Bahnhofstraße 14 // D-37181 Hardegsen // T +49 (0)5505 94098-0
Geschäftsführer: Ralf Klaus Blecher // Amtsgericht Göttingen HRB 130263
www.crb-gmbh.de // labor@crb-gmbh.de

Analyse Service GmbH

RFA Ringversuch GeoPT 43, England - ADS-1, Dolerite

Veranstalter des Ringversuchs:	International Association of Geoanalysts and Geostandards Newsletter - GeoPT43
Ringversuchsmaterial:	ADS-1, Dolerite
RV geschlossen:	2018 – 7
Literatur:	Report - GeoPT43 Proficiency Testing Round 43 (Laborcode CRB = B100)

Hauptelemente [MA%]

	CRB	RV	1sRV	Z-Score
Na_2O	2,450	2,470	0,031	-0,230
MgO	5,560	5,590	0,150	-0,410
Al_2O_3	13,730	13,740	0,187	-0,030
SiO_2	51,020	51,010	0,436	0,010
P_2O5	0,296	0,300	0,012	-0,280
K_2O	0,990	0,999	0,028	-0,240
CaO	9,030	8,970	0,166	0,230
TiO_2	2,430	2,430	0,049	0,000
Fe_2O_3tot	13,290	13,220	0,257	0,200
MnO	0,173	0,171	0,005	0,260

Spurenelemente [µg/g]

	CRB	RV	1sRV	Z-Score
Ba	359,00	341,60	22,70	0,76
Ce	40,00	59,50	3,90	-3,79
Co	52,00	44,60	4,10	1,82
Cr	118,00	91,80	12,20	3,52
Cu	83,00	64,30	5,70	3,40
Ga	22,00	21,90	1,70	0,05
Hf	4,50	5,10	0,30	-0,94
La	30,00	26,90	2,20	1,17
Nb	15,00	17,40	1,50	-1,34
Nd	29,00	32,80	2,00	-1,21
Ni	54,00	52,80	4,90	0,27
Pr	8,00	7,80	0,40	0,27
Rb	22,00	25,30	1,50	-1,32
Sc	28,00	27,60	2,40	0,17
Sr	409,00	402,00	15,70	0,27
V	327,00	333,00	19,90	-0,27
Y	30,00	30,00	2,20	0,00
Zn	135,00	113,00	9,80	2,48
Zr	210,00	199,00	10,50	0,77

Legende

CRB: Ergebnisse CRB – **RV:** Ergebnisse Ringversuch -- **1s-RV:** Standardabweichung Ringversuch
Z-Score: Differenz des Messwertes vom Mittelwert des Ringversuchs -- ***** Wert nicht zertifiziert

Geo*PT*43 — AN INTERNATIONAL PROFICIENCY TEST FOR ANALYTICAL GEOCHEMISTRY LABORATORIES — REPORT ON ROUND 43 (Dolerite, ADS-1) / July 2018

Peter C. Webb[1]*, Philip J. Potts[1], Michael Thompson[2] and Charles J. B. Gowing[3]

[1]Faculty of Science, Technology, Mathematics and Computing, The Open University, Walton Hall, Milton Keynes, MK7 6AA, UK.

[2]School of Biological and Chemical Sciences, Birkbeck University of London, Malet Street, London WC1E 7HX, UK.

[3]British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, NG12 5GG, UK.

*Corresponding author, Peter Webb: e-mail geopt@macace.net

*Keywords: proficiency testing, quality assurance, Geo*PT*, Geo*PT*43, Round 43, ADS-1, Dolerite*

Abstract

Results are presented for Round 43 of the International Association of Geoanalysts' Proficiency Testing programme for analytical geochemistry laboratories. The test material distributed in this round of Geo*PT* was Dolerite, ADS-1, originally prepared at The Open University. In this report, the data contributed by 98 laboratories are listed, together with an assessment of consensus values, consequent *z*-scores and charts to show the distribution of contributed results and the overall performance of participating laboratories.

Introduction

This forty-third round of the international proficiency testing programme, Geo*PT*, was conducted in a similar manner to earlier rounds. The programme is designed to be part of the routine quality assurance procedures employed by analytical geochemistry laboratories. The programme is organised by the International Association of Geoanalysts and is conducted in accordance with a published protocol, recently revised and available at (*http://www.geoanalyst.org/wp-content/uploads/2018/06/GeoPT-revised-protocol-2018.pdf*). The overall aim of the programme is to provide participating laboratories with *z*-score information for their reported measurement results from which the laboratory can decide whether the quality of their data is satisfactory in relation both to their chosen fitness-for-purpose criteria and to the results submitted by other laboratories contributing to the round. In circumstances where *z*-scores are unsatisfactory, a participating laboratory is encouraged to investigate for unsuspected analytical bias and to take corrective action if this appears justified.

Steering Committee for Round 43: P.C. Webb (results coordinator), M. Thompson (statistical advisor), P.J. Potts and C.J.B. Gowing (analytical advisors).

Timetable for Round 43:
Distribution of sample: March 2018
Results submission deadline: 13th June 2018
Release of report: July 2018

Test Material details

Geo*PT*43: The Dolerite test material, ADS-1, was originally prepared at The Open University by John Watson in the 1990s from a batch of material similar to that used for Geo*PT*4. The material was reground and homogenised at the British Geological Survey before packeting and distribution. The test material was evaluated for homogeneity, and as a result, the sample was considered suitable for use in this proficiency test.

Submission of results

A total of 3555 results were submitted for Geo*PT*43 (ADS-1) by 98 laboratories as listed in Table 1. Measurement results that were designated by the participating laboratory as data quality 1 (see ***Z*-score analysis section** below for explanation) are shown in

bold and results of data quality 2 are shown underlined. Results from all laboratories submitting data were used to assess respective assigned values. Only one laboratory reported a value of '0' (i.e. zero) for this round. It is reassuring that almost every laboratory has now followed our ***Instructions to Analysts*****,** where we ask that values of zero for measurands other than LOI should not be reported. The single value reported was excluded from consideration in the data assessment process.

Assigned values

Following procedures described in earlier rounds, robust statistical procedures were used to derive assigned values [X_a] for measurands in this test sample: these consensus values being judged to be the best available estimates of the true composition. Values were assigned on the basis that: i) sufficient laboratories had contributed data for a measurand, and ii) visual assessment gave confidence that a substantial proportion of the results distribution was symmetrically disposed. Part of this assessment involved examining the distribution of results from barcharts of data contributed for each measurand (presented in Figures 1 and 2), and a variety of plots – permitting discrimination of data by technique of analysis and method of sample preparation – as developed by Thomas Meisel using the Shiny App (*https://www.shinyapps.io*) linked to the statistical package 'R'. This enabled us, when necessary, to refine the selection of consensus values by taking account of data distributions according to analytical procedure.

Many datasets were normally distributed, showing remarkable symmetry with relatively little dispersion of data, and consequently, in 17 cases, the robust mean was used to define an appropriate consensus value. However, for 26 datasets that were very slightly skewed, medians provided a more satisfactory estimator for defining consensus values. For 8 datasets that were more severely skewed, where the median did not provide a symmetrical distribution of data about the consensus, a mode was preferred to define the consensus.

In most cases when a mode was considered to be most appropriate, it was as a consequence of an asymmetric distribution of results often involving tails of somewhat variable data. Sometimes, but not always, the reason for a high tail was because XRF data had been reported for mass fractions close to the detection limit for the technique (e.g. for Cs, Sb, Ta, Th, U and W) and those measurement results consequently had poor precision and accuracy.

For many major elements, XRF powder pellet values were more variable, and frequently biased to low values, compared to data reported by other procedures and thus caused a greater dispersion of these datasets. For Nb, many of the lower values were XRF results, both on powder pellets and fusion discs. For S, it might have been possible to set a provisional value based on a mode of the dataset at around 595 mg kg^{-1}, but the dispersion of the whole dataset ruled that out. A spread of high and low values reported by XRF and the likelihood that three laboratories had reported their results in the wrong units degraded the dataset.

Possibly the most dispersed dataset was for LOI. The variability was most likely to be due to variable conditions used by participants for the loss on ignition determination, there being a significant quantity of Fe(II)O present in this test material, which was most likely incompletely oxidised to $Fe(III)_2O_3$. Unfortunately not enough participants provide sufficient details of their LOI procedure for us to be able to analyse satisfactorily and explain the variability of these results. This is in spite of our **request** for provision of **full information about temperature and time of ignition** in the ***Instructions to Analysts*** that accompanied the test material and in the Addendum to the Round 42 report. We request that participants read the Addendum to this report and update their LOI procedure on the Geo*PT* website accordingly.

Use of modes as location estimators helped to avoid bias due to asymmetric tailing in several datasets. In four cases, modes were sufficiently well defined by a consensus of results acquired by appropriate techniques

to justify their designation as assigned values. Procedures used to determine a mode included the estimation of the mass fraction corresponding to the maximum value of the kernel density distribution for the dataset as described by Thompson (2017) and the estimation of the Lientz mode (Lientz, 1969) as provided by the "modeest" package which runs in 'R' (*https://cran.r-project.org/web/packages/modeest/modeest.pdf*). Modes are suitably robust location estimators that can provide consensus values representing the most coherent part of a data distribution where data are symmetrically disposed, whereas the dataset as a whole may be asymmetric.

Table 2 lists assigned and provisional values for 10 major components and 41 trace elements in Geo*PT*43 (ADS-1). Barcharts for the 51 measurands of Geo*PT*43 that were judged to have satisfactory distributions for consensus values to be designated as assigned or provisional values are shown in Figure 1. These are: SiO_2, TiO_2, Al_2O_3, Fe_2O_3T, MnO, MgO, CaO, Na_2O, K_2O, P_2O_5, Ba, Be, Ce, Co, Cr, Cs, Cu, Dy, Er, Eu, Ga, Gd, Hf, Ho, La, Li*, Lu, Mo*, Nb, Nd, Ni, Pb, Pr, Rb, Sb*, Sc, Sm, Sn*, Sr, Ta, Tb, Th, Tl, Tm, U, V, W*, Y, Yb, Zn and Zr. Of these, provisional values were given to the 5 measurands marked '*'. Instances of provisional status were recorded because either: i) a relatively small number of results (<15) contributed to the consensus, or ii) the results were unduly dispersed in relation to the target value, or iii) the distribution of values was severely skewed.

Bar charts for the 15 measurands: Fe(II)O, H_2O^+, LOI, Ag, As, Bi, C(tot), Cd, Cl, F, Ge, In, S, Se and Te are plotted in Figure 2 for information only, as the data were either insufficient in number, or the distribution was too highly skewed or too variable for the 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. For Geo*PT*43, 1780 results of data quality 1 were submitted.

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. For Geo*PT*43, 1775 results of data quality 2 were submitted.

The target standard deviation (H_a) for each measurand assessed was calculated from a modified form of the Horwitz function as follows:

$$H_a = k.X_a^{0.8495}$$

Where X_a is the mass fraction of the element; the factor k = 0.01 for pure geochemistry laboratories and k = 0.02 for applied geochemistry laboratories.

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

$$z = [X - X_a] / H_a$$

Where X is the contributed measurement result, X_a is the assigned value and H_a is the target standard deviation (all as mass fractions). *Z*-score values for results contributed to Geo*PT*43 are listed in Table 3. Results designated as data quality 1 are shown in bold: results of data quality 2 are shown underlined. *Z*-scores derived from provisional values are shown in italics.

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 participant). If the *z*-score for any element falls outside this range, especially if it is outside the range $-3<z<3$, contributing laboratories are advised to examine their procedures, and if necessary, take action to ensure that determinations are not subject to unsuspected analytical bias.

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 simple to identify whether the results 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.

Participation in future rounds

The benefit from proficiency testing arises from regular participation and laboratories are invited to contribute to Round 44, the test sample for which will be distributed during September 2018.

Acknowledgements

The authors thank Cynthia Turner for much-valued assistance in distributing this sample and Thomas Meisel for development of software which has greatly assisted the investigation of data according to analytical procedure and facilitated analysis of datasets involving alternative modes as provided in the package “modeest”, which is available as an “R” package (*https://cran.r-project.org/web/packages/modeest/modeest.pdf*).

References

Lientz (1969) On estimating points of local maxima and minima of density functions. Nonparametric Techniques in Statistical Inference (ed. M.L. Puri, Cambridge University Press, p.275-282.

Thompson, M. (2017) On the role of the mode as a location parameter for the results of proficiency tests in chemical measurement. *Anal. Methods*, **9**, p.5534-5540.

ADDENDUM — NOTICE TO ANALYSTS

Repeat warning to analysts regarding reporting of Loss on Ignition procedures:

It is necessary to **reiterate** that in the ***Instructions for Analysts*** accompanying your samples, there was a "***specific request*** *for* ***procedures involving ignition or fusion,*** *to ensure that you provide* ***additional details*** *where appropriate*" and further details were provided in the notes, viz. "***For procedures involving fusion, sintering or ignition, particularly LOI determinations: Please ensure*** *that you have specified the* ***temperature used*** *and where appropriate, the* ***end-point criterion****, e.g. duration of ignition, as* ***Additional Details****, in your descriptions of all relevant procedures.*"

Our thanks to those who have already complied with this request, but it appears that in many cases it has been ignored. Please make efforts to provide these details for future rounds, as it will assist in assessing data variations. Also, a large number of laboratories are listing their LOI procedure as the same as that employed for major elements, rather than providing specific details. It is important to provide information that is appropriate for every analyte.

It would help if details of gravimetric procedures were included under **Analytical Technique details** rather than under **Sample Preparation details**. For gravimetric analysis, other than drying, which should in any case be carried out according to our instructions, there is no other sample preparation involved.

Appendix 1

Publication status of proficiency testing reports. Previous 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, 22 127-156.

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 microgranite) and 6A (CAL-S: CRPG limestone). International Association of Geoanalysts: 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: 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: 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 slate). International Association of Geoanalysts: 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: 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: 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: Unpublished report.

Geo*PT*13
Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and Kaspar 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: 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 granite). International Association of Geoanalysts: 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: 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: 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: 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: 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: 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: 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 (Granite, MGT-1). International Association of Geoanalysts: Unpublished report.

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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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 (Granite, GRI-1) / January 2014. International Association of Geoanalysts: 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 (Tonalite, TLM-1) / August 2014. International Association of Geoanalysts: 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: 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: 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: 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: 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: 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: 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: 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.

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: 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: 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: 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: Unpublished report.

Table 1 - GeoPT43 Contributed data for Dolerite, ADS-1. 13/06/2018

Lab Code		B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B14	B16
SiO2	g 100g-1	49.882	50.48	51.42	**50.57**	41.21	52.08	51.1	**51.13**	**48.41**	**51.44**	50.75	50.96	50.98
TiO2	g 100g-1	2.472	2.28	2.44	**2.47**	2.67	2.1	2.39	**2.42**	**2.35**	**2.45**	2.4	2.4	2.43
Al2O3	g 100g-1	13.688	14.02	13.77	**13.7**	16.91	12.9	13.65	**13.77**	**13.24**	**13.74**	13.72	13.6	13.73
Fe2O3T	g 100g-1	13.117	12.66	13.36	**12.94**	15.87	12.66	13.4	**13.44**	**13.01**	**13.42**	13.14	13.3	13.27
Fe(II)O	g 100g-1							7.94	**7**				7.8	
MnO	g 100g-1	0.168	0.16	0.2	**0.18**	0.21	0.17	0.17	**0.18**	**0.168**	**0.17**	0.17	0.169	0.17
MgO	g 100g-1	5.455	6.36	5.91	**5.43**	7.91	6.55	5.56	**5.59**	**5.69**	**5.46**	5.7	5.68	5.52
CaO	g 100g-1	9.214	8.86	8.38	**8.9**	11.01	8.5	8.99	**9.1**	**9.04**	**9.72**	8.93	9.05	8.77
Na2O	g 100g-1	2.386	2.47	2.41	**2.43**	0.23	2.28	2.47	**2.33**	**2.33**	**2.42**	2.51	2.47	2.34
K2O	g 100g-1	0.983	0.88	1.06	**0.98**	1.45	0.97	0.98	**0.99**	**0.99**	**0.91**	1	1.02	1.01
P2O5	g 100g-1	0.295	0.35	0.3	**0.31**	0.5	0.3	0.29	**0.3**	**0.29**	**0.3**	0.293	0.31	0.29
H2O+	g 100g-1			0.77				1.38						
CO2	g 100g-1								**0.13**					
LOI	g 100g-1	0.81		0.62		1.35	1.29	0.65	**0.74**	**0.98**		1.28	0.7	1.18
Ag	mg kg-1													
As	mg kg-1		1			72		0.91						
Au	mg kg-1													
B	mg kg-1					46								
Ba	mg kg-1	329.4	391		**346**	294	370	353	**331**	**334**			339	341
Be	mg kg-1	1				0.81		1					1.12	
Bi	mg kg-1													
Br	mg kg-1		2											
C(org)	mg kg-1													
C(tot)	mg kg-1											404.192		
Cd	mg kg-1					0.25		0.098						
Ce	mg kg-1	58.52	51		**53**	48.7	57.18	61.4		**37**			60.6	
Cl	mg kg-1		72											
Co	mg kg-1	43.7	45		**48**	37.4	1	45.3	**39**	**35**			43	43
Cr	mg kg-1	88.8	69	205	**82**	81.5	128	82	**98**	**80**			95	87
Cs	mg kg-1		2				0.62	0.49						
Cu	mg kg-1	59.1	87		**62**	56.5	68	66	**70**	**56**			60	64
Dy	mg kg-1	6.09			**5**	5.06	5.92	6.36						
Er	mg kg-1	3.03			**2.3**	2.6	2.75	3.15						
Eu	mg kg-1	2.23			**2.1**	1.8	2.08	2.22					2.02	
F	mg kg-1													
Ga	mg kg-1	22.4	22				28.7	23.9	**17**	**16**				20
Gd	mg kg-1	6.13			**6**	6	6.88	7.2						
Ge	mg kg-1						4.04							
Hf	mg kg-1	4.87	3				5.95	4.96	**5**				5.33	
Hg	mg kg-1													
Ho	mg kg-1	1.16			**1**		1.09	1.18						
In	mg kg-1							0.098						
Ir	mg kg-1													
La	mg kg-1	25.1	24		**25**	22.5	24.22	27.6					27.5	
Li	mg kg-1				**15**	5		15.2					13.8	
Lu	mg kg-1	0.35			**0.3**	0.3	0.36	0.36						
Mo	mg kg-1	2.77				3		3.5						
Nb	mg kg-1	15.88	22		**15**		18	16.8	**16**	**17**			17.5	16
Nd	mg kg-1	32.28	33		**27**	27.3	29.58	33.6					35.1	
Ni	mg kg-1	52.7			**50**	42.19	38	57.9	**115**	**48**			52	52
Pb	mg kg-1	13.52	14		**14**	8	12	13.7	**11**	**24**			14	14
Pd	mg kg-1													
Pr	mg kg-1	7.51			**6**	6.16	7.08	8.14						
Pt	mg kg-1													
Rb	mg kg-1	24.74	32		**24**		25	25.6	**26**	**23**			24.4	25
Re	mg kg-1													
Rh	mg kg-1													
Ru	mg kg-1													
S	mg kg-1		376	40		0.15			**357**	**400**			600	
Sb	mg kg-1					0.13								
Sc	mg kg-1	27.5	30		**23**	22.16	14	28.8	**26**					26
Se	mg kg-1					59.33								
Sm	mg kg-1	8.38			**7**	7.21	8.06	9.19						
Sn	mg kg-1	19.49	13			11.64		18.2					18	21
Sr	mg kg-1	402.180	409	507	**409**	445	400	421	**407**	**398**			395	394
Ta	mg kg-1	1.02	17				1.48	1.14						
Tb	mg kg-1	0.94			**1**	0.89	1.05	1.03						
Te	mg kg-1													
Th	mg kg-1	2.88	10			9.13	2.63	3.09						
Tl	mg kg-1							0.153						
Tm	mg kg-1	0.4			**0.3**	0.34	0.4	0.41						
U	mg kg-1	0.58	3		**2**		0.49	0.67						
V	mg kg-1	331.7	217		**330**	300	310	353	**343**	**346**			333	316
W	mg kg-1							0.488						
Y	mg kg-1	26.14	33		**28**	23.1	27	29.1	**29**	**27**			30.5	30
Yb	mg kg-1	2.57			**2**	2.14	2.41	2.55						
Zn	mg kg-1	110	110	241	**107**	137	127	119	**116**	**112**			108	102
Zr	mg kg-1	187.6	211		**202**		201	206	**203**	**208**			196	204

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

Table 1 - GeoPT43 Contributed data for Dolerite, ADS-1. 13/06/2018

Lab Code		B17	B19	B20	B21	B22	B23	B24	B25	B28	B29	B30	B31	B33
SiO2	g 100g-1	51.055	50.87	51.38	50.58	51.36		50.78	51.02	38.5	50.33	50.07		49.46
TiO2	g 100g-1	2.407	2.46	2.41	2.34	2.43	2.81	2.49	2.319	0.962	2.121			2.497
Al2O3	g 100g-1	13.696	13.66	13.6	14.19	13.62		13.3	13.763	8.6	13.62	16.21		13.71
Fe2O3T	g 100g-1	13.201	13.07	13.26	13.01	13.15	14.3	13.58	13.494	12.911	13.58	13.04		13.57
Fe(II)O	g 100g-1													
MnO	g 100g-1	0.172	0.16	0.17	0.168	0.17		0.165	0.160	0.156	0.173			0.178
MgO	g 100g-1	5.584	5.53	5.39	5.653	5.64	5.87	5.79	5.539		5.599	5.86		5.531
CaO	g 100g-1	8.97	8.92	8.99	9.022	8.95	9.09	9.4	8.863		8.309	9.13		9.923
Na2O	g 100g-1	2.393	2.47	2.28	2.482	2.29	2.6	2.53	2.431		2.441	2.77		2.254
K2O	g 100g-1	0.985	1.01	1.06	0.982	1	1.15	1.02	1.002	0.867	0.96	1.03		1.071
P2O5	g 100g-1	0.297	0.29	0.33	0.304	0.29		0.303	0.300	1.468	0.32			0.267
H2O+	g 100g-1								2.022	0.4				
CO2	g 100g-1													
LOI	g 100g-1	0.69	1.07	1.63	1.295	1.04		0.8	1.021	1.51				1.216
Ag	mg kg-1							6.5		23	0.064			0.038
As	mg kg-1								2.921	3.5	1.683			2.418
Au	mg kg-1													
B	mg kg-1													
Ba	mg kg-1	331.3	312	390	337.5	336	344	352.3	315.8		335.6		361.480	322
Be	mg kg-1				1.2	1.09					1.121			0.81
Bi	mg kg-1										0.012			0.02
Br	mg kg-1													
C(org)	mg kg-1													335
C(tot)	mg kg-1							500	342					453
Cd	mg kg-1							8.1		10		0.068		0.07
Ce	mg kg-1	59.9			59.88	58.5	57.2	66	63.12		59.8		59.72	51.4
Cl	mg kg-1								73.29					380
Co	mg kg-1	44.6	42	40	44.3	44.9	49.2	48.1	43.83	113	43.9			53.9
Cr	mg kg-1	90.8	76	125	93.2	86.8	90.7	85.8	87.62	60	90.2			76
Cs	mg kg-1				0.481	0.48		2.7			0.443		0.48	0.584
Cu	mg kg-1	62.9	53	69	66.14	64.5	65.7	58.9	63.89	60	65.59			62.9
Dy	mg kg-1				6.09	6.14	6.2		6.9		5.97		5.91	4.84
Er	mg kg-1				3.036	3.12	2.93		3.503		2.87		3.09	2.82
Eu	mg kg-1				2.16	2.2	2.21		2.476		2.12		2.25	2.01
F	mg kg-1								486.3					
Ga	mg kg-1	22.2	24	21	34.34	23		21.6	24.6		21		21.24	19.1
Gd	mg kg-1	8.8			7.16	6.98	7.4		8.023		7.28		7.06	6.59
Ge	mg kg-1										2.034			
Hf	mg kg-1				5.2	5.37		3.5	5.476		5.139		5.14	4.69
Hg	mg kg-1													
Ho	mg kg-1				1.163	1.18	1.09		1.305		1.22		1.21	1.07
In	mg kg-1										0.156			0.16
Ir	mg kg-1													
La	mg kg-1	30.8			26.88	27.8	24.9	33.2	28.03		26.98		27.39	24.5
Li	mg kg-1				14.1		14.4				12.03			12.5
Lu	mg kg-1				0.35	0.4	0.34		0.417		0.352		0.36	0.33
Mo	mg kg-1				3.98			2.9		5	2.5			2.37
Nb	mg kg-1	17.7		17		13.3		15	18.07	19	18.5		18.28	16.2
Nd	mg kg-1	32.5			32.55	33.9	31.8	31.4	35.73		31.74		34.51	35.7
Ni	mg kg-1	52.6	45	54	52.76	50.1	54.3	46.2	52.94	135.5	53.99	38.94		39.8
Pb	mg kg-1	17.1		14	16.39	16.1	15.01	9.8	14.6	14.3	12.03			9.72
Pd	mg kg-1													
Pr	mg kg-1				7.78	8.16	7.39		8.398		7.6		7.94	2.4
Pt	mg kg-1													
Rb	mg kg-1	25.9		29	26.1	25.4		24.6		15	24.9		24.81	26.5
Re	mg kg-1													
Rh	mg kg-1													
Ru	mg kg-1													
S	mg kg-1							620		1235				457
Sb	mg kg-1										0.08			0.351
Sc	mg kg-1		24	26	27.6	28.6		23.7	27.38		27.62		27.54	22
Se	mg kg-1									3.35	2.39			0.19
Sm	mg kg-1				8.51	8.87	8.95	7.1	9.842		8.15		9.18	6.14
Sn	mg kg-1							18.1			11.1		21.26	13.5
Sr	mg kg-1	401.3	346	392	403.4	402	399	381.7	399.780		399		367.670	511
Ta	mg kg-1				0.98	0.76			1.333		1.132		1.04	3.45
Tb	mg kg-1				1.067	1.12	1.04		1.193		1.105		1.07	2.16
Te	mg kg-1							2.1			0.049			0.02
Th	mg kg-1				3.06	3.14	2.95	2.7	3.413		3.039		3.17	3.25
Tl	mg kg-1										0.153			0.18
Tm	mg kg-1					0.46	0.4		0.46		0.402		0.45	0.38
U	mg kg-1				0.63	0.66	0.65	2.5	0.793		0.635		0.74	0.64
V	mg kg-1	336.9	311	360	324.1	347	356	276.7	343.2	433	319.7			336
W	mg kg-1							1.3		114	0.436		1.29	0.55
Y	mg kg-1	31.7		32	31.31	29.9	27.1	28.6	29.208	23	30.3		29.08	23.3
Yb	mg kg-1				2.51	2.7	2.38	1.3	2.728		2.24		2.43	2.35
Zn	mg kg-1	113	99	117	122.6	117	125	106.1	155.170	122	116.9	74.13		92
Zr	mg kg-1	194.2		243	209.2	199		192.2	200.8	168	196.2		200.010	185

