# G-Probe 30 – an International Proficiency Test for Microanalytical Laboratories
# Report on Round 30 (Limestone, KCLs-1NP, Nano-particulate powder pellet) / November 2024

**Dieter Garbe-Schönberg[1]*, Peter C. Webb[2], Jay M. Thompson[3], and Philip J. Potts[2]**

[1]CAU Kiel University, Institute of Geosciences, Ludewig-Meyn-Strasse 10, 24098 Kiel, Germany.
[2] Retired from the Faculty of Science, Technology, Engineering and Mathematics, The Open University, Walton Hall, Milton Keynes, MK7 6AA, UK.
[3] U.S. Geological Survey, Geology, Geophysics & Geochemistry Science Center, Denver Federal Centre, Denver, CO 80225, USA
*Corresponding author, Dieter Garbe-Schönberg: e-mail *dieter.garbe-schoenberg@ifg.uni-kiel.de*

*Keywords: proficiency testing, quality assurance, microanalysis, G-Probe 30, Limestone KCLs-1NP, nano-particulate powder pellet*

## Abstract

Results are presented for Round 30 of the G-Probe Proficiency Testing programme for microanalytical laboratories, organised by the International Association of Geoanalysts (IAG). The test material distributed in this round of G-Probe was a fortified limestone from Mongolia (Limestone KCLs-1NP) prepared as nano-particulate powder pellets at Kiel University. In this report, the data contributed by 24 laboratories are listed, together with an assessment of consensus values as composition location estimators, consequent *z*-scores, and a series of charts showing the distribution of contributed results that reveal the overall performance of participating laboratories. Assigned values were conferred for 32 elements, and provisional values for a further 21 out of 62 elements reported. For a further 5 elements, too few results were reported to determine their status; these are shown graphically for information. Only 1 or 2 values were reported for each of the remaining 4 elements, which are not plotted.

## Introduction

This thirteenth round of G-Probe, the international proficiency testing programme for microanalytical laboratories, was conducted in a similar manner to recent rounds. The programme is organised by the IAG and conforms with the published G-Probe Protocol (IAG, 2020).

The overall aim of the programme is to provide participating laboratories with *z*-score information for their reported measurement results so that each laboratory can decide whether the quality of their data is satisfactory in relation both to the G-Probe fitness-for-purpose criterion 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 its procedures for unsuspected analytical bias and to take corrective action if this appears justified. The programme is designed to be part of the routine quality assurance procedures employed by microanalytical geochemistry laboratories.

## G-Probe Steering Committee:

D. Garbe-Schönberg (principal organiser), P.C. Webb (results coordinator and website administrator), P.J. Potts (results reviewer), M. Thompson (statistical advisor), C.J.B. Gowing (distribution coordinator), Jay M. Thompson, L. Danyushevsky, R. Mertz-Kraus and A. Kronz (analytical advisors).

## Timetable for Round 30 of G-Probe:

Distribution of test material: September 2024
Results submission deadline: 18th December 2024
Release of report: February 2025

## G-Probe 30 test material details

The starting material for this test sample was a pulverized limestone from Mongolia. A small amount of clay material had been added to the bulk material in order to increase the silica content. This material was jointly developed by the Central Geological Laboratory Mongolia (CGL) and the IAG as a Certified Reference Material known as IAG/CGL 020 ML-3 (Limestone) (IAG 2016). A total of 87 grams of original material was ultra-milled in 22 batches of ~4 g each, using a high-energy ball mill (Fritsch Pulverisette 7 Premium) with agate milling gear. Total milling time was 45 minutes. The resulting batches were unified into one single slurry and thoroughly re-homogenized by stirring and shaking. This slurry was subdivided into 12 batches B1-B12 and freeze-dried. The dried nano-particulate powder was re-homogenized and then pelletized to tablets of 13 mm OD. Details of the procedure are outlined in Garbe-Schönberg and Müller (2014). For homogeneity testing following the G-Probe Protocol (IAG, 2020), 12 randomly selected pellets from all 12 batches were analysed with 10 points per pellet by LA-ICP-MS at 60 µm spot size to assess both within-pellet and between-pellet heterogeneity. After careful assessment of all homogeneity data, the KCLs-1NP nano-particulate powder pellets were considered suitable for use as test materials. However, participants should not assume that their individual pellet is sufficiently homogeneous for their particular analytical procedure. A material can be sufficiently homogeneous at the selected beam size / spatial resolution for some analytes and not for others. Participants were alerted to the fact that nano-particulate materials are hygroscopic and were advised to store the pellet in a desiccator and/or under vacuum.

## Submission of results

For G-Probe 30, participants were instructed to apply their routine measurement procedures to provide one measurement result per analyte for the nano-particulate powder pellet representative of its average composition (Result A), however, 4 laboratories provided two measurements, results A and B.

A total of 1123 measurement results, submitted by 24 laboratories are listed in Table 1. Where results A and B were provided, the average was used for the subsequent data assessment. Of the resultant 961 individual values reported for 62 analytes, 933 values were by LA-ICP-MS from 22 laboratories, 12 by EPMA from two laboratories, 7 by SEM from one laboratory, and 9 by µ-XRF from one laboratory.

## Target values and results summary

Robust statistical procedures were used to derive a consensus value from the contributed data for each elemental component in the test material. These procedures included the evaluation for each dataset of the Huber robust mean, the median or a mode derived from a kernel density distribution as detailed by Thompson (2017). Evaluations of consensus values involved a critical assessment of distributions of results from ordered sequential charts for each analyte.

Consensus values were credited with assigned status on the basis that:

(i) sufficient laboratories had contributed data for estimating a measurand (usually a minimum of 15);
(ii) visual assessment of sigmoidal plots gave confidence that a substantial proportion of the results from which the consensus was estimated was symmetrically disposed about the consensus;
(iii) the ratio of the uncertainty in the location estimate to the target precision ($H_a$, as defined below) was an acceptably small value; and
(iv) where possible, an evaluation of measurement results by procedure was judged to provide no clear evidence of procedural bias among the measurement results from which the consensus was derived.

Where these criteria were nearly, but not fully met, measurands were credited with 'provisional' rather than ‘assigned’ status. Instances of provisional status were identified because either:

(i) a smaller number of results (less than 15 but at least 8) contributed to the consensus, or
(ii) the results were unduly dispersed in relation to the target precision ($H_a$, see below), or

(iii) the distribution of results was significantly skewed (but not severely enough to preclude the recognition of a clear consensus), or

(iv) procedural bias was identified but a target value could nevertheless be recognised based on the most coherent part of the overall data distribution conforming approximately to a random sample from a normal distribution.

It must be noted that the assignment of a 'provisional' status was handled with some generosity in this round, to provide feedback and z-scores for a few more measurands (e.g., $Fe_2O_3$, MgO).

Where data were either insufficient in number, or the distribution was too variable or too highly skewed for the confident estimation of a consensus to provide *z*-scores, data distributions are presented 'for information'.

The resulting consensus values credited with 'assigned' or 'provisional' status were those judged to be the best available estimates of the true composition of the test material and therefore suitable for use as target values for proficiency testing. It should be noted, however, that in many cases, these estimates are derived from a single analytical method.

Data distributions for those analytes given 'assigned' or 'provisional' status are presented in Figure 1, and those for which no status could be conferred are shown 'for information' in Figure 2. Measurement results in the Figure 1 and 2 data distribution plots are presented in order of increasing magnitude and identified according to laboratory code. Data symbols are coded by colour and shape according to the method of measurement. By far the majority of results were obtained by LA-ICP-MS, and for a limited number of elements by EPMA, SEM and μ-XRF.

For most trace elements there is no option other than to make assessments based on LA-ICP-MS data, and therefore concerns about the possibility of single method bias, noted above, must be in principle kept in mind and the outcomes should be regarded with caution in the reflection of true values. Nevertheless, the derived consensus values represent the best that currently can be obtained and are, therefore, considered appropriate for the purposes of this proficiency test.

Several laboratories in this round required values of a major element oxide for internal standardisation of LA-ICP-MS data. Laboratories coded L1, L30, L34, L45 and L47 were provided with information that the CaO content should be about 50.3 g/100g. Inspection of the results provided by these participants showed no detectable evidence that the use of these values had been responsible for any significant bias in datasets.

Table 2 lists assigned and provisional values for 9 major components and 44 trace elements in G-Probe 30 (KCLs-1NP). Data distribution charts for these 53 measurands that were judged to have satisfactory distributions for consensus values to be conferred with assigned or provisional status are shown in Figure 1. These are: $SiO_2$*, $TiO_2$, $Al_2O_3$*, $Fe_2O_3T$ *, MgO*, CaO, $Na_2O$*, $K_2O$*,$P_2O_5$*, As*, Ba, Be, Bi*, Ce, Co*, Cs, Cu, Dy, Er, Eu, Ga, Gd, Ge*, Hf, Ho, La, Li, Lu, Mn, 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, values of the 21 analytes marked '*' were credited with provisional status for reasons given above.

Data distribution plots for the 4 analytes: B, Cd, Cr, and In are plotted in Figure 2 for information only, as the data were either insufficient in number, or the data distribution were too highly dispersed or too highly skewed for the confident estimation of a consensus for provision of *z*-scores.

## Observations

Higher mass fractions of major and trace elements in this fortified limestone facilitated the assignment of consensus values for 53 measurands – significantly more than for the previous bio-carbonate (Round 28) and speleothem (Round 25b) test materials with very low mass fractions of most elements.

Data distributions for most major elements showed a large range where no clear consensus value could be defined, and the provisional status for $Fe_2O_3$, MgO, $K_2O$ and $P_2O_5$ were given with some generosity to provide statistical data and *z*-scores as feedback to the participants. Only CaO and $TiO_2$ showed an inflection point in their data distributions with a majority of values within the $z=|2|$ ranges. Pronounced low tails can be observed for $SiO_2$, $Al_2O_3$, $Fe_2O_3$, CaO, $K_2O$, and $P_2O_5$

while $TiO_2$ and $Na_2O$ show high tails in their data distributions. Note that milling with agate equipment leads to a slightly elevated $SiO_2$ content when compared to the starting material.

In contrast, results for all REEs and many trace elements – Ba, Be, Cs, Cu, Ga, Hf, Li, Mn, Nb, Pb, Rb, Sr, Ta, Th, V, Y, and Zn showed data distributions with well-defined inflection points for the definition of consensus values. Again, generosity was granted when giving 'assigned' status to the elements Be, Ta, and 'provisional' status to Bi, Mo, Tl, W with very consistent data distributions although the number of values contributing to the consensus was actually slightly less than normally allowed (see above). High tails in the data distributions for As and also for Sc, Cr, Ni and, to a lesser extent, Co were observed. Results for the latter elements could be affected by unidentified interferences from the calcium carbonate matrix in ICP-MS (e.g., $^{44}Ca^{1}H$ – $^{45}Sc$, $^{40}Ca^{12}C$ – $^{52}Cr$, $^{43}Ca^{16}O$ – $^{59}Co$, $^{48}Ca^{12}C$ – $^{60}Ni$).

## *Z*-score analysis

Assessment of submitted results followed the strategy adopted in recent rounds of G-Probe and detailed in the G-Probe protocol (IAG, 2020). Based on an assessment of the variation of measurement results in earlier rounds, and in order to provide sufficient discrimination for the proficiency test to be helpful to participating laboratories, the fitness for purpose criterion applied throughout was provided by the modified Horwitz function:

$$H_a = k \cdot X_a^{0.8495}$$

where $H_a$ is the standard deviation for proficiency, also referred to as the target precision, calculated for each measurand; and $X_a$ is the best estimate of the true composition, also known as the 'target value' (and may be credited with assigned or provisional status). The values of $H_a$ and $X_a$ are represented in *units of mass fraction*. The factor k = 0.01, which is regarded as appropriate 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.

*Z*-scores were calculated for the average measurement result submitted by each laboratory from:

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

where $X$ is the (average) measurement result submitted, $X_a$ is the target value (assigned or provisional) and $H_a$ is the target precision (all as mass fractions).

*Z*-score values for results submitted to G-Probe 30 are listed in Table 3. *Z*-scores derived from provisional values of measurands 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 $-3<z<3$, laboratories are advised to examine their procedures and, if necessary, take action to ensure that their determinations are not subject to unsuspected analytical bias.

Should a participating laboratory decide that this performance standard is not appropriate for assessment of their measurement results, they are invited to recalculate their *z*-scores by substituting the appropriate value of the standard deviation for proficiency testing, $H_a$, into the equation for the calculation of *z*-scores (i.e., $z = [X - X_a] / H_a$). Adoption of such an approach should include a justification as to why an amended value of $H_a$ is more appropriate for assessment of their data.

## Overall performance

A summary of the overall performance of individual laboratories for this round is plotted in multiple *z*-score charts in Figure 3. In these charts, the *z*-score performance for each element is distinguished by symbols that make it easy to identify whether the measurements 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 test. Note, however, that participants should always review their *z*-scores in accordance with their own fitness-for-purpose criteria.

Test materials presented as pressed powder pellets have been used in previous G-Probe rounds e.g., GP-4 (Carbonate MACS-3), GP-10 (Phosphate MAPS-4), GP-20 (ultra-milled Basalt Glass GSD-2G-NP), GP-25b (Speleothem KCSp-1NP), GP-28 (Fossil Coral). The preparation of powder pellets is a strategy for presenting materials that cannot be prepared as homogenous glasses or minerals. However, powder pellets are characterized by some porosity and moisture content and cannot be polished with wet polishing techniques. This may represent challenges for measurements by EPMA and SEM.

## Participation in future rounds

The benefit from proficiency testing arises from regular participation and laboratories are invited to contribute to the upcoming Rounds 31 (Andesite glass) and 32 (silicate mineral) of G-Probe, the test samples for which are planned for spring 2024.

