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Analyse Service GmbH

GeoPT25, England - HTB-1, Basalt

Veranstalter: International Association of Geoanalysts and Geostandards Newsletter - GeoPT25
Ringversuchsmaterial: HTB-1, Basalt
RV geschlossen: 2009 – 8
Literatur: Proficiency Testing Report GeoPT25 (Laborcode CRB = Z10)

Hauptelemente [MA%]

	CRB	RV	1sRV	Z-Score
Na_2O	2,62	2,73	0,057	
MgO	3,93	3,89	0,063	
Al_2O_3	12,49	12,41	0,17	
SiO_2	50,25	50,42	0,559	
P_2O5	0,635	0,633	0,014	
K_2O	1,52	1,53	0,029	
CaO	7,88	7,85	0,115	
TiO_2	0,52	0,534	0,012	
Fe_2O_3 tot	15,75	15,54	0,206	
MnO	0,221	0,215	0,005	
L.O.I.	0,36	---	---	

Spurenelemente [µg/g]

	CRB	RV	1sRV	Z-Score
Ba	572	550	17	
Ce	101	93	3,7	
Co	54	38	1,8	
Cr	9	10,7	0,6	
Cu	162	161	6	
Ga	28	24,1	1,2	
Hf	6	7,9	0,5	
La	42	40,9	1,9	
Nb	27	29,2	1,4	
Nd	48	51,4	2,3	
Ni	35	32,1	1,1	
Pr	9	11,9	0,7	
Rb	34	35	1,7	
Sm	7	11	0,6	
Sn	7	2,6	0,2	
Sr	475	482	6,4	
Th	3,6	3,98	0,26	
V	385	392,8	12,8	
Y	37	39,9	1,8	
Zn	131	141,5	5,4	

Zr	293	310,1	10,5

Legende

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

GeoPT25 – AN INTERNATIONAL PROFICIENCY TEST FOR ANALYTICAL GEOCHEMISTRY LABORATORIES – REPORT ON ROUND 25 (Basalt, HTB-1) / July 2009

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Keywords: proficiency testing, quality assurance, GeoPT, GeoPT25 Round, HTB-1, basalt

Abstract

Results are presented for GeoPT25, round twenty-five of the International Association of Geoanalysts' Proficiency Testing programme for analytical geochemistry laboratories. The sample distributed for this round was HTB-1, a basalt supplied by Jacinta Enzweiler of the Institute of Geosciences, University of Campinas - UNICAMP, Brazil. In this report, contributed data are listed, together with an assessment of consensus values, z-scores and charts showing both the distribution of contributed results and the overall performance of participating laboratories.

Introduction

This twenty-fifth round of the international proficiency testing programme, GeoPT, was conducted in a similar manner to earlier rounds. The programme is designed to be part of the routine quality assurance scheme of analytical geochemistry laboratories and the aims of the programme can be reviewed at http://www.geoanalyst.org/geopt.html. The programme is organised by the International Association of Geoanalysts and is conducted in accordance with a published protocol (http://www.geoanalyst.org/GeoPt-protocol.pdf). The overall aim of the programme is to provide participating laboratories with z-score information for each reported elemental determination, from which the laboratories can decide whether the quality of their data is satisfactory in relation to both their chosen fitness-for-purpose criterion and results submitted by all the other laboratories contributing to the round and, therefore, choose to take corrective action if this appears justified.

Steering Committee for Round 25: M. Thompson (Statistician), P.C. Webb (Results coordinator), P.J. Potts and J. Enzweiler.

Sample GeoPT25: HTB-1, a basalt, from the Paraná Basin was produced by Brazilian institutions led by the Institute of Geosciences, University of Campinas - UNICAMP, and prepared by the United States Geological Survey under the direction of Dr Steve Wilson. The test material was tested for homogeneity by the originating laboratory and considered suitable for use in the GeoPT proficiency testing programme.

Timetable for Round 25:

Distribution of sample: March 2009.

Deadline for submission of analytical results: 12th June 2009.
Distribution of draft report: August 2009

Submission of results

Results submitted by 84 laboratories are listed in Table 1. All of these data were used for the assessment of assigned values. Data are also listed for one laboratory (Z86) that submitted results too late for inclusion in the assessment.

Assigned values

Following procedures described in earlier rounds, a robust statistical procedure was used to derive assigned concentration values [X_a], these being judged to be the best estimates of the true composition of this sample. Data in Table 2 lists assigned values for 10 major components and assigned and provisional values for 41 trace elements. Values were assigned on the basis that: (i) sufficient laboratories had contributed data for an element, (ii) the statistical assessment gave confidence that the results distribution showed a central portion approximating to a normal distribution. Part of this assessment involved examining bar charts for each element to judge the distribution of results and the most favourable basis for defining the assigned value. In 26 cases the robust mean was the preferred value. In 20 cases the median was preferred. In 5 cases a new procedure was used in which the most favourable mode was taken as the consensus value. The procedure used to determine this mode was based on the analysis of mixed populations detailed in Thompson (2006) and first used in GeoPT to analyse data in round 23. One such value (for U) was assigned and the other four values so obtained were assigned provisional values.

Bar charts for 51 elements/components that were judged to have satisfactory distributions for assigned or provisional values to be given, as listed in Table 2, are shown in Figure 1, namely: SiO_2, TiO_2, Al_2O_3, Fe_2O_3T, MnO, MgO, CaO, Na_2O, K_2O, P_2O_5, Ba, Be, Cd, Ce, Co, Cr, Cs, Cu, Dy, Er, Eu, Ga, Gd, Hf, Ho, La, Li, Lu, Mo, Nb, Nd, Ni, Pb, Pr, Rb, Sc, Sm, Sn, Sr, Ta, Tb, Th, Tl, Tm, U, V, W, Y, Yb, Zn, and Zr. Of these, only provisional values could be given to the elements: Cd, Cr, Mo, Sn and W. In most cases these corresponded to results for which the ratio of the uncertainty in the assigned value to the Horwitz target value exceeded 0.5.

Bar charts for the 13 elements/components, Fe(II)O, CO_2, H_2O^+, LOI, Ag, As, Bi, Cl, F, Ge, S, Sb and Se are plotted in Figure 2 for information only, where the data were not amenable to a reliable determination of the consensus.

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. 1500 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. 1438 results of data quality 2 were submitted.

The target standard deviation (H_a) for each element 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 concentration of the element expressed as a *fraction*, and the factor k = 0.01 for pure geochemistry labs and k=0.02 for applied geochemistry labs.

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

$z = [X - X_a] / H_a$

where: X is the contributed result, X_a is the assigned value and H_a is the target standard deviation.

Z-score results are listed in Table 3. Participating laboratories are invited to assess their performance using the following criterion:–

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, it would be advisable for contributing laboratories to examine their procedures, and if necessary, to take action to ensure that determinations are not subject to unsuspected analytical bias.

Overall performance

A summary of the overall performance of individual laboratories in this round is plotted in Figure 3 as a multiple z-score chart. In this chart, 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 to judge their overall performance in this proficiency testing round.

Participation in future rounds

The benefit from proficiency testing arises from regular participation and laboratories are invited to contribute to the GeoPT26 round, the sample for which will be distributed during September 2009.

Acknowledgements

The authors thank John Watson (OU) for repacketing the samples for distribution and Liz Lomas (OU) for valued assistance in the distribution of samples and the production of this report.

Reference

Thompson, M. (2006). Using mixture models for bump-hunting in the results of proficiency tests. Accred Qual Assur, 10, 501-505.

Appendix 1

Publication status of proficiency testing reports

GeoPT1
Thompson M., Potts P.J., Kane J.S. and Webb P.C. (1996)
GeoPT1. International proficiency test for analytical geochemistry laboratories - Report on round 1. Geostandards Newsletter: The Journal of Geostandards and Geoanalysis, 20, 295-325.

GeoPT2
Thompson M., Potts P.J., Kane J.S., Webb P.C. and Watson, J.S. (1998)
GeoPT2. International proficiency test for analytical geochemistry laboratories - Report on round 2. Geostandards Newsletter: The Journal of Geostandards and Geoanalysis, 22 127-156.

GeoPT3
Thompson M., Potts P.J., Kane J.S. and Chappell B.W. (1999a)
GeoPT3. International proficiency test for analytical geochemistry laboratories - Report on round 3. Geostandards Newsletter: The Journal of Geostandards and Geoanalysis, 23, 87-121.

GeoPT4
Thompson M., Potts P.J., Kane J.S., Webb P.C. and Watson J.S. (1999b)
GeoPT4. 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).

GeoPT5
Thompson M., Potts P.J., Kane J.S., and Wilson S. (1999c)
GeoPT5. 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).

GeoPT6
Potts P.J., Thompson M., Kane J.S., Webb P.C. and Carignan J. (2000)
GEOPT6 - 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.

GeoPT7
Potts P.J., Thompson M., Kane J.S., and Petrov L.L. (2000)
GEOPT7 - an international proficiency test for analytical geochemistry laboratories - report on round 7 (GBPG-1 Garnet-biotite plagiogneiss). International Association of Geoanalysts: Unpublished report.

GeoPT8
Potts P.J., Thompson M., Kane J.S., Webb, P.C. and Watson J.S. (2000)
GEOPT8 - an international proficiency test for analytical geochemistry laboratories - report on round 8 / February 2001 (OU-4 Penmaenmawr microdiorite). International Association of Geoanalysts: Unpublished report.

GeoPT9
Potts P.J., Thompson M., Webb, P.C. and Watson J.S. (2001)
GEOPT9 - an international proficiency test for analytical geochemistry laboratories - report on round 9 / July 2001 (OU-6 Penrhyn slate). International Association of Geoanalysts: Unpublished report.

GeoPT10
Potts P.J., Thompson M., Webb, P.C., Watson J.S. and Wang Yimin (2001)

GEOPT10 - an international proficiency test for analytical geochemistry laboratories - report on round 10 / December 2001 (CH-1 Marine sediment). International Association of Geoanalysts: Unpublished report.

GeoPT11
Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and Watson J.S. (2002)
GEOPT11 - an international proficiency test for analytical geochemistry laboratories - report on round 11 / July 2002 (OU-5 Leaton dolerite). International Association of Geoanalysts: Unpublished report.

GeoPT12
Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and Batjargal B. (2003)
GEOPT12 - an international proficiency test for analytical geochemistry laboratories - report on round 12 / January 2003 (GAS Serpentinite). International Association of Geoanalysts: Unpublished report.

GeoPT13
Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and Kaspar H.U. (2003)
GEOPT13 - an international proficiency test for analytical geochemistry laboratories - report on round 13 / July 2003 (Köln Loess). International Association of Geoanalysts: Unpublished report.

GeoPT14
Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and B. Batjargal (2004)
GeoPT14 - an international proficiency test for analytical geochemistry laboratories - report on round 14 / January 2004 (OShBO - alkaline granite). International Association of Geoanalysts: Unpublished report.

GeoPT15
Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and WANG Yimin (2004)
GeoPT15 - an international proficiency test for analytical geochemistry laboratories - report on round 15 / June 2004 (Ocean floor sediment MSAN). International Association of Geoanalysts: Unpublished report.

GeoPT16
Potts P.J., Thompson M., Webb, P.C. and S.Wilson (2005)
GeoPT16 - an international proficiency test for analytical geochemistry laboratories - report on round 16 / February 2005 (Nevada basalt, BNV-1). International Association of Geoanalysts: Unpublished report.

GeoPT17
Potts P.J., Thompson M., Webb, P.C. and J. Nicholas Walsh (2005)
GeoPT17 - an international proficiency test for analytical geochemistry laboratories - report on round 17 / July 2005 (Calcareous sandstone, OU-8). International Association of Geoanalysts: Unpublished report.

GeoPT18
Webb, P.C., Thompson M., Potts P.J. and L. Paul Bedard (2006)
GeoPT18 - an international proficiency test for analytical geochemistry laboratories - report on round 18 / Jan 2006 (Quartz Diorite, KPT-1). International Association of Geoanalysts: Unpublished report.

GeoPT19
Webb, P.C., Thompson M., Potts P.J. and B. Batjargal (2006)
GeoPT19 - an international proficiency test for analytical geochemistry laboratories - report on round 19 / July 2006 (Gabbro, MGR-N). International Association of Geoanalysts: Unpublished report.

GeoPT20
Webb, P.C., Thompson M., Potts P.J. and M. Burnham (2007)
GeoPT20 - an international proficiency test for analytical geochemistry laboratories - report on round 20 / Jan 2007 (Ultramafic rock, OPY-1). International Association of Geoanalysts: Unpublished report.

GeoPT21
Webb, P.C., Thompson M., Potts P.J. and B. Batjargal (2007)
GeoPT21 - an international proficiency test for analytical geochemistry laboratories - report on round 21 / July 2007 (Granite, MGT-1). International Association of Geoanalysts: Unpublished report.

GeoPT22
Webb, P.C., Thompson, M., Potts, P.J. and Batjargal, B. (2008)
GeoPT22 - an international proficiency test for analytical geochemistry laboratories - report on round 22 / January 2008 (Basalt, MBL-1). International Association of Geoanalysts: Unpublished report.

GeoPT23
Webb, P.C., Thompson, M., Potts, P.J., Watson, J.S. and Kriete, C. (2008)
GeoPT23 - 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.

GeoPT24
Webb, P.C., Thompson, M., Potts, P.J., Watson, J.S. (2009)
GeoPT24 - an international proficiency test for analytical geochemistry laboratories - report on round 24 / January 2009 (Longmyndian greywacke, OU-10). International Association of Geoanalysts: Unpublished report.

Table 1		GeoPT25 Analytical results for Basalt, HTB-1, as submitted (June 2009)										
Lab identifier		Z01	Z02	Z03	Z04	Z05	Z06	Z07	Z08	Z09	Z10	Z11
Sample		HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1
Data quality		1	2	2	1	1	1	1	2	1	2	2
SiO2	% m/m	51.29	50.44	49.79		50.33	50.65	50.34			50.25	48.37
TiO2	% m/m	3.69	3.76	3.76		3.51	3.78	3.71			3.85	3.63
Al2O3	% m/m	12.25	12.48	12.09		12.50	12.53	12.41	11.5		12.49	13.56
Fe2O3	% m/m	15.77	15.82	15.34		15.27	15.95	15.67	15.60		15.75	14.26
Fe(II)O	% m/m	9.59				10.51		10				
MnO	% m/m	0.20	0.213	0.214		0.228	0.22	0.22	0.217		0.221	0.206
MgO	% m/m	3.78	3.97	3.85		3.86	3.97	3.94	3.84		3.93	4.11
CaO	% m/m	7.78	7.88	7.75		8.41	8.04	7.87	7.80		7.88	7.77
Na2O	% m/m	2.81	2.7	2.6		2.64	2.76	2.81	2.66		2.62	3.30
K2O	% m/m	1.49	1.54	1.5		1.50	1.54	1.62	1.49		1.52	1.69
P2O5	% m/m	0.58	0.63	0.62		0.583	0.67	0.64			0.635	0.78
H2O+	% m/m					1.64		1.41				
CO2	% m/m					0.052		0.07				
LOI	% m/m	0.59	0.58	0.84		0.51	0.42	0.43			0.36	1
Ag	mg kg^{-1}											
As	mg kg^{-1}							12				
Au	mg kg^{-1}											
B	mg kg^{-1}											
Ba	mg kg^{-1}			656	561.7		507	422	551	490	572	556
Be	mg kg^{-1}					2.2			1.630			
Bi	mg kg^{-1}							0				
Br	mg kg^{-1}											
Cd	mg kg^{-1}							10	0.14			
Ce	mg kg^{-1}			83	87.16			190	86.2	85.3	101	55.5
Cl	mg kg^{-1}							27				125
Co	mg kg^{-1}			49	37.21	37	43	27	37.5	35.9	54	
Cr	mg kg^{-1}			29	10.224	22		17	11.0	10.5	9	33
Cs	mg kg^{-1}				0.344			0	0.36	0.28		
Cu	mg kg^{-1}			185	161.58	163	177	154	157.0	159	162	189
Dy	mg kg^{-1}				8.484			4		7.93		
Er	mg kg^{-1}				4.048			3		3.96		
Eu	mg kg^{-1}				3.206			2		3.17		
F	mg kg^{-1}					1140		748				
Ga	mg kg^{-1}			22	24.828			26		23.4	28	20
Gd	mg kg^{-1}				10.72			17		10.4		
Ge	mg kg^{-1}										1.6	
Hf	mg kg^{-1}				7.782			11		5.21	6	
Hg	mg kg^{-1}											
Ho	mg kg^{-1}				1.612			4		1.45		
I	mg kg^{-1}											
In	mg kg^{-1}											
Ir	mg kg^{-1}											
La	mg kg^{-1}			32	41.468			19	47.7	38.4	42	7
Li	mg kg^{-1}					4.6			6.3			
Lu	mg kg^{-1}				0.523					0.46		
Mo	mg kg^{-1}							2				2.2
Nb	mg kg^{-1}			28	32.796	29	30	36		25.3	27	27.8
Nd	mg kg^{-1}				53.548			53		47.6	48	
Ni	mg kg^{-1}			18	23.813	14.5	24	19	21.0	22.3	35	29.5
Os	mg kg^{-1}											
Pb	mg kg^{-1}			5	5.18		6	5	5.3			7.5
Pd	mg kg^{-1}											
Pr	mg kg^{-1}				12.467			10		10.9	9	
Pt	mg kg^{-1}											
Rb	mg kg^{-1}			42	35.227	31	38	34	33.9	29.5	34	34.7
Re	mg kg^{-1}											
Rh	mg kg^{-1}											
Ru	mg kg^{-1}											
S	mg kg^{-1}					450		127			380	440
Sb	mg kg^{-1}							22				
Sc	mg kg^{-1}				28.44	28		28				
Se	mg kg^{-1}											
Sm	mg kg^{-1}				11.215			17		10.5	7	
Sn	mg kg^{-1}							2			7	
Sr	mg kg^{-1}			481	489.92	471	506	487	500	465	475	490
Ta	mg kg^{-1}				1.937			0		1.84		
Tb	mg kg^{-1}				1.531			2		1.46		
Te	mg kg^{-1}											
Th	mg kg^{-1}				4.356	5.5		3		3.98	3.6	3.2
Tl	mg kg^{-1}											
Tm	mg kg^{-1}				0.594					0.51		
U	mg kg^{-1}			18	0.858			0	0.83	0.74		
V	mg kg^{-1}			413	380.86	395	380	355	400.0	380	385	377
W	mg kg^{-1}							0				
Y	mg kg^{-1}			31	44.288		46	35	37.9	35.5	37	38.9
Yb	mg kg^{-1}				3.494			5		3.35		
Zn	mg kg^{-1}			138	144.67	147	145	107	141.0		131	149
Zr	mg kg^{-1}			234	333	316	313	314		198	293	319

