ORE RESEARCH & EXPLORATION PTY LTD

6 - 8 Gatwick Road, Bayswater North, Vic 3153 AUSTRALIA
Telephone: 61-3-9729 0333 Facsimile: 61-3-9729 4777

CERTIFICATE OF ANALYSIS FOR

COPPER ORE REFERENCE MATERIAL OREAS 94

SUMMARY STATISTICS OREAS 94

Constituent	Recommended value	95% Confidence Interval		Tolerance limits 1-α=0.99, ρ=0.95	
		Low	High	Low	High
4 Acid					
Silver, Ag (ppm)	3.37	3.16	3.59	3.25	3.50
Bismuth, Bi (ppm)	8.02	7.77	8.26	7.78	8.26
Cobalt, Co (ppm)	23.1	22.2	24.0	22.4	23.8
Copper, Cu (wt.%)	1.14	1.12	1.17	1.13	1.15
Lead, Pb (ppm)	30.9	28.8	32.9	29.5	32.2
Sulphur, S (wt.%)	1.38	1.15	1.60	1.34	1.42
Antimony, Sb (ppm)	2.36	2.22	2.50	2.22	2.51
Selenium, Se (ppm)	12.9	11.3	14.5	12.0	13.7
Tin, Sn (ppm)	22.6	21.4	23.8	21.5	23.6
Zinc, Zn (ppm)	171	166	176	166	176
Aqua Regia					
Silver, Ag (ppm)	3.42	3.27	3.56	3.34	3.49
Bismuth, Bi (ppm)	8.77	8.37	9.16	8.43	9.11
Cobalt, Co (ppm)	22.9	21.9	23.9	22.1	23.7
Copper, Cu (wt.%)	1.13	1.11	1.15	1.11	1.15
Lead, Pb (ppm)	30.9	29.2	32.6	29.7	32.2
Sulphur, S (wt.%)	1.35	1.20	1.50	1.28	1.42
Antimony, Sb (ppm)	1.64	1.37	1.91	1.54	1.73
Selenium, Se (ppm)	12.7	11.5	14.0	12.4	13.0
Tin, Sn (ppm)	16.4	15.7	17.1	16.0	16.8
Zinc, Zn (ppm)	167	157	177	162	172
Sulphur, S (wt.%) by LECO	1.29	1.24	1.33	1.26	1.31

Intervals may appear asymmetric due to rounding

Prepared by:
Ore Research & Exploration Pty Ltd
February 2006

REPORT 06/556E

INTRODUCTION

OREAS certified reference materials (CRMs) are intended to provide a low cost method of evaluating and improving the quality of precious and base metal analysis of geological samples. To the analyst they provide an effective means of calibrating analytical equipment, assessing new techniques and routinely monitoring in-house procedures. To the geologist they provide a means of implementing quality control in analytical data sets generated in exploration, from the grass roots level through to prospect evaluation, and in grade control at mining operations.

SOURCE MATERIAL

Reference material OREAS 94 is one of a suite of nine copper CRMs (OREAS 90 to OREAS 98) prepared from material from the CSA mine located near the town Cobar in central western New South Wales, Australia. The copper ore body is hosted by the Early Devonian CSA Siltstone, a thinly bedded turbiditic sequence of carbonaceous siltstones and mudstones with minor coarser units. The CSA Siltstone is part of the Cobar Supergroup, consisting of lower syn-rift sediments and upper post-rift sag phase sediments. The mineralisation is structurally controlled and confined to a number of steeply dipping bodies within a major shear zone on the eastern margin of the Early Devonian Cobar Basin. It is characterised by low-grade greenschist alteration and epigenetic low-grade mineralisation enveloping higher-grade shoots of vein complexes or sub-massive to massive sulphides. The sulphides include chalcopyrite, pyrrhotite, pyrite, sphalerite, galena, bornite and cubanite. Iron-rich chlorite and silica are prominent alterations in the siltstone host.

Table 1. Indicative (uncertified) major and trace element composition of OREAS 94 (values are means of duplicate determinations; SiO_2 to C in wt.%, As to Zr in ppm).

Constituent	Mean value	Constituent	Mean value	Constituent	Mean value
SiO_2	64.4	As	10.0	Ni	42.7
Al_2O_3	14.5	Ba	429	Pr	10.1
CaO	0.71	Be	2.9	Rb	200
Fe_2O_3	7.8	Cd	<0.5	Re	<0.1
K_2O	3.4	Ce	88	Sb	2.40
MgO	2.6	Cs	6.7	Sc	13.0
Na_2O	0.72	Dy	5.15	Sm	7.0
P_2O_5	0.15	Er	2.9	Sr	33.0
SO_3	3.28	Eu	1.3	Ta	0.97
TiO_2	0.71	Ga	17.1	Tb	0.86
MnO	0.08	Gd	5.9	Te	<0.2
LOI	3.0	Hf	3.6	Th	16.4
		Ho	1.0	Tl	1.0
C	0.09	In	1.19	Tm	0.40
		La	43.3	U	3.3
		Li	26.0	W	2.8
		Lu	0.39	Y	25.8
		Mo	<0.5	Yb	2.7
		Nb	14.0	Zr	123
		Nd	36.9		

The approximate major and trace element composition of OREAS 94 has been determined by various total methods. These values, presented in Table 1, are based on the means of duplicate determinations at one laboratory and are uncertified. The constituents SiO_2 to MnO (excluding Na_2O) have been determined by borate fusion X-ray fluorescence analysis, LOI by thermo-gravimetric analysis, C by total combustion analysis, Na_2O, Co, Ni and Sc by 4-acid ICPOES and the remaining trace constituents by 4-acid ICP-MS.

COMMINUTION AND HOMOGENISATION PROCEDURES

The material constituting OREAS 94 was prepared in the following manner:

a) drying to constant mass at 65^0 C;
b) crushing;
c) milling to minus 75 microns;
d) homogenisation;
e) packaging into 10g lots under nitrogen in laminated foil pouches.

ANALYTICAL PROGRAM FOR OREAS 94

Sixteen commercial laboratories participated in the analytical program to certify Ag, Bi, Co, Cu, Pb, S, Sb, Se, Sn and Zn by both total and partial methods. Their results together with uncorrected means, medians, one sigma standard deviations, relative standard deviations and percent deviation of lab means from the corrected mean of means (PDM^3) are presented in an appendix (Tables A2 – A22). The analytical methods employed by each laboratory are indicated as codes at the head of each laboratory data set and explained in Table A1 of the appendix.

The intent of the certification program was to characterise the analytes by a) total methods (mainly HF-HCl-HNO_3-$HClO_4$ digest ICP-OES and ICP-MS), and b) aqua regia digest ICP-OES, ICP-MS or AAS. A batch of five dried and vacuum-packed samples were submitted to each of the participating laboratories for analysis. Each batch was composed of two 10g sub-samples scoop-split from each of two separate 1kg test units taken during the bagging stage and immediately following homogenisation. This two-stage nested design for the interlaboratory programme was amenable to analysis of variance (ANOVA) treatment and enables a comparative assessment of within- and between-unit homogeneity. A fifth randomly chosen sample was included from a third 1kg test unit to make up batches of five samples.

STATISTICAL EVALUATION OF OREAS 94

Recommended Value and Confidence Limits
The certified value is the mean of means of accepted replicate values of accepted participating laboratories computed according to the formulae

$$\bar{x}_i = \frac{1}{n_i} \sum_{j=1}^{n_i} x_{ij}$$

$$\ddot{x} = \frac{1}{p} \sum_{i=1}^{p} \bar{x}_i$$

where

x_{ij} *is the jth result reported by laboratory i;*
p is the number of participating laboratories;
n_i *is the number of results reported by laboratory i;*
$\bar{x}_i$ *is the mean for laboratory i;*
$\ddot{x}$ *is the mean of means.*

The confidence limits were obtained by calculation of the variance of the consensus value (mean of means) and reference to Student's-*t* distribution with degrees of freedom (*p*-1).

$$\hat{V}(\ddot{x}) = \frac{1}{p(p-1)} \sum_{i=1}^{p} (\bar{x}_i - \ddot{x})^2$$

$$\text{Confidence limits} = \ddot{x} \pm t_{1-x/2}(p-1)(\hat{V}(\ddot{x}))^{1/2}$$

where $t_{1-x/2}(p-1)$ *is the 1-x/2 fractile of the t-distribution with (p-1) degrees of freedom.*

The distribution of the values are assumed to be symmetrical about the mean in the calculation of the confidence limits.

