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INTERCOMPARISON OF TRACE ELEMENT MEASUREMENTS
IN MARINE SEDIMENT SAMPLE SD-N-1/2

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Laboratory of Marine Radioactivity
Oceanographic Museum
MC 98000 Monaco

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Introduction

This intercalibration exercise was organised with the aim of providing to the participating laboratories a possibility of testing the performance of their analytical methods and to acquire basic data for establishing reference values for a number of stable elements and natural radionuclides in the sediment material SD-N-1/2.

Description of the Material

The material used in this exercise is a natural fine-grained sediment collected in 1979 from the top 0-30 cm layer of the North Sea floor in the coastal zone near the Scheldt Estuary. After drying, grinding and sieving, it was homogenized in a rotary drum for one week. A sub-sample of this material was used for the preparation of SD-N-1/1 for intercomparison of artificial radionuclide measurements. The remaining portion, after additional homogenization, was dispensed into 400 polyethylene bottles, with double seals, each containing 25g of dry material. The loss of weight on drying 1-2g portions of the material in an oven at 105-110°C was found to be 1.5%. The approximate mineral composition of the matrix is the following:

60% quartz	6% feldspar
20% calcite	3% NaCl
10% clay minerals	1-2% pyrite

Homogeneity Test

Homogeneity tests were performed on a number of samples selected at random, by measuring Cr, Cs, Fe, Hf and Eu in 100mg aliquots by the instrumental non-destructive neutron activation method in the IAEA's Laboratory at Seibersdorf and analyzing Cd, Cu, Mn, Pb and V in 200-500 mg sample aliquots by flameless atomic absorption technique following sample decomposition at the Monaco Laboratory. In neither case did the relative standard deviation exceed 4%. The "between samples" variances showed no significant differences from the "within sample" variances for all the elements tested (at the significance level of 0.05). Additional homogeneity tests were carried out by direct gamma spectrometric measurements of K-40, Tl-208, Bi-214, Pb-214, Ra-226 and Ac-228 nuclides on intact samples and alpha spectrometric measurements on thorium and uranium isotopes following radiochemical separation. A high degree of homogeneity with respect of thorium and uranium isotopes on a microscale basis was further confirmed by one of the participants using a fission track technique (Lab.10). Satisfactory homogeneity with respect of a number of artificial radionuclides was demonstrated in an earlier intercomparison exercise (1).

Sample Dispatch and Data Return

During 1983 the samples were dispatched to 69 laboratories which had expressed interest in participating in either trace element and/or natural radionuclide intercomparison measurements. By the end of the year the response from participants was disappointingly low and the number of results

reported was insufficient to establish meaningful reference values. The termination of the intercalibration exercise was therefore postponed until the end of 1984, during that time 35 additional requests for the intercalibration sample were received. Altogether 98 laboratories from 42 Member States joined this intercomparison. By October 1984, 80 laboratories had submitted their results, with some still outstanding. In order to avoid excessive delay in evaluating the data, it was decided to issue a provisional report based on the data already in hand, leaving the final evaluation after the remaining participants had communicated their results (2).

The preliminary report contained all the data on trace elements retrieved from reports submitted by the laboratories which had received the material under the codes SD-N-1 and SD-N-1/1 (which had been originally distributed for artificial radionuclide measurements) since a certain number of analysts reported on both groups of measurements. Natural radionuclides were excluded from this provisional evaluation because of discrepancies in certain results which were found difficult to explain without additional confirmatory analyses. A number of laboratories with proven expertise in natural radionuclide measurements were approached and by the end of May 1985, additional results were received which helped to improve the situation to some extent, although did not resolve the problem completely. This was discussed in more detail in (3). A complete list of laboratories and investigators participating in the trace elements intercomparison exercise is shown in the appendix.

Data Layout

The analytical results received up to May 1985 are compiled in Tables 1 to 44. Each table contains data for one chemical element. They are arranged in alphabetical order according to their chemical symbols. Potassium, thorium and uranium appear at the end of this compilation (Tables 42, 43 and 44, respectively). In the second column of these tables, the code numbers of the participating laboratories are shown. The code number of your laboratory is inscribed on page 7 of this report. When a laboratory has used more than one analytical method, each result is regarded as a separate entry and the method is distinguished by the addition of a small letter to the laboratory code.

The method code number is composed of two groups of numbers. The group before the fullstop refers to sample pretreatment, while the group after the fullstop indicates the measurement method. The key to this code is given on page 8.

The number of determinations indicates the number of individual results from which the laboratory mean was calculated. When no mention was made in a participant's report as to the number of determinations made, it has been taken as only one. In several cases the participants reported up to 12 individual measurements. Since our evaluation programme cannot accept more than 6 results for a single element, these values were grouped in pairs to yield a maximum of six composite results. An asterisk by the laboratory's mean result identifies those results which fall outside the accepted ranges imposed by rejection criteria. These results were excluded from calculations of the median and the confidence intervals. Under the sign "<" are listed values reported as being below the detection limit. Although recorded, they have not been considered in the evaluation.

Absolute standard deviations were calculated from individual determinations when at least three values were reported, assuming a Gaussian distribution. The standard deviations are expressed in relative units in the next column. A number of laboratories did not report results of individual measurements, although their mean values were based on more than two replicate analyses. In such cases, standard deviations could not be computed and this is marked by the sign 0 in the column.

In the last column, the measurement errors as reported by the analysts themselves are shown. They are composed of two-figure numbers separated by a fullstop. The first group indicates a magnitude of the random error of the mean value while the second group gives an estimation of the total error both as percentages, rounded up to the nearest figure.

In Table 45, concentration values of the 17 least frequently measured chemical elements are listed, for which the evaluation procedure could not be applied because of the insufficient number of data.

Evaluation Procedure and Certification of Reference Values

The data were introduced into a computer and processed, using a statistical programme specially designed for this purpose. The principles and applications of this programme have been described in earlier reports (4, 5). Briefly, the data treatment consists of identifying and eliminating the outlying values, calculating the median and setting the confidence intervals. Calculations are based on the assumption of non-parametric distribution of data to which distribution-free statistics are applicable. Testing for outliers is performed according to Veglia's procedure (4) and the confidence intervals are calculated using statistical tables (6).

Following the IAEA's recent practice, the overall medians have been accepted as the most reliable estimates of the true concentration values. As in the previous intercomparison runs, these values have been classified into one of the three categories A, B or C, depending on how they comply with the quality criteria assigned to each category. These criteria are based on a number of arbitrarily chosen conditions developed in the course of the past IAEA intercomparisons. They differ slightly, depending on the kind of matrix and the suite of elements considered. In order to enable direct comparison of the SD-N-1/2 sample with other IAEA reference materials of a similar type, we applied in principle the same criteria for certification of trace elements as those used in the soil S-7 (7). They were originally formulated as follows:

- 1) For a given concentration range the relative uncertainty of the overall median (at a significance level of 0.05) does not exceed the following limits:

100 - 500 $\mu\text{g/g} \pm 20\%$
10 - 100 $\mu\text{g/g} \pm 30\%$
0.1 - 10 $\mu\text{g/g} - 50\%; + 60\%$
<0.1 $\mu\text{g/g} - 50\%; + 100\%$

- 2) The overall median is based on data obtained by at least two different methods.
- 3) More than half of the medians of all groups of laboratory means obtained by different analytical methods and calculated on the basis of a least three results is enclosed inside the confidence limits found for the overall median.

- 4) The relative number of laboratory means rejected as outliers does not exceed: a) 0% (no outlier), b) 30% and c) 50%.
- 5) The overall median is calculated on the basis of at least the following number of laboratory means: a) 5, b) 3 and c) 2.

A concentration value for an element (overall median) is classified as the recommended value with a satisfactory degree of confidence (Class A) when it fulfills the first three criteria and criteria 4b and 5a.

A concentration value is classified as the recommended value with an acceptable degree of confidence (Class B) when it fulfills at least criteria 1, 2, 3, 4c and 5a, or 1, 2, 3, 4 b and 5b, or 1, 2, 4a and 5a..

A concentration value is classified as the uncertified information value (Class C) when it fulfills at least criteria 4a and 5c or 4c and 5b and their confidence interval is reasonable for the given concentration level.

Concentration values which do not even satisfy the reliability criteria for Class C are regarded as meaningless until additional results are obtained for the elements concerned.

The following minor adjustments were made:

- in criterium 1, we stretched the concentration ranges over 500 $\mu\text{g/g}$ to accomodate the value for manganese which is 777 $\mu\text{g/g}$;
- in order for any element to belong to the category B, we demand that at least one meaningful result by a different analytical method should be present in a data set;
- values derived from not less than three laboratory means obtained by one method and at least two laboratory means by different methods, are allocated to class C, provided no more than 1/3 of the results differ from the remaining values by one order of magnitude.

As a result of this evaluation, 27 elements were found to qualify for certification either in Class A (14 elements) or Class B (13 elements). They are listed in Table 46. In Table 47 the approximate concentration values for 16 elements (Class C) which are not certified are shown. Most of them are likely to upgrade to Class B if a few additional data will become available. There remain 10 elements which were measured only by one or two laboratories. While reported in Table 45, they have no information value and are pending classification until more data become available.

Table 48 shows concentration values for 8 major and minor elements, together with the respective confidence intervals. Even though five among them are characterized with quite a good precision (within 1-5%), they cannot be regarded as certified values as still higher accuracy can be normally attained in the determination of these elements using classical chemical methods. Nevertheless, these data can be used as reference values in such cases where uncertainties of the order of $\pm 5\%$ are considered acceptable.

Discussion

This intercomparison exercise brought altogether more than 900 laboratory averages, providing analytical results for 61 chemical elements, 51 of which were considered for evaluation.

The analytical techniques applied most frequently were: non-destructive instrumental neutron activation analysis followed by atomic absorption, emission spectroscopy and atomic fluorescence. Elements possessing radioactive properties (potassium, thorium and uranium) were often measured by their natural radiation and the radiation of their decay products using non-destructive gamma spectrometry. The suite of elements analysed and the number of results submitted for each element were largely determined by the measuring power and analytical performance of these methods. Thus, the largest number of results were reported for thorium (77), potassium (47), zinc and manganese (45 each), iron (43), chromium (39), cobalt (37), copper (35), cadmium (32), nickel (31), lead (27), strontium and uranium (24 each), for which at least three of the quoted methods could be successfully applied. Comparability of median values in the data sub-groups by methods is generally very good for these elements and the confidence limits of overall medians as well as the percentage of outliers are all below + 16%. The only exception is strontium for which 5 outliers were identified (21% total) and even though the remaining data are characterized with a very narrow confidence interval of less than + 5%, it was classified to group B according to the adopted quality criteria.

As may be seen in Table 42, a majority of the results for potassium were obtained by direct gamma counting of its radioactive isotope K-40. To enable a comparison, the results, originally expressed by the participants in activity units, were converted to mass units using a multiplier $1 \text{ Bq/g} = 3.277\% \text{ K}$. This group of data shows an asymmetrical distribution around the overall median to a proportion nearly as 1 to 2 in favour of higher values. Although the median value of gamma spectrometric data (1.56% K) differs only slightly from those of the AAS and AES groups (1.48 and 1.50% K, respectively), it is evident that direct gamma counting leads to a slight systematic error. We have studied the problem in some more detail and concluded that the observed discrepancy may have originated from an error in detector efficiency calibration. This disappears when the measurements are directly related to a pure potassium salt (e.g. K_2SO_4) measured in the same geometric configuration. Larger departures were observed in the XRF, PIXE and PIGE measurements. The four available results are higher than the overall median and only one of them was found to be in the confidence interval. This observation has no large statistical weight because of a low number of data in this category, but should be taken as a warning signal by those analysts who use these techniques.

In order for the potassium value to comply with the quality criteria for Class A, the lower confidence limit had to be enlarged by 0.04% K compared to the originally calculated value. This slight adjustment allowed the inclusion of all but one result obtained by atomic absorption spectrometry which can be regarded as one of the most reliable analytical techniques for potassium.

The main reason for classifying a large number of elements into Class B (i.e. with only an acceptable degree of confidence) was the insufficient number of available results obtained for them by different methods. These

elements were predominantly measured by INAA with only one or two corroborative measurements by other analytical techniques. The agreement of the results was generally very good and the percentage of outliers low, thus indicating no major analytical problems. With the arrival of a few more meaningful results by other than INAA methods, these elements may eventually upgrade to Class A.