Table 1		GeoPT25 Analytical results for Basalt, HTB-1, as submitted (June 2009)										
Lab identifier		Z12	Z13	Z14	Z15	Z16	Z17	Z18	Z19	Z19	Z20	Z21
Sample		HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1
Data quality		1	1	1	1	1	1	2	1	2	1	1
SiO2	% m/m	51.08	48.37	50.04	50.9	50.94		50.69	50.00		50.11	49.8
TiO2	% m/m	3.936	3.929	3.832	3.87	3.88		3.87	3.897		3.86	3.72
Al2O3	% m/m	12.7	13.89	12.22	12.4	12.31		12.18	12.530		12.6	11.34
Fe2O3	% m/m	15.15	16.27	15.04	15.4	15.79		15.79	15.860		15.87	14.91
Fe(II)O	% m/m	8.65										
MnO	% m/m	0.199	0.216	0.216	0.22	0.21		0.21		0.208	0.21	0.198
MgO	% m/m	2.89	3.64	3.957	3.85	3.85		3.9		4.058	3.80	2.40
CaO	% m/m	7.84	8.09	7.972	7.94	7.84		7.88	7.941		7.76	7.34
Na2O	% m/m	2.8	2.696	2.741	2.60	2.75		2.67		2.755	2.87	1.84
K2O	% m/m	1.64	1.551	1.506	1.54	1.57		1.56		1.490	1.32	1.6
P2O5	% m/m	0.63	0.554	0.622	0.66	0.67		0.62		0.592	0.62	0.707
H2O+	% m/m					0.4						
CO2	% m/m											
LOI	% m/m	1.7	0.80	0.51	0.42	0.63		0.57		0.850	0.38	
Ag	mg kg^{-1}	1.019	1							0.090	0.035	
As	mg kg^{-1}	2.487	3							4.6		
Au	mg kg^{-1}									0.1		
B	mg kg^{-1}									4.40		
Ba	mg kg^{-1}	549.155	508	556	546		547	559		530.00	594	552.3
Be	mg kg^{-1}	1.264	2		1.5		1.63	1.88		2.81	1.1	
Bi	mg kg^{-1}	0.022	2.6									
Br	mg kg^{-1}											
Cd	mg kg^{-1}	0.269	0.15	0.248	0.3		0.092			0.11	0.41	1.3
Ce	mg kg^{-1}	93.780	87.9	94.1	96		89.1	91.3		92.7	86.6	87
Cl	mg kg^{-1}											
Co	mg kg^{-1}	31.680	35.4	38.5	37		38.3	38.6		39.0	51.8	
Cr	mg kg^{-1}	9.566	30.9	14.4	18		10.9	12		22.40	14.55	
Cs	mg kg^{-1}	0.369		0.373	0.5		0.37	0.37				
Cu	mg kg^{-1}	133.626	164.7	163	163		158	160		165.00	165.6	161.5
Dy	mg kg^{-1}	8.653	8.17	8.36	8.6		8.42	8.56	8.62		6.08	
Er	mg kg^{-1}	4.118	4.15	4.00	4.3		4.08	4.22	4.37		3.61	
Eu	mg kg^{-1}	3.568	3.31	3.34	3.4		3.27	3.38	3.29		3.15	
F	mg kg^{-1}									1150.00		
Ga	mg kg^{-1}	22.631	26	24.9	23		23.6	24.3		24.30		22.2
Gd	mg kg^{-1}	10.352	10.51	10.2	10.5		10.2	10.4	11.1		9.43	
Ge	mg kg^{-1}	1.328	2.2		1.3		1.72	1.8		1.40		
Hf	mg kg^{-1}	8.087	8.9	7.80	8		7.41	7.85		7.59	16	
Hg	mg kg^{-1}									0.0070		
Ho	mg kg^{-1}	1.616	1.52	1.56	1.6		1.62	1.67	1.61		1.23	
I	mg kg^{-1}											
In	mg kg^{-1}				0.1							
Ir	mg kg^{-1}	0.032										
La	mg kg^{-1}	38.626	39.8	41.6	44		40.6	41.9	39.8		41.7	36.4
Li	mg kg^{-1}	5.940	7.3	6.73	6		6.54	7.41	6.0		8.6	
Lu	mg kg^{-1}	0.489	0.48	0.487	0.51		0.49	0.5	0.500		0.45	
Mo	mg kg^{-1}	1.474	3.3	1.53	1.5		1.51			1.80		
Nb	mg kg^{-1}	29.319	31.1	29.8	29		30.9	32.7		35.8		26
Nd	mg kg^{-1}	53.464	49.3	51.3	51		50.7	52.1		52.3	51.9	34.8
Ni	mg kg^{-1}	18.035	19	22.0	17		22.2	23.4		24.20	26	23.4
Os	mg kg^{-1}											
Pb	mg kg^{-1}	5.726	7.5	5.38	6		5.16	5.78		5.60		6.1
Pd	mg kg^{-1}	7.326										
Pr	mg kg^{-1}	12.131	11.4	12.1	12		12.2	11.8		11.4	11.9	
Pt	mg kg^{-1}	0.070										
Rb	mg kg^{-1}	32.416	36.6	35.3	35		34.9	37.1		30.00		33.2
Re	mg kg^{-1}											
Rh	mg kg^{-1}	0.013										
Ru	mg kg^{-1}											
S	mg kg^{-1}				370						218.9	289.1
Sb	mg kg^{-1}	0.062		0.072	0.1							
Sc	mg kg^{-1}	20.885	27.8	28.7	27		28.7	30.4		29.10	28	
Se	mg kg^{-1}	0.694									3.32	
Sm	mg kg^{-1}	11.239	10.7	10.9	11		11.0	11.3	11.0		10.62	15.800
Sn	mg kg^{-1}	2.532		2.54	2.8		2.67			3.40		3.5
Sr	mg kg^{-1}	457.167	483.6	494	469		487	500		500.00	424.3	440.1
Ta	mg kg^{-1}	2.097	5.6	1.90	1.8		1.88	1.95		1.99		
Tb	mg kg^{-1}	1.461	1.5	1.50	1.54		1.47	1.53	1.54		1.68	
Te	mg kg^{-1}											
Th	mg kg^{-1}	4.034	4	3.77	3.82		3.79	4.01		4.10		3.1
Tl	mg kg^{-1}	0.117	0.11	0.120	0.11		0.11			0.17		
Tm	mg kg^{-1}	0.568	0.53	0.545	0.58		0.55	0.59	0.553		0.54	
U	mg kg^{-1}	0.937	0.86	0.788	0.8		0.78	0.83		0.822		2.4
V	mg kg^{-1}	395.653	409	396	407		394	410		411.0	399.3	417.2
W	mg kg^{-1}	0.524		0.474	0.6		0.47			1.50		
Y	mg kg^{-1}	32.939	42.9	41.2	38		43.0	43.6	40.3		59.3	38.8
Yb	mg kg^{-1}	3.469	3.39	3.42	3.4		3.38	3.55	3.50		3.88	5.8
Zn	mg kg^{-1}	119.988	143.5	150	141		140	144	140.00		150	123.5
Zr	mg kg^{-1}	278.055	325.7	314	318		308	316		324.0	360	297.4

Table 1		GeoPT25 Analytical results for Basalt, HTB-1, as submitted (June 2009)										
Lab identifier		Z22	Z23	Z24	Z25	Z26	Z27	Z28	Z29	Z30	Z32	Z33
Sample		HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1
Data quality		2	2	2	2	2	2	2	2	1	2	1
SiO2	% m/m	49.761	50.665	51.2	50.7	50.1	50.29	51.08		51.54	52.51	
TiO2	% m/m	3.741	3.818	3.8	3.86	3.98	3.76	3.75		3.83	3.76	3.96
Al2O3	% m/m	12.195	12.423	13.3	12.2	12.1	12.4	12.80		13.39	12.55	12.5
Fe2O3	% m/m	15.649	15.698	15.3	15.8	15.79	15.64	15.05		13.53	14.98	15.2
Fe(II)O	% m/m											
MnO	% m/m	0.231	0.219	0.236	0.217	0.23	0.226	0.196		0.19	0.23	0.22
MgO	% m/m	3.856	3.994		3.82	4.18	3.9	3.82		2.88	4.07	3.7
CaO	% m/m	7.789	7.944	7.9	7.96	7.77	7.68	7.97		7.78	5.83	7.7
Na2O	% m/m	2.607	2.671		2.93		2.65	2.65		2.54	2.52	2.7
K2O	% m/m	1.556	1.543	1.78	1.53	1.54	1.46	1.52		1.64	1.32	1.6
P2O5	% m/m	0.620	0.632		0.657	0.55	0.65	0.73		0.58	1.2	
H2O+	% m/m											
CO2	% m/m											
LOI	% m/m	0.928	0.295		0.480	0.88	0.66	0.50		1	0.99	
Ag	mg kg^{-1}					14	0.32					
As	mg kg^{-1}						1.49					0.4
Au	mg kg^{-1}											
B	mg kg^{-1}					27.5						
Ba	mg kg^{-1}		566.3	618	670	571	559	540	547.02	602		
Be	mg kg^{-1}					2.8	1.42	1.75	1.84			
Bi	mg kg^{-1}						0.03		0.04			
Br	mg kg^{-1}											
Cd	mg kg^{-1}			2.5		0.6	0.33	0.16	0.13			
Ce	mg kg^{-1}		99.3	95.9	102	102.9	88.7	91.5	85.52			89
Cl	mg kg^{-1}							89				
Co	mg kg^{-1}				45.8	37.7	37.8	40.6	39.7	27	57.1	34
Cr	mg kg^{-1}		2.3	82.6	4.3	14.5	10.6	25	10.87	7	38.94	15
Cs	mg kg^{-1}						0.35	0.36	0.39			
Cu	mg kg^{-1}		177.7	192	160	85.7	154	132	157.6	165	100.8	181
Dy	mg kg^{-1}					9.7	8.06	8.41	8.01			
Er	mg kg^{-1}					4.9	4.05	4.11	3.9			
Eu	mg kg^{-1}					3.6	3.23	3.3	3.27			3.53
F	mg kg^{-1}							834				
Ga	mg kg^{-1}		24.7	24	23.8	28.8	23.3	27.4		17		
Gd	mg kg^{-1}					11.5	10.1	8.9	10.24			
Ge	mg kg^{-1}					7.8						
Hf	mg kg^{-1}				5.8		7.9	8.1	7.4			7.7
Hg	mg kg^{-1}						0.123					
Ho	mg kg^{-1}					1.1	1.52	1.59	1.53			
I	mg kg^{-1}											
In	mg kg^{-1}											
Ir	mg kg^{-1}											0.00002
La	mg kg^{-1}		48.0	39.9	33	47.5	40.1	40.7	42.2			41
Li	mg kg^{-1}					10.1	5.89	7.09	7.37			
Lu	mg kg^{-1}					0.7	0.48	0.51	0.5			0.46
Mo	mg kg^{-1}				2.4		1.39	1.55				
Nb	mg kg^{-1}		29.7	25.6	27.8	25.1	31	29	29.16	11		
Nd	mg kg^{-1}			51.2	56	55.2	49.2	51.9	53.09			
Ni	mg kg^{-1}		21.0	22.9	15.6	23.5	22.5	24.1	21.64	15	33.75	
Os	mg kg^{-1}											0.000014
Pb	mg kg^{-1}		9.0	2.7		28.5	5.23	5.59	5.33	4	10.59	
Pd	mg kg^{-1}											
Pr	mg kg^{-1}			11.3		12.7		11.9	11.88			
Pt	mg kg^{-1}											0.00081
Rb	mg kg^{-1}		38.0	38.1	35.7		39	35.3	35.64	31		
Re	mg kg^{-1}											0.00092
Rh	mg kg^{-1}											
Ru	mg kg^{-1}											
S	mg kg^{-1}				200			465				
Sb	mg kg^{-1}					5.4	0.07	0.1				0.04
Sc	mg kg^{-1}		29.3		28.8	33.2	28.6	29.8	29.46	37		28.3
Se	mg kg^{-1}						0.25					
Sm	mg kg^{-1}					13.1	10.5	10.9	10.82			10.2
Sn	mg kg^{-1}						2.42	2.63				
Sr	mg kg^{-1}		513.3	532	461	455.7	478	510	484.36	436		
Ta	mg kg^{-1}						1.88	2				1.7
Tb	mg kg^{-1}					2.6	1.5	1.5	1.55			
Te	mg kg^{-1}						0.1					
Th	mg kg^{-1}		4.0		5.4		4.0		3.84			3.5
Tl	mg kg^{-1}						0.17	0.121	0.12			
Tm	mg kg^{-1}					0.2	0.53	0.54	0.59			
U	mg kg^{-1}						0.80	0.93	0.72			0.77
V	mg kg^{-1}		386.3		362	457.6	383	395	410.77	427		449
W	mg kg^{-1}						0.51	0.60				
Y	mg kg^{-1}		45.0	39.8	43.0	48.5	44		39.67	30		
Yb	mg kg^{-1}					4	3.31	3.54	3.4			3.5
Zn	mg kg^{-1}		134.3	145	134	146.8	149	127	153	71	129	143
Zr	mg kg^{-1}		331.0	336	310		312	256		223		
								Code Z31 was initially assigned in error and is unused				

Table 1		GeoPT25 Analytical results for Basalt, HTB-1, as submitted (June 2009)										
Lab identifier		Z34	Z35	Z35	Z36	Z37	Z38	Z38	Z39	Z40	Z41	Z42
Sample		HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1
Data quality		2	1	2	2	2	1	2	1	2	2	2
SiO2	% m/m	50.87			49.87	50.6		50.2	50.25	50.442	50.45	
TiO2	% m/m	3.80	3.85		3.68	3.86		3.75	3.73	3.796	3.93	3.86
Al2O3	% m/m	12.30	12.28		13.02	12.75		12.93	12.16	12.399	12.42	
Fe2O3	% m/m	15.59	15.73		16.2	15.45		15.41	15.48	15.288	16.04	
Fe(II)O	% m/m	11.62							10.83		8.16	
MnO	% m/m	0.21	0.210		0.2	0.214	0.209		0.22	0.218	0.22	0.19
MgO	% m/m	3.92	3.95		3.94	3.92		3.95	3.87	3.965	3.95	2.54
CaO	% m/m	7.77	7.84		7.95	8.01		7.84	7.95	7.936	7.84	7.71
Na2O	% m/m	2.77	2.78		2.8	2.81		2.87	2.75	2.691	2.67	3.02
K2O	% m/m	1.48	1.61		1.58	1.5		1.51	1.53	1.541	1.5	1.51
P2O5	% m/m	0.62			0.48	0.53		0.63	0.65	0.650	0.61	0.69
H2O+	% m/m	1.37				0.22			1.38			
CO2	% m/m								0.04			
LOI	% m/m	0.53				0.59	0.63		0.66	0.748	0.59	
Ag	mg kg^{-1}											
As	mg kg^{-1}											
Au	mg kg^{-1}											
B	mg kg^{-1}								2.5		135	
Ba	mg kg^{-1}	572	570		540	532.8	578		528	639.1	541	556.7
Be	mg kg^{-1}	1.76				2.71			1.57	1.72		
Bi	mg kg^{-1}											
Br	mg kg^{-1}											
Cd	mg kg^{-1}					0.19			0.29	0.142		
Ce	mg kg^{-1}	92.0	90		86.62	82	97.4		91.1	90.39	89	77.9
Cl	mg kg^{-1}								125			
Co	mg kg^{-1}	39.3	38.9		37.7	46.6	35.9		37.7	35.8	45	36.1
Cr	mg kg^{-1}	11.0	11.1		11.7	9.82	8.2		12.1	9.2	19	17
Cs	mg kg^{-1}	0.37		0.34	0.35				0.32	0.50		
Cu	mg kg^{-1}	165		190	143		165		159	164	162	110
Dy	mg kg^{-1}	8.92	8		7.93				7.98	8.032		7.47
Er	mg kg^{-1}	4.25			3.96				3.83	4.052		3.92
Eu	mg kg^{-1}	3.43	3.71		3.26				3.41	3.289		3.28
F	mg kg^{-1}								940		782	
Ga	mg kg^{-1}	24.6		20			25.4		26.3	24.9	25	20.4
Gd	mg kg^{-1}	10.6			9.64				9.75	1.401		8.51
Ge	mg kg^{-1}								1.76			1.67
Hf	mg kg^{-1}	7.93	8.3			5.99			7.62	7.75	5	7.29
Hg	mg kg^{-1}								0.0046			
Ho	mg kg^{-1}	1.73			1.48				1.46	1.507		1.52
I	mg kg^{-1}											
In	mg kg^{-1}											
Ir	mg kg^{-1}											
La	mg kg^{-1}	43.2	43		38.44	40.8	41.7		40.6	40.64	47	40.00
Li	mg kg^{-1}	6.91			7.2	7.82			6.5	6.7	8	
Lu	mg kg^{-1}	0.51	0.476		0.45				0.495	0.469		0.45
Mo	mg kg^{-1}	1.24					1.9		1.60	1.28	2	2.8
Nb	mg kg^{-1}	32.7					29.2		27.5	28.3	38	28
Nd	mg kg^{-1}	53.2	53		49.15	50.1	55.7		50.0	50.32	49	49.65
Ni	mg kg^{-1}	21.4			22.6	18.2	22.5		25.0	22.0	70	27
Os	mg kg^{-1}											
Pb	mg kg^{-1}	5.18			5.2		4.5		5.45	5.9		4
Pd	mg kg^{-1}											
Pr	mg kg^{-1}	12.2			11.23	11.7			11.7	11.8		10.89
Pt	mg kg^{-1}											
Rb	mg kg^{-1}	36.7	37		36.57	35.6	35.7		34.6	34.7		37
Re	mg kg^{-1}											
Rh	mg kg^{-1}											
Ru	mg kg^{-1}											
S	mg kg^{-1}								300		532	410
Sb	mg kg^{-1}				0.57					0.078		
Sc	mg kg^{-1}	29.3	30		29.2		28.1			26.8		31
Se	mg kg^{-1}								0.21			
Sm	mg kg^{-1}	11.5	11.000		10.75				10.8	10.66		10.96
Sn	mg kg^{-1}						3.1		3.29	2.7		1.34
Sr	mg kg^{-1}	510		570	506.5	484.3	496		476	490.2	490	520
Ta	mg kg^{-1}	1.90	1.8						2.12	1.74		0.14
Tb	mg kg^{-1}	1.55	1.53		1.41				1.43	9.565		1.34
Te	mg kg^{-1}											
Th	mg kg^{-1}	3.89	3.86		4.05		4.3		3.63	3.90		3.4
Tl	mg kg^{-1}									0.115		
Tm	mg kg^{-1}	0.57			0.51				0.529	0.555		0.49
U	mg kg^{-1}	0.79		1.4	0.84				0.78	0.822		1.4
V	mg kg^{-1}	412	429		397.8	398	405		392	372.8	378	403.6
W	mg kg^{-1}	0.35						2.3	0.55	0.585		4
Y	mg kg^{-1}	44.2			36.65	41.4	40.4		39.6	40.6	39	36
Yb	mg kg^{-1}	3.43	3.55		3.15				3.36	3.475		2.64
Zn	mg kg^{-1}	150		130	134.5	139	142		174	143.1	186	110
Zr	mg kg^{-1}	312	290		292.8	332.4	318		308	319.3	393	281