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

Table 1 - GeoPT43 Contributed data for Dolerite, ADS-1. 13/06/2018

Lab Code		B34	B35	B36	B37	B39	B40	B41	B42	B43	B44	B45	B46	B48
SiO2	g 100g-1	51.102	50.78	51.16	50.33	51.78	51.011	51.16	51.47	52.04	50.19	51.54	51.27	50.808
TiO2	g 100g-1	2.421	2.4	2.43	2.41	2.35	2.423	2.4	2.41	2.42	2.458	2.413	2.36	1.77
Al2O3	g 100g-1	13.829	13.74	13.64	13.45	13.49	13.719	13.72	13.63	13.67	14.03	13.68	13.89	14.065
Fe2O3T	g 100g-1	13.085	13.02	13.02	13.1	12.95	13.283	13.22	13.27	13.24	13.34	12.98	13.15	12.99
Fe(II)O	g 100g-1			7.19										7.733
MnO	g 100g-1	0.17	0.17	0.17		0.17	0.170	0.17		0.17	0.169	0.171	0.165	0.178
MgO	g 100g-1	5.62	5.48	5.43	5.61	5.45	5.66	5.58	5.36	5.65	5.76	5.43	5.62	6.483
CaO	g 100g-1	8.985	8.84	9.11	9.03	8.7	9.07	8.87	8.96	9.02	8.81	9.02	8.77	8.847
Na2O	g 100g-1	2.605	2.47	2.44		2.47	2.528	2.48	2.47	2.44	2.58	2.49	2.58	2.378
K2O	g 100g-1	1.024	1	0.99	1	0.95	1.001	1	0.99	1	0.95	1.01	0.99	0.954
P2O5	g 100g-1	0.297	0.3	0.3	0.31	0.26	0.303	0.3	0.32	0.3	0.307	0.29	0.296	0.284
H2O+	g 100g-1					1.19			0.77					1.696
CO2	g 100g-1					0.17								
LOI	g 100g-1	0.63	1.05	1.11	0.86	1.42	0.873	0.64	0.7	1.22	0.8		0.43	0.925
Ag	mg kg-1							0.11						
As	mg kg-1			27.1		5.11		0.7						
Au	mg kg-1													
B	mg kg-1													
Ba	mg kg-1	374.2	404.590	355	332	330.140	316.8	358		374.2	327	336	330	332
Be	mg kg-1		1.2	1.46			1.04	1.09					1.08	
Bi	mg kg-1					0.05		0.01						
Br	mg kg-1									0.4				
C(org)	mg kg-1													
C(tot)	mg kg-1								476			360		514
Cd	mg kg-1			0.2				0.13						
Ce	mg kg-1	65.6	59	61.7	61	60.74	58.9	65.5		72	69.3		57	
Cl	mg kg-1									25				
Co	mg kg-1	43.6	45.2	44.8	48	46.08	46.5	46.1		40.5			43.8	
Cr	mg kg-1	89.3	93.9	91.3		97.26	97.5	100		84.5		95	85	
Cs	mg kg-1		0.6	0.77		0.39	0.48	0.51					0.45	
Cu	mg kg-1	55.3	62.7	63.9	75	75.29	67.7	71.2		53.2		61	67	
Dy	mg kg-1		6.1	6.06		6.09	6.04	6.23			7.21		5.95	
Er	mg kg-1		3	2.99		3.23	3.13	3.37			3.7		2.95	
Eu	mg kg-1		2.2	2.24		2.38	2.2	2.24			2.7		2.12	
F	mg kg-1									477				913
Ga	mg kg-1	23	22	23.7		20.38	21.11	24		19.7			21.8	
Gd	mg kg-1		6.9	7.71		7.33	7.09	7.38			8.48		7.05	
Ge	mg kg-1	0.7		0.85		2.31		0.21						
Hf	mg kg-1	3.9	5.1	5.55		5.07	5.44	5.4					4.95	
Hg	mg kg-1													0.007
Ho	mg kg-1		1.2	1.16		1.15	1.16	1.2			1.39		1.12	
In	mg kg-1					0.1		0.95						
Ir	mg kg-1													
La	mg kg-1	30.5	27.3	27.5		26.85	26.22	27.3		28.5	31.1	25	25.5	
Li	mg kg-1			14.8			12.95	14.2					12.9	
Lu	mg kg-1		0.4	0.36		0.37	0.37	0.39			0.38		0.342	
Mo	mg kg-1	3.8	3.3	2.71		1.99	3.5	3.58		3.2			3.04	
Nb	mg kg-1	16	17.6	19.4	16	17.2	17.44	17.4		16.9			17.5	
Nd	mg kg-1	39.4	33.1	33.1		36.2	31.2	34.3		32.7	38.6		34	
Ni	mg kg-1	50.7	55.5	46.4	59	42.2	50.93	55.4		51		52	50	
Pb	mg kg-1	11.2	16.4	13.1		16.02	12.32	16.5		16.2			11.2	
Pd	mg kg-1													
Pr	mg kg-1		7.7	7.95		7.33	7.39	8.07			9.4		7.52	
Pt	mg kg-1													
Rb	mg kg-1	24.3	26.5	28.3	25	24.31	27.17	26.8		24.6			28	
Re	mg kg-1							0.002						
Rh	mg kg-1													
Ru	mg kg-1													
S	mg kg-1					587.670		600		202		600		446
Sb	mg kg-1			0.34	16	0.61	0.08	0.11		1.9			0.096	
Sc	mg kg-1	28.6	27.39	28.9		26.54	24.75	30.6		27	31.7		27	
Se	mg kg-1							1		0.7				
Sm	mg kg-1	8.8	8.6	8.75		9.33	8.47	9.12		9.4	10.22		8.65	
Sn	mg kg-1	16.82	20.9	28.5	34	13.33	16.14	19		14.5				
Sr	mg kg-1	396.3	393.970	408	409	406.540	403.2	447		386.1			405	382
Ta	mg kg-1		1.2	1.27		1	1.12	1.1		2.6			1.3	
Tb	mg kg-1		1.1	1.16		1.05	1.1	1.14			1.25		1.01	
Te	mg kg-1			0.04				0.05		2				
Th	mg kg-1	6	3.2	2.96		3	3.15	3.19		3.8			3.04	
Tl	mg kg-1		0.2	0.18				0.16		2			0.15	
Tm	mg kg-1		0.4	0.42		0.41	0.41	0.41			0.45		0.395	
U	mg kg-1		0.7	0.63		0.64	0.71	0.68		3			0.59	
V	mg kg-1	314.8	343.4	335	332	332.470	340.1	353		323.4		340	318	
W	mg kg-1		0.7	0.58		0.27		3		5.7			0.43	
Y	mg kg-1	29.4	30.9	31.3	31	30.09	31.7	32.6		28.7	31.7	28	28.4	
Yb	mg kg-1		2.5	2.52		2.24	2.51	2.51			2.61		2.39	
Zn	mg kg-1	111.7	121.760	106	122	92.06	109.1	119		113		112	105	
Zr	mg kg-1	190.6	199.920	201	195	196.110	201.5	198		196.2		118	208	

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

Table 1 - GeoPT43 Contributed data for Dolerite, ADS-1. 13/06/2018

Lab Code		B49	B51	B52	B53	B54	B56	B59	B60	B63	B64	B65	B67	B68
SiO2	g 100g-1	50.44	51.2		51.006	50.964	47.6	51.29	51.647	50.61	50.8		51.02	50.7
TiO2	g 100g-1	2.33	2.44		2.415	2.414	2.58	2.435	2.442	2.447	2.42		2.47	2.44
Al2O3	g 100g-1	15.02	13.8		13.643	13.769	13.9	13.74	14.002	13.52	13.56		13.75	13.8
Fe2O3T	g 100g-1	12.39	13.3		13.061	13.206	16.2	13.33	13.332	12.8	13.14		13.24	13.3
Fe(II)O	g 100g-1							8.5						7.67
MnO	g 100g-1	0.148	0.17		0.168	0.168	0.202	0.184	0.173	0.172	0.17	0.171	0.17	0.171
MgO	g 100g-1	4.8	5.66		5.588	5.55	4.22	5.628	5.691	5.483	5.55		5.51	5.51
CaO	g 100g-1	8.75	8.92		8.807	9.001	9.78	9.099	9.027	9.002	8.98		8.78	9.04
Na2O	g 100g-1	2.85	2.51		2.485	2.461	2.48	2.468	2.42	2.516	2.38		2.55	2.46
K2O	g 100g-1	1	0.99		0.981	1.001	1.15	1.017	0.974	1.032	1		1.01	1
P2O5	g 100g-1	0.407	0.3		0.299	0.297	0.403	0.303	0.289	0.313	0.3		0.3	0.3
H2O+	g 100g-1							1.6		1.833				
CO2	g 100g-1		0.07					0.06						
LOI	g 100g-1	0.6	1.27		1.000	0.702	1.1	0.65	0.847		0.52		0.79	0.73
Ag	mg kg-1	0.12						0.27						
As	mg kg-1	1.91	17	1.44					0.855	0.8				
Au	mg kg-1													
B	mg kg-1													
Ba	mg kg-1	346	348	319	335.455	347.1	0.05	353.9	300.1	340.1	360	366	340	347
Be	mg kg-1				1.046			0.817	0.719	1.022				
Bi	mg kg-1							0.1						
Br	mg kg-1													
C(org)	mg kg-1													
C(tot)	mg kg-1							567						
Cd	mg kg-1	0.178						0.23	0.194	0.139				
Ce	mg kg-1	62.1	60	59.2	59.189	58.2	0.02	58	54.71	61.16	57	62.8		72
Cl	mg kg-1	172					0.02	198			44			
Co	mg kg-1	48	47		44.817	37.6		47.5	40.85	46.44	34	44.37		36
Cr	mg kg-1	85.6	100		96.742	90.4	0.01	99	108.730	69.94	88	111		95
Cs	mg kg-1		0.4	0.44	0.453			0.7	0.437	0.471				
Cu	mg kg-1	64.4	70		62.504	61.2	0.02	65.83	68.51	66.67	57	63.1		66
Dy	mg kg-1	6.3	6.34	6.21	6.162	5.4		5.99	5.765	6.354				
Er	mg kg-1	3.33	3.14	3.07	3.043			3.01	2.857	3.137				
Eu	mg kg-1	2.25	1.97	2.2	2.222			2.15	2.123	2.196				
F	mg kg-1	480						512			355	541		
Ga	mg kg-1	24.1	23.5		22.634	21		22.26	21.06	21.99	20	23.89		21
Gd	mg kg-1	7.48	7.51	7.3	7.187			7.33	6.767	7.254	6			
Ge	mg kg-1	5.4	2					1.63		2.408				
Hf	mg kg-1	5.75	5	5.54	5.041	5		5.28		5.498	5			
Hg	mg kg-1													
Ho	mg kg-1	1.21	1.13	1.14	1.155			1.15	1.091	1.192				
In	mg kg-1	0.083												
Ir	mg kg-1													
La	mg kg-1	28.1	26.3	26	26.691	29.8		27.4	25.91	27.55	30	29.5		21
Li	mg kg-1	12.8	15		12.620			13						
Lu	mg kg-1	0.38	0.36	0.353	0.359			0.39	0.336	0.363				
Mo	mg kg-1		3		3.393	3.7		3.67	3.01	3.302		2.95		
Nb	mg kg-1	17.2	15	18.9	18.138	17.6		17.21	17.365	17.37	13	17.11		15
Nd	mg kg-1	33.8	32.7	32.4	32.420	31.6		32.9	31.61	33.78	49			35
Ni	mg kg-1	51.9	55		54.596	52.8		60	44.4	53.48	57	53.63		52
Pb	mg kg-1	14	14	14.4	13.385	15.3		17.25	15.47	14.28	12	11.86		14
Pd	mg kg-1													
Pr	mg kg-1	7.79	7.96	7.45	7.634			7.66	7.316	7.844				
Pt	mg kg-1													
Rb	mg kg-1	25.9	25.3	24.9	24.908	25.3		27	24.34	25.98	29	26.33		22
Re	mg kg-1													
Rh	mg kg-1													
Ru	mg kg-1													
S	mg kg-1	582					0.132	595			337			
Sb	mg kg-1							0.1		0.094				
Sc	mg kg-1	26.8	29	26.2	27.576	27.7		28	23.78		26	27.7		
Se	mg kg-1	1.8												
Sm	mg kg-1	9.06	9	8.28	8.879	6.9		8.36	8.52	9.178				
Sn	mg kg-1		18		17.408	23		18.78	21.5	18.99				7
Sr	mg kg-1	409	408	390	408.982	407.7	0.03	415.2	363	386.2	393	403.2	423	420
Ta	mg kg-1	1.01	0.8	1.32	1.096			1.3	1.042	1.144				
Tb	mg kg-1	1.11	1.08	1.07	1.103			1.12	1.039					
Te	mg kg-1													
Th	mg kg-1	3.4	3	3.09	3.023	3		3.2	2.85	3.173		3.69		7
Tl	mg kg-1	0.147			0.183					0.168				
Tm	mg kg-1	0.437	0.4	0.416	0.418			0.45	0.374	0.427				
U	mg kg-1	0.643	0.57	0.597	0.626	0.9		0.7	0.485	0.659				
V	mg kg-1	325	345		333.909	330.5	0.07	349.2	314.5	357.5	321	350.2		308
W	mg kg-1								0.824	0.528				
Y	mg kg-1	28.1	29.5	31.6	31.131	31.5		30	28.33		31	31.36		31
Yb	mg kg-1	2.63	2.6	2.49	2.546			2.45	2.315	2.497				
Zn	mg kg-1	117	116		116.904	114.9	0.02	109.7	121.4	124.2	108	118.7		115
Zr	mg kg-1	197	193	225	199.781	200.9	0.03	195	216.1	183	169	206.9		197

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

Table 1 - GeoPT43 Contributed data for Dolerite, ADS-1. 13/06/2018

Lab Code		B69	B70	B71	B72	B74	B75	B76	B77	B78	B80	B81	B82	B84
SiO2	g 100g-1	50.528	50.305		51	54.46	50.7	50.06	50.6	50.5		51.06	50.94	50.33
TiO2	g 100g-1	3.234	2.495	2.45	2.35	2.45	2.44	2.51	2.45	2.09		2.458	2.366	2.39
Al2O3	g 100g-1	13.807	14.067	13.66	13.8	13.99	13.9	13.56	14.41	15.06		13.79	13.99	13.65
Fe2O3T	g 100g-1	12.225	13.444	13.58	12.75		13	13.82	13.22	11.9		13.3	13.299	13.22
Fe(II)O	g 100g-1					12.35			7.64					
MnO	g 100g-1	0.126	0.172	0.17	0.17	0.17	0.215	0.17	0.171	0.13		0.176	0.159	0.167
MgO	g 100g-1	5.561	5.866	5.8	5.61	5.29	5.75	5.4	5.94	4.06		5.572	5.605	5.49
CaO	g 100g-1	8.547	9.117	9.37	8.97	8.98	8.97	9.09	8.63	8.1		9.069	8.975	8.9
Na2O	g 100g-1	1.809	2.65	2.52	2.48	2.47	2.53	2.49	2.38			2.472	2.645	2.33
K2O	g 100g-1	0.954	1.01	1.036	1.05	1	1.01	0.97	0.934	0.964		0.998	0.988	1
P2O5	g 100g-1	0.263	0.298		0.32	0.29	0.301	0.296	0.29			0.304	0.309	0.285
H2O+	g 100g-1							0.05						
CO2	g 100g-1									5.51				
LOI	g 100g-1	1.77	1.219			1.24	0.82	1.52	1.1			0.65	0.68	
Ag	mg kg-1													
As	mg kg-1	7		1			1.277	0.992					7	
Au	mg kg-1													
B	mg kg-1													
Ba	mg kg-1		358	380		339	337.101	328.680	113	322			327	336
Be	mg kg-1						1.06	0.929	0.52					
Bi	mg kg-1							0.009	1.3	2.2				
Br	mg kg-1			0.51						0.35				
C(org)	mg kg-1													
C(tot)	mg kg-1													
Cd	mg kg-1	0.081					0.142	0.141	0.045	3				
Ce	mg kg-1			62		60.4	59.211	55.704	57.24	56	50.5		64	68.6
Cl	mg kg-1	208							125				140	
Co	mg kg-1	17	38	46.2			45.346	39.91	38.55				44	
Cr	mg kg-1	102	105	95		88.8	97.472	93.268	84.05	56.4			74	110.7
Cs	mg kg-1					0.47	0.461	0.431					13	
Cu	mg kg-1	50	34			64.7	64.31	58.732	65.69	24.6			58	62.9
Dy	mg kg-1			6.1		6.78	6.034	5.85	5.65		5.935			6.21
Er	mg kg-1					3.2	2.998	2.857	3		3.29			2.69
Eu	mg kg-1			2.24		2.42	2.164	2.065	2.13		2.19			2.46
F	mg kg-1		867						515				723	
Ga	mg kg-1		19	23		21.2	21.832	19.967	20.93	15.4			23	
Gd	mg kg-1					7.39	7.007	9.09	6.52		9.455			7.78
Ge	mg kg-1							1.416						
Hf	mg kg-1		2	4.96		5.23	4.902	6.049	5.32					
Hg	mg kg-1													
Ho	mg kg-1					1.27	1.166	1.084	1.26		1.22			1.21
In	mg kg-1								0.14					
Ir	mg kg-1													
La	mg kg-1			27.7		27.5	26.173	24.828	25.12	23.8	25.55		19	
Li	mg kg-1		12				13.031	11.096						15.33
Lu	mg kg-1			0.41		0.37	0.353	0.317	0.41		0.39			0.373
Mo	mg kg-1						3.351	2.958	3.06				5	2.89
Nb	mg kg-1					16.9	17.931	18.59	11.81	15.3			16	
Nd	mg kg-1			32		33.4	32.431	30.834	31.59	30.1	29.65		30	37
Ni	mg kg-1	26	58				51.976	54.13	50.39	28.1			53	52.2
Pb	mg kg-1	9				14.5	12.908	8.525		11.5			5	13.7
Pd	mg kg-1	0.006												
Pr	mg kg-1					7.92	7.832	7.327	7.81		6.675			8.87
Pt	mg kg-1	0.044												
Rb	mg kg-1			28		25.7	25.255	23.865	25.35	21.6			29	
Re	mg kg-1													
Rh	mg kg-1	84						0.01						
Ru	mg kg-1													
S	mg kg-1	0.108							633				766	
Sb	mg kg-1	2					0.078	0.07						
Sc	mg kg-1			28.7		27.8	25.281	24.687	26.82		186		21	
Se	mg kg-1													
Sm	mg kg-1			8.7		9.35	8.401	8.473	7.55	130	7.795			9.91
Sn	mg kg-1						20.48	17.245	17.74	31.6			16	
Sr	mg kg-1		440	370		415	407.229	402.020	375.6	363			385	423
Ta	mg kg-1			0.87		1.12	1.096	1.115	0.92					
Tb	mg kg-1			1.01		1.19	1.067	0.998	1.09		1.27			1.13
Te	mg kg-1	0.639							0.25					
Th	mg kg-1			2.94		3.13	2.816	2.636	3.1				5	
Tl	mg kg-1	0.045					0.166	0.153						
Tm	mg kg-1					0.429	0.416		0.47		0.43			
U	mg kg-1					0.635	0.636	0.569	0.69				3	
V	mg kg-1	188		349			313.447	330.691	325.7	478			337	345
W	mg kg-1						0.397	0.376	0.4					
Y	mg kg-1		30			31.6	28.429	27.108	26.71	26.2	22.25		30	29.1
Yb	mg kg-1			2.63		2.47	2.537	2.264	2.32		2.545			2.593
Zn	mg kg-1	78	112	100			117.431	99.849		93.5			108	120.3
Zr	mg kg-1		159	220		200	192.597	179.578	196.9	184			192	

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

Table 1 - GeoPT43 Contributed data for Dolerite, ADS-1. 13/06/2018

Lab Code		B86	B87	B88	B89	B90	B91	B93	B94	B95	B96	B97	B98	B99
SiO2	g 100g-1	50.91	51.263		51.07	51.04	50.894	**49.6**	50.85	**50.57**	51.8	50.205	51.132	52.69
TiO2	g 100g-1	2.41	2.441		2.47	2.44	2.391	**2.37**	2.442	**2.43**	2.4	2.237	2.450	2.37
Al2O3	g 100g-1	13.75	13.781		13.87	13.77	13.855	**13.65**	13.77	**13.67**	14.1	16.283	13.902	13.53
Fe2O3T	g 100g-1	13.28	13.258		13.12	13.34	12.406	**13.29**	13.23	**13.25**	12.9	12.645	13.283	12.63
Fe(II)O	g 100g-1									**7.9**			8.083	8.04
MnO	g 100g-1	0.18	0.172		0.176	0.17	0.16		0.177	**0.17**	0.17	0.168	0.176	0.168
MgO	g 100g-1	5.52	5.662		5.6	5.63	5.26	**5.39**	5.58	**5.55**	5.61	5.375	5.565	5.25
CaO	g 100g-1	8.95	9.032		9.01	8.96	10.376	**8.49**	9.017	**8.97**	8.76	8.616	9.015	8.35
Na2O	g 100g-1	2.41	2.454		2.45	2.5	2.419	**2.52**	2.37	**2.5**	2.17	2.761	2.508	1.91
K2O	g 100g-1	1.01	0.999		1	1.01	1.077	**1.04**	0.943	**0.99**	0.95	1.025	0.996	1.23
P2O5	g 100g-1	0.3	0.297		0.306	0.308	0.394	**0.32**	0.293	**0.31**		0.419	0.299	0.289
H2O+	g 100g-1									**1.23**			1.757	
CO2	g 100g-1													
LOI	g 100g-1	0.76	0.64			0.69	0.43		1.05	**0.78**	0.84	1.029	0.533	1.23
Ag	mg kg-1						0.19						0.047	
As	mg kg-1						2.68			**1**				
Au	mg kg-1						0.05							
B	mg kg-1									**7**				
Ba	mg kg-1		168			351	564.170	**341**	332	**306**		460	360.170	345
Be	mg kg-1					1.2	1.56			**1.03**			0.976	1.12
Bi	mg kg-1						0.008	**0.023**						
Br	mg kg-1													
C(org)	mg kg-1									**206**				
C(tot)	mg kg-1	488				600				**1551**			459	378
Cd	mg kg-1					0.12	0.23			**0.13**			0.12	0.164
Ce	mg kg-1					62.8	99.13	**59.7**	55.7	**56**			60.21	60.12
Cl	mg kg-1									**140**		172.1	131	
Co	mg kg-1		53			46	77.77	**30**	41.3	**43.5**			45.07	42.42
Cr	mg kg-1		110			109	144.210	**78**	94.3	**95.4**			95.2	116
Cs	mg kg-1					0.5		**0.462**		**0.43**			0.459	0.468
Cu	mg kg-1		65			66	116.140	**63.6**	64	**51**		107.1	64.9	88
Dy	mg kg-1					6.4	9.75	**5.74**		**5.74**			6.169	6.51
Er	mg kg-1					3.3	5.31	**2.89**		**2.82**			3.191	3.79
Eu	mg kg-1					2.2	3.84	**2.21**		**2.1**			2.261	3.25
F	mg kg-1									**570**			723	
Ga	mg kg-1					23	40.29	**19.5**	22	**23**		12.1	21.729	22.83
Gd	mg kg-1					7.4	11.96	**7.02**		**6.29**			7.271	8.06
Ge	mg kg-1					2	5.3			**1.63**				
Hf	mg kg-1					5	4.41	**5.13**		**4.81**			5.22	
Hg	mg kg-1			0.021						**0.003**				
Ho	mg kg-1					1.1	2.01	**0.958**		**1.11**			1.185	1.25
In	mg kg-1					0.1				**0.07**			0.089	0.096
Ir	mg kg-1						0.01							
La	mg kg-1					28.3	45.16	**26.5**	22.9	**24.3**			27.588	27.29
Li	mg kg-1					13.8	21	**13**					12.6	14.02
Lu	mg kg-1					0.4	0.62	**0.363**		**0.34**			0.369	0.414
Mo	mg kg-1					4	5.44	**3.04**		**2.96**			3.47	4
Nb	mg kg-1		18			19	32.83	**16.9**	19	**14.9**			17.424	15.6
Nd	mg kg-1					34.4	53.02	**33.2**	30.7	**30.3**			34.175	33.79
Ni	mg kg-1		53			53	94.74	**55.5**	52.8	**48.7**		64	53.28	59.27
Pb	mg kg-1		18			14	25.71	**13**	12	**13.7**			13.61	14.31
Pd	mg kg-1						0.06							
Pr	mg kg-1					7.8	13.17	**7.82**		**7.11**			7.927	8.06
Pt	mg kg-1						0.04							
Rb	mg kg-1		25			26.1	43.23	**25.2**	26.5	**25.2**			26.58	22.7
Re	mg kg-1													
Rh	mg kg-1													
Ru	mg kg-1						0.001							
S	mg kg-1	590		639		641				**611**		1390	500	531
Sb	mg kg-1						0.12			**0.07**			0.079	
Sc	mg kg-1					28.5	47.99	**25.2**	30.3	**29.45**			27.6	25.86
Se	mg kg-1						0.27			**0.15**				
Sm	mg kg-1					8.6	13.73	**8.52**	8.4	**8.31**			8.902	9.09
Sn	mg kg-1					19.5	15.46		18.9	**23.1**			19.85	
Sr	mg kg-1		402			424	702.390	**400**	394	**395**	400	383	412.9	426
Ta	mg kg-1					1.18	3.61	**1.12**		**1.14**			1.132	
Tb	mg kg-1					1	1.97	**1.04**		**0.967**			1.067	1.53
Te	mg kg-1													
Th	mg kg-1		3			3.09	5.24	**3.08**		**2.76**			3.206	3.25
Tl	mg kg-1					0.15	0.28	**0.162**					0.162	0.186
Tm	mg kg-1					0.4	0.7	**0.41**		**0.371**			0.415	0.438
U	mg kg-1					0.65	1.08	**0.646**		**0.59**			0.668	0.675
V	mg kg-1		304			362	609.930	**275**	334	**333**		478	343.4	335
W	mg kg-1					0.4	0.78						0.449	
Y	mg kg-1		26			31	50.21	**28.3**	35	**28.6**			31.068	27.99
Yb	mg kg-1					2.6	3.97	**2.42**		**2.35**			2.555	2.82
Zn	mg kg-1		127			116	202.940	**102**	121	**126**	100	74	117.2	110
Zr	mg kg-1	356	169			201	324.890	**188**	199	**189**	200	186	202.2	186

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

Table 1 - GeoPT43 Contributed data for Dolerite, ADS-1. 13/06/2018

Lab Code		B100	B102	B103	B104	B107	B108	B109	B111	B113	B114	B115	B117	B118
SiO2	g 100g-1	51.02	51.302	51.17	51.49	51.16	51.24		50.76	51	51.69	51.09	51.22	51.58
TiO2	g 100g-1	2.43	2.398	2.453	2.45	2.45	2.433		2.424	2.455	2.45	2.499	2.48	2.43
Al2O3	g 100g-1	13.73	13.781	13.76	13.8	13.72	13.68	13.38	13.68	13.69	13.94	13.74	14.05	13.86
Fe2O3T	g 100g-1	13.29	13.207	13.2	13.24	13.2	13.21	13.98	13.21	13.6	13.1	13.14	12.73	12.82
Fe(II)O	g 100g-1						8.23							
MnO	g 100g-1	0.173	0.170	0.168	0.177	0.17	0.173	0.167	0.171	0.173	0.179	0.163	0.19	0.167
MgO	g 100g-1	5.52	5.657	5.61	5.49	5.34	5.59	5.4	5.515	5.626	5.77	5.712	5.7	5.61
CaO	g 100g-1	9.03	9.016	8.9	8.91	9.09	8.92	8.92	8.854	8.819	8.86	8.8	8.62	9.04
Na2O	g 100g-1	2.45	2.467	2.438	2.45	2.25	2.48		2.484	2.305	2.49	2.436	2.6	2.53
K2O	g 100g-1	0.99	0.995	1.004	0.98	1	0.99		1.009	1.004	0.96	0.997	1	1.01
P2O5	g 100g-1	0.296	0.300	0.294	0.294	0.297	0.297		0.308	0.3	0.308	0.305	0.28	0.304
H2O+	g 100g-1													
CO2	g 100g-1													
LOI	g 100g-1	0.77	0.622		0.64	0.83	0.78		0.675	1.02	0.82	0.749	0.55	0.655
Ag	mg kg-1		0.08							0.11				
As	mg kg-1						1.046	2.9		1.8			2.2	
Au	mg kg-1													
B	mg kg-1													
Ba	mg kg-1	359	349.440	296		322	315.1	343.1	360.7	341	362		371	
Be	mg kg-1		1.24			1.01	1.009			1.13	1.08			
Bi	mg kg-1		0.02											
Br	mg kg-1									2.1				
C(org)	mg kg-1													
C(tot)	mg kg-1	591										444		
Cd	mg kg-1		0.1							0.06				
Ce	mg kg-1	40	57.26			60.4	55.4	59.19	58.95	57.1	63.1		73	
Cl	mg kg-1													
Co	mg kg-1	52	45.68			44	42.41	43.11	47.96	44.3	51.47		42	
Cr	mg kg-1	118	90.55	76		104	86.35	95.42	98.1	94			84	
Cs	mg kg-1		0.46			0.45	0.491	0.435						
Cu	mg kg-1	83	66.87	64		66	61.32	64.39	62.12	62.1	81		60	
Dy	mg kg-1		6.19			6.26	5.619	6.05		6.17	6.36			
Er	mg kg-1		3.07			3.11	2.866	2.99		3.05	3.32			
Eu	mg kg-1		2.29			2.27	2.06	2.21		2.23				
F	mg kg-1													
Ga	mg kg-1	22	22.05	25		23.7	21.7	21.84	22.56	20.7	20		21	
Gd	mg kg-1		7.16			7.61	6.541	7.46		7.07	8.57			
Ge	mg kg-1									0.63	2.22			
Hf	mg kg-1	4.5	5.03			5.22	4.872	5.3	5.164	3.06	4.94		3	
Hg	mg kg-1													
Ho	mg kg-1		1.18			1.25	1.136	1.18		1.14	1.08			
In	mg kg-1													
Ir	mg kg-1													
La	mg kg-1	30	26.27			26.86	24.72	26.58	26.42	25.3	27.4		110	
Li	mg kg-1		11.59			11.88	11.77				12.7			
Lu	mg kg-1		0.37			0.39	0.362	0.364		0.35	0.31			
Mo	mg kg-1		3.28			4.94	3.408		4.011	3.2			3	
Nb	mg kg-1	15	17.69	18		17.8	16.96	18.25	16.96	15.2	15		16	
Nd	mg kg-1	29	32.01			33.77	31.16	33.39	28.53	31.3	33.03		31	
Ni	mg kg-1	54	47.56	52		48	48.82	55.15	52.61	54.2	53		48	
Pb	mg kg-1		14.2			13.5	15.14	13.09	13.99	13.7			20	
Pd	mg kg-1													
Pr	mg kg-1	8	7.53			8.01	7.142	8		7.52				
Pt	mg kg-1													
Rb	mg kg-1	22	25.13	25		31.6	24.36	25.8	24.07	24.7	24		27	
Re	mg kg-1													
Rh	mg kg-1													
Ru	mg kg-1													
S	mg kg-1		501		515				485	777		584		
Sb	mg kg-1		0.09							0.29				
Sc	mg kg-1	28	26.97			29.7	21.31	28.26	30.07	30.3	30.73		25	
Se	mg kg-1									4.67				
Sm	mg kg-1		8.86			8.69	8.104	8.62		8.47	8.72		8	
Sn	mg kg-1		16.97				22.94		18.06	17.9				
Sr	mg kg-1	409	403.060	405		397	375.8	403.5	399.4	390	386		398	
Ta	mg kg-1		1.26			1.16	1.24	1.1		4.1				
Tb	mg kg-1		1.12			1.03	1.049	1.14		1.05	1.09			
Te	mg kg-1													
Th	mg kg-1		3.17			3.04	2.508	3.05		3.39	3.2		4	
Tl	mg kg-1		0.15			0.17	0.192			0.12				
Tm	mg kg-1		0.42			0.38	0.413	0.428		0.41				
U	mg kg-1		0.63			0.59	0.613	0.626		0.77	0.62		2.65	
V	mg kg-1	327	321.270	333		343	306.7	334.5	309	356	301		331	
W	mg kg-1		0.25				0.764			1.63			38	
Y	mg kg-1	30	30.75	29		31.3	26.61	31.69	32.72	28.5	34		30	
Yb	mg kg-1		2.53			2.67	2.396	2.52		2.44	2.81			
Zn	mg kg-1	135	107.990	115		115	109.9	112.070	111.9	115	116		111	
Zr	mg kg-1	210	201.380	197		202	188.7	250.2	196.2	188	204		197	

