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CERTIFICATE OF ANALYSIS FOR

NICKEL SULPHIDE ORE REFERENCE MATERIAL OREAS 74a

SUMMARY STATISTICS OREAS 74a

Constituent	Recommended value	95% Confidence Interval		Tolerance limits 1-α=0.99, ρ=0.95	
		Low	High	Low	High
Lead fire assay					
Gold, Au (ppb)	21	19	23	18	24
Palladium, Pd (ppb)	172	168	176	166	179
Platinum, Pt (ppb)	223	216	231	212	234
4 Acid digest					
Aluminium oxide, Al_2O_3 (wt.%)	2.20	2.14	2.25	2.15	2.24
Arsenic, As (ppm)	49.6	47.2	52.0	45.0	54.2
Chromium, Cr (ppm)	1303	1130	1475	1231	1374
Cobalt, Co (ppm)	554	541	567	545	563
Copper, Cu (ppm)	1178	1160	1197	1157	1200
Iron, Fe (wt.%)	13.8	13.5	14.1	13.6	14.0
Magnesium oxide, MgO (wt.%)	28.1	27.3	28.9	27.5	28.7
Nickel, Ni (wt.%)	3.14	3.04	3.23	3.07	3.20
Sulphur, S (wt.%)	7.73	7.44	8.01	7.58	7.88
Fusion					
Aluminium oxide, Al_2O_3 (wt.%)	2.21	2.18	2.24	2.16	2.26
Arsenic, As (ppm)	49.6	45.0	54.2	40.8	58.3
Chromium, Cr (ppm)	1780	1745	1815	1745	1815
Cobalt, Co (ppm)	581	556	606	559	604
Copper, Cu (ppm)	1240	1217	1263	1198	1282
Iron, Fe (wt.%)	13.7	13.5	14.0	13.5	14.0
Magnesium oxide, MgO (wt.%)	27.9	27.6	28.3	27.5	28.3
Nickel, Ni (wt.%)	3.24	3.12	3.37	3.15	3.33
Silicon dioxide, SiO_2 (wt.%)	32.4	32.2	32.6	32.1	32.7
Sulphur, S (wt.%)	7.25	6.95	7.55	7.01	7.49
IR Combustion					
Sulphur, S (wt.%)	7.48	7.25	7.71	7.34	7.62

*values may appear asymmetric due to rounding

Prepared by:
Ore Research & Exploration Pty Ltd
October 2006

REPORT 05/562C

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 74a is one of a suite of six nickel sulphide CRMs (OREAS 72a to OREAS 77a) prepared from high grade massive nickel sulphide ore and barren ultramafic material from the Cosmos Nickel mine located in the Kathleen Valley area approximately 30km north of Leinster in Western Australia. Cosmos is situated within the Agnew-Wiluna portion of the Norseman-Wiluna greenstone belt. This portion of the belt is strongly attenuated and characterised by large scale faults, complex folding and typically steep dips. It is a typical Kambalda-style, komatiite associated, massive sulphide deposit representing an essentially in-situ accumulation of primary magmatic Ni-Fe sulphides with minor by-products including Cu, Co and platinum group elements (PGE's). The Cosmos deposit comprises one discrete zone of massive and semi-massive sulphides extending over a strike length of 240m. Mineralisation is strata bound between the ovelying ultramafic unit and the underlying dolerite and felsic volcanic rocks. Continuity of grade and width of mineralisation are strong both along strike and down dip.

COMMINUTION AND HOMOGENISATION PROCEDURES

The material constituting OREAS 74a was prepared in the following manner:

a) drying to constant mass at 65 C (Ni ore)and 105^{0}C (barren ultramafic);
b) crushing;
c) milling of the nickel ore to 100% minus 25 microns;
d) milling of the barren ultramafic to 98% minus 75 microns;
e) combining in appropriate proportions to achieve the desired grade;
f) homogenisation;
g) packaging into 10g units in laminated foil pouches.

ANALYTICAL PROGRAM FOR OREAS 74a

Fifteen commercial laboratories participated in the analytical program to certify Au, Pt, Pd, Al_2O_3, As, Cr, Co, Cu, Fe, MgO, Ni, SiO_2 and S 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 – A24). 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.

Table 1. Approximate major and trace element composition of nickel sulphide reference material OREAS 74a; wt.% - weight percent; ppm - parts per million.

Constituent	wt.%	Constituent	ppm	Constituent	ppm	Constituent	ppm
TiO_2	0.12	Ag	0.67	Ho	0.13	Sm	0.47
MnO	0.13	Ba	22	In	0.04	Sn	<1
CaO	1.98	Be	0.4	La	3.2	Sr	16
K_2O	0.13	Bi	0.67	Li	10.8	Ta	<1
P_2O_5	0.04	Cd	<1	Lu	0.05	Tb	0.1
Na_2O	0.14	Ce	6.1	Mo	1	Te	0.4
C	0.19	Cs	1.8	Nb	1	Th	1.2
		Dy	0.43	Nd	1.6	U	0.43
		Er	0.35	Pb	5.3	W	4.2
		Eu	0.02	Pr	0.52	Y	3.2
		Ga	1.6	Rb	8.9	Yb	0.37
		Gd	0.5	Sb	<1	Zn	73
		Hf	<1	Sc	6	Zr	10

The intent of the certification program was to characterise the analytes by a) fire assay ICP-MS, b) total acid digest methods (mainly HF-HCl-HNO_3-$HClO_4$) with ICP-OES, ICP-MS and AAS finish, and b) sodium peroxide or lithium borate fusion with ICP-OES, ICP-MS, AAS or XRF finish. S was also analysed by Leco IR combustion furnace. 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 110g 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 74a

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 distributions 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

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

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

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 74a

Constituent	Recommended value	95% Confidence Interval	
		Low	High
Lead fire assay			
Gold, Au (ppb)	21	19	23
Palladium, Pd (ppb)	172	168	176
Platinum, Pt (ppb)	223	216	231
4 Acid digest			
Aluminium oxide, Al_2O_3 (wt.%)	2.20	2.14	2.25
Arsenic, As (ppm)	49.6	47.2	52.0
Chromium, Cr (ppm)	1303	1130	1475
Cobalt, Co (ppm)	554	541	567
Copper, Cu (ppm)	1178	1160	1197
Iron, Fe (wt.%)	13.8	13.5	14.1
Magnesium oxide, MgO	28.1	27.3	28.9
Nickel, Ni (wt.%)	3.14	3.04	3.23
Sulphur, S (wt.%)	7.73	7.44	8.01
Fusion			
Aluminium oxide, Al_2O_3 (wt.%)	2.21	2.18	2.24
Arsenic, As (ppm)	49.6	45.0	54.2
Chromium, Cr (ppm)	1780	1745	1815
Cobalt, Co (ppm)	581	556	606
Copper, Cu (ppm)	1240	1217	1263
Iron, Fe (wt.%)	13.7	13.5	14.0
Magnesium oxide, MgO	27.9	27.6	28.3
Nickel, Ni (wt.%)	3.24	3.12	3.37
Silicon dioxide, SiO_2 (wt.%)	32.4	32.2	32.6
Sulphur, S (wt.%)	7.25	6.95	7.55
IR Combustion			
Sulphur, S (wt.%)	7.48	7.25	7.71

* 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* j*th raw result reported by laboratory* i;

x'_{ij} *is the* j*th 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.

