



CERTIFICATE OF ANALYSIS FOR
BASE METAL MMCRM OREAS 37

SUMMARY STATISTICS

Constituent	Certified Value	5% window		Relative Standard Deviations			1SD	2SD window		3SD window	
		Low	High	1RSD	2RSD	3RSD		Low	High	Low	High
Mixed Acid Digests (no HF)											
Ag (ppm)	5.19	4.93	5.45	12.13%	24.26%	36.38%	0.63	3.93	6.45	3.30	7.08
As (ppm)	449	427	472	6.20%	12.41%	18.61%	28	393	505	366	533
Cu (ppm)	125	119	132	4.27%	8.54%	12.81%	5	115	136	109	142
Fe (wt.%)	23.76	22.58	24.95	2.34%	4.68%	7.02%	0.56	22.65	24.88	22.10	25.43
Mn (wt.%)	0.719	0.683	0.755	2.37%	4.73%	7.10%	0.017	0.685	0.753	0.668	0.770
Pb (wt.%)	0.615	0.584	0.646	2.81%	5.63%	8.44%	0.017	0.580	0.650	0.563	0.667
Tl (ppm)	63	59	66	8.18%	16.36%	24.54%	5	52	73	47	78
Zn (wt.%)	6.26	5.95	6.57	2.35%	4.71%	7.06%	0.15	5.97	6.55	5.82	6.70
Peroxide Fusion											
Ag (ppm)	~5	IND	IND	IND	IND	IND	IND	IND	IND	IND	IND
As (ppm)	460	437	483	9.19%	18.37%	27.56%	42	375	544	333	587
Cu (ppm)	129	123	136	4.47%	8.94%	13.41%	6	118	141	112	146
Fe (wt.%)	23.53	22.36	24.71	2.29%	4.58%	6.87%	0.54	22.46	24.61	21.92	25.15
Mn (wt.%)	0.769	0.730	0.807	3.50%	7.00%	10.50%	0.027	0.715	0.822	0.688	0.849
Pb (wt.%)	0.597	0.567	0.627	2.57%	5.14%	7.70%	0.02	0.566	0.628	0.551	0.643
Tl (ppm)	156	IND	IND	IND	IND	IND	IND	IND	IND	IND	IND
Zn (wt.%)	6.30	5.99	6.62	2.90%	5.80%	8.70%	0.18	5.94	6.67	5.75	6.85
Leco											
S (wt.%)	26.79	25.45	28.13	2.65%	5.31%	7.96%	0.71	25.37	28.21	24.66	28.92

Note - intervals may appear asymmetric due to rounding

Prepared by:
Ore Research & Exploration Pty Ltd
June 2008

SOURCE MATERIAL

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.

OREAS 37 is a medium grade zinc ore matrix-matched certified reference material (MMCRM) prepared by Ore Research and Exploration. It is one of 3 MMCRM's sourced from the Gamsberg Zn deposit located in the Northern Cape Province of South Africa, approximately 20km west of the Black Mountain mine. Gamsberg is a stratiform base metal Broken Hill Style (BHS) deposit located in the mid-proterozoic Bushmanland Province of the Namaqualand Metamorphic Complex (NMC) of South Africa. The NMC is a highly deformed and metamorphosed supracrustal succession of dominantly pelitic schists and quartzites, deposited on a regionally extensive ± 2000 Ma basement (Rozendal & Stalder, 2001). The stratiform ores have a close spatial and genetic association with metamorphosed chemical sediments including manganiferous iron formations, quartz-garnet rocks (coticules), Ca-Mn marbles and barite (Rozendal & Stalder, 2001).

COMMINUTION AND HOMOGENISATION PROCEDURES

The material was prepared in the following manner:

- a) *drying at 65^o C to constant mass;*
- b) *crushing and screening;*
- b) *preliminary homogenisation;*
- c) *milling to minus 30 microns;*
- d) *final homogenisation;*
- e) *packaging into 10g units under nitrogen and sealed in laminated foil pouches.*

ANALYSIS OF OREAS 37

Ten commercial laboratories participated in the analytical program to characterise Ag, As, Cu, Fe, Mn, Pb, S, Tl and Zn in OREAS 37. The laboratories were requested to analyse all elements by three acid ore grade digest (preferred) or strong aqua regia digestion together with sodium peroxide fusion methods. To evaluate and compensate for the effects of batch-to-batch variation at individual laboratories, samples were submitted to six of the laboratories in three batches of four 10g samples at weekly intervals. The remaining four laboratories completed one round only. Their data has been included in all statistical analysis excluding performance gates, where only the six labs incorporating batch to batch variation have been used (for further discussion see 'Performance Gates').

All 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 (PDM³) are presented in the Appendix (Tables A2 to A18). The parameter PDM³ is a measure of laboratory accuracy while the relative standard deviation is an effective measure of analytical precision where homogeneity of the test material has been confirmed. The analytical methods employed by each laboratory are given in the table captions and described in Table A1 of the Appendix.

All ten commercial labs participated in the acid digest work and employed flame AAS, ICP-OES or ICP-MS instrumental finishes. Up to eight of these labs (depending on the analyte) also carried out sodium peroxide fusion ICP-OES/MS analysis to evaluate the presence of an acid insoluble component. Sulphur was determined via Leco by nine labs with the remaining lab employing aqua regia digest with an ICP-OES finish. Each of the four samples submitted to each laboratory were taken at regular intervals during packaging of the standard in order to maximise their representation. Comparisons of interlaboratory bias and precision are graphically presented in scatter plots for acid digest Pb and Zn (Figures 1 and 2) together with $\pm 3SD$ (magenta) and $\pm 5\%$ (yellow) control lines and certified value (green line). Accepted individual results are coloured blue and individual and dataset outliers are identified by red and violet, respectively.

STATISTICAL EVALUATION OF ANALYTICAL DATA FOR OREAS 37

Certified Value and Confidence Interval

Each batch of results is treated as a separate data set in testing for outliers. The certified value is determined from the mean of lab means after filtering of individual and batch outliers. It is computed according to the formulae

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

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

where

- x_{ij} is the j th 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 ;
- \bar{x} is the mean of means.

The confidence intervals are obtained by calculation of the variance (\hat{V}) of the consensus value (\hat{x}) (mean of means) and reference to Student's- t distribution with degrees of freedom ($p-1$).

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

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

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 is assumed to be symmetrical about the mean in the calculation of the confidence interval.

The test for rejection of individual outliers from each laboratory data set is 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

$$S = 1.483 \frac{\text{median}_{j=1 \dots n} |x_j - \text{median}_{i=1 \dots n}(x_i)|}{}$$

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

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.