## Acknowledgements

The authors wish to thank Alina Erle (CAU Kiel) for help with the preparation of nano-particulate powder pellets and Ulrike Westernströer for assistance during LA-ICP-MS homogeneity testing. Andrea Mills and Charles Gowing (BGS, Keyworth) are thanked for arranging the dispatch and delivery of the test materials. Thomas Meisel's support for development of procedures involving the ShinyApp to facilitate the visualisation and analysis of proficiency testing datasets and to permit the derivation of modes according to Thompson (2017) is kindly acknowledged.

## References

**Garbe-Schönberg D and Müller S (2014)** Nano-particulate pressed powder tablets for LA-ICP-MS. *JAAS J Analyt Atom Spectrom*, 2014, **29**: 990-1000.- *http://dx.doi.org/10.1039/C4JA00007B*

**IAG (2016)** Reference Material Certificate of Analysis – CGL/IAG ML-3 (Limestone). International Association of Geoanalysts (Keyworth, UK)

**IAG (2020)** Protocol for the Operation of the G-Probe Proficiency Testing Scheme. International Association of Geoanalysts (Keyworth, UK), 20pp. *http://www.geoanalyst.org/wp-content/uploads/2020/08/G-Probe-protocol-August-2020.pdf*.

**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.

**Table 1 - G-Probe 30 Contributed data for Limestone, KCLs-1NP Pellet. 18/12/2024**

| Lab Code | | L1A | L1B | L2A | L2B | L6A | L6B | L7A | L7B | L11A | L11B | L15A | L15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SiO2 | g 100g$^{-1}$ | | | | | 5.76 | 5.82 | 6.438 | | | | 6.69 | |
| TiO2 | g 100g$^{-1}$ | | | 0.04 | | 0.0367 | 0.0368 | 0.0398 | | 0.042 | | 0.0423 | |
| Al2O3 | g 100g$^{-1}$ | 0.9 | | | | 0.975 | 0.973 | 0.9741 | | 1.147 | | 1.12 | |
| Fe2O3T | g 100g$^{-1}$ | | | 0.33 | | 0.308 | 0.304 | 0.2921 | | 0.38 | | 0.331 | |
| MgO | g 100g$^{-1}$ | 1.06 | | | | 1.178 | 1.196 | 1.21 | | 1.449 | | 1.47 | |
| CaO | g 100g$^{-1}$ | | | | | 44.56 | 44.45 | 43.56 | | 50.31 | | 48.9 | |
| Na2O | g 100g$^{-1}$ | 0.2 | | | | 0.203 | 0.2 | 0.2056 | | 0.221 | | 0.237 | |
| K2O | g 100g$^{-1}$ | | | | | 0.195 | 0.196 | 0.1958 | | | | 0.261 | |
| P2O5 | g 100g$^{-1}$ | | | | | | | 0.0766 | | 0.0677 | | 0.0756 | |
| Ag | mg kg$^{-1}$ | | | | | | | | | | | | |
| As | mg kg$^{-1}$ | | | | | | | 0.6562 | | 0.674 | | 0.87 | |
| Au | mg kg$^{-1}$ | | | | | | | | | | | | |
| B | mg kg$^{-1}$ | 4.44 | | | | | | 4.646 | | 4.126 | | | |
| Ba | mg kg$^{-1}$ | 42.7 | | 48.9 | | 45.46 | 45.65 | 45.2 | | 51.2 | | 50.31 | |
| Be | mg kg$^{-1}$ | | | 0.6 | | | | 0.5814 | | | | | |
| Bi | mg kg$^{-1}$ | | | | | | | 0.0408 | | 0.0487 | | 0.045 | |
| Cd | mg kg$^{-1}$ | 0.07 | | | | | | 0.0141 | | | | 0.016 | |
| Ce | mg kg$^{-1}$ | 4.63 | | 5.76 | | 5.32 | 5.38 | 5.248 | | 6.2603 | | 5.72 | |
| Co | mg kg$^{-1}$ | | | | | 0.518 | 0.522 | 0.5344 | | | | 0.583 | |
| Cr | mg kg$^{-1}$ | 8.12 | | | | | | 4.313 | | 5.502 | | 3.9 | |
| Cs | mg kg$^{-1}$ | | | 2 | | 1.78 | 1.81 | 1.855 | | 2.028 | | 2.21 | |
| Cu | mg kg$^{-1}$ | 0.89 | | 1.21 | | 0.917 | 0.927 | 0.9935 | | 1.1176 | | 1.08 | |
| Dy | mg kg$^{-1}$ | | | 0.493 | | 0.465 | 0.468 | 0.4486 | | 0.5286 | | 0.482 | |
| Er | mg kg$^{-1}$ | | | 0.265 | | 0.277 | 0.281 | 0.2558 | | 0.2986 | | 0.276 | |
| Eu | mg kg$^{-1}$ | | | 0.14 | | 0.117 | 0.118 | 0.1212 | | 0.145 | | 0.131 | |
| Ga | mg kg$^{-1}$ | 1.22 | | | | 1.26 | 1.28 | 1.3 | | 1.459 | | 1.44 | |
| Gd | mg kg$^{-1}$ | | | 0.592 | | 0.56 | 0.58 | 0.5183 | | 0.5978 | | 0.541 | |
| Ge | mg kg$^{-1}$ | | | | | | | 0.3524 | | | | 0.365 | |
| Hf | mg kg$^{-1}$ | | | 0.37 | | | | 0.3214 | | 0.3875 | | 0.379 | |
| Ho | mg kg$^{-1}$ | | | 0.096 | | 0.092 | 0.105 | 0.0888 | | 0.1068 | | 0.098 | |
| In | mg kg$^{-1}$ | | | | | | | 0.0047 | | 0.0081 | | 0.006 | |
| La | mg kg$^{-1}$ | 2.78 | | 3.49 | | 3.17 | 3.17 | 3.107 | | 3.8165 | | 3.4 | |
| Li | mg kg$^{-1}$ | 9.26 | | | | 8.33 | 8.39 | 8.95 | | 9.812 | | 10.49 | |
| Lu | mg kg$^{-1}$ | | | 0.04 | | 0.036 | 0.036 | 0.0345 | | 0.0415 | | 0.038 | |
| Mn | mg kg$^{-1}$ | 149 | | 180 | | 163.5 | 164.6 | 167.5 | | 182.66 | | 181 | |
| Mo | mg kg$^{-1}$ | | | | | | | 0.0586 | | | | 0.051 | |
| Nb | mg kg$^{-1}$ | | | 0.68 | | 0.725 | 0.749 | 0.7106 | | 0.8236 | | 0.738 | |
| Nd | mg kg$^{-1}$ | 2.55 | | 3.22 | | 2.95 | 3.03 | 2.882 | | 3.4263 | | 3.12 | |
| Ni | mg kg$^{-1}$ | 1.77 | | | | 1.7 | 1.67 | 1.703 | | | | 1.8 | |
| Pb | mg kg$^{-1}$ | 2.25 | | 2.77 | | 2.5 | 2.51 | 2.452 | | 3.0056 | | 2.98 | |
| Pr | mg kg$^{-1}$ | 0.67 | | 0.76 | | 0.754 | 0.767 | 0.7174 | | 0.8563 | | 0.784 | |
| Rb | mg kg$^{-1}$ | | | 11.8 | | 9.99 | 9.91 | 10.29 | | 11.372 | | 12.31 | |
| S | mg kg$^{-1}$ | | | | | | | | | | | | |
| Sb | mg kg$^{-1}$ | | | | | | | 0.1909 | | 0.2446 | | 0.233 | |
| Sc | mg kg$^{-1}$ | | | | | 0.66 | 0.63 | | | 0.926 | | 0.722 | |
| Se | mg kg$^{-1}$ | | | | | | | | | | | 0.194 | |
| Sm | mg kg$^{-1}$ | | | 0.625 | | 0.6 | 0.61 | 0.5583 | | 0.66418 | | 0.602 | |
| Sn | mg kg$^{-1}$ | 1.14 | | | | | | 0.577 | | 0.6761 | | 0.667 | |
| Sr | mg kg$^{-1}$ | 903 | | 1011 | | 932.6 | 934.6 | 924.1 | | 1034.6 | | 1080 | |
| Ta | mg kg$^{-1}$ | | | 0.064 | | 0.071 | 0.073 | 0.0676 | | 0.0797 | | 0.071 | |
| Tb | mg kg$^{-1}$ | | | 0.083 | | 0.074 | 0.078 | 0.0738 | | 0.0886 | | 0.081 | |
| Te | mg kg$^{-1}$ | | | | | | | | | | | 0.025 | |
| Th | mg kg$^{-1}$ | 0.56 | | 0.65 | | 0.61 | 0.63 | 0.575 | | 0.703 | | 0.644 | |
| Tl | mg kg$^{-1}$ | | | | | | | 0.0642 | | 0.0974 | | 0.088 | |
| Tm | mg kg$^{-1}$ | | | 0.037 | | 0.045 | 0.043 | 0.0345 | | 0.0415 | | 0.038 | |
| U | mg kg$^{-1}$ | 0.62 | | | | | | 0.6229 | | | | 0.877 | |
| V | mg kg$^{-1}$ | | | | | 4.61 | 4.55 | 5.091 | | 5.764 | | 5.3 | |
| W | mg kg$^{-1}$ | | | | | | | 0.6659 | | 0.7915 | | 0.747 | |
| Y | mg kg$^{-1}$ | 2.34 | | 3.08 | | 3.22 | 3.18 | 3.072 | | 3.4872 | | 3.2 | |
| Yb | mg kg$^{-1}$ | | | 0.273 | | 0.247 | 0.247 | 0.2364 | | 0.2817 | | 0.256 | |
| Zn | mg kg$^{-1}$ | 6.19 | | | | 4.88 | 4.95 | 4.476 | | 7.6939 | | 7.3 | |
| Zr | mg kg$^{-1}$ | | | 13.8 | | | | 12.83 | | | | 13.9 | |