Among the elements in the category of uncertified information, values are either those less frequently measured or the ones characterized by a rather large scatter of individual data and significant differences between results obtained by different methods. In this category, the confidence intervals are relatively wide as the evaluation criteria provide here no means to decide which values are erratic. Mercury, molybdenum and zirconium are typical examples of these difficult elements. Other "difficult to certify" elements are those measured exclusively by one method (hafnium, tantalum). Clearly, these elements merit some more consideration and additional analytical effort is needed in order to assign trustworthy concentration values to them.

Comparison of analytical performances of the most frequently used analytical techniques is not always possible since some of them do not work well for certain elements. For instance, such common elements as copper and lead were measured nearly exclusively by atomic absorption and emission spectroscopy whereas the lanthanides, antimony and caesium were nearly exclusively analyzed by the neutron activation method. However, for elements which were easily measurable by both techniques, their performances in terms of mean values and variances were comparable. Less satisfactory was the performance of XRF, PIXE and PIGE methods which showed generally much worse precision and in most cases produced too high results. The proportion of outliers was highest in this particular category of data, with more than 50% for aluminium, cadmium and sodium. There were, however, cases where these methods yielded unbiased results, with no outliers whatever (arsenic, bromine, zinc).

Conclusions

The comparative effort of 98 laboratories participating in this intercomparison exercise enabled certification of concentration values for 27 trace elements. Another 16 trace and 8 major elements received a class of information value with a good prospect of upgrading some of them to a higher class.

A great majority of submitted results were of very good quality with the low overall proportion of outlying values not exceeding 7.5%. Only 13 out of 61 measured elements had two or more outlying values in the data sets. Marked progress was observed not only in the overall quality of analytical results but also in the number of well-determined elements compared with earlier intercomparison studies. This reflects improvements in analytical measuring techniques as well as better analytical quality control exercised by the participating laboratories.

The SD-N-1/2 sediment sample is very similar to the IAEA Reference Soil S-7 with respect of the number and the type of chemical elements certified. Additional are reference values for: Ba, Br, Cd and Lu while missing are: Dy,

Hf, Ta, Y and Yb. The sediment has more silicon and less calcium than the soil S-7 (28% vs. 18% and 5.3% vs. 16.3%, respectively). Concentrations of other major elements and the rare earth elements Co, Cs, Mn, Ni, Rb, Sc, Th, V and U are much the same within \pm 30%, but As, Br, Cd, Cr, Cu, Hg, P, Pb, Se, Sr and Zn are two to ten times higher than in the soil. These two reference materials are thus complementary, covering element concentration ranges often encountered in the natural environment.

Note

The results presented in this report are subject to further revision and re-evaluation with the admission of additional analytical data. The users of the reference material SD-N-1/2 are therefore encouraged to report all meaningful data as well as any remarks and comments on the sample and the reported concentration values which may help achieve this objective. They will be notified of any changes in the certification status of the sample that may result.

References

1. Intercomparison of artificial radionuclide measurements on marine sediment SD-N-1/1, March 1984. IAEA Monaco Report No. 21.
2. Intercomparison of trace metal measurements in marine sediment sample SD-N-1/2, October 1984. IAEA Monaco Provisional Report No. 22.
3. R. Bojanowski, R. Fukai, E. Holm, Comparability of Data for Natural Radionuclides in Marine Sediment Obtained by Different Analytical Techniques. Proc. Internat. Symp. on Nucl. Anal. Chem., 5-7 June 1985, Halifax, Canada.
4. A. Veglia, International Atomic Energy Agency, Report No. IAEA/RL/84, August 1981.
5. L. Pszonicki, A.N. Hanna and O. Suschny, International Atomic Energy Agency, Report No. IAEA/RL/97, March 1983.
6. R.D. Remington, M.A. Schork, "Statistics with Application to the Biological and Health Sciences", Prentice Hall, Inc., Engelwood Cliffs, N.J., 1970.
7. L. Pszonicki, A.N. Hanna and O. Suschny, International Atomic Energy Agency, Report No. IAEA/RL/112, May 1984.

Your laboratory code number is:

Code Numbers of Sample Pretreatment Methods

- 0 No pretreatment or not communicated
- 1 Dry dilution by mixing powder
- 2 Pellets formation
- 3 Alkaline fusion (carbonates, borates)
- 4 Acid fusion
- 5 Acid digestion including HF
- 6 Acid digestion without HF (HNO₃, HCl, HClO₄, H₂SO₄ or mixture)

Code Numbers of Measuring Methods

- .0 Not given or not clearly stated
- .10 Neutron activation (without specification)
- .11 Neutron activation (instrumental)
- .12 Neutron activation (with radiochemical separation)

- .20 Atomic absorption (without specification)
- .21 Atomic absorption (flame technique)
- .22 Atomic absorption (graphite furnace)
- .23 Atomic absorption (hydride generation)
- .24 Atomic absorption (cold-vapour technique)

- .30 Emission spectroscopy
- .31 Flame emission spectroscopy
- .32 ICP (plasma AES)
- .33 Polarography
- .34 Fluorimetry
- .35 Colorimetry

- .40 X-ray fluorescence (without specification)
- .41 Energy-dispersive XRF
- .42 Wavelength-dispersive XRF

- .51 PIXE (proton-induced X-ray emission)
- .52 PIGE (proton-induced γ -ray emission)

- .60 Gamma-ray spectroscopy (without specification)
- .61 Gamma-ray spectroscopy (germanium detector)
- .62 Gamma-ray spectroscopy (Ra-226 line 186 KeV)
- .63 Gamma-ray spectroscopy (Pb-214 and/or Bi-214 line(s))
- .64 Gamma-ray spectroscopy (Ra-226 + Pb-214 + Bi-214 lines)

- .70 Alpha spectrometry

- .80 Emanation method

- .90 Fission track counting

TABLE NO:1

RESULTS OF INTERCOMPARISON FOR:
Ag IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	30	0.11	1	1.97	-	-	06.
2	21a	0.11	6	2.00	0	0	10.
3	5	0.11	4	2.03	.45	22.22	-
4	68	2.41	5	2.10	0	0	.24
5	74	0.11	6	2.30	0	0	10.
6	18c	6.32	1	2.90	-	-	09.
7	18e	6.20	1	3.00	-	-	00.
8	84	0.11	4	3.23	0	0	41.
9	8	5.21	6	3.90	0	0	.28
10	6	5.32		5.00			

CONT'D

SUMMARY OF RESULTS FOR Ag

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		9
	INDIVIDUAL DETERMINATIONS		34
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		9
	INDIVIDUAL DETERMINATIONS:		34
TOTAL RANGE OF LABORATORY MEANS:	1.97	-	3.90
RANGE OF ACCEPTED LABORATORY MEANS	1.97	-	3.90
PERCENTAGE OF OUTLYING LABORATORIES			0
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			2.30
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	2.00	-	3.23

TABLE NO: 2

RESULTS OF INTERCOMPARISON FOR:
A1 IN SD-N-1/2

UNIT: %

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	73	0.11	6	3.36	.03	1.00	-
2	67	5.32	4	3.47	0	0	04.
3	79	2.11	3	3.53	.18	5.01	05.
4	26	0.40	6	3.54	.08	2.24	02.
5	8	5.21	6	3.58	0	0	.11
6	30	3.35	1	3.70	-	-	04.
7	21a	0.11	6	3.72	0	0	02.
8	86	0.11	3	3.74	.04	1.01	01.
9	55b	5.32	3	3.76	0	0	02.
10	18a	3.32	1	3.77	-	-	01.
11	6	5.32	6	3.79	.04	.97	01.
12	88	5.21	6	3.85	0	0	01.
13	18d	5.20	1	3.87	-	-	01.
14	18b	5.32	1	3.92	-	-	01.
15	78	5.32	1	3.96	-	-	03.
16	42	5.21	6	4.01	0	0	01.
17	63	2.52	6	4.82 *	0	0	15.
18	12	2.52	6	4.95 *	1.21	24.40	10.20
19	9	2.41	1	5.31 *	-	-	07.

CONT'D

SUMMARY OF RESULTS FOR A1

UNIT: %

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	19
	INDIVIDUAL DETERMINATIONS	73
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	16
	INDIVIDUAL DETERMINATIONS:	60
TOTAL RANGE OF LABORATORY MEANS:	3.36 -	5.31
RANGE OF ACCEPTED LABORATORY MEANS	3.36 -	4.01
PERCENTAGE OF OUTLYING LABORATORIES		16
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS		3.75
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	3.58 -	3.85

TABLE NO: 3

RESULTS OF INTERCOMPARISON FOR:
As IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	36	4.22	1	27.00	-	-	-
2	63	2.51	6	35.00	0	0	19.
3	30	0.11	1	42.00	-	-	05.
4	68	2.41	5	42.00	0	0	.17
5	30b	5.23	5	42.40	0	0	12.
6	82	0.20	5	43.00	0	0	07.
7	84	0.11	4	49.20	0	0	19.
8	15	0.11	1	49.70	-	-	07.
9	18c	6.32	1	50.20	-	-	04.
10	21a	0.11	6	55.00	0	0	05.
11	5	0.11	4	57.00	3.92	6.87	-
12	67	5.32	4	60.00	0	0	05.
13	21b	5.40	1	61.50	-	-	06.
14	80	0.11	4	66.00	0	0	09.
15	26	0.40	6	67.00	3.16	4.72	05.
16	72	5.23	1	76.00	-	-	08.
17	74	0.11	6	101.00 *	0	0	12.

CONT'D

SUMMARY OF RESULTS FOR As

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		17
	INDIVIDUAL DETERMINATIONS		61
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		16
	INDIVIDUAL DETERMINATIONS:		55
TOTAL RANGE OF LABORATORY MEANS:	27.00	-	101.00
RANGE OF ACCEPTED LABORATORY MEANS	27.00	-	76.00
PERCENTAGE OF OUTLYING LABORATORIES			6
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			49.95
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	42.40	-	60.00

TABLE NO: 4

RESULTS OF INTERCOMPARISON FOR:
Au IN SD-N-1/2

UNIT:ng/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB-MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	30	0.11	1	31.00	-	-	03.
2	5	0.11	4	35.00	0	0	-
3	94	0.11	4	36.00	0	0	11.
4	21a	0.11	6	42.00	0	0	12.
5	8	0.22	6	59.00 *	0	0	.34

CONT'D

SUMMARY OF RESULTS FOR Au

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	5
	INDIVIDUAL DETERMINATIONS	21
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	4
	INDIVIDUAL DETERMINATIONS:	15
TOTAL RANGE OF LABORATORY MEANS:	31.00 -	59.00
RANGE OF ACCEPTED LABORATORY MEANS	31.00 -	42.00
PERCENTAGE OF OUTLYING LABORATORIES		20
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS		35.50
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL		-

TABLE NO: 5

RESULTS OF INTERCOMPARISON FOR:

Ba IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	30	0.11	1	197.00	-	-	14.
2	18b	5.32	1	244.70	-	-	03.
3	67	5.32	4	252.00	0	0	01.
4	15	0.11	1	253.50	-	-	10.
5	18a	3.32	1	255.10	-	-	02.
6	78	5.32	1	276.00	-	-	04.
7	79	2.11	3	280.80	22.21	7.91	08.
8	84	0.11	4	291.20	0	0	15.
9	42	5.21	6	282.00	0	0	01.
10	2	0.32	6	288.50	6.06	2.10	-
11	21a	0.11	6	290.00	0	0	07.
12	23	5.32	3	297.47	9.85	3.31	03.
13	88	5.21	6	308.00	0	0	02.
14	71	0.11	6	310.00	0	0	07.
15	80	0.11	4	310.00	0	0	10.
16	55b	5.32	3	315.00	0	0	04.
17	18d	5.20	1	338.00	-	-	15.
18	5	0.11	4	342.25	47.35	13.83	-
19	21b	5.40	1	349.00	-	-	13.
20	74	0.11	6	395.00	0	0	04.

