Geo*PT*56A — AN INTERNATIONAL PROFICIENCY TEST FOR ANALYTICAL GEOCHEMISTRY LABORATORIES — REPORT ON ROUND 56A

(Calcareous Ironstone, CFU-1) / February 2025

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Abstract

Results are presented for Round 56A of the Geo*PT* Proficiency Testing programme for analytical geochemistry laboratories organised by the International Association of Geoanalysts (IAG). The test material distributed was identified as Calcareous Ironstone, CFU-1, which was obtained by the British Geological Survey from Northamptonshire, England. In this report, results contributed by 99 laboratories are listed, together with an assessment of consensus values, consequent *z*-scores and a series of charts to show for each analyte the distribution of contributed results and the overall performance of participating laboratories.

Introduction

This fifty-sixth supplementary round of Geo*PT*, the international proficiency testing programme for geoanalytical laboratories, was conducted in a similar manner to earlier rounds (previous reports listed in the Appendix). The programme is designed to be a key part of the routine quality assurance procedures employed by an analytical geochemistry laboratory. It is organised by the International Association of Geoanalysts (IAG) and is conducted in accordance with a published protocol (IAG, 2020). The overall aim of the programme is to provide participating laboratories with information on their performance in the form of *z*-scores for each reported measurement result so that individual laboratories can decide whether the quality of their data is satisfactory in relation both to their chosen fitness-for-purpose criteria and to the performance of other laboratories participating in this round. In circumstances where a *z*-score from a reported result is unsatisfactory, a participating laboratory is encouraged to investigate for unsuspected analytical bias and to take corrective action when it appears justified.

Steering Committee for Round 56A:

P.C. Webb (administrator and results assessor), P.J. Potts (results reviewer), C.J.B. Gowing (arranging the provision of the test material, distribution manager and results reviewer), M. Thompson (statistical advisor).

Timetable for Round 56A:

Distribution of sample: September/October 2024
Results accepted from: 28th October 2024
Results submission deadline: 11th December 2024
Release of report: February 2025

GeoPT56A Test Material Details

The test material for this round, identified as Calcareous Ironstone CFU-1, was distributed as a supplementary test material on account of its more challenging composition, much richer in iron and calcium carbonates than most silicate rocks. It was obtained by the British Geological Survey (BGS) from Northamptonshire, England. The material was processed at the BGS, Keyworth, where it was homogenised, divided and packeted under the direction of Dr Charles Gowing. Note that milling to fine powder was carried out in chrome steel equipment which can cause metallic contamination and might result in an elevated mass fraction of Cr.

The test material was evaluated for homogeneity by ICP-MS measurement at the BGS and an assessment of the results showed that this material was sufficiently homogeneous to be suitable for use in this proficiency test.

Submission of Results

For GeoPT56A (CFU-1), a total of 3540 measurement results were submitted by 99 laboratories and are listed in Table 1. Of the measurements submitted, 1606 results were designated by their originators as data quality 1 (see the ***z*-score analysis section** below for an explanation of data qualities) and are shown in **bold**, whereas 1934 results were specified as data quality 2 and are shown underlined. Results from all laboratories submitting data were used to assess consensus values for each measurand.

Anomalies in reporting: We believe that **errors were made by a few laboratories in reporting** their measurement results as follows:

> The reporting of **trace element results in units of g/100g instead of mg/kg** included **two laboratories for Ctot, three for Cl, one for F and two for S**. Note that such reporting errors are **counter to our instructions** and could potentially result in excessively high *z*-scores. **One laboratory reported numerous (12) values of '0' (i.e., zero) in this round**, which, with **the exception of a potential zero value for LOI**, is also **counter to instructions**. In addition, there are likely to have been instances where the **decimal point was inserted in the wrong place**. For one laboratory this appears to have happened for most of the major elements.

It must be emphasised that the **Geo*PT* scheme requires measurement results for all constituents listed as trace elements to be reported in mg/kg and that zero values should not be reported** unless it represents a genuine result from a LOI measurement. **Please be aware that erroneous results cannot be altered or removed once they have been finally submitted** and that corresponding ***z*-scores will be adversely affected**.

Assigned values and results summary

Following procedures described in earlier rounds, and detailed fully in the Geo*PT* protocol (IAG, 2020), robust statistical procedures were used to derive consensus values for measurands in this test material: these consensus values being judged to be the best available estimates of the true composition. Values are normally credited with assigned status on the basis that: i) sufficient laboratories (usually 15 or more) have contributed data for effective estimation of the consensus, ii) visual assessment of the distribution of results gives confidence that a substantial part is symmetrically disposed about the consensus value, iii) the ratio of the uncertainty in the location estimate to the target precision is an acceptably small value (usually < 0.5), and iv) an evaluation of measurement results by analytical procedure – including both the method of measurement and the form of sample preparation – indicates either that no significant procedural bias is discernible amongst measurement results from which the consensus is derived, or that sufficient data judged to be unbiased are available from which the consensus value is determined. Where these criteria are only partially met, or where obvious anomalies in the dataset can be accommodated by judicious selection of the consensus, values are credited with 'provisional' rather than 'assigned' status.

Geo*PT*56A data assessments involved an examination of barcharts showing the distribution of results contributed for each measurand (as presented in Figures 1 and 2). In addition, a variety of plots, permitting discrimination of data by method of measurement and by sample preparation procedure, as developed by Thomas Meisel using the statistical package 'R' and made available for visual appraisal using the Shiny App (*https://www.shinyapps.io*), were also examined. This approach enables us, when necessary, to refine the selection of appropriate consensus values by taking account of data distributions according to measurement procedure. Kernel density distributions of such datasets (seen in the Shiny App as 'ridges' plots) have proved valuable in this respect.

As first notified to participants in 2022, the facility exists for participants to inspect for themselves the Geo*PT* data distributions for all elements in a similar way using Shiny App graphics through the link: *https://geoanalyst.shinyapps.io/GeoPTcommon2/*. This package permits participants to view all of the data submitted according to the principle of measurement; the method of sample preparation; and the chosen fitness-for-purpose criterion, using several forms of graphical display.

Consensus values derived from the contributed data are listed in Table 2. They were provided in 11 instances by the Huber robust mean, a procedure that provides limited accommodation of outliers, but can often be unreliable when too many outliers are present or when a dataset is skewed. In such circumstances, the median is frequently a more robust estimator of the consensus and was employed in 22 cases. For heavily skewed and many strongly tailed datasets, even the median may not be a suitable estimator and a mode can often provide a more effective means of estimating the location of the consensus. In this round the use of a mode as a consensus estimator was preferred in 26 cases, and in 17 of those, the distribution of data was sufficiently compatible with the criteria outlined above to justify the designation of an assigned value. As with Round 56, this is an unusually high number of assigned values to be defined by a mode. It is recognised that modes can provide a effective means to selectively favour the distribution of a set or sets of coherent results judged to be derived by more reliable methods, where the consequent consensus could not be resolved adequately using robust mean or median values. The method used to determine modes was mostly as described by Thompson (2017) involving estimation of the mass fraction corresponding to the maximum value of the kernel density distribution for the dataset. Such modes often provide a robust estimate of the consensus location representing the most coherent part of a data distribution where data are often symmetrically disposed, although the whole dataset may be asymmetric.

Table 2 lists consensus values conferred with assigned or provisional status for 11 major components and 48 trace elements in Geo*PT*56A (CFU-1). Barcharts for datasets from which these consensus values were derived are shown in Figure 1. Statistical data, consensus values and status designations are listed in full in Table 2 for the 59 analytes: SiO_2, TiO_2, Al_2O_3, Fe_2O_3T, MnO, MgO, CaO, Na_2O*, K_2O, P_2O_5, LOI, As, Ba, Be, Bi, C(tot)*, Cd*, Ce, Co, Cr, Cs, Cu*, Dy, Er, Eu, Ga, Gd, Hf*, Ho, In, La, Li, Lu, Mo*, Nb, Nd, Ni, Pb, Pr, Rb, S*, Sb, Sc, Sm, Sn, Sr, Ta, Tb, Te*, Th, Tl, Tm, U, V*, W*, Y, Yb, Zn* and Zr*. Of these, the measurands of the 12 analytes marked '*' were credited only with provisional status. Provisional status was conferred most often where either: i) a relatively small number of results (normally less than 15, but at least 8) contributed to the consensus, or ii) the results were unduly dispersed in relation to the target value, or iii) the ratio of the uncertainty in the location estimate to the target precision was a large value (usually > 0.5), or iv) the distribution of results was significantly skewed without any clear indication of the cause, or v) the distribution of results overall would have been sufficient to recognise an assigned value, but differences observed in the consensus values of results from different methodologies for which no clear preference could be recognised on the basis of analytical characteristics necessitated the choice of a collective consensus value.

Bar charts for the 9 analytes: Fe(II)O, H_2O^+, Ag, B, C(org), Cl, F, Ge and Se and are plotted in Figure 2 for information only, as the data were either insufficient in number, their distribution too highly skewed, or too highly dispersed for a sufficiently reliable determination of a consensus for the estimation of *z*-scores.

Z-score analysis

As in previous rounds, laboratories were invited to choose one of two performance standards against which their analytical results would be judged:

Data quality 1 for laboratories working to a 'pure geochemistry' standard of performance, where analytical results are designed for geochemical research and where care is taken to provide data of high precision and accuracy, sometimes at the expense of a reduced sample throughput rate.

Data quality 2 for laboratories working to an 'applied geochemistry' standard of performance, where, although precision and accuracy are still important, the main objective is to provide results on large numbers of samples collected, for example, as part of geochemical mapping projects or geochemical exploration programmes.

The **standard deviation for proficiency** (σ_{pt}) – also referred to as the target precision – for each measurand assessed was calculated from a modified form of the Horwitz function as follows:

$$\sigma_{pt} = k.x_{pt}^{0.8495}$$

Where x_{pt} is the mass fraction of the element; the factor k = 0.01 for pure geochemistry laboratories (quality 1) and
k = 0.02 for applied geochemistry laboratories (quality 2).

Z-scores were calculated for each elemental measurement submitted by each laboratory from:

$$z_i = [x_i - x_{pt}] / \sigma_{pt}$$

Where x_i is the contributed measurement result, x_{pt} is the assigned (or provisional) value and σ_{pt} is the target standard deviation (all as mass fractions). *Z*-scores for results contributed to Geo*PT*56A are listed in Table 3. Those of results designated as data **quality 1** are shown in **bold**: those of data quality 2 are shown underlined. *Z*-scores derived from *provisional value*s of measurands are shown in *italics*. 2851 *z*-scores have assigned status, 571 have provisional status.

Participating laboratories are invited to assess their performance using the following criteria:–

> *Z*-score results in the range $-2<z<2$ are considered to be 'satisfactory' (in the sense that no action is called for by the participating laboratory). If the *z*-score for an element falls outside this range, more especially if it is outside the range $-3<z<3$, laboratories are advised to examine their procedures, and if necessary, take appropriate action to ensure that their determinations are not subject to unsuspected analytical bias.

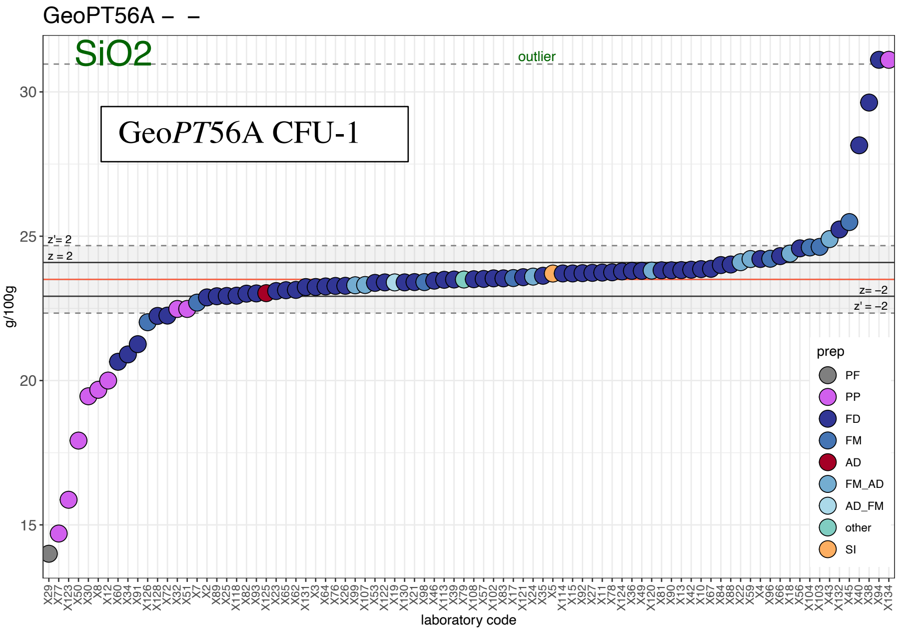

Figure 0.1 A sequential data distribution plot for CFU-1 of sorted SiO_2 results distinguished according to sample preparation procedure, showing a broadly symmetrical distribution of results with a large proportion of XRF powder pellet results at low values. Shaded horizontal bands represent ranges of satisfactory performance recognised according to the modified Horwitz function (see *z*-score analysis section for clarification).

Key to sample preparation: PF – Powder on film; PP – Powder pellet; FD – Fusion disc; FM – Fusion melt; AD – Acid digestion; FM_AD – Fusion followed by acid digestion; AD_FM – Acid digestion, followed by fusion; other – not specified; SI – Sintering. Results marked as outliers have their true magnitude suppressed.

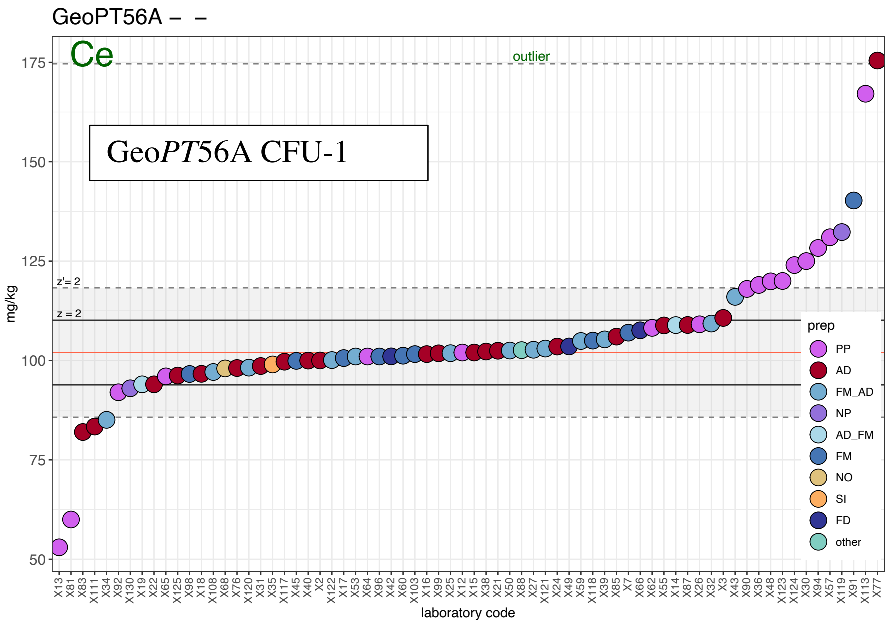

Figure 0.2 A sequential data distribution plot for CFU-1 of sorted Ce results distinguished according to sample preparation procedure, showing a coherent distribution of acid digestion (AD) and fusion results compared to a dispersed distribution of XRF PP results with a substantial number at relatively high values. Shaded horizontal bands represent ranges of satisfactory performance as recognised according to the modified Horwitz function (see *z*-score analysis section for clarification).

Key to sample preparation: As for Figure 0.1 with the addition of: NP – nano-particulate powder pellet; NO – No preparation. Results marked as outliers have their true magnitude suppressed.

Overall performance

A summary of the overall performance of individual laboratories for this round is plotted in multiple *z*-score charts in Figure 3. In these charts, the *z*-score performance for each element is distinguished by symbols that make it easy to identify whether the results from your laboratory were satisfactory or gave *z*-scores that exceeded the action limits. This chart is designed to help individual laboratories judge their overall performance in this proficiency testing round. Participants should always review their *z*-scores in accordance with their own fitness-for-purpose criteria.

Reflections on data distributions

Many data distributions in this round, as shown in Figure 1, are regular, symmetrical about a consensus, with a significant proportion of the data showing a remarkable degree of agreement and consequently assigned status can easily be conferred on most consensus values. However, there were a substantial number of high-tailed distributions. Among major elements, a large number of the CaO measurements by XRF on powder pellets form part of the high tail as indeed they do for Fe_2O_3T. Notably, both of these components comprise significant proportions of this test material. Conversely, for SiO_2, another significant constituent of CFU-1, most of the determinations by XRF on powder pellets appear to be underestimates (see Figure 0.1). XRF powder pellet measurements also contribute significantly to the high-tailed distributions for the trace elements: Ce (see Figure 0.2), Cu, La, Mo, Nb, Rb and Sc as well as low-tailed distributions for As, Sr and Zr. In most of these cases the mass fractions involved are not close to detection limits and the cause of such anomalies should not be due to poor precision and suppression of results below detection limits which is often the cause of high-tailed distributions at low mass fractions. However, the high tails apparent in the Cd, Cs, Ta and W distributions are at low mass fractions and may be developed in such circumstances, but for these particular examples, a range of analytical methods, including XRF, ICP-AES/OES, and some ICP-MS results, contribute to the high tails.

In a number of cases, it should be noted that an overwhelming proportion of ICP-MS measurements, in particular for Ce, Cs, La, Nb, Ni, Pb, Rb, not only provide a highly coherent consensus, but can be considered to be measured by the procedure of choice at the relevant mass fraction, and therefore provide sufficient confidence for the consensus to merit assigned status, although based largely on measurements from a single procedure. Similar reasoning, with confidence in acid digestion ICP-MS results has supported provisional status being given to corresponding consensus values for both Cu and Mo.

Indium was awarded assigned status on account of the remarkable agreement of results submitted, although there was not a full complement of 15 measurements contributing to the consensus. LOI was also given assigned status on account of the undoubted coherence of results about the consensus.

It is unusual for LOI to be awarded assigned status, but CFU-1, with its relatively high carbonate content has much higher than usual LOI compared to most silicate-rich subjects of the Geo*PT* programme. Provisional status was awarded to S despite the relatively high dispersion of results, largely because the data distribution was a far more coherent array of results about the consensus than is normally found for S in most Geo*PT* materials. Fewer data were provided for C(tot), but the majority of the data formed a reasonably coherent consensus.

For both V and Zn, which feature substantial high and low tails but have coherent collective consensus data distributions, only provisional status was conferred on account of the apparent bias noticed between different analytical procedures that have similar analytical credibility. Figure 0.3 shows for Zn that there is disparity between acid digestion (AD) results, largely by ICP-MS, and fusion disc (FD) results, largely by XRF. Notably, the compromise consensus agrees with most XRF powder pellet results and some ICP-MS fusion and acid digestion results.

As is frequently observed, some sets of results in this round, including those of TiO_2, MnO, MgO, Na_2O, K_2O, P_2O_5, Er, Gd, Lu, Tl, Tm and U feature notably stepped distributions resulting from the over-rounding of some of the contributed data. As a result, we **continue to recommend** that for proficiency testing purposes **all measurements** should be quoted to **at least one decimal place more than would be routinely presented** to a client. This recommendation would enable our statistical procedures to define consensus values more effectively, which is especially relevant for distributions of both major element components and trace elements when reported at low mass fractions.

Because CFU-1 is not a typical silicate rock of the kind normally used in the Geo*PT* programme, it is worth reviewing the overall composition. The sum of the major components, Fe_2O_3(total), SiO_2 and CaO along with the minor oxides, and LOI (which is likely to represent CO_2

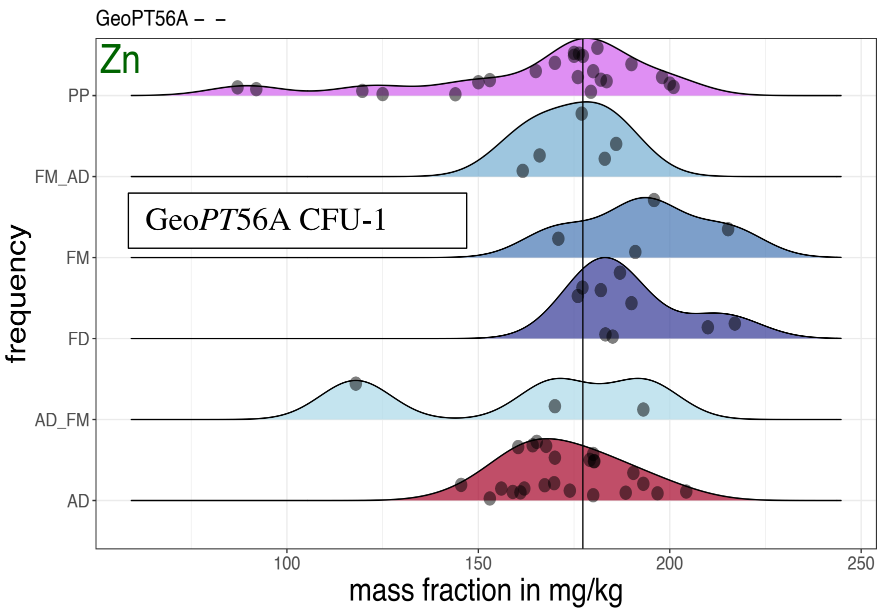

Figure 0.3 A ‘ridges’ plot for Zn in CFU-1 in which smoothed distributions of results presented according to method of sample preparation show that the provisional consensus value is offset from mid-points of most ICP-MS acid digestion (AD) and XRF fusion disc (FD) measurements but is compatible with XRF powder pellet (PP) and ICP-MS (FM_AD) results.

Key to sample preparation: PP – Powder pellet (XRF); FM_AD – Fusion followed by acid digestion; FM – Fusion melt; FD – Fusion disc (XRF); AD_FM – Acid digestion followed by fusion of the residue; AD – Acid digestion.

and H_2O), amounts to 99.326 g/100g, suggesting that all major and minor constituents are accounted for. C(tot) is measured as 4.6 g/100g which represents 16.9 g/100g CO_2, somewhat short of the LOI value of 21.62 g/100g, suggesting that several g/100g OH may be present in hydrous minerals, possibly clays.

Participation in future rounds

The benefit from proficiency testing arises from regular participation and laboratories are invited to contribute to Round 57, the test material for which will be distributed during March 2025.

Acknowledgements

The authors once again thank Andrea Mills (BGS) for much-valued assistance in distributing these samples. We are especially grateful to Thomas Meisel (Montanuniversität Leoben, Austria) for both maintaining and continuing to improve the system by developing procedures that involve the package 'R' and the Shiny App, which has greatly assisted in the investigation of data according to analytical procedure, and has provided the graphics featured in Figures 0.1, 0.2 and 0.3, as well as facilitating the analysis of datasets involving modes derived according to Thompson (2017).

References

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References of more general relevance

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ADDENDUM
— IMPORTANT NOTICES TO ANALYSTS

Graphical displays of Geo*PT* data distributions

As previously reported, participants can view their data according to analytical procedure online, using the Shiny App implementation produced and arranged by Thomas Meisel: *https://www.geoanalyst.shinyapps.io/GeoPTcommon2*

Reminder about correct reporting of Loss On Ignition (LOI) procedures

It continues to be a concern that procedures for LOI determination are not recorded accurately by all participants. **Please check your recorded LOI procedure before submitting results in the next round of Geo*PT*.**

Appendix

Publication status of proficiency testing reports.

Previous Geo*PT* reports are available for download from the IAG website (*http://www.geoanalyst.org/*).

Geo*PT*1
Thompson M., Potts P.J., Kane J.S. and Webb P.C. (1996)
Geo*PT*1. International proficiency test for analytical geochemistry laboratories - Report on round 1. Geostandards Newsletter: The Journal of Geostandards and Geoanalysis, 20, 295-325.

Geo*PT*2
Thompson M., Potts P.J., Kane J.S., Webb P.C. and Watson, J.S. (1998)
Geo*PT*2. International proficiency test for analytical geochemistry laboratories - Report on round 2. Geostandards Newsletter: The Journal of Geostandards and Geoanalysis, 22 127-156A.

Geo*PT*3
Thompson M., Potts P.J., Kane J.S. and Chappell B.W. (1999a)
Geo*PT*3. International proficiency test for analytical geochemistry laboratories - Report on round 3. Geostandards Newsletter: The Journal of Geostandards and Geoanalysis, 23, 87-121.

Geo*PT*4
Thompson M., Potts P.J., Kane J.S., Webb P.C. and Watson J.S. (1999b)
Geo*PT*4. International proficiency test for analytical geochemistry laboratories - Report on round 4. Published in the electronic version of Geostandards Newsletter: The Journal of Geostandards and Geoanalysis (Summer 2000).

Geo*PT*5
Thompson M., Potts P.J., Kane J.S., and Wilson S. (1999c)
Geo*PT*5. International proficiency test for analytical geochemistry laboratories - Report on round 5. Published in the electronic version of Geostandards Newsletter: The Journal of Geostandards and Geoanalysis (Summer 2000).

Geo*PT*6
Potts P.J., Thompson M., Kane J.S., Webb P.C. and Carignan J. (2000)
GEO*PT*6 - an international proficiency test for analytical geochemistry laboratories - report on round 6 (OU-3: Nanhoron microCalcareous ironstone) and 6A (CAL-S: CRPG limestone). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*7
Potts P.J., Thompson M., Kane J.S., and Petrov L.L. (2000)
GEO*PT*7 - an international proficiency test for analytical geochemistry laboratories - report on round 7 (GBPG-1 Garnet-biotite plagiogneiss). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*8
Potts P.J., Thompson M., Kane J.S., Webb, P.C. and Watson J.S. (2000)
GEO*PT*8 - an international proficiency test for analytical geochemistry laboratories - report on round 8 / February 2001 (OU-4 Penmaenmawr microdiorite). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*9
Potts P.J., Thompson M., Webb, P.C. and Watson J.S. (2001)
GEO*PT*9 - an international proficiency test for analytical geochemistry laboratories - report on round 9 / July 2001 (OU-6 Penrhyn Calcareous ironstone). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*10
Potts P.J., Thompson M., Webb, P.C., Watson J.S. and Wang Yimin (2001)
GEO*PT*10 - an international proficiency test for analytical geochemistry laboratories - report on round 10 / December 2001 (CH-1 Marine sediment). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*11
Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and Watson J.S. (2002)
GEO*PT*11 - an international proficiency test for analytical geochemistry laboratories - report on round 11 / July 2002 (OU-5 Leaton dolerite). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*12
Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and Batjargal B. (2003)
GEO*PT*12 - an international proficiency test for analytical geochemistry laboratories - report on round 12 / January 2003 (GAS Serpentinite). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*13
Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and Kasper H.U. (2003)
GEO*PT*13 - an international proficiency test for analytical geochemistry laboratories - report on round 13 / July 2003 (Köln Loess). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*14
Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and B. Batjargal (2004)
Geo*PT*14 - an international proficiency test for analytical geochemistry laboratories - report on round 14 / January 2004 (OShBO - alkaline Calcareous ironstone). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*15
Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and Wang Yimin (2004)
Geo*PT*15 - an international proficiency test for analytical geochemistry laboratories - report on round 15 / June 2004 (Ocean floor sediment MSAN). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*16
Potts P.J., Thompson M., Webb, P.C. and S.Wilson (2005)
Geo*PT*16 - an international proficiency test for analytical geochemistry laboratories - report on round 16 / February 2005 (Nevada basalt, BNV-1). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*17
Potts P.J., Thompson M., Webb, P.C. and J. Nicholas Walsh (2005)
Geo*PT*17 - an international proficiency test for analytical geochemistry laboratories - report on round 17 / July 2005 (Calcareous sandstone, OU-8). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*18
Webb, P.C., Thompson M., Potts P.J. and L. Paul Bedard (2006)
Geo*PT*18 - an international proficiency test for analytical geochemistry laboratories - report on round 18 / Jan 2006 (Quartz Diorite, KPT-1). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*19
Webb, P.C., Thompson M., Potts P.J. and B. Batjargal (2006)
Geo*PT*19 - an international proficiency test for analytical geochemistry laboratories - report on round 19 / July 2006 (Gabbro, MGR-N). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*20
Webb, P.C., Thompson M., Potts P.J. and M. Burnham (2007) Geo*PT*20 - an international proficiency test for analytical geochemistry laboratories - report on round 20 / Jan 2007 (Ultramafic rock, OPY-1). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*21
Webb, P.C., Thompson M., Potts P.J. and B. Batjargal (2007)
Geo*PT*21 - an international proficiency test for analytical geochemistry laboratories - report on round 21 / July 2007 (Calcareous ironstone, MGT-1). International Association of Geoanalysts, Keyworth. Unpublished report.

Appendix (Cont'd)

Geo*PT*22
Webb, P.C., Thompson, M., Potts, P.J. and Batjargal, B. (2008)
Geo*PT*22 - an international proficiency test for analytical geochemistry laboratories - report on round 22 / January 2008 (Basalt, MBL-1). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*23
Webb, P.C., Thompson, M., Potts, P.J., Watson, J.S. and Kriete, C. (2008)
Geo*PT*23 - an international proficiency test for analytical geochemistry laboratories - report on round 23 / September 2008 (Separation Lake pegmatite, OU-9) and 23A (Manganese nodule, FeMn-1). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*24
Webb, P.C., Thompson, M., Potts, P.J. and Watson, J.S. (2009)
Geo*PT*24 - an international proficiency test for analytical geochemistry laboratories - report on round 24 / January 2009 (Longmyndian greywacke, OU-10). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*25
Webb, P.C., Thompson, M., Potts, P.J. and Enzweiler, J. (2009)
Geo*PT*25 - an international proficiency test for analytical geochemistry laboratories - report on round 25 / July 2009 (Basalt, HTP-1). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*26
Webb, P.C., Thompson, M., Potts, P.J. and Loubser, M. (2010)
Geo*PT*26 - an international proficiency test for analytical geochemistry laboratories - report on round 26 / January 2010 (Ordinary Portland cement, OPC-1). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*27
Webb, P.C., Thompson, M., Potts, P.J. and Batjargal, B. (2010)
Geo*PT*27 - an international proficiency test for analytical geochemistry laboratories - report on round 27 / July 2010 (Andesite, MGL-AND). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*28
Webb, P.C., Thompson, M., Potts, P.J. and Wilson, S. (2011)
Geo*PT*28 - an international proficiency test for analytical geochemistry laboratories - report on round 28 / January 2011 (Shale, SBC-1). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*29
Webb, P.C., Thompson, M., Potts, P.J. and Wilson, S. (2011)
Geo*PT*29 - an international proficiency test for analytical geochemistry laboratories - report on round 29 / July 2011 (Nephelinite, NKT-1). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*30
Webb, P.C., Thompson, M., Potts, P.J., Long, D. and Batjargal, B. (2012)
Geo*PT*30 - an international proficiency test for analytical geochemistry laboratories - report on round 30 / January 2012 (Syenite, CG-2) and 30A (Limestone, ML-2). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*31
Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2012)
Geo*PT*31 - an international proficiency test for analytical geochemistry laboratories - report on round 31 / July 2012 (Modified river sediment, SdAR-1). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*32
Webb, P.C., Thompson, M., Potts, P.J and Webber, E. (2013)
Geo*PT*32 - an international proficiency test for analytical geochemistry laboratories - report on round 32 / January 2013 (Woodstock Basalt, WG-1). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*33
Webb, P.C., Thompson, M., Potts, P.J., Prusisz, B., and Young, K. (2013)
Geo*PT*33 - an international proficiency test for analytical geochemistry laboratories - report on round 33 / July-August 2013 (Ball Clay, DBC-1). International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*34
Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2014)
Geo*PT*34 - an international proficiency test for analytical geochemistry laboratories - report on round 34 (Calcareous ironstone, GRI-1) / January 2014. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*35
Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2014)
Geo*PT*35 - an international proficiency test for analytical geochemistry laboratories - report on round 35 (Toleiitic Basalt, TLM-1) / August 2014. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*35A
Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2014)
Geo*PT*35A - an international proficiency test for analytical geochemistry laboratories - report on round 35A (Metalliferous sediment, SdAR-H1) / August 2014. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*36
Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2015)
Geo*PT*36 - an international proficiency test for analytical geochemistry laboratories - report on round 36 (Gabbro, GSM-1) / January 2015. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*36A
Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2015)
Geo*PT*36A - an international proficiency test for analytical geochemistry laboratories - report on round 36A (Metal-rich sediment, SdAR-M2) / January 2015. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*37
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Burnham, M. (2015)
Geo*PT*37 - an international proficiency test for analytical geochemistry laboratories - report on round 37 (Rhyolite, ORPT-1) / July 2015. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*37A
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S. (2015)
Geo*PT*37A - an international proficiency test for analytical geochemistry laboratories - report on round 37A (Blended sediment, SdAR-L2) / July 2015. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*38
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2016)
Geo*PT*38 - an international proficiency test for analytical geochemistry laboratories - report on round 38 (Gabbro, OU-7) / January 2016. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*38A
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Meisel, T. (2016)
Geo*PT*38A - an international proficiency test for analytical geochemistry laboratories – special report on round 38A (Modified harzburgite, HARZ01) / June 2016. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*39
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2016)
Geo*PT*39 - an international proficiency test for analytical geochemistry laboratories - report on round 39 (Syenite, SyMP-1) / July 2016. International Association of Geoanalysts: Unpublished report.

Appendix (Cont'd)

Geo*PT*39A
Webb, P.C., Thompson, M., Potts, P.J, and Gowing, C.J.B. (2016) Geo*PT*39A - an international proficiency test for analytical geochemistry laboratories - report on round 39A (Nepheline syenite, MNS-1) / July 2016. International Association of Geoanalysts: Unpublished report.

Geo*PT*40
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2017)
Geo*PT*40 - an international proficiency test for analytical geochemistry laboratories - report on round 40 (Silty marine shale, ShWYO-1) / January 2017. International Association of Geoanalysts: Unpublished report.

Geo*PT*40A
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2017)
Geo*PT*40A - an international proficiency test for analytical geochemistry laboratories - report on round 40A (Calcareous organic-rich shale, ShTX-1) / January 2017. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*41
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2017)
Geo*PT*41 - an international proficiency test for analytical geochemistry laboratories - report on round 41 (Andesite, ORA-1) / July 2017. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*41A
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2017)
Geo*PT*41A - an international proficiency test for analytical geochemistry laboratories - report on round 41A (Mineralized stream sediment, SSCO-1) / July 2017. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*42
Webb, P.C., Thompson, M., Potts, P.J., Gowing, C.J.B. and Burnham, M. (2018)
Geo*PT*42 – an international proficiency test for analytical geochemistry laboratories – report on round 42 (Queenston shale, QS-1) / January 2018. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*43
Webb, P.C., Potts, P.J., Thompson, M. and Gowing, C.J.B. (2018)
Geo*PT*43 – an international proficiency test for analytical geochemistry laboratories – report on round 43 (Dolerite, ADS-1) / July 2018. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*44
Webb, P.C., Potts, P.J., Thompson, M., Gowing, C.J.B. (2019)
Geo*PT*44 – an international proficiency test for analytical geochemistry laboratories – report on round 44 (Calcareous shale, ShCX-1) / January 2019. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*44A
Webb, P.C., Potts, P.J., Thompson, M. Gowing, C.J.B. and Wilson, S.A. (2019)
Geo*PT*44A – an international proficiency test for analytical geochemistry laboratories – report on round 44A (Calcareous mudrock, CM-1) / January 2019. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*45
Webb, P.C., Potts, P.J., Thompson, M. Gowing, C.J.B. and Wilson, S.A. (2019)
Geo*PT*45 – an international proficiency test for analytical geochemistry laboratories – report on round 45 (Silicified siltstone, GONV-1) / July 2019. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*46
Webb, P.C., Potts, P.J., Thompson, M. and Gowing, C.J.B. (2020)
Geo*PT*46 – an international proficiency test for analytical geochemistry laboratories – report on round 46 (Granodiorite, HG-1) / January 2020. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*46A
Webb, P.C., Potts, P.J., Thompson, M. Gowing, C.J.B. and Wilson, S.A. (2020)
Geo*PT*46A – an international proficiency test for analytical geochemistry laboratories – report on round 46A (Phosphate rock, POLC-1) / January 2020. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*47
Webb, P.C., Potts, P.J., Thompson, M. and Gowing, C.J.B. (2020)
Geo*PT*47 – an international proficiency test for analytical geochemistry laboratories – report on round 47 (Silty Soil BIM-1) / December 2020. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*47A
Webb, P.C., Potts, P.J., Thompson, M. and Gowing, C.J.B. (2020)
Geo*PT*47A – an international proficiency test for analytical geochemistry laboratories – report on round 47A (Silty Soil, NES-1) / December 2020. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*48
Webb, P.C., Potts, P.J., Thompson, M., Gowing, C.J.B., Glodny, J., Wiedenbeck, M. (2021)
Geo*PT*48 – an international proficiency test for analytical geochemistry laboratories – report on round 48 (Monzonite, MzBP-1) / April 2021. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*49
Webb, P.C., Potts, P.J., Thompson, M., Gowing, C.J.B., and Wilson, S.A. (2021)
Geo*PT*49 – an international proficiency test for analytical geochemistry laboratories – report on round 49 (Basalt, BVA-1) / July 2021. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*50
Webb, P.C., Potts, P.J., Thompson, M., and Gowing, C.J.B. (2022)
Geo*PT*50 – an international proficiency test for analytical geochemistry laboratories – report on round 50 (Calcified sediment, CSd-1) / January 2022. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*51
Webb, P.C., Potts, P.J., Thompson, M., Gowing, C.J.B. and Renno, A.D. (2022)
Geo*PT*51 – an international proficiency test for analytical geochemistry laboratories – report on round 51 (LeucomonzoCalcareous ironstone, GMN-1) / July 2022. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*51A
Webb, P.C., Potts, P.J., Thompson, M. and Gowing, C.J.B. (2022)
Geo*PT*51A – an international proficiency test for analytical geochemistry laboratories – report on round 51A (Calcareous ironstone, MEG-1) / July 2022. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*52
Webb, P.C., Potts, P.J., Gowing, C.J.B., Thompson, M., Wind, J., (2023)
Geo*PT*52 – an international proficiency test for analytical geochemistry laboratories – report on round 52 (Metalliferous Shale, EMS-1) / January 2023. International Association of Geoanalysts, Keyworth. Unpublished report.