**Table 1 - G-Probe 30 Contributed data for Limestone, KCLs-1NP Pellet. 18/12/2024**

| Lab Code | | L17A | L17B | L19A | L19B | L20A | L20B | L21A | L21B | L22A | L22B | L24A | L24B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SiO2 | g 100g⁻¹ | 6.41 | 6.61 | | | | | 6.835 | | 6.935 | 7.029 | 6.898 | |
| TiO2 | g 100g⁻¹ | | | 0.04 | | | | 0.039 | | 0.042 | 0.041 | 0.0422 | |
| Al2O3 | g 100g⁻¹ | 1.23 | 1.25 | 1.133 | | | | 1.126 | | 1.074 | 1.075 | 1.1543 | |
| Fe2O3T | g 100g⁻¹ | 0.22 | 0.24 | 0.33 | | | | 0.392 | | 0.358 | 0.356 | 0.374 | |
| MgO | g 100g⁻¹ | 1.41 | 1.41 | 1.218 | | | | 1.4 | | 1.356 | 1.357 | 1.4545 | |
| CaO | g 100g⁻¹ | 35.9 | 38.49 | 49.02 | | | | 50.32 | | 49.735 | 49.758 | 53.96 | |
| Na2O | g 100g⁻¹ | 0.25 | 0.24 | 0.217 | | | | 0.223 | | 0.207 | 0.209 | 0.2475 | |
| K2O | g 100g⁻¹ | 0.17 | 0.18 | 0.217 | | | | 0.218 | | 0.214 | 0.211 | 0.2369 | |
| P2O5 | g 100g⁻¹ | | | 0.07 | | | | | | 0.064 | 0.065 | | |
| Ag | mg kg⁻¹ | | | | | | | | | 0.007 | 0.002 | | |
| As | mg kg⁻¹ | | | | | | | | | 0.655 | 0.619 | | |
| Au | mg kg⁻¹ | | | | | | | | | 0.0003 | 0.0001 | | |
| B | mg kg⁻¹ | | | | | | | | | 22.772 | 21.909 | | |
| Ba | mg kg⁻¹ | | | 49.18 | | 53.2 | | 49.86 | | 52.017 | 51.75 | 52.202 | |
| Be | mg kg⁻¹ | | | 0.569 | | 0.654 | | | | 0.624 | 0.612 | | |
| Bi | mg kg⁻¹ | | | | | | | | | 0.043 | 0.05 | | |
| Cd | mg kg⁻¹ | | | | | | | | | 0.008 | 0.002 | | |
| Ce | mg kg⁻¹ | | | 5.957 | | 6.39 | | 5.86 | | 5.782 | 5.634 | 6.124 | |
| Co | mg kg⁻¹ | | | 0.807 | | 0.873 | | 0.64 | | 0.585 | 0.583 | | |
| Cr | mg kg⁻¹ | | | 4.761 | | 5.37 | | 4.63 | | 5.427 | 4.042 | | |
| Cs | mg kg⁻¹ | | | 1.914 | | 2.052 | | 2.08 | | 2.046 | 2.028 | 2.268 | |
| Cu | mg kg⁻¹ | | | 1.318 | | 0.996 | | 1.18 | | 1.129 | 1.161 | | |
| Dy | mg kg⁻¹ | | | 0.498 | | 0.624 | | 0.53 | | 0.523 | 0.503 | 0.533 | |
| Er | mg kg⁻¹ | | | 0.302 | | 0.364 | | 0.3 | | 0.309 | 0.29 | 0.311 | |
| Eu | mg kg⁻¹ | | | 0.136 | | 0.1827 | | 0.14 | | 0.135 | 0.133 | 0.156 | |
| Ga | mg kg⁻¹ | | | 1.399 | | 1.372 | | 1.43 | | 1.483 | 1.47 | | |
| Gd | mg kg⁻¹ | | | 0.574 | | 0.7095 | | 0.61 | | 0.585 | 0.571 | 0.69 | |
| Ge | mg kg⁻¹ | | | 0.379 | | | | | | 0.425 | 0.422 | | |
| Hf | mg kg⁻¹ | | | 0.383 | | 0.5021 | | 0.37 | | 0.457 | 0.429 | 0.33 | |
| Ho | mg kg⁻¹ | | | 0.103 | | | | 0.1 | | 0.106 | 0.105 | 0.106 | |
| In | mg kg⁻¹ | | | | | | | | | 0.008 | 0.009 | | |
| La | mg kg⁻¹ | | | 3.569 | | 4.2706 | | 3.51 | | 3.49 | 3.49 | 3.672 | |
| Li | mg kg⁻¹ | | | 9.737 | | 10.55 | | 10.4 | | | | | |
| Lu | mg kg⁻¹ | | | 0.042 | | 0.053 | | 0.04 | | 0.042 | 0.044 | 0.041 | |
| Mn | mg kg⁻¹ | | | 177.7 | | | | 191.5 | | 171.041 | 172.122 | 202 | |
| Mo | mg kg⁻¹ | | | | | | | 0.04 | | 0.057 | 0.047 | | |
| Nb | mg kg⁻¹ | | | 0.788 | | 0.735 | | 0.77 | | 0.789 | 0.781 | 0.75 | |
| Nd | mg kg⁻¹ | | | 3.112 | | 4.03 | | 3.32 | | 3.297 | 3.16 | 3.422 | |
| Ni | mg kg⁻¹ | | | 2.117 | | 3.126 | | 1.87 | | 1.848 | 1.829 | | |
| Pb | mg kg⁻¹ | | | 2.779 | | 3.4469 | | 3.02 | | 2.859 | 2.836 | 3.234 | |
| Pr | mg kg⁻¹ | | | 0.806 | | 0.9247 | | 0.82 | | 0.799 | 0.769 | 0.83 | |
| Rb | mg kg⁻¹ | | | 11.06 | | 12.25 | | 11.34 | | 11.542 | 11.379 | 12.31 | |
| S | mg kg⁻¹ | | | | | | | | | 89.458 | 102.129 | | |
| Sb | mg kg⁻¹ | | | | | 0.213 | | | | 0.29 | 0.286 | | |
| Sc | mg kg⁻¹ | | | 1.069 | | | | 0.74 | | 0.78 | 0.773 | | |
| Se | mg kg⁻¹ | | | | | | | | | 0.125 | 0.092 | | |
| Sm | mg kg⁻¹ | | | 0.604 | | 0.755 | | 0.67 | | 0.654 | 0.628 | 0.653 | |
| Sn | mg kg⁻¹ | | | | | 0.5846 | | | | 0.623 | 0.618 | | |
| Sr | mg kg⁻¹ | | | 1005 | | 1164 | | 1084.5 | | 1056.67 | 1050.603 | 1077 | |
| Ta | mg kg⁻¹ | | | 0.081 | | | | | | 0.08 | 0.078 | 0.078 | |
| Tb | mg kg⁻¹ | | | 0.083 | | 0.1106 | | 0.08 | | 0.083 | 0.078 | 0.086 | |
| Te | mg kg⁻¹ | | | | | | | | | 0.012 | 0.0001 | | |
| Th | mg kg⁻¹ | | | 0.703 | | 0.864 | | 0.67 | | 0.736 | 0.778 | 0.698 | |
| Tl | mg kg⁻¹ | | | | | | | | | 0.091 | 0.099 | | |
| Tm | mg kg⁻¹ | | | 0.042 | | 0.0536 | | 0.04 | | 0.045 | 0.038 | 0.042 | |
| U | mg kg⁻¹ | | | 1.149 | | 0.873 | | 0.53 | | 1.024 | 0.775 | 0.488 | |
| V | mg kg⁻¹ | | | 5.482 | | | | 5.67 | | 5.449 | 5.465 | 5.67 | |
| W | mg kg⁻¹ | | | | | | | | | 0.834 | 0.79 | 0.856 | |
| Y | mg kg⁻¹ | | | 3.296 | | 3.568 | | 3.41 | | 3.461 | 3.337 | 3.728 | |
| Yb | mg kg⁻¹ | | | 0.262 | | 0.3416 | | 0.28 | | 0.287 | 0.265 | 0.301 | |
| Zn | mg kg⁻¹ | | | 7.116 | | 5.937 | | 7.15 | | 6.052 | 6.089 | 7.069 | |
| Zr | mg kg⁻¹ | | | 14.24 | | 14.695 | | 11.43 | | 16.102 | 16.507 | 11.7 | |

**Table 1 - G-Probe 30 Contributed data for Limestone, KCLs-1NP Pellet. 18/12/2024**

| Lab Code | | L27A | L27B | L28A | L28B | L30A | L30B | L33A | L33B | L34A | L34B | L43A | L43B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SiO2 | g 100g⁻¹ | 7.04 | | 6.57 | 6.47 | 7.09 | | 7.04 | | 6.9644 | | 11 | |
| TiO2 | g 100g⁻¹ | | | 0.06 | 0.02 | 0.042 | | 0.05 | | 0.0372 | | 0.07 | |
| Al2O3 | g 100g⁻¹ | 1.05 | | 1.06 | 1.05 | 1.13 | | 1 | | 1.144 | | 1.78 | |
| Fe2O3T | g 100g⁻¹ | | | 0.31 | 0.27 | 0.357 | | 0.4 | | 0.3133 | | 0.57 | |
| MgO | g 100g⁻¹ | 1.29 | | 1.31 | 1.32 | 1.368 | | 1.22 | | 1.205 | | 2.37 | |
| CaO | g 100g⁻¹ | 50.01 | | 49.93 | 49.71 | 50.32 | | 49.64 | | 50.158 | | 83.1 | |
| Na2O | g 100g⁻¹ | | | 0.21 | 0.22 | 0.246 | | 0.15 | | 0.2157 | | 0.39 | |
| K2O | g 100g⁻¹ | | | 0.2 | 0.2 | 0.292 | | 0.19 | | 0.2131 | | 0.37 | |
| P2O5 | g 100g⁻¹ | | | 0.07 | 0.07 | 0.034 | | 0.05 | | 0.0692 | | 0.11 | |
| Ag | mg kg⁻¹ | | | | | | | | | | | | |
| As | mg kg⁻¹ | | | 11.1 | 10.1 | 1.81 | | 1.09 | | 0.7217 | | | |
| Au | mg kg⁻¹ | | | | | | | | | | | | |
| B | mg kg⁻¹ | | | 6.42 | 6.38 | | | 7.93 | | | | | |
| Ba | mg kg⁻¹ | | | 63.5 | 62.6 | 50.03 | | 45.8 | | 49.154 | | 88.7 | |
| Be | mg kg⁻¹ | | | 0.6 | 0.62 | 0.562 | | 0.558 | | | | | |
| Bi | mg kg⁻¹ | | | 0.04 | 0.05 | | | | | | | | |
| Cd | mg kg⁻¹ | | | | | | | | | | | | |
| Ce | mg kg⁻¹ | | | 6.83 | 6.84 | 6.03 | | 6.78 | | 5.322 | | 10 | |
| Co | mg kg⁻¹ | | | 0.51 | 0.61 | 0.618 | | 0.752 | | 0.6132 | | | |
| Cr | mg kg⁻¹ | | | 11.4 | 11.5 | 7.03 | | 3.49 | | 4.065 | | 6.74 | |
| Cs | mg kg⁻¹ | | | 2.12 | 2.08 | 2.166 | | 1.98 | | 1.914 | | | |
| Cu | mg kg⁻¹ | | | 1.15 | 1.35 | 0.93 | | 0.211 | | 1.006 | | | |
| Dy | mg kg⁻¹ | | | 0.54 | 0.54 | 0.475 | | 0.409 | | 0.4704 | | 0.8 | |
| Er | mg kg⁻¹ | | | 0.3 | 0.29 | 0.265 | | 0.202 | | 0.2501 | | 0.49 | |
| Eu | mg kg⁻¹ | | | 0.14 | 0.14 | | | 0.142 | | 0.1273 | | 0.22 | |
| Ga | mg kg⁻¹ | | | 1.61 | 1.6 | 1.52 | | 1.34 | | 1.332 | | | |
| Gd | mg kg⁻¹ | | | 0.6 | 0.59 | 0.57 | | 0.594 | | 0.5321 | | 1.01 | |
| Ge | mg kg⁻¹ | | | 0.36 | 0.47 | 0.144 | | | | 0.4311 | | | |
| Hf | mg kg⁻¹ | | | 0.37 | 0.35 | 0.34 | | 0.148 | | 0.3084 | | 0.62 | |
| Ho | mg kg⁻¹ | | | 0.1 | 0.1 | | | 0.073 | | 0.0934 | | 0.16 | |
| In | mg kg⁻¹ | | | | | | | | | | | | |
| La | mg kg⁻¹ | | | 3.92 | 3.96 | 3.52 | | 3.39 | | 3.293 | | 6 | |
| Li | mg kg⁻¹ | | | 10.8 | 10.9 | 10.41 | | 10.56 | | 9.771 | | | |
| Lu | mg kg⁻¹ | | | 0.04 | 0.04 | 0.0367 | | 0.042 | | 0.033 | | 0.06 | |
| Mn | mg kg⁻¹ | | | 222 | 223 | 193.42 | | 213 | | 177.9 | | | |
| Mo | mg kg⁻¹ | | | 0.06 | 0.07 | | | | | 0.0367 | | | |
| Nb | mg kg⁻¹ | | | 0.86 | 0.86 | 0.754 | | 0.747 | | 0.6963 | | 1.32 | |
| Nd | mg kg⁻¹ | | | 3.69 | 3.72 | 3.2 | | 3.32 | | 2.976 | | 5.27 | |
| Ni | mg kg⁻¹ | | | 1.86 | 2 | 2.39 | | 2.63 | | 2.604 | | | |
| Pb | mg kg⁻¹ | | | 3.09 | 3.1 | 2.86 | | 2.84 | | 2.753 | | | |
| Pr | mg kg⁻¹ | | | 0.85 | 0.84 | 0.82 | | 0.975 | | 0.7281 | | 1.36 | |
| Rb | mg kg⁻¹ | | | 13.2 | 13.1 | 12.21 | | 11.7 | | 11.1 | | 18.8 | |
| S | mg kg⁻¹ | | | | | | | | | | | | |
| Sb | mg kg⁻¹ | | | 0.27 | 0.27 | 0.16 | | 0.266 | | 0.2045 | | | |
| Sc | mg kg⁻¹ | | | 0.8 | 0.83 | 0.73 | | 2.01 | | | | 1.17 | |
| Se | mg kg⁻¹ | | | | | | | | | | | | |
| Sm | mg kg⁻¹ | | | 0.68 | 0.66 | 0.62 | | 0.638 | | 0.5829 | | 1.06 | |
| Sn | mg kg⁻¹ | | | 0.8 | 0.91 | 0.715 | | 0.691 | | 0.5594 | | | |
| Sr | mg kg⁻¹ | | | 1097 | 1092 | 1052.77 | | 1071 | | 1034.24 | | 1733 | |
| Ta | mg kg⁻¹ | | | 0.08 | 0.08 | | | 0.047 | | 0.0666 | | | |
| Tb | mg kg⁻¹ | | | 0.08 | 0.08 | | | 0.062 | | 0.0745 | | 0.13 | |
| Te | mg kg⁻¹ | | | | | | | | | | | | |
| Th | mg kg⁻¹ | | | 0.7 | 0.76 | 0.675 | | 0.583 | | 0.61 | | | |
| Tl | mg kg⁻¹ | | | 0.09 | 0.09 | | | | | 0.0745 | | | |
| Tm | mg kg⁻¹ | | | 0.04 | 0.04 | | | 0.037 | | 0.0348 | | 0.06 | |
| U | mg kg⁻¹ | | | 0.8 | 0.78 | 1.04 | | 0.485 | | 0.0522 | | | |
| V | mg kg⁻¹ | | | 6.22 | 6.16 | 5.516 | | 5.33 | | 5.027 | | 8.7 | |
| W | mg kg⁻¹ | | | | | | | | | | | | |
| Y | mg kg⁻¹ | | | 3.93 | 3.86 | 3.117 | | 2.9 | | 3.125 | | 5.45 | |
| Yb | mg kg⁻¹ | | | 0.28 | 0.27 | 0.245 | | 0.237 | | 0.239 | | 0.4 | |
| Zn | mg kg⁻¹ | | | 6.05 | 6.02 | 6.73 | | 7.3 | | 6.4 | | | |
| Zr | mg kg⁻¹ | | | 16.6 | 15.8 | 12.29 | | 9.35 | | 10.951 | | 22.7 | |