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 nickel by 4 acid digest, where 99% of the time at least 95% of subsamples will have concentrations lying between 3.07 and 3.20 percent (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:

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

where

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

s_g' *is the grand standard deviation computed from the transformed (i.e. means - adjusted) results*

according to the formula:

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

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 $s_l / 2s_g' > 1$ (i.e. where the weighting factor $1 - s_l / 2s_g' < 0$). 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 $s_l / 2s_g' > 1$ (i.e. where the weighting factor $1 - s_l / 2s_g' < 0$).

Table 3. Recommended values and tolerance limits for OREAS 74a

Constituent	Recommended value	Tolerance limits 1-α=0.99, ρ=0.95	
		Low	High
Lead fire assay			
Gold, Au (ppb)	21	18	24
Palladium, Pd (ppb)	172	166	179
Platinum, Pt (ppb)	223	212	234
4 Acid digest			
Aluminium oxide, Al_2O_3 (wt.%)	2.20	2.15	2.24
Arsenic, As (ppm)	49.6	45.0	54.2
Chromium, Cr (ppm)	1303	1231	1374
Cobalt, Co (ppm)	554	545	563
Copper, Cu (ppm)	1178	1157	1200
Iron, Fe (wt.%)	13.8	13.6	14.0
Magnesium oxide, MgO (wt.%)	28.1	27.5	28.7
Nickel, Ni (wt.%)	3.14	3.07	3.20
Sulphur, S (wt.%)	7.73	7.58	7.88
Fusion			
Aluminium oxide, Al_2O_3 (wt.%)	2.21	2.16	2.26
Arsenic, As (ppm)	49.6	40.8	58.3
Chromium, Cr (ppm)	1780	1745	1815
Cobalt, Co (ppm)	581	559	604
Copper, Cu (ppm)	1240	1198	1282
Iron, Fe (wt.%)	13.7	13.5	14.0
Magnesium oxide, MgO (wt.%)	27.9	27.5	28.3
Nickel, Ni (wt.%)	3.24	3.15	3.33
Silicon dioxide, SiO_2 (wt.%)	32.4	32.1	32.7
Sulphur, S (wt.%)	7.25	7.01	7.49
IR Combustion			
Sulphur, S (wt.%)	7.48	7.34	7.62

*intervals may appear asymmetric due to rounding

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.

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 (SDs) of the accepted pool of certification data and are presented in Table 4. As a guide these intervals may be regarded as informational (1SD), warning or rejection for multiple outliers (2SD), or rejection for individual outliers (3SD) in QC monitoring although their precise application should be at the discretion of the QC manager concerned.

Table 4. Proposed performance gates for OREAS 74a

Constituent	Recommended value	Performance Gates							
		1SD		2SD		3SD		5%	
		Low	High	Low	High	Low	High	Low	High
Lead fire assay									
Gold, Au (ppb)	21	18	24	14	27	11	31	20	22
Palladium, Pd (ppb)	172	164	180	156	188	148	196	164	181
Platinum, Pt (ppb)	223	206	240	189	258	171	275	212	234
4 Acid digest									
Aluminium oxide, Al_2O_3 (wt.%)	2.20	2.11	2.28	2.03	2.37	1.94	2.45	2.09	2.31
Arsenic, As (ppm)	49.6	44.1	55.1	38.6	60.6	33.1	66.1	47.1	52.1
Chromium, Cr (ppm)	1303	1048	1558	793	1813	538	2068	1237	1368
Cobalt, Co (ppm)	554	529	579	505	603	480	628	526	582
Copper, Cu (ppm)	1178	1143	1214	1107	1250	1071	1286	1119	1237
Iron, Fe (wt.%)	13.8	13.2	14.3	12.7	14.9	12.1	15.4	13.1	14.5
Magnesium oxide, MgO (wt.%)	28.1	26.8	29.5	25.5	30.8	24.2	32.1	26.7	29.5
Nickel, Ni (wt.%)	3.14	2.96	3.31	2.79	3.49	2.61	3.66	2.98	3.29
Sulphur, S (wt.%)	7.73	7.35	8.11	6.97	8.49	6.59	8.87	7.34	8.11
Fusion									
Aluminium oxide, Al_2O_3 (wt.%)	2.21	2.15	2.28	2.08	2.34	2.02	2.41	2.10	2.32
Arsenic, As (ppm)	49.6	44.4	54.8	39.2	60.0	34.0	65.2	47.1	52.1
Chromium, Cr (ppm)	1780	1724	1836	1668	1891	1612	1947	1691	1869
Cobalt, Co (ppm)	581	536	626	491	671	446	717	552	610
Copper, Cu (ppm)	1240	1186	1294	1132	1348	1078	1402	1178	1302
Iron, Fe (wt.%)	13.7	13.3	14.2	12.9	14.6	12.5	15.0	13.1	14.4
Magnesium oxide, MgO (wt.%)	27.9	27.3	28.5	26.7	29.1	26.1	29.7	26.5	29.3
Nickel, Ni (wt.%)	3.24	3.05	3.44	2.86	3.63	2.66	3.83	3.08	3.41
Silicon dioxide, SiO_2 (wt.%)	32.4	32.0	32.7	31.7	33.1	31.3	33.4	30.8	34.0
Sulphur, S (wt.%)	7.25	6.96	7.54	6.66	7.83	6.37	8.13	6.89	7.61
IR Combustion									
Sulphur, S (wt.%)	7.48	7.06	7.89	6.65	8.31	6.23	8.72	7.11	7.85

*values may appear asymmetric due to rounding

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
SGS, Welshpool, WA, Australia
SGS Geosol, Brazil, Sth America
Ultra Trace Laboratories, Canning Vale, WA, Australia

PREPARER AND SUPPLIER OF THE REFERENCE MATERIAL

The siltstone reference material OREAS 74a has been prepared and certified and is supplied by:

Ore Research & Exploration Pty Ltd
6-8 Gatwick Road
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AUSTRALIA

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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 74a is a reference material intended for the following:

i) for the calibration of instruments used in the determination of the concentration of Ni, Au, Pt, Pd, Fe, Cu, Cr, Co, MgO, Al_2O_3, As, SiO_2 and S;
ii) for the verification of analytical methods for , Au, Pt, Pd, Fe, Cu, Cr, Co, MgO, Al_2O_3, As, SiO_2 and S;
iii) for the preparation of secondary reference materials of similar composition;

STABILITY AND STORAGE INSTRUCTIONS

OREAS 74a has been prepared from high grade nickel sulphide ore and barren ultramafic. Packaging under nitrogen in robust foil laminate it is considered to provide long-term stability for this CRM under normal storage conditions.

