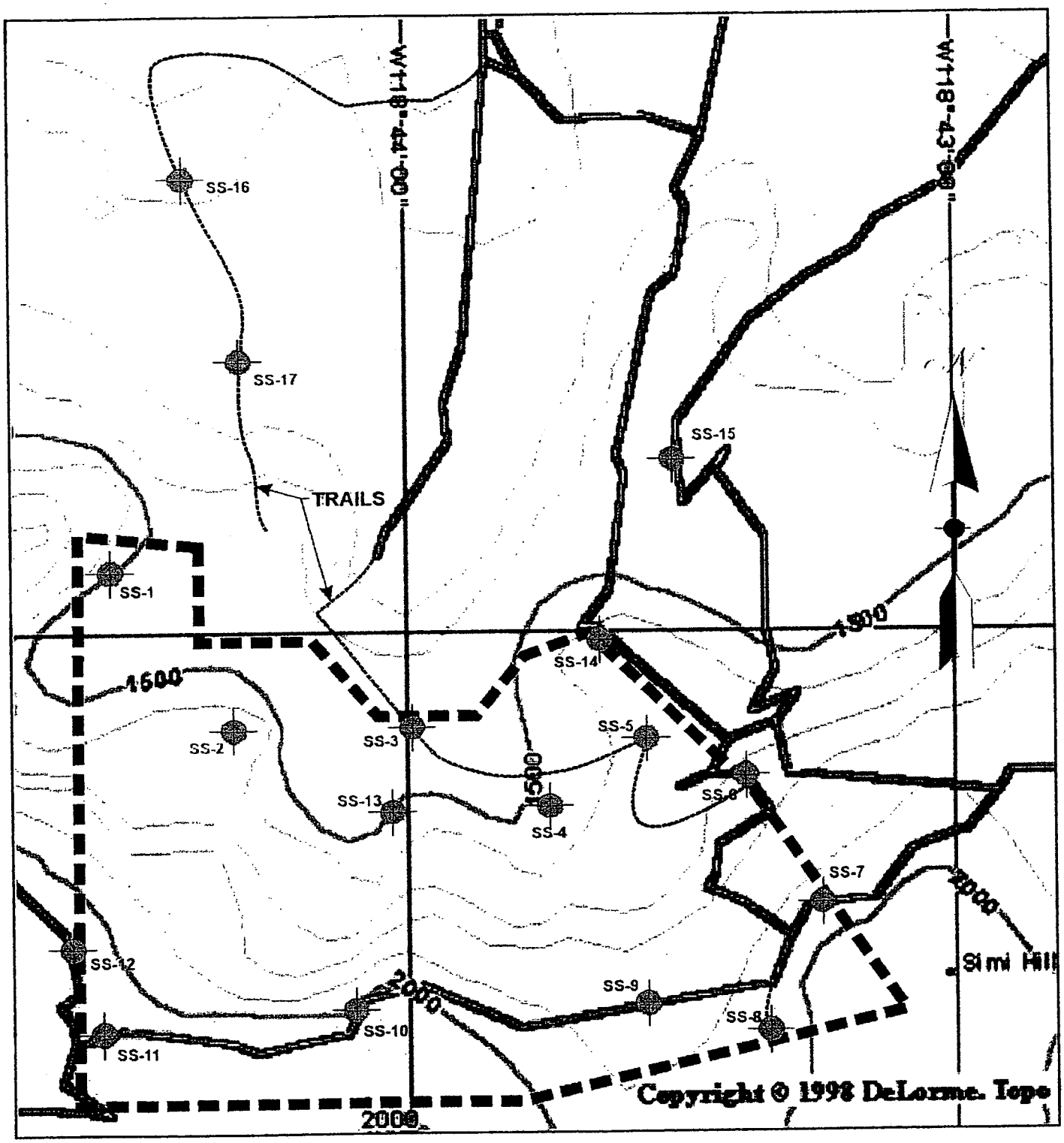
SITE LOCATION MAP
RANCHO SIMI PROPERTY
SIMI VALLEY, CALIFORNIA

Figure
1

Drawn	Project Number	Approved	Date
Daniel L. Kudlicki		JSK	11/13/2000



EXPLANATION

SS-1 SOIL SAMPLE LOCATION

SITE BOUNDARY

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SURFACE SOIL SAMPLE LOCATION
RANCHO SIMI PROPERTY
SIMI VALLEY, CALIFORNIA

Figure **2**

Drawn	Project Number	Approved	Date
Daniel L. Kudlicki		JSK	10/13/2000

TABLES

Table 1. Results of Limited Soil Sampling

Sample ID	Sample Date	Collection Notation	Matrix	Analysis Code	Isotope	Result	Units	Uncertainty	MDA	DCGL	DCLG - Result	Sign	Laboratory Notations and QA/QC Data Results								
													Count Time	Counts	DateReceived	DilutionRatio	Method	TPUFactor	TPU	LCSKnownError
LCS	09/07/2000	Lab QA/QC	Soil	Gamma	Cesium-137	996.800000	pCi/g	100.600000	1.671000	NA	NA	NA	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	102.280708	43.6
BLANK	09/07/2000	Lab QA/QC	Soil	Gamma	Cesium-137	-0.006045	pCi/g	0.040020	0.072460	NA	NA	NA	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.040020	
SS-1	09/06/2000	Lab Duplicate	Soil	Gamma	Cesium-137	0.067650	pCi/g	0.071500	0.081410	2.867	2.799350	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.071511	
SS-1	09/06/2000	Field Original	Soil	Gamma	Cesium-137	0.090040	pCi/g	0.077770	0.073480	2.867	2.776960	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.077788	
SS-2	09/06/2000	Field Original	Soil	Gamma	Cesium-137	0.056050	pCi/g	0.072780	0.114400	2.867	2.810950	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.072787	
SS-3	09/06/2000	Field Original	Soil	Gamma	Cesium-137	-0.020640	pCi/g	0.073970	0.128300	2.867	2.887640	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.073971	
SS-4	09/06/2000	Field Original	Soil	Gamma	Cesium-137	0.011630	pCi/g	0.043930	0.080160	2.867	2.855370	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.043931	
SS-5	09/06/2000	Field Original	Soil	Gamma	Cesium-137	0.027230	pCi/g	0.073540	0.135100	2.867	2.839770	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.073542	
SS-6	09/06/2000	Field Original	Soil	Gamma	Cesium-137	-0.001018	pCi/g	0.064370	0.115700	2.867	2.868018	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.064370	
SS-7	09/06/2000	Field Original	Soil	Gamma	Cesium-137	0.042130	pCi/g	0.043180	0.083880	2.867	2.824870	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.043187	
SS-8	09/06/2000	Field Original	Soil	Gamma	Cesium-137	0.070470	pCi/g	0.055620	0.105100	2.867	2.796530	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.055635	
SS-9	09/06/2000	Field Original	Soil	Gamma	Cesium-137	0.012420	pCi/g	0.071560	0.135600	2.867	2.854580	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.071560	
SS-10	09/06/2000	Field Original	Soil	Gamma	Cesium-137	0.035180	pCi/g	0.063610	0.121300	2.867	2.831820	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.063613	
LCS	09/07/2000	Lab QA/QC	Soil	Gamma	Cesium-137	999.200000	pCi/g	101.400000	3.145000	NA	NA	NA	30		09/07/2000	1	LANL ER-130 Modified	0.000343176	103.075638	43.6
BLANK	09/07/2000	Lab QA/QC	Soil	Gamma	Cesium-137	-0.037030	pCi/g	0.045980	0.075050	NA	NA	NA	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.045985	
SS-11	09/06/2000	Lab Duplicate	Soil	Gamma	Cesium-137	0.092480	pCi/g	0.128100	0.136000	2.867	2.774520	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.128111	
SS-11	09/06/2000	Field Original	Soil	Gamma	Cesium-137	-0.087930	pCi/g	0.087950	0.144400	2.867	2.954930	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.087965	
SS-12	09/06/2000	Field Original	Soil	Gamma	Cesium-137	-0.019610	pCi/g	0.053770	0.094740	2.867	2.886610	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.053771	
SS-13	09/06/2000	Field Original	Soil	Gamma	Cesium-137	-0.008181	pCi/g	0.043300	0.075460	2.867	2.875181	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.043300	
SS-14	09/06/2000	Field Original	Soil	Gamma	Cesium-137	0.036400	pCi/g	0.039840	0.076450	2.867	2.830600	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.039846	
SS-15	09/06/2000	Field Original	Soil	Gamma	Cesium-137	-0.029360	pCi/g	0.067750	0.120500	2.867	2.896360	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.067752	
SS-16	09/06/2000	Field Original	Soil	Gamma	Cesium-137	0.014810	pCi/g	0.058670	0.109500	2.867	2.852190	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.058671	
SS-17	09/06/2000	Field Original	Soil	Gamma	Cesium-137	0.021200	pCi/g	0.074340	0.144200	2.867	2.845800	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.074341	
SS-18	09/06/2000	Field Duplicate of SS-3	Soil	Gamma	Cesium-137	-0.015260	pCi/g	0.066590	0.116700	2.867	2.882260	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.066591	
SS-19	09/06/2000	Field Duplicate of SS-7	Soil	Gamma	Cesium-137	0.054560	pCi/g	0.067080	0.131600	2.867	2.812440	+	60		09/07/2000	1	LANL ER-130 Modified	0.000343176	0.067088	
LCS	09/07/2000	Lab QA/QC	Soil	H0003	Tritium	214.392203	pCi/g	15.978175	14.701301	NA	NA	NA	15	1138.05	09/07/2000	1	LANL ER210 Modified	0.01109	27.659411	43.30274688
BLANK	09/07/2000	Lab QA/QC	Soil	H0003	Tritium	-2.854743	pCi/g	7.857305	14.013010	NA	NA	NA	15	169.05	09/07/2000	1	LANL ER210 Modified	0.01109	7.863054	
SS-1	09/06/2000	Lab Duplicate	Soil	H0003	Tritium	-8.623463	pCi/g	7.854567	14.545758	NA	NA	NA	15	143.55	09/07/2000	1	LANL ER210 Modified	0.01109	7.906891	
SS-1	09/06/2000	Field Original	Soil	H0003	Tritium	-6.011262	pCi/g	8.020248	14.589740	NA	NA	NA	15	155.4	09/07/2000	1	LANL ER210 Modified	0.01109	8.045192	
SS-2	09/06/2000	Field Original	Soil	H0003	Tritium	-3.981100	pCi/g	6.740629	12.162461	NA	NA	NA	15	160.95	09/07/2000	1	LANL ER210 Modified	0.01109	6.753654	
SS-3	09/06/2000	Field Original	Soil	H0003	Tritium	-5.533470	pCi/g	6.512789	11.908469	NA	NA	NA	15	151.95	09/07/2000	1	LANL ER210 Modified	0.01109	6.538806	
SS-4	09/06/2000	Field Original	Soil	H0003	Tritium	-12.371546	pCi/g	6.775468	13.023577	NA	NA	NA	15	120.15	09/07/2000	1	LANL ER210 Modified	0.01109	6.899590	
SS-5	09/06/2000	Field Original	Soil	H0003	Tritium	-3.419082	pCi/g	6.648654	11.949614	NA	NA	NA	15	163.65	09/07/2000	1	LANL ER210 Modified	0.01109	6.658396	
SS-6	09/06/2000	Field Original	Soil	H0003	Tritium	-8.095369	pCi/g	6.419886	11.988615	NA	NA	NA	15	138.15	09/07/2000	1	LANL ER210 Modified	0.01109	6.476243	
SS-7	09/06/2000	Field Original	Soil	H0003	Tritium	-11.417545	pCi/g	8.527005	15.987205	NA	NA	NA	15	135.6	09/07/2000	1	LANL ER210 Modified	0.01109	8.611359	
SS-8	09/06/2000	Field Original	Soil	H0003	Tritium	-8.835177	pCi/g	6.906371	12.909174	NA	NA	NA	15	137.55	09/07/2000	1	LANL ER210 Modified	0.01109	6.968763	
SS-9	09/06/2000	Field Original	Soil	H0003	Tritium	-3.697925	pCi/g	4.795107	8.732543	NA	NA	NA	15	154.65	09/07/2000	1	LANL ER210 Modified	0.01109	4.810894	
SS-10	09/06/2000	Field Original	Soil	H0003	Tritium	-7.050745	pCi/g	5.632267	10.512882	NA	NA	NA	15	138.45	09/07/2000	1	LANL ER210 Modified	0.01109	5.680999	
LCS	09/07/2000	Lab QA/QC	Soil	H0003	Tritium	114.859524	pCi/g	11.066404	10.901625	NA	NA	NA	15	739.05	09/07/2000	1	LANL ER210 Modified	0.01109	16.394281	43.30274688
BLANK	09/07/2000	Lab QA/QC	Soil	H0003	Tritium	10.490204	pCi/g	7.554364	12.259363	NA	NA	NA	15	185.85	09/07/2000	1	LANL ER210 Modified	0.01109	7.634711	
SS-11	09/06/2000	Lab Duplicate	Soil	H0003	Tritium	1.454280	pCi/g	5.909402	10.260198	NA	NA	NA	15	145.05	09/07/2000	1	LANL ER210 Modified	0.01109	5.911386	
SS-11	09/06/2000	Field Original	Soil	H0003	Tritium	-0.929477	pCi/g	6.226015	11.065985	NA	NA	NA	15	132.15	09/07/2000	1	LANL ER210 Modified	0.01109	6.226784	
SS-12	09/06/2000	Field Original	Soil	H0003	Tritium	-0.151281	pCi/g	6.533998	11.526971	NA	NA	NA	15	136.2	09/07/2000	1	LANL ER210 Modified	0.01109	6.534018	
SS-13	09/06/2000	Field Original	Soil	H0003	Tritium	-0.480566	pCi/g	5.167643	9.154293	NA	NA	NA	15	133.95	09/07/2000	1	LANL ER210 Modified	0.01109	5.167891	
SS-14	09/06/2000	Field Original	Soil	H0003	Tritium	4.751250	pCi/g	5.889212	9.891414	NA	NA	NA	15	164.4	09/07/2000	1	LANL ER210 Modified	0.01109	5.910429	
SS-15	09/06/2000	Field Original	Soil	H0003	Tritium	3.462045	pCi/g	6.769228	11.569895	NA	NA	NA	15	154.05	09/07/2000	1	LANL ER210 Modified	0.01109	6.779039	
SS-16	09/06/2000	Field Original	Soil	H0003	Tritium	5.074166	pCi/g	8.423258	14.319652	NA	NA	NA	15	157.2	09/07/2000	1	LANL ER210 Modified	0.01109	8.440191	
SS-17	09/06/2000	Field Original	Soil	H0003	Tritium	2.975158	pCi/g	7.322775	12.594156	NA	NA	NA	15	150.45	09/07/2000	1	LANL ER210 Modified	0.01109	7.329474	
SS-18	09/06/2000	Field Duplicate of SS-3	Soil	H0003	Tritium	-2.011032	pCi/g	4.765838	8.608560	NA	NA	NA	15	123.6	09/07/2000	1	LANL ER210 Modified	0.01109	4.770541	
SS-19	09/06/2000	Field Duplicate of SS-7	Soil	H0003	Tritium	-2.077345	pCi/g	5.490996	9.892821	NA	NA	NA	15	124.95	09/07/2000	1	LANL ER210 Modified	0.01109	5.495352	

Table 1. Results of Limited Soil Sampling

													Laboratory Notations and QA/QC Data Results							
Sample ID	Sample Date	Collection Notation	Matrix	Analysis Code	Isotope	Result	Units	Uncertainty	MDA	DCGL	DCLG - Result	Sign	Count Time	Counts	DateReceived	DilutionRatio	Method	TPUFactor	TPU	LCSKnownError
LCS	09/07/2000	Lab QA/QC	Soil	SrTOT	Strontium	17.110290	pCi/g	1.118387	0.707397	NA	NA	NA	60	1100	09/07/2000	1	Eichrom SRW01 Modified	0.01109	2.120736	0.450360328
BLANK	09/07/2000	Lab QA/QC	Soil	SrTOT	Strontium	-0.391317	pCi/g	0.383491	0.739393	NA	NA	NA	60	60	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.385698	
SS-1	09/06/2000	Lab Duplicate	Soil	SrTOT	Strontium	0.117401	pCi/g	0.429862	0.751999	1.230	1.112599	+	60	89	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.430040	
SS-1	09/06/2000	Field Original	Soil	SrTOT	Strontium	0.436029	pCi/g	0.462889	0.770244	1.230	0.793971	+	60	129	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.465161	
SS-2	09/06/2000	Field Original	Soil	SrTOT	Strontium	0.386687	pCi/g	0.347700	0.569775	1.230	0.843313	+	60	103	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.350076	
SS-3	09/06/2000	Field Original	Soil	SrTOT	Strontium	-3.638307	pCi/g	0.618891	0.749249	1.230	-2.408307	-	60	358	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.727893	
SS-4	09/06/2000	Field Original	Soil	SrTOT	Strontium	0.523880	pCi/g	0.474955	0.781534	1.230	0.706120	+	60	133	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.478148	
SS-5	09/06/2000	Field Original	Soil	SrTOT	Strontium	-1.92600	pCi/g	0.563906	0.792497	1.230	-0.562600	-	60	185	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.594665	
SS-6	09/06/2000	Field Original	Soil	SrTOT	Strontium	-4.756099	pCi/g	0.632890	0.643080	1.230	-3.526099	-	60	396	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.807100	
SS-7	09/06/2000	Field Original	Soil	SrTOT	Strontium	1.038319	pCi/g	0.472994	0.708690	1.230	0.191681	+	60	131	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.485468	
SS-8	09/06/2000	Field Original	Soil	SrTOT	Strontium	-1.935331	pCi/g	0.545680	0.751521	1.230	-0.705331	-	60	209	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.582499	
SS-9	09/06/2000	Field Original	Soil	SrTOT	Strontium	0.209168	pCi/g	0.442818	0.763423	1.230	1.020832	+	60	90	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.443365	
SS-10	09/06/2000	Field Original	Soil	SrTOT	Strontium	-0.031219	pCi/g	0.359406	0.649898	1.230	1.261219	+	60	68	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.359421	
LCS	09/07/2000	Lab QA/QC	Soil	SrTOT	Strontium	18.171652	pCi/g	1.094590	0.697498	NA	NA	NA	60	1303	09/07/2000	1	Eichrom SRW01 Modified	0.01109	2.204573	0.446508101
BLANK	09/07/2000	Lab QA/QC	Soil	SrTOT	Strontium	0.460810	pCi/g	0.345679	0.553653	NA	NA	NA	60	91	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.349069	
SS-11	09/06/2000	Lab Duplicate	Soil	SrTOT	Strontium	0.012743	pCi/g	0.337868	0.600035	1.230	1.217257	+	60	92	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.337870	
SS-11	09/06/2000	Field Original	Soil	SrTOT	Strontium	-0.173570	pCi/g	0.365430	0.669592	1.230	1.403570	+	60	91	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.365887	
SS-12	09/06/2000	Field Original	Soil	SrTOT	Strontium	-0.159384	pCi/g	0.353124	0.647664	1.230	1.389384	+	60	86	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.353523	
SS-13	09/06/2000	Field Original	Soil	SrTOT	Strontium	0.257220	pCi/g	0.373678	0.633345	1.230	0.972780	+	60	98	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.374659	
SS-14	09/06/2000	Field Original	Soil	SrTOT	Strontium	-0.204292	pCi/g	0.314569	0.588647	1.230	1.434292	+	60	71	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.315304	
SS-15	09/06/2000	Field Original	Soil	SrTOT	Strontium	-0.322867	pCi/g	0.349935	0.669228	1.230	1.552867	+	60	63	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.351583	
SS-16	09/06/2000	Field Original	Soil	SrTOT	Strontium	0.686001	pCi/g	0.367473	0.561168	1.230	0.543999	+	60	106	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.374506	
SS-17	09/06/2000	Field Original	Soil	SrTOT	Strontium	-0.241348	pCi/g	0.307958	0.582439	1.230	1.471348	+	60	67	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.309005	
SS-18	09/06/2000	Field Duplicate of SS-3	Soil	SrTOT	Strontium	-2.467877	pCi/g	0.280852	0.467723	1.230	-2.237877	+	60	88	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.282123	
SS-19	09/06/2000	Field Duplicate of SS-7	Soil	SrTOT	Strontium	0.254029	pCi/g	0.487029	0.514045	1.230	0.975971	-	60	379	09/07/2000	1	Eichrom SRW01 Modified	0.01109	0.608743	

APPENDIX A

APPENDIX A.

LABORATORY ANALYTICAL REPORTS, QA/QC DATA, AND CHAIN-OF-CUSTODY DOCUMENTATION

ESE

STANDARD LEVEL IV
REPORT OF ANALYSIS

WORK ORDER #00-09041-OR

October 4, 2000

THERMORETEC/OAK RIDGE LABORATORY
OAK RIDGE, TN

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Thermo NUtech - Oak Ridge

LABORATORY DATA SUPPORT CHECKLIST QCP-002-4

Thermo NUtech Work Order # 000904

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

DATE FOR PARTIAL	INITIALS	DATE	INITIALS	CHECKLIST ITEMS
		9/7/00	KAB	Sample Log-in
		10/2/00	[illegible]	Data Compilation
		10/2/00	[illegible]	Technical Data Review
		10/3/00	[illegible]	Data Entry/Electronic Deliverable
		10/3/00	[illegible]	Case Narrative
		10/4/00	KBS	Electronic Deliverable Proof
		10/4/00	[illegible]	Samples Analyzed Within Holding Time YES
		10/4/00	[illegible]	QA/QC Review
				Invoiced by Laboratory

TECHNICAL/CLERICAL CORRECTIONS, SIGNATURES NEEDED, PROBLEMS, ETC.	DATE / INITIALS

Date package approved by: [signature] Laboratory Manager 10/4/00 Date

SECTION I

CHAIN OF CUSTODY

Chain of Custody Record

№ 3457 A

Thermo NUTech
A ThermoRetec Company
601 Scarboro Road • Oak Ridge, TN 37830
(423) 481-0687 Phone • (423) 483-4621 Fax
www.thermoretec.com

ThermoRetec
Smart Solutions. Positive Outcomes.

Project Name: GREEN PARK – SILVER VALLEY
Project Number: 660033.0300
Send Report to: JOHN KIM – ESE
Sampler (Print Name): PATRICK STICH
Address: 426 N. 44th St.
Sampler (Print Name):
SUITE 110
Shipment Method: FED EX
PHOENIX, AZ 85008
Airbill Number:
Phone: 602-244-1192
Laboratory Receiving:
Fax: 602-244-9280

Page 1 of 2

Purchase Order #: 660033.0300

Analysis Requested

Field Sample ID	Sample Date	Sample Time	Sample Matrix	Number of Containers	Strontium 90 Method SRW01	Cesium 137 Method LANL ER 130 Mod	Tritium Method LANL ER 310	Comments, Special Instructions, etc.	Lab Sample ID (to be completed by lab)
SS-1	9-6-00	~~1425~~ 1515	S	1	X	X	X		
SS-2	9-6-00	0933	S	1	X	X	X		
SS-3	9-6-00	0649	S	1	X	X	X		
SS-4	9-6-00	0905	S	1	X	X	X		
SS-5	9-6-00	0711	S	1	X	X	X		
SS-6	9-6-00	0720	S	1	X	X	X		
SS-7	9-6-00	0732	S	1	X	X	X		
SS-8	9-6-00	0746	S	1	X	X	X		
SS-9	9-6-00	0753	S	1	X	X	X		
SS-10	9-6-00	0804	S	1	X	X	X		
4 SS-11	9-6-00	0810	S	1	X	X	X		
5 SS-12	9-6-00	0845	S	1	X	X	X		
6 SS-13	9-6-00	0947	S	1	X	X	X		
7 SS-14	9-6-00	1110	S	1	X	X	X		
8 SS-15	9-6-00	0053	S	1	X	X	X		
9 SS-16	9-6-00	1135	S	1	X	X	X		
10 SS-17	9-6-00	1148	S	1	X	X	X		

RECEIVED
SEP 7 2000
FMA, Etherline
JAK 3 DGE AB

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Patrick Stich	FED EX	9-6-00	1430
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
FED EX	K Bannister	9-7-00	0845
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Sample Custodian Remarks (Completed By Laboratory):

QA/QC Level: Level I ☐ Level II ☐ Level III ☐ Other ☐

Turnaround: 14 day excel; Routine ☐ 24 Hour ☐ 1 Week ☐ Other ____

Sample Receipt: Total # Containers Received? COC Seals Present? COC Seals Intact? Received Containers Intact? Temperature?

White: Lab Copy Yellow: PM Copy Pink: Field Copy Gold: PM/QA/QC Copy

00003

Chain of Custody Record

№ 3457 B

Thermo NUTech
A ThermoRetec Company
601 Scarboro Road • Oak Ridge, TN 37830
(423) 481-0687 Phone • (423) 487-4621 Fax
www.thermoretec.com

ThermoRetec
Smart Solutions. Positive Outcomes.

Project Name: GREEN PARK - SIMI VALLEY
Project Number: 660033.0300
Send Report To: JOHN KIM - ESE
Sampler (Print Name): PAT STICH
Address: 426 N. 44TH ST.
Sampler (Print Name):
SUITE 110
Shipment Method: FED EX
PHOENIX, AZ 85008
Airbill Number:
Phone: 602 - 244 - 1192
Laboratory Receiving:
Fax: 602 - 244 - 9280

Page 2 of 2

Purchase Order #: 660033.0300

Analysis Requested

	Field Sample ID	Sample Date	Sample Time	Sample Matrix	Number of Containers	STRONTIUM 90 METHOD SRW 84	CESIUM 137 METHOD LANL ER 130 MOD	TRITIUM METHOD LANL ER 210	Comments, Special Instructions, etc.	Lab Sample ID (to be completed by lab)
11	SS-18	9-6-00	0650	S	1	X	X	X		
12	SS-19	9-6-00	0732	S	1	X	X	X		

RECEIVED
SEP 7 2000
OAK RIDGE

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Patrick Stich	FED EX	9-6-00	1430
FED EX	K Bannister	9-7-00	0845

Sample Custodian Remarks (Completed By Laboratory):

QA/QC Level: Level I ☐ Level II ☐ Level III ☐ Other ☐

Turnaround: (14 Day Excel) Routine ☐ 24 Hour ☐ 1 Week ☐ Other: ____

Sample Receipt	
Total # Containers Received?	
COC Seals Present?	
COC Seals Intact?	
Received Containers Intact?	
Temperature?	

White: Lab Copy Yellow: PM Copy Pink: Field Copy Gold: PM/QA/QC Copy

Thermo Retec
Oak Ridge Laboratory

Internal Chain of Custody

Work Order #	00-09041
Lab Deadline	09/19/00
Analysis	H0003 - Level 4
Sample Matrix	SO

Comments

Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
4		E1.1
5		E1.1
6		E1.1
7		E1.1
8		E1.1
9		E1.1
10		E1.1
11		E1.1
12		E1.1

	Location (circle one)					Technician Initials	
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	9/7/00
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	9/8/00
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	9-8-00
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	9-12-00
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	9-12-00
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	9-16-00
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		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

Thermo Retec
Oak Ridge Laboratory

Internal Chain of Custody

Work Order #	00-09041
Lab Deadline	09/19/00
Analysis	SrTOT - Level 4
Sample Matrix	SO

Comments

Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
4		E1.1
5		E1.1
6		E1.1
7		E1.1
8		E1.1
9		E1.1
10		E1.1
11		E1.1
12		E1.1

	Location (circle one)					Technician Initials	
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	9/7/00
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	9/8/00
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	Charlotte P. McMurray	9/8/00
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	Charlotte P. McMurray	9/19/00
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	9-15-00
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	9-15-00
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		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

Thermo Retec
Oak Ridge Laboratory

Internal Chain of Custody

Work Order #	00-09041
Lab Deadline	09/19/00
Analysis	Gamma - Level 4
Sample Matrix	SO

Comments

Report Cs137

Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
4		E1.1
5		E1.1
6		E1.1
7		E1.1
8		E1.1
9		E1.1
10		E1.1
11		E1.1
12		E1.1

	Location (circle one)					Technician Initials	
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	9/7/00
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	9/8/00
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	[illegible]	
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		
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		

00009

SECTION II

SAMPLE ACKNOWLEDGEMENT

Client Name	Contract/PO	Project Type	Date Received	Required Turnaround Days	Thermo Retec Work Order
ESE	660033	Environmental	09/07/2000	14	00-09041
Project Name	**Client WO**	**Sample Disp**	**Lab Deadline**	**Internal Deadline**	**Client Deadline**
660033.0300		R	09/19/2000	09/21/2000	09/21/2000

Internal ID	Client ID	Sample Date	Matrix	Storage	Gamma	H0003	SrTOT																					Ttl
00-09041-01	LCS				X	X	X																					3
00-09041-02	BLANK				X	X	X																					3
00-09041-03	DUP				X	X	X																					3
00-09041-04	SS-11	09/06/00 08:10	SO	E1.1	X	X	X																					3
00-09041-05	SS-12	09/06/00 08:45	SO	E1.1	X	X	X																					3
00-09041-06	SS-13	09/06/00 09:47	SO	E1.1	X	X	X																					3
00-09041-07	SS-14	09/06/00 11:10	SO	E1.1	X	X	X																					3
00-09041-08	SS-15	09/06/00 10:53	SO	E1.1	X	X	X																					3
00-09041-09	SS-16	09/06/00 11:35	SO	E1.1	X	X	X																					3
00-09041-10	SS-17	09/06/00 11:48	SO	E1.1	X	X	X																					3
00-09041-11	SS-18	09/06/00 06:50	SO	E1.1	X	X	X																					3
00-09041-12	SS-19	09/06/00 07:32	SO	E1.1	X	X	X																					3
																												0
																												0
																												0
																												0
																												0
																												0
																												0
	Totals Per Analysis (non QA samples)				9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Thermo Retec
Sample Log In Report

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

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

Invoice	John Kim
	ESE
	426 N. 44th Street #110
	Phoeniz, AZ 85008
Voice	602-244-1192
Fax	602-244-9280

Contact	John Kim
Voice	602-244-1192
Fax	602-244-9280

Report Data	John Kim
	ESE
	426 N. 44th Street #110
	Phoenix, AZ 85008
	jkim@ESEmail.com
Voice	602-244-1192
Fax	602-244-9280

Fax & email as data comes in: John Kim 602-244-9280, jkim@ESEmail.com

Printed: 09/07/00 2:28 PM

THERMO NUTECH - OAK RIDGE
SAMPLE RECEIPT CHECKLIST

QCP-002-2

WORK ORDER # 0009041

SAMPLE MATRIX/MATRICES (CIRCLE ONE OR BOTH)

AQUEOUS NON-AQUEOUS

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

WERE SAMPLES:

1) RECEIVED IN GOOD CONDITION? Y OR N
2) IF AQUEOUS, PROPERLY PRESERVED Y OR N N/A

WERE CHAIN OF CUSTODY SEALS:

1) PRESENT ON OUTSIDE OF PACKAGE? Y OR N
2) UNBROKEN ON OUTSIDE OF PACKAGE? Y OR N
3) PRESENT ON SAMPLES? Y OR N
4) UNBROKEN ON SAMPLES? Y OR N

WAS CHAIN OF CUSTODY PRESENT UPON SAMPLE RECEIPT? Y OR N

IF ANY OF THE ABOVE ARE CIRCLED "NO", A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: Sample SS-13 was broken inside of container upon receipt.

SIGNATURE: K Bannister DATE: 9-7-00

THERMO NUTECH - OAK RIDGE
DISCREPANT SAMPLE RECEIPT REPORT

QCP-002-1

WORK ORDER:	00-09-041
CUSTOMER:	ESE
DATE RECEIVED:	9-7-00
MATRIX:	Soil
PROBLEM:	Sample SS-13, upon receipt, was broken inside of box.
ACTION TAKEN:	Box scanned. Remaining sample transferred to another container for analysis
CLIENT NOTIFIED: X	DATE/INITIALS: 9-7-00 KAB
CLIENTCOMMENTS:	

1. Shipping papers not in order.
2. Custody papers absent.
3. Analyses not specified.
4. Samples physically damaged.
5. Samples not adequately identified.
6. Custody seals absent or broken.
7. Sample screen activity levels elevated.
8. Amount of sample less than that required for analyses.
9. Number of samples does not agree with chain-of-custody.
10. Identification of samples does not agree with chain-of-custody.
11. Sample analyses requested do not agree with paperwork.
12. Other (describe).

SIGNATURE: K Bannister 9/7/00
Date

SECTION III

CASE NARRATIVE

ThermoRetec
Smart Solutions, Positive Outcomes.
Nuclear Services
A Thermo Electron Company
601 Scarboro Road
Oak Ridge, TN 37830
(865) 481-0683 Phone
(865) 483-4621 Lab Fax
(865) 481-0121 Adm. Fax
www.thermoretec.com

TNU-OR-13598

October 4, 2000

John Kim
ESE
426 N. 44th Street #110
Phoenix, AZ 85008

CASE NARRATIVE
Work Order # 00-09041-OR

SAMPLE RECEIPT

This work order contains nine soil samples received 09/07/00. These samples were analyzed for Tritium, Strontium-90 and by Gamma Spectroscopy.

CLIENT ID	LAB ID	CLIENT ID	LAB ID
SS-11	00-09041-04	SS-16	00-09041-09
SS-12	00-09041-05	SS-17	00-09041-10
SS-13	00-09041-06	SS-18	00-09041-11
SS-14	00-09041-07	SS-19	00-09041-12
SS-15	00-09041-08		

ANALYTICAL METHODS

Tritium was performed by beta liquid scintillation using Method LANL ER-210 modified. Strontium-90 was analyzed using ElChroM Method SRW01 modified. Gamma Spectroscopy was performed using Method LANL ER-130 modified.

SPECIAL PROBLEMS OR UNUSUAL CIRCUMSTANCES

TRITIUM

All sample results were at or below the sample specific detection limit. The normalized difference result was acceptable (≤2.58) for the laboratory control standard and the replicate analysis. There were no problems associated with this analysis.

STRONTIUM-90

All sample results ranged from less than to slightly above the sample specific detection limit. All chemical recoveries were within acceptable limits (>20%). The normalized difference result was acceptable for the replicate analysis. The laboratory control standard had an elevated (>2.58) normalized difference and the result was slightly low based on the percent recovery (85.46%). There were no other problems associated with this analysis.

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SPECIAL PROBLEMS OR UNUSUAL CIRCUMSTANCES CONTINUED

GAMMA SPECTRAL ANALYSIS

At the client's request, only ^{137}Cesium was reported from the gamma spectral analysis. The results were all less than the respective sample specific detection limit. The normalized difference comparison gave acceptable ($\leq$2.58) results for both the laboratory control standard and the replicate. There were no problems associated with the analysis of these samples.

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: 10/4/2000

00016

SECTION IV

ANALYTICAL RESULTS SUMMARY

John Kim
ESE
426 N. 44th Street #110
Phoenix, AZ 85008

P.O. #: 660033
SDG: 0009041
Matrix: Soil

Final Report of Analysis
Date of Report: 10/4/2000

Lab ID	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	Error	MDA	Units
00-09041-01	K KNOWN	09/07/00	09/07/00	09/11/00	0009041	Cobalt-60	LANL ER-130 Modified	1092.75	48.65		pCi/g
00-09041-01	K KNOWN	09/07/00	09/07/00	09/11/00	0009041	Cesium-137	LANL ER-130 Modified	948.60	43.60		pCi/g
00-09041-01	S SPIKE	09/07/00	09/07/00	09/11/00	0009041	Cobalt-60	LANL ER-130 Modified	1083.00	77.52	8.64	pCi/g
00-09041-01	S SPIKE	09/07/00	09/07/00	09/11/00	0009041	Cesium-137	LANL ER-130 Modified	999.20	101.40	3.15	pCi/g
00-09041-02	B BLANK	09/07/00	09/07/00	09/11/00	0009041	Cesium-137	LANL ER-130 Modified	-0.04	0.05	0.08	pCi/g
00-09041-03	D SS-11	09/06/00	09/07/00	09/11/00	0009041	Cesium-137	LANL ER-130 Modified	0.09	0.13	0.14	pCi/g
00-09041-04	SS-11	09/06/00	09/07/00	09/11/00	0009041	Cesium-137	LANL ER-130 Modified	-0.09	0.09	0.14	pCi/g
00-09041-05	SS-12	09/06/00	09/07/00	09/11/00	0009041	Cesium-137	LANL ER-130 Modified	-0.02	0.05	0.09	pCi/g
00-09041-06	SS-13	09/06/00	09/07/00	09/11/00	0009041	Cesium-137	LANL ER-130 Modified	-0.01	0.04	0.08	pCi/g
00-09041-07	SS-14	09/06/00	09/07/00	09/11/00	0009041	Cesium-137	LANL ER-130 Modified	0.04	0.04	0.08	pCi/g
00-09041-08	SS-15	09/06/00	09/07/00	09/11/00	0009041	Cesium-137	LANL ER-130 Modified	-0.03	0.07	0.12	pCi/g
00-09041-09	SS-16	09/06/00	09/07/00	09/11/00	0009041	Cesium-137	LANL ER-130 Modified	0.01	0.06	0.11	pCi/g
00-09041-10	SS-17	09/06/00	09/07/00	09/11/00	0009041	Cesium-137	LANL ER-130 Modified	0.02	0.07	0.14	pCi/g
00-09041-11	SS-18	09/06/00	09/07/00	09/11/00	0009041	Cesium-137	LANL ER-130 Modified	-0.02	0.07	0.12	pCi/g
00-09041-12	SS-19	09/06/00	09/07/00	09/11/00	0009041	Cesium-137	LANL ER-130 Modified	0.05	0.07	0.13	pCi/g
00-09041-01	S KNOWN	09/07/00	09/07/00	09/15/00	0009041	Tritium	LANL ER-210 Modified	123.39	43.30		pCi/g
00-09041-01	S SPIKE	09/07/00	09/07/00	09/15/00	0009041	Tritium	LANL ER-210 Modified	114.86	11.07	10.90	pCi/g
00-09041-02	B BLANK	09/07/00	09/07/00	09/15/00	0009041	Tritium	LANL ER-210 Modified	10.49	7.55	12.26	pCi/g
00-09041-03	D SS-11	09/06/00	09/07/00	09/15/00	0009041	Tritium	LANL ER-210 Modified	1.45	5.91	10.26	pCi/g
00-09041-04	SS-11	09/06/00	09/07/00	09/15/00	0009041	Tritium	LANL ER-210 Modified	-0.93	6.23	11.07	pCi/g
00-09041-05	SS-12	09/06/00	09/07/00	09/15/00	0009041	Tritium	LANL ER-210 Modified	-0.15	6.53	11.53	pCi/g
00-09041-06	SS-13	09/06/00	09/07/00	09/15/00	0009041	Tritium	LANL ER-210 Modified	-0.48	5.17	9.15	pCi/g
00-09041-07	SS-14	09/06/00	09/07/00	09/15/00	0009041	Tritium	LANL ER-210 Modified	4.75	5.89	9.89	pCi/g
00-09041-08	SS-15	09/06/00	09/07/00	09/15/00	0009041	Tritium	LANL ER-210 Modified	3.46	6.77	11.57	pCi/g
00-09041-09	SS-16	09/06/00	09/07/00	09/15/00	0009041	Tritium	LANL ER-210 Modified	5.07	8.42	14.32	pCi/g
00-09041-10	SS-17	09/06/00	09/07/00	09/15/00	0009041	Tritium	LANL ER-210 Modified	2.98	7.32	12.59	pCi/g
00-09041-11	SS-18	09/06/00	09/07/00	09/15/00	0009041	Tritium	LANL ER-210 Modified	-2.01	4.77	8.61	pCi/g
00-09041-12	SS-19	09/06/00	09/07/00	09/15/00	0009041	Tritium	LANL ER-210 Modified	-2.08	5.49	9.89	pCi/g

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K=Known,S=Spike,B=Blank,D=Duplicate,MS=Matrix Spike

John Kim
ESE
426 N. 44th Street #110
Phoenix, AZ 85008

P.O. #: 660033
SDG: 0009041
Matrix: Soil

Final Report of Analysis
Date of Report: 10/4/2000

Lab ID	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	Error	MDA	Units
00-09041-01	K KNOWN	09/07/00	09/07/00	09/19/00	0009041	Strontium-90	EIChroM SRW01 Modified	21.26	0.45		pCi/g
00-09041-01	S SPIKE	09/07/00	09/07/00	09/19/00	0009041	Strontium-90	EIChroM SRW01 Modified	18.17	1.09	0.70	pCi/g
00-09041-02	B BLANK	09/07/00	09/07/00	09/19/00	0009041	Strontium-90	EIChroM SRW01 Modified	0.46	0.35	0.55	pCi/g
00-09041-03	D SS-11	09/06/00	09/07/00	09/19/00	0009041	Strontium-90	EIChroM SRW01 Modified	0.01	0.34	0.60	pCi/g
00-09041-04	SS-11	09/06/00	09/07/00	09/19/00	0009041	Strontium-90	EIChroM SRW01 Modified	-0.17	0.37	0.67	pCi/g
00-09041-05	SS-12	09/06/00	09/07/00	09/19/00	0009041	Strontium-90	EIChroM SRW01 Modified	-0.16	0.35	0.65	pCi/g
00-09041-06	SS-13	09/06/00	09/07/00	09/19/00	0009041	Strontium-90	EIChroM SRW01 Modified	0.26	0.37	0.63	pCi/g
00-09041-07	SS-14	09/06/00	09/07/00	09/19/00	0009041	Strontium-90	EIChroM SRW01 Modified	-0.20	0.31	0.59	pCi/g
00-09041-08	SS-15	09/06/00	09/07/00	09/19/00	0009041	Strontium-90	EIChroM SRW01 Modified	-0.32	0.35	0.67	pCi/g
00-09041-09	SS-16	09/06/00	09/07/00	09/19/00	0009041	Strontium-90	EIChroM SRW01 Modified	0.69	0.37	0.56	pCi/g
00-09041-10	SS-17	09/06/00	09/07/00	09/19/00	0009041	Strontium-90	EIChroM SRW01 Modified	-0.24	0.31	0.58	pCi/g
00-09041-11	SS-18	09/06/00	09/07/00	09/19/00	0009041	Strontium-90	EIChroM SRW01 Modified	0.25	0.28	0.47	pCi/g
00-09041-12	SS-19	09/06/00	09/07/00	09/19/00	0009041	Strontium-90	EIChroM SRW01 Modified	3.47	0.49	0.51	pCi/g

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K=Known,S=Spike,B=Blank,D=Duplicate,MS=Matrix Spike

SECTION V

ANALYTICAL STANDARD

(H-

CERTIFICATE OF CALIBRATION
BETA STANDARD SOLUTION

QA/QC REVIEWED
Date 4/16/99 Initials

Radionuclide	H-3	Customer:	THERMO NUTECH
Half Life:	12.35 ± 0.1 years	P.O.No.:	5108
Catalog No.:	7003	Reference Date:	15 Apr 99 12:00 PST.
Source No.:	660-25	Contained Radioactivity:	99.61 μCi (3686 kBq)

Description of Solution

a. Mass of solution: 4.91974 grams in 5 mL flame sealed ampoule

b. Chemical form: Tritiated water

c. Carrier content: Not applicable

d. Density: 0.9982 gram/ml @ 20°C.