Following identification of z-score outliers a 3SD filter is applied, with those values lying outside this window relegated to outlying status also. In certain instances statistician's prerogative has been employed in discriminating outliers. The test for outlying laboratory batches is also based on z-score discrimination (rejected if $|z_i| > 2.5$) and these batches are deleted from the respective lab mean before calculation of the mean of lab means (Certified Value). All outliers are shown in bold and left justified in the tabulated data of the Appendix and to reiterate, have been omitted in the determination of the certified value.

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 certified value, i.e. the narrower the confidence interval the greater the certainty in the certified value.

Fig. 1. Mixed Acid Digest (no HF) results for Zn in OREAS 37

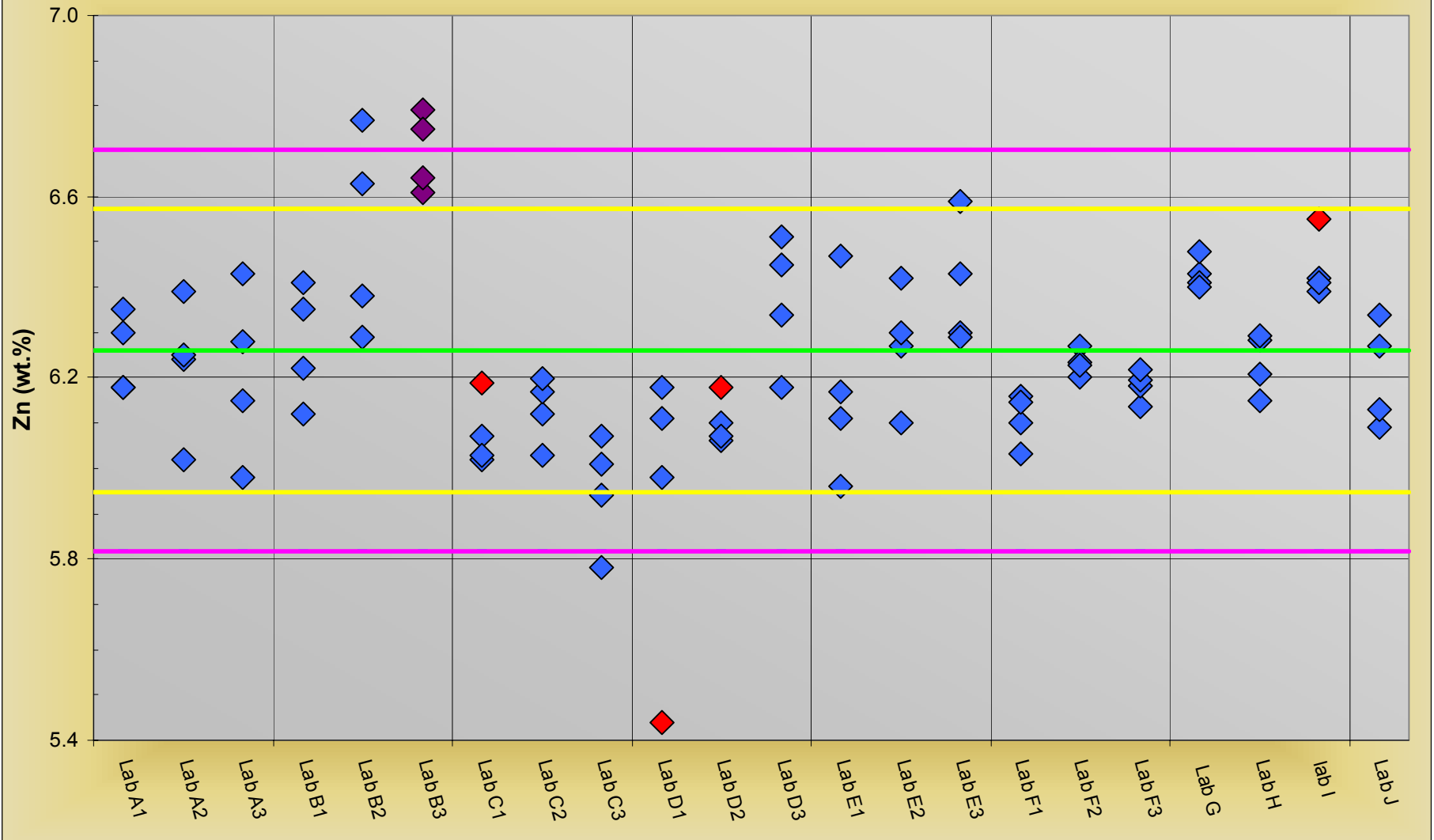


Fig. 2. Mixed Acid Digest (no HF) results for Pb in OREAS 37

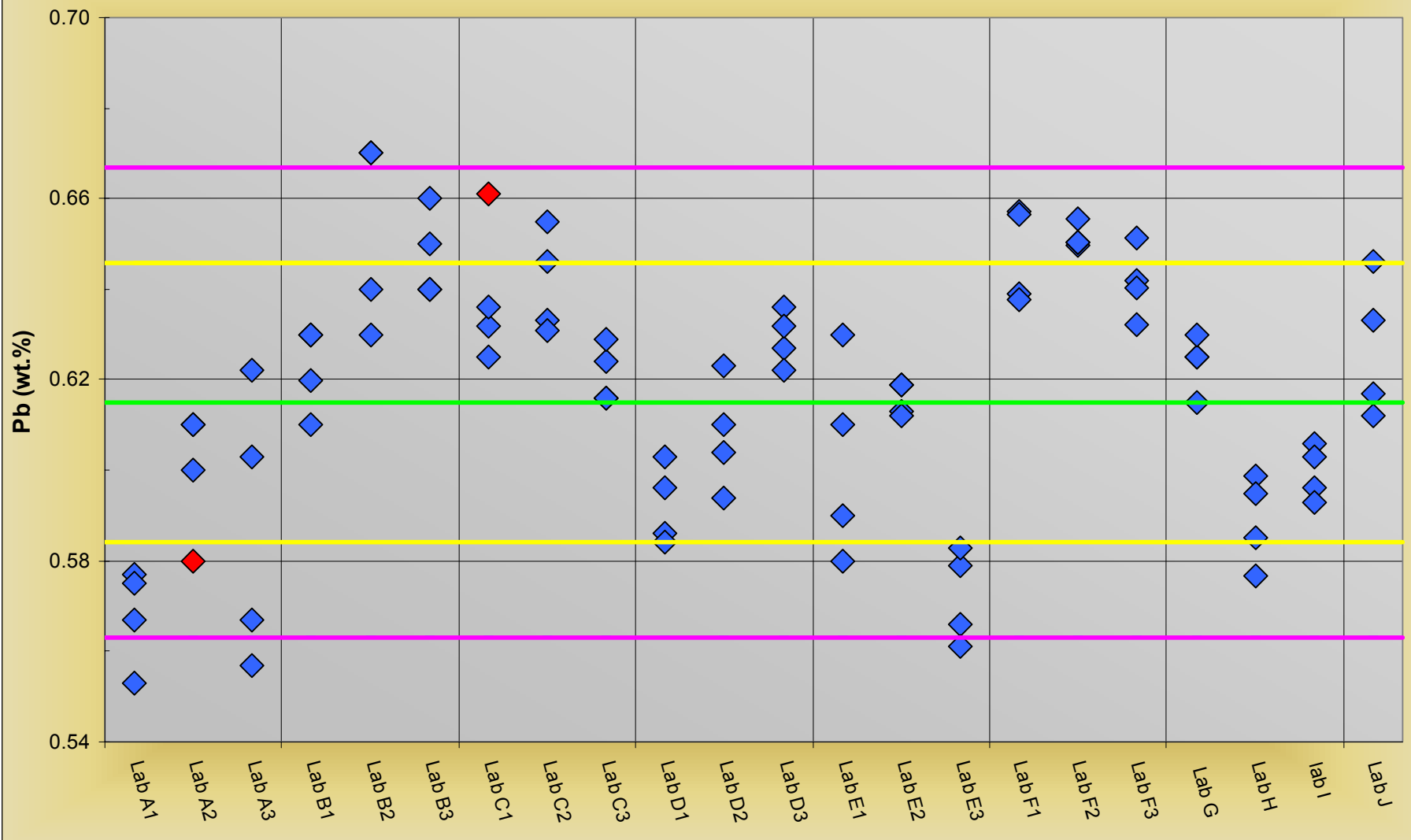


Table 1. Certified Values and 95% Confidence Intervals for OREAS 37.

Constituent	Certified Value	95% Confidence Interval	
		Low	High
Mixed Acid Digests (no HF)			
Silver, Ag (ppm)	5.19	4.77	5.62
Arsenic, As (ppm)	449	438	461
Copper, Cu (ppm)	125	120	131
Iron, Fe (wt.%)	23.76	23.31	24.22
Manganese, Mn (wt.%)	0.719	0.687	0.751
Lead, Pb (wt.%)	0.615	0.599	0.631
Thallium, Tl (ppm)	63	32	93
Zinc, Zn (wt.%)	6.26	6.17	6.35
Peroxide Fusion			
Silver, Ag (ppm)	5.0	4.2	5.8
Arsenic, As (ppm)	460	424	496
Copper, Cu (ppm)	129	123	135
Iron, Fe (wt.%)	23.53	22.88	24.19
Manganese, Mn (wt.%)	0.769	0.751	0.786
Lead, Pb (wt.%)	0.597	0.589	0.605
Thallium, Tl (ppm)	156	139	174
Zinc, Zn (wt.%)	6.30	6.09	6.51
Leco			
Sulphur, S (wt.%)	26.79	26.14	27.45

Note - 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 that 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

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

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

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 zinc by acid digest, where 99% of the time at least 95% of subsamples will have concentrations lying between 6.16 and 6.36 wt.%. 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 (ISO 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

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

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

according to the formula

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

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. Individual outliers (shown in bold in Tables A2 to A18) 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 $1 - s_l / 2s_g' < 0$). Data sets displaying poor resolution (i.e. where the ratio of the reading increment divided by the measured value is $< 1/20$) were also omitted.

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. Despite the limitations of this method, the tolerance intervals presented in Table 2 are considered to confirm a high level of homogeneity for this CRM.

Table 2. Certified Values and Tolerance Limits for OREAS 37.

Constituent	Certified Value	Tolerance limits 1- α =0.99, ρ =0.95	