Table 1		GeoPT25 Analytical results for Basalt, HTB-1, as submitted (June 2009)										
Lab identifier		Z43	Z44	Z45	Z46	Z47	Z48	Z48	Z49	Z49	Z50	Z51
Sample		HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1
Data quality		1	2	2	1	1	1	2	1	2	2	2
SiO2	% m/m			50.32		51.18			49.91		50.4	
TiO2	% m/m		4.16	3.86	3.755	3.89		3.591	3.845		3.8	
Al2O3	% m/m			12.31	11.72	12.57		12.1	12.23		12.9	
Fe2O3	% m/m		15.4	15.93	11.4	15.15		15.19	15.62		15.7	
Fe(II)O	% m/m								10.93			
MnO	% m/m		0.218	0.212	0.21	0.20		0.2134	0.216			
MgO	% m/m			3.94		3.88		3.754	3.85		4.1	2.27
CaO	% m/m		7.67	7.89	7.712	7.49		7.288	7.84		7.8	6.24
Na2O	% m/m			2.7	2.62	3.01			2.88		2.7	
K2O	% m/m		1.71	1.5	1.506	1.45			1.51		1.5	
P2O5	% m/m			0.58	0.606	0.61			0.631			
H2O+	% m/m											
CO2	% m/m								0.07			
LOI	% m/m			0.4					0.61		0.49	
Ag	mg kg^{-1}				0.61							
As	mg kg^{-1}	3.87			1.31							
Au	mg kg^{-1}											
B	mg kg^{-1}											
Ba	mg kg^{-1}	519		539	545.0	453	530.6		522		528.7	
Be	mg kg^{-1}	3.11		1.79								
Bi	mg kg^{-1}	0.065			0.0							
Br	mg kg^{-1}											
Cd	mg kg^{-1}	0.049			0.13							
Ce	mg kg^{-1}	86.6		84	92.4	95	91.61		91.5			
Cl	mg kg^{-1}											
Co	mg kg^{-1}	35.6		35	38	34	37.66		36			32
Cr	mg kg^{-1}	12.8			10	18						
Cs	mg kg^{-1}	0.38			0.36		0.3554		0.38			
Cu	mg kg^{-1}	129	150	161	157	156	159.9		165		141.0	140
Dy	mg kg^{-1}	7.86		7.6	8.90	7.7	8.343		7.30			
Er	mg kg^{-1}	3.82		3.46	4.46	4	4.114		3.63			
Eu	mg kg^{-1}	3.15		2.96	3.46	3.3	3.322		3.13			
F	mg kg^{-1}									580		
Ga	mg kg^{-1}	22.9	21	24	24.8	22			25			
Gd	mg kg^{-1}	9.04		8.91		11	9.989		8.95			
Ge	mg kg^{-1}	1.9			1.79							
Hf	mg kg^{-1}	7.87			8.0		8.103		7.09			
Hg	mg kg^{-1}											
Ho	mg kg^{-1}	1.65		1.31	1.60	1.4	1.553		1.44			
I	mg kg^{-1}											
In	mg kg^{-1}	0.19										
Ir	mg kg^{-1}											
La	mg kg^{-1}	39.6		39.3	42.44	41	40.53		39.9			
Li	mg kg^{-1}	5.89					6.64					
Lu	mg kg^{-1}	0.48		0.43	0.50	0.6	0.4803		0.43			
Mo	mg kg^{-1}	1.66			1.46		1.614					
Nb	mg kg^{-1}	29.1	29	28	30.16	25		28.98	28.0			
Nd	mg kg^{-1}	47.9		64	51.64	46	51.05		45.7			
Ni	mg kg^{-1}	23		26	22	19	24.1		22		21.9	13
Os	mg kg^{-1}											
Pb	mg kg^{-1}	6.66			5.3		5.76		4.48			
Pd	mg kg^{-1}											
Pr	mg kg^{-1}	11.3		11.1	12.04	11	11.83		10.7			
Pt	mg kg^{-1}											
Rb	mg kg^{-1}	33.3	37	35	34.55	30	34.33		33.8		33.4	
Re	mg kg^{-1}											
Rh	mg kg^{-1}											
Ru	mg kg^{-1}											
S	mg kg^{-1}								476			
Sb	mg kg^{-1}	0.29			0.07							
Sc	mg kg^{-1}	23		24.9	29	29			26.2			
Se	mg kg^{-1}											
Sm	mg kg^{-1}	10.400		9.15	11.10	11	10.80		9.67			
Sn	mg kg^{-1}											
Sr	mg kg^{-1}	452	477	491	515	446	474.3		451		451.1	
Ta	mg kg^{-1}	2.06						1.815				
Tb	mg kg^{-1}	1.44		1.42	1.54		1.449		1.31			
Te	mg kg^{-1}											
Th	mg kg^{-1}	3.78			3.91		3.915		3.51			
Tl	mg kg^{-1}	0.13			0.110							
Tm	mg kg^{-1}	0.52		0.45	0.57	0.6	0.560		0.50			
U	mg kg^{-1}	0.79			0.82		0.8206		0.67			
V	mg kg^{-1}	354		386	406.16	335			359		341.0	
W	mg kg^{-1}	0.64			0.47							
Y	mg kg^{-1}	38	39	43	39.7	37	37.48		37.6		38.9	
Yb	mg kg^{-1}	3.27		2.93	3.52	3.1	3.448		3.04			
Zn	mg kg^{-1}	179	136	142	154	134		237.3	141		134.5	79
Zr	mg kg^{-1}	299	306	317	303	219	320.7		304		298.2	

Table 1		GeoPT25 Analytical results for Basalt, HTB-1, as submitted (June 2009)										
Lab identifier		Z52	Z53	Z54	Z55	Z56	Z57	Z58	Z59	Z60	Z61	Z62
Sample		HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1
Data quality		2	2	2	2	2	1	1	1	1	2	1
SiO2	% m/m	50.4	50.39	49.98	50.2	50.3	50.266	50.5	50.030667	50.4	53.34	
TiO2	% m/m	3.78	3.89	3.837	3.941	3.85	3.789	3.85	3.8843333	3.83	4.92	
Al2O3	% m/m	12.4	12.28	12.56	12.07	12.4	12.459	12.45	12.740333	12.8	8.83	
Fe2O3	% m/m	15.44	15.32	15.63	15.96	15.7	15.431	15.3	15.511	15.5	20.01	
Fe(II)O	% m/m	9.7	10.27						10.35			
MnO	% m/m	0.22	0.222	0.208	0.22	0.223	0.212	0.2	0.2126667	0.22	0.23	
MgO	% m/m	3.86	3.93	3.91	3.82	3.89	3.905	3.89	3.934	3.95	0.16	
CaO	% m/m	7.82	7.88	7.56	7.93	7.87	7.949	8.15	7.846	7.8	8.61	
Na2O	% m/m	2.7	2.65	2.82	2.51	2.6	2.779	2.71	2.7043333	2.88	1.48	
K2O	% m/m	1.48	1.52	1.51	1.5	1.51	1.529	1.55	1.491	1.51	1.93	
P2O5	% m/m	0.69	0.64	0.64	0.648	0.6	0.632	0.64	0.635	0.63	0.13	
H2O+	% m/m	1.6										
CO2	% m/m									0.11		
LOI	% m/m		0.51		0.82	0.33		0.62	0.84	0.58		
Ag	mg kg^{-1}	0.13								1.15	0.53	
As	mg kg^{-1}	1.4	1.9	6						7.5	15.08	
Au	mg kg^{-1}											
B	mg kg^{-1}											
Ba	mg kg^{-1}	560	512	437	602	540	553		562	467		519.2
Be	mg kg^{-1}	1.6					1.97		1.83	2.3		
Bi	mg kg^{-1}									0.23		
Br	mg kg^{-1}			4								
Cd	mg kg^{-1}	0.15	0.14						0.12	1.03		
Ce	mg kg^{-1}	95.4		106	101		90.27		93.66	91.4		90.56
Cl	mg kg^{-1}	130									57.96	
Co	mg kg^{-1}	38.1		24	43		38.27		31	37	25.37	
Cr	mg kg^{-1}	15			8		12		19	30	4.87	
Cs	mg kg^{-1}	0.4			35		0.385		0.36	0.39		0.339
Cu	mg kg^{-1}	163	159	119	157	90	164.7		136	180	194.23	
Dy	mg kg^{-1}	8.79							9.4	8.23		8.58
Er	mg kg^{-1}	4.34							4.3	4.27		4.242
Eu	mg kg^{-1}	3.39					3.247		3.4	3.39		3.262
F	mg kg^{-1}	800										
Ga	mg kg^{-1}	25	37	23	25		23.27			37.2	19.37	
Gd	mg kg^{-1}	10.3					9.963		10.6	11.2		9.992
Ge	mg kg^{-1}											
Hf	mg kg^{-1}	8		8			7.893		8.2	8.83		8.97
Hg	mg kg^{-1}	8					0.006					
Ho	mg kg^{-1}	1.6					1.67		1.75	1.47		1.608
I	mg kg^{-1}											
In	mg kg^{-1}	0.13										
Ir	mg kg^{-1}											
La	mg kg^{-1}	43.8	34	43	45		40.17		43.3	45.4		39.9
Li	mg kg^{-1}	7							6.39			
Lu	mg kg^{-1}	0.53					0.499		0.52	0.52		0.473
Mo	mg kg^{-1}						2.47		1.41	1.9	7.59	2.768
Nb	mg kg^{-1}	31	29	30	29		31.33		28	22.2		32.04
Nd	mg kg^{-1}	53.7	84				49.13		50.8	49.6	11.13	49.3
Ni	mg kg^{-1}	25	20	21	20		23.97		22	22.5	22.97	
Os	mg kg^{-1}											
Pb	mg kg^{-1}	5.3		4			4.82		4.5	6.4	14.03	5.63
Pd	mg kg^{-1}											
Pr	mg kg^{-1}	12.7							12.65	11.5		11.353
Pt	mg kg^{-1}											
Rb	mg kg^{-1}	36.5	39	39	36	50	36.53		30	25.9	52.9	33.245
Re	mg kg^{-1}											
Rh	mg kg^{-1}											
Ru	mg kg^{-1}											
S	mg kg^{-1}	0.04				620				400	1560	
Sb	mg kg^{-1}									0.85		
Sc	mg kg^{-1}	23			27		28.17		29.5	30.5	16.05	
Se	mg kg^{-1}						0.407					
Sm	mg kg^{-1}	11.4					10.467		11.2	11.4		10.662
Sn	mg kg^{-1}	2								3.3		
Sr	mg kg^{-1}	480	501	483	465	490	493		473	497	338.25	481.15
Ta	mg kg^{-1}	2.4	4.3				1.933		2.04	4.46	0.77	1.929
Tb	mg kg^{-1}	1.53					1.557		1.65	1.65		1.452
Te	mg kg^{-1}											
Th	mg kg^{-1}	4.1	32	3			3.97		3.5	13.2	19.7	4.133
Tl	mg kg^{-1}	0.11	3.4				0.12					
Tm	mg kg^{-1}	0.6					0.552		0.54	0.47		0.559
U	mg kg^{-1}	0.89	6.6	4			0.791		0.83	1.23	30.96	0.859
V	mg kg^{-1}	380	436	383	364		397.3		373	385	242.01	
W	mg kg^{-1}		2.5								139.96	
Y	mg kg^{-1}	41.3	39	37	43		39.93		29	44.7	30.73	37.15
Yb	mg kg^{-1}	3.6					3.453		3.6	3.4		3.43
Zn	mg kg^{-1}	138	153	140	147	140	135.3		119	180	215.96	
Zr	mg kg^{-1}	310	307	325	304	320	316.7		210	320	249.99	303.42

Table 1		GeoPT25 Analytical results for Basalt, HTB-1, as submitted (June 2009)										
Lab identifier		Z63	Z64	Z65	Z66	Z67	Z68	Z69	Z70	Z70	Z71	Z72
Sample		HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1
Data quality		2	1	1	2	1	1	1	1	2	2	1
SiO2	% m/m	52.403	49.6	50.92	51.2	51.088936	51.53	52.11		50.788	50.64	49
TiO2	% m/m	4.115	3.78	3.84	3.89	3.8982103	3.471	3.782		3.859	3.83	3.885
Al2O3	% m/m	12.554	12.21	12.46	12.4	12.558537	12.47	12.023		12.19478	12.56	11.96
Fe2O3	% m/m	16.319	15.45	15.78	15.8	15.864272	15.05	14.516		15.758	15.66	15.05
Fe(II)O	% m/m		10.8	7.8								
MnO	% m/m	0.224	0.215	0.22	0.22	0.2219166	0.097	0.2039		0.227	0.22	0.2074
MgO	% m/m	3.918	3.91	3.94	3.98	3.9703394	3.89	3.754		3.859	3.79	3.991
CaO	% m/m	8.137	7.8	8.01	8.16	7.9616999	7.94	7.732		7.656762	7.59	7.426
Na2O	% m/m	2.769	2.71	2.73	2.7	2.9160748	2.73	2.944		2.75	2.62	2.753
K2O	% m/m	1.538	1.5	1.54	1.53	1.5523701	1.48	1.549		1.549	1.48	1.612
P2O5	% m/m	0.659	0.629	0.63	0.68	0.6462231	0.64	0.7051		0.66	0.62	0.629
H2O+	% m/m											1.074
CO2	% m/m											0.0927
LOI	% m/m	0.385	0.75	0.43	0.36	0.379002	0.73	0.445		0.69	0.74	
Ag	mg kg^{-1}				1							
As	mg kg^{-1}		0.75			1.7355	0					
Au	mg kg^{-1}											
B	mg kg^{-1}											
Ba	mg kg^{-1}	537.3	649.5	567	565	548.06518	471.7	612.3	460		558	527
Be	mg kg^{-1}	1.9	1.85		1.3							1.981
Bi	mg kg^{-1}		0.065									
Br	mg kg^{-1}											
Cd	mg kg^{-1}		0.17			0.1693						0.2407
Ce	mg kg^{-1}	87.72	90.7		97	93.38		110			100	90.83
Cl	mg kg^{-1}											
Co	mg kg^{-1}	40.95		38	40	37.74	40	32.6	24		41	36.09
Cr	mg kg^{-1}	13.1	7	17	10	18.3475	58.4	9.06	20		11	20.3
Cs	mg kg^{-1}		0.345									0.3791
Cu	mg kg^{-1}	161.9	162.5	210	170	161	163.6	158.1	157		171	151.7
Dy	mg kg^{-1}	8.16	8.38		8.4	8.85525						8.676
Er	mg kg^{-1}	4.16	4.05		4.4	4.40525						4.311
Eu	mg kg^{-1}	3.29	3.39		3.4	3.55575						3.47
F	mg kg^{-1}		1080									
Ga	mg kg^{-1}	25.62	25	23		24		24.2			22	23.81
Gd	mg kg^{-1}	9.78	10.26		11	10.74						10.43
Ge	mg kg^{-1}		1.2									
Hf	mg kg^{-1}	7.28	7.48	6		9		6.86				5.608
Hg	mg kg^{-1}											
Ho	mg kg^{-1}	1.55	1.63		1.6	3.36						1.655
I	mg kg^{-1}											
In	mg kg^{-1}											
Ir	mg kg^{-1}											
La	mg kg^{-1}	39.53	39.67		43	39.915		42.8			40	40.58
Li	mg kg^{-1}										9	6.826
Lu	mg kg^{-1}	0.48	0.47			0.5086						0.527
Mo	mg kg^{-1}		1.4		1.5	1.341						1.589
Nb	mg kg^{-1}	26.66	31.2	29		27		28				30.4
Nd	mg kg^{-1}	49.45	50.6		55	53.725		53.2			57	51.1
Ni	mg kg^{-1}	14.6	20.5	20	24	22	20.9	21.2	20		22	24.26
Os	mg kg^{-1}											
Pb	mg kg^{-1}		5.74	7	5.4	4.8365	5.2	2.97	8		27	5.833
Pd	mg kg^{-1}											
Pr	mg kg^{-1}	11.6	11.38		12	12.98						12.16
Pt	mg kg^{-1}											
Rb	mg kg^{-1}	34.7	34.8	37		36	37.2	35.7			39	34.37
Re	mg kg^{-1}											
Rh	mg kg^{-1}											
Ru	mg kg^{-1}											
S	mg kg^{-1}		252				420		340			307
Sb	mg kg^{-1}											0.0782
Sc	mg kg^{-1}	28.1	28.5	30		23		22.7			36	29.65
Se	mg kg^{-1}						0					
Sm	mg kg^{-1}	10.59	11.11		11	11.57					13	11.18
Sn	mg kg^{-1}		2.2									3.773
Sr	mg kg^{-1}	514.4	490	487	495	456	447.6	464.9	430		472	455
Ta	mg kg^{-1}	1.69	1.82			2						1.371
Tb	mg kg^{-1}	1.49	1.55		1.6	1.589						1.618
Te	mg kg^{-1}											
Th	mg kg^{-1}	3.74	3.79	5	4	4.148		5.71	6			3.965
Tl	mg kg^{-1}											
Tm	mg kg^{-1}	0.55				0.58915						0.5825
U	mg kg^{-1}	0.79	0.81		0.8	0.9151	1.9	2.08				0.8477
V	mg kg^{-1}	412.4	418.5	409		404	389	392.7			402	400.4
W	mg kg^{-1}					1						0.4492
Y	mg kg^{-1}	44.9	43.5	43	42	40.315		39.5			42	39.44
Yb	mg kg^{-1}	3.35	3.53		3.6	3.56975						3.539
Zn	mg kg^{-1}	148.3	149	137	160	138	143.6	137.3	130		132	151.8
Zr	mg kg^{-1}	289.98	320	307		291		310.1			313	311.9

Table 1		GeoPT25 Analytical results for Basalt, HTB-1, as submitted (June 2009)										
Lab identifier		Z73	Z74	Z74	Z75	Z76	Z77	Z78	Z79	Z80	Z81	Z82
Sample		HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1
Data quality		1	1	2	2	2	1	2	2	2	2	2
SiO2	% m/m	50.83	50.27		50.42	51.32	50.83	50.39	50.16	50.715435	51.46	49.98
TiO2	% m/m	3.873	3.92		3.8	3.72	3.89	3.89	3.88	3.945375	3.812	3.907
Al2O3	% m/m	12.37	12.31		12.23	11.87	12.62	12.39	12.32	12.399795	12.56	12.25
Fe2O3	% m/m	15.72	15.48		15.78	15.23	15.44	15.58	15.65	16.280215	14.64	15.234
Fe(II)O	% m/m											
MnO	% m/m	0.219	0.22		0.22	0.21	0.21	0.21	0.21	0.22739	0.202	0.216
MgO	% m/m	3.830	3.9		3.88	3.74	3.92	3.99	3.84	3.924015	3.992	3.925
CaO	% m/m	7.950	7.81		7.98	7.62	7.98	7.82	7.92	7.982955	8.067	7.52
Na2O	% m/m	2.712	2.72		2.85	2.75	2.85	2.73	2.81	2.8131409	2.895	2.658
K2O	% m/m	1.525	1.49		1.53	1.49	1.56	1.53	1.53	1.56516	1.607	1.479
P2O5	% m/m	0.629	0.64		0.67	0.617	0.633	0.64	0.64	0.65137	0.637	0.638
H2O+	% m/m				1.2							
CO2	% m/m										0.057	
LOI	% m/m	0.21		0.57	0.52	0.84	0.5		0.25	0.46	0.425	0.58
Ag	mg kg^{-1}		0									
As	mg kg^{-1}		0			0.6						
Au	mg kg^{-1}											
B	mg kg^{-1}											
Ba	mg kg^{-1}		572		568.1	556	555.7		636			375.5
Be	mg kg^{-1}				1.67	1.54	1.79					1.9
Bi	mg kg^{-1}		0									
Br	mg kg^{-1}		0									
Cd	mg kg^{-1}		2		0.196	0.15	0.13					
Ce	mg kg^{-1}		80		95.19	92.4	90.5					93.2
Cl	mg kg^{-1}		50									
Co	mg kg^{-1}		30		40.7	36.3	37.01		74			38.6
Cr	mg kg^{-1}		11		12	9	10.8				13.6	14.9
Cs	mg kg^{-1}		0		0.378	0.35	0.37					0.4
Cu	mg kg^{-1}		159		170.8	153.5	162.7		146		133.1	152.5
Dy	mg kg^{-1}				8.761	8.42	8.72					8.5
Er	mg kg^{-1}				4.392	4.34	4.07					4.5
Eu	mg kg^{-1}				3.523	3.37	3.37					3.4
F	mg kg^{-1}											
Ga	mg kg^{-1}		24		24.09	25.3	24.92					23.6
Gd	mg kg^{-1}				10.702		10.35					10.2
Ge	mg kg^{-1}		0			0.17						
Hf	mg kg^{-1}		7		8.14	8.3	7.89					8.3
Hg	mg kg^{-1}											
Ho	mg kg^{-1}				1.667	1.65	1.654					1.65
I	mg kg^{-1}		0									
In	mg kg^{-1}					0.121						
Ir	mg kg^{-1}											
La	mg kg^{-1}		42		42.97	41.1	40.61					42.6
Li	mg kg^{-1}				7.1	6.8	7.25					
Lu	mg kg^{-1}				0.499	0.53	0.498					0.5
Mo	mg kg^{-1}		2		1.56	1.39	1.53					2.2
Nb	mg kg^{-1}		28		30.162	30	29.76					30.4
Nd	mg kg^{-1}		52		53.29	52.8	51.69					53.1
Ni	mg kg^{-1}		18		25.2	20.7	24.1		19		24.4	29.7
Os	mg kg^{-1}											
Pb	mg kg^{-1}		8		5.4	7.2	5.43					5.4
Pd	mg kg^{-1}											
Pr	mg kg^{-1}				12.473	11.9	12.01					12.1
Pt	mg kg^{-1}											
Rb	mg kg^{-1}		34		37.62	37.4	34.1					34.8
Re	mg kg^{-1}											
Rh	mg kg^{-1}											
Ru	mg kg^{-1}											
S	mg kg^{-1}										401	
Sb	mg kg^{-1}		0		0.1	0.1	0.06					
Sc	mg kg^{-1}		25		30.8	26.5	28.59					27.2
Se	mg kg^{-1}		0									
Sm	mg kg^{-1}		14		11.487	11.5	11.27					11.2
Sn	mg kg^{-1}		0			2.3	2.49					
Sr	mg kg^{-1}		467		504.7	505	494.9		451			473.5
Ta	mg kg^{-1}		0		1.951	1.8	1.96					2.1
Tb	mg kg^{-1}				1.514	1.54	1.526					
Te	mg kg^{-1}		0									
Th	mg kg^{-1}		5		3.985	4.07	3.89					4.2
Tl	mg kg^{-1}		0		0.109	0.11						
Tm	mg kg^{-1}				0.584	0.58	0.574					
U	mg kg^{-1}		1		0.844	0.78	0.814					0.85
V	mg kg^{-1}		358			373	388.9		404			401.9
W	mg kg^{-1}		0		0.47	0.6	0.49					
Y	mg kg^{-1}		40		42.28	39.4	42.2					43.1
Yb	mg kg^{-1}		5		3.529	3.48	3.501					3.4
Zn	mg kg^{-1}		131		176	174	144		127		117.1	178.4
Zr	mg kg^{-1}		305		328	297	302.5		266			305.2