Geo*PT*53
Webb, P.C., Potts, P.J., Gowing, C.J.B., Thompson, M., Wiedenbeck, M., Glodney, J. (2023) Geo*PT*53 – an international proficiency test for analytical geochemistry laboratories – report on round 53 (Tonalite, TLB-1) / July 2023. International Association of Geoanalysts, Keyworth. Unpublished report.

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Geo*PT*54
Webb, P.C., Potts, P.J, Gowing, C.J.B. Thompson, M., Sigmarsson, O. and Wiedenbeck, M. (2024)
Geo*PT*54 - an international proficiency test for analytical geochemistry laboratories - report on round 54 (Tholeiitic Basalt, BNA-1) / February 2024. International Association of Geoanalysts: Unpublished report.

Geo*PT*54A
Webb, P.C., Potts, P.J, Gowing, C.J.B. Thompson, M., and Enzweiler, J. (2024)
Geo*PT*54A - an international proficiency test for analytical geochemistry laboratories - report on round 54A (Basalt, CSQ-1) / February 2024. International Association of Geoanalysts: Unpublished report.

Geo*PT*55
Webb, P.C., Potts, P.J, Gowing, C.J.B. Thompson, M. and Wiedenbeck, M. (2024)
Geo*PT*55 - an international proficiency test for analytical geochemistry laboratories - report on round 55 (Slate, SMB-1) / July 2024. International Association of Geoanalysts: Unpublished report.

Table 1 - GeoPT56A Contributed data for Calcareous ironstone, CFU-1. 11/12/2024

Lab Code		X2	X3	X4	X5	X7	X8	X10	X11	X12	X13	X14	X15	X16
SiO2	$g\ 100g^{-1}$	22.88	23.24	**24.211**	**23.707**	22.7	19.68	**23.86**	**23.74**	20	23.826		23.71	
TiO2	$g\ 100g^{-1}$	0.31	0.291	**0.291**	**0.295**	0.284	0.33	**0.3**	**0.3**	0.247	0.315		0.29	
Al2O3	$g\ 100g^{-1}$	4.8	5.11	**5.459**	**4.718**	4.8	4.83	**5.1**	**4.94**		4.681		4.88	
Fe2O3T	$g\ 100g^{-1}$	24.44	26.54		**26.04**	26.05	26.2	**26.62**	**26.32**	25.1	26.52		26.67	
Fe(II)O	$g\ 100g^{-1}$			**25.61**										
MnO	$g\ 100g^{-1}$	0.19	0.172	**0.175**	**0.18**	0.161	0.23	**0.18**	**0.18**	0.155	0.174		0.18	
MgO	$g\ 100g^{-1}$	0.7	0.69	**0.753**	**0.674**	0.632	0.85	**0.66**	**0.66**		0.696		0.67	
CaO	$g\ 100g^{-1}$	22.67	19.03	**19.425**	**19.817**	19.49	23.72	**20.29**	**19.92**	20.9	20.076		20.2	
Na2O	$g\ 100g^{-1}$	0.16	0.19			0.15	0.11	**0.1**	**0.14**		0.19		0.13	
K2O	$g\ 100g^{-1}$	0.67	0.57	**0.627**	**0.645**	0.659	0.62	**0.59**	**0.67**	0.792	0.62		0.64	
P2O5	$g\ 100g^{-1}$	1.05	0.897	**0.858**		0.894	0.81	**0.84**	**0.94**		0.863		0.9	
H2O+	$g\ 100g^{-1}$								**2**					
CO2	$g\ 100g^{-1}$					16.9								
LOI	$g\ 100g^{-1}$	22.18	21.5					**21.61**	**21.58**		22.04		21.67	
Ag	$mg\ kg^{-1}$												0.012	**1.001**
As	$mg\ kg^{-1}$		110			102				96		**106.1**	106	**105.8**
B	$mg\ kg^{-1}$											**18.4**		
Ba	$mg\ kg^{-1}$	164	172.750			160	283			162	127.9	**154.1**	170.5	**170.6**
Be	$mg\ kg^{-1}$	3.36	3.51			3.1						**3.4**	2.99	**3.8**
Bi	$mg\ kg^{-1}$												0.286	**0.298**
Br	$mg\ kg^{-1}$									22.4				
C(org)	$mg\ kg^{-1}$					880							1100	
C(tot)	$mg\ kg^{-1}$					46900			**45301**				44600	
Cd	$mg\ kg^{-1}$		0.1									**0.12**	0.069	**0.407**
Ce	$mg\ kg^{-1}$	100	110.7			107				102	53	**108.9**	102	**101.6**
Cl	$mg\ kg^{-1}$					264								
Co	$mg\ kg^{-1}$	27.5	28.54	**25.41**		27	72				49.2	**30.08**	25.8	**30.05**
Cr	$mg\ kg^{-1}$	257		**517.3**		320	510			437	257.1	**280.5**	287	**292.2**
Cs	$mg\ kg^{-1}$	0.75	0.83									**0.9**	0.82	**0.963**
Cu	$mg\ kg^{-1}$	7.21	9.39	**7.5**			10						6.12	**5.56**
Dy	$mg\ kg^{-1}$	9.13	9.7			10						**10.89**	9.4	**10.9**
Er	$mg\ kg^{-1}$	4.75	4.97			5.4						**5.86**	4.96	**5.81**
Eu	$mg\ kg^{-1}$	2.47	2.78			2.8						**3.09**	2.87	**3.16**
F	$mg\ kg^{-1}$					925								
Ga	$mg\ kg^{-1}$	6.42				8.8	14					**7.74**	6.2	**9.81**
Gd	$mg\ kg^{-1}$	10.4	10.89			11						**13.23**	10.95	**14**
Ge	$mg\ kg^{-1}$	1.02										**6.1**	0.05	
Hf	$mg\ kg^{-1}$	4.09										**4.08**	4.76	**4.79**
Hg	$mg\ kg^{-1}$													
Ho	$mg\ kg^{-1}$	1.72	1.85			1.9						**2.08**	1.76	**2.03**
I	$mg\ kg^{-1}$													
In	$mg\ kg^{-1}$												0.126	**0.143**
La	$mg\ kg^{-1}$	38.8	44.1			42				41	41	**42.84**	42.1	**39.72**
Li	$mg\ kg^{-1}$	23.4	24.5			24						**22.15**	24.8	**25.1**
Lu	$mg\ kg^{-1}$	0.63	0.64									**0.75**	0.64	**0.742**
Mo	$mg\ kg^{-1}$		1.34	**0.67**								**1.32**	1.17	**2.21**
Nb	$mg\ kg^{-1}$	7.55					8				7.9	**8.14**	7.31	**6.5**
Nd	$mg\ kg^{-1}$	47.2	53.9			52				43.9		**58.59**	52.8	**50.13**
Ni	$mg\ kg^{-1}$	69.7	72.4	**67.19**		68	76				35.5	**76.32**	66.3	**66.5**
Pb	$mg\ kg^{-1}$	24.9	25.98	**32.95**		27	15				10.3	**28.96**	23.8	**23.4**
Pr	$mg\ kg^{-1}$	11.8	13.8			13						**13.61**	13	**12.27**
Rb	$mg\ kg^{-1}$	19.5	22			18.7	39			21.2	21	**22.81**	21.5	**20.9**
Re	$mg\ kg^{-1}$												0.001	
Ru	$mg\ kg^{-1}$													
S	$mg\ kg^{-1}$					800		**1300**	**1275**				1300	
Sb	$mg\ kg^{-1}$		0.45									**0.49**	0.44	**0.208**
Sc	$mg\ kg^{-1}$	14.5	14			19	25					**15.99**	13	**15.55**
Se	$mg\ kg^{-1}$												0.158	
Sm	$mg\ kg^{-1}$	11.1	12.11			12						**13.19**	11.95	**11.36**
Sn	$mg\ kg^{-1}$		1.1									**2.03**	1.44	**0.229**
Sr	$mg\ kg^{-1}$	755	635			740	534		**760**	781	395.6	**851.3**	790	**815.3**
Ta	$mg\ kg^{-1}$	0.33										**1.88**	0.285	**0.445**
Tb	$mg\ kg^{-1}$	1.6	1.76			1.7						**2.01**	1.62	**2.02**
Te	$mg\ kg^{-1}$												0.239	
Th	$mg\ kg^{-1}$	14.7	16.46			17	75			11.4	7.3	**15.81**	16.5	**14.5**
Tl	$mg\ kg^{-1}$		0.27										0.1	**0.119**
Tm	$mg\ kg^{-1}$	0.7	0.71									**0.82**	0.72	**0.797**
U	$mg\ kg^{-1}$	2.28	2.39	**3.46**		2.5						**2.57**	2.28	**2.43**
V	$mg\ kg^{-1}$	314				320	442		**280**		236.3	**364.2**	362	**369.3**
W	$mg\ kg^{-1}$											**1.42**	2.8	
Y	$mg\ kg^{-1}$	45	44.6			47	40				19	**46.56**	44	**41.84**
Yb	$mg\ kg^{-1}$	4.41	4.58			4.8						**5.3**	4.67	**5.24**
Zn	$mg\ kg^{-1}$	156		**204.310**		170	200			182	119.7	**193.1**	190.5	**193.1**
Zr	$mg\ kg^{-1}$	163	190				186			167	97.7	**149**	206	**158.5**

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2

Table 1 - GeoPT56A Contributed data for Calcareous ironstone, CFU-1. 11/12/2024

Lab Code		X17	X18	X19	X21	X22	X23	X24	X25	X26	X27	X29	X30	X31
SiO2	g 100g^{-1}	23.55	**24.4**	23.4	23.41	24.1	23.1	**23.6**	**22.93**	**23.282**	23.73	14	**19.455**	
TiO2	g 100g^{-1}	0.28	**0.278**	0.27	0.283	0.3	0.28	**0.28**	**0.299**	**0.292**	0.29	0.27	**0.334**	**0.3**
Al2O3	g 100g^{-1}	4.74	**4.95**	4.95	4.795	5.2	5.2	**4.9**	**4.96**	**4.857**	4.82	3.4	**5.186**	**4.79**
Fe2O3T	g 100g^{-1}	25.34	**26.59**	25.01	25.925	25.9	26.4	**26.8**	**26.79**	**26.315**	26.54	27	**31.851**	**25.4**
Fe(II)O	g 100g^{-1}			2.3	2.42								**1.9**	
MnO	g 100g^{-1}	0.17	**0.177**	0.18	0.175	0.19	0.18	**0.18**	**0.179**	**0.177**	0.18	0.18	**0.218**	**0.17**
MgO	g 100g^{-1}	0.69	**0.7**	0.66	0.647	0.65	0.68	**0.679**	**0.6**	**0.665**	0.63		**0.847**	**0.66**
CaO	g 100g^{-1}	19.88	**19.81**	19.88	19.869	19.8	20.3	**19.9**	**20.6**	**19.893**	20.29	22	**24.984**	**20.1**
Na2O	g 100g^{-1}	0.16	**0.16**	0.51	0.137	0.15	0.15	**0.152**	**0.15**	**0.085**	0.12		**0.199**	**0.15**
K2O	g 100g^{-1}	0.62	**0.57**	0.65	0.573	0.74	0.69	**0.611**	**0.66**	**0.647**	0.64	0.75	**0.659**	**0.68**
P2O5	g 100g^{-1}	0.87	**0.92**	0.87	0.858	0.97	0.92	**1.046**	**0.887**	**0.898**	0.889	1.6	**0.927**	**0.92**
H2O+	g 100g^{-1}									**1.57**			**5.19**	
CO2	g 100g^{-1}													**4.55**
LOI	g 100g^{-1}	22.29	**21.51**	22.13	21.421	25.5		**21.6**	**21.66**	**21.83**	21.36		**22.05**	
Ag	mg kg^{-1}		**0.1**											**0.010**
As	mg kg^{-1}		**103.2**			114			**110**	**99.5**	103.6	130	16	
B	mg kg^{-1}													
Ba	mg kg^{-1}	160.9	**150.840**	143	162.2	158		**158.4**	**157**	**164.1**	161	380	**183**	**148**
Be	mg kg^{-1}	3.2	**4.24**		3.065	3.2		**3.25**			3.03			**3.11**
Bi	mg kg^{-1}				0.41	0.5					0.34			**0.32**
Br	mg kg^{-1}													
C(org)	mg kg^{-1}													
C(tot)	mg kg^{-1}				47164						46500			
Cd	mg kg^{-1}		**0.18**		0.115	0.1		**0.089**			0.08			
Ce	mg kg^{-1}	100.6	**96.64**	94	102.450	94		**103.5**	**101.830**	**109.1**	102.7		**125**	**98.6**
Cl	mg kg^{-1}											350	140	
Co	mg kg^{-1}	25.4	**26.59**	24	26.448	28.9		**27**		**26.6**	26.6		**82**	**26**
Cr	mg kg^{-1}	264.7	**263.690**	220	259.1	279		**264**	**278**	**282**	279	230	**306**	**257**
Cs	mg kg^{-1}	0.8	**0.69**		0.735	0.7		**0.738**	**0.77**	**3.5**	0.79			**0.7**
Cu	mg kg^{-1}	7.8	**5.4**	11	5.9	9		**6.15**	**10**	**1.3**	5.8		**7**	**5.47**
Dy	mg kg^{-1}	9	**8.16**	7.6	9.392			**9.18**	**9.08**		9.3			**9.03**
Er	mg kg^{-1}	4.5	**4.36**	4	4.734	5.01		**4.78**	**4.74**		4.9			**4.62**
Eu	mg kg^{-1}	2.5	**2.32**	2.3	2.644	2.8		**2.55**	**2.56**		2.6			**2.43**
F	mg kg^{-1}				811								**783**	
Ga	mg kg^{-1}	6.7	**8.16**		5.721	6		**5.5**	**5**	**4.7**	5.38		**6**	**6.16**
Gd	mg kg^{-1}	10	**9.44**	10	10.498	9.6		**10.43**	**10.47**		10.5			**9.9**
Ge	mg kg^{-1}									**1**	1			
Hf	mg kg^{-1}	4.3	**2.4**		3.763	2.4		**3.29**	**4.34**	**2.3**	4.5		**4**	**3.55**
Hg	mg kg^{-1}													
Ho	mg kg^{-1}	1.8	**1.56**		1.745	1.6		**1.778**	**1.75**		1.78			**1.67**
I	mg kg^{-1}													
In	mg kg^{-1}				0.118						0.12			
La	mg kg^{-1}	40.4	**37.79**	38	39.734	41		**40.5**	**40.11**	**50.5**	40.1		**56**	**39.9**
Li	mg kg^{-1}		**23.25**	18	22.06	27.5		**23.2**			23			**21.6**
Lu	mg kg^{-1}	0.6	**0.6**	0.6	0.634			**0.63**	**0.65**		0.7			**0.6**
Mo	mg kg^{-1}	1.3	**1.16**		1.094	1.4		**1.043**		**2.5**	1.2	2.7	**2**	**1.27**
Nb	mg kg^{-1}	6.8	**8.26**	16	6.669	21		**7.16**	**7.15**	**6.7**	6.54	10	**5**	**7.3**
Nd	mg kg^{-1}	50.1	**47.59**	48	51.01	55		**51.1**	**50.43**	**55.9**	52.6		**56**	**48.2**
Ni	mg kg^{-1}	68.7	**65.79**	68	65.32	71.2		**65**	**62**	**69**	66.7	86	**64**	**63.2**
Pb	mg kg^{-1}	25.7	**8.07**		24.77	23.5		**23.9**	**24.94**	**25.9**	25	9.8	**228**	**24.6**
Pr	mg kg^{-1}	12.6	**11.7**	10	12.456	14.1		**12.76**	**12.52**		13.1			**11.6**
Rb	mg kg^{-1}	19.1	**17.54**	12	18.56	18.7		**18.85**	**18.7**	**18.8**	19.4	15	**29**	**17.9**
Re	mg kg^{-1}													
Ru	mg kg^{-1}													
S	mg kg^{-1}				945.853	1360				**1200**	1300	898	1447	**1351**
Sb	mg kg^{-1}		**0.47**		0.398			**0.443**			0.45			
Sc	mg kg^{-1}	13.5	**13.41**	14	14.08	13		**14.15**	**14.2**	**6.5**	13.2	220	**16**	**14.4**
Se	mg kg^{-1}													**0.147**
Sm	mg kg^{-1}	10.9	**10.25**	9.6	11.17	11.9		**11.35**	**11.28**	**3.2**	11.4			**10.8**
Sn	mg kg^{-1}	1.5	**1.4**		1.21	1.5		**1.559**			1.5		**4**	**1.43**
Sr	mg kg^{-1}	743.8	**704.680**	735	746.5	786		**752**	**748**	**728.9**	790	730	**119**	**738**
Ta	mg kg^{-1}		**0.381**		0.32	0.25		**0.333**	**0.34**		0.31		**2**	**0.34**
Tb	mg kg^{-1}	1.5	**1.42**		1.595	1.5		**1.632**	**1.68**		1.6			**1.59**
Te	mg kg^{-1}				0.277						0.3			**0.262**
Th	mg kg^{-1}	16.2	**13.86**	15	15.364	16.2		**15.15**	**15.63**	**14.5**	15.2		**16**	**15.1**
Tl	mg kg^{-1}	0.1	**0.11**		0.107			**0.106**			0.11			**0.11**
Tm	mg kg^{-1}	0.7	**0.64**		0.668			**0.712**	**0.71**		0.7			**0.67**
U	mg kg^{-1}	2.3	**2.02**	1.4	2.345	2.3		**2.32**	**2.26**	**2.7**	2.3		**2**	**2.18**
V	mg kg^{-1}	320.6	**327.710**	275	324.270	315		**313**	**321**	**347.1**	328	370	**48**	**321**
W	mg kg^{-1}	2			1.51			**1.425**			1.5		**249**	**1.54**
Y	mg kg^{-1}	46.6	**38.37**	39	44.817	36.7		**41.8**	**44.91**	**41.4**	41.1		**33**	**47.6**
Yb	mg kg^{-1}	4.3	**4.06**	4.2	4.354	3.9		**4.5**	**4.37**		4.8			**4.32**
Zn	mg kg^{-1}	195.9	**196.8**	178	180.2	208		**180.3**	**176**	**181.1**	180	180	**47**	**162**
Zr	mg kg^{-1}	168	**162**	125	141.1	600		**125**	**176**	**149.3**	164	150	**446**	**144**

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2

Table 1 - GeoPT56A Contributed data for Calcareous ironstone, CFU-1. 11/12/2024

Lab Code		X32	X34	X35	X36	X38	X39	X40	X42	X43	X45	X46	X47	X48
SiO2	g 100g^{-1}	22.48	20.905	23.63	23.8	29.63	23.5	28.15	23.839	24.9	25.49	23.46		
TiO2	g 100g^{-1}	0.29	0.205	0.292	0.272	0.37	0.297	0.32	0.319	0.288	0.272	0.3		
Al2O3	g 100g^{-1}	6.23	4.658	4.84	4.9	6.28	4.87	5.631	5.161	4.6	4.682	4.97		
Fe2O3T	g 100g^{-1}	28.33	26.645	26.55	26.61	34.15	26.51	32.06	26.642	26.6	25.417	27.3		
Fe(II)O	g 100g^{-1}			2.01										
MnO	g 100g^{-1}	0.15	0.194	0.174	0.184	0.225	0.188	0.212	0.179	0.175	0.176	0.17		
MgO	g 100g^{-1}	0.67	0.589	0.64	0.68	0.87	0.68	0.902	0.664	0.634	0.653	0.75		
CaO	g 100g^{-1}	17.95	19.635	19.82	20.57	25.75	20.07	24.51	20.343	19.5	19.768	20.18		
Na2O	g 100g^{-1}		0.099		0.13	0.15	0.14	0.406	0.219	0.15	0.149	0.14		
K2O	g 100g^{-1}	0.54	0.619	0.63	0.67	0.687	0.588	0.726	0.669	0.65	0.694	0.66		
P2O5	g 100g^{-1}	0.78	0.842	0.883	0.929	1.113	0.91	1.079	0.880	0.899	0.864	0.83		
H2O+	g 100g^{-1}		1.087											
CO2	g 100g^{-1}													
LOI	g 100g^{-1}	24.65	22.99	21.55	21.59		21.49	2.62	22.841			21.3		21.7
Ag	mg kg^{-1}		0.055			0.133		0.018	0.028					
As	mg kg^{-1}	106.070	115.5	103	108	109.240	99.8	97.99	86.993		91.4	91		90.3
B	mg kg^{-1}			22		34.96						265		
Ba	mg kg^{-1}	152	146.9	160	155	174	127	158.8	167.7	162	149	120		168
Be	mg kg^{-1}	2.74	3.016	2.9		3.357		2.769			3.23			
Bi	mg kg^{-1}					0.319		0.309	0.303		0.365	12		
Br	mg kg^{-1}								2.7		1.61			
C(org)	mg kg^{-1}													
C(tot)	mg kg^{-1}							45995						
Cd	mg kg^{-1}		0.474			0.165		0.068	0.063		0.068			
Ce	mg kg^{-1}	109.290	85.064	99	119	102.250	105.3	99.97	101.033	116	99.901			119.9
Cl	mg kg^{-1}				287		0.006		0.027					
Co	mg kg^{-1}	31	27.98	25	40	100	22.3	26.39			25.83			23.4
Cr	mg kg^{-1}	277	243.050		309	355	270	265.3	351.8	263	255	217		275.2
Cs	mg kg^{-1}					0.772		0.719	0.75		0.742			
Cu	mg kg^{-1}	15	7.448	6.1	15	6.079	15.5	5.96	12.4		10			4.1
Dy	mg kg^{-1}	9.66	8.443	9.1		9.326	9.3	8.98	9.139		8.973		8.925	
Er	mg kg^{-1}	4.97	4.481	4.73		4.825	4.8	4.707	4.874		4.608		4.65	
Eu	mg kg^{-1}	2.75	2.359	2.53		2.556	2.6	2.528	2.654		2.515		2.485	
F	mg kg^{-1}								0.081					
Ga	mg kg^{-1}	6	6.769	6.1	8	9.067	6.5	4.43	6.505		6.28			5.3
Gd	mg kg^{-1}	10.7	9.653	10.6	7	10.907	10.5	10.047	11.018		10.175			
Ge	mg kg^{-1}	2.93				0.483	0.9		0.851		0.794			
Hf	mg kg^{-1}	4.84					15.8	2.572	4.497		4.703			
Hg	mg kg^{-1}		0.034											
Ho	mg kg^{-1}	1.66	1.671	1.72		1.761	1.7	1.688	1.771		1.692		1.65	
I	mg kg^{-1}						1.9							
In	mg kg^{-1}										0.114			
La	mg kg^{-1}	45.71	39.7	39	38	40.111	41.9	38.11	40.741	41	38.566			38.1
Li	mg kg^{-1}		24.54	20.2		22.455		21.02				31		
Lu	mg kg^{-1}	0.72	0.594	0.61		0.639	0.6	0.625	0.638		0.664		0.53	
Mo	mg kg^{-1}	1.01	0.558			1.232		1.164	1.21		1.93			1.5
Nb	mg kg^{-1}					6.703	8	7.047	6.852		6.61			5.3
Nd	mg kg^{-1}	56.99	41.589	52.1	63	50.157	50.8	47.99	50.781		48.126			54.5
Ni	mg kg^{-1}	64	80.4	61	82	90	67.5	64.84	68.35		70.79	56		57.6
Pb	mg kg^{-1}		14.245	24	23	24.647	18.3	23.73	24.625		23.8	23		35.5
Pr	mg kg^{-1}	13.31	9.884	12.3		12.302	12.6	12.01	12.402		12.202		12.85	
Rb	mg kg^{-1}	16.95	11.666		24	26	16.8	18.53	19.445		19.87			20.9
Re	mg kg^{-1}													
Ru	mg kg^{-1}													
S	mg kg^{-1}		9376.500		1134			1486				2000		
Sb	mg kg^{-1}		24.327			0.713		0.446	0.657					
Sc	mg kg^{-1}	64	19.29	12.9	20	14.425	13.8	14.23	14.3		20.1			2.3
Se	mg kg^{-1}		1.67								0.367			
Sm	mg kg^{-1}	12.12	9.014	11.7		11.24	11.3	11.12	11.417		10.517		11.1	10.2
Sn	mg kg^{-1}	0.4	1.215			1.601	1.3	1.501	1.661		1.59			
Sr	mg kg^{-1}	694	796.1	760	842	962	728	739.3	777.293		702.930	581		694.2
Ta	mg kg^{-1}	0.32				0.404	0.3	0.333	0.643					
Tb	mg kg^{-1}	1.84	1.584	1.59		1.466	1.6	1.561	1.651		1.558		1.605	
Te	mg kg^{-1}	0.16									0.214			
Th	mg kg^{-1}	16	14.315	14.8	14	15.271	15.2	15.68	15.384		15.56			13.1
Tl	mg kg^{-1}		0.814			0.11		0.108	0.03		0.044			
Tm	mg kg^{-1}	0.74	0.659	0.69		0.691	0.7	0.685	0.727		0.686		0.595	
U	mg kg^{-1}	2.27	1.935	2.2		2.232	2.5	2.249	2.243		2.250			4.8
V	mg kg^{-1}	247	305.8	305	346	401	330	330.2	328.7	338	367.640	292		373.6
W	mg kg^{-1}	1.18				1.57		1.614			1.2			87
Y	mg kg^{-1}	44.47	37.78	43	45	41.567	45.5	42.78	46.426	43	41.85		40.7	41
Yb	mg kg^{-1}	4.71	4.026	4.49		4.406	4.6	4.284	4.525		4.438		4.155	
Zn	mg kg^{-1}	165	179.1	176	182	217	187	167.7	177.2	177	177.3	153		170
Zr	mg kg^{-1}	121	76.52	169	140	246	172	148	184.621	118	149.610			132.5

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2

Table 1 - GeoPT56A Contributed data for Calcareous ironstone, CFU-1. 11/12/2024

Lab Code		X49	X50	X51	X53	X55	X56	X57	X59	X60	X62	X64	X65	X66
SiO2	$g\ 100g^{-1}$	23.801	17.92	22.48	23.383		24.58	23.52	24.209	20.65	23.14	23.26	23.13	24.31
TiO2	$g\ 100g^{-1}$	0.303	0.19	0.25	0.267	0.022	0.3	0.3	0.287	0.33	0.284	0.27	0.3	0.31
Al2O3	$g\ 100g^{-1}$	5.014	6.53	5.26	4.77	2.634	5.4	4.84	4.667	4.46	4.84	4.76	4.88	5.16
Fe2O3T	$g\ 100g^{-1}$	26.686	27.17	24.98	26.44	34.116	28.4	24.63	25.219	35.26	25.9	25.84	26.45	27.86
Fe(II)O	$g\ 100g^{-1}$													
MnO	$g\ 100g^{-1}$	0.176	0.16	0.18	0.18	0.142	0.214	0.18	0.171	0.22	0.173	0.18	0.18	0.19
MgO	$g\ 100g^{-1}$	0.693	0.76	0.64	0.689	0.518	0.79	0.69	0.655	0.73	0.672	0.69	0.67	0.72
CaO	$g\ 100g^{-1}$	20.135	21.86	20.57	19.82	20.347	20.62	20.07	19.197	6.69	19.66	19.8	20.04	20.52
Na2O	$g\ 100g^{-1}$	0.145		0.45	0.165	0.082	0.21	0.16	0.155	0.15	0.16	0.15	0.23	0.16
K2O	$g\ 100g^{-1}$	0.656	0.78	0.74	0.64	0.307	0.65	0.63	0.661	0.64	0.638	0.45	0.55	0.68
P2O5	$g\ 100g^{-1}$	0.897	1.16	0.85	0.91	0.772	1.26	0.87	0.850	0.88	0.899	0.89	0.91	1
H2O+	$g\ 100g^{-1}$													
CO2	$g\ 100g^{-1}$													15.03
LOI	$g\ 100g^{-1}$	21.848	22.78		21.219			22.01	21.96	29.99	23.16	22.43	22.06	22.88
Ag	$mg\ kg^{-1}$	0.027				0.035				0.35				0.1
As	$mg\ kg^{-1}$	98.732	106.5		99	4.209	86	110		184	97.8	95	107	111.370
B	$mg\ kg^{-1}$				24	0.929								
Ba	$mg\ kg^{-1}$	163.403			163	129.220	67		155.470	300	146	169	180	
Be	$mg\ kg^{-1}$	3.520	4.57		2.91	0.529				4.7				166.360
Bi	$mg\ kg^{-1}$	0.299	0.33		0.31	0.139								0.36
Br	$mg\ kg^{-1}$													
C(org)	$mg\ kg^{-1}$													
C(tot)	$mg\ kg^{-1}$								44400					40973.750
Cd	$mg\ kg^{-1}$					0.068				1.9				0.18
Ce	$mg\ kg^{-1}$	103.529	102.5		101	108.816		131	104.9	101.2	108.2	101	96	107.590
Cl	$mg\ kg^{-1}$								294					
Co	$mg\ kg^{-1}$	28.29	9.6			1.865	97	28	28.03	42.6		24	14	28.41
Cr	$mg\ kg^{-1}$	257.931	283		257	229.089	309	272	263.9	467	271.3	274	320	270.270
Cs	$mg\ kg^{-1}$	0.774			0.76	1.792				0.35				0.76
Cu	$mg\ kg^{-1}$	6.621	3.51		6.26	5.076				9.93			23	3.58
Dy	$mg\ kg^{-1}$	9.138	8.66		9.4	5.424			8.93	8.7				9.76
Er	$mg\ kg^{-1}$	4.853	4.45		5.1	3.039			4.502	4.43				5.04
Eu	$mg\ kg^{-1}$	2.725	2.57		2.4	0.994			2.601	2.52				2.64
F	$mg\ kg^{-1}$													
Ga	$mg\ kg^{-1}$	6.477	6.6		7.2					7.16		8		7.39
Gd	$mg\ kg^{-1}$	10.693	10.11		8.15	6.398			10.35	9.99				10.97
Ge	$mg\ kg^{-1}$	1.119	0.71			0.602				2.87		3		
Hf	$mg\ kg^{-1}$	4.131	4.25		4.6				4.79	1.84		6		4.57
Hg	$mg\ kg^{-1}$													
Ho	$mg\ kg^{-1}$	1.770	1.63		1.7	1.065			1.799	1.53				1.81
I	$mg\ kg^{-1}$													
In	$mg\ kg^{-1}$	0.113	0.1		0.11									
La	$mg\ kg^{-1}$	41.802	40.5		40	58.011		69	41.13	38.45	43.3	41.7		41.94
Li	$mg\ kg^{-1}$		20.35		23	12.503								
Lu	$mg\ kg^{-1}$	0.674	0.64		0.62	0.376				0.6				0.66
Mo	$mg\ kg^{-1}$	1.590	1.51			1.473				4.2				2.04
Nb	$mg\ kg^{-1}$	7.129	7.53		6.9	0.209	9	7	7.213	4.84		6.5		7.08
Nd	$mg\ kg^{-1}$	50.489	50.53		48	41.533			52.32	45.77		60		52.9
Ni	$mg\ kg^{-1}$	69.958			68	3.006	105	70		109	58.9	84		65.6
Pb	$mg\ kg^{-1}$	26.596	26.8		25	25.309	31	55		43.5	20.8	42	18	30.36
Pr	$mg\ kg^{-1}$	12.572	12.55		13	11.108			12.65	11.73				12.82
Rb	$mg\ kg^{-1}$	20.141	20.85		19	16.295	9	22	18.42	19.2	21.1	47		19.92
Re	$mg\ kg^{-1}$													
Ru	$mg\ kg^{-1}$												20	
S	$mg\ kg^{-1}$					19.162			1250			1242		993.820
Sb	$mg\ kg^{-1}$	0.468	0.51			0.014				1		1		0.68
Sc	$mg\ kg^{-1}$	14.627	14.8		13.9			15	14.9	12.2				13.88
Se	$mg\ kg^{-1}$					0.010				14.2		0.9		2.89
Sm	$mg\ kg^{-1}$	11.824	10.83		10.8	7.197			11.5	10.3				11.72
Sn	$mg\ kg^{-1}$	1.740			1.6	0.566				0.1		1.6		
Sr	$mg\ kg^{-1}$	747.185	625.6		738	20.495	761	729	747.6	755	723.4	761	743	785.560
Ta	$mg\ kg^{-1}$	0.337	0.28		0.37					2.16				0.32
Tb	$mg\ kg^{-1}$	1.628	1.63		1.56	0.939			1.626	1.59				1.64
Te	$mg\ kg^{-1}$		0.24											0.37
Th	$mg\ kg^{-1}$	15.611	13.98		15.4	17.394	21		15.3	14.4		43	11	16.69
Tl	$mg\ kg^{-1}$	0.084	0.13			0.100				0.2				
Tm	$mg\ kg^{-1}$	0.701	0.69		0.71	0.415				0.65				0.71
U	$mg\ kg^{-1}$	2.374	1.99		2.31	3.546			2.406	2.03		8	11	2.45
V	$mg\ kg^{-1}$	323.766	261		296	3.495	436		350.1	551	325	392	251	334.8
W	$mg\ kg^{-1}$	1.984	1.64		1.5	0.498			1.925	1.4				
Y	$mg\ kg^{-1}$	43.004	41.6		43	35.172	41	53	41.11	38.5	44.9	48	38	45.17
Yb	$mg\ kg^{-1}$	4.458	4.38		4.64	2.570			4.528	3.98				4.59
Zn	$mg\ kg^{-1}$	185.083	179.4		166	55.593	190	198	186	327	176.3	190	337	209.950
Zr	$mg\ kg^{-1}$	161.852	150		179	7.335	182	172	185.9	92	142	167	128	162.090