The test for rejection of individual outliers from each laboratory data set was based on *z* scores (rejected if $|z_i| > 2.5$) computed from the robust estimators of location and scale, *T* and *S*, respectively, according to the formulae

$$S = 1.483 \underset{j=1.\ldots n}{\text{median}} / x_j - \underset{i=1.\ldots n}{\text{median}} (x_i) /$$

$$z_i = \frac{x_i - T}{S}$$

where

T is the median value in a data set;
S is the median of all absolute deviations from the sample median multiplied by 1.483, a correction factor to make the estimator consistent with the usual parameter of a normal distribution.

Individual outliers and, more rarely, laboratory means deemed to be outlying are shown in bold in the tabulated results (Appendix) and have been omitted in the determination of recommended values. The magnitude of the confidence interval is inversely proportional to the number of participating laboratories and interlaboratory agreement. It is a measure of the reliability of the recommended value, i.e. the narrower the confidence interval the greater the certainty in the recommended value.

Table 2. Recommended values and 95% confidence intervals for OREAS 94

Constituent	Recommended value	95% Confidence Interval	
		Low	High
4 Acid			
Silver, Ag (ppm)	3.37	3.16	3.59
Bismuth, Bi (ppm)	8.02	7.77	8.26
Cobalt, Co (ppm)	23.1	22.2	24.0
Copper, Cu (wt.%)	1.14	1.12	1.17
Lead, Pb (ppm)	30.9	28.8	32.9
Sulphur, S (wt.%)	1.38	1.15	1.60
Antimony, Sb (ppm)	2.36	2.22	2.50
Selenium, Se (ppm)	12.9	11.3	14.5
Tin, Sn (ppm)	22.6	21.4	23.8
Zinc, Zn (ppm)	171	166	176
Aqua Regia			
Silver, Ag (ppm)	3.42	3.27	3.56
Bismuth, Bi (ppm)	8.77	8.37	9.16
Cobalt, Co (ppm)	22.9	21.9	23.9
Copper, Cu (wt.%)	1.13	1.11	1.15
Lead, Pb (ppm)	30.9	29.2	32.6
Sulphur, S (wt.%)	1.35	1.20	1.50
Antimony, Sb (ppm)	1.64	1.37	1.91
Selenium, Se (ppm)	12.7	11.5	14.0
Tin, Sn (ppm)	16.4	15.7	17.1
Zinc, Zn (ppm)	167	157	177
Sulphur, S (wt.%) by LECO	1.29	1.24	1.33

Intervals may appear asymmetric due to rounding

Statement of Homogeneity

The standard deviation of each laboratory data set includes error due to both the imprecision of the analytical method employed and to possible inhomogeneity of the material analysed. The standard deviation of the pooled individual analyses of all participating laboratories includes error due to the imprecision of each analytical method, to possible inhomogeneity of the material analysed and, in particular, to deficiencies in accuracy of each analytical method. In determining tolerance intervals the component of error attributable to measurement inaccuracy was eliminated by transformation of the individual results of each data set to a common mean (the uncorrected grand mean) according to the formula

$$x'_{ij} = x_{ij} - \bar{x}_i + \frac{\sum_{i=1}^{p} \sum_{j=1}^{n_i} x_{ij}}{\sum_{i=1}^{p} n_i}$$

where

x_{ij} *is the jth raw result reported by laboratory i*;

x'_{ij} *is the jth transformed result reported by laboratory i*;

n_i *is the number of results reported by laboratory i*;

p *is the number of participating laboratories*;

$\bar{x}_i$ *is the raw mean for laboratory i*.

Table 3. Recommended values and tolerance limits for OREAS 94

Constituent	Recommended value	Tolerance limits 1-α=0.99, ρ=0.95	
		Low	High
4 Acid			
Silver, Ag (ppm)	3.37	3.25	3.50
Bismuth, Bi (ppm)	8.02	7.78	8.26
Cobalt, Co (ppm)	23.1	22.4	23.8
Copper, Cu (wt.%)	1.14	1.13	1.15
Lead, Pb (ppm)	30.9	29.5	32.2
Sulphur, S (wt.%)	1.38	1.34	1.42
Antimony, Sb (ppm)	2.36	2.22	2.51
Selenium, Se (ppm)	12.9	12.0	13.7
Tin, Sn (ppm)	22.6	21.5	23.6
Zinc, Zn (ppm)	171	166	176
Aqua Regia			
Silver, Ag (ppm)	3.42	3.34	3.49
Bismuth, Bi (ppm)	8.77	8.43	9.11
Cobalt, Co (ppm)	22.9	22.1	23.7
Copper, Cu (wt.%)	1.13	1.11	1.15
Lead, Pb (ppm)	30.9	29.7	32.2
Sulphur, S (wt.%)	1.35	1.28	1.42
Antimony, Sb (ppm)	1.64	1.54	1.73
Selenium, Se (ppm)	12.7	12.4	13.0
Tin, Sn (ppm)	16.4	16.0	16.8
Zinc, Zn (ppm)	167	162	172
Sulphur, S (wt.%) by LECO	1.29	1.26	1.31

Intervals may appear asymmetric due to rounding

The homogeneity of each constituent was determined from tables of factors for two-sided tolerance limits for normal distributions (ISO 3207) in which

$$\text{Lower limit is } \ddot{x} - k'_2(n,p,1-\alpha)s''_g$$

$$\text{Upper limit is } \ddot{x} + k'_2(n,p,1-\alpha)s''_g$$

where

n *is the number of results*;

$1-\alpha$ *is the confidence level*;

p *is the proportion of results expected within the tolerance limits*;

k_2' *is the factor for two – sided tolerance limits* (m, α *unknown*);

s_g'' *is the corrected grand standard deviation.*

The meaning of these tolerance limits may be illustrated for copper by 4 acid digest, where 99% of the time at least 95% of subsamples will have concentrations lying between 1.13 and 1.15 per cent (see Table 3). Put more precisely, this means that if the same number of subsamples were taken and analysed in the same manner repeatedly, 99% of the tolerance intervals so constructed would cover at least 95% of the total population, and 1% of the tolerance intervals would cover less than 95% of the total population (IS0 Guide 35).

The corrected grand standard deviation, s_g'', used to compute the tolerance intervals is the weighted means of standard deviations of all data sets for a particular constituent according to the formula:

$$s_g'' = \frac{\sum_{i=1}^{p}(s_i(1 - \frac{s_i}{s_g'}))}{\sum_{i=1}^{p}(1 - \frac{s_i}{s_g'})}$$

where

$$1 - (\frac{s_i}{2s_g'}) \text{ is the weighting factor for laboratory } i;$$

$$s_g' \text{ is the grand standard deviation computed from the transformed (i.e. means - adjusted) results}$$

according to the formula:

$$s_g' = \left[\frac{\sum_{i=j}^{p} \sum_{j=i}^{n_i} (x_{ij}' - \bar{x}_i')^2}{\sum_{i=1}^{p} n_i - 1} \right]^{1/2}$$

where $\bar{x}_i'$ *is the transformed mean for laboratory* i

The weighting factors were applied to compensate for the considerable variation in analytical precision amongst participating laboratories. Hence, weighting factors for each data set have been constructed so as to be inversely proportional to the standard deviation of that data set. A weighting factor of zero was applied to those data sets where $s_I / 2s_g' > 1$ (i.e. where the weighting factor $1 - s_I / 2s_g' < 0$). It should be noted that estimates of tolerance by this method are considered conservative as a significant proportion of the observed variance, even in those laboratories exhibiting the best analytical precision, can presumably be attributed to measurement error. Outliers were removed prior to the calculation of tolerance intervals and a weighting factor of zero was applied to those data sets where $s_I / 2s_g' > 1$ (i.e. where the weighting factor $1 - s_I / 2s_g' < 0$).

Performance Gates

Performance gates provide an indication of a level of performance that might reasonably be expected for a particular analyte from a laboratory being monitored by this standard in a QA/QC program. They incorporate errors attributable to measurement (analytical bias and precision) and standard variability. For an effective standard the contribution of the latter should be negligible in comparison to measurement errors. Two methods have been employed to calculate performance gates.