		Low	High
<u>Mixed Acid Digests (no HF)</u>			
Silver, Ag (ppm)	5.19	4.94	5.44
Arsenic, As (ppm)	449	439	459
Copper, Cu (ppm)	125	122	129
Iron, Fe (wt.%)	23.76	23.45	24.08
Manganese, Mn (wt.%)	0.719	0.707	0.731
Lead, Pb (wt.%)	0.615	0.601	0.629
Thallium, Tl (ppm)	63	60	65
Zinc, Zn (wt.%)	6.26	6.16	6.36
<u>Peroxide Fusion</u>			
Silver, Ag (ppm)	5.0	IND	IND
Arsenic, As (ppm)	460	435	485
Copper, Cu (ppm)	129	IND	IND
Iron, Fe (wt.%)	23.53	23.03	24.04
Manganese, Mn (wt.%)	0.769	0.750	0.787
Lead, Pb (wt.%)	0.597	0.583	0.611
Thallium, Tl (ppm)	156	152	161
Zinc, Zn (wt.%)	6.30	6.17	6.43
<u>Leco</u>			
Sulphur, S (wt.%)	26.79	26.50	27.08

Note - intervals may appear asymmetric due to rounding

ANOVA Study

The sampling format for OREAS 37 was structured to enable nested ANOVA treatment of the round robin results. During the bagging stage immediately following final homogenization, samples were taken at 10 intervals representative of the entire batch of OREAS 37. Each lab received 4 samples per batch made up of paired samples from two different (non-adjacent) intervals. For example, the four samples that Lab A received consisted of:

- Sample 1 (from sampling interval 1)
- Sample 2 (from sampling interval 6)
- Sample 3 (from sampling interval 1)
- Sample 4 (from sampling interval 6)

The acid digest zinc results were used as the test data for the ANOVA investigation comparing within- and between-unit variance. This approach permitted an assessment of homogeneity across the entire batch of OREAS 37. The test was performed using the following parameters:

- Significance Level $\alpha = P$ (type I error) = 0.05
- Null Hypothesis, H_0 : Between-unit variance is no greater than within-unit variance (reject H_0 if p-value < 0.05)
- Alternative Hypothesis, H_1 : Between-unit variance is greater than within-unit variance

P-values are a measure of probability whereby values less than 0.05 indicate a greater than 95% probability that the observed differences in within-unit and between-unit variances are real. The same filtered dataset used to calculate the certified value for zinc via acid digest was used yielding a total of 76 samples from nine labs. The derived p-value of 0.692 indicates that there is no significant evidence that suggests between-unit variance is greater than within-unit variance. Conclusion: do not reject H_0 . Note that ANOVA is not an absolute measure of homogeneity. Rather, it establishes that zinc is uniformly distributed throughout OREAS 37 and that the variance between two aliquots from the same unit is identical to the variance from two aliquots taken from any two separate units.

Performance Gates

Performance gates provide an indication of a level of performance that might reasonably be expected from a laboratory being monitored by this standard in a QA/QC program. They take into account errors attributable to measurement and CRM variability. For an effective CRM the contribution of the latter should be negligible in comparison to measurement errors. Sources of measurement error include inter-lab bias, analytical precision (repeatability) and inter-batch bias (reproducibility).