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2

Table 1 - GeoPT56A Contributed data for Calcareous ironstone, CFU-1. 11/12/2024

Lab Code		X67	X68	X70	X72	X76	X77	X78	X79	X81	X82	X83	X84	X85
SiO2	g 100g^{-1}	23.87			**22.25**	**23.277**	14.7	23.75	23.5	**23.82**	**23.01**	**23.54**	24	
TiO2	g 100g^{-1}	0.31	**0.297**		**0.31**	**0.292**	0.26	0.29	0.284	**0.301**	**0.25**	**0.29**	0.29	
Al2O3	g 100g^{-1}	4.76	**4.87**		**4.97**	**4.790**	4.78	4.65	5.08	**4.9**	**4.71**	**4.55**	5.1	
Fe2O3T	g 100g^{-1}	26.25	**26.735**		**25.65**	**26.458**	36.9	26	25.9	**26.6**	**25.8**	**26.5**	26	
Fe(II)O	g 100g^{-1}					**2.55**								
MnO	g 100g^{-1}	0.18	**0.182**		**0.919**	**0.174**	0.227	0.18	0.18	**0.184**	**0.18**	**0.2**	0.19	
MgO	g 100g^{-1}	0.63	**0.763**		**0.92**	**0.741**	0.63	0.67	0.71	**0.92**	**0.65**	**0.71**	0.73	
CaO	g 100g^{-1}	19.76	**20.708**		**20.53**	**19.734**	19.2	20.09	20.2	**20.39**	**19.69**	**21.04**	19	
Na2O	g 100g^{-1}	0.19	**0.146**		**0.51**	**0.163**		0.54		**0.41**	**0.14**	**0.05**	0.13	
K2O	g 100g^{-1}	0.65	**0.63**		**0.65**	**0.643**	0.59	0.6	0.605	**0.592**	**0.6**	**0.66**	0.71	
P2O5	g 100g^{-1}	0.91			**0.888**	**0.881**	0.75	0.88	0.87	**0.92**	**0.898**	**1.16**	0.94	
H2O+	g 100g^{-1}											**1.1**		
CO2	g 100g^{-1}													
LOI	g 100g^{-1}	21.6			21.32	**21.891**	21.77	21.68	21.7	**20.96**	**23.3**	**21.46**		
Ag	mg kg^{-1}											**0.13**		
As	mg kg^{-1}	79	**103**	**99.97**						**86**		**91**		
B	mg kg^{-1}													
Ba	mg kg^{-1}	114				**153.2**				**84**		**151**		
Be	mg kg^{-1}					**3.04**						**2.91**		3.19
Bi	mg kg^{-1}	0.2				**0.33**						**0.28**		
Br	mg kg^{-1}		**1.9**											
C(org)	mg kg^{-1}			**4042.460**										
C(tot)	mg kg^{-1}			**45708.250**										
Cd	mg kg^{-1}			**2.57**						**27**		**0.07**		
Ce	mg kg^{-1}		**98**			**98.1**	490			**60**		**82**		106
Cl	mg kg^{-1}		**260**				0.05							
Co	mg kg^{-1}	21	**28.3**	**26.76**		**25.9**				**12**		**22**		27.76
Cr	mg kg^{-1}	211	**256**	**229.260**		**246.2**				**218**		**207**		
Cs	mg kg^{-1}			**8**		**0.73**	5.03					**0.75**		0.78
Cu	mg kg^{-1}	4				**6.23**	80.8			**9**		**6.6**		
Dy	mg kg^{-1}		**10.9**			**9.06**						**8.6**		9.63
Er	mg kg^{-1}					**4.65**						**4.4**		4.68
Eu	mg kg^{-1}		**2.55**			**2.46**						**2.4**		2.14
F	mg kg^{-1}													
Ga	mg kg^{-1}	5				**6.46**						**6.4**		6.51
Gd	mg kg^{-1}					**10.3**						**9.8**		11.21
Ge	mg kg^{-1}											**0.76**		1.38
Hf	mg kg^{-1}		**4.2**			**4.1**						**1.9**		
Hg	mg kg^{-1}													
Ho	mg kg^{-1}					**1.72**						**1.61**		
I	mg kg^{-1}													
In	mg kg^{-1}											**0.12**		
La	mg kg^{-1}		**39.8**			**38.5**				**26**		**36.37**		40.99
Li	mg kg^{-1}					**21.3**	31.49					**23.94**		21.2
Lu	mg kg^{-1}		**0.62**			**0.61**						**0.58**		0.64
Mo	mg kg^{-1}					**1.2**						**1.21**		
Nb	mg kg^{-1}					**6.91**						**6.79**		
Nd	mg kg^{-1}		**45**			**49.7**				**26**		**50.46**		52.16
Ni	mg kg^{-1}	49		**57.22**		**67.6**	80.79			**61**		**65.6**		
Pb	mg kg^{-1}	18		**24.79**		**24**				**21**		**28**		25.28
Pr	mg kg^{-1}					**12.8**						**12.3**		12.62
Rb	mg kg^{-1}					**19.2**				**14**		**19.6**		19.7
Re	mg kg^{-1}													
Ru	mg kg^{-1}													
S	mg kg^{-1}						0.096					**1244**		
Sb	mg kg^{-1}	0.3	**0.53**									**0.32**		
Sc	mg kg^{-1}		**14.5**			**14.3**				**7.2**		**13.6**		13.52
Se	mg kg^{-1}											**1.89**		
Sm	mg kg^{-1}		**11.1**			**11.1**						**11.4**		10.18
Sn	mg kg^{-1}	1				**1.47**						**1.39**		
Sr	mg kg^{-1}	726	**990**			**736**				**631**		**841**		721
Ta	mg kg^{-1}					**0.33**						**0.53**		
Tb	mg kg^{-1}		**1.6**			**1.61**						**0.1**		1.76
Te	mg kg^{-1}											**0.1**		
Th	mg kg^{-1}		**15.6**			**14.9**				**13**		**14.76**		15.99
Tl	mg kg^{-1}					**0.1**						**0.11**		
Tm	mg kg^{-1}					**0.68**						**0.54**		0.67
U	mg kg^{-1}		**2**			**2.14**						**2.43**		2.38
V	mg kg^{-1}	223	**353**	**303.080**		**308.6**	307			**225**		**320**		
W	mg kg^{-1}		**1.5**			**1.55**						**2.08**		
Y	mg kg^{-1}	36		**38.2**		**43.4**				**36**		**41**		40.49
Yb	mg kg^{-1}		**4.52**			**4.3**				**17**		**3.48**		4.41
Zn	mg kg^{-1}	118	**210**	**164.190**		**160.4**	145.5			**153**		**159**		
Zr	mg kg^{-1}					**158.9**				**120**		**50**		

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2

Table 1 - GeoPT56A Contributed data for Calcareous ironstone, CFU-1. 11/12/2024

Lab Code		X87	X88	X89	X90	X91	X92	X93	X94	X96	X98	X99	X102	X103
SiO2	g 100g^{-1}		**24.02**	22.92	**23.82**	**21.26**	**23.72**	**23.018**	70.81	24.22	**23.41**	**23.3**	23.54	24.63
TiO2	g 100g^{-1}		**0.3**	0.3	**0.316**	**0.27**	**0.295**	**0.302**	0.52	0.302	**0.3**	**0.287**	0.299	0.297
Al2O3	g 100g^{-1}		**4.95**	4.74	**4.9**	**4.42**	**4.81**	**5.033**	12.87	4.91	**4.99**	**4.84**	4.81	4.737
Fe2O3T	g 100g^{-1}		**26.79**	25.8	**26.27**	**29.29**	**27.75**	**27.907**	5.21	26.07	**26.07**	**26.33**	26.6	26.04
Fe(II)O	g 100g^{-1}							**2.43**			**2.093**			
MnO	g 100g^{-1}		**0.179**	0.17	**0.178**	**0.19**	**0.182**	**0.178**	0.075	0.174	**0.18**	**0.175**	0.187	0.175
MgO	g 100g^{-1}		**0.63**	0.63	**0.698**	**0.69**	**0.68**	**0.701**	0.37	0.64	**0.64**	**0.678**	0.69	0.652
CaO	g 100g^{-1}		**20.71**	18.85	**20.202**	**19.53**	**19.92**	**19.631**	2.34	20.51	**19.94**	**20.22**	20.12	19.57
Na2O	g 100g^{-1}		**0.13**	0.05	**0.147**	**0.21**	**0.99**	**0.112**	3.41	0.14	**0.15**		0.14	0.144
K2O	g 100g^{-1}		**0.66**	0.64	**0.66**	**0.66**	**0.69**	**0.724**	4	0.65	**0.63**	**0.654**	0.65	0.633
P2O5	g 100g^{-1}		**0.89**	0.88	**0.868**	**0.79**	**0.9**	**0.856**	0.16	0.91	**0.87**	**0.97**	0.89	0.89
H2O+	g 100g^{-1}										**5.019**			
CO2	g 100g^{-1}												15.71	
LOI	g 100g^{-1}		**21.3**	22.67	**21.45**	**21.6**	**21.94**	**21.74**	0.32	21.53	**21.92**		21.62	
Ag	mg kg^{-1}	0.912												
As	mg kg^{-1}	155.958	**95.7**		**114**				6.2		**94.6**			104.5
B	mg kg^{-1}		**3.036**								**27.197**			
Ba	mg kg^{-1}		**165.6**		**154**	**166.570**	**141**		1458.300	163	**164**	**158.6**	170	152.7
Be	mg kg^{-1}		**3.372**			0.17				3	**3.11**			3.209
Bi	mg kg^{-1}										**0.31**			0.297
Br	mg kg^{-1}													
C(org)	mg kg^{-1}										**1310**		2173	
C(tot)	mg kg^{-1}								4.52		**46114**		45053	
Cd	mg kg^{-1}					**3.82**			2.5		**0.09**			0.07
Ce	mg kg^{-1}	108.929	**102.6**		**118**	**140.250**	**92**		128.3	101	**96.6**	**101.8**		101.6
Cl	mg kg^{-1}		386		**1112**						**270**			
Co	mg kg^{-1}	33.66	**26.91**		**17**	**34.88**	**45**		2		**26.4**	**27.74**	23	27.4
Cr	mg kg^{-1}	226.905	**249.7**		**300**	**385.790**	**326**		440.9		**269**	**277.1**	280	263.3
Cs	mg kg^{-1}				**10**	**3.97**					**0.71**	**0.748**		0.783
Cu	mg kg^{-1}	20.242	**3.215**		**5**				3.1		**6.4**	**6.12**		6.023
Dy	mg kg^{-1}	12.289	**9.341**			**3.3**				9	**8.73**	**9.68**		9.209
Er	mg kg^{-1}	5.477	**4.869**			**3.54**				4.5	**4.35**	**4.87**		4.757
Eu	mg kg^{-1}	6.853	**2.539**			**3.95**				2.46	**2.46**	**2.59**		2.562
F	mg kg^{-1}		1088		**2055**		**338**				**710**			
Ga	mg kg^{-1}		**6.472**		**10**	**21.76**			18.6		**6.74**	**6.59**		6.159
Gd	mg kg^{-1}	39.723	**10.51**			**8.17**				9.3	**9.38**	**11.17**		10.42
Ge	mg kg^{-1}		**0.186**			**3.86**					**1.31**			0.447
Hf	mg kg^{-1}		**5.754**						14.9	4	**4.02**	**3.21**		4.572
Hg	mg kg^{-1}										**0.008**			
Ho	mg kg^{-1}	2.388	**1.723**			**1.56**				1.6	**1.67**	**1.76**		1.732
I	mg kg^{-1}													
In	mg kg^{-1}										**0.126**			0.128
La	mg kg^{-1}	67.328	**39.72**		**49**	**42.09**	**43**		67.8	39.4	**40.8**	**40.32**		39.4
Li	mg kg^{-1}	25.441	**19.66**			**29.61**					**19.65**	**24.27**		24.93
Lu	mg kg^{-1}	0.546	**0.638**			**0.91**				0.64	**0.603**	**0.653**		0.621
Mo	mg kg^{-1}				**5**	**57.17**			4.1		**1.13**	**1.26**		1.048
Nb	mg kg^{-1}		**6.569**		**6**	**28.4**	**21**		17	7	**5.79**	**7.43**		6.776
Nd	mg kg^{-1}	60.589	**50.16**		**50**	**46.04**			50.2	49.6	**47.8**	**53.2**		50.43
Ni	mg kg^{-1}	55.251	**69.6**		**55**	**62.14**	**42**		5		**65.9**	**72.8**	75	66.54
Pb	mg kg^{-1}	48.655	**21.2**			**35.05**			38.4	23	**23.8**	**21.61**		24.06
Pr	mg kg^{-1}	26.297	**12.19**			**12.65**				11.8	**11.6**	**13.01**		12.31
Rb	mg kg^{-1}		**19.8**		**26**	**51.26**	**47**		142.8	20	**19**	**18.81**	18	20.8
Re	mg kg^{-1}													
Ru	mg kg^{-1}													
S	mg kg^{-1}		2388		**3092**		**1482**		1884		**1228**			1370
Sb	mg kg^{-1}					0.22			2.1		**0.46**			0.426
Sc	mg kg^{-1}	11.064	**14.91**		**21**	**17.7**	**29**		14.2	13	**14.53**	**15.02**		13.32
Se	mg kg^{-1}										**0.139**			
Sm	mg kg^{-1}	37.245	**11.35**			**14.43**			10.9	10.8	**10.8**	**11.76**		11.15
Sn	mg kg^{-1}					0.36			8.2	2	**1.41**			1.558
Sr	mg kg^{-1}	663.527	**793.7**		**721**	**801.790**	**828**		189.1		**741**	**786**	780	741.6
Ta	mg kg^{-1}		**0.307**			**25.97**					**0.35**	**0.35**		
Tb	mg kg^{-1}	9.028	**1.519**			**3.11**				1.5	**1.5**	**1.73**		1.58
Te	mg kg^{-1}													0.292
Th	mg kg^{-1}		**15.63**		**19**	**10.94**	**18**		17.3	14.9	**14.9**	**14.58**		15.24
Tl	mg kg^{-1}													0.108
Tm	mg kg^{-1}	2.458	**0.681**			0.02				0.64	**0.662**	**0.741**		0.687
U	mg kg^{-1}		**2.309**			**2.24**			4.3	2.3	**2.21**	**2.18**		2.315
V	mg kg^{-1}	289.911	**333.6**		**380**	**334.510**	**339**		5.5	330	**308**	**323.4**	307	329.4
W	mg kg^{-1}					**24.98**					**1.67**			1.598
Y	mg kg^{-1}	44.579	**41.84**		**44**	**66.55**	**44**		51.1	40	**41**	**45.33**	43	39.73
Yb	mg kg^{-1}	4.442	**4.631**			**5.23**			3.4	4.3	**4.11**	**4.62**		4.394
Zn	mg kg^{-1}	167.333	**183.5**		**175**	**215.240**	**125**		87.1		**191**	**173.9**	180	161
Zr	mg kg^{-1}		**219.9**		**158**	**258.760**	**155**		466.8	182	**163**	**120.1**	160	149.7

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2

Table 1 - GeoPT56A Contributed data for Calcareous ironstone, CFU-1. 11/12/2024

Lab Code		X104	X107	X108	X111	X113	X114	X117	X118	X119	X120	X121	X122	X123
SiO2	g 100g^{-1}	24.611	**23.31**	23.51		23.49	23.71		22.94		23.81	23.58	**23.4**	**15.87**
TiO2	g 100g^{-1}	0.203	**0.290**	0.3		0.297	0.27		0.29	**0.373**	0.31	0.28	**0.31**	**0.24**
Al2O3	g 100g^{-1}	5.808	**4.84**	4.88		4.922	4.94		4.896	**13.02**	4.91	4.88	**4.75**	**4.13**
Fe2O3T	g 100g^{-1}	24.377	**26.344**	26.32		26.41	26.38		26.58		26.38	25.98	**26.25**	**32.55**
Fe(II)O	g 100g^{-1}			2.45					2.681	**28.86**				
MnO	g 100g^{-1}		**0.174**	0.17		0.176	0.18		0.18		0.17	0.17	**0.188**	**0.14**
MgO	g 100g^{-1}	0.933	**0.648**	0.66		0.666	0.62		0.676	**0.91**	0.66	0.71	**0.63**	**0.51**
CaO	g 100g^{-1}	19.623	**20.243**	19.95		20.41	19.88		20.42	**24.82**	19.87	20.32	**19.7**	**21.53**
Na2O	g 100g^{-1}			0.14		0.191	0.25		0.133	**0.257**		0.16	**0.13**	**0.14**
K2O	g 100g^{-1}	0.749	**0.633**	0.65		0.608	0.6		0.655	**0.939**	0.68	0.54	**0.54**	**0.79**
P2O5	g 100g^{-1}	0.879	**0.916**	0.89		0.922	0.91		0.917		0.92	0.9	**0.786**	**0.91**
H2O+	g 100g^{-1}			6.06					0.58					
CO2	g 100g^{-1}			15.3					15.7					
LOI	g 100g^{-1}	22.198	**22.327**	21.87		21.91	22.14		21.89		21.37	20.91	**23.01**	**23.18**
Ag	mg kg^{-1}											0.03		
As	mg kg^{-1}			108	54.596	122	89	78.71				104		**88**
B	mg kg^{-1}									**39.1**				
Ba	mg kg^{-1}	70.57	**159.420**	153	104.696	182.5	164	**154.2**	158	**214**	193.8	159	**156.5**	**128**
Be	mg kg^{-1}			3.1	1.523			**3.169**	3.05	**3.93**	3.29	3.77		
Bi	mg kg^{-1}			0.302								0.32		
Br	mg kg^{-1}													
C(org)	mg kg^{-1}					2880			3431					
C(tot)	mg kg^{-1}			4.54		45300			46357			48300		
Cd	mg kg^{-1}			0.065	0.201			**0.072**				0.06	0.058	
Ce	mg kg^{-1}			97.1	83.375	167.1		**99.69**	105	**132.3**	98.2	103	**100.1**	**120**
Cl	mg kg^{-1}													**240**
Co	mg kg^{-1}			28.2	16.544	36.34	27	**27.19**	28.1	**32.2**	26.86	28.1	**27.82**	**68**
Cr	mg kg^{-1}	333.830		273	153.738	264.1	265	**268.130**	251	**335**	267.070	218	**289**	**238**
Cs	mg kg^{-1}			0.78				**0.741**		**1.086**	0.73	0.7	**0.55**	
Cu	mg kg^{-1}	3.504		5.81		29.9		**6.286**	7	**7.69**			**5.13**	**11**
Dy	mg kg^{-1}			9.27	8.565			**9.023**	9.2	**10.9**	8.96	9.18	**8.72**	
Er	mg kg^{-1}			4.69	4.373			**4.657**	4.5	**5.66**	4.59	4.75	**4.5**	
Eu	mg kg^{-1}			2.54	2.397			**2.431**	2.5	**3.201**	2.39	2.47	**2.56**	
F	mg kg^{-1}			760										
Ga	mg kg^{-1}			5.9	4.051	5.48		**7**			9.07	8.5		**5**
Gd	mg kg^{-1}			9.93	9.646			**10.25**	9.6	**12.47**	9.84	10.5	**9.62**	
Ge	mg kg^{-1}											1		
Hf	mg kg^{-1}			4.77				**2.602**		**4.99**	3.91	4.2	**3.59**	**4**
Hg	mg kg^{-1}													
Ho	mg kg^{-1}			1.64	1.727			**1.735**	1.7	**2.043**	1.63	1.75	**1.64**	
I	mg kg^{-1}													
In	mg kg^{-1}			0.123								0.124		
La	mg kg^{-1}			40.1	39.71	63.1		**39.199**	40	**49.7**	38.58	41.1	**39.54**	**31**
Li	mg kg^{-1}			25.2	11.478			**23.53**		**28.1**		24.6		
Lu	mg kg^{-1}			0.61	0.806			**0.605**	0.9	**0.742**	0.62	0.61	**0.61**	
Mo	mg kg^{-1}			1.15				**0.987**		**1.45**	1.34	1.15		
Nb	mg kg^{-1}			7.04				**7.063**		**7.8**	6.6	6.8	**7.26**	**11**
Nd	mg kg^{-1}			48.7	46.785	75.31	59	**48.73**	51	**62.7**	48.45	49.5	**49.34**	**36**
Ni	mg kg^{-1}	39.04		68.6	43.356	69.6		**65.69**	70	**86.4**	67.06	72	**71.57**	**40**
Pb	mg kg^{-1}			23.7	15.991	207.2	27	**23.61**	24.8	**35.34**	23.32		**24.57**	**17**
Pr	mg kg^{-1}			11.8				**12.46**	12.8	**15.43**	12.03	12	**11.89**	
Rb	mg kg^{-1}			19.8		23.8	19	**18.91**		**27.41**	18.1	17	**18.4**	
Re	mg kg^{-1}													
Ru	mg kg^{-1}													
S	mg kg^{-1}			1400		1350			1345			0.16		**1030**
Sb	mg kg^{-1}			0.47	0.392			0.449		**0.471**		0.46		
Sc	mg kg^{-1}		**14.51**	14.7	15.66	30.34	19	**14.16**		**17.99**	13.95	14.7		**28**
Se	mg kg^{-1}			0.171										
Sm	mg kg^{-1}			11.65	10.293			**11.01**	10.8	**14.03**	10.79	10.8	**10.85**	**23**
Sn	mg kg^{-1}			1.61				**1.548**				1.6		
Sr	mg kg^{-1}	632	**744.171**	813	448.225	738.1	657	**737.730**	738	**1001**	758.7	811	**731.640**	**405**
Ta	mg kg^{-1}			0.284				**0.336**		**0.389**	0.3	0.29	**0.28**	
Tb	mg kg^{-1}			1.56	1.7			**1.606**	1.5	**1.837**	1.47	1.5	**1.58**	
Te	mg kg^{-1}			0.254								0.28		
Th	mg kg^{-1}	446.950		14.9		20.09	27	**14.58**	14.5	**19.02**	14.81	14.8	**19.58**	
Tl	mg kg^{-1}			0.099	0.098			**0.109**				0.09		
Tm	mg kg^{-1}			0.69	0.678			**0.695**	0.8	**0.796**	0.64	0.67	**0.64**	
U	mg kg^{-1}			2.29				**2.272**	1.8	**2.92**	2.21	2.21	**2.19**	
V	mg kg^{-1}		**317.030**	313	189.474	317.3	330	**306.8**	316	**444.8**	351.220	338	**325.1**	**264**
W	mg kg^{-1}			1.635				**1.387**		**1.82**	13.81	1.6		**2**
Y	mg kg^{-1}	32	**46.6**	42.6	39.945	56.15	39	**40.56**	41.9	**48.6**	46.55	42.5	**45.59**	**51**
Yb	mg kg^{-1}			4.57	4.701			**4.254**	4.4	**5.26**	4.27	4.42	**4.17**	
Zn	mg kg^{-1}	144		188.5		183.2	150	**165.260**	170	**354**	183.030	180	**161.6**	**92**
Zr	mg kg^{-1}	100	**188.1**	201		167.6	137	**101.1**		**198**	189.230	168	**175**	**97**

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2

Table 1 - GeoPT56A Contributed data for Calcareous ironstone, CFU-1. 11/12/2024

Lab Code		X124	X125	X126	X128	X130	X131	X132	X134	-	-	-	-	-
SiO2	g 100g^{-1}	23.78	23.027	22.02	22.238	23.401	23.238	25.234	179.210					
TiO2	g 100g^{-1}	0.29	0.269	0.28	0.293	0.290	0.286	0.32	2.25					
Al2O3	g 100g^{-1}	4.93	4.705	4.58	5.041	4.775	4.725	4.257	40.94					
Fe2O3T	g 100g^{-1}	26.57	25.38	24.91	26.696	25.617	25.991	28.036	212.560					
Fe(II)O	g 100g^{-1}													
MnO	g 100g^{-1}	0.18	0.176	0.17	0.203	0.164	0.181	0.229	1.44					
MgO	g 100g^{-1}	0.68	0.595	0.81	0.684	0.641	0.695	0.73	5.85					
CaO	g 100g^{-1}	19.83	19.668	19.17	20.162	19.303	19.516	22.395	240.120					
Na2O	g 100g^{-1}	0.12	0.142	0.13	0.093	0.172	0.138	0.05	10.24					
K2O	g 100g^{-1}	0.6	0.606	0.57	0.58	0.567	0.643	0.772	6.62					
P2O5	g 100g^{-1}	0.89	0.92		0.813	0.868	0.884	1.011	9.37					
H2O+	g 100g^{-1}													
CO2	g 100g^{-1}													
LOI	g 100g^{-1}	21.41	23.202		98.642	21.85	23.53							
Ag	mg kg^{-1}													
As	mg kg^{-1}	103							52.41					
B	mg kg^{-1}													
Ba	mg kg^{-1}	158	150.7	161.4		148.5			170.370					
Be	mg kg^{-1}		3.15			2.68								
Bi	mg kg^{-1}													
Br	mg kg^{-1}													
C(org)	mg kg^{-1}													
C(tot)	mg kg^{-1}						46530							
Cd	mg kg^{-1}			0.3										
Ce	mg kg^{-1}	124	96.21			93								
Cl	mg kg^{-1}								240.7					
Co	mg kg^{-1}		25.658	32.4		21.95								
Cr	mg kg^{-1}	310	244.9	304.4		172.7	331		213.940					
Cs	mg kg^{-1}		0.734			0.65			5.77					
Cu	mg kg^{-1}	14	5.606											
Dy	mg kg^{-1}		8.59			8.16								
Er	mg kg^{-1}		4.41			4.33								
Eu	mg kg^{-1}		2.39			2.38								
F	mg kg^{-1}													
Ga	mg kg^{-1}		5.54											
Gd	mg kg^{-1}		9.97			9.31								
Ge	mg kg^{-1}													
Hf	mg kg^{-1}		2.13			3.69								
Hg	mg kg^{-1}													
Ho	mg kg^{-1}		1.638			1.53								
I	mg kg^{-1}													
In	mg kg^{-1}													
La	mg kg^{-1}	47	37.46			36.83			16.37					
Li	mg kg^{-1}		22.56			18.61								
Lu	mg kg^{-1}		0.576			0.56								
Mo	mg kg^{-1}		0.774											
Nb	mg kg^{-1}	9	6.53			5.67								
Nd	mg kg^{-1}		46.91			46.56			31.57					
Ni	mg kg^{-1}	62	64.48	69.2		53.18								
Pb	mg kg^{-1}	32	25.98	22.8		20.76			3.27					
Pr	mg kg^{-1}		11.85			11.19								
Rb	mg kg^{-1}	20	18.02	17.9		16.04			7.32					
Re	mg kg^{-1}													
Ru	mg kg^{-1}													
S	mg kg^{-1}						1168		1197.780					
Sb	mg kg^{-1}			0.5										
Sc	mg kg^{-1}	20	13.48			13.75								
Se	mg kg^{-1}													
Sm	mg kg^{-1}		10.49			10.29								
Sn	mg kg^{-1}			1.9		1.27			5.2					
Sr	mg kg^{-1}	727	719.5	827.7		754.410	795		353.220					
Ta	mg kg^{-1}		0.309											
Tb	mg kg^{-1}		1.525			1.35								
Te	mg kg^{-1}													
Th	mg kg^{-1}	17	15.13			14.1			12.9					
Tl	mg kg^{-1}													
Tm	mg kg^{-1}					0.6								
U	mg kg^{-1}	2	2.09			1.77								
V	mg kg^{-1}	346	305.3	366.5		270.290			247.190					
W	mg kg^{-1}		4.37											
Y	mg kg^{-1}	45	41.63			39.2			27.19					
Yb	mg kg^{-1}		4.08			4.01								
Zn	mg kg^{-1}	175	169.8	170.9		157.290	201		57.84					
Zr	mg kg^{-1}	144	77.55			154.420			53.07					

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2

Table 2 - GeoPT56A Consensus values and statistical summary for Calcareous ironstone, CFU-1.

	Consensus Value	Uncertainty of consensus value	Horwitz Target Precision	Uncertainty/ Target Precision	Number of reported results	Robust Mean of results	Robust SD of results	Median of results	Status of consensus value	Type of consensus value
	X_{pt}	$u(X_{pt})$	σ_{pt}	$u(X_{pt}) / \sigma_{pt}$	n					
	g 100g $^{-1}$	g 100g $^{-1}$	g 100g $^{-1}$			g 100g $^{-1}$	g 100g $^{-1}$	g 100g $^{-1}$		
SiO2	23.51	0.07414	0.2923	0.2536	86	23.45	0.828	23.51	Assigned	Median
TiO2	0.294	0.003057	0.00707	0.4324	90	0.2921	0.01912	0.292	Assigned	Mode
Al2O3	4.88	0.02561	0.07689	0.333	89	4.891	0.2288	4.88	Assigned	Median
Fe2O3T	26.43	0.09625	0.323	0.298	88	26.43	0.9029	26.43	Assigned	Robust Mean
MnO	0.1795	0.00104	0.00465	0.2238	88	0.1795	0.00976	0.18	Assigned	Robust Mean
MgO	0.6785	0.006121	0.01439	0.4255	88	0.6821	0.05261	0.6785	Assigned	Median
CaO	20.05	0.07051	0.2554	0.2761	90	20.07	0.6161	20.05	Assigned	Median
Na2O	0.145	0.004558	0.003878	1.175	77	0.1572	0.04472	0.15	Provisional	Mode
K2O	0.645	0.005807	0.01378	0.4214	90	0.645	0.05509	0.6485	Assigned	Robust Mean
P2O5	0.894	0.00524	0.01818	0.2882	85	0.8963	0.04661	0.894	Assigned	Median
LOI	21.62	0.07476	0.2723	0.2746	69	21.95	0.6854	21.85	Assigned	Mode
	mg kg $^{-1}$	mg kg $^{-1}$	mg kg $^{-1}$			mg kg $^{-1}$	mg kg $^{-1}$	mg kg $^{-1}$		
As	104.3	1.65	4.143	0.3982	55	99.79	12.64	102	Assigned	Mode
Ba	158.9	1.724	5.927	0.2908	74	158.5	14.63	158.9	Assigned	Median
Be	3.11	0.06758	0.2097	0.3223	42	3.194	0.3819	3.159	Assigned	Mode
Bi	0.31	0.007749	0.02957	0.262	23	0.3185	0.03722	0.31	Assigned	Median
C(tot)	46000	543	731.1	0.7428	17	45470	1595	45710	Provisional	Mode
Cd	0.06949	0.002556	0.008303	0.3079	30	0.1793	0.1606	0.1	Provisional	Mode
Ce	101.1	1.01	4.037	0.2502	70	103.8	9.284	102	Assigned	Mode
Co	27	0.3579	1.315	0.2722	69	27.51	5.099	27	Assigned	Median
Cr	266.6	3.4	9.199	0.3696	78	273.5	41.23	269.5	Assigned	Mode
Cs	0.749	0.01096	0.06257	0.1751	42	0.7932	0.1202	0.76	Assigned	Mode
Cu	6.119	0.155	0.3726	0.416	56	7.406	3.252	6.343	Provisional	Mode
Dy	9.13	0.07489	0.5235	0.143	51	9.13	0.5348	9.13	Assigned	Robust Mean
Er	4.7	0.04096	0.2978	0.1375	51	4.7	0.2925	4.707	Assigned	Robust Mean
Eu	2.54	0.02636	0.1765	0.1493	52	2.552	0.1727	2.54	Assigned	Median
Ga	6.477	0.1968	0.3911	0.5032	51	6.7	1.45	6.477	Assigned	Median
Gd	10.25	0.1036	0.5774	0.1794	51	10.25	0.7396	10.3	Assigned	Robust Mean
Hf	4.395	0.1349	0.2813	0.4796	44	4.037	1.007	4.115	Provisional	Mode
Ho	1.72	0.01593	0.1268	0.1256	49	1.712	0.09774	1.72	Assigned	Median
In	0.1202	0.002185	0.01323	0.1652	13	0.1202	0.007877	0.12	Assigned	Robust Mean
La	40.1	0.451	1.84	0.2451	69	40.7	2.682	40.32	Assigned	Mode
Li	23.23	0.5396	1.157	0.4663	38	23.08	3.007	23.23	Assigned	Median
Lu	0.62	0.015	0.05329	0.2815	49	0.6294	0.04368	0.625	Assigned	Mode
Mo	1.175	0.04529	0.09173	0.4938	41	1.419	0.5001	1.27	Provisional	Mode
Nb	6.876	0.1191	0.4114	0.2894	55	7.203	1.058	7.047	Assigned	Mode
Nd	50.18	0.5307	2.226	0.2384	64	50.4	4.217	50.18	Assigned	Median
Ni	67.5	0.7471	2.864	0.2608	72	66.45	9.06	66.88	Assigned	Mode
Pb	24.45	0.526	1.209	0.4352	70	24.91	5.76	24.61	Assigned	Mode
Pr	12.46	0.119	0.6817	0.1746	50	12.42	0.6715	12.46	Assigned	Median
Rb	19	0.292	0.9757	0.2993	68	19.68	2.812	19.3	Assigned	Mode
S	1288	43.5	35.05	1.241	34	1271	311	1288	Provisional	Median
Sb	0.46	0.01669	0.04135	0.4035	31	0.4847	0.1603	0.46	Assigned	Median
Sc	14.16	0.208	0.7601	0.2737	64	15.09	2.652	14.41	Assigned	Mode
Sm	11.15	0.09929	0.6202	0.1601	56	11.15	0.743	11.11	Assigned	Robust Mean
Sn	1.525	0.03618	0.1144	0.3161	38	1.471	0.3707	1.5	Assigned	Mode
Sr	741.3	7.789	21.93	0.3552	80	739.7	66.39	741.3	Assigned	Median
Ta	0.32	0.01572	0.03038	0.5174	35	0.349	0.0663	0.333	Assigned	Mode
Tb	1.601	0.01578	0.1193	0.1323	51	1.601	0.1127	1.6	Assigned	Robust Mean
Te	0.262	0.02252	0.02564	0.8783	12	0.2533	0.05199	0.258	Provisional	Mode
Th	15.1	0.195	0.8027	0.2429	68	15.47	1.603	15.26	Assigned	Mode
Tl	0.108	0.002973	0.01208	0.2462	25	0.1064	0.01465	0.108	Assigned	Median
Tm	0.69	0.005753	0.05836	0.09859	46	0.6873	0.04309	0.69	Assigned	Median
U	2.28	0.02461	0.1611	0.1528	57	2.291	0.2278	2.28	Assigned	Median
V	322.2	3.821	10.81	0.3536	78	320.3	42.11	322.2	Provisional	Median
W	1.54	0.05993	0.1154	0.5192	32	1.745	0.4489	1.607	Provisional	Mode
Y	42.51	0.4458	1.934	0.2305	77	42.51	3.911	42.5	Assigned	Robust Mean
Yb	4.414	0.04092	0.2823	0.1449	54	4.414	0.3007	4.41	Assigned	Robust Mean
Zn	177.3	2.655	6.505	0.4081	79	176.1	21.64	177.3	Provisional	Median
Zr	162	4.94	6.025	0.8199	71	155.6	37.23	158.9	Provisional	Mode