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

Table 1 - GeoPT43 Contributed data for Dolerite, ADS-1. 13/06/2018

Lab Code		B120	B121	B123	B124	B125	B126	B128	-	-	-	-	-	-
SiO2	g 100g-1		48.926	51.11	51.21	51	51.1	51.89						
TiO2	g 100g-1	2.41	2.402	2.444	2.41	2.42	2.47	2.43						
Al2O3	g 100g-1		13.475	13.75	13.77	13.7	13.73	14.03						
Fe2O3T	g 100g-1		12.613	13.33	13.22	13	13.24	13.35						
Fe(II)O	g 100g-1			8.33		7.85								
MnO	g 100g-1	0.17		0.175	0.16	0.17	0.17	0.178						
MgO	g 100g-1		5.41	5.63	5.63	5.64	5.61	5.59						
CaO	g 100g-1		8.343	9.05	9	9.13	8.97	9.1						
Na2O	g 100g-1		2.34	2.37	2.51	2.53	2.46	2.47						
K2O	g 100g-1		1	0.99	1.03	1.02	1.01	1.11						
P2O5	g 100g-1		0.323	0.297	0.32	0.3	0.3	0.32						
H2O+	g 100g-1													
CO2	g 100g-1													
LOI	g 100g-1		1.322	0.93	0.58	0.93	0.88	0.62						
Ag	mg kg-1		11.01											
As	mg kg-1		25.39			1.2								
Au	mg kg-1		0.364											
B	mg kg-1													
Ba	mg kg-1	324	298.5	356	357	336	349	378						
Be	mg kg-1	1.1					1.15							
Bi	mg kg-1													
Br	mg kg-1													
C(org)	mg kg-1													
C(tot)	mg kg-1													
Cd	mg kg-1		0.616											
Ce	mg kg-1	60	58.695	61.2	60	58.2	59.6	62.8						
Cl	mg kg-1													
Co	mg kg-1	45.5	59.89	44		44.9	44.9	44.3						
Cr	mg kg-1	89.2	74.98	83	95	97.5	89.4	82.6						
Cs	mg kg-1	0.46		0.47		0.45	0.47							
Cu	mg kg-1	64.9	80.44	64	66	66.4	66.8	52.3						
Dy	mg kg-1	6.35	5.619	6.17		6.03	6.11							
Er	mg kg-1	3.05	2.943	2.99		3.12	3.07							
Eu	mg kg-1	2.24	2.305	2.2		2.19	2.2							
F	mg kg-1			490										
Ga	mg kg-1	22.5	20.44	22	22	21.5	22.1	22.1						
Gd	mg kg-1	7.24	7.843	7.28		6.94	7.07							
Ge	mg kg-1					1.7	1.63	1.1						
Hf	mg kg-1	5.24		5.25		5.19	5.08	5.1						
Hg	mg kg-1		0.11											
Ho	mg kg-1	1.17	1.045	1.2		1.15	1.15							
In	mg kg-1													
Ir	mg kg-1													
La	mg kg-1	27.1	26.435	27.4	30	26.3	27.1	187						
Li	mg kg-1	12.7					14.1							
Lu	mg kg-1	0.36	0.324	0.37			0.361							
Mo	mg kg-1	3.39	5.445	3.43		3.6		3.4						
Nb	mg kg-1	18.4		15.6	17	16.8	18.3	15.7						
Nd	mg kg-1	33	33.96	33.3		32.6	33.1	32.2						
Ni	mg kg-1	53	39.65	58	51	57.8	53.1	74.3						
Pb	mg kg-1	13	24.83	13.6	18	14.3	14	10.9						
Pd	mg kg-1													
Pr	mg kg-1	7.75	7.71	7.89		7.6	7.59							
Pt	mg kg-1													
Rb	mg kg-1	25.4	18.778	26	26	24.3	26.4	23.7						
Re	mg kg-1													
Rh	mg kg-1													
Ru	mg kg-1													
S	mg kg-1													
Sb	mg kg-1		33.11					0.5						
Sc	mg kg-1	28.2		27.7	27	27.7	28.3	19.1						
Se	mg kg-1							1.9						
Sm	mg kg-1	9.01	8.567	8.92		8.1	8.69	6.9						
Sn	mg kg-1	17.4				19.5		18.5						
Sr	mg kg-1	414		401	402	394	413	1.9						
Ta	mg kg-1	1.11		1.27		1.05	1.14	5.7						
Tb	mg kg-1	1.12	1.023	1.15		1.04	1.08							
Te	mg kg-1													
Th	mg kg-1	3.09	3.105	3.04	4	3	2.97	4.3						
Tl	mg kg-1	0.2												
Tm	mg kg-1	0.42	0.371	0.41			0.419							
U	mg kg-1	0.64	0.642	0.61	1	0.65	0.629	1.3						
V	mg kg-1	334	304.4	331	322	337	335							
W	mg kg-1	0.57		0.44		0.42								
Y	mg kg-1	32.2	28.427	30.4	32	27.8	31.5							
Yb	mg kg-1	2.56	2.306	2.49		2.42	2.54	7.1						
Zn	mg kg-1	116	81.37	110	109	122	114	108						
Zr	mg kg-1	202		193	210	199	202	227						

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

Table 2 - GeoPT43 Assigned values and statistical summary for Dolerite, ADS-1.

	Assigned Value	Uncertainty of assigned value	Horwitz Target Value	Uncertainty/ Target	Number of reported results	Robust Mean of results	Robust SD of results	Median of results	Status of consensus value	Type of consensus value
	X_a	*sdm*	H_a	*sdm/H* $_a$	*n*					
	g 100g^{-1}	g 100g^{-1}	g 100g^{-1}			g 100g^{-1}	g 100g^{-1}	g 100g^{-1}		
SiO2	51.01	0.04651	0.5645	0.08239	89	50.94	0.5362	51.01	Assigned	Median
TiO2	2.43	0.003885	0.04252	0.09138	91	2.423	0.04857	2.43	Assigned	Median
Al2O3	13.74	0.01399	0.1852	0.07551	91	13.76	0.1874	13.74	Assigned	Median
Fe2O3T	13.22	0.0202	0.1793	0.1127	91	13.18	0.2574	13.22	Assigned	Median
MnO	0.1706	0.0005427	0.004453	0.1219	88	0.1706	0.005091	0.17	Assigned	Robust Mean
MgO	5.59	0.01243	0.08629	0.1441	91	5.581	0.1496	5.59	Assigned	Median
CaO	8.97	0.01554	0.129	0.1205	91	8.951	0.1664	8.97	Assigned	Median
Na2O	2.47	0.007902	0.04311	0.1833	88	2.454	0.09103	2.47	Assigned	Median
K2O	0.9994	0.002907	0.01999	0.1454	91	0.9994	0.02773	1	Assigned	Robust Mean
P2O5	0.3	0.001039	0.007192	0.1445	86	0.3018	0.01172	0.3	Assigned	Median
	mg kg^{-1}	mg kg^{-1}	mg kg^{-1}			mg kg^{-1}	mg kg^{-1}	mg kg^{-1}		
Ba	341.6	2.526	11.36	0.2224	81	341.6	22.73	340.1	Assigned	Robust Mean
Be	1.07	0.01717	0.08472	0.2026	32	1.058	0.1329	1.07	Assigned	Median
Ce	59.51	0.4612	2.573	0.1792	71	59.51	3.886	59.7	Assigned	Robust Mean
Co	44.6	0.449	2.014	0.2229	70	44.16	4.055	44.33	Assigned	Mode
Cr	91.83	1.402	3.72	0.3768	76	91.83	12.22	91.05	Assigned	Robust Mean
Cs	0.4624	0.007499	0.04153	0.1806	38	0.4807	0.05292	0.47	Assigned	Mode
Cu	64.31	0.4545	2.749	0.1653	77	63.94	5.74	64.31	Assigned	Median
Dy	6.1	0.03425	0.3717	0.09217	51	6.083	0.2998	6.1	Assigned	Median
Er	3.059	0.02878	0.2068	0.1392	49	3.059	0.2015	3.05	Assigned	Robust Mean
Eu	2.203	0.01437	0.1565	0.09187	50	2.203	0.1016	2.2	Assigned	Robust Mean
Ga	21.88	0.2038	1.1	0.1853	68	21.88	1.681	22	Assigned	Robust Mean
Gd	7.26	0.08057	0.4309	0.187	51	7.26	0.5754	7.254	Assigned	Robust Mean
Hf	5.1	0.03666	0.3192	0.1148	53	5.083	0.338	5.1	Assigned	Median
Ho	1.164	0.009545	0.09102	0.1049	48	1.164	0.06613	1.161	Assigned	Robust Mean
La	26.93	0.2041	1.312	0.1555	68	26.91	2.168	26.93	Assigned	Median
Li	12.94	0.36	0.7038	0.5115	31	13.28	1.397	13	Provisional	Mode
Lu	0.3651	0.003958	0.03399	0.1165	49	0.3651	0.02771	0.362	Assigned	Robust Mean
Mo	3.2	0.21	0.2148	0.9774	45	3.361	0.5296	3.351	Provisional	Mode
Nb	17.42	0.114	0.9065	0.1258	68	16.98	1.473	17.16	Assigned	Mode
Nd	32.76	0.2467	1.55	0.1592	66	32.76	2.004	32.8	Assigned	Robust Mean
Ni	52.76	0.4092	2.323	0.1761	75	52.26	4.853	52.76	Assigned	Median
Pb	14	0.2006	0.7527	0.2666	68	13.88	2.219	14	Assigned	Median
Pr	7.75	0.05083	0.4555	0.1116	49	7.697	0.401	7.75	Assigned	Median
Rb	25.28	0.1644	1.243	0.1322	70	25.42	1.517	25.28	Assigned	Median
Sb	0.085	0.007888	0.009852	0.8007	22	0.274	0.2741	0.115	Provisional	Mode
Sc	27.56	0.2595	1.338	0.1939	64	27.18	2.446	27.56	Assigned	Median
Sm	8.634	0.07994	0.4992	0.1601	58	8.634	0.6088	8.635	Assigned	Robust Mean
Sn	18.15	0.4244	0.9385	0.4522	42	18.35	3.437	18.15	Provisional	Median
Sr	402	1.326	13.04	0.1017	80	401.2	15.72	402	Assigned	Median
Ta	1.12	0.018	0.08807	0.2044	44	1.17	0.1804	1.136	Assigned	Mode
Tb	1.084	0.01031	0.08568	0.1203	49	1.084	0.07217	1.08	Assigned	Robust Mean
Th	3.095	0.02102	0.2088	0.1007	58	3.162	0.3096	3.095	Assigned	Median
Tl	0.1641	0.00454	0.01722	0.2636	24	0.1683	0.02426	0.1641	Assigned	Median
Tm	0.4138	0.004047	0.0378	0.1071	44	0.4138	0.02684	0.4115	Assigned	Robust Mean
U	0.646	0.007331	0.05518	0.1329	53	0.6743	0.09383	0.646	Assigned	Median
V	333	2.054	11.11	0.1849	75	331.4	19.93	333	Assigned	Median
W	0.438	0.0157	0.03967	0.3958	27	0.7371	0.4765	0.55	Provisional	Mode
Y	30	0.2689	1.438	0.187	75	29.68	2.234	30	Assigned	Median
Yb	2.491	0.02165	0.1737	0.1246	52	2.491	0.1561	2.51	Assigned	Robust Mean
Zn	113	1.102	4.436	0.2484	79	113	9.793	113	Assigned	Robust Mean
Zr	199	1.02	7.176	0.1422	76	198	10.51	199	Assigned	Median

Table 3 - GeoPT43 Z-scores for Dolerite, ADS-1. 13/06/2018

Lab Code	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B14	B16
SiO2	-1.00	-0.47	0.37	**-0.77**	-8.68	0.95	0.08	**0.22**	**-4.60**	**0.77**	-0.23	-0.04	-0.02
TiO2	0.49	-1.76	0.12	**0.94**	2.82	-3.88	-0.47	**-0.24**	**-1.88**	**0.47**	-0.35	-0.35	0.00
Al2O3	-0.14	0.76	0.08	**-0.22**	8.56	-2.27	-0.24	**0.16**	**-2.70**	**0.00**	-0.05	-0.38	-0.03
Fe2O3T	-0.29	-1.56	0.39	**-1.56**	7.39	-1.56	0.50	**1.23**	**-1.17**	**1.12**	-0.22	0.22	0.14
MnO	-0.30	-1.20	3.30	**2.10**	4.42	-0.07	-0.07	**2.10**	**-0.59**	**-0.14**	-0.07	-0.18	-0.07
MgO	-0.78	4.46	1.85	**-1.85**	13.44	5.56	-0.17	**0.00**	**1.16**	**-1.51**	0.64	0.52	-0.41
CaO	0.95	-0.43	-2.29	**-0.54**	7.91	-1.82	0.08	**1.01**	**0.54**	**5.82**	-0.16	0.31	-0.78
Na2O	-0.97	0.00	-0.70	**-0.93**	-25.98	-2.20	0.00	**-3.25**	**-3.25**	**-1.16**	0.46	0.00	-1.51
K2O	-0.41	-2.99	1.52	**-0.97**	11.27	-0.74	-0.49	**-0.47**	**-0.47**	**-4.47**	0.01	0.52	0.27
P2O5	-0.35	3.48	0.00	**1.39**	13.90	0.00	-0.70	**0.00**	**-1.39**	**0.00**	-0.49	0.70	-0.70
Ba	-0.54	2.17	*	**0.38**	-2.10	1.25	0.50	**-0.94**	**-0.67**	*	*	-0.12	-0.03
Be	-0.41	*	*	*	-1.53	*	-0.41	*	*	*	*	0.30	*
Ce	-0.19	-1.65	*	**-2.53**	-2.10	-0.45	0.37	*	**-8.75**	*	*	0.21	*
Co	-0.22	0.10	*	**1.69**	-1.79	-10.82	0.17	**-2.78**	**-4.77**	*	*	-0.40	-0.40
Cr	-0.41	-3.07	15.21	**-2.64**	-1.39	4.86	-1.32	**1.66**	**-3.18**	*	*	0.43	-0.65
Cs	*	18.51	*	*	*	1.90	0.33	*	*	*	*	*	*
Cu	-0.95	4.13	*	**-0.84**	-1.42	0.67	0.31	**2.07**	**-3.02**	*	*	-0.78	-0.06
Dy	-0.01	*	*	**-2.96**	-1.40	-0.24	0.35	*	*	*	*	*	*
Er	-0.07	*	*	**-3.67**	-1.11	-0.75	0.22	*	*	*	*	*	*
Eu	0.09	*	*	**-0.66**	-1.29	-0.39	0.05	*	*	*	*	-0.59	*
Ga	0.24	0.05	*	*	*	3.10	0.92	**-4.44**	**-5.35**	*	*	*	-0.85
Gd	-1.31	*	*	**-2.92**	-1.46	-0.44	-0.07	*	*	*	*	*	*
Hf	-0.36	-3.29	*	*	*	1.33	-0.22	**-0.31**	*	*	*	0.36	*
Ho	-0.02	*	*	**-1.81**	*	-0.41	0.09	*	*	*	*	*	*
La	-0.70	-1.12	*	**-1.47**	-1.69	-1.03	0.26	*	*	*	*	0.22	*
Li	*	*	*	***2.93***	*-5.64*	*	*1.61*	*	*	*	*	*0.61*	*
Lu	-0.22	*	*	**-1.92**	-0.96	-0.08	-0.08	*	*	*	*	*	*
Mo	*-1.00*	*	*	*	*-0.47*	*	*0.70*	*	*	*	*	*	*
Nb	-0.85	2.52	*	**-2.67**	*	0.32	-0.34	**-1.57**	**-0.47**	*	*	0.04	-0.79
Nd	-0.16	0.08	*	**-3.72**	-1.76	-1.03	0.27	*	*	*	*	0.75	*
Ni	-0.01	*	*	**-1.19**	-2.27	-3.18	1.11	**26.79**	**-2.05**	*	*	-0.16	-0.16
Pb	-0.32	0.00	*	**0.00**	-3.99	-1.33	-0.20	**-3.99**	**13.29**	*	*	0.00	0.00
Pr	-0.26	*	*	**-3.84**	-1.75	-0.74	0.43	*	*	*	*	*	*
Rb	-0.22	2.70	*	**-1.03**	*	-0.11	0.13	**0.58**	**-1.83**	*	*	-0.35	-0.11
Sb	*	*	*	*	*2.28*	*	*	*	*	*	*	*	*
Sc	-0.02	0.91	*	**-3.41**	-2.02	-5.07	0.46	**-1.16**	*	*	*	*	-0.58
Sm	-0.25	*	*	**-3.27**	-1.43	-0.57	0.56	*	*	*	*	*	*
Sn	*0.71*	*-2.74*	*	*	*-3.47*	*	*0.03*	*	*	*	*	*-0.08*	*1.52*
Sr	0.01	0.27	4.03	**0.54**	1.65	-0.08	0.73	**0.38**	**-0.31**	*	*	-0.27	-0.31
Ta	-0.57	90.16	*	*	*	2.04	0.11	*	*	*	*	*	*
Tb	-0.84	*	*	**-0.98**	-1.13	-0.20	-0.32	*	*	*	*	*	*
Th	-0.51	16.53	*	*	14.45	-1.11	-0.01	*	*	*	*	*	*
Tl	*	*	*	*	*	*	-0.32	*	*	*	*	*	*
Tm	-0.18	*	*	**-3.01**	-0.98	-0.18	-0.05	*	*	*	*	*	*
U	-0.60	21.33	*	**24.54**	*	-1.41	0.22	*	*	*	*	*	*
V	-0.06	-5.22	*	**-0.27**	-1.48	-1.03	0.90	**0.90**	**1.17**	*	*	0.00	-0.76
W	*	*	*	*	*	*	*0.63*	*	*	*	*	*	*
Y	-1.34	1.04	*	**-1.39**	-2.40	-1.04	-0.31	**-0.70**	**-2.09**	*	*	0.17	0.00
Yb	0.23	*	*	**-2.83**	-1.01	-0.23	0.17	*	*	*	*	*	*
Zn	-0.34	-0.34	14.43	**-1.35**	2.71	1.58	0.68	**0.68**	**-0.22**	*	*	-0.56	-1.24
Zr	-0.79	0.84	*	**0.42**	*	0.14	0.49	**0.56**	**1.25**	*	*	-0.21	0.35

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

Table 3 - GeoPT43 Z-scores for Dolerite, ADS-1. 13/06/2018

Lab Code	B17	B19	B20	B21	B22	B23	B24	B25	B28	B29	B30	B31	B33
SiO2	**0.09**	-0.12	**0.66**	**-0.75**	**0.63**	*	-0.20	0.01	-11.08	-0.60	-0.83	*	-2.74
TiO2	**-0.54**	0.35	**-0.47**	**-2.12**	**0.00**	4.47	0.71	-1.31	-17.26	-3.63	*	*	1.58
Al2O3	**-0.24**	-0.22	**-0.76**	**2.43**	**-0.65**	*	-1.19	0.06	-13.87	-0.32	6.67	*	-0.16
Fe2O3T	**-0.11**	-0.42	**0.22**	**-1.17**	**-0.39**	3.01	1.00	0.76	-0.86	1.00	-0.50	*	1.95
MnO	**0.30**	-1.20	**-0.14**	**-0.59**	**-0.14**	*	-0.63	-1.22	-1.64	0.26	*	*	1.65
MgO	**-0.07**	-0.35	**-2.32**	**0.73**	**0.58**	1.62	1.16	-0.30	*	0.05	1.56	*	-0.68
CaO	**0.00**	-0.19	**0.16**	**0.40**	**-0.16**	0.47	1.67	-0.41	*	-2.56	0.62	*	7.39
Na2O	**-1.79**	0.00	**-4.41**	**0.28**	**-4.17**	1.51	0.70	-0.45	*	-0.34	3.48	*	-5.01
K2O	**-0.72**	0.27	**3.03**	**-0.87**	**0.03**	3.77	0.52	0.07	-3.31	-0.99	0.77	*	3.58
P2O5	**-0.42**	-0.70	**4.17**	**0.56**	**-1.39**	*	0.21	-0.01	81.20	1.39	*	*	-4.59
Ba	**-0.91**	-1.30	**4.26**	**-0.36**	**-0.50**	0.10	0.47	-1.14	*	-0.27	*	**1.75**	-1.73
Be	*	*	*	**1.53**	**0.24**	*	*	*	*	0.30	*	*	-3.07
Ce	0.08	*	*	**0.15**	**-0.39**	-0.45	1.26	0.70	*	0.06	*	**0.08**	-3.15
Co	**0.00**	-0.65	**-2.28**	**-0.15**	**0.15**	1.14	0.87	-0.19	16.98	-0.17	*	*	4.62
Cr	**-0.28**	-2.13	**8.92**	**0.37**	**-1.35**	-0.15	-0.81	-0.57	-4.28	-0.22	*	*	-4.26
Cs	*	*	*	**0.45**	**0.42**	*	26.94	*	*	-0.23	*	**0.42**	2.93
Cu	**-0.51**	-2.06	**1.71**	**0.67**	**0.07**	0.25	-0.98	-0.08	-0.78	0.23	*	*	-0.51
Dy	*	*	*	**-0.03**	**0.11**	0.13	*	1.08	*	-0.17	*	**-0.51**	-3.39
Er	*	*	*	**-0.11**	**0.29**	-0.31	*	1.07	*	-0.46	*	**0.15**	-1.16
Eu	*	*	*	**-0.28**	**-0.02**	0.02	*	0.87	*	-0.27	*	**0.30**	-1.23
Ga	**0.29**	0.96	**-0.80**	**11.33**	**1.02**	*	-0.13	1.24	*	-0.40	*	**-0.58**	-2.53
Gd	1.79	*	*	**-0.23**	**-0.65**	0.16	*	0.89	*	0.02	*	**-0.46**	-1.55
Hf	*	*	*	**0.31**	**0.85**	*	-2.51	0.59	*	0.06	*	**0.13**	-1.28
Ho	*	*	*	**-0.02**	**0.17**	-0.41	*	0.77	*	0.31	*	**0.50**	-1.04
La	1.47	*	*	**-0.04**	**0.66**	-0.77	2.39	0.42	*	0.02	*	**0.35**	-1.85
Li	*	*	*	***1.65***	*	*1.04*	*	*	*	*-0.64*	*	*	*-0.62*
Lu	*	*	*	**-0.45**	**1.03**	-0.37	*	0.77	*	-0.19	*	**-0.15**	-1.03
Mo	*	*	*	***3.63***	*	*	*-0.70*	*	*4.19*	*-1.63*	*	*	*-3.86*
Nb	**0.30**	*	**-0.47**	*	**-4.55**	*	-1.34	0.36	0.87	0.59	*	**0.94**	-1.35
Nd	-0.08	*	*	**-0.14**	**0.73**	-0.31	-0.44	0.96	*	-0.33	*	**1.13**	1.90
Ni	**-0.07**	-1.67	**0.53**	**0.00**	**-1.14**	0.33	-1.41	0.04	17.81	0.26	-2.97	*	-5.58
Pb	**4.12**	*	**0.00**	**3.18**	**2.79**	0.67	-2.79	0.40	0.20	-1.31	*	*	-5.69
Pr	*	*	*	**0.07**	**0.90**	-0.40	*	0.71	*	-0.16	*	**0.42**	-11.75
Rb	**0.50**	*	**2.99**	**0.66**	**0.10**	*	-0.27	*	-4.13	-0.15	*	**-0.38**	0.98
Sb	*	*	*	*	*	*	*	*	*	*-0.25*	*	*	*27.00*
Sc	*	-1.33	**-1.16**	**0.03**	**0.78**	*	-1.44	-0.07	*	0.02	*	**-0.01**	-4.15
Sm	*	*	*	**-0.25**	**0.47**	0.32	-1.54	1.21	*	-0.48	*	**1.09**	-5.00
Sn	*	*	*	*	*	*	*-0.03*	*	*	*-3.76*	*	***3.31***	*-4.95*
Sr	**-0.05**	-2.15	**-0.77**	**0.11**	**0.00**	-0.12	-0.78	-0.09	*	-0.12	*	**-2.63**	8.36
Ta	*	*	*	**-1.59**	**-4.09**	*	*	1.21	*	0.07	*	**-0.91**	26.46
Tb	*	*	*	**-0.20**	**0.42**	-0.26	*	0.63	*	0.12	*	**-0.17**	12.56
Th	*	*	*	**-0.17**	**0.22**	-0.35	-0.95	0.76	*	-0.13	*	**0.36**	0.74
Tl	*	*	*	*	*	*	*	*	*	-0.32	*	*	0.93
Tm	*	*	*	*	**1.22**	-0.18	*	0.61	*	-0.16	*	**0.96**	-0.89
U	*	*	*	**-0.29**	**0.25**	0.04	16.80	1.33	*	-0.10	*	**1.70**	-0.11
V	**0.35**	-0.99	**2.43**	**-0.80**	**1.26**	1.03	-2.53	0.46	4.50	-0.60	*	*	0.27
W	*	*	*	*	*	*	*10.87*	*	*1431.46*	*-0.03*	*	***21.48***	*2.82*
Y	**1.18**	*	**1.39**	**0.91**	**-0.07**	-1.01	-0.49	-0.28	-2.43	0.10	*	**-0.64**	-4.66
Yb	*	*	*	**0.11**	**1.20**	-0.32	-3.43	0.68	*	-0.72	*	**-0.35**	-0.81
Zn	**0.00**	-1.58	**0.91**	**2.17**	**0.91**	1.35	-0.78	4.76	1.02	0.44	-4.38	*	-4.73
Zr	**-0.67**	*	**6.13**	**1.42**	**0.00**	*	-0.47	0.13	-2.16	-0.20	*	**0.14**	-1.95