Performance gates have been calculated from the same filtered data set used to determine the certified value, i.e. after removal of all individual and batch outliers. These outliers can only be removed after the absolute homogeneity of the CRM has been independently established, i.e. the outliers must be confidently deemed to be analytical rather than arising from inhomogeneity of the CRM. The standard deviations are then calculated for each lab's results and then each SD is tested for outlying status using z-score discrimination (rejected if $|z_i| > 2.5$). The 1SD used to calculate performance gates is the mean of the remaining (accepted) lab standard deviations. Because batch to batch bias is an important component of performance gates, only results from the six labs that received 3 submissions of samples have been used in the calculations.

Table 3 shows performance gates calculated for two and three standard deviations. As a guide these intervals may be regarded as warning or rejection for multiple 2SD outliers, or rejection for individual 3SD outliers in QC monitoring, although their precise application should be at the discretion of the QC manager concerned. Standard deviation is also shown in relative percent for one, two and three relative standard deviations (1RSD, 2RSD and 3RSD) to facilitate comparison with a 5% window calculated directly from the certified value. Caution should be exercised 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.

Table 3. Performance Gates for OREAS 37.

Constituent	Certified Value	5% window		Relative Standard Deviations			1SD	2SD window		3SD window	
		Low	High	1RSD	2RSD	3RSD		Low	High	Low	High
Mixed Acid Digests (no HF)											
Ag (ppm)	5.19	4.93	5.45	12.13%	24.26%	36.38%	0.63	3.93	6.45	3.30	7.08
As (ppm)	449	427	472	6.20%	12.41%	18.61%	28	393	505	366	533
Cu (ppm)	125	119	132	4.27%	8.54%	12.81%	5	115	136	109	142
Fe (wt.%)	23.76	22.58	24.95	2.34%	4.68%	7.02%	0.56	22.65	24.88	22.10	25.43
Mn (wt.%)	0.719	0.683	0.755	2.37%	4.73%	7.10%	0.017	0.685	0.753	0.668	0.770
Pb (wt.%)	0.615	0.584	0.646	2.81%	5.63%	8.44%	0.017	0.580	0.650	0.563	0.667
Tl (ppm)	63	59	66	8.18%	16.36%	24.54%	5	52	73	47	78
Zn (wt.%)	6.26	5.95	6.57	2.35%	4.71%	7.06%	0.15	5.97	6.55	5.82	6.70
Peroxide Fusion											
Ag (ppm)	~5	IND	IND	IND	IND	IND	IND	IND	IND	IND	IND
As (ppm)	460	437	483	9.19%	18.37%	27.56%	42	375	544	333	587
Cu (ppm)	129	123	136	4.47%	8.94%	13.41%	6	118	141	112	146
Fe (wt.%)	23.53	22.36	24.71	2.29%	4.58%	6.87%	0.54	22.46	24.61	21.92	25.15
Mn (wt.%)	0.769	0.730	0.807	3.50%	7.00%	10.50%	0.027	0.715	0.822	0.688	0.849
Pb (wt.%)	0.597	0.567	0.627	2.57%	5.14%	7.70%	0.02	0.566	0.628	0.551	0.643
Tl (ppm)	156	IND	IND	IND	IND	IND	IND	IND	IND	IND	IND
Leco											
S (wt.%)	26.79	25.45	28.13	2.65%	5.31%	7.96%	0.71	25.37	28.21	24.66	28.92

Note - intervals may appear asymmetric due to rounding

PARTICIPATING LABORATORIES

Acme Analytical Laboratories, Vancouver, BC, Canada
 Activation Laboratories, Ancaster, Ontario, Canada
 ALS Chemex, Johannesburg, Australia
 ALS Chemex, Stafford, QLD, Australia
 ALS Chemex, North Vancouver, BC, Canada
 Amdel Laboratories, Perth, WA, Australia
 Genalysis, Maddington, WA, Australia
 SGS Analabs, Welshpool, Perth, WA, Australia
 OMAC, Loughrea, Ireland
 Ultra Trace, Canning Vale, WA, Australia

PREPARER AND SUPPLIER OF THE REFERENCE MATERIAL

The reference material OREAS 37 has been prepared and certified by:

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OREAS 37 has been packaged under nitrogen in laminated foil pouches in 10g units.

INTENDED USE

OREAS 37 is a reference material intended for the following:

- i) for the calibration of instruments used in the determination of the concentration of Ag, As, Cu, Fe, Mn, Pb, S, Tl and Zn;
- ii) for the verification of analytical methods for Ag, As, Cu, Fe, Mn, Pb, S, Tl and Zn;
- iii) for the monitoring of laboratory performance in the analysis of Ag, As, Cu, Fe, Mn, Pb, S, Tl and Zn in geological samples.

STABILITY AND STORAGE INSTRUCTIONS

OREAS 37 is sourced from medium grade zinc sulphide ore and has been packaged under dry nitrogen in robust laminated foil pouches. In its unopened state and under normal conditions of storage it has a shelf life beyond five years.

INSTRUCTIONS FOR THE CORRECT USE OF THE REFERENCE MATERIAL

The certified values for CRM OREAS 37 refer to the concentration level of Ag, As, Cu, Fe, Mn, Pb, S, Tl and Zn in its packaged state. Therefore it should not be dried prior to weighing and analysis.

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

REFERENCES

ISO Guide 35 (2006), Certification of reference materials - General and statistical principals.

ISO Guide 3207 (1975), Statistical interpretation of data - Determination of a statistical tolerance interval.

Rozendaal, A. & Stalder, M. 2001. REE geochemistry of garnet associated with the Gamsberg Zn-Pb deposit, South Africa. *Mineral Deposits at the Beginning of the 21st Century*, pp. 325.

APPENDIX

Analytical Data for OREAS 37

Table A1. Key to abbreviations used in Tables A2 – A18.

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
PF	sodium peroxide fusion
AR	aqua regia digest (HNO ₃ -HCl)
3A	three acid digest (HNO ₃ -HCl-HClO ₄)
MA	mixed acid digest (KClO ₄ -HNO ₃ -HBr-HCl)
OES	inductively coupled plasma optical emission spectrometry
MS	inductively coupled plasma mass spectrometry
AAS	atomic absorption spectrometry
Leco	IR combustion furnace

Table A2. Mixed acid digest (no HF) results for Ag in OREAS 37 (abbreviations as in Table A1; values in ppm)