Table 3 - GeoPT56A Z-scores for Calcareous ironstone, CFU-1. 11/12/2024

Lab Code	X2	X3	X4	X5	X7	X8	X10	X11	X12	X13	X14	X15	X16
SiO2	-1.07	-0.45	**2.42**	**0.69**	-1.38	-6.54	**1.21**	**0.80**	-6.00	0.55	*	0.35	*
TiO2	1.13	-0.21	**-0.42**	**0.14**	-0.71	2.55	**0.85**	**0.85**	-3.32	1.49	*	-0.28	*
Al2O3	-0.52	1.50	**7.53**	**-2.11**	-0.52	-0.33	**2.86**	**0.78**	*	-1.29	*	0.00	*
Fe2O3T	-3.09	0.17	*	**-1.22**	-0.59	-0.36	**0.58**	**-0.35**	-2.06	0.13	*	0.37	*
MnO	1.12	-0.81	**-0.98**	**0.10**	-1.99	5.43	**0.10**	**0.10**	-2.64	-0.60	*	0.05	*
MgO	0.75	0.40	**5.18**	**-0.31**	-1.62	5.96	**-1.29**	**-1.29**	*	0.61	*	-0.30	*
CaO	5.12	-2.01	**-2.47**	**-0.93**	-1.11	7.17	**0.92**	**-0.53**	1.65	0.04	*	0.28	*
Na2O	*1.93*	*5.80*	*	*	*0.64*	*-4.51*	***-11.60***	***-1.29***	*	*5.80*	*	*-1.93*	*
K2O	0.91	-2.72	**-1.31**	**0.00**	0.51	-0.91	**-3.99**	**1.81**	5.33	-0.91	*	-0.18	*
P2O5	4.29	0.08	**-1.98**	*	0.00	-2.31	**-2.97**	**2.53**	*	-0.85	*	0.16	*
LOI	1.03	-0.22	*	*	*	*	**-0.04**	**-0.15**	*	0.77	*	0.09	*
As	*	0.69	*	*	-0.27	*	*	*	-1.00	*	**0.45**	0.21	**0.37**
Ba	0.43	1.17	*	*	0.09	10.47	*	*	0.26	-2.62	**-0.81**	0.98	**1.97**
Be	0.60	0.95	*	*	-0.02	*	*	*	*	*	**1.38**	-0.29	**3.29**
Bi	*	*	*	*	*	*	*	*	*	*	*	-0.41	**-0.41**
C(tot)	*	*	*	*	*0.62*	*	*	***-0.95***	*	*	*	*-0.95*	*
Cd	*	*1.84*	*	*	*	*	*	*	*	*	***6.08***	*-0.03*	***40.65***
Ce	-0.14	1.19	*	*	0.73	*	*	*	0.11	-5.96	**1.93**	0.11	**0.12**
Co	0.19	0.59	**-1.21**	*	0.00	17.11	*	*	*	8.44	**2.34**	-0.46	**2.32**
Cr	-0.52	*	**27.26**	*	2.90	13.23	*	*	9.26	-0.51	**1.51**	1.11	**2.79**
Cs	0.01	0.65	*	*	*	*	*	*	*	*	**2.41**	0.57	**3.42**
Cu	*1.46*	*4.39*	***3.71***	*	*	*5.21*	*	*	*	*	*	*0.00*	***-1.50***
Dy	-0.00	0.54	*	*	0.83	*	*	*	*	*	**3.36**	0.26	**3.38**
Er	0.08	0.45	*	*	1.18	*	*	*	*	*	**3.90**	0.44	**3.73**
Eu	-0.20	0.68	*	*	0.74	*	*	*	*	*	**3.12**	0.94	**3.51**
Ga	-0.07	*	*	*	2.97	9.62	*	*	*	*	**3.23**	-0.35	**8.52**
Gd	0.13	0.56	*	*	0.65	*	*	*	*	*	**5.17**	0.61	**6.50**
Hf	*-0.54*	*	*	*	*	*	*	*	*	*	***-1.12***	*0.65*	***1.40***
Ho	0.00	0.51	*	*	0.71	*	*	*	*	*	**2.84**	0.16	**2.45**
In	*	*	*	*	*	*	*	*	*	*	*	0.22	**1.72**
La	-0.35	1.09	*	*	0.52	*	*	*	0.24	0.24	**1.49**	0.54	**-0.21**
Li	0.08	0.55	*	*	0.33	*	*	*	*	*	**-0.93**	0.68	**1.62**
Lu	0.09	0.19	*	*	*	*	*	*	*	*	**2.44**	0.19	**2.29**
Mo	*	*0.90*	***-5.51***	*	*	*	*	*	*	*	***1.58***	*-0.03*	***11.28***
Nb	0.82	*	*	*	*	1.37	*	*	*	1.24	**3.07**	0.53	**-0.91**
Nd	-0.67	0.84	*	*	0.41	*	*	*	-1.41	*	**3.78**	0.59	**-0.02**
Ni	0.38	0.86	**-0.11**	*	0.09	1.48	*	*	*	-5.59	**3.08**	-0.21	**-0.35**
Pb	0.19	0.63	**7.03**	*	1.05	-3.91	*	*	*	-5.85	**3.73**	-0.27	**-0.87**
Pr	-0.48	0.98	*	*	0.40	*	*	*	*	*	**1.69**	0.40	**-0.28**
Rb	0.26	1.54	*	*	-0.15	10.25	*	*	1.13	1.02	**3.91**	1.28	**1.95**
S	*	*	*	*	*-6.95*	*	***0.36***	***-0.36***	*	*	*	*0.18*	*
Sb	*	-0.12	*	*	*	*	*	*	*	*	**0.73**	-0.24	**-6.09**
Sc	0.22	-0.11	*	*	3.18	7.13	*	*	*	*	**2.41**	-0.76	**1.83**
Sm	-0.04	0.78	*	*	0.69	*	*	*	*	*	**3.29**	0.65	**0.34**
Sn	*	-1.85	*	*	*	*	*	*	*	*	**4.42**	-0.37	**-11.32**
Sr	0.31	-2.42	*	*	-0.03	-4.73	*	**0.85**	0.91	-7.88	**5.02**	1.11	**3.37**
Ta	0.16	*	*	*	*	*	*	*	*	*	**51.35**	-0.58	**4.11**
Tb	-0.00	0.67	*	*	0.41	*	*	*	*	*	**3.43**	0.08	**3.51**
Te	*	*	*	*	*	*	*	*	*	*	*	*-0.45*	*
Th	-0.25	0.85	*	*	1.18	37.31	*	*	-2.30	-4.86	**0.88**	0.87	**-0.75**
Tl	*	6.71	*	*	*	*	*	*	*	*	*	-0.33	**0.91**
Tm	0.09	0.17	*	*	*	*	*	*	*	*	**2.23**	0.26	**1.83**
U	0.00	0.34	**7.33**	*	0.68	*	*	*	*	*	**1.80**	0.00	**0.93**
V	*-0.38*	*	*	*	*-0.10*	*5.54*	*	***-3.91***	*	*-3.97*	***3.89***	*1.84*	***4.36***
W	*	*	*	*	*	*	*	*	*	*	***-1.04***	*5.46*	*
Y	0.64	0.54	*	*	1.16	-0.65	*	*	*	-6.08	**2.10**	0.39	**-0.34**
Yb	-0.01	0.29	*	*	0.68	*	*	*	*	*	**3.14**	0.45	**2.93**
Zn	*-1.64*	*	***4.15***	*	*-0.56*	*1.74*	*	*	*0.36*	*-4.43*	***2.43***	*1.01*	***2.43***
Zr	*0.08*	*2.32*	*	*	*	*1.99*	*	*	*0.41*	*-5.34*	***-2.16***	*3.65*	***-0.58***

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

Table 3 - GeoPT56A Z-scores for Calcareous ironstone, CFU-1. 11/12/2024

Lab Code	X17	X18	X19	X21	X22	X23	X24	X25	X26	X27	X29	X30	X31
SiO2	0.08	3.06	-0.18	-0.16	1.02	-0.69	0.33	-1.97	-0.76	0.38	-16.26	-13.86	*
TiO2	-0.99	-2.26	-1.70	-0.77	0.42	-0.99	-1.98	0.71	-0.28	-0.28	-1.70	5.66	0.85
Al2O3	-0.91	0.91	0.46	-0.55	2.08	2.08	0.26	1.04	-0.30	-0.39	-9.62	3.98	-1.17
Fe2O3T	-1.69	0.49	-2.20	-0.79	-0.83	-0.05	1.14	1.10	-0.37	0.17	0.88	16.78	-3.20
MnO	-1.03	-0.55	0.05	-0.52	1.12	0.05	0.10	-0.12	-0.61	0.05	0.05	8.23	-2.05
MgO	0.40	1.49	-0.64	-1.11	-0.99	0.05	0.03	-5.46	-0.94	-1.69	*	11.71	-1.29
CaO	-0.34	-0.96	-0.34	-0.36	-0.50	0.48	-0.61	2.13	-0.63	0.46	3.81	19.30	0.18
Na2O	1.93	3.87	47.06	-1.03	0.64	0.64	1.81	1.29	-15.47	-3.22	*	13.92	1.29
K2O	-0.91	-5.44	0.18	-2.62	3.45	1.63	-2.47	1.09	0.15	-0.18	3.81	1.02	2.54
P2O5	-0.66	1.43	-0.66	-0.98	2.09	0.71	8.36	-0.38	0.22	-0.14	19.41	1.81	1.43
LOI	1.23	-0.40	0.94	-0.37	7.13	*	-0.07	0.15	0.77	-0.48	*	1.58	*
As	*	-0.25	*	*	1.18	*	*	1.39	-1.15	-0.08	3.11	-10.65	*
Ba	0.17	-1.36	-1.34	0.28	-0.08	*	-0.08	-0.32	0.88	0.18	18.65	4.07	-1.84
Be	0.21	5.39	*	-0.11	0.21	*	0.67	*	*	-0.19	*	*	0.00
Bi	*	*	*	1.69	3.21	*	*	*	*	0.51	*	*	0.34
C(tot)	*	*	*	0.80	*	*	*	*	*	0.35	*	*	*
Cd	*	13.31	*	2.74	1.84	*	2.35	*	*	0.63	*	*	*
Ce	-0.06	-1.11	-0.88	0.17	-0.88	*	0.59	0.18	1.98	0.20	*	5.92	-0.62
Co	-0.61	-0.31	-1.14	-0.21	0.72	*	0.00	*	-0.30	-0.15	*	41.82	-0.76
Cr	-0.10	-0.31	-2.53	-0.41	0.68	*	-0.28	1.24	1.68	0.68	-1.99	4.29	-1.04
Cs	0.41	-0.94	*	-0.11	-0.39	*	-0.18	0.34	43.97	0.33	*	*	-0.78
Cu	2.26	-1.93	6.55	-0.29	3.87	*	0.08	10.41	-12.93	-0.43	*	2.36	-1.74
Dy	-0.12	-1.85	-1.46	0.25	*	*	0.10	-0.10	*	0.16	*	*	-0.19
Er	-0.34	-1.14	-1.18	0.06	0.52	*	0.27	0.13	*	0.34	*	*	-0.27
Eu	-0.11	-1.24	-0.68	0.29	0.74	*	0.06	0.12	*	0.17	*	*	-0.62
Ga	0.28	4.30	*	-0.97	-0.61	*	-2.50	-3.78	-4.54	-1.40	*	-1.22	-0.81
Gd	-0.21	-1.39	-0.21	0.22	-0.56	*	0.32	0.39	*	0.22	*	*	-0.60
Hf	-0.17	-7.09	*	-1.12	-3.55	*	-3.93	-0.20	-7.45	0.19	*	-1.40	-3.00
Ho	0.32	-1.26	*	0.10	-0.47	*	0.46	0.24	*	0.24	*	*	-0.39
In	*	*	*	-0.08	*	*	*	*	*	-0.01	*	*	*
La	0.08	-1.26	-0.57	-0.10	0.24	*	0.22	0.01	5.65	0.00	*	8.64	-0.11
Li	*	0.02	-2.26	-0.50	1.85	*	-0.02	*	*	-0.10	*	*	-1.40
Lu	-0.19	-0.38	-0.19	0.14	*	*	0.19	0.56	*	0.75	*	*	-0.38
Mo	0.68	-0.16	*	-0.44	1.23	*	-1.44	*	14.45	0.14	8.31	8.99	1.04
Nb	-0.09	3.36	11.09	-0.25	17.16	*	0.69	0.67	-0.43	-0.41	3.80	-4.56	1.03
Nd	-0.02	-1.16	-0.49	0.19	1.08	*	0.41	0.11	2.57	0.54	*	2.61	-0.89
Ni	0.21	-0.60	0.09	-0.38	0.65	*	-0.87	-1.92	0.52	-0.14	3.23	-1.22	-1.50
Pb	0.52	-13.55	*	0.13	-0.39	*	-0.46	0.41	1.20	0.23	-6.06	168.39	0.12
Pr	0.10	-1.11	-1.80	-0.00	1.20	*	0.44	0.09	*	0.47	*	*	-1.26
Rb	0.05	-1.50	-3.59	-0.23	-0.15	*	-0.15	-0.31	-0.20	0.20	-2.05	10.25	-1.13
S	*	*	*	-4.87	1.03	*	*	*	-2.50	0.18	-5.56	2.28	1.81
Sb	*	0.24	*	-0.75	*	*	-0.41	*	*	-0.12	*	*	*
Sc	-0.43	-0.99	-0.11	-0.05	-0.76	*	-0.01	0.05	-10.08	-0.63	135.41	2.42	0.31
Sm	-0.20	-1.45	-1.25	0.02	0.61	*	0.33	0.22	-12.81	0.20	*	*	-0.56
Sn	-0.11	-1.09	*	-1.37	-0.11	*	0.30	*	*	-0.11	*	21.63	-0.83
Sr	0.06	-1.67	-0.14	0.12	1.02	*	0.49	0.31	-0.57	1.11	-0.26	-28.38	-0.15
Ta	*	2.01	*	0.00	-1.15	*	0.43	0.66	*	-0.16	*	55.29	0.66
Tb	-0.42	-1.52	*	-0.03	-0.42	*	0.26	0.66	*	-0.00	*	*	-0.09
Te	*	*	*	0.29	*	*	*	*	*	0.74	*	*	0.00
Th	0.69	-1.54	-0.06	0.16	0.69	*	0.06	0.66	-0.75	0.06	*	1.12	0.00
Tl	-0.33	0.17	*	-0.03	*	*	-0.17	*	*	0.08	*	*	0.17
Tm	0.09	-0.86	*	-0.19	*	*	0.38	0.34	*	0.09	*	*	-0.34
U	0.06	-1.61	-2.73	0.20	0.06	*	0.25	-0.12	2.61	0.06	*	-1.74	-0.62
V	-0.07	0.51	-2.18	0.10	-0.33	*	-0.85	-0.11	2.30	0.27	2.21	-25.38	-0.11
W	1.99	*	*	-0.13	*	*	-1.00	*	*	-0.17	*	2143.91	0.00
Y	1.06	-2.14	-0.91	0.60	-1.50	*	-0.37	1.24	-0.57	-0.36	*	-4.92	2.63
Yb	-0.20	-1.25	-0.38	-0.11	-0.91	*	0.30	-0.16	*	0.68	*	*	-0.33
Zn	1.43	3.00	0.05	0.22	2.36	*	0.46	-0.20	0.58	0.21	0.21	-20.03	-2.35
Zr	0.50	0.00	-3.07	-1.73	36.35	*	-6.14	2.32	-2.11	0.17	-1.00	47.13	-2.99

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

Table 3 - GeoPT56A Z-scores for Calcareous ironstone, CFU-1. 11/12/2024

Lab Code	X32	X34	X35	X36	X38	X39	X40	X42	X43	X45	X46	X47	X48
SiO2	-1.75	-4.45	0.21	1.01	20.95	-0.01	15.89	1.14	2.39	3.40	-0.15	*	*
TiO2	-0.28	-6.29	-0.14	-3.11	10.75	0.21	3.68	3.55	-0.42	-1.55	0.85	*	*
Al2O3	8.78	-1.44	-0.26	0.26	18.21	-0.07	9.77	3.65	-1.82	-1.29	1.17	*	*
Fe2O3T	2.94	0.33	0.18	0.55	23.89	0.12	17.42	0.65	0.26	-1.57	2.68	*	*
MnO	-3.18	1.55	-0.60	0.96	9.78	0.91	6.98	-0.20	-0.49	-0.37	-2.05	*	*
MgO	-0.30	-3.11	-1.34	0.10	13.31	0.05	15.54	-1.01	-1.55	-0.90	4.97	*	*
CaO	-4.12	-0.82	-0.46	2.02	22.30	0.03	17.44	1.13	-1.09	-0.56	0.49	*	*
Na2O	*	-5.93	*	-3.87	1.29	-0.64	67.30	19.08	0.64	0.52	-1.29	*	*
K2O	-3.81	-0.94	-0.54	1.81	3.05	-2.07	5.88	1.74	0.18	1.77	1.09	*	*
P2O5	-3.13	-1.43	-0.30	1.92	12.04	0.44	10.17	-0.76	0.14	-0.83	-3.52	*	*
LOI	5.56	2.52	-0.13	-0.11	*	-0.24	-69.79	4.48	*	*	-1.18	*	0.29
As	0.22	1.36	-0.15	0.91	1.20	-0.54	-1.51	-4.16	*	-1.55	-3.20	*	-3.37
Ba	-0.58	-1.01	0.09	-0.66	2.55	-2.69	-0.02	1.48	0.26	-0.84	-6.56	*	1.54
Be	-0.88	-0.22	-0.50	*	1.18	*	-1.63	*	*	0.29	*	*	*
Bi	*	*	*	*	0.30	*	-0.03	-0.25	*	0.93	395.28	*	*
C(tot)	*	*	*	*	*	*	0.00	*	*	*	*	*	*
Cd	*	24.36	*	*	11.50	*	-0.18	-0.78	*	-0.09	*	*	*
Ce	1.01	-1.99	-0.26	4.43	0.28	0.52	-0.28	-0.02	1.84	-0.15	*	*	4.65
Co	1.52	0.37	-0.76	9.89	55.51	-1.79	-0.46	*	*	-0.44	*	*	-2.74
Cr	0.57	-1.28	*	4.61	9.61	0.19	-0.14	9.27	-0.19	-0.63	-5.39	*	0.94
Cs	*	*	*	*	0.37	*	-0.48	0.02	*	-0.06	*	*	*
Cu	11.92	1.78	-0.03	23.83	-0.11	12.59	-0.43	16.85	*	5.21	*	*	-5.42
Dy	0.51	-0.66	-0.03	*	0.37	0.16	-0.29	0.02	*	-0.15	*	-0.39	*
Er	0.45	-0.37	0.05	*	0.42	0.17	0.02	0.58	*	-0.15	*	-0.17	*
Eu	0.60	-0.51	-0.03	*	0.09	0.17	-0.07	0.65	*	-0.07	*	-0.31	*
Ga	-0.61	0.37	-0.48	3.89	6.62	0.03	-5.24	0.07	*	-0.25	*	*	-3.01
Gd	0.39	-0.51	0.31	-5.62	1.15	0.22	-0.34	1.34	*	-0.06	*	*	*
Hf	0.79	*	*	*	*	20.27	-6.48	0.36	*	0.55	*	*	*
Ho	-0.24	-0.19	0.00	*	0.32	-0.08	-0.25	0.40	*	-0.11	*	-0.55	*
In	*	*	*	*	*	*	*	*	*	-0.23	*	*	*
La	1.52	-0.11	-0.30	-1.14	0.01	0.49	-1.08	0.35	0.24	-0.42	*	*	-1.09
Li	*	0.57	-1.31	*	-0.67	*	-1.91	*	*	*	6.72	*	*
Lu	0.94	-0.24	-0.09	*	0.36	-0.19	0.09	0.34	*	0.41	*	-1.69	*
Mo	-0.90	-3.36	*	*	0.62	*	-0.12	0.38	*	4.12	*	*	3.54
Nb	*	*	*	*	-0.42	1.37	0.42	-0.06	*	-0.32	*	*	-3.83
Nd	1.53	-1.93	0.43	5.76	-0.01	0.14	-0.98	0.27	*	-0.46	*	*	1.94
Ni	-0.61	2.25	-1.14	5.06	7.85	-0.00	-0.93	0.30	*	0.57	-4.02	*	-3.46
Pb	*	-4.22	-0.19	-1.20	0.16	-2.54	-0.60	0.14	*	-0.27	-1.20	*	9.14
Pr	0.62	-1.89	-0.12	*	-0.23	0.10	-0.66	-0.08	*	-0.19	*	0.58	*
Rb	-1.05	-3.76	*	5.12	7.17	-1.13	-0.48	0.46	*	0.45	*	*	1.95
S	*	115.38	*	-4.38	*	*	5.66	*	*	*	20.33	*	*
Sb	*	288.57	*	*	6.12	*	-0.34	4.76	*	*	*	*	*
Sc	32.79	3.37	-0.83	7.68	0.35	-0.24	0.09	0.18	*	3.91	*	*	-15.61
Sm	0.78	-1.72	0.45	*	0.15	0.12	-0.04	0.44	*	-0.51	*	-0.07	-1.53
Sn	-4.91	-1.35	*	*	0.67	-0.98	-0.21	1.19	*	0.29	*	*	*
Sr	-1.08	1.25	0.43	4.59	10.06	-0.30	-0.09	1.64	*	-0.87	-7.31	*	-2.15
Ta	0.00	*	*	*	2.76	-0.33	0.43	10.63	*	*	*	*	*
Tb	1.00	-0.07	-0.05	*	-1.13	-0.00	-0.34	0.42	*	-0.18	*	0.03	*
Te	-1.99	*	*	*	*	*	*	*	*	-0.94	*	*	*
Th	0.56	-0.49	-0.19	-1.37	0.21	0.06	0.72	0.35	*	0.29	*	*	-2.49
Tl	*	29.23	*	*	0.17	*	0.00	-6.46	*	-2.65	*	*	*
Tm	0.43	-0.27	0.00	*	0.02	0.09	-0.09	0.63	*	-0.03	*	-1.63	*
U	-0.03	-1.07	-0.25	*	-0.30	0.68	-0.19	-0.23	*	-0.09	*	*	15.64
V	-3.48	-0.76	-0.80	2.20	7.29	0.36	0.74	0.60	0.73	2.10	-2.79	*	4.76
W	-1.56	*	*	*	0.26	*	0.64	*	*	-1.47	*	*	740.40
Y	0.51	-1.22	0.13	1.29	-0.49	0.77	0.14	2.03	0.13	-0.17	*	-0.93	-0.78
Yb	0.52	-0.69	0.13	*	-0.03	0.33	-0.46	0.39	*	0.04	*	-0.92	*
Zn	-0.95	0.14	-0.10	0.72	6.10	0.75	-1.48	-0.02	-0.02	0.00	-3.74	*	-1.12
Zr	-3.40	-7.09	0.58	-3.65	13.94	0.83	-2.32	3.75	-3.65	-1.03	*	*	-4.90

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

Table 3 - GeoPT56A Z-scores for Calcareous ironstone, CFU-1. 11/12/2024

Lab Code	X49	X50	X51	X53	X55	X56	X57	X59	X60	X62	X64	X65	X66
SiO2	0.51	-9.55	-1.75	-0.21	*	1.84	**0.05**	**2.41**	**-9.77**	-0.62	-0.42	-0.64	1.38
TiO2	0.64	-7.36	-3.11	-1.91	-19.25	0.42	**0.85**	**-0.99**	**5.09**	-0.71	-1.70	0.42	1.13
Al2O3	0.87	10.73	2.47	-0.72	-14.60	3.38	**-0.52**	**-2.77**	**-5.46**	-0.26	-0.78	0.00	1.82
Fe2O3T	0.39	1.14	-2.25	0.01	11.89	3.04	**-5.58**	**-3.76**	**27.33**	-0.83	-0.92	0.03	2.21
MnO	-0.38	-2.10	0.05	0.05	-4.00	3.71	**0.10**	**-1.81**	**8.70**	-0.70	0.05	0.05	1.12
MgO	0.50	2.83	-1.34	0.36	-5.59	3.88	**0.80**	**-1.63**	**3.58**	-0.23	0.40	-0.30	1.44
CaO	0.16	3.53	1.01	-0.46	0.57	1.11	**0.06**	**-3.36**	**-52.32**	-0.77	-0.50	-0.03	0.91
Na2O	*0.00*	*	*39.32*	*2.58*	*-8.06*	*8.38*	***3.87***	***2.48***	***1.29***	*1.93*	*0.64*	*10.96*	*1.93*
K2O	0.40	4.90	3.45	-0.18	-12.25	0.18	**-1.09**	**1.13**	**-0.36**	-0.25	-7.08	-3.45	1.27
P2O5	0.08	7.31	-1.21	0.44	-3.34	10.06	**-1.32**	**-2.40**	**-0.77**	0.14	-0.11	0.44	2.91
LOI	0.42	2.13	*	-0.74	*	*	**1.43**	**1.25**	**30.74**	2.83	1.49	0.81	2.31
As	-0.67	0.27	*	-0.63	-12.07	-2.20	**1.39**	*	**19.25**	-0.78	-1.12	0.33	0.86
Ba	0.38	*	*	0.35	-2.50	-7.75	*	**-0.58**	**23.81**	-1.09	0.85	1.78	*
Be	0.98	3.48	*	-0.48	-6.15	*	*	*	**7.58**	*	*	*	389.25
Bi	-0.19	0.34	*	0.00	-2.89	*	*	*	*	*	*	*	0.85
C(tot)	*	*	*	*	*	*	*	***-2.18***	*	*	*	*	*-3.43*
Cd	*	*	*	*	*-0.06*	*	*	*	***220.47***	*	*	*	*6.66*
Ce	0.30	0.17	*	-0.01	0.95	*	3.70	**0.94**	**0.02**	0.88	-0.01	-0.63	0.80
Co	0.49	-6.62	*	*	-9.56	26.61	**0.76**	**0.78**	**11.86**	*	-1.14	-4.94	0.54
Cr	-0.47	0.89	*	-0.52	-2.04	2.31	**0.59**	**-0.29**	**21.79**	0.26	0.40	2.90	0.20
Cs	0.20	*	*	0.09	8.34	*	*	*	**-6.38**	*	*	*	0.09
Cu	*0.67*	*-3.50*	*	*0.19*	*-1.40*	*	*	*	***10.23***	*	*	*22.65*	*-3.41*
Dy	0.01	-0.45	*	0.26	-3.54	*	*	**-0.38**	**-0.82**	*	*	*	0.60
Er	0.26	-0.42	*	0.67	-2.79	*	*	**-0.66**	**-0.91**	*	*	*	0.57
Eu	0.52	0.09	*	-0.40	-4.38	*	*	**0.35**	**-0.11**	*	*	*	0.28
Ga	0.00	0.16	*	0.92	*	*	*	*	**1.75**	*	1.95	*	1.17
Gd	0.39	-0.12	*	-1.81	-3.33	*	*	**0.18**	**-0.44**	*	*	*	0.63
Hf	*-0.47*	*-0.26*	*	*0.36*	*	*	*	***1.40***	***-9.08***	*	*2.85*	*	*0.31*
Ho	0.20	-0.35	*	-0.08	-2.58	*	*	**0.62**	**-1.50**	*	*	*	0.35
In	-0.26	-0.76	*	-0.39	*	*	*	*	*	*	*	*	*
La	0.46	0.11	*	-0.03	4.87	*	**15.70**	**0.56**	**-0.90**	0.87	0.43	*	0.50
Li	*	-1.24	*	-0.10	-4.63	*	*	*	*	*	*	*	*
Lu	0.51	0.19	*	0.00	-2.29	*	*	*	**-0.38**	*	*	*	0.38
Mo	*2.26*	*1.83*	*	*	*1.63*	*	*	*	***32.98***	*	*	*	*4.72*
Nb	0.31	0.79	*	0.03	-8.10	2.58	**0.30**	**0.82**	**-4.95**	*	-0.46	*	0.25
Nd	0.07	0.08	*	-0.49	-1.94	*	*	**0.96**	**-1.98**	*	2.21	*	0.61
Ni	0.43	*	*	0.09	-11.26	6.55	**0.87**	*	**14.49**	-1.50	2.88	*	-0.33
Pb	0.89	0.97	*	0.23	0.36	2.71	12.64	*	**15.76**	-1.51	7.26	-2.67	2.44
Pr	0.08	0.07	*	0.40	-0.99	*	*	**0.28**	**-1.07**	*	*	*	0.27
Rb	0.58	0.95	*	0.00	-1.39	-5.12	**3.07**	**-0.59**	**0.20**	1.08	14.35	*	0.47
S	*	*	*	*	*-18.09*	*	*	***-1.07***	*	*	*-0.65*	*	*-4.19*
Sb	0.10	0.60	*	*	-5.40	*	*	*	**13.06**	*	6.53	*	2.66
Sc	0.31	0.42	*	-0.17	*	*	0.55	**0.97**	**-2.58**	*	*	*	-0.18
Sm	0.55	-0.26	*	-0.28	-3.18	*	*	**0.57**	**-1.36**	*	*	*	0.46
Sn	0.94	*	*	0.33	-4.19	*	*	*	**-12.45**	*	0.33	*	*
Sr	0.13	-2.64	*	-0.08	-16.43	0.45	**-0.56**	**0.29**	**0.62**	-0.41	0.45	0.04	1.01
Ta	0.28	-0.66	*	0.82	*	*	*	*	**60.56**	*	*	*	0.00
Tb	0.11	0.12	*	-0.17	-2.78	*	*	**0.21**	**-0.09**	*	*	*	0.16
Te	*	*-0.43*	*	*	*	*	*	*	*	*	*	*	*2.11*
Th	0.32	-0.70	*	0.19	1.43	3.68	*	**0.25**	**-0.87**	*	17.38	-2.55	0.99
Tl	-1.01	0.91	*	*	-0.34	*	*	*	**7.62**	*	*	*	*
Tm	0.10	0.00	*	0.17	-2.36	*	*	*	**-0.69**	*	*	*	0.17
U	0.29	-0.90	*	0.09	3.93	*	*	**0.78**	**-1.55**	*	17.75	27.07	0.53
V	*0.07*	*-2.83*	*	*-1.21*	*-14.75*	*5.27*	*	***2.58***	***21.17***	*0.13*	*3.23*	*-3.29*	*0.58*
W	*1.92*	*0.43*	*	*-0.17*	*-4.51*	*	*	***3.34***	***-1.21***	*	*	*	*
Y	0.13	-0.23	*	0.13	-1.90	-0.39	**5.43**	**-0.72**	**-2.07**	0.62	1.42	-1.17	0.69
Yb	0.08	-0.06	*	0.40	-3.27	*	*	**0.40**	**-1.54**	*	*	*	0.31
Zn	*0.60*	*0.16*	*	*-0.87*	*-9.35*	*0.98*	***3.18***	***1.34***	***23.01***	*-0.08*	*0.98*	*12.27*	*2.51*
Zr	*-0.01*	*-1.00*	*	*1.41*	*-12.83*	*1.66*	***1.66***	***3.97***	***-11.62***	*-1.66*	*0.41*	*-2.82*	*0.01*

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

Table 3 - GeoPT56A Z-scores for Calcareous ironstone, CFU-1. 11/12/2024

Lab Code	X67	X68	X70	X72	X76	X77	X78	X79	X81	X82	X83	X84	X85
SiO2	0.62	*	*	**-4.29**	**-0.78**	-15.06	0.42	-0.01	**1.08**	**-1.69**	**0.12**	0.85	*
TiO2	1.13	**0.42**	*	**2.26**	**-0.30**	-2.40	-0.28	-0.71	**0.99**	**-6.22**	**-0.57**	-0.28	*
Al2O3	-0.78	**-0.13**	*	**1.17**	**-1.17**	-0.65	-1.50	1.30	**0.26**	**-2.21**	**-4.29**	1.43	*
Fe2O3T	-0.28	**0.93**	*	**-2.43**	**0.08**	16.20	-0.67	-0.83	**0.52**	**-1.96**	**0.21**	-0.67	*
MnO	0.05	**0.53**	*	**159.03**	**-1.28**	5.10	0.05	0.05	**0.96**	**0.10**	**4.40**	1.12	*
MgO	-1.69	**5.87**	*	**16.79**	**4.32**	-1.69	-0.30	1.09	**16.79**	**-1.98**	**2.19**	1.79	*
CaO	-0.58	**2.56**	*	**1.86**	**-1.26**	-1.67	0.07	0.28	**1.31**	**-1.43**	**3.86**	-2.07	*
Na2O	*5.80*	***0.26***	*	***94.12***	***4.74***	*	*50.93*	*	***68.33***	***-1.29***	***-24.50***	*-1.93*	*
K2O	0.18	**-1.09**	*	**0.36**	**-0.12**	-2.00	-1.63	-1.45	**-3.85**	**-3.27**	**1.09**	2.36	*
P2O5	0.44	*	*	**-0.33**	**-0.71**	-3.96	-0.38	-0.66	**1.43**	**0.22**	**14.63**	1.26	*
LOI	-0.04	*	*	-0.55	**0.99**	0.28	0.11	0.15	**-2.42**	**6.17**	**-0.59**	*	*
As	-3.05	**-0.30**	**-1.03**	*	*	*	*	*	**-4.40**	*	**-3.20**	*	*
Ba	-3.79	*	*	*	**-0.96**	*	*	*	**-12.64**	*	**-1.33**	*	*
Be	*	*	*	*	**-0.33**	*	*	*	*	*	**-0.95**	*	0.19
Bi	-1.86	*	*	*	**0.68**	*	*	*	*	*	**-1.01**	*	*
C(tot)	*	*	***-0.39***	*	*	*	*	*	*	*	*	*	*
Cd	*	*	***301.17***	*	*	*	*	*	***3243.63***	*	***0.06***	*	*
Ce	*	**-0.77**	*	*	**-0.75**	48.16	*	*	**-10.18**	*	**-4.73**	*	0.61
Co	-2.28	**0.99**	**-0.18**	*	**-0.84**	*	*	*	**-11.41**	*	**-3.80**	*	0.29
Cr	-3.02	**-1.15**	**-4.06**	*	**-2.21**	*	*	*	**-5.28**	*	**-6.48**	*	*
Cs	*	*	**115.89**	*	**-0.30**	34.21	*	*	*	*	**0.02**	*	0.25
Cu	*-2.84*	*	*	*	***0.30***	*100.20*	*	*	***7.73***	*	***1.29***	*	*
Dy	*	**3.38**	*	*	**-0.13**	*	*	*	*	*	**-1.01**	*	0.48
Er	*	*	*	*	**-0.17**	*	*	*	*	*	**-1.01**	*	-0.03
Eu	*	**0.06**	*	*	**-0.45**	*	*	*	*	*	**-0.79**	*	-1.13
Ga	-1.89	*	*	*	**-0.04**	*	*	*	*	*	**-0.20**	*	0.04
Gd	*	*	*	*	**0.09**	*	*	*	*	*	**-0.77**	*	0.84
Hf	*	***-0.69***	*	*	***-1.05***	*	*	*	*	*	***-8.87***	*	*
Ho	*	*	*	*	**0.00**	*	*	*	*	*	**-0.87**	*	*
In	*	*	*	*	*	*	*	*	*	*	**-0.02**	*	*
La	*	**-0.16**	*	*	**-0.87**	*	*	*	**-7.66**	*	**-2.03**	*	0.24
Li	*	*	*	*	**-1.66**	3.57	*	*	*	*	**0.62**	*	-0.88
Lu	*	**0.00**	*	*	**-0.19**	*	*	*	*	*	**-0.75**	*	0.19
Mo	*	*	*	*	***0.27***	*	*	*	*	*	***0.38***	*	*
Nb	*	*	*	*	**0.08**	*	*	*	*	*	**-0.21**	*	*
Nd	*	**-2.33**	*	*	**-0.22**	*	*	*	**-10.86**	*	**0.13**	*	0.44
Ni	-3.23	*	**-3.59**	*	**0.03**	2.32	*	*	**-2.27**	*	**-0.66**	*	*
Pb	-2.67	*	**0.28**	*	**-0.37**	*	*	*	**-2.85**	*	**2.94**	*	0.34
Pr	*	*	*	*	**0.50**	*	*	*	*	*	**-0.23**	*	0.12
Rb	*	*	*	*	**0.20**	*	*	*	**-5.12**	*	**0.61**	*	0.36
S	*	*	*	*	*	*-18.36*	*	*	*	*	***-1.24***	*	*
Sb	-1.93	**1.69**	*	*	*	*	*	*	*	*	**-3.39**	*	*
Sc	*	**0.45**	*	*	**0.18**	*	*	*	**-9.16**	*	**-0.74**	*	-0.42
Sm	*	**-0.07**	*	*	**-0.07**	*	*	*	*	*	**0.41**	*	-0.78
Sn	-2.29	*	*	*	**-0.48**	*	*	*	*	*	**-1.18**	*	*
Sr	-0.35	**11.34**	*	*	**-0.24**	*	*	*	**-5.03**	*	**4.55**	*	-0.46
Ta	*	*	*	*	**0.33**	*	*	*	*	*	**6.91**	*	*
Tb	*	**-0.01**	*	*	**0.07**	*	*	*	*	*	**-12.58**	*	0.67
Te	*	*	*	*	*	*	*	*	*	*	***-6.32***	*	*
Th	*	**0.62**	*	*	**-0.25**	*	*	*	**-2.62**	*	**-0.42**	*	0.55
Tl	*	*	*	*	**-0.66**	*	*	*	*	*	**0.17**	*	*
Tm	*	*	*	*	**-0.17**	*	*	*	*	*	**-2.57**	*	-0.17
U	*	**-1.74**	*	*	**-0.87**	*	*	*	*	*	**0.93**	*	0.31
V	*-4.59*	***2.85***	***-1.77***	*	***-1.26***	*-0.70*	*	*	***-9.00***	*	***-0.20***	*	*
W	*	***-0.35***	*	*	***0.09***	*	*	*	*	*	***4.68***	*	*
Y	-1.68	*	**-2.23**	*	**0.46**	*	*	*	**-3.37**	*	**-0.78**	*	-0.52
Yb	*	**0.38**	*	*	**-0.40**	*	*	*	**44.58**	*	**-3.31**	*	-0.01
Zn	*-4.56*	***5.03***	***-2.02***	*	***-2.60***	*-2.44*	*	*	***-3.74***	*	***-2.81***	*	*
Zr	*	*	*	*	***-0.51***	*	*	*	***-6.97***	*	***-18.59***	*	*