Table 4. Performance gates for OREAS 94

Constituent	Recommended value	Performance Gates							
		1σ		2σ		3σ		5%	
		Low	High	Low	High	Low	High	Low	High
4 Acid									
Silver, Ag (ppm)	3.37	2.97	3.77	2.57	4.18	2.17	4.58	3.21	3.54
Bismuth, Bi (ppm)	8.02	7.54	8.50	7.05	8.99	6.57	9.47	7.62	8.42
Cobalt, Co (ppm)	23.1	21.5	24.7	19.8	26.4	18.2	28.0	22.0	24.3
Copper, Cu (wt %)	1.14	1.10	1.18	1.05	1.23	1.01	1.27	1.08	1.20
Lead, Pb (ppm)	30.9	27.2	34.5	23.5	38.2	19.9	41.9	29.3	32.4
Sulphur, S (wt %)	1.38	1.22	1.54	1.05	1.70	0.89	1.86	1.31	1.45
Antimony, Sb (ppm)	2.36	2.09	2.64	1.81	2.92	1.53	3.19	2.24	2.48
Selenium, Se (ppm)	12.9	10.1	15.6	7.38	18.4	4.63	21.1	12.2	13.5
Tin, Sn (ppm)	22.6	20.4	24.8	18.2	26.9	16.1	29.1	21.5	23.7
Zinc, Zn (ppm)	171	156	186	140	202	125	217	162	180
Aqua Regia									
Silver, Ag (ppm)	3.42	3.17	3.66	2.93	3.90	2.68	4.15	3.24	3.59
Bismuth, Bi (ppm)	8.77	8.05	9.48	7.34	10.2	6.62	10.92	8.33	9.21
Cobalt, Co (ppm)	22.9	21.2	24.6	19.5	26.3	17.8	28.0	21.8	24.0
Copper, Cu (wt %)	1.13	1.09	1.17	1.05	1.20	1.01	1.24	1.07	1.18
Lead, Pb (ppm)	30.9	27.9	33.9	24.9	36.9	21.9	39.9	29.4	32.5
Sulphur, S (wt %)	1.35	1.25	1.45	1.15	1.55	1.05	1.65	1.28	1.42
Antimony, Sb (ppm)	1.64	1.21	2.06	0.79	2.48	0.37	2.91	1.56	1.72
Selenium, Se (ppm)	12.7	10.6	14.9	8.4	17.1	6.3	19.2	12.1	13.4
Tin, Sn (ppm)	16.4	15.2	17.6	14.0	18.8	12.8	20.0	15.6	17.2
Zinc, Zn (ppm)	167	104	230	40.8	294	IND	IND	159	176
Sulphur, S (wt %) by LECO	1.29	1.22	1.35	1.16	1.42	1.09	1.48	1.22	1.35

*IND - indeterminate; intervals may appear asymmetric due to rounding

The first method uses the standard deviation of the pooled individual analyses generated from the certification program. All individual and lab dataset (batch) outliers are removed prior to determination of the standard deviation. These outliers can only be removed if they can be confidently deemed to be analytical rather than arising from inhomogeneity of the CRM. Performance gates have been calculated for one, two and three standard deviations of the accepted pool of certification data and are presented in Table 4. As a guide these intervals may be regarded as informational (1σ), warning or rejection for multiple outliers (2σ), or rejection for individual outliers (3σ) in QC monitoring although their precise application should be at the discretion of the QC manager concerned.

For the second method a ±5% error bar on the recommended value is used as the window of acceptability (refer Table 4).

Both methods should be used with caution when concentration levels approach lower limits of detection of the analytical methods employed, as performance gates calculated from standard deviations tend to be excessively wide whereas those determined by the 5% method are too narrow.

PARTICIPATING LABORATORIES

Acme Analytical Laboratories, Vancouver, BC, Canada
Activation Laboratories, Ancaster, ON, Canada
Actlabs Pacific, Redcliffe, WA, Australia
ALS Chemex, Malaga, WA, Australia
ALS Chemex, Stafford, QLD, Australia
ALS Chemex, North Vancouver, BC, Canada
Amdel Laboratories, Thebarton, SA, Australia
Amdel Laboratories, Wangara, WA, Australia
Genalysis Laboratory Services, Maddington, WA, Australia
Intertek Testing Services, Jakarta, Indonesia
Kalgoorlie Assay Laboratories, Kalgoorlie WA, Australia
McPhar Geoservices (Phil.) Inc., Makati, Philippines
OMAC Laboratories, Loughrea, Co. Galway, Ireland
SGS, Don Mills, Ontario, Canada
SGS, Welshpool, WA, Australia
Ultra Trace Laboratories, Canning Vale, WA, Australia

PREPARER AND SUPPLIER OF THE REFERENCE MATERIAL

The siltstone reference material OREAS 94 has been prepared and certified and is supplied by:

Ore Research & Exploration Pty Ltd
6-8 Gatwick Road
Bayswater North, VIC 3153
AUSTRALIA

Telephone	(03) 9729 0333	International	+613-9729 0333
Facsimile	(03) 9729 4777	International	+613-9729 4777
Email	info @ore.com.au	Web	www.ore.com.au

It is available in unit sizes of 10g in laminated foil packets.

INTENDED USE

OREAS 94 is a reference material intended for the following:

i) for the calibration of instruments used in the determination of the concentration of Ag, Bi, Co, Cu, Pb, S, Sb, Se, Sn and Zn;
ii) for the verification of analytical methods for Ag, Bi, Co, Cu, Pb, S, Sb, Se, Sn and Zn;
iii) for the preparation of secondary reference materials of similar composition;

STABILITY AND STORAGE INSTRUCTIONS

OREAS 94 has been prepared from a sediment-hosted sulphide-bearing copper ore. To prolong its shelf life it has been packaged under nitrogen in robust foil laminate pouches. It is considered to have long-term stability under normal storage conditions.

INSTRUCTIONS FOR THE CORRECT USE OF THE REFERENCE MATERIAL

The recommended values for OREAS 94 refer to the concentration levels of Ag, Bi, Co, Cu, Pb, S, Sb, Se, Sn and Zn after removal of hygroscopic moisture by drying in air to constant mass at the reduced temperature of 65^0 C. If the reference material is not dried prior to analysis, the recommended value should be corrected to the moisture-bearing basis.

LEGAL NOTICE

Ore Research & Exploration Pty Ltd has prepared and statistically evaluated the property values of this reference material to the best of its ability. The Purchaser by receipt hereof releases and indemnifies Ore Research & Exploration Pty Ltd from and against all liability and costs arising from the use of this material and information.

CERTIFYING OFFICER

Dr Paul Hamlyn

CERTIFICATION DATE

February 25, 2006

REFERENCES

ISO Guide 35 (1985), Certification of reference materials - General and statistical principals.
ISO Guide 3207 (1975), Statistical interpretation of data - Determination of a statistical tolerance interval.
Kleeman, A. W. (1967), *J. Geol. Soc. Australia*,

APPENDIX

Analytical Results for OREAS 94

Table A1. Explanation of abbreviations used in Tables A2 – A22.