CONT'D

SUMMARY OF RESULTS FOR Ba

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	20
	INDIVIDUAL DETERMINATIONS	68
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	20
	INDIVIDUAL DETERMINATIONS:	68
TOTAL RANGE OF LABORATORY MEANS:	197.00 -	395.00
RANGE OF ACCEPTED LABORATORY MEANS	197.00 -	395.00
PERCENTAGE OF OUTLYING LABORATORIES		0
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS		269.25
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	274.00 -	310.00

TABLE NO: 6

RESULTS OF INTERCOMPARISON FOR:
Br IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	68	2.41	5	28.00	0	0	.07
2	30	0.11	1	39.00	-	-	03.
3	26	0.40	6	45.83	2.01	4.38	04.
4	15	0.11	1	50.40	-	-	09.
5	86	0.11	3	50.43	.27	.54	01.
6	5	0.11	4	53.50	1.91	3.58	-
7	21a	0.11	6	59.00	0	.0	05.
8	63	2.51	6	59.00	0	0	18.
9	84	0.11	4	64.60	0	0	04.
10	11	0.40	1	86.00	-	-	05.
11	73	0.11	6	395.83 *	11.41	2.88	-

CONT'D

SUMMARY OF RESULTS FOR Br

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	11
	INDIVIDUAL DETERMINATIONS	43
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	10
	INDIVIDUAL DETERMINATIONS:	37
TOTAL RANGE OF LABORATORY MEANS:	28.00 -	395.83
RANGE OF ACCEPTED LABORATORY MEANS	28.00 -	86.00
PERCENTAGE OF OUTLYING LABORATORIES		9
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS		51.97
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	39.00 -	64.60

TABLE NO: 7

RESULTS OF INTERCOMPARISON FOR:
Ca IN SD-N-1/2

UNIT: %

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	79	2.11	3	4.50	.30	6.77	07.
2	26	0.40	6	4.77	.40	8.36	08.
3	67	5.32	4	4.92	0	0	01.
4	30	0.11	1	5.00	-	-	06.
5	88	0.11	6	5.00	0	0	01.
6	42	5.21	6	5.12	0	0	01.
7	8	5.21	6	5.18	0	0	.17
8	18a	3.32	1	5.22	-	-	01.
9	55b	5.32	3	5.31	0	0	03.
10	73	0.11	6	5.31	-.43	8.18	-
11	86	0.11	3	5.32	-.01	-.14	00.
12	18d	5.20	1	5.33	-	-	01.
13	18b	5.32	1	5.36	-	-	04.
14	6	5.32	6	5.37	-.07	1.23	01.
15	78	5.32	1	5.46	-	-	02.
16	21b	5.40	1	5.60	-	-	03.
17	84	0.11	4	5.66	0	0	25.
18	21a	0.11	6	5.84	0	0	03.
19	76	5.31	4	6.05	-.16	2.58	-.10
20	69	2.41	5	6.30	0	0	.03
21	63	2.51	6	6.64	0	0	25.
22	9	2.41	1	8.80 *	-	-	01.

CONT'D

SUMMARY OF RESULTS FOR Ca

UNIT: %

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	22
	INDIVIDUAL DETERMINATIONS	81
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	21
	INDIVIDUAL DETERMINATIONS:	80
TOTAL RANGE OF LABORATORY MEANS:	4.50 -	8.80
RANGE OF ACCEPTED LABORATORY MEANS	4.50 -	6.64
PERCENTAGE OF OUTLYING LABORATORIES		5
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS		5.32
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN-LEVEL	5.12 -	5.60

TABLE NO: 8

RESULTS OF INTERCOMPARISON FOR:

Cd IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	67	5.32	4	1.50 *	0	0	07.
2	64	6.21	3	4.95 *	0	0	03.
3	68	2.41	5	6.20 *	0	0	.32
4	89	6.33	6	7.60	0	0	04.
5	42	5.22	6	8.60.	0	0	10.
6	13	6.21	6	8.93	.55	6.15	03.
7	38	6.21	1	9.04	-	-	06.
8	74	0.11	6	9.36	0	0	08.
9	88	5.22	6	9.41	0	0	10.
10	37	6.22	1	9.90	-	-	.10
11	69	6.22	6	10.00	0	0	20.
12	18c	6.32	1	10.30	-	-	03.
13	19	6.21	3	10.39	0	0	03.
14	84	0.11	4	10.90	0	0	06.
15	4	5.21	6	10.97	.20	1.79	.05
16	21a	0.11	6	11.00	0	0	14
17	82	0.20	5	11.00	0	0	05.
18	72	5.22	1	11.10	-	-	02.
19	8	5.21	6	11.20	0	0	.04
20	24	5.21	1	11.50	-	-	-
21	66	6.21	6	11.55	.23	1.96	03.
22	16	6.21	1	12.00	-	-	-
23	18e	6.20	1	12.00	-	-	00.
24	55b	5.32	3	12.00	0	0	03.
25	1	6.21	3	12.07	.74	6.11	-
26	55a	6.32	3	12.10	0	0	06.
27	54	5.21	5	12.50	0	0	02.
28	56	6.21	6	12.72	.60	4.73	01.
29	77	5.32	3	12.80	0	0	-
30	33	5.22	6	13.30	.11	.82	01.
31	21b	5.40	1	17.70 *	-	-	06.
32	6	5.32	6	22.00 *	0	0	00.

CONT'D

SUMMARY OF RESULTS FOR Cd

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		32
	INDIVIDUAL DETERMINATIONS		127
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		27
	INDIVIDUAL DETERMINATIONS:		108
TOTAL RANGE OF LABORATORY MEANS:	1.50	-	22.00
RANGE OF ACCEPTED LABORATORY MEANS	7.60	-	13.30
PERCENTAGE OF OUTLYING LABORATORIES			16
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			11.00
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	10.00	-	12.00

RESULTS OF INTERCOMPARISON FOR:
Ce IN SD-N-:

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	OF ERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	30	0.11	1	51.00	-	-	04.
2	21a	0.11	6	58.00	0	0	05.
3	57	0.11	3	58.20	0	0	05.
4	80	0.11	4	59.00	0	0	08.
5	15	0.11	1	59.60	-	-	09.
6	31	5.32	6	59.80	0	0	04.
7	86	0.11	3	60.25	.06	.09	00.
8	59	0.11	1	60.70	-	-	10.
9	26	0.40	6	61.02	1.47	2.42	02.
10	60	0.11	5	62.25	0	0	07.
11	21b	5.40	1	65.00	-	-	06.
12	74	0.11	6	68.90	0	0	05.
13	71	0.11	6	72.90	0	0	03.
14	84	0.11	4	93.65 *	0	0	12.

CONT'D

SUMMARY OF RES FOR Ce

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	14
	INDIVIDUAL DETERMINATIONS	53
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	13
	INDIVIDUAL DETERMINATIONS:	49
TOTAL RANGE OF LABORATORY	51.00 -	93.65
RANGE OF ACCEPTED LABORATO	51.00 -	72.90
PERCENTAGE OF OUTLYING LAB		7
OVERALL MEDIAN OF ACCEPTEDRY MEANS		60.25
CONFIDENCE LIMITS OF THE (
MEDIAN AT THE .05 SIGN.LEV	58.20 -	65.00

RESULTS OF INTERCOMPARISON FOR:
Co IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	75	5.20	2	1.29 *	-	-	-
2	13	6.21	6	7.48	.99	13.29	07.
3	29	5.32	5	8.50	0	0	13.
4	55a	6.32	3	9.60	0	0	03.
5	7	5.21	5	9.60	0	0	15.
6	56	6.21	6	10.40	.61	5.83	01.
7	8	5.21	6	10.63	0	0	.18
8	18c	6.32	1	10.70	-	-	04.
9	88	5.22	6	10.77	0	0	05.
10	30	0.11	1	10.80	-	-	02.
11	42	5.22	6	11.20	0	0	02.
12	60	0.11	5	11.23	0	0	05.
13	66	6.21	5	11.46	.15	1.32	01.
14	26	0.40	6	11.68	.53	4.57	05.
15	59	0.11	1	11.70	-	-	10.
16	67	5.32	4	12.00	0	0	05.
17	15	0.11	1	12.05	-	-	03.
18	57	0.11	3	12.10	0	0	03.
19	86	0.11	3	12.12	.08	.65	01.
20	24	5.21	1	12.20	-	-	-
21	72	5.22	1	12.30	-	-	02.
22	21a	0.11	6	12.40	0	0	03.
23	55b	5.32	3	12.40	0	0	02.
24	18e	6.20	1	12.50	-	-	04.
25	38	6.21	1	12.70	-	-	10.
26	71	0.11	6	12.90	0	0	05.
27	80	0.11	4	13.00	0	0	08.
28	4	5.21	6	13.03	.43	3.31	.05
29	74	0.11	6	13.50	0	0	04.
30	84	0.11	4	13.50	0	0	10.
31	17	0.11	6	13.72	1.52	11.06	-10
32	19	6.21	3	13.92	0	0	04.
33	5	0.11	3	14.00	0	0	-
34	77	5.32	3	14.50	0	0	-
35	16	6.21	1	18.00 *	-	-	-
36	1	6.21	3	21.40 *	1.05	4.92	-
37	6	5.32	6	23.50 *	.84	3.56	04.

CONT'D

SUMMARY OF RESULTS FOR Co

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		37
	INDIVIDUAL DETERMINATIONS		139
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		33
	INDIVIDUAL DETERMINATIONS:		127
TOTAL RANGE OF LABORATORY MEANS:	1.29	-	23.50
RANGE OF ACCEPTED LABORATORY MEANS	7.48	-	14.50
PERCENTAGE OF OUTLYING LABORATORIES			11
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			12.10
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN-LEVEL	11.20	-	12.70

TABLE NO: 11

RESULTS OF INTERCOMPARISON FOR:

Cr IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	16	6.21	1	51.00	-	-	-
2	1	6.21	3	73.73	6.55	11.59	-
3	66	6.21	5	79.60	10.06	12.64	13.
4	64	6.21	3	83.00	0	0	06.
5	11	0.40	1	96.00	-	-	47.
6	13	6.21	6	110.20	18.27	16.58	09.
7	55a	6.32	3	115.00	0	0	04.
8	76	5.21	4	121.25	1.26	1.04	.33
9	38	6.21	1	123.00	-	-	08.
10	7	5.21	5	124.00	0	0	20.
11	67	5.32	4	124.00	0	0	08.
12	37	6.22	1	125.00	-	-	.15
13	56	6.21	6	133.67	6.86	5.13	01.
14	80	0.11	4	140.00	0	0	07.
15	55b	5.32	3	142.00	0	0	02.
16	18a	3.32	1	144.50	-	-	02.
17	60	0.11	5	146.38	0	0	06.
18	8	5.22	6	147.30	0	0	.29
19	21b	5.40	1	148.00	-	-	10.
20	4	5.21	6	149.58	2.37	1.58	.05
21	86	0.11	3	150.42	.30	.20	00.
22	24	5.21	1	151.00	-	-	-
23	30	0.11	1	151.00	-	-	03.
24	57	0.11	3	154.00	0	0	10.
25	21a	0.11	6	158.00	0	0	05.
26	15	0.11	1	159.50	-	-	04.
27	42	5.21	6	161.00	0	0	02.
28	6	5.32	6	164.67	5.28	3.21	03.
29	73	0.11	6	164.83	10.65	6.46	-
30	29	5.32	5	166.00	0	0	08.
31	59	0.11	1	166.00	-	-	10.
32	82	0.20	5	166.00	0	0	09.
33	84	0.11	4	168.90	0	0	09.
34	71	0.11	6	169.00	0	0	08.
35	70	0.20	1	173.00	-	-	.14
36	74	0.11	6	175.00	0	0	03.
37	5	0.11	3	175.33	28.50	16.26	-
38	19	6.21	3	213.86	0	0	03.
39	63	2.51	6	940.00 *	0	0	24.

CONT'D

SUMMARY OF RESULTS FOR Cr

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		39
	INDIVIDUAL DETERMINATIONS		142
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		38
	INDIVIDUAL DETERMINATIONS:		136
TOTAL RANGE OF LABORATORY MEANS:	51.00	-	940.00
RANGE OF ACCEPTED LABORATORY MEANS	51.00	-	213.86
PERCENTAGE OF OUTLYING LABORATORIES			3
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			148.79
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	125.00	-	161.00

TABLE NO: 12

RESULTS OF INTERCOMPARISON FOR:
Cs IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEVZ	ESTIM. LAB.ERROR %
1	54	5.31	6	3.98	.08	2.01	02.
2	57	0.11	3	4.10	0	0	07.
3	84	0.11	4	4.11	0	0	17.
4	60	0.11	5	4.21	0	0	11.
5	15	0.11	1	4.30	-	-	03.
6	80	0.11	4	4.80	0	0	08.
7	86	0.11	3	4.97	.04	.88	01.
8	74	0.11	6	4.98	0	0	03.
9	21a	0.11	6	5.40	0	0	05.
10	30	0.11	1	5.42	-	-	04.
11	5	0.11	4	5.60	.48	8.63	-
12	59	0.11	1	5.60	-	-	10.