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

Table 3 - GeoPT56A Z-scores for Calcareous ironstone, CFU-1. 11/12/2024

Lab Code	X87	X88	X89	X90	X91	X92	X93	X94	X96	X98	X99	X102	X103
SiO2	*	**1.76**	-1.00	**1.08**	**-7.68**	**0.74**	**-1.67**	80.92	1.22	**-0.33**	**-0.70**	0.06	1.92
TiO2	*	**0.85**	0.42	**3.11**	**-3.39**	**0.14**	**1.13**	15.98	0.57	**0.85**	**-0.99**	0.35	0.21
Al2O3	*	**0.91**	-0.91	**0.26**	**-5.98**	**-0.91**	**1.99**	51.96	0.20	**1.43**	**-0.52**	-0.46	-0.93
Fe2O3T	*	**1.10**	-0.98	**-0.51**	**8.85**	**4.08**	**4.56**	-32.86	-0.56	**-1.12**	**-0.32**	0.26	-0.61
MnO	*	**-0.12**	-1.03	**-0.33**	**2.25**	**0.53**	**-0.37**	-11.24	-0.60	**0.10**	**-0.98**	0.80	-0.49
MgO	*	**-3.37**	-1.69	**1.36**	**0.80**	**0.10**	**1.56**	-10.72	-1.34	**-2.68**	**-0.03**	0.40	-0.92
CaO	*	**2.56**	-2.36	**0.58**	**-2.06**	**-0.53**	**-1.66**	-34.68	0.89	**-0.45**	**0.65**	0.13	-0.95
Na2O	*	***-3.87***	*-12.25*	***0.52***	***16.76***	***217.89***	***-8.51***	*420.96*	*-0.64*	***1.29***	*	*-0.64*	*-0.13*
K2O	*	**1.09**	-0.18	**1.09**	**1.09**	**3.27**	**5.73**	121.73	0.18	**-1.09**	**0.65**	0.18	-0.44
P2O5	*	**-0.22**	-0.38	**-1.43**	**-5.72**	**0.33**	**-2.09**	-20.18	0.44	**-1.32**	**4.18**	-0.11	-0.11
LOI	*	**-1.18**	1.93	**-0.62**	**-0.07**	**1.18**	**0.44**	-39.12	-0.17	**1.10**	*	0.00	*
As	6.24	**-2.06**	*	**2.35**	*	*	*	-11.83	*	**-2.33**	*	*	0.03
Ba	*	**1.13**	*	**-0.83**	**1.29**	**-3.02**	*	109.61	0.35	**0.86**	**-0.05**	0.94	-0.52
Be	*	**1.25**	*	*	-7.01	*	*	*	-0.26	**0.00**	*	*	0.24
Bi	*	*	*	*	*	*	*	*	*	**0.00**	*	*	-0.22
C(tot)	*	*	*	*	*	*	*	*-31.45*	*	***0.16***	*	*-0.64*	*
Cd	*	*	*	*	***451.73***	*	*	*146.37*	*	***2.47***	*	*	*0.03*
Ce	0.97	**0.37**	*	**4.18**	**9.70**	**-2.26**	*	3.37	-0.01	**-1.12**	**0.17**	*	0.06
Co	2.53	**-0.07**	*	**-7.60**	**5.99**	**13.69**	*	-9.51	*	**-0.46**	**0.56**	-1.52	0.15
Cr	-2.16	**-1.83**	*	**3.63**	**12.96**	**6.46**	*	9.48	*	**0.26**	**1.14**	0.73	-0.18
Cs	*	*	*	**147.85**	**51.48**	*	*	*	*	**-0.62**	**-0.02**	*	0.27
Cu	*18.95*	***-7.79***	*	***-3.00***	*	*	*	*-4.05*	*	***0.75***	***0.00***	*	*-0.13*
Dy	3.02	**0.40**	*	*	**-11.14**	*	*	*	-0.12	**-0.76**	**1.05**	*	0.08
Er	1.30	**0.57**	*	*	**-3.89**	*	*	*	-0.34	**-1.18**	**0.57**	*	0.10
Eu	12.22	**-0.00**	*	*	**7.99**	*	*	*	-0.23	**-0.45**	**0.29**	*	0.06
Ga	*	**-0.01**	*	**9.01**	**39.08**	*	*	15.50	*	**0.67**	**0.29**	*	-0.41
Gd	25.53	**0.46**	*	*	**-3.59**	*	*	*	-0.82	**-1.50**	**1.60**	*	0.15
Hf	*	***4.83***	*	*	*	*	*	*18.67*	*-0.70*	***-1.33***	***-4.21***	*	*0.31*
Ho	2.63	**0.02**	*	*	**-1.26**	*	*	*	-0.47	**-0.39**	**0.32**	*	0.05
In	*	*	*	*	*	*	*	*	*	**0.44**	*	*	0.29
La	7.40	**-0.21**	*	**4.84**	**1.08**	**1.58**	*	7.53	-0.19	**0.38**	**0.12**	*	-0.19
Li	0.96	**-3.08**	*	*	**5.52**	*	*	*	*	**-3.09**	**0.90**	*	0.74
Lu	-0.69	**0.34**	*	*	**5.44**	*	*	*	0.19	**-0.32**	**0.62**	*	0.01
Mo	*	*	*	***41.70***	***610.45***	*	*	*15.94*	*	***-0.49***	***0.93***	*	*-0.69*
Nb	*	**-0.75**	*	**-2.13**	**52.31**	**34.33**	*	12.30	0.15	**-2.64**	**1.35**	*	-0.12
Nd	2.34	**-0.01**	*	**-0.08**	**-1.86**	*	*	0.00	-0.13	**-1.07**	**1.36**	*	0.06
Ni	-2.14	**0.73**	*	**-4.36**	**-1.87**	**-8.90**	*	-10.91	*	**-0.56**	**1.85**	1.31	-0.17
Pb	10.01	**-2.69**	*	*	**8.77**	*	*	5.77	-0.60	**-0.54**	**-2.35**	*	-0.16
Pr	10.15	**-0.39**	*	*	**0.28**	*	*	*	-0.48	**-1.26**	**0.81**	*	-0.11
Rb	*	**0.82**	*	**7.17**	**33.06**	**28.70**	*	63.44	0.51	**0.00**	**-0.19**	-0.51	0.92
S	*	*15.70*	*	***51.48***	*	***5.55***	*	*8.51*	*	***-1.70***	*	*	*1.18*
Sb	*	*	*	*	-2.90	*	*	19.83	*	**0.00**	*	*	-0.41
Sc	-2.04	**0.99**	*	**9.00**	**4.66**	**19.52**	*	0.03	-0.76	**0.49**	**1.13**	*	-0.55
Sm	21.04	**0.33**	*	*	**5.29**	*	*	-0.20	-0.28	**-0.56**	**0.99**	*	0.00
Sn	*	*	*	*	-5.09	*	*	29.17	2.08	**-1.00**	*	*	0.15
Sr	-1.77	**2.39**	*	**-0.93**	**2.76**	**3.95**	*	-12.59	*	**-0.01**	**2.04**	0.88	0.01
Ta	*	**-0.43**	*	*	**844.23**	*	*	*	*	**0.99**	**0.99**	*	*
Tb	31.13	**-0.69**	*	*	**12.65**	*	*	*	-0.42	**-0.85**	**1.08**	*	-0.09
Te	*	*	*	*	*	*	*	*	*	*	*	*	*0.59*
Th	*	**0.66**	*	**4.86**	**-5.18**	**3.61**	*	1.37	-0.12	**-0.25**	**-0.65**	*	0.09
Tl	*	*	*	*	*	*	*	*	*	*	*	*	0.00
Tm	15.15	**-0.15**	*	*	-5.74	*	*	*	-0.43	**-0.48**	**0.87**	*	-0.03
U	*	**0.18**	*	*	**-0.25**	*	*	6.27	0.06	**-0.43**	**-0.62**	*	0.11
V	*-1.49*	***1.05***	*	***5.35***	***1.14***	***1.55***	*	*-14.65*	*0.36*	***-1.31***	***0.11***	*-0.70*	*0.33*
W	*	*	*	*	***203.08***	*	*	*	*	***1.13***	*	*	*0.25*
Y	0.54	**-0.34**	*	**0.77**	**12.43**	**0.77**	*	2.22	-0.65	**-0.78**	**1.46**	0.13	-0.72
Yb	0.05	**0.77**	*	*	**2.89**	*	*	-1.80	-0.20	**-1.08**	**0.73**	*	-0.04
Zn	*-0.77*	***0.95***	*	***-0.35***	***5.83***	***-8.04***	*	*-6.93*	*	***2.11***	***-0.52***	*0.21*	*-1.25*
Zr	*	***9.61***	*	***-0.66***	***16.06***	***-1.16***	*	*25.29*	*1.66*	***0.17***	***-6.95***	*-0.17*	*-1.02*

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

Table 3 - GeoPT56A Z-scores for Calcareous ironstone, CFU-1. 11/12/2024

Lab Code	X104	X107	X108	X111	X113	X114	X117	X118	X119	X120	X121	X122	X123
SiO2	1.89	**-0.67**	0.01	*	-0.03	0.35	*	-0.97	*	0.52	0.13	**-0.36**	**-26.12**
TiO2	-6.44	**-0.61**	0.42	*	0.21	-1.70	*	-0.28	**11.17**	1.13	-0.99	**2.26**	**-7.64**
Al2O3	6.03	**-0.52**	0.00	*	0.27	0.39	*	0.10	**105.87**	0.20	0.00	**-1.69**	**-9.75**
Fe2O3T	-3.18	**-0.28**	-0.18	*	-0.04	-0.08	*	0.23	*	-0.08	-0.70	**-0.57**	**18.94**
MnO	*	**-1.09**	-1.03	*	-0.38	0.05	*	0.05	*	-1.03	-1.03	**1.76**	**-8.50**
MgO	8.85	**-2.11**	-0.64	*	-0.43	-2.03	*	-0.09	**16.09**	-0.64	1.09	**-3.37**	**-11.71**
CaO	-0.85	**0.74**	-0.21	*	0.69	-0.34	*	0.71	**18.65**	-0.36	0.52	**-1.39**	**5.77**
Na2O	*	*	*-0.64*	*	*5.93*	*13.54*	*	*-1.55*	***28.88***	*	*1.93*	***-3.87***	***-1.29***
K2O	3.77	**-0.87**	0.18	*	-1.34	-1.63	*	0.36	**21.34**	1.27	-3.81	**-7.62**	**10.52**
P2O5	-0.41	**1.20**	-0.11	*	0.77	0.44	*	0.63	*	0.71	0.16	**-5.94**	**0.88**
LOI	1.06	**2.60**	0.46	*	0.53	0.95	*	0.50	*	-0.46	-1.30	**5.11**	**5.73**
As	*	*	0.45	-5.99	2.14	-1.84	-3.08	*	*	*	-0.03	*	**-3.92**
Ba	-7.45	**0.09**	-0.50	-4.57	1.99	0.43	**-0.79**	-0.08	**9.30**	2.94	0.01	**-0.40**	**-5.21**
Be	*	*	-0.02	-3.78	*	*	**0.28**	-0.14	**3.91**	0.43	1.57	*	*
Bi	*	*	-0.14	*	*	*	*	*	*	*	0.17	*	*
C(tot)	*	*	*-31.45*	*	*-0.48*	*	*	*0.25*	*	*	*1.58*	*	*
Cd	*	*	*-0.27*	*7.92*	*	*	***0.27***	*	*	*	*-0.57*	*-0.69*	*
Ce	*	*	-0.50	-2.20	8.17	*	**-0.35**	0.48	**7.73**	-0.36	0.23	**-0.25**	**4.68**
Co	*	*	0.46	-3.98	3.55	0.00	**0.14**	0.42	**3.95**	-0.05	0.42	**0.62**	**31.18**
Cr	3.66	*	0.35	-6.13	-0.13	-0.09	**0.17**	-0.85	**7.44**	0.03	-2.64	**2.44**	**-3.11**
Cs	*	*	0.25	*	*	*	**-0.12**	*	**5.39**	-0.15	-0.39	**-3.18**	*
Cu	*-3.51*	*	*-0.41*	*	*31.91*	*	***0.45***	*1.18*	***4.22***	*	*	***-2.65***	***13.10***
Dy	*	*	0.13	-0.54	*	*	**-0.20**	0.07	**3.38**	-0.16	0.05	**-0.78**	*
Er	*	*	-0.02	-0.55	*	*	**-0.14**	-0.34	**3.22**	-0.18	0.08	**-0.67**	*
Eu	*	*	0.00	-0.40	*	*	**-0.61**	-0.11	**3.75**	-0.42	-0.20	**0.12**	*
Ga	*	*	-0.74	-3.10	-1.28	*	**1.34**	*	*	3.31	2.59	*	**-3.78**
Gd	*	*	-0.27	-0.52	*	*	**0.01**	-0.56	**3.85**	-0.35	0.22	**-1.08**	*
Hf	*	*	*0.67*	*	*	*	***-6.37***	*	***2.12***	*-0.86*	*-0.35*	***-2.86***	***-1.40***
Ho	*	*	-0.32	0.03	*	*	**0.12**	-0.08	**2.55**	-0.35	0.12	**-0.63**	*
In	*	*	0.11	*	*	*	*	*	*	*	0.14	*	*
La	*	*	0.00	-0.11	6.25	*	**-0.49**	-0.03	**5.22**	-0.41	0.27	**-0.30**	**-4.95**
Li	*	*	0.85	-5.08	*	*	**0.26**	*	**4.21**	*	0.59	*	*
Lu	*	*	-0.09	1.75	*	*	**-0.28**	2.63	**2.29**	0.00	-0.09	**-0.19**	*
Mo	*	*	*-0.14*	*	*	*	***-2.05***	*	***3.00***	*0.90*	*-0.14*	*	*
Nb	*	*	0.20	*	*	*	**0.45**	*	**2.25**	-0.34	-0.09	**0.93**	**10.02**
Nd	*	*	-0.33	-0.76	5.64	1.98	**-0.65**	0.18	**5.62**	-0.39	-0.15	**-0.38**	**-6.37**
Ni	-4.97	*	0.19	-4.22	0.37	*	**-0.63**	0.44	**6.60**	-0.08	0.79	**1.42**	**-9.60**
Pb	*	*	-0.31	-3.50	75.59	1.05	**-0.69**	0.14	**9.01**	-0.47	*	**0.10**	**-6.16**
Pr	*	*	-0.48	*	*	*	**0.00**	0.25	**4.36**	-0.31	-0.34	**-0.83**	*
Rb	*	*	0.41	*	2.46	0.00	**-0.09**	*	**8.62**	-0.46	-1.02	**-0.61**	*
S	*	*	*1.60*	*	*0.89*	*	*	*0.82*	*	*	*-18.36*	*	***-7.35***
Sb	*	*	0.12	-0.82	*	*	-0.14	*	**0.27**	*	0.00	*	*
Sc	*	**0.46**	0.35	0.99	10.64	3.18	**-0.00**	*	**5.04**	-0.14	0.35	*	**18.21**
Sm	*	*	0.41	-0.69	*	*	**-0.22**	-0.28	**4.65**	-0.29	-0.28	**-0.48**	**19.11**
Sn	*	*	0.37	*	*	*	**0.21**	*	*	*	0.33	*	*
Sr	-2.49	**0.13**	1.63	-6.68	-0.07	-1.92	**-0.16**	-0.08	**11.84**	0.40	1.59	**-0.44**	**-15.33**
Ta	*	*	-0.59	*	*	*	**0.52**	*	**2.27**	-0.33	-0.49	**-1.32**	*
Tb	*	*	-0.17	0.41	*	*	**0.04**	-0.42	**1.98**	-0.55	-0.42	**-0.18**	*
Te	*	*	*-0.16*	*	*	*	*	*	*	*	*0.35*	*	*
Th	269.01	*	-0.12	*	3.11	7.41	**-0.65**	-0.37	**4.88**	-0.18	-0.19	**5.58**	*
Tl	*	*	-0.37	-0.41	*	*	**0.05**	*	*	*	-0.75	*	*
Tm	*	*	0.00	-0.10	*	*	**0.09**	0.94	**1.82**	-0.43	-0.17	**-0.86**	*
U	*	*	0.03	*	*	*	**-0.05**	-1.49	**3.97**	-0.22	-0.22	**-0.56**	*
V	*	***-0.48***	*-0.43*	*-6.14*	*-0.23*	*0.36*	***-1.43***	*-0.29*	***11.35***	*1.34*	*0.73*	***0.27***	***-5.39***
W	*	*	*0.41*	*	*	*	***-1.33***	*	***2.43***	*53.15*	*0.26*	*	***3.99***
Y	-2.72	**2.12**	0.02	-0.66	3.53	-0.91	**-1.01**	-0.16	**3.15**	1.05	-0.00	**1.59**	**4.39**
Yb	*	*	0.28	0.51	*	*	**-0.57**	-0.02	**3.00**	-0.25	0.01	**-0.86**	*
Zn	*-2.56*	*	*0.86*	*	*0.45*	*-2.10*	***-1.85***	*-0.56*	***27.16***	*0.44*	*0.21*	***-2.41***	***-13.11***
Zr	*-5.14*	***4.33***	*3.24*	*	*0.46*	*-2.07*	***-10.11***	*	***5.97***	*2.26*	*0.50*	***2.16***	***-10.79***

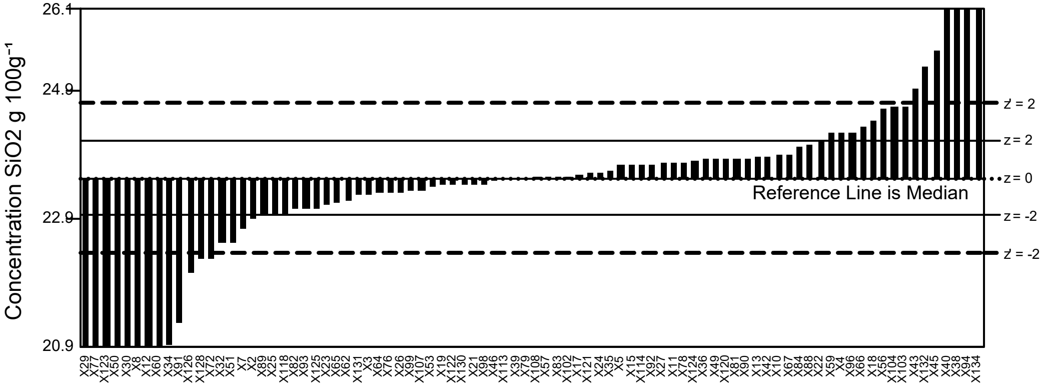
Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

Table 3 - GeoPT56A Z-scores for Calcareous ironstone, CFU-1. 11/12/2024

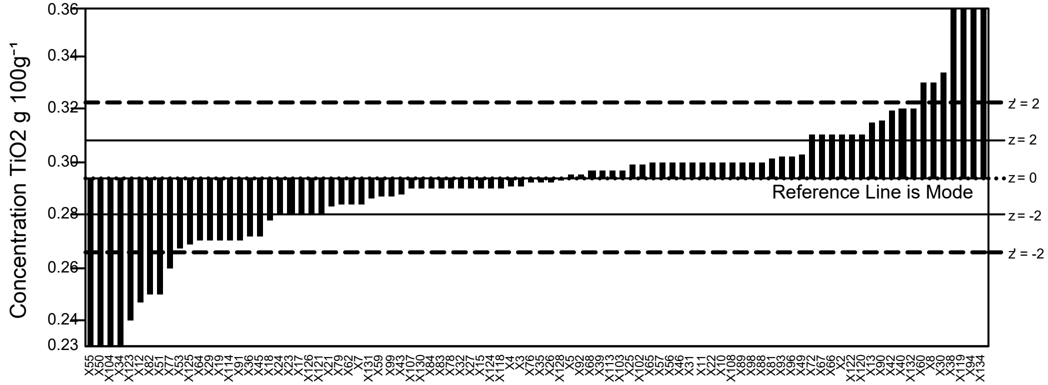
Lab Code	X124	X125	X126	X128	X130	X131	X132	X134
SiO2	0.47	**-1.64**	-2.54	**-4.33**	-0.18	-0.46	**5.92**	**532.69**
TiO2	-0.28	**-3.54**	-0.99	**-0.14**	-0.29	-0.57	**3.68**	**276.68**
Al2O3	0.33	**-2.28**	-1.95	**2.09**	-0.68	-1.01	**-8.10**	**469.01**
Fe2O3T	0.21	**-3.26**	-2.36	**0.81**	-1.26	-0.68	**4.96**	**576.32**
MnO	0.05	**-0.78**	-1.03	**5.05**	-1.66	0.10	**10.64**	**271.08**
MgO	0.05	**-5.80**	4.57	**0.38**	-1.30	0.56	**3.58**	**359.49**
CaO	-0.44	**-1.52**	-1.73	**0.42**	-1.47	-1.06	**9.16**	**861.55**
Na2O	*-3.22*	***-0.77***	*-1.93*	*-6.70*	*3.48*	*-0.90*	***-24.50***	***2603.12***
K2O	-1.63	**-2.83**	-2.72	-2.36	-2.83	-0.07	**9.22**	**433.60**
P2O5	-0.11	**1.43**	*	**-4.45**	-0.72	-0.29	**6.43**	**466.12**
LOI	-0.39	**5.81**	*	**282.89**	0.42	3.51	*	*
As	-0.15	*	*	*	*	*	*	**-12.51**
Ba	-0.08	**-1.38**	0.21	*	**-1.75**	*	*	**1.94**
Be	*	**0.19**	*	*	**-2.05**	*	*	*
Bi	*	*	*	*	*	*	*	*
C(tot)	*	*	*	*	*	*0.37*	*	*
Cd	*	*	*13.88*	*	*	*	*	*
Ce	2.83	**-1.21**	*	*	**-2.01**	*	*	*
Co	*	**-1.02**	2.05	*	**-3.84**	*	*	*
Cr	2.36	**-2.36**	2.06	*	**-10.20**	3.50	*	**-5.72**
Cs	*	**-0.24**	*	*	**-1.58**	*	*	**80.25**
Cu	*10.57*	***-1.38***	*	*	*	*	*	*
Dy	*	**-1.03**	*	*	**-1.85**	*	*	*
Er	*	**-0.97**	*	*	**-1.24**	*	*	*
Eu	*	**-0.85**	*	*	**-0.90**	*	*	*
Ga	*	**-2.40**	*	*	*	*	*	*
Gd	*	**-0.48**	*	*	**-1.62**	*	*	*
Hf	*	***-8.05***	*	*	***-2.51***	*	*	*
Ho	*	**-0.65**	*	*	**-1.50**	*	*	*
In	*	*	*	*	*	*	*	*
La	1.87	**-1.43**	*	*	**-1.78**	*	*	**-12.90**
Li	*	**-0.57**	*	*	**-3.99**	*	*	*
Lu	*	**-0.83**	*	*	**-1.13**	*	*	*
Mo	*	***-4.37***	*	*	*	*	*	*
Nb	2.58	**-0.84**	*	*	**-2.93**	*	*	*
Nd	*	**-1.47**	*	*	**-1.63**	*	*	**-8.36**
Ni	-0.96	**-1.06**	0.30	*	**-5.00**	*	*	*
Pb	3.12	**1.27**	-0.68	*	**-3.05**	*	*	**-17.52**
Pr	*	**-0.89**	*	*	**-1.86**	*	*	*
Rb	0.51	**-1.00**	-0.56	*	**-3.03**	*	*	**-11.97**
S	*	*	*	*	*	*-1.70*	*	***-2.56***
Sb	*	*	0.48	*	*	*	*	*
Sc	3.84	**-0.90**	*	*	**-0.54**	*	*	*
Sm	*	**-1.06**	*	*	**-1.38**	*	*	*
Sn	*	*	1.64	*	**-2.22**	*	*	**32.12**
Sr	-0.33	**-0.99**	1.97	*	**0.60**	1.22	*	**-17.70**
Ta	*	**-0.36**	*	*	*	*	*	*
Tb	*	**-0.64**	*	*	**-2.10**	*	*	*
Te	*	*	*	*	*	*	*	*
Th	1.18	**0.04**	*	*	**-1.25**	*	*	**-2.74**
Tl	*	*	*	*	*	*	*	*
Tm	*	*	*	*	**-1.54**	*	*	*
U	-0.87	**-1.18**	*	*	**-3.17**	*	*	*
V	*1.10*	***-1.56***	*2.05*	*	***-4.80***	*	*	***-6.94***
W	*	***24.52***	*	*	*	*	*	*
Y	0.64	**-0.45**	*	*	**-1.71**	*	*	**-7.92**
Yb	*	**-1.18**	*	*	**-1.43**	*	*	*
Zn	*-0.18*	***-1.15***	*-0.49*	*	***-3.08***	*1.82*	*	***-18.36***
Zr	*-1.49*	***-14.02***	*	*	***-1.26***	*	*	***-18.08***