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

Table 3 - GeoPT43 Z-scores for Dolerite, ADS-1. 13/06/2018

Lab Code	B34	B35	B36	B37	B39	B40	B41	B42	B43	B44	B45	B46	B48
SiO2	0.09	-0.40	0.27	-1.20	0.69	0.01	0.27	0.82	1.83	-0.72	0.47	0.23	-0.35
TiO2	-0.11	-0.71	0.00	-0.47	-0.94	-0.17	-0.71	-0.47	-0.24	0.33	-0.20	-0.82	-15.52
Al2O3	0.24	0.00	-0.54	-1.57	-0.67	-0.11	-0.11	-0.59	-0.38	0.78	-0.16	0.40	1.75
Fe2O3T	-0.38	-1.12	-1.12	-0.67	-0.75	0.35	0.00	0.28	0.11	0.33	-0.67	-0.20	-1.28
MnO	-0.07	-0.14	-0.14	*	-0.07	-0.26	-0.14	*	-0.14	-0.18	0.04	-0.63	1.56
MgO	0.17	-1.27	-1.85	0.23	-0.81	0.81	-0.12	-2.67	0.70	0.99	-0.93	0.17	10.35
CaO	0.06	-1.01	1.09	0.47	-1.05	0.78	-0.78	-0.08	0.39	-0.62	0.19	-0.78	-0.95
Na2O	1.57	0.00	-0.70	*	0.00	1.35	0.23	0.00	-0.70	1.28	0.23	1.28	-2.13
K2O	0.62	0.03	-0.47	0.03	-1.24	0.08	0.03	-0.47	0.03	-1.24	0.27	-0.24	-2.27
P2O5	-0.21	0.00	0.00	1.39	-2.78	0.46	0.00	2.78	0.00	0.49	-0.70	-0.28	-2.22
Ba	1.43	5.54	1.18	-0.85	-0.51	-2.19	1.44	*	2.87	-0.64	-0.25	-0.51	-0.42
Be	*	1.53	4.60	*	*	-0.35	0.24	*	*	*	*	0.06	*
Ce	1.18	-0.20	0.85	0.29	0.24	-0.24	2.33	*	4.86	1.90	*	-0.97	*
Co	-0.25	0.30	0.10	0.84	0.37	0.94	0.74	*	-2.04	*	*	-0.20	*
Cr	-0.34	0.56	-0.14	*	0.73	1.52	2.20	*	-1.97	*	0.43	-0.92	*
Cs	*	3.31	7.41	*	-0.87	0.42	1.15	*	*	*	*	-0.15	*
Cu	-1.64	-0.59	-0.15	1.94	2.00	1.23	2.51	*	-4.04	*	-0.60	0.49	*
Dy	*	0.00	-0.11	*	-0.01	-0.16	0.35	*	*	1.49	*	-0.40	*
Er	*	-0.29	-0.33	*	0.41	0.34	1.50	*	*	1.55	*	-0.53	*
Eu	*	-0.02	0.24	*	0.57	-0.02	0.24	*	*	1.59	*	-0.53	*
Ga	0.51	0.11	1.66	*	-0.68	-0.70	1.93	*	-1.98	*	*	-0.04	*
Gd	*	-0.83	1.05	*	0.08	-0.39	0.28	*	*	1.42	*	-0.24	*
Hf	-1.88	0.00	1.41	*	-0.05	1.07	0.94	*	*	*	*	-0.23	*
Ho	*	0.39	-0.05	*	-0.08	-0.05	0.39	*	*	1.24	*	-0.49	*
La	1.36	0.28	0.43	*	-0.03	-0.54	0.28	*	1.20	1.59	-0.74	-1.09	*
Li	*	*	*2.65*	*	*	*0.02*	*1.80*	*	*	*	*	*-0.03*	*
Lu	*	1.03	-0.15	*	0.07	0.14	0.73	*	*	0.22	*	-0.68	*
Mo	*1.40*	*0.47*	*-2.28*	*	*-2.82*	*1.40*	*1.77*	*	*0.00*	*	*	*-0.37*	*
Nb	-0.79	0.19	2.18	-0.79	-0.12	0.02	-0.03	*	-0.58	*	*	0.04	*
Nd	2.14	0.22	0.22	*	1.11	-1.01	0.99	*	-0.04	1.88	*	0.80	*
Ni	-0.44	1.18	-2.74	2.69	-2.27	-0.79	1.14	*	-0.76	*	-0.16	-0.59	*
Pb	-1.86	3.19	-1.20	*	1.34	-2.23	3.32	*	2.92	*	*	-1.86	*
Pr	*	-0.11	0.44	*	-0.46	-0.79	0.70	*	*	1.81	*	-0.50	*
Rb	-0.39	0.98	2.43	-0.11	-0.39	1.52	1.22	*	-0.54	*	*	1.09	*
Sb	*	*	*25.88*	*807.67*	*26.64*	*-0.51*	*2.54*	*	*184.22*	*	*	*0.56*	*
Sc	0.39	-0.13	1.00	*	-0.38	-2.10	2.27	*	-0.42	1.55	*	-0.21	*
Sm	0.17	-0.07	0.23	*	0.70	-0.33	0.97	*	1.53	1.59	*	0.03	*
Sn	*-0.71*	*2.93*	*11.03*	*8.44*	*-2.57*	*-2.14*	*0.91*	*	*-3.89*	*	*	*	*
Sr	-0.22	-0.62	0.46	0.54	0.17	0.09	3.45	*	-1.22	*	*	0.12	-1.53
Ta	*	0.91	1.70	*	-0.68	0.00	-0.23	*	16.81	*	*	1.02	*
Tb	*	0.18	0.88	*	-0.20	0.18	0.65	*	*	0.97	*	-0.87	*
Th	6.96	0.50	-0.65	*	-0.23	0.26	0.45	*	3.38	*	*	-0.13	*
Tl	*	2.09	0.93	*	*	*	-0.24	*	106.60	*	*	-0.41	*
Tm	*	-0.37	0.16	*	-0.05	-0.10	-0.10	*	*	0.48	*	-0.50	*
U	*	0.98	-0.29	*	-0.05	1.16	0.62	*	42.66	*	*	-0.51	*
V	-0.82	0.94	0.18	-0.09	-0.02	0.64	1.80	*	-0.86	*	0.31	-0.67	*
W	*	*6.61*	*3.58*	*	*-2.12*	*	*64.59*	*	*132.66*	*	*	*-0.10*	*
Y	-0.21	0.63	0.90	0.70	0.03	1.18	1.81	*	-0.90	0.59	-0.70	-0.56	*
Yb	*	0.05	0.17	*	-0.72	0.11	0.11	*	*	0.34	*	-0.58	*
Zn	-0.14	1.98	-1.57	2.03	-2.36	-0.87	1.36	*	0.00	*	-0.11	-0.90	*
Zr	-0.59	0.13	0.28	-0.56	-0.20	0.35	-0.14	*	-0.39	*	-5.64	0.63	*

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

Table 3 - GeoPT43 Z-scores for Dolerite, ADS-1. 13/06/2018

Lab Code	B49	B51	B52	B53	B54	B56	B59	B60	B63	B64	B65	B67	B68
SiO2	-0.50	0.17	*	0.00	-0.07	-6.03	0.25	1.14	-0.70	-0.36	*	0.01	-0.54
TiO2	-1.18	0.12	*	-0.35	-0.38	3.53	0.06	0.28	0.40	-0.24	*	0.47	0.24
Al2O3	3.45	0.16	*	-0.52	0.16	0.86	0.00	1.41	-1.19	-0.97	*	0.03	0.32
Fe2O3T	-2.31	0.22	*	-0.89	-0.08	16.62	0.31	0.62	-2.34	-0.45	*	0.06	0.45
MnO	-2.54	-0.07	*	-0.59	-0.55	7.04	1.50	0.53	0.37	-0.14	0.01	-0.07	0.08
MgO	-4.58	0.41	*	-0.02	-0.46	-15.88	0.22	1.17	-1.24	-0.46	*	-0.46	-0.93
CaO	-0.85	-0.19	*	-1.26	0.24	6.28	0.50	0.44	0.25	0.08	*	-0.74	0.54
Na2O	4.41	0.46	*	0.35	-0.21	0.23	-0.02	-1.16	1.07	-2.09	*	0.93	-0.23
K2O	0.01	-0.24	*	-0.92	0.08	7.53	0.44	-1.27	1.63	0.03	*	0.27	0.03
P2O5	7.44	0.00	*	-0.14	-0.39	14.32	0.21	-1.53	1.75	0.00	*	0.00	0.00
Ba	0.19	0.28	-1.99	-0.54	0.48	-30.08	0.54	-3.66	-0.13	1.62	1.07	-0.07	0.47
Be	*	*	*	-0.29	*	*	-1.49	-4.14	-0.57	*	*	*	*
Ce	0.50	0.10	-0.12	-0.12	-0.51	-23.12	-0.29	-1.86	0.64	-0.97	0.64	*	4.86
Co	0.84	0.60	*	0.11	-1.74	*	0.72	-1.86	0.91	-5.26	-0.06	*	-4.27
Cr	-0.84	1.10	*	1.32	-0.38	-24.68	0.96	4.54	-5.88	-1.03	2.58	*	0.85
Cs	*	-0.75	-0.54	-0.22	*	*	2.86	-0.61	0.21	*	*	*	*
Cu	0.02	1.04	*	-0.66	-1.13	-23.39	0.28	1.53	0.86	-2.66	-0.22	*	0.61
Dy	0.27	0.32	0.30	0.17	-0.94	*	-0.15	-0.90	0.68	*	*	*	*
Er	0.66	0.20	0.05	-0.08	*	*	-0.12	-0.98	0.38	*	*	*	*
Eu	0.15	-0.75	-0.02	0.12	*	*	-0.17	-0.51	-0.05	*	*	*	*
Ga	1.01	0.74	*	0.69	-0.80	*	0.17	-0.74	0.10	-1.71	0.91	*	-0.80
Gd	0.26	0.29	0.09	-0.17	*	*	0.08	-1.14	-0.01	-2.92	*	*	*
Hf	1.02	-0.16	1.38	-0.19	-0.16	*	0.28	*	1.25	-0.31	*	*	*
Ho	0.25	-0.19	-0.27	-0.11	*	*	-0.08	-0.81	0.30	*	*	*	*
La	0.45	-0.24	-0.71	-0.18	2.19	*	0.18	-0.78	0.47	2.34	0.98	*	-4.52
Li	*-0.10*	*1.47*	*	***-0.45***	*	*	*0.05*	*	*	*	*	*	*
Lu	0.22	-0.08	-0.36	-0.17	*	*	0.37	-0.86	-0.07	*	*	*	*
Mo	*	*-0.47*	*	***0.90***	*1.16*	*	*1.09*	***-0.88***	***0.47***	*	*-0.58*	*	*
Nb	-0.12	-1.34	1.63	0.79	0.19	*	-0.12	-0.07	-0.06	-4.88	-0.17	*	-2.67
Nd	0.33	-0.02	-0.23	-0.22	-0.75	*	0.04	-0.74	0.66	10.48	*	*	1.44
Ni	-0.19	0.48	*	0.79	0.02	*	1.56	-3.60	0.31	1.83	0.19	*	-0.33
Pb	0.00	0.00	0.53	-0.82	1.73	*	2.16	1.95	0.37	-2.66	-1.42	*	0.00
Pr	0.04	0.23	-0.66	-0.25	*	*	-0.10	-0.95	0.21	*	*	*	*
Rb	0.25	0.01	-0.30	-0.30	0.02	*	0.69	-0.75	0.56	2.99	0.42	*	-2.64
Sb	*	*	*	*	*	*	*0.76*	*	***0.88***	*	*	*	*
Sc	-0.28	0.54	-1.01	0.01	0.11	*	0.17	-2.82	*	-1.16	0.05	*	*
Sm	0.43	0.37	-0.71	0.49	-1.74	*	-0.27	-0.23	1.09	*	*	*	*
Sn	*	*-0.08*	*	***-0.79***	***5.17***	*	*0.34*	***3.57***	***0.90***	*	*	*	***-11.88***
Sr	0.27	0.23	-0.92	0.54	0.44	-30.83	0.51	-2.99	-1.21	-0.69	0.05	0.81	1.38
Ta	-0.62	-1.82	2.27	-0.27	*	*	1.02	-0.89	0.27	*	*	*	*
Tb	0.15	-0.03	-0.17	0.22	*	*	0.21	-0.53	*	*	*	*	*
Th	0.73	-0.23	-0.02	-0.34	-0.45	*	0.25	-1.17	0.37	*	1.42	*	18.70
Tl	-0.49	*	*	1.11	*	*	*	*	0.22	*	*	*	*
Tm	0.31	-0.18	0.06	0.12	*	*	0.48	-1.05	0.34	*	*	*	*
U	-0.03	-0.69	-0.89	-0.36	2.30	*	0.49	-2.92	0.24	*	*	*	*
V	-0.36	0.54	*	0.08	-0.22	-29.96	0.73	-1.66	2.20	-1.08	0.77	*	-2.25
W	*	*	*	*	*	*	*	***9.73***	***2.26***	*	*	*	*
Y	-0.66	-0.17	1.11	0.79	1.04	*	0.00	-1.16	*	0.70	0.47	*	0.70
Yb	0.40	0.31	-0.01	0.32	*	*	-0.12	-1.01	0.03	*	*	*	*
Zn	0.45	0.34	*	0.88	0.43	-25.46	-0.37	1.90	2.53	-1.12	0.64	*	0.46
Zr	-0.14	-0.42	3.62	0.11	0.26	-27.73	-0.28	2.38	-2.23	-4.18	0.55	*	-0.28

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

Table 3 - GeoPT43 Z-scores for Dolerite, ADS-1. 13/06/2018

Lab Code	B69	B70	B71	B72	B74	B75	B76	B77	B78	B80	B81	B82	B84
SiO2	-0.85	-0.62	*	-0.01	6.12	-0.54	-1.68	-0.72	-0.45	*	0.05	-0.12	-1.20
TiO2	18.91	0.76	0.47	-0.94	0.47	0.24	1.88	0.47	-4.00	*	0.33	-1.51	-0.94
Al2O3	0.36	0.88	-0.43	0.16	1.35	0.86	-0.97	3.62	3.56	*	0.13	1.35	-0.49
Fe2O3T	-5.55	0.62	2.01	-1.31	*	-1.23	3.35	0.00	-3.68	*	0.22	0.44	0.00
MnO	-10.02	0.15	-0.14	-0.07	-0.14	9.96	-0.14	0.08	-4.56	*	0.60	-2.55	-0.82
MgO	-0.34	1.60	2.43	0.12	-3.48	1.85	-2.20	4.06	-8.87	*	-0.10	0.17	-1.16
CaO	-3.28	0.57	3.10	0.00	0.08	0.00	0.93	-2.64	-3.37	*	0.38	0.04	-0.54
Na2O	-15.33	2.09	1.16	0.12	0.00	1.39	0.46	-2.09	*	*	0.02	4.06	-3.25
K2O	-2.27	0.27	0.92	1.27	0.03	0.53	-1.47	-3.27	-0.89	*	-0.04	-0.57	0.03
P2O5	-5.14	-0.14	*	1.39	-1.39	0.14	-0.56	-1.39	*	*	0.28	1.25	-2.09
Ba	*	0.72	3.38	*	-0.23	-0.40	-1.14	-20.13	-0.86	*	*	-1.29	-0.50
Be	*	*	*	*	*	-0.12	-1.66	-6.49	*	*	*	*	*
Ce	*	*	0.97	*	0.35	-0.11	-1.48	-0.88	-0.68	-3.50	*	1.75	3.53
Co	-13.70	-1.64	0.79	*	*	0.37	-2.33	-3.00	*	*	*	-0.30	*
Cr	2.73	1.77	0.85	*	-0.81	1.52	0.39	-2.09	-4.76	*	*	-4.79	5.07
Cs	*	*	*	*	0.18	-0.03	-0.76	*	*	*	*	301.87	*
Cu	-5.21	-5.51	*	*	0.14	0.00	-2.03	0.50	-7.22	*	*	-2.30	-0.51
Dy	*	*	0.00	*	1.83	-0.18	-0.67	-1.21	*	-0.44	*	*	0.30
Er	*	*	*	*	0.68	-0.30	-0.98	-0.29	*	1.12	*	*	-1.78
Eu	*	*	0.24	*	1.39	-0.25	-0.88	-0.47	*	-0.08	*	*	1.64
Ga	*	-1.31	0.51	*	-0.62	-0.04	-1.74	-0.86	-2.95	*	*	1.02	*
Gd	*	*	*	*	0.30	-0.59	4.25	-1.72	*	5.10	*	*	1.21
Hf	*	-4.86	-0.44	*	0.41	-0.62	2.97	0.69	*	*	*	*	*
Ho	*	*	*	*	1.16	0.02	-0.88	1.05	*	0.61	*	*	0.50
La	*	*	0.59	*	0.43	-0.58	-1.60	-1.38	-1.19	-1.05	*	-6.04	*
Li	*	*-0.66*	*	*	*	*0.13*	*-2.61*	*	*	*	*	*	*3.40*
Lu	*	*	1.32	*	0.14	-0.36	-1.42	1.32	*	0.73	*	*	0.23
Mo	*	*	*	*	*	*0.70*	*-1.13*	*-0.65*	*	*	*	*8.38*	*-1.44*
Nb	*	*	*	*	-0.58	0.56	1.29	-6.19	-1.17	*	*	-1.57	*
Nd	*	*	-0.25	*	0.41	-0.21	-1.24	-0.76	-0.86	-2.01	*	-1.78	2.73
Ni	-11.52	1.13	*	*	*	-0.34	0.59	-1.02	-5.31	*	*	0.10	-0.24
Pb	-6.64	*	*	*	0.66	-1.45	-7.27	*	-1.66	*	*	-11.96	-0.40
Pr	*	*	*	*	0.37	0.18	-0.93	0.13	*	-2.36	*	*	2.46
Rb	*	*	1.09	*	0.34	-0.02	-1.14	0.06	-1.48	*	*	2.99	*
Sb	*194.37*	*	*	*	*	*-0.71*	*-1.52*	*	*	*	*	*	*
Sc	*	*	0.85	*	0.18	-1.70	-2.15	-0.55	*	118.41	*	-4.90	*
Sm	*	*	0.13	*	1.43	-0.47	-0.32	-2.17	121.55	-1.68	*	*	2.56
Sn	*	*	*	*	*	*2.48*	*-0.96*	*-0.44*	*7.17*	*	*	*-2.29*	*
Sr	*	1.46	-2.45	*	1.00	0.40	0.00	-2.02	-1.50	*	*	-1.30	1.61
Ta	*	*	-1.42	*	0.00	-0.27	-0.06	-2.27	*	*	*	*	*
Tb	*	*	-0.87	*	1.23	-0.20	-1.01	0.07	*	2.17	*	*	0.53
Th	*	*	-0.74	*	0.17	-1.34	-2.20	0.02	*	*	*	9.12	*
Tl	-6.91	*	*	*	*	0.11	-0.64	*	*	*	*	*	*
Tm	*	*	*	*	0.40	0.06	*	1.49	*	0.43	*	*	*
U	*	*	*	*	-0.20	-0.18	-1.40	0.80	*	*	*	42.66	*
V	-13.05	*	1.44	*	*	-1.76	-0.21	-0.66	6.52	*	*	0.36	1.08
W	*	*	*	*	*	*-1.03*	*-1.56*	*-0.96*	*	*	*	*	*
Y	*	0.00	*	*	1.11	-1.09	-2.01	-2.29	-1.32	-5.39	*	0.00	-0.63
Yb	*	*	0.80	*	-0.12	0.26	-1.31	-0.98	*	0.31	*	*	0.59
Zn	-7.88	-0.11	-1.46	*	*	1.00	-2.96	*	-2.20	*	*	-1.12	1.65
Zr	*	-2.79	1.46	*	0.14	-0.89	-2.71	-0.29	-1.05	*	*	-0.98	*

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

Table 3 - GeoPT43 Z-scores for Dolerite, ADS-1. 13/06/2018

Lab Code	B86	B87	B89	B90	B91	B93	B94	B95	B96	B97	B98	B99	B100
SiO2	-0.09	0.23	0.06	0.03	-0.10	**-2.49**	-0.14	**-0.77**	0.70	-0.71	0.11	1.49	0.01
TiO2	-0.24	0.13	0.47	0.12	-0.46	**-1.41**	0.14	**0.00**	-0.35	-2.27	0.23	-0.71	0.00
Al2O3	0.03	0.11	0.35	0.08	0.31	**-0.49**	0.08	**-0.38**	0.97	6.86	0.44	-0.57	-0.03
Fe2O3T	0.17	0.11	-0.28	0.33	-2.27	**0.39**	0.03	**0.17**	-0.89	-1.60	0.18	-1.65	0.20
MnO	1.05	0.15	0.60	-0.07	-1.20	*	0.71	**-0.14**	-0.07	-0.35	0.56	-0.30	0.26
MgO	-0.41	0.42	0.06	0.23	-1.91	**-2.32**	-0.06	**-0.46**	0.12	-1.24	-0.15	-1.97	-0.41
CaO	-0.08	0.24	0.16	-0.04	5.45	**-3.72**	0.18	**0.00**	-0.81	-1.37	0.17	-2.40	0.23
Na2O	-0.70	-0.19	-0.23	0.35	-0.59	**1.16**	-1.16	**0.70**	-3.48	3.37	0.44	-6.49	-0.23
K2O	0.27	-0.01	0.01	0.27	1.94	**2.03**	-1.41	**-0.47**	-1.24	0.64	-0.08	5.77	-0.24
P2O5	0.00	-0.21	0.42	0.56	6.54	**2.78**	-0.49	**1.39**	*	8.29	-0.08	-0.76	-0.28
Ba	*	-7.64	*	0.41	9.80	**-0.06**	-0.42	**-3.14**	*	5.21	0.82	0.15	0.76
Be	*	*	*	0.77	2.89	*	*	**-0.47**	*	*	-0.55	0.30	*
Ce	*	*	*	0.64	7.70	**0.08**	-0.74	**-1.36**	*	*	0.14	0.12	-3.79
Co	*	2.09	*	0.35	8.23	**-7.25**	-0.82	**-0.55**	*	*	0.12	-0.54	1.84
Cr	*	2.44	*	2.31	7.04	**-3.72**	0.33	**0.96**	*	*	0.45	3.25	3.52
Cs	*	*	*	0.45	*	**-0.01**	*	**-0.78**	*	*	-0.04	0.07	*
Cu	*	0.13	*	0.31	9.43	**-0.26**	-0.06	**-4.84**	*	7.78	0.11	4.31	3.40
Dy	*	*	*	0.40	4.91	**-0.97**	*	**-0.97**	*	*	0.09	0.55	*
Er	*	*	*	0.58	5.44	**-0.82**	*	**-1.16**	*	*	0.32	1.77	*
Eu	*	*	*	-0.01	5.23	**0.04**	*	**-0.66**	*	*	0.19	3.35	*
Ga	*	*	*	0.51	8.37	**-2.16**	0.05	**1.02**	*	-4.45	-0.07	0.43	0.05
Gd	*	*	*	0.16	5.45	**-0.56**	*	**-2.25**	*	*	0.01	0.93	*
Hf	*	*	*	-0.16	-1.08	**0.09**	*	**-0.91**	*	*	0.19	*	-0.94
Ho	*	*	*	-0.35	4.64	**-2.27**	*	**-0.60**	*	*	0.11	0.47	*
La	*	*	*	0.52	6.95	**-0.33**	-1.54	**-2.00**	*	*	0.25	0.14	1.17
Li	*	*	*	*0.61*	*5.73*	***0.09***	*	*	*	*	*-0.24*	*0.77*	*
Lu	*	*	*	0.51	3.75	**-0.06**	*	**-0.74**	*	*	0.05	0.72	*
Mo	*	*	*	*1.86*	*5.21*	***-0.74***	*	***-1.12***	*	*	*0.63*	*1.86*	*
Nb	*	0.32	*	0.87	8.50	**-0.58**	0.87	**-2.78**	*	*	0.00	-1.01	-1.34
Nd	*	*	*	0.53	6.54	**0.28**	-0.67	**-1.59**	*	*	0.46	0.33	-1.21
Ni	*	0.05	*	0.05	9.03	**1.18**	0.01	**-1.75**	*	2.42	0.11	1.40	0.27
Pb	*	2.66	*	0.00	7.78	**-1.33**	-1.33	**-0.40**	*	*	-0.26	0.21	*
Pr	*	*	*	0.05	5.95	**0.15**	*	**-1.41**	*	*	0.19	0.34	0.27
Rb	*	-0.11	*	0.33	7.22	**-0.06**	0.49	**-0.06**	*	*	0.52	-1.04	-1.32
Sb	*	*	*	*	*1.78*	*	*	***-1.52***	*	*	*-0.30*	*	*
Sc	*	*	*	0.35	7.63	**-1.76**	1.02	**1.41**	*	*	0.02	-0.63	0.17
Sm	*	*	*	-0.03	5.10	**-0.23**	-0.23	**-0.65**	*	*	0.27	0.46	*
Sn	*	*	*	*0.72*	*-1.43*	*	*0.40*	***5.27***	*	*	*0.91*	*	*
Sr	*	0.00	*	0.84	11.52	**-0.15**	-0.31	**-0.54**	-0.08	-0.73	0.42	0.92	0.27
Ta	*	*	*	0.34	14.14	**0.00**	*	**0.23**	*	*	0.07	*	*
Tb	*	*	*	-0.49	5.17	**-0.52**	*	**-1.37**	*	*	-0.10	2.60	*
Th	*	-0.23	*	-0.01	5.14	**-0.07**	*	**-1.60**	*	*	0.27	0.37	*
Tl	*	*	*	-0.41	3.37	**-0.12**	*	*	*	*	-0.06	0.64	*
Tm	*	*	*	-0.18	3.79	**-0.10**	*	**-1.13**	*	*	0.02	0.32	*
U	*	*	*	0.04	3.93	**0.00**	*	**-1.01**	*	*	0.20	0.26	*
V	*	-1.30	*	1.30	12.46	**-5.22**	0.04	**0.00**	*	6.52	0.47	0.09	-0.27
W	*	*	*	*-0.48*	*4.31*	*	*	*	*	*	*0.14*	*	*
Y	*	-1.39	*	0.35	7.03	**-1.18**	1.74	**-0.97**	*	*	0.37	-0.70	0.00
Yb	*	*	*	0.31	4.26	**-0.41**	*	**-0.81**	*	*	0.18	0.95	*
Zn	*	1.58	*	0.34	10.14	**-2.47**	0.90	**2.94**	-1.46	-4.39	0.48	-0.34	2.48
Zr	10.94	-2.09	*	0.14	8.77	**-1.53**	0.00	**-1.39**	0.07	-0.91	0.22	-0.91	0.77

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

Table 3 - GeoPT43 Z-scores for Dolerite, ADS-1. 13/06/2018

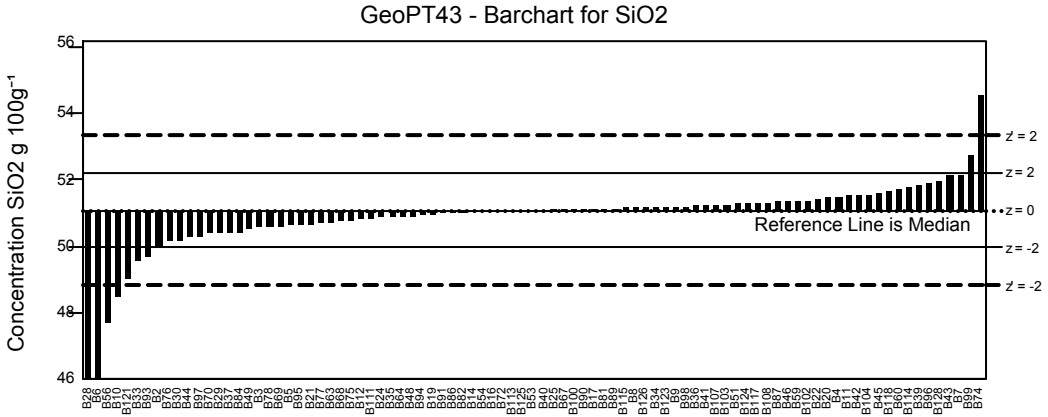
Lab Code	B102	B103	B104	B107	B108	B109	B111	B113	B114	B115	B117	B118	B120
SiO2	0.52	0.15	0.86	0.27	0.21	*	-0.22	-0.01	0.61	0.07	0.38	0.51	*
TiO2	-0.75	0.27	0.47	0.47	0.04	*	-0.07	0.59	0.24	0.81	1.18	0.00	-0.47
Al2O3	0.22	0.05	0.32	-0.11	-0.16	-1.94	-0.16	-0.27	0.54	0.00	1.67	0.32	*
Fe2O3T	-0.07	-0.06	0.11	-0.11	-0.03	4.24	-0.03	2.12	-0.33	-0.22	-2.73	-1.12	*
MnO	-0.08	-0.30	1.43	-0.14	0.26	-0.82	0.04	0.53	0.94	-0.86	4.35	-0.41	-0.14
MgO	0.78	0.12	-1.16	-2.90	0.00	-2.20	-0.43	0.42	1.04	0.71	1.27	0.12	*
CaO	0.36	-0.27	-0.47	0.93	-0.19	-0.39	-0.45	-1.17	-0.43	-0.66	-2.71	0.27	*
Na2O	-0.07	-0.37	-0.46	-5.10	0.12	*	0.16	-3.83	0.23	-0.39	3.02	0.70	*
K2O	-0.21	0.12	-0.97	0.03	-0.24	*	0.24	0.23	-0.99	-0.06	0.03	0.27	*
P2O5	0.04	-0.42	-0.83	-0.42	-0.21	*	0.52	0.00	0.56	0.35	-2.78	0.28	*
Ba	0.69	-2.01	*	-1.73	-1.17	0.13	0.84	-0.06	0.90	*	2.59	*	-1.55
Be	2.01	*	*	-0.71	-0.36	*	*	0.71	0.06	*	*	*	0.35
Ce	-0.87	*	*	0.35	-0.80	-0.12	-0.11	-0.93	0.70	*	5.24	*	0.19
Co	0.54	*	*	-0.30	-0.54	-0.74	0.83	-0.15	1.71	*	-1.29	*	0.45
Cr	-0.34	-2.13	*	3.27	-0.74	0.97	0.84	0.58	*	*	-2.10	*	-0.71
Cs	-0.06	*	*	-0.30	0.34	-0.66	*	*	*	*	*	*	-0.06
Cu	0.93	-0.06	*	0.61	-0.54	0.03	-0.40	-0.80	3.04	*	-1.57	*	0.21
Dy	0.24	*	*	0.43	-0.65	-0.13	*	0.19	0.35	*	*	*	0.67
Er	0.05	*	*	0.25	-0.47	-0.33	*	-0.04	0.63	*	*	*	-0.04
Eu	0.55	*	*	0.43	-0.46	0.04	*	0.17	*	*	*	*	0.24
Ga	0.16	1.42	*	1.66	-0.08	-0.04	0.31	-0.54	-0.85	*	-0.80	*	0.56
Gd	-0.23	*	*	0.81	-0.83	0.47	*	-0.44	1.52	*	*	*	-0.05
Hf	-0.22	*	*	0.38	-0.36	0.63	0.10	-3.20	-0.25	*	-6.58	*	0.44
Ho	0.17	*	*	0.94	-0.16	0.17	*	-0.27	-0.46	*	*	*	0.06
La	-0.50	*	*	-0.05	-0.84	-0.27	-0.19	-1.24	0.18	*	63.31	*	0.13
Li	*-1.91*	*	*	*-1.50*	*-0.83*	*	*	*	*-0.17*	*	*	*	*-0.34*
Lu	0.14	*	*	0.73	-0.05	-0.03	*	-0.45	-0.81	*	*	*	-0.15
Mo	*0.37*	*	*	*4.05*	*0.48*	*	*1.89*	*0.00*	*	*	*-0.93*	*	*0.88*
Nb	0.29	0.32	*	0.41	-0.26	0.91	-0.26	-1.23	-1.34	*	-1.57	*	1.08
Nd	-0.49	*	*	0.65	-0.52	0.41	-1.37	-0.94	0.09	*	-1.14	*	0.15
Ni	-2.24	-0.16	*	-2.05	-0.85	1.03	-0.03	0.62	0.05	*	-2.05	*	0.10
Pb	0.27	*	*	-0.66	0.76	-1.21	-0.01	-0.40	*	*	7.97	*	-1.33
Pr	-0.48	*	*	0.57	-0.67	0.55	*	-0.50	*	*	*	*	0.00
Rb	-0.12	-0.11	*	5.08	-0.37	0.42	-0.49	-0.23	-0.51	*	1.39	*	0.10
Sb	*0.51*	*	*	*	*	*	*	*20.81*	*	*	*	*	*
Sc	-0.44	*	*	1.60	-2.33	0.52	0.94	1.02	1.19	*	-1.91	*	0.48
Sm	0.45	*	*	0.11	-0.53	-0.03	*	-0.33	0.09	*	-1.27	*	0.75
Sn	*-1.26*	*	*	*	*2.55*	*	*-0.05*	*-0.13*	*	*	*	*	*-0.80*
Sr	0.08	0.12	*	-0.38	-1.00	0.12	-0.10	-0.46	-0.61	*	-0.31	*	0.92
Ta	1.59	*	*	0.45	0.68	-0.23	*	16.92	*	*	*	*	-0.11
Tb	0.42	*	*	-0.63	-0.21	0.65	*	-0.40	0.03	*	*	*	0.42
Th	0.36	*	*	-0.26	-1.41	-0.22	*	1.41	0.25	*	4.33	*	-0.02
Tl	-0.82	*	*	0.17	0.81	*	*	-2.56	*	*	*	*	2.09
Tm	0.16	*	*	-0.89	-0.01	0.38	*	-0.10	*	*	*	*	0.16
U	-0.29	*	*	-1.01	-0.30	-0.36	*	2.25	-0.24	*	36.32	*	-0.11
V	-1.06	0.00	*	0.90	-1.18	0.13	-1.08	2.07	-1.44	*	-0.18	*	0.09
W	*-4.74*	*	*	*	*4.11*	*	*	*15.03*	*	*	*946.95*	*	*3.33*
Y	0.52	-0.35	*	0.90	-1.18	1.18	0.95	-1.04	1.39	*	0.00	*	1.53
Yb	0.22	*	*	1.03	-0.27	0.17	*	-0.29	0.92	*	*	*	0.40
Zn	-1.12	0.23	*	0.46	-0.35	-0.20	-0.12	0.46	0.34	*	-0.45	*	0.68
Zr	0.33	-0.14	*	0.42	-0.72	7.14	-0.20	-0.77	0.35	*	-0.28	*	0.42