Radioimpurities

None detected

Radioactive Daughters

None

Radionuclide Concentration

20.25 μCi/gram

Method of Calibration

This source was prepared from a weighed aliquot of solution whose concentration in μCi/gram was determined by a liquid scintillation counter.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration: ±3.0%

b. Random uncertainty in assay: ±1.9%

c. Random uncertainty in weighing(s): ±0.0%

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. 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

2 Apr 99
Date Signed

ISOTOPE PRODUCTS LABORATORIES
1800 N. KEYSTONE STREET
BURBANK, CALIFORNIA 91504
818-843-7000 FAX 818-843-6168

Thermo Retec

QUALITY CONTROL PROGRAM

QCP-009

Title: Radioactive Reference Standards Solutions & Records

THERMO NUTECH - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION

QCP-009-1-A

Solution Reference # IPL 660-25

Date 4/10/00 10:18

Solution # H-5

Principal Radionuclide	Half Life, Years	Half Life, Days
^{3}H	1.235E+01	4.511E+03

Radionuclide of Interest ^{3}H

Parent Solution Conc. 2.21E+05 dpm/ml

Reference Date 4/15/99 15:00

Chemical Composition of Standard Solution

$^{3}H_2O$ in water

Dilution Instructions:

Dilution Solvent Used Tritium-free water

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 65.0000 ml

Total Activity: 1.4372E+07 dpm

Final Volume: 1000.00 ml

Final Activity Concentration: 1.4372E+04 dpm/ml

NOTES:

Expiration Date: April 10, 2002

Diluted By [signature] Date: 4/10/00 10:18

Verified & Approved By [signature] Date: 4/10/00

QC Approval Martin R. Keller Date: 4/10/00

Sr-4

QA/QC REVIEWED
Date 11 Nov 1993 Initials

CERTIFICATE OF CALIBRATION
BETA STANDARD SOLUTION

Radionuclide:	Sr-90	Customer:	TMA EBERLINE
Half Life:	28.5 ± 0.2 years	P.O.No.:	VH1632
Catalog No.:	7090	Reference Date:	November 1 1993 12:00 PST.
Source No.:	435-104-1	Contained Radioactivity:	(Sr-90) 0.984 μCi.
		Contained Radioactivity:	(Sr-90) 36.4 kBq.

Description of Solution

a. Mass of solution: 5.0021g (in a 5mL Flame Sealed Ampoule)

b. Chemical form: SrCl2 in 0.1N HCl

c. Carrier content: None Added

d. Density: 0.9996 g/ml @ 20°C.

Radioimpurities

None detected

Radioactive Daughters

Y-90 daughter in equilibrium

Radionuclide Concentration

0.1967 μCi/g.

Method of Calibration

The source was prepared from a weighed aliquot of solution whose concentration in μCi/gram was determined by a liquid scintillation counter.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration: ±2.1%

b. Random uncertainty in assay: ±0.4%

c. Random uncertainty in weighing(s): ±0.0%

d. Total uncertainty at the 99% confidence level: ±2.1%

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).

QUALITY CONTROL

Nov. 8, 1993
Date Signed

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

Thermo Retec

QUALITY CONTROL PROGRAM

QCP-009

Rev.7; 9/29/99

Title: Radioactive Reference Standards Solutions & Records

THERMO NUTECH - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS

QCP-009-1-A

SECONDARY DILUTION

DATE: 11/1/99 10:57

SOLUTION REFERENCE #: IPL 435-104-1

SOLUTION #: SR-~~5A~~ 4A NC 11/1/99

Principal Radionuclide	Half Life, Years	Half Life, Days
Sr-90	2.910E+01	1.063E+04

Radionuclide	Sr-90	
Total Diluted Activity	1.092E+05	dpm
Diluted Activity/ml	2.184E+03	dpm
Volume	50	

Reference Date: 11/1/93 0:00

Chemical Composition of Standard Solution

SrCl2 in 0.1 N HCL Diluted from SR-5

Dilution Instructions:

Dilution Solvent Used: 0.1 N HCl

SECONDARY VOLUMETRIC DILUTION

Certified Activity	2184.4800	dpm
Solution Net	50	Millilitres
Final Dilution Volume	500	Millilitres

Activity Decay Corrected to This Date: 11/1/93 0:00

Total Activity, dpm: 1.0922E+05

Dilution Activity: 218.4480 dpm/ml

NOTES: THIS STANDARD IS A SECONDARY DILUTION FROM THE PRIMARY DILUTON OF ~~NP-T~~ Sr-4 11/4/99

EXPIRATION DATE: November 1, 2001

Diluted By: [signature] Date: 11/1/99 10:57

Verified & Approved By: [signature] Date: 11/4/99

QC Approval: Martin R. Keller Date: 11/4/99

S JAKB

ANALYTICS

ANALYTICS, INC
1950 SEABOARD INDUSTRIAL BOULEVARD
ATLANTA, GEORGIA 30318 (404) 352 8677

CERTIFICATE OF CALIBRATION
STANDARD RADIONUCLIDE SOURCE

39096-201

50 ml (80 Grams) Sand in 4 Ounce Parkway Jar

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solution sources. The Am-241 was calibrated by 4 pi alpha liquid scintillation counting. All other radionuclides were calibrated using a germanium gamma spectrometer system. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Analytics maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Rev. 1, February, 1979.

Calibration date: April 1, 1991 12:00 EST

Source prepared by: M. Wilson
M. Wilson, Radiochemist

ISOTOPE	GAMMA-RAY ENERGY	HALF-LIFE		GAMMA-RAYS PER SECOND	TOTAL UNCERTAINTY %
Am-241	59.5	432	y	1376	5.0
Cd-109	88	463.9	d	1801	4.7
Co-57	122	272.4	d	1144	4.5
Ce-139	166	137.7	d	1760	4.6
Hg-203	279	46.62	d	2651	4.7
Sn-113	392	115.0	d	2698	4.5
Cs-137	662	30.0	y	2390	4.6
Y-88	898	106.66	d	6325	4.5
Co-60	1173	5.271	y	3229	4.3
Co-60	1333	5.271	y	3240	4.6
Y-88	1836	106.66	d	6656	4.8

P O NUMBER TT3958, Item 6

Q A APPROVED D.M. Montgomery 5-23-91

41 = 1376 ÷ .037 = 37189.19 ÷ .359 = 103591.06 ÷ 80 = 1294.9 pCi/g ± 64.7 4.8% STARD
= 1801 ÷ .037 = 48675.68 ÷ .0372 = 1308485.91 ÷ 80 = 16356.1 ± 768.7
= 1144 ÷ .037 = 30918.92 ÷ .8551 = 36158.25 ÷ 80 = 451.9 ± 20.3
139 = 1760 ÷ .037 = 47567.57 ÷ .8035 = 59206.46 ÷ 80 = 740.0 ± 34.0
3 = 2698 ÷ .037 = 72918.92 ÷ .6490 = 112355.8 ÷ 80 = 1404.4 ± 63.2
7 = 2390 ÷ .037 = 64594.59 ÷ .8512 = 75886.5 ÷ 80 = 948.6 ± 43.6
18 = 6325 ÷ .037 = 170945.95 ÷ .934 = 183025.6 ÷ 80 = 2287.8 ± 103.0
= 3229 ÷ .037 = 87270.27 ÷ 1.0 = 87270.27 ÷ 80 = 1090.9 ± 46.4
= 3240 [illegible]

00025

SECTION VI

QUALITY CONTROL SAMPLE RESULTS SUMMARY

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
00-09041	H0003	1	pCi	g	ESE

Laboratory Control Sample

Analyte	Normalized Difference	LCS Measured	CU Measured	LCS Expected	CU Expected	Known	Known Error	Result	Error	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
H-3	0.48	93.08%	9.63%	100.00%	35.09%	1.23E+02	4.33E+01	1.15E+02	1.11E+01	H-5a	1.33E+04	3.60E+00	2.01E-01

Matrix Spike

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

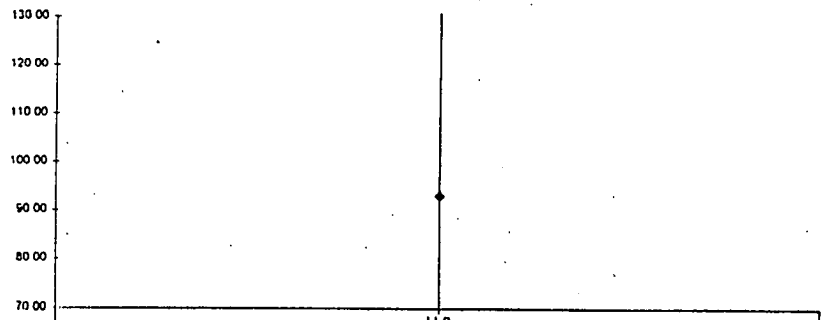
Replicate Sample / QC Summary

Analyte	Normalized Difference	RPD	Original Result	Original CU	Replicate Result	Replicate CU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
H-3	0.54	908.44	-9.29E-01	6.23E+00	1.45E+00	5.91E+00	0.93	OK	OK			INV	OK

00027

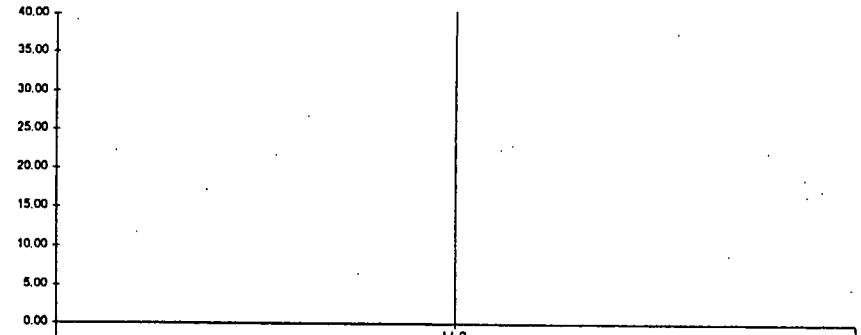
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
00-09041	H0003	1	pCi	g	ESE

LCS % Recovery



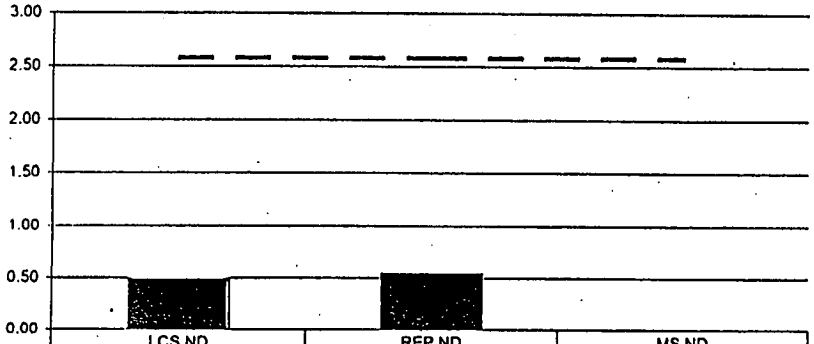
	H-3
Lower Error	48.36
Upper Error	137.81
%R	93.08
LCL	80
Mean	100
UCL	120

Replicate Sample RPD



	H-3
Lower Error	11411.69
Upper Error	-9594.82
RPD	908.44
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
H-3	0.48	0.54	0.00
UCL	2.58	2.58	2.58

No Matrix Spike

Version XXXXX

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
00-09041	SrTOT	1	pCi	g	ESE

Laboratory Control Sample

Analyte	Normalized Difference	LCS Measured	CU Measured	LCS Expected	CU Expected	Known	Known Error	Result	Error	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
TOTAL SR	5.29	85.46%	6.02%	100.00%	2.10%	2.13E+01	4.47E-01	1.82E+01	1.09E+00	Sr-4a	1.85E+02	2.10E+00	2.55E-01

Matrix Spike

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

Replicate Sample

Analyte	Normalized Difference	RPD	Original Result	Original CU	Replicate Result	Replicate CU
TOTAL SR	0.73	231.69	-1.74E-01	3.65E-01	1.27E-02	3.38E-01

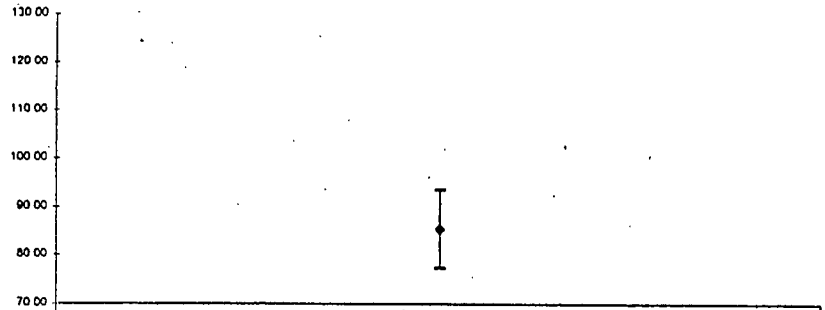
QC Summary

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

00023

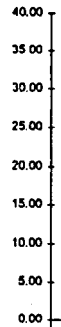
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
00-09041	SrTOT	1	pCi	g	ESE

LCS % Recovery



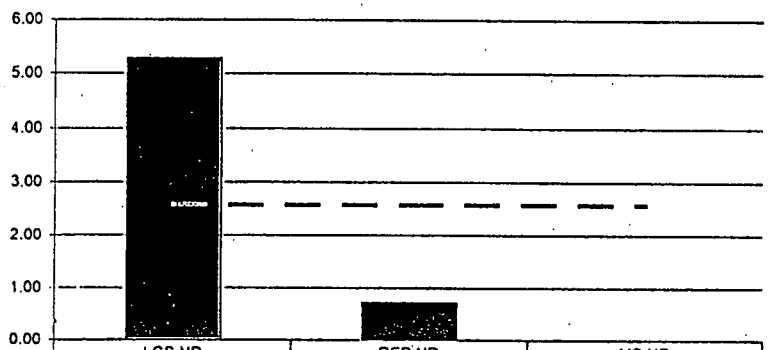
	TOTAL SR
Lower Error	77.34
Upper Error	93.59
%R	85.46
LCL	80
Mean	100
UCL	120

Replicate Sample RPD



	TOTAL SR
Lower Error	-274.90
Upper Error	738.29
RPD	231.69
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
TOTAL SR	5.29	0.73	0.00
UCL	2.58	2.58	2.58

No Matrix Spike

00030

Version XXXXX

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
00-09041	Gamma	1	pCi	g	ESE

Laboratory Control Sample

Analyte	Normalized Difference	LCS Measured	CU Measured	LCS Expected	CU Expected	Known	Known Error	Result	Error	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
CO-60	0.22	99.11%	7.16%	100.00%	4.45%	1.09E+03	4.87E+01	1.08E+03	7.75E+01	SJarB	1.09E+03	4.87E+01	8.00E+01
CS-137	0.93	105.33%	10.15%	100.00%	4.60%	9.49E+02	4.36E+01	9.99E+02	1.01E+02	SJarB	9.49E+02	4.36E+01	8.00E+01

Matrix Spike

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

Replicate Sample

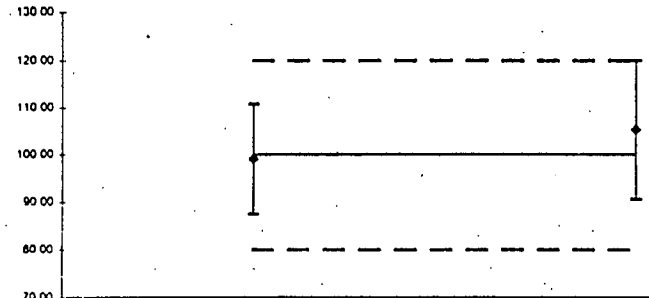
Analyte	Normalized Difference	RPD	Original Result	Original CU	Replicate Result	Replicate CU

QC Summary

LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND

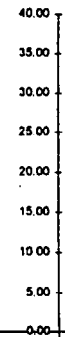
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
00-09041	Gamma	1	pCi	g	ESE

LCS % Recovery



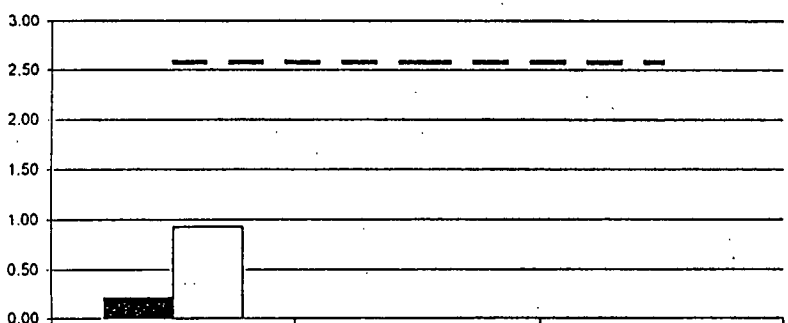
	CO-60	CS-137
Lower Error	87.50	90.59
Upper Error	110.72	120.08
%R	99.11	105.33
LCL	80	80
Mean	100	100
UCL	120	120

Replicate Sample RPD



Lower Error	0.00
Upper Error	0.00
RPD	0.00
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
CO-60	0.22	0.00	0.00
CS-137	0.93	0.00	0.00
UCL	2.58	2.58	2.58

No Matrix Spike

Version XXXXX

SECTION VII

LABORATORY TECHNICIAN'S NOTES

H-3 NOTES

06-09-041
DISTILLED 10 MLS OF SAMPLE SPIKED
SPIKE. PIPETTED 10MLS OF SAMPLE AND
10 MLS SCENULATION COCK TAIL COMPLISTED
PAPERWORK TOOK PAPERWORK AND SAMPLE
TO COUNT ROOM.
P. Farrell 9-12-00

PF

DATE	SAMPLE #	PROTOCOL	CLIENT	LOAD TIME	CT. TIME	ANALYSIS	TECH
-00	0008199A(1-5,B)	19/20	NFT	1830	9'15"	Tc99	[illegible]
1-00	0008264B(1-4,B)	2	Recu	1830	2'15"	H3	[illegible]
1-00	0008279A(1-5,B)	4,11	BSC	1830	9'45"	H3	[illegible]
1-00	0008283A(1-15,B)	13	Recu	1830	7'45	H3	[illegible]
1-00	0009042B(1-4,B)	3/17	Recu	1830	4'20"	C14	[illegible]
1-00	0008285B(1-3,6,7,8,10,11,B)		Recu	1400	4'45"	H3	[illegible]
12-00	0008286B(1-4,B)	13	Recu	1400	2'15"	H3	[illegible]
-00	0009004B(1-4,B)	16	Recu	1400	2'15"	H3	[illegible]
12-00	0008313A(1-4,B)	18	Recu	1400	2'15"	H3	[illegible]
12-00	0008142B(1-5,B)	4/13	NFT	1830	17'15"	Tc99	[illegible]
12-00	0008200A(1-4,B)	3/17	NFT	1830	4'20"	C14	[illegible]
-00	0008176A(1-4,B)	19/20	NFT	1150	8½ HR	Tc-99	JP
13-00	0009074A(1-3,6,7,B)	12/14	NFT	1500	5'15"	C14	[illegible]
-00	0008283B(1-3,7,14,B)	12	REFRA	0705	3HR 15min	H-3	JP
-00	0009040A(1-3,B)	4	ESE	0750	6HR.45min.	H-3	JP
-00	0009041A(1-12,B)	11	ESE	0750	6HR 15min.	H-3	JP

SR-90 NOTES

00-09-040 T. Su
00-09-041 T. Su

The samples were aliquoted. Carrier added to all samples. The LCS were spiked. The samples were digested in ~5 ml of HF to near dryness. The samples were then digested in 5 ml of HClO4 & 10 ml of c HNO3 to near dryness.

Charlotte P. McMurray 9-11-00

00-09-040 T. Su
00-09-041 T. Su

The samples were digested in 10 ml of HCl and 20 ml c HNO3 to dryness. The samples were digested in 10 ml of c HNO3 to near dryness.

Charlotte P. McMurray 9-12-00

CPM 9-12-00

00-09-065 9-13-00 Sr 89/90

The samples were aliquotted. Dup of #4 and MS of #12.

Charlotte P. McMurray 9-13-00

00-07-148 Sr 90

The columns were conditioned with 5 mL of 8M HNO_3. The samples were put over the columns.

Charlotte P. McMurray 9-13-00

00-07-148 Sr 90

The samples were rinsed with 5 mL of 8M HNO_3 3x5. The To: 9-14-00, 13:00. The Sr was eluted with 10 mL of 0.05M HNO_3. The samples are in ingrowth.

Charlotte P. McMurray 9-14-00

00-09-041 T.Sr

The samples were transferred to a tube with 8M HNO_3. The samples were centrifuged. The supernate was filtered into new a tube.

Charlotte P. McMurray 9-14-00

00-08-273 Sr 90

The column was conditioned with 5ml of 8M HNO3. The sample were put over the columns. Ti: 9-18-00 10:05. The Y samples were transfered to planchets and dried down. The Y samples were taken to the counting room. The Sr samples were eluted with 15 mls of 0.05M HNO3. The Sr samples were then transfered to tared planchets and dried down. After the Sr sample had dried down a final weight was obtained for gravimetric recovery.

Charlotte R. McMurray 9-18-00

00-08-176B T. Sr
00-09-041 T. Sr

The columns were conditioned with 5ml of 8M HNO3. The sample were put over the columns. The sample were rinsed 3x5 with 5ml of 8M HNO3. To: 9-18-00, 15:15. The Sr was eluted with 15 mls of 0.05M HNO3.

Charlotte R. McMurray 9-18-00

CRM 9-18-00

00-08-176 B T. L

The samples were transferred to tared blanchet and dried down. A final weight was obtained for gravimetric recovery. The samples were taken to the courtroom.

Charlotte P. McMurray 9-18-00

00-09-041 T. L

The samples were transferred to tared blanchet & dried down. A final weight was obtained for gravimetric recovery. The samples were taken to the courtroom.

Charlotte P. McMurray 9-19-00

9-19-00
CM

DATE	SAMPLE #	CLIENT	LOAD TIME	CT. TIME	ANALYSIS	TECH
9-15-00	0008359AB(1,2)	BJC	0730	30min.	αβ	JP
9-15-00	0009018AB1(3-5)	RECRA	0805	1½HR	αβ	JP
9-15-00	0009018AB2(6-11)	RECRA	0945	1½HR	αβ	JP
9-15-00	0009105AB1(3,4)	ATAS	1125	4HR	αβ	JP
9-15-00	0009105AB(1,2)	ATAS	1125	30min	αβ	JP
9-15-00	0008117BY(1-7)	MSA	1719	1hr	490	[illegible]
9-15-00	0009040A(1-5)	ESE	1805	1hr	SR	[illegible]
9-15-00	0009040A(6-13)	ESE	1830	1hr	SR	[illegible]
9-15-00	0009043A(1,2)	Recra	1935	30min	αβ	[illegible]
9-15-00	0009043A(3-9)	Recra	1935	5hr	αβ	[illegible]
9-18-00	Daily Blank	LAB	0340	1HR	Blank	JP
↓	QC	↓	0500	30min	Sr-90	JP
9-18-00	0008228PuA(1,2,4,5)	USG	0725	1HR	Pu-241	JP
9-18-00	0009102PA(1-6)	ECC	1400	2hr	Ra-228	[illegible]
9-18-00	0009102Ra(1-6)	ECC	1400	2hr	Ra-228	[illegible]
9-18-00	0009097A(5-12)	SCDhr	1705	90min	αβ	[illegible]
9-18-00	0008273(3,1,2,9,10)	Shaw	Shaw 1636	1hr	490	[illegible]
9-18-00	0009097A(B-15)	SCDhr	MT03 1734	90min	αβ	[illegible]
9-18-00	0009097AB(1,2)	SCDhr	1759	30min	αβ	[illegible]
9-18-00	0009097AB(3,4)	SCDhr	1838	3hr	αβ	[illegible]
9-19-00	Daily Blank	LAB	0235	1HR	Blank	JP
↓	QC	↓	0350	30min	Sr-90	JP
9-19-00	0008176SB(1-4,6,7)	NFT	0430	1HR	Sr	JP
9-19-00	0009041SA(1-12)	ESE	1150	1HR	Sr	JP

GAMMA NOTES

DATE	SAMPLE #	CLIENT	LOAD TIME	CT. TIME	ANALYSIS	TECH
9-11-00	0009040-11	ESE	1054	1HR	γ	[illegible]
9-11-00	0009040-02	ESE	1158	1HR	γ	[illegible]
9-11-00	0009041-06	ESE	1303	1hr	γ	[illegible]
9-11-00	0009041-02	ESE	1406	1hr	γ	[illegible]
9-11-00	0008020-03	NFT	1508	4hr	γ	[illegible]

DATE	SAMPLE#	CLIENT	LOAD TIME	CT. TIME	ANALYSIS	TECH
[redacted]-11-00	0008297-02	IT	0438	1HR	γ	JD
9-11-00	0008297-01	IT	0539	30min.	γ	JD
[redacted]-11-00	SJARA	LAB	0615	30min.	γ	JD
9-11-00	0009040-05	ESE	0647	1HR	γ	JD
[redacted]-11-00	0009040-06	ESE	0749	1HR	γ	JD
[redacted]-11-00	0009040-08	ESE	0851	1HR	γ	JD
[redacted]-11-00	0009040-09	ESE	0953	1HR	γ	JD
[redacted]-10-00	SJARB	LAB	1100	30min.	γ	JD
9-11-00	SJARB	LAB	1143	30min.	γ	JD
[redacted]-11-00	0009040-01	ESE	1215	30min.	γ	JD
9-11-00	0009041-07	ESE	1324	1hr	γ	[illegible]
[redacted]-11-00	0009041-11	ESE	1431	1hr	γ	[illegible]
9-11-00	0008200-05	NFT	1336	4hr	γ	[illegible]

Date	Sam#	Client	Load Time	Count Time	Analyst	Tech
9-8-00	0009035-06	BSC	1424	1hr	[illegible]	[illegible]
9-8-00	0009035-08	BSC	1526	1hr	[illegible]	[illegible]
9-8-00	0009035-02	BSC	1628	1hr	[illegible]	[illegible]
9-8-00	0008008-05	Recu	1729	4hr	[illegible]	[illegible]
9-8-00	0008008-07	Recu	2152	4hr	[illegible]	[illegible]
9-9-00	Chamber	lab	1222	1day	[illegible]	[illegible]
9-11-00	Daily Blood	LAB	0206	15min.	[illegible]	[illegible]
9-11-00	HAFOIRT	LAB	0310	15min.	[illegible]	[illegible]
9-11-00	HAFOIRT	LAB	0327	15min.	[illegible]	[illegible]
9-11-00	WATER	LAB	0409	30min.	[illegible]	[illegible]
9-11-00	SJARB	LAB	0453	30min.	[illegible]	[illegible]
9-11-00	0008176-03	NFT	0526	2HR	[illegible]	[illegible]
9-11-00	0008176.04	NFT	0729	2HR	[illegible]	[illegible]
9-11-00	0008176.02	NFT	0931	2HR	[illegible]	[illegible]
9-11-00	0009040.13	ESE	1141	1HR	[illegible]	[illegible]
9-11-00	0009041-05	ESE	1243	1hr	[illegible]	[illegible]
9-11-00	0009041-12	ESE	1354	1hr	[illegible]	[illegible]
9-11-00	0009041-09	ESE	1455	1hr	[illegible]	[illegible]
9-11-00	0009037-03	Recu	1601	1hr	[illegible]	[illegible]
9-11-00	0009037-04	Recu	1701	1hr	[illegible]	[illegible]

DATE	SAMPLE#	CLIENT	LOAD TIME	CT. TIME	ANALYSIS	TECH
9-9-00	90546 -029	NPBS	1220	5m	Ro-[illegible]	[illegible]
	-031		1226			
	-036		1232			
	-038		1237			
	-040		1243			
	-043		1249			
	-051		1256			
	-139		1302			
9-9-00	Chamber BKGD	lab	1315	1day	[illegible]	[illegible]
9-11-00	DAILY BKGD	LAB	0206	15min.	[illegible]	[illegible]
9-11-00	SJARB	LAB	0347	30min.	[illegible]	[illegible]
9-11-00	HAFDIRT	LAB	0454	30min.	[illegible]	[illegible]
9-11-00	WATER	LAB	0528	30min	[illegible]	[illegible]
9-11-00	0008176-05	NFT	0603	2HR	[illegible]	[illegible]
9-11-00	0008176-06	NFT	0805	2HR	[illegible]	[illegible]
9-11-00	0008176-01	NFT	1023	30min.	[illegible]	[illegible]
9-11-00	0009040-12	ESE	401	1HR	[illegible]	[illegible]
9-11-00	0009041-03 Rev	ESE	1203	1HR	[illegible]	[illegible]
9-11-00	~~0009041-02~~ 208	ESE	~~1243~~ 1304	1hr	[illegible]	[illegible]
9-11-00	0009041-01	ESE	1407	30m	[illegible]	[illegible]
9-11-00	0009041-04	ESE	1439	1hr	[illegible]	[illegible]
9-11-00	0009041-10	ESE	1840	hr	[illegible]	[illegible]
9-11-00	0009037-05	ESE Rev	1844	1hr	[illegible]	[illegible]

SECTION VIII

ANALYTICAL DATA (TRITIUM)

Work Order	00-09041
Analysis Code	H0003
Run	1
Date Received	9/7/00
Lab Deadline	9/19/00
Client	ESE
Project	660033.03
Report Level	4
Activity Units	pCi
Aliquot Units	g
Matrix	SO
Method	LANL ER210 Modified
Instrument Type	Beta LSC
Radiometric Tracer	H-3MS
Radiometric Sol#	H-5a
Tracer Act (dpm/g)	13272.048
Carrier	
Carrier Conc (mg/ml)	

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		09/07/00 14:26	9.7482E+00
02	MBL	BLANK		09/07/00 14:26	1.1170E+01
03	DUP	SS-11		09/06/00 08:10	9.6067E+00
04	DO	SS-11		09/06/00 08:10	9.2387E+00
05	TRG	SS-12		09/06/00 08:45	9.7287E+00
06	TRG	SS-13		09/06/00 09:47	9.6227E+00
07	TRG	SS-14		09/06/00 11:10	9.7092E+00
08	TRG	SS-15		09/06/00 10:53	9.7970E+00
09	TRG	SS-16		09/06/00 11:35	9.5857E+00
10	TRG	SS-17		09/06/00 11:48	9.7405E+00
11	TRG	SS-18		09/06/00 06:50	9.6946E+00
12	TRG	SS-19		09/06/00 07:32	9.6104E+00

00049

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only.

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	0.3010	3994.9										
02	MBL	0.1006	1335.2										
03	DUP	0.0997	1323.2										
04	DO	0.1011	1341.8										
05	TRG	0.1011	1341.8										
06	TRG	0.1006	1335.2										
07	TRG	0.1004	1332.5										
08	TRG	0.1011	1341.8										
09	TRG	0.1008	1337.8										
10	TRG	0.1008	1337.8										
11	TRG	0.1007	1336.5										
12	TRG	0.1003	1331.2										

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only.

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			09/12/00 17:41	PFARRELL				
02	MBL			09/12/00 17:41	PFARRELL				
03	DUP			09/12/00 17:41	PFARRELL				
04	DO	09/08/00 08:28	TMILES	09/12/00 17:41	PFARRELL				
05	TRG	09/08/00 08:28	TMILES	09/12/00 17:41	PFARRELL				
06	TRG	09/08/00 08:28	TMILES	09/12/00 17:41	PFARRELL				
07	TRG	09/08/00 08:28	TMILES	09/12/00 17:41	PFARRELL				
08	TRG	09/08/00 08:28	TMILES	09/12/00 17:41	PFARRELL				
09	TRG	09/08/00 08:28	TMILES	09/12/00 17:41	PFARRELL				
10	TRG	09/08/00 08:28	TMILES	09/12/00 17:41	PFARRELL				
11	TRG	09/08/00 08:28	TMILES	09/12/00 17:41	PFARRELL				
12	TRG	09/08/00 08:28	TMILES	09/12/00 17:41	PFARRELL				

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only.