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

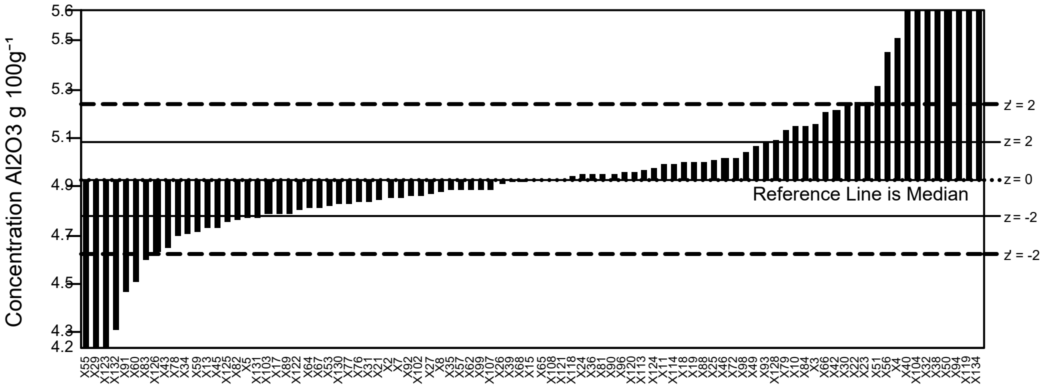
GeoPT56A - Barchart for SiO2



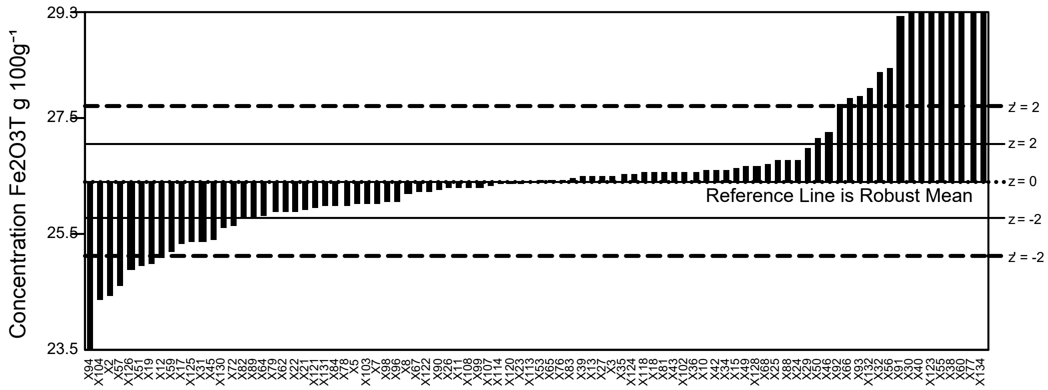
GeoPT56A - Barchart for TiO2



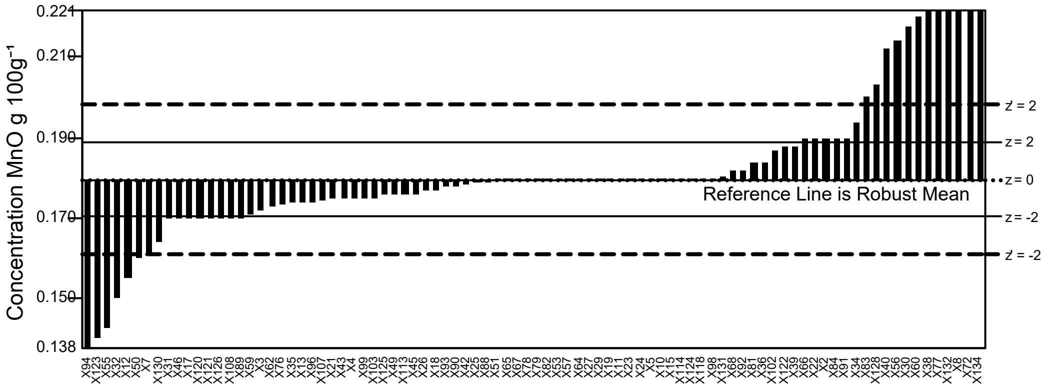
GeoPT56A - Barchart for Al2O3



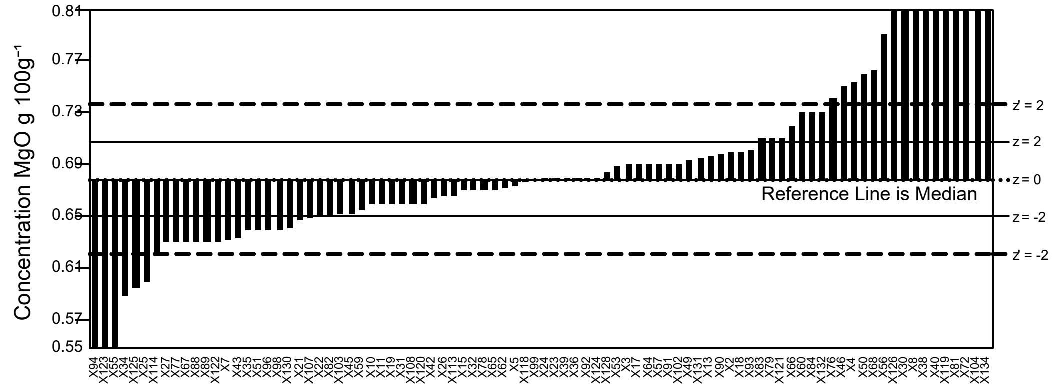
GeoPT56A - Barchart for Fe2O3T



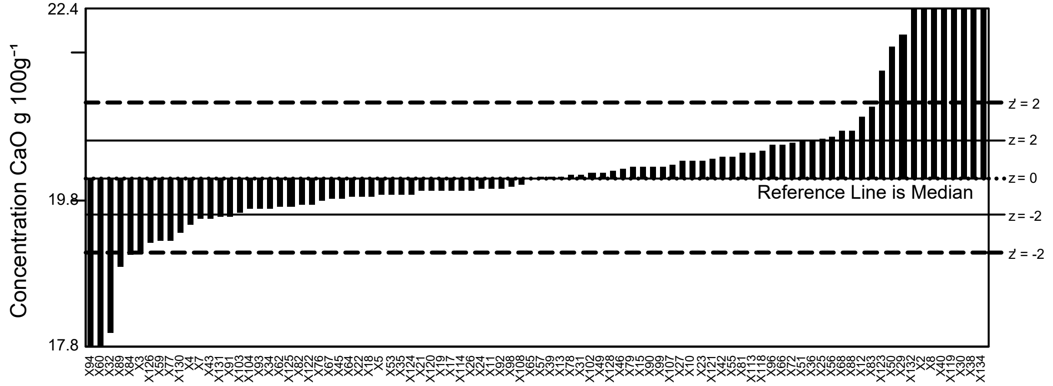
GeoPT56A - Barchart for MnO



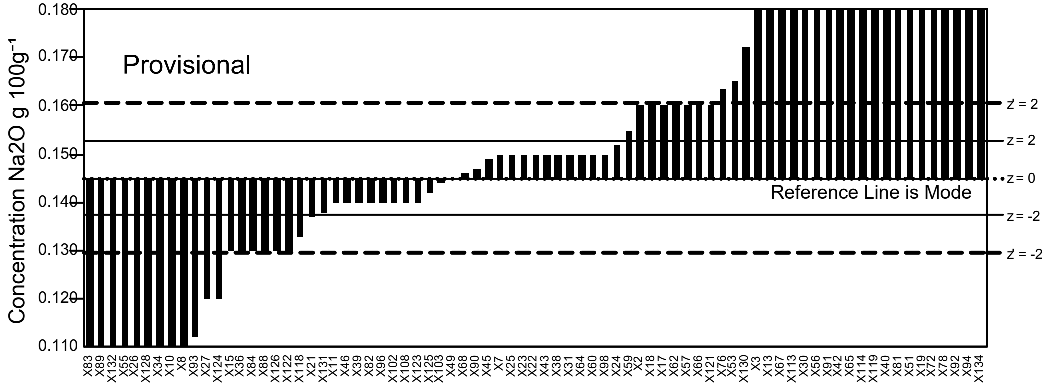
GeoPT56A - Barchart for MgO



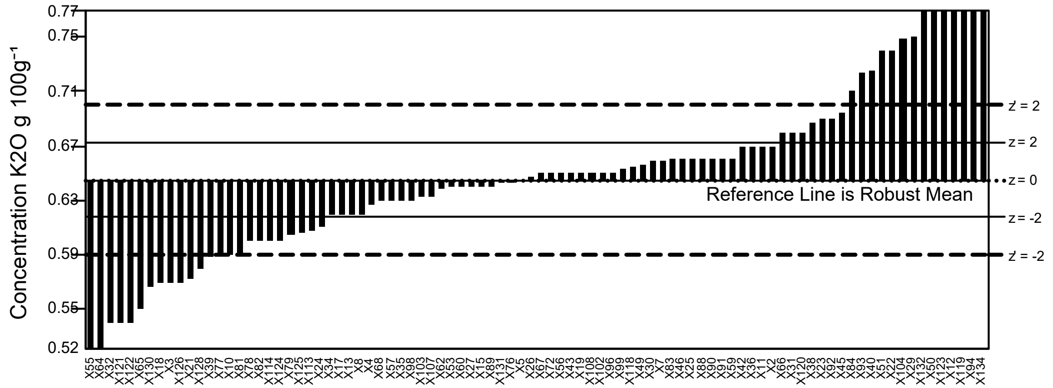
GeoPT56A - Barchart for CaO



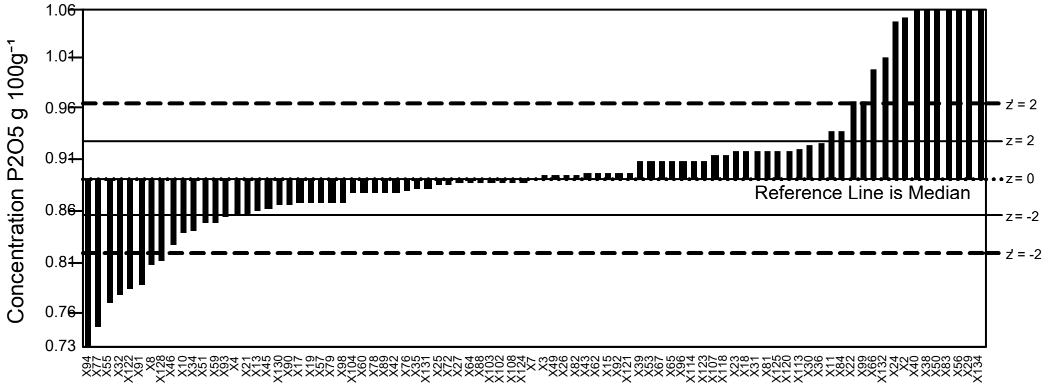
GeoPT56A - Barchart for Na2O



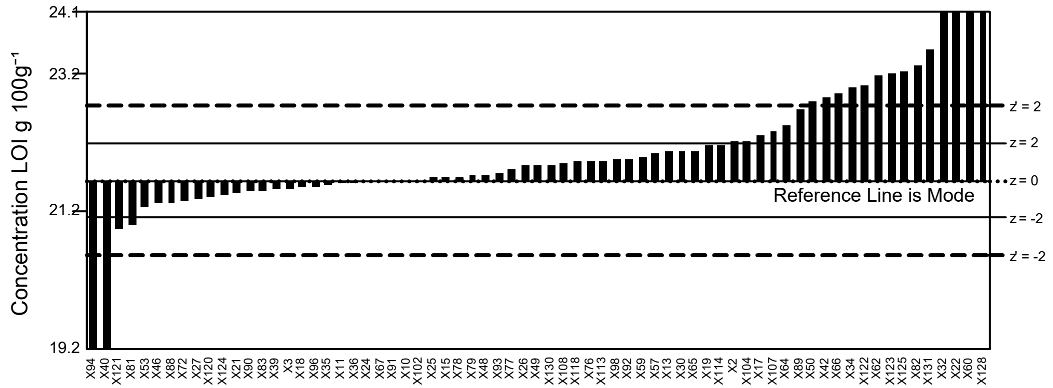
GeoPT56A - Barchart for K2O



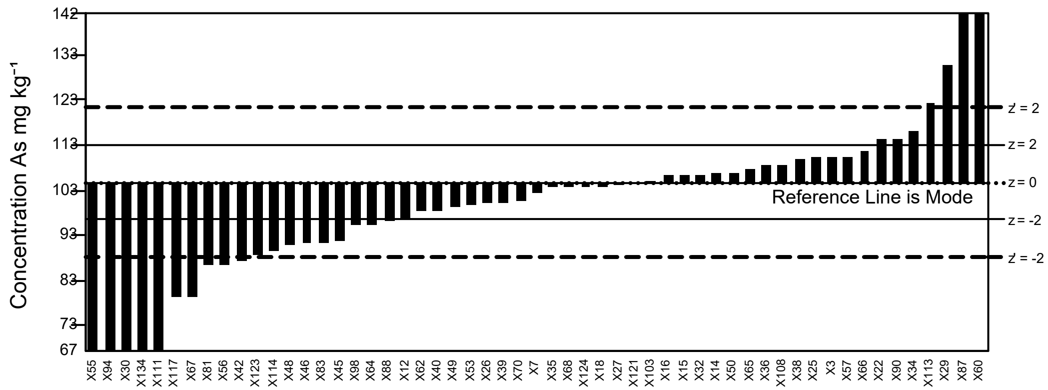
GeoPT56A - Barchart for P2O5

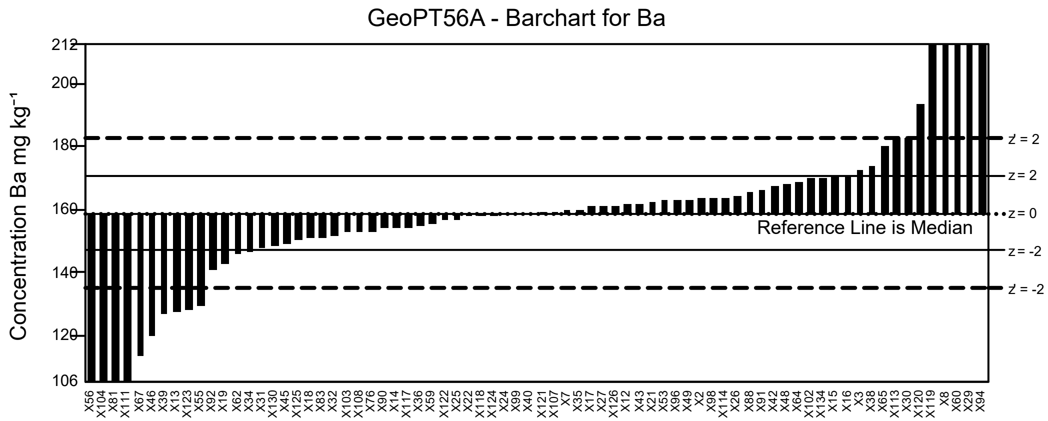


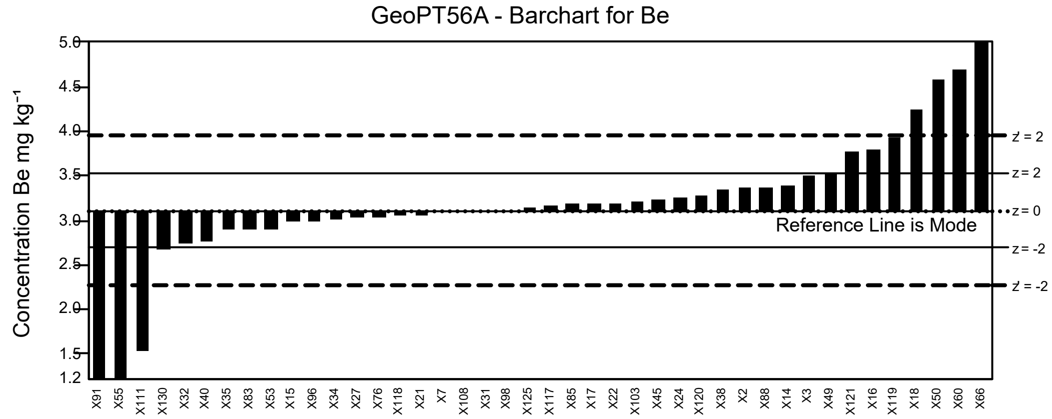
GeoPT56A - Barchart for LOI

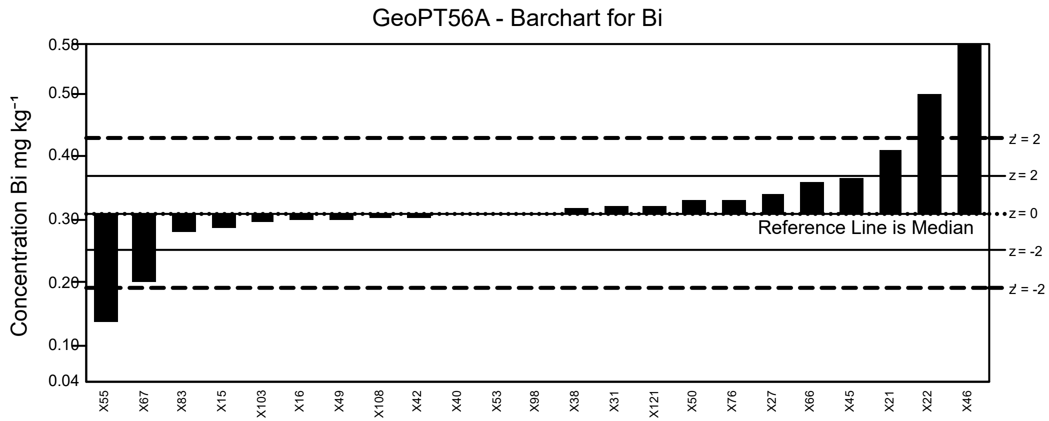


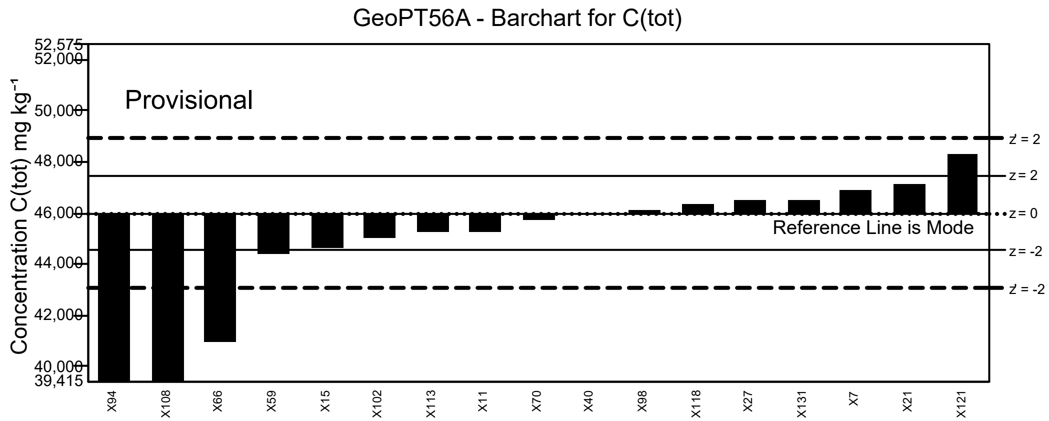
GeoPT56A - Barchart for As

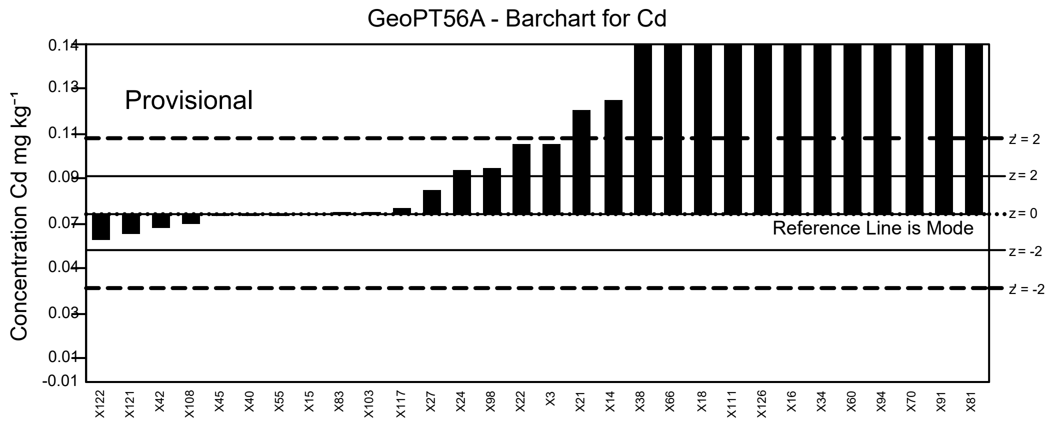


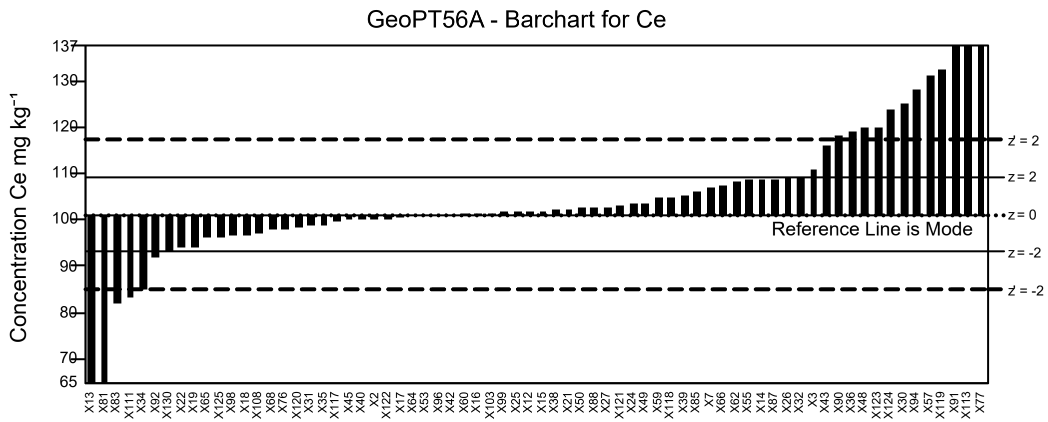

GeoPT56A - Barchart for Ba
Concentration Ba mg kg⁻¹
z' = 2
z = 2
z = 0
Reference Line is Median
z = -2
z' = -2

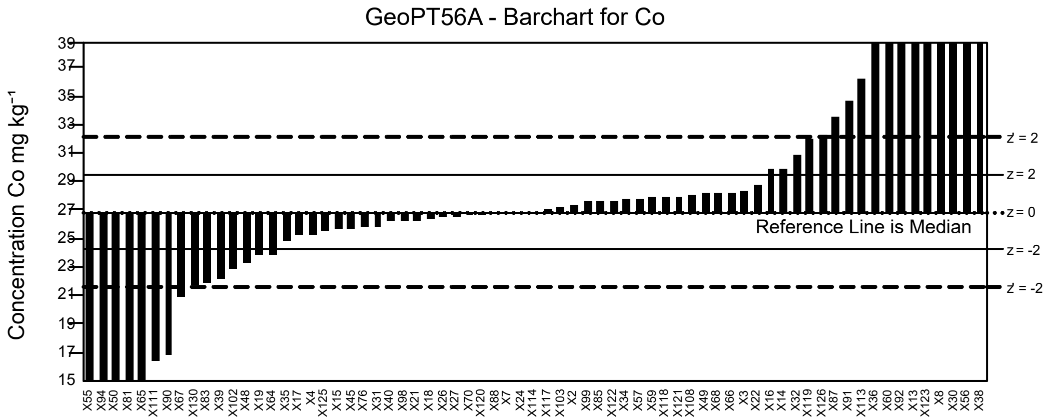

GeoPT56A - Barchart for Be
Concentration Be mg kg⁻¹
z' = 2
z = 2
z = 0
Reference Line is Mode
z = -2
z' = -2

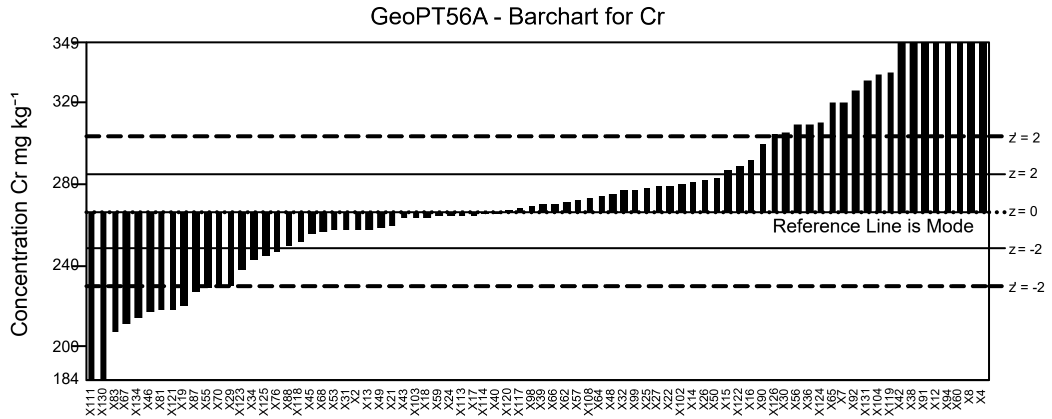

GeoPT56A - Barchart for Bi
Concentration Bi mg kg⁻¹
z' = 2
z = 2
z = 0
Reference Line is Median
z = -2
z' = -2

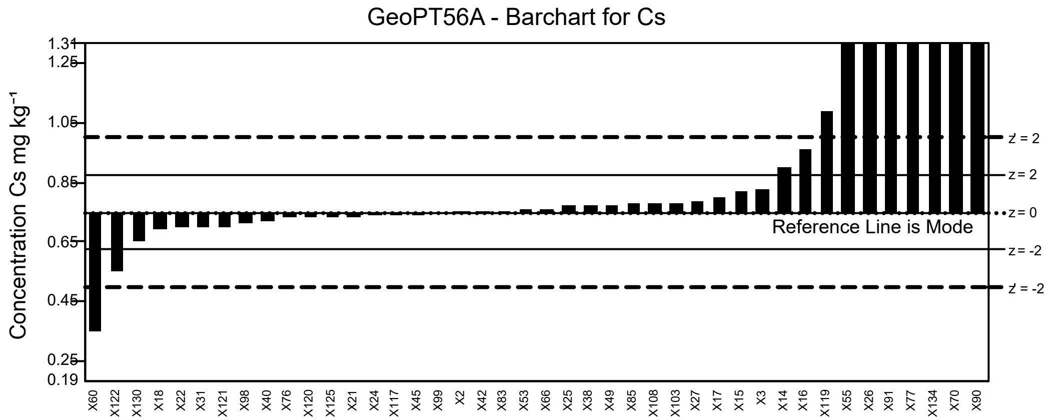

GeoPT56A - Barchart for C(tot)
Provisional
Concentration C(tot) mg kg⁻¹
z' = 2
z = 2
z = 0
Reference Line is Mode
z = -2
z' = -2

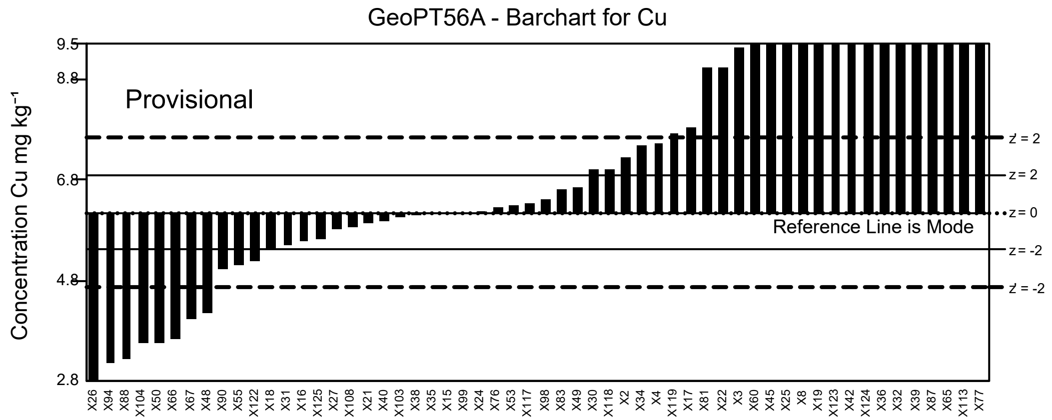

GeoPT56A - Barchart for Cd
Provisional
Concentration Cd mg kg⁻¹
z' = 2
z = 2
z = 0
Reference Line is Mode
z = -2
z' = -2

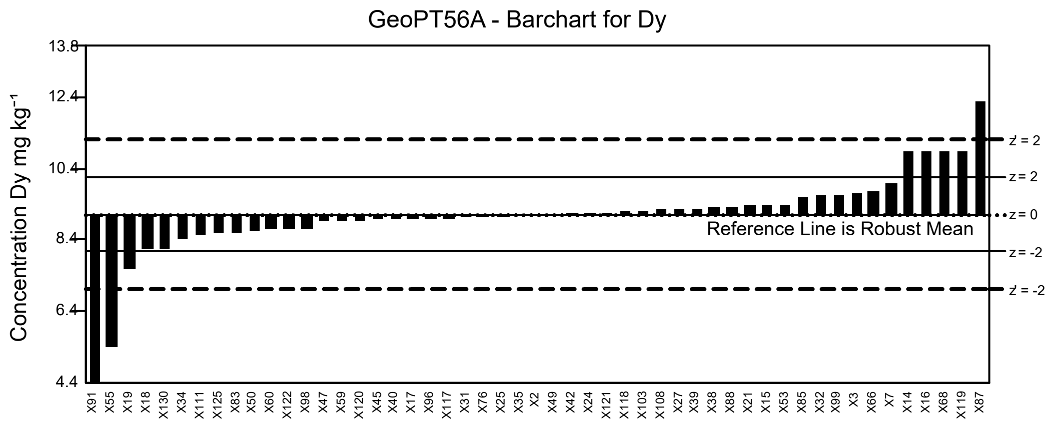

GeoPT56A - Barchart for Ce
Concentration Ce mg kg⁻¹
z' = 2
z = 2
z = 0
Reference Line is Mode
z = -2
z' = -2

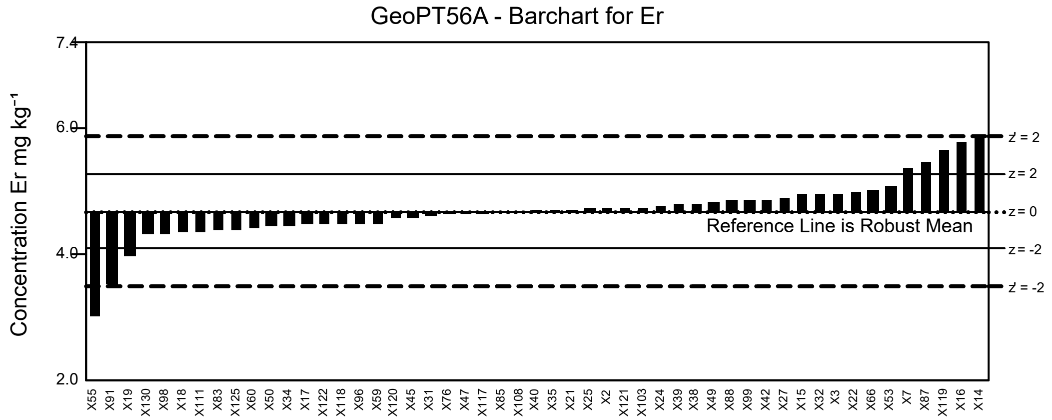

GeoPT56A - Barchart for Co
Concentration Co mg kg⁻¹
Reference Line is Median
z' = 2
z = 2
z = 0
z = -2
z' = -2

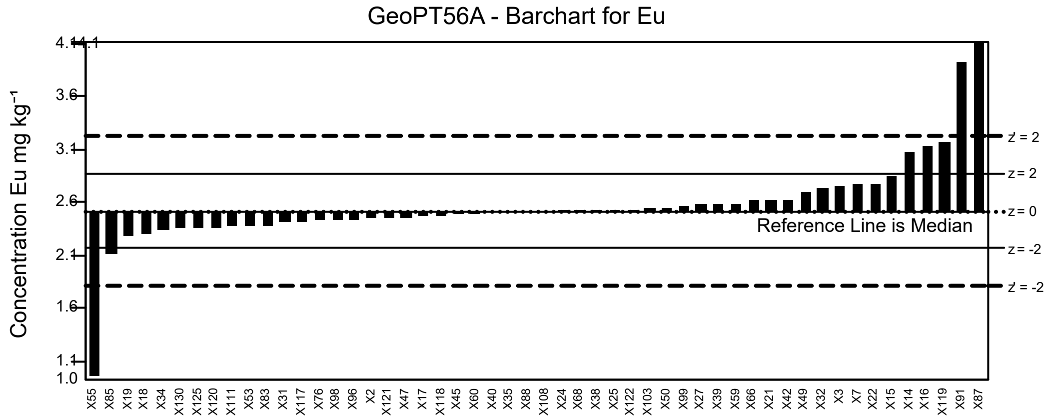

GeoPT56A - Barchart for Cr
Concentration Cr mg kg⁻¹
Reference Line is Mode
z' = 2
z = 2
z = 0
z = -2
z' = -2

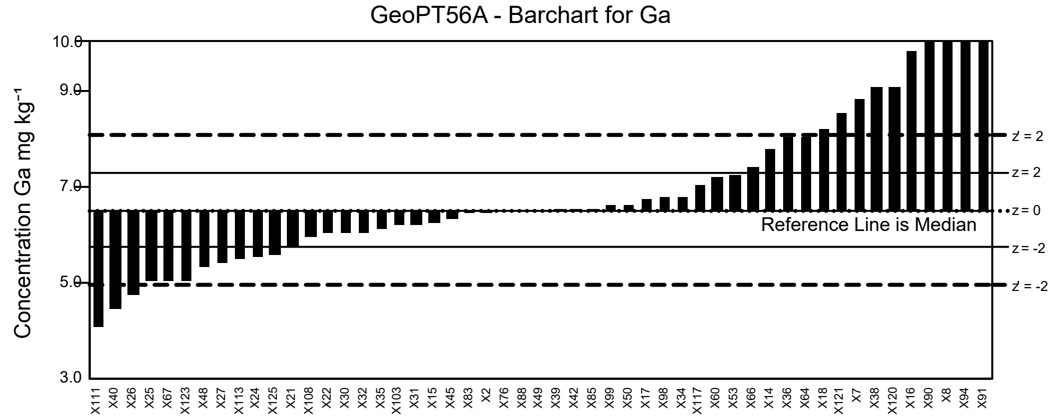

GeoPT56A - Barchart for Cs
Concentration Cs mg kg⁻¹
Reference Line is Mode
z' = 2
z = 2
z = 0
z = -2
z' = -2

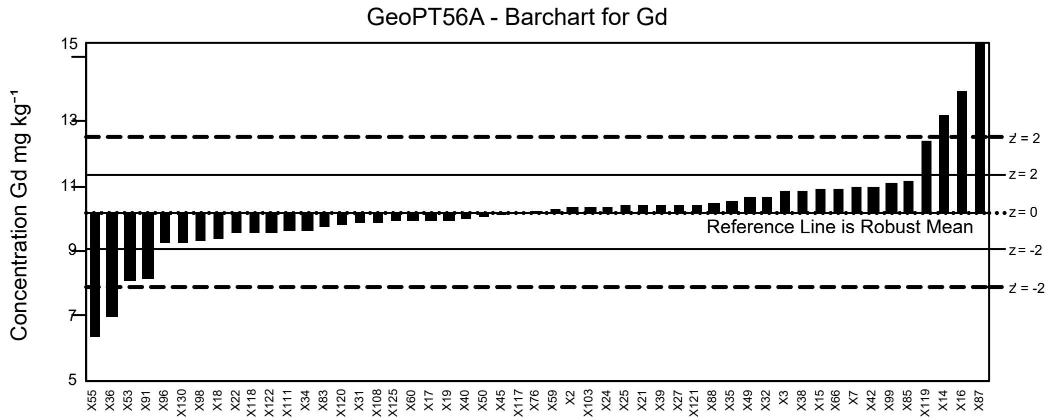

GeoPT56A - Barchart for Cu
Concentration Cu mg kg⁻¹
Provisional
Reference Line is Mode
z' = 2
z = 2
z = 0
z = -2
z' = -2

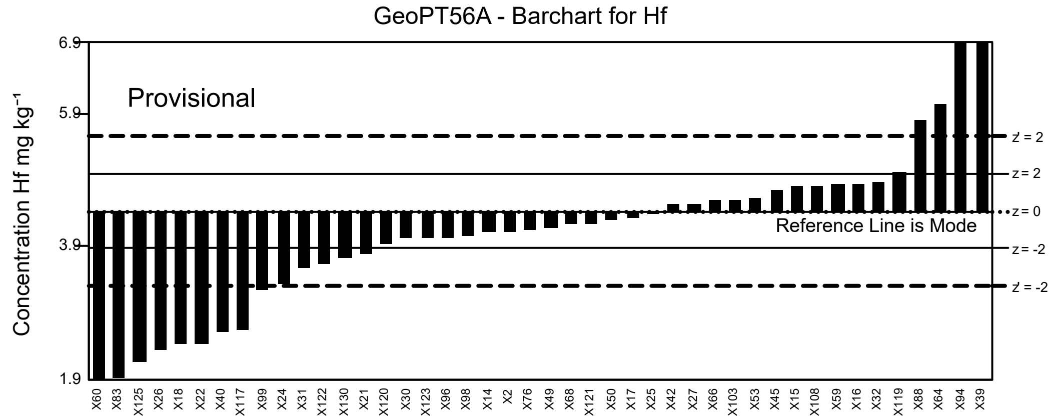

GeoPT56A - Barchart for Dy
Concentration Dy mg kg⁻¹
Reference Line is Robust Mean
z' = 2
z = 2
z = 0
z = -2
z' = -2

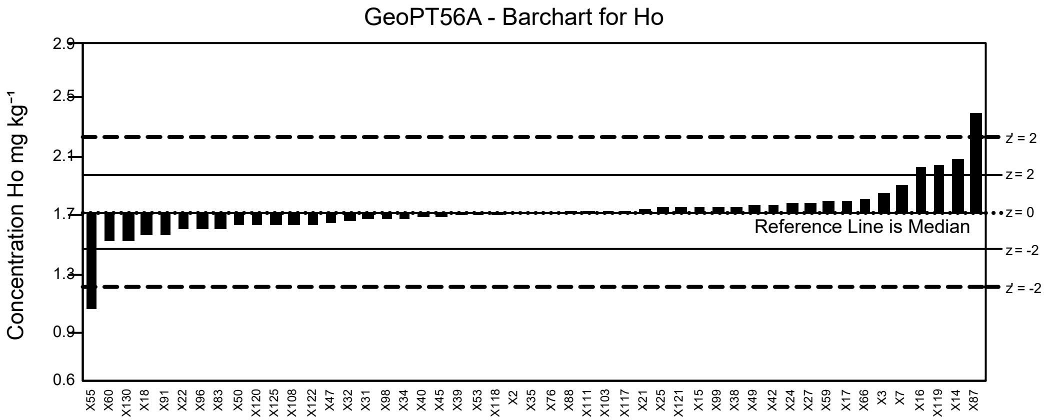

GeoPT56A - Barchart for Er
Concentration Er mg kg⁻¹
Reference Line is Robust Mean
z' = 2
z = 2
z = 0
z = -2
z' = -2

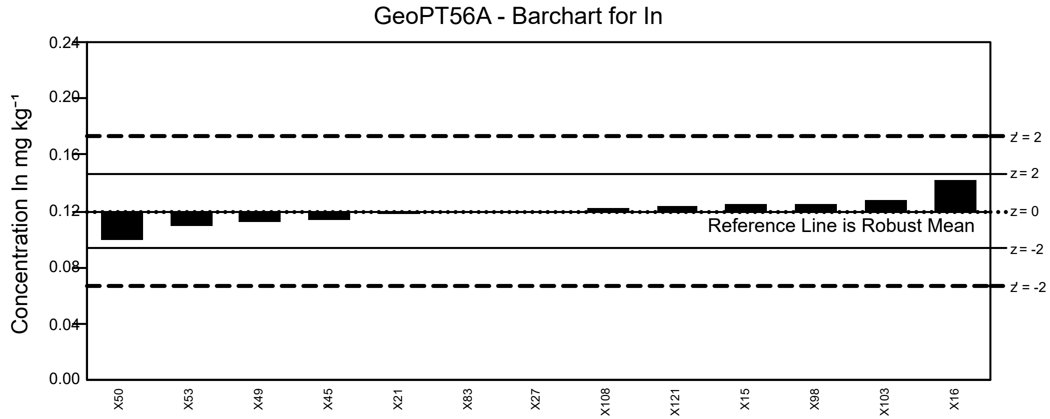

GeoPT56A - Barchart for Eu
Concentration Eu mg kg⁻¹
4.1 3.6 3.1 2.6 2.1 1.6 1.1 1.0
z' = 2
z = 2
z = 0
Reference Line is Median
z = -2
z' = -2
X55 X85 X19 X18 X34 X130 X125 X120 X111 X53 X83 X31 X117 X76 X98 X96 X2 X121 X47 X17 X118 X45 X60 X40 X35 X88 X108 X24 X68 X38 X25 X122 X103 X50 X99 X27 X39 X59 X66 X21 X42 X49 X32 X3 X7 X22 X15 X14 X16 X119 X91 X87


GeoPT56A - Barchart for Ga
Concentration Ga mg kg⁻¹
10.0 9.0 7.0 5.0 3.0
z' = 2
z = 2
z = 0
Reference Line is Median
z = -2
z' = -2
X111 X40 X26 X25 X67 X123 X48 X27 X113 X24 X125 X21 X108 X22 X30 X32 X35 X103 X31 X15 X45 X83 X2 X76 X88 X49 X39 X42 X85 X99 X50 X17 X98 X34 X117 X60 X53 X66 X14 X36 X64 X18 X121 X7 X38 X120 X16 X90 X8 X94 X91

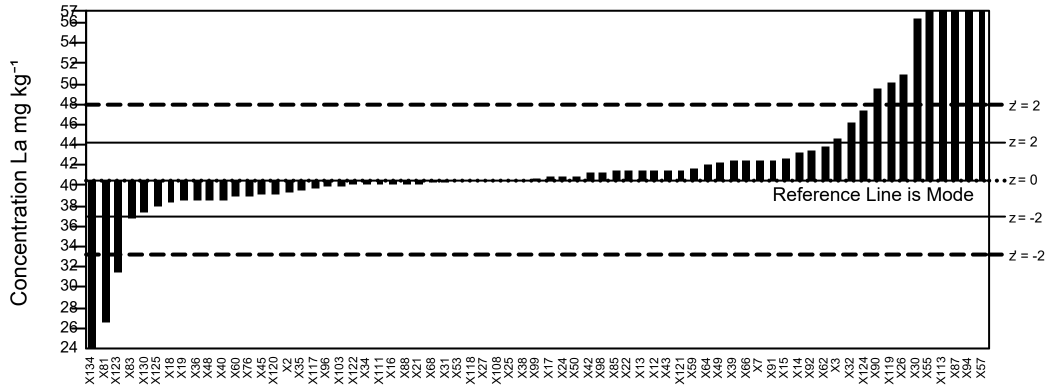

GeoPT56A - Barchart for Gd
Concentration Gd mg kg⁻¹
15 13 11 9 7 5
z' = 2
z = 2
z = 0
Reference Line is Robust Mean
z = -2
z' = -2
X55 X36 X53 X91 X96 X130 X98 X18 X22 X118 X122 X111 X34 X83 X120 X31 X108 X125 X60 X17 X19 X40 X50 X45 X117 X76 X59 X2 X103 X24 X25 X21 X39 X27 X121 X88 X35 X49 X32 X3 X38 X15 X66 X7 X42 X99 X85 X119 X14 X16 X87


GeoPT56A - Barchart for Hf
Provisional
Concentration Hf mg kg⁻¹
6.9 5.9 3.9 1.9
z' = 2
z = 2
z = 0
Reference Line is Mode
z = -2
z' = -2
X60 X83 X125 X26 X18 X22 X40 X117 X99 X24 X31 X122 X130 X21 X120 X30 X123 X96 X98 X14 X2 X76 X49 X68 X121 X50 X17 X25 X42 X27 X66 X103 X53 X45 X15 X108 X59 X16 X32 X119 X88 X64 X94 X39

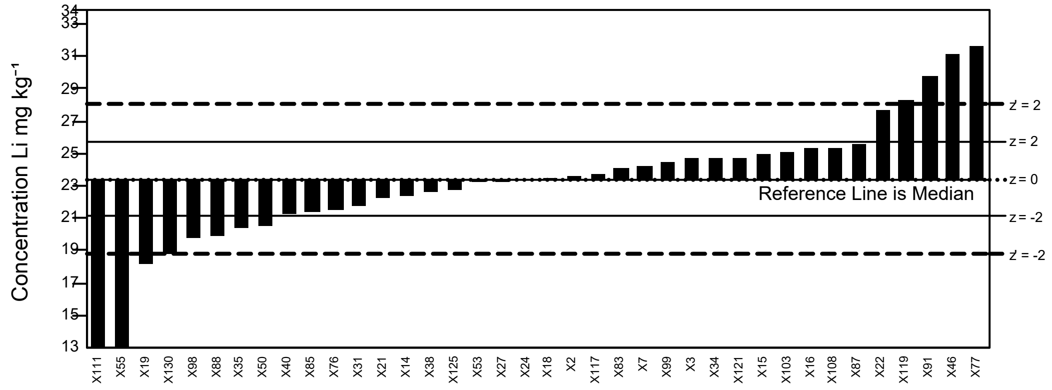

GeoPT56A - Barchart for Ho
Concentration Ho mg kg⁻¹
2.9 2.5 2.1 1.7 1.3 0.9 0.6
z' = 2
z = 2
z = 0
Reference Line is Median
z = -2
z' = -2
X55 X60 X130 X18 X91 X22 X96 X83 X50 X120 X125 X108 X122 X47 X32 X31 X98 X34 X40 X45 X39 X53 X118 X2 X35 X76 X88 X111 X103 X117 X21 X25 X121 X15 X99 X38 X49 X42 X24 X27 X59 X17 X66 X3 X7 X16 X119 X14 X87


GeoPT56A - Barchart for In
Concentration In mg kg⁻¹
0.24 0.20 0.16 0.12 0.08 0.04 0.00
z' = 2
z = 2
z = 0
Reference Line is Robust Mean
z = -2
z' = -2
X50 X53 X49 X45 X21 X83 X27 X108 X121 X15 X98 X103 X16