Table 1		GeoPT25 Analytical results for Basalt, HTB-1, as submitted (June 2009)								
Lab identifier		Z83	Z83	Z84	Z85	Z86				
Sample		HTB-1	HTB-1	HTB-1	HTB-1	HTB-1				
Data quality		1	2	1	2	1				
SiO2	% m/m	50.421		50.423889	50.50	55.5				
TiO2	% m/m	3.701		3.8476622	4.029	2.53				
Al2O3	% m/m	12.813		12.584168	12.19	9.48				
Fe2O3	% m/m	15.677		15.60781	15.905	13.5				
Fe(II)O	% m/m									
MnO	% m/m	0.205		0.2205376	0.2098	0.120				
MgO	% m/m	3.842		3.8680053	3.786	3.55				
CaO	% m/m	7.971		7.996391	7.905	6.89				
Na2O	% m/m	2.693		2.7050161	2.64	0.978				
K2O	% m/m	1.559		1.5305027	1.5545	0.977				
P2O5	% m/m	0.616		0.632667	0.6097	0.498				
H2O+	% m/m			0.001						
CO2	% m/m					0.19				
LOI	% m/m	0.44		0.645463	0.621	5.31				
Ag	mg kg^{-1}					0.83				
As	mg kg^{-1}				1.930	0.09				
Au	mg kg^{-1}					0.002				
B	mg kg^{-1}					0.5				
Ba	mg kg^{-1}		576.6	555.34944	562	569				
Be	mg kg^{-1}				1.319	0.39				
Bi	mg kg^{-1}				0.036	0.41				
Br	mg kg^{-1}					0.5				
Cd	mg kg^{-1}				0.977	0.15				
Ce	mg kg^{-1}	91.08		94.280943	91.27	53.7				
Cl	mg kg^{-1}					9				
Co	mg kg^{-1}		23.9		39.79	25.5				
Cr	mg kg^{-1}		6.8	8	18.57	7.9				
Cs	mg kg^{-1}	0.38		0.3758123	0.379	0.32				
Cu	mg kg^{-1}	162.6		163.2	141.9	131				
Dy	mg kg^{-1}	8.182		9.338184	8.398	2.7				
Er	mg kg^{-1}	4.151		4.4364431	4.147	2.8				
Eu	mg kg^{-1}	3.319		3.6301652	3.389	1.8				
F	mg kg^{-1}									
Ga	mg kg^{-1}	24.7		24	24.40	21				
Gd	mg kg^{-1}	10.08		11.086842	10.53	2.1				
Ge	mg kg^{-1}				1.827	0.35				
Hf	mg kg^{-1}	7.84		8.0453943	7.668	4.3				
Hg	mg kg^{-1}					0.02				
Ho	mg kg^{-1}	1.58		1.7700155	1.571	0.05				
I	mg kg^{-1}					0.2				
In	mg kg^{-1}				0.109	0.07				
Ir	mg kg^{-1}					0.0001				
La	mg kg^{-1}	41.88		42.879388	40.99	28.5				
Li	mg kg^{-1}	7.387			6.46	0.45				
Lu	mg kg^{-1}	0.5017		0.5144577	0.489	0.41				
Mo	mg kg^{-1}	1.527			1.629	3.8				
Nb	mg kg^{-1}	29.6		28.804089	33.2	18.3				
Nd	mg kg^{-1}	50.43		52.674809	49.29	32.3				
Ni	mg kg^{-1}	25		19.129274	23.81	15.2				
Os	mg kg^{-1}					0.0001				
Pb	mg kg^{-1}	10.9		5.4039141	5.498	4.5				
Pd	mg kg^{-1}					0.0002				
Pr	mg kg^{-1}	11.99		12.397173	11.82	4.3				
Pt	mg kg^{-1}					0.0003				
Rb	mg kg^{-1}	36.7		34.595673	35.8	23.3				
Re	mg kg^{-1}					0.003				
Rh	mg kg^{-1}					0.0002				
Ru	mg kg^{-1}					0.0001				
S	mg kg^{-1}					585				
Sb	mg kg^{-1}	0.052			0.141	0.15				
Sc	mg kg^{-1}	30.2		27.227766	24.92	16.2				
Se	mg kg^{-1}					0.20				
Sm	mg kg^{-1}	10.97		11.590119	10.26	7.1				
Sn	mg kg^{-1}	3.029			2.591	3.3				
Sr	mg kg^{-1}	505.6		499.01135	497	380				
Ta	mg kg^{-1}	1.917		1.9472242	2.002	2.8				
Tb	mg kg^{-1}	1.484		1.6461343	1.495	0.03				
Te	mg kg^{-1}				0.045	0.09				
Th	mg kg^{-1}	3.99		3.9980828	3.772	2.7				
Tl	mg kg^{-1}				0.095	0.07				
Tm	mg kg^{-1}			0.5815092	0.554	0.29				
U	mg kg^{-1}	0.8257		0.8212056	0.796	0.49				
V	mg kg^{-1}	400.4		391.5	374	271				
W	mg kg^{-1}				0.778	1.2				
Y	mg kg^{-1}	44.9		42.461844	38.6	26.1				
Yb	mg kg^{-1}	3.372		3.3955649	3.381	2.28				
Zn	mg kg^{-1}	134.6		147.1	137.8	109				
Zr	mg kg^{-1}	317		311.14519	325	201				
						Z86 supplied data too late for inclusion				

Table 2 GeoPT25 Assigned values and statistical summary for contributed data (Basalt HTB-1)

	Assigned value	Uncertainty of assigned value	Horwitz Target value	Uncertainty/ Target	Number of reported results	Robust mean of results	Median of results	Status	Type of assigned value
	X_a	**sdm**	**H_a**	**sdm/H_a**	**n**				
	% m/m	**% m/m**	**% m/m**			**% m/m**	**% m/m**		
SiO2	50.42	0.066	0.559	0.119	70	50.52	50.42	Assigned	Median
TiO2	3.85	0.009	0.063	0.139	76	3.83	3.85	Assigned	Median
Al2O3	12.41	0.033	0.170	0.192	75	12.41	12.40	Assigned	Robust mean
Fe2O3T	15.54	0.042	0.206	0.206	76	15.54	15.60	Assigned	Robust mean
MnO	0.215	0.001	0.005	0.206	76	0.215	0.216	Assigned	Robust mean
MgO	3.89	0.011	0.063	0.173	75	3.89	3.90	Assigned	Robust mean
CaO	7.85	0.018	0.115	0.157	78	7.85	7.86	Assigned	Robust mean
Na2O	2.73	0.013	0.047	0.272	73	2.73	2.72	Assigned	Robust mean
K2O	1.53	0.005	0.029	0.182	76	1.53	1.53	Assigned	Robust mean
P2O5	0.633	0.004	0.014	0.281	70	0.633	0.632	Assigned	Robust mean
	mg/kg	mg/kg	mg/kg			mg/kg	mg/kg		
Ba	550.4	4.278	17.029	0.251	69	550.4	553.0	Assigned	Robust mean
Be	1.80	0.066	0.132	0.500	32	1.80	1.79	Assigned	Robust mean
Cd	0.15	0.009	0.016	0.562	32	0.27	0.18	Provisional	Mode
Ce	91.3	0.680	3.702	0.184	61	91.65	91.30	Assigned	Median
Co	37.7	0.388	1.746	0.222	64	37.58	37.70	Assigned	Median
Cr	10.7	0.496	0.601	0.826	63	13.86	12.00	Provisional	Mode
Cs	0.37	0.004	0.034	0.106	37	0.37	0.37	Assigned	Median
Cu	161	0.689	5.994	0.115	74	159.0	161.0	Assigned	Median
Dy	8.40	0.076	0.488	0.157	43	8.33	8.40	Assigned	Median
Er	4.14	0.038	0.267	0.141	42	4.14	4.13	Assigned	Robust mean
Eu	3.35	0.021	0.223	0.094	45	3.35	3.34	Assigned	Robust mean
Ga	24.1	0.228	1.194	0.191	56	24.09	24.15	Assigned	Robust mean
Gd	10.3	0.078	0.580	0.135	41	10.25	10.30	Assigned	Median
Hf	7.86	0.077	0.461	0.167	48	7.75	7.86	Assigned	Median
Ho	1.60	0.015	0.119	0.127	43	1.58	1.60	Assigned	Median
La	40.9	0.237	1.871	0.127	62	41.11	40.90	Assigned	Median
Li	6.83	0.126	0.409	0.309	31	6.88	6.83	Assigned	Median
Lu	0.49	0.004	0.044	0.097	43	0.49	0.50	Assigned	Robust mean
Mo	1.51	0.033	0.114	0.290	36	1.75	1.59	Provisional	Mode
Nb	29.2	0.296	1.406	0.210	59	29.21	29.00	Assigned	Robust mean
Nd	51.4	0.360	2.271	0.159	56	51.38	51.25	Assigned	Robust mean
Ni	22.1	0.364	1.109	0.328	71	22.09	22.00	Assigned	Robust mean
Pb	5.44	0.089	0.337	0.264	56	5.74	5.44	Assigned	Median
Pr	11.9	0.078	0.654	0.120	44	11.78	11.86	Assigned	Median
Rb	35.4	0.285	1.657	0.172	66	35.45	35.30	Assigned	Robust mean
Sc	28.5	0.270	1.377	0.196	51	28.18	28.50	Assigned	Median
Sm	11.0	0.075	0.614	0.122	49	11.01	11.00	Assigned	Robust mean
Sn	2.63	0.133	0.182	0.731	23	2.71	2.63	Provisional	Median
Sr	481.8	2.874	15.210	0.189	72	481.8	484.3	Assigned	Robust mean
Ta	1.93	0.027	0.140	0.194	39	1.91	1.93	Assigned	Median
Tb	1.53	0.013	0.115	0.117	42	1.53	1.53	Assigned	Robust mean
Th	3.98	0.056	0.259	0.217	54	3.98	3.98	Assigned	Robust mean
Tl	0.12	0.002	0.013	0.134	19	0.12	0.12	Assigned	Median
Tm	0.55	0.006	0.048	0.122	38	0.55	0.55	Assigned	Robust mean
U	0.81	0.007	0.067	0.102	50	0.86	0.83	Assigned	Mode
V	392.8	2.613	12.787	0.204	65	392.8	395.0	Assigned	Robust mean
W	0.52	0.030	0.050	0.620	24	0.70	0.57	Provisional	Mode
Y	39.93	0.466	1.834	0.254	65	40.27	39.93	Assigned	Median
Yb	3.46	0.020	0.229	0.089	47	3.46	3.45	Assigned	Robust mean
Zn	141.5	1.496	5.372	0.278	74	141.5	141.0	Assigned	Robust mean
Zr	310.1	1.816	10.459	0.174	66	307.8	310.1	Assigned	Median

Table 3	GeoPT25 Analytical results for Basalt, HTB-1, as submitted (June 2009)																
Lab identifier	Z01	Z02	Z03	Z04	Z05	Z06	Z07	Z08	Z09	Z10	Z11	Z12	Z13	Z14	Z15	Z16	Z17
Sample	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1
Data quality	1	2	2	1	1	1	1	2	1	2	2	1	1	1	1	1	1
SiO2	1.55	0.02	-0.57	*	-0.17	0.41	-0.15	*	*	-0.15	-1.84	1.18	-3.67	-0.68	0.85	0.93	*
TiO2	-2.49	-0.69	-0.69	*	-5.36	-1.06	-2.17	*	*	0.03	-1.72	1.43	1.32	-0.23	0.38	0.54	*
Al2O3	-0.94	0.21	-0.94	*	0.53	0.71	0.00	-2.68	*	0.24	3.38	1.71	8.71	-1.12	-0.06	-0.59	*
Fe2O3	1.12	0.68	-0.49	*	-1.31	1.99	0.63	0.15	*	0.51	-3.11	-1.90	3.55	-2.43	-0.68	1.21	*
MnO	-2.68	-0.14	-0.05	*	2.49	1.01	1.01	0.23	*	0.60	-0.79	-2.87	0.27	0.27	1.01	-0.83	*
MgO	-1.66	0.67	-0.28	*	-0.40	1.34	0.87	-0.36	*	0.35	1.77	-15.71	-3.87	1.13	-0.56	-0.56	*
CaO	-0.62	0.12	-0.44	*	4.85	1.63	0.16	-0.23	*	0.12	-0.36	-0.10	2.07	1.04	0.76	-0.10	*
Na2O	1.66	-0.34	-1.41	*	-1.96	0.59	1.66	-0.77	*	-1.19	6.04	1.44	-0.77	0.19	-2.81	0.38	*
K2O	-1.43	0.16	-0.54	*	-1.08	0.31	3.10	-0.71	*	-0.19	2.77	3.79	0.70	-0.87	0.31	1.36	*
P2O5	-3.92	-0.12	-0.49	*	-3.70	2.71	0.50	*	*	0.07	5.41	-0.23	-5.84	-0.82	1.98	2.71	*
Ba	*	*	3.10	0.67	*	-2.55	-7.54	0.02	-3.55	0.64	0.17	-0.07	-2.49	0.33	-0.26	*	-0.20
Be	*	*	*	*	3.04	*	*	-0.64	*	*	*	-4.06	1.52	*	-2.27	*	-1.29
Cd	*	*	*	*	*	*	625.61	-0.24	*	*	*	7.71	0.15	6.37	9.68	*	-3.53
Ce	*	*	-1.12	-1.12	*	*	26.66	-0.69	-1.62	1.31	-4.84	0.67	-0.92	0.76	1.27	*	-0.59
Co	*	*	3.24	-0.28	-0.40	3.04	-6.13	-0.06	-1.03	4.67	*	-3.45	-1.32	0.46	-0.40	*	0.34
Cr	*	*	15.21	-0.85	18.76	*	10.44	0.22	-0.39	-1.44	18.54	-1.94	33.58	6.11	12.10	*	0.28
Cs	*	*	*	-0.76	*	*	-10.77	-0.15	-2.62	*	*	-0.03	*	0.09	3.78	*	0.00
Cu	*	*	2.00	0.10	0.33	2.67	-1.17	-0.33	-0.33	0.08	2.34	-4.57	0.62	0.33	0.33	*	-0.50
Dy	*	*	*	0.18	*	*	-9.02	*	-0.96	*	*	0.52	-0.47	-0.08	0.41	*	0.05
Er	*	*	*	-0.34	*	*	-4.26	*	-0.67	*	*	-0.08	0.04	-0.52	0.60	*	-0.22
Eu	*	*	*	-0.62	*	*	-6.03	*	-0.79	*	*	1.00	-0.16	-0.02	0.24	*	-0.34
Ga	*	*	-0.88	0.62	*	*	1.60	*	-0.58	1.64	-1.71	-1.23	1.60	0.68	-0.92	*	-0.41
Gd	*	*	*	0.72	*	*	11.55	*	0.17	*	*	0.09	0.36	-0.17	0.34	*	-0.17
Hf	*	*	*	-0.17	*	*	6.81	*	-5.75	-2.02	*	0.49	2.26	-0.13	0.30	*	-0.98
Ho	*	*	*	0.10	*	*	20.13	*	-1.26	*	*	0.13	-0.67	-0.34	0.00	*	0.17
La	*	*	-2.38	0.31	*	*	-11.70	1.82	-1.33	0.30	-9.06	-1.21	-0.59	0.38	1.66	*	-0.16
Li	*	*	*	*	-5.44	*	*	-0.64	*	*	*	-2.17	1.16	-0.23	-2.02	*	-0.70
Lu	*	*	*	0.69	*	*	*	*	-0.74	*	*	-0.08	-0.29	-0.13	0.40	*	-0.06
Mo	*	*	*	*	*	*	4.33	*	*	*	3.05	-0.31	15.79	0.18	-0.08	*	0.01
Nb	*	*	-0.43	2.55	-0.15	0.56	4.83	*	-2.78	-0.79	-0.50	0.08	1.35	0.42	-0.15	*	1.20
Nd	*	*	*	0.96	*	*	0.71	*	-1.66	-0.74	*	0.92	-0.91	-0.03	-0.17	*	-0.30
Ni	*	*	-1.84	1.55	-6.84	1.72	-2.79	-0.49	0.19	5.82	3.34	-3.66	-2.79	-0.08	-4.59	*	0.10
Pb	*	*	-0.65	-0.77	*	1.66	-1.30	-0.21	*	*	3.05	0.85	6.11	-0.18	1.66	*	-0.83
Pr	*	*	*	0.94	*	*	-2.84	*	-1.46	-2.18	*	0.42	-0.70	0.37	0.22	*	0.53
Rb	*	*	1.98	-0.13	-2.69	1.54	-0.87	-0.47	-3.59	-0.44	-0.23	-1.83	0.69	-0.09	-0.27	*	-0.33
Sc	*	*	*	-0.04	-0.36	*	-0.36	*	*	*	*	-5.53	-0.51	0.15	-1.09	*	0.15
Sm	*	*	*	0.34	*	*	9.77	*	-0.83	-3.27	*	0.38	-0.50	-0.18	-0.01	*	-0.01
Sn	*	*	*	*	*	*	-3.46	*	*	12.01	*	-0.54	*	-0.49	0.93	*	0.22
Sr	*	*	-0.03	0.53	-0.71	1.59	0.34	0.60	-1.11	-0.23	0.27	-1.62	0.12	0.80	-0.84	*	0.34
Ta	*	*	*	0.06	*	*	-13.80	*	-0.64	*	*	1.20	26.27	-0.21	-0.92	*	-0.35
Tb	*	*	*	0.03	*	*	4.12	*	-0.59	*	*	-0.58	-0.24	-0.24	0.11	*	-0.50
Th	*	*	*	1.44	5.86	*	-3.80	*	-0.01	-0.74	-1.51	0.20	0.07	-0.82	-0.63	*	-0.74
Tl	*	*	*	*	*	*	*	*	*	*	*	0.16	-0.39	0.39	-0.39	*	-0.39
Tm	*	*	*	0.87	*	*	*	*	-0.87	*	*	0.33	-0.45	-0.14	0.58	*	-0.04
U	*	*	128.48	0.71	*	*	-12.11	0.15	-1.05	*	*	1.89	0.74	-0.33	-0.16	*	-0.45
V	*	*	0.79	-0.94	0.17	-1.00	-2.96	0.28	-1.00	-0.31	-0.62	0.22	1.27	0.25	1.11	*	0.09
W	*	*	*	*	*	*	-11.34	*	*	*	*	0.00	*	-1.08	1.65	*	-1.17
Y	*	*	-2.44	2.38	*	3.31	-2.69	-0.55	-2.42	-0.80	-0.28	-3.81	1.62	0.69	-1.05	*	1.67
Yb	*	*	*	0.16	*	*	6.73	*	-0.46	*	*	0.06	-0.29	-0.16	-0.25	*	-0.33
Zn	*	*	-0.33	0.58	1.02	0.64	-6.43	-0.05	*	-0.98	0.69	-4.01	0.37	1.58	-0.10	*	-0.29
Zr	*	*	-3.64	2.19	0.57	0.28	0.38	*	-10.71	-0.82	0.43	-3.06	1.50	0.38	0.76	*	-0.20