Abbreviation	Explanation
Std.Dev.	one sigma standard deviation
Rel.Std.Dev.	one sigma relative standard deviation
PDM[3]	percent deviation of lab mean from corrected mean of means
-	outlying values shown in bold
AF	alkali fusion
BF	borate fusion
4A	four acid (HF-HNO3 -HClO4 -HCl) digestion
AR	aqua regia digest
OES	inductively coupled plasma optical emission spectrometry
MS	inductively coupled plasma mass spectrometry
AAS	atomic absorption spectrometry
Leco	Leco infrared furnace

Table A2. Analytical results for 4 acid silver in OREAS 94 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A 4A*MS	Lab B 4A*MS	Lab C 4A*MS	Lab D 4A*MS	Lab E 4A*OES	Lab F 4A*MS	Lab G 4A*MS	Lab H 4A*MS	Lab I 4A*MS	Lab J 4A*MS	Lab K 4A*MS	Lab L 4A*OES	Lab M 4A*OES	Lab N 4A*OES	Lab O 4A*MS	Lab P 4A*AAS
1	3.0	3.2	3.4	2.76	3.66	2.8	3.6	3.19	3.76	**4.10**	2.91	3.5	3.9	3.6	3.01	3
2	3.0	3.4	3.4	2.98	3.41	3.1	3.4	**2.99**	3.74	4.32	2.91	3.3	**4.5**	3.8	3.10	3
3	3.0	3.4	3.4	3.03	3.51	2.9	3.6	3.25	3.68	4.33	2.66	3.4	3.9	3.6	3.08	3
4	3.0	3.4	3.5	**2.13**	3.71	2.9	3.6	3.14	3.69	4.27	2.73	3.3	4.0	3.6	3.02	3
5	3.5	4.0	3.4	2.97	3.55	2.9	3.6	3.24	3.77	4.28	2.73	3.4	3.8	3.6	3.09	3
Mean	3.10	3.48	3.42	2.77	3.57	2.92	3.56	3.16	3.73	4.26	2.79	3.38	4.02	3.64	3.06	3.00
Median	3.00	3.40	3.40	2.97	3.55	2.90	3.60	3.19	3.74	4.28	2.73	3.40	3.90	3.60	3.08	3.00
Std.Dev.	0.22	0.30	0.04	0.37	0.12	0.11	0.09	0.11	0.04	0.09	0.11	0.08	0.28	0.09	0.04	0.00
Rel.Std.Dev.	7.21%	8.72%	1.31%	13.50%	3.35%	3.75%	2.51%	3.36%	1.10%	2.15%	4.06%	2.48%	6.90%	2.46%	1.37%	0.00%
PDM[3]	-8.11%	3.15%	1.37%	-17.8%	5.76%	-13.4%	5.52%	-6.35%	10.5%	26.3%	-17.4%	0.19%	19.2%	7.89%	-9.3%	-11.1%

Table A3. Analytical results for 4 acid bismuth in OREAS 94 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A 4A*MS	Lab B 4A*MS	Lab C 4A*MS	Lab D 4A*MS	Lab E 4A*OES	Lab F 4A*MS	Lab G 4A*MS	Lab H 4A*MS	Lab I 4A*MS	Lab J 4A*MS	Lab K 4A*MS	Lab L 4A*MS	Lab M 4A*OES	Lab N 4A*OES	Lab O 4A*MS	Lab P -
1	8.7	7.94	8.2	7.75	7.75	9.1	8.2	5.61	9.61	7.564	7.29	7.70	8.7	9	8.31	NR
2	8.7	7.90	8.1	7.68	7.26	9.3	8.0	5.53	9.45	7.862	7.29	7.83	9.3	10	8.30	NR
3	8.6	7.87	7.9	8.02	8.01	9.7	8.5	5.68	9.46	7.796	7.61	7.49	7.7	10	8.26	NR
4	**7.4**	**8.09**	8.0	**6.31**	7.90	9.5	8.3	5.60	9.38	7.872	7.79	7.64	8.3	10	8.17	NR
5	8.8	**7.70**	8.3	7.48	7.67	9.5	8.4	5.82	9.64	7.700	7.87	8.01	8.3	10	**8.06**	NR
Mean	8.44	7.90	8.10	7.45	7.72	**9.42**	8.28	**5.65**	**9.51**	7.76	7.57	7.73	8.46	**9.80**	8.22	
Median	8.70	7.90	8.10	7.68	7.75	9.50	8.30	5.61	9.46	7.80	7.61	7.70	8.30	10.00	8.26	
Std.Dev.	0.59	0.14	0.16	0.66	0.29	0.23	0.19	0.11	0.11	0.13	0.27	0.20	0.59	0.45	0.11	
Rel.Std.Dev.	6.94%	1.77%	1.95%	8.93%	3.73%	2.42%	2.32%	1.95%	1.17%	1.66%	3.62%	2.54%	6.97%	4.56%	1.28%	
PDM[3]	5.24%	-1.49%	1.00%	-7.13%	-3.76%	17.5%	3.25%	-29.6%	18.6%	-3.25%	-5.63%	-3.56%	5.49%	22.2%	2.50%	

Table A4. Analytical results for 4 acid cobalt in OREAS 94 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A 4A*MS	Lab B 4A*MS	Lab C 4A*MS	Lab D 4A*MS	Lab E 4A*OES	Lab F 4A*MS	Lab G 4A*MS	Lab H 4A*MS	Lab I 4A*MS	Lab J 4A*MS	Lab K 4A*MS	Lab L 4A*OES	Lab M 4A*OES	Lab N 4A*OES	Lab O 4A*MS	Lab P 4A*AAS
1	26	23.6	24.0	22.0	21.3	24.0	24.9	22.8	25.5	21.5	20.7	23.0	23.5	25	20.8	30
2	23	24.6	24.0	21.4	20.0	25.0	24.6	22.8	25.0	21.2	20.7	23.5	25.0	25	21.8	30
3	24	23.0	24.0	21.7	20.3	23.0	25.3	22.8	25.5	**22.1**	20.9	22.4	23.7	24	20.8	30
4	24	24.6	24.0	**17.2**	21.5	26.0	24.7	**21.8**	25.0	21.5	21.4	22.8	23.5	25	21.9	30
5	24	23.7	25.0	20.9	20.7	23.0	24.9	22.4	25.5	21.3	21.3	22.8	23.5	25	20.8	30
Mean	24.2	23.9	24.2	20.6	20.8	24.2	24.9	22.5	25.3	21.5	21.0	22.9	23.8	24.8	21.2	**30.0**
Median	24.0	23.7	24.0	21.4	20.7	24.0	24.9	22.8	25.5	21.5	20.9	22.8	23.5	25.0	20.8	30.0
Std.Dev.	1.1	0.7	0.4	2.0	0.6	1.3	0.3	0.5	0.3	0.3	0.4	0.4	0.7	0.4	0.6	0.0
Rel.Std.Dev.	4.53%	2.90%	1.85%	9.52%	3.08%	5.39%	1.08%	2.04%	1.08%	1.60%	1.71%	1.75%	2.74%	1.80%	2.72%	0.00%
PDM[3]	4.73%	3.43%	4.73%	-10.7%	-10.2%	4.73%	7.68%	-2.58%	9.49%	-6.83%	-9.10%	-0.89%	3.17%	7.33%	-8.16%	29.8%

Table A5. Analytical results for 4 acid copper in OREAS 94 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A 4A*OES	Lab B 4A*OES	Lab C 4A*AAS	Lab D -	Lab E 4A*AAS	Lab F 4A*OES	Lab G 4A*AAS	Lab H 4A*OES	Lab I 4A*OES	Lab J 4A*OES	Lab K 4A*OES	Lab L 4A*OES	Lab M 4A*OES	Lab N 4A*OES	Lab O PF*OES	Lab P 4A*AAS
1	1.20	1.12	1.15	NR	1.08	1.19	1.13	1.14	1.29	1.13	1.01	1.15	**1.13**	1.13	1.16	1.21
2	1.21	1.13	1.17	NR	1.11	1.18	1.10	1.15	1.31	1.13	1.04	1.16	1.18	1.13	1.15	1.21
3	1.20	1.11	1.15	NR	1.09	1.17	1.09	1.13	1.30	1.14	1.04	1.12	1.19	**1.12**	1.13	1.21
4	1.20	1.12	1.11	NR	1.08	1.17	1.11	1.12	1.33	**1.14**	1.07	1.14	1.16	1.13	1.13	1.21
5	1.19	1.11	1.18	NR	1.09	1.17	1.12	**1.06**	1.29	1.14	1.08	1.15	1.17	1.13	1.15	1.21
Mean	1.20	1.12	1.15		1.09	1.18	1.11	1.12	**1.30**	1.14	1.05	1.14	1.17	1.13	1.14	1.21
Median	1.20	1.12	1.15		1.09	1.17	1.11	1.13	1.30	1.14	1.04	1.15	1.17	1.13	1.15	1.21
Std.Dev.	0.01	0.01	0.03		0.01	0.01	0.02	0.04	0.02	0.00	0.03	0.01	0.02	0.01	0.01	0.00
Rel.Std.Dev.	0.59%	0.57%	2.33%		1.12%	0.61%	1.42%	3.16%	1.28%	0.37%	2.61%	1.20%	1.97%	0.55%	1.17%	0.00%
PDM[3]	5.21%	-1.82%	1.00%		-4.44%	3.03%	-2.68%	-1.81%	14.32%	-0.33%	-8.00%	0.35%	2.22%	-1.29%	0.30%	6.08%