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
00-09041	1	H0003	9/12/00 17:32	PFARRELL		

LCS & Matrix Spikes					LCS	MS	LCSD	MSD	LCS		MS		LCSD		MSD	
Isotope	Sol #	Activity dpm/ml	Solution Date	Approx Addition	Volume Used (ml)	Volume Used (ml)	Volume Used (ml)	Volume Used (ml)	Known pCi	Error Estimate	Added pCi	Error Estimate	Known pCi	Error Estimate	Added pCi	Error Estimate
H-3	H-5a	13272.048	9/12/00	0.210	0.2012				1202.85	43.303	0.00	0.000	0.00	0.000	0.00	0.000

Tracers							Balance Printer Tapes	
fraction	Isotope	Sol #	Activity dpm/ml	Solution Date	Volume Used (ml)	Approx Addition	Tracer	LCS
01	H-3MS	H-5a	13272.048	9/12/00	0.3010	0.1100		
02	H-3MS	H-5a	13272.048	9/12/00	0.1006	0.1100		
03	H-3MS	H-5a	13272.048	9/12/00	0.0997	0.1100		
04	H-3MS	H-5a	13272.048	9/12/00	0.1011	0.1100		
05	H-3MS	H-5a	13272.048	9/12/00	0.1011	0.1100		
06	H-3MS	H-5a	13272.048	9/12/00	0.1006	0.1100		
07	H-3MS	H-5a	13272.048	9/12/00	0.1004	0.1100		
08	H-3MS	H-5a	13272.048	9/12/00	0.1011	0.1100		
09	H-3MS	H-5a	13272.048	9/12/00	0.1008	0.1100		
10	H-3MS	H-5a	13272.048	9/12/00	0.1008	0.1100		
11	H-3MS	H-5a	13272.048	9/12/00	0.1007	0.1100		
12	H-3MS	H-5a	13272.048	9/12/00	0.1003	0.1100		

00052

Thermo Retec - Oak Ridge
Version 2.0 8/1999

Aliquot Worksheet

Work Order	Run	Analysis Code	Aliquot Units	Lab Deadline	Technician
00-09041	1	H0003	grams	9/19/00	PFARRELL

TRetec	ESE	Sample	Muffle Data	Dilution Data			Aliquot Data		MS Aliquot Data		H-3 Solids Only	
Fraction	Client ID	Type	Ratio Post/Pre	Aliquot	Final (ml)	Ratio	Aliquot	Net Equiv	Aliquot	Net Equiv	Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					9.7482	9.7482E+00	9.1421	9.1421E+00	100.0000	10.0000
02	BLANK	MBL					11.1702	1.1170E+01	11.1726	1.1173E+01	100.0000	10.0000
03	SS-11	DUP					9.6067	9.6067E+00	9.8818	9.8818E+00	100.0000	10.8190
04	SS-11	DO					9.2387	9.2387E+00	9.4823	9.4823E+00	100.0000	10.8190
05	SS-12	TRG					9.7287	9.7287E+00	9.5711	9.5711E+00	100.0000	9.5210
06	SS-13	TRG					9.6227	9.6227E+00	9.5327	9.5327E+00	100.0000	12.5740
07	SS-14	TRG					9.7092	9.7092E+00	9.4504	9.4504E+00	100.0000	10.8050
08	SS-15	TRG					9.7970	9.7970E+00	9.5823	9.5823E+00	100.0000	9.5690
09	SS-16	TRG					9.5857	9.5857E+00	9.5715	9.5715E+00	100.0000	8.1020
10	SS-17	TRG					9.7405	9.7405E+00	9.6770	9.6770E+00	100.0000	8.6780
11	SS-18	TRG					9.6946	9.6946E+00	9.5420	9.5420E+00	100.0000	12.5210
12	SS-19	TRG					9.6104	9.6104E+00	9.6488	9.6488E+00	100.0000	11.4480

Comments	

00053

Technician: P. Farrell Date: 9/12/00

Thermo Retec - 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
00-09041	09/19/00	09/07/00	09/08/00	09/09/00	TMILES

TRetec Fraction	ESE Client ID	Tare (g) Pan Wt	Gross (g) Wet Wt.	Gross (g) Dry Wt.	Net (g) Wet Wt.	Net (g) Dry Wt.	Percent Liquid	Percent Solid	Gamma Dry Wt.	Gamma LEPS Wt.	Special Info
04	SS-11	13.6020	250.0200	244.5560	236.4180	230.9540	2.31%	97.69%	140.0120		
05	SS-12	13.5640	329.8650	320.3490	316.3010	306.7850	3.01%	96.99%	150.5120		
06	SS-13	13.5850	216.4860	213.1680	202.9010	199.5830	1.64%	98.36%	147.5090		
07	SS-14	13.5830	292.1330	289.6280	278.5500	276.0450	0.90%	99.10%	187.1380		
08	SS-15	13.5420	244.3490	237.4210	230.8070	223.8790	3.00%	97.00%	152.8550		
09	SS-16	13.5550	268.8110	264.2970	255.2560	250.7420	1.77%	98.23%	148.2160		
10	SS-17	13.5610	229.4590	222.5200	215.8980	208.9590	3.21%	96.79%	136.3090		
11	SS-18	13.5480	329.4850	325.4290	315.9370	311.8810	1.28%	98.72%	214.2390		
12	SS-19	13.5460	225.0730	217.3690	211.5270	203.8230	3.64%	96.36%	126.4380		

Comments	Samples were dried and pulverized for chemistry and gamma spectroscopy.
Special Codes	H: Hot, O: Organic Hazard, P: PCB Hazard, R: Rush, T: Other (see comments)

00034

Technician: TMil Date: 9/8/00 / Analysis: H0003

Client: ESE

Tracer ID: H-3a

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	09/07/00 14:26	9.7482	0.3010	3994.8864				
02	MBL	BLANK	09/07/00 14:26	11.1702	0.1006	1335.1680				
03	DUP	SS-11	09/06/00 08:10	9.6067	0.0997	1323.2232				
04	DO	SS-11	09/06/00 08:10	9.2387	0.1011	1341.8041				
05	TRG	SS-12	09/06/00 08:45	9.7287	0.1011	1341.8041				
06	TRG	SS-13	09/06/00 09:47	9.6227	0.1006	1335.1680				
07	TRG	SS-14	09/06/00 11:10	9.7092	0.1004	1332.5136				
08	TRG	SS-15	09/06/00 10:53	9.7970	0.1011	1341.8041				
09	TRG	SS-16	09/06/00 11:35	9.5857	0.1008	1337.8224				
10	TRG	SS-17	09/06/00 11:48	9.7405	0.1008	1337.8224				
11	TRG	SS-18	09/06/00 06:50	9.6946	0.1007	1336.4952				
12	TRG	SS-19	09/06/00 07:32	9.6104	0.1003	1331.1864				

Client: ESE
ThermoRetec Work Order: 00-09041
Analysis Code: H0003
Run: 1

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	H-3	LCS	LCS	pCi/g	1.15E+02	1.11E+01	1.09E+01	1.23E+02	93.08	OK		INV	
02	H-3	MBL	BLANK	pCi/g	1.05E+01	7.55E+00	1.23E+01					INV	OK
03	H-3	DUP	SS-11	pCi/g	1.45E+00	5.91E+00	1.03E+01				INV	INV	
04	H-3	DO	SS-11	pCi/g	-9.29E-01	6.23E+00	1.11E+01					INV	
05	H-3	TRG	SS-12	pCi/g	-1.51E-01	6.53E+00	1.15E+01					INV	
06	H-3	TRG	SS-13	pCi/g	-4.81E-01	5.17E+00	9.15E+00					INV	
07	H-3	TRG	SS-14	pCi/g	4.75E+00	5.89E+00	9.89E+00					INV	
08	H-3	TRG	SS-15	pCi/g	3.46E+00	6.77E+00	1.16E+01					INV	
09	H-3	TRG	SS-16	pCi/g	5.07E+00	8.42E+00	1.43E+01					INV	
10	H-3	TRG	SS-17	pCi/g	2.98E+00	7.32E+00	1.26E+01					INV	
11	H-3	TRG	SS-18	pCi/g	-2.01E+00	4.77E+00	8.61E+00					INV	
12	H-3	TRG	SS-19	pCi/g	-2.08E+00	5.49E+00	9.89E+00					INV	

FAXED

Client: ESE

ThermoRetec Work Order: 00-09041

Analysis Code: H0003

Run: 1

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	H-3	LCS	09/07/00 14:26	9.7482		0.00	0.00			
02	H-3	MBL	09/07/00 14:26	11.1702		0.00	0.00			
03	H-3	DUP	09/06/00 08:10	9.6067		0.00	0.00			
04	H-3	DO	09/06/00 08:10	9.2387		0.00	0.00			
05	H-3	TRG	09/06/00 08:45	9.7287		0.00	0.00			
06	H-3	TRG	09/06/00 09:47	9.6227		0.00	0.00			
07	H-3	TRG	09/06/00 11:10	9.7092		0.00	0.00			
08	H-3	TRG	09/06/00 10:53	9.7970		0.00	0.00			
09	H-3	TRG	09/06/00 11:35	9.5857		0.00	0.00			
10	H-3	TRG	09/06/00 11:48	9.7405		0.00	0.00			
11	H-3	TRG	09/06/00 06:50	9.6946		0.00	0.00			
12	H-3	TRG	09/06/00 07:32	9.6104		0.00	0.00			

ThermoRetec Work Order: 00-09041

Client: ESE

Analysis Code: H0003

Run: 1

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	H-3	LCS	09/15/00 18:14	4485.27	2550	1	15	739.05	9.13	0.161685053
02	H-3	MBL	09/15/00 18:44	4485.27	2550	3	15	185.85	9.13	0.125474844
03	H-3	DUP	09/15/00 19:14	4485.27	2550	5	15	145.05	9.13	0.161151953
04	H-3	DO	09/15/00 19:44	4485.27	2550	7	15	132.15	9.13	0.155700826
05	H-3	TRG	09/15/00 20:14	4485.27	2550	9	15	136.2	9.13	0.161424464
06	H-3	TRG	09/15/00 20:44	4485.27	2550	11	15	133.95	9.13	0.155396172
07	H-3	TRG	09/15/00 21:14	4485.27	2550	13	15	164.4	9.13	0.165754403
08	H-3	TRG	09/15/00 21:44	4485.27	2550	15	15	154.05	9.13	0.158905467
09	H-3	TRG	09/15/00 22:14	4485.27	2550	17	15	157.2	9.13	0.154788852
10	H-3	TRG	09/15/00 22:44	4485.27	2550	19	15	150.45	9.13	0.161934793
11	H-3	TRG	09/15/00 23:14	4485.27	2550	21	15	123.6	9.13	0.164662016
12	H-3	TRG	09/15/00 23:44	4485.27	2550	23	15	124.95	9.13	0.158445127

Internal Work Order: 00-09041
Run: 1

Fraction	Isotope	LSCSampleType	AnalysisCode	InstrumentID	ProtocolID	PID	SNumber	CountDuration	CPM_A	CPM_B	CPM_C	SIS	tSIE	DataSource	CountTime
1	H-3	S	H0003	2550	11	16	1	15	19.53	49.27	58.4	329.482		I	09/15/2000 18:14
1	H-3	M	H0003	2550	11	16	2	15	142.27	263.43	272.8	308.599		I	09/15/2000 18:29
2	H-3	S	H0003	2550	11	16	3	15	0.67	12.39	24.53	338.115		I	09/15/2000 18:44
2	H-3	M	H0003	2550	11	16	4	15	116.6	179.92	189.93	260.658		I	09/15/2000 18:59
3	H-3	S	H0003	2550	11	16	5	15	1.2	9.67	20.4	324.12		I	09/15/2000 19:14
3	H-3	M	H0003	2550	11	16	6	15	104.47	222.91	233.07	328.695		I	09/15/2000 19:29
4	H-3	S	H0003	2550	11	16	7	15	0.73	8.81	19.73	307.631		I	09/15/2000 19:44
4	H-3	M	H0003	2550	11	16	8	15	109.07	217.73	231.27	323.575		I	09/15/2000 19:59
5	H-3	S	H0003	2550	11	16	9	15	1.4	9.08	19.27	341.151		I	09/15/2000 20:14
5	H-3	M	H0003	2550	11	16	10	15	116.87	225.68	236.07	313.185		I	09/15/2000 20:29
6	H-3	S	H0003	2550	11	16	11	15	1	8.93	17.87	306.923		I	09/15/2000 20:44
6	H-3	M	H0003	2550	11	16	12	15	119.93	216.41	225.27	318.073		I	09/15/2000 20:59
7	H-3	S	H0003	2550	11	4	13	15	0.93	10.96	19.6	314.68		I	09/15/2000 21:14
7	H-3	M	H0003	2550	11	4	14	15	129.73	231.83	242.33	306.746		I	09/15/2000 21:29
8	H-3	S	H0003	2550	11	4	15	15	1.67	10.27	21.53	315.987		I	09/15/2000 21:44
8	H-3	M	H0003	2550	11	4	16	15	113.33	223.49	234.67	328.45		I	09/15/2000 21:59
9	H-3	S	H0003	2550	11	4	17	15	1.13	10.48	19.53	326.949		I	09/15/2000 22:14
9	H-3	M	H0003	2550	11	4	18	15	118.2	217.56	227.87	318.145		I	09/15/2000 22:29
10	H-3	S	H0003	2550	11	4	19	15	0.93	10.03	20.47	325.926		I	09/15/2000 22:44
10	H-3	M	H0003	2550	11	4	20	15	119.33	226.67	237.13	315.025		I	09/15/2000 22:59
11	H-3	S	H0003	2550	11	4	21	15	1.07	8.24	19.2	331.668		I	09/15/2000 23:14
11	H-3	M	H0003	2550	11	4	22	15	124.4	228.31	238.4	306.327		I	09/15/2000 23:29
12	H-3	S	H0003	2550	11	4	23	15	1.4	8.33	19.2	305.063		I	09/15/2000 23:44
12	H-3	M	H0003	2550	11	4	24	15	114.27	219.25	229	309.232		I	09/15/2000 23:59
0	H-3	B	H0003	2550	11	1	25	15	0.93	9.13	19.93	275.085		I	09/16/2000 0:14

00059

Sep 2000 18:07 TRI-CARB - 1.09 Page #1

ocol #:11 TRITIUM User : ESE

9-16-00

: 15.00

Mode: CPM Nuclide: TRITIUM

ound Quench: None

	LL	UL	LOS	DOS%	BKG
A:	[illegible] - 1.0	0	0.0	0.00	
B:	[illegible] - 18.6	0	0.0	0.00	
top C:	[illegible] - 125	0	0.0	0.00	

Indicator: tSIE

Ext Std Terminator: Count

041A(1-1293KGD)

ence Time(ns): 18

efore Burst(ns): Normal

ocol Data Filename: C:\SPECTRA\PROT.DAT

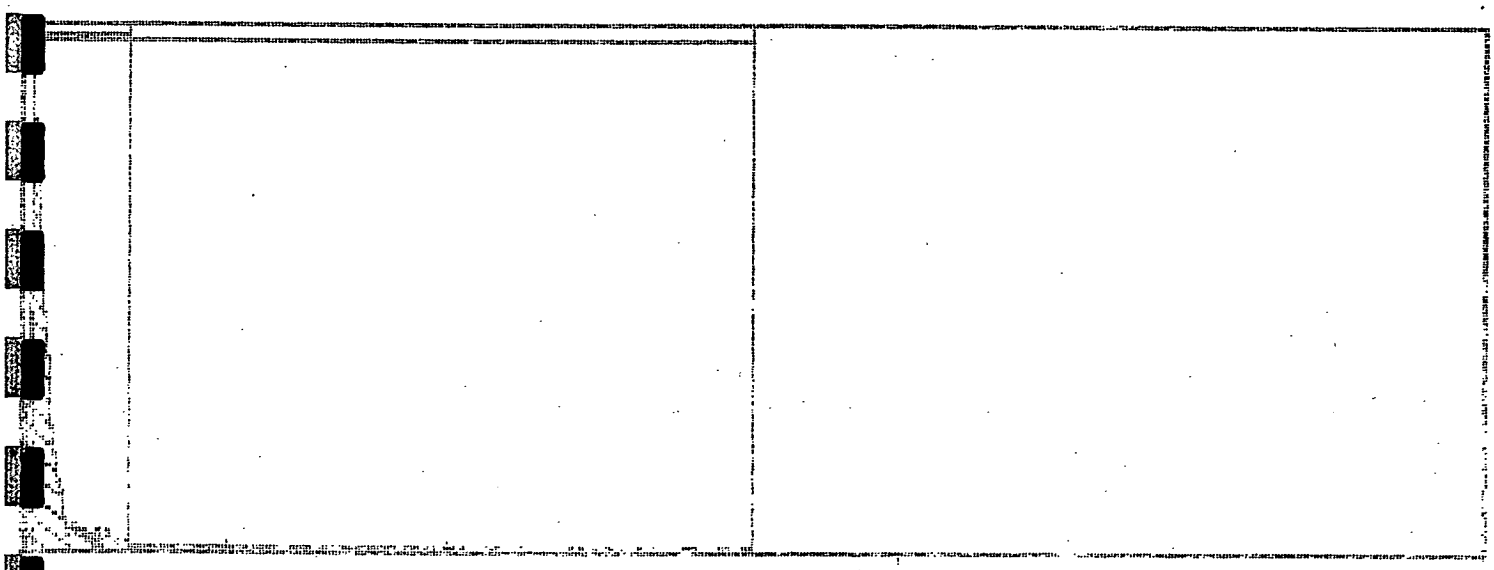
ata Filename: C:\SPECTRA\SDATA11.DAT

m Data Drive & Path: C:\SPECTRA

	PID	S#	TIME	CPMA	CPMB	CPMC	tSIE
1	16	1	15.00	19.53	49.27	58.40	329.48

SPECTRUM PLOT

CPM Y maximum Protocol No. 11 Sample No. 1 Repeat 1



keV 250

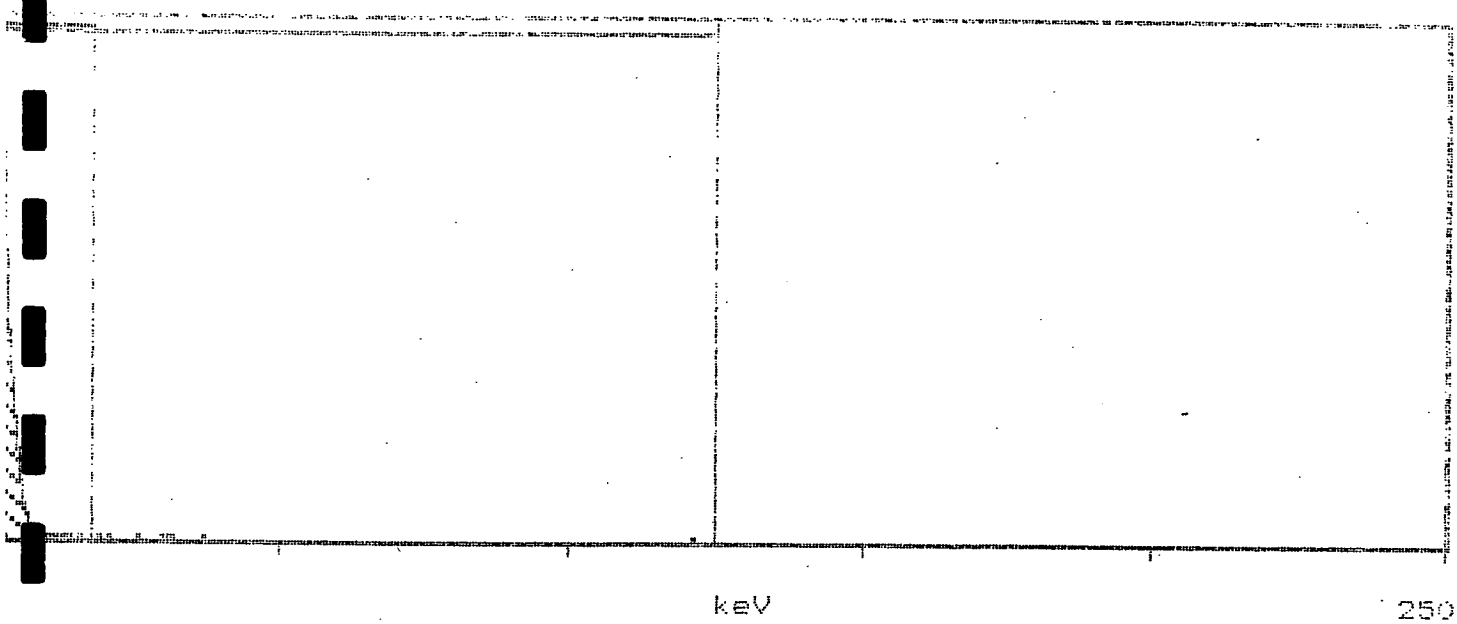
Region	L	UL	CPM
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

00060

[illegible] 272 30 [illegible] 60

PROTOCOL PLOT

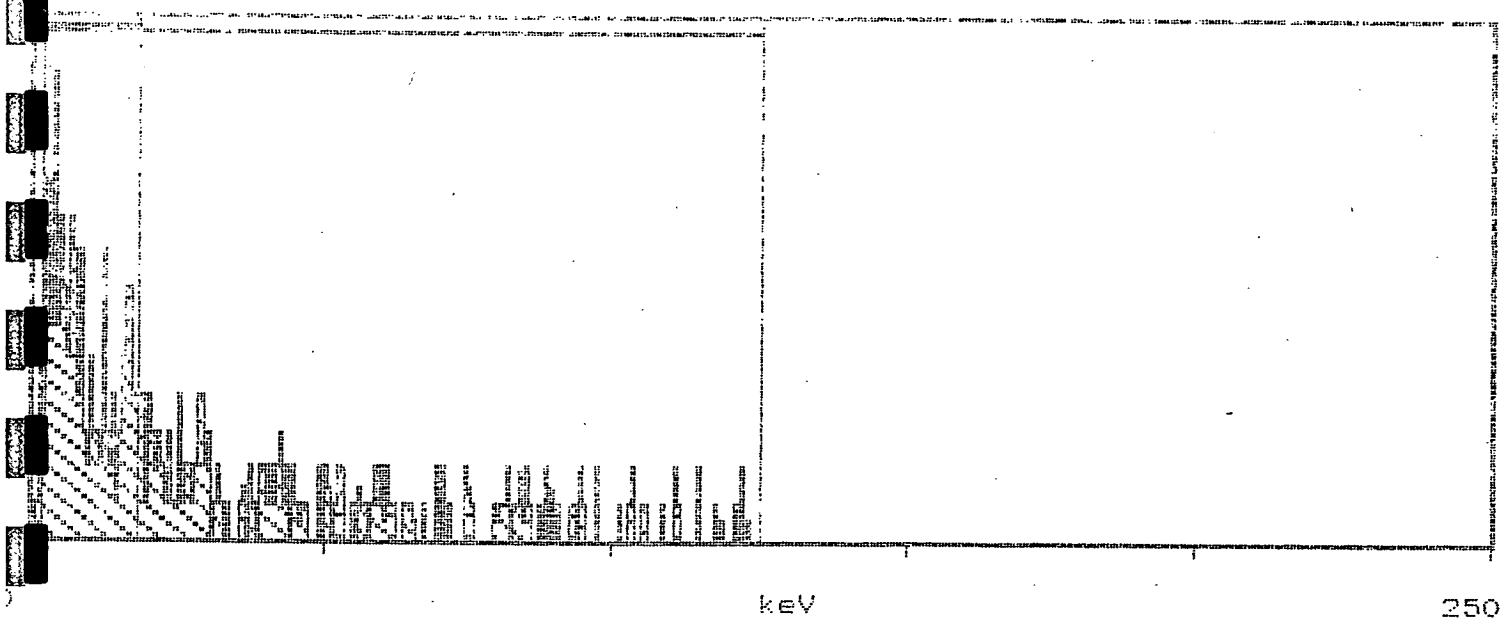
[illegible] Sample No. 11 Sample No. 2 Repeat 1



Region	LL	UL	CPM
A:	0.0	2.0	142.3
B:	2.0	18.6	263.4
C:	2.0	125.	272.8

SPECTRUM PLOT

CPM Y maximum Product No. 11 Sample No. I Repeat 1

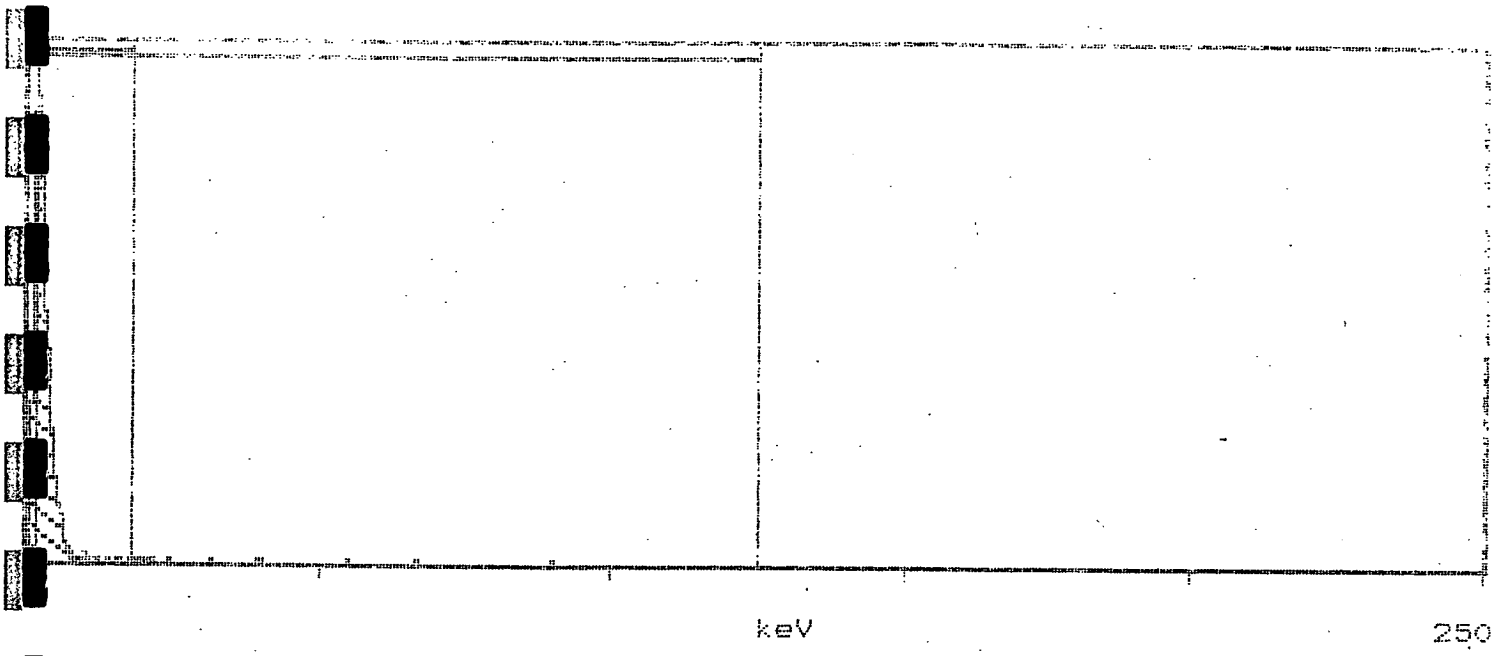


Region	LL	UL	CPM
A:	0.0	2.0	0.7
B:	2.0	18.6	12.4
C:	2.0	125.	24.5

[illegible] 4 [illegible] LL.00 179.93 189.93 250.66

SPECTRUM PLOT

[illegible] CPM Y maximum Protocol No. 11 Sample No. 4 Repeat 1

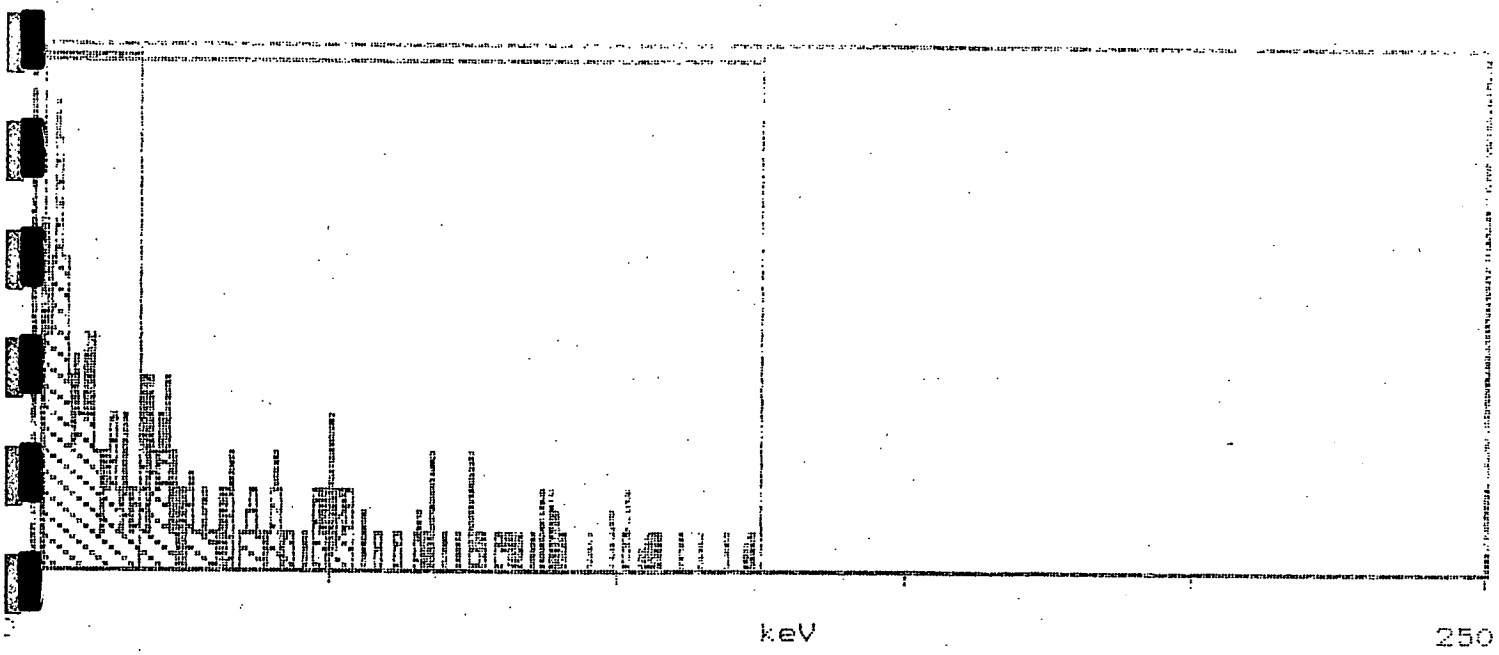


Region	LL	UL	CPM
A:	0.0	2.0	116.6
B:	2.0	18.6	179.9
C:	2.0	125.	189.9

[illegible]

SPECTRUM PLOT

CPM Y maximum Material No. [illegible] Sample No. 5 Repeat 1

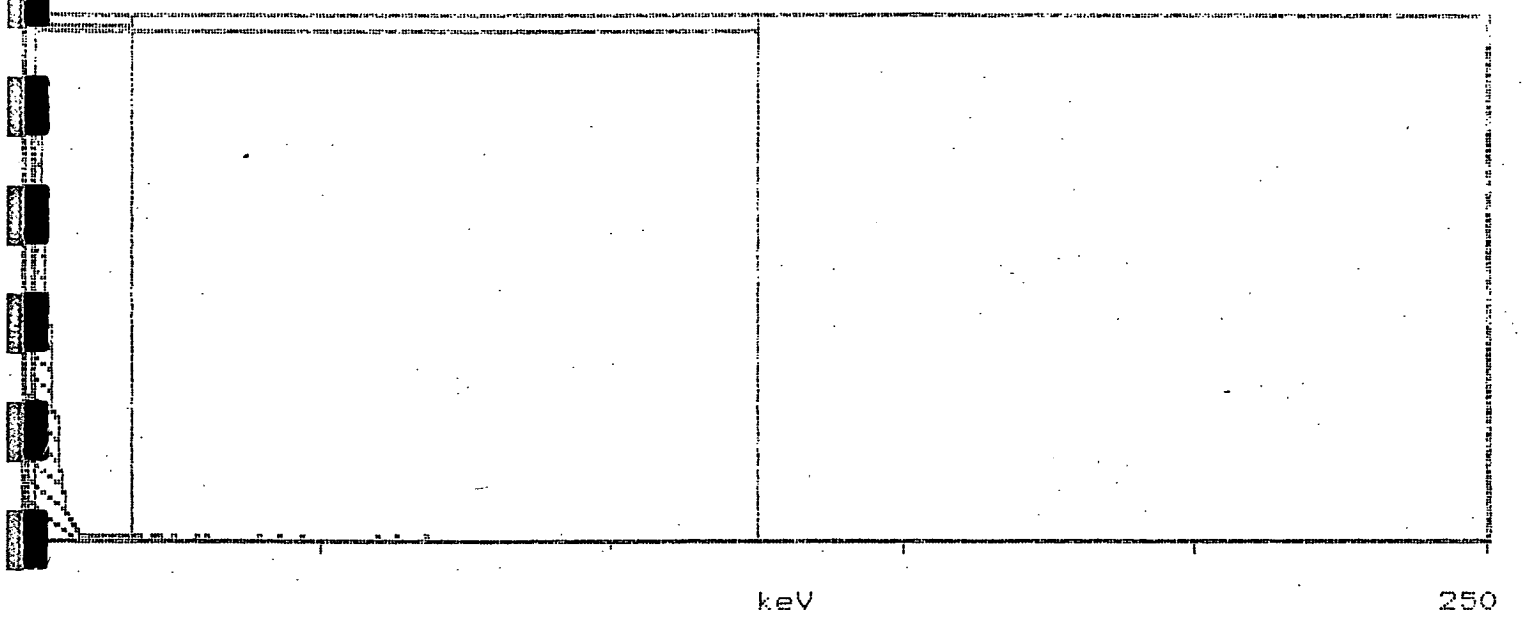


Region	LL	UL	CPM
A:	0.0	2.0	1.2
B:	2.0	18.6	9.7
C:	2.0	125.	20.4

4 15.00 101.47 222.71 233.07 328.79

SPECTRUM PLOT

CPM Y maximum Protocol No. 11 Sample No. 4 Repeat 1

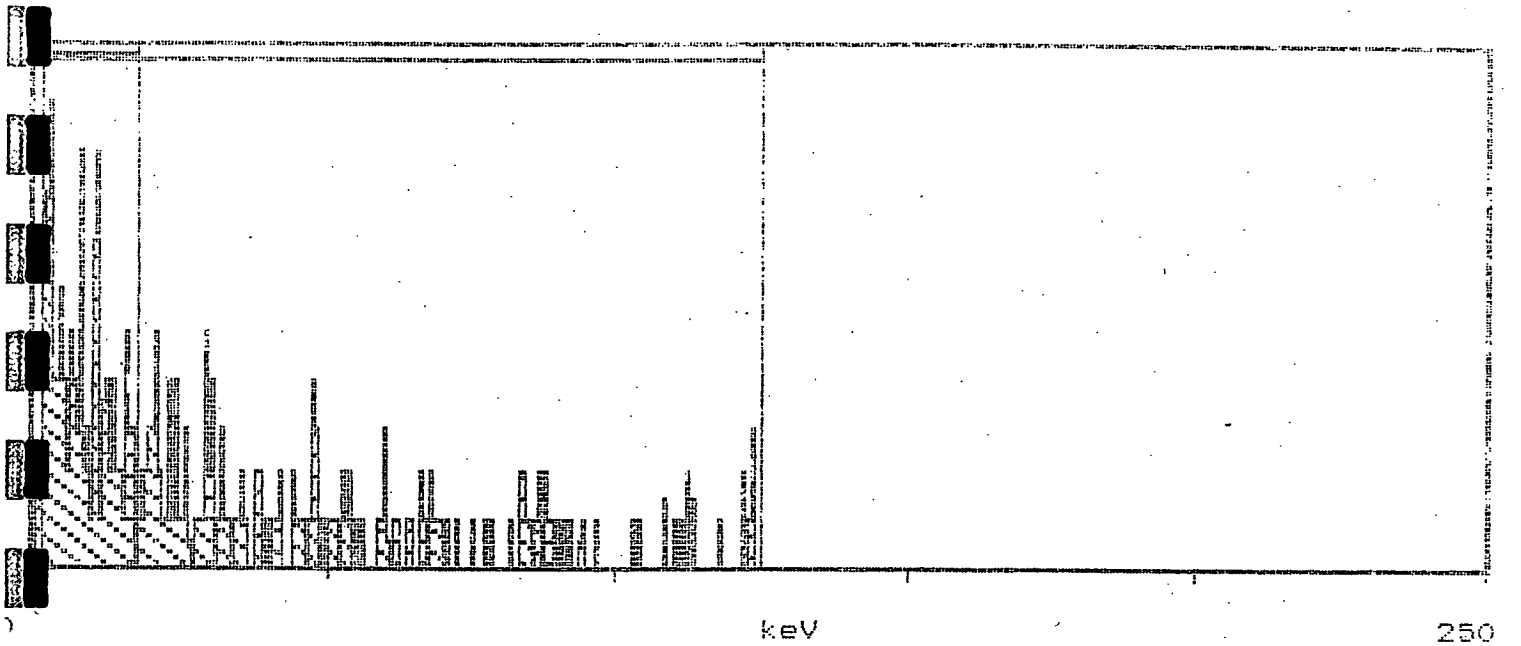


Region	LL	UL	CPM
A:	0.0	2.0	104.5
B:	2.0	18.6	222.9
C:	2.0	125.	233.1

1 11 7 [illegible] 0.73 8.81 19.77 307.67

SPECTRUM PLOT

CPM Y maximum Protocol No. 11 Sample No. 7 Repeat 1

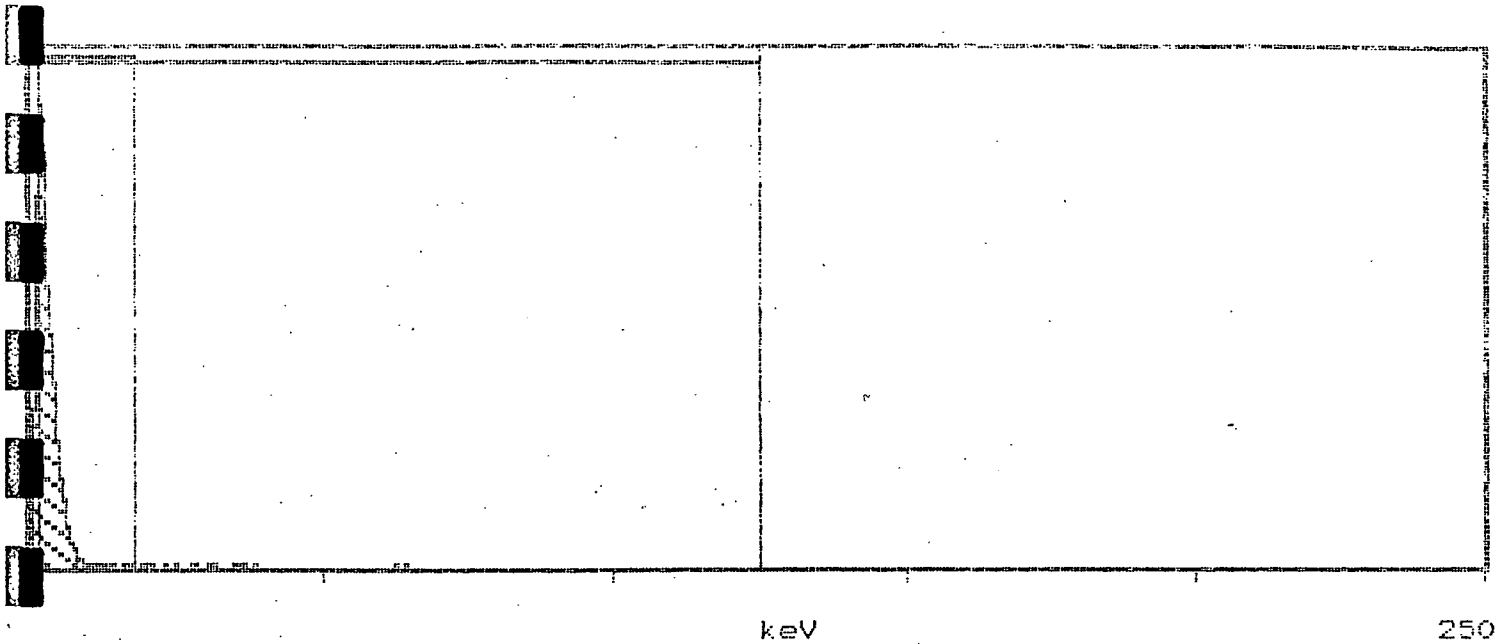


Region	LL	UL	CPM
A:	0.0	2.0	0.7
B:	2.0	18.6	8.8
C:	2.0	125.	19.7

1 3 15.00 109.07 217.72 271.27 323.58

SPECTRUM PLOT

0.7 CPM Y maximum Protocol No. 11 Sample No. 2 Repeat 1

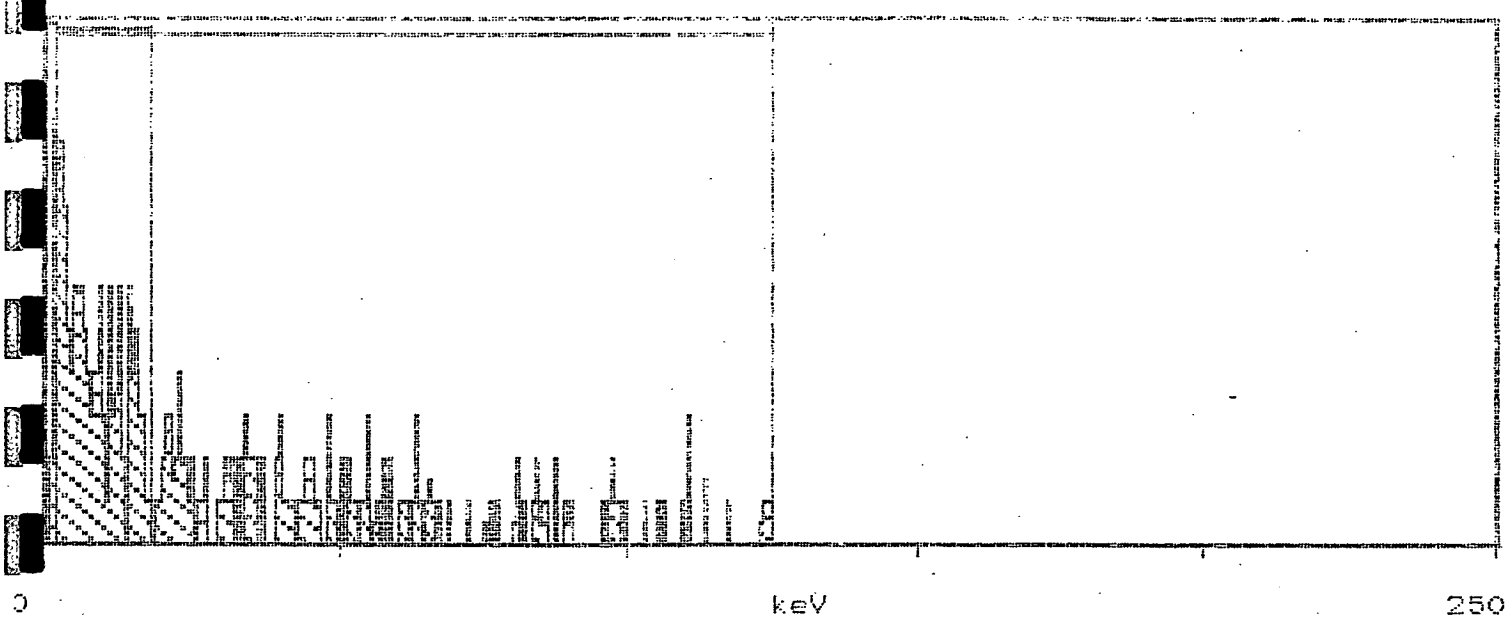


Region	LL	UL	CPM
A:	0.0	2.0	109.1
B:	2.0	18.6	217.7
C:	2.0	125.	231.3

[illegible]