Table 3	GeoPT25 Analytical results for Basalt, HTB-1, as submitted (June 2009)																
Lab identifier	Z18	Z19	Z19	Z20	Z21	Z22	Z23	Z24	Z25	Z26	Z27	Z28	Z29	Z30	Z32	Z33	Z34
Sample	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1
Data quality	2	1	2	1	1	2	2	2	2	2	2	2	2	1	2	1	2
SiO2	0.24	-0.76	*	-0.56	-1.11	-0.59	0.22	0.70	0.25	-0.29	-0.12	0.59	*	2.00	1.87	*	0.40
TiO2	0.19	0.81	*	0.22	-2.01	-0.84	-0.23	-0.37	0.11	1.06	-0.69	-0.77	*	-0.26	-0.69	1.81	-0.37
Al2O3	-0.68	0.71	*	1.12	-6.30	-0.63	0.04	2.62	-0.62	-0.91	-0.03	1.15	*	5.77	0.41	0.53	-0.32
Fe2O3	0.61	1.55	*	1.60	-3.06	0.26	0.38	-0.58	0.63	0.61	0.24	-1.19	*	-9.77	-1.36	-1.65	0.12
MnO	-0.42	*	-0.60	-0.83	-3.05	1.52	0.41	1.99	0.23	1.43	1.06	-1.71	*	-4.53	1.43	1.01	-0.42
MgO	0.12	*	1.36	-1.34	-23.45	-0.23	0.86	*	-0.51	2.33	0.12	-0.51	*	-15.87	1.46	-2.92	0.28
CaO	0.12	0.77	*	-0.80	-4.45	-0.27	0.40	0.21	0.47	-0.36	-0.75	0.51	*	-0.62	-8.78	-1.32	-0.36
Na2O	-0.66	*	0.24	2.93	-19.00	-1.33	-0.65	*	2.11	*	-0.88	-0.88	*	-4.09	-2.26	-0.69	0.40
K2O	0.50	*	-0.71	-7.35	2.40	0.43	0.21	4.34	-0.02	0.16	-1.24	-0.19	*	3.79	-3.67	2.40	-0.89
P2O5	-0.49	*	-1.52	-0.97	5.44	-0.49	-0.04	*	0.88	-3.07	0.62	3.57	*	-3.92	20.89	*	-0.49
Ba	0.25	*	-0.60	2.56	0.11	*	0.47	1.99	3.51	0.61	0.25	-0.31	-0.10	3.03	*	*	0.64
Be	0.31	*	3.84	-5.31	*	*	*	*	*	3.80	-1.44	-0.19	0.15	*	*	*	-0.15
Cd	*	*	-1.20	16.66	73.17	*	*	74.69	*	14.36	5.79	0.39	-0.56	*	*	*	*
Ce	0.00	*	0.19	-1.27	-1.16	*	1.08	0.62	1.45	1.57	-0.35	0.03	-0.78	*	*	-0.62	0.09
Co	0.26	*	0.37	8.07	*	*	*	*	2.32	0.00	0.03	0.83	0.57	-6.13	5.55	-2.12	0.46
Cr	1.06	*	9.71	6.36	*	*	-7.02	59.83	-5.36	3.14	-0.11	11.88	0.11	-6.21	23.48	7.11	0.22
Cs	0.00	*	*	*	*	*	*	*	*	*	-0.29	-0.15	0.29	*	*	*	0.00
Cu	-0.08	*	0.33	0.77	0.08	*	1.39	2.59	-0.08	-6.28	-0.58	-2.42	-0.28	0.67	-5.02	3.34	0.33
Dy	0.17	0.46	*	-4.75	*	*	*	*	*	1.34	-0.35	0.01	-0.40	*	*	*	0.54
Er	0.15	0.87	*	-1.98	*	*	*	*	*	1.42	-0.17	-0.05	-0.45	*	*	*	0.21
Eu	0.08	-0.25	*	-0.88	*	*	*	*	*	0.57	-0.26	-0.10	-0.17	*	*	0.83	0.19
Ga	0.09	*	0.09	*	-1.59	*	0.25	-0.04	-0.12	1.97	-0.33	1.38	*	-5.94	*	*	0.21
Gd	0.09	1.38	*	-1.50	*	*	*	*	*	1.03	-0.17	-1.21	-0.05	*	*	*	0.26
Hf	-0.01	*	-0.29	17.66	*	*	*	*	-2.23	*	0.04	0.26	-0.50	*	*	-0.35	0.08
Ho	0.29	0.08	*	-3.10	*	*	*	*	*	-2.10	-0.34	-0.04	-0.29	*	*	*	0.55
La	0.27	-0.59	*	0.43	-2.40	*	1.90	-0.27	-2.11	1.76	-0.21	-0.05	0.35	*	*	0.06	0.62
Li	0.71	-2.02	*	4.34	*	*	*	*	*	4.00	-1.14	0.32	0.67	*	*	*	0.10
Lu	0.08	0.17	*	-0.97	*	*	*	*	*	2.37	-0.14	0.20	0.08	*	*	-0.74	0.20
Mo	*	*	1.28	*	*	*	*	*	3.93	*	-0.52	0.18	*	*	*	*	-1.19
Nb	1.24	*	2.34	*	-2.28	*	0.17	-1.28	-0.50	-1.46	0.64	-0.07	-0.02	-12.95	*	*	1.24
Nd	0.16	*	0.20	0.23	-7.30	*	*	-0.04	1.02	0.84	-0.48	0.12	0.38	*	*	*	0.40
Ni	0.59	*	0.95	3.53	1.18	*	-0.49	0.37	-2.93	0.64	0.18	0.91	-0.20	-6.39	5.26	*	-0.31
Pb	0.50	*	0.24	*	1.96	*	5.28	-4.06	*	34.19	-0.31	0.22	-0.16	-4.27	7.64	*	-0.39
Pr	-0.04	*	-0.35	0.07	*	*	*	-0.42	*	0.65	*	0.03	0.02	*	*	*	0.26
Rb	0.50	*	-1.64	*	-1.36	*	0.77	0.80	0.08	*	1.07	-0.05	0.06	-2.69	*	*	0.38
Sc	0.69	*	0.22	-0.36	*	*	0.29	*	0.11	1.71	0.04	0.47	0.35	6.17	*	-0.15	0.29
Sm	0.24	-0.01	*	-0.63	7.81	*	*	*	*	1.70	-0.41	-0.09	-0.15	*	*	-1.32	0.40
Sn	*	*	2.12	*	4.78	*	*	*	*	*	-0.58	0.00	*	*	*	*	*
Sr	0.60	*	0.60	-3.78	-2.75	*	1.03	1.65	-0.69	-0.86	-0.13	0.93	0.08	-3.01	*	*	0.93
Ta	0.08	*	0.22	*	*	*	*	*	*	*	-0.18	0.25	*	*	*	-1.64	-0.10
Tb	0.01	0.11	*	1.33	*	*	*	*	*	4.68	-0.12	-0.12	0.10	*	*	*	0.10
Th	0.05	*	0.23	*	-3.41	*	0.03	*	2.74	*	0.03	*	-0.28	*	*	-1.87	-0.18
Tl	*	*	2.16	*	*	*	*	*	*	*	2.16	0.24	0.20	*	*	*	*
Tm	0.40	0.02	*	-0.25	*	*	*	*	*	-3.64	-0.23	-0.12	0.40	*	*	*	0.19
U	0.15	*	0.09	*	23.76	*	*	*	*	*	-0.08	0.89	-0.68	*	*	-0.60	-0.15
V	0.67	*	0.71	0.51	1.91	*	-0.26	*	-1.21	2.53	-0.38	0.09	0.70	2.67	*	4.39	0.75
W	*	*	10.57	*	*	*	*	*	*	*	-0.15	0.83	*	*	*	*	-1.88
Y	1.00	0.20	*	10.56	-0.62	*	1.38	-0.04	0.84	2.34	1.11	*	-0.07	-5.42	*	*	1.16
Yb	0.20	0.19	*	1.85	10.22	*	*	*	*	1.19	-0.32	0.18	-0.12	*	*	0.19	-0.06
Zn	0.23	-0.29	*	1.58	-3.36	*	-0.67	0.32	-0.70	0.49	0.69	-1.35	1.07	-13.13	-1.17	0.27	0.79
Zr	0.28	*	0.67	4.78	-1.21	*	1.00	1.24	0.00	*	0.09	-2.58	*	-8.32	*	*	0.09
														N.B. Z31 was reassigned			

Table 3	GeoPT25 Analytical results for Basalt, HTB-1, as submitted (June 2009)																
Lab identifier	Z35	Z35	Z36	Z37	Z38	Z38	Z39	Z40	Z41	Z42	Z43	Z44	Z45	Z46	Z47	Z48	Z48
Sample	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1
Data quality	1	2	2	2	1	2	1	2	2	2	1	2	2	1	1	1	2
SiO2	*	*	-0.49	0.16	*	-0.20	-0.31	0.02	0.02	*	*	*	-0.09	*	1.36	*	*
TiO2	0.06	*	-1.32	0.11	*	-0.77	-1.85	-0.40	0.67	0.11	*	2.50	0.11	-1.45	0.70	*	-2.03
Al2O3	-0.77	*	1.80	1.00	*	1.53	-1.47	-0.03	0.03	*	*	*	-0.29	-4.06	0.94	*	-0.91
Fe2O3	0.92	*	1.60	-0.22	*	-0.32	-0.29	-0.61	1.22	*	*	-0.34	0.95	-20.13	-1.90	*	-0.85
MnO	-0.83	*	-1.34	-0.05	-1.02	*	1.01	0.32	0.51	-2.27	*	0.32	-0.23	-0.83	-2.68	*	-0.10
MgO	1.02	*	0.43	0.28	*	0.51	-0.24	0.63	0.51	-10.62	*	*	0.43	*	-0.08	*	-1.04
CaO	-0.10	*	0.43	0.69	*	-0.05	0.85	0.37	-0.05	-0.62	*	-0.79	0.17	-1.22	-3.14	*	-2.45
Na2O	1.02	*	0.72	0.83	*	1.47	0.38	-0.44	-0.66	3.06	*	*	-0.34	-2.39	5.91	*	*
K2O	2.75	*	0.85	-0.54	*	-0.37	-0.04	0.17	-0.54	-0.37	*	3.12	-0.54	-0.87	-2.82	*	*
P2O5	*	*	-5.65	-3.80	*	-0.12	1.24	0.62	-0.85	2.09	*	*	-1.96	-2.00	-1.71	*	*
Ba	1.15	*	-0.31	-0.52	1.62	*	-1.31	2.61	-0.28	0.19	-1.84	*	-0.33	-0.32	-5.72	-1.16	*
Be	*	*	*	3.46	*	*	-1.74	-0.30	*	*	9.95	*	-0.04	*	*	*	*
Cd	*	*	*	1.35	*	*	9.04	-0.18	*	*	-6.26	*	*	-1.12	*	*	*
Ce	-0.35	*	-0.63	-1.26	1.65	*	-0.05	-0.12	-0.31	-1.81	-1.27	*	-0.99	0.30	1.00	0.08	*
Co	0.69	*	0.00	2.55	-1.03	*	0.00	-0.54	2.09	-0.46	-1.20	*	-0.77	0.17	-2.12	-0.02	*
Cr	0.61	*	0.81	-0.76	-4.22	*	2.28	-1.28	6.88	5.22	3.44	*	*	-1.22	12.10	*	*
Cs	*	-0.44	-0.29	*	*	*	-1.46	1.89	*	*	0.29	*	*	-0.29	*	-0.43	*
Cu	*	2.42	-1.50	*	0.67	*	-0.33	0.25	0.08	-4.25	-5.34	-0.92	0.00	-0.67	-0.83	-0.18	*
Dy	-0.82	*	-0.48	*	*	*	-0.86	-0.38	*	-0.95	-1.10	*	-0.82	1.03	-1.43	-0.11	*
Er	*	*	-0.33	*	*	*	-1.15	-0.16	*	-0.41	-1.19	*	-1.27	1.20	-0.52	-0.09	*
Eu	1.63	*	-0.19	*	*	*	0.29	-0.13	*	-0.15	-0.88	*	-0.86	0.51	-0.20	-0.10	*
Ga	*	-1.71	*	*	1.09	*	1.85	0.34	0.38	-1.55	-1.00	-1.30	-0.04	0.59	-1.75	*	*
Gd	*	*	-0.57	*	*	*	-0.95	-7.67	*	-1.54	-2.17	*	-1.20	*	1.21	-0.54	*
Hf	0.95	*	*	-2.03	*	*	-0.52	-0.12	-3.10	-0.62	0.02	*	*	0.30	*	0.53	*
Ho	*	*	-0.50	*	*	*	-1.17	-0.39	*	-0.34	0.42	*	-1.22	0.00	-1.68	-0.39	*
La	1.13	*	-0.66	-0.03	0.43	*	-0.16	-0.07	1.63	-0.24	-0.69	*	-0.43	0.83	0.06	-0.20	*
Li	*	*	0.46	1.22	*	*	-0.80	-0.15	1.44	*	-2.29	*	*	*	*	-0.45	*
Lu	-0.38	*	-0.49	*	*	*	0.06	-0.27	*	-0.49	-0.29	*	-0.71	0.17	2.45	-0.28	*
Mo	*	*	*	*	3.45	*	0.80	-1.01	2.16	5.69	1.33	*	*	-0.43	*	0.92	*
Nb	*	*	*	*	-0.01	*	-1.22	-0.32	3.13	-0.43	-0.08	-0.07	-0.43	0.68	-2.99	*	-0.08
Nd	0.71	*	-0.49	-0.28	1.90	*	-0.61	-0.23	-0.52	-0.38	-1.53	*	2.78	0.12	-2.37	-0.14	*
Ni	*	*	0.23	-1.75	0.37	*	2.62	-0.04	21.60	2.21	0.82	*	1.76	-0.08	-2.79	1.81	*
Pb	*	*	-0.36	*	-2.79	*	0.03	0.68	*	-2.14	3.62	*	*	-0.42	*	0.95	*
Pr	*	*	-0.48	-0.12	*	*	-0.24	-0.04	*	-0.74	-0.85	*	-0.58	0.28	-1.31	-0.04	*
Rb	0.94	*	0.34	0.05	0.15	*	-0.51	-0.23	*	0.47	-1.30	0.47	-0.14	-0.54	-3.29	-0.68	*
Sc	1.09	*	0.25	*	-0.29	*	*	-0.62	*	0.91	-3.99	*	-1.31	0.36	0.36	*	*
Sm	-0.01	*	-0.21	*	*	*	-0.34	-0.28	*	-0.04	-0.99	*	-1.51	0.15	-0.01	-0.34	*
Sn	*	*	*	*	2.58	*	3.63	0.19	*	-3.55	*	*	*	*	*	*	*
Sr	*	2.90	0.81	0.08	0.93	*	-0.38	0.28	0.27	1.25	-1.96	-0.16	0.30	2.18	-2.36	-0.50	*
Ta	-0.92	*	*	*	*	*	1.37	-0.68	*	-6.40	0.94	*	*	*	*	*	-0.41
Tb	0.02	*	-0.51	*	*	*	-0.85	35.05	*	-0.82	-0.77	*	-0.47	0.11	*	-0.69	*
Th	-0.47	*	0.13	*	1.23	*	-1.36	-0.16	*	-1.13	-0.78	*	*	-0.28	*	-0.26	*
Tl	*	*	*	*	*	*	*	0.00	*	*	1.18	*	*	-0.39	*	*	*
Tm	*	*	-0.43	*	*	*	-0.47	0.03	*	-0.64	-0.66	*	-1.06	0.38	1.00	0.17	*
U	*	4.41	0.22	*	*	*	-0.45	0.09	*	4.41	-0.30	*	*	0.14	*	0.15	*
V	2.83	*	0.20	0.20	0.95	*	-0.06	-0.78	-0.58	0.42	-3.04	*	-0.27	1.04	-4.52	*	*
W	*	*	*	*	*	19.23	0.57	0.66	*	37.64	2.52	*	*	-1.17	*	*	*
Y	*	*	-0.89	0.40	0.26	*	-0.18	0.18	-0.25	-1.07	-1.05	-0.25	0.84	-0.13	-1.60	-1.34	*
Yb	0.41	*	-0.67	*	*	*	-0.42	0.04	*	-1.78	-0.81	*	-1.15	0.28	-1.55	-0.04	*
Zn	*	-1.07	-0.66	-0.24	0.09	*	6.04	0.15	4.14	-2.94	6.97	-0.52	0.04	2.32	-1.40	*	8.91
Zr	-1.92	*	-0.83	1.07	0.76	*	-0.20	0.44	3.97	-1.39	-1.06	-0.19	0.33	-0.67	-8.71	1.02	*