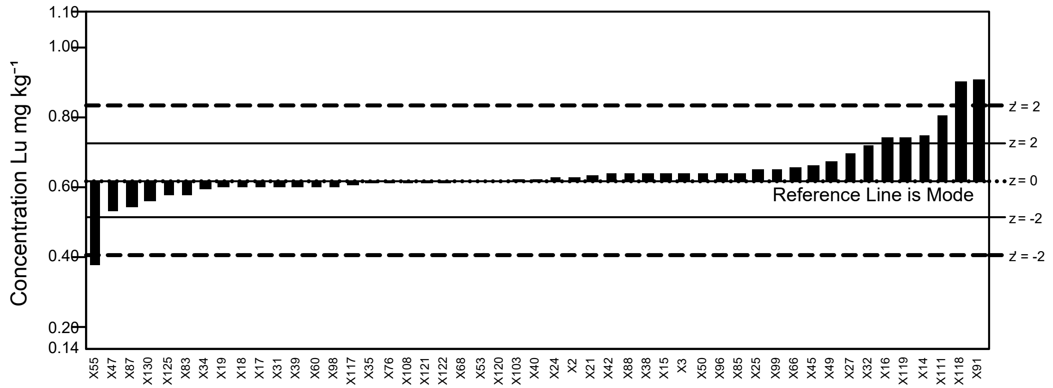
GeoPT56A - Barchart for La



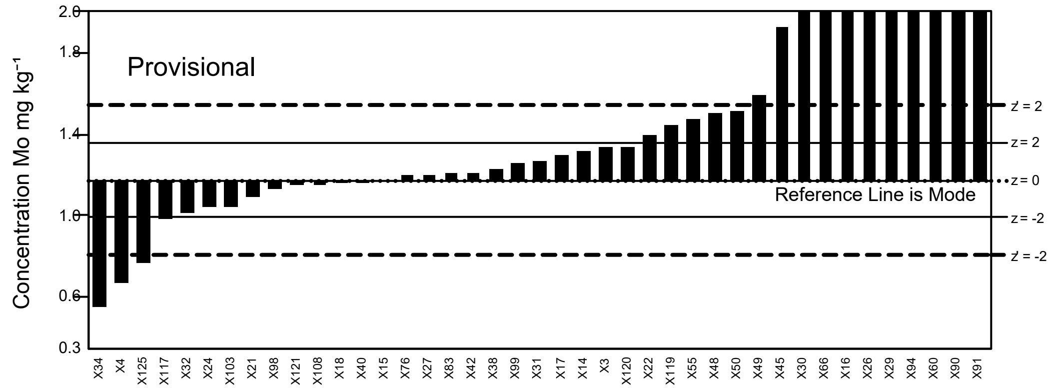
GeoPT56A - Barchart for Li



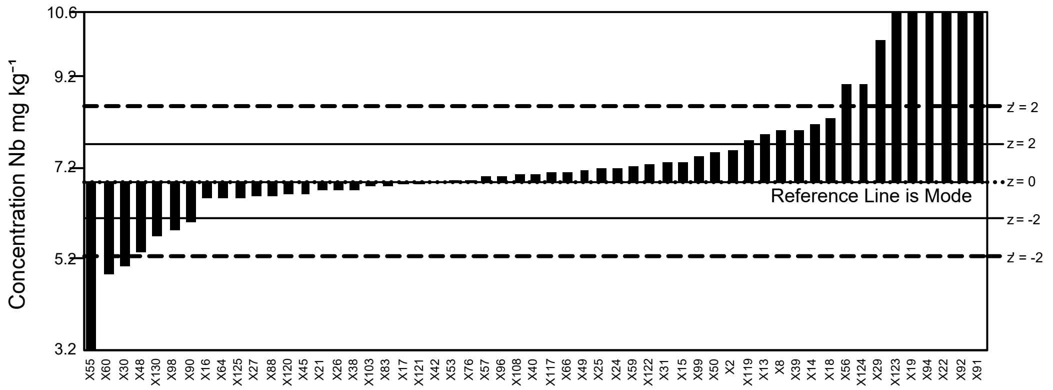
GeoPT56A - Barchart for Lu



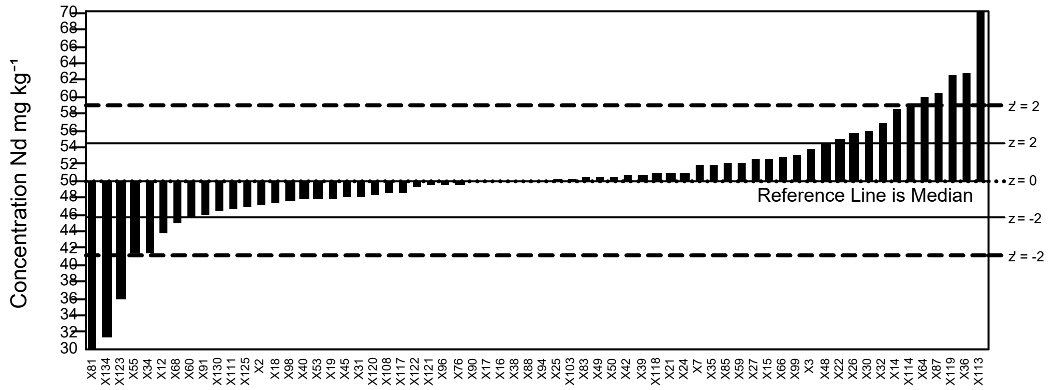
GeoPT56A - Barchart for Mo



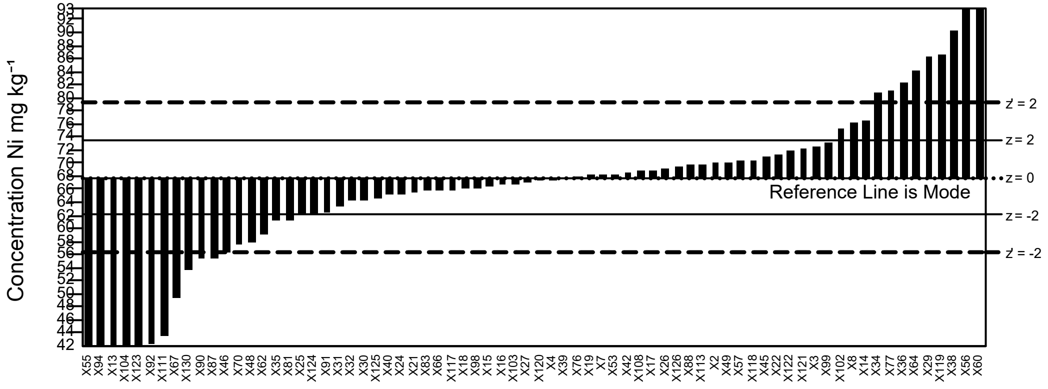
GeoPT56A - Barchart for Nb



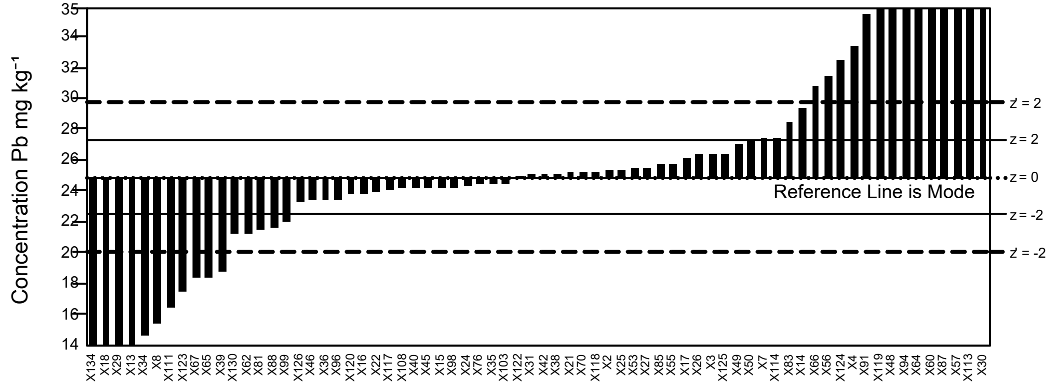
GeoPT56A - Barchart for Nd



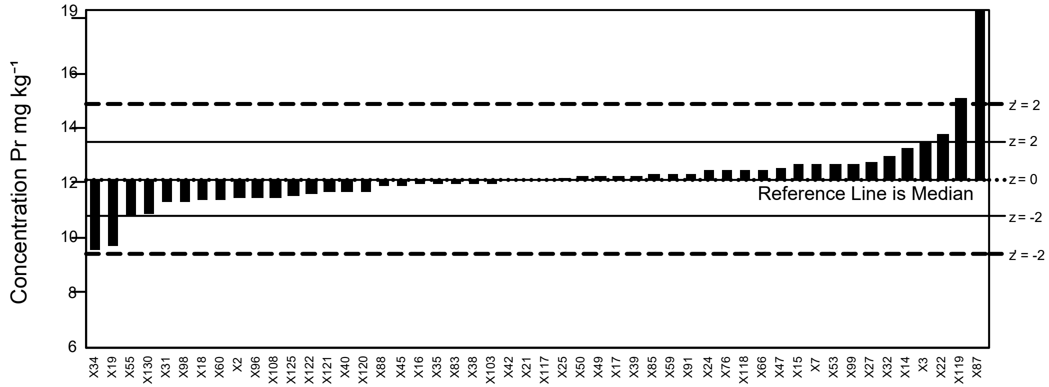
GeoPT56A - Barchart for Ni



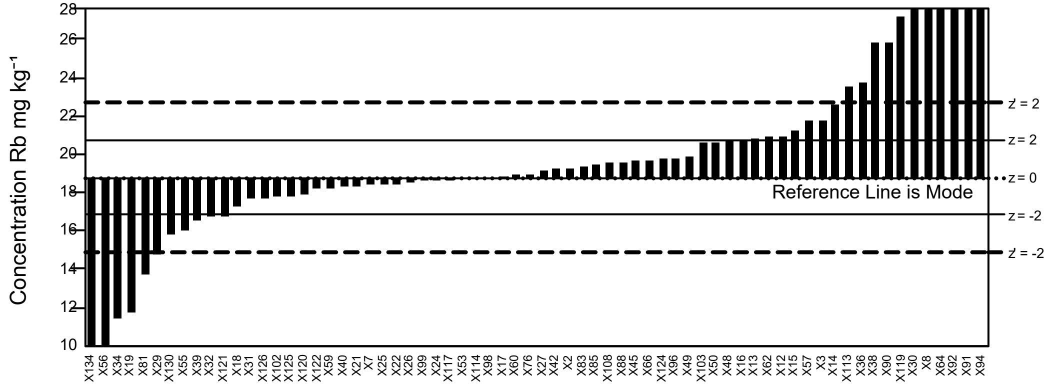
GeoPT56A - Barchart for Pb



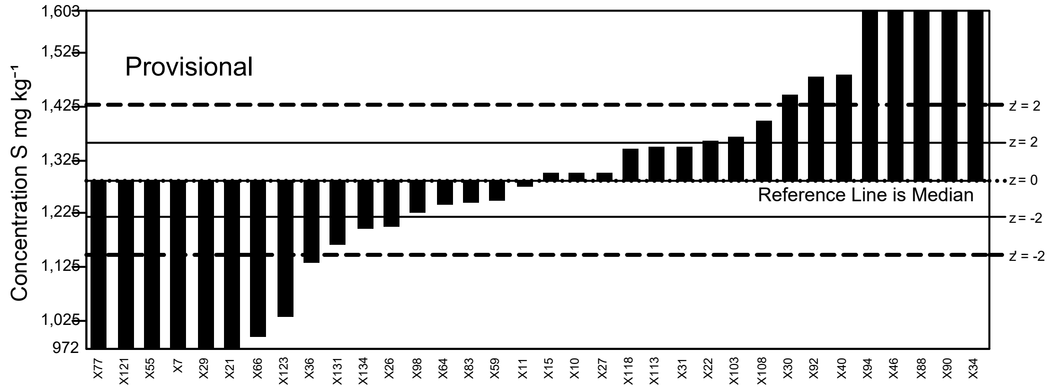
GeoPT56A - Barchart for Pr



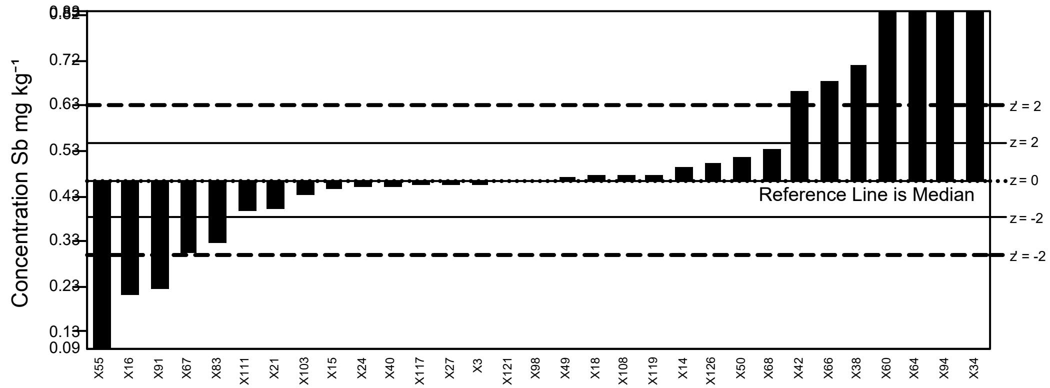
GeoPT56A - Barchart for Rb



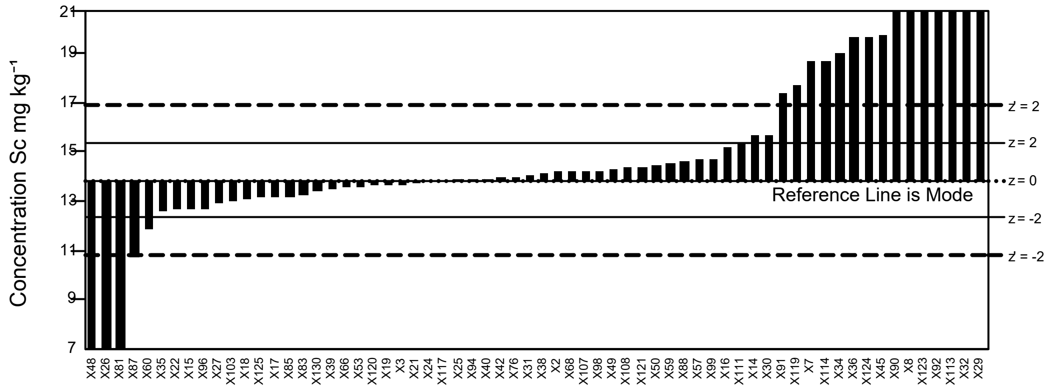
GeoPT56A - Barchart for S



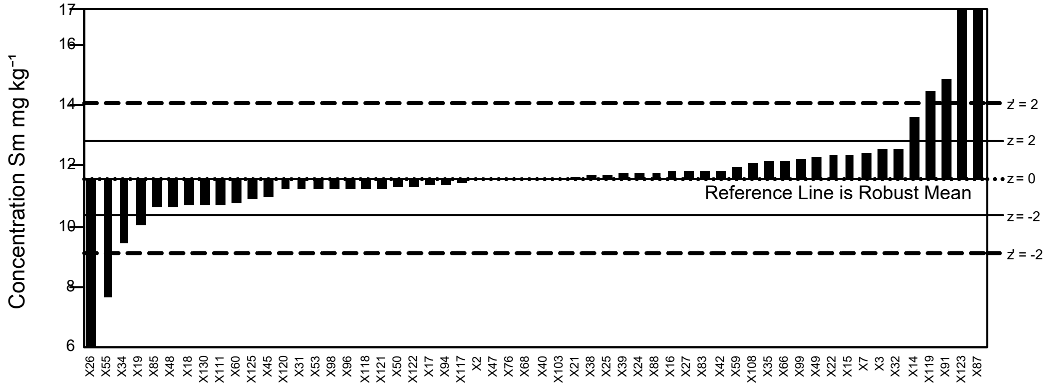
GeoPT56A - Barchart for Sb



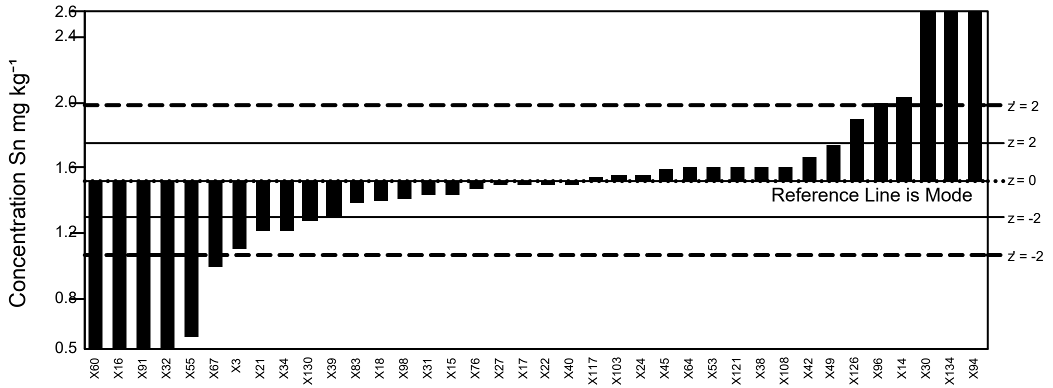
GeoPT56A - Barchart for Sc



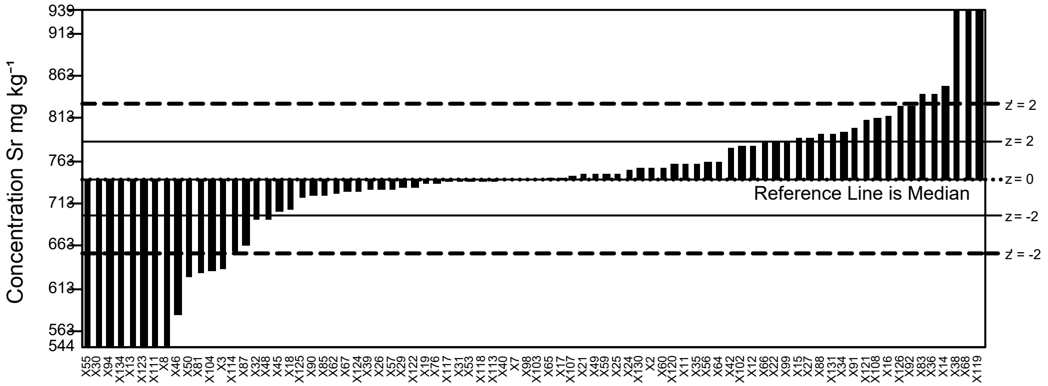
GeoPT56A - Barchart for Sm



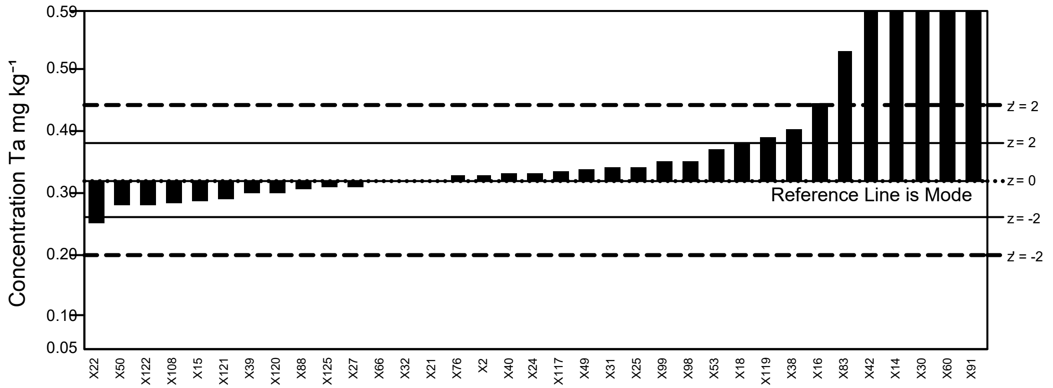
GeoPT56A - Barchart for Sn



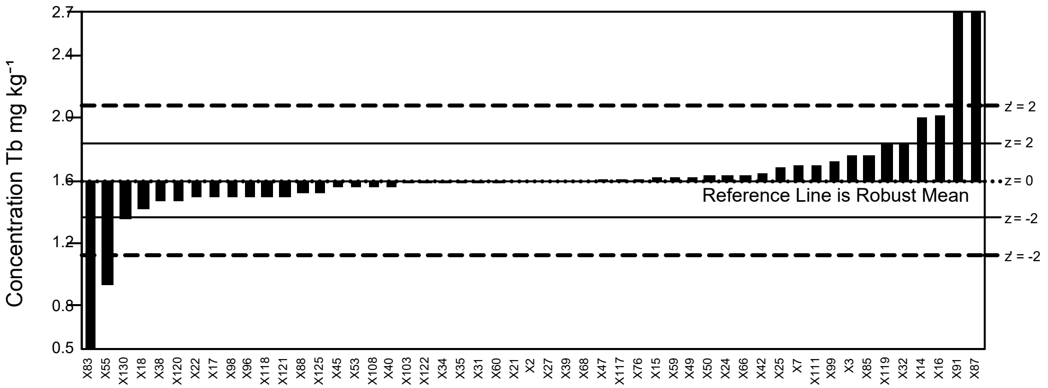
GeoPT56A - Barchart for Sr



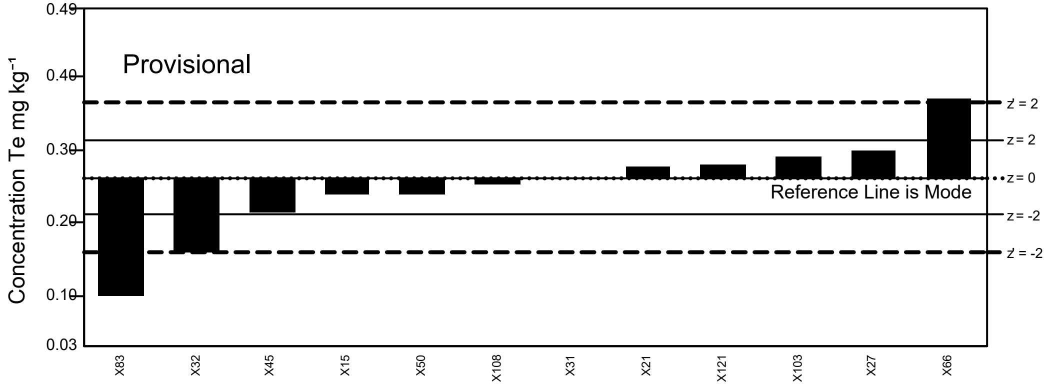
GeoPT56A - Barchart for Ta



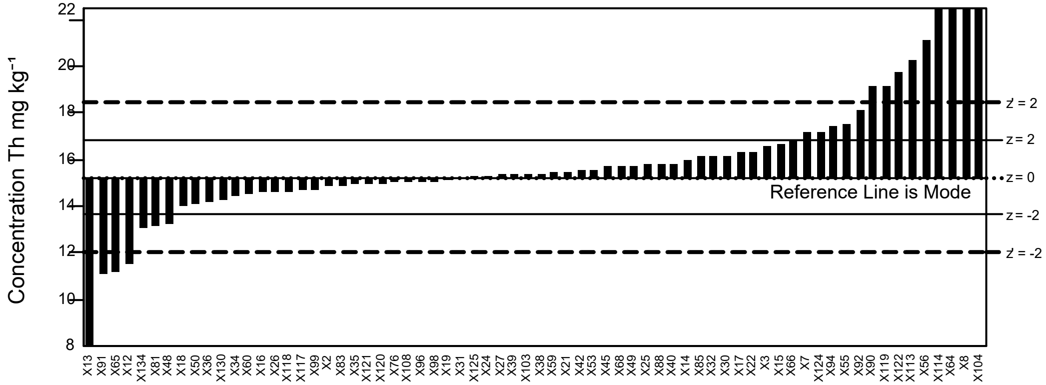
GeoPT56A - Barchart for Tb



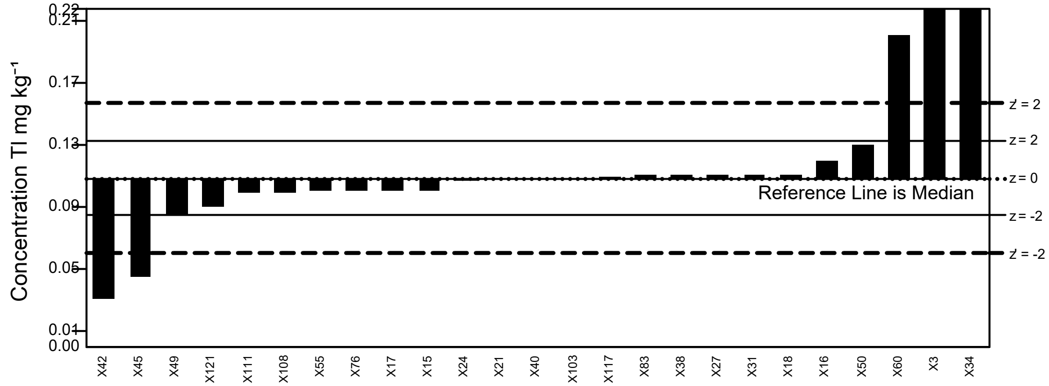
GeoPT56A - Barchart for Te



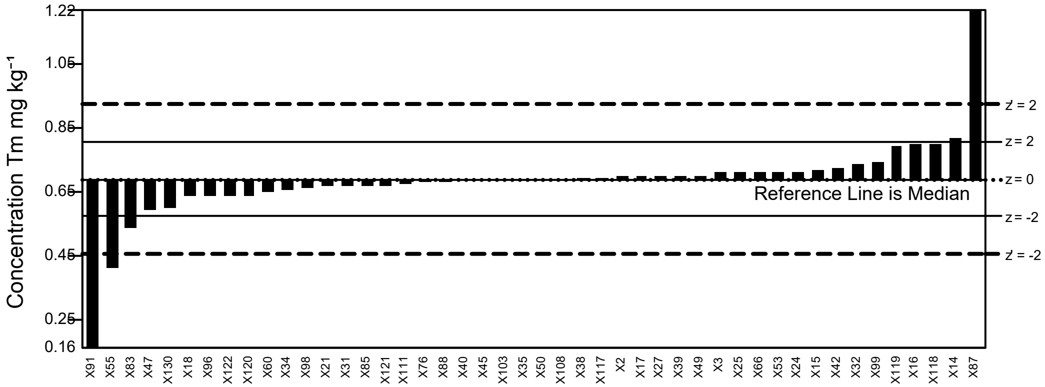
GeoPT56A - Barchart for Th



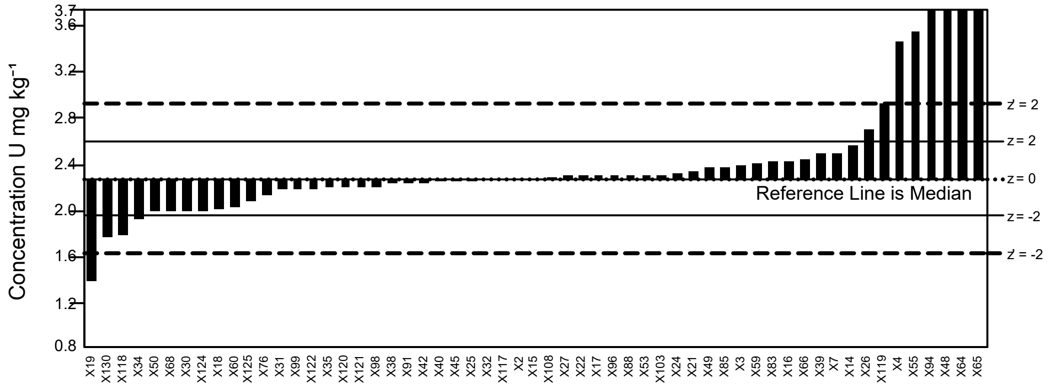
GeoPT56A - Barchart for Tl



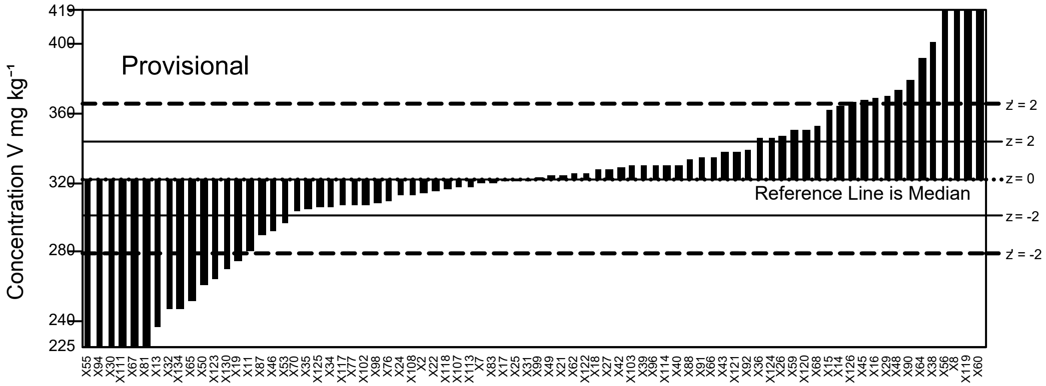
GeoPT56A - Barchart for Tm



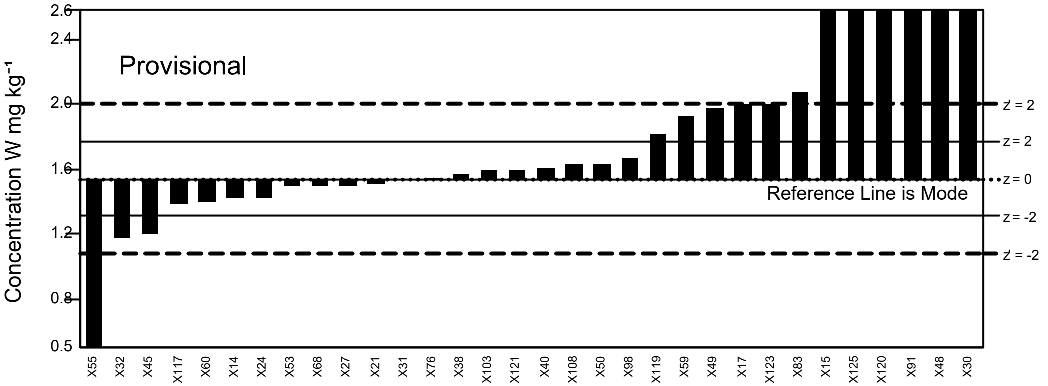
GeoPT56A - Barchart for U



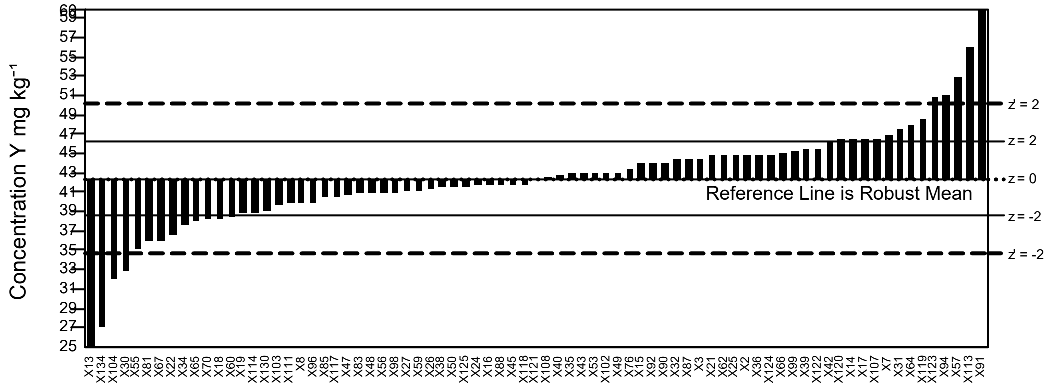
GeoPT56A - Barchart for V



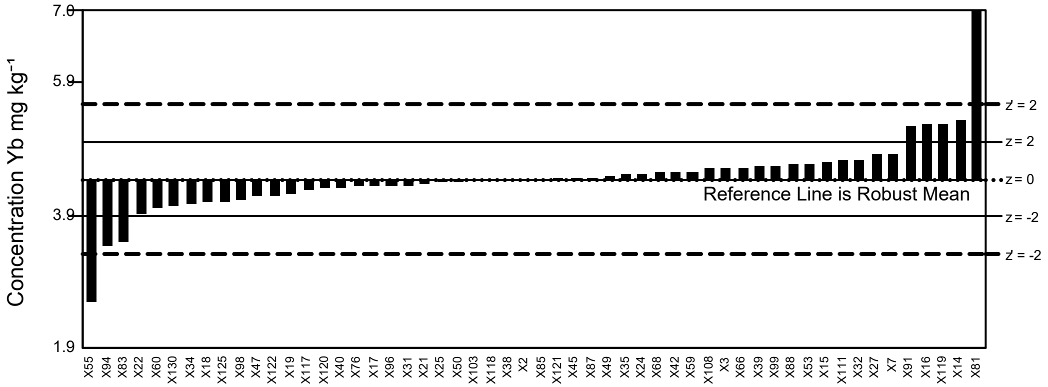
GeoPT56A - Barchart for W



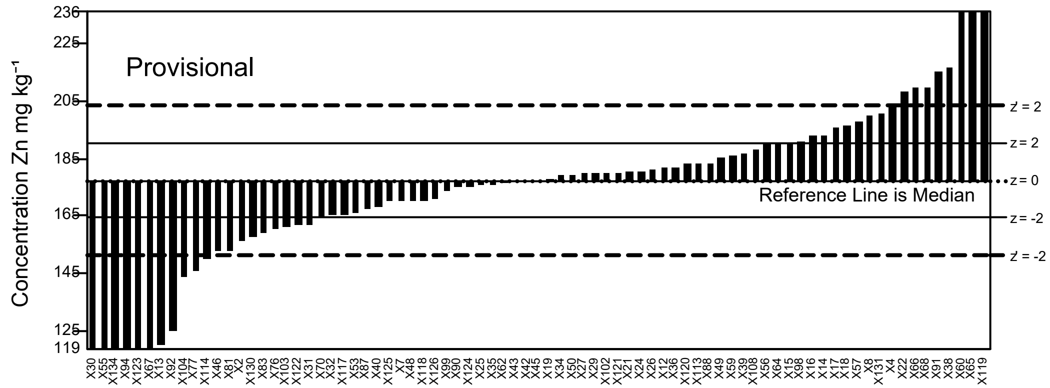
GeoPT56A - Barchart for Y



GeoPT56A - Barchart for Yb



GeoPT56A - Barchart for Zn



GeoPT56A - Barchart for Zr

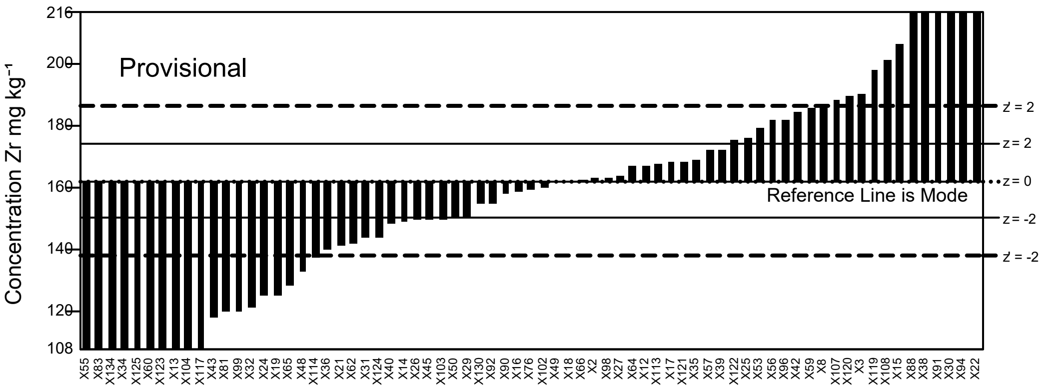
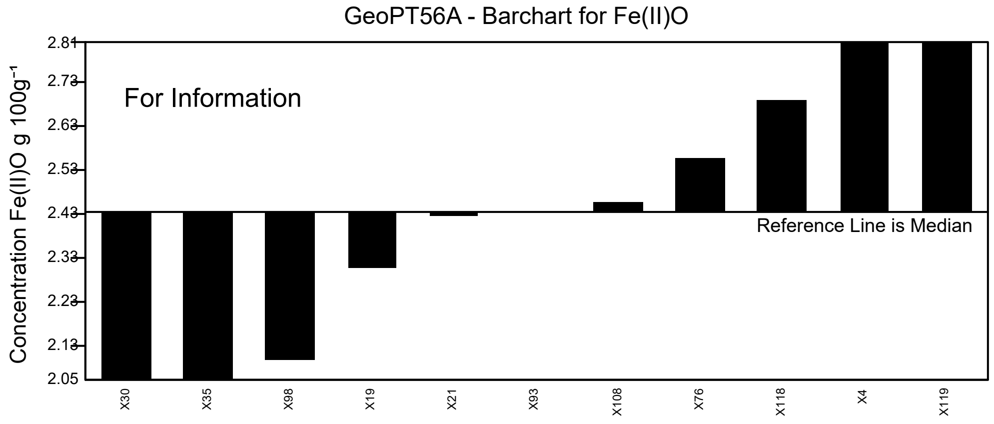
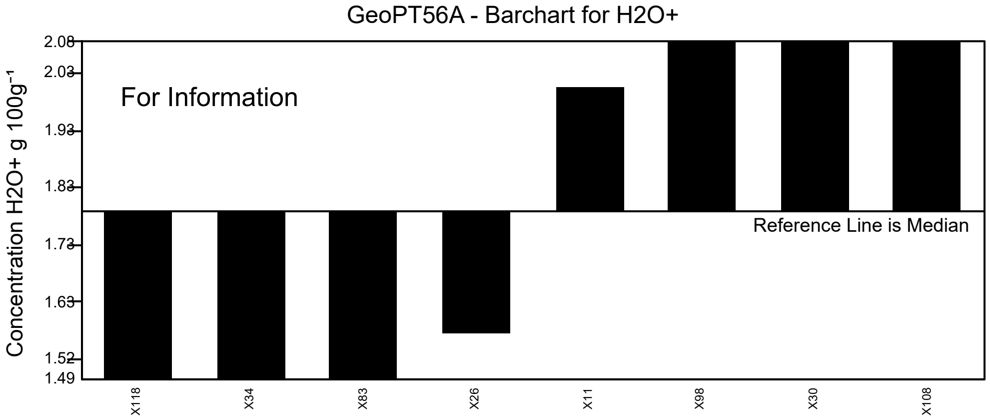
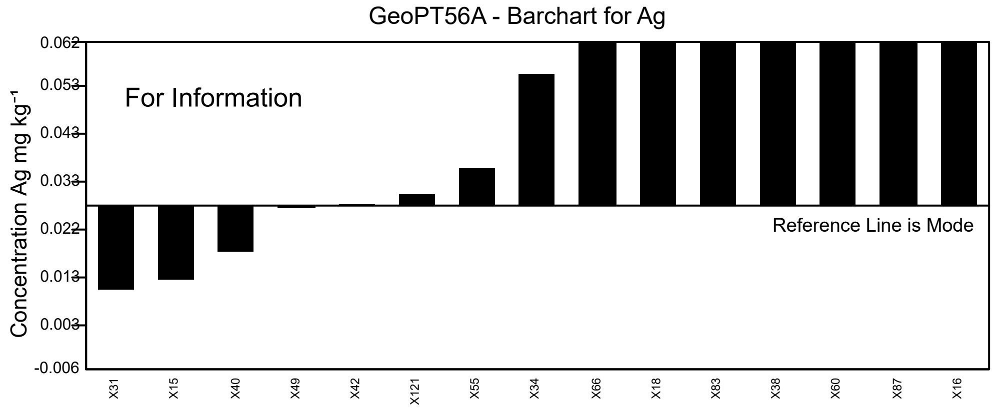
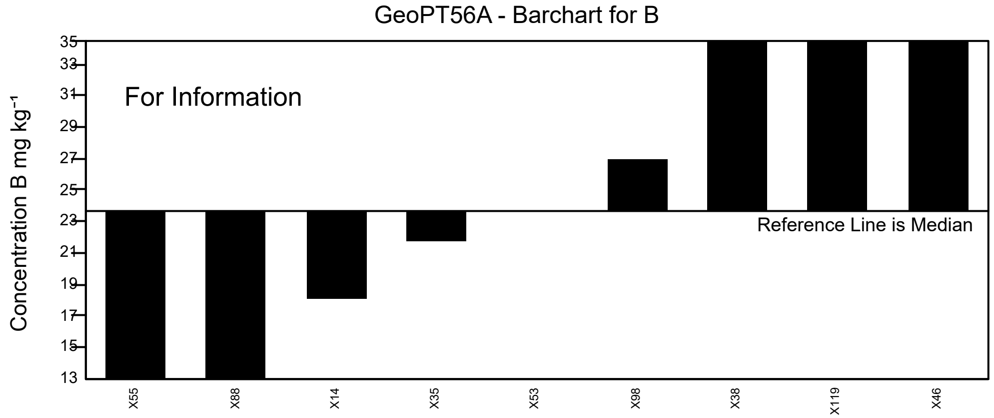


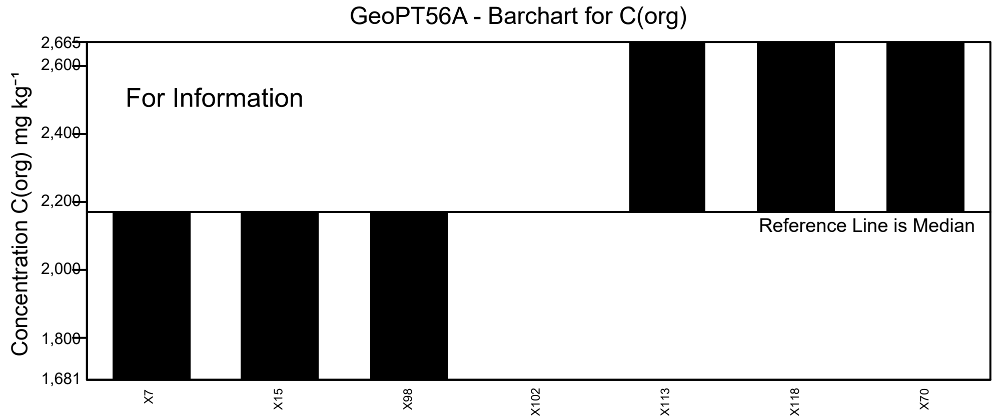
Figure 1: GeoPT56A - Calcareous ironstone, CFU-1. Data distribution charts for elements for which values were assigned or provisional values given for guidance. Horizontal lines show the limits for -2<z<2 for pure geochemistry labs (solid lines) and -2<z'<2 for applied geochemistry labs (pecked lines).