INSTRUCTIONS FOR THE CORRECT USE OF THE REFERENCE MATERIAL

The recommended values for OREAS 74a refer to the concentration levels of Ni, Au, Pt, Pd, Fe, Cu, Cr, Co, MgO, Al_2O_3, As, SiO_2 and S after removal of hygroscopic moisture (~0.66 wt.%) by drying in air to constant mass at 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

October 27, 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 74a

Table A1. Explanation of abbreviations used in Tables A2 – A24.

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
4A	four acid (HF-HNO3 -HClO4 -HCl) digestion
AAS	atomic absorption spectrometry
OES	inductively coupled plasma optical emission spectrometry
MS	inductively coupled plasma mass spectrometry
PPP	inductively coupled plasma optical emission spectrometry
XRF	x-ray fluorescence
BF	lithium metaborate fusion
PF	sodium peroxide fusion
LECO	Leco infrared furnace
HG	Hydride generation

Table A2. Analytical results for gold in OREAS 74a (abbreviations as in Table A1; values in ppb).

Replicate No.	Lab A FA*MS	Lab B FA*MS	Lab C FA*MS	Lab D -	Lab E FA*MS	Lab F FA*MS	Lab G FA*MS	Lab H FA*MS	Lab I -	Lab J FA*MS	Lab K FA*MS	Lab L FA*OES	Lab M FA*MS	Lab N FA*MS	Lab O FA*MS
1	42	17	23	NR	20	18	22	19	NR	56	20	20	30	20	23
2	43	27	24	NR	22	17	21	16	NR	45	24	20	24	19	25
3	40	26	21	NR	27	19	21	14	NR	53	**28**	19	26	19	20
4	41	22	26	NR	22	18	20	**30**	NR	29	19	20	26	18	17
5	40	20	21	NR	20	17	23	19	NR	47	18	**25**	23	18	22
Mean	**41**	22	23		22	18	21	20		**46**	22	21	26	19	21
Median	41	22	23		22	18	21	19		47	20	20	26	19	22
Std.Dev.	1	4	2		3	1	1	6		10	4	2	3	1	3
Rel.Std.Dev.	3.16%	18.6%	9.22%		12.9%	4.70%	5.33%	31.6%		22.8%	19.0%	11.8%	10.4%	4.45%	14.3%
PDM[3]	97.4%	7.31%	10.2%		6.35%	-14.7%	2.51%	-6.11%		120%	4.43%	-1.13%	23.6%	-9.94%	2.51%

Table A3. Analytical results for palladium in OREAS 74a (abbreviations as in Table A1; values in ppb).

Replicate No.	Lab A FA*MS	Lab B FA*MS	Lab C FA*MS	Lab D -	Lab E FA*MS	Lab F FA*MS	Lab G FA*MS	Lab H FA*MS	Lab I -	Lab J FA*MS	Lab K FA*MS	Lab L FA*OES	Lab M FA*MS	Lab N FA*MS	Lab O FA*MS
1	182	160	**170**	NR	167	163	163	163	NR	173	143	174	182	180	167
2	178	165	180	NR	176	162	162	160	NR	173	153	166	186	172	163
3	177	183	178	NR	164	163	173	**142**	NR	185	160	172	183	176	177
4	173	178	180	NR	169	**169**	169	157	NR	**154**	137	172	**166**	177	173
5	174	182	178	NR	157	164	183	162	NR	178	137	170	176	168	183
Mean	177	174	177		167	164	170	157		173	**146**	171	179	175	173
Median	177	178	178		167	163	169	160		173	143	172	182	176	173
Std.Dev.	4	10	4		7	3	9	9		12	10	3	8	5	8
Rel.Std.Dev.	2.02%	6.02%	2.34%		4.17%	1.71%	5.03%	5.48%		6.66%	6.98%	1.78%	4.44%	2.67%	4.59%
PDM[3]	2.68%	0.82%	2.91%		-3.25%	-4.76%	-1.27%	-8.94%		0.24%	-15.2%	-0.81%	3.72%	1.40%	0.24%

Table A4. Analytical results for platinum in OREAS 74a (abbreviations as in Table A1; values in ppb).

Replicate No.	Lab A FA*MS	Lab B FA*MS	Lab C FA*MS	Lab D -	Lab E FA*MS	Lab F FA*MS	Lab G FA*MS	Lab H FA*MS	Lab I -	Lab J FA*MS	Lab K FA*MS	Lab L FA*OES	Lab M FA*MS	Lab N FA*MS	Lab O FA*MS
1	238	193	231	NR	226	215	197	219	NR	223	191	221	240	220	180
2	241	227	235	NR	238	217	196	215	NR	226	197	218	249	216	180
3	**226**	244	265	NR	223	222	212	**195**	NR	210	**219**	227	243	212	169
4	239	246	259	NR	217	233	204	217	NR	181	186	229	232	222	164
5	242	232	257	NR	204	226	218	219	NR	239	190	222	232	218	174
Mean	237	228	**249**		222	223	205	213		216	197	**223**	239	218	**173**
Median	239	232	257		223	222	204	217		223	191	222	240	218	174
Std.Dev.	6	21	15		12	7	10	10		22	13	5	7	4	7
Rel.Std.Dev.	2.72%	9.34%	6.14%		5.62%	3.19%	4.64%	4.79%		10.2%	6.68%	2.02%	3.06%	1.77%	4.03%
PDM[3]	6.30%	2.35%	11.8%		-0.69%	-0.25%	-7.95%	-4.55%		-3.29%	-11.9%	0.11%	7.19%	-2.49%	-22.3%

Table A5. Analytical results for 4 acid aluminium oxide in OREAS 74a (abbreviations as in Table A1; values in wt %).

Replicate No.	Lab A 4A*OES	Lab B 4A*OES	Lab C 4A*OES	Lab D 4A*MS	Lab E 4A*AAS	Lab F 4A*OES	Lab G 4A*OES	Lab H 4A*OES	Lab I 4A*OES	Lab J -	Lab K -	Lab L -	Lab M 4A*OES	Lab N 4A*OES	Lab O 4A*OES
1	**2.14**	2.20	2.08	2.25	2.35	2.04	2.20	1.01	2.16	NR	NR	NR	2.14	2.37	2.21
2	2.23	2.17	2.10	2.31	2.29	2.06	2.23	1.07	2.13	NR	NR	NR	2.23	2.30	2.23
3	2.25	2.17	2.15	2.25	2.28	2.04	2.20	1.03	2.10	NR	NR	NR	2.08	2.34	2.21
4	2.21	2.19	2.19	2.19	2.27	2.06	2.23	0.99	2.14	NR	NR	NR	2.14	2.34	2.19
5	2.29	2.17	2.12	2.19	2.31	2.06	2.20	1.06	2.16	NR	NR	NR	2.06	**2.10**	2.21
Mean	2.22	2.18	2.13	2.24	2.30	2.05	2.21	**1.03**	2.14				2.13	2.29	2.21
Median	2.23	2.17	2.12	2.25	2.29	2.06	2.20	1.03	2.14				2.14	2.34	2.21
Std.Dev.	0.06	0.01	0.05	0.05	0.03	0.01	0.02	0.03	0.02				0.07	0.11	0.01
Rel.Std.Dev.	2.50%	0.64%	2.14%	2.24%	1.37%	0.50%	0.74%	3.24%	1.16%				3.11%	4.76%	0.60%
PDM[3]	1.21%	-0.68%	-3.17%	1.85%	4.67%	-6.61%	0.67%	-53.0%	-2.70%				-3.17%	4.22%	0.61%