Table A6. Analytical results for 4 acid lead in OREAS 94 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A 4A*MS	Lab B 4A*MS	Lab C 4A*MS	Lab D 4A*MS	Lab E 4A*OES	Lab F 4A*MS	Lab G 4A*MS	Lab H 4A*MS	Lab I 4A*MS	Lab J 4A*MS	Lab K 4A*MS	Lab L 4A*OES	Lab M 4A*OES	Lab N 4A*OES	Lab O 4A*MS	Lab P 4A*AAS
1	33	30	31	31.9	29.1	26.4	31	32.1	38	31.9	23.9	39	38.5	33	30.0	39
2	31	30	29	28.3	27.3	25.3	32	30.9	37	31.9	23.9	43	43.1	34	30.2	39
3	32	30	29	29.2	27.2	25.8	30	31.6	34	33.2	24.3	41	34.4	34	29.1	39
4	33	31	29	**23.2**	29.7	28.3	30	30.4	37	32.6	24.7	35	36.4	32	29.5	39
5	31	**46**	30	27.9	28.6	27.6	31	31.1	38	32.7	24.9	36	35.8	32	29.4	39
Mean	32.0	33.4	29.6	28.1	28.4	26.7	30.8	31.2	36.8	32.5	24.3	**38.8**	37.6	33.0	29.6	**39.0**
Median	32.0	30.0	29.0	28.3	28.6	26.4	31.0	31.1	37.0	32.6	24.3	39.0	36.4	33.0	29.5	39.0
Std.Dev.	1.0	7.1	0.9	3.2	1.1	1.2	0.8	0.7	1.6	0.6	0.5	3.3	3.4	1.0	0.5	0.0
Rel.Std.Dev.	3.13%	21.1%	3.02%	11.2%	3.89%	4.68%	2.72%	2.12%	4.47%	1.74%	1.98%	8.63%	9.01%	3.03%	1.52%	0.00%
PDM[3]	3.67%	8.21%	-4.10%	-8.96%	-8.06%	-13.6%	-0.22%	1.10%	19.2%	5.18%	-21.1%	25.7%	21.9%	6.91%	-3.97%	26.3%

Table A7. Analytical results for 4 acid sulphur in OREAS 94 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A 4A*OES	Lab B -	Lab C 4A*MS	Lab D -	Lab E 4A*OES	Lab F -	Lab G -	Lab H -	Lab I -	Lab J -	Lab K 4A*OES	Lab L -	Lab M -	Lab N -	Lab O 4A*OES	Lab P -
1	1.43	NR	**1.38**	NR	1.34	NR	NR	NR	NR	NR	1.613	NR	NR	NR	1.11	NR
2	1.40	NR	1.42	NR	1.29	NR	NR	NR	NR	NR	1.605	NR	NR	NR	**1.15**	NR
3	1.42	NR	1.43	NR	1.28	NR	NR	NR	NR	NR	1.632	NR	NR	NR	1.10	NR
4	1.40	NR	1.44	NR	1.35	NR	NR	NR	NR	NR	1.607	NR	NR	NR	1.10	NR
5	1.41	NR	1.42	NR	1.32	NR	NR	NR	NR	NR	**1.649**	NR	NR	NR	1.14	NR
Mean	1.41		1.42		1.32						1.62				1.12	
Median	1.41		1.42		1.32						1.61				1.11	
Std.Dev.	0.01		0.02		0.03						0.02				0.02	
Rel.Std.Dev.	0.92%		1.61%		2.32%						1.16%				2.09%	
PDM[3]	2.58%		3.02%		-4.39%						17.8%				-18.6%	

Table A8. Analytical results for 4 acid (and XRF – 1 lab) antimony in OREAS 94 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A 4A*MS	Lab B 4A*MS	Lab C 4A*MS	Lab D 4A*MS	Lab E 4A*OES	Lab F 4A*MS	Lab G 4A*MS	Lab H 4A*MS	Lab I -	Lab J 4A*MS	Lab K 4A*MS	Lab L 4A*MS	Lab M 4A*OES	Lab N -	Lab O 4A*MS	Lab P XRF*PPP
1	2.9	2.40	2.7	2.28	2.29	2.3	2.6	2.38	NR	2.11	1.92	2.4	2.8	NR	2.24	3
2	2.4	2.39	2.7	2.27	2.12	2.1	2.5	2.13	NR	2.16	1.92	2.2	2.9	NR	2.34	3
3	2.5	2.33	2.7	2.18	2.12	1.8	2.6	2.47	NR	2.16	2.03	2.3	2.8	NR	2.13	3
4	1.9	2.45	2.8	**1.78**	2.20	2.6	2.6	2.26	NR	2.15	2.00	2.2	2.8	NR	2.28	3
5	2.8	2.53	2.7	2.23	2.18	2.4	2.7	2.33	NR	2.11	2.09	2.3	2.7	NR	2.29	3
Mean	2.50	2.42	2.72	2.15	2.18	2.24	2.60	2.31		2.14	1.99	2.28	2.80		2.26	**3.00**
Median	2.50	2.40	2.70	2.23	2.18	2.30	2.60	2.33		2.15	2.00	2.30	2.80		2.28	3.00
Std.Dev.	0.39	0.07	0.04	0.21	0.07	0.30	0.07	0.13		0.03	0.07	0.08	0.07		0.08	0.00
Rel.Std.Dev.	15.7%	3.09%	1.64%	9.75%	3.21%	13.6%	2.72%	5.49%		1.33%	3.61%	3.67%	2.53%		3.50%	0.00%
PDM[3]	5.82%	2.43%	15.1%	-9.08%	-7.64%	-5.19%	10.0%	-2.10%		-9.54%	-15.6%	-3.50%	18.5%		-4.51%	27.0%

Table A9. Analytical results for 4 acid selenium in OREAS 94 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A 4A*MS	Lab B 4A*MS	Lab C 4A*MS	Lab D 4A*MS	Lab E 4A*OES	Lab F -	Lab G 4A*MS	Lab H 4A*MS	Lab I 4A*MS	Lab J 4A*MS	Lab K 4A*MS	Lab L 4A*MS	Lab M 4A*OES	Lab N -	Lab O 4A*MS	Lab P XRF*PPP
1	10	17	10	15.5	15	NR	10	**14.8**	11.3	10.9	12.0	11.3	16.6	NR	13.0	17.0
2	10	19	10	14.8	14	NR	10	11.7	11.1	10.8	12.0	10.2	**20.1**	NR	13.0	17.0
3	10	17	10	14.9	14	NR	10	14.0	10.8	11.3	11.6	11.3	15.9	NR	13.0	17.0
4	10	19	10	**12.0**	15	NR	10	11.4	10.9	10.9	**12.8**	10.6	16.1	NR	11.0	17.0
5	10	19	10	14.4	14	NR	10	12.1	11.3	11.3	12.1	11.0	15.3	NR	13.0	17.0
Mean	10.0	18.2	10.0	14.3	14.4		10.0	12.8	11.1	11.1	12.1	10.9	16.8		12.6	17.0
Median	10.0	19.0	10.0	14.8	14.0		10.0	12.1	11.1	10.9	12.0	11.0	16.1		13.0	17.0
Std.Dev.	0.0	1.1	0.0	1.4	0.5		0.0	1.5	0.2	0.2	0.4	0.5	1.9		0.9	0.0
Rel.Std.Dev.	0.00%	6.02%	0.00%	9.46%	3.80%		0.00%	11.71%	2.06%	2.19%	3.58%	4.38%	11.33%		7.10%	0.00%
PDM[3]	-22.4%	41.3%	-22.4%	11.2%	11.8%		-22.4%	-0.7%	-14.0%	-14.1%	-6.1%	-15.5%	30.4%		-2.2%	32.0%