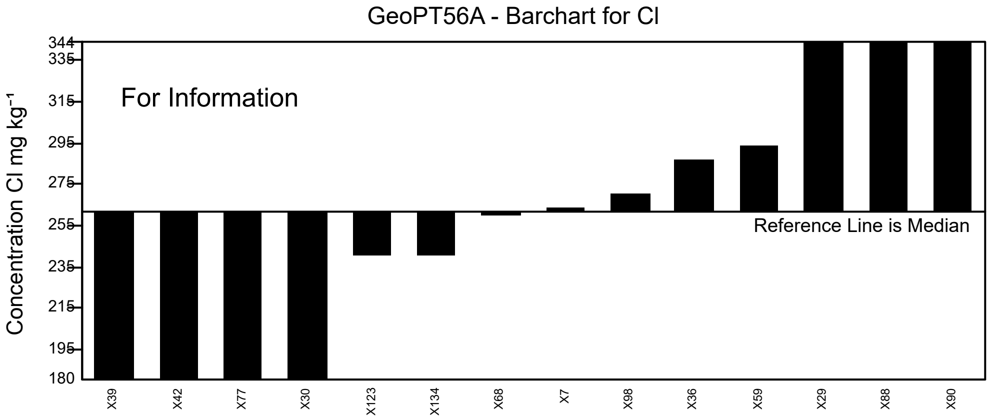

GeoPT56A - Barchart for Fe(II)O
Concentration Fe(II)O g 100g⁻¹
For Information
Reference Line is Median
2.81
2.73
2.63
2.53
2.43
2.33
2.23
2.13
2.05
X30 X35 X98 X19 X21 X93 X108 X76 X118 X4 X119

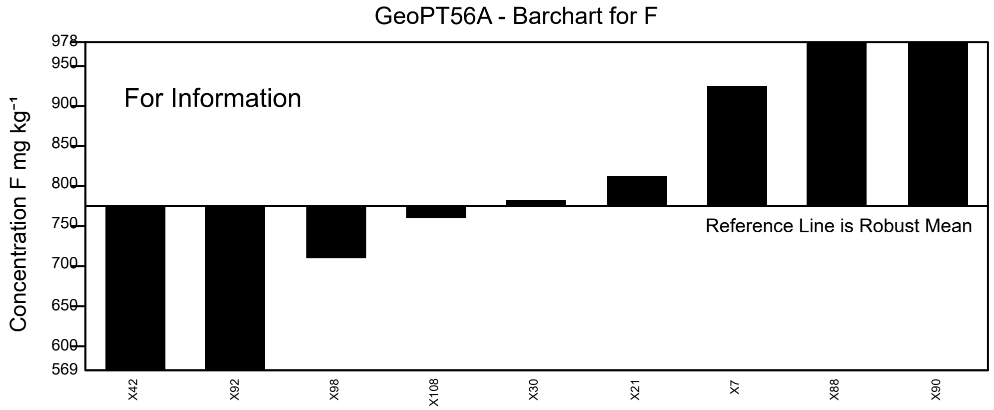

GeoPT56A - Barchart for H2O+
Concentration H2O+ g 100g⁻¹
For Information
Reference Line is Median
2.08
2.03
1.93
1.83
1.73
1.63
1.52
1.49
X118 X34 X83 X26 X11 X98 X30 X108

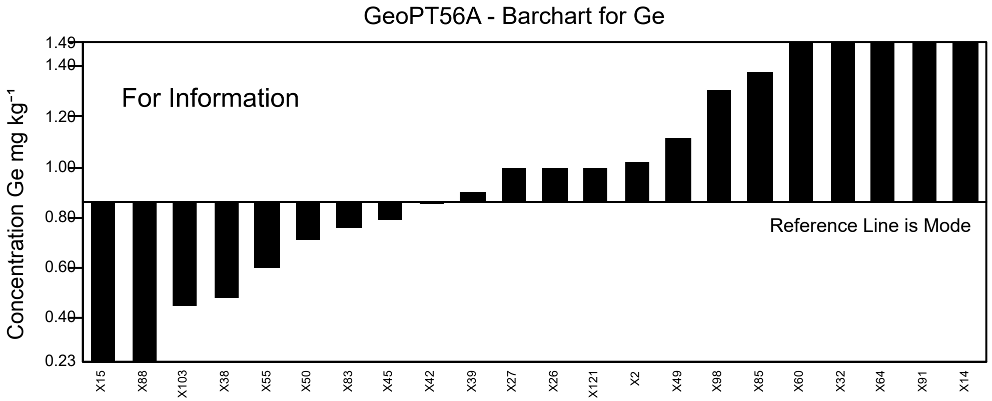

GeoPT56A - Barchart for Ag
Concentration Ag mg kg⁻¹
For Information
Reference Line is Mode
0.062
0.053
0.043
0.033
0.022
0.013
0.003
-0.006
X31 X15 X40 X49 X42 X121 X55 X34 X66 X18 X83 X38 X60 X87 X16


GeoPT56A - Barchart for B
Concentration B mg kg⁻¹
For Information
Reference Line is Median
35
33
31
29
27
25
23
21
19
17
15
13
X55 X88 X14 X35 X53 X98 X38 X119 X46


GeoPT56A - Barchart for C(org)
Concentration C(org) mg kg⁻¹
For Information
Reference Line is Median
2,665
2,600
2,400
2,200
2,000
1,800
1,681
X7 X15 X98 X102 X113 X118 X70


GeoPT56A - Barchart for Cl
Concentration Cl mg kg⁻¹
For Information
Reference Line is Median
344
335
315
295
275
255
235
215
195
180
X39 X42 X77 X30 X123 X134 X68 X7 X98 X36 X59 X29 X88 X90





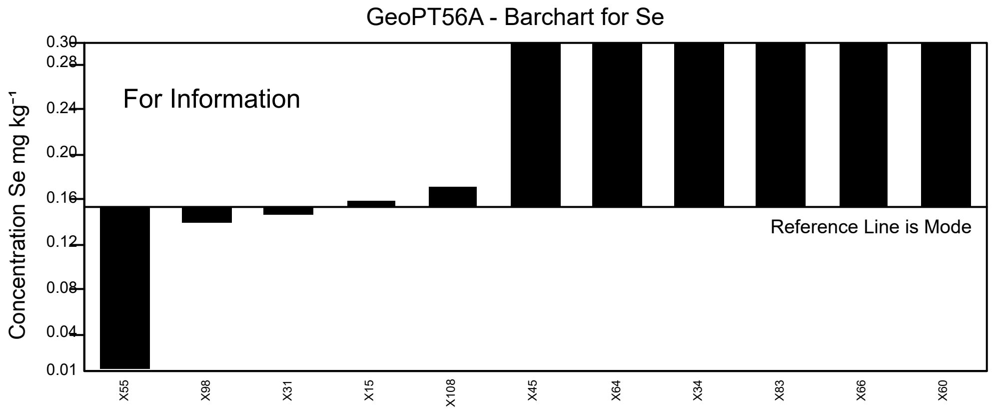
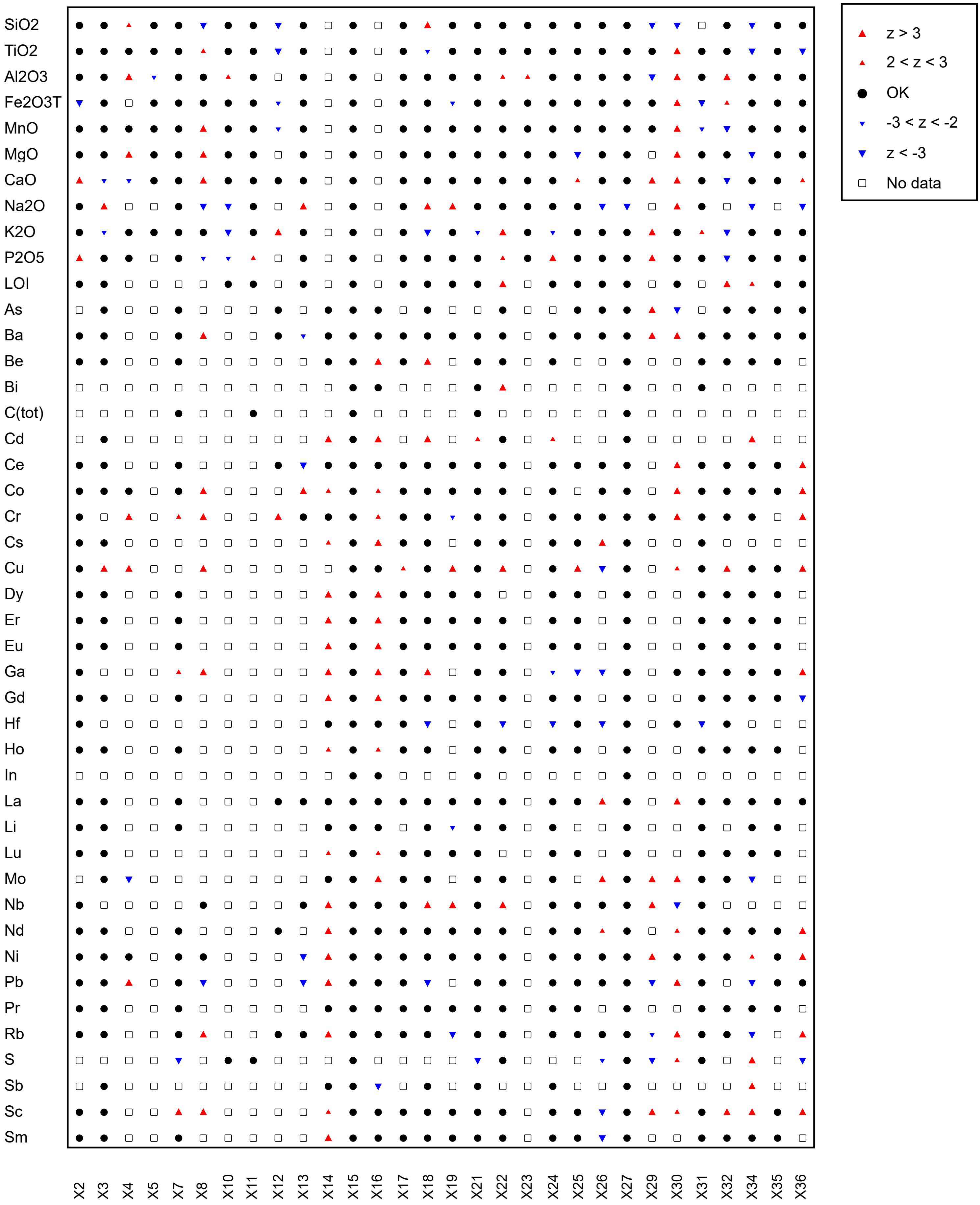


Figure 2: GeoPT56A - Calcareous ironstone, CFU-1. Data distribution charts provided for information only for elements for which values could not be assigned.

Multiple Z-Score Chart for GeoPT56A



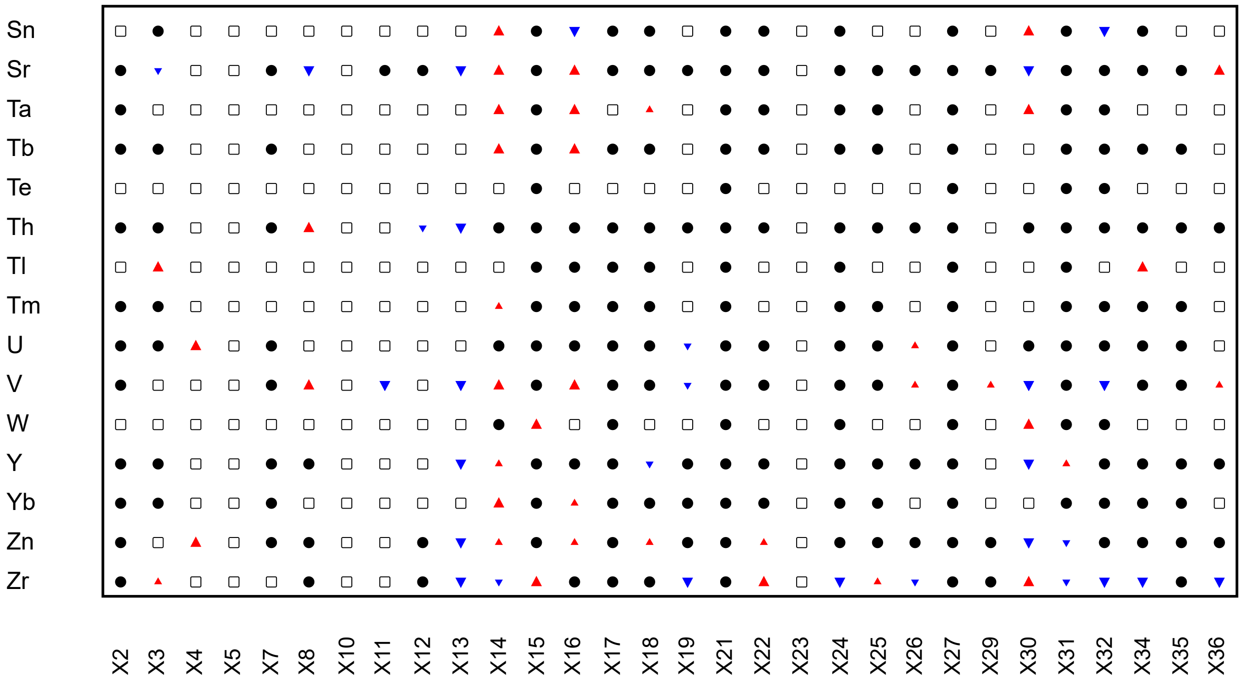
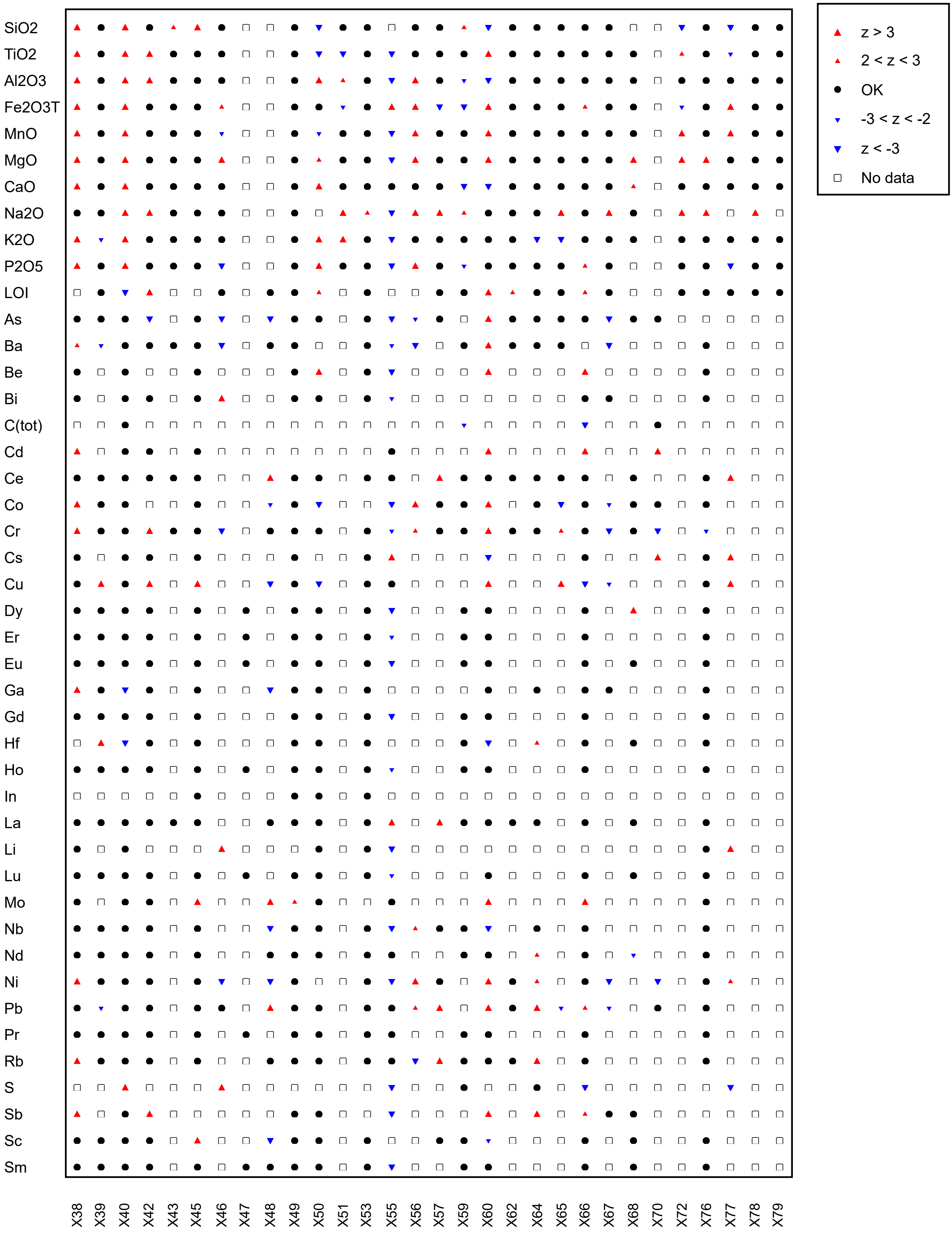


Figure 3: GeoPT56A - Calcareous ironstone, CFU-1. Multiple z-score charts for laboratories participating in the GeoPT56 A round. Symbols indicate whether or not an elemental result complies with the -2<z<+2 criteria (see key).

Multiple Z-Score Chart for GeoPT56A



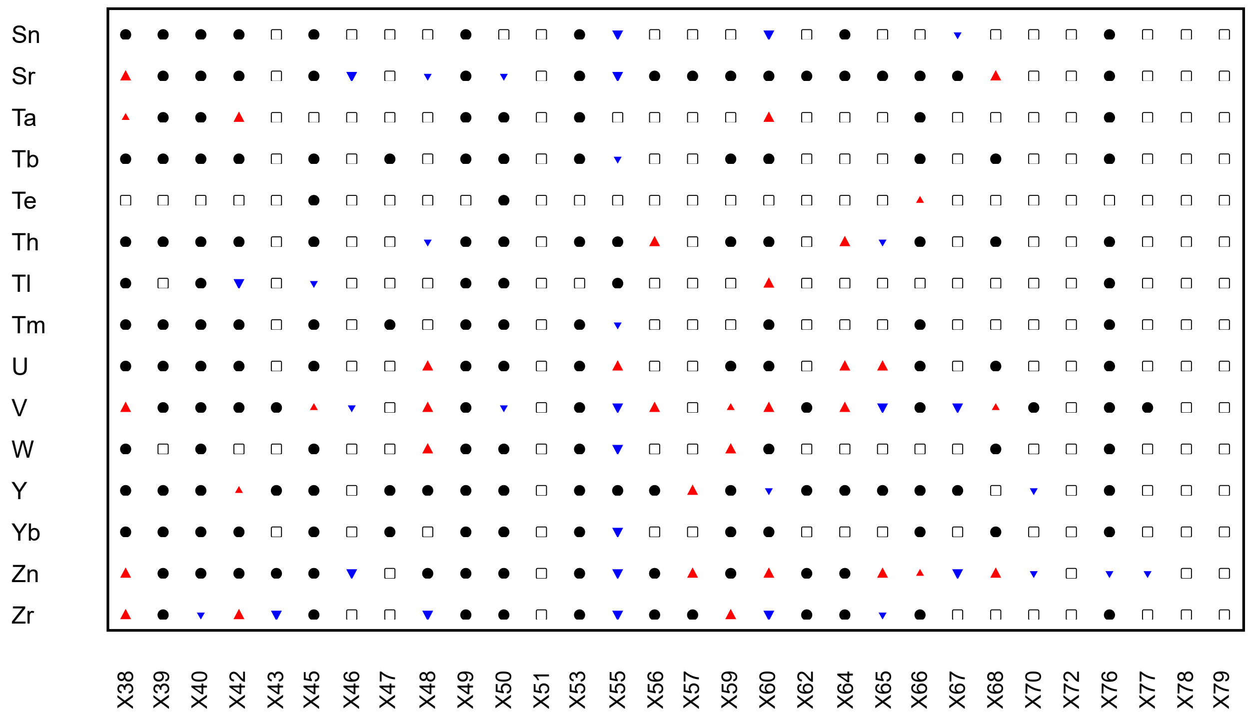
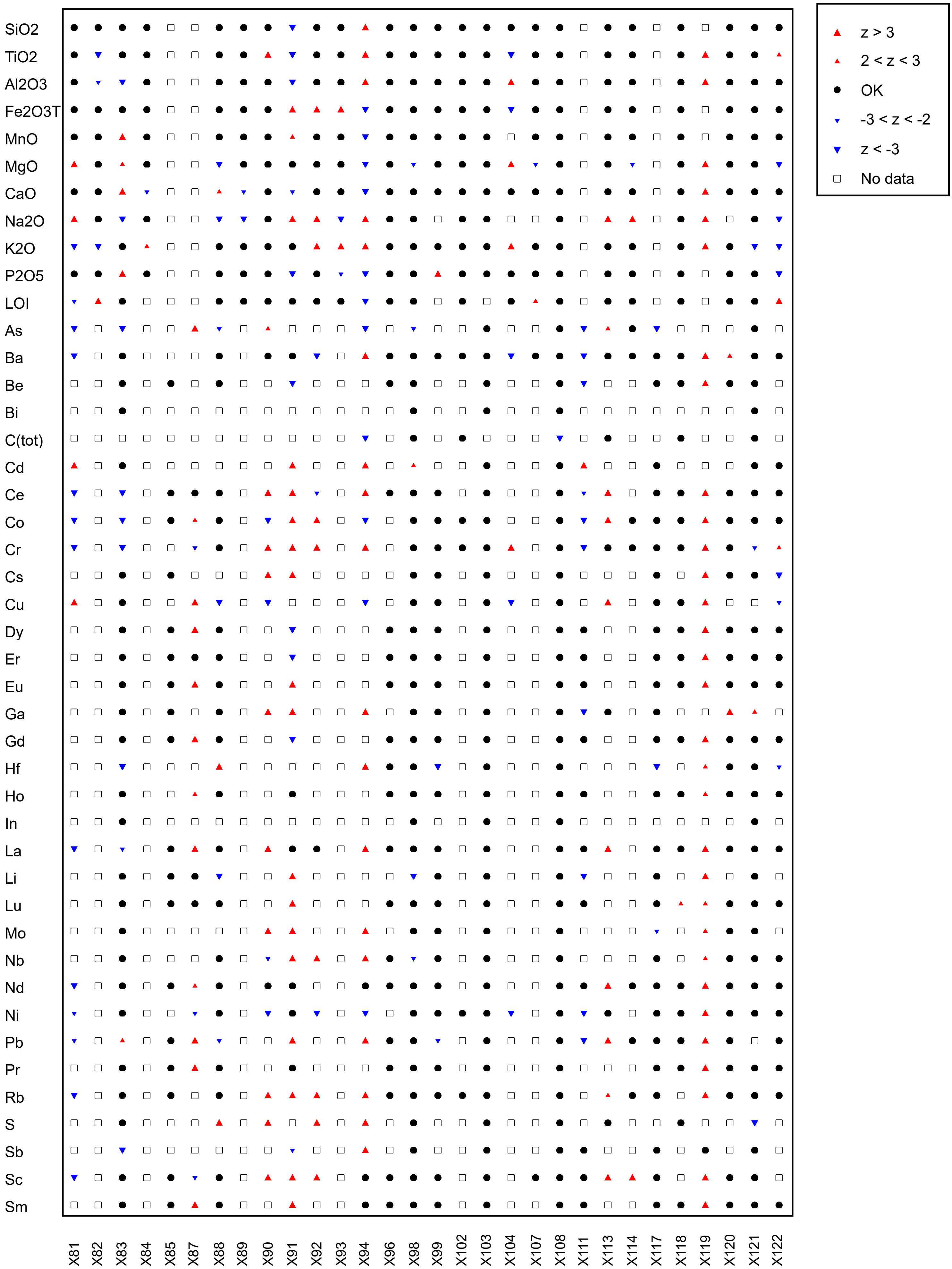


Figure 3: GeoPT56A - Calcareous ironstone, CFU-1. Multiple z-score charts for laboratories participating in the GeoPT56 A round. Symbols indicate whether or not an elemental result complies with the -2<z<+2 criteria (see key).

Multiple Z-Score Chart for GeoPT56A



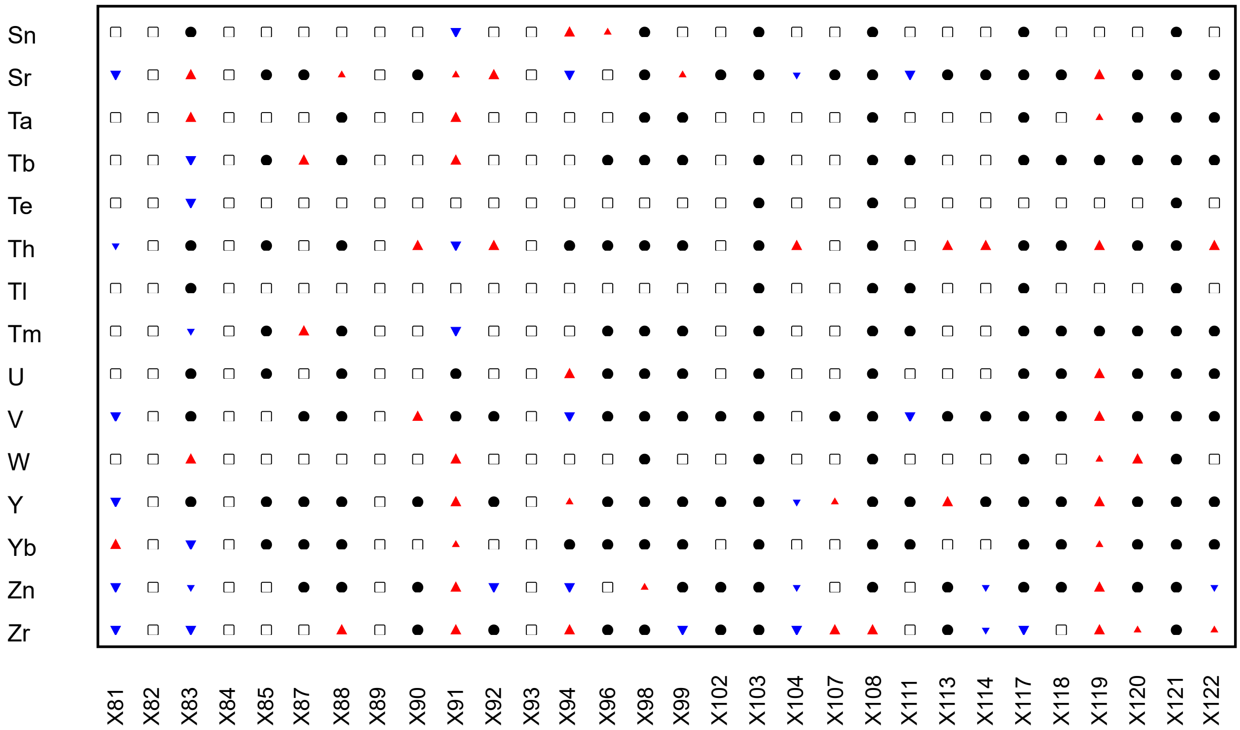
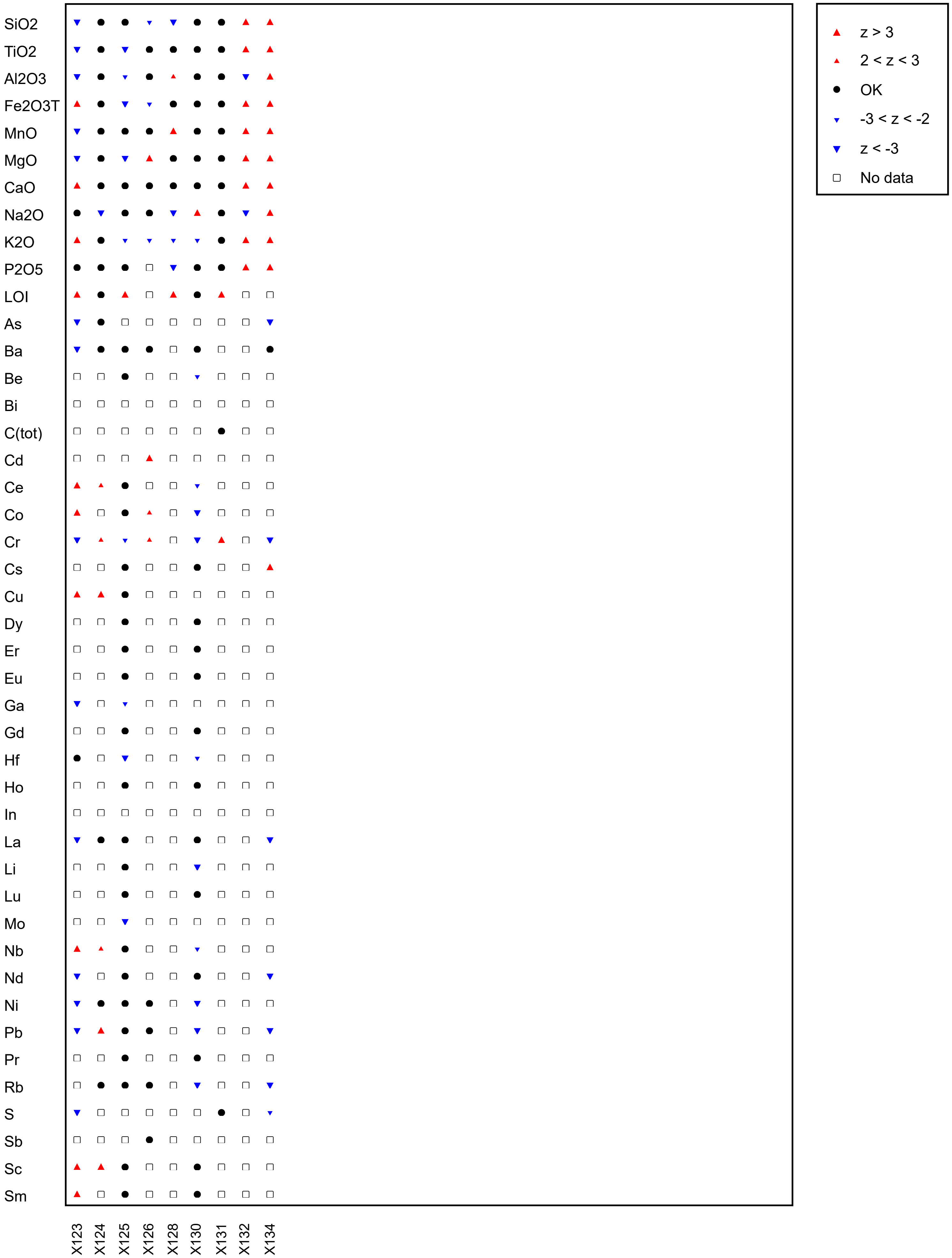


Figure 3: GeoPT56A - Calcareous ironstone, CFU-1. Multiple z-score charts for laboratories participating in the GeoPT56 A round. Symbols indicate whether or not an elemental result complies with the -2<z<+2 criteria (see key).

Multiple Z-Score Chart for GeoPT56A



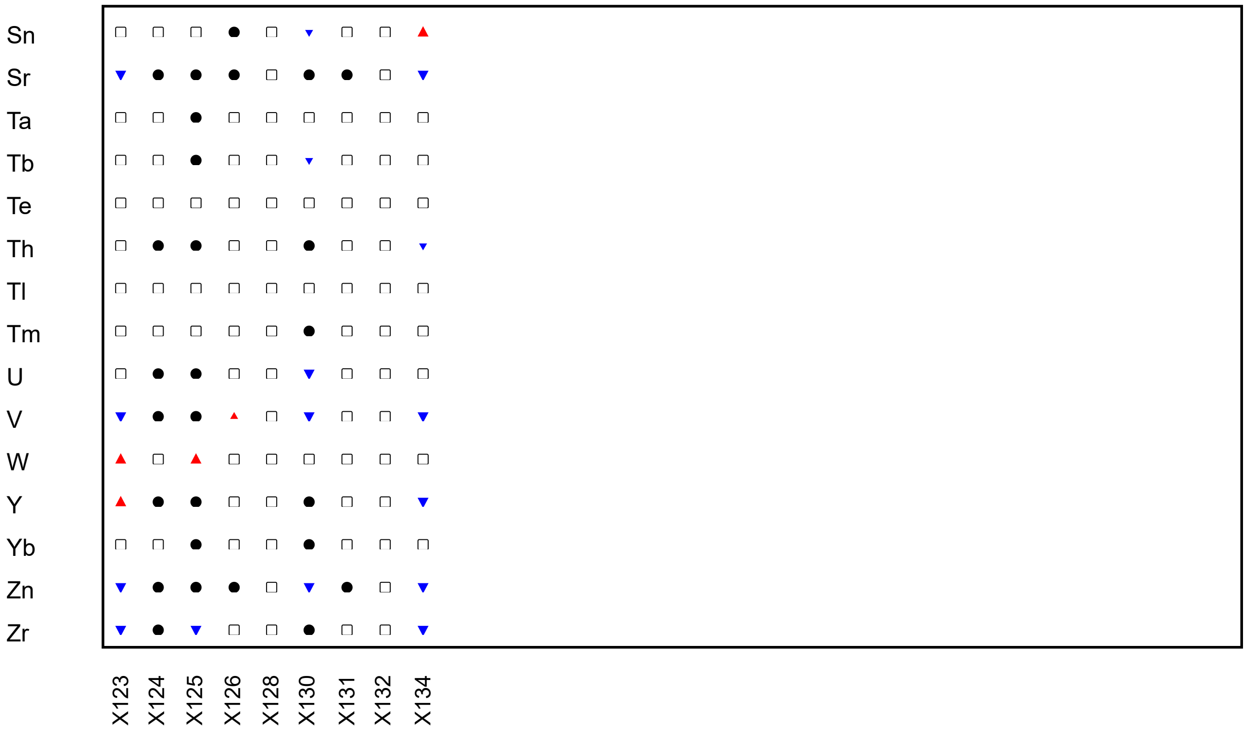


Figure 3: GeoPT56A - Calcareous ironstone, CFU-1. Multiple z-score charts for laboratories participating in the GeoPT56 A round. Symbols indicate whether or not an elemental result complies with the -2<z<+2 criteria (see key).