Table 3	GeoPT25 Analytical results for Basalt, HTB-1, as submitted (June 2009)																
Lab identifier	Z49	Z49	Z50	Z51	Z52	Z53	Z54	Z55	Z56	Z57	Z58	Z59	Z60	Z61	Z62	Z63	Z64
Sample	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1
Data quality	1	2	2	2	2	2	2	2	2	1	1	1	1	2	1	2	1
SiO2	-0.92	*	-0.02	*	-0.02	-0.03	-0.40	-0.20	-0.11	-0.28	0.14	-0.70	-0.04	2.61	*	1.77	-1.47
TiO2	-0.02	*	-0.37	*	-0.53	0.35	-0.07	0.75	0.03	-0.91	0.06	0.61	-0.26	8.55	*	2.14	-1.06
Al2O3	-1.06	*	1.44	*	-0.03	-0.38	0.44	-1.00	-0.03	0.29	0.23	1.94	2.30	-10.54	*	0.42	-1.18
Fe2O3	0.39	*	0.39	*	-0.24	-0.54	0.22	1.02	0.39	-0.53	-1.17	-0.14	-0.20	10.87	*	1.89	-0.44
MnO	0.27	*	*	*	0.51	0.69	-0.60	0.51	0.78	-0.46	-2.68	-0.34	1.01	1.43	*	0.88	0.09
MgO	-0.56	*	1.70	-12.75	-0.20	0.35	0.20	-0.51	0.04	0.31	0.08	0.77	1.02	-29.40	*	0.26	0.39
CaO	-0.10	*	-0.23	-7.00	-0.14	0.12	-1.27	0.34	0.08	0.84	2.59	-0.05	-0.45	3.29	*	1.24	-0.45
Na2O	3.15	*	-0.34	*	-0.34	-0.88	0.93	-2.37	-1.41	1.00	-0.47	-0.59	3.15	-13.33	*	0.39	-0.47
K2O	-0.73	*	-0.54	*	-0.89	-0.19	-0.37	-0.54	-0.37	-0.07	0.66	-1.39	-0.73	6.95	*	0.12	-1.08
P2O5	-0.16	*	*	*	2.09	0.25	0.25	0.55	-1.22	-0.09	0.50	0.13	-0.23	-18.55	*	0.95	-0.31
Ba	-1.67	*	-0.64	*	0.28	-1.13	-3.33	1.52	-0.31	0.15	*	0.68	-4.90	*	-1.83	-0.38	5.82
Be	*	*	*	*	-0.76	*	*	*	*	1.30	*	0.23	3.80	*	*	0.38	0.38
Cd	*	*	*	*	0.08	-0.24	*	*	*	*	*	-1.76	56.03	*	*	*	1.42
Ce	0.05	*	*	*	0.55	*	1.99	1.31	*	-0.28	*	0.64	0.03	*	-0.20	-0.48	-0.16
Co	-0.97	*	*	-1.63	0.11	*	-3.92	1.52	*	0.33	*	-3.84	-0.40	-3.53	*	0.93	*
Cr	*	*	*	*	3.55	*	*	-2.27	*	2.11	*	13.77	32.08	-4.88	*	1.97	-6.21
Cs	0.29	*	*	*	0.44	*	*	503.77	*	0.44	*	-0.29	0.58	*	-0.90	*	-0.73
Cu	0.67	*	-1.67	-1.75	0.17	-0.17	-3.50	-0.33	-5.92	0.62	*	-4.17	3.17	2.77	*	0.08	0.25
Dy	-2.25	*	*	*	0.40	*	*	*	*	*	*	2.05	-0.34	*	0.37	-0.24	-0.04
Er	-1.90	*	*	*	0.38	*	*	*	*	*	*	0.60	0.49	*	0.39	0.04	-0.33
Eu	-0.97	*	*	*	0.10	*	*	*	*	-0.44	*	0.24	0.20	*	-0.37	-0.12	0.20
Ga	0.76	*	*	*	0.38	5.41	-0.46	0.38	*	-0.69	*	*	10.98	-1.98	*	0.64	0.76
Gd	-2.33	*	*	*	0.00	*	*	*	*	-0.58	*	0.52	1.55	*	-0.53	-0.45	-0.07
Hf	-1.67	*	*	*	0.15	*	0.15	*	*	0.07	*	0.74	2.10	*	2.41	-0.63	-0.82
Ho	-1.34	*	*	*	0.00	*	*	*	*	0.59	*	1.26	-1.09	*	0.07	-0.21	0.25
La	-0.53	*	*	*	0.78	-1.84	0.56	1.10	*	-0.39	*	1.29	2.41	*	-0.53	-0.36	-0.65
Li	*	*	*	*	0.21	*	*	*	*	*	*	-1.07	*	*	*	*	*
Lu	-1.43	*	*	*	0.43	*	*	*	*	0.15	*	0.63	0.63	*	-0.45	-0.14	-0.52
Mo	*	*	*	*	*	*	*	*	*	8.47	*	-0.87	3.45	26.80	11.10	*	-0.96
Nb	-0.86	*	*	*	0.64	-0.07	0.28	-0.07	*	1.51	*	-0.86	-4.99	*	2.01	-0.91	1.42
Nd	-2.50	*	*	*	0.51	7.18	*	*	*	-0.99	*	-0.25	-0.78	-8.86	-0.91	-0.42	-0.34
Ni	-0.08	*	-0.09	-4.10	1.31	-0.94	-0.49	-0.94	*	1.70	*	-0.08	0.37	0.40	*	-3.38	-1.43
Pb	-2.85	*	*	*	-0.21	*	-2.14	*	*	-1.84	*	-2.79	2.85	12.74	0.56	*	0.89
Pr	-1.77	*	*	*	0.65	*	*	*	*	*	*	1.22	-0.54	*	-0.77	-0.20	-0.73
Rb	-1.00	*	-0.62	*	0.32	1.07	1.07	0.17	4.39	0.65	*	-3.29	-5.76	5.26	-1.33	-0.23	-0.39
Sc	-1.67	*	*	*	-2.00	*	*	-0.54	*	-0.24	*	0.73	1.45	-4.52	*	-0.15	0.00
Sm	-2.18	*	*	*	0.32	*	*	*	*	-0.88	*	0.31	0.64	*	-0.56	-0.34	0.17
Sn	*	*	*	*	-1.73	*	*	*	*	*	*	*	3.68	*	*	*	-2.36
Sr	-2.03	*	-1.01	*	-0.06	0.63	0.04	-0.55	0.27	0.73	*	-0.58	1.00	-4.72	-0.05	1.07	0.54
Ta	*	*	*	*	1.69	8.48	*	*	*	0.03	*	0.79	18.11	-4.15	0.00	-0.86	-0.78
Tb	-1.90	*	*	*	0.01	*	*	*	*	0.25	*	1.07	1.07	*	-0.66	-0.17	0.19
Th	-1.83	*	*	*	0.23	54.14	-1.90	*	*	-0.05	*	-1.87	35.62	30.37	0.58	-0.47	-0.74
Tl	*	*	*	*	-0.20	128.96	*	*	*	0.39	*	*	*	*	*	*	*
Tm	-1.07	*	*	*	0.50	*	*	*	*	0.00	*	-0.25	-1.70	*	0.15	-0.02	*
U	-2.10	*	*	*	0.60	43.27	23.84	*	*	-0.29	*	0.29	6.27	225.34	0.73	-0.15	-0.01
V	-2.65	*	-2.03	*	-0.50	1.69	-0.38	-1.13	*	0.35	*	-1.55	-0.61	-5.90	*	0.77	2.01
W	*	*	*	*	*	21.40	*	*	*	*	*	*	*	1509.78	*	*	*
Y	-1.27	*	-0.28	*	0.37	-0.25	-0.80	0.84	*	0.00	*	-5.96	2.60	-2.51	-1.52	1.36	1.95
Yb	-1.82	*	*	*	0.31	*	*	*	*	-0.01	*	0.63	-0.25	*	-0.12	-0.23	0.32
Zn	-0.10	*	-0.66	-5.82	-0.33	1.07	-0.14	0.51	-0.14	-1.16	*	-4.20	7.16	6.93	*	0.63	1.39
Zr	-0.58	*	-0.57	*	0.00	-0.15	0.72	-0.29	0.48	0.64	*	-9.57	0.95	-2.87	-0.63	-0.96	0.95

Table 3	GeoPT25 Analytical results for Basalt, HTB-1, as submitted (June 2009)																
Lab identifier	Z65	Z66	Z67	Z68	Z69	Z70	Z70	Z71	Z72	Z73	Z74	Z74	Z75	Z76	Z77	Z78	Z79
Sample	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1
Data quality	1	2	1	1	1	1	2	2	1	1	1	2	2	2	1	2	2
SiO2	0.89	0.70	1.19	1.98	3.02	*	0.33	0.19	-2.54	0.73	-0.27	*	0.00	0.80	0.73	-0.03	-0.23
TiO2	-0.10	0.35	0.83	-5.98	-1.02	*	0.10	-0.13	0.62	0.42	1.17	*	-0.37	-1.01	0.70	0.35	0.27
Al2O3	0.29	-0.03	0.87	0.35	-2.28	*	-0.63	0.44	-2.65	-0.24	-0.59	*	-0.53	-1.59	1.24	-0.06	-0.27
Fe2O3	1.17	0.63	1.58	-2.38	-4.98	*	0.53	0.29	-2.38	0.87	-0.29	*	0.58	-0.75	-0.49	0.10	0.27
MnO	1.01	0.51	1.37	-21.73	-1.96	*	1.15	0.51	-1.32	0.83	1.01	*	0.51	-0.42	-0.83	-0.42	-0.42
MgO	0.87	0.75	1.34	0.08	-2.07	*	-0.21	-0.75	1.67	-0.87	0.23	*	-0.04	-1.15	0.55	0.83	-0.36
CaO	1.37	1.34	0.95	0.76	-1.04	*	-0.85	-1.14	-3.70	0.85	-0.36	*	0.56	-1.01	1.11	-0.14	0.30
Na2O	-0.05	-0.34	3.91	-0.05	4.51	*	0.19	-1.19	0.44	-0.43	-0.26	*	1.25	0.19	2.51	-0.02	0.83
K2O	0.31	-0.02	0.74	-1.78	0.63	*	0.31	-0.89	2.82	-0.21	-1.43	*	-0.02	-0.71	1.01	-0.02	-0.02
P2O5	-0.23	1.73	0.96	0.50	5.30	*	0.99	-0.49	-0.31	-0.31	0.50	*	1.36	-0.60	-0.01	0.25	0.25
Ba	0.98	0.43	-0.14	-4.62	3.64	-5.31	*	0.22	-1.37	*	1.27	*	0.52	0.17	0.31	*	2.51
Be	*	-1.90	*	*	*	*	*	*	1.38	*	*	*	-0.49	-0.98	-0.07	*	*
Cd	*	*	1.38	*	*	*	*	*	5.91	*	117.62	*	1.54	0.08	-1.12	*	*
Ce	*	0.77	0.56	*	5.05	*	*	1.18	-0.13	*	-3.05	*	0.53	0.15	-0.22	*	*
Co	0.17	0.66	0.02	1.32	-2.92	-7.85	*	0.94	-0.92	*	-4.41	*	0.86	-0.40	-0.40	*	10.39
Cr	10.44	-0.61	12.68	79.37	-2.78	15.43	*	0.22	15.93	*	0.45	*	1.06	-1.44	0.11	*	*
Cs	*	*	*	*	*	*	*	*	0.27	*	-10.77	*	0.12	-0.29	0.00	*	*
Cu	8.18	0.75	0.00	0.43	-0.48	-0.67	*	0.83	-1.55	*	-0.33	*	0.82	-0.63	0.28	*	-1.25
Dy	*	0.00	0.94	*	*	*	*	*	0.57	*	*	*	0.37	0.02	0.66	*	*
Er	*	0.49	1.00	*	*	*	*	*	0.65	*	*	*	0.47	0.38	-0.26	*	*
Eu	*	0.12	0.94	*	*	*	*	*	0.56	*	*	*	0.40	0.06	0.11	*	*
Ga	-0.92	*	-0.08	*	0.09	*	*	-0.88	-0.24	*	-0.08	*	0.00	0.51	0.69	*	*
Gd	*	0.60	0.76	*	*	*	*	*	0.22	*	*	*	0.35	*	0.09	*	*
Hf	-4.04	*	2.47	*	-2.17	*	*	*	-4.89	*	-1.87	*	0.30	0.48	0.07	*	*
Ho	*	0.00	14.76	*	*	*	*	*	0.46	*	*	*	0.28	0.21	0.45	*	*
La	*	0.56	-0.52	*	1.02	*	*	-0.24	-0.17	*	0.59	*	0.55	0.05	-0.15	*	*
Li	*	*	*	*	*	*	*	2.66	0.00	*	*	*	0.34	-0.03	1.04	*	*
Lu	*	*	0.37	*	*	*	*	*	0.79	*	*	*	0.07	0.43	0.12	*	*
Mo	*	-0.04	-1.48	*	*	*	*	*	0.70	*	4.33	*	0.22	-0.52	0.18	*	*
Nb	-0.15	*	-1.57	*	-0.86	*	*	*	0.85	*	-0.86	*	0.34	0.28	0.39	*	*
Nd	*	0.80	1.03	*	0.80	*	*	1.24	-0.12	*	0.27	*	0.42	0.31	0.14	*	*
Ni	-1.89	0.86	-0.08	-1.07	-0.80	-1.89	*	-0.04	1.96	*	-3.69	*	1.40	-0.63	1.81	*	-1.39
Pb	4.63	-0.06	-1.79	-0.71	-7.33	7.59	*	31.97	1.17	*	7.59	*	-0.06	2.61	-0.03	*	*
Pr	*	0.11	1.72	*	*	*	*	*	0.47	*	*	*	0.47	0.03	0.24	*	*
Rb	0.94	*	0.33	1.06	0.15	*	*	1.07	-0.65	*	-0.87	*	0.65	0.59	-0.81	*	*
Sc	1.09	*	-3.99	*	-4.21	*	*	2.72	0.84	*	-2.54	*	0.84	-0.73	0.07	*	*
Sm	*	-0.01	0.92	*	*	*	*	1.62	0.28	*	4.88	*	0.39	0.40	0.43	*	*
Sn	*	*	*	*	*	*	*	*	6.28	*	-14.46	*	*	-0.91	-0.77	*	*
Sr	0.34	0.43	-1.70	-2.25	-1.11	-3.41	*	-0.32	-1.77	*	-0.98	*	0.75	0.76	0.86	*	-1.01
Ta	*	*	0.51	*	*	*	*	*	-3.99	*	-13.80	*	0.08	-0.46	0.22	*	*
Tb	*	0.31	0.53	*	*	*	*	*	0.79	*	*	*	-0.06	0.05	-0.02	*	*
Th	3.93	0.03	0.64	*	6.68	7.80	*	*	-0.07	*	3.93	*	0.00	0.17	-0.36	*	*
Tl	*	*	*	*	*	*	*	*	*	*	-9.03	*	-0.24	-0.20	*	*	*
Tm	*	*	0.77	*	*	*	*	*	0.63	*	*	*	0.33	0.29	0.46	*	*
U	*	-0.08	1.57	16.29	18.98	*	*	*	0.56	*	2.84	*	0.25	-0.23	0.06	*	*
V	1.27	*	0.88	-0.30	-0.01	*	*	0.36	0.59	*	-2.72	*	*	-0.78	-0.31	*	0.44
W	*	*	10.31	*	*	*	*	*	-1.62	*	-11.34	*	-0.58	0.83	-0.73	*	*
Y	1.67	0.56	0.21	*	-0.23	*	*	0.56	-0.27	*	0.04	*	0.64	-0.14	1.24	*	*
Yb	*	0.31	0.49	*	*	*	*	*	0.36	*	6.73	*	0.16	0.05	0.19	*	*
Zn	-0.85	1.72	-0.66	0.38	-0.79	-2.15	*	-0.89	1.91	*	-1.96	*	3.21	3.02	0.46	*	-1.35
Zr	-0.29	*	-1.82	*	0.01	*	*	0.14	0.18	*	-0.48	*	0.86	-0.62	-0.72	*	-2.11

Table 3	GeoPT25 Analytical results for Basalt, HTB-1, as submitted (June 2009)									
Lab identifier	Z80	Z81	Z82	Z83	Z83	Z84	Z85			
Sample	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1	HTB-1			
Data quality	2	2	2	1	2	1	2			
SiO2	0.26	0.93	-0.40	0.00	*	0.00	0.07			
TiO2	0.79	-0.27	0.48	-2.31	*	0.02	1.45			
Al2O3	-0.03	0.44	-0.47	2.37	*	1.02	-0.65			
Fe2O3	1.80	-2.19	-0.74	0.66	*	0.33	0.89			
MnO	1.19	-1.16	0.14	-1.76	*	1.11	-0.44			
MgO	0.31	0.84	0.31	-0.68	*	-0.27	-0.78			
CaO	0.57	0.93	-1.44	1.03	*	1.25	0.23			
Na2O	0.86	1.73	-0.79	-0.83	*	-0.58	-0.98			
K2O	0.59	1.32	-0.91	0.97	*	-0.02	0.41			
P2O5	0.67	0.14	0.18	-1.27	*	-0.04	-0.87			
Ba	*	*	-5.14	*	0.77	0.29	0.34			
Be	*	*	0.38	*	*	*	-1.82			
Cd	*	*	*	*	*	*	26.33			
Ce	*	*	0.26	-0.06	*	0.81	0.00			
Co	*	*	0.26	*	-3.95	*	0.60			
Cr	*	2.39	3.47	*	-3.27	-4.55	6.53			
Cs	*	*	0.44	0.29	*	0.17	0.13			
Cu	*	-2.33	-0.71	0.27	*	0.37	-1.59			
Dy	*	*	0.10	-0.44	*	1.93	0.00			
Er	*	*	0.68	0.05	*	1.11	0.02			
Eu	*	*	0.12	-0.12	*	1.28	0.10			
Ga	*	*	-0.21	0.51	*	-0.08	0.13			
Gd	*	*	-0.09	-0.38	*	1.36	0.20			
Hf	*	*	0.48	-0.04	*	0.40	-0.21			
Ho	*	*	0.21	-0.17	*	1.43	-0.12			
La	*	*	0.46	0.53	*	1.06	0.03			
Li	*	*	*	1.37	*	*	-0.45			
Lu	*	*	0.08	0.21	*	0.50	-0.04			
Mo	*	*	3.05	0.16	*	*	0.53			
Nb	*	*	0.42	0.28	*	-0.29	1.42			
Nd	*	*	0.38	-0.42	*	0.57	-0.46			
Ni	*	1.04	3.43	2.62	*	-2.67	0.78			
Pb	*	*	-0.06	16.19	*	-0.11	0.09			
Pr	*	*	0.19	0.21	*	0.83	-0.03			
Rb	*	*	-0.20	0.75	*	-0.52	0.11			
Sc	*	*	-0.47	1.23	*	-0.92	-1.30			
Sm	*	*	0.16	-0.06	*	0.95	-0.61			
Sn	*	*	*	2.19	*	*	-0.11			
Sr	*	*	-0.27	1.56	*	1.13	0.50			
Ta	*	*	0.61	-0.09	*	0.13	0.26			
Tb	*	*	*	-0.38	*	1.03	-0.14			
Th	*	*	0.42	0.03	*	0.06	-0.41			
Tl	*	*	*	*	*	*	-0.79			
Tm	*	*	*	*	*	0.61	0.02			
U	*	*	0.30	0.23	*	0.16	-0.11			
V	*	*	0.36	0.59	*	-0.10	-0.74			
W	*	*	*	*	*	*	2.75			
Y	*	*	0.86	2.71	*	1.38	-0.36			
Yb	*	*	-0.12	-0.37	*	-0.27	-0.16			
Zn	*	-2.28	3.43	-1.29	*	1.04	-0.35			
Zr	*	*	-0.23	0.67	*	0.11	0.72			

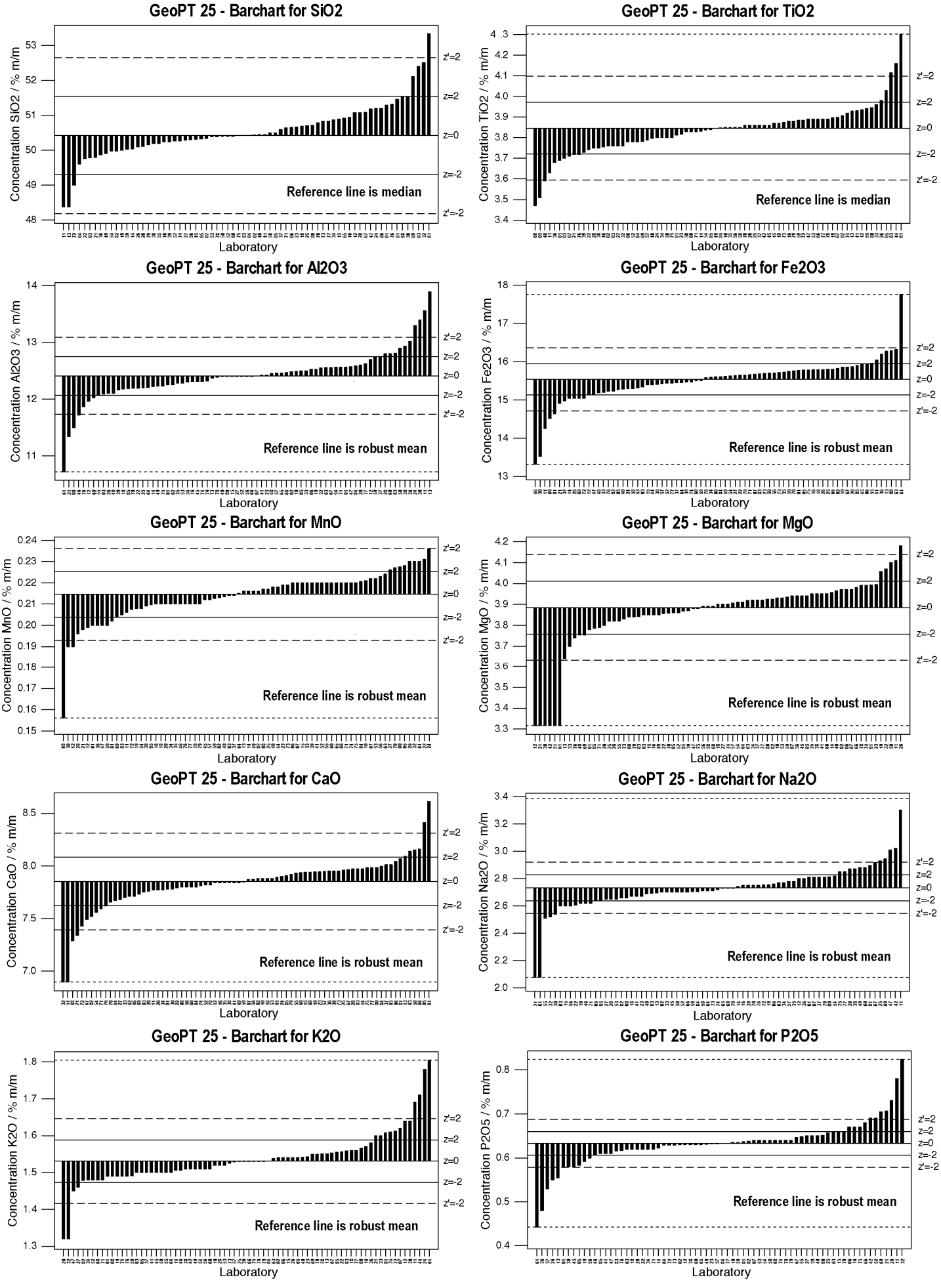


Figure 1: GeoPT25 – Basalt, HTB-1. Data distribution charts for elements for which values were assigned or provisional values given for guidance. Horizontal lines show the limits for -2<z<2 for pure geochemistry labs (solid lines) and -2<z'<2 for applied geochemistry labs (pecked lines).