CONT'D

SUMMARY OF RESULTS FOR Cs

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		12
	INDIVIDUAL DETERMINATIONS		44
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		12
	INDIVIDUAL DETERMINATIONS:		44
TOTAL RANGE OF LABORATORY MEANS:	3.98	-	5.60
RANGE OF ACCEPTED LABORATORY MEANS	3.98	-	5.60
PERCENTAGE OF OUTLYING LABORATORIES			0
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			4.89
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	4.11	-	5.42

TABLE NO: 13

RESULTS OF INTERCOMPARISON FOR:
 CU IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	13	6.21	6	53.40	5.41	10.13	05.
2	33	5.22	6	56.35	.36	.63	01.
3	82	0.20	5	58.00	0	0	14.
4	69	6.22	6	60.00	0	0	17.
5	88	5.22	6	60.70	0	0	03.
6	19	6.21	3	64.07	0	0	01.
7	18c	6.32	1	67.80	-	-	02.
8	37	6.22	1	68.00	-	-	.10
9	6	5.32	6	68.07	1.03	1.51	01.
10	38	6.21	1	68.10	-	-	06.
11	55b	5.21	3	69.00	0	0	04.
12	7	5.21	5	70.00	0	0	05.
13	75	5.20	2	70.30	-	-	-
14	72	5.22	1	70.60	-	-	01.
15	18e	6.20	1	71.30	-	-	01.
16	67	5.32	4	72.00	0	0	03.
17	66	6.21	6	72.33	.52	.71	01.
18	56	6.21	6	72.50	3.83	5.29	01.
19	42	5.21	6	72.80	0	0	00.
20	8	5.21	6	74.40	0	0	-03
21	4	5.21	6	74.97	.90	1.21	-05
22	16	6.21	1	75.00	-	-	-
23	21b	5.40	1	75.20	-	-	08.
24	24	5.21	1	75.20	-	-	-
25	11	0.40	1	76.00	-	-	09.
26	68	2.41	5	76.00	0	0	.12
27	29	5.32	5	76.70	0	0	06.
28	54	5.21	5	78.00	0	0	02.
29	64	6.21	3	78.00	0	0	03.
30	63	2.51	6	82.50	0	0	14.
31	70	0.20	1	83.70	-	-	.18
32	55a	6.21	3	92.00	0	0	04.
33	77	5.32	3	102.40 *	0	0	-
34	76	5.21	4	109.50 *	7.19	6.56	.14
35	1	6.21	3	129.53 *	24.89	19.21	-

CONT'D

SUMMARY OF RESULTS FOR Cu

UNIT: ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		35
	INDIVIDUAL DETERMINATIONS		129
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		32
	INDIVIDUAL DETERMINATIONS:		119
TOTAL RANGE OF LABORATORY MEANS:	53.40	-	129.53
RANGE OF ACCEPTED LABORATORY MEANS	53.40	-	92.00
PERCENTAGE OF OUTLYING LABORATORIES			9
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			72.17
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN-LEVEL	68.10	-	75.20

TABLE NO: 14

RESULTS OF INTERCOMPARISON FOR:

Eu IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	17	0.11	3	1.06	.12	10.82	10.12
2	84	0.11	4	1.07	0	0	19.
3	59	0.11	1	1.10	-	-	10.
4	57	0.11	3	1.12	0	0	04.
5	60	0.11	5	1.12	0	0	03.
6	21a	0.11	6	1.14	0	0	05.
7	15	0.11	1	1.15	-	-	05.
8	30	0.11	1	1.16	-	-	05.
9	86	0.11	3	1.16	.03	2.77	03.
10	31	5.32	6	1.19	0	0	02.
11	80	0.11	4	1.30	0	0	08.
12	26	0.40	6	1.31	.04	3.09	03.
13	71	0.11	6	1.31	0	0	09.
14	74	0.11	6	1.31	0	0	05.

CONT'D

SUMMARY OF RESULTS FOR Eu

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	14
	INDIVIDUAL DETERMINATIONS	55
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	14
	INDIVIDUAL DETERMINATIONS:	55
TOTAL RANGE OF LABORATORY MEANS:	1.06 -	1.31
RANGE OF ACCEPTED LABORATORY MEANS	1.06 -	1.31
PERCENTAGE OF OUTLYING LABORATORIES		0
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS		1.16
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	1.12 -	1.30

TABLE NO: 15

RESULTS OF INTERCOMPARISON FOR:

Fe IN SD-N-1/2

UNIT: %

NO.	LAB. CODE	METH. CODE	NO. OF DETERM.	LAB. MEAN	ABS. STND. DEV.	REL. STND. DEV%	ESTIM. LAB. ERROR %
1	1	6.21	3	1.07 *	.12	11.47	-
2	7	5.21	3	2.51	0	0	05.
3	13	6.21	6	2.82	.29	10.31	05.
4	16	6.21	1	2.91	-	-	-
5	11	0.40	1	2.93	-	-	01.
6	40	6.20	6	3.00	0	0	.07
7	70	0.20	1	3.12	-	-	.05
8	66	6.21	5	3.14	.01	.45	01.
9	38	6.21	1	3.19	-	-	08.
10	55a	6.32	3	3.26	0	0	02.
11	67	5.32	4	3.33	0	0	02.
12	30	0.11	1	3.50	-	-	03.
13	60	0.11	5	3.50	0	0	04.
14	69	6.22	6	3.50	0	0	06.
15	18a	3.32	1	3.53	-	-	01.
16	59	0.11	1	3.53	-	-	10.
17	19	6.21	3	3.58	0	0	03.
18	15	0.11	1	3.59	-	-	03.
19	68	2.41	5	3.59	0	0	.02
20	56	6.21	6	3.61	.15	4.27	01.
21	86	0.11	3	3.61	.01	.14	00.
22	76	5.21	4	3.64	.03	.91	.08
23	8	5.21	6	3.66	0	0	.12
24	78	5.32	1	3.68	-	-	03.
25	55b	5.32	3	3.70	0	0	02.
26	18b	5.32	1	3.74	-	-	03.
27	21a	0.11	6	3.74	0	0	03.
28	21b	5.40	1	3.74	-	-	02.
29	26	0.00	6	3.78	.03	.92	01.
30	42	5.21	6	3.78	0	0	01.
31	71	0.11	6	3.78	0	0	03.
32	88	5.21	6	3.79	0	0	01.
33	54	5.21	5	3.81	0	0	06.
34	84	0.11	4	3.81	0	0	13.
35	74	0.11	6	3.85	0	0	03.
36	4	5.21	6	3.87	.02	.50	.02
37	18d	5.20	1	3.90	-	-	00.
38	24	5.21	1	3.94	-	-	-
39	80	0.11	4	4.06	0	0	05.
40	6	5.32	6	4.07	.04	1.05	01.
41	63	2.51	6	4.11	0	0	12.
42	17	0.11	6	4.30	.27	6.32	.06
43	9	2.41	1	7.13 *	-	-	01.

CONT'D

SUMMARY OF RESULTS FOR Fe

UNIT: %

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		43
	INDIVIDUAL DETERMINATIONS		158
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		41
	INDIVIDUAL DETERMINATIONS:		154
TOTAL RANGE OF LABORATORY MEANS:	1.07	-	7.13
RANGE OF ACCEPTED LABORATORY MEANS	2.51	-	4.30
PERCENTAGE OF OUTLYING LABORATORIES			5
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			3.64
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN-LEVEL	3.53	-	3.78

TABLE NO: 16

RESULTS OF INTERCOMPARISON FOR:
HF IN SD-N-1/2

UNIT: ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	30	0.11	1	7.30	-	-	08.
2	74	0.11	6	7.45	0	0	07.
3	59	0.11	1	7.50	-	-	10.
4	21a	0.11	6	8.40	0	0	05.
5	57	0.11	3	8.40	0	0	05.
6	71	0.11	6	8.57	0	0	11.
7	60	0.11	5	8.77	0	0	07.
8	80	0.11	4	9.10	0	0	05.
9	84	0.11	4	11.90 *	0	0	04.

CONT'D

SUMMARY OF RESULTS FOR HF

UNIT: ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	9
	INDIVIDUAL DETERMINATIONS	36
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	8
	INDIVIDUAL DETERMINATIONS:	32
TOTAL RANGE OF LABORATORY MEANS:	7.30 -	11.90
RANGE OF ACCEPTED LABORATORY MEANS	7.30 -	9.10
PERCENTAGE OF OUTLYING LABORATORIES		11
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS		8.40
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	7.45 -	8.77

TABLE NO: 17

RESULTS OF INTERCOMPARISON FOR:
Hg IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	30	0.11	1	0.05	-	-	04.
2	38	6.24	1	0.06	-	-	31.
3	84	0.11	4	0.78	0	0	13.
4	87	6.24	6	0.96	.04	3.91	04.
5	55a	6.24	3	1.41	0	0	03.
6	66	6.24	6	1.50	.18	11.93	.20
7	21a	0.11	6	1.52	0	0	05.
8	24	6.24	1	1.56	-	-	-
9	89	6.24	6	1.72	0	0	02.
10	82	0.20	5	2.25	0	0	07.
11	86	0.11	3	8.22 *	.15	1.87	00.

CONT'D

SUMMARY OF RESULTS FOR Hg

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		11
	INDIVIDUAL DETERMINATIONS		42
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		10
	INDIVIDUAL DETERMINATIONS:		39
TOTAL RANGE OF LABORATORY MEANS:	0.05	-	8.22
RANGE OF ACCEPTED LABORATORY MEANS	0.05	-	2.25
PERCENTAGE OF OUTLYING LABORATORIES			9
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			1.46
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN-LEVEL	0.06	-	1.72

TABLE NO: 18

**RESULTS OF INTERCOMPARISON FOR:
L_a IN SD-N-1/2**

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB-MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	31	5.32	6	28.60	0	0	04.
2	84	0.11	4	29.34	0	0	03.
3	30	0.11	1	29.40	-	-	08.
4	80	0.11	4	30.00	0	0	07.
5	21a	0.11	6	31.60	0	0	06.
6	26	0.40	6	31.85	.52	1.63	02.
7	57	0.11	3	31.90	0	0	08.
8	86	0.11	3	31.92	.20	.63	01.
9	5	0.11	4	32.00	2.16	6.75	-
10	73	0.11	6	34.40	.94	2.73	-
11	77	5.32	3	35.50	0	0	-
12	71	0.11	6	36.20	0	0	03.
13	17	0.11	6	37.83	6.40	16.92	04.15
14	74	0.11	6	38.20	0	0	05.

CONT'D

SUMMARY OF RESULTS FOR L_a

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		14
	INDIVIDUAL DETERMINATIONS		64
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS:		14
	INDIVIDUAL DETERMINATIONS:		64
TOTAL RANGE OF LABORATORY MEANS:	28.60	-	38.20
RANGE OF ACCEPTED LABORATORY MEANS	28.60	-	38.20
PERCENTAGE OF OUTLYING LABORATORIES			0
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			31.91
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN-LEVEL	30.00	-	35.50

TABLE NO: 19

RESULTS OF INTERCOMPARISON FOR:
Lu IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEVZ	ESTIM. LAB.ERROR %
1	31	5.32	6	0.30	0	0	07.
2	30	0.11	1	0.31	-	-	10.
3	86	0.11	3	0.31	0	1.16	00.
4	57	0.11	3	0.35	0	0	14.
5	74	0.11	6	0.35	0	0	12.
6	26	0.40	6	0.37	.01	2.77	03.
7	80	0.11	4	0.39	0	0	08.
8	71	0.11	6	0.41	0	0	06.