Table A10. Analytical results for 4 acid tin in OREAS 94 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A 4A*MS	Lab B 4A*MS	Lab C 4A*MS	Lab D 4A*MS	Lab E 4A*OES	Lab F 4A*MS	Lab G 4A*MS	Lab H 4A*MS	Lab I 4A*MS	Lab J 4A*MS	Lab K 4A*MS	Lab L 4A*MS	Lab M 4A*OES	Lab N -	Lab O 4A*MS	Lab P XRF*PPP
1	22	22.4	23	23.0	20.3	19.5	23.4	22.0	26	25.9	26.2	**21.2**	25.1	NR	21.2	23.0
2	22	22.5	23	22.2	18.2	18.1	22.9	21.3	25	25.9	26.2	20.2	**27.6**	NR	22.0	23.0
3	21	22.0	23	22.2	18.8	18.4	23.5	21.6	24	26.1	26.1	20.3	23.4	NR	20.8	23.0
4	**17**	23.1	23	**18.0**	20.4	18.0	23.3	**20.4**	23	26.0	**28.1**	20.5	24.1	NR	21.7	23.0
5	22	22.7	23	22.0	19.7	**20.7**	23.5	22.4	25	26.1	27.0	20.1	24.4	NR	21.4	23.0
Mean	20.8	22.5	23.0	21.5	19.5	18.9	23.3	21.5	24.6	26.0	26.7	20.5	24.9		21.4	23.0
Median	22.0	22.5	23.0	22.2	19.7	18.4	23.4	21.6	25.0	26.0	26.2	20.3	24.4		21.4	23.0
Std.Dev.	2.2	0.4	0.0	2.0	1.0	1.2	0.2	0.8	1.1	0.1	0.8	0.4	1.6		0.5	0.0
Rel.Std.Dev.	10.4%	1.79%	0.00%	9.23%	4.92%	6.07%	1.07%	3.54%	4.63%	0.42%	3.14%	2.15%	6.49%		2.15%	0.00%
PDM[3]	-7.88%	-0.18%	1.86%	-4.87%	-13.7%	-16.1%	3.28%	-4.63%	8.95%	15.1%	18.4%	-9.39%	10.4%		-5.1%	1.9%

Table A11. Analytical results for 4 acid zinc in OREAS 94 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A 4A*OES	Lab B 4A*OES	Lab C 4A*MS	Lab D -	Lab E 4A*OES	Lab F 4A*OES	Lab G 4A*MS	Lab H 4A*OES	Lab I 4A*OES	Lab J 4A*OES	Lab K 4A*OES	Lab L 4A*OES	Lab M 4A*OES	Lab N 4A*OES	Lab O 4A*OES	Lab P 4A*AAS
1	185	174	140	NR	165	200	175	171	155	187	155	208	190	165	165	169
2	175	176	160	NR	159	200	170	169	160	180	160	188	180	168	170	169
3	175	175	150	NR	154	200	**189**	167	165	187	153	186	180	167	169	169
4	185	172	180	NR	168	200	178	169	160	184	157	175	180	165	165	169
5	**325**	175	160	NR	157	100	174	**160**	165	177	162	167	180	166	165	169
Mean	209	174	158		161	180	177	167	161	183	157	185	182	166	167	169
Median	185	175	160		159	200	175	169	160	184	157	186	180	166	165	169
Std.Dev.	65.0	1.5	14.8		5.8	44.7	7.2	4.0	4.2	4.4	3.5	15.5	4.5	1.3	2.5	0.0
Rel.Std.Dev.	31.12%	0.87%	9.39%		3.59%	24.8%	4.06%	2.37%	2.60%	2.40%	2.21%	8.40%	2.46%	0.78%	1.49%	0.00%
PDM[3]	22.2%	2.01%	-7.59%		-6.06%	5.28%	3.64%	-2.15%	-5.83%	6.93%	-7.95%	8.09%	6.45%	-2.79%	-2.44%	-1.15%

Table A12. Analytical results for aqua regia silver in OREAS 94 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A AR*MS	Lab B AR*MS	Lab C -	Lab D AR*MS	Lab E AR*OES	Lab F AR*MS	Lab G AR*MS	Lab H AR*MS	Lab I AR*MS	Lab J AR*MS	Lab K AR*MS	Lab L AR*MS	Lab M AR*MS	Lab N AR*OES	Lab O AR*MS	Lab P -
1	3.30	3.13	NR	**2.96**	3.29	2.8	3.7	3.40	3.45	3.56	3.60	3.75	2.37	3.6	3.44	NR
2	3.10	3.32	NR	3.17	3.34	2.8	3.7	3.46	3.52	3.60	3.52	3.75	2.45	3.6	3.37	NR
3	3.25	3.39	NR	3.12	3.37	2.8	3.7	3.31	3.55	3.61	3.48	3.75	2.54	3.6	3.43	NR
4	3.30	3.38	NR	3.35	3.27	2.9	3.8	3.43	3.46	3.62	3.68	3.66	2.65	3.6	3.30	NR
5	3.25	3.18	NR	3.18	3.41	2.9	3.7	3.33	3.44	3.54	3.69	3.62	2.47	3.6	3.55	NR
Mean	3.24	3.28		3.16	3.34	2.84	3.72	3.39	3.48	3.59	3.60	3.71	**2.50**	3.60	3.42	
Median	3.25	3.32		3.17	3.34	2.80	3.70	3.40	3.46	3.60	3.60	3.75	2.47	3.60	3.43	
Std.Dev.	0.08	0.12		0.14	0.06	0.05	0.04	0.06	0.05	0.03	0.10	0.06	0.11	0.00	0.09	
Rel.Std.Dev.	2.54%	3.61%		4.43%	1.72%	1.93%	1.20%	1.83%	1.39%	0.95%	2.66%	1.67%	4.22%	0.00%	2.71%	
PDM[3]	-5.13%	-3.96%		-7.59%	-2.32%	-16.8%	8.92%	-0.83%	2.01%	5.00%	5.29%	8.51%	-26.9%	5.41%	0.08%	

Table A13. Analytical results for aqua regia bismuth in OREAS 94 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A AR*MS	Lab B AR*MS	Lab C -	Lab D AR*MS	Lab E AR*OES	Lab F AR*MS	Lab G AR*MS	Lab H AR*MS	Lab I AR*MS	Lab J AR*MS	Lab K AR*MS	Lab L AR*MS	Lab M AR*MS	Lab N AR*OES	Lab O AR*MS	Lab P -
1	8.86	7.82	NR	8.13	8.27	9.3	9.1	8.94	9.21	7.91	8.53	5.34	9.9	7	9.20	NR
2	8.70	7.80	NR	7.77	8.19	9.2	9.0	8.84	9.11	7.78	8.48	5.57	10.4	8	9.41	NR
3	8.40	8.06	NR	7.76	8.47	9.4	9.4	9.13	9.13	7.99	8.43	5.78	10.1	10	8.79	NR
4	8.86	8.25	NR	8.07	8.05	9.4	9.4	9.03	9.23	7.97	8.33	6.12	10.3	9	8.93	NR
5	8.74	8.13	NR	8.00	8.91	9.5	9.4	**8.49**	9.19	7.81	8.54	6.27	10.1	9	8.87	NR
Mean	8.71	8.01		7.95	8.38	9.36	9.26	8.89	9.17	7.89	8.46	**5.82**	10.16	8.60	9.04	
Median	8.74	8.06		8.00	8.27	9.40	9.40	8.94	9.19	7.91	8.48	5.78	10.10	9.00	8.93	
Std.Dev.	0.19	0.20		0.17	0.33	0.11	0.19	0.25	0.05	0.09	0.08	0.38	0.19	1.14	0.26	
Rel.Std.Dev.	2.16%	2.45%		2.16%	3.99%	1.22%	2.11%	2.80%	0.56%	1.20%	0.99%	6.59%	1.92%	13.3%	2.85%	
PDM[3]	-0.64%	-8.62%		-9.38%	-4.45%	6.75%	5.61%	1.37%	4.63%	-10.0%	-3.49%	-33.7%	15.9%	-1.92%	3.10%	