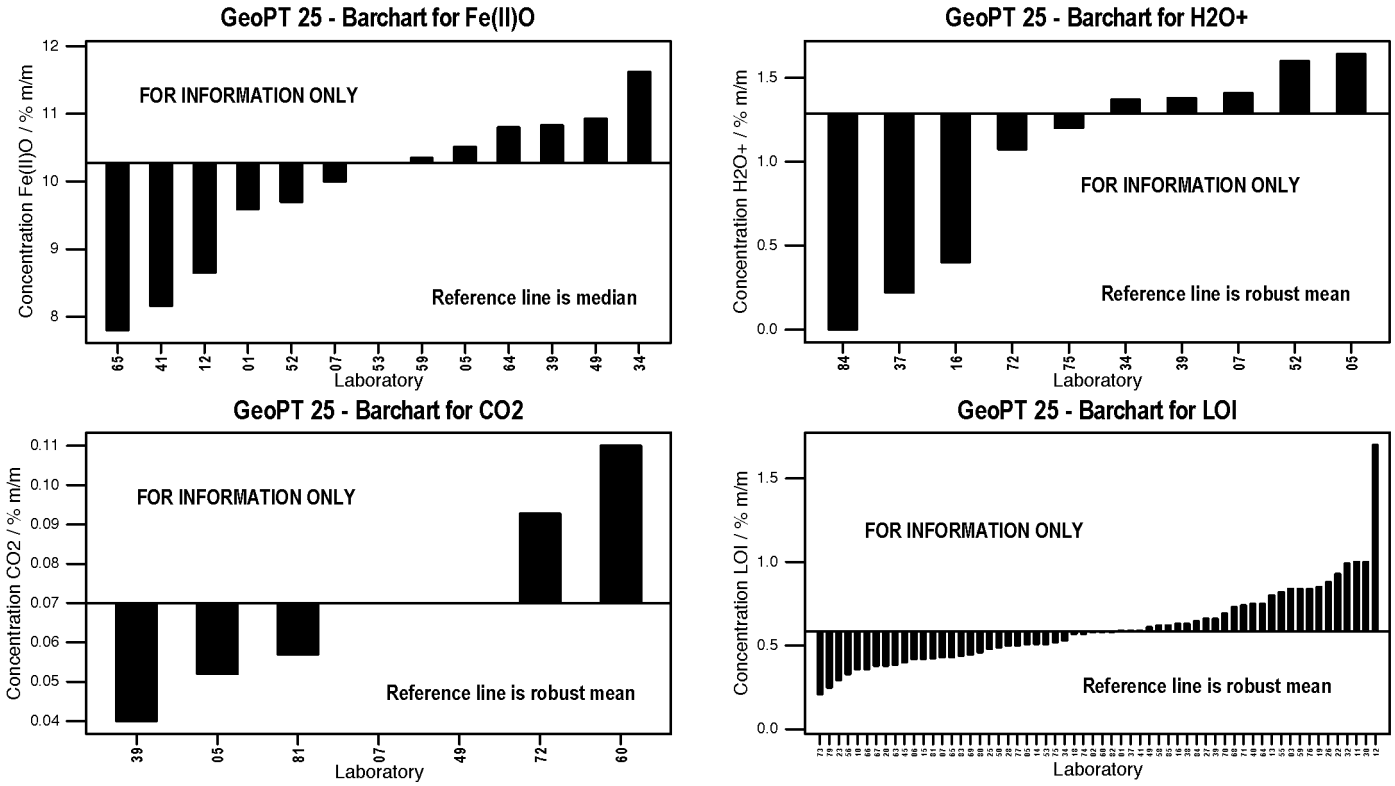
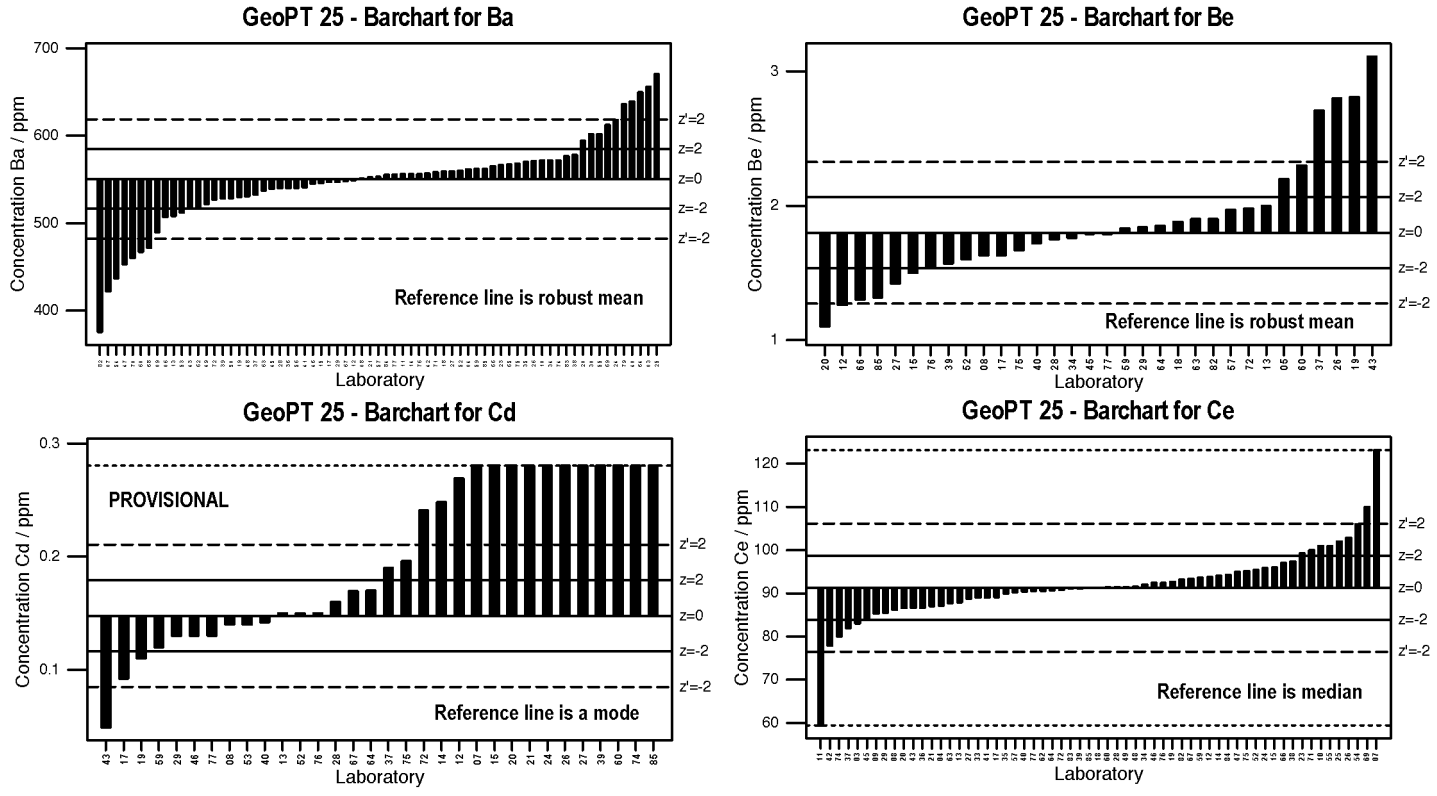


Figure 2: GeoPT25 – Basalt, HTB-1. Data distribution charts for information only for elements for which values could not be assigned.



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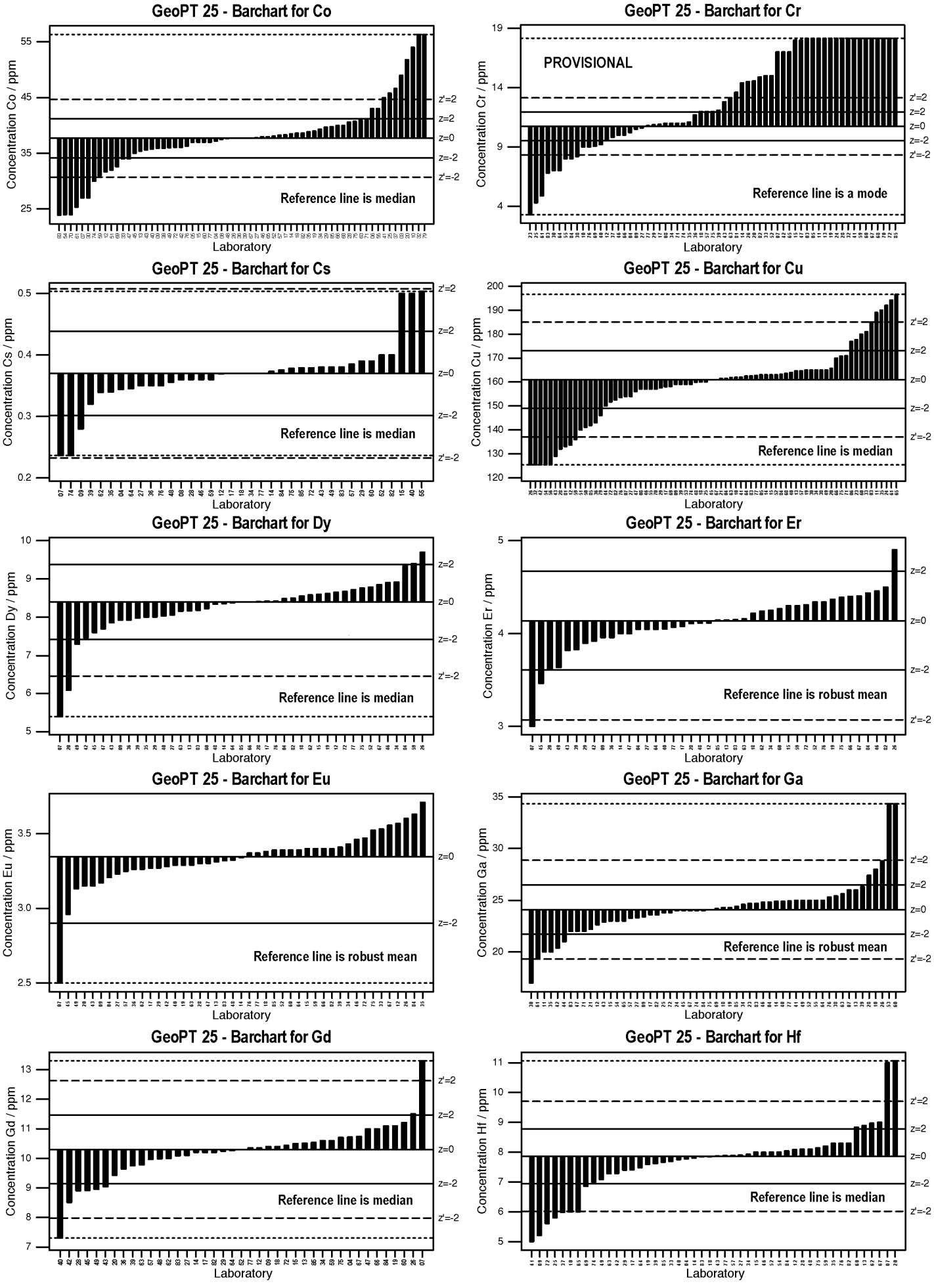

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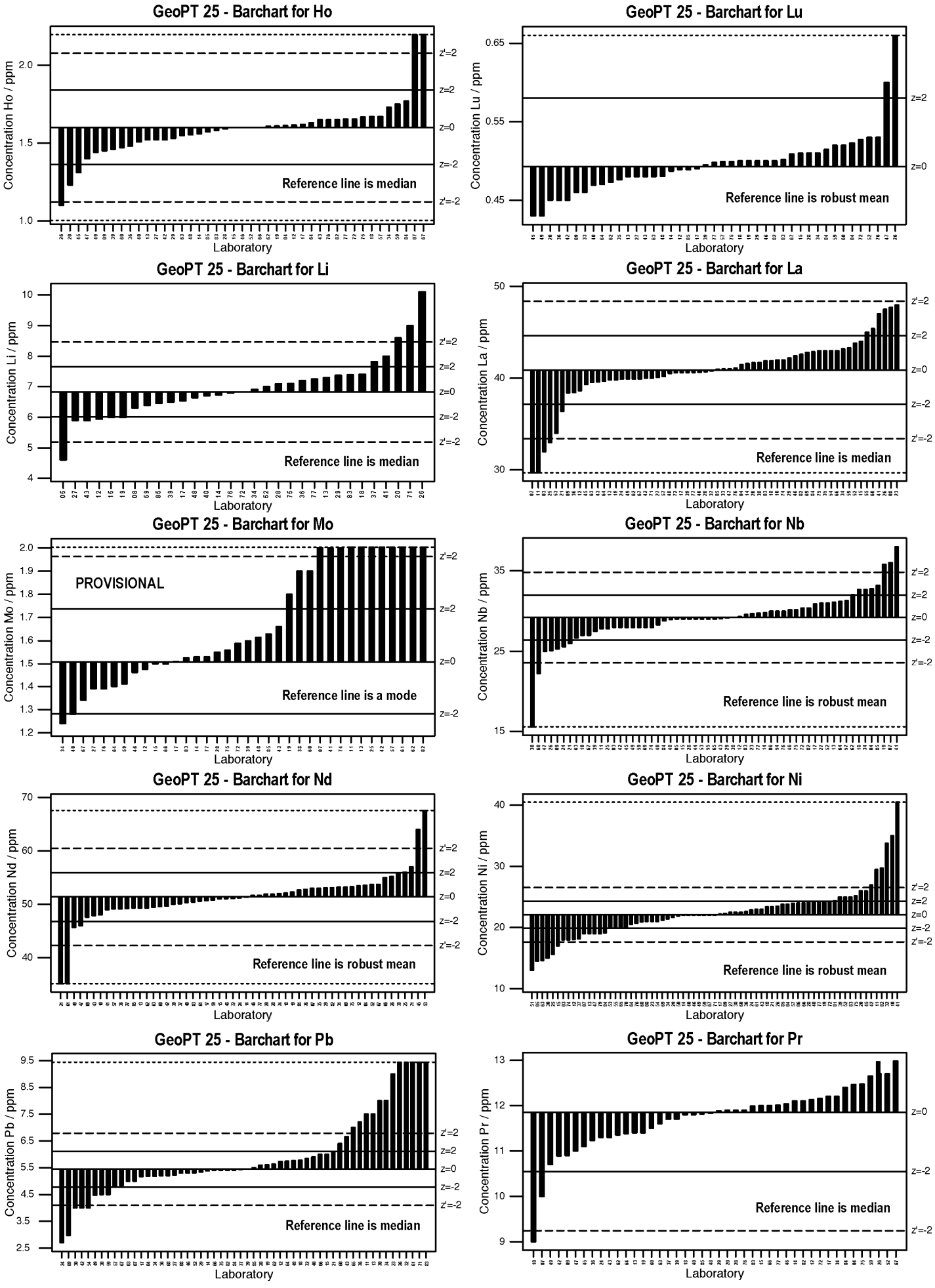

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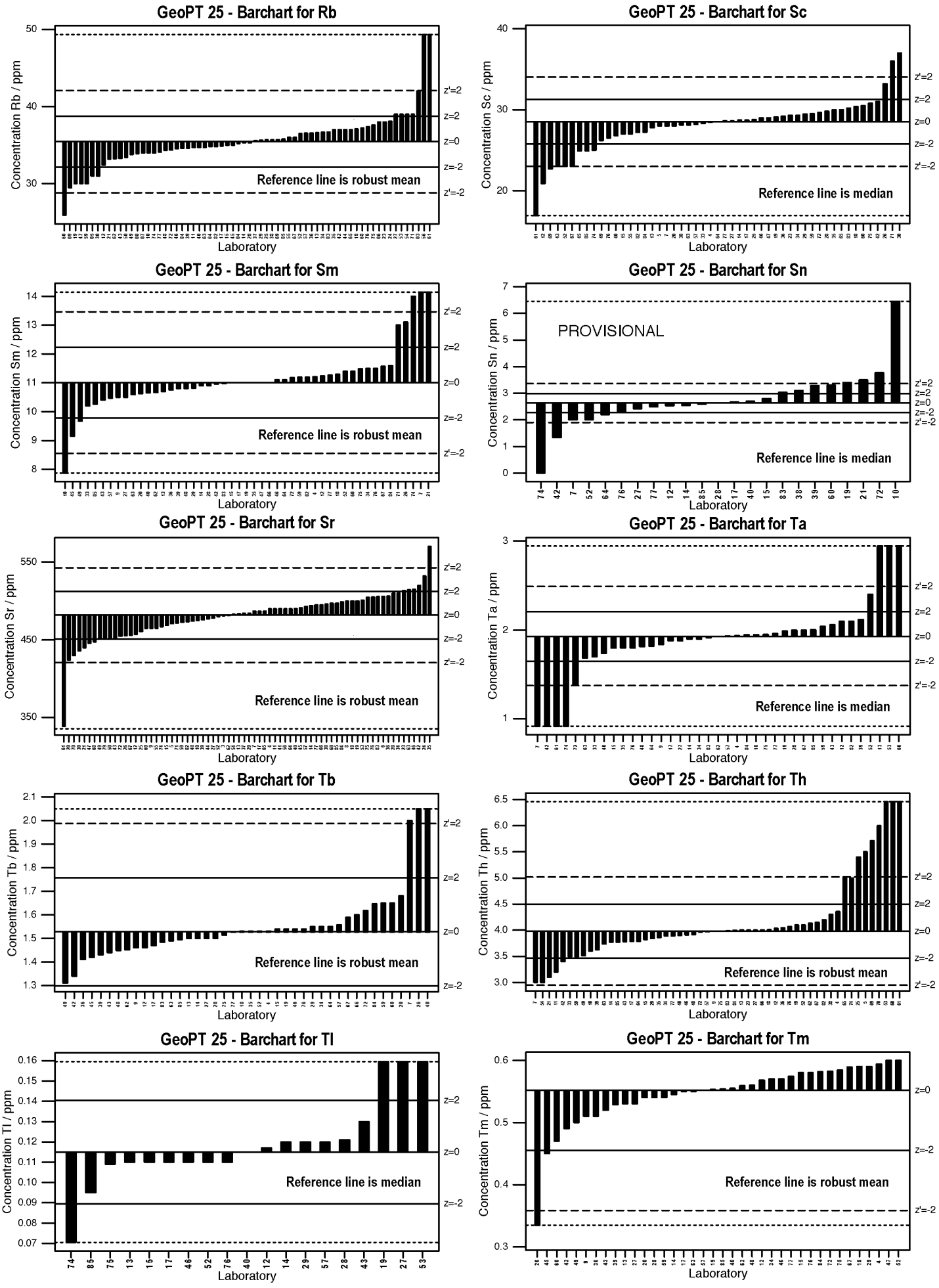