Table A6. Analytical results for 4 acid arsenic in OREAS 74a (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A 4A*OES	Lab B 4A*OES	Lab C 4A*OES	Lab D 4A*MS	Lab E 4A*AAS	Lab F 4A*OES	Lab G 4A*OES	Lab H 4A*OES	Lab I 4A*OES	Lab J HG*AAS	Lab K -	Lab L -	Lab M 4A*OES	Lab N 4A*OES	Lab O 4A*OES
1	40	42	70	30	50	<200	46	54.6	50	73	NR	NR	50	52	52
2	50	41	60	20	50	<200	48	54.9	45	75	NR	NR	<50	54	50
3	40	46	70	30	40	<200	51	53.6	50	68	NR	NR	50	52	50
4	65	46	80	20	50	<200	51	52.7	50	69	NR	NR	50	54	**54**
5	65	46	90	30	40	<200	51	53.5	45	70	NR	NR	<50	52	49
Mean	52	44	**74**	**26**	46	<200	49	54	48	**71**			50	53	51
Median	50	46	70	30	50	<200	51	54	50	70			50	52	50
Std.Dev.	13	2	11	5	5	-	2	1	3	3			0	1	2
Rel.Std.Dev.	24.1%	5.63%	15.4%	21.1%	11.9%	-	4.66%	1.65%	5.71%	4.11%			0.00%	2.07%	3.92%
PDM[3]	4.81%	-10.9%	49.2%	-47.6%	-7.28%	-	-0.43%	8.56%	-3.25%	43.1%			0.78%	6.43%	2.80%

Table A7. Analytical results for 4 acid chromium in OREAS 74a (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A 4A*OES	Lab B 4A*OES	Lab C 4A*OES	Lab D 4A*MS	Lab E 4A*AAS	Lab F 4A*OES	Lab G 4A*OES	Lab H -	Lab I 4A*OES	Lab J -	Lab K -	Lab L -	Lab M 4A*OES	Lab N 4A*OES	Lab O -
1	**1500**	**1560**	1140	1200	1420	800	**1720**	NR	1110	NR	NR	NR	1660	1538	NR
2	1330	**1581**	1200	1180	1480	780	1430	NR	1080	NR	NR	NR	1570	1562	NR
3	1280	1298	1240	1160	1680	810	1450	NR	1110	NR	NR	NR	1530	1511	NR
4	1270	1316	1440	1050	1370	800	1390	NR	1070	NR	NR	NR	1620	1582	NR
5	1230	1320	1560	**950**	1580	820	**1280**	NR	1090	NR	NR	NR	1610	1569	NR
Mean	1322	1415	1316	1108	1506	802	1454		1092				1598	1552	
Median	1280	1320	1240	1160	1480	800	1430		1090				1610	1562	
Std.Dev.	106	142	177	106	125	15	163		18				50	28	
Rel.Std.Dev.	7.99%	10.1%	13.4%	9.54%	8.29%	1.85%	11.2%		1.64%				3.11%	1.81%	
PDM[3]	1.49%	8.63%	1.03%	-14.9%	15.6%	-38.4%	11.6%		-16.2%				22.7%	19.2%	

Table A8. Analytical results for 4 acid cobalt in OREAS 74a (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A 4A*OES	Lab B 4A*OES	Lab C 4A*OES	Lab D 4A*MS	Lab E 4A*AAS	Lab F 4A*OES	Lab G 4A*OES	Lab H 4A*OES	Lab I 4A*OES	Lab J 4A*AAS	Lab K -	Lab L AR*OES	Lab M 4A*OES	Lab N 4A*OES	Lab O 4A*OES
1	510	**499**	550	530	560	570	564	550	565	538	NR	573	560	578	590
2	540	**494**	560	540	540	570	555	551	560	537	NR	575	500	585	590
3	530	544	560	520	540	560	**536**	546	560	530	NR	574	520	598	590
4	515	542	580	510	530	560	555	**567**	565	551	NR	**579**	520	591	610
5	535	540	560	510	**500**	570	550	545	570	548	NR	574	540	**540**	610
Mean	526	523.8	562	522	534	566	552	552	564	540.8		575	528	578	598
Median	530	540	560	520	540	570	555	550	565	538		574	520	585	590
Std.Dev.	13	25	11	13	22	5	10	9	4	9		2	23	23	11
Rel.Std.Dev.	2.46%	4.78%	1.95%	2.50%	4.10%	0.97%	1.86%	1.61%	0.74%	1.59%		0.41%	4.32%	3.92%	1.83%
PDM[3]	-5.07%	-5.47%	1.43%	-5.79%	-3.63%	2.15%	-0.38%	-0.41%	1.79%	-2.40%		3.77%	-4.71%	4.39%	7.92%

Table A9. Analytical results for 4 acid copper in OREAS 74a (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A 4A*OES	Lab B 4A*OES	Lab C 4A*OES	Lab D 4A*MS	Lab E 4A*AAS	Lab F 4A*OES	Lab G 4A*OES	Lab H 4A*OES	Lab I 4A*OES	Lab J 4A*AAS	Lab K -	Lab L AR*OES	Lab M 4A*OES	Lab N 4A*OES	Lab O 4A*OES
1	1120	**1082**	1160	1160	1210	1170	1100	1030	1240	1149	NR	1195	1230	1231	1130
2	1190	**1082**	1160	1200	1160	1170	1090	1050	1250	1155	NR	1187	1130	1218	1140
3	1170	1197	1200	1160	1180	1150	1140	1010	1220	1176	NR	1182	1170	1238	1140
4	1160	1194	1220	1140	1180	1170	1140	1060	1210	**1190**	NR	1203	1190	1246	1140
5	1200	1196	1180	1140	**1080**	1180	1170	1020	1230	1157	NR	1205	1170	**1124**	1140
Mean	1168	1150	1184	1160	1162	1168	1128	**1034**	1230	1165.4		1194	1178	1211	1138
Median	1170	1194	1180	1160	1180	1170	1140	1030	1230	1157		1195	1170	1231	1140
Std.Dev.	31	62	26	24	49	11	33	21	16	17		10	36	50	4
Rel.Std.Dev.	2.67%	5.41%	2.20%	2.11%	4.23%	0.94%	2.90%	2.01%	1.29%	1.46%		0.83%	3.08%	4.12%	0.39%
PDM[3]	-0.88%	-2.39%	0.48%	-1.56%	-1.39%	-0.88%	-4.28%	-12.3%	4.38%	-1.10%		1.36%	-0.03%	2.80%	-3.43%

Table A10. Analytical results for 4 acid iron in OREAS 74a (abbreviations as in Table A1; values in wt %).