9 60 .11 0.15

CONT'D

SUMMARY OF RESULTS FOR Lu

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	8
	INDIVIDUAL DETERMINATIONS	35
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	8
	INDIVIDUAL DETERMINATIONS:	35
TOTAL RANGE OF LABORATORY MEANS:	0.30 -	0.41
RANGE OF ACCEPTED LABORATORY MEANS	0.30 -	0.41
PERCENTAGE OF OUTLYING LABORATORIES		0
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS		0.35
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	0.31 -	0.39

TABLE NO: 20

RESULTS OF INTERCOMPARISON FOR:

Mg IN SD-N-1/2

UNIT: %

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	67	5.32	4	0.67	0	0	01.
2	18b	5.32	1	0.72	-	-	01.
3	18a	3.32	1	0.74	-	-	01.
4	18d	5.20	1	0.74	-	-	07.
5	55b	5.32	3	0.74	0	0	06.
6	21a	0.11	6	0.76	0	0	13.
7	86	0.11	3	0.77	.02	2.61	03.
8	78	5.32	1	0.78	-	-	03.
9	8	5.21	6	0.79	0	0	.05
10	88	5.21	6	0.81	0	0	01.
11	6	5.32	6	0.82	.01	1.45	02.
12	42	5.21	6	0.91 *	0	0	01.
13	76	5.21	4	0.93 *	.04	4.31	.11
14	79	2.11	3	1.03 *	.04	3.94	04.
15	19	6.21	3	5.73 *	0	0	02.

CONT'D

SUMMARY OF RESULTS FOR Mg

UNIT: %

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		15
	INDIVIDUAL DETERMINATIONS		54
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		11
	INDIVIDUAL DETERMINATIONS:		38
TOTAL RANGE OF LABORATORY MEANS:	0.67	-	5.73
RANGE OF ACCEPTED LABORATORY MEANS	0.67	-	0.82
PERCENTAGE OF OUTLYING LABORATORIES			27
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			0.76
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	0.74	-	0.79

TABLE NO: 21

RESULTS OF INTERCOMPARISON FOR:

Mn IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	1	6.21	3	459.90	17.82	3.87	-
2	11	0.40	1	497.00	-	-	09.
3	7	5.21	5	530.00	0	0	10.
4	59	0.11	1	547.00	-	-	10.
5	13	6.21	6	607.77	36.48	6.00	03.
6	18c	6.32	1	658.90	-	-	02.
7	69	6.22	6	670.00	0	0	07.
8	19	6.21	3	678.91	0	0	01.
9	40	6.20	6	687.50	13.69	1.99	.07
10	75	5.20	2	697.35	-	-	-
11	18e	6.20	1	700.00	-	-	01.
12	15	0.11	1	704.70	-	-	07.
13	84	0.11	4	716.00	0	0	03.
14	16	6.21	1	728.00	-	-	-
15	67	5.32	4	743.00	0	0	01.
16	88	5.22	6	744.00	0	0	04.
17	66	6.21	5	748.60	8.08	1.08	01.
18	76	5.21	4	749.25	10.59	1.41	.11
19	26	0.40	6	761.67	17.22	2.26	02.
20	54	5.21	5	772.00	0	0	02.
21	23	5.32	3	773.90	18.96	2.45	01.
22	86	0.11	3	780.30	1.37	.18	00.
23	21b	5.40	1	781.00	-	-	04.
24	8	5.21	6	784.00	0	0	.19
25	79	2.11	3	785.57	76.18	9.70	10.
26	21a	0.11	6	794.00	0	0	02.
27	55b	5.32	3	798.00	0	0	02.
28	55a	6.32	3	799.00	0	0	02.
29	18a	3.32	1	800.50	-	-	02.
30	4	5.21	6	806.83	5.12	.63	.02
31	18d	5.20	1	811.30	-	-	01.
32	18b	5.32	1	818.30	-	-	03.
33	6	5.32	6	821.17	12.14	1.48	01.
34	24	5.21	1	826.00	-	-	-
35	78	5.32	1	835.00	-	-	02.
36	73	0.11	6	835.33	11.43	1.37	-
37	29	5.32	5	847.00	0	0	04.
38	56	6.21	6	849.83	51.19	6.02	01.
39	42	5.21	6	865.00	0	0	01.
40	33	5.22	6	879.33	7.81	.89	01.
41	37	6.21	1	880.00	-	-	.10
42	70	0.20	1	927.00	-	-	.04
43	68	2.41	5	1100.00 *	0	0	.09
44	38	6.21	1	1540.00 *	-	-	06.
45	63	2.51	6	3690.00 *	0	0	17.

CONT'D

SUMMARY OF RESULTS FOR Mn

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		45
	INDIVIDUAL DETERMINATIONS		159
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		42
	INDIVIDUAL DETERMINATIONS:		147
TOTAL RANGE OF LABORATORY MEANS:	459.90	-	3690.00
RANGE OF ACCEPTED LABORATORY MEANS	459.90	-	927.00
PERCENTAGE OF OUTLYING LABORATORIES			7
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			777.10
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	728.00	-	800.50

TABLE NO: 22

RESULTS OF INTERCOMPARISON FOR:
Mo IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	18e	6.20	1	1.30	-	-	77.
2	8	5.22	6	1.47	0	0	.34
3	18c	6.32	1	1.50	-	-	13.
4	68	2.41	1	2.60	-	-	.31
5	6	5.32	6	71.67 *	4.08	5.70	06.
6	77	5.32	3	96.40 *	0	0	-
7	30	0.11		4.50			

CONT'D

SUMMARY OF RESULTS FOR Mo

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	6
	INDIVIDUAL DETERMINATIONS	18
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	4
	INDIVIDUAL DETERMINATIONS:	9
TOTAL RANGE OF LABORATORY MEANS:	1.30 -	96.40
RANGE OF ACCEPTED LABORATORY MEANS	1.30 -	2.60
PERCENTAGE OF OUTLYING LABORATORIES		33
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS		1.49
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL		-

TABLE NO: 23

RESULTS OF INTERCOMPARISON FOR:
Na IN SD-N-1/2

UNIT: %

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	63	2.52	6	0.87 *	0	0	09.
2	30	0.11	1	0.98	-	-	01.
3	67	5.32	4	0.98	0	0	01.
4	78	5.32	1	0.99	-	-	03.
5	6	5.32	6	1.01	.02	1.84	02.
6	71	0.11	6	1.01	0	0	02.
7	18a	3.32	1	1.03	-	-	03.
8	73	0.11	6	1.03	.03	2.84	-
9	26	0.40	6	1.04	.03	2.89	03.
10	55b	5.32	3	1.04	0	0	03.
11	86	0.11	3	1.04	0	.15	00.
12	18b	5.32	1	1.05	-	-	03.
13	18d	5.20	1	1.05	-	-	03.
14	21a	0.11	6	1.05	0	0	04.
15	8	5.21	6	1.07	0	0	.25
16	15	0.11	1	1.09	-	-	07.
17	74	0.11	6	1.09	0	0	05.
18	88	5.21	6	1.09	0	0	01.
19	84	0.11	4	1.11	0	0	04.
20	42	5.21	6	1.14	0	0	01.
21	80	0.11	4	1.19 *	0	0	06.
22	12	2.52	6	1.25 *	.17	13.30	01.11

CONT'D

SUMMARY OF RESULTS FOR Na

UNIT: %

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		22
	INDIVIDUAL DETERMINATIONS		90
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		19
	INDIVIDUAL DETERMINATIONS:		74
TOTAL RANGE OF LABORATORY MEANS:	0.87	-	1.25
RANGE OF ACCEPTED LABORATORY MEANS	0.98	-	1.14
PERCENTAGE OF OUTLYING LABORATORIES			14
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			1.04
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	1.03	-	1.07

TABLE NO: 24

RESULTS OF INTERCOMPARISON FOR:
Nd IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	31	5.32	6	26.80	0	0	01.
2	57	0.11	3	28.40	0	0	11.
3	21a	0.11	6	30.00	0	0	05.
4	26	0.40	6	31.50	1.22	3.89	04.
5	30	0.11	1	32.00	-	-	06.
6	80	0.11	4	35.00	0	0	43.
7	74	0.11	6	35.40	0	0	08.
8	71	0.11	6	36.40	0	0	17.

CONT'D .

SUMMARY OF RESULTS FOR Nd

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	8
	INDIVIDUAL DETERMINATIONS	38
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	8
	INDIVIDUAL DETERMINATIONS:	38
TOTAL RANGE OF LABORATORY MEANS:	26.80 -	36.40
RANGE OF ACCEPTED LABORATORY MEANS	26.80 -	36.40
PERCENTAGE OF OUTLYING LABORATORIES		0
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS		31.75
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	28.40 -	35.40

TABLE NO: 25

RESULTS OF INTERCOMPARISON FOR:

N₁ IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	29	5.32	5	21.00	0	0	10.
2	18c	6.32	1	22.10	-	-	01.
3	13	6.21	6	22.78	2.17	9.51	05.
4	38	6.21	1	22.90	-	-	07.
5	80	0.11	4	25.00	0	0	40.
6	18e	6.20	1	26.70	-	-	02.
7	66	6.21	4	26.75	.39	1.45	01.
8	75	5.20	2	26.96	-	-	-
9	64	6.21	3	27.00	0	0	04.
10	42	5.22	6	27.80	0	0	05.
11	16	6.21	1	28.00	-	-	-
12	67	5.32	4	28.50	0	0	04.
13	72	5.22	1	29.10	-	-	04.
14	63	2.51	6	29.50	0	0	17.
15	56	6.21	6	29.90	1.18	3.94	01.
16	7	5.21	4	31.00	0	0	20.
17	24	5.21	1	31.80	-	-	-
18	77	5.32	3	31.90	0	0	-
19	88	5.22	6	32.10	0	0	04.
20	71	0.11	6	32.70	0	0	07.
21	4	5.21	6	32.90	.97	2.95	.02
22	19	6.21	3	34.04	0	0	03.
23	21a	0.11	6	34.30	0	0	04.
24	6	5.32	6	34.50	.84	2.43	03.
25	55a	6.32	3	35.00	0	0	11.
26	21b	5.40	1	36.00	-	-	06.
27	8	5.21	6	37.30	0	0	.08
28	55b	5.32	3	38.00	0	0	09.
29	1	6.21	3	39.60	1.44	3.64	-
30	84	0.11	4	42.50	0	0	40.
31	76	5.21	4	44.98	3.40	7.56	.56

CONT'D

SUMMARY OF RESULTS FOR N1

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		31
	INDIVIDUAL DETERMINATIONS		116
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		31
	INDIVIDUAL DETERMINATIONS:		116
TOTAL RANGE OF LABORATORY MEANS:	21.00	-	44.98
RANGE OF ACCEPTED LABORATORY MEANS	21.00	-	44.98
PERCENTAGE OF OUTLYING LABORATORIES			0
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			31.00
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN-LEVEL	27.00	-	34.04

TABLE NO: 26

RESULTS OF INTERCOMPARISON FOR:
PB IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	11	0.40	1	54.00 *	-	-	-
2	38	6.21	1	66.70 *	-	-	11.
3	82	0.20	5	85.50	0	0	12.
4	13	6.21	6	93.35	7.37	7.89	08.
5	66	6.21	5	103.80	.84	.81	01.
6	19	6.21	3	110.64	0	0	02.
7	67	5.32	4	111.00	0	0	04.
8	75	5.20	2	111.50	-	-	-
9	68	2.41	5	112.00	0	0	.04
10	18c	6.32	1	114.80	-	-	04.
11	7	5.21	5	115.00	0	0	10.
12	1	6.21	3	116.13	3.26	2.80	-
13	24	5.21	1	119.00	-	-	-
14	33	5.22	6	119.50	2.17	1.81	02.
15	16	6.21	1	120.00	-	-	-
16	4	5.21	4	122.25	.62	.51	.02
17	18e	6.20	1	123.70	-	-	02.
18	72	5.22	1	125.00	-	-	01.
19	8	5.21	6	129.00	0	0	.32
20	21b	5.40	1	132.00	-	-	07.
21	56	6.21	6	133.67	8.55	6.39	01.
22	64	6.21	3	136.00	0	0	03.
23	54	5.21	5	136.70	0	0	06.
24	88	5.22	6	142.50	0	0	07.
25	78	5.32	1	150.00	-	-	08.
26	63	2.51	6	154.00	0	0	06.
27	77	5.32	3	196.10 *	0	0	-

28 55a 6.21 1.00

CONT'D

SUMMARY OF RESULTS FOR Pb

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		27
	INDIVIDUAL DETERMINATIONS		92
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		24
	INDIVIDUAL DETERMINATIONS:		87
TOTAL RANGE OF LABORATORY MEANS:	54.00	-	196.10
RANGE OF ACCEPTED LABORATORY MEANS	85.50	-	154.00
PERCENTAGE OF OUTLYING LABORATORIES			11
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			119.75
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	112.00	-	132.00

RESULTS OF INTERCOMPARISON FOR:
Rb IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	5	0.11	4	64.75	4.43	6.83	-
2	42	5.21	6	65.00	0	0	01.
3	74	0.11	6	65.40	0	0	08.
4	54	5.31	6	68.27	2.19	3.21	03.
5	84	0.11	4	68.60	0	0	03.
6	68	2.41	5	70.00	0	0	.04
7	57	0.11	3	71.30	0	0	03.
8	15	0.11	1	73.80	-	-	07.
9	60	0.11	5	74.08	0	0	03.
10	18d	5.20	1	74.30	-	-	07.
11	86	0.11	3	74.37	1.56	2.10	02.
12	71	0.11	6	74.40	0	0	07.
13	80	0.11	4	75.00	0	0	13.
14	21b	5.40	1	77.00	-	-	07.
15	63	2.51	6	78.00	0	0	05.
16	30	0.11	1	80.00	-	-	04.
17	17	0.11	3	85.33	26.08	30.57	30.33
18	21a	0.11	6	90.00	0	0	03.
19	11	0.40	1	127.00 *	-	-	05.