**Table 1 - G-Probe 30 Contributed data for Limestone, KCLs-1NP Pellet. 18/12/2024**

| Lab Code | | L44A | L44B | L45A | L45B | L47A | L47B | L55A | L55B | L58A | L58B | L62A | L62B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SiO2 | g 100g⁻¹ | 4.09 | | | | 4.47 | | 7.792016086 | | 4.556 | | 6.88 | |
| TiO2 | g 100g⁻¹ | 0.05 | | | | 0.04 | | 0.04 | | 0.037 | | 0.0473 | |
| Al2O3 | g 100g⁻¹ | 1.05 | | | | 1.23 | | 1.218290033 | | 0.704 | | 1.225 | |
| Fe2O3T | g 100g⁻¹ | 0.37 | | | | 0.75 | | 0.344423316 | | 0.297 | | 0.3758 | |
| MgO | g 100g⁻¹ | 1.07 | | | | 1.24 | | 1.320577019 | | 1.293 | | 1.2597 | |
| CaO | g 100g⁻¹ | 50.32 | | | | | | | | 48.84 | | 50.496 | |
| Na2O | g 100g⁻¹ | 0.21 | | | | 0.2 | | 0.217938695 | | 0.144 | | 0.2287 | |
| K2O | g 100g⁻¹ | | | | | 0.01 | | 0.233328515 | | 0.159 | | | |
| P2O5 | g 100g⁻¹ | | | | | 0.061 | | 0.0475 | | 0.057 | | 0.068 | |
| Ag | mg kg⁻¹ | | | | | | | | | | | | |
| As | mg kg⁻¹ | | | | | 1.32 | | 0.738911202 | | 0.335 | | | |
| Au | mg kg⁻¹ | | | | | | | | | | | | |
| B | mg kg⁻¹ | | | | | | | 8.036532446 | | | | | |
| Ba | mg kg⁻¹ | 48.3 | | 46.6 | | 48.7 | | 50.28836628 | | 55.443 | | 53.16 | |
| Be | mg kg⁻¹ | 0.61 | | 0.46 | | 0.52 | | | | | | | |
| Bi | mg kg⁻¹ | | | | | | | | | 0.042 | | | |
| Cd | mg kg⁻¹ | | | | | | | | | 0.011 | | | |
| Ce | mg kg⁻¹ | 5.37 | | 4.91 | | 5.52 | | 5.924663116 | | 6.41 | | 5.84 | |
| Co | mg kg⁻¹ | | | 0.82 | | 1.95 | | 0.606297263 | | 0.257 | | | |
| Cr | mg kg⁻¹ | 3.64 | | 9.57 | | 4.19 | | 4.733469679 | | 6.85 | | | |
| Cs | mg kg⁻¹ | | | 1.45 | | | | | | 1.676 | | | |
| Cu | mg kg⁻¹ | | | 0.76 | | 1.03 | | 1.123108447 | | 0.873 | | | |
| Dy | mg kg⁻¹ | 0.51 | | 0.42 | | 0.51 | | 0.509846036 | | 0.476 | | | |
| Er | mg kg⁻¹ | 0.29 | | 0.23 | | 0.28 | | 0.290258981 | | 0.27 | | | |
| Eu | mg kg⁻¹ | 0.13 | | 0.11 | | 0.14 | | 0.136571746 | | 0.145 | | 0.1359 | |
| Ga | mg kg⁻¹ | 1.72 | | | | | | | | 1.15 | | 1.584 | |
| Gd | mg kg⁻¹ | 0.64 | | 0.49 | | 0.62 | | 0.581724414 | | 0.555 | | | |
| Ge | mg kg⁻¹ | | | | | 0.59 | | | | 0.246 | | | |
| Hf | mg kg⁻¹ | 0.39 | | 0.34 | | | | | | 0.377 | | | |
| Ho | mg kg⁻¹ | 0.11 | | 0.08 | | 0.1 | | 0.102771794 | | 0.097 | | | |
| In | mg kg⁻¹ | | | | | | | | | 0.016 | | | |
| La | mg kg⁻¹ | 3.53 | | 3 | | 3.42 | | 3.574689325 | | 3.615 | | 3.48 | |
| Li | mg kg⁻¹ | 9.09 | | 7 | | 9.68 | | 10.45764806 | | | | 10.66 | |
| Lu | mg kg⁻¹ | 0.04 | | 0.03 | | 0.04 | | 0.04 | | 0.04 | | | |
| Mn | mg kg⁻¹ | 172 | | 153 | | 177 | | 189.2805725 | | 156 | | 183.9 | |
| Mo | mg kg⁻¹ | | | | | | | | | 0.044 | | | |
| Nb | mg kg⁻¹ | 0.75 | | 0.57 | | 0.68 | | | | 0.554 | | 0.6826 | |
| Nd | mg kg⁻¹ | 3.21 | | 2.74 | | 3.09 | | 3.181021717 | | 3.051 | | 3.08 | |
| Ni | mg kg⁻¹ | 2.06 | | 1.4 | | 2.78 | | 1.910834253 | | 1.708 | | | |
| Pb | mg kg⁻¹ | 2.48 | | 2.16 | | 2.69 | | 2.873806131 | | 2.076 | | 2.921 | |
| Pr | mg kg⁻¹ | 0.8 | | 0.7 | | 0.79 | | 0.811009136 | | 0.874 | | 0.801 | |
| Rb | mg kg⁻¹ | | | 8.37 | | | | 12.11905053 | | 9.08 | | | |
| S | mg kg⁻¹ | | | | | | | | | | | | |
| Sb | mg kg⁻¹ | 0.21 | | 0.15 | | | | | | 0.178 | | | |
| Sc | mg kg⁻¹ | 1.35 | | 0.73 | | 4.53 | | 0.703067186 | | 0.726 | | 0.715 | |
| Se | mg kg⁻¹ | | | | | | | | | | | | |
| Sm | mg kg⁻¹ | 0.57 | | 0.52 | | 0.62 | | 0.632988751 | | 0.566 | | | |
| Sn | mg kg⁻¹ | 0.59 | | 0.47 | | | | | | 0.444 | | | |
| Sr | mg kg⁻¹ | 1110 | | 932 | | 1011 | | 1092.932057 | | 1088 | | 1032.35 | |
| Ta | mg kg⁻¹ | 0.08 | | 0.06 | | | | | | 0.078 | | | |
| Tb | mg kg⁻¹ | 0.08 | | 0.07 | | 0.08 | | 0.0842 | | 0.081 | | | |
| Te | mg kg⁻¹ | | | | | | | | | | | | |
| Th | mg kg⁻¹ | 0.66 | | 0.57 | | 0.66 | | | | 0.666 | | | |
| Tl | mg kg⁻¹ | | | | | | | | | 0.068 | | | |
| Tm | mg kg⁻¹ | 0.04 | | 0.03 | | 0.04 | | 0.0409 | | 0.041 | | | |
| U | mg kg⁻¹ | 0.66 | | 0.8 | | 0.74 | | 0.640986986 | | 0.688 | | | |
| V | mg kg⁻¹ | 5.7 | | 3.35 | | 5.42 | | 5.693145424 | | 3.857 | | 5.786 | |
| W | mg kg⁻¹ | 0.8 | | | | | | | | 0.531 | | | |
| Y | mg kg⁻¹ | 3.34 | | 2.71 | | 3.29 | | 3.468661101 | | 3 | | 3.06 | |
| Yb | mg kg⁻¹ | 0.25 | | 0.22 | | 0.25 | | 0.267697693 | | 0.254 | | | |
| Zn | mg kg⁻¹ | 5.92 | | 4.27 | | 6.51 | | 6.682777273 | | 3.629 | | 7.17 | |
| Zr | mg kg⁻¹ | 14.6 | | 11.6 | | 14.9 | | 12.38935539 | | 12.95 | | 14.59 | |

**Table 2 - G-Probe 30 Designated values and statistical summary for Limestone, KCLs-1NP Pellet.**

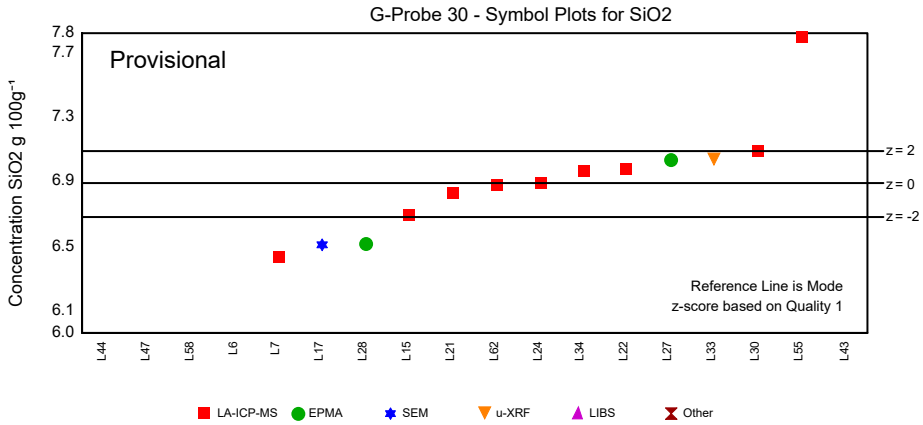
| | Designated Value | Uncertainty of designated value | Horwitz Quality | Horwitz Target Precision | Uncertainty/ Target Precision | Number of reported results | Robust Mean of results | Robust SD of results | Median of results | Status of designated value | Type of designated value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $X_{pt}$ | $u(x_{pt})$ | *k x 0.01* | $\sigma_{pt}$ | $u(x_{pt}) / \sigma_{pt}$ | *n* | | | | | |
| | g 100g$^{-1}$ | g 100g$^{-1}$ | | g 100g$^{-1}$ | | | g 100g$^{-1}$ | g 100g$^{-1}$ | g 100g$^{-1}$ | | |
| **SiO2** | 6.889 | 0.104 | 1 | 0.103 | 1.009 | 18 | 6.654 | 0.7699 | 6.857 | Provisional | Mode |
| **TiO2** | 0.04 | 0.0008526 | 1 | 0.001299 | 0.6565 | 19 | 0.0415 | 0.003803 | 0.04 | Assigned | Median |
| **Al2O3** | 1.126 | 0.03082 | 1 | 0.02212 | 1.393 | 21 | 1.104 | 0.1137 | 1.126 | Provisional | Median |
| **Fe2O3T** | 0.3478 | 0.01085 | 1 | 0.008154 | 1.331 | 20 | 0.3478 | 0.04854 | 0.3507 | Provisional | Robust Mean |
| **MgO** | 1.304 | 0.02749 | 1 | 0.02506 | 1.097 | 21 | 1.304 | 0.126 | 1.293 | Provisional | Robust Mean |
| **CaO** | 49.91 | 0.2159 | 1 | 0.5542 | 0.3896 | 18 | 49.69 | 1.256 | 49.91 | Assigned | Median |
| **Na2O** | 0.2164 | 0.005651 | 1 | 0.005448 | 1.037 | 20 | 0.218 | 0.0217 | 0.2164 | Provisional | Median |
| **K2O** | 0.2128 | 0.009923 | 1 | 0.005373 | 1.847 | 16 | 0.2128 | 0.03969 | 0.2128 | Provisional | Robust Mean |
| **P2O5** | 0.06785 | 0.003625 | 1 | 0.002034 | 1.782 | 14 | 0.06475 | 0.01214 | 0.06785 | Provisional | Median |
| | mg kg$^{-1}$ | mg kg$^{-1}$ | | mg kg$^{-1}$ | | | mg kg$^{-1}$ | mg kg$^{-1}$ | mg kg$^{-1}$ | | |
| **As** | 0.6978 | 0.0492 | 1 | 0.05892 | 0.835 | 11 | 0.9358 | 0.4599 | 0.7389 | Provisional | Mode |
| **Ba** | 50.02 | 0.7819 | 1 | 2.221 | 0.3521 | 22 | 50.02 | 3.667 | 49.95 | Assigned | Robust Mean |
| **Be** | 0.5809 | 0.01352 | 1 | 0.05042 | 0.2681 | 11 | 0.5809 | 0.04483 | 0.5814 | Assigned | Robust Mean |
| **Bi** | 0.04467 | 0.001224 | 1 | 0.005704 | 0.2145 | 6 | 0.04467 | 0.002997 | 0.045 | Provisional | Robust Mean |
| **Ce** | 5.85 | 0.1763 | 1 | 0.3587 | 0.4917 | 22 | 5.865 | 0.6134 | 5.85 | Assigned | Median |
| **Co** | 0.5835 | 0.0219 | 1 | 0.05061 | 0.4327 | 15 | 0.6547 | 0.1517 | 0.6132 | Provisional | Mode |
| **Cs** | 2.014 | 0.04645 | 1 | 0.145 | 0.3204 | 16 | 1.99 | 0.1754 | 2.014 | Assigned | Median |
| **Cu** | 1.033 | 0.03942 | 1 | 0.08222 | 0.4794 | 18 | 1.033 | 0.1672 | 1.018 | Assigned | Robust Mean |
| **Dy** | 0.499 | 0.009198 | 1 | 0.04431 | 0.2076 | 20 | 0.499 | 0.04114 | 0.5039 | Assigned | Robust Mean |
| **Er** | 0.283 | 0.006092 | 1 | 0.02737 | 0.2226 | 20 | 0.283 | 0.02724 | 0.285 | Assigned | Robust Mean |
| **Eu** | 0.1375 | 0.002732 | 1 | 0.01482 | 0.1843 | 20 | 0.1375 | 0.01222 | 0.1383 | Assigned | Robust Mean |
| **Ga** | 1.411 | 0.03643 | 1 | 0.1071 | 0.34 | 16 | 1.411 | 0.1457 | 1.414 | Assigned | Robust Mean |
| **Gd** | 0.5869 | 0.01143 | 1 | 0.05086 | 0.2247 | 20 | 0.5888 | 0.05081 | 0.5869 | Assigned | Median |
| **Ge** | 0.3981 | 0.054 | 1 | 0.03657 | 1.477 | 9 | 0.3731 | 0.09796 | 0.379 | Provisional | Mode |
| **Hf** | 0.3696 | 0.01203 | 1 | 0.03434 | 0.3504 | 17 | 0.3696 | 0.04961 | 0.37 | Assigned | Robust Mean |
| **Ho** | 0.09961 | 0.001829 | 1 | 0.01127 | 0.1622 | 18 | 0.09961 | 0.007758 | 0.1 | Assigned | Robust Mean |
| **La** | 3.499 | 0.06158 | 1 | 0.2318 | 0.2657 | 22 | 3.499 | 0.2888 | 3.5 | Assigned | Robust Mean |
| **Li** | 10.22 | 0.133 | 1 | 0.5759 | 0.2309 | 17 | 9.884 | 0.8048 | 9.812 | Assigned | Mode |
| **Lu** | 0.03967 | 0.0007786 | 1 | 0.005157 | 0.151 | 20 | 0.03967 | 0.003482 | 0.04 | Assigned | Robust Mean |
| **Mn** | 179.2 | 3.921 | 1 | 6.565 | 0.5973 | 20 | 179.2 | 17.54 | 178.9 | Assigned | Robust Mean |
| **Mo** | 0.051 | 0.005338 | 1 | 0.006384 | 0.8361 | 7 | 0.04961 | 0.01064 | 0.051 | Provisional | Median |
| **Nb** | 0.7425 | 0.01828 | 1 | 0.06211 | 0.2943 | 20 | 0.7392 | 0.06299 | 0.7425 | Assigned | Median |
| **Nd** | 3.146 | 0.086 | 1 | 0.2117 | 0.4061 | 22 | 3.189 | 0.2542 | 3.191 | Assigned | Mode |
| **Ni** | 1.808 | 0.0578 | 1 | 0.1322 | 0.4371 | 17 | 2.052 | 0.4562 | 1.911 | Provisional | Mode |
| **Pb** | 2.84 | 0.06715 | 1 | 0.1941 | 0.3459 | 21 | 2.772 | 0.3292 | 2.84 | Assigned | Median |
| **Pr** | 0.8035 | 0.01674 | 1 | 0.06642 | 0.252 | 22 | 0.8055 | 0.07028 | 0.8035 | Assigned | Median |
| **Rb** | 11.51 | 0.2746 | 1 | 0.6374 | 0.4307 | 18 | 11.51 | 1.165 | 11.58 | Assigned | Robust Mean |
| **Sb** | 0.2115 | 0.01786 | 1 | 0.02137 | 0.8358 | 12 | 0.2173 | 0.04792 | 0.2115 | Provisional | Median |
| **Sc** | 0.72 | 0.00603 | 1 | 0.06051 | 0.09966 | 16 | 0.8971 | 0.2654 | 0.7583 | Provisional | Mode |
| **Sm** | 0.6232 | 0.01084 | 1 | 0.05353 | 0.2026 | 20 | 0.6232 | 0.04849 | 0.6225 | Assigned | Robust Mean |
| **Sn** | 0.6339 | 0.0348 | 1 | 0.0543 | 0.6409 | 13 | 0.6339 | 0.1255 | 0.6205 | Provisional | Robust Mean |
| **Sr** | 1053 | 16.05 | 1 | 29.55 | 0.543 | 22 | 1044 | 74.16 | 1053 | Assigned | Median |
| **Ta** | 0.075 | 0.002483 | 1 | 0.008859 | 0.2803 | 14 | 0.07263 | 0.008513 | 0.075 | Assigned | Median |
| **Tb** | 0.08077 | 0.001419 | 1 | 0.009434 | 0.1505 | 19 | 0.08077 | 0.006187 | 0.0805 | Assigned | Robust Mean |
| **Th** | 0.6574 | 0.01517 | 1 | 0.05601 | 0.2709 | 19 | 0.6574 | 0.06615 | 0.66 | Assigned | Robust Mean |
| **Tl** | 0.08245 | 0.00531 | 1 | 0.0096 | 0.5531 | 7 | 0.08245 | 0.01405 | 0.088 | Provisional | Robust Mean |
| **Tm** | 0.03998 | 0.0008467 | 1 | 0.005191 | 0.1631 | 19 | 0.03998 | 0.003691 | 0.04 | Assigned | Robust Mean |
| **U** | 0.688 | 0.07121 | 1 | 0.05821 | 1.223 | 17 | 0.7155 | 0.2022 | 0.688 | Provisional | Median |
| **V** | 5.593 | 0.138 | 1 | 0.3452 | 0.3997 | 19 | 5.443 | 0.4735 | 5.482 | Assigned | Mode |
| **W** | 0.7915 | 0.03125 | 1 | 0.06557 | 0.4766 | 7 | 0.7569 | 0.0872 | 0.7915 | Provisional | Median |
| **Y** | 3.263 | 0.06732 | 1 | 0.2185 | 0.3082 | 22 | 3.263 | 0.3158 | 3.245 | Assigned | Robust Mean |
| **Yb** | 0.2628 | 0.005557 | 1 | 0.0257 | 0.2162 | 20 | 0.2628 | 0.02485 | 0.259 | Assigned | Robust Mean |
| **Zn** | 6.73 | 0.579 | 1 | 0.404 | 1.433 | 20 | 6.33 | 1.017 | 6.455 | Provisional | Mode |
| **Zr** | 13.49 | 0.4683 | 1 | 0.7295 | 0.642 | 19 | 13.49 | 2.041 | 13.8 | Provisional | Robust Mean |