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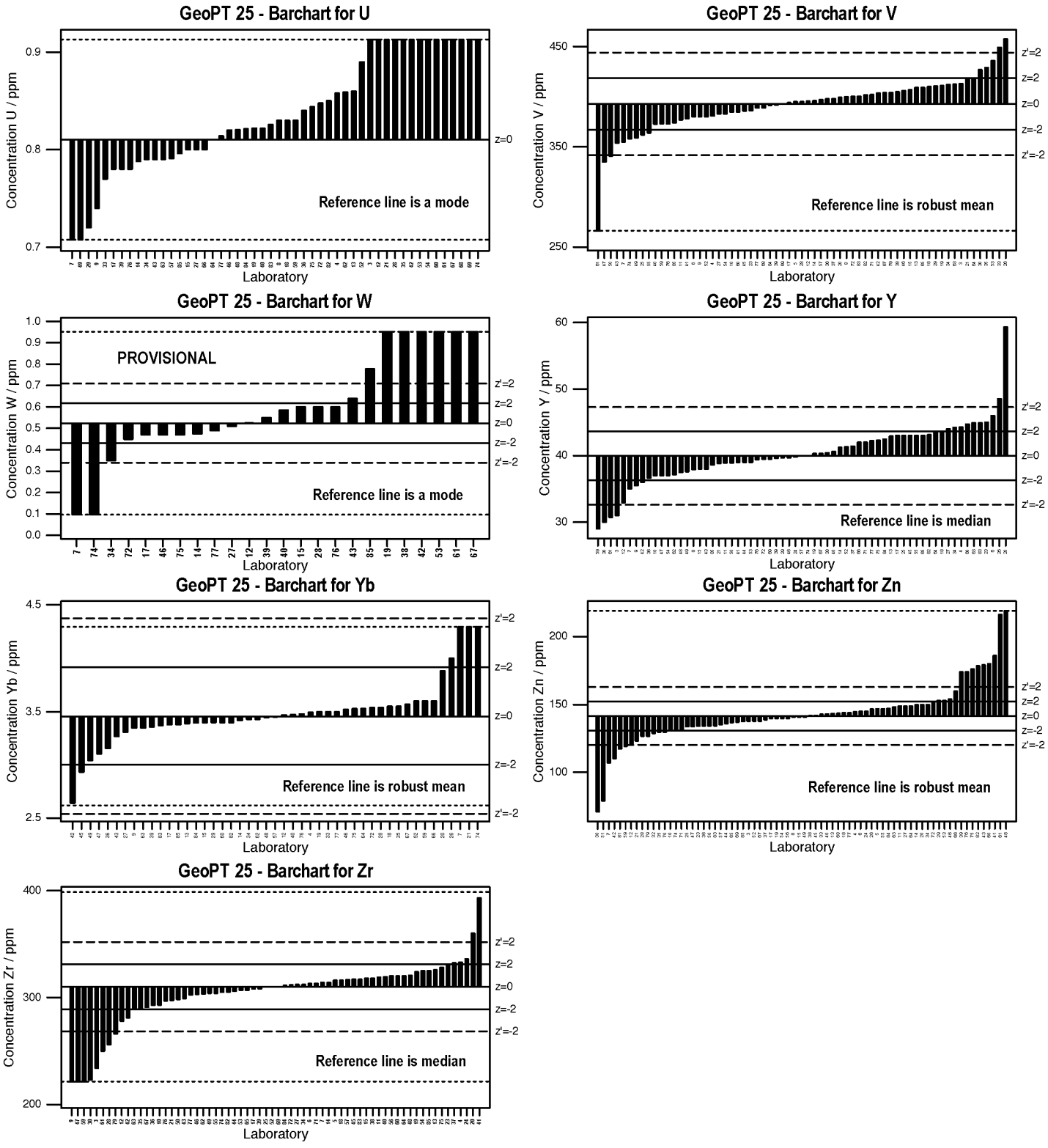

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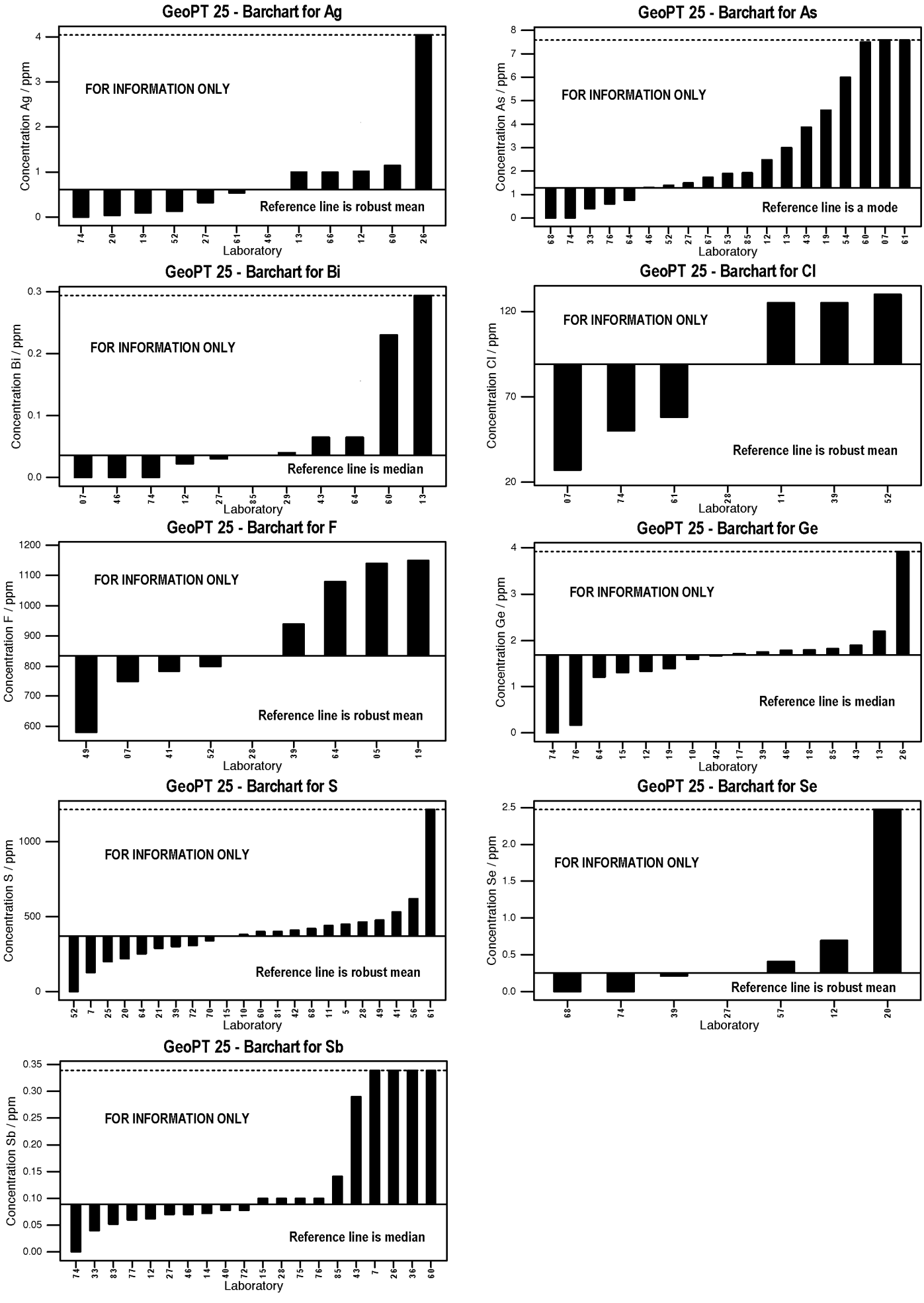


Figure 2: GeoPT25 – HTB-1. Data distribution charts for information only for elements for which values could not be assigned.

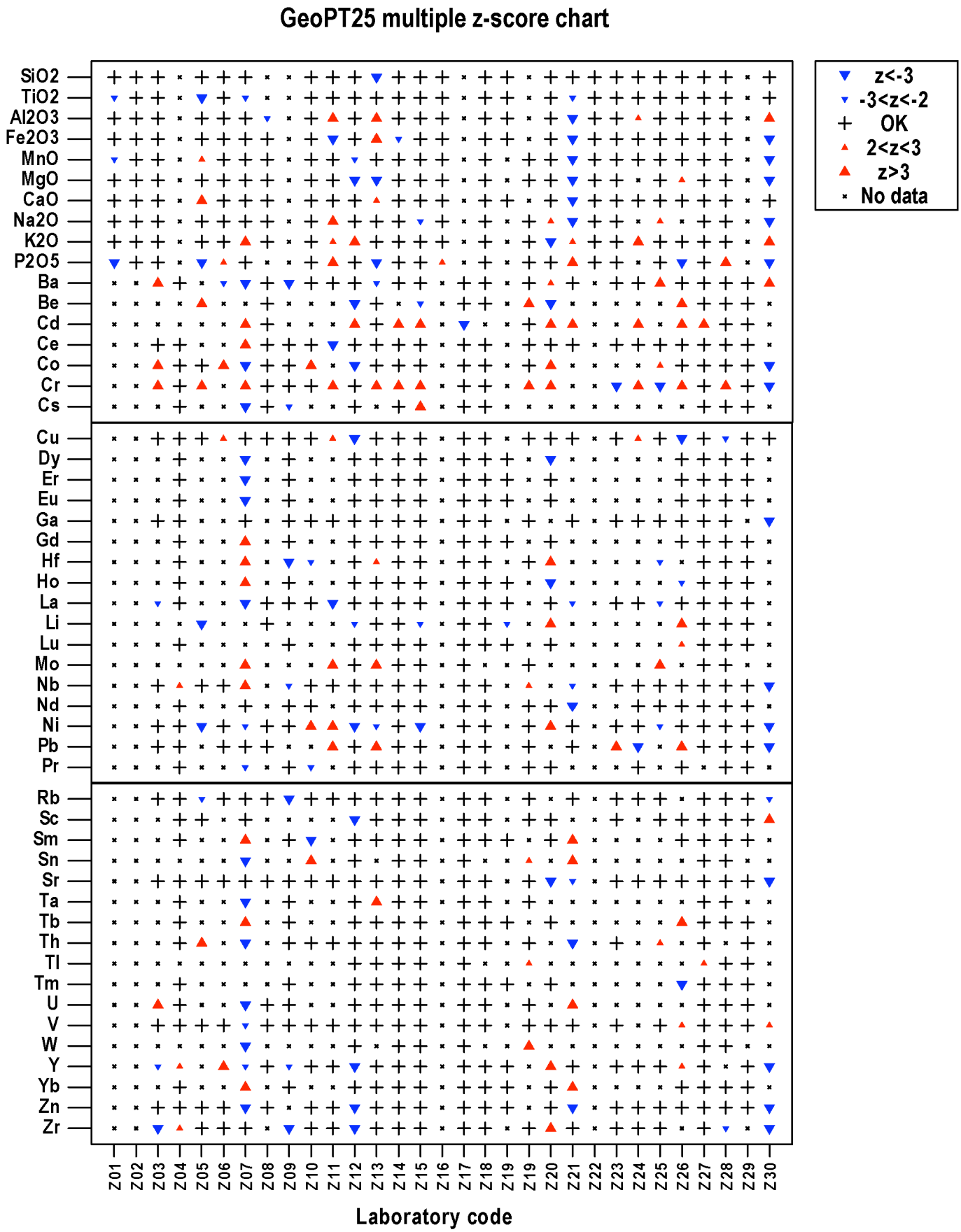
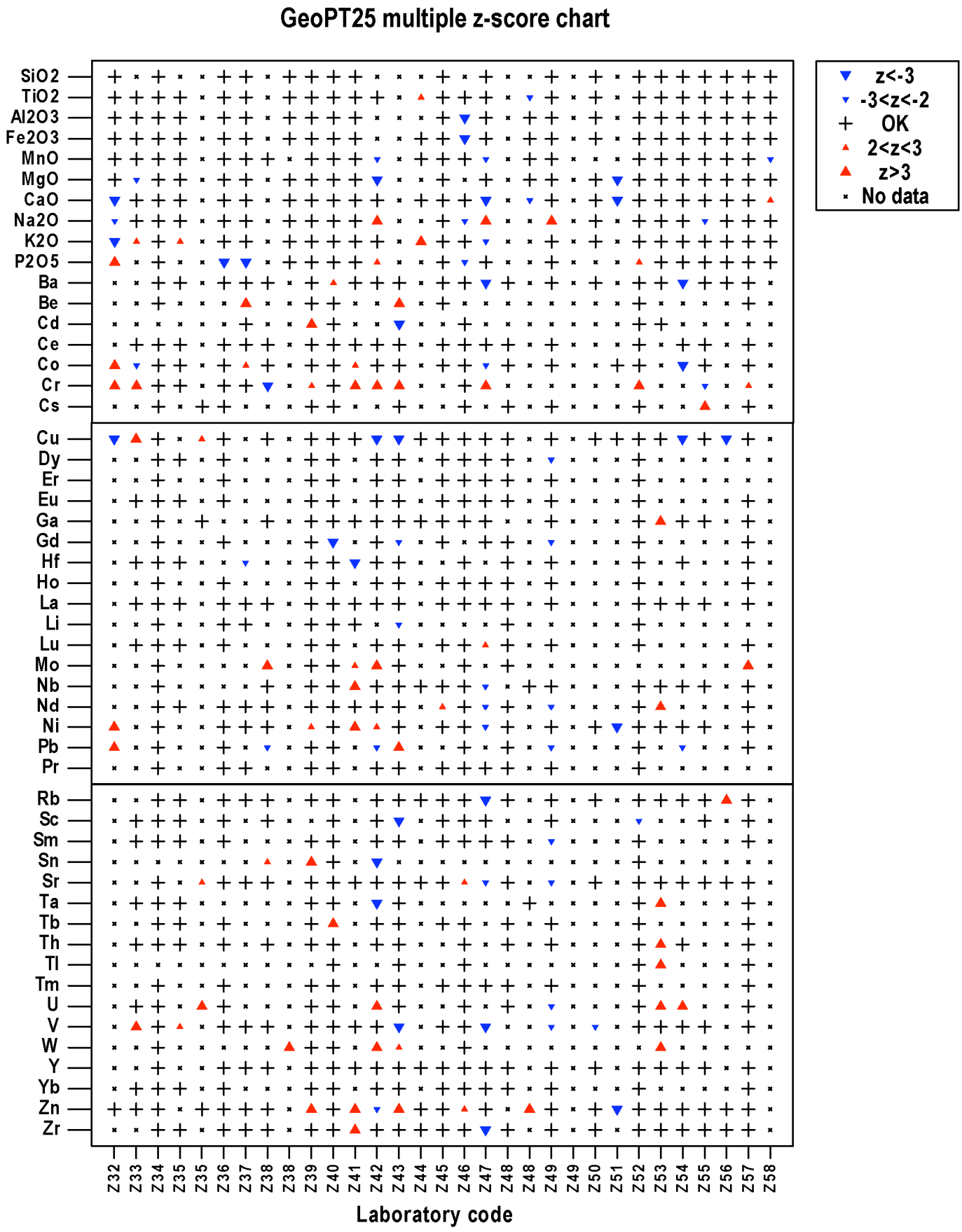


Figure 3: GeoPT25 – Basalt, HTB-1. Multiple z-score charts for laboratories participating in the GeoPT25 round. Symbols indicate whether or not an elemental result complies with the -2<z<+2 criteria. Satisfactory data are plottedas '+'. Data for other categories are plotted as follows: z<-3 (▼), -3<z<-2 (▾), +2<z<+3 (▲), Z>+3 (▲).



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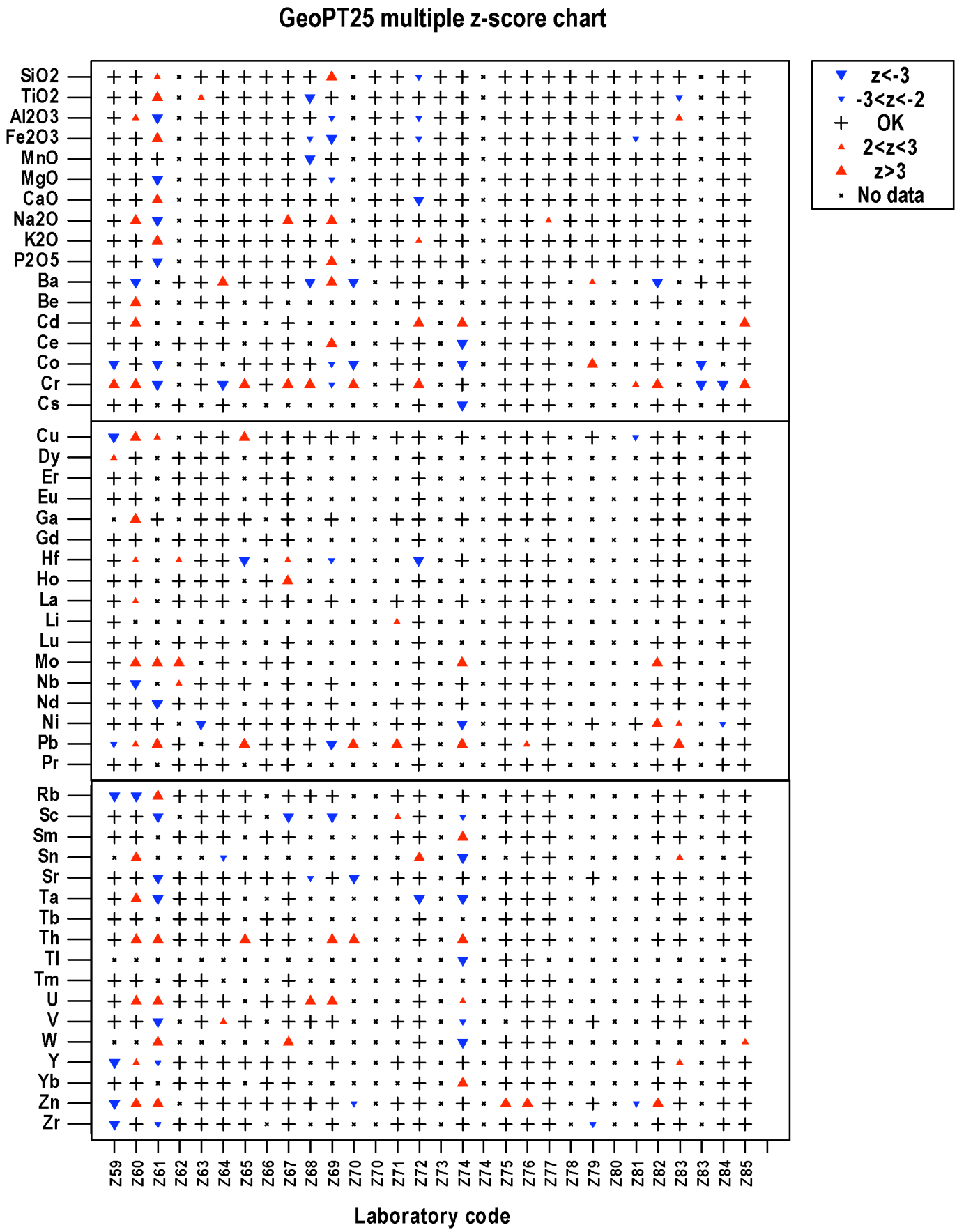

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