Replicate No.	Lab A 4A*OES	Lab B 4A*OES	Lab C 4A*OES	Lab D 4A*MS	Lab E 4A*AAS	Lab F 4A*OES	Lab G 4A*OES	Lab H 4A*OES	Lab I 4A*OES	Lab J -	Lab K -	Lab L -	Lab M 4A*OES	Lab N 4A*OES	Lab O 4A*OES
1	14.1	13.9	13.0	13.4	13.9	14.4	**12.9**	13.0	14.5	NR	NR	NR	13.6	**14.5**	14.2
2	13.9	13.9	13.1	13.8	13.8	14.4	13.2	13.0	14.2	NR	NR	NR	12.7	14.2	14.2
3	13.7	14.5	13.4	13.5	13.8	14.3	13.8	12.8	14.6	NR	NR	NR	13.1	14.2	14.5
4	13.7	14.6	**13.7**	13.1	13.8	14.3	14.0	13.1	14.2	NR	NR	NR	13.2	14.3	14.1
5	14.2	14.5	13.1	13.0	**13.4**	14.3	13.9	12.8	14.3	NR	NR	NR	13.3	14.2	13.9
Mean	13.9	14.3	13.2	13.3	13.7	14.3	13.6	12.9	14.4				13.2	14.3	14.2
Median	13.9	14.5	13.1	13.4	13.8	14.3	13.8	13.0	14.3				13.2	14.2	14.2
Std.Dev.	0.2	0.4	0.3	0.3	0.2	0.1	0.5	0.1	0.2				0.3	0.1	0.2
Rel.Std.Dev.	1.64%	2.47%	2.09%	2.32%	1.26%	0.40%	3.56%	1.04%	1.27%				2.39%	0.85%	1.53%
PDM[3]	1.02%	3.45%	-3.91%	-3.26%	-0.57%	4.01%	-1.59%	-6.09%	4.22%				-4.29%	3.48%	2.91%

Table A11. Analytical results for 4 acid magnesium oxide in OREAS 74a (abbreviations as in Table A1; values in wt %).

Replicate No.	Lab A 4A*OES	Lab B 4A*OES	Lab C 4A*OES	Lab D 4A*MS	Lab E 4A*AAS	Lab F 4A*OES	Lab G 4A*OES	Lab H 4A*OES	Lab I 4A*OES	Lab J -	Lab K -	Lab L -	Lab M 4A*OES	Lab N 4A*OES	Lab O 4A*OES
1	26.9	27.9	25.9	27.3	28.5	28.6	30.2	29.6	27.3	NR	NR	NR	30.0	27.3	28.7
2	28.2	28.0	26.0	27.6	27.6	28.2	30.7	31.5	27.2	NR	NR	NR	27.9	27.3	28.7
3	28.0	27.2	26.5	27.4	27.4	28.8	29.8	30.8	27.6	NR	NR	NR	28.7	27.2	28.2
4	27.7	27.5	**26.9**	26.4	27.3	28.8	30.3	28.1	**27.9**	NR	NR	NR	28.7	27.3	28.0
5	28.7	27.3	26.0	26.4	28.3	29.0	29.9	31.8	27.3	NR	NR	NR	29.2	**27.0**	28.4
Mean	27.9	27.6	26.3	27.0	27.8	28.7	30.2	30.4	27.5				28.9	27.2	28.4
Median	28.0	27.5	26.0	27.3	27.6	28.8	30.2	30.8	27.3				28.7	27.3	28.4
Std.Dev.	0.67	0.35	0.45	0.58	0.54	0.30	0.36	1.52	0.29				0.79	0.12	0.30
Rel.Std.Dev.	2.39%	1.26%	1.70%	2.13%	1.96%	1.03%	1.18%	5.02%	1.05%				2.73%	0.45%	1.04%
PDM[3]	-0.82%	-1.94%	-6.58%	-3.95%	-1.11%	2.00%	7.28%	7.88%	-2.39%				2.72%	-3.21%	0.91%

Table A12. Analytical results for 4 acid nickel in OREAS 74a (abbreviations as in Table A1; values in wt %).

Replicate No.	Lab A 4A*OES	Lab B 4A*OES	Lab C 4A*OES	Lab D 4A*MS	Lab E 4A*AAS	Lab F 4A*OES	Lab G 4A*OES	Lab H 4A*OES	Lab I 4A*OES	Lab J 4A*AAS	Lab K -	Lab L AR*OES	Lab M 4A*OES	Lab N 4A*OES	Lab O 4A*OES
1	2.96	2.84	3.04	3.00	3.17	3.10	2.79	3.46	3.25	3.19	NR	3.13	2.95	3.38	3.33
2	3.13	2.84	3.14	2.98	3.08	3.10	2.94	3.45	3.31	3.19	NR	3.12	2.74	3.26	3.33
3	3.02	3.17	3.18	2.95	3.10	3.06	3.03	3.4	3.28	3.35	NR	3.15	2.87	3.34	3.35
4	3.09	3.06	3.26	2.85	3.11	3.12	3.12	3.42	3.24	3.31	NR	3.13	2.82	3.31	3.31
5	3.15	3.11	3.14	2.86	3.06	**3.16**	3.03	3.41	3.26	3.21	NR	3.12	2.87	**3.01**	3.35
Mean	3.07	3.00	3.15	2.93	3.10	3.11	2.98	3.43	3.27	3.25		3.13	2.85	3.26	3.33
Median	3.09	3.06	3.14	2.95	3.10	3.10	3.03	3.42	3.26	3.21		3.13	2.87	3.31	3.33
Std.Dev.	0.08	0.15	0.08	0.07	0.04	0.03	0.12	0.03	0.03	0.07		0.01	0.08	0.15	0.02
Rel.Std.Dev.	2.58%	5.15%	2.52%	2.36%	1.34%	1.10%	4.18%	0.76%	0.85%	2.26%		0.44%	2.71%	4.49%	0.50%
PDM[3]	-2.13%	-4.23%	0.48%	-6.66%	-1.05%	-0.92%	-4.94%	9.28%	4.18%	3.54%		-0.18%	-9.15%	3.92%	6.28%

Table A13. Analytical results for 4 acid sulphur in OREAS 74a (abbreviations as in Table A1; values in wt %).