Table A14. Analytical results for aqua regia cobalt in OREAS 94 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A AR*MS	Lab B AR*MS	Lab C -	Lab D AR*MS	Lab E AR*OES	Lab F AR*MS	Lab G AR*MS	Lab H AR*MS	Lab I AR*MS	Lab J AR*MS	Lab K AR*MS	Lab L AR*MS	Lab M AR*MS	Lab N AR*OES	Lab O AR*MS	Lab P -
1	24.5	25.9	NR	21.3	21.3	21.7	24.3	27.1	21.5	24.1	22.6	20.6	20.8	25.0	22.2	NR
2	23.5	25.8	NR	21.7	21.7	21.6	24.0	**25.9**	22.5	24.5	21.9	21.1	22.8	24.0	22.0	NR
3	24.5	26.8	NR	21.3	21.8	22.2	24.4	26.9	22.0	24.7	21.3	21.3	21.7	23.0	22.7	NR
4	24.5	27.6	NR	21.7	21.2	22.3	24.6	**28.4**	21.5	24.0	20.8	20.6	24.3	24.0	21.5	NR
5	25.0	26.7	NR	21.1	22.1	23.0	24.5	27.4	22.0	23.5	21.6	20.3	22.3	24.0	22.5	NR
Mean	24.4	26.6		21.4	21.6	22.2	24.4	**27.1**	21.9	24.2	21.7	20.8	22.4	24.0	22.2	
Median	24.5	26.7		21.3	21.7	22.2	24.4	27.1	22.0	24.1	21.6	20.6	22.3	24.0	22.2	
Std.Dev.	0.5	0.7		0.3	0.4	0.6	0.2	0.9	0.4	0.5	0.7	0.4	1.3	0.7	0.5	
Rel.Std.Dev.	2.24%	2.77%		1.25%	1.71%	2.52%	0.95%	3.34%	1.91%	1.90%	3.07%	1.97%	5.84%	2.95%	2.10%	
PDM[3]	6.56%	16.0%		-6.46%	-5.58%	-3.22%	6.38%	18.4%	-4.36%	5.57%	-5.43%	-9.3%	-2.26%	4.81%	-3.14%	

Table A15. Analytical results for aqua regia copper in OREAS 94 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A AR*OES	Lab B AR*OES	Lab C AR*AAS	Lab D AR*OES	Lab E AR*OES	Lab F AR*OES	Lab G 3A*AAS	Lab H AR*OES	Lab I AR*MS	Lab J AR*OES	Lab K AR*OES	Lab L AR*OES	Lab M AR*OES	Lab N AR*OES	Lab O -	Lab P -
1	1.15	1.137	1.17	1.08	0.961	1.119	1.20	1.173	1.33	1.141	1.110	1.135	1.160	1.114	NR	NR
2	1.09	1.156	1.14	1.04	0.974	**1.135**	1.09	1.182	1.32	1.139	1.090	1.129	1.175	1.102	NR	NR
3	1.12	1.153	1.16	1.12	0.977	1.113	1.08	1.188	1.35	1.142	1.095	1.143	1.170	1.103	NR	NR
4	1.15	1.183	1.14	1.10	0.953	1.123	0.99	1.111	1.33	1.139	1.114	1.135	1.170	1.107	NR	NR
5	1.15	1.127	1.13	1.06	0.995	1.120	1.04	1.120	**1.29**	1.141	1.098	1.132	**1.150**	1.115	NR	NR
Mean	1.132	1.151	1.148	1.080	**0.972**	1.122	1.080	1.155	**1.324**	1.141	1.101	1.135	1.165	1.108		
Median	1.150	1.153	1.140	1.080	0.974	1.120	1.080	1.173	1.330	1.141	1.098	1.135	1.170	1.107		
Std.Dev.	0.027	0.021	0.016	0.032	0.016	0.008	0.078	0.037	0.022	0.001	0.010	0.005	0.010	0.006		
Rel.Std.Dev.	2.37%	1.85%	1.43%	2.93%	1.66%	0.72%	7.20%	3.17%	1.65%	0.12%	0.92%	0.46%	0.86%	0.55%		
PDM[3]	0.49%	2.20%	1.91%	-4.13%	-13.7%	-0.40%	-4.13%	2.51%	17.5%	1.24%	-2.24%	0.74%	3.42%	-1.64%		

Table A16. Analytical results for aqua regia lead in OREAS 94 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A AR*MS	Lab B AR*MS	Lab C -	Lab D AR*MS	Lab E AR*OES	Lab F AR*MS	Lab G AR*MS	Lab H AR*MS	Lab I AR*MS	Lab J AR*MS	Lab K AR*MS	Lab L AR*MS	Lab M AR*MS	Lab N AR*MS	Lab O AR*MS	Lab P -
1	27	29	NR	29.6	27.6	30.6	32	35.8	32	28.5	18.9	31.1	41.5	34	32.1	NR
2	26	29	NR	26.5	27.8	29.7	32	35.6	33	28.4	19.6	**34.5**	36.2	33	30.9	NR
3	26	30	NR	26.1	28.5	30.5	33	35.8	33	29.1	20.3	31.0	33.6	33	30.4	NR
4	27	30	NR	30.5	27.3	29.8	33	34.9	32	28.4	19.1	30.4	32.2	33	29.9	NR
5	27	31	NR	28.9	29.2	30.5	32	35.2	30	28.8	18.2	30.5	36.6	33	30.4	NR
Mean	26.6	29.8		28.3	28.1	30.2	32.4	35.5	32.0	28.6	**19.2**	31.5	36.0	33.2	30.7	
Median	27.0	30.0		28.9	27.8	30.5	32.0	35.6	32.0	28.5	19.1	31.0	36.2	33.0	30.4	
Std.Dev.	0.5	0.8		1.9	0.8	0.4	0.5	0.4	1.2	0.3	0.8	1.7	3.6	0.4	0.8	
Rel.Std.Dev.	2.06%	2.81%		6.83%	2.73%	1.43%	1.69%	1.08%	3.83%	1.02%	4.03%	5.41%	9.90%	1.35%	2.73%	
PDM[3]	-14.0%	-3.69%		-8.47%	-9.25%	-2.33%	4.71%	14.6%	3.42%	-7.46%	-37.8%	1.81%	16.4%	7.30%	-0.65%	

Table A17. Analytical results for aqua regia sulphur in OREAS 94 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A AR*MS	Lab B AR*OES	Lab C AR*OES	Lab D AR*OES	Lab E AR*OES	Lab F AR*MS	Lab G AR*OES	Lab H AR*OES	Lab I AR*MS	Lab J AR*OES	Lab K AR*OES	Lab L AR*OES	Lab M AR*OES	Lab N AR*OES	Lab O AR*OES	Lab P AR*AAS
1	NR	NR	NR	NR	1.34	NR	NR	NR	NR	1.253	1.462	NR	NR	NR	1.270	NR
2	NR	NR	NR	NR	1.34	NR	NR	NR	NR	1.249	1.410	NR	NR	NR	1.270	NR
3	NR	NR	NR	NR	1.40	NR	NR	NR	NR	1.271	1.440	NR	NR	NR	1.270	NR
4	NR	NR	NR	NR	1.59	NR	NR	NR	NR	1.256	1.457	NR	NR	NR	1.220	NR
5	NR	NR	NR	NR	**1.98**	NR	NR	NR	NR	1.281	1.444	NR	NR	NR	1.340	NR
Mean					1.53					1.26	1.44				1.27	
Median					1.40					1.26	1.44				1.27	
Std.Dev.					0.27					0.01	0.02				0.04	
Rel.Std.Dev.					17.76%					1.07%	1.41%				3.36%	
PDM[3]					13.4%					-6.46%	6.94%				-5.56%	

Table A18. Analytical results for aqua regia antimony in OREAS 94 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A AR*MS	Lab B AR*MS	Lab C -	Lab D AR*MS	Lab E AR*OES	Lab F AR*MS	Lab G AR*MS	Lab H AR*MS	Lab I -	Lab J AR*MS	Lab K AR*MS	Lab L AR*MS	Lab M AR*MS	Lab N -	Lab O AR*MS	Lab P -
1	1.56	1.49	NR	1.88	1.01	2.10	2.0	1.89	NR	1.78	2.25	**<0.5**	1.3	NR	1.11	NR
2	1.54	1.53	NR	1.90	1.03	1.90	2.0	1.96	NR	1.69	2.32	0.6	1.3	NR	1.08	NR
3	1.62	1.58	NR	1.88	1.02	1.80	2.1	2.01	NR	1.81	2.27	0.9	1.4	NR	1.12	NR
4	1.62	1.58	NR	1.93	**1.18**	2.10	2.1	2.09	NR	1.96	2.31	1.3	1.4	NR	1.10	NR
5	1.58	1.61	NR	1.90	1.01	1.70	2.0	2.05	NR	1.93	2.26	1.5	1.3	NR	1.07	NR
Mean	1.58	1.56		1.90	1.05	1.92	2.04	2.00		1.84	2.28	1.08	1.34		1.10	
Median	1.58	1.58		1.90	1.02	1.90	2.00	2.01		1.81	2.27	1.10	1.30		1.10	
Std.Dev.	0.04	0.05		0.02	0.07	0.18	0.05	0.08		0.11	0.03	0.40	0.05		0.02	
Rel.Std.Dev.	2.26%	3.06%		1.08%	6.97%	9.32%	2.68%	3.97%		6.03%	1.30%	37.5%	4.09%		1.89%	
PDM[3]	-3.26%	-4.85%		15.9%	-35.9%	17.3%	24.6%	22.2%		12.1%	39.5%	-34.3%	-18.2%		-33.1%	