CONT'D

SUMMARY OF RESULTS FOR Rb

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	19
	INDIVIDUAL DETERMINATIONS	72
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	18
	INDIVIDUAL DETERMINATIONS:	71
TOTAL RANGE OF LABORATORY MEANS:	64.75 -	127.00
RANGE OF ACCEPTED LABORATORY MEANS	64.75 -	90.00
PERCENTAGE OF OUTLYING LABORATORIES		5
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS		74.19
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	68.60 -	77.00

TABLE NO: 28

RESULTS OF INTERCOMPARISON FOR:
Sb IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	60	0.11	5	2.39	0	0	08.
2	8	5.22	6	2.44	0	0	.45
3	30	0.11	1	3.20	-	-	09.
4	84	0.11	4	3.26	0	0	03.
5	15	0.11	1	3.27	-	-	04.
6	57	0.11	3	3.60	0	0	03.
7	86	0.11	3	3.62	.06	1.52	02.
8	5	0.11	4	3.63	.17	4.71	-
9	74	0.11	6	3.82	0	0	07.
10	71	0.11	6	3.90	0	0	05.
11	26	0.40	6	3.95	.27	6.93	07.
12	21a	0.11	6	4.30	0	0	06.
13	80	0.11	4	4.50	0	0	16.

CONT'D

SUMMARY OF RESULTS FOR Sb

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	13
	INDIVIDUAL DETERMINATIONS	55
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	13
	INDIVIDUAL DETERMINATIONS:	55
TOTAL RANGE OF LABORATORY MEANS:	2.39 -	4.50
RANGE OF ACCEPTED LABORATORY MEANS	2.39 -	4.50
PERCENTAGE OF OUTLYING LABORATORIES		0
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS		3.62
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	3.20 -	3.95

TABLE NO: 29

RESULTS OF INTERCOMPARISON FOR:
Sc IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	84	0.11	4	6.13	0	0	16.
2	73	0.11	6	6.48	.22	3.40	-
3	59	0.11	1	6.80	-	-	10.
4	15	0.11	1	6.90	-	-	01.
5	30	0.11	1	6.95	-	-	02.
6	60	0.11	5	7.04	0	0	03.
7	86	0.11	3	7.09	.08	1.09	01.
8	21a	0.11	6	7.10	0	0	04.
9	57	0.11	3	7.10	0	0	03.
10	29	5.32	5	7.20	0	0	06.
11	26	0.40	6	7.21	.09	1.22	01.
12	80	0.11	4	7.50	0	0	03.
13	71	0.11	6	7.71	0	0	07.
14	17	0.11	6	8.14	.23	2.78	01.05
15	74	0.11	6	9.23 *	0	0	03.

CONT'D

SUMMARY OF RESULTS FOR Sc

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		15
	INDIVIDUAL DETERMINATIONS		63
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		14
	INDIVIDUAL DETERMINATIONS:		57
TOTAL RANGE OF LABORATORY MEANS:	6.13	-	9.23
RANGE OF ACCEPTED LABORATORY MEANS	6.13	-	8.14
PERCENTAGE OF OUTLYING LABORATORIES			7
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			7.10
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	6.90	-	7.21

RESULTS OF INTERCOMPARISON FOR:
Se IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	30	0.11	1	2.30	-	-	17.
2	86	0.11	3	2.52	.04	1.57	02.
3	21A	0.11	6	2.90	0	0	09.
4	21b	5.40	1	3.00	-	-	50.
5	84	0.11	4	3.78	0	0	15.
6	38	6.23	1	16.20 *	-	-	55.

7 60 0.11 3.60

CONT'D

SUMMARY OF RESULTS FOR Se

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		6
	INDIVIDUAL DETERMINATIONS		16
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		5
	INDIVIDUAL DETERMINATIONS:		15
TOTAL RANGE OF LABORATORY MEANS:	2.30	-	16.20
RANGE OF ACCEPTED LABORATORY MEANS:	2.30	-	3.78
PERCENTAGE OF OUTLYING LABORATORIES			17
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			2.90
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	2.30	-	3.78

RESULTS OF INTERCOMPARISON FOR:
Si IN SD-N-1/2

UNIT: ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	78	5.32	1	26.10	-	-	03.
2	18a	3.32	1	27.90	-	-	01.
3	18d	5.20	1	28.20	-	-	01.
4	18b	5.32	1	29.23	-	-	02.
5	9	2.41	1	40.69 *	-	-	02.

CONT'D

SUMMARY OF RESULTS FOR Si

UNIT: ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		5
	INDIVIDUAL DETERMINATIONS		5
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		4
	INDIVIDUAL DETERMINATIONS:		4
TOTAL RANGE OF LABORATORY MEANS:	26.10	-	40.69
RANGE OF ACCEPTED LABORATORY MEANS	26.10	-	29.23
PERCENTAGE OF OUTLYING LABORATORIES			20
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			28.05
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL			-

TABLE NO: 32

RESULTS OF INTERCOMPARISON FOR:

Sm IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	31	5.32	6	5.08	0	0	01.
2	57	0.11	3	5.40	0	0	09.
3	74	0.11	6	5.47	0	0	08.
4	26	0.40	6	5.54	.22	3.97	04.
5	5	0.11	4	5.58	.10	1.72	-
6	30	0.11	1	5.80	-	-	02.
7	21a	0.11	6	6.00	0	0	05.
8	71	0.11	6	6.35	0	0	06.
9	80	0.11	4	6.50	0	0	05.

CONT'D

SUMMARY OF RESULTS FOR Sm

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	9
	INDIVIDUAL DETERMINATIONS	42
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	9
	INDIVIDUAL DETERMINATIONS:	42
TOTAL RANGE OF LABORATORY MEANS:	5.08 -	6.50
RANGE OF ACCEPTED LABORATORY MEANS	5.08 -	6.50
PERCENTAGE OF OUTLYING LABORATORIES		0
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS		5.58
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	5.40 -	6.35

TABLE NO: 33

RESULTS OF INTERCOMPARISON FOR:
Sr IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	1	6.21	3	127.90 *	17.93	14.02	-
2	8	5.21	6	214.00 *	0	0	.29
3	42	5.21	6	261.00	0	0	01.
4	67	5.32	4	268.00	0	0	01.
5	68	2.41	5	273.00	0	0	.02
6	88	5.21	6	273.00	0	0	01.
7	77	5.32	3	273.80	0	0	-
8	2	0.32	6	277.33	3.39	1.22	-
9	18a	3.32	1	284.70	-	-	02.
10	55b	5.32	3	286.00	0	0	03.
11	6	5.32	6	289.17	4.92	1.70	02.
12	18d	5.30	1	290.70	-	-	02.
13	84	0.11	4	291.90	0	0	15.
14	78	5.32	1	295.00	-	-	03.
15	72	5.21	1	301.00	-	-	01.
16	23	5.32	3	302.53	5.80	1.92	28.
17	63	2.51	6	305.00	0	0	09.
18	18b	5.32	1	305.70	-	-	02.
19	76	5.31	4	321.75	3.69	1.15	.19
20	21a	0.11	6	325.00	0	0	05.
21	21b	5.40	1	325.00	-	-	04.
22	74	0.11	6	440.00 *	0	0	05.
23	11	0.40	1	516.00 *	-	-	02.
24	9	2.41	1	572.00 *	-	-	02.

SUMMARY OF RESULTS FOR Sr

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	24
	INDIVIDUAL DETERMINATIONS	85
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	19
	INDIVIDUAL DETERMINATIONS:	68
TOTAL RANGE OF LABORATORY MEANS:	127.90 -	572.00
RANGE OF ACCEPTED LABORATORY MEANS	261.00 -	325.00
PERCENTAGE OF OUTLYING LABORATORIES		21
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS		290.70
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	277.33 -	302.53

TABLE NO: 34

RESULTS OF INTERCOMPARISON FOR:
T_a IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	30	0.11	1	0.79	-	-	11.
2	74	0.11	6	0.83	0	0	05.
3	71	0.11	6	1.00	0	0	09.
4	15	0.11	1	1.10	-	-	06.
5	57	0.11	3	1.10	0	0	27.
6	80	0.11	4	1.10	0	0	09.
7	5	0.11	4	1.20	.12	9.62	-
8	21a	0.11	6	1.25	0	0	06.

CONT'D

SUMMARY OF RESULTS FOR T_a

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		8
	INDIVIDUAL DETERMINATIONS		31
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		8
	INDIVIDUAL DETERMINATIONS:		31
TOTAL RANGE OF LABORATORY MEANS:	0.79	-	1.25
RANGE OF ACCEPTED LABORATORY MEANS	0.79	-	1.25
PERCENTAGE OF OUTLYING LABORATORIES			0
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			1.10
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	0.83	-	1.20

TABLE NO: 35

RESULTS OF INTERCOMPARISON FOR:
Tb IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	57	0.11	3	0.69	0	0	14.
2	30	0.11	1	0.70	-	-	14.
3	80	0.11	4	0.80	0	0	25.
4	21a	0.11	6	0.81	0	0	06.
5	71	0.11	6	0.86	0	0	09.
6	74	0.11	6	0.86	0	0	02.
7	86	0.11	3	0.86	-01	.64	01.
8	84	0.11	4	0.88	0	0	08.
9	26	0.40	6	0.92	-05	4.97	05.
10	15	0.11	1	0.94	-	-	10.
11	59	0.11	1	1.10	-	-	10.

12 60 .11 0.54

CONT'D

SUMMARY OF RESULTS FOR Tb

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		11
	INDIVIDUAL DETERMINATIONS		41
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		11
	INDIVIDUAL DETERMINATIONS:		41
TOTAL RANGE OF LABORATORY MEANS:	0.69	-	1.10
RANGE OF ACCEPTED LABORATORY MEANS	0.69	-	1.10
PERCENTAGE OF OUTLYING LABORATORIES			0
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			0.86
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	0.80	-	0.92

RESULT INTERCOMPARISON FOR:

Ti IN 4-1/2

UNIT: %

NO.	LAB. COL. CODE		NO. OF DETERM.	LAB. MEAN	ABS. STND. DEV.	REL. STND. DEV. %	ESTIM. LAB. ERROR %
1	6	5.32	6	0.20	.01	3.79	04.
2	78	5.32	1	0.23	-	-	04.
3	26	0.40	6	0.24	.03	12.37	12.
4	21a	0.11	6	0.26	0	0	08.
5	21b	5.40	1	0.26	-	-	07.
6	67	5.32	4	0.26	0	0	02.
7	68	2.41	5	0.27	0	0	.19
8	18a	3.32	1	0.28	-	-	01.
9	29	5.32	5	0.28	0	0	04.
10	79	2.11	3	0.31	.04	12.20	12.
11	8	5.21	6	0.32	0	0	.19
12	63	2.51	6	0.35	0	0	21.
13	9	2.41	1	0.49 *	-	-	03.