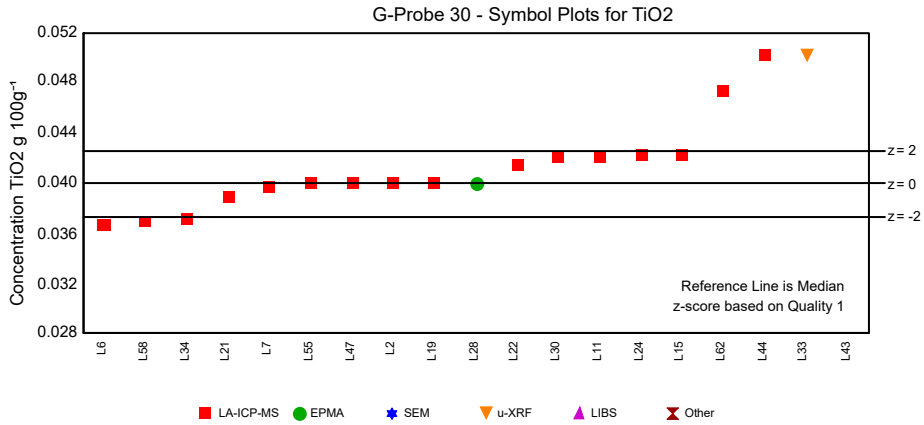
**Table 3 - G-Probe 30 Z-scores for Limestone, KCLs-1NP Pellet. 18/12/2024**

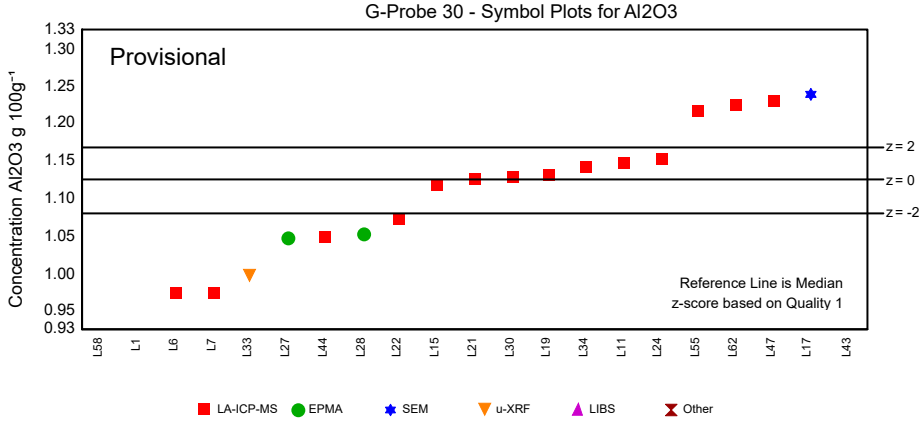
| Lab Code | L1 | L2 | L6 | L7 | L11 | L15 | L17 | L19 | L20 | L21 | L22 | L24 | L27 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SiO2: 1 | * | * | -10.66 | -4.38 | * | -1.93 | -3.68 | * | * | -0.52 | 0.90 | 0.09 | 1.47 |
| TiO2: 1 | * | 0.00 | -2.50 | -0.15 | 1.54 | 1.77 | * | 0.00 | * | -0.77 | 1.16 | 1.69 | * |
| Al2O3: 1 | -10.22 | * | -6.87 | -6.87 | 0.95 | -0.27 | 5.15 | 0.32 | * | 0.00 | -2.33 | 1.28 | -3.44 |
| Fe2O3T: 1 | * | -2.18 | -5.13 | -6.83 | 3.95 | -2.06 | -14.45 | -2.18 | * | 5.42 | 1.13 | 3.21 | * |
| MgO: 1 | -9.75 | * | -4.68 | -3.76 | 5.77 | 6.61 | 4.22 | -3.44 | * | 3.82 | 2.08 | 5.99 | -0.57 |
| CaO: 1 | * | * | -9.76 | -11.47 | 0.71 | -1.83 | -22.95 | -1.61 | * | 0.73 | -0.30 | 7.30 | 0.17 |
| Na2O: 1 | -3.00 | * | -2.73 | -1.97 | 0.85 | 3.79 | 5.26 | 0.12 | * | 1.22 | -1.53 | 5.72 | * |
| K2O: 1 | * | * | -3.22 | -3.17 | * | 8.97 | -7.04 | 0.78 | * | 0.96 | -0.06 | 4.48 | * |
| P2O5: 1 | * | * | * | 4.30 | -0.07 | 3.81 | * | 1.06 | * | * | -1.65 | * | * |
| As: 1 | * | * | * | -0.71 | -0.40 | 2.92 | * | * | * | * | -1.03 | * | * |
| Ba: 1 | -3.30 | -0.51 | -2.01 | -2.17 | 0.53 | 0.13 | * | -0.38 | 1.43 | -0.07 | 0.84 | 0.98 | * |
| Be: 1 | * | 0.38 | * | 0.01 | * | * | * | -0.24 | 1.45 | * | 0.74 | * | * |
| Bi: 1 | * | * | * | -0.68 | 0.71 | 0.06 | * | * | * | * | 0.32 | * | * |
| Ce: 1 | -3.40 | -0.25 | -1.39 | -1.68 | 1.14 | -0.36 | * | 0.30 | 1.51 | 0.03 | -0.40 | 0.76 | * |
| Co: 1 | * | * | -1.25 | -0.97 | * | -0.01 | * | 4.42 | 5.72 | 1.12 | 0.01 | * | * |
| Cs: 1 | * | -0.10 | -1.51 | -1.10 | 0.10 | 1.35 | * | -0.69 | 0.26 | 0.46 | 0.16 | 1.75 | * |
| Cu: 1 | -1.74 | 2.15 | -1.35 | -0.48 | 1.03 | 0.57 | * | 3.47 | -0.45 | 1.79 | 1.36 | * | * |
| Dy: 1 | * | -0.14 | -0.73 | -1.14 | 0.67 | -0.38 | * | -0.02 | 2.82 | 0.70 | 0.32 | 0.77 | * |
| Er: 1 | * | -0.66 | -0.14 | -0.99 | 0.57 | -0.25 | * | 0.70 | 2.96 | 0.62 | 0.60 | 1.02 | * |
| Eu: 1 | * | 0.17 | -1.35 | -1.10 | 0.51 | -0.44 | * | -0.10 | 3.05 | 0.17 | -0.24 | 1.25 | * |
| Ga: 1 | -1.78 | * | -1.31 | -1.03 | 0.45 | 0.28 | * | -0.11 | -0.36 | 0.18 | 0.62 | * | * |
| Gd: 1 | * | 0.10 | -0.33 | -1.35 | 0.22 | -0.90 | * | -0.25 | 2.41 | 0.45 | -0.17 | 2.03 | * |
| Ge: 1 | * | * | * | -1.25 | * | -0.90 | * | -0.52 | * | * | 0.70 | * | * |
| Hf: 1 | * | 0.01 | * | -1.40 | 0.52 | 0.28 | * | 0.39 | 3.86 | 0.01 | 2.14 | -1.15 | * |
| Ho: 1 | * | -0.32 | -0.10 | -0.96 | 0.64 | -0.14 | * | 0.30 | * | 0.03 | 0.52 | 0.57 | * |
| La: 1 | -3.10 | -0.04 | -1.42 | -1.69 | 1.37 | -0.43 | * | 0.30 | 3.33 | 0.05 | -0.04 | 0.75 | * |
| Li: 1 | -1.66 | * | -3.22 | -2.20 | -0.70 | 0.48 | * | -0.83 | 0.58 | 0.32 | * | * | * |
| Lu: 1 | * | 0.06 | -0.71 | -1.00 | 0.36 | -0.32 | * | 0.45 | 2.58 | 0.06 | 0.65 | 0.26 | * |
| Mn: 1 | -4.60 | 0.12 | -2.31 | -1.78 | 0.52 | 0.27 | * | -0.23 | * | 1.87 | -1.16 | 3.47 | * |
| Mo: 1 | * | * | * | 1.19 | * | 0.00 | * | * | * | -1.72 | 0.16 | * | * |
| Nb: 1 | * | -1.01 | -0.09 | -0.51 | 1.31 | -0.07 | * | 0.73 | -0.12 | 0.44 | 0.68 | 0.12 | * |
| Nd: 1 | -2.81 | 0.35 | -0.74 | -1.25 | 1.32 | -0.12 | * | -0.16 | 4.18 | 0.82 | 0.39 | 1.30 | * |
| Ni: 1 | -0.28 | * | -0.93 | -0.79 | * | -0.06 | * | 2.34 | 9.97 | 0.47 | 0.23 | * | * |
| Pb: 1 | -3.04 | -0.36 | -1.73 | -2.00 | 0.85 | 0.72 | * | -0.31 | 3.13 | 0.93 | 0.04 | 2.03 | * |
| Pr: 1 | -2.01 | -0.65 | -0.65 | -1.30 | 0.79 | -0.29 | * | 0.04 | 1.82 | 0.25 | -0.29 | 0.40 | * |
| Rb: 1 | * | 0.45 | -2.45 | -1.92 | -0.22 | 1.25 | * | -0.71 | 1.16 | -0.27 | -0.08 | 1.25 | * |
| Sb: 1 | * | * | * | -0.96 | 1.55 | 1.01 | * | * | 0.07 | * | 3.58 | * | * |
| Sc: 1 | * | * | -1.24 | * | 3.40 | 0.03 | * | 5.77 | * | 0.33 | 0.93 | * | * |
| Sm: 1 | * | 0.03 | -0.34 | -1.21 | 0.76 | -0.40 | * | -0.36 | 2.46 | 0.87 | 0.33 | 0.56 | * |
| Sn: 1 | 9.32 | * | * | -1.05 | 0.78 | 0.61 | * | * | -0.91 | * | -0.25 | * | * |
| Sr: 1 | -5.08 | -1.43 | -4.05 | -4.37 | -0.63 | 0.91 | * | -1.63 | 3.75 | 1.06 | 0.01 | 0.81 | * |
| Ta: 1 | * | -1.24 | -0.34 | -0.84 | 0.53 | -0.45 | * | 0.68 | * | * | 0.45 | 0.34 | * |
| Tb: 1 | * | 0.24 | -0.51 | -0.74 | 0.83 | 0.02 | * | 0.24 | 3.16 | -0.08 | -0.03 | 0.55 | * |
| Th: 1 | -1.74 | -0.13 | -0.67 | -1.47 | 0.81 | -0.24 | * | 0.81 | 3.69 | 0.23 | 1.78 | 0.73 | * |
| Tl: 1 | * | * | * | -1.90 | 1.56 | 0.58 | * | * | * | * | 1.31 | * | * |
| Tm: 1 | * | -0.57 | 0.77 | -1.06 | 0.29 | -0.38 | * | 0.39 | 2.62 | 0.00 | 0.29 | 0.39 | * |
| U: 1 | -1.17 | * | * | -1.12 | * | 3.25 | * | 7.92 | 3.18 | -2.71 | 3.63 | -3.44 | * |
| V: 1 | * | * | -2.93 | -1.45 | 0.50 | -0.85 | * | -0.32 | * | 0.22 | -0.39 | 0.22 | * |
| W: 1 | * | * | * | -1.92 | 0.00 | -0.68 | * | * | * | * | 0.31 | 0.98 | * |
| Y: 1 | -4.23 | -0.84 | -0.29 | -0.88 | 1.02 | -0.29 | * | 0.15 | 1.39 | 0.67 | 0.62 | 2.13 | * |
| Yb: 1 | * | 0.40 | -0.61 | -1.03 | 0.74 | -0.26 | * | -0.03 | 3.07 | 0.67 | 0.51 | 1.49 | * |
| Zn: 1 | -1.34 | * | -4.49 | -5.58 | 2.39 | 1.41 | * | 0.96 | -1.96 | 1.04 | -1.63 | 0.84 | * |
| Zr: 1 | * | 0.42 | * | -0.91 | * | 0.56 | * | 1.02 | 1.65 | -2.83 | 3.86 | -2.46 | * |