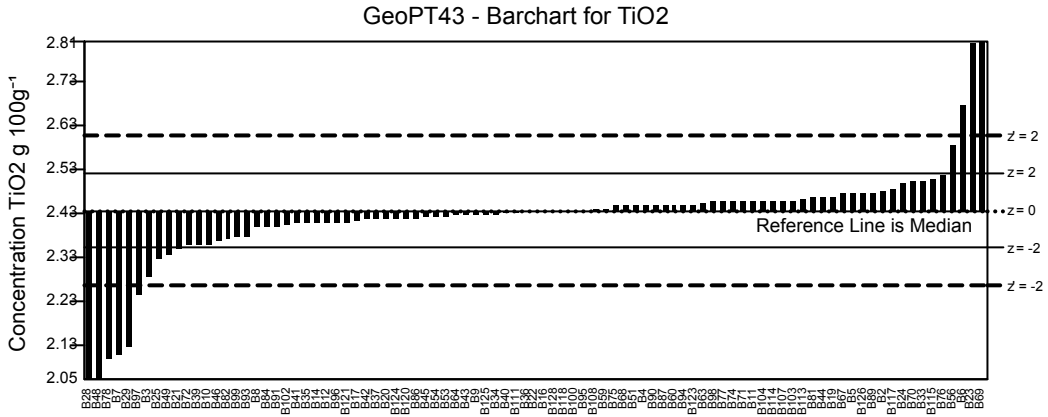
Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

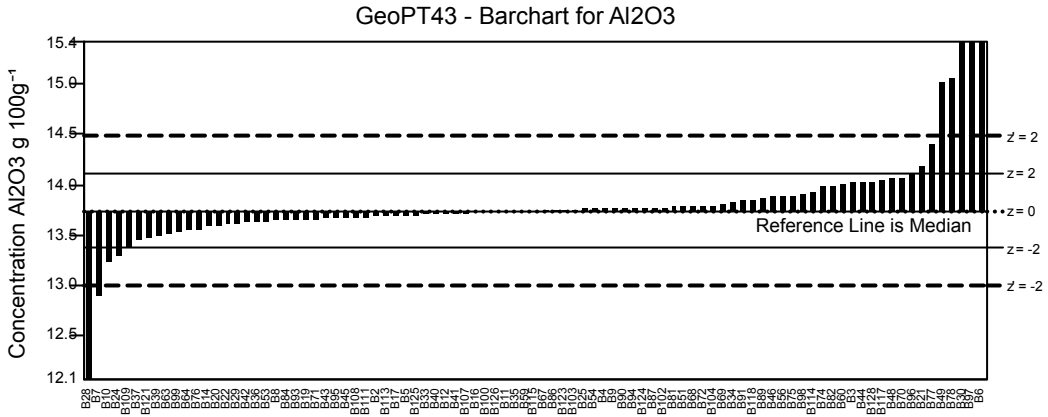
Table 3 - GeoPT43 Z-scores for Dolerite, ADS-1. 13/06/2018

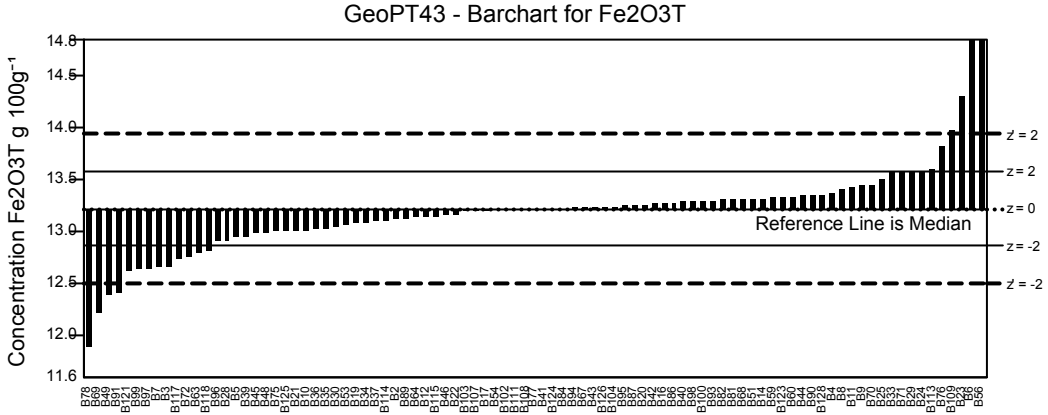
Lab Code	B121	B123	B124	B125	B126	B128
SiO2	-1.84	**0.18**	0.18	**-0.01**	0.08	0.78
TiO2	-0.33	**0.33**	-0.24	**-0.24**	0.47	0.00
Al2O3	-0.72	**0.05**	0.08	**-0.22**	-0.03	0.78
Fe2O3T	-1.69	**0.61**	0.00	**-1.23**	0.06	0.36
MnO	*	**0.98**	-1.20	**-0.14**	-0.07	0.83
MgO	-1.04	**0.46**	0.23	**0.58**	0.12	0.00
CaO	-2.43	**0.62**	0.12	**1.24**	0.00	0.50
Na2O	-1.51	**-2.32**	0.46	**1.39**	-0.12	0.00
K2O	0.01	**-0.47**	0.77	**1.03**	0.27	2.77
P2O5	1.60	**-0.42**	1.39	**0.00**	0.00	1.39
Ba	-1.90	**1.27**	0.68	**-0.50**	0.32	1.60
Be	*	*	*	*	0.47	*
Ce	-0.16	**0.66**	0.10	**-0.51**	0.02	0.64
Co	3.80	**-0.30**	*	**0.15**	0.07	-0.07
Cr	-2.26	**-2.37**	0.43	**1.52**	-0.33	-1.24
Cs	*	**0.18**	*	**-0.30**	0.09	*
Cu	2.93	**-0.11**	0.31	**0.76**	0.45	-2.18
Dy	-0.65	**0.19**	*	**-0.19**	0.01	*
Er	-0.28	**-0.33**	*	**0.29**	0.03	*
Eu	0.33	**-0.02**	*	**-0.08**	-0.01	*
Ga	-0.65	0.05	0.05	**-0.34**	0.10	0.10
Gd	0.68	**0.05**	*	**-0.74**	-0.22	*
Hf	*	**0.47**	*	**0.28**	-0.03	0.00
Ho	-0.66	**0.39**	*	**-0.16**	-0.08	*
La	-0.19	**0.36**	1.17	**-0.48**	0.06	60.99
Li	*	*	*	*	*0.83*	*
Lu	-0.61	**0.14**	*	*	-0.06	*
Mo	*5.22*	*0.54*	*	***1.86***	*	*0.47*
Nb	*	**-2.01**	-0.23	**-0.69**	0.48	-0.95
Nd	0.39	**0.35**	*	**-0.10**	0.11	-0.18
Ni	-2.82	**2.26**	-0.38	**2.17**	0.07	4.64
Pb	7.19	**-0.53**	2.66	**0.40**	0.00	-2.06
Pr	-0.04	**0.31**	*	**-0.33**	-0.18	*
Rb	-2.61	**0.58**	0.29	**-0.79**	0.45	-0.63
Sb	*1675.99*	*	*	*	*	*21.06*
Sc	*	**0.11**	-0.21	**0.11**	0.28	-3.16
Sm	-0.07	**0.57**	*	**-1.07**	0.06	-1.74
Sn	*	*	*	***1.44***	*	*0.19*
Sr	*	**-0.08**	0.00	**-0.61**	0.42	-15.34
Ta	*	0.85	*	**-0.79**	0.11	26.00
Tb	-0.36	**0.77**	*	**-0.52**	-0.03	*
Th	0.02	**-0.26**	2.17	**-0.45**	-0.30	2.88
Tl	*	*	*	*	*	*
Tm	-0.57	**-0.10**	*	*	0.07	*
U	-0.04	**-0.65**	3.21	**0.07**	-0.15	5.93
V	-1.29	**-0.18**	-0.49	**0.36**	0.09	*
W	*	*0.03*	*	***-0.45***	*	*
Y	-0.55	**0.28**	0.70	**-1.53**	0.52	*
Yb	-0.53	**-0.01**	*	**-0.41**	0.14	13.27
Zn	-3.56	**-0.67**	-0.45	**2.03**	0.12	-0.56
Zr	*	**-0.84**	0.77	**0.00**	0.21	1.95

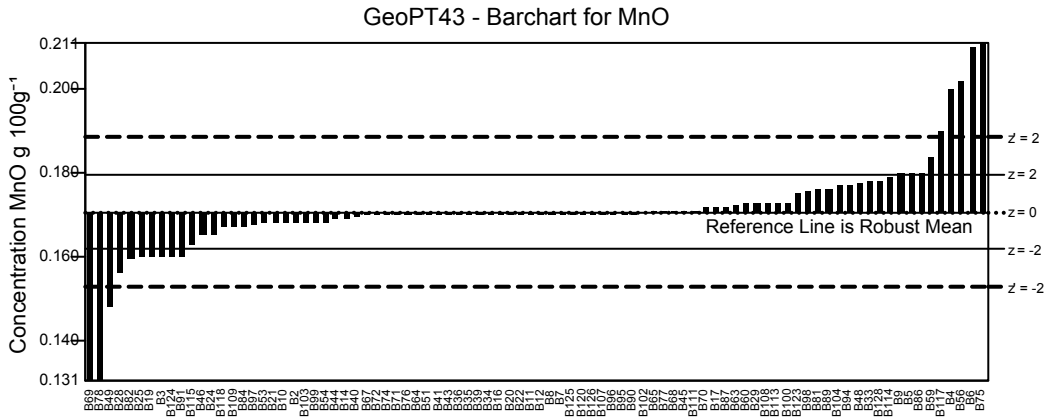
Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

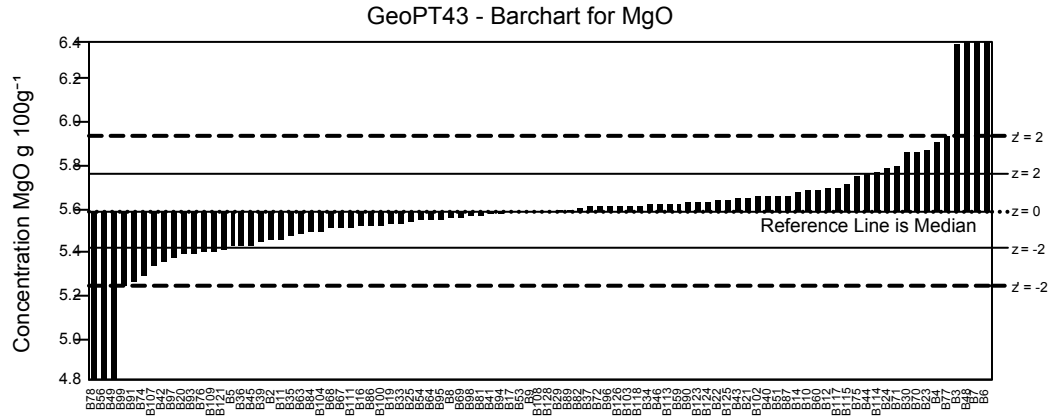

GeoPT43 - Barchart for SiO2
Concentration SiO2 g 100g⁻¹
Reference Line is Median
z = 2
z = 2
z = 0
z = -2
z = -2


GeoPT43 - Barchart for TiO2
Concentration TiO2 g 100g⁻¹
Reference Line is Median
z = 2
z = 2
z = 0
z = -2
z = -2

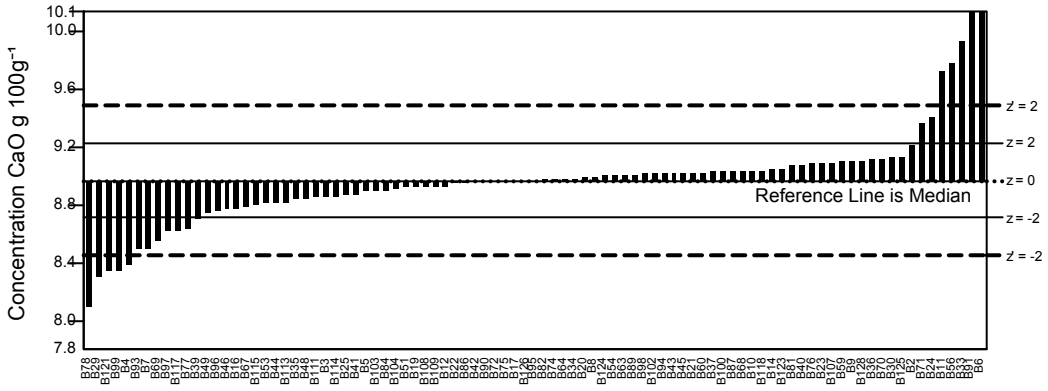

GeoPT43 - Barchart for Al2O3
Concentration Al2O3 g 100g⁻¹
Reference Line is Median
z = 2
z = 2
z = 0
z = -2
z = -2


GeoPT43 - Barchart for Fe2O3T
Concentration Fe2O3T g 100g⁻¹
Reference Line is Median
z = 2
z = 2
z = 0
z = -2
z = -2

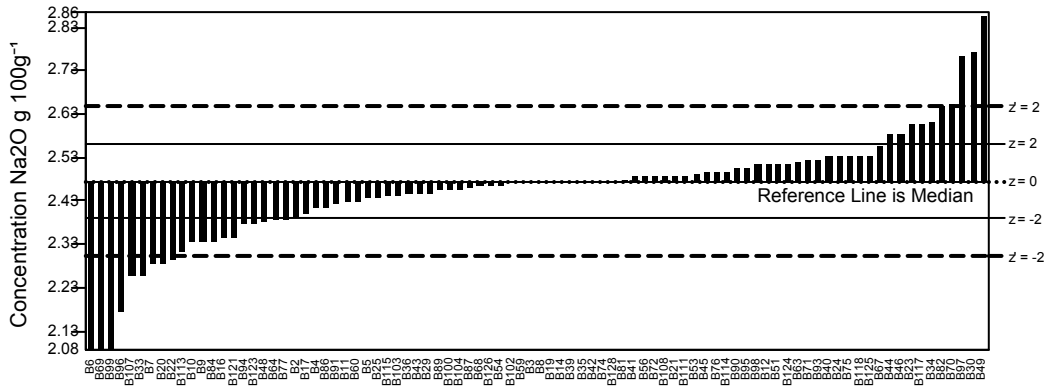

GeoPT43 - Barchart for MnO
Concentration MnO g 100g⁻¹
Reference Line is Robust Mean
z = 2
z = 2
z = 0
z = -2
z = -2


GeoPT43 - Barchart for MgO
Concentration MgO g 100g⁻¹
Reference Line is Median
z = 2
z = 2
z = 0
z = -2
z = -2