Replicate No.	Lab A 4A*OES	Lab B 4A*OES	Lab C 4A*OES	Lab D 4A*MS	Lab E 4A*AAS	Lab F 4A*OES	Lab G -	Lab H 4A*OES	Lab I 4A*OES	Lab J -	Lab K -	Lab L AR*OES	Lab M 4A*OES	Lab N -	Lab O -
1	**7.40**	**6.69**	7.60	7.43	**8.18**	7.20	NR	6.45	7.85	NR	NR	7.95	8.72	NR	NR
2	7.69	**6.56**	7.60	7.63	7.88	**7.43**	NR	6.55	7.69	NR	NR	7.97	8.18	NR	NR
3	7.64	7.33	7.80	7.46	8.01	7.23	NR	6.39	7.73	NR	NR	7.93	8.64	NR	NR
4	7.62	7.45	8.00	7.19	7.94	7.19	NR	6.61	7.81	NR	NR	7.96	8.67	NR	NR
5	7.74	7.37	7.70	7.27	7.88	7.35	NR	6.29	7.76	NR	NR	7.94	8.16	NR	NR
Mean	7.62	7.08	7.74	7.40	7.98	7.28		**6.46**	7.77			7.95	8.47		
Median	7.64	7.33	7.70	7.43	7.94	7.23		6.45	7.76			7.95	8.64		
Std.Dev.	0.13	0.42	0.17	0.17	0.12	0.11		0.13	0.06			0.02	0.28		
Rel.Std.Dev.	1.71%	5.92%	2.16%	2.33%	1.57%	1.45%		1.97%	0.82%			0.20%	3.29%		
PDM[3]	-1.42%	-8.37%	0.16%	-4.29%	3.24%	-5.79%		-16.4%	0.52%			2.84%	9.66%		

Table A14. Analytical results for fusion aluminium oxide in OREAS 74a (abbreviations as in Table A1; values in wt %).

Replicate No.	Lab A BF*XRF	Lab B PF*OES	Lab C BF*OES	Lab D BF*OES	Lab E BF*XRF	Lab F BF*OES	Lab G BF*OES	Lab H BF*OES	Lab I BF*OES	Lab J BF*XRF	Lab K BF*OES	Lab L PF*OES	Lab M BF*OES	Lab N BF*OES	Lab O BF*OES
1	2.24	2.17	2.17	2.24	2.02	2.19	2.20	2.19	2.16	2.3	2.17	2.20	2.25	2.32	2.44
2	2.24	2.17	2.16	2.24	2.03	2.24	2.50	2.19	2.13	2.2	2.10	2.22	2.22	2.42	2.40
3	2.24	2.23	2.19	2.27	2.07	2.24	2.50	2.19	2.17	2	2.08	2.21	2.23	2.25	2.38
4	2.24	2.17	2.19	2.26	2.09	2.26	2.30	2.19	2.13	2.1	1.98	2.21	2.21	2.36	2.48
5	2.23	2.23	2.14	2.28	2.12	2.27	2.40	2.19	2.11	2.3	2.00	2.19	2.21	2.17	2.42
Mean	2.24	2.20	2.17	2.26	**2.07**	2.24	**2.38**	2.19	2.14	2.18	**2.07**	2.20	2.22	2.30	**2.42**
Median	2.24	2.17	2.17	2.26	2.07	2.24	2.40	2.19	2.13	2.2	2.08	2.21	2.22	2.32	2.42
Std.Dev.	0.00	0.03	0.02	0.02	0.04	0.03	0.13	0.00	0.02	0.13	0.08	0.01	0.02	0.10	0.04
Rel.Std.Dev.	0.20%	1.41%	0.98%	0.79%	2.01%	1.38%	5.48%	0.00%	1.14%	5.98%	3.69%	0.44%	0.75%	4.21%	1.59%
PDM[3]	1.13%	-0.79%	-1.95%	2.03%	-6.65%	1.22%	7.54%	-1.04%	-3.30%	-1.49%	-6.60%	-0.40%	0.49%	4.11%	9.53%

Table A15. Analytical results for fusion arsenic in OREAS 74a (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A BF*XRF	Lab B PF*OES	Lab C BF*OES	Lab D BF*OES	Lab E BF*XRF	Lab F BF*OES	Lab G BF*OES	Lab H BF*OES	Lab I -	Lab J -	Lab K BF*OES	Lab L PF*MS	Lab M BF*OES	Lab N BF*OES	Lab O BF*OES
1	**110**	<100	100	<100	60	20	90	NR	NR	NR	45	43.3	NR	50	43
2	50	<100	100	<100	60	20	60	NR	NR	NR	45	44.1	NR	52	50
3	60	<100	100	<100	50	20	80	NR	NR	NR	47	44.4	NR	52	48
4	50	<100	100	**100**	50	20	80	NR	NR	NR	48	44.4	NR	50	42
5	50	<100	200	<100	60	26	70	NR	NR	NR	51	44.8	NR	52	49
Mean	64	<100	**120**	<100	56	**21**	**76**				47	44		51	46
Median	50	<100	100	<100	60	20	80				47	44		52	48
Std.Dev.	26	-	45	-	5	3	11				2	1		1	4
Rel.Std.Dev.	40.7%	-	37.3%	-	9.78%	12.7%	15.0%				5.28%	1.27%		2.14%	7.86%
PDM[3]	29.1%	-	142%	-	12.9%	-57.2%	53.3%				-4.81%	-10.9%		3.26%	-6.42%

Table A16. Analytical results for fusion chromium in OREAS 74a (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A BF*XRF	Lab B PF*OES	Lab C BF*OES	Lab D BF*OES	Lab E BF*XRF	Lab F BF*OES	Lab G BF*OES	Lab H BF*OES	Lab I BF*OES	Lab J -	Lab K BF*OES	Lab L PF*OES	Lab M BF*OES	Lab N BF*OES	Lab O BF*OES
1	1800	1911	1700	1700	1815	1752	2200	1800	1800	NR	1600	1777	1710	1749	2600
2	1800	**1958**	1800	1800	1750	1772	2360	1800	1770	NR	1600	1773	1610	1713	2200
3	1810	1882	1800	1700	1760	1772	2050	1800	1790	NR	1600	1777	**1560**	1738	2400
4	1790	**1819**	1800	1800	1815	1765	2110	1800	1800	NR	1600	1780	1650	1706	2500
5	1780	1894	1800	1700	1890	1786	2000	1800	1810	NR	1500	**1765**	1790	1741	2500
Mean	1796	1893	1780	1740	1806	1769	**2144**	1800	1794		**1580**	1774	1664	1729	**2440**
Median	1800	1894	1800	1700	1815	1772	2110	1800	1800		1600	1777	1650	1738	2500
Std.Dev.	11	50	45	55	56	12	142	0	15		45	6	89	19	152
Rel.Std.Dev.	0.63%	2.66%	2.51%	3.15%	3.09%	0.70%	6.62%	0.00%	0.85%		2.83%	0.33%	5.37%	1.09%	6.22%
PDM[3]	0.91%	6.35%	0.01%	-2.23%	1.48%	-0.59%	20.5%	1.14%	0.80%		-11.2%	-0.30%	-6.50%	-2.83%	37.1%