SPECTRUM PLOT

CPM Y maximum Protocol No. 11 Sample No. 9 Repeat 1

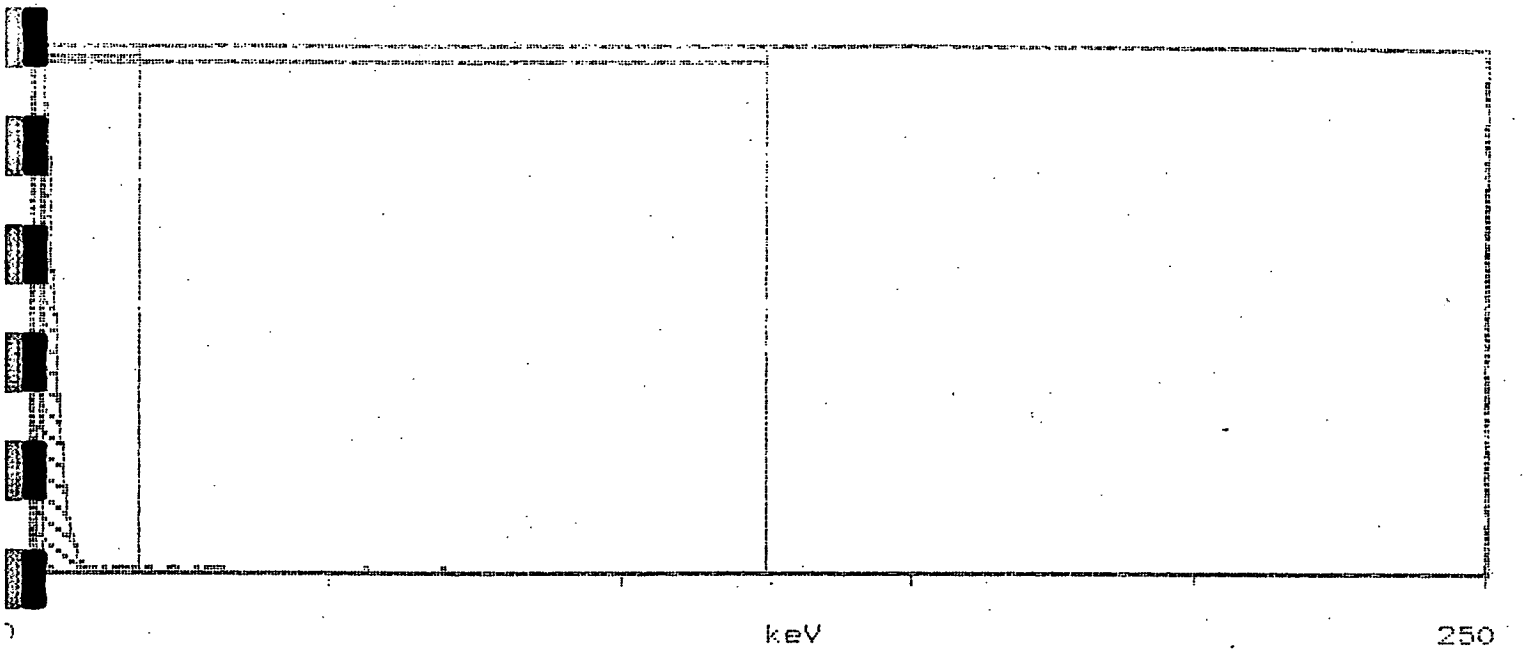


Region	LL	UL	CPM
A:	0.0	2.0	1.4
B:	2.0	18.6	9.1
C:	2.0	125.	19.3

[illegible] 313 19

[illegible]

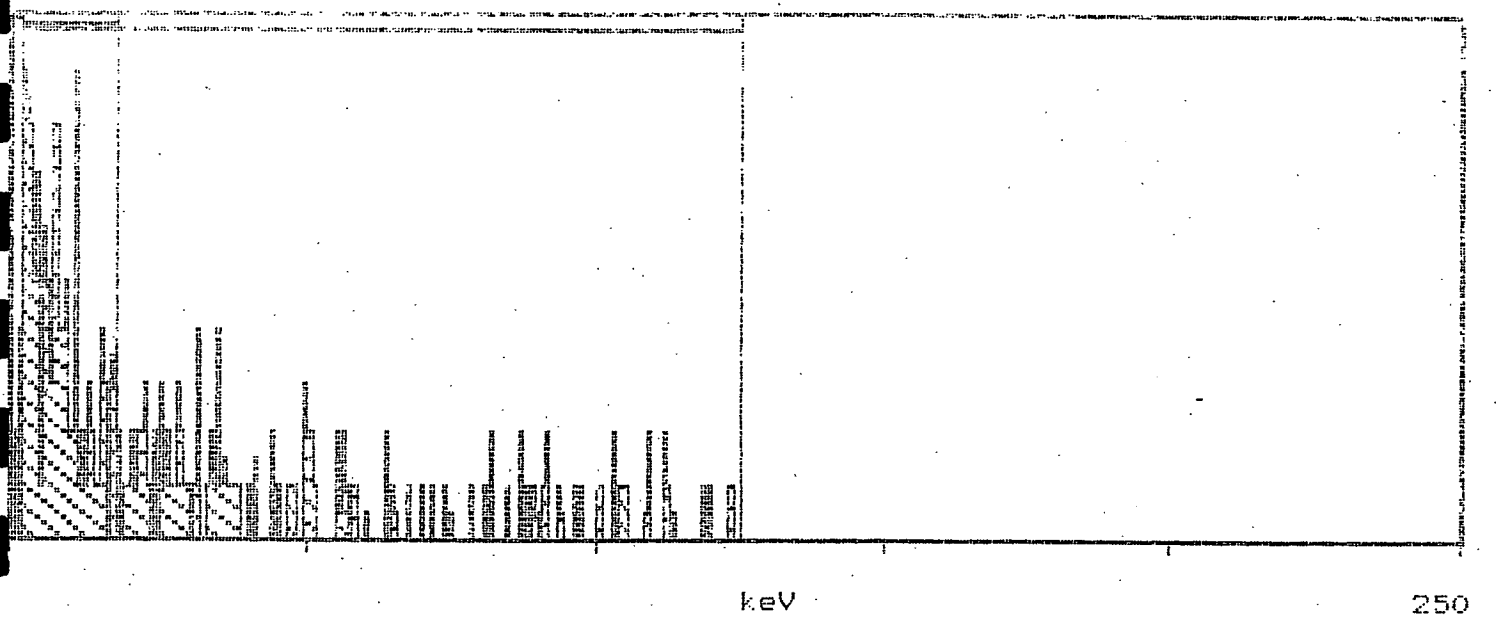
CPM Y maximum Protocol No. 11 Sample No. 10 Repeat 1



Region	LL	UL	CPM
A:	0.0	2.0	116.9
B:	2.0	18.6	225.7
C:	2.0	125.	236.1

SPECTRUM PLOT

CPM Y maximum Protocol No 11 Sample No 11 Repeat 1

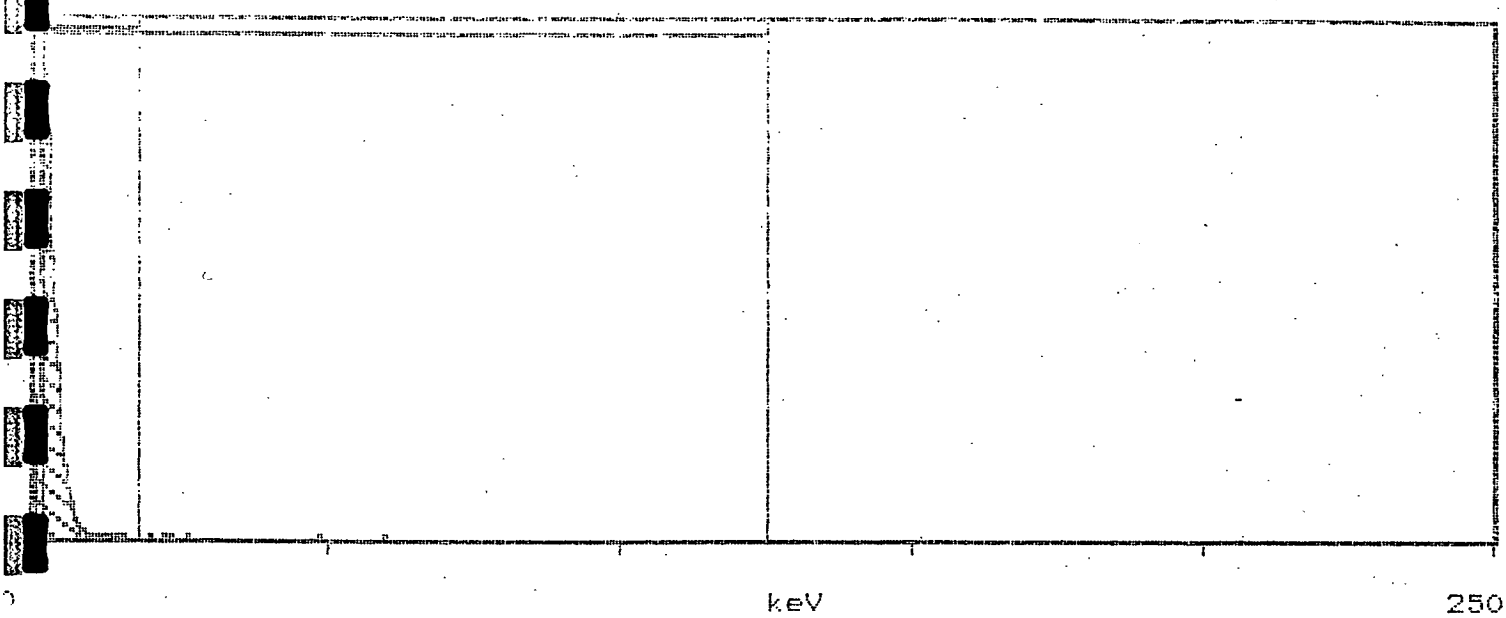


Region	LL	UL	CPM
A:	0.0	2.0	1.0
B:	2.0	18.6	8.9
C:	2.0	125.	17.9

12 13.00 119.97 [illegible] 225.37 313.07

SPECTRUM PLOT

CPM % maximum Protocol No. 11 Sample No. 12 Repeat 1

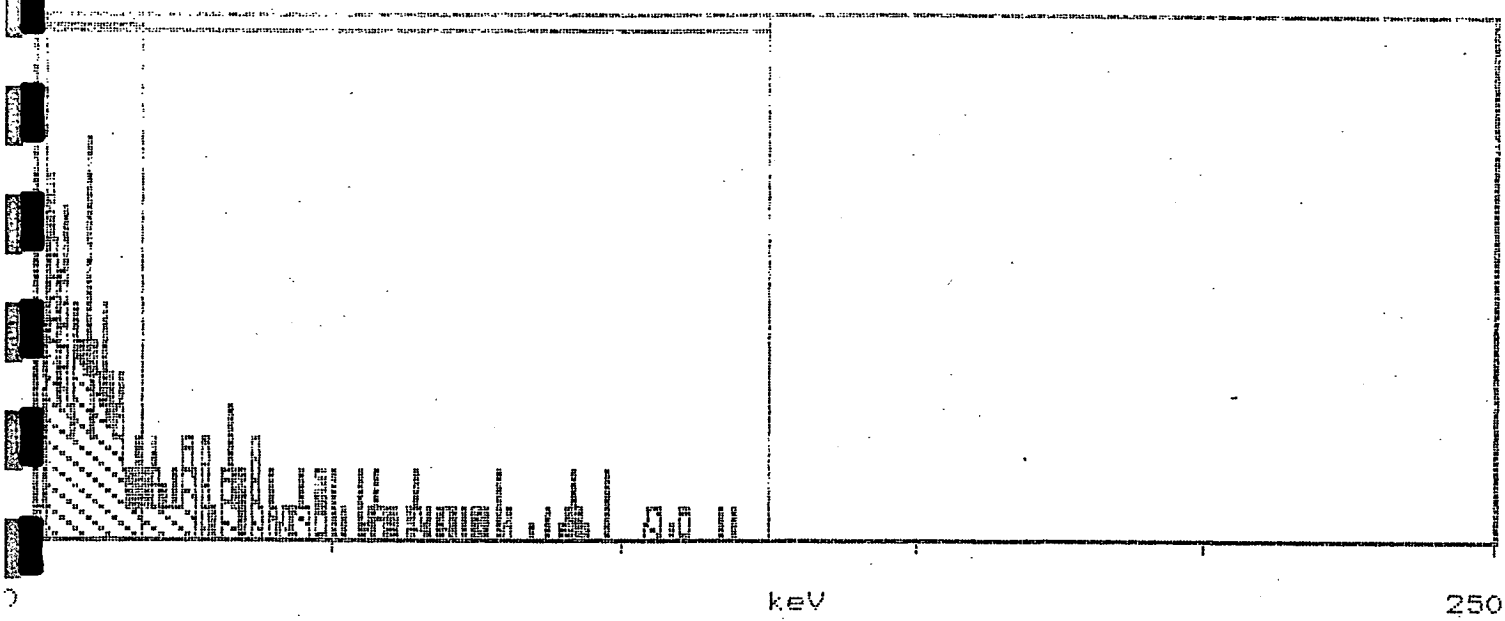


Region	LL	UL	CPM
A:	0.0	2.0	119.9
B:	2.0	18.6	216.4
C:	2.0	125.	225.3

17 13 [illegible] 1.[illegible] 10 96 17 40 714.63

SPECTRUM PLOT

CPM Y maximum Protocol No. 11 Sample No. 13 Repeat 1

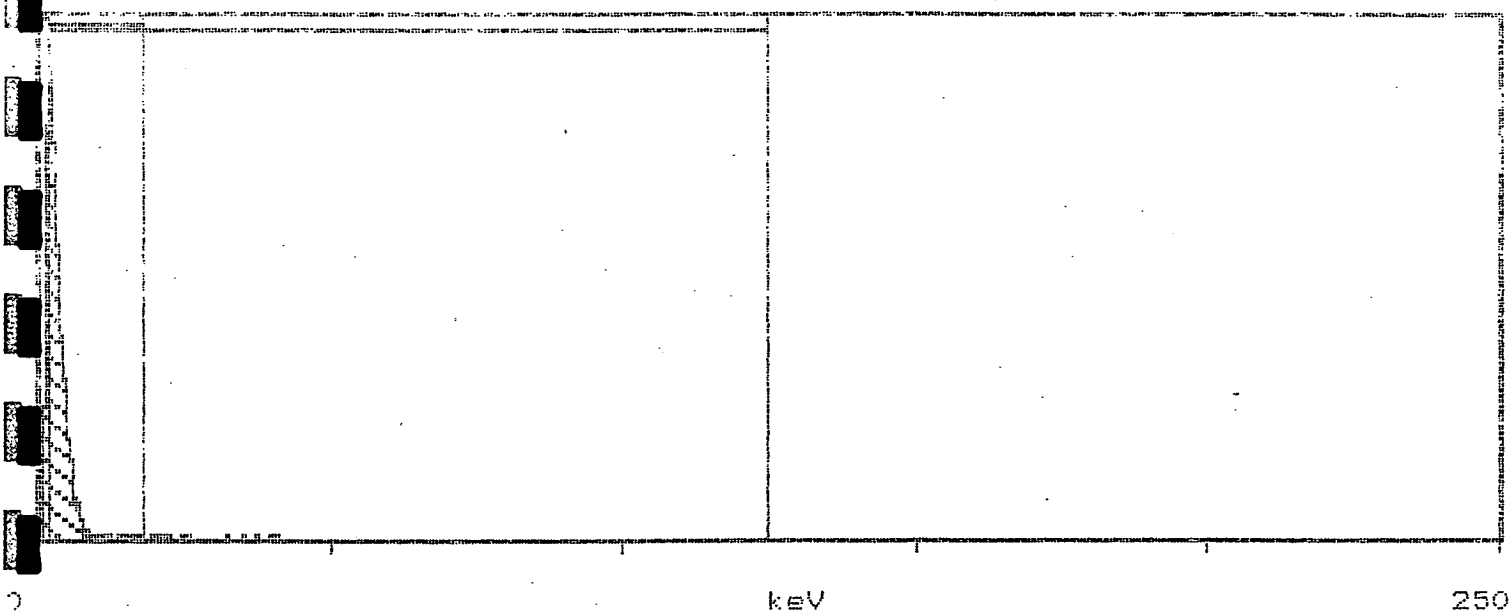


Region	LL	UL	CPM
A:	0.0	2.0	0.9
B:	2.0	18.6	11.0
C:	2.0	125.	19.6

14 13 [illegible] 129.77 [illegible] 63 [illegible] 306.75

SPECTRUM PLOT

[illegible].9 CPM Y maximum Protocol No. 11 Sample No. 14 Repeat 1

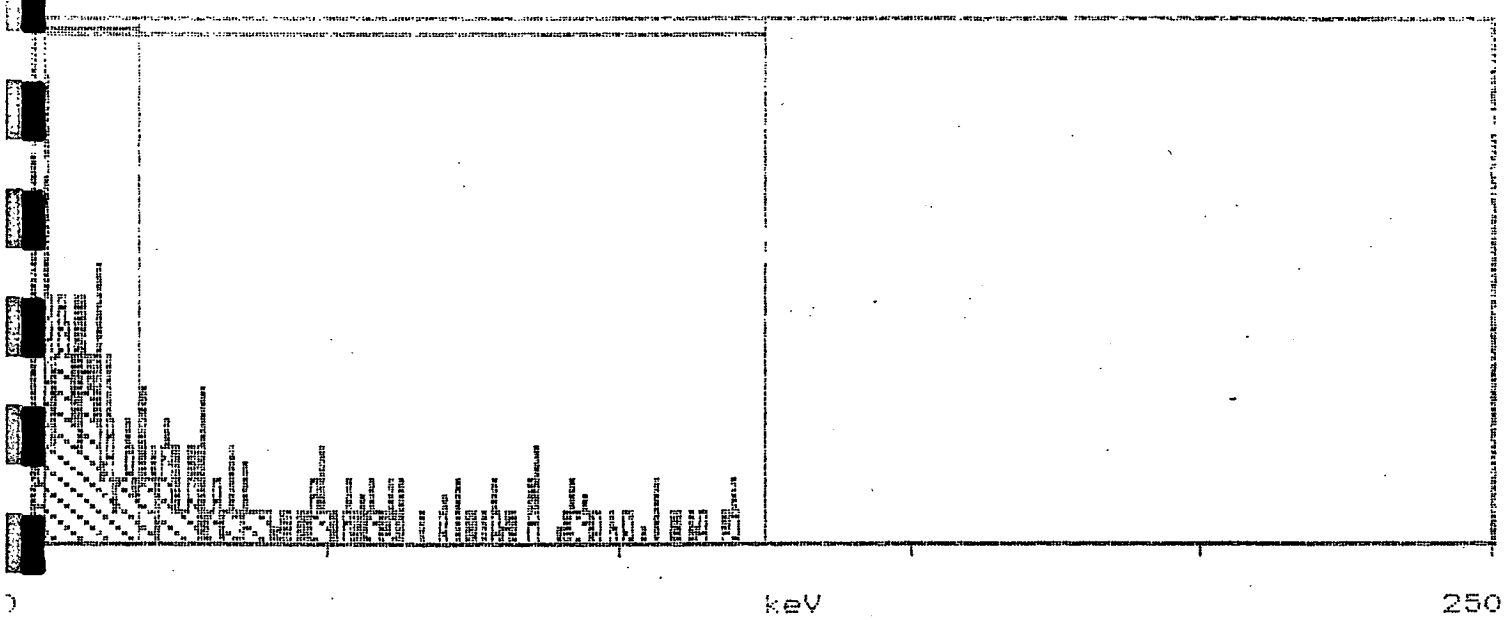


Region	LL	UL	CPM
A:	0.0	2.0	129.7
B:	2.0	18.6	231.8
C:	2.0	125.	242.3

4 15 17 .42 1.67 10.27 21.53 315.99

SPECTRUM PLOT

CPM Y maximum Protocol No. 11 Sample No. 15 Repeat 1

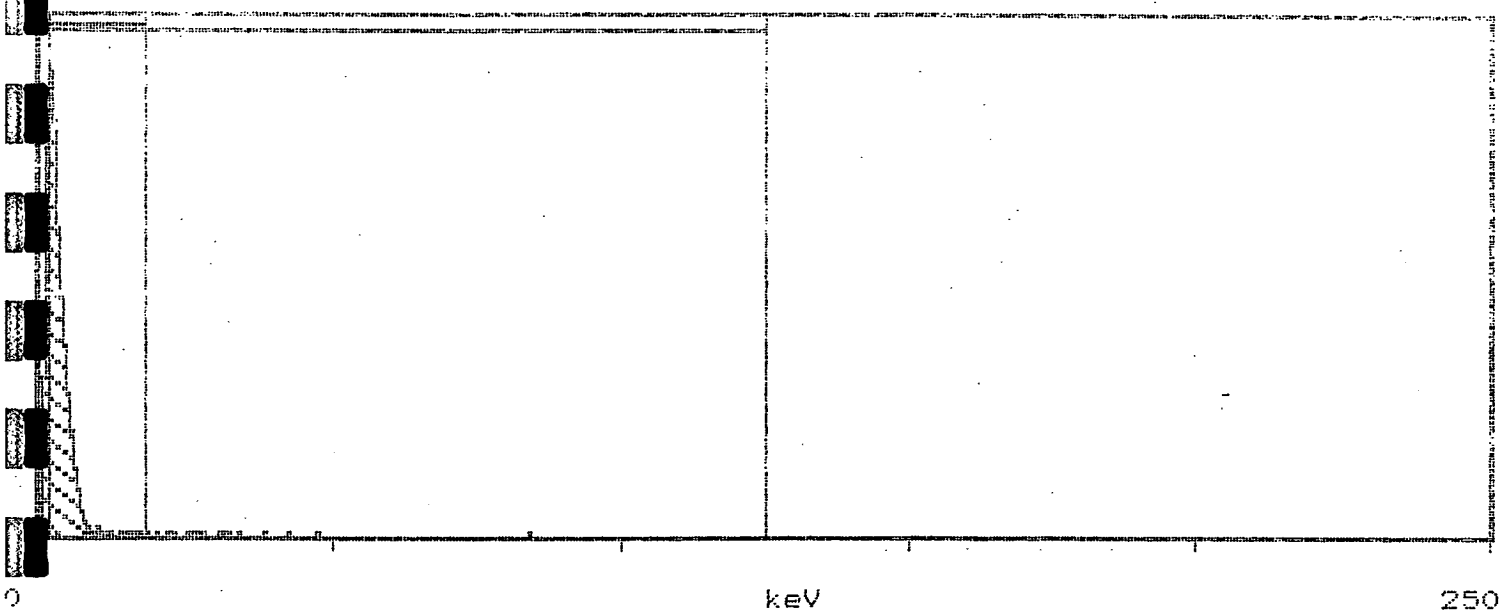


Region	LL	UL	CPM
A:	0.0	2.0	1.7
B:	2.0	18.6	10.3
C:	2.0	125.	21.5

.1 4 14 15.00 113.33 203.49 234.67 328.45

SPECTRUM PLOT

30.9 CPM Y maximum Protocol No. 11 Sample No. 16 Repeat 1

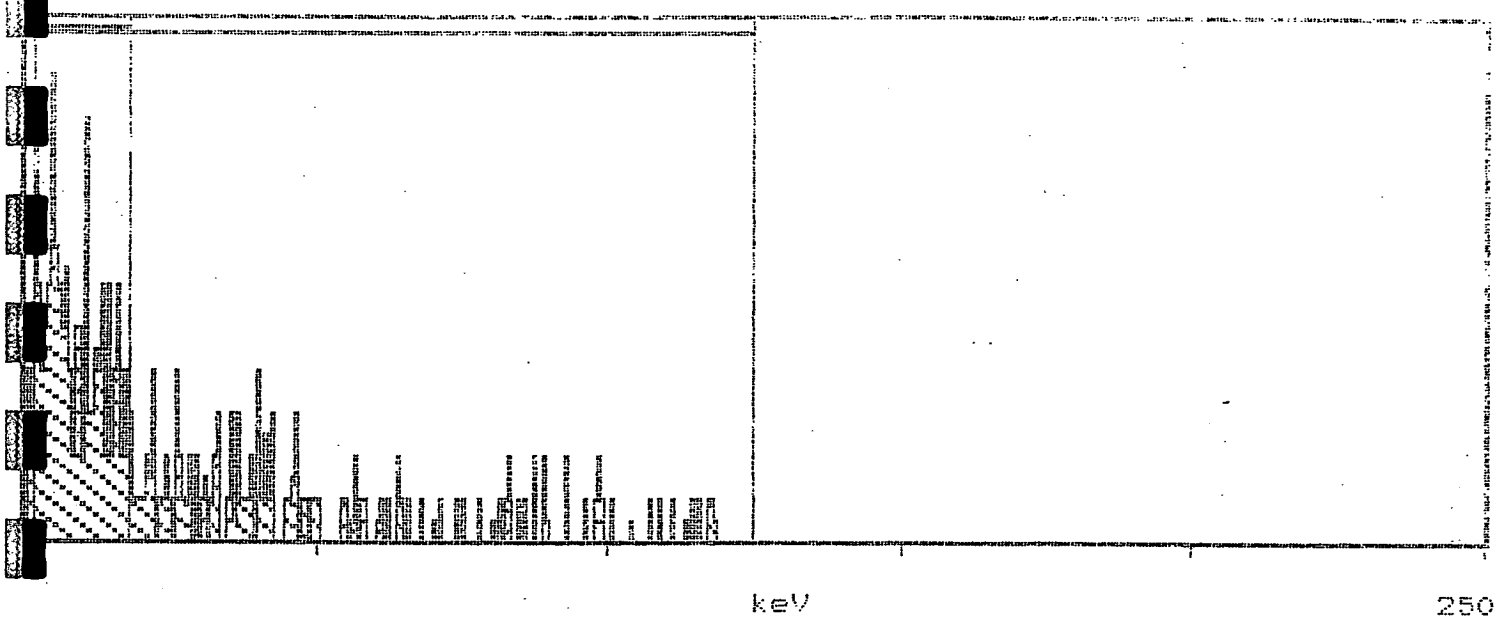


Region	LL	UL	CPM
A:	0.0	2.0	113.3
B:	2.0	18.6	223.5
C:	2.0	125.	234.7

1 4 17 15.00 1 17 [illegible].18 19.57 [illegible]

SPECTRUM PLOT

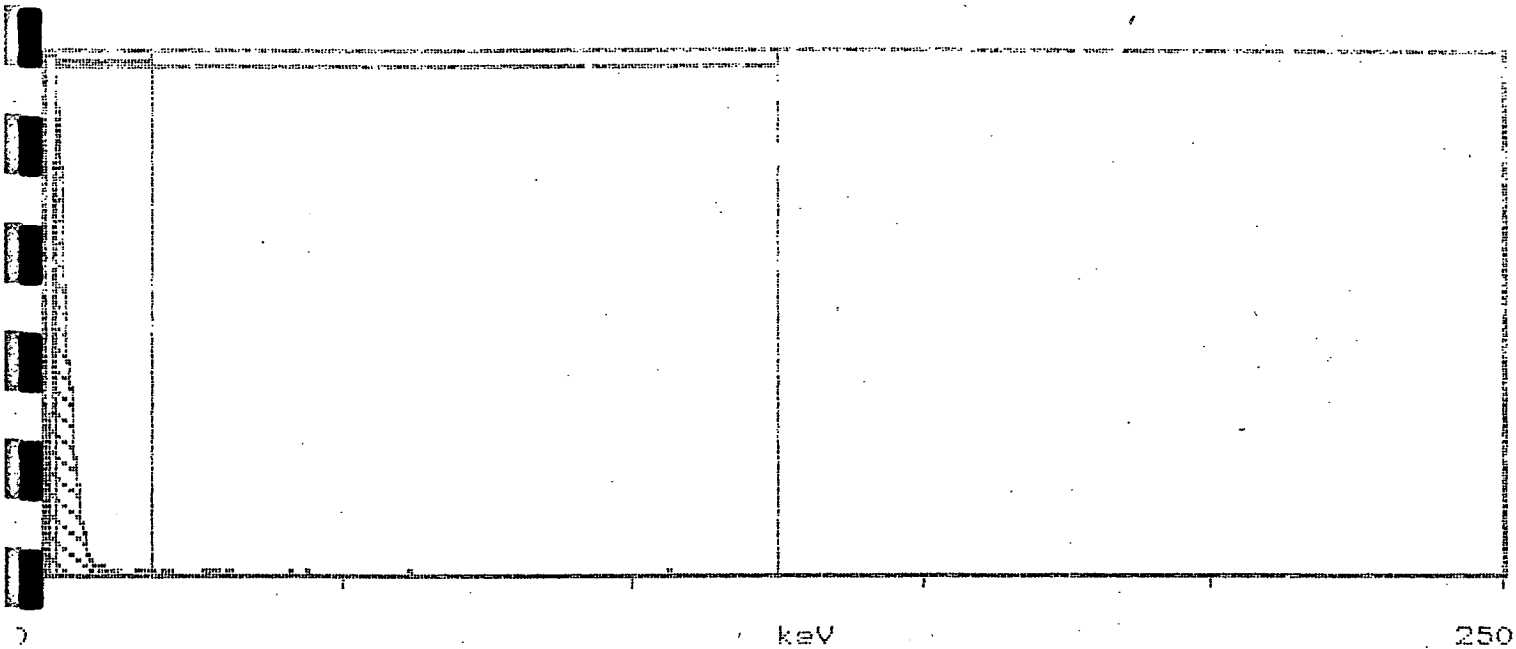
CPM Y maximum Protocol No. 11 Sample No. 17 Repeat 1



Region	LL	UL	CPM
A:	0.0	2.0	1.1
B:	2.0	18.6	10.5
C:	2.0	125.	19.5

SPECTRUM PLOT

227.9 CPM Y maximum Protocol No. 11 Sample No. 13 Repeat 1

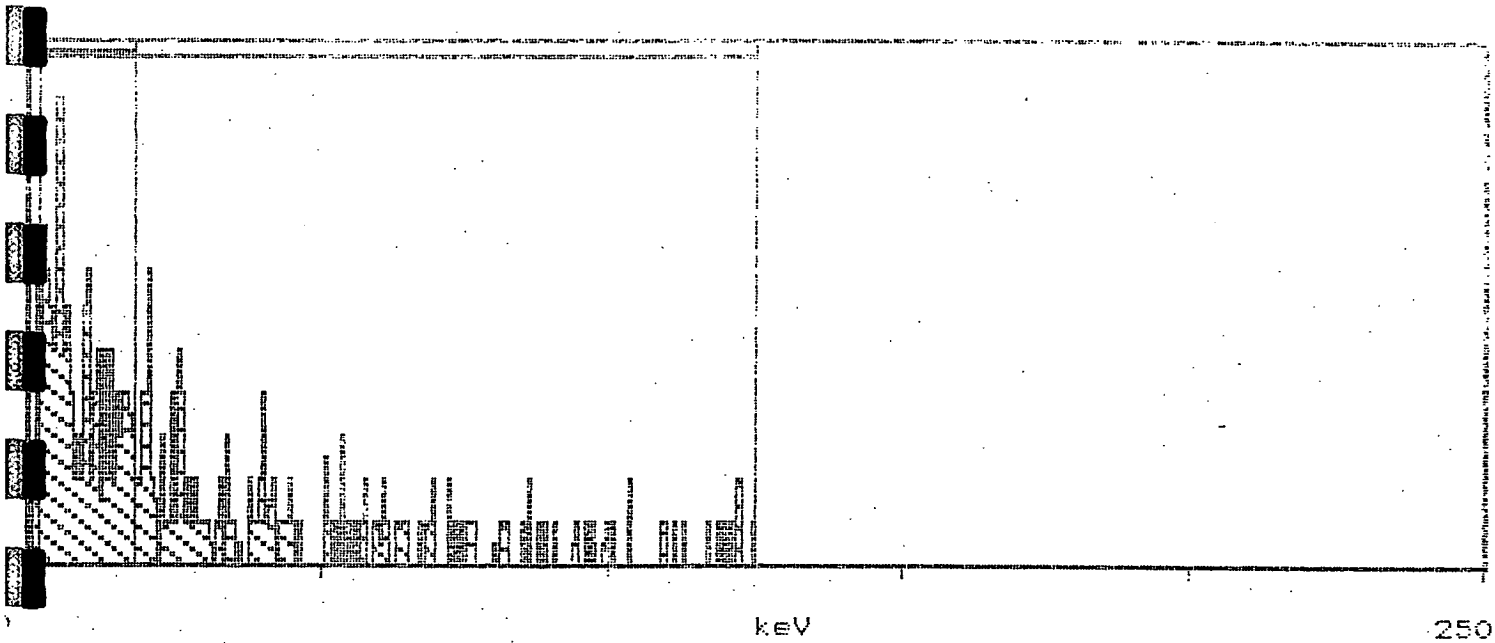


Region	LL	UL	CPM
A:	0.0	2.0	118.2
B:	2.0	18.6	217.6
C:	2.0	125.	227.9

1 4. 19 15.00 0.97 [illegible] [illegible] 285.93

SPECTRUM PLOT

CPM Y maximum Protocol No 11 Sample No 19 Repeat 1

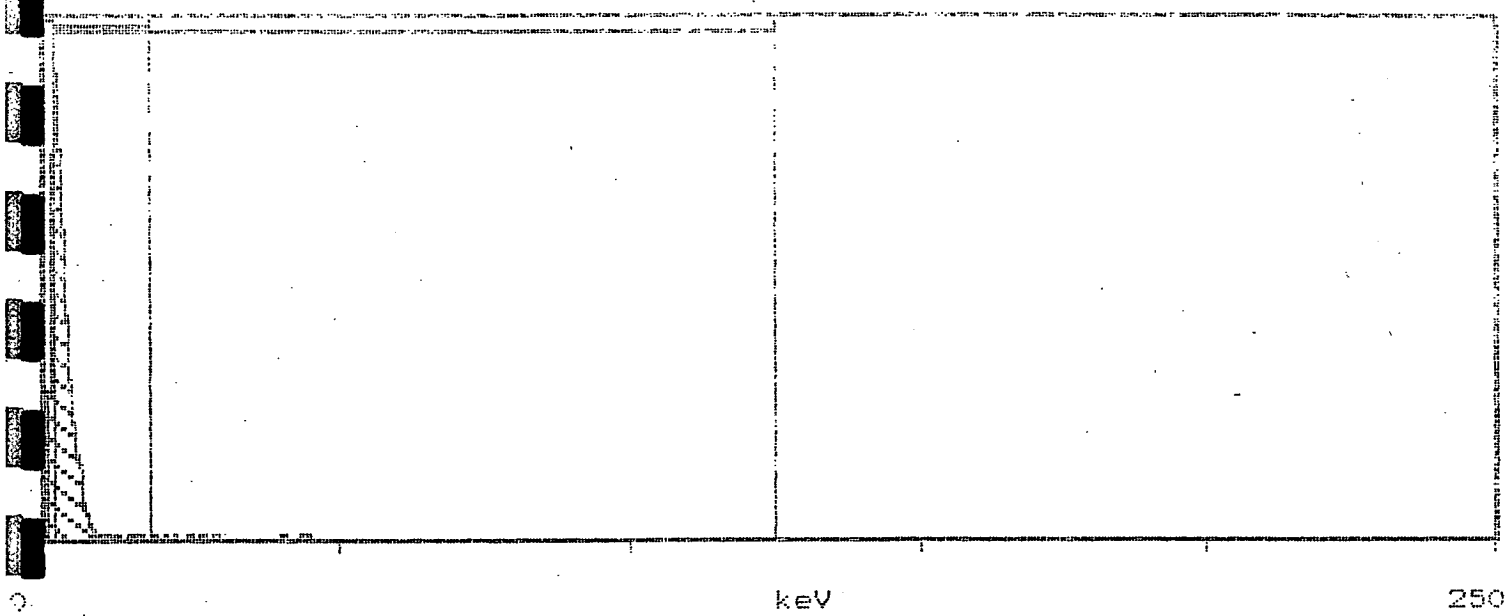


Region	LL	UL	CPM
A:	0.0	2.0	0.9
B:	2.0	18.6	10.0
C:	2.0	125.	20.5

11 20 [illegible] 119.37 226.67 237.17 315.05

SPECTRUM PLOT

10.7 CPM Y maximum Protocol No. 11 Sample No. 20 Repeat 1

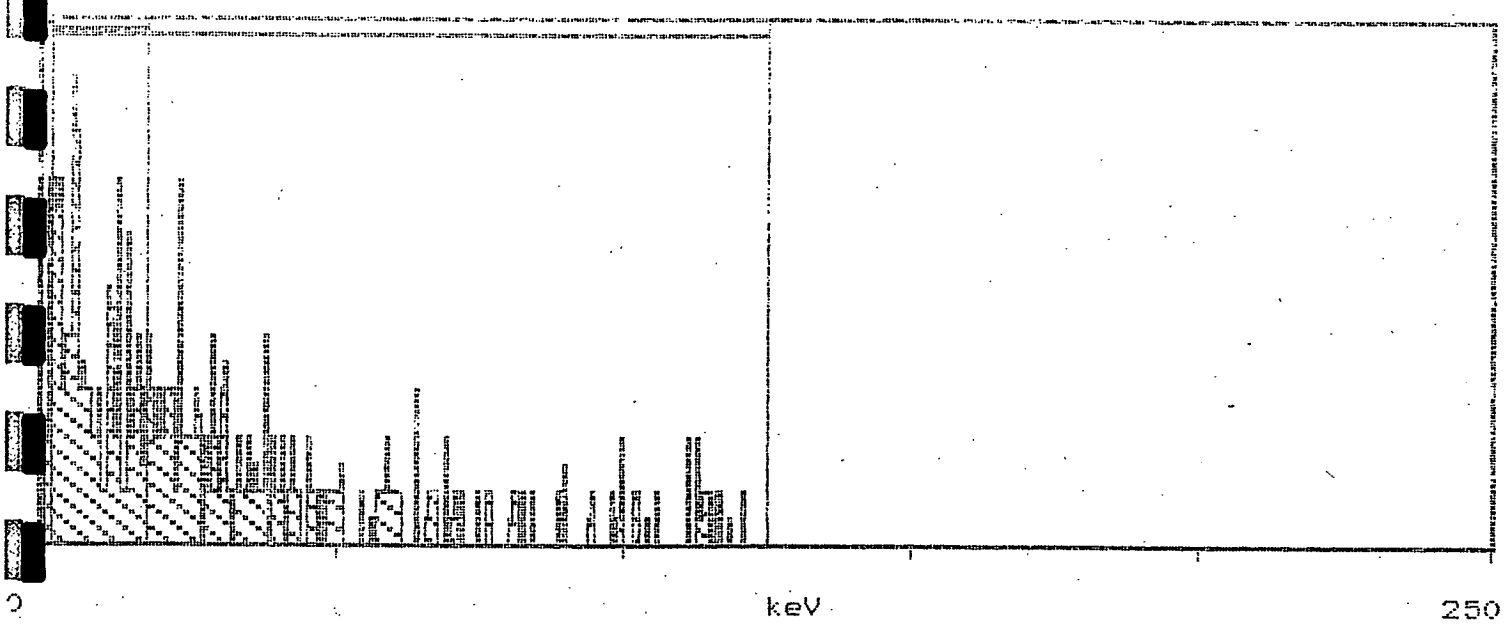


Region	LL	UL	CPM
A:	0.0	2.0	119.3
B:	2.0	18.6	226.7
C:	2.0	125.	237.1

11 1 21 15.00 1.17 3.24 17.20 377.67

SPECTRUM PLOT

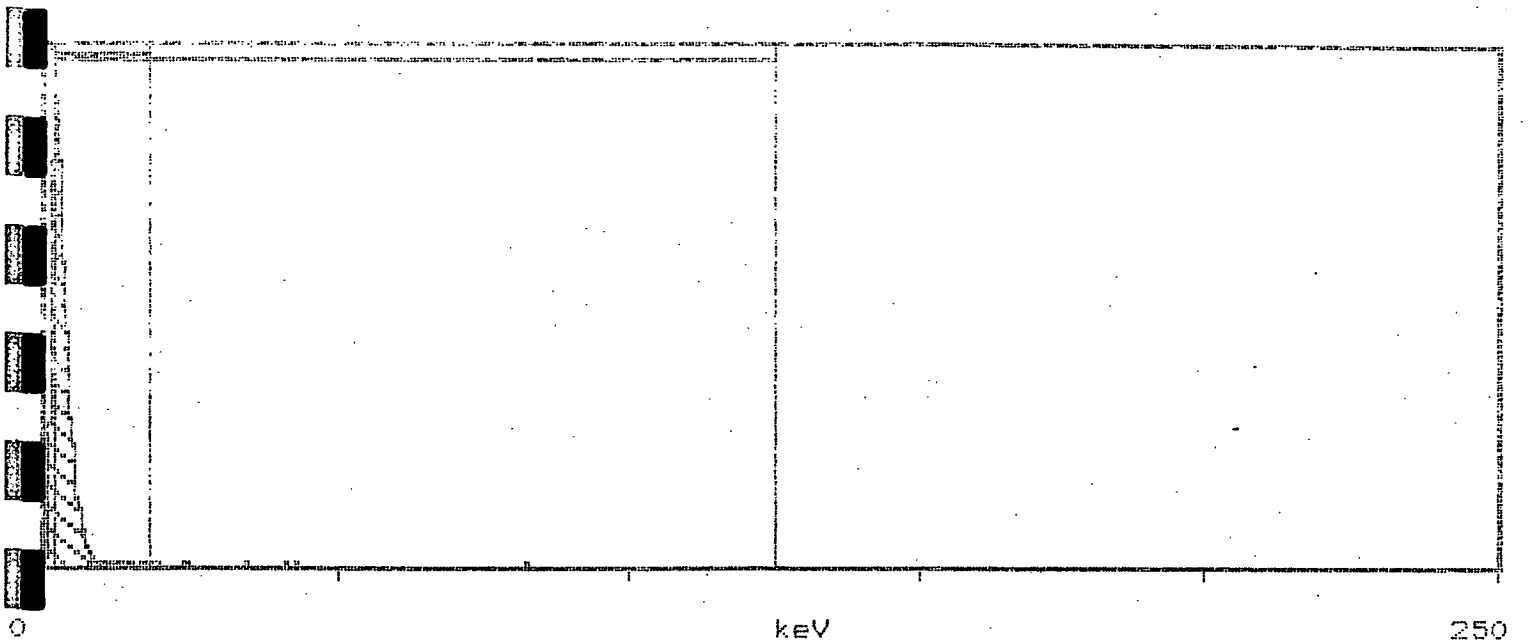
CPM Y maximum Protocol No. 11 Sample No. 21 Repeat 1