Table A19. Analytical results for aqua regia selenium in OREAS 94 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A AR*MS	Lab B AR*MS	Lab C -	Lab D AR*MS	Lab E AR*OES	Lab F AR*MS	Lab G AR*MS	Lab H AR*MS	Lab I AR*MS	Lab J AR*MS	Lab K AR*MS	Lab L AR*MS	Lab M AR*MS	Lab N -	Lab O AR*MS	Lab P -
1	9	14	NR	13.0	14.2	15	12	14.1	11.6	**12.2**	11.5	9.3	15.4	NR	14.00	NR
2	8	14	NR	13.1	14.7	16	12	15.1	11.8	12.4	11.4	9.3	16.8	NR	13.00	NR
3	9	14	NR	13.1	14.3	14	12	14.2	11.9	12.5	10.4	9.3	15.7	NR	13.00	NR
4	9	15	NR	**13.5**	14.2	13	12	15.4	11.8	12.4	10.5	9.6	16.8	NR	13.00	NR
5	9	14	NR	12.9	15.2	14	12	15.1	11.9	12.4	10.9	9.5	15.3	NR	14.00	NR
Mean	8.8	14.2		13.1	14.5	14.4	12.0	14.8	11.8	12.4	10.9	9.4	16.0		13.4	
Median	9.0	14.0		13.1	14.3	14.0	12.0	15.1	11.8	12.4	10.9	9.3	15.7		13.0	
Std.Dev.	0.4	0.4		0.2	0.4	1.1	0.0	0.6	0.1	0.1	0.5	0.1	0.7		0.5	
Rel.Std.Dev.	5.08%	3.15%		1.74%	2.98%	7.92%	0.00%	4.02%	1.04%	0.91%	4.59%	1.50%	4.66%		4.09%	
PDM[3]	-31.0%	11.4%		2.95%	13.9%	13.0%	-5.84%	16.1%	-7.41%	-2.94%	-14.3%	-26.2%	25.5%		5.1%	

Table A20. Analytical results for aqua regia tin in OREAS 94 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A AR*MS	Lab B AR*MS	Lab C -	Lab D AR*MS	Lab E AR*OES	Lab F AR*MS	Lab G AR*MS	Lab H AR*MS	Lab I AR*MS	Lab J AR*MS	Lab K AR*MS	Lab L AR*MS	Lab M AR*MS	Lab N -	Lab O AR*MS	Lab P -
1	15.4	16.61	NR	17.0	15.6	16	17	15.7	18	16.9	18.7	14.5	15.8	NR	15.2	NR
2	14.6	17.05	NR	17.4	15.8	16	17	14.7	18	16.7	18.7	14.9	16.0	NR	15.0	NR
3	15.2	17.37	NR	17.0	15.8	17	17	15.0	18	17.0	18.6	15.1	17.2	NR	15.4	NR
4	15.2	17.01	NR	**17.8**	15.3	17	17	15.0	18	17.2	**18.0**	14.6	17.4	NR	14.9	NR
5	15.4	17.50	NR	17.1	16.4	16	17	14.7	17	16.9	18.7	14.4	15.5	NR	15.1	NR
Mean	15.2	17.1		17.3	15.8	16.4	17.0	15.0	17.8	16.9	18.5	14.7	16.4		15.1	
Median	15.2	17.1		17.1	15.8	16.0	17.0	15.0	18.0	16.9	18.7	14.6	16.0		15.1	
Std.Dev.	0.3	0.3		0.3	0.4	0.5	0.0	0.4	0.4	0.2	0.3	0.3	0.9		0.2	
Rel.Std.Dev.	2.17%	2.03%		1.99%	2.55%	3.34%	0.00%	2.80%	2.51%	1.14%	1.56%	1.98%	5.26%		1.27%	
PDM[3]	-7.55%	4.33%		5.26%	-3.77%	0.01%	3.67%	-8.40%	8.55%	3.33%	12.9%	-10.4%	-0.11%		-7.8%	

Table A21. Analytical results for aqua regia zinc in OREAS 94 (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A AR*OES	Lab B AR*OES	Lab C AR*AAS	Lab D AR*OES	Lab E AR*OES	Lab F AR*OES	Lab G AR*MS	Lab H AR*OES	Lab I AR*OES	Lab J AR*OES	Lab K AR*OES	Lab L AR*OES	Lab M AR*OES	Lab N AR*OES	Lab O AR*OES	Lab P -
1	160	158	200	200	134	200	164	177	160	168	178	170	400	163	**160**	NR
2	150	161	200	100	136	200	165	180	170	165	176	160	400	161	157	NR
3	158	160	200	200	136	200	165	178	170	167	177	160	400	159	156	NR
4	156	163	200	200	131	200	167	175	165	167	182	160	400	160	156	NR
5	156	156	200	100	140	200	168	**168**	160	**171**	181	150	400	160	153	NR
Mean	156	160	200	160	135	200	166	176	165	168	179	160	**400**	161	156	
Median	156	160	200	200	136	200	165	177	165	167	178	160	400	160	156	
Std.Dev.	4	3	0	55	3	0	2	5	5	2	3	7	0	2	3	
Rel.Std.Dev.	2.40%	1.69%	0.00%	34.23%	2.43%	0.00%	0.99%	2.62%	3.03%	1.17%	1.49%	4.42%	0.00%	0.94%	1.60%	
PDM[3]	-6.72%	-4.57%	19.6%	-4.33%	-19.0%	19.6%	-0.86%	5.09%	-1.34%	0.29%	6.96%	-4.33%	139.18%	-3.97%	-6.48%	

Table A22. Analytical results for leco sulphur in OREAS 94 (abbreviations as in Table A1; values in wt.%).

Replicate No.	Lab A LECO	Lab B LECO	Lab C LECO	Lab D LECO	Lab E LECO	Lab F LECO	Lab G LECO	Lab H LECO	Lab I LECO	Lab J LECO	Lab K LECO	Lab L LECO	Lab M LECO	Lab N LECO	Lab O LECO	Lab P LECO
1	NR	1.34	1.25	**1.32**	1.26	1.33	1.26	1.41	NR	NR	1.27	**1.30**	1.37	NR	1.27	1.31
2	NR	1.33	1.22	1.11	1.26	1.31	1.28	1.42	NR	NR	1.27	1.35	1.31	NR	1.24	1.31
3	NR	1.34	1.25	1.17	1.26	1.38	1.27	1.36	NR	NR	1.27	1.36	1.23	NR	1.20	1.31
4	NR	1.32	1.23	1.13	1.30	1.35	1.24	1.36	NR	NR	1.29	1.36	1.23	NR	1.26	1.31
5	NR	1.34	1.22	1.12	1.25	1.31	1.29	1.36	NR	NR	1.28	1.37	1.24	NR	1.30	1.31
Mean		1.33	1.23	1.17	1.27	1.34	1.27	1.38			1.28	1.35	1.28		1.25	1.31
Median		1.34	1.23	1.13	1.26	1.33	1.27	1.36			1.27	1.36	1.24		1.26	1.31
Std.Dev.		0.01	0.02	0.09	0.02	0.03	0.02	0.03			0.01	0.03	0.06		0.04	0.00
Rel.Std.Dev.		0.67%	1.23%	7.43%	1.54%	2.22%	1.52%	2.19%			0.60%	2.06%	4.88%		2.96%	0.00%
PDM[3]		3.74%	-4.03%	-9.01%	-1.55%	3.90%	-1.39%	7.48%			-0.61%	4.83%	-0.77%		-2.48%	1.88%