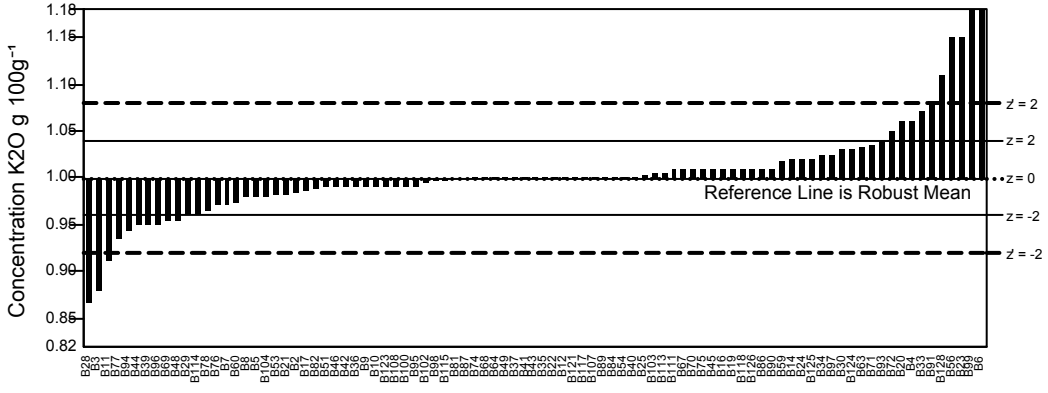
GeoPT43 - Barchart for CaO



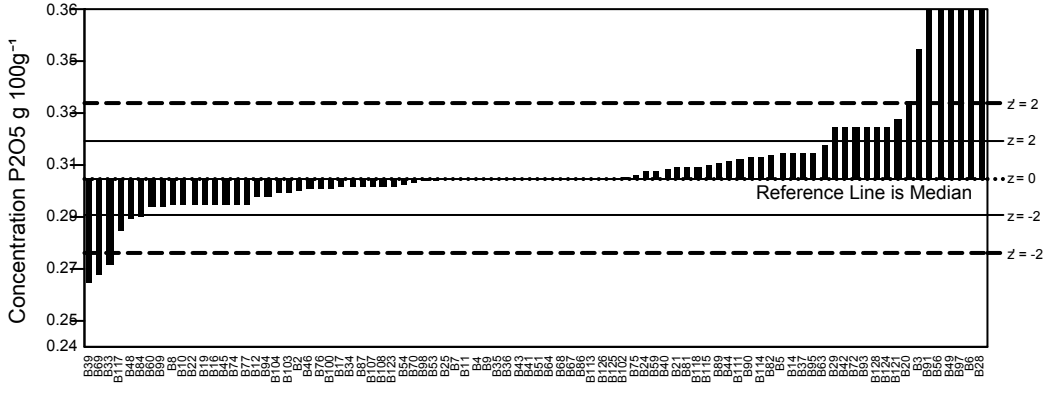
GeoPT43 - Barchart for Na2O



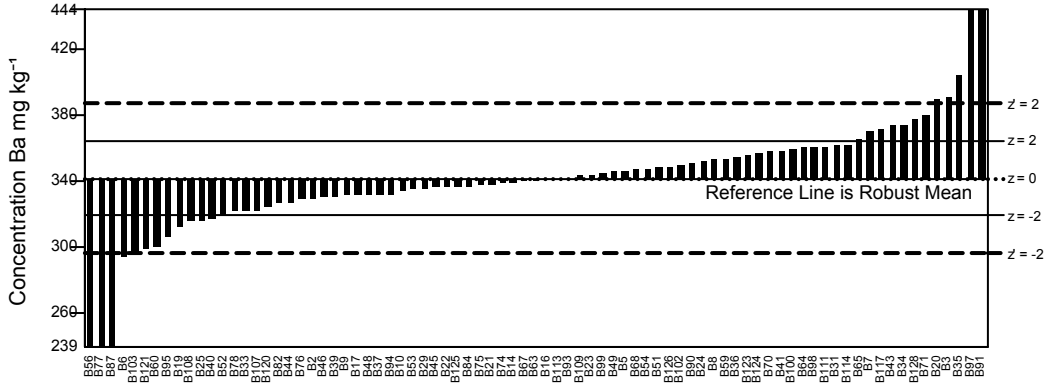
GeoPT43 - Barchart for K2O



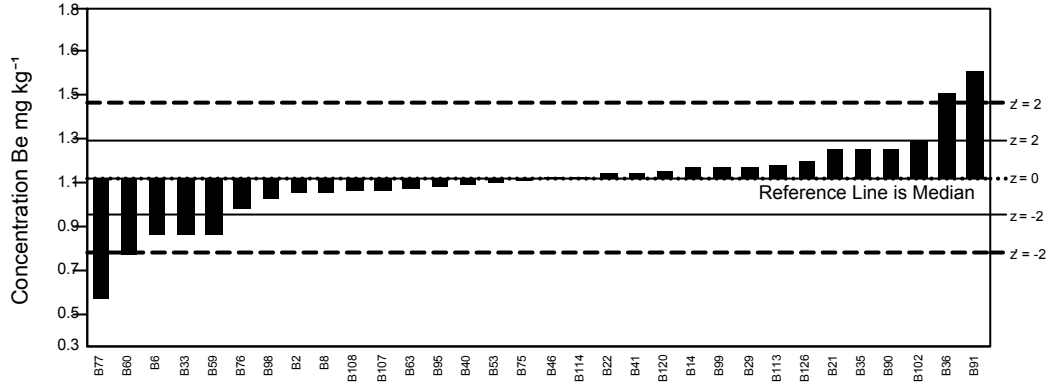
GeoPT43 - Barchart for P2O5



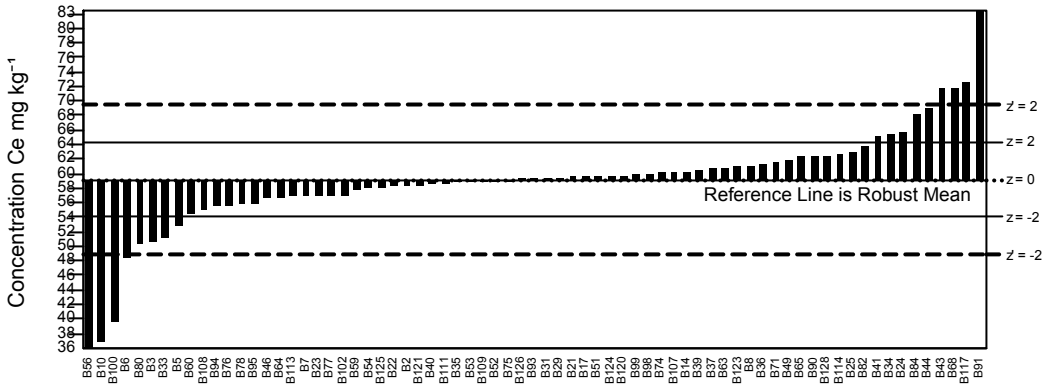
GeoPT43 - Barchart for Ba



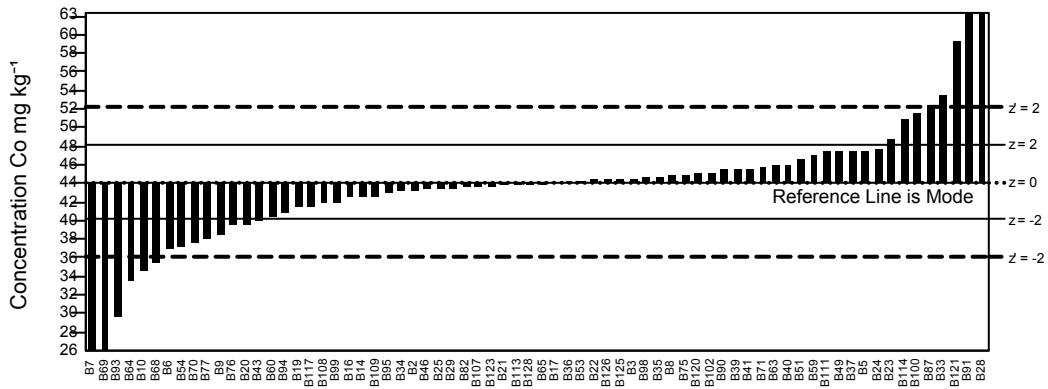
GeoPT43 - Barchart for Be



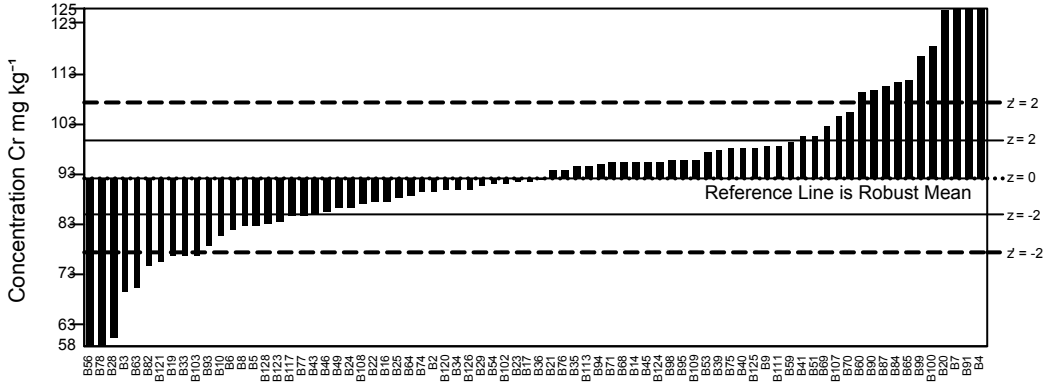
GeoPT43 - Barchart for Ce



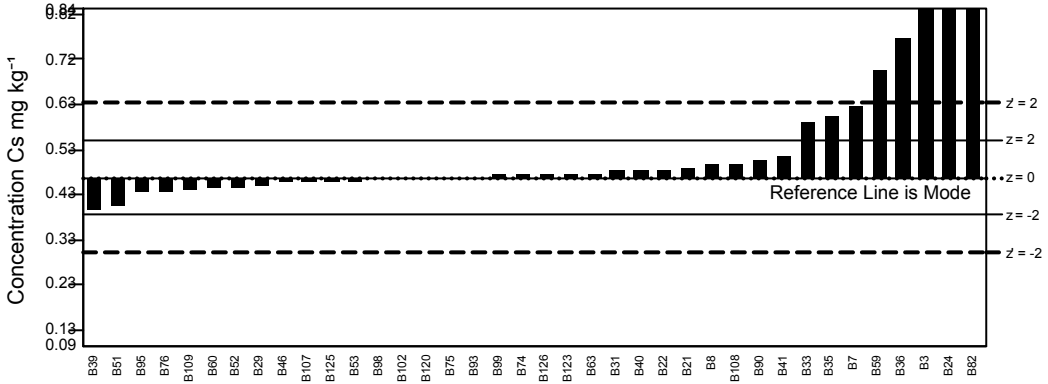
GeoPT43 - Barchart for Co



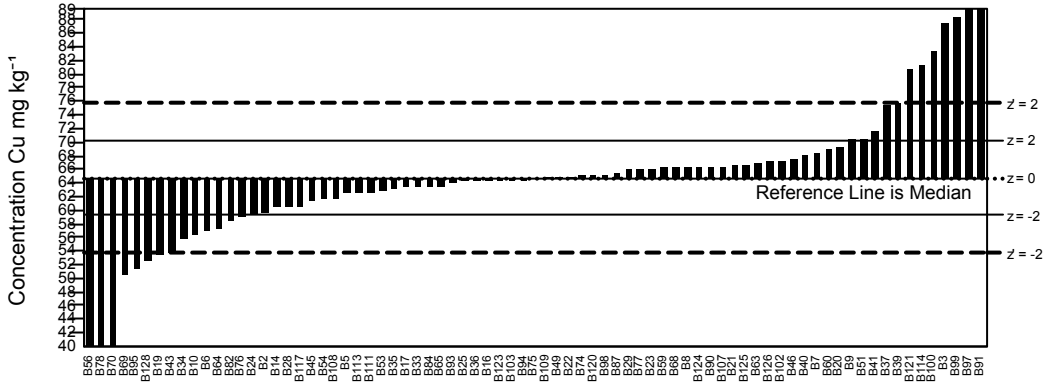
GeoPT43 - Barchart for Cr



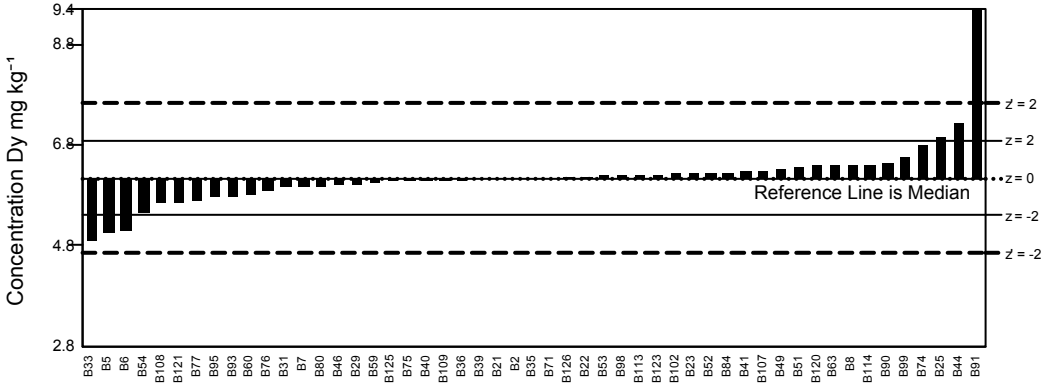
GeoPT43 - Barchart for Cs



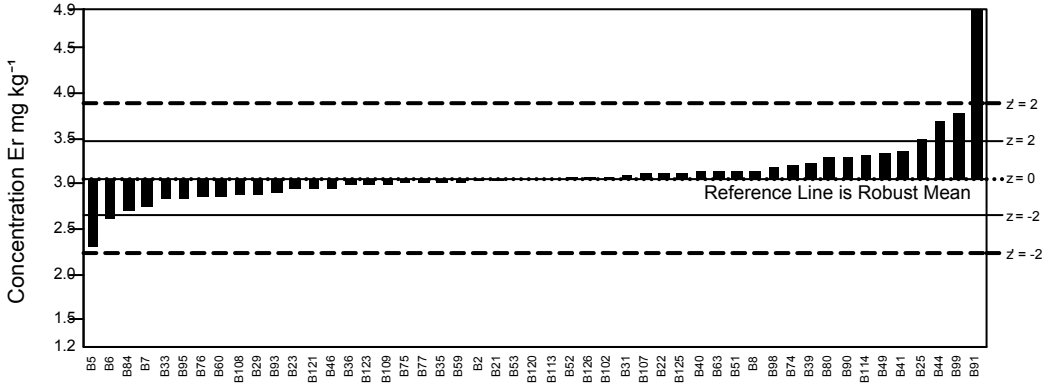
GeoPT43 - Barchart for Cu



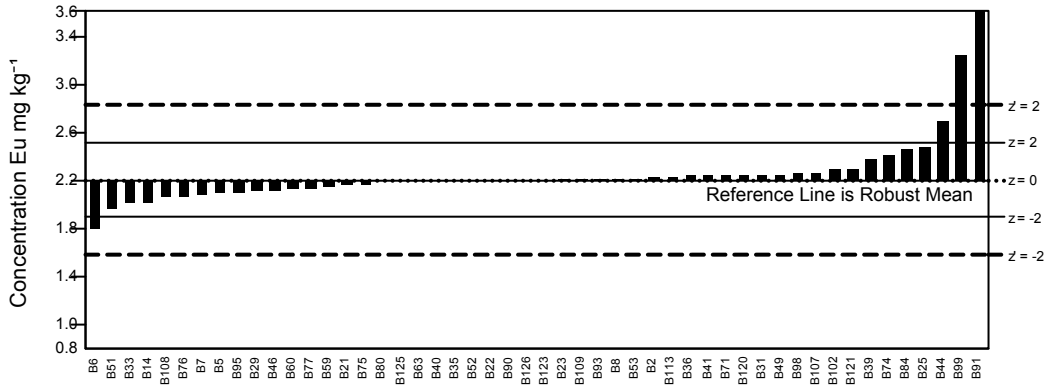
GeoPT43 - Barchart for Dy



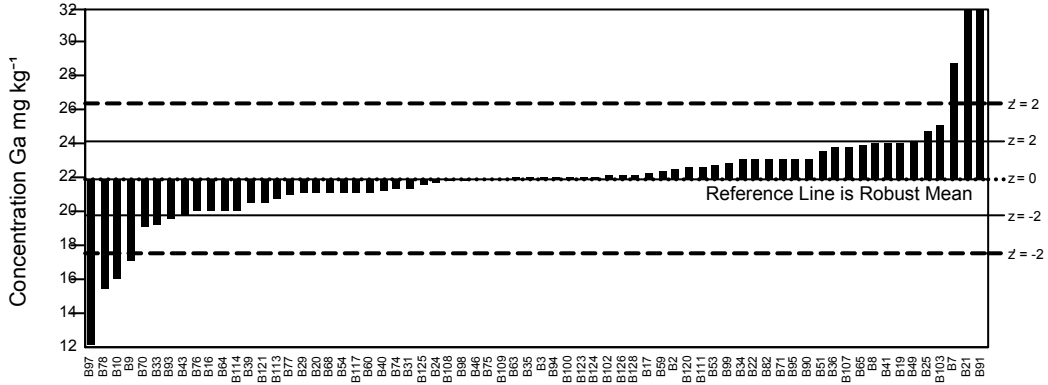
GeoPT43 - Barchart for Er



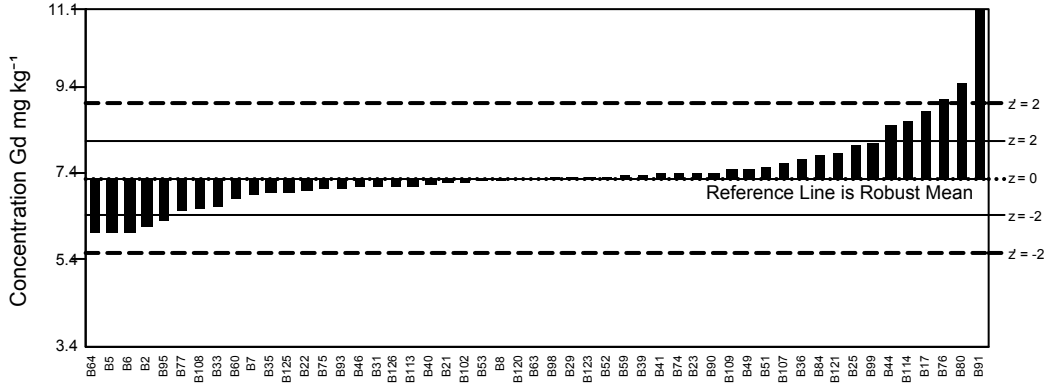
GeoPT43 - Barchart for Eu



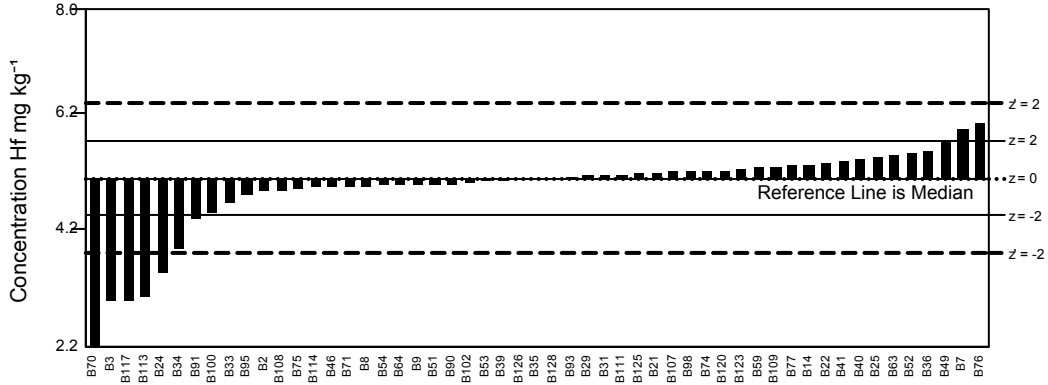
GeoPT43 - Barchart for Ga



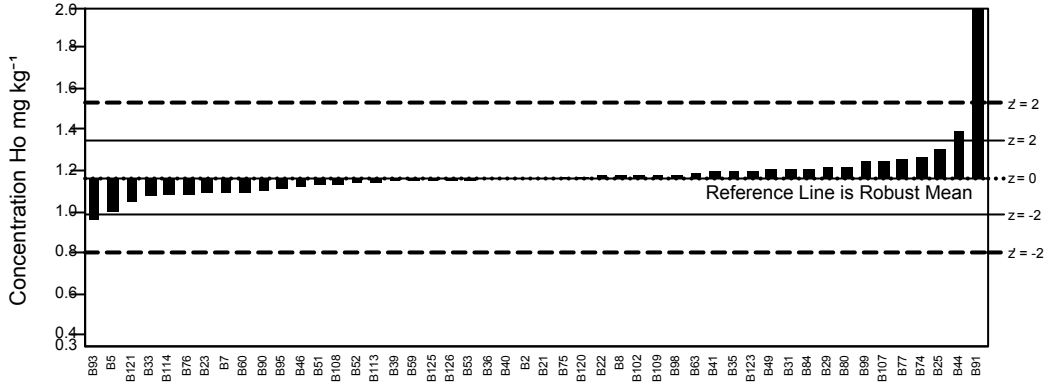
GeoPT43 - Barchart for Gd



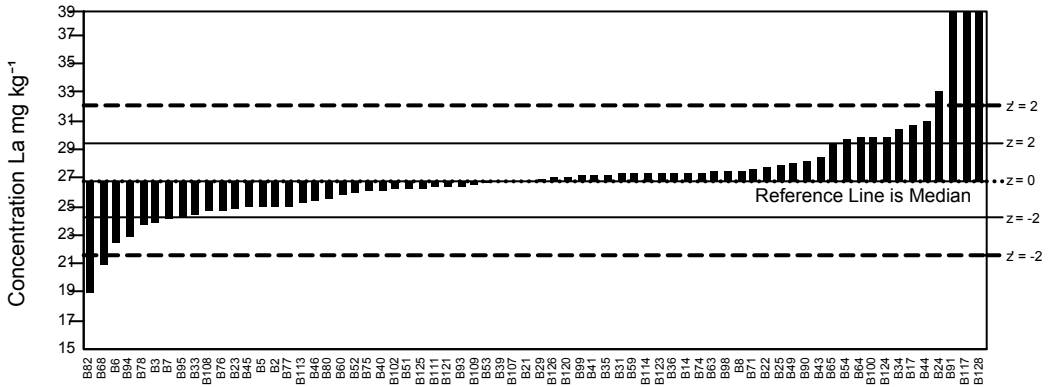
GeoPT43 - Barchart for Hf



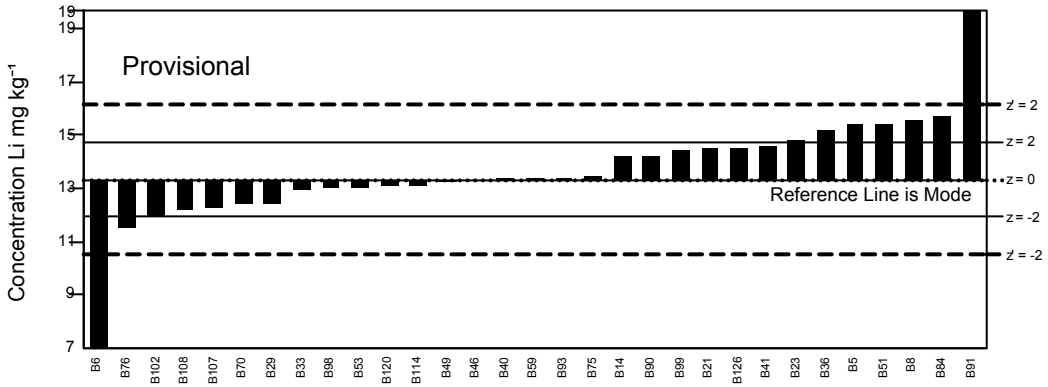
GeoPT43 - Barchart for Ho



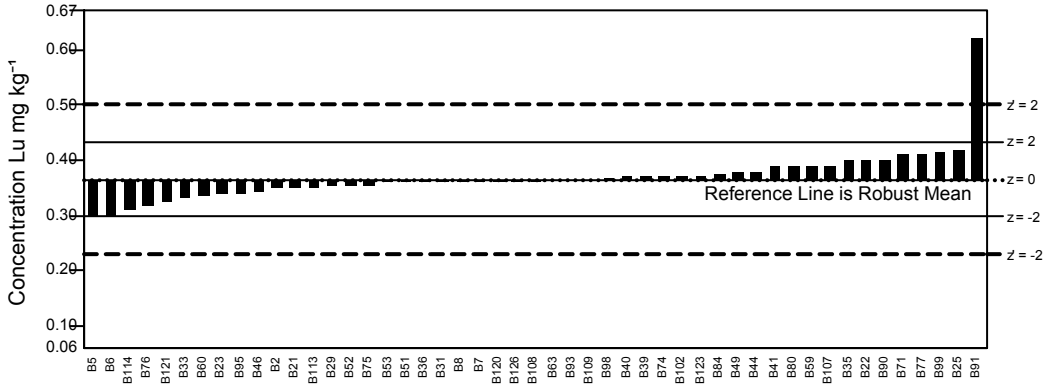
GeoPT43 - Barchart for La



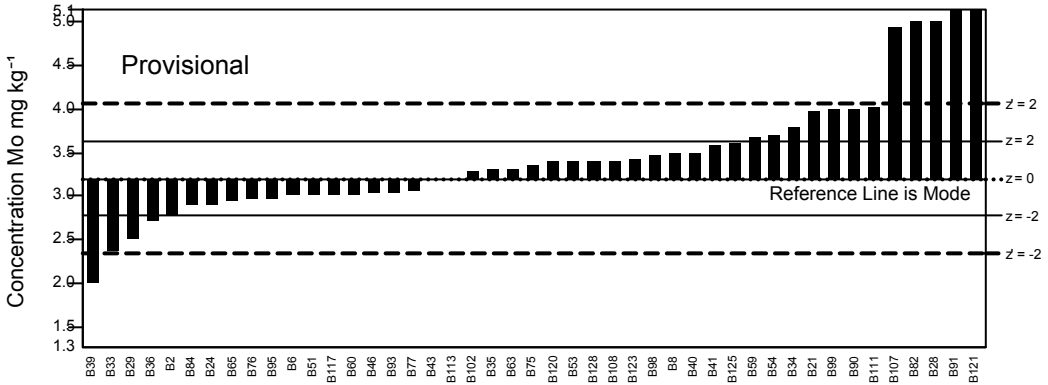
GeoPT43 - Barchart for Li



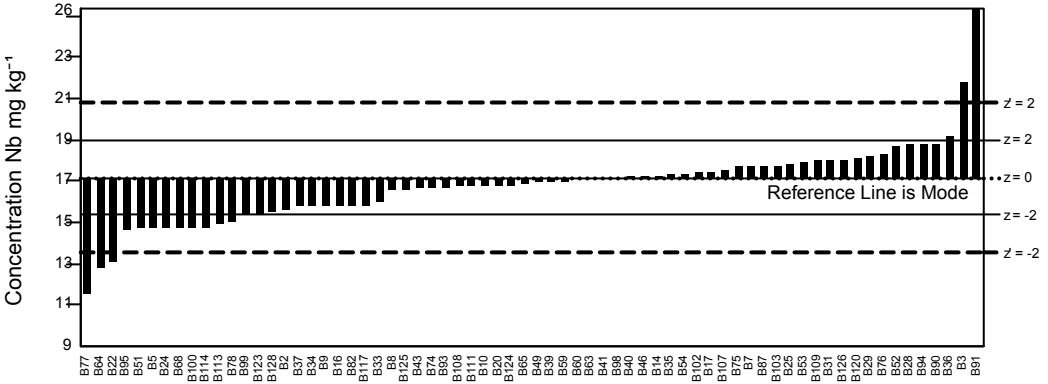
GeoPT43 - Barchart for Lu



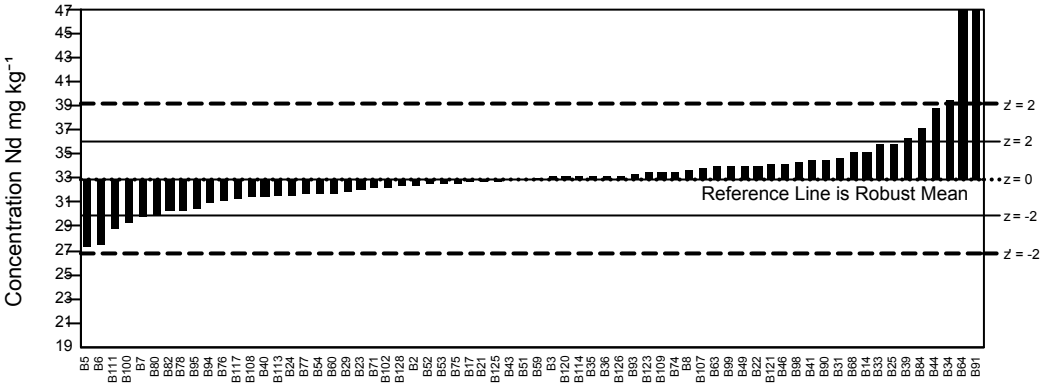
GeoPT43 - Barchart for Mo



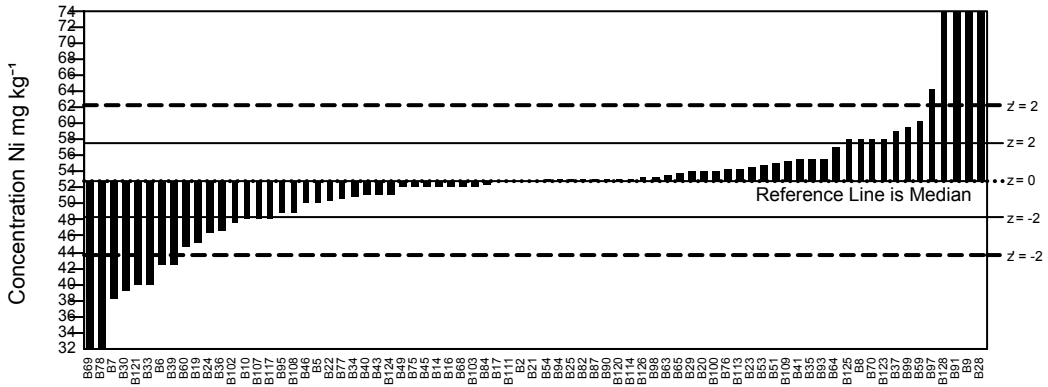
GeoPT43 - Barchart for Nb



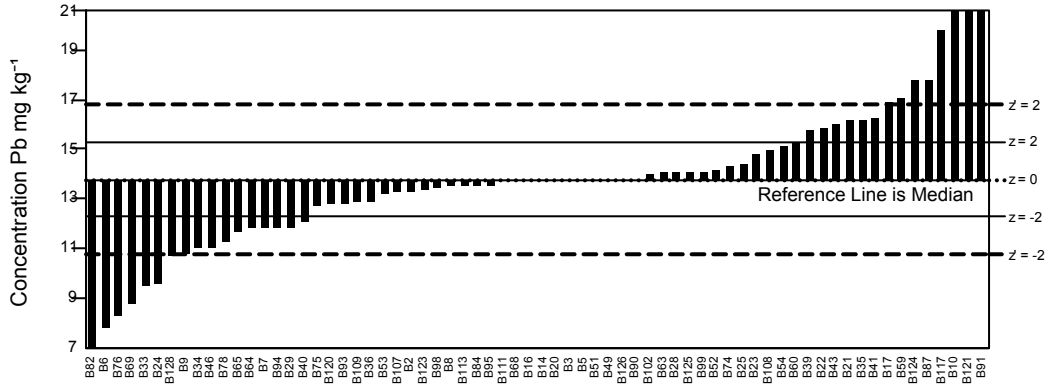
GeoPT43 - Barchart for Nd



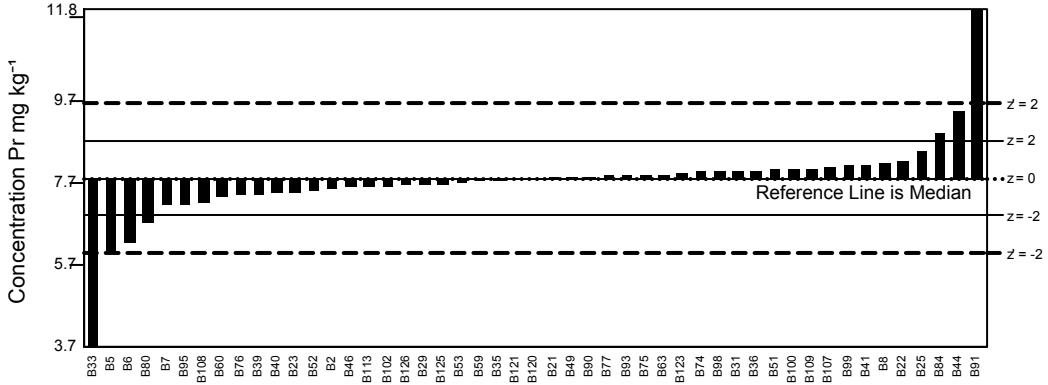
GeoPT43 - Barchart for Ni



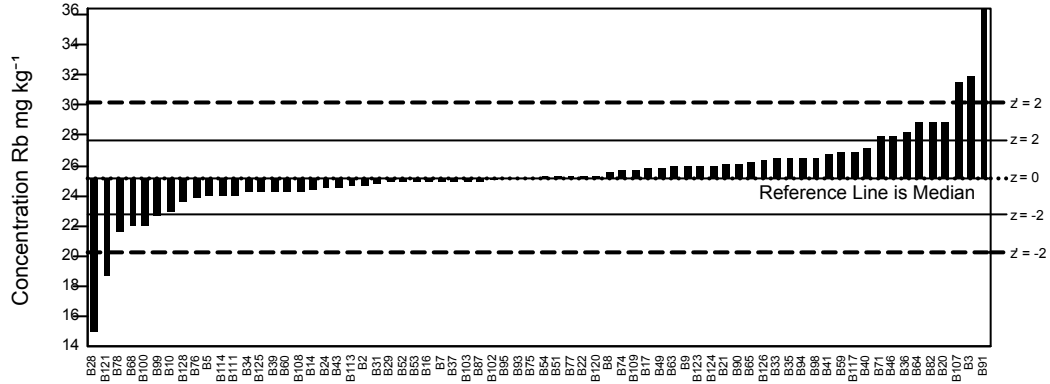
GeoPT43 - Barchart for Pb



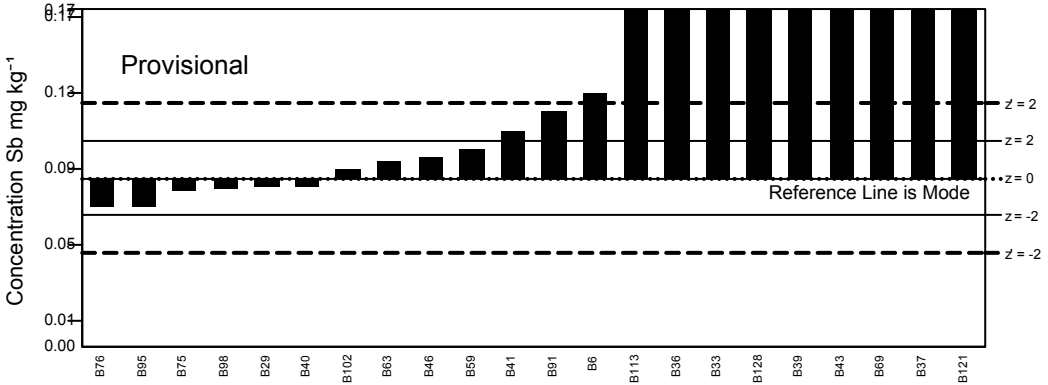
GeoPT43 - Barchart for Pr



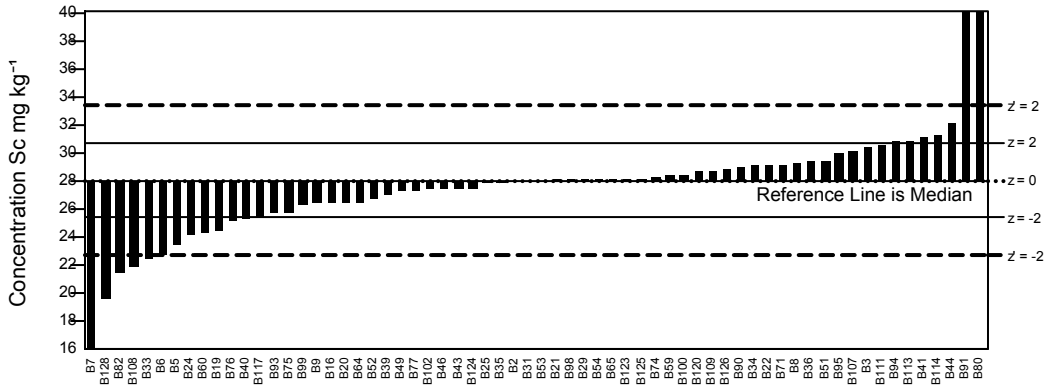