Region	LL	UL	CPM
A:	0.0	2.0	1.1
B:	2.0	18.6	8.2
C:	2.0	125.	19.2

SPECTRUM PLOT

CPM V maximum Protocol No. 11 Sample No. 22 Repeat 1



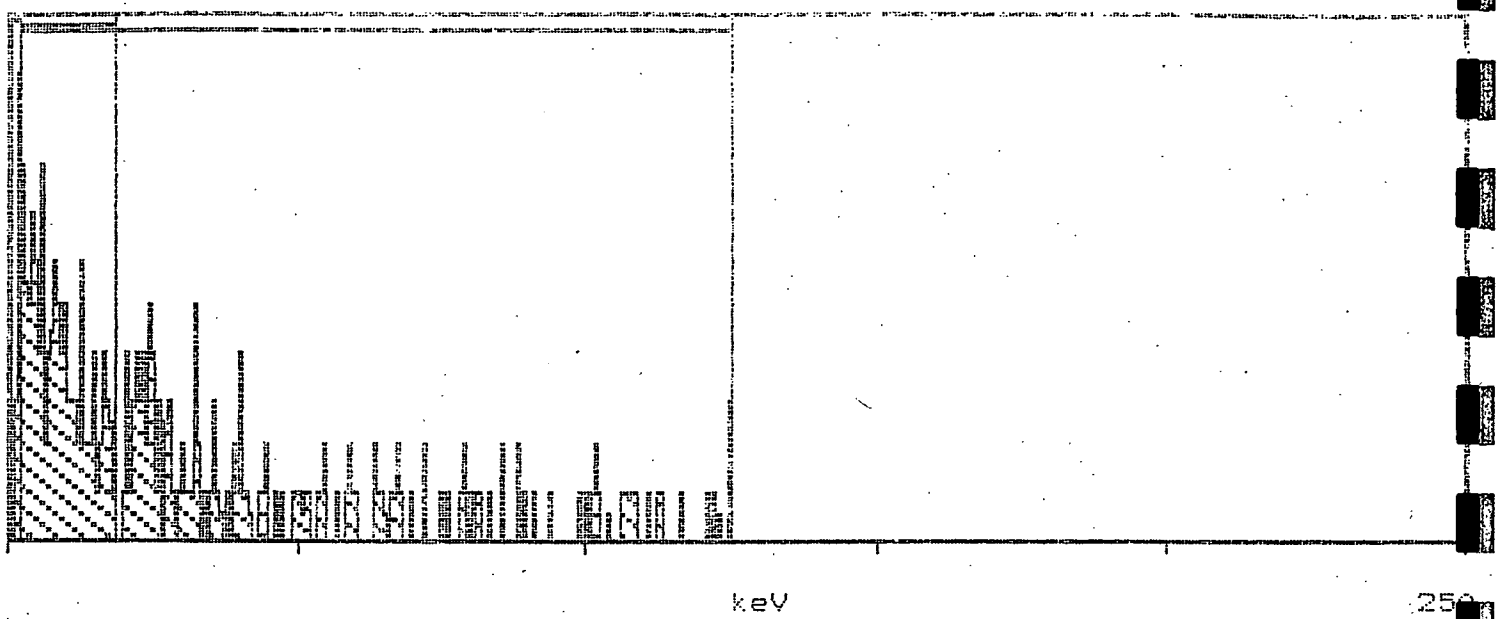
Region	LL	UL	CPM
A:	0.0	2.0	124.4
B:	2.0	18.6	228.3
C:	2.0	125.	238.4

28000

11 4 27 [illegible]

SPECTRUM PLOT

1.3 CPM Y maximum Protocol No. 11 Sample No. 23 Repeat 1

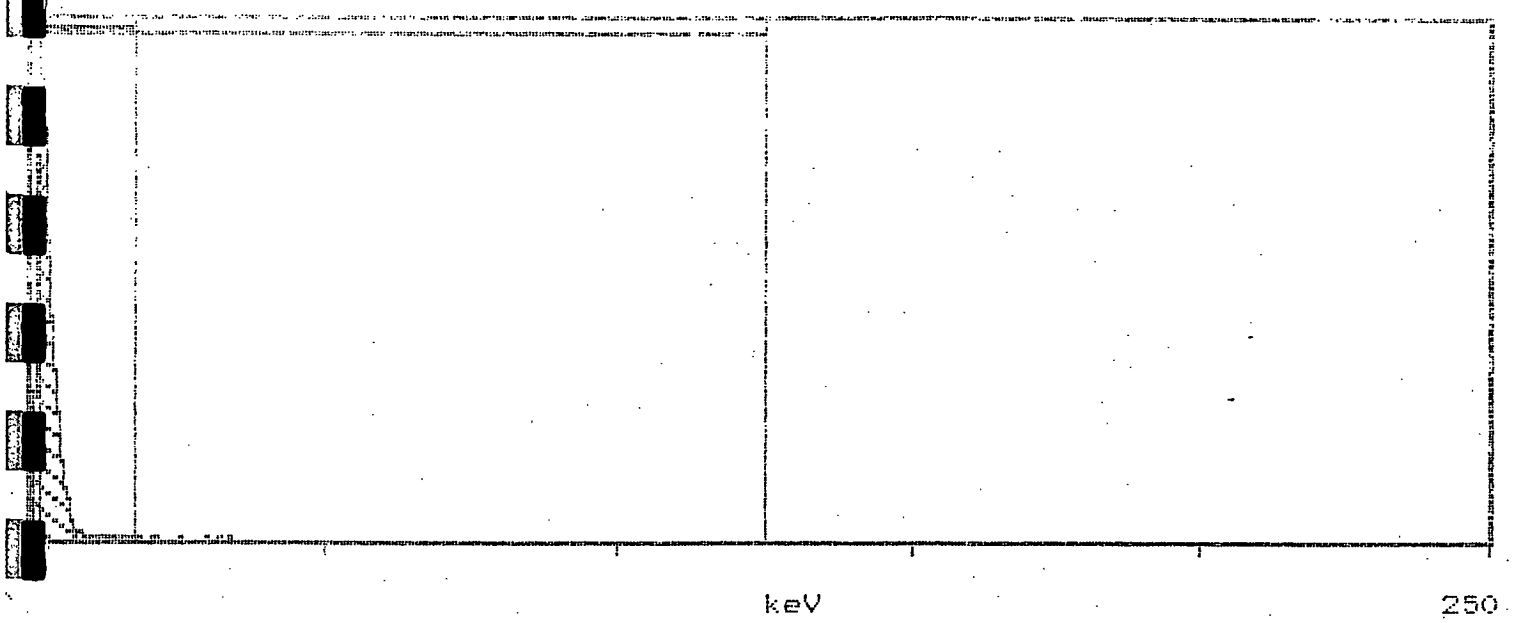


Region	LL	UL	CPM
A:	0.0	2.0	1.4
B:	2.0	18.6	8.3
C:	2.0	125.	19.2

[illegible] 219.25 209.00 309.25

SPECTRUM PLOT

[illegible]5 CPM Y maximum Protocol No. 11 Sample No. 24 Repeat 1

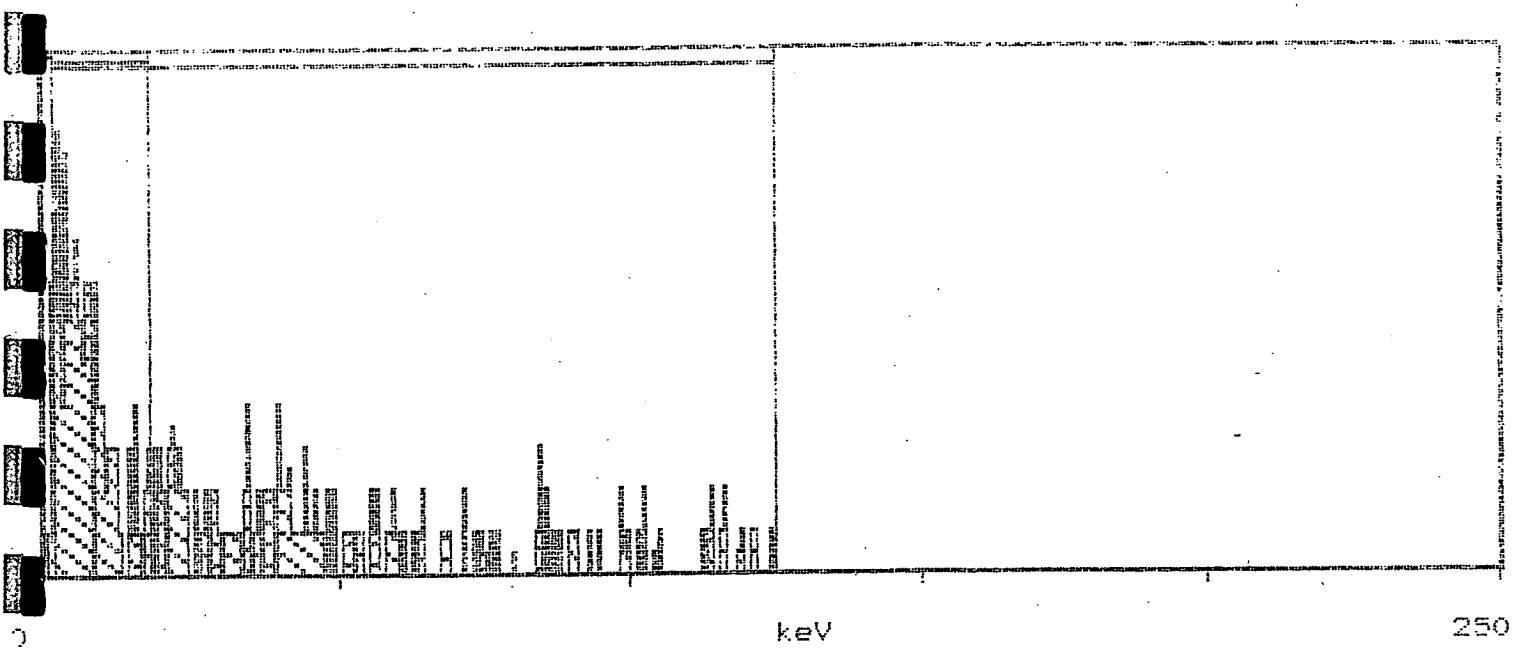


Region	LL	UL	CPM
A:	0.0	2.0	114.3
B:	2.0	18.6	219.3
C:	2.0	125.	229.0

1 1 05 13 00 0.91 9.13 19.93 275.08

SPECTRUM PLOT

CPM Y maximum Protocol No. 11 Sample No. 27 Repeat 1



Region	LL	UL	CPM
A:	0.0	2.0	0.9
B:	2.0	18.6	9.1
C:	2.0	125.	19.9

SECTION IX

ANALYTICAL DATA (STRONTIUM-90)

Work Order	00-09041
Analysis Code	SrTOT
Run	1
Date Received	09/07/00
Lab Deadline	09/19/00
Client	ESE
Project	660033.03
Report Level	4
Activity Units	pCi
Aliquot Units	g
Matrix	SO
Method	Eichrom SRW01 Modified
Instrument Type	Beta GPC
Radiometric Tracer	
Radiometric Sol#	
Tracer Act (dpm/g)	
Carrier	Strontium
Carrier Conc (mg/ml)	105.95

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		09/07/00 14:26	1.0000E+00
02	MBL	BLANK		09/07/00 14:26	1.0000E+00
03	DUP	SS-11		09/06/00 08:10	1.1852E+00
04	DO	SS-11		09/06/00 08:10	1.0469E+00
05	TRG	SS-12		09/06/00 08:45	1.0842E+00
06	TRG	SS-13		09/06/00 09:47	1.0148E+00
07	TRG	SS-14		09/06/00 11:10	1.1123E+00
08	TRG	SS-15		09/06/00 10:53	1.0418E+00
09	TRG	SS-16		09/06/00 11:35	1.0077E+00
10	TRG	SS-17		09/06/00 11:48	1.1155E+00
11	TRG	SS-18		09/06/00 06:50	1.3474E+00
12	TRG	SS-19		09/06/00 07:32	1.2927E+00

00080

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only.

Analysis Sheet

SrTOT

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					0.110	7.7202	7.7317	0.0115	98.50	98.50	1.00	1.00
02	MBL					0.110	7.7049	7.7168	0.0119	102.48	100.00	1.00	1.00
03	DUP					0.110	7.7254	7.7432	0.0178	152.32	100.00	1.00	1.00
04	DO					0.110	7.7230	7.7449	0.0219	188.08	100.00	1.00	1.00
05	TRG					0.110	7.7065	7.7406	0.0341	292.06	100.00	1.00	1.00
06	TRG					0.110	7.7177	7.7514	0.0337	288.63	100.00	1.00	1.00
07	TRG					0.110	7.7101	7.7270	0.0169	144.88	100.00	1.00	1.00
08	TRG					0.110	7.7412	7.7550	0.0138	118.41	100.00	1.00	1.00
09	TRG					0.109	7.7043	7.7375	0.0332	286.43	100.00	1.00	1.00
10	TRG					0.110	7.7049	7.7300	0.0251	216.15	100.00	1.00	1.00
11	TRG					0.110	7.6886	7.7198	0.0312	268.20	100.00	1.00	1.00
12	TRG					0.110	7.7307	7.7792	0.0485	417.29	100.00	1.00	1.00

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only.

Analysis Sheet

SITOT

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			09/11/00 18:54	CMCMURRAY	09/18/00 15:15	CMCMURRAY		
02	MBL			09/11/00 18:54	CMCMURRAY	09/18/00 15:15	CMCMURRAY		
03	DUP			09/11/00 18:54	CMCMURRAY	09/18/00 15:15	CMCMURRAY		
04	DO	09/08/00 08:28	TMILES	09/11/00 18:54	CMCMURRAY	09/18/00 15:15	CMCMURRAY		
05	TRG	09/08/00 08:28	TMILES	09/11/00 18:54	CMCMURRAY	09/18/00 15:15	CMCMURRAY		
06	TRG	09/08/00 08:28	TMILES	09/11/00 18:54	CMCMURRAY	09/18/00 15:15	CMCMURRAY		
07	TRG	09/08/00 08:28	TMILES	09/11/00 18:54	CMCMURRAY	09/18/00 15:15	CMCMURRAY		
08	TRG	09/08/00 08:28	TMILES	09/11/00 18:54	CMCMURRAY	09/18/00 15:15	CMCMURRAY		
09	TRG	09/08/00 08:28	TMILES	09/11/00 18:54	CMCMURRAY	09/18/00 15:15	CMCMURRAY		
10	TRG	09/08/00 08:28	TMILES	09/11/00 18:54	CMCMURRAY	09/18/00 15:15	CMCMURRAY		
11	TRG	09/08/00 08:28	TMILES	09/11/00 18:54	CMCMURRAY	09/18/00 15:15	CMCMURRAY		
12	TRG	09/08/00 08:28	TMILES	09/11/00 18:54	CMCMURRAY	09/18/00 15:15	CMCMURRAY		

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only.

Internal Work Order	Run	Analysis Code	Date	Technician	Technician Initials	Witness Initials
00-09041	1	SrTOT	09/11/00 18:54	CMCMURRAY	CMM	

LCS & Matrix Spikes					LCS	MS	LCSD	MSD	LCS		MS		LCSD		MSD	
Isotope	Sol #	Activity dpm/ml	Solution Date	Approx Addition	Volume Used (ml)	Volume Used (ml)	Volume Used (ml)	Volume Used (ml)	Known pCi	Error Estimate	Added pCi	Error Estimate	Known pCi	Error Estimate	Added pCi	Error Estimate
TOTAL SR	Sr-4a	185.107	09/11/00	0.260	0.2550				21.26	0.447	0.00	0.000	0.00	0.000	0.00	0.000

Tracers

fraction	Isotope	Sol #	Activity dpm/ml	Solution Date	Volume Used (ml)	Approx Addition
	Carrier					
	0.1102 g					
	0.1096 g					
	0.1103 g					
	0.1099 g					
	0.1102 g					
	0.1102 g					
	0.1101 g					
	0.1100 g					
	0.1094 g					
	0.1096 g					
	0.1098 g					
	0.1097 g					

Balance Printer Tapes

Tracer	LCS
7.7202 g	
7.7049 g	
7.7254 g	
7.7230 g	
7.7065 g	0.2550 g
7.7177 g	
7.7101 g	
7.7412 g	
7.7043 g	
7.7049 g	
7.6886 g	
[redacted]	aliquot
7.7307 g	1.1852 g
	1.0469 g
	1.0842 g
	1.0148 g
	1.1123 g
7.7317 g	1.0418 g
7.7168 g	1.0077 g
7.7432 g	1.1155 g
7.7449 g	1.3474 g
7.7406 g	1.2927 g
7.7515 g	
7.7270 g	
7.7550 g	
7.7375 g	
7.7300 g	
7.7198 g	
7.7792 g	

00089

Aliquot Worksheet

Work Order	Run	Analysis Code	Aliquot Units	Lab Deadline	Technician
00-09041	1	SrTOT	grams	09/19/00	CMCMURRAY

TRetec	ESE	Sample	Muffle Data	Dilution Data			Aliquot Data		MS Aliquot Data		H-3 Solids Only	
Fraction	Client ID	Type	Ratio Post/Pre	Aliquot	Final (ml)	Ratio	Aliquot	Net Equiv	Aliquot	Net Equiv	Water Added (ml)	H3 Dist Aliq
01	LCS	LCS					1.0000	1.0000E+00				
02	BLANK	MBL					1.0000	1.0000E+00				
03	SS-11	DUP					1.1852	1.1852E+00				
04	SS-11	DO					1.0469	1.0469E+00				
05	SS-12	TRG					1.0842	1.0842E+00				
06	SS-13	TRG					1.0148	1.0148E+00				
07	SS-14	TRG					1.1123	1.1123E+00				
08	SS-15	TRG					1.0418	1.0418E+00				
09	SS-16	TRG					1.0077	1.0077E+00				
10	SS-17	TRG					1.1155	1.1155E+00				
11	SS-18	TRG					1.3474	1.3474E+00				
12	SS-19	TRG					1.2927	1.2927E+00				

Comments	

00090

Technician: Charlotte P. McMurray Date: 9/11/00

Thermo Retec - 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
00-09041	09/19/00	09/07/00	09/08/00	09/09/00	TMILES

TRetec	ESE	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	SS-11	13.6020	250.0200	244.5560	236.4180	230.9540	2.31%	97.69%	140.0120		
05	SS-12	13.5640	329.8650	320.3490	316.3010	306.7850	3.01%	96.99%	150.5120		
06	SS-13	13.5850	216.4860	213.1680	202.9010	199.5830	1.64%	98.36%	147.5090		
07	SS-14	13.5830	292.1330	289.6280	278.5500	276.0450	0.90%	99.10%	187.1380		
08	SS-15	13.5420	244.3490	237.4210	230.8070	223.8790	3.00%	97.00%	152.8550		
09	SS-16	13.5550	268.8110	264.2970	255.2560	250.7420	1.77%	98.23%	148.2160		
10	SS-17	13.5610	229.4590	222.5200	215.8980	208.9590	3.21%	96.79%	136.3090		
11	SS-18	13.5480	329.4850	325.4290	315.9370	311.8810	1.28%	98.72%	214.2390		
12	SS-19	13.5460	225.0730	217.3690	211.5270	203.8230	3.64%	96.36%	126.4380		

Comments	Samples were dried and pulverized for chemistry and gamma spectroscopy.
Special Codes	**H: Hot, O: Organic Hazard, P: PCB Hazard, R: Rush, T: Other (see comments)**

00091

Technician: T Miles Date: 9/8/00 / **Analysis:** SrTOT

Gravimetric Worksheet

Work Order	Run	Analysis Code	Gravimetric Carrier	Carrier Conc (mg/ml)	Technician
00-09041	1	SrTOT	Strontium	105.9500	CMCMURRAY

TRetec Fraction	ESE 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	0.1102	7.7202	7.7317	0.0115	98.50
02	BLANK	MBL	0.1096	7.7049	7.7168	0.0119	102.48
03	SS-11	DUP	0.1103	7.7254	7.7432	0.0178	152.32
04	SS-11	DO	0.1099	7.7230	7.7449	0.0219	188.08
05	SS-12	TRG	0.1102	7.7065	7.7406	0.0341	292.06
06	SS-13	TRG	0.1102	7.7177	7.7514	0.0337	288.63
07	SS-14	TRG	0.1101	7.7101	7.7270	0.0169	144.88
08	SS-15	TRG	0.1100	7.7412	7.7550	0.0138	118.41
09	SS-16	TRG	0.1094	7.7043	7.7375	0.0332	286.43
10	SS-17	TRG	0.1096	7.7049	7.7300	0.0251	216.15
11	SS-18	TRG	0.1098	7.6886	7.7198	0.0312	268.20
12	SS-19	TRG	0.1097	7.7307	7.7792	0.0485	417.29

00092

Technician: Charlotte P. McMurray Date: 9/19/00

Client: ESE

Tracer ID:

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	09/07/00 14:26	1.0000					1.00	1.00
02	MBL	BLANK	09/07/00 14:26	1.0000					1.00	1.00
03	DUP	SS-11	09/06/00 08:10	1.1852					1.00	1.00
04	DO	SS-11	09/06/00 08:10	1.0469					1.00	1.00
05	TRG	SS-12	09/06/00 08:45	1.0842					1.00	1.00
06	TRG	SS-13	09/06/00 09:47	1.0148					1.00	1.00
07	TRG	SS-14	09/06/00 11:10	1.1123					1.00	1.00
08	TRG	SS-15	09/06/00 10:53	1.0418					1.00	1.00
09	TRG	SS-16	09/06/00 11:35	1.0077					1.00	1.00
10	TRG	SS-17	09/06/00 11:48	1.1155					1.00	1.00
11	TRG	SS-18	09/06/00 06:50	1.3474					1.00	1.00
12	TRG	SS-19	09/06/00 07:32	1.2927					1.00	1.00

Work Order: 00-09041-SrTOT-1

Client: ESE
ThermoRetec Work Order: 00-09041
Analysis Code: SrTOT
Run: 1

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	TOTAL SR	LCS	LCS	pCi/g	1.82E+01	1.09E+00	6.97E-01	2.13E+01	85.46	OK		OK	
02	TOTAL SR	MBL	BLANK	pCi/g	4.61E-01	3.46E-01	5.54E-01					OK	OK
03	TOTAL SR	DUP	SS-11	pCi/g	1.27E-02	3.38E-01	6.00E-01				INV	OK	
04	TOTAL SR	DO	SS-11	pCi/g	-1.74E-01	3.65E-01	6.70E-01					OK	
05	TOTAL SR	TRG	SS-12	pCi/g	-1.59E-01	3.53E-01	6.48E-01					OK	
06	TOTAL SR	TRG	SS-13	pCi/g	2.57E-01	3.74E-01	6.33E-01					OK	
07	TOTAL SR	TRG	SS-14	pCi/g	-2.04E-01	3.15E-01	5.89E-01					OK	
08	TOTAL SR	TRG	SS-15	pCi/g	-3.23E-01	3.50E-01	6.69E-01					OK	
09	TOTAL SR	TRG	SS-16	pCi/g	6.86E-01	3.67E-01	5.61E-01					OK	
10	TOTAL SR	TRG	SS-17	pCi/g	-2.41E-01	3.08E-01	5.82E-01					OK	
11	TOTAL SR	TRG	SS-18	pCi/g	2.54E-01	2.81E-01	4.68E-01					OK	
12	TOTAL SR	TRG	SS-19	pCi/g	3.47E+00	4.87E-01	5.14E-01					OK	

AG 9/20/00

00094

Work Order: 00-09041-SrTOT-1

Run	Analysis Code	ThermoRetec Work Order	Client
1	SrTOT	00-09041	ESE

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	TOTAL SR	LCS	09/07/00 14:26	1.0000		98.50	98.50	1.00	9/18/00 15:15	
02	TOTAL SR	MBL	09/07/00 14:26	1.0000		102.48	100.00	1.00	9/18/00 15:15	
03	TOTAL SR	DUP	09/06/00 08:10	1.1852		152.32	100.00	1.00	9/18/00 15:15	
04	TOTAL SR	DO	09/06/00 08:10	1.0469		188.08	100.00	1.00	9/18/00 15:15	
05	TOTAL SR	TRG	09/06/00 08:45	1.0842		292.06	100.00	1.00	9/18/00 15:15	
06	TOTAL SR	TRG	09/06/00 09:47	1.0148		288.63	100.00	1.00	9/18/00 15:15	
07	TOTAL SR	TRG	09/06/00 11:10	1.1123		144.88	100.00	1.00	9/18/00 15:15	
08	TOTAL SR	TRG	09/06/00 10:53	1.0418		118.41	100.00	1.00	9/18/00 15:15	
09	TOTAL SR	TRG	09/06/00 11:35	1.0077		286.43	100.00	1.00	9/18/00 15:15	
10	TOTAL SR	TRG	09/06/00 11:48	1.1155		216.15	100.00	1.00	9/18/00 15:15	
11	TOTAL SR	TRG	09/06/00 06:50	1.3474		268.20	100.00	1.00	9/18/00 15:15	
12	TOTAL SR	TRG	09/06/00 07:32	1.2927		417.29	100.00	1.00	9/18/00 15:15	

Work Order: 00-09041-SrTOT-1

Run	Analysis Code	ThermoRetec Work Order	Client
1	SrTOT	00-09041	ESE

Lab Fraction	Nuclide	Sample Desc	Counting Date/Time	Halflife (days)	Detect	Carrier	Count Time	Counts	Bkg CPM	Eff
01	TOTAL SR	LCS	09/19/00 12:50		LB4110	A1	60	1303	1.483333333	0.42
02	TOTAL SR	MBL	09/19/00 12:50		LB4110	A2	60	91	0.983333333	0.43
03	TOTAL SR	DUP	09/19/00 12:50		LB4110	A4	60	92	1.516666667	0.41
04	TOTAL SR	DO	09/19/00 12:50		LB4110	B1	60	91	1.733333333	0.443
05	TOTAL SR	TRG	09/19/00 12:50		LB4110	B2	60	86	1.633333333	0.43
06	TOTAL SR	TRG	09/19/00 12:50		LB4110	B3	60	98	1.333333333	0.427
07	TOTAL SR	TRG	09/19/00 12:50		LB4110	B4	60	71	1.45	0.436
08	TOTAL SR	TRG	09/19/00 12:50		LB4110	C1	60	63	1.416666667	0.405
09	TOTAL SR	TRG	09/19/00 12:50		LB4110	C2	60	106	0.983333333	0.421
10	TOTAL SR	TRG	09/19/00 12:50		LB4110	C3	60	67	1.433333333	0.437
11	TOTAL SR	TRG	09/19/00 12:50		LB4110	C4	60	88	1.1	0.398
12	TOTAL SR	TRG	09/19/00 12:50		LB4110	D3	60	379	1.333333333	0.413

9-18-00

Detector ID	Sample ID	Alpha	Beta	Guard	Count Count Time	Event	Voltage	TOD
A1	BKGD	5	72	30433	60	0	1402.5	36787.19
A2	BKGD	4	52	30431	60	0	1402.5	36787.19
A3	BKGD	5	74	30429	60	0	1402.5	36787.19
A4	BKGD	8	77	30428	60	0	1402.5	36787.19
B1	BKGD	4	95	31321	60	0	1402.5	36787.19
B2	BKGD	6	73	31320	60	0	1402.5	36787.19
B3	BKGD	7	91	31323	60	0	1402.5	36787.19
B4	BKGD	3	74	31322	60	0	1402.5	36787.19
C1	BKGD	6	57	31326	60	0	1402.5	36787.19
C2	BKGD	6	62	31325	60	0	1402.5	36787.19
C3	BKGD	4	81	31324	60	0	1402.5	36787.19
C4	BKGD	4	56	31325	60	0	1402.5	36787.19
D1	BKGD	4	95	31643	60	0	1402.5	36787.19
D2	BKGD	3	51	31643	60	0	1402.5	36787.19
D3	BKGD	2	95	31642	60	0	1402.5	36787.19
D4	BKGD	1	71	31640	60	0	1402.5	36787.19

Printed 9/18/2000 4:55 AM

Ans 9-19-00

Detector ID	Sample ID	Alpha	Beta	Count Time	Voltage	TOD
C1	0009041-08	3	63	60	1410	9/19/00 12:50
C2	0009041-09	11	106	60	1410	9/19/00 12:50
C3	0009041-10	4	67	60	1410	9/19/00 12:50
C4	0009041-11	8	88	60	1410	9/19/00 12:50
D3	0009041-12	2	379	60	1410	9/19/00 12:50
A1	0009041-01	7	1303	60	1410	9/19/00 12:50
A2	0009041-02	4	91	60	1410	9/19/00 12:50
A4	0009041-03	9	92	60	1410	9/19/00 12:50
B1	0009041-04	13	91	60	1410	9/19/00 12:50
B2	0009041-05	2	86	60	1410	9/19/00 12:50
B3	0009041-06	13	98	60	1410	9/19/00 12:50
B4	0009041-07	6	71	60	1410	9/19/00 12:50

SECTION X

ANALYTICAL DATA (GAMMA SPECTROSCOPY)

Work Order	00-09041
Analysis Code	Gamma
Run	1
Date Received	09/07/00
Lab Deadline	09/19/00
Client	ESE
Project	660033.03
Report Level	4
Activity Units	pCi
Aliquot Units	g
Matrix	SO
Method	LANL ER-130 Modified
Instrument Type	Gamma Spectroscopy
Radiometric Tracer	
Radiometric Sol#	
Tracer Act (dpm/g)	
Carrier	
Carrier Conc (mg/ml)	

Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
01	LCS	LCS		09/07/00 14:26	1.0000E+00
02	MBL	BLANK		09/07/00 14:26	1.0000E+00
03	DUP	SS-11		09/06/00 08:10	1.4001E+02
04	DO	SS-11		09/06/00 08:10	1.4001E+02
05	TRG	SS-12		09/06/00 08:45	1.5051E+02
06	TRG	SS-13		09/06/00 09:47	1.4751E+02
07	TRG	SS-14		09/06/00 11:10	1.8714E+02
08	TRG	SS-15		09/06/00 10:53	1.5286E+02
09	TRG	SS-16		09/06/00 11:35	1.4822E+02
10	TRG	SS-17		09/06/00 11:48	1.3631E+02
11	TRG	SS-18		09/06/00 06:50	2.1424E+02
12	TRG	SS-19		09/06/00 07:32	1.2644E+02

00100

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only.

00-09041
Gamma
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												
02	MBL												
03	DUP												
04	DO												
05	TRG												
06	TRG												
07	TRG												
08	TRG												
09	TRG												
10	TRG												
11	TRG												
12	TRG												

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only.

Analysis Sheet

Gamma

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								
02	MBL								
03	DUP								
04	DO	09/08/00 08:28	TMILES						
05	TRG	09/08/00 08:28	TMILES						
06	TRG	09/08/00 08:28	TMILES						
07	TRG	09/08/00 08:28	TMILES						
08	TRG	09/08/00 08:28	TMILES						
09	TRG	09/08/00 08:28	TMILES						
10	TRG	09/08/00 08:28	TMILES						
11	TRG	09/08/00 08:28	TMILES						
12	TRG	09/08/00 08:28	TMILES						

00102

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only.

Thermo Retec - Oak Ridge
Version 2.0 8/1999

Aliquot Worksheet

Work Order	Run	Analysis Code	Aliquot Units	Lab Deadline	Technician
00-09041	1	Gamma	grams	09/19/00	TMILES

TRetec Fraction	ESE Client ID	Sample Type	Muffle Data Ratio Post/Pre	Dilution Data Aliquot	Dilution Data Final (ml)	Dilution Data Ratio	Aliquot Data Aliquot	Aliquot Data Net Equiv	MS Aliquot Data Aliquot	MS Aliquot Data Net Equiv	H-3 Solids Only Water Added (ml)	H-3 Solids Only H3 Dist Aliq
01	LCS	LCS					1.0000	1.0000E+00				
02	BLANK	MBL					1.0000	1.0000E+00				
03	SS-11	DUP					140.0120	1.4001E+02				
04	SS-11	DO					140.0120	1.4001E+02				
05	SS-12	TRG					150.5120	1.5051E+02				
06	SS-13	TRG					147.5090	1.4751E+02				
07	SS-14	TRG					187.1380	1.8714E+02				
08	SS-15	TRG					152.8550	1.5286E+02				
09	SS-16	TRG					148.2160	1.4822E+02				
10	SS-17	TRG					136.3090	1.3631E+02				
11	SS-18	TRG					214.2390	2.1424E+02				
12	SS-19	TRG					126.4380	1.2644E+02				

Comments	

00103

Technician: T Miles Date: 9/8/00

Thermo Retec - 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
00-09041	09/19/00	09/07/00	09/08/00	09/09/00	TMILES

TRetec Fraction	ESE Client ID	Tare (g) Pan Wt	Gross (g) Wet Wt.	Gross (g) Dry Wt.	Net (g) Wet Wt.	Net (g) Dry Wt.	Percent Liquid	Percent Solid	Gamma Dry Wt.	Gamma LEPS Wt.	Special Info
04	SS-11	13.6020	250.0200	244.5560	236.4180	230.9540	2.31%	97.69%	140.0120		
05	SS-12	13.5640	329.8650	320.3490	316.3010	306.7850	3.01%	96.99%	150.5120		
06	SS-13	13.5850	216.4860	213.1680	202.9010	199.5830	1.64%	98.36%	147.5090		
07	SS-14	13.5830	292.1330	289.6280	278.5500	276.0450	0.90%	99.10%	187.1380		
08	SS-15	13.5420	244.3490	237.4210	230.8070	223.8790	3.00%	97.00%	152.8550		
09	SS-16	13.5550	268.8110	264.2970	255.2560	250.7420	1.77%	98.23%	148.2160		
10	SS-17	13.5610	229.4590	222.5200	215.8980	208.9590	3.21%	96.79%	136.3090		
11	SS-18	13.5480	329.4850	325.4290	315.9370	311.8810	1.28%	98.72%	214.2390		
12	SS-19	13.5460	225.0730	217.3690	211.5270	203.8230	3.64%	96.36%	126.4380		

Comments	Samples were dried and pulverized for chemistry and gamma spectroscopy.
Special Codes	H: Hot, O: Organic Hazard, P: PCB Hazard, R: Rush, T: Other (see comments)

00104

Technician: [signature] Date: 9/8/00 / Analysis: Gamma

Thermo NUtech
Oak Ridge Laboratory
Dryness Confirmation Data Sheet
Version 1.1 4/29/98

1st Weighing Time	7:00					
DATE & TIME:	09/08/00	Technician:			WO #	00-09-041
Fraction	1st Weight	Time	2nd Weight	Time	3rd Weight	Time
04	244.56	7:00 AM	244.56	7:30 AM	244.56	8:00 AM
05	320.35	7:00 AM	320.35	7:30 AM	320.35	8:00 AM
06	213.17	7:00 AM	213.17	7:30 AM	213.17	8:00 AM
07	289.63	7:00 AM	289.63	7:30 AM	289.63	8:00 AM
08	237.42	7:00 AM	237.42	7:30 AM	237.42	8:00 AM
09	264.30	7:00 AM	264.30	7:30 AM	264.30	8:00 AM
10	222.52	7:00 AM	222.52	7:30 AM	222.52	8:00 AM
11	325.43	7:00 AM	325.43	7:30 AM	325.43	8:00 AM
12	217.37	7:00 AM	217.37	7:30 AM	217.37	8:00 AM
13						
14						
15						
16						
17						
18						
19						
20						

All samples must be removed from the drying oven at three (3) seperate times and weighed to confirm consistent dryness if the sample(s). Remove sample(s) and document dryness at 1/2 hour increments. Place a copy of this information within the data package.