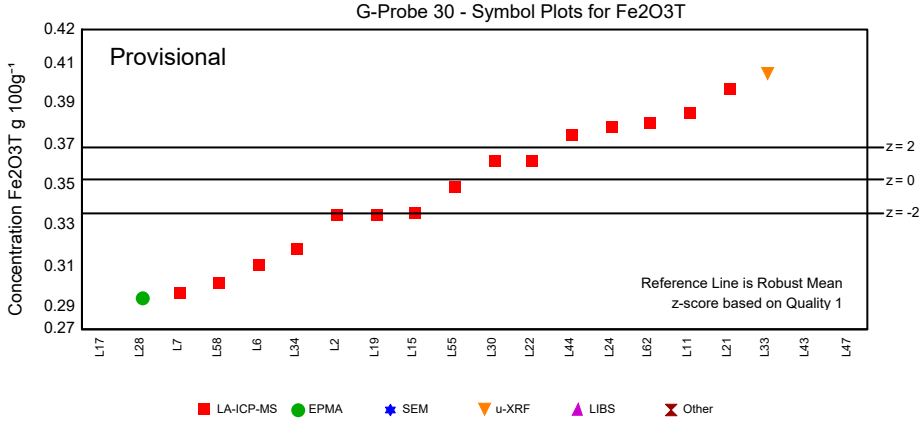
**Table 3 - G-Probe 30 Z-scores for Limestone, KCLs-1NP Pellet. 18/12/2024**

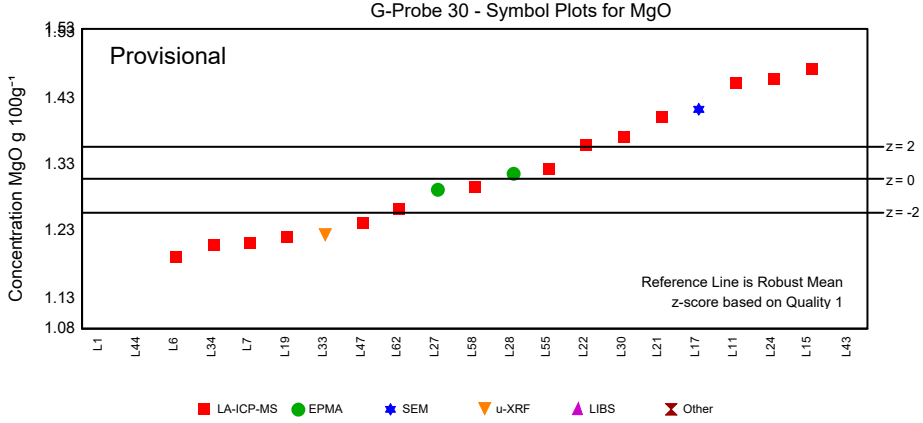
| Lab Code | L28 | L30 | L33 | L34 | L43 | L44 | L45 | L47 | L55 | L58 | L62 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SiO2: 1 | -3.58 | 1.95 | 1.47 | 0.73 | 39.90 | -27.16 | * | -23.47 | 8.76 | -22.64 | -0.09 |
| TiO2: 1 | 0.00 | 1.54 | 7.70 | -2.16 | 23.10 | 7.70 | * | 0.00 | -0.02 | -2.31 | 5.62 |
| Al2O3: 1 | -3.21 | 0.18 | -5.70 | 0.81 | 29.56 | -3.44 | * | 4.70 | 4.17 | -19.08 | 4.48 |
| Fe2O3T: 1 | -7.09 | 1.13 | 6.40 | -4.23 | 27.25 | 2.72 | * | 49.33 | -0.41 | -6.23 | 3.44 |
| MgO: 1 | 0.43 | 2.54 | -3.36 | -3.96 | 42.52 | -9.35 | * | -2.57 | 0.65 | -0.45 | -1.78 |
| CaO: 1 | -0.17 | 0.73 | -0.50 | 0.44 | 59.88 | 0.73 | * | * | * | -1.94 | 1.05 |
| Na2O: 1 | -0.25 | 5.44 | -12.18 | -0.12 | 31.87 | -1.17 | * | -3.00 | 0.29 | -13.28 | 2.27 |
| K2O: 1 | -2.39 | 14.74 | -4.25 | 0.05 | 29.26 | * | * | -37.75 | 3.82 | -10.02 | * |
| P2O5: 1 | 1.06 | -16.64 | -8.77 | 0.65 | 20.72 | * | * | -3.37 | -10.02 | -5.33 | 0.07 |
| As: 1 | 168.06 | 18.88 | 6.66 | 0.41 | * | * | * | 10.56 | 0.70 | -6.16 | * |
| Ba: 1 | 5.87 | 0.00 | -1.90 | -0.39 | 17.42 | -0.78 | -1.54 | -0.60 | 0.12 | 2.44 | 1.41 |
| Be: 1 | 0.58 | -0.38 | -0.45 | * | * | 0.58 | -2.40 | -1.21 | * | * | * |
| Bi: 1 | 0.06 | * | * | * | * | * | * | * | * | -0.47 | * |
| Ce: 1 | 2.75 | 0.50 | 2.59 | -1.47 | 11.57 | -1.34 | -2.62 | -0.92 | 0.21 | 1.56 | -0.03 |
| Co: 1 | -0.46 | 0.68 | 3.33 | 0.59 | * | * | 4.67 | 27.00 | 0.45 | -6.45 | * |
| Cs: 1 | 0.59 | 1.05 | -0.23 | -0.69 | * | * | -3.89 | * | * | -2.33 | * |
| Cu: 1 | 2.64 | -1.25 | -10.00 | -0.33 | * | * | -3.32 | -0.04 | 1.10 | -1.95 | * |
| Dy: 1 | 0.93 | -0.54 | -2.03 | -0.65 | 6.79 | 0.25 | -1.78 | 0.25 | 0.24 | -0.52 | * |
| Er: 1 | 0.44 | -0.66 | -2.96 | -1.20 | 7.57 | 0.26 | -1.93 | -0.11 | 0.27 | -0.47 | * |
| Eu: 1 | 0.17 | * | 0.30 | -0.69 | 5.57 | -0.51 | -1.85 | 0.17 | -0.06 | 0.51 | -0.11 |
| Ga: 1 | 1.82 | 1.02 | -0.66 | -0.73 | * | 2.89 | * | * | * | -2.43 | 1.62 |
| Gd: 1 | 0.16 | -0.33 | 0.14 | -1.08 | 8.32 | 1.04 | -1.90 | 0.65 | -0.10 | -0.63 | * |
| Ge: 1 | 0.46 | -6.95 | * | 0.90 | * | * | * | 5.25 | * | -4.16 | * |
| Hf: 1 | -0.28 | -0.86 | -6.45 | -1.78 | 7.29 | 0.60 | -0.86 | * | * | 0.22 | * |
| Ho: 1 | 0.03 | * | -2.36 | -0.55 | 5.36 | 0.92 | -1.74 | 0.03 | 0.28 | -0.23 | * |
| La: 1 | 1.90 | 0.09 | -0.47 | -0.89 | 10.79 | 0.13 | -2.15 | -0.34 | 0.33 | 0.50 | -0.08 |
| Li: 1 | 1.10 | 0.34 | 0.60 | -0.77 | * | -1.96 | -5.58 | -0.93 | 0.42 | * | 0.77 |
| Lu: 1 | 0.06 | -0.58 | 0.45 | -1.29 | 3.94 | 0.06 | -1.88 | 0.06 | 0.06 | 0.06 | * |
| Mn: 1 | 6.59 | 2.16 | 5.15 | -0.20 | * | -1.10 | -3.99 | -0.34 | 1.53 | -3.54 | 0.71 |
| Mo: 1 | 2.19 | * | * | -2.24 | * | * | * | * | * | -1.10 | * |
| Nb: 1 | 1.89 | 0.19 | 0.07 | -0.74 | 9.30 | 0.12 | -2.78 | -1.01 | * | -3.03 | -0.96 |
| Nd: 1 | 2.64 | 0.26 | 0.82 | -0.80 | 10.03 | 0.30 | -1.92 | -0.26 | 0.17 | -0.45 | -0.31 |
| Ni: 1 | 0.93 | 4.40 | 6.22 | 6.02 | * | 1.91 | -3.08 | 7.35 | 0.78 | -0.75 | * |
| Pb: 1 | 1.31 | 0.10 | 0.00 | -0.45 | * | -1.85 | -3.50 | -0.77 | 0.17 | -3.94 | 0.42 |
| Pr: 1 | 0.62 | 0.25 | 2.58 | -1.14 | 8.38 | -0.05 | -1.56 | -0.20 | 0.11 | 1.06 | -0.04 |
| Rb: 1 | 2.57 | 1.10 | 0.30 | -0.65 | 11.43 | * | -4.93 | * | 0.95 | -3.81 | * |
| Sb: 1 | 2.74 | -2.41 | 2.55 | -0.33 | * | -0.07 | -2.88 | * | * | -1.57 | * |
| Sc: 1 | 1.57 | 0.17 | 21.32 | * | 7.44 | 10.41 | 0.17 | 62.97 | -0.28 | 0.10 | -0.08 |
| Sm: 1 | 0.87 | -0.06 | 0.28 | -0.75 | 8.16 | -0.99 | -1.93 | -0.06 | 0.18 | -1.07 | * |
| Sn: 1 | 4.07 | 1.49 | 1.05 | -1.37 | * | -0.81 | -3.02 | * | * | -3.50 | * |
| Sr: 1 | 1.40 | -0.01 | 0.60 | -0.64 | 23.00 | 1.92 | -4.10 | -1.43 | 1.34 | 1.18 | -0.71 |
| Ta: 1 | 0.56 | * | -3.16 | -0.95 | * | 0.56 | -1.69 | * | * | 0.34 | * |
| Tb: 1 | -0.08 | * | -1.99 | -0.66 | 5.22 | -0.08 | -1.14 | -0.08 | 0.36 | 0.02 | * |
| Th: 1 | 1.30 | 0.31 | -1.33 | -0.85 | * | 0.05 | -1.56 | 0.05 | * | 0.15 | * |
| Tl: 1 | 0.79 | * | * | -0.83 | * | * | * | * | * | -1.50 | * |
| Tm: 1 | 0.00 | * | -0.57 | -1.00 | 3.86 | 0.00 | -1.92 | 0.00 | 0.17 | 0.20 | * |
| U: 1 | 1.75 | 6.05 | -3.49 | -10.92 | * | -0.48 | 1.92 | 0.89 | -0.81 | 0.00 | * |
| V: 1 | 1.73 | -0.22 | -0.76 | -1.64 | 9.00 | 0.31 | -6.50 | -0.50 | 0.29 | -5.03 | 0.56 |
| W: 1 | * | * | * | * | * | 0.13 | * | * | * | -3.97 | * |
| Y: 1 | 2.89 | -0.67 | -1.66 | -0.63 | 10.01 | 0.35 | -2.53 | 0.12 | 0.94 | -1.21 | -0.93 |
| Yb: 1 | 0.48 | -0.69 | -1.00 | -0.92 | 5.34 | -0.50 | -1.66 | -0.50 | 0.19 | -0.34 | * |
| Zn: 1 | -1.72 | 0.00 | 1.41 | -0.82 | * | -2.00 | -6.09 | -0.54 | -0.12 | -7.68 | 1.09 |
| Zr: 1 | 3.71 | -1.65 | -5.68 | -3.48 | 12.62 | 1.52 | -2.59 | 1.93 | -1.51 | -0.74 | 1.50 |