CONT'D

SUMMARY RESULTS FOR Ti

UNIT: %

NUMBER OF REPORTED R	LABORATORY MEANS:	13
	INDIVIDUAL DETERMINATIONS	51
NUMBER OF ACCEPTED R	LABORATORY MEANS	12
	INDIVIDUAL DETERMINATIONS:	50
TOTAL RANGE OF LABORMEANS:	0.20 -	0.49
RANGE OF ACCEPTED LABY MEANS	0.20 -	0.35
PERCENTAGE OF OUTLYDRATORIES		8
OVERALL MEDIAN OF AC LABORATORY MEANS		0.27
CONFIDENCE LIMITS OVERALL MEDIAN AT THE .05 SIEL	0.24 -	0.31

TABLE NO: 37

RESULTS OF INTERCOMPARISON FOR:
V IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	55a	6.32	3	12.80 *	0	0	02.
2	69	6.32	6	60.00	0	0	03.
3	67	5.32	4	65.00	0	0	01.
4	6	5.32	6	70.17	1.00	1.43	01.
5	26	0.40	6	73.33	2.07	2.82	03.
6	73	0.11	6	76.87	3.00	3.91	-
7	86	0.11	3	77.67	1.26	1.63	02.
8	29	5.32	5	78.00	0	0	06.
9	21a	0.11	6	78.80	0	0	03.
10	79	2.11	3	80.66	8.93	11.08	11.
11	77	5.32	3	89.90	0	0	-
12	21b	5.40	1	93.30	-	-	12.

CONT'D

SUMMARY OF RESULTS FOR V

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		12
	INDIVIDUAL DETERMINATIONS		52
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		11
	INDIVIDUAL DETERMINATIONS:		49
TOTAL RANGE OF LABORATORY MEANS:	12.80	-	93.30
RANGE OF ACCEPTED LABORATORY MEANS	60.00	-	93.30
PERCENTAGE OF OUTLYING LABORATORIES			8
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			77.67
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	65.00	-	80.66

TABLE NO: 38

RESULTS OF INTERCOMPARISON FOR:
Y IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	3	0.30	1	20.00	-	-	-
2	31	5.32	6	22.50	0	0	02.
3	29	5.32	5	23.60	0	0	07.
4	43	2.41	5	24.00	0	0	.13
5	21b	5.40	1	30.00 *	-	-	13.

CONT'D

SUMMARY OF RESULTS FOR Y

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		5
	INDIVIDUAL DETERMINATIONS		18
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		4
	INDIVIDUAL DETERMINATIONS:		17
TOTAL RANGE OF LABORATORY MEANS:	20.00	-	30.00
RANGE OF ACCEPTED LABORATORY MEANS	20.00	-	24.00
PERCENTAGE OF OUTLYING LABORATORIES			20
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			23.15
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL			-

TABLE NO: 39

RESULTS OF INTERCOMPARISON FOR:

Yb IN SD-N-1/2

UNIT: ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	31	5.32	6	1.79	0	0	02.
2	30	0.11	1	2.06	-	-	12.
3	57	0.11	3	2.10	0	0	14.
4	86	0.11	3	2.18	.03	1.34	01.
5	74	0.11	6	2.20	0	0	14.
6	26	0.40	6	2.30	.15	6.74	07.
7	80	0.11	4	2.50	0	0	12.
8	84	0.11	4	2.50	0	0	08.
9	71	0.11	6	2.55	0	0	09.
10	15	0.11	1	2.70	-	-	26.
11	21a	0.11	6	4.90 *	0	0	05.

CONT'D

SUMMARY OF RESULTS FOR Yb

UNIT: ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		11
	INDIVIDUAL DETERMINATIONS		46
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		10
	INDIVIDUAL DETERMINATIONS:		40
TOTAL RANGE OF LABORATORY MEANS:	1.79	-	4.90
RANGE OF ACCEPTED LABORATORY MEANS	1.79	-	2.70
PERCENTAGE OF OUTLYING LABORATORIES			9
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			2.25
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN-LEVEL	2.06	-	2.55

TABLE NO: 40

RESULTS OF INTERCOMPARISON FOR:

Zn IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	30	0.11	1	240.00 *	-	-	13.
2	59	0.11	1	342.00	-	-	10.
3	70	0.20	1	351.00	-	-	.11
4	13	6.21	6	358.98	32.72	9.11	05.
5	26	6.40	6	366.33	7.69	2.10	02.
6	2	0.32	6	376.17	32.11	8.54	-
7	1	6.21	3	386.47	19.52	5.05	-
8	38	6.21	1	399.00	-	-	06.
9	69	6.21	6	400.00	0	0	10.
10	66	6.21	5	400.40	10.36	2.59	03.
11	19	6.21	3	401.31	0	0	03.
12	72	5.21	1	408.00	-	-	01.
13	29	5.32	5	416.00	0	0	03.
14	7	5.21	3	420.00	0	0	05.
15	64	6.21	3	420.00	0	0	04.
16	60	0.11	5	423.06	0	0	12.
17	67	5.32	4	426.00	0	0	02.
18	68	2.41	5	430.00	0	0	.02
19	76	5.21	4	431.25	2.87	.67	.12
20	11	0.40	1	433.00	-	-	03.
21	16	6.21	1	435.00	-	-	-
22	15	0.11	1	437.00	-	-	32.
23	84	0.11	4	438.00	0	0	18.
24	88	5.21	6	440.00	0	0	02.
25	4	5.21	6	444.33	3.27	.74	.02
26	18a	3.32	1	444.50	-	-	01.
27	82	0.20	5	446.00	0	0	04.
28	6	5.32	6	448.17	7.41	1.65	02.
29	75	5.20	2	450.25	-	-	-
30	23	5.32	3	451.77	7.88	1.74	04.
31	74	0.11	6	456.00	0	0	04.
32	80.	0.11	4	460.00	0	0	09.
33	21a	0.11	6	464.00	0	0	03.
34	8	5.21	6	470.00	0	0	.04
35	37	6.21	1	470.00	-	-	.10
36	24	5.21	1	472.00	-	-	-
37	55b	5.32	3	478.00	0	0	04.
38	21b	5.40	1	479.00	-	-	03.
39	55a	6.32	3	481.00	0	0	03.
40	54	5.21	5	484.00	0	0	02.
41	63	2.51	6	486.00	0	0	12.
42	5	0.11	3	488.67	29.14	5.96	-
43	71	0.11	6	496.00	0	0	02.
44	56	6.21	6	547.83	16.81	3.07	01.
45	42	5.21	6	549.00	0	0	01.

CONT'D

SUMMARY OF RESULTS FOR Zn

UNIT:ug/s

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		45
	INDIVIDUAL DETERMINATIONS		168
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		44
	INDIVIDUAL DETERMINATIONS:		167
TOTAL RANGE OF LABORATORY MEANS:	240.00	-	549.00
RANGE OF ACCEPTED LABORATORY MEANS	342.00	-	549.00
PERCENTAGE OF OUTLYING LABORATORIES			2
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			439.00
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN-LEVEL	423.06	-	451.77

TABLE NO: 41

RESULTS OF INTERCOMPARISON FOR:
Zr IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	6	5.32	6	77.17	1.94	2.52	03.
2	21b	5.40	1	145.00	-	-	15.
3	30	0.11	1	200.00	-	-	07.
4	68	2.41	5	310.00	0	0	.06
5	74	0.11	6	327.00	0	0	09.
6	63	2.51	6	336.00	0	0	24.
7	21a	0.11	6	350.00	0	0	07.
8	9	2.41	1	395.00	-	-	02.
9	84	0.11	4	398.50	0	0	15.

CONT'D

SUMMARY OF RESULTS FOR Zr

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	9
	INDIVIDUAL DETERMINATIONS	36
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	9
	INDIVIDUAL DETERMINATIONS:	36
TOTAL RANGE OF LABORATORY MEANS:	77.17 -	398.50
RANGE OF ACCEPTED LABORATORY MEANS	77.17 -	398.50
PERCENTAGE OF OUTLYING LABORATORIES		0
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS		327.00
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	145.00 -	395.00

TABLE NO: 42

RESULTS OF INTERCOMPARISON FOR:
K IN SD-N-1/2

UNIT: %

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	92	0.61	5	1.08	.18	16.48	-
2	27	0.61	1	1.21	-	-	04.
3	41	0.61	1	1.24	-	-	19.
4	8	5.21	4	1.31	0	0	09.
5	25	0.61	1	1.36	-	-	02.
6	50	0.61	1	1.38	-	-	04.
7	94	0.61	1	1.39	-	-	03.
8	80	0.11	1	1.41	-	-	18.
9	71	0.11	6	1.42	0	0	17.
10	84	0.11	4	1.46	0	0	06.
11	18b	5.32	1	1.47	-	-	09.
12	42b	5.21	6	1.47	0	0	01.
13	18d	5.21	1	1.49	-	-	01.
14	78	5.32	1	1.49	-	-	06.
15	18a	3.32	1	1.50	-	-	05.
16	74	0.11	6	1.50	0	0	03.
17	15	0.11	1	1.51	-	-	06.
18	6	5.32	5	1.52	.01	.66	01.
19	30	0.61	1	1.52	-	-	02.
20	33	0.61	6	1.52	.05	3.11	03.
21	53	0.61	3	1.53	0	0	07.
22	40	0.61	2	1.54	-	-	08.
23	93	0.61	4	1.54	0	0	04.
24	59	0.61	1	1.56	-	-	00
25	91	0.61	2	1.56	-	-	15.
26	95	0.61	2	1.56	-	-	01.
27	88	5.21	6	1.57	0	0	01.
28	21b	0.11	6	1.58	0	0	.13
29	83	0.61	3	1.59	.07	4.37	07.
30	21a	5.40	1	1.65	-	-	05.
31	45	0.61	3	1.66	.07	4.22	.11
32	68	2.41	5	1.70	0	0	.29
33	90	0.61	1	1.70	-	-	04.
34	47	0.61	1	1.73	-	-	02.
35	42a	0.61	1	1.75	-	-	15.
36	28	0.61	1	1.77	-	-	.11
37	46	0.61	5	1.77	0	0	03.
38	61	0.61	1	1.78	-	-	02.
39	85	0.61	1	1.78	-	-	15.
40	23	0.61	1	1.86	-	-	09.
41	35	0.61	1	1.86	-	-	03.
42	86	0.11	3	1.91	.03	1.36	02.
43	62	0.61	3	1.94	0	0	.11
44	63	2.51	6	2.14	0	0	20.
45	52	0.61	1	2.20	-	-	02.
46	9	2.41	1	2.88 *	-	-	04.
47	14	0.61		1.64			

CONT'D

SUMMARY OF RESULTS FOR K

UNIT:Z

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		46
	INDIVIDUAL DETERMINATIONS		119
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		45
	INDIVIDUAL DETERMINATIONS:		118
TOTAL RANGE OF LABORATORY MEANS:	1.08	-	2.88
RANGE OF ACCEPTED LABORATORY MEANS	1.08	-	2.20
PERCENTAGE OF OUTLYING LABORATORIES			2
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			1.54
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN-LEVEL	1.46	-	1.66