Client: ESE

Tracer ID:

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	09/07/00 14:26	1.0000						
02	MBL	BLANK	09/07/00 14:26	1.0000						
~~03~~	DUP	SS-11	09/06/00 08:10	140.0120						
04	DO	SS-11	09/06/00 08:10	140.0120						
05	TRG	SS-12	09/06/00 08:45	150.5120						
06	TRG	SS-13	09/06/00 09:47	147.5090						
07	TRG	SS-14	09/06/00 11:10	187.1380						
08	TRG	SS-15	09/06/00 10:53	152.8550						
09	TRG	SS-16	09/06/00 11:35	148.2160						
10	TRG	SS-17	09/06/00 11:48	136.3090						
11	TRG	SS-18	09/06/00 06:50	214.2390						
12	TRG	SS-19	09/06/00 07:32	126.4380						

ThermoRetec
Oak Ridge Laboratory

Preliminary Data Report & Analytical Calculations

Work Order: 00-09041-Gamma-1

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LSC Known	LCS %R	LCS Flag	RPD Flag	Sample Date	Sample Aliquot	Counting Date/Time
01	CO-60	LCS	LCS	pCi/g	1.08E+03	7.75E+01	8.64E+00	1.09E+03	99.11	OK		09/07/00 14:26	1.0000	09/11/00 14:07
01	CS-137	LCS	LCS	pCi/g	9.99E+02	1.01E+02	3.15E+00	9.49E+02	105.33	OK		09/07/00 14:26	1.0000	09/11/00 14:07
02	CS-137	MBL	BLANK	pCi/g	-3.70E-02	4.60E-02	7.51E-02					09/07/00 14:26	1.0000	09/11/00 14:06
03	CS-137	DUP	SS-11	pCi/g	9.25E-02	1.28E-01	1.36E-01					09/06/00 08:10	140.0120	09/11/00 12:03
04	CS-137	DO	SS-11	pCi/g	-8.79E-02	8.80E-02	1.44E-01					09/06/00 08:10	140.0120	09/11/00 14:39
05	CS-137	TRG	SS-12	pCi/g	-1.96E-02	5.38E-02	9.47E-02					09/06/00 08:45	150.5120	09/11/00 12:43
06	CS-137	TRG	SS-13	pCi/g	-8.18E-03	4.33E-02	7.55E-02					09/06/00 09:47	147.5090	09/11/00 13:03
07	CS-137	TRG	SS-14	pCi/g	3.64E-02	3.98E-02	7.65E-02					09/06/00 11:10	187.1380	09/11/00 13:24
08	CS-137	TRG	SS-15	pCi/g	-2.94E-02	6.78E-02	1.21E-01					09/06/00 10:53	152.8550	09/11/00 13:04
09	CS-137	TRG	SS-16	pCi/g	1.48E-02	5.87E-02	1.10E-01					09/06/00 11:35	148.2160	09/11/00 14:55
10	CS-137	TRG	SS-17	pCi/g	2.12E-02	7.43E-02	1.44E-01					09/06/00 11:48	136.3090	09/11/00 15:40
11	CS-137	TRG	SS-18	pCi/g	-1.53E-02	6.66E-02	1.17E-01					09/06/00 08:50	214.2390	09/11/00 14:31
12	CS-137	TRG	SS-19	pCi/g	5.46E-02	6.71E-02	1.32E-01					09/06/00 07:32	128.4380	09/11/00 13:54

AG
9/12/00

Chns 9-11-00

mple ID : 0009041-01 Acquisition date : 11-SEP-2000 14:07:27

VMS Peak Search Report Generated 11-SEP-2000 14:38:32.20

figuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_000904101_GE4_SJARB_12990.CNF
yses by : PEAK V16.9 ENBACK V1.6 PEAKEFF V2.2
ient ID : SPIKE
position Date :
le Date : 1-APR-1991 00:00:00 Acquisition date : 11-SEP-2000 14:07:27
mple ID : 0009041-01 Sample Quantity : 8.00000E+01 GRAM
mple type : SOIL Sample Geometry : 0
ector name : GE4 Detector Geometry: SJARB
psed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:50.06 2.7%
art channel : 5 End channel : 4096
sitivity : 3.00000 Gaussian : 15.00000
ical level : No

t-NID Peak Search Report

Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
21.95	7899	9385	1.78	21.68	20	5	4.2	7.55E+02	
26.16*	3379	5260	1.46	25.89	25	4	7.2	1.00E+01	
32.12	9056	6571	1.56	31.85	29	6	3.5	7.54E+01	
36.67	1895	4975	1.03	36.40	35	4	11.4	4.41E-01	PM-145
									PM-145
44.57	3074	6410	1.69	44.29	39	25	9.0	3.53E+03	
49.57	11272	6120	1.70	49.30	39	25	3.4		
53.28	7986	4647	1.41	53.00	39	25	4.3		
59.57	130016	4307	1.72	59.29	39	25	0.6		AM-241
88.50	1477	4647	1.72	88.21	85	7	16.0	4.50E+01	SN-126
									CD-109
150.81	294	3766	2.05	150.50	148	6	66.8	5.62E+00	
216.49	266	4124	3.80	216.16	214	6	77.3	3.95E-01	
444.27	188	2737	1.59	443.87	442	5	84.3	3.94E+00	
467.44	327	2869	1.49	467.03	465	5	49.8	2.79E+01	
475.33	185	3176	2.40	474.92	473	6	98.2	6.94E-01	
536.10	133	1179	1.95	535.67	534	5	78.8	2.78E+00	
661.69*	45465	1717	1.61	661.22	656	10	1.0	8.59E-01	CS-137
787.11	84	1027	3.71	786.61	783	8	133.6	6.80E-01	
900.02	121	1059	3.09	899.49	897	7	90.5	5.15E-01	
949.78	72	1412	2.30	949.23	946	7	175.0	7.30E-01	
986.69	79	826	2.35	986.14	984	6	116.6	1.32E+00	
1067.45	150	952	3.79	1066.87	1064	8	72.5	1.35E+00	
1173.16	12401	372	1.88	1172.55	1168	18	1.9	9.44E-01	CO-60
1178.33	91	465	3.35	1177.73	1168	18	205.4		
1230.65	49	255	3.07	1230.03	1224	10	125.5	2.18E+00	
1236.83	37	137	2.82	1236.21	1234	7	110.7	1.07E+00	
1332.39	11004	140	1.98	1331.75	1327	11	2.0	1.07E+00	CO-60
1455.89	22	25	2.39	1455.22	1452	12	88.8	2.63E+00	
1459.89*	12	18	2.40	1459.22	1452	12	150.3		K-40
1732.77	42	17	11.90	1732.03	1725	14	50.8	1.90E+00	
1966.46	27	21	7.58	1965.68	1960	11	76.7	2.99E+00	
2099.87	11	12	3.47	2099.06	2095	7	115.2	2.16E+00	
2168.83	25	7	5.84	2168.01	2164	9	53.1	6.62E-01	
2338.83	8	5	3.49	2337.98	2335	6	101.7	1.71E-01	
2505.45	114	2	2.72	2504.56	2501	8	19.5	1.04E+00	

9/12/00

ample ID : 0009041-01 Acquisition date : 11-SEP-2000 14:07:27

Total number of lines in spectrum	34	
Number of unidentified lines	22	
Number of lines tentatively identified by NID	12	35.29%

uclide Type : NATURAL

uclide	Hlife	Decay	Wtd Mean Uncorrected pCi/GRAM	Wtd Mean Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
-40	1.28E+09Y	1.00	3.533E+00	3.533E+00	5.327E+00	150.76	
M-241	432.20Y	1.02	1.146E+03	1.164E+03	0.126E+03	10.82	
Total Activity :			1.150E+03	1.167E+03			

uclide Type : ACTIVATION

uclide	Hlife	Decay	Wtd Mean Uncorrected pCi/GRAM	Wtd Mean Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
O-60	5.27Y	3.47	3.124E+02	1.083E+03	0.078E+03	7.16	
Total Activity :			3.124E+02	1.083E+03			

uclide Type : FISSION

uclide	Hlife	Decay	Wtd Mean Uncorrected pCi/GRAM	Wtd Mean Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
D-109	464.00D	174.	1.397E+02	2.423E+04	0.799E+04	32.98	
N-126	1.00E+05Y	1.00	1.402E+01	1.402E+01	0.450E+01	32.10	
S-137	30.17Y	1.24	8.042E+02	9.992E+02	1.014E+02	10.15	
M-145	17.70Y	1.45	2.727E+01	3.948E+01	2.703E+01	68.45	
Total Activity :			9.852E+02	2.529E+04			

Grand Total Activity : 2.448E+03 2.754E+04

lags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

ample ID : 0009041-01 Acquisition date : 11-SEP-2000 14:07:27

uclide Type: NATURAL

lide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
-40	1460.81	10.67*	6.144E-01	3.533E+00	3.533E+00	150.76	OK

Final Mean for 1 Valid Peaks = 3.533E+00+/- 5.327E+00 (150.76%)

M-241	59.54	35.90*	5.929E+00	1.146E+03	1.164E+03	10.82	OK

Final Mean for 1 Valid Peaks = 1.164E+03+/- 1.260E+02 (10.82%)

uclide Type: ACTIVATION

lide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
-60	1173.22	100.00*	7.418E-01	3.138E+02	1.087E+03	9.87	OK
	1332.49	100.00	6.642E-01	3.110E+02	1.077E+03	10.41	OK

Final Mean for 2 Valid Peaks = 1.083E+03+/- 7.752E+01 (7.16%)

uclide Type: FISSION

lide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
-109	88.03	3.72*	5.336E+00	1.397E+02	2.423E+04	32.98	OK

Final Mean for 1 Valid Peaks = 2.423E+04+/- 7.991E+03 (32.98%)

N-126	87.57	37.00*	5.347E+00	1.402E+01	1.402E+01	32.10	OK

Final Mean for 1 Valid Peaks = 1.402E+01+/- 4.500E+00 (32.10%)

S-137	661.65	85.12*	1.247E+00	8.042E+02	9.992E+02	10.15	OK

Final Mean for 1 Valid Peaks = 9.992E+02+/- 1.014E+02 (10.15%)

145	36.85	21.70*	6.010E+00	2.727E+01	3.948E+01	68.45	OK
	37.36	39.70	6.019E+00	1.488E+01	2.155E+01	64.64	<<WM Interf
	42.30	15.10	6.070E+00	-----	Line Not Found	-----	Absent
	72.40	2.31	5.681E+00	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 3.948E+01+/- 2.703E+01 (68.45%)

g: "*" = Keyline

--- Identified Nuclides ----

uclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
-40	3.533E+00	5.327E+00	8.509E+00	8.828E-01	0.415
O-60	1.083E+03	7.752E+01	8.644E+00	7.629E-01	125.234
D-109	2.423E+04	7.991E+03	4.134E+03	1.182E+03	5.862
N-126	1.402E+01	4.500E+00	2.391E+00	6.591E-01	5.863
S-137	9.992E+02	1.014E+02	3.145E+00	2.917E-01	317.672
M-145	3.948E+01	2.703E+01	6.846E+00	4.613E+00	5.767
M-241	1.164E+03	1.260E+02	2.567E+00	2.577E-01	453.391

--- Non-Identified Nuclides ----

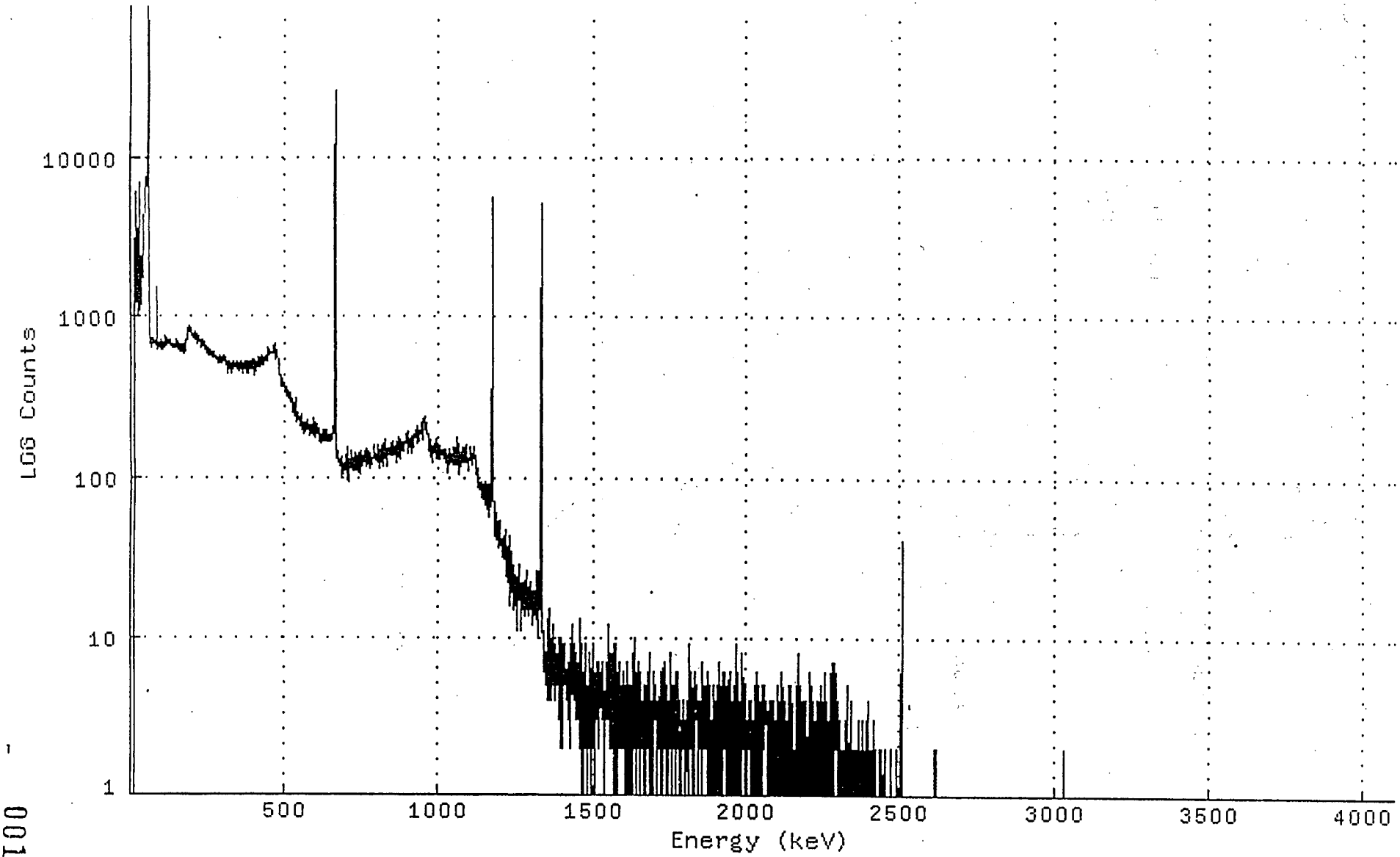
uclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
A-22	6.582E+00		1.055E+01	1.869E+01	1.722E+00	0.352
R-85	5.361E+02		5.956E+02	9.959E+02	2.974E+02	0.538
S-94	-1.707E+00		1.652E+00	2.699E+00	2.643E-01	-0.632
S-125	2.992E+01		5.393E+01	9.126E+01	3.393E+01	0.328
-129	3.410E+01		1.155E+01	1.534E+01	1.505E+00	2.224
A-133	2.524E-01		3.641E+00	6.300E+00	2.541E+00	0.040
S-134	9.167E+00		3.069E+01	5.264E+01	9.824E+00	0.174
M-146	-7.015E+00		1.359E+01	2.276E+01	7.959E+00	-0.308
U-152	6.160E-01		5.920E+00	1.053E+01	1.263E+00	0.059
U-154	3.175E+00		5.047E+00	8.941E+00	8.235E-01	0.355
U-155	3.826E+01		1.288E+01	1.232E+01	3.303E+00	3.106
I-207	-4.543E-01		1.518E+00	2.576E+00	6.049E-01	-0.176
L-208	-1.251E+00		4.073E+00	6.908E+00	1.497E+00	-0.181
I-210M	4.603E-02		2.363E+00	3.725E+00	1.432E+00	0.012
B-210	8.310E+02		9.040E+01	4.307E+01	4.213E+00	19.295
B-211	-3.834E+01		4.843E+01	7.874E+01	2.962E+01	-0.487
I-212	-5.124E+00		1.038E+01	1.743E+01	1.660E+00	-0.294
B-212	3.020E-02		2.374E+00	3.754E+00	1.414E+00	0.008
I-214	-1.104E+00		2.677E+00	4.521E+00	8.092E-01	-0.244
B-214	-1.171E+00		3.147E+00	5.362E+00	2.098E+00	-0.218
N-219	-4.545E+00		2.055E+01	3.518E+01	1.328E+01	-0.129
A-223	-1.577E+00		2.776E+01	4.812E+01	1.893E+01	-0.033
A-224	-1.646E+01		2.762E+01	4.215E+01	1.591E+01	-0.391
A-226	-7.145E+00		3.131E+01	4.497E+01	8.375E+01	-0.159
H-227	8.272E+00		9.692E+00	1.468E+01	5.513E+00	0.563
C-228	3.858E+00		6.500E+00	1.103E+01	1.079E+00	0.350
A-231	3.619E+00		5.056E+01	7.937E+01	3.115E+01	0.046
H-231	7.801E+01	+	1.054E+01	1.033E+01	1.109E+00	7.555
A-234	-2.027E+00		3.388E+00	5.304E+00	1.653E+00	-0.382
A-234M	3.187E+01		1.990E+02	3.344E+02	3.218E+01	0.095
H-234	4.651E+01		1.582E+01	2.324E+01	2.825E+00	2.002
-235	1.468E+00		7.350E+00	1.087E+01	3.866E+00	0.135
P-237	2.511E+01		8.448E+00	8.065E+00	2.164E+00	3.113

ample ID : 0009041-01 Acquisition date : 11-SEP-2000 14:07:27

lide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (pCi/GRAM)	2-Sigma %Error	Rejected by
-125	60.14D	57.39	35.49*	6.49	1.733E+19	15.64	Decay
		% Abundances Found =	100.00				
E-132	78.20H	1059.31	49.72	13.10	1.000E+41	11.12	Decay,Abun.
			228.16*	88.00	--- Not Found ---		
		% Abundances Found =		12.96			
S-136	13.16D	262.28	153.22	7.46	--- Not Found ---		Decay,Abun.
			163.89	4.61	--- Not Found ---		
			176.55	13.56	--- Not Found ---		
			273.65	12.66	--- Not Found ---		
			340.57	48.50	--- Not Found ---		
			818.50	99.70	--- Not Found ---		
			1048.07*	79.60	--- Not Found ---		
			1235.34	19.70	1.000E+41	138.91	
		% Abundances Found =		6.89			
A-140	12.79D	269.89	162.64	6.70	--- Not Found ---		Decay,Abun.
			304.84	4.50	--- Not Found ---		
			423.70	3.20	--- Not Found ---		
			437.55	2.00	--- Not Found ---		
			537.32*	25.00	1.000E+41	91.18	
		% Abundances Found =		60.39			
M-144	363.00D	9.51	476.78	42.00	3.580E+03	115.54	Decay,Abun.
			618.01	98.60	--- Not Found ---		
			696.49*	99.49	--- Not Found ---		
		% Abundances Found =		17.49			
227	3.28E+04Y	0.00	50.10	8.40	4.163E+02	11.12	Abun.
			236.00*	11.50	--- Not Found ---		
			256.20	6.30	--- Not Found ---		
		% Abundances Found =		32.06			
H-231	7.04E+08Y	0.00	25.64*	14.70	7.801E+01	13.51	Abun.
			84.21	6.40	--- Not Found ---		
		% Abundances Found =		69.67			

g: "*" = Keyline

Spectrum : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_000904101_GE4_SJARB_12990.CNF;1
Title :
Sample Title: SPIKE
Start Time: 11-SEP-2000 14:07 Sample Time: 1-APR-1991 00:00: Energy Offset: 2.60368E-01
Real Time : 0 00:30:50.06 Sample ID : 0009041-01 Energy Slope : 1.00033E+00
Live Time : 0 00:30:00.00 Sample Type: SOIL Energy Quad : -3.19527E-08



Channel Contents for [GAMMA.SCUSR.ARCHIVE]SMP_000904101_GE4_SJARB_12990.CNF

Channel

1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	8	992	1909
17:	4835	4195	1180	2211	4486	5837	1479	1446
25:	2496	3472	1638	970	1146	1392	2942	6784
33:	1984	1072	1178	2366	1948	1297	1332	1484
41:	1859	2217	2449	2701	2780	3005	3561	5119
49:	7013	7306	6826	6489	6487	6305	6572	6828
57:	7018	10411	85702	56619	1570	687	674	660
65:	666	677	678	713	652	630	647	670
73:	705	657	712	722	708	704	687	644
81:	695	649	644	709	680	611	877	1467
89:	750	675	646	636	629	671	638	631
97:	626	631	699	657	608	670	681	606
105:	612	620	666	620	619	626	688	733
113:	649	692	691	666	699	717	647	687
121:	679	654	660	699	672	658	697	678
129:	661	639	641	673	648	653	668	662
137:	652	625	632	642	656	660	665	657
145:	620	626	650	623	696	657	708	688
153:	613	630	667	640	604	614	597	615
161:	602	666	623	655	595	620	628	601
169:	635	636	586	660	585	571	610	608
177:	611	600	658	632	626	705	703	716
185:	739	772	815	728	800	842	790	787
193:	787	772	744	765	734	742	818	733
201:	728	716	763	710	710	723	704	735
209:	711	772	691	691	663	697	755	746
217:	731	718	711	674	696	714	740	694
225:	716	704	673	632	677	651	680	660
233:	645	701	706	702	679	671	646	652
241:	673	641	612	641	651	592	599	578
249:	596	604	604	587	567	621	632	600
257:	580	576	580	587	561	589	568	541
265:	554	576	556	562	575	577	574	540
273:	545	598	549	532	527	538	551	559
281:	533	541	529	520	529	505	553	512
289:	559	533	496	515	517	538	549	522
297:	503	532	562	532	509	541	525	535
305:	529	499	511	502	491	549	518	459
313:	504	502	437	519	493	515	466	490
321:	481	517	505	494	442	496	507	491
329:	476	488	466	514	487	492	457	492
337:	498	493	506	505	478	512	482	477
345:	499	522	467	499	483	448	479	473
353:	498	483	492	462	474	521	499	501
361:	500	472	443	485	483	462	477	473
369:	477	466	460	520	468	439	504	485
377:	521	484	492	448	442	504	518	494
385:	468	490	521	485	490	490	491	468
393:	483	512	505	532	486	509	494	517
401:	514	427	526	472	522	452	495	495
409:	510	513	496	537	506	541	479	474
417:	518	491	520	544	525	482	526	550
425:	558	504	538	542	542	496	494	528

433:	510	565	512	517	545	517	554	559
441:	544	529	621	615	583	514	595	582
449:	590	610	570	556	594	596	579	578
457:	583	580	623	588	589	624	652	584
465:	580	646	603	656	536	601	604	604
473:	593	601	587	583	503	481	487	480
481:	424	448	415	400	360	369	383	402
489:	418	386	366	386	400	362	371	381
497:	375	333	346	352	332	359	340	352
505:	362	327	310	304	307	323	345	315
513:	321	330	311	315	295	292	291	303
521:	289	287	290	254	283	266	275	274
529:	289	273	260	248	221	250	247	303
537:	255	230	242	251	246	245	227	246
545:	217	236	236	235	209	237	198	243
553:	215	207	217	199	199	214	216	218
561:	216	184	200	190	222	194	205	204
569:	205	203	200	196	225	219	189	203
577:	202	211	207	181	203	188	193	196
585:	215	190	190	211	210	196	211	183
593:	230	206	196	181	175	183	198	193
601:	191	213	186	214	189	179	164	174
609:	203	179	181	166	170	181	176	163
617:	187	165	165	189	197	184	176	195
625:	188	177	194	187	165	179	195	184
633:	175	177	165	195	169	165	181	175
641:	175	185	177	171	177	184	184	167
649:	177	187	204	206	191	172	197	214
657:	199	205	369	5608	25407	14181	996	142
665:	129	142	130	144	132	132	127	143
673:	122	119	129	120	127	117	125	127
681:	133	134	99	125	134	105	115	113
689:	108	106	121	123	115	122	135	110
697:	136	101	123	155	96	114	127	123
705:	128	118	128	124	113	93	138	128
713:	112	143	112	114	110	128	116	115
721:	132	124	137	114	111	139	111	118
729:	135	138	133	110	134	122	112	108
737:	112	141	115	127	110	113	144	120
745:	105	141	116	128	130	130	138	125
753:	143	136	128	132	131	123	130	120
761:	116	134	148	122	130	120	139	122
769:	127	131	146	138	127	112	121	139
777:	128	131	135	125	118	123	127	129
785:	149	156	156	128	140	135	127	137
793:	133	140	141	126	129	134	134	124
801:	128	157	113	139	123	150	125	138
809:	121	125	142	159	154	131	139	145
817:	134	118	115	152	169	145	142	146
825:	151	130	121	152	129	117	145	140
833:	150	144	151	148	138	140	154	139
841:	137	150	153	148	161	165	141	141
849:	148	138	156	148	136	149	149	154
857:	156	152	149	137	136	168	124	140
865:	169	133	175	146	157	161	130	142
873:	143	155	170	158	164	151	145	145
881:	144	149	166	165	158	168	156	145
889:	178	185	181	184	160	169	155	142
897:	157	164	189	170	178	157	151	154
905:	163	166	142	172	173	176	155	181

913:	177	174	179	179	151	184	187	197
921:	193	175	193	189	161	173	165	206
929:	182	193	209	165	180	198	177	193
937:	195	196	188	218	187	209	209	173
945:	214	190	192	213	228	237	197	200
953:	203	198	195	220	198	203	194	211
961:	188	183	184	144	159	164	162	157
969:	152	170	143	133	156	136	141	158
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985:	163	153	170	130	131	137	140	146
993:	130	163	141	132	154	129	159	150
1001:	154	144	129	136	141	138	150	143
1009:	147	150	148	136	131	143	132	128
1017:	150	124	135	121	135	146	135	138
1025:	131	133	141	129	107	130	130	144
1033:	124	150	137	139	132	140	137	140
1041:	124	153	124	120	138	140	125	152
1049:	119	138	130	118	144	120	122	153
1057:	118	125	174	103	142	134	108	125
1065:	126	161	133	146	130	135	117	125
1073:	123	138	125	154	127	137	141	144
1081:	151	137	142	122	128	140	123	125
1089:	157	141	129	129	120	109	131	119
1097:	144	125	134	126	140	152	133	119
1105:	140	134	132	130	124	153	142	141
1113:	143	131	134	136	117	119	108	116
1121:	104	104	97	106	112	91	86	87
1129:	92	89	90	85	90	74	83	87
1137:	92	80	85	84	72	90	80	78
1145:	82	77	92	82	66	69	73	81
1153:	90	76	80	64	80	73	72	76
1161:	57	91	83	74	65	86	90	77
1169:	83	125	1009	4979	5370	1241	117	71
1177:	71	56	69	51	43	55	45	49
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1193:	37	38	46	41	54	49	37	41
1201:	44	32	39	40	42	36	33	40
1209:	37	40	31	38	41	46	29	29
1217:	37	24	36	22	37	30	29	35
1225:	31	34	16	30	42	43	27	29
1233:	19	22	34	27	33	22	17	15
1241:	23	18	28	19	21	25	22	16
1249:	25	18	20	11	19	23	18	24
1257:	21	19	19	28	20	17	22	14
1265:	14	11	19	16	20	15	22	22
1273:	16	20	23	19	20	14	20	18
1281:	15	15	26	15	20	18	26	17
1289:	14	19	16	21	19	20	18	20
1297:	15	22	19	20	19	16	12	20
1305:	14	19	17	14	20	15	15	18
1313:	20	15	13	21	26	10	26	25
1321:	20	13	26	16	24	23	15	24
1329:	44	632	3520	5024	1745	150	21	12
1337:	9	7	7	9	6	11	6	8
1345:	7	8	6	5	13	6	7	4
1353:	10	11	15	7	4	9	10	7
1361:	9	7	6	10	4	7	5	5
1369:	8	12	7	9	5	9	4	6
1377:	4	8	7	7	7	5	5	8
1385:	5	9	4	10	8	6	3	7

1393:	5	10	8	6	2	2	5	9
1401:	6	7	9	6	5	5	7	9
1409:	7	6	6	6	4	5	6	6
1417:	4	5	4	7	6	3	4	9
1425:	5	8	2	3	6	6	8	12
1433:	7	7	4	9	7	6	4	9
1441:	7	6	7	3	7	8	4	5
1449:	7	6	3	6	2	8	13	7
1457:	12	4	9	4	7	3	1	3
1465:	9	3	1	4	4	2	6	4
1473:	3	3	2	9	5	4	3	1
1481:	5	3	3	7	8	4	2	8
1489:	7	6	3	1	6	4	6	2
1497:	6	9	4	2	3	3	6	1
1505:	1	4	4	6	4	7	4	3
1513:	5	3	5	7	4	2	3	7
1521:	5	5	5	6	6	4	3	7
1529:	4	3	6	7	3	1	1	4
1537:	2	4	4	7	7	6	6	3
1545:	6	4	12	3	4	5	8	8
1553:	8	5	4	5	2	6	3	8
1561:	5	2	6	4	9	5	2	4
1569:	1	9	4	2	2	1	4	4
1577:	1	5	6	4	4	3	7	5
1585:	6	2	5	5	5	3	2	2
1593:	5	2	6	5	2	5	6	5
1601:	2	5	4	5	1	4	3	7
1609:	4	1	3	3	1	1	5	4
1617:	4	4	5	2	5	3	5	1
1625:	1	3	3	1	4	8	5	2
1633:	2	5	2	3	10	1	3	4
1641:	6	0	3	5	4	7	6	2
1649:	4	6	1	3	2	2	4	4
1657:	3	3	2	3	2	4	4	3
1665:	3	1	5	5	2	1	2	3
1673:	2	4	6	5	3	4	5	2
1681:	6	8	5	6	7	1	4	3
1689:	1	4	4	1	5	2	6	2
1697:	1	4	4	4	4	5	3	5
1705:	3	3	3	0	4	1	4	3
1713:	4	3	2	3	6	1	3	6
1721:	1	2	0	2	1	1	2	6
1729:	6	7	2	4	6	2	5	4
1737:	5	1	1	4	4	3	2	4
1745:	1	4	1	5	2	3	8	4
1753:	5	0	2	3	1	4	5	2
1761:	3	3	5	3	3	2	5	4
1769:	1	2	6	4	5	5	6	2
1777:	3	3	2	4	4	2	1	3
1785:	2	3	1	3	3	3	3	2
1793:	2	4	2	2	3	3	2	2
1801:	1	3	2	2	3	4	3	2
1809:	1	6	5	2	9	3	2	6
1817:	6	4	2	4	6	4	2	2
1825:	1	3	3	2	1	3	1	3
1833:	6	4	4	3	5	4	4	3
1841:	4	2	0	0	0	4	4	3
1849:	2	4	4	1	1	2	4	4
1857:	7	6	4	2	5	5	5	2
1865:	2	4	5	2	2	4	0	4

[redacted]73:	3	0	2	6	1	4	4	5
[redacted]81:	2	2	3	1	3	1	3	1
[redacted]889:	4	5	0	2	5	0	1	3
[redacted]97:	4	3	2	1	3	5	4	1
[redacted]05:	1	4	5	4	1	3	4	7
[redacted]913:	5	5	5	2	1	2	1	6
[redacted]21:	3	2	3	1	3	4	4	3
[redacted]29:	6	2	4	5	2	1	2	1
[redacted]937:	0	3	3	2	2	1	5	6
[redacted]945:	5	3	3	2	6	1	2	0
[redacted]53:	4	1	2	2	1	4	4	2
[redacted]61:	5	3	1	4	9	8	3	2
[redacted]969:	6	0	2	2	3	4	1	4
[redacted]77:	2	2	4	3	4	3	2	1
[redacted]85:	4	8	4	2	5	2	2	3
[redacted]993:	4	3	4	2	5	0	1	3
[redacted]01:	1	1	3	0	2	4	2	2
[redacted]09:	4	2	4	2	3	3	3	4
[redacted]017:	1	2	2	0	2	3	2	2
[redacted]025:	2	1	3	2	5	1	2	6
[redacted]33:	2	1	1	2	3	2	3	0
[redacted]041:	5	1	4	4	0	4	3	0
[redacted]049:	3	1	5	2	2	2	2	2
[redacted]57:	5	2	2	2	4	3	3	3
[redacted]65:	3	4	3	2	0	1	3	3
[redacted]073:	4	3	0	3	3	2	4	2
[redacted]081:	4	1	4	4	4	2	2	3
[redacted]89:	2	4	1	3	0	2	3	1
[redacted]097:	1	5	3	5	0	2	1	1
[redacted]105:	2	1	3	4	1	2	3	0
[redacted]13:	0	1	6	4	0	3	2	3
[redacted]21:	2	2	2	0	4	1	4	3
[redacted]2129:	1	3	1	1	3	3	2	2
[redacted]37:	5	0	3	1	2	1	0	1
[redacted]45:	1	5	3	3	0	3	1	2
[redacted]2153:	2	0	2	2	1	1	3	3
[redacted]161:	2	3	0	1	5	0	5	8
[redacted]69:	3	5	3	0	2	5	3	5
[redacted]2177:	2	4	2	2	1	2	0	4
[redacted]2185:	4	3	1	1	2	2	1	1
[redacted]93:	4	2	1	1	1	1	2	2
[redacted]01:	2	3	6	2	1	6	4	4
[redacted]2209:	2	3	3	3	5	1	2	3
[redacted]17:	1	4	1	2	2	3	1	2
[redacted]25:	2	2	1	2	2	4	2	4
[redacted]2233:	0	3	2	4	2	4	0	1
[redacted]241:	5	1	3	1	1	0	3	4
[redacted]49:	3	4	2	4	6	2	3	3
[redacted]257:	1	1	2	3	4	1	4	1
[redacted]2265:	3	2	1	2	0	2	3	1
[redacted]73:	6	3	2	7	2	3	4	2
[redacted]81:	1	7	3	0	2	1	2	2
[redacted]2289:	3	6	3	3	4	0	1	4
[redacted]97:	1	1	1	3	2	3	1	0
[redacted]05:	0	1	0	2	1	0	2	1
[redacted]2313:	0	2	0	2	2	2	0	1
[redacted]2321:	0	2	3	1	4	2	1	2
[redacted]29:	2	5	1	0	0	1	0	0
[redacted]37:	2	4	2	0	2	1	0	0
[redacted]2345:	0	0	2	2	2	0	0	2

[redacted]

2353:	0	0	1	2	1	1	1	1
2361:	0	0	0	1	1	3	0	1
2369:	0	2	0	0	0	1	3	2
2377:	0	1	0	2	0	0	1	1
2385:	2	1	0	0	1	0	0	3
2393:	0	1	0	4	0	1	1	0
2401:	0	2	1	0	1	2	1	0
2409:	0	0	1	0	0	1	3	2
2417:	0	2	0	0	0	1	0	1
2425:	0	0	1	0	0	1	0	1
2433:	1	2	0	0	2	0	0	0
2441:	2	0	0	0	0	0	0	0
2449:	0	0	1	2	0	0	0	0
2457:	0	0	0	0	0	0	0	0
2465:	1	0	0	0	2	0	0	1
2473:	0	1	0	1	0	0	1	1
2481:	1	0	0	0	0	0	1	1
2489:	2	1	0	0	0	0	1	1
2497:	1	0	0	1	0	2	18	41
2505:	41	13	4	0	0	0	0	0
2513:	0	0	0	0	1	1	0	0
2521:	0	0	0	0	0	0	0	0
2529:	0	0	0	0	1	1	0	0
2537:	0	0	0	0	0	0	0	0
2545:	0	1	0	0	0	0	0	0
2553:	0	0	0	0	0	0	0	0
2561:	0	0	0	0	0	0	0	0
2569:	0	0	0	0	0	1	0	0
2577:	0	1	0	0	0	0	1	0
2585:	0	0	0	0	0	0	1	0
2593:	0	1	0	0	0	0	0	0
2601:	0	0	0	0	1	0	0	1
2609:	0	0	0	0	2	2	0	0
2617:	0	0	0	0	0	0	0	0
2625:	0	0	0	0	1	0	0	0
2633:	0	0	0	1	0	0	0	0
2641:	0	0	0	0	0	0	1	0
2649:	0	0	0	0	0	0	0	0
2657:	0	0	0	0	1	0	0	0
2665:	0	1	1	0	0	0	0	0
2673:	0	0	0	0	0	0	0	0
2681:	0	0	0	0	0	0	0	1
2689:	0	0	0	0	0	0	0	0
2697:	1	0	0	0	0	0	0	0
2705:	1	0	0	0	0	0	0	0
2713:	0	0	0	0	0	0	1	0
2721:	0	0	0	0	0	0	0	0
2729:	0	0	0	0	0	0	0	0
2737:	0	0	0	0	0	0	0	0
2745:	1	0	0	0	0	0	0	0
2753:	0	0	0	0	0	0	0	1
2761:	0	0	0	1	0	0	0	0
2769:	0	0	0	0	0	0	0	1
2777:	1	0	0	0	0	0	0	0
2785:	0	0	0	1	0	0	0	0
2793:	0	0	0	0	0	0	0	0
2801:	0	0	0	0	0	0	0	0
2809:	0	0	0	0	0	0	0	0
2817:	0	0	0	1	0	0	1	0
2825:	0	0	0	0	1	0	0	0