Replicate No.	Lab A	Lab B	Lab C	Lab D	Lab E	Lab F	Lab G	Lab H	Lab I	Lab J
	3A*MS	3A*OES	AR*MS	AR*OES	AR*OES	MA*MS	AR*OES	3A*MS	3A*MS	AR*OES
1	5.20	5.00	4.90	6.00	4.00	5.02	<2	6.00	5.00	6.00
2	5.10	5.00	4.80	4.00	5.00	4.82	<2	6.00	5.00	6.00
3	5.10	4.00	4.70	5.00	6.00	4.50	<2	6.00	5.00	6.00
4	5.20	3.00	4.80	6.00	5.00	5.01	2.00	8.00	5.00	7.00
5	6.00	5.00	4.07	5.00	5.00	4.94				
6	6.00	6.00	4.14	6.00	4.00	4.91				
7	6.00	6.00	4.60	5.00	3.00	5.13				
8	6.00	5.00	4.50	6.00	5.00	5.15				
9	4.70	5.00	5.00	6.00	2.00	5.07				
10	5.00	7.00	4.90	4.00	2.00	5.22				
11	4.70	6.00	4.80	5.00	3.00	5.08				
12	4.60	6.00	4.80	6.00	2.00	5.41				
Mean	5.30	5.25	4.67	5.33	3.83	5.02	<2	6.50	5.00	6.25
Median	5.15	5.00	4.80	5.50	4.00	5.04	<2	6.00	5.00	6.00
Std.Dev.	0.55	1.06	0.30	0.78	1.40	0.23	-	1.00	0.00	0.50
Rel.Std.Dev.	10.4%	20.1%	6.32%	14.6%	36.6%	4.48%	-	15.4%	0.00%	8.00%
PDM ³	2.11%	1.15%	-10.1%	2.75%	-26.1%	-3.24%	-	25.2%	-3.67%	20.4%

Table A3. Mixed acid digest (no HF) results for As in OREAS 37 (abbreviations as in Table A1; values in ppm)

Replicate No.	Lab A	Lab B	Lab C	Lab D	Lab E	Lab F	Lab G	Lab H	Lab I	Lab J
	3A*MS	3A*OES	AR*MS	AR*OES	AR*OES	MA*MS	AR*OES	3A*MS	3A*MS	AR*OES
1	480	400	NR	430	460	468	380	454	445	450
2	472	400	NR	430	460	465	390	460	459	460
3	468	400	NR	440	490	457	400	459	426	450
4	479	400	NR	450	470	458	360	472	420	470
5	434	400	491	440	440	466				
6	445	500	408	430	500	471				
7	439	400	525	460	480	465				
8	435	500	507	450	450	475				
9	419	400	436	480	440	454				
10	435	400	427	480	380	456				
11	435	400	428	460	410	448				
12	411	400	428	460	440	444				
Mean	446	417	456	451	452	460	383	461	438	458
Median	437	400	432	450	455	462	385	460	436	455
Std.Dev.	23	39	44	18	34	9	17	8	18	10
Rel.Std.Dev.	5.20%	9.34%	9.70%	3.95%	7.42%	2.01%	4.46%	1.65%	4.08%	2.09%
PDM ³	-0.70%	-7.23%	1.58%	0.37%	0.56%	2.52%	-14.8%	2.69%	-2.60%	1.86%

Table A4. Mixed acid digest (no HF) results for Cu in OREAS 37 (abbreviations as in Table A1; values in ppm)

Replicate No.	Lab A	Lab B	Lab C	Lab D	Lab E	Lab F	Lab G	Lab H	Lab I	Lab J
	3A*MS	3A*OES	AR*OES	AR*OES	AR*OES	MA*MS	AR*OES	3A*OES	3A*OES	AR*OES
1	130	120	110	117	104	125	100	143	140	123
2	129	120	100	118	102	124	100	143	130	123
3	128	120	110	132	112	123	100	135	135	121
4	131	120	110	118	108	122	100	138	125	122
5	137	120	136	121	128	126				
6	135	120	108	118	121	124				
7	137	120	134	123	123	124				
8	133	120	124	127	119	124				
9	121	120	132	125	123	134				
10	122	120	131	122	120	129				
11	123	110	136	124	119	132				
12	118	110	134	122	120	127				
Mean	129	118	122	122	117	126	100	140	133	122
Median	130	120	128	122	120	124	100	141	133	123
Std.Dev.	6	4	13	4	8	4	0	4	6	1
Rel.Std.Dev.	5.00%	3.29%	11.0%	3.59%	7.00%	3.00%	0.00%	2.82%	4.87%	0.78%
PDM ³	2.54%	-5.70%	-2.71%	-2.57%	-7.09%	0.58%	-20.3%	11.4%	5.59%	-2.57%

Table A5. Mixed acid digest (no HF) results for Fe in OREAS 37 (abbreviations as in Table A1; values in wt.%)

Replicate No.	Lab A	Lab B	Lab C	Lab D	Lab E	Lab F	Lab G	Lab H	Lab I	Lab J
	3A*OES	3A*OES	AR*OES	AR*OES	AR*OES	MA*MS	AR*OES	3A*OES	3A*OES	AR*OES
1	23.70	22.43	18.50	23.30	23.00	23.09	23.98	24.76	24.80	23.30
2	23.50	23.39	18.00	23.00	22.90	22.95	23.90	24.80	24.70	22.90
3	23.40	22.88	19.50	23.20	24.60	23.11	24.38	24.34	24.90	23.00
4	23.50	23.36	18.50	22.80	23.50	23.03	24.10	24.49	24.40	23.40
5	24.20	23.70	20.60	24.20	24.20	22.94				
6	24.40	24.05	21.10	24.00	23.40	22.99				
7	24.70	23.80	21.30	24.50	24.20	23.00				
8	24.20	24.00	20.40	24.40	23.20	23.03				
9	24.70	23.41	23.70	24.90	24.00	23.22				
10	24.60	23.78	23.00	24.30	23.40	22.97				
11	24.90	22.81	23.00	24.80	23.50	23.14				
12	24.80	23.23	22.30	24.50	23.30	22.89				
Mean	24.22	23.40	20.83	23.99	23.60	23.03	24.09	24.60	24.70	23.15
Median	24.30	23.40	20.85	24.25	23.45	23.01	24.04	24.63	24.75	23.15
Std.Dev.	0.56	0.50	1.93	0.73	0.53	0.09	0.21	0.22	0.22	0.24
Rel.Std.Dev.	2.30%	2.14%	9.27%	3.03%	2.24%	0.40%	0.87%	0.89%	0.87%	1.03%
PDM ³	1.91%	-1.52%	-12.4%	0.96%	-0.69%	-3.09%	1.37%	3.51%	3.94%	-2.58%

Table A6. Mixed acid digest (no HF) results for Mn in OREAS 37 (abbreviations as in Table A1; values in wt.%)