RESULTS OF INTERCOMPARISON FOR:
 Th IN SD-N-1/2

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEVZ	ESTIM. LAB.ERROR %
1	39a	3.70 d	3	1.67 *	.85	50.62	51.
2	48a	5.70 c	1	2.91 **	-	-	03.
3	48b	5.70 d	1	2.93 **	-	-	03.
4	32a	6.70 d	4	3.03 **	.38	12.52	13.
5	32b	6.70 c	4	3.30 **	.30	9.24	09.
6	25	0.61 a	1	5.22	-	-	07.
7	92	0.61 a	5	5.23	.96	18.43	18.
8	27	0.61 a	1	5.42	-	-	05.
9	65a	5.70 c	1	5.47	-	-	14.
10	81a	0.61 b	4	5.47	0	0	.33
11	30a	0.11	1	5.51	-	-	03.
12	30b	0.61 b	1	5.62	-	-	08.
13	35	0.61	1	5.87	-	-	17.
14	65b	5.70 d	1	5.96	-	-	09.
15	21a	5.40	1	6.00	-	-	17.
16	95a	0.61 a	2	6.06	-	-	01.
17	28a	3.70 d	1	6.16	-	-	.48
18	45a	5.70 c	3	6.26	.47	7.53	08.
19	41	0.61	1	6.28	-	-	.20
20	93a	0.61 a	4	6.34	.18	2.83	03.
21	39b	3.80	3	6.38	1.90	29.70	30.
22	45b	5.70 d	3	6.41	.19	2.98	03.
23	32c	0.61 b	1	6.41	-	-	15.
24	83a	0.61 a	3	6.43	.10	1.62	02.
25	79a	5.70 d	1	6.48	-	-	04.
26	44a	0.61 a	3	6.51	0	0	14.
27	40	0.61 a	2	6.53	-	-	.08
28	60	0.11	5	6.66	0	0	13.
29	59	0.11	1	6.70	-	-	10.
30	42a	4.70 d	1	6.73	-	-	08.
31	61	0.61	1	6.85	-	-	.07
32	50a	0.61	1	6.85	-	-	08.
33	33a	0.61 b	6	6.93	0	0	.06
34	95b	0.61 b	2	6.93	-	-	04.
35	33b	35.70 d	6	7.00	0	0	.08
36	22a	4.70 c	2	7.02	-	-	04.
37	22b	4.70 d	4	7.02	.26	3.77	04.
38	46a	0.61 a	5	7.02	0	0	04.
39	44b	0.61 b	3	7.02	0	0	.20
40	83b	0.61 b	3	7.06	.63	8.98	09.
41	90	0.61 a	1	7.07	-	-	.14
42	80	0.11	4	7.10	0	0	03.
43	33c	0.61 a	6	7.12	0	0	14.
44	43a	5.70 d	3	7.14	1.15	16.06	.17
45	33d	35.70 c	6	7.15	0	0	06.
46	5	0.11	4	7.15	.40	5.65	06.
47	54	5.35	6	7.16	0	0	07.
48	21b	0.11	6	7.20	0	0	07.
49	57	0.11	3	7.20	0	0	08.
50	26	0.40	6	7.25	.47	6.51	07.
51	15	0.11	1	7.27	-	-	06.
52	43b	5.70 c	3	7.29	0	0	.14

53	71	0.11	6	7.33	0	0	07.
54	23	0.61	1	7.54	-	-	16.
55	34	5.70 d	1	7.54	-	-	03.
56	42b	0.61 a	1	7.57	-	-	30.
57	53a	0.61 b	3	7.57	0	0	02.
58	91	0.61 b	2	7.59	-	-	17.
59	46b	0.61 b	5	7.66	0	0	05.
60	93b	0.61 b	4	7.77	1.98	25.47	25.
61	40b	0.61 b	2	7.89	-	-	.09
62	53b	0.61 a	3	7.94	0	0	03.
63	74	0.11	6	8.03	0	0	08.
64	84	0.11	4	8.13	0	0	09.
65	79b	5.70 c	1	8.68	-	-	04.
66	17	0.11	6	8.79	1.59	18.09	18.
67	50b	0.61 a	1	9.39	-	-	10.
68	10	0.90	6	9.51	0	0	.07
69	85a	0.61 b	1	9.61	-	-	26.
70	85b	0.61 a	1	9.86	-	-	25.
71	42c	4.70 c	1	9.91	-	-	08.
72	81b	0.61 a	4	10.03	0	0	.18
73	62	0.61 b	3	10.57	0	0	31.
74	28b	0.61 a	1	11.09 *	-	-	.11
75	28c	3.70 c	1	15.53 *	-	-	.38
76	6.	5.32	6	30.17 *	2.40	7.96	08.

Method code for Th-measurements

77	14	0.61	74.00	a - ²¹² Pb and/or ²⁰⁸ Tl
				b - ²²⁸ Ac
				c - ²²⁸ Th
				d - ²³² Th

CONT'D

SUMMARY OF RESULTS FOR TH

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:	76
	INDIVIDUAL DETERMINATIONS	216
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS	68
	INDIVIDUAL DETERMINATIONS:	185
TOTAL RANGE OF LABORATORY MEANS:	1.67 -	30.17
RANGE OF ACCEPTED LABORATORY MEANS	5.22 -	10.57
PERCENTAGE OF OUTLYING LABORATORIES		6
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS		7.04
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN.LEVEL	6.85 -	7.20

** Results excluded from the evaluation because of incomplete recovery.

RESULTS OF INTERCOMPARISON FOR:
U IN SD-N-1/2.

UNIT:ug/g

NO.	LAB.CODE	METH.CODE	NO.OF DETERM.	LAB.MEAN	ABS. STND.DEV.	REL. STND.DEV%	ESTIM. LAB.ERROR %
1	48	5.70	2	0.66 *	-	-	06.
2	42	5.21	6	1.20 *	0	0	05.
3	49	0.70	1	1.64 *	-	-	.16
4	51	5.70	2	1.86	-	-	06.
5	30	0.11	1	1.94	-	-	06.
6	65	5.70	1	2.11	-	-	07.
7	34	5.70	1	2.18	-	-	03.
8	75	53.34	1	2.29	-	-	-
9	88	35.34	1	2.30	-	-	.09
10	26	0.40	6	2.33	-11	4.66	05.
11	74	0.11	6	2.36	0	0	13.
12	28	3.70	1	2.37	-	-	.24
13	21	0.11	6	2.40	0	0	.17
14	57	0.11	3	2.40	0	0	08.
15	71	0.11	6	2.42	0	0	11.
16	39	53.34	3	2.43	-15	6.28	.23
17	85	0.61	1	2.45	-	-	.33
18	58	53.70	1	2.47	-	-	-
19	33a	0.61	5	2.48	-.38	15.18	.16
20	33b	5.70	6	2.53	0	0	05.06
21	80	0.11	4	2.60	0	0	12.
22	22	4.70	4	2.63	-10	3.73	02.
23	95	0.61	2	2.68	-	-	03.
24	5	0.11	4	2.75	-.37	13.44	-
25	10	0.90	6	2.80	0	0	.06
26	91	0.61	2	4.42 *	-	-	23.
27	61	0.61	1	6.53 *	-	-	.13
28	40	0.61	2	6.90 *	-	-	.38

CONT'D

SUMMARY OF RESULTS FOR U

UNIT:ug/g

NUMBER OF REPORTED RESULTS	LABORATORY MEANS:		28
	INDIVIDUAL DETERMINATIONS		85
NUMBER OF ACCEPTED RESULTS	LABORATORY MEANS		22
	INDIVIDUAL DETERMINATIONS:		71
TOTAL RANGE OF LABORATORY MEANS:	0.66	-	6.90
RANGE OF ACCEPTED LABORATORY MEANS	1.86	-	2.80
PERCENTAGE OF OUTLYING LABORATORIES			21
OVERALL MEDIAN OF ACCEPTED LABORATORY MEANS			2.41
CONFIDENCE LIMITS OF THE OVERALL MEDIAN AT THE .05 SIGN-LEVEL	2.29	-	2.53

TABLE NO: 45

Less frequently measured elements in SD-N-1/2 sample.
Results expressed in/ug/g. dry sediment.

Element	Lab.Code No.	Method Code	Number of determ.	Lab.Mean	Estimated Lab.Error %
Er	31	5.32	6	2.08	01.
Ga	21b	5.40	1	9.9	20.
Gd	31	5.32	6	4.29	02.
Ho	31	5.32	6	0.73	03.
In	15	0.11	1	0.167	08.
S	67	5.32	4	5613	01.
Sn	21b	5.40	1	17	12.
Pr	31	5.32	6	6.62	02.
Dy	21a	5.32	6	3.64	02.
	31	0.11	6	4.5	17.
F	12	2.52	6	770	08.18
	63	2.52	6	434	10.
I	26	3.40	6	20.5	-
	79	2.11	3	22.06	06.
	86	0.11	3	20.539	02.
Nb	21b	5.40	1	9.5	08.
	68	2.41	5	7	.14
Be	6	6.32	6	1.1	09.
	29	5.32	5	1.5	13.
	67	5.32	4	1.5	02.
P	6	6.32	6	3478	01.
	29	5.32	5	3820	05.
	67	5.32	4	3114	01.
W	5	0.11	3	1.3	-
	21a	0.11	6	2.8	14.
	30	0.11	1	2.5	10.

(contd.)

Element	Lab.Code No.	Method Code	Number of determ.	Lab.Mean	Estimated Lab.Errors
Cl	26	3.40	4	0.90%	03.
	63	2.51	6	0.96%	12.
	73	0.11	6	363	-
	86	0.11	3	0.904	01.
Li	12	2.52	6	46	10.20
	18b	5.32	1	33.7	07.
	18d	5.20	1	23.7	02.
	29	5.32	5	33	06.

TABLE NO: 46 Concentrations of trace elements in the SD-N-1/2 sediment sample which can be certified with satisfactory (Class A) or acceptable (Class B) degree of confidence

No.	Element	Nc. of laboratory means		Concentration /ug.g ⁻¹	Confidence interval (α=0.05) /ug.g ⁻¹	Class of results
		reported	accepted			
1	Ag	9	9	2.3	2.0 - 3.2	B
2	As	17	16	50.0	42.4 - 60.0	A
3	Ba	20	20	289	276 - 310	A
4	Br	11	10	52.0	39.0 - 64.6	A
5	Cd	32	27	11.0	10.0 - 12.0	A
6	Ce	14	13	60.3	58.2 - 65.0	B
7	Co	37	33	12.1	11.2 - 12.7	A
8	Cr	39	38	149	125 - 161	A
9	Cs	12	12	4.9	4.1 - 5.4	B
10	Cu	35	32	72.2	68.1 - 75.2	A
11	Eu	14	14	1.16	1.12 - 1.30	B
12	La	14	14	31.9	30.0 - 35.5	B
13	Lu	8	8	0.35	0.31 - 0.39	B
14	Mn	45	42	777	728 - 801	A
15	Nd	8	8	31.8	28.4 - 35.4	B
16	Ni	31	31	31.0	27.0 - 34.0	A
17	Pb	24	24	120	112 - 132	A
18	Rb	19	18	74.2	68.6 - 77.0	B
19	Sb	13	13	3.62	3.20 - 3.95	B
20	Sc	15	14	7.10	6.90 - 7.21	B
21	Sm	9	9	5.58	5.40 - 6.35	B
22	Sr	24	19	291	277 - 303	B
23	Tb	11	11	0.86	0.80 - 0.92	B
24	Th	69	66	7.04	6.85 - 7.20	A
25	U	31	22	2.41	2.29 - 2.53	A
26	V	12	11	77.7	65.0 - 80.7	B
27	Zn	45	44	439	423 - 452	A

TABLE NO: 47 Non-certified information values for certain trace elements (Class C)

No.	Element	No. of laboratory means		No. of methods*	Concentration /ug.g ⁻¹	Confidence interval (α=0.05) /ug.g ⁻¹
		reported	accepted			
1	Au	5	4	1	0.04	0.03 - 0.04
2	Be	3	3	1	1.5	1.1 - 1.5
3	Cl	4	3	2	9040	9000 - 9600
4	DY	2	2	2	4.1	3.64 - 4.50
5	Hf	9	8	1	8.40	7.45 - 8.77
6	Hg	11	10	2	1.46	0.06 - 1.72
7	I	3	3	1	20.5	20.5 - 22.1
8	Li	4	4	3	33.4	23.7 - 46.0
9	Mo	6	4	3	1.49	1.30 - 2.60
10	P	3	3	1	3478	3114 - 3820
11	Se	6	5	2	2.90	2.30 - 3.78
12	Ta	8	8	1	1.10	0.83 - 1.20
13	W	3	3	1	2.5	1.3 - 2.8
14	Y	5	4	2	23.2	20.0 - 24.0
15	Yb	11	10	2	2.25	2.06 - 2.55
16	Zr	9	9	3	327	145 - 395

* These figures show the number of methods used for data included in the confidence interval.

TABLE NO: 48 Concentration values of major and minor elements in SD-N-1/2 sediment sample.

No.	Element	No. of laboratory means		Concentration %	Confidence interval ($\alpha=0.05$) %
		reported	accepted		
1	Al	19	16	3.75	3.58 - 3.85
2	Ca	22	21	5.32	5.12 - 5.60
3	Fe	43	41	3.64	3.53 - 3.78
4	K	46	45	1.54	1.46 - 1.66
5	Mg	15	11	0.76	0.74 - 0.79
6	Na	22	19	1.04	1.03 - 1.07
7	Si	5	4	28.05	26.10 - 29.23
8	Ti	13	12	0.27	0.24 - 0.31

Note : These values are not certified because the confidence intervals are larger than normally required for this group of elements in standard materials.

APPENDIX

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