Table A17. Analytical results for fusion cobalt in OREAS 74a (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A BF*XRF	Lab B PF*OES	Lab C BF*OES	Lab D BF*OES	Lab E BF*XRF	Lab F BF*OES	Lab G BF*OES	Lab H BF*OES	Lab I -	Lab J -	Lab K BF*OES	Lab L -	Lab M BF*OES	Lab N BF*OES	Lab O BF*OES
1	590	513	550	500	520	612	570	600	NR	NR	508	NR	620	554	600
2	580	527	560	600	530	596	620	600	NR	NR	504	NR	620	564	700
3	580	586	570	600	530	560	620	600	NR	NR	543	NR	630	572	700
4	590	554	560	600	520	570	650	600	NR	NR	552	NR	630	558	700
5	590	580	560	600	500	582	600	600	NR	NR	563	NR	620	**526**	600
Mean	586	552	560	580	520	584	612	600			534		624	555	660
Median	590	554	560	600	520	582	620	600			543		620	558	700
Std.Dev.	5	32	7	45	12	21	29	0			27		5	17	55
Rel.Std.Dev.	0.93%	5.79%	1.26%	7.71%	2.36%	3.53%	4.82%	0.00%			4.97%		0.88%	3.15%	8.30%
PDM[3]	0.83%	-5.02%	-3.64%	-0.20%	-10.5%	0.49%	5.31%	3.24%			-8.12%		7.37%	-4.54%	13.6%

Table A18. Analytical results for fusion copper in OREAS 74a (abbreviations as in Table A1; values in ppm).

Replicate No.	Lab A BF*XRF	Lab B PF*OES	Lab C BF*OES	Lab D BF*OES	Lab E BF*XRF	Lab F BF*OES	Lab G BF*OES	Lab H BF*OES	Lab I -	Lab J -	Lab K BF*OES	Lab L -	Lab M BF*OES	Lab N BF*OES	Lab O -
1	1300	1089	1240	1200	1220	1113	1170	1300	NR	NR	1158	NR	1060	1236	NR
2	1290	**1077**	1220	1300	1240	935	1310	1200	NR	NR	1135	NR	1050	1242	NR
3	1290	1236	1240	1200	1220	967	1470	1200	NR	NR	1310	NR	1060	1235	NR
4	1260	1203	1300	1300	1200	1033	1340	1300	NR	NR	1334	NR	**1140**	**1271**	NR
5	1260	1231	1240	1300	1190	1051	1410	1200	NR	NR	1311	NR	1050	**1148**	NR
Mean	1280	1167	1248	1260	1214	**1020**	**1340**	1240			1250		**1072**	1226	
Median	1290	1203	1240	1300	1220	1033	1340	1200			1310		1060	1236	
Std.Dev.	19	78	30	55	19	70	114	55			95		38	46	
Rel.Std.Dev.	1.46%	6.68%	2.43%	4.35%	1.61%	6.90%	8.48%	4.42%			7.60%		3.58%	3.77%	
PDM[3]	3.24%	-5.86%	0.66%	1.62%	-2.09%	-17.7%	8.08%	0.01%			0.78%		-13.5%	-1.09%	

Table A19. Analytical results for fusion iron in OREAS 74a (abbreviations as in Table A1; values in wt %).

Replicate No.	Lab A BF*XRF	Lab B BF*XRF	Lab C BF*OES	Lab D BF*OES	Lab E BF*XRF	Lab F BF*OES	Lab G BF*OES	Lab H BF*OES	Lab I BF*OES	Lab J BF*XRF	Lab K BF*OES	Lab L PF*OES	Lab M BF*OES	Lab N BF*OES	Lab O BF*OES
1	13.8	13.0	13.2	**14.1**	13.5	13.9	12.8	13.9	14.2	13.7	13.5	13.8	13.5	14.4	14.9
2	13.7	13.0	13.2	14.3	13.4	14.0	13.4	13.9	14.2	13.6	**13.1**	13.8	13.4	14.1	14.7
3	13.8	14.2	13.5	14.6	13.4	13.9	13.6	13.7	14.4	13.9	13.7	13.7	13.6	14.3	14.8
4	13.7	13.7	13.4	14.5	13.5	13.9	12.4	14.0	14.1	13.7	13.5	13.9	13.6	14.0	15.1
5	13.7	14.0	13.4	14.6	13.3	13.9	13.1	13.9	14.2	13.9	13.5	13.8	13.4	14.0	14.7
Mean	13.7	13.6	13.3	14.4	13.4	13.9	13.1	13.9	14.2	13.8	13.5	13.8	13.5	14.2	**14.8**
Median	13.7	13.7	13.4	14.5	13.4	13.9	13.1	13.9	14.2	13.7	13.5	13.8	13.5	14.1	14.8
Std.Dev.	0.1	0.6	0.1	0.2	0.1	0.1	0.5	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2
Rel.Std.Dev.	0.40%	4.06%	1.11%	1.49%	0.73%	0.51%	3.66%	0.79%	0.77%	0.95%	1.60%	0.47%	0.74%	1.20%	1.13%
PDM[3]	0.00%	-1.10%	-2.98%	4.81%	-2.62%	1.33%	-4.95%	1.02%	3.50%	0.29%	-2.07%	0.34%	-1.74%	3.02%	8.01%

Table A20. Analytical results for fusion magnesium oxide in OREAS 74a (abbreviations as in Table A1; values wt %).

Replicate No.	Lab A BF*XRF	Lab B PF*OES	Lab C BF*OES	Lab D BF*OES	Lab E BF*XRF	Lab F BF*OES	Lab G BF*OES	Lab H BF*OES	Lab I BF*OES	Lab J BF*XRF	Lab K BF*OES	Lab L PF*OES	Lab M BF*OES	Lab N BF*OES	Lab O BF*OES
1	27.7	28.4	26.0	28.4	26.5	27.9	29.7	27.7	27.8	28.8	29.5	27.7	28.1	27.4	30.9
2	27.9	28.0	26.0	28.3	26.8	27.9	33.2	27.6	27.4	28.6	28.8	27.8	28.1	27.7	30.6
3	27.7	28.4	26.5	29.1	26.6	27.9	32.1	27.6	27.3	28.9	28.1	27.9	28.1	27.4	30.3
4	27.7	27.8	26.4	29.0	27.2	27.7	29.4	27.6	27.8	28.7	28.1	27.9	28.1	27.7	31.2
5	27.7	28.3	26.1	28.9	27.0	27.5	30.7	27.6	27.5	28.9	27.7	27.7	28.2	27.2	30.8
Mean	27.7	28.2	**26.2**	28.7	26.8	27.8	**31.0**	27.6	27.6	28.8	28.5	27.8	28.1	27.5	**30.8**
Median	27.7	28.3	26.1	28.9	26.8	27.9	30.7	27.6	27.5	28.8	28.1	27.8	28.1	27.4	30.8
Std.Dev.	0.1	0.2	0.2	0.4	0.3	0.2	1.6	0.0	0.2	0.1	0.7	0.1	0.0	0.2	0.3
Rel.Std.Dev.	0.32%	0.88%	0.90%	1.27%	1.07%	0.64%	5.20%	0.11%	0.84%	0.45%	2.53%	0.38%	0.13%	0.76%	1.09%
PDM[3]	-0.65%	0.92%	-6.16%	2.94%	-3.94%	-0.53%	11.1%	-1.10%	-1.29%	3.08%	1.96%	-0.45%	0.69%	-1.63%	10.2%

Table A21. Analytical results for fusion nickel in OREAS 74a (abbreviations as in Table A1; values in wt %).