Replicate No.	Lab A 3A*AAS	Lab B 3A*OES	Lab C AR*OES	Lab D AR*OES	Lab E AR*OES	Lab F MA*MS	Lab G AR*OES	Lab H 3A*OES	Lab I 3A*OES	Lab J AR*OES
1	0.750	0.710	0.618	0.655	0.631	0.739	1.040	0.789	0.750	0.721
2	0.748	0.730	0.591	0.645	0.630	0.735	1.025	0.796	0.744	0.704
3	0.764	0.700	0.652	0.649	0.676	0.745	1.060	0.780	0.758	0.716
4	0.764	0.720	0.610	0.634	0.644	0.735	1.060	0.775	0.747	0.721
5	<0.01	0.740	0.694	0.667	0.710	0.735				
6	<0.01	0.740	0.641	0.648	0.680	0.734				
7	<0.01	0.730	0.701	0.668	0.706	0.735				
8	<0.01	0.750	0.616	0.667	0.672	0.732				
9	0.732	0.720	0.762	0.696	0.668	0.738				
10	0.724	0.740	0.763	0.674	0.645	0.735				
11	0.739	0.710	0.770	0.693	0.651	0.753				
12	0.727	0.720	0.780	0.678	0.645	0.743				
Mean	0.744	0.726	0.683	0.665	0.663	0.738	1.046	0.785	0.750	0.716
Median	0.744	0.725	0.673	0.667	0.660	0.735	1.050	0.784	0.749	0.719
Std.Dev.	0.016	0.015	0.071	0.019	0.027	0.006	0.017	0.009	0.006	0.008
Rel.Std.Dev.	2.10%	2.07%	10.38%	2.88%	4.04%	0.80%	1.63%	1.17%	0.80%	1.12%
PDM ³	3.41%	0.95%	-4.98%	-7.58%	-7.76%	2.67%	45.5%	9.17%	4.28%	-0.48%

Table A7. Mixed acid digest (no HF) results for Pb in OREAS 37 (abbreviations as in Table A1; values in wt.%)

Replicate No.	Lab A 3A*AAS	Lab B 3A*OES	Lab C AR*OES	Lab D AR*OES	Lab E AR*OES	Lab F MA*MS	Lab G AR*OES	Lab H 3A*MS	Lab I 3A*MS	Lab J AR*OES
1	0.553	0.620	0.636	0.586	0.580	0.639	0.615	0.585	0.593	0.617
2	0.577	0.630	0.661	0.603	0.610	0.657	0.625	0.595	0.606	0.633
3	0.575	0.610	0.625	0.584	0.590	0.638	0.630	0.577	0.603	0.612
4	0.567	0.630	0.632	0.596	0.630	0.657	0.625	0.599	0.596	0.646
5	0.600	0.640	0.631	0.594	0.619	0.650				
6	0.610	0.670	0.646	0.610	0.619	0.650				
7	0.580	0.630	0.655	0.604	0.612	0.650				
8	0.610	0.670	0.633	0.623	0.613	0.655				
9	0.557	0.660	0.624	0.627	0.566	0.640				
10	0.622	0.640	0.629	0.632	0.583	0.651				
11	0.567	0.650	0.616	0.622	0.561	0.632				
12	0.603	0.640	0.616	0.636	0.579	0.642				
Mean	0.585	0.641	0.634	0.610	0.597	0.647	0.624	0.589	0.600	0.627
Median	0.579	0.640	0.632	0.607	0.600	0.650	0.625	0.590	0.600	0.625
Std.Dev.	0.023	0.019	0.014	0.018	0.023	0.008	0.006	0.010	0.006	0.016
Rel.Std.Dev.	3.93%	2.94%	2.2%	2.95%	3.85%	1.28%	1.01%	1.68%	1.01%	2.47%
PDM ³	-4.86%	4.20%	3.03%	-0.85%	-2.95%	5.17%	1.42%	-4.26%	-2.52%	1.95%

Table A8. Mixed acid digest (no HF) results for TI in OREAS 37 (abbreviations as in Table A1; values in ppm)

Replicate No.	Lab A 3A*MS	Lab B 3A*OES	Lab C AR*OES	Lab D AR*OES	Lab E AR*OES	Lab F MA*MS	Lab G AR*OES	Lab H 3A*MS	Lab I 3A*MS	Lab J AR*OES
1	140	100	77	50	<50	33	<50	158	57	60
2	140	100	74	50	50	38	<50	156	58	60
3	140	100	77	50	<50	39	<50	153	61	60
4	141	100	75	50	<50	41	<50	152	69	60
5	144	100	69	60	50	33				
6	147	100	56	50	60	34				
7	155	100	64	50	50	36				
8	153	100	62	50	60	36				
9	142	NR	81	50	<50	28				
10	147	NR	82	50	<50	32				
11	138	NR	82	50	<50	33				
12	135	NR	77	50	<50	38				
Mean	144	100	73	51	54	35	<50	155	61	60
Median	142	100	76	50	50	35	<50	155	60	60
Std.Dev.	6	0	8	3	5	3	-	3	5	0
Rel.Std.Dev.	4.18%	0.00%	11.3%	5.68%	10.1%	9.87%	-	1.76%	8.88%	0.00%
PDM ³	129%	59.9%	16.6%	-18.7%	-13.7%	-43.8%	-	147%	-2.06%	-4.06%

Table A9. Mixed acid digest (no HF) results for Zn in OREAS 37 (abbreviations as in Table A1; values in wt.%)

Replicate No.	Lab A 3A*AAS	Lab B 3A*OES	Lab C AR*OES	Lab D AR*OES	Lab E AR*OES	Lab F MA*MS	Lab G AR*OES	Lab H 3A*OES	Lab I 3A*OES	Lab J AR*OES
1	6.18	6.22	6.02	5.98	5.96	6.10	6.41	6.28	6.42	6.09
2	6.30	6.41	6.19	6.11	6.17	6.15	6.40	6.29	6.55	6.27
3	6.35	6.12	6.03	5.44	6.11	6.03	6.48	6.15	6.41	6.13
4	6.18	6.35	6.07	6.18	6.47	6.16	6.43	6.21	6.39	6.34
5	6.25	6.38	6.03	6.06	6.27	6.20				
6	6.39	6.63	6.17	6.10	6.42	6.23				
7	6.02	6.29	6.20	6.07	6.30	6.23				
8	6.24	6.77	6.12	6.18	6.10	6.27				
9	5.98	6.79	6.01	6.18	6.43	6.18				
10	6.15	6.75	6.07	6.34	6.59	6.20				
11	6.28	6.64	5.94	6.51	6.29	6.22				
12	6.43	6.61	5.78	6.45	6.30	6.14				
Mean	6.23	6.50	6.05	6.13	6.28	6.18	6.43	6.23	6.44	6.21
Median	6.25	6.51	6.05	6.15	6.30	6.19	6.42	6.25	6.42	6.20
Std.Dev.	0.14	0.23	0.12	0.27	0.18	0.07	0.04	0.07	0.07	0.12
Rel.Std.Dev.	2.20%	3.53%	1.93%	4.42%	2.84%	1.05%	0.55%	1.09%	1.13%	1.89%
PDM ³	-0.49%	3.78%	-3.32%	-2.03%	0.38%	-1.35%	2.71%	-0.42%	2.91%	-0.84%

Table A10. Peroxide fusion results for Ag in OREAS 37 (abbreviations as in Table A1; values in ppm)