[redacted]33:	0	0	0	0	0	0	0	0
[redacted]41:	0	0	0	0	0	0	0	0
2849:	0	0	0	0	0	0	0	0
[redacted]57:	0	0	0	0	0	0	0	0
[redacted]65:	1	0	0	0	0	0	0	0
2873:	0	0	0	0	0	0	1	0
[redacted]81:	0	0	0	0	0	0	0	0
[redacted]89:	0	0	0	0	0	0	0	0
2897:	0	0	0	0	0	0	0	0
2905:	0	0	0	0	0	1	0	0
[redacted]13:	0	1	0	0	0	0	0	0
[redacted]21:	0	0	0	0	0	0	0	0
2929:	0	0	0	0	0	0	0	0
[redacted]37:	0	0	0	0	0	0	0	0
[redacted]45:	0	0	0	0	0	0	0	0
2953:	0	0	0	0	0	0	0	0
2961:	0	0	0	0	1	0	0	0
[redacted]69:	0	0	0	0	0	0	0	0
2977:	1	0	0	0	0	0	0	0
2985:	0	0	0	0	0	0	0	0
[redacted]93:	0	0	0	0	0	0	0	0
[redacted]01:	0	0	0	0	0	0	0	0
3009:	0	0	0	0	0	0	0	0
[redacted]17:	0	0	1	0	0	0	0	0
[redacted]25:	0	0	0	2	0	0	0	0
3033:	0	1	0	0	0	0	0	0
3041:	0	0	0	0	0	0	0	0
[redacted]49:	0	0	0	0	0	0	0	0
3057:	1	1	0	0	1	0	0	0
3065:	0	0	0	0	0	0	0	0
[redacted]73:	0	1	0	0	0	0	0	0
[redacted]81:	0	0	0	0	0	0	0	0
3089:	0	0	0	1	0	0	0	0
[redacted]97:	0	0	0	0	0	0	0	0
[redacted]05:	0	0	0	0	0	0	0	0
3113:	0	0	0	0	0	0	0	0
3121:	0	0	0	0	0	1	0	0
[redacted]29:	0	0	0	0	0	0	0	0
3137:	0	0	0	0	0	0	0	0
3145:	0	0	0	0	0	0	0	0
[redacted]53:	0	0	0	0	0	0	0	0
[redacted]61:	0	0	1	0	0	0	0	0
3169:	0	0	0	0	0	0	0	0
[redacted]77:	0	0	0	0	0	0	0	0
[redacted]85:	0	0	0	0	0	0	0	0
3193:	0	0	1	0	0	0	0	0
3201:	0	0	0	0	0	0	0	0
[redacted]09:	0	0	0	0	0	0	0	0
[redacted]17:	0	0	0	0	0	0	0	0
3225:	0	0	0	0	0	0	0	0
[redacted]33:	0	0	0	0	0	0	0	0
[redacted]41:	0	1	0	0	0	0	0	0
3249:	0	0	0	0	0	0	0	0
[redacted]57:	0	0	0	0	0	0	0	0
[redacted]65:	0	0	0	0	0	0	0	0
3273:	0	0	1	0	0	0	0	0
3281:	0	0	0	0	0	0	0	0
[redacted]89:	0	1	0	0	0	0	0	0
[redacted]97:	0	0	0	0	0	0	0	0
3305:	0	0	0	0	0	0	0	0

[redacted]

3313:	0	0	0	0	0	0	1	0
3321:	0	1	1	0	0	0	0	0
329:	0	0	0	0	0	0	1	1
337:	0	0	0	0	0	0	0	0
3345:	0	1	0	0	0	1	0	0
3353:	0	0	1	0	0	0	0	0
361:	0	0	0	0	1	0	0	0
3369:	0	0	0	0	0	0	0	1
3377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	1	0	0	0
3393:	0	0	0	0	0	0	0	0
3401:	0	0	0	0	0	0	0	0
409:	0	0	0	0	1	0	0	0
417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0	0
441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	1	0
3457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	1	0	0
3481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	0	0	0	0
3505:	0	0	0	0	0	0	1	0
3513:	0	0	0	1	0	0	0	0
3521:	0	0	0	0	0	0	0	0
3529:	0	0	0	0	0	0	0	0
3537:	1	0	0	0	0	0	0	0
3545:	0	0	0	0	0	0	0	0
3553:	0	0	0	0	0	0	0	0
3561:	0	0	0	1	0	0	0	0
3569:	0	0	0	0	0	0	0	0
3577:	0	0	0	1	0	0	0	0
3585:	0	0	0	0	0	0	0	0
3593:	0	0	0	0	0	0	0	0
3601:	0	0	0	0	0	1	0	0
3609:	0	0	0	0	0	0	0	0
3617:	0	0	0	0	0	0	1	0
3625:	0	0	0	0	0	0	0	0
3633:	0	1	0	0	0	0	0	0
3641:	0	0	0	1	0	0	0	0
3649:	0	0	0	0	0	0	1	0
3657:	0	0	0	0	0	0	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	0	0	0	0	0	0	0
3681:	1	0	0	0	0	0	0	0
3689:	0	0	0	0	0	0	0	0
3697:	0	0	0	0	0	0	0	0
3705:	0	0	0	0	0	0	0	0
3713:	0	0	0	0	0	0	0	1
3721:	0	0	0	0	0	0	0	1
3729:	0	0	0	0	0	1	0	0
3737:	0	0	0	0	0	0	0	0
3745:	0	0	0	0	0	0	0	0
3753:	0	0	0	0	0	0	0	1
3761:	0	0	0	0	0	0	0	0
3769:	0	0	0	1	0	0	0	0
3777:	1	0	0	0	0	0	0	0
3785:	1	0	0	0	0	0	0	0

3793:	0	0	0	0	0	0	0	0
3801:	0	0	0	0	0	0	0	0
3809:	1	0	0	0	0	1	0	0
3817:	0	0	0	0	0	0	0	0
3825:	0	0	0	0	0	0	0	0
3833:	0	0	0	0	0	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	0	0	0	0	0	0	0
3857:	0	0	0	0	0	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	0	0	0	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	0	0	0	0	0	0
3897:	0	0	0	0	0	0	0	0
3905:	0	0	0	0	1	0	0	0
3913:	0	0	0	0	0	0	0	0
3921:	0	0	0	0	0	0	0	0
3929:	0	0	0	0	0	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	0	0	0	0	0
3953:	0	0	1	0	0	0	0	0
3961:	0	0	0	0	0	0	0	0
3969:	0	0	0	0	1	0	0	0
3977:	0	0	0	0	0	0	0	0
3985:	0	0	0	0	0	0	1	1
3993:	0	0	0	0	0	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	0	0	0	0	0	0
4017:	0	0	0	0	0	0	0	0
4025:	0	0	0	0	0	0	0	0
4033:	0	0	0	0	0	0	0	0
4041:	0	0	0	0	0	0	0	0
4049:	0	0	0	0	0	0	0	0
4057:	0	0	0	0	0	0	0	0
4065:	0	0	0	0	0	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	0	0	0	0	0	0	0	1
4089:	0	0	0	0	0	0	0	0

ample ID : 0009041-02 Acquisition date : 11-SEP-2000 14:06:35

AX/VMS Peak Search Report Generated 11-SEP-2000 15:06:48.63

onfiguration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_000904102_GE1_SJARB_12989.CNF
nalyses by : PEAK V16.9 ENBACK V1.6 PEAKEFF V2.2
lient ID : BLANK
eposition Date :
ample Date : 11-SEP-2000 00:00:00 Acquisition date : 11-SEP-2000 14:06:35
ample ID : 0009041-02 Sample Quantity : 1.00000E+02 GRAM
ample type : SOIL Sample Geometry : 0
etector name : GE1 Detector Geometry: SJARB
lapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.27 0.0%
tart channel : 5 End channel : 4096
ensitivity : 3.00000 Gaussian : 15.00000
ritical level : No

ost-NID Peak Search Report

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw %Err	Fit	Nuclides
1	76.47*	22	302	11.36	75.94	69	16365.7	1.96E+00	
1	240.24*	16	106	1.91	239.92	234	11275.7	7.56E+00	RA-224
1	319.14	18	27	3.59	318.91	316	7103.8	1.09E+00	CR-51
1	336.22	56	43	6.64	336.00	330	11 52.8	1.42E+00	
1	353.07*	51	58	9.94	352.87	346	15 72.3	1.81E+00	
1	511.42*	17	16	3.77	511.39	506	11162.1	5.87E-01	
1	583.08*	9	11	2.37	583.11	579	7172.3	1.37E+00	TL-208
1	729.98	27	10	8.67	730.14	726	10 58.6	1.05E+00	
1	898.49	16	11	5.13	898.77	894	8 85.1	3.59E-01	
1	961.58	16	5	5.92	961.90	958	9 65.5	5.24E-01	
1	987.45	10	7	4.29	987.78	983	8115.4	1.09E+00	
1	1039.86	15	9	4.29	1040.22	1037	7 76.2	1.04E+00	
1	1156.47	10	3	4.54	1156.89	1154	6 73.0	7.41E-02	
1	1172.26	7	4	2.50	1172.69	1169	6111.3	5.24E-01	
1	1762.48	10	2	4.98	1763.03	1758	8 66.2	6.31E-02	
1	2613.44*	3	2	2.64	2613.68	2608	9254.7	1.37E-01	TL-208

mmary of Nuclide Activity
mple ID : 0009041-02 Acquisition date : 11-SEP-2000 14:06:35

otal number of lines in spectrum 16
umber of unidentified lines 9
Number of lines tentatively identified by NID 7 43.75%

clide Type : ACTIVATION

clide	Hlife	Decay	Wtd Mean Uncorrected pCi/GRAM	Wtd Mean Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
-51	27.70D	1.02	2.960E-01	3.006E-01	3.199E-01	106.43	
			---	---			
Total Activity :			2.960E-01	3.006E-01			

uclide Type : NATURAL

uclide	Hlife	Decay	Wtd Mean Uncorrected pCi/GRAM	Wtd Mean Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
L-208	1.41E+10Y	1.00	6.376E-02	6.376E-02	9.134E-02	143.25	
-224	1.41E+10Y	1.00	5.618E-01	5.618E-01	15.55E-01	276.77	
			---	---			
Total Activity :			6.255E-01	6.255E-01			

Grand Total Activity : 9.215E-01 9.261E-01

ags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

ıclide Type: ACTIVATION

uclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
R-51	320.08	9.83*	4.768E+00	2.960E-01	3.006E-01	106.43	OK

Final Mean for 1 Valid Peaks = 3.006E-01+/- 3.199E-01 (106.43%)

uclide Type: NATURAL

ıclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
L-208	583.14	30.22*	3.243E+00	6.541E-02	6.541E-02	172.97	OK
	860.37	4.48	2.308E+00	-----	Line Not Found	-----	Absent
	2614.66	35.85	1.079E+00	6.068E-02	6.068E-02	255.12	OK

Final Mean for 2 Valid Peaks = 6.376E-02+/- 9.134E-02 (143.25%)

A-224	240.98	3.95*	5.345E+00	5.618E-01	5.618E-01	276.77	OK

Final Mean for 1 Valid Peaks = 5.618E-01+/- 1.555E+00 (276.77%)

'lag: "*" = Keyline

- Identified Nuclides ----

lide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
-51	3.006E-01	3.199E-01	5.631E-01	1.303E-01	0.534
208	6.376E-02	9.134E-02	2.181E-01	3.089E-02	0.292
224	5.618E-01	1.555E+00	1.464E+00	3.523E-01	0.384

- Non-Identified Nuclides ----

lide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
-7	-1.536E-01		3.046E-01	5.202E-01	1.002E-01	-0.295
22	-1.594E-02		3.724E-02	6.587E-02	5.989E-03	-0.242
24	-5.087E-02		8.408E-02	1.406E-01	1.336E-02	-0.362
-40	-1.299E-01		4.518E-01	9.234E-01	9.450E-02	-0.141
41	2.933E-01		9.456E+00	1.877E+01	1.719E+00	0.016
54	2.667E-02		3.969E-02	8.018E-02	7.741E-03	0.333
-57	1.830E-02		4.173E-02	7.498E-02	1.828E-02	0.244
-58	7.689E-03		3.795E-02	7.269E-02	7.013E-03	0.106
59	3.102E-02		7.035E-02	1.447E-01	1.416E-02	0.214
60	3.190E-02	+	3.564E-02	8.249E-02	7.172E-03	0.387
N-65	4.224E-02		6.910E-02	1.503E-01	1.360E-02	0.281
67	-2.794E-02		1.415E-01	2.682E-01	3.074E-01	-0.104
75	5.138E-02		5.479E-02	1.025E-01	2.440E-02	0.501
B-83	5.229E-02		6.505E-02	1.212E-01	2.620E-02	0.432
85	3.876E+01		1.344E+01	2.422E+01	4.245E+00	1.600
85	1.705E-01		5.911E-02	1.066E-01	1.868E-02	1.600
-88	-2.850E-02		3.725E-02	5.662E-02	6.673E-03	-0.503
R-94	-1.346E-02		3.652E-02	6.446E-02	6.236E-03	-0.209
95	1.021E-02		4.141E-02	7.917E-02	7.559E-03	0.129
95M	2.339E-01		2.010E-01	3.313E-01	7.994E-02	0.706
R-95	-3.428E-02		6.323E-02	1.079E-01	1.114E-02	-0.318
99	-1.491E-01		3.109E-01	4.551E-01	4.317E-02	-0.328
103	-1.432E-02		3.620E-02	6.277E-02	1.343E-02	-0.228
U-106	3.430E-02		3.345E-01	6.263E-01	9.809E-02	0.055
-109	-5.659E+00		1.937E+00	1.603E+00	3.714E-01	-3.529
110M	-2.859E-02		4.179E-02	6.949E-02	6.603E-03	-0.411
N-113	-1.035E-02		5.144E-02	9.068E-02	1.962E-02	-0.114
E123M	-3.404E-02		4.543E-02	7.493E-02	1.852E-02	-0.454
124	-3.288E-02		4.357E-02	7.152E-02	9.332E-03	-0.460
25	0.000E+00		0.000E+00	1.209E-02	4.747E-04	0.000
B-125	6.110E-02		1.169E-01	2.197E-01	4.536E-02	0.278
126	-5.651E-01		1.901E-01	1.609E-01	3.572E-02	-3.512
127	-2.195E-02		1.013E-01	1.828E-01	1.702E-02	-0.120
-129	0.000E+00		0.000E+00	1.349E-02	6.893E-04	0.000
131	6.032E-03		4.134E-02	6.751E-02	1.495E-02	0.089
132	-4.966E-02		5.209E-02	7.079E-02	1.714E-02	-0.701
A-133	3.976E-02		5.774E-02	1.078E-01	2.637E-02	0.369
-133	9.263E-03		5.688E-02	1.069E-01	1.798E-02	0.087
134	-3.666E-02		4.370E-02	7.089E-02	9.176E-03	-0.517
35	5.675E-02		6.686E-01	1.311E+00	1.185E-01	0.043

--- Non-Identified Nuclides ----

uclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
S-136	3.522E-02		5.023E-02	1.005E-01	9.611E-03	0.351
S-137	-3.703E-02		4.598E-02	7.505E-02	6.936E-03	-0.493
E-139	5.746E-02		4.786E-02	8.623E-02	2.130E-02	0.666
A-140	3.866E-02		1.318E-01	2.489E-01	8.959E-02	0.155
A-140	-1.965E-02		4.386E-02	7.843E-02	8.419E-03	-0.250
E-141	-8.499E-02		8.453E-02	1.345E-01	3.997E-02	-0.632
E-143	3.100E-02		1.104E-01	2.006E-01	4.692E-02	0.155
E-144	-8.427E-02		3.118E-01	5.410E-01	1.330E-01	-0.156
M-144	-1.599E-02		4.201E-02	7.282E-02	6.810E-03	-0.220
M-145	0.000E+00		0.000E+00	3.951E-03	2.555E-03	0.000
M-146	-4.930E-02		8.175E-02	1.374E-01	2.716E-02	-0.359
D-147	2.496E-02		2.424E-01	4.517E-01	7.577E-02	0.055
M-149	8.495E-01		1.233E+00	2.305E+00	5.416E-01	0.369
U-152	2.623E-01		2.948E-01	6.620E-01	7.817E-02	0.396
U-154	-4.485E-02		1.048E-01	1.854E-01	1.685E-02	-0.242
U-155	-7.195E-01		2.337E-01	1.947E-01	4.231E-02	-3.695
G-203	1.777E-02		4.154E-02	7.652E-02	1.812E-02	0.232
I-207	2.214E-02		3.856E-02	7.411E-02	1.103E-02	0.299
I-210M	-2.399E-02		7.260E-02	1.256E-01	2.992E-02	-0.191
B-210	-7.072E-01		1.899E-01	3.447E-02	2.423E-03	-20.519
B-211	-3.757E-01		1.067E+00	1.856E+00	3.934E-01	-0.202
I-212	1.288E-01		3.983E-01	6.876E-01	6.497E-02	0.187
B-212	4.598E-02		9.026E-02	1.696E-01	4.086E-02	0.271
I-214	2.698E-02		8.741E-02	1.697E-01	2.148E-02	0.159
B-214	2.271E-01	+	1.723E-01	1.791E-01	4.012E-02	1.268
N-219	7.000E-03		4.860E-01	8.800E-01	1.873E-01	0.008
A-223	-2.487E-02		9.539E-01	1.278E+00	2.928E-01	-0.019
A-226	1.240E-01		1.358E+00	2.535E+00	4.679E+00	0.049
H-227	5.016E-01		3.956E-01	6.515E-01	1.572E-01	0.770
C-228	6.619E-03		1.482E-01	2.795E-01	2.700E-02	0.024
A-231	-7.906E-02		1.456E+00	2.588E+00	6.017E-01	-0.031
H-231	0.000E+00		0.000E+00	1.832E-03	2.484E-05	0.000
A-233	2.574E-02		9.407E-02	1.528E-01	4.744E-02	0.168
A-234	-1.106E-01		1.700E-01	2.842E-01	6.978E-02	-0.389
A-234M	-1.027E+00		4.613E+00	8.729E+00	8.298E-01	-0.118
H-234	-6.285E-01		8.450E-01	1.554E+00	1.802E-01	-0.404
-235	-8.246E-02		3.548E-01	6.216E-01	1.803E-01	-0.133
P-237	-1.764E+00		5.730E-01	4.774E-01	1.037E-01	-3.695
P-239	8.537E-02		1.843E-01	3.309E-01	7.871E-02	0.258
M-241	-8.990E-02		7.171E-02	1.162E-01	1.166E-02	-0.773

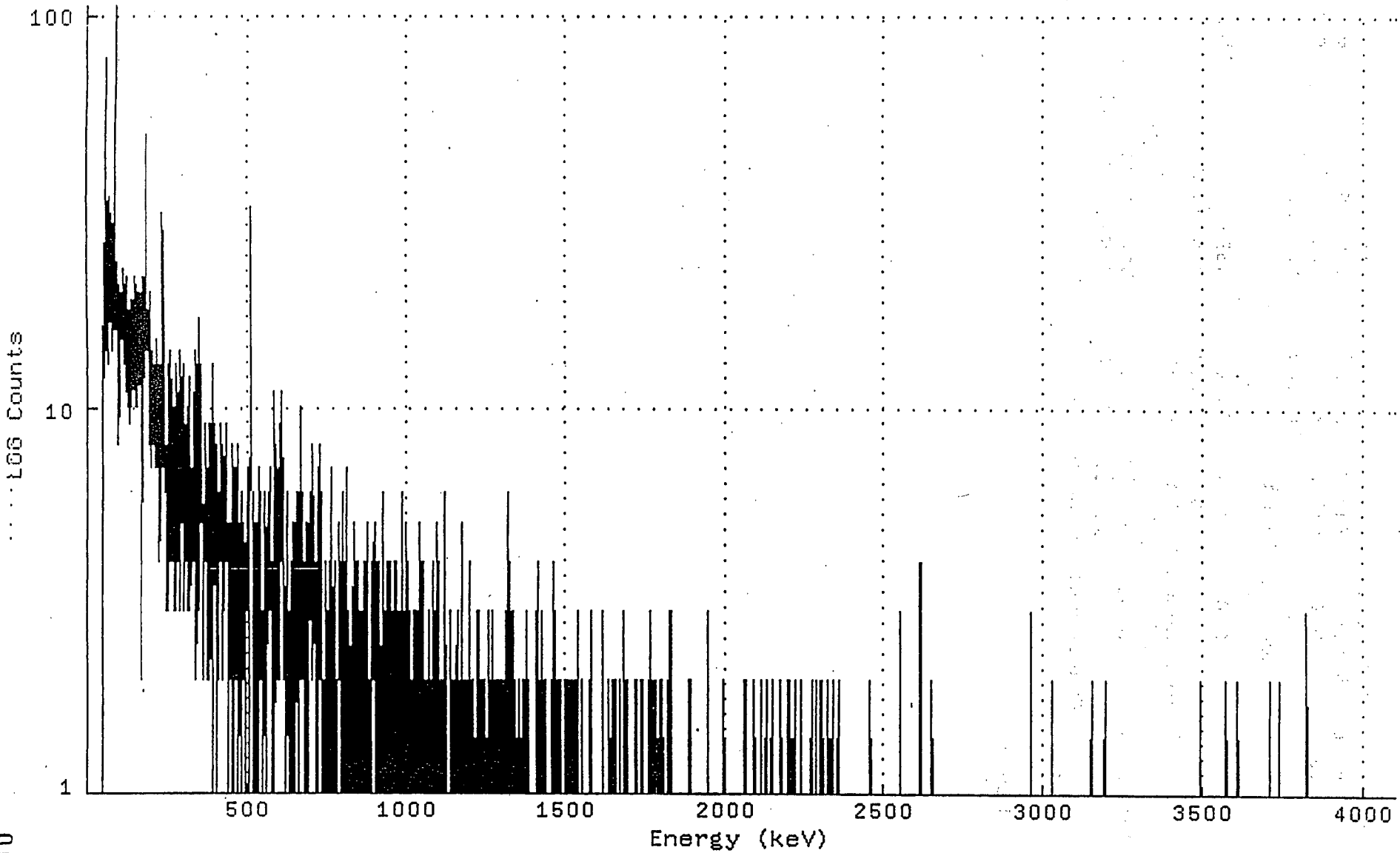
ample ID : 0009041-02 Acquisition date : 11-SEP-2000 14:06:35

lide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (pCi/GRAM)	2-Sigma %Error	Rejected by
O-60	5.27Y	0.00	1173.22*	100.00	3.190E-02	111.71	Abun.
			1332.49	100.00	--- Not Found ---		
		% Abundances	Found =	50.00			
8	106.60D	0.01	898.02	93.40	5.865E-02	85.71	Abun.
			1836.01*	99.38	--- Not Found ---		
		% Abundances	Found =	48.45			
214	1602.00Y	0.00	295.21	19.19	--- Not Found ---		Abun.
			351.92*	37.19	2.271E-01	75.84	
		% Abundances	Found =	65.96			

lag: "*" = Keyline

Spectrum : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_000904102_GE1_SJARB_12989.CNF;1
Title :
Sample Title: BLANK

Start Time:	11-SEP-2000 14:06	Sample Time:	11-SEP-2000 00:00	Energy Offset:	6.28320E-01
Real Time :	0 01:00:00.27	Sample ID :	0009041-02	Energy Slope :	9.98634E-01
Live Time :	0 01:00:00.00	Sample Type:	SOIL	Energy Quad :	3.95326E-07



001123

Channel Contents for [GAMMA.SCUSR.ARCHIVE]SMP_000904102_GE1_SJARB_12989.CNF

Channel

1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	7	10	27	17	20	19
57:	12	20	15	14	23	19	66	78
65:	15	23	17	13	20	16	17	21
73:	17	27	35	27	32	18	14	16
81:	18	20	30	18	24	16	21	18
89:	16	24	20	59	106	32	18	14
97:	14	19	20	8	11	13	21	18
105:	18	20	15	19	20	19	16	19
113:	18	23	18	13	17	16	16	11
121:	21	17	14	20	22	16	10	11
129:	14	14	18	13	9	15	12	10
137:	18	14	10	19	12	11	19	19
145:	15	17	17	12	10	22	16	17
153:	19	16	17	12	12	12	21	10
161:	13	16	20	14	16	18	20	15
169:	13	7	8	2	16	12	11	22
177:	13	16	15	13	17	13	22	12
185:	32	50	20	16	14	16	14	8
193:	9	11	18	15	8	17	20	7
201:	17	14	13	8	12	11	11	14
209:	11	13	7	12	11	12	11	11
217:	15	10	7	13	8	13	13	10
225:	9	4	5	10	8	11	10	13
233:	13	13	7	10	12	32	26	13
241:	14	13	9	6	8	5	6	6
249:	6	3	8	9	3	8	7	13
257:	6	5	5	4	10	14	10	4
265:	11	8	9	9	10	10	8	5
273:	3	7	8	13	11	3	5	12
281:	4	10	6	5	11	6	11	3
289:	14	5	10	6	5	12	10	12
297:	9	5	10	13	5	3	11	9
305:	7	4	6	7	9	6	7	9
313:	10	4	6	3	5	12	9	7
321:	4	3	4	6	4	5	7	4
329:	7	4	9	6	8	11	9	12
337:	13	14	8	2	3	7	13	8
345:	5	5	8	11	3	6	9	17
353:	10	8	5	6	10	8	4	2
361:	4	3	5	3	9	4	6	4
369:	5	4	4	5	2	4	7	4
377:	2	6	3	3	8	9	4	9
385:	3	5	6	5	1	7	5	5
393:	13	3	6	9	6	4	7	6
401:	2	6	7	1	8	4	3	4
409:	4	6	2	4	7	5	5	4
417:	5	9	5	2	7	5	8	8
425:	7	6	3	7	6	4	9	4

433:	4	5	4	4	4	5	2	1
441:	5	4	4	5	2	5	4	3
449:	8	1	4	4	3	5	3	6
457:	5	1	5	7	7	3	4	6
465:	5	2	5	8	1	4	3	7
473:	3	4	5	5	3	2	0	4
481:	5	5	6	5	3	2	5	4
489:	5	5	4	0	1	0	2	3
497:	6	3	7	4	4	6	7	4
505:	3	1	3	5	11	20	33	32
513:	13	9	4	0	2	3	5	2
521:	3	3	5	3	1	4	2	0
529:	5	4	2	3	7	2	5	1
537:	4	2	5	6	4	3	4	2
545:	2	3	3	2	3	1	2	3
553:	2	2	5	6	4	3	2	0
561:	2	2	3	6	3	6	3	4
569:	7	5	7	5	3	5	3	2
577:	3	4	0	4	3	5	8	11
585:	1	1	3	8	4	2	5	5
593:	3	4	2	7	2	4	9	2
601:	4	2	4	5	4	4	5	4
609:	5	11	5	4	4	3	4	2
617:	3	3	2	0	3	3	4	2
625:	6	4	6	2	1	1	3	1
633:	3	2	2	3	2	3	4	1
641:	3	1	3	0	4	5	3	5
649:	1	3	5	1	4	6	5	2
657:	4	3	0	4	1	2	6	3
665:	2	10	5	4	4	5	3	4
673:	2	4	6	2	3	1	4	3
681:	2	1	2	4	1	5	1	3
689:	0	5	1	2	1	3	3	3
697:	6	4	3	4	2	8	7	5
705:	5	7	5	4	3	3	4	3
713:	2	4	4	0	2	1	5	2
721:	1	4	4	7	2	2	8	3
729:	3	3	4	6	3	1	0	1
737:	1	0	2	2	2	0	2	2
745:	4	2	1	3	1	0	3	3
753:	1	3	1	0	3	2	1	4
761:	0	2	7	3	2	3	3	3
769:	3	3	1	3	4	2	1	4
777:	2	4	1	1	2	1	1	1
785:	4	2	4	5	3	4	3	4
793:	2	1	2	4	1	3	2	6
801:	4	2	3	2	4	2	2	1
809:	3	4	0	1	7	2	1	1
817:	1	1	3	3	2	1	2	2
825:	0	2	1	1	1	2	0	3
833:	4	1	5	5	3	2	1	1
841:	2	4	3	3	1	0	4	1
849:	1	2	1	2	2	3	0	2
857:	0	2	3	2	1	3	1	0
865:	4	2	2	0	3	2	4	1
873:	0	0	3	5	1	1	3	2
881:	2	1	2	2	0	1	0	1
889:	0	3	2	4	2	3	2	2
897:	3	4	5	4	0	1	2	3
905:	2	2	2	0	3	4	3	1

913:	4	0	3	1	2	2	1	0
921:	1	2	3	0	6	1	0	2
929:	2	1	3	3	0	3	1	2
937:	4	2	2	3	2	2	1	4
945:	0	3	4	0	3	1	0	1
953:	2	2	1	3	0	1	1	2
961:	3	3	4	1	1	0	1	0
969:	4	4	0	3	1	2	3	2
977:	1	1	1	1	3	0	3	0
985:	1	2	2	6	1	0	1	3
993:	0	1	2	5	1	2	0	2
1001:	3	3	2	4	0	0	1	1
1009:	3	2	3	2	1	1	2	2
1017:	1	0	1	2	3	1	1	2
1025:	3	3	0	3	1	3	0	1
1033:	2	2	0	3	0	1	4	5
1041:	4	3	0	2	4	0	2	0
1049:	4	1	0	2	3	3	0	1
1057:	0	2	2	0	1	1	0	2
1065:	1	1	0	0	2	1	3	1
1073:	1	0	2	2	2	0	1	4
1081:	1	1	0	0	2	0	2	3
1089:	2	1	0	2	1	2	3	5
1097:	0	4	1	0	2	1	0	2
1105:	2	1	0	1	0	0	1	0
1113:	1	2	2	1	2	0	0	6
1121:	1	1	1	1	1	1	1	1
1129:	1	0	0	0	1	3	0	1
1137:	0	1	1	1	1	2	1	2
1145:	0	2	2	1	1	0	1	1
1153:	0	0	1	2	3	3	0	2
1161:	0	1	1	1	0	2	0	1
1169:	1	1	1	2	5	0	1	0
1177:	2	1	2	0	1	2	1	1
1185:	2	0	2	1	0	2	1	0
1193:	0	3	2	1	2	4	1	0
1201:	0	0	1	1	1	2	1	2
1209:	1	1	1	1	1	0	1	1
1217:	2	0	3	2	2	1	3	1
1225:	0	1	0	1	1	1	1	1
1233:	0	2	1	0	1	0	2	2
1241:	1	0	0	1	1	2	0	1
1249:	0	1	0	1	0	3	2	1
1257:	2	3	0	0	1	0	2	2
1265:	1	0	2	1	0	3	0	1
1273:	0	1	0	2	2	0	0	1
1281:	1	1	0	0	2	2	0	0
1289:	1	1	0	1	2	0	2	2
1297:	0	0	2	0	1	1	0	0
1305:	2	0	2	1	2	0	3	1
1313:	2	0	0	2	6	0	1	3
1321:	4	0	0	1	2	1	1	1
1329:	3	0	0	3	2	0	1	1
1337:	1	1	1	2	1	2	0	0
1345:	0	0	1	0	1	1	0	1
1353:	2	0	0	1	1	1	1	0
1361:	2	1	1	1	2	1	0	0
1369:	0	1	2	1	0	1	0	3
1377:	2	0	2	0	0	1	1	0
1385:	1	1	1	0	1	0	0	0

1393:	0	0	0	1	1	0	0	1
1401:	0	0	0	1	3	1	0	3
1409:	1	0	0	4	4	0	2	1
1417:	1	0	0	0	0	1	3	0
1425:	1	3	1	2	0	2	0	0
1433:	1	1	0	0	2	0	0	1
1441:	1	0	0	1	0	1	1	0
1449:	1	0	0	1	0	2	0	0
1457:	0	2	0	2	4	1	1	2
1465:	0	0	3	1	0	1	2	0
1473:	0	0	1	0	2	0	1	0
1481:	0	2	2	1	2	1	0	0
1489:	1	1	1	0	1	0	1	1
1497:	1	2	0	0	1	2	0	0
1505:	0	0	1	0	2	1	1	1
1513:	0	1	2	2	0	2	0	1
1521:	1	0	0	1	0	0	1	2
1529:	1	1	0	2	1	1	1	3
1537:	0	1	1	0	1	0	0	0
1545:	0	0	0	2	1	0	1	0
1553:	0	1	0	1	0	0	0	1
1561:	1	1	1	0	0	0	0	1
1569:	1	0	0	0	2	2	0	1
1577:	3	1	0	1	1	0	0	1
1585:	1	0	0	0	0	1	1	1
1593:	1	1	0	0	1	0	0	0
1601:	0	0	0	1	1	1	0	1
1609:	0	0	0	1	0	3	1	1
1617:	1	0	0	0	0	1	1	0
1625:	0	0	1	0	0	0	0	0
1633:	2	1	1	0	1	1	0	0
1641:	0	0	2	0	1	0	1	1
1649:	2	1	0	0	0	1	0	2
1657:	0	1	1	0	0	0	1	0
1665:	1	1	0	2	1	0	0	1
1673:	0	1	1	1	1	1	0	0
1681:	1	1	3	0	0	1	2	1
1689:	0	0	0	2	1	1	0	0
1697:	0	1	0	1	0	1	0	0
1705:	1	0	0	1	0	1	0	1
1713:	0	0	1	1	0	0	2	0
1721:	2	0	0	1	0	0	1	0
1729:	1	0	0	0	0	2	0	0
1737:	1	1	1	0	2	1	0	0
1745:	0	1	0	0	1	1	1	0
1753:	1	0	0	1	0	0	0	0
1761:	1	2	2	3	0	1	0	0
1769:	0	2	1	0	0	1	2	2
1777:	1	0	0	0	2	2	1	2
1785:	0	2	0	0	1	0	1	1
1793:	0	0	2	0	0	1	0	0
1801:	1	0	0	2	0	0	0	1
1809:	0	0	1	0	1	0	1	0
1817:	0	1	0	0	2	0	0	2
1825:	0	0	1	3	0	3	0	2
1833:	0	0	0	1	0	0	0	0
1841:	1	0	0	0	0	0	1	0
1849:	0	0	0	0	0	0	0	1
1857:	0	0	0	0	0	1	0	1
1865:	1	1	0	1	0	0	0	1

73:	1	0	0	1	1	0	0	1
881:	0	0	1	0	0	0	0	2
889:	2	0	0	1	1	0	0	0
97:	1	0	1	1	1	0	1	1
905:	0	0	0	0	0	0	0	0
913:	1	1	0	0	0	1	1	1
21:	0	0	0	0	0	0	0	1
29:	1	0	0	1	0	1	0	0
937:	0	1	1	1	0	1	1	3
945:	1	0	0	0	0	0	1	0
53:	0	0	0	1	1	0	0	0
961:	1	1	0	0	0	0	0	1
969:	0	0	1	0	0	0	0	1
77:	0	1	0	0	1	1	0	0
985:	1	0	1	1	0	1	0	0
993:	0	1	0	2	0	1	1	0
01:	0	0	1	0	0	0	0	0
09:	0	1	1	0	0	0	0	0
2017:	1	0	0	0	1	1	1	1
25:	1	1	0	0	0	0	0	0
33:	0	0	1	0	0	1	1	0
2041:	0	0	1	1	0	0	0	0
049:	0	0	0	1	1	0	1	0
57:	0	1	0	0	2	2	0	1
065:	2	0	0	0	0	0	1	0
2073:	0	0	0	1	0	0	0	0
81:	0	0	0	1	0	0	1	0
89:	0	0	1	2	0	0	0	1
2097:	1	0	0	1	0	0	0	0
105:	1	0	0	0	0	1	0	2
13:	2	1	0	0	1	1	1	0
2121:	1	1	0	0	1	1	0	0
2129:	2	0	1	0	0	0	0	0
37:	0	0	0	0	1	0	0	0
45:	1	0	2	0	0	0	0	1
2153:	1	0	0	1	1	0	0	0
61:	0	0	0	0	0	1	0	0
69:	0	0	1	0	2	0	1	2
2177:	0	1	0	0	1	0	0	0
185:	0	0	0	1	0	1	0	1
93:	0	0	1	0	0	0	0	2
2201:	0	1	1	1	0	2	0	1
2209:	0	0	0	1	1	0	1	0
17:	0	0	2	1	0	0	0	1
25:	0	0	0	0	1	0	1	1
2233:	0	1	0	0	1	2	0	0
41:	0	0	0	1	0	1	0	0
49:	0	0	0	1	1	1	0	1
2257:	0	1	0	1	1	0	1	0
265:	0	0	0	0	1	1	0	2
73:	0	1	1	1	1	0	1	1
2281:	0	0	0	0	1	0	2	2
2289:	0	0	0	0	1	0	0	1
97:	0	2	0	1	1	0	1	0
05:	0	0	2	0	1	0	0	1
2313:	1	0	1	0	0	0	0	0
21:	0	1	2	0	2	1	1	0
29:	0	0	0	0	1	0	0	0
2337:	0	2	0	0	0	0	0	1
345:	0	0	0	0	0	0	0	0

2353:	1	1	1	2	1	1	0	0
2361:	0	0	1	0	0	0	0	0
2369:	0	1	1	0	0	1	0	0
2377:	0	1	1	1	0	0	0	0
2385:	1	1	0	0	0	0	0	0
2393:	0	0	1	1	1	1	0	0
2401:	1	0	0	0	1	1	0	0
2409:	0	1	0	0	0	1	0	0
2417:	0	1	1	0	0	1	1	0
2425:	0	1	0	0	0	0	1	0
2433:	1	0	0	0	1	0	0	0
2441:	0	0	0	1	0	0	0	1
2449:	0	1	0	0	1	0	0	0
2457:	2	1	0	0	0	0	0	0
2465:	1	0	0	0	0	0	0	1
2473:	0	0	0	0	0	1	0	0
2481:	0	0	0	1	0	0	0	0
2489:	1	1	1	0	0	0	0	0
2497:	0	0	0	0	1	0	0	0
2505:	0	0	0	0	0	0	0	0
2513:	0	0	0	0	1	1	0	0
2521:	0	0	0	1	0	1	0	1
2529:	0	0	0	0	0	0	0	0
2537:	0	0	1	0	0	0	0	0
2545:	1	0	0	0	3	0	0	1
2553:	0	1	1	1	0	0	0	0
2561:	0	0	0	1	0	0	1	0
2569:	0	0	0	0	0	0	0	0
2577:	0	0	0	0	0	1	1	1
2585:	0	1	0	0	0	1	0	0
2593:	0	0	1	0	0	1	0	0
2601:	0	0	0	0	0	1	1	0
2609:	1	1	0	0	4	4	0	0
2617:	0	0	0	0	0	0	0	0
2625:	0	0	1	1	0	0	1	0
2633:	0	1	0	1	0	0	0	0
2641:	0	0	0	0	0	1	0	0
2649:	2	0	0	0	0	0	0	0
2657:	1	0	0	0	1	1	0	1
2665:	0	0	0	0	1	0	0	1
2673:	0	0	0	0	0	0	0	0
2681:	0	0	1	0	0	0	0	1
2689:	0	0	0	1	0	0	0	0
2697:	0	1	0	0	1	1	0	0
2705:	0	0	0	0	0	0	0	0
2713:	1	0	1	0	0	0	0	0
2721:	0	0	0	1	0	0	0	0
2729:	0	0	0	0	0	0	0	0
2737:	0	0	0	0	1	1	0	0
2745:	0	0	0	0	0	1	1	0
2753:	0	0	0	0	0	0	1	0
2761:	0	1	0	0	0	1	1	0
2769:	0	1	0	0	0	0	0	0
2777:	0	0	0	0	0	0	0	0
2785:	1	0	0	1	1	0	1	0
2793:	0	0	0	1	1	0	0	0
2801:	0	0	0	0	0	0	0	0
2809:	0	0	0	0	0	0	0	1
2817:	0	0	1	0	0	0	0	0
2825:	1	0	0	0	0	0	0	0