Replicate No.	Lab A BF*XRF	Lab B PF*OES	Lab C BF*OES	Lab D BF*OES	Lab E BF*XRF	Lab F BF*OES	Lab G BF*OES	Lab H BF*OES	Lab I -	Lab J -	Lab K BF*OES	Lab L -	Lab M BF*OES	Lab N BF*OES	Lab O BF*OES
1	3.25	2.90	3.13	3.00	3.23	3.25	NR	3.34	NR	NR	2.92	NR	3.51	3.27	3.61
2	3.25	2.96	3.16	2.98	3.18	3.25	NR	3.30	NR	NR	2.85	NR	3.50	3.31	3.46
3	3.26	3.34	3.23	2.95	3.19	3.27	NR	3.24	NR	NR	3.14	NR	3.59	3.41	3.50
4	3.23	3.21	3.18	2.85	3.22	3.32	NR	3.35	NR	NR	3.10	NR	3.56	3.37	3.56
5	3.24	3.33	3.18	2.86	3.16	3.20	NR	3.30	NR	NR	3.12	NR	3.52	**2.98**	3.46
Mean	3.25	3.15	3.18	2.93	3.20	3.26		3.31			3.03		3.54	3.27	3.52
Median	3.25	3.21	3.18	2.95	3.19	3.25		3.30			3.10		3.52	3.31	3.50
Std.Dev.	0.01	0.21	0.04	0.07	0.03	0.04		0.04			0.13		0.04	0.17	0.07
Rel.Std.Dev.	0.35%	6.56%	1.15%	2.36%	0.90%	1.31%		1.31%			4.36%		1.07%	5.19%	1.87%
PDM[3]	0.08%	-2.97%	-2.08%	-9.73%	-1.46%	0.48%		1.93%			-6.71%		9.02%	0.76%	8.46%

Table A22. Analytical results for silicon dioxide in OREAS 74a (abbreviations as in Table A1; values in wt %).

Replicate No.	Lab A BF*XRF	Lab B PF*OES	Lab C BF*OES	Lab D BF*OES	Lab E BF*XRF	Lab F BF*OES	Lab G BF*OES	Lab H BF*OES	Lab I BF*OES	Lab J BF*XRF	Lab K -	Lab L PF*OES	Lab M BF*OES	Lab N BF*OES	Lab O BF*OES
1	32.1	32.7	32.3	32.7	30.7	32.2	32.6	32.2	32.6	32.7	NR	32.2	32.0	31.2	35.2
2	32.2	32.5	32.6	32.6	30.5	31.8	36.9	32.2	32.8	32.7	NR	32.3	32.0	31.2	34.8
3	32.1	33.2	32.9	32.6	30.4	32.0	36.1	32.2	32.6	32.7	NR	32.3	31.9	31.3	34.8
4	32.1	32.5	33.2	32.6	32.1	32.1	32.7	32.2	32.2	32.7	NR	32.3	31.8	**31.0**	35.4
5	32.0	32.9	32.5	32.9	32.6	32.4	34.3	32.1	32.6	32.6	NR	32.2	31.9	**32.0**	35.0
Mean	32.1	32.8	32.7	32.7	**31.3**	32.1	**34.5**	32.2	32.6	32.7		32.3	31.9	**31.3**	**35.0**
Median	32.1	32.7	32.6	32.6	30.7	32.1	34.3	32.2	32.6	32.7		32.3	31.9	31.2	35.0
Std.Dev.	0.1	0.3	0.4	0.1	1.0	0.2	1.9	0.1	0.2	0.0		0.1	0.1	0.4	0.3
Rel.Std.Dev.	0.22%	0.85%	1.08%	0.40%	3.25%	0.68%	5.65%	0.16%	0.67%	0.14%		0.28%	0.26%	1.18%	0.74%
PDM[3]	-0.90%	1.18%	0.96%	0.89%	-3.49%	-0.87%	6.57%	-0.71%	0.52%	0.89%		-0.43%	-1.54%	-3.26%	8.18%

Table A23. Analytical results for fusion sulphur in OREAS 74a (abbreviations as in Table A1; values in wt %)..

Replicate No.	Lab A BF*XRF	Lab B PF*OES	Lab C BF*OES	Lab D BF*OES	Lab E BF*XRF	Lab F -	Lab G -	Lab H -	Lab I -	Lab J -	Lab K -	Lab L -	Lab M -	Lab N -	Lab O -
1	7.37	6.67	6.97	8.02	>6.0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
2	7.33	6.81	7.12	8.07	>6.0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
3	7.37	7.79	7.25	8.31	>6.0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
4	7.33	7.52	7.20	8.12	>6.0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
5	7.37	7.58	7.04	8.22	>6.0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	7.35	7.27	7.12	**8.15**	>6.0										
Median	7.37	7.52	7.12	8.12	>6.0										
Std.Dev.	0.02	0.50	0.11	0.12	-										
Rel.Std.Dev.	0.30%	6.88%	1.60%	1.43%	-										
PDM[3]	1.46%	0.36%	-1.82%	12.4%	-										

Table A24. Analytical results for sulphur by LECO in OREAS 74a (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
1	7.37	7.18	7.53	7.37	7.74	7.48	6.61	8.05	NR	7.85	**6.48**	7.93	8.92	6.94	7.49
2	7.42	7.13	7.52	**7.22**	7.67	7.17	6.41	8.13	NR	**8.21**	**6.39**	7.98	**8.77**	7.01	7.54
3	7.50	8.12	**7.66**	7.27	7.86	7.32	7.12	8.16	NR	7.87	7.03	7.83	8.88	6.92	7.37
4	7.31	7.98	**7.47**	7.39	8.05	7.57	7.07	7.85	NR	**8.08**	6.97	8.02	8.96	6.83	7.40
5	7.49	7.99	7.51	7.41	7.54	7.62	7.27	8.02	NR	7.86	6.91	7.85	8.90	6.80	7.48
Mean	7.42	7.68	7.54	7.33	7.77	7.43	6.90	8.04		7.97	6.76	7.92	**8.89**	6.90	7.46
Median	7.42	7.98	7.52	7.37	7.74	7.48	7.07	8.05		7.87	6.91	7.93	8.90	6.92	7.48
Std.Dev.	0.08	0.48	0.07	0.08	0.19	0.19	0.37	0.12		0.16	0.30	0.08	0.07	0.09	0.07
Rel.Std.Dev.	1.08%	6.29%	0.95%	1.13%	2.49%	2.50%	5.32%	1.51%		2.04%	4.41%	1.02%	0.80%	1.23%	0.93%
PDM[3]	-0.82%	2.68%	0.79%	-1.97%	3.91%	-0.63%	-7.80%	7.52%		6.62%	-9.67%	5.95%	18.8%	-7.74%	-0.31%