GeoPT43 - Barchart for Rb



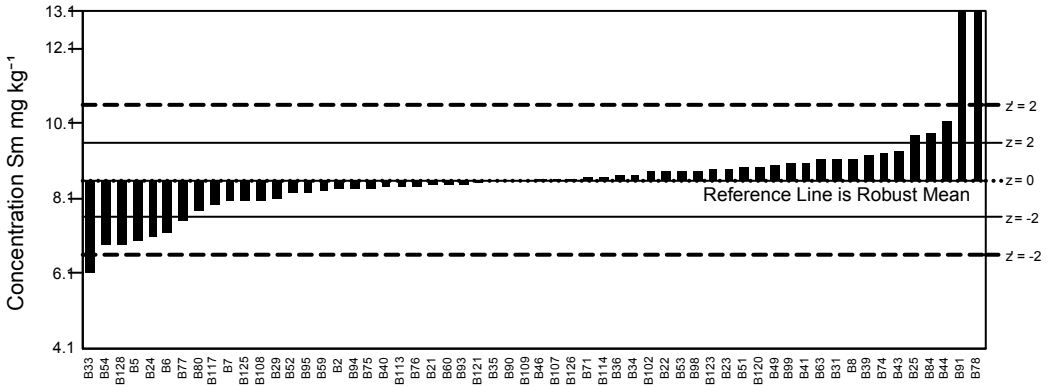
GeoPT43 - Barchart for Sb



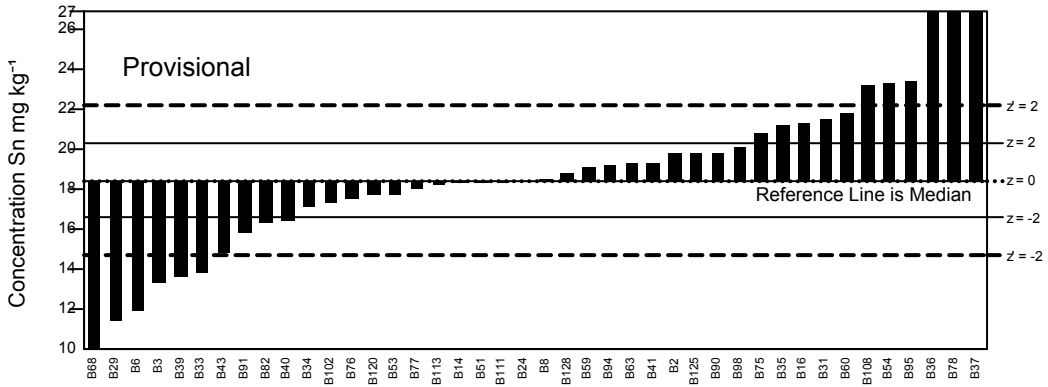
GeoPT43 - Barchart for Sc



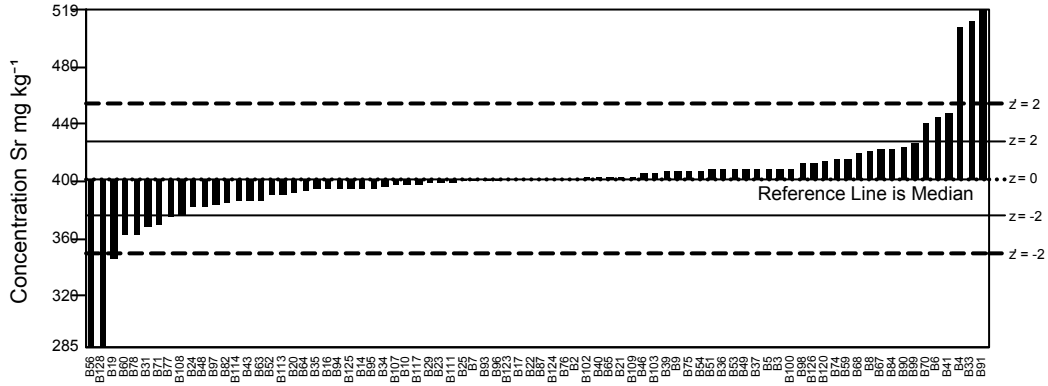
GeoPT43 - Barchart for Sm



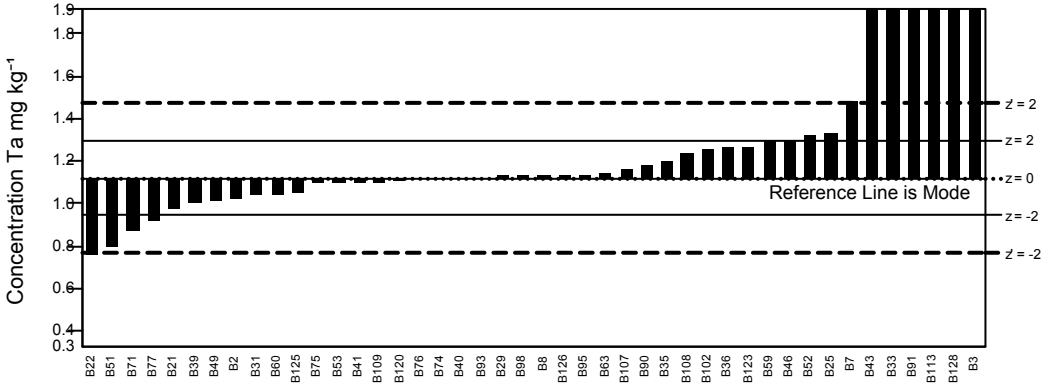
GeoPT43 - Barchart for Sn



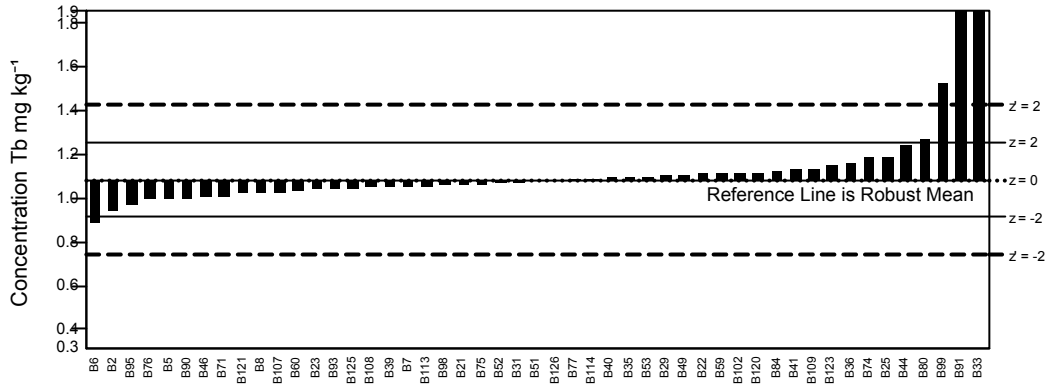
GeoPT43 - Barchart for Sr



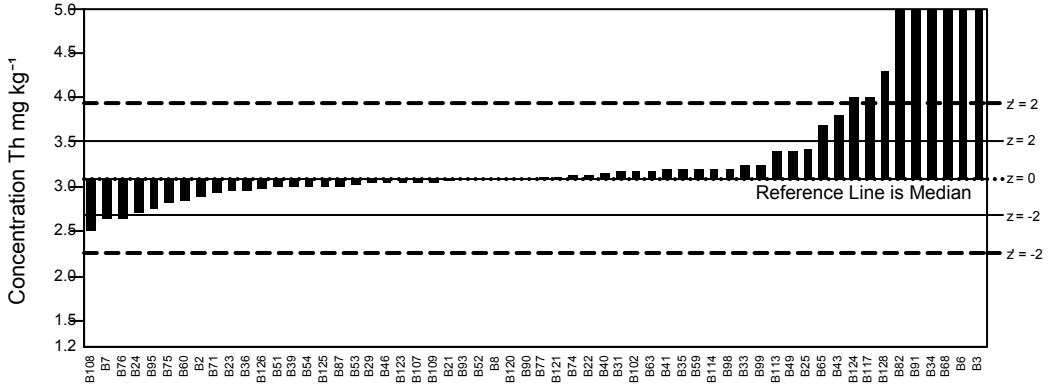
GeoPT43 - Barchart for Ta



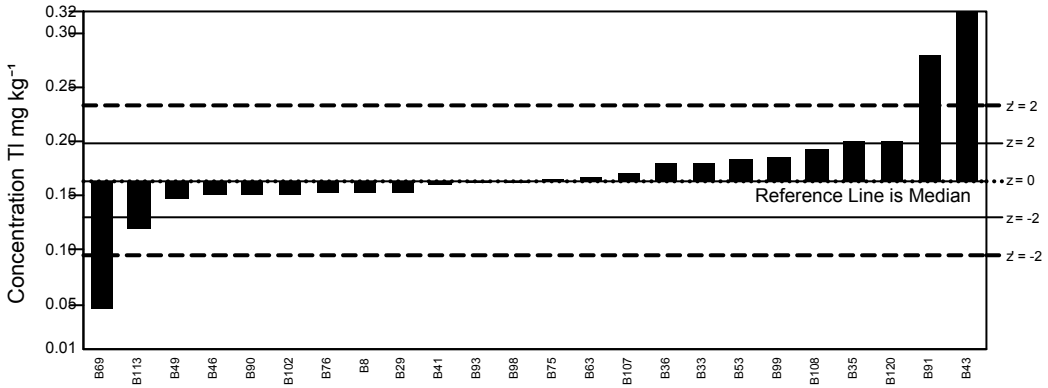
GeoPT43 - Barchart for Tb



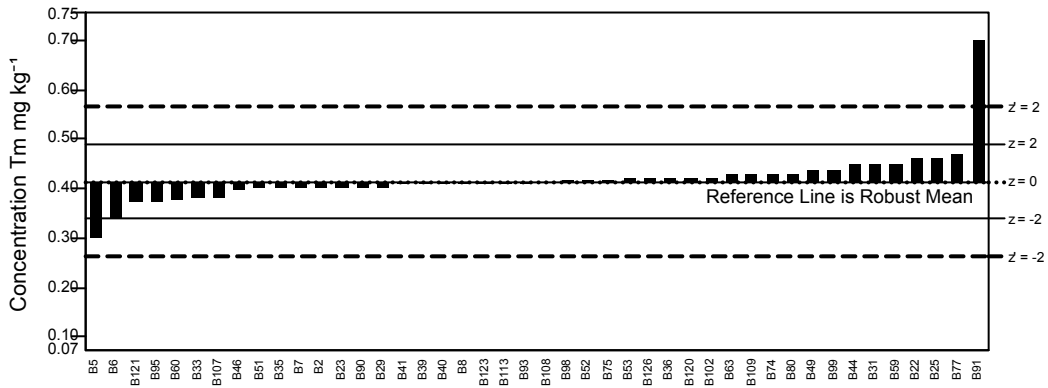
GeoPT43 - Barchart for Th



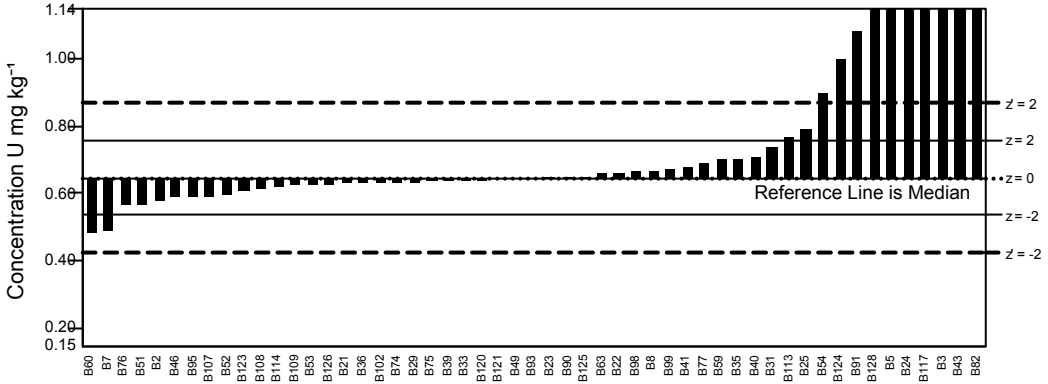
GeoPT43 - Barchart for Tl



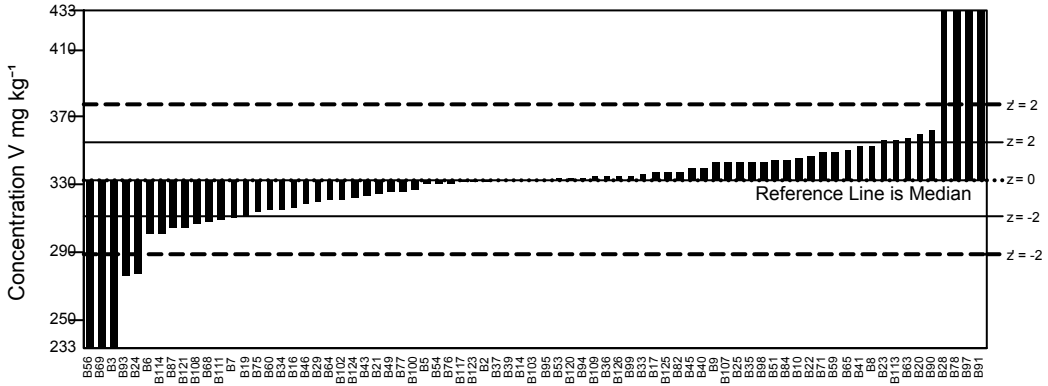
GeoPT43 - Barchart for Tm



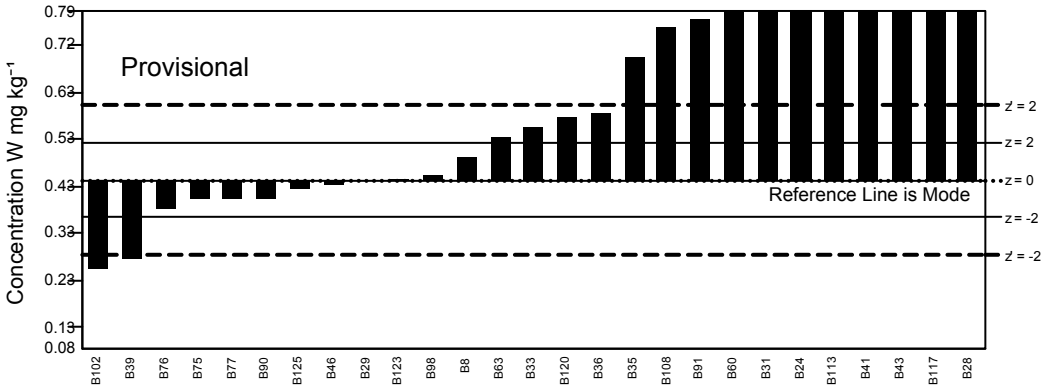
GeoPT43 - Barchart for U



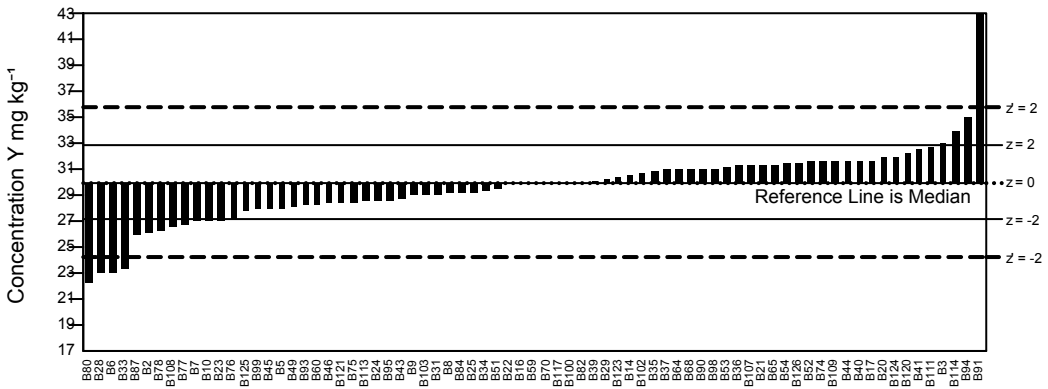
GeoPT43 - Barchart for V

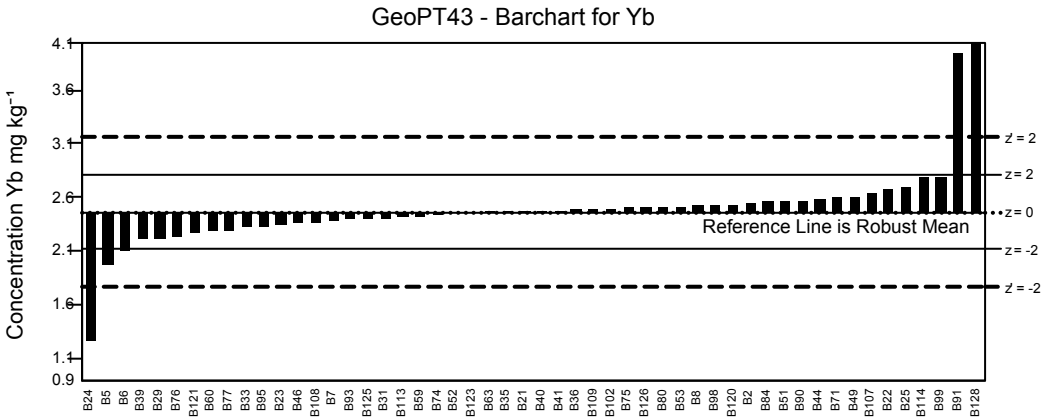


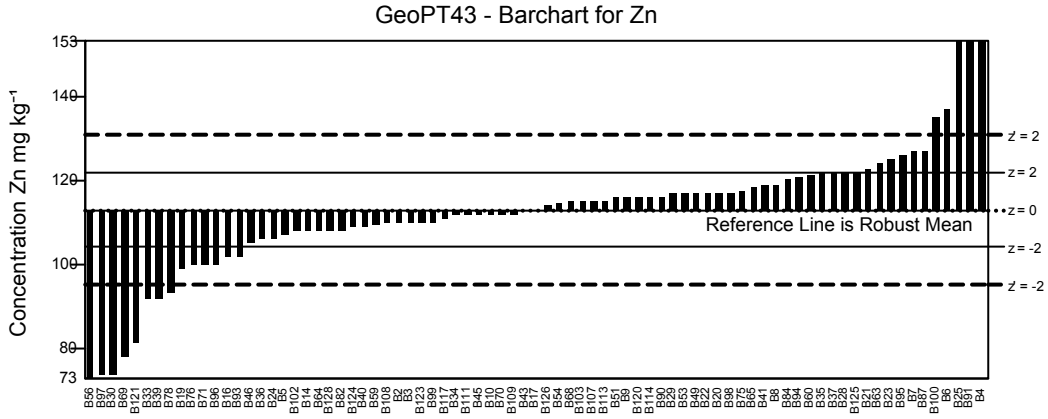
GeoPT43 - Barchart for W



GeoPT43 - Barchart for Y







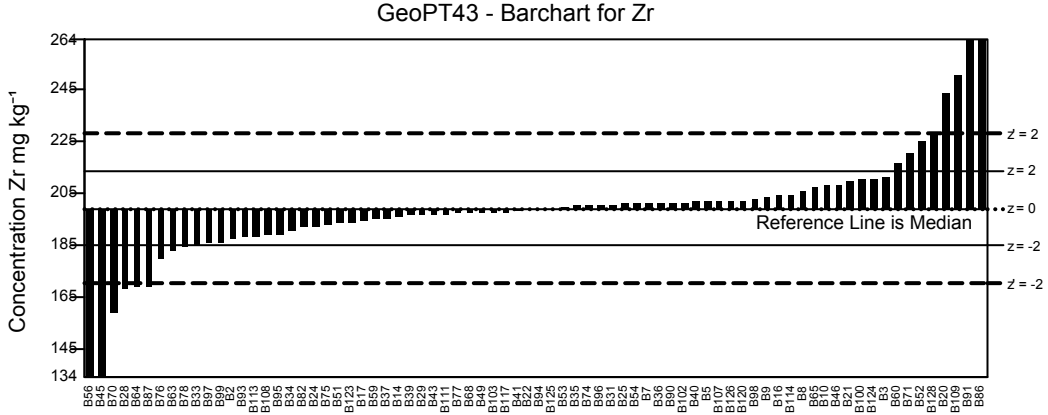
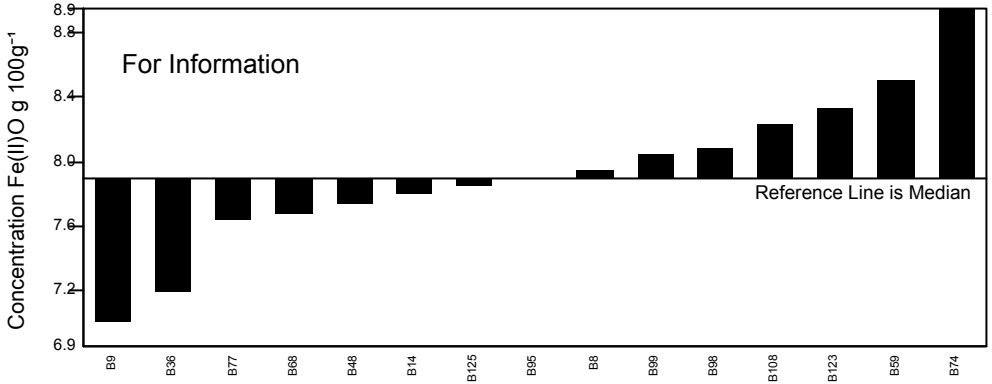
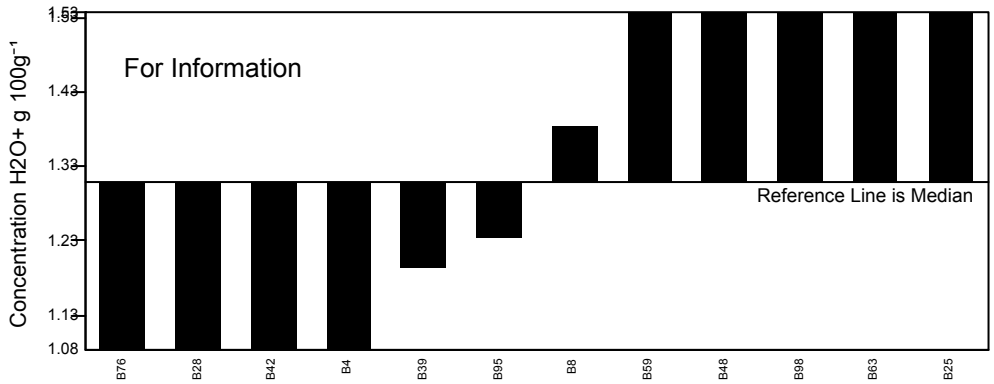


Figure 1: GeoPT43 - Dolerite, ADS-1. Data distribution charts for elements for which values were assigned or provisional values given for guidance. Horizontal lines show the limits for -2<z<2 for pure geochemistry labs (solid lines) and -2<z'<2 for applied geochemistry labs (pecked lines).

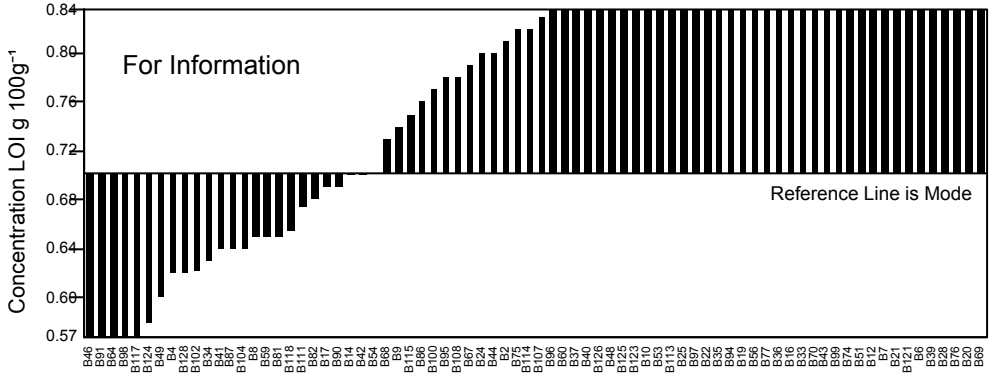
GeoPT43 - Barchart for Fe(II)O



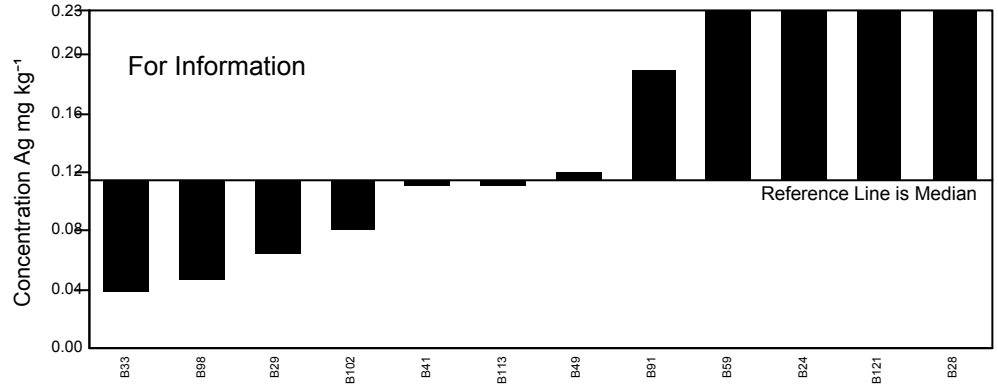
GeoPT43 - Barchart for H2O+



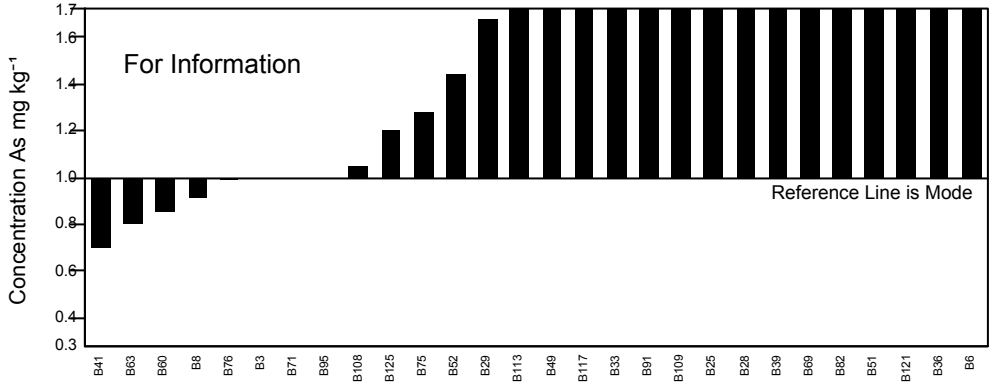
GeoPT43 - Barchart for LOI



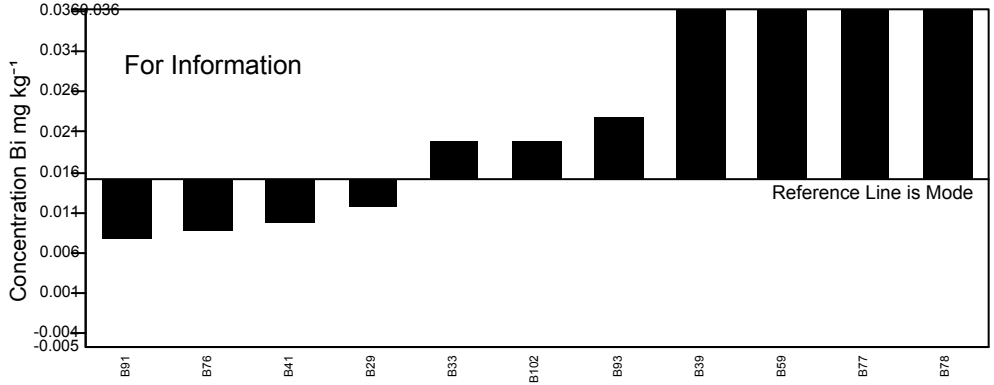
GeoPT43 - Barchart for Ag



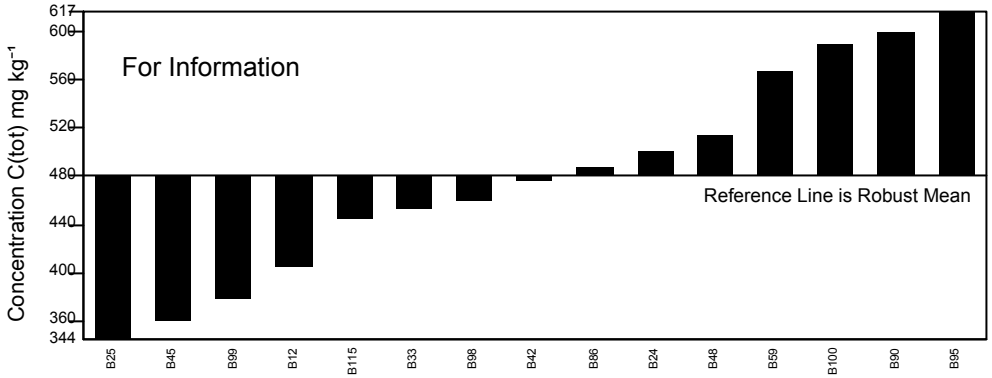
GeoPT43 - Barchart for As



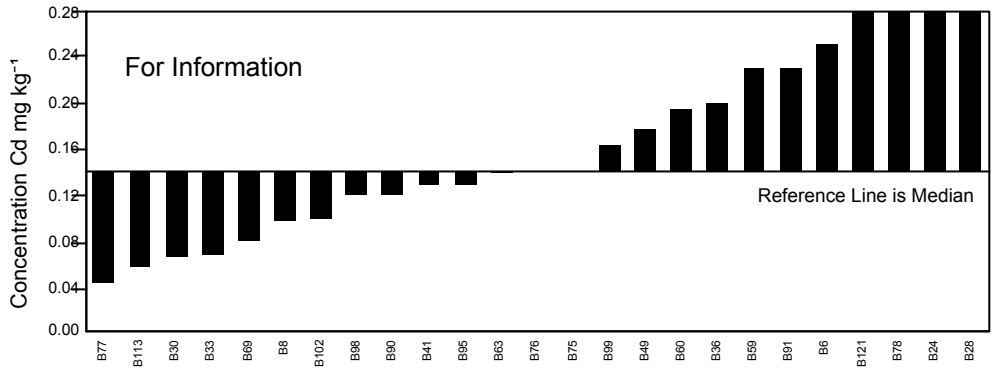
GeoPT43 - Barchart for Bi



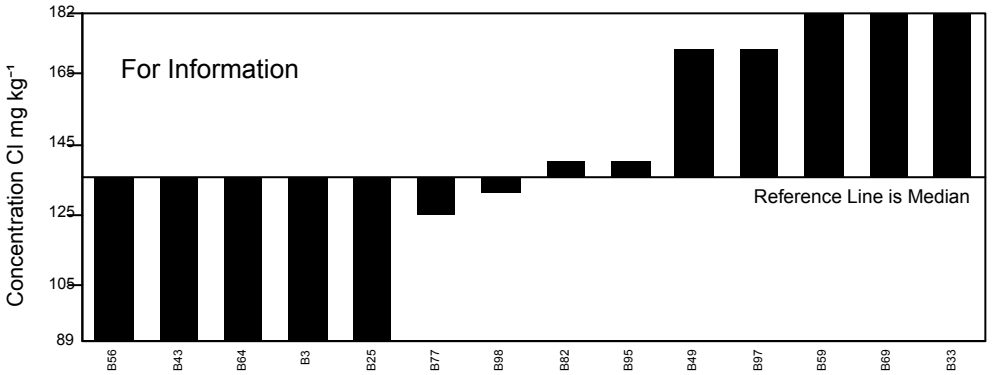
GeoPT43 - Barchart for C(tot)