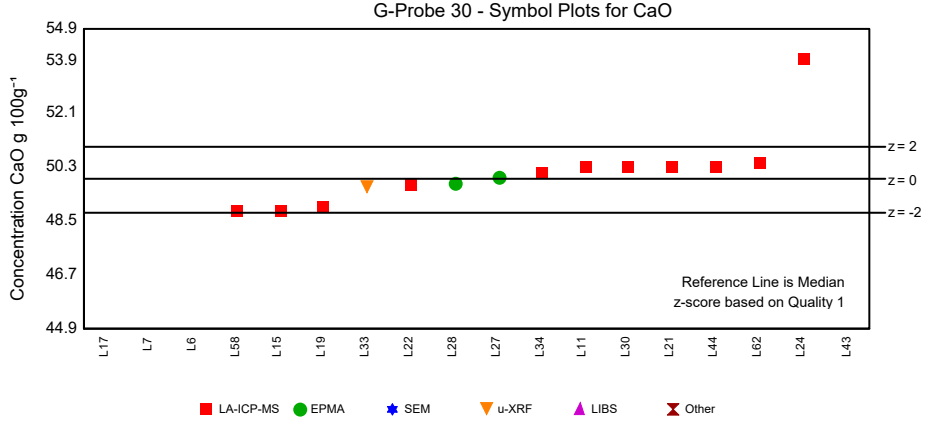

G-Probe 30 - Symbol Plots for SiO2
Provisional
Concentration SiO2 g 100g⁻¹
7.8
7.7
7.3
6.9
6.5
6.1
6.0
z = 2
z = 0
z = -2
Reference Line is Mode
z-score based on Quality 1
L44 L47 L58 L6 L7 L17 L28 L15 L21 L62 L24 L34 L22 L27 L33 L30 L55 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

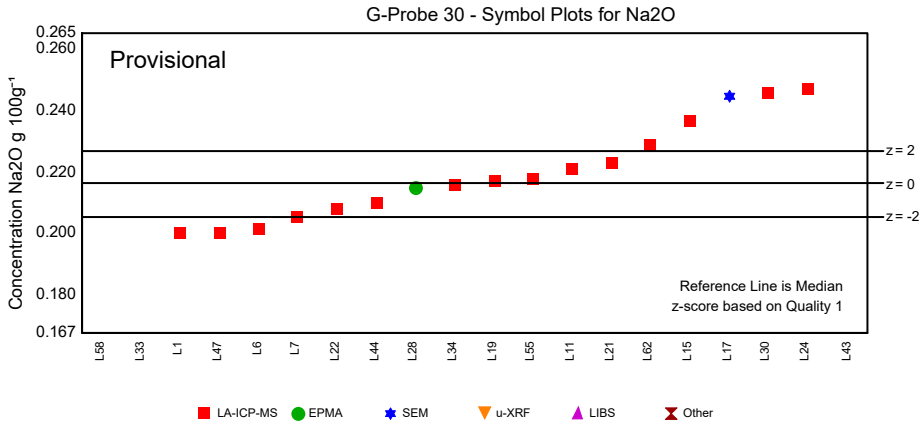

G-Probe 30 - Symbol Plots for TiO2
Concentration TiO2 g 100g⁻¹
0.052
0.048
0.044
0.040
0.036
0.032
0.028
z = 2
z = 0
z = -2
Reference Line is Median
z-score based on Quality 1
L6 L58 L34 L21 L7 L55 L47 L2 L19 L28 L22 L30 L11 L24 L15 L62 L44 L33 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

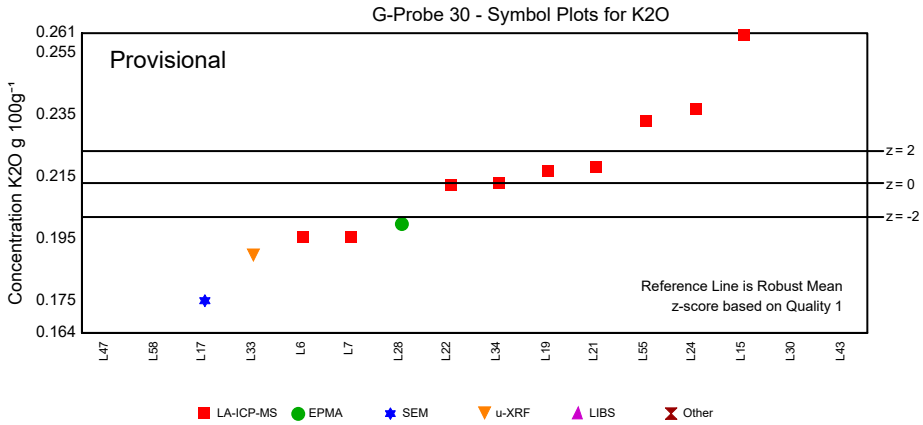

G-Probe 30 - Symbol Plots for Al2O3
Provisional
Concentration Al2O3 g 100g⁻¹
1.33
1.30
1.25
1.20
1.15
1.10
1.05
1.00
0.95
0.93
z = 2
z = 0
z = -2
Reference Line is Median
z-score based on Quality 1
L58 L1 L6 L7 L33 L27 L44 L28 L22 L15 L21 L30 L19 L34 L11 L24 L55 L62 L47 L17 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

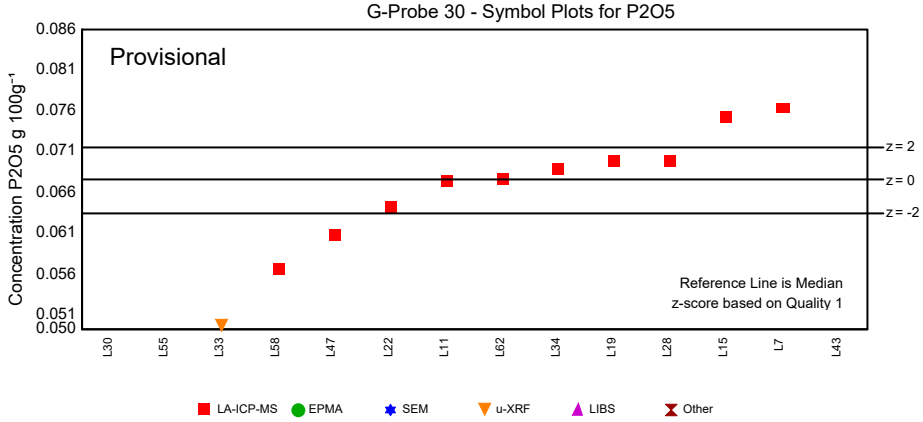

G-Probe 30 - Symbol Plots for Fe2O3T
Provisional
Concentration Fe2O3T g 100g⁻¹
0.42
0.41
0.39
0.37
0.35
0.33
0.31
0.29
0.27
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L17 L28 L7 L58 L6 L34 L2 L19 L15 L55 L30 L22 L44 L24 L62 L11 L21 L33 L43 L47
LA-ICP-MS EPMA SEM u-XRF LIBS Other

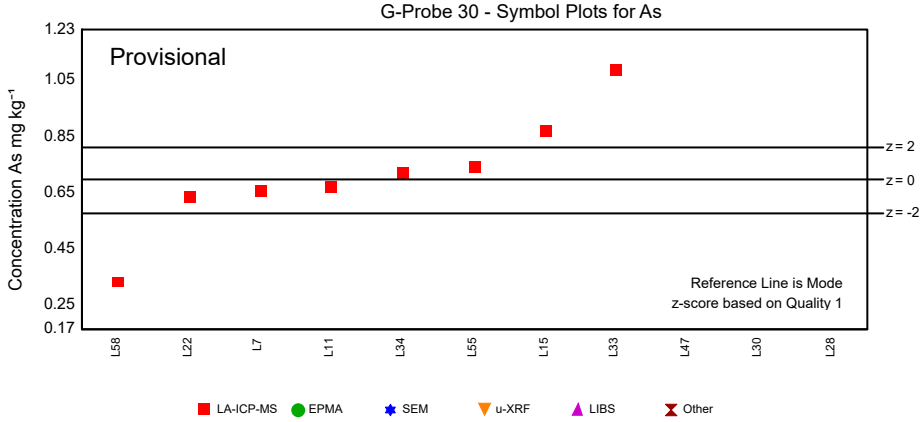

G-Probe 30 - Symbol Plots for MgO
Provisional
Concentration MgO g 100g⁻¹
1.43
1.33
1.23
1.13
1.08
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L1 L44 L6 L34 L7 L19 L33 L47 L62 L27 L58 L28 L55 L22 L30 L21 L17 L11 L24 L15 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

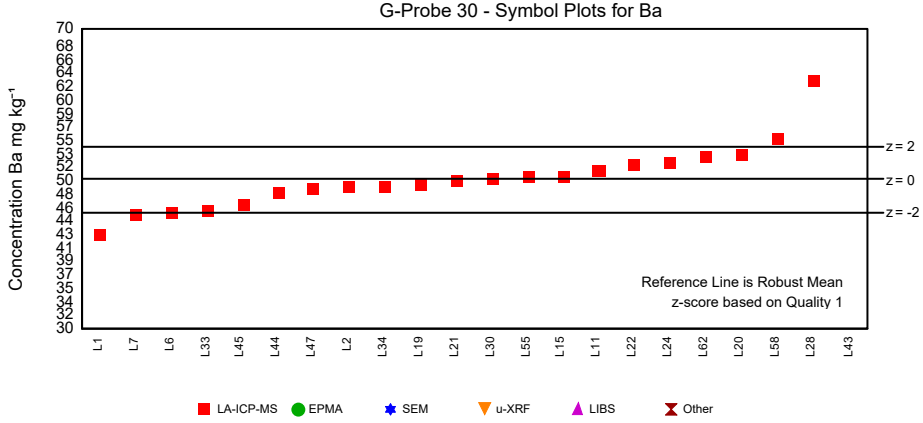

G-Probe 30 - Symbol Plots for CaO
Concentration CaO g 100g⁻¹
54.9
53.9
52.1
50.3
48.5
46.7
44.9
z = 2
z = 0
z = -2
Reference Line is Median
z-score based on Quality 1
L17 L7 L6 L58 L15 L19 L33 L22 L28 L27 L34 L11 L30 L21 L44 L62 L24 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

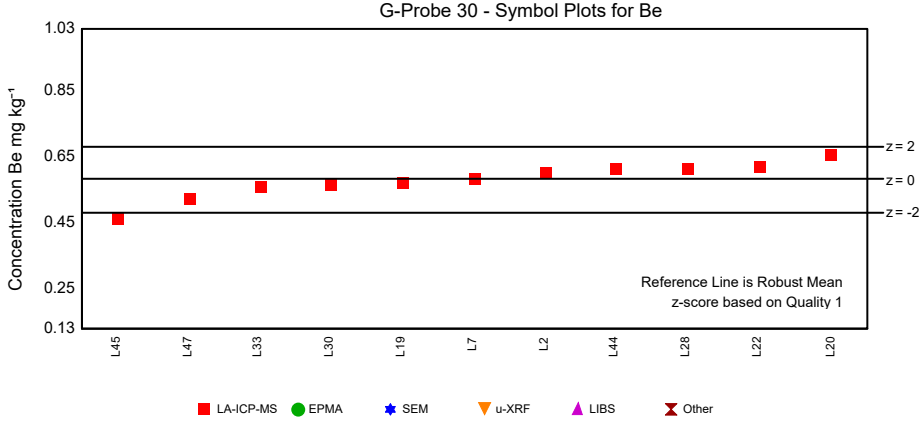

G-Probe 30 - Symbol Plots for Na2O
Provisional
Concentration Na2O g 100g⁻¹
0.265
0.260
0.240
0.220
0.200
0.180
0.167
z = 2
z = 0
z = -2
Reference Line is Median
z-score based on Quality 1
L58 L33 L1 L47 L6 L7 L22 L44 L28 L34 L19 L55 L11 L21 L62 L15 L17 L30 L24 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

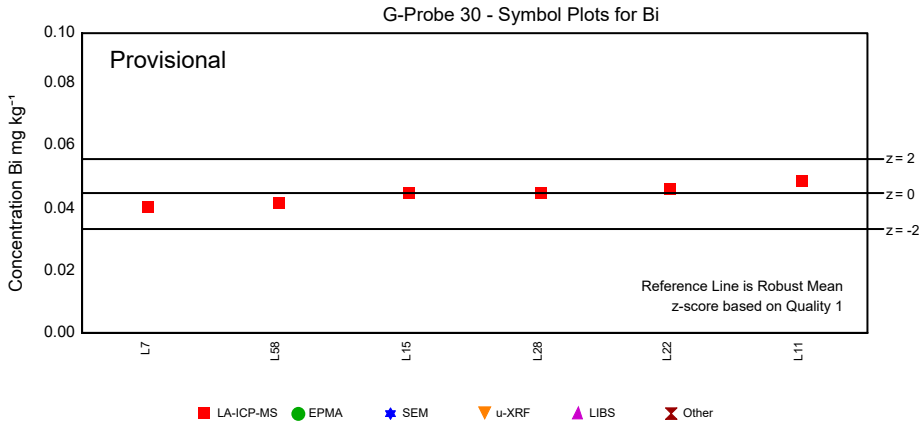

G-Probe 30 - Symbol Plots for K2O
Provisional
Concentration K2O g 100g⁻¹
0.261
0.255
0.235
0.215
0.195
0.175
0.164
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L47 L58 L17 L33 L6 L7 L28 L22 L34 L19 L21 L55 L24 L15 L30 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