[redacted]33:	0	0	0	0	0	0	0	0
841:	0	1	0	0	1	1	0	0
849:	0	0	1	1	0	1	0	0
[redacted]57:	0	0	1	0	1	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	1	0	0	1
[redacted]81:	0	1	0	1	0	1	0	0
[redacted]89:	0	1	0	1	0	0	1	0
897:	0	0	0	0	0	0	0	1
[redacted]05:	1	0	0	1	0	0	1	0
[redacted]13:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
[redacted]37:	0	0	0	0	0	1	0	1
945:	0	0	0	0	0	0	0	0
953:	1	1	0	0	3	0	0	0
[redacted]61:	0	1	0	0	0	0	0	0
[redacted]69:	1	0	0	0	0	0	1	0
2977:	0	1	0	0	0	0	0	1
[redacted]85:	0	0	1	0	0	0	0	0
[redacted]93:	0	1	0	0	0	0	0	0
001:	0	0	0	0	0	0	0	0
009:	0	0	0	0	0	0	0	0
[redacted]17:	1	0	0	0	0	0	2	0
025:	0	0	0	0	0	0	0	0
033:	0	0	0	0	0	0	0	0
[redacted]41:	0	0	0	0	0	0	0	0
[redacted]49:	0	1	0	0	0	0	0	0
3057:	0	0	0	0	0	1	0	0
[redacted]65:	0	0	0	0	0	0	0	0
[redacted]73:	1	0	0	0	0	0	1	1
081:	0	0	0	0	0	0	0	0
089:	1	0	0	0	0	0	0	0
[redacted]97:	0	0	0	0	0	0	0	1
105:	0	0	0	0	0	0	0	0
3113:	0	1	0	1	0	0	1	0
[redacted]21:	0	0	0	1	0	0	0	0
[redacted]29:	1	0	1	0	1	0	0	1
3137:	0	0	0	0	1	0	0	0
[redacted]45:	0	0	2	0	0	0	0	0
[redacted]53:	0	0	1	0	0	1	0	1
3161:	0	0	0	0	0	0	0	0
3169:	0	0	0	0	0	0	1	0
[redacted]77:	1	0	0	0	0	0	0	1
[redacted]85:	0	0	1	0	2	1	0	0
3193:	1	0	1	1	1	0	0	0
[redacted]01:	0	0	0	0	1	1	0	0
[redacted]09:	0	0	0	0	0	0	1	0
3217:	0	0	1	0	0	0	1	0
[redacted]25:	0	0	0	0	0	1	0	0
[redacted]33:	0	0	0	0	0	0	0	0
3241:	0	0	0	0	0	0	0	0
3249:	0	0	0	1	1	0	0	0
[redacted]57:	0	0	0	0	0	0	0	0
[redacted]65:	1	1	0	0	0	0	0	1
3273:	0	0	0	1	0	0	0	0
[redacted]81:	0	0	0	0	0	0	0	1
[redacted]89:	0	0	0	0	0	0	0	0
3297:	0	0	0	0	0	0	0	0
3305:	0	0	0	0	0	0	0	0

[redacted]

3313:	0	0	0	1	0	1	0	0
3321:	0	0	0	1	1	1	0	0
329:	0	0	0	0	0	0	0	1
3337:	0	0	0	0	0	0	0	0
3345:	0	0	1	0	0	0	0	0
353:	1	0	0	1	0	0	1	0
3361:	0	0	0	0	0	0	1	0
3369:	0	0	1	0	0	1	0	0
377:	0	0	0	0	0	0	0	0
385:	0	0	0	0	0	0	0	0
3393:	0	0	1	0	0	0	0	0
3401:	1	0	0	0	0	0	0	0
409:	0	1	0	0	0	1	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	1	1	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	1	1	0	0	0	1	1	0
3457:	0	0	0	0	0	0	0	0
3465:	0	1	0	0	0	0	0	0
3473:	0	0	0	1	1	0	0	0
3481:	0	0	0	0	1	0	2	0
3489:	0	0	0	0	0	0	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	1	0	0	0	0
3513:	0	0	0	0	0	1	0	0
3521:	0	0	0	0	0	0	0	0
3529:	0	0	0	0	0	1	0	0
3537:	0	0	0	0	0	1	0	0
3545:	1	0	0	0	0	0	0	0
3553:	1	0	0	0	0	0	0	0
3561:	1	0	0	0	0	2	0	0
3569:	0	1	0	0	0	0	0	0
3577:	0	0	0	0	0	1	0	1
3585:	0	0	0	0	0	0	0	0
3593:	0	0	0	1	0	0	0	0
3601:	0	2	1	0	0	1	0	0
3609:	0	0	0	0	0	0	0	0
3617:	0	0	1	0	1	0	0	0
3625:	0	0	0	1	0	0	0	0
3633:	0	0	0	0	0	1	0	0
3641:	1	0	0	0	0	0	0	0
3649:	0	0	0	0	0	0	0	0
3657:	0	0	0	0	0	0	0	1
3665:	0	0	0	0	0	0	0	0
3673:	0	0	0	0	0	0	0	0
3681:	0	0	0	0	0	0	0	0
3689:	0	0	0	0	1	0	0	0
3697:	0	0	0	0	0	2	0	0
3705:	0	0	0	0	0	0	0	0
3713:	0	0	0	0	0	0	0	0
3721:	0	0	0	0	1	0	0	1
3729:	0	0	0	2	0	0	0	0
3737:	0	0	0	0	0	0	0	0
3745:	0	0	0	0	1	0	0	0
3753:	1	0	0	0	0	0	0	0
3761:	0	0	0	0	0	0	0	0
3769:	0	0	0	0	0	0	1	0
3777:	0	0	0	0	0	0	0	0
3785:	0	0	0	0	0	0	1	0

[redacted]93:	0	0	1	0	0	1	0	0
801:	0	0	0	0	0	0	0	0
[redacted]09:	0	0	0	0	0	0	0	0
[redacted]17:	3	1	0	0	0	0	0	0
3825:	0	0	1	0	0	0	0	0
3833:	0	0	0	0	0	0	0	0
[redacted]41:	0	0	0	1	0	1	0	0
[redacted]49:	0	0	0	0	0	0	0	1
3857:	1	0	0	0	0	0	0	1
[redacted]65:	0	0	0	0	0	0	0	1
[redacted]73:	1	0	0	0	0	1	0	1
3881:	0	0	0	0	0	0	0	0
[redacted]89:	0	0	0	0	0	0	0	0
[redacted]97:	0	0	0	0	0	0	0	0
3905:	0	0	0	0	0	0	0	0
3913:	1	0	0	0	1	0	0	0
[redacted]21:	0	0	0	0	0	0	0	0
[redacted]29:	0	0	0	0	1	0	1	0
3937:	0	1	0	1	0	0	0	0
[redacted]45:	1	0	0	0	0	0	1	1
[redacted]53:	0	0	0	0	0	0	0	1
3961:	0	0	0	0	0	1	0	0
[redacted]69:	0	1	0	0	0	0	0	0
[redacted]77:	0	0	0	1	0	0	0	0
3985:	1	0	0	0	0	0	0	0
3993:	0	0	0	0	0	0	0	1
[redacted]01:	0	1	0	0	0	0	0	0
[redacted]09:	0	1	0	0	0	0	0	0
4017:	0	0	0	0	0	0	0	0
[redacted]25:	0	0	0	0	0	0	0	0
[redacted]33:	0	0	0	0	0	0	0	0
4041:	0	0	0	0	0	0	0	0
4049:	0	0	0	0	0	0	0	0
[redacted]57:	0	0	0	0	0	0	0	1
4065:	0	0	0	0	0	0	0	0
4073:	0	0	0	0	0	0	0	0
[redacted]81:	0	1	0	0	0	0	0	0
[redacted]89:	0	0	0	0	0	0	0	0

Ans 9-11-00

mple ID : 0009041-03 Acquisition date : 11-SEP-2000 12:03:26

AX/VMS Peak Search Report Generated 11-SEP-2000 13:03:40.94

onfiguration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_000904103_GE4_SJARB_12975.CNF
nalyses by : PEAK V16.9 ENBACK V1.6 PEAKEFF V2.2
ient ID : SS-11
position Date :
ample Date : 6-SEP-2000 00:00:00. Acquisition date : 11-SEP-2000 12:03:26
mple ID : 0009041-03 Sample Quantity : 1.40012E+02 GRAM
mple type : SOIL Sample Geometry : 0
etector name : GE4 Detector Geometry: SJARB
lapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:02.08 0.1%
tart channel : 5 End channel : 4096
ensitivity : 3.00000 Gaussian : 15.00000
ritical level : No

ost-NID Peak Search Report

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw %Err	Fit	Nuclides
1	62.81*	31	311	2.63	62.53	59	7200.5	3.55E+00	TH-234
1	76.52*	694	477	3.20	76.24	71	11 14.0	5.19E+01	
1	84.39*	37	229	1.61	84.11	82	8131.4	4.21E+00	
1	87.14	40	256	1.61	86.85	82	8126.9		NP-237
									SN-126
									CD-109
1	92.38*	54	325	2.85	92.09	89	8127.7	6.66E+00	
1	128.16	41	222	2.44	127.86	125	8129.7	2.13E+00	
1	144.78*	20	143	3.64	144.48	142	6204.7	2.01E+00	CE-141
2	234.50	20	43	1.77	234.16	233	12 95.1	1.26E+01	NB-95M
2	239.05*	315	84	1.95	238.72	233	12 15.6		PB-212
1	269.89	41	82	2.62	269.54	266	7 77.8	9.06E+00	
1	295.73*	44	112	2.69	295.38	291	8 92.7	7.81E+00	PB-214
1	308.20	20	83	2.23	307.84	304	7158.2	1.58E+00	
1	338.54*	58	32	1.86	338.17	335	23 44.1	1.88E+00	AC-228
1	352.21*	144	37	1.82	351.83	335	23 20.9		PB-214
1	451.51	18	41	3.44	451.11	449	8126.8	1.46E+00	
1	510.88*	28	36	2.36	510.46	507	7 99.2	7.60E+00	
1	583.60*	47	65	2.26	583.15	580	8 67.9	3.72E+00	TL-208
4	609.51*	83	25	1.68	609.06	604	32 28.8	1.47E+00	BI-214
4	632.67	17	25	2.72	632.22	604	32124.4		
1	661.28*	18	37	4.13	660.81	655	10138.2	1.63E+00	CS-137
1	794.91	14	22	3.59	794.40	792	6115.0	3.31E+00	
1	861.84	34	23	5.62	861.31	856	12 66.6	2.14E+00	TL-208
1	911.36*	39	33	3.08	910.83	906	11 65.5	1.27E+00	AC-228
1	919.01	17	13	4.83	918.47	916	7 79.7	2.30E+00	
4	934.46	15	11	2.91	933.92	930	12101.1	1.42E+00	
4	939.18	9	5	2.91	938.64	930	12127.9		
3	963.21	23	16	2.66	962.66	957	17 72.9	1.82E+00	
3	968.80	35	16	2.67	968.25	957	17 53.9		AC-228
1	1052.00	20	13	6.53	1051.43	1047	10 76.1	1.07E+00	
1	1119.45	40	12	6.38	1118.86	1113	12 46.1	8.65E-01	BI-214
1	1265.86	7	14	1.16	1265.24	1259	9199.3	2.41E+00	
1	1325.20	17	6	5.90	1324.55	1321	8 66.0	1.83E+00	
1	1440.97	11	2	5.74	1440.30	1437	7 59.2	7.02E-01	
1	1460.73*	163	9	2.16	1460.06	1454	12 18.3	1.74E+00	K-40

AG 9/12/00

mple ID : 0009041-03 Acquisition date : 11-SEP-2000 12:03:26

Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
1729.78	12	5	4.70	1729.04	1725	8	81.5	9.23E-01	
1764.47	17	5	2.31	1763.73	1760	7	65.0	5.23E-01	BI-214
2614.49*	25	2	3.25	2613.58	2610	7	45.5	1.23E+00	TL-208

ımple ID : 0009041-03 Acquisition date : 11-SEP-2000 12:03:26

Total number of lines in spectrum 37
Number of unidentified lines 15
Number of lines tentatively identified by NID 22 59.46%

uclide Type : NATURAL

uclide	Hlife	Decay	Wtd Mean Uncorrected pCi/GRAM	Wtd Mean Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
·40	1.28E+09Y	1.00	1.331E+01	1.331E+01	0.285E+01	21.43	
ı-208	1.41E+10Y	1.00	8.013E-01	8.013E-01	3.107E-01	38.77	
B-212	1.41E+10Y	1.00	1.264E+00	1.264E+00	0.518E+00	40.95	
T-214	1602.00Y	1.00	8.269E-01	8.269E-01	2.235E-01	27.03	
3-214	1602.00Y	1.00	7.512E-01	7.512E-01	3.199E-01	42.59	
C-228	1.41E+10Y	1.00	1.047E+00	1.047E+00	0.368E+00	35.16	
H-234	4.47E+09Y	1.00	7.476E-01	7.476E-01	15.02E-01	200.86	
			---	---			
	Total Activity :		1.875E+01	1.875E+01			

ıclide Type : ACTIVATION

uclide	Hlife	Decay	Wtd Mean Uncorrected pCi/GRAM	Wtd Mean Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
3-95M	3.61D	2.89	1.388E-01	4.007E-01	4.102E-01	102.35	
			---	---			
	Total Activity :		1.388E-01	4.007E-01			

ıclide Type : FISSION

ıclide	Hlife	Decay	Wtd Mean Uncorrected pCi/GRAM	Wtd Mean Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
D-109	464.00D	1.01	1.087E+00	1.096E+00	1.426E+00	130.10	
N-126	1.00E+05Y	1.00	1.091E-01	1.091E-01	1.417E-01	129.90	
3-137	30.17Y	1.00	9.245E-02	9.248E-02	12.81E-02	138.52	
E-141	32.50D	1.13	5.192E-02	5.842E-02	12.14E-02	207.90	
P-237	2.14E+06Y	1.00	3.190E-01	3.190E-01	4.139E-01	129.75	
			---	---			
	Total Activity :		1.660E+00	1.675E+00			

Grand Total Activity : 2.055E+01 2.082E+01

'lags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

lide Line Activity Report
mple ID : 0009041-03 Acquisition date : 11-SEP-2000 12:03:26

lide Type: NATURAL

lide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
40	1460.81	10.67*	6.144E-01	1.331E+01	1.331E+01	21.43	OK
Final Mean for 1 Valid Peaks = 1.331E+01+/- 2.852E+00 (21.43%)							
208	583.14	30.22*	1.399E+00	5.923E-01	5.923E-01	71.36	OK
	860.37	4.48	9.800E-01	4.149E+00	4.149E+00	67.44	OK
	2614.66	35.85	3.963E-01	9.615E-01	9.615E-01	48.31	OK
Final Mean for 3 Valid Peaks = 8.013E-01+/- 3.107E-01 (38.77%)							
-212	238.63	44.60*	2.994E+00	1.264E+00	1.264E+00	40.95	OK
	300.09	3.41	2.500E+00	----- Line Not Found		-----	Absent
Final Mean for 1 Valid Peaks = 1.264E+00+/- 5.176E-01 (40.95%)							
214	609.31	46.30*	1.344E+00	7.173E-01	7.173E-01	34.11	OK
	1120.29	15.10	7.727E-01	1.837E+00	1.837E+00	47.20	OK
	1764.49	15.80	5.268E-01	1.071E+00	1.071E+00	66.18	OK
	2204.22	4.98	4.454E-01	----- Line Not Found		-----	Absent
Final Mean for 3 Valid Peaks = 8.269E-01+/- 2.235E-01 (27.03%)							
214	295.21	19.19	2.533E+00	4.858E-01	4.858E-01	100.73	OK
	351.92	37.19*	2.189E+00	9.494E-01	9.494E-01	44.54	OK
Final Mean for 2 Valid Peaks = 7.512E-01+/- 3.199E-01 (42.59%)							
-228	338.32	11.40	2.263E+00	1.211E+00	1.211E+00	59.20	OK
	911.07	27.70*	9.303E-01	8.138E-01	8.138E-01	66.33	OK
	969.11	16.60	8.797E-01	1.286E+00	1.286E+00	54.91	OK
Final Mean for 3 Valid Peaks = 1.047E+00+/- 3.679E-01 (35.16%)							
H-234	63.29	3.80*	5.863E+00	7.476E-01	7.476E-01	200.86	OK
Final Mean for 1 Valid Peaks = 7.476E-01+/- 1.502E+00 (200.86%)							

lide Type: ACTIVATION

lide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
95M	235.69	25.00*	3.022E+00	1.388E-01	4.007E-01	102.35	OK
Final Mean for 1 Valid Peaks = 4.007E-01+/- 4.102E-01 (102.35%)							

ımple ID : 0009041-03 Acquisition date : 11-SEP-2000 12:03:26

ıclide Type: FISSION

uclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
)-109	88.03	3.72*	5.336E+00	1.087E+00	1.096E+00	130.10	OK
Final Mean for 1 Valid Peaks = 1.096E+00+/- 1.426E+00 (130.10%)							
J-126	87.57	37.00*	5.347E+00	1.091E-01	1.091E-01	129.90	OK
Final Mean for 1 Valid Peaks = 1.091E-01+/- 1.417E-01 (129.90%)							
S-137	661.65	85.12*	1.247E+00	9.245E-02	9.248E-02	138.52	OK
Final Mean for 1 Valid Peaks = 9.248E-02+/- 1.281E-01 (138.52%)							
E-141	145.44	48.40*	4.187E+00	5.192E-02	5.842E-02	207.90	OK
Final Mean for 1 Valid Peaks = 5.842E-02+/- 1.214E-01 (207.90%)							
P-237	86.50	12.60*	5.370E+00	3.190E-01	3.190E-01	129.75	OK
Final Mean for 1 Valid Peaks = 3.190E-01+/- 4.139E-01 (129.75%)							

lag: "*" = Keyline

--- Identified Nuclides ----

lide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
0	1.331E+01	2.852E+00	1.193E+00	1.238E-01	11.153
95M	4.007E-01	4.102E-01	9.383E-01	3.522E-01	0.427
-109	1.096E+00	1.426E+00	1.814E+00	5.169E-01	0.604
126	1.091E-01	1.417E-01	2.110E-01	5.818E-02	0.517
137	9.248E-02	1.281E-01	1.360E-01	1.261E-02	0.680
-141	5.842E-02	1.214E-01	1.556E-01	5.655E-02	0.375
-208	8.013E-01	3.107E-01	3.865E-01	8.375E-02	2.073
212	1.264E+00	5.176E-01	1.840E-01	6.927E-02	6.870
214	8.269E-01	2.235E-01	2.408E-01	4.311E-02	3.433
3-214	7.512E-01	3.199E-01	2.270E-01	8.879E-02	3.309
228	1.047E+00	3.679E-01	5.423E-01	5.305E-02	1.930
234	7.476E-01	1.502E+00	1.699E+00	2.066E-01	0.440
P-237	3.190E-01	4.139E-01	6.166E-01	1.654E-01	0.517

- Non-Identified Nuclides ----

lide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
7	4.235E-01		5.938E-01	1.135E+00	3.784E-01	0.373
22	8.964E-04		7.658E-02	1.455E-01	1.340E-02	0.006
R-51	-3.020E-01		5.361E-01	9.228E-01	3.639E-01	-0.327
54	-1.112E-02		6.998E-02	1.276E-01	1.246E-02	-0.087
57	-1.454E-02		4.990E-02	7.493E-02	2.283E-02	-0.194
-58	-5.640E-02		6.927E-02	1.138E-01	1.110E-02	-0.496
E-59	-1.108E-01		1.612E-01	2.658E-01	2.632E-02	-0.417
60	-8.051E-03		8.028E-02	1.478E-01	1.304E-02	-0.054
65	9.088E-02		1.794E-01	3.285E-01	3.013E-02	0.277
A-67	4.989E-01	+	9.313E-01	7.654E-01	1.042E+00	0.652
75	-3.312E-02		9.173E-02	1.333E-01	5.138E-02	-0.248
83	-3.540E-02		1.154E-01	2.076E-01	6.641E-02	-0.171
R-85	2.408E+01		1.757E+01	3.087E+01	9.219E+00	0.780
R-85	1.116E-01		8.142E-02	1.430E-01	4.271E-02	0.780
8	2.030E-02		4.557E-02	1.178E-01	1.441E-02	0.172
94	-8.312E-02		8.188E-02	1.075E-01	1.053E-02	-0.773
B-95	-3.202E-02		7.215E-02	1.265E-01	1.221E-02	-0.253
95	3.396E-02		1.327E-01	2.532E-01	2.636E-02	0.134
99	1.703E+00		2.321E+00	4.589E+00	4.392E-01	0.371
U-103	-9.840E-03		6.372E-02	1.167E-01	3.902E-02	-0.084
106	-5.852E-02		6.247E-01	1.148E+00	2.175E-01	-0.051
110M	3.145E-03		7.874E-02	1.316E-01	1.309E-02	0.024
N-113	8.966E-03		7.764E-02	1.452E-01	5.544E-02	0.062
E123M	-1.486E-02		5.485E-02	8.927E-02	2.965E-02	-0.166
124	-1.420E-02		7.639E-02	1.233E-01	2.329E-02	-0.115
-125	-3.271E-01		5.001E-01	8.197E-01	8.139E-02	-0.399
B-125	2.263E-01		1.807E-01	3.382E-01	1.236E-01	0.669
127	-3.140E-01		4.720E-01	8.031E-01	7.518E-02	-0.391
29	1.879E-01		4.134E-01	7.218E-01	7.086E-02	0.260
-131	-1.472E-02		9.010E-02	1.647E-01	6.406E-02	-0.089

--- Non-Identified Nuclides ----

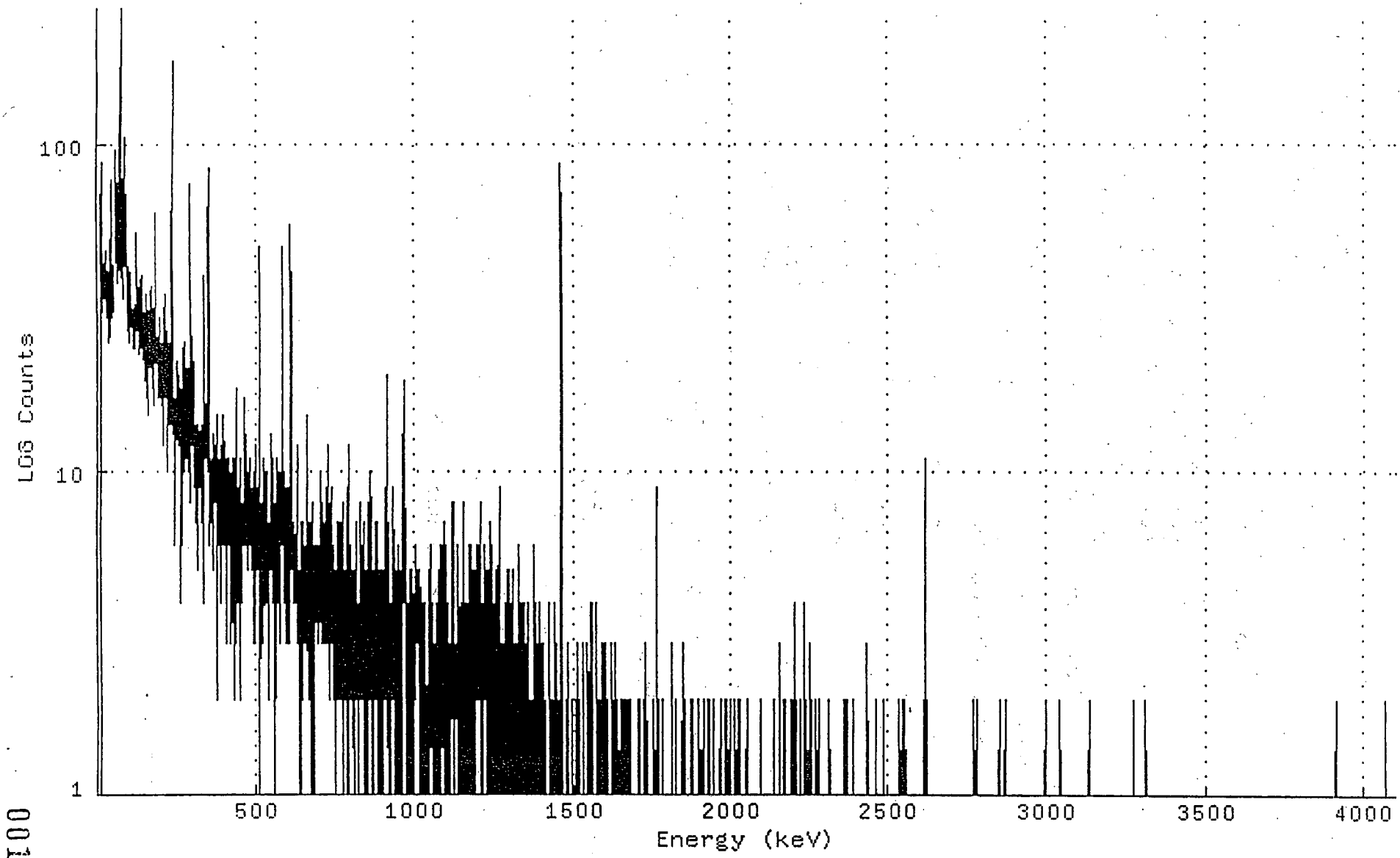
clide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
E-132	-5.202E-02		1.866E-01	3.011E-01	1.120E-01	-0.173
A-133	5.012E-02		9.027E-02	1.557E-01	6.277E-02	0.322
-133	2.543E+00		5.229E+00	1.013E+01	2.859E+00	0.251
S-134	1.418E-03		7.109E-02	1.185E-01	2.204E-02	0.012
S-136	-4.459E-02		1.291E-01	2.007E-01	1.943E-02	-0.222
-139	3.226E-02		5.828E-02	9.891E-02	3.332E-02	0.326
-140	1.127E-01		3.155E-01	5.983E-01	2.520E-01	0.188
A-140	-3.112E-01		7.622E-01	1.330E+00	1.455E-01	-0.234
-143	4.835E+00		3.096E+00	4.396E+00	1.720E+00	1.100
-144	3.870E-01		4.229E-01	6.709E-01	2.104E-01	0.577
M-144	-2.839E-02		6.751E-02	1.187E-01	1.117E-02	-0.239
M-145	1.363E-02		1.405E-01	2.409E-01	1.572E-01	0.057
M-146	9.020E-03		1.227E-01	2.305E-01	8.047E-02	0.039
D-147	1.851E-01		5.906E-01	1.131E+00	3.176E-01	0.164
M-149	3.613E+00		9.337E+00	1.591E+01	6.209E+00	0.227
J-152	8.033E-02		4.377E-01	8.939E-01	1.065E-01	0.090
J-154	-3.406E-03		2.138E-01	4.045E-01	3.725E-02	-0.008
J-155	1.304E-01	+	1.691E-01	2.703E-01	7.250E-02	0.482
G-203	3.762E-02		7.623E-02	1.294E-01	5.038E-02	0.291
-207	-8.226E-03		6.961E-02	1.270E-01	2.981E-02	-0.065
I-210M	-1.017E-01		1.320E-01	1.751E-01	6.733E-02	-0.581
B-210	2.940E-01		8.644E-01	1.552E+00	1.518E-01	0.190
B-211	-1.272E+00		1.854E+00	3.100E+00	1.166E+00	-0.410
-212	5.367E-01		6.359E-01	1.264E+00	1.204E-01	0.425
N-219	3.785E-01		7.905E-01	1.497E+00	5.650E-01	0.253
A-223	-2.768E-02		1.185E+00	2.187E+00	8.604E-01	-0.013
A-224	1.220E+01		5.052E+00	4.236E+00	1.599E+00	2.880
A-226	1.828E+00		3.776E+00	2.948E+00	5.491E+00	0.620
H-227	1.425E+00		7.473E-01	1.000E+00	3.755E-01	1.425
A-231	1.575E+00		2.995E+00	4.199E+00	1.648E+00	0.375
H-231	4.511E-02		2.353E-01	4.069E-01	4.370E-02	0.111
A-233	-5.863E-02		1.460E-01	2.297E-01	1.021E-01	-0.255
A-234	1.725E-02		2.274E-01	3.513E-01	1.095E-01	0.049
A-234M	2.931E+00		8.233E+00	1.643E+01	1.581E+00	0.178
-235	2.377E-01	+	4.939E-01	7.105E-01	2.526E-01	0.335
P-239	2.591E-01		8.625E-01	1.465E+00	4.283E-01	0.177
M-241	6.802E-02		1.081E-01	1.745E-01	1.751E-02	0.390

ample ID : 0009041-03 Acquisition date : 11-SEP-2000 12:03:26

uclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (pCi/GRAM)	2-Sigma %Error	Rejected by
A-67	3.26D	1.69	93.31*	35.70	4.989E-01	186.68	Abun.
			208.95	2.24	--- Not Found ---		
			300.22	16.00	--- Not Found ---		
		% Abundances Found =		66.18			
134	2.06Y	0.01	563.23	8.38	--- Not Found ---		Abun.
			569.32	15.43	--- Not Found ---		
			604.70*	97.60	--- Not Found ---		
			795.84	85.40	8.378E-02	115.45	
			801.93	8.73	--- Not Found ---		
		% Abundances Found =		39.62			
D 147	10.98D	0.50	91.11	28.90	2.675E-01	130.77	Abun.
			531.02*	13.10	--- Not Found ---		
		% Abundances Found =		68.81			
U-152	13.60Y	0.00	121.78	20.50	--- Not Found ---		Abun.
			244.69	5.40	--- Not Found ---		
			344.27	19.13	--- Not Found ---		
			778.89	9.20	--- Not Found ---		
			964.01	10.40	1.321E+00	73.87	
			1085.78	7.22	--- Not Found ---		
			1112.02	9.60	--- Not Found ---		
			1407.95*	14.94	--- Not Found ---		
		% Abundances Found =		10.79			
U-155	4.96Y	0.00	86.50*	30.90	1.304E-01	129.75	Abun.
			105.30	20.70	--- Not Found ---		
		% Abundances Found =		59.88			
H-231	7.04E+08Y	0.00	25.64*	14.70	--- Not Found ---		Abun.
			84.21	6.40	5.770E-01	133.91	
		% Abundances Found =		30.33			
235	7.04E+08Y	0.00	143.76*	10.50	2.377E-01	207.76	Abun.
			163.35	4.70	--- Not Found ---		
			205.31	4.70	--- Not Found ---		
		% Abundances Found =		52.76			

lag: "*" = Keyline

Spectrum : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_000904103_GE4_SJARB_12975.CNF;1
Title :
Sample Title: SS-11
Start Time: 11-SEP-2000 12:03 Sample Time: 6-SEP-2000 00:00: Energy Offset: 2.60368E-01
Real Time : 0 01:00:02.08 Sample ID : 0009041-03 Energy Slope : 1.00033E+00
Live Time : 0 01:00:00.00 Sample Type: SOIL Energy Quad : -3.19527E-08



00147

Channel Contents for [GAMMA.SCUSR.ARCHIVE]SMP_000904103_GE4_SJARB_12975.CNF

Channel

1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	58	88
17:	64	48	46	33	31	39	34	41
25:	44	35	39	35	35	48	30	41
33:	34	27	25	36	38	40	36	49
41:	26	39	37	31	35	78	64	34
49:	30	40	32	31	40	35	40	39
57:	42	46	48	54	46	69	96	63
65:	38	47	64	51	52	54	42	50
73:	75	90	172	77	260	105	46	42
81:	45	34	52	73	68	59	79	67
89:	43	74	50	84	105	48	29	35
97:	27	28	42	41	32	30	34	25
105:	43	40	28	36	28	36	34	30
113:	25	29	29	32	24	33	29	32
121:	24	26	27	28	27	34	31	44
129:	54	23	30	32	24	37	35	31
137:	24	25	39	25	24	29	24	40
145:	38	23	25	19	31	23	28	23
153:	26	33	22	17	27	35	19	30
161:	15	29	28	21	28	36	28	24
169:	23	29	21	24	25	19	37	18
177:	21	25	16	21	32	23	21	22
185:	45	62	30	25	25	26	19	22
193:	17	23	17	20	30	17	24	20
201:	19	16	23	24	25	22	17	21
209:	24	32	23	12	27	22	20	25
217:	17	26	35	13	27	10	24	20
225:	19	25	23	15	14	18	25	14
233:	15	26	14	18	25	157	179	41
241:	48	53	17	10	17	15	15	6
249:	11	14	14	16	22	20	19	15
257:	20	19	17	12	16	18	10	11
265:	17	13	4	21	20	24	19	6
273:	12	17	10	15	25	16	12	21
281:	11	16	15	12	16	21	10	14
289:	12	12	10	16	8	20	76	23
297:	15	22	12	26	17	13	14	15
305:	16	9	20	22	12	7	13	8
313:	8	11	14	13	5	10	10	6
321:	14	9	9	12	12	11	13	14
329:	13	10	9	11	12	4	6	6
337:	14	40	22	12	12	11	12	13
345:	11	13	14	15	10	11	49	85
353:	27	12	10	10	6	11	8	9
361:	7	8	7	8	5	13	10	11
369:	7	11	8	10	12	10	8	13
377:	15	12	2	10	12	6	11	10
385:	9	10	10	7	12	11	7	4
393:	8	15	7	10	6	11	14	11
401:	10	7	6	12	10	7	3	11
409:	10	7	7	11	8	11	8	8
417:	7	5	10	8	6	7	3	4
425:	8	7	11	11	6	9	4	2

433:	6	11	5	8	4	13	18	3
441:	5	9	7	8	9	9	4	4
449:	2	11	10	8	7	6	4	5
457:	8	8	5	10	7	8	17	10
465:	6	9	9	6	13	7	10	6
473:	5	5	10	7	9	9	8	11
481:	8	8	6	9	6	9	5	5
489:	5	10	4	5	8	3	6	4
497:	6	3	12	7	6	7	7	6
505:	9	8	5	10	10	35	49	13
513:	1	7	7	4	5	8	3	5
521:	4	3	11	8	3	5	4	9
529:	4	10	4	7	4	4	6	10
537:	9	4	7	2	6	7	7	6
545:	7	11	5	6	13	4	11	6
553:	4	7	5	8	8	4	7	6
561:	1	4	6	5	11	5	9	5
569:	10	6	8	10	4	9	10	7
577:	3	5	9	6	6	21	49	17
585:	6	7	9	8	10	4	6	9
593:	3	3	8	7	7	6	3	5
601:	5	4	9	3	10	4	4	17
609:	57	30	5	8	8	5	7	5
617:	5	6	4	4	7	6	5	4
625:	4	6	4	5	6	3	6	4
633:	12	2	1	5	4	5	4	3
641:	7	1	2	1	0	6	4	6
649:	2	7	6	6	6	3	6	5
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665:	4	7	3	2	7	1	5	7
673:	2	4	1	4	1	8	6	7
681:	5	6	3	4	1	6	3	4
689:	4	5	5	4	6	4	3	5
697:	4	6	3	4	10	5	4	8
705:	7	6	8	3	6	6	7	6
713:	7	3	7	7	3	3	7	5
721:	6	4	9	9	3	5	12	5
729:	8	5	3	2	3	4	8	3
737:	8	9	6	4	7	3	2	5
745:	4	6	4	0	4	3	2	5
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761:	3	5	4	3	2	3	2	7
769:	4	2	5	6	5	1	7	4
777:	8	2	2	5	3	4	3	2
785:	6	9	5	1	5	5	1	5
793:	4	7	12	3	2	6	6	2
801:	3	3	4	4	4	5	2	1
809:	1	5	5	0	4	4	4	5
817:	7	6	2	2	2	4	3	4
825:	1	5	5	5	6	2	8	3
833:	3	4	6	2	2	7	3	0
841:	2	2	1	1	5	4	5	3
849:	4	3	1	3	8	5	3	2
857:	5	3	4	9	10	7	8	1
865:	4	1	2	1	0	3	0	5
873:	4	4	7	4	6	5	2	3
881:	3	3	5	7	1	5	4	3
889:	3	2	0	3	5	2	0	5
897:	3	5	1	3	0	2	3	5
905:	4	2	4	5	5	16	20	10

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[redacted]21:	4	1	3	4	4	1	4	3
929:	2	2	3	3	9	5	5	2
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953:	5	3	1	2	2	2	2	2
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977:	1	4	2	2	2	3	1	5
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1009:	3	5	3	3	1	3	1	3
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1033:	2	3	4	1	1	2	0	1
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[redacted]49:	2	4	4	4	6	2	1	0
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1065:	1	3	3	2	1	2	4	2
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1089:	2	0	3	1	3	7	3	1
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1113:	0	3	2	3	7	8	5	8
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1145:	3	4	4	4	1	4	2	0
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1169:	3	6	3	1	3	1	0	2
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1193:	2	2	3	4	6	6	3	3
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1217:	3	2	6	3	2	1	2	2
1225:	5	5	4	1	3	5	3	1
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[redacted]41:	2	3	1	6	2	1	2	2
1249:	2	4	2	3	4	5	2	1
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[redacted]65:	4	1	0	3	1	1	0	3
1273:	1	2	1	3	3	2	1	3
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1297:	0	2	2	4	1	2	2	2
1305:	2	5	3	0	1	0	3	3
[redacted]13:	3	2	1	0	1	2	2	0
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1329:	2	4	1	1	3	1	1	0
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1353:	1	2	1	1	1	4	1	1
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1385:	1	1	3	0	1	2	1	0

1393:	4	0	1	3	0	0	1	0
1401:	2	2	1	2	0	3	0	2
1409:	1	1	0	0	0	1	1	0
1417:	1	0	1	4	1	0	2	0
1425:	1	1	2	1	2	1	1	2
1433:	1	0	1	0	0	0	2	1
1441:	4	1	0	1	3	1	0	1
1449:	2	0	1	1	1	1	1	1
1457:	3	8	28	87	59	4	1	1
1465:	0	1	1	1	0	1	0	0
1473:	1	0	1	1	1	2	2	3
1481:	0	0	1	0	1	0	1	0
1489:	1	0	1	2	2	0	1	1
1497:	1	0	0	0	0	1	0	1
1505:	2	2	1	1	3	1	1	1
1513:	1	1	2	1	1	1	1	0
1521:	0	1	0	0	0	1	0	1
1529:	3	2	1	0	1	1	1	1
1537:	1	1	1	0	2	0	1	3
1545:	2	1	1	0	0	1	1	1
1553:	1	4	0	2	1	1	1	4
1561:	3	1	0	1	1	1	1	0
1569:	1	0	3	0	1	4	1	1
1577:	0	2	0	1	1	0	0	1
1585:	2	0	3	0	1	3	1	1
1593:	3	1	0	0	1	0	1	0
1601:	3	0	2	2	0	0	2	1
1609:	0	1	0	1	1	0	0	1
1617:	0	0	0	3	0	3	0	1
1625:	0	2	1	1	1	3	2	0
1633:	0	1	2	1	0	1	2	1
1641:	0	0	0	1	1	1	2	2
1649:	0	0	0	0	0	0	0	1
1657:	0	2	0	1	0	2	0	2
1665:	0	1	2	1	2	0	2	1
1673:	2	1	0	0	1	0	1	2
1681:	0	0	1	0	0	1	0	1
1689:	1	0	1	1	1	1	0	1
1697:	1	1	1	0	1	1	0	0
1705:	1	2	1	1	2	0	0	0
1713:	0	1	1	1	0	1	0	2
1721:	1	1	0	2	1	1	1	3
1729:	3	3	1	0	0	0	1	0
1737:	1	0	0	1	0	0	0	0
1745:	0	1	1	0	1	0	0	0
1753:	1	2	0	0	1	0	1	1
1761:	1	0	9	7	2	0	1	0
1769:	2	0	0	0	1	1	1	0
1777:	0	0	0	1	0	0	2	0
1785:	0	0	0	0	0	0	0	1
1793:	1	1	0	1	0	0	0	1
1801:	0	0	0	0	0	0	0	0
1809:	0	0	3	0	1	0	0	1
1817:	0	1	0	1	0	2	1	1
1825:	0	1	0	0	0	0	1	0
1833:	1	0	1	1	0	0	0	0
1841:	0	0	1	1	3	1	2	0
1849:	0	0	0	1	1	2	0	0
1857:	0	1	0	1	0	0	1	0
1865:	0	1	1	1	0	0	0	0