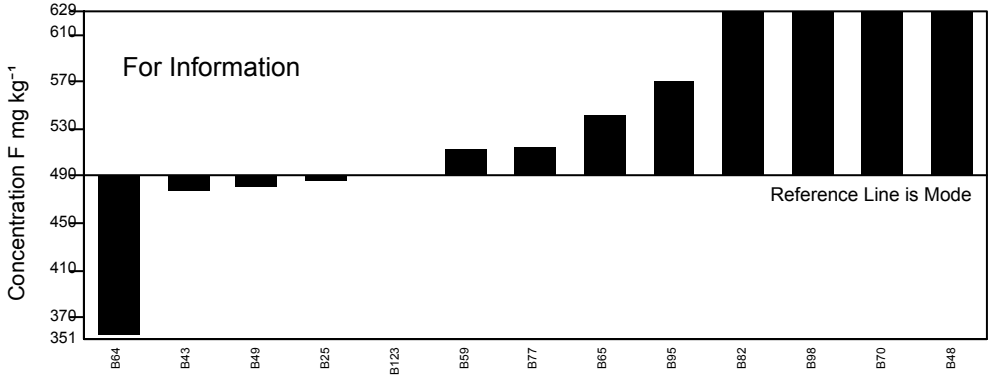
GeoPT43 - Barchart for Cd



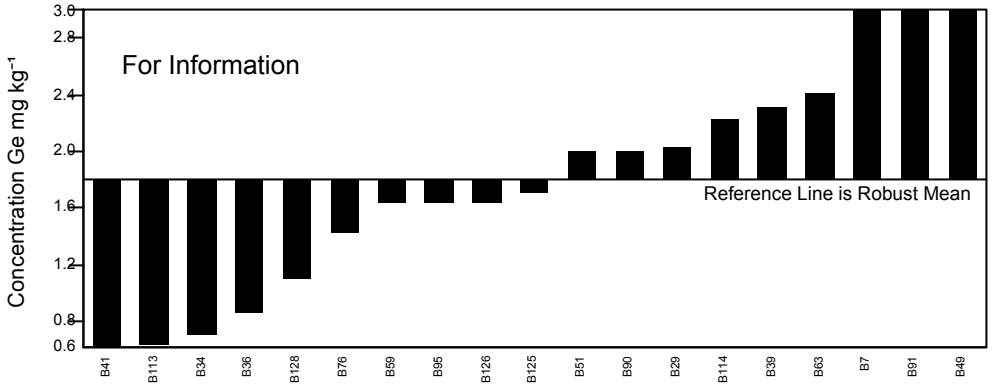
GeoPT43 - Barchart for Cl



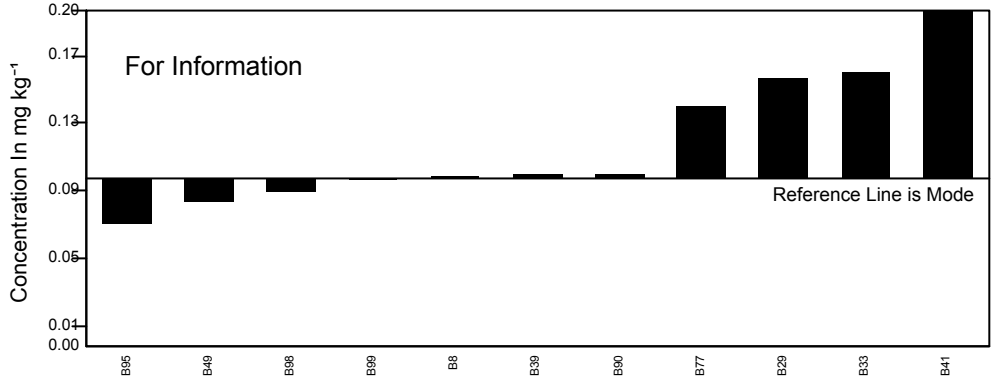
GeoPT43 - Barchart for F

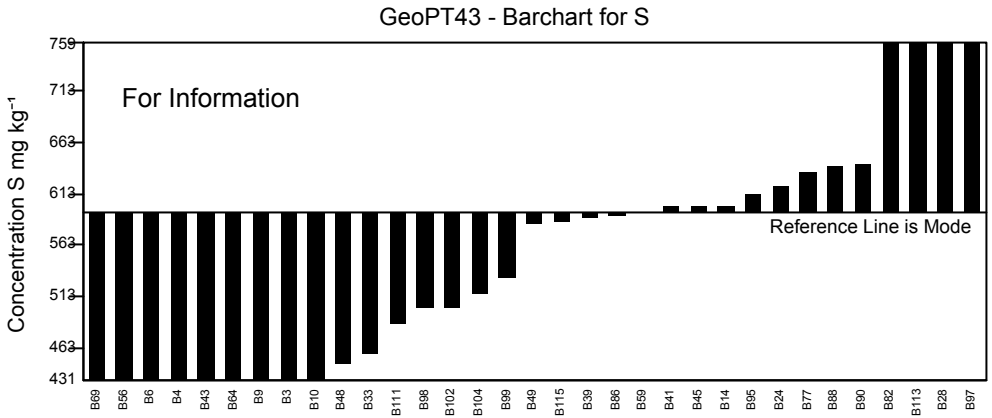


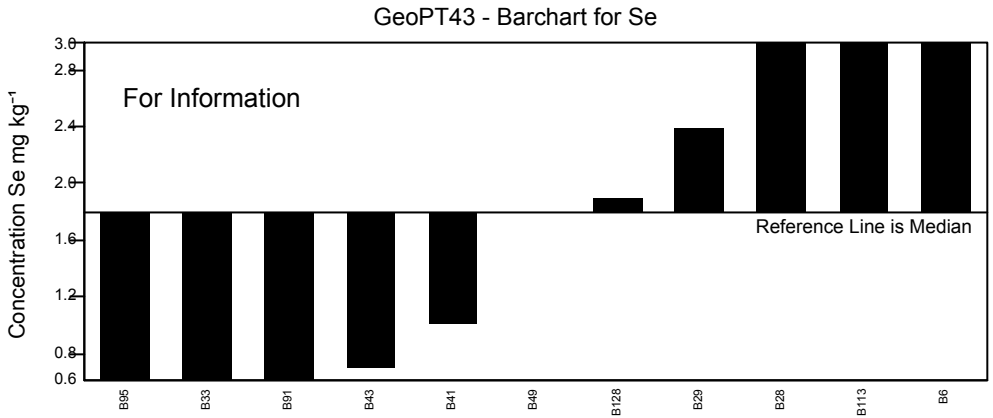
GeoPT43 - Barchart for Ge



GeoPT43 - Barchart for In







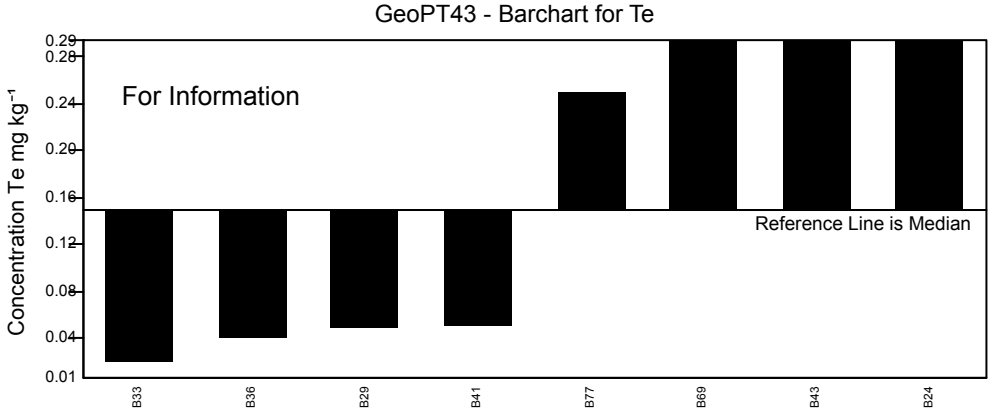
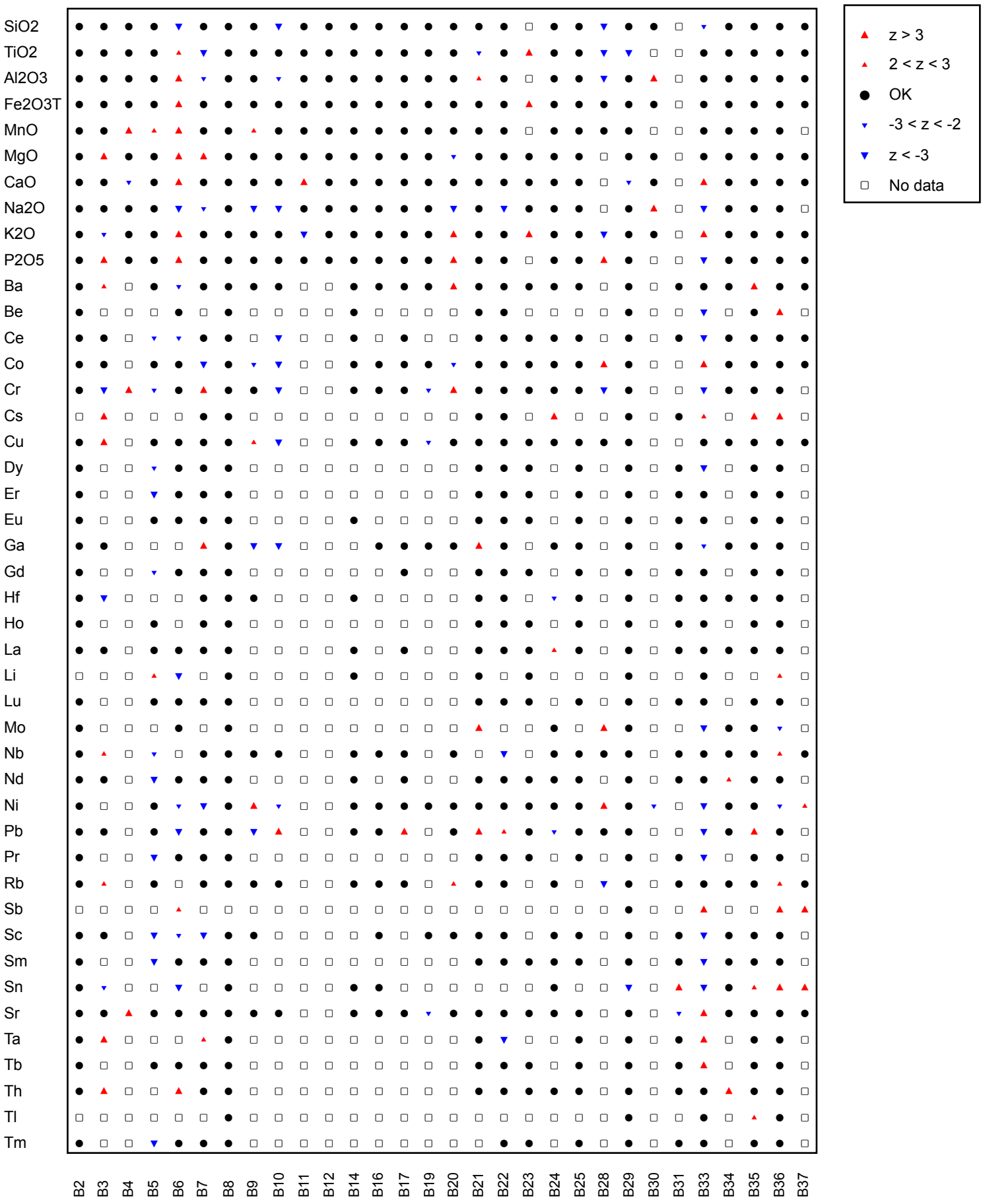


Figure 2: GeoPT43 - Dolerite, ADS-1. Data distribution charts provided for information only for elements for which values could not be assigned.

Multiple Z-Score Chart for GeoPT43



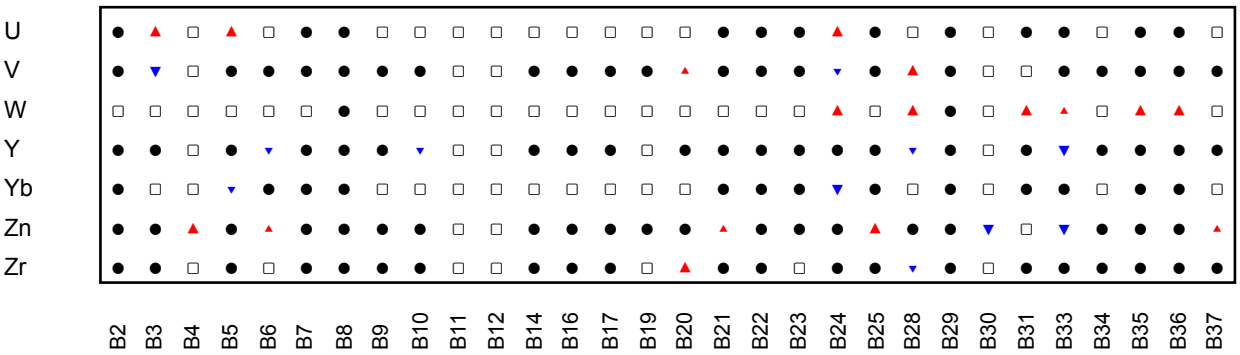
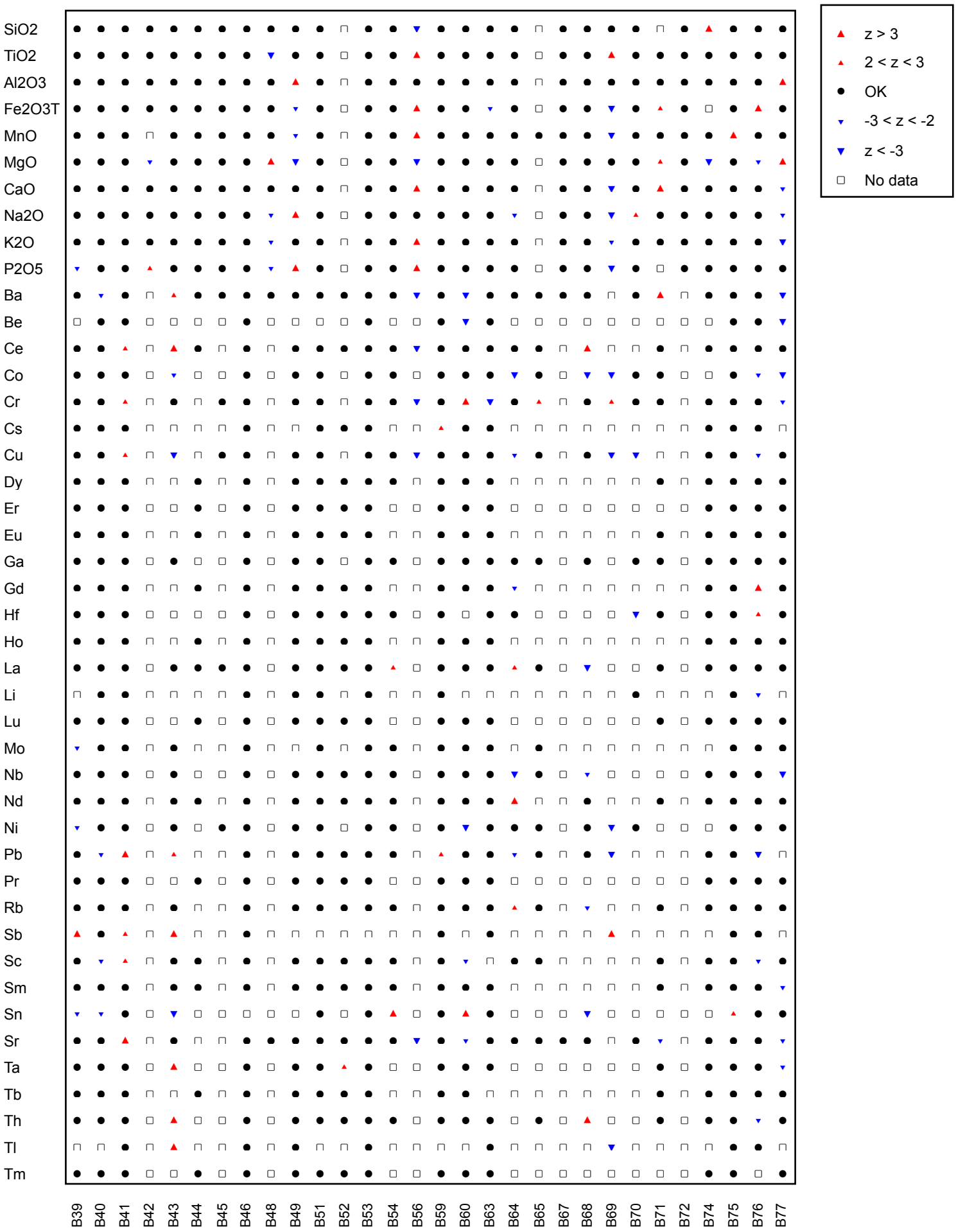


Figure 3: GeoPT43 - Dolerite, ADS-1. Multiple z-score charts for laboratories participating in the GeoPT43 round. Symbols indicate whether or not an elemental result complies with the -2<z<+2 criteria (see key).

Multiple Z-Score Chart for GeoPT43



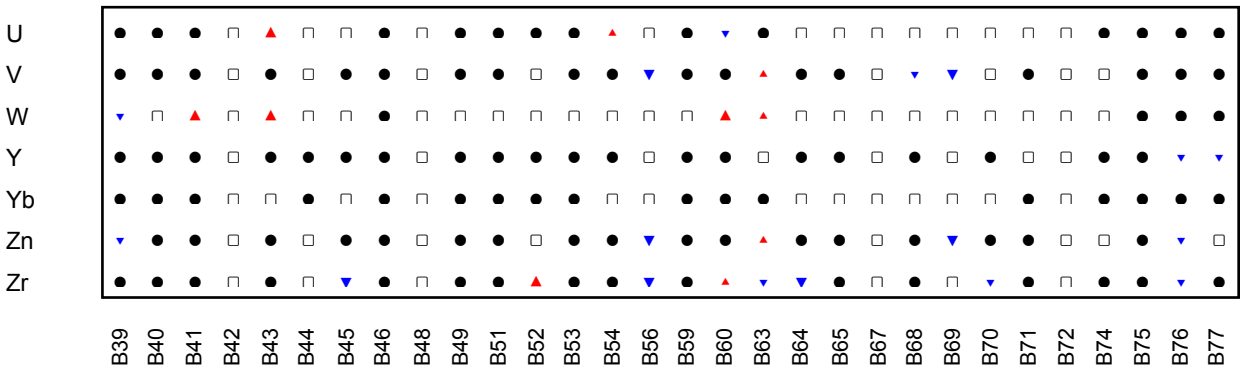
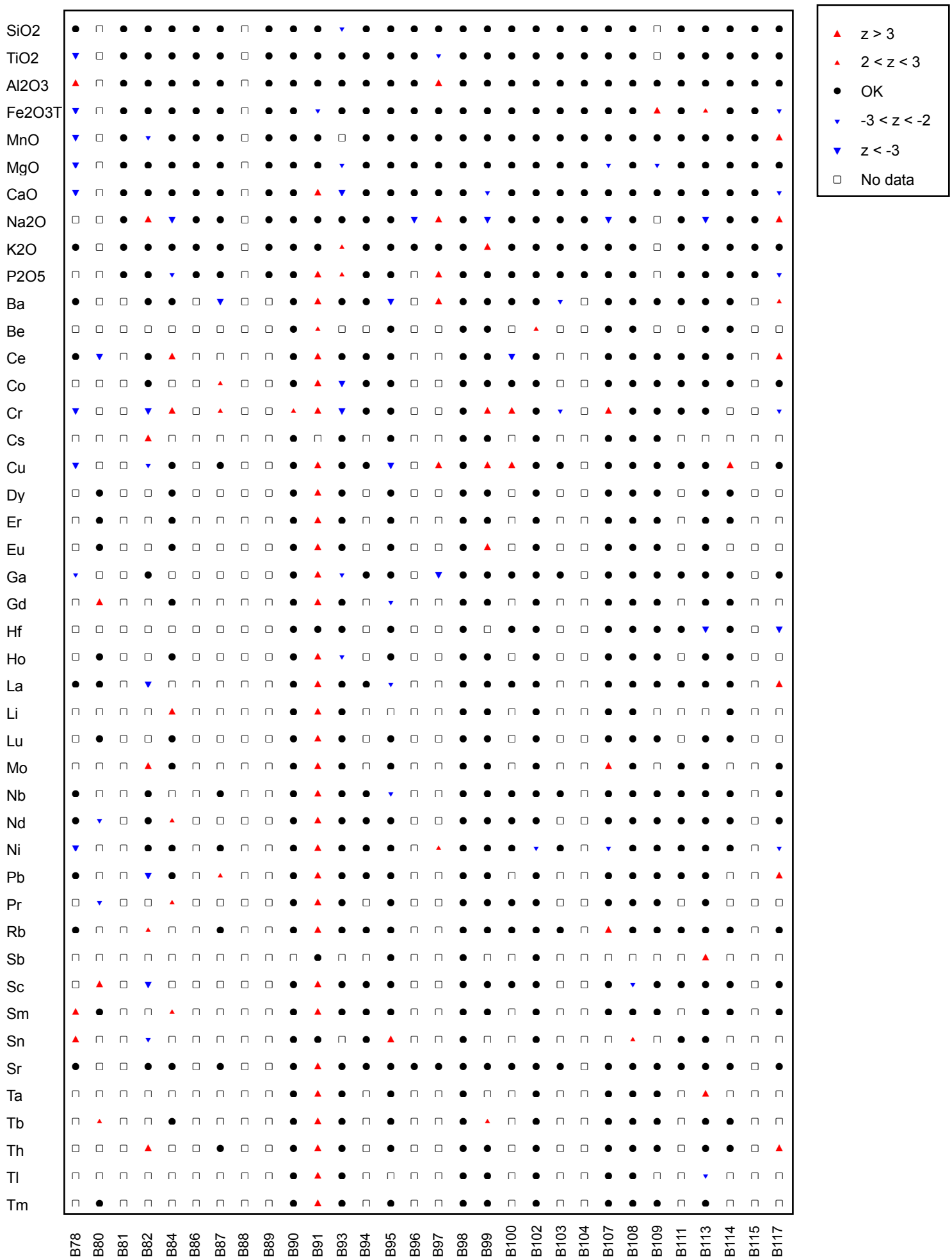


Figure 3: GeoPT43 - Dolerite, ADS-1. Multiple z-score charts for laboratories participating in the GeoPT43 round. Symbols indicate whether or not an elemental result complies with the -2<z<+2 criteria (see key).

Multiple Z-Score Chart for GeoPT43



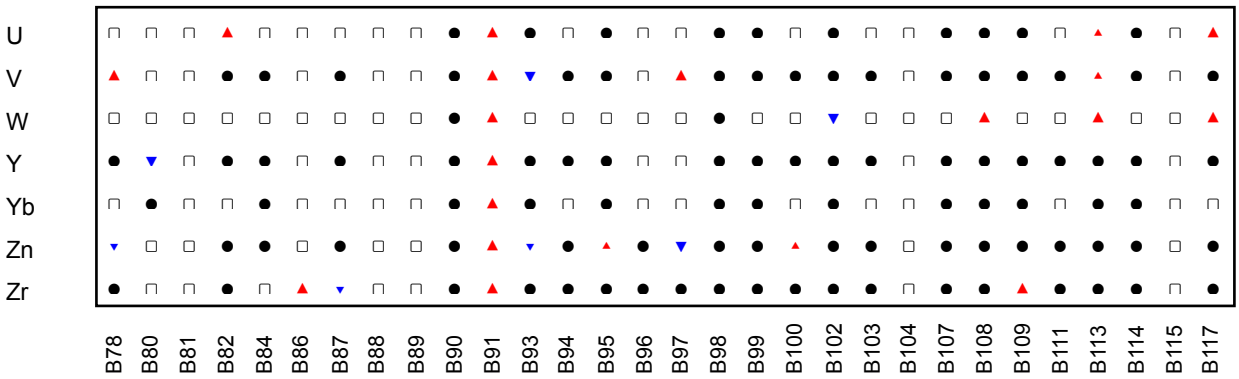
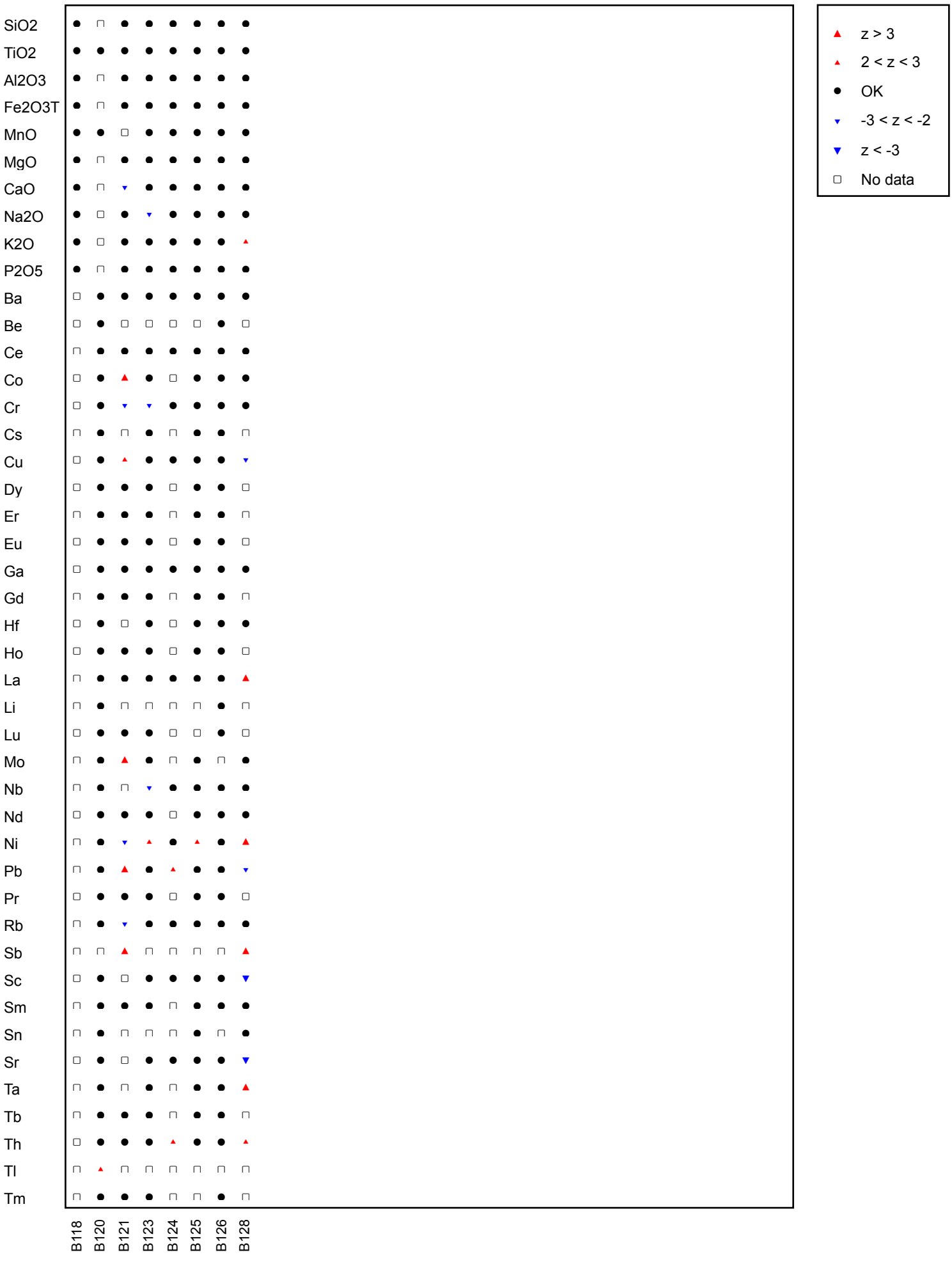


Figure 3: GeoPT43 - Dolerite, ADS-1. Multiple z-score charts for laboratories participating in the GeoPT43 round. Symbols indicate whether or not an elemental result complies with the -2<z<+2 criteria (see key).

Multiple Z-Score Chart for GeoPT43



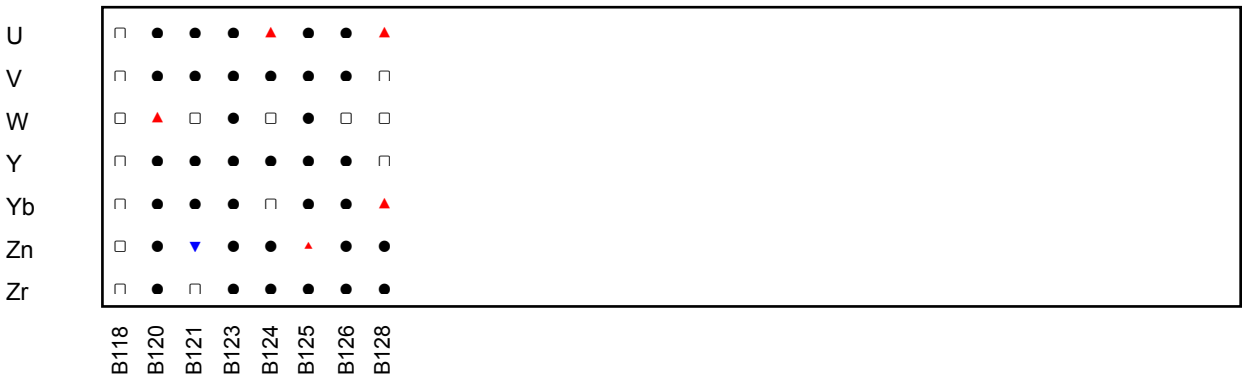


Figure 3: GeoPT43 - Dolerite, ADS-1. Multiple z-score charts for laboratories participating in the GeoPT43 round. Symbols indicate whether or not an elemental result complies with the -2<z<+2 criteria (see key).