Replicate No.	Lab A PF*MS	Lab B -	Lab C PF*OES	Lab D -	Lab E -	Lab F -	Lab G PF*OES	Lab H PF*MS	Lab I PF*MS	Lab J -
1	5.00	NR	< 60	NR	NR	NR	<20	5.00	<5	NR
2	5.00	NR	< 60	NR	NR	NR	<20	5.00	<5	NR
3	5.00	NR	< 60	NR	NR	NR	<20	5.00	<5	NR
4	5.00	NR	< 60	NR	NR	NR	<20	5.00	<5	NR
5	6.00	NR	4.70	NR	NR	NR				
6	6.00	NR	4.80	NR	NR	NR				
7	6.00	NR	4.60	NR	NR	NR				
8	6.00	NR	4.70	NR	NR	NR				
9	5.00	NR	< 50	NR	NR	NR				
10	5.00	NR	< 50	NR	NR	NR				
11	5.00	NR	< 50	NR	NR	NR				
12	5.00	NR	< 50	NR	NR	NR				
Mean	5.33		4.70				<20	5.00	<5	
Median	5.00		4.70				<20	5.00	<5	
Std.Dev.	0.49		0.08				-	0.00	-	
Rel.Std.Dev.	9.23%		1.74%				-	0.00%	-	
PDM ³	6.43%		-6.21%				-	-0.22%	-	

Table A11. Peroxide fusion results for As in OREAS 37 (abbreviations as in Table A1; values in ppm)

Replicate No.	Lab A PF*MS	Lab B PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E -	Lab F -	Lab G PF*OES	Lab H PF*MS	Lab I PF*MS	Lab J PF*OES
1	510	400	400	400	NR	NR	360	487	465	500
2	490	400	400	400	NR	NR	435	511	478	500
3	490	400	400	400	NR	NR	415	510	465	500
4	450	400	400	500	NR	NR	400	506	480	600
5	430	400	500	400	NR	NR				
6	470	500	400	500	NR	NR				
7	420	400	500	400	NR	NR				
8	430	400	500	400	NR	NR				
9	470	NR	400	500	NR	NR				
10	470	NR	500	500	NR	NR				
11	470	NR	500	400	NR	NR				
12	480	NR	500	500	NR	NR				
Mean	465	413	450	442			403	504	472	525
Median	470	400	450	400			408	508	471	500
Std.Dev.	27	35	52	51			32	11	8	50
Rel.Std.Dev.	5.91%	8.57%	11.6%	11.7%			7.89%	2.23%	1.70%	9.52%
PDM ³	1.13%	-10.3%	-2.14%	-3.95%			-12.5%	9.50%	2.62%	14.2%

Table A12. Peroxide fusion results for Cu in OREAS 37 (abbreviations as in Table A1; values in ppm)

Replicate No.	Lab A PF*MS	Lab B PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E -	Lab F -	Lab G PF*OES	Lab H PF*OES	Lab I PF*OES	Lab J PF*OES
1	150	120	120	120	NR	NR	140	NR	140	100
2	150	120	130	150	NR	NR	120	NR	130	100
3	150	110	120	130	NR	NR	130	NR	140	100
4	140	120	120	130	NR	NR	125	NR	140	200
5	130	130	130	120	NR	NR				
6	130	130	120	130	NR	NR				
7	140	120	130	130	NR	NR				
8	130	130	130	120	NR	NR				
9	130	100	110	130	NR	NR				
10	130	100	110	130	NR	NR				
11	130	100	120	130	NR	NR				
12	140	100	100	140	NR	NR				
Mean	138	115	120	130			129		138	125
Median	135	120	120	130			128		140	100
Std.Dev.	9	12	10	9			9		5	50
Rel.Std.Dev.	6.30%	10.8%	7.95%	6.56%			6.63%		3.64%	40.0%
PDM ³	6.53%	-10.9%	-7.03%	0.72%			-0.25%		6.53%	-3.15%

Table A13. Peroxide fusion results for Fe in OREAS 37 (abbreviations as in Table A1; values in wt.%)

Replicate No.	Lab A PF*OES	Lab B PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E -	Lab F -	Lab G PF*OES	Lab H PF*OES	Lab I PF*OES	Lab J PF*OES
1	21.50	23.06	23.60	22.70	NR	NR	22.60	23.64	24.90	31.70
2	21.80	23.40	23.20	23.60	NR	NR	22.70	23.86	24.60	33.40
3	23.10	22.46	23.50	22.40	NR	NR	22.60	23.87	24.90	35.10
4	22.70	23.01	23.10	23.00	NR	NR	22.80	24.49	25.20	34.80
5	25.00	24.37	24.80	23.50	NR	NR				
6	23.80	23.86	23.90	23.10	NR	NR				
7	25.10	24.13	24.10	23.50	NR	NR				
8	24.00	24.09	23.80	24.20	NR	NR				
9	22.70	23.43	22.90	23.10	NR	NR				
10	23.10	23.51	23.00	22.40	NR	NR				
11	24.20	23.35	23.30	22.70	NR	NR				
12	24.20	22.81	23.40	21.70	NR	NR				
Mean	23.43	23.46	23.55	22.99			22.68	23.97	24.90	33.75
Median	23.45	23.42	23.45	23.05			22.65	23.87	24.90	34.10
Std.Dev.	1.15	0.58	0.54	0.67			0.10	0.37	0.24	1.55
Rel.Std.Dev.	4.91%	2.45%	2.29%	2.91%			0.42%	1.53%	0.98%	4.61%
PDM ³	-0.43%	-0.33%	0.07%	-2.31%			-3.65%	1.83%	5.80%	43.4%

Table A14. Analytical results fusion Mn in OREAS 37 (abbreviations as in Table A1; values in wt.%)

Replicate No.	Lab A PF*OES	Lab B PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E -	Lab F -	Lab G PF*OES	Lab H PF*OES	Lab I PF*OES	Lab J PF*OES
1	0.721	0.790	0.770	0.805	NR	NR	1.050	0.800	0.752	0.751
2	0.715	0.790	0.740	0.805	NR	NR	1.050	0.800	0.734	0.743
3	0.740	0.760	0.770	0.790	NR	NR	1.040	0.800	0.752	0.805
4	0.730	0.790	0.750	0.790	NR	NR	1.060	0.900	0.736	0.798
5	0.965	0.770	0.800	0.790	NR	NR				
6	0.894	0.750	0.750	0.751	NR	NR				
7	0.965	0.780	0.780	0.790	NR	NR				
8	0.899	0.750	0.740	0.782	NR	NR				
9	0.773	NR	0.720	0.790	NR	NR				
10	0.763	NR	0.720	0.743	NR	NR				
11	0.823	NR	0.730	0.782	NR	NR				
12	0.801	NR	0.730	0.720	NR	NR				
Mean	0.816	0.773	0.750	0.778			1.050	0.825	0.744	0.774
Median	0.787	0.775	0.745	0.790			1.050	0.800	0.744	0.774
Std.Dev.	0.093	0.018	0.025	0.026			0.008	0.050	0.010	0.032
Rel.Std.Dev.	11.4%	2.27%	3.36%	3.35%			0.78%	6.06%	1.32%	4.08%
PDM ³	6.15%	0.52%	-2.41%	1.28%			36.6%	7.35%	-3.25%	0.78%

Table A15. Peroxide fusion results for Pb in OREAS 37 (abbreviations as in Table A1; values in wt.%)

Replicate No.	Lab A PF*MS	Lab B PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E -	Lab F -	Lab G -	Lab H PF*MS	Lab I PF*MS	Lab J PF*OES
1	0.594	0.590	0.600	0.570	NR	NR	NR	0.583	0.605	0.510
2	0.599	0.610	0.610	0.610	NR	NR	NR	0.614	0.629	0.570
3	0.611	0.580	0.630	0.560	NR	NR	NR	0.582	0.604	0.580
4	0.553	0.610	0.620	0.610	NR	NR	NR	0.603	0.605	0.590
5	0.566	0.660	0.620	0.590	NR	NR				
6	0.593	0.660	0.620	0.610	NR	NR				
7	0.589	0.650	0.600	0.590	NR	NR				
8	0.596	0.670	0.620	0.630	NR	NR				
9	0.585	NR	0.580	0.600	NR	NR				
10	0.605	NR	0.590	0.610	NR	NR				
11	0.593	NR	0.590	0.590	NR	NR				
12	0.621	NR	0.590	0.590	NR	NR				
Mean	0.592	0.629	0.606	0.597				0.596	0.611	0.563
Median	0.594	0.630	0.605	0.595				0.593	0.605	0.575
Std.Dev.	0.018	0.035	0.016	0.019				0.016	0.012	0.036
Rel.Std.Dev.	3.10%	5.60%	2.68%	3.22%				2.63%	1.99%	6.39%
PDM ³	-0.82%	5.32%	1.48%	-0.05%				-0.22%	2.31%	-5.78%

Table A16. Peroxide fusion results for TI in OREAS 37 (abbreviations as in Table A1; values in ppm)

Replicate No.	Lab A PF*MS	Lab B PF*OES	Lab C PF*OES	Lab D -	Lab E -	Lab F -	Lab G -	Lab H PF*MS	Lab I PF*MS	Lab J -
1	143	100	187	NR	NR	NR	NR	156	135	NR
2	144	200	194	NR	NR	NR	NR	163	140	NR
3	143	200	190	NR	NR	NR	NR	157	152	NR
4	144	100	186	NR	NR	NR	NR	156	149	NR
5	142	200	162	NR	NR	NR				
6	142	200	175	NR	NR	NR				
7	146	100	173	NR	NR	NR				
8	147	200	166	NR	NR	NR				
9	140	NR	171	NR	NR	NR				
10	142	NR	167	NR	NR	NR				
11	141	NR	170	NR	NR	NR				
12	145	NR	178	NR	NR	NR				
Mean	143	163	177					158	144	
Median	143	200	174					156	144	
Std.Dev.	2	52	10					4	8	
Rel.Std.Dev.	1.43%	31.8%	5.89%					2.26%	5.53%	
PDM ³	-8.45%	3.85%	12.9%					1.01%	-8.05%	

Table A17. Peroxide fusion results for Zn in OREAS 37 (abbreviations as in Table A1; values in wt.%)

Replicate No.	Lab A PF*OES	Lab B PF*OES	Lab C PF*OES	Lab D PF*OES	Lab E -	Lab F -	Lab G PF*OES	Lab H PF*OES	Lab I PF*OES	Lab J PF*OES
1	6.19	6.52	6.07	5.98	NR	NR	4.23	6.03	6.55	5.85
2	6.00	6.57	6.16	6.24	NR	NR	4.27	6.09	6.63	6.17
3	5.89	6.25	6.10	6.23	NR	NR	4.25	6.07	6.57	6.01
4	5.85	6.45	6.23	6.38	NR	NR	4.29	6.27	6.55	6.32
5	6.55	6.78	6.31	5.97	NR	NR				
6	6.49	6.93	6.34	6.22	NR	NR				
7	6.58	6.76	6.14	6.18	NR	NR				
8	6.48	7.00	6.12	6.45	NR	NR				
9	6.14	6.68	6.39	6.18	NR	NR				
10	6.32	6.57	6.34	6.34	NR	NR				
11	6.31	6.54	6.12	6.51	NR	NR				
12	6.47	6.44	6.27	6.45	NR	NR				
Mean	6.27	6.62	6.22	6.26			4.26	6.12	6.58	6.09
Median	6.32	6.57	6.20	6.24			4.26	6.08	6.56	6.09
Std.Dev.	0.26	0.22	0.11	0.17			0.03	0.11	0.04	0.20
Rel.Std.Dev.	4.10%	3.25%	1.78%	2.78%			0.61%	1.74%	0.58%	3.33%
PDM ³	-0.47%	5.11%	-1.37%	-0.66%			-32.4%	-2.97%	4.33%	-3.41%

Table A18. Analytical results for S in OREAS 37 (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 AR*OES	Lab H Leco	Lab I Leco	Lab J Leco
1	25.40	26.12	26.00	25.20	27.00	27.47	26.65	27.24	26.50	28.60
2	26.20	26.82	26.20	26.00	26.20	27.19	27.10	26.91	25.70	28.60
3	26.50	26.36	26.90	25.60	26.90	27.88	27.15	27.03	26.20	28.40
4	26.70	26.04	26.10	25.90	26.20	27.29	27.00	27.19	26.20	28.40
5	27.30	26.46	28.60	26.20	25.80	27.43				
6	27.40	15.55	27.80	26.30	25.00	27.51				
7	27.50	26.22	28.70	26.30	25.10	27.98				
8	27.20	25.30	28.40	26.50	25.00	28.04				
9	27.70	NR	26.20	25.40	25.40	28.19				
10	27.40	NR	25.80	23.80	25.90	27.50				
11	27.90	NR	26.20	23.50	26.00	27.79				
12	27.50	NR	25.70	22.60	25.60	27.46				
Mean	27.06	24.86	26.88	25.28	25.84	27.64	26.98	27.09	26.15	28.50
Median	27.35	26.17	26.20	25.75	25.85	27.50	27.05	27.11	26.20	28.50
Std.Dev.	0.72	3.79	1.16	1.28	0.67	0.32	0.23	0.15	0.33	0.12
Rel.Std.Dev.	2.67%	15.2%	4.31%	5.06%	2.60%	1.16%	0.84%	0.55%	1.27%	0.41%
PDM ³	0.99%	-7.22%	0.34%	-5.66%	-3.55%	3.18%	0.68%	1.12%	-2.40%	6.37%