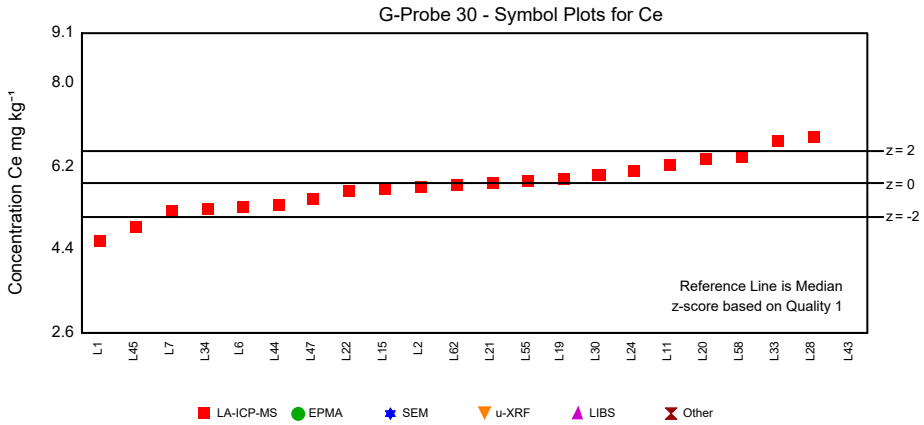

G-Probe 30 - Symbol Plots for P2O5
Provisional
Concentration P2O5 g 100g⁻¹
0.086
0.081
0.076
0.071
0.066
0.061
0.056
0.051
0.050
z = 2
z = 0
z = -2
Reference Line is Median
z-score based on Quality 1
L30 L55 L33 L58 L47 L22 L11 L62 L34 L19 L28 L15 L7 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

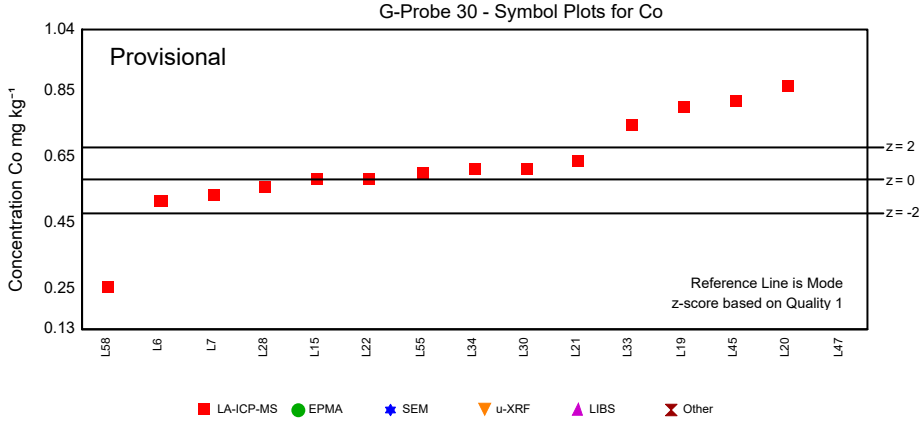

G-Probe 30 - Symbol Plots for As
Provisional
Concentration As mg kg⁻¹
1.23
1.05
0.85
0.65
0.45
0.25
0.17
z = 2
z = 0
z = -2
Reference Line is Mode
z-score based on Quality 1
L58 L22 L7 L11 L34 L55 L15 L33 L47 L30 L28
LA-ICP-MS EPMA SEM u-XRF LIBS Other

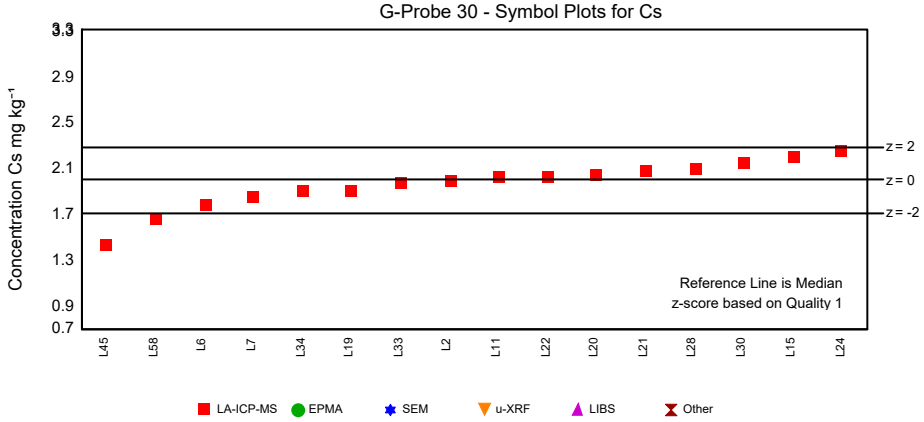

G-Probe 30 - Symbol Plots for Ba
Concentration Ba mg kg⁻¹
70
68
66
64
62
60
59
57
55
53
52
50
48
46
44
43
41
39
37
35
34
32
30
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L1 L7 L6 L33 L45 L44 L47 L2 L34 L19 L21 L30 L55 L15 L11 L22 L24 L62 L20 L58 L28 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

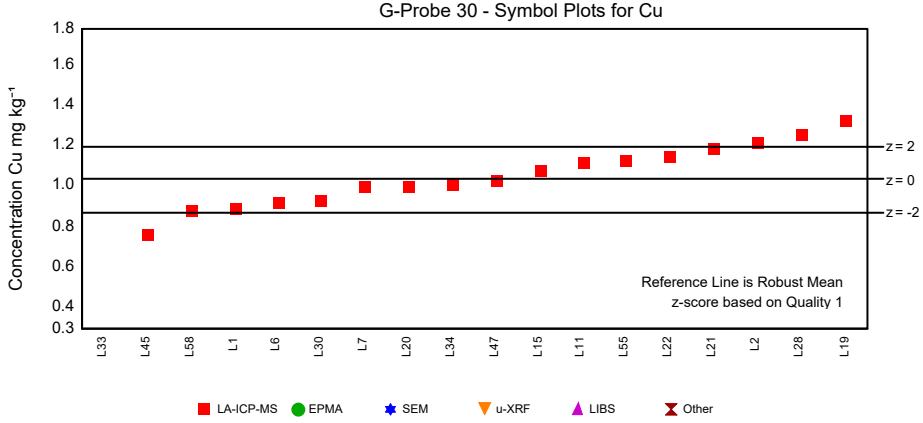

G-Probe 30 - Symbol Plots for Be
Concentration Be mg kg⁻¹
1.03
0.85
0.65
0.45
0.25
0.13
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L45 L47 L33 L30 L19 L7 L2 L44 L28 L22 L20
LA-ICP-MS EPMA SEM u-XRF LIBS Other

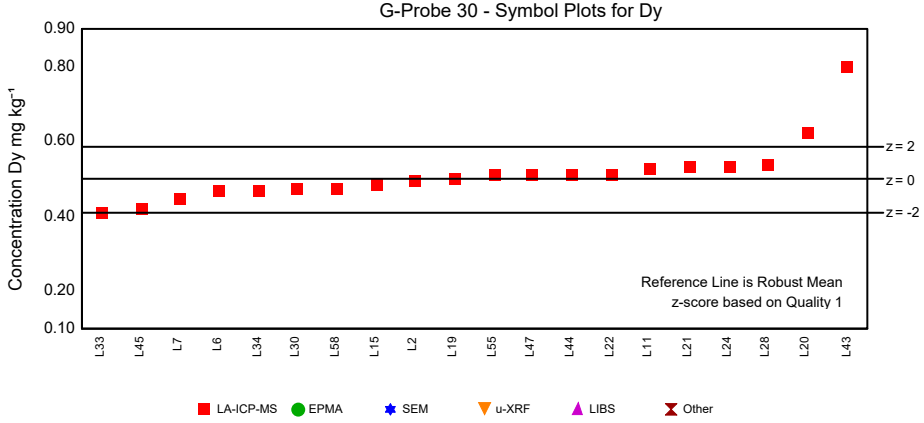

G-Probe 30 - Symbol Plots for Bi
Provisional
Concentration Bi mg kg⁻¹
0.10
0.08
0.06
0.04
0.02
0.00
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L7
L58
L15
L28
L22
L11
LA-ICP-MS
EPMA
SEM
u-XRF
LIBS
Other

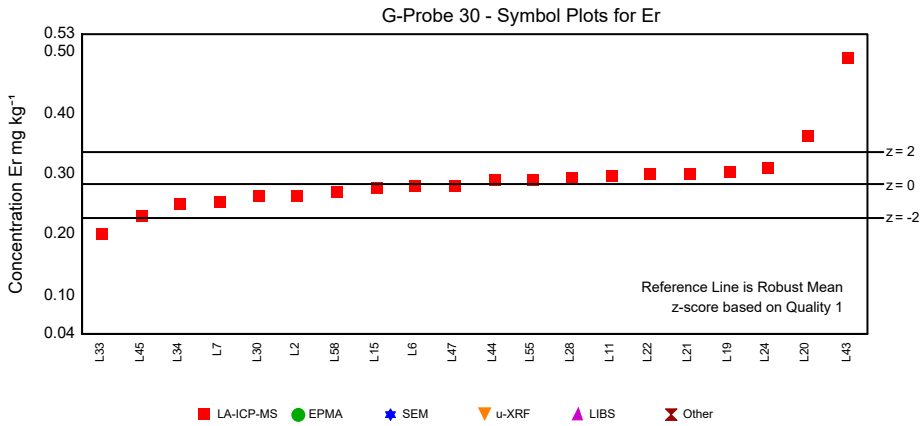

G-Probe 30 - Symbol Plots for Ce
Concentration Ce mg kg⁻¹
9.1
8.0
6.2
4.4
2.6
z = 2
z = 0
z = -2
Reference Line is Median
z-score based on Quality 1
L1
L45
L7
L34
L6
L44
L47
L22
L15
L2
L62
L21
L55
L19
L30
L24
L11
L20
L58
L33
L28
L43
LA-ICP-MS
EPMA
SEM
u-XRF
LIBS
Other

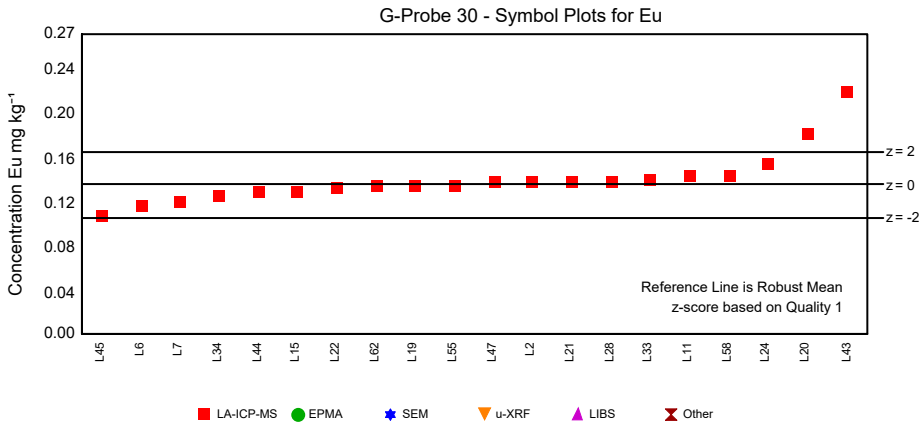

G-Probe 30 - Symbol Plots for Co
Provisional
Concentration Co mg kg⁻¹
1.04
0.85
0.65
0.45
0.25
0.13
z = 2
z = 0
z = -2
Reference Line is Mode
z-score based on Quality 1
L58
L6
L7
L28
L15
L22
L55
L34
L30
L21
L33
L19
L45
L20
L47
LA-ICP-MS
EPMA
SEM
u-XRF
LIBS
Other

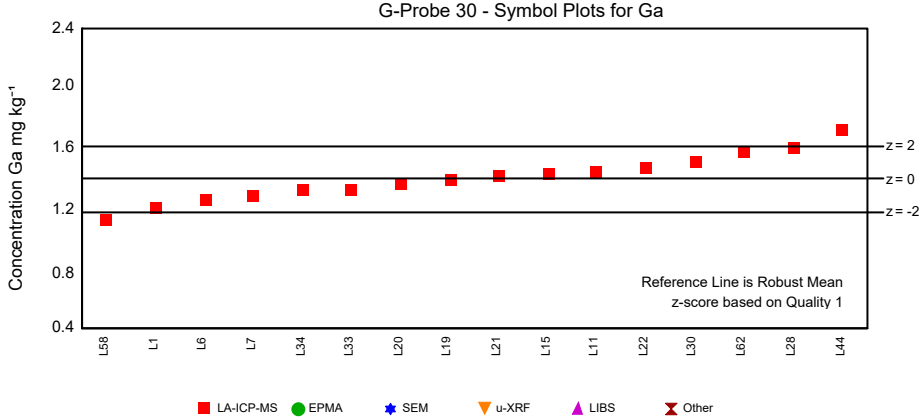

G-Probe 30 - Symbol Plots for Cs
Concentration Cs mg kg⁻¹
3.3
2.9
2.5
2.1
1.7
1.3
0.9
0.7
z = 2
z = 0
z = -2
Reference Line is Median
z-score based on Quality 1
L45
L58
L6
L7
L34
L19
L33
L2
L11
L22
L20
L21
L28
L30
L15
L24
LA-ICP-MS
EPMA
SEM
u-XRF
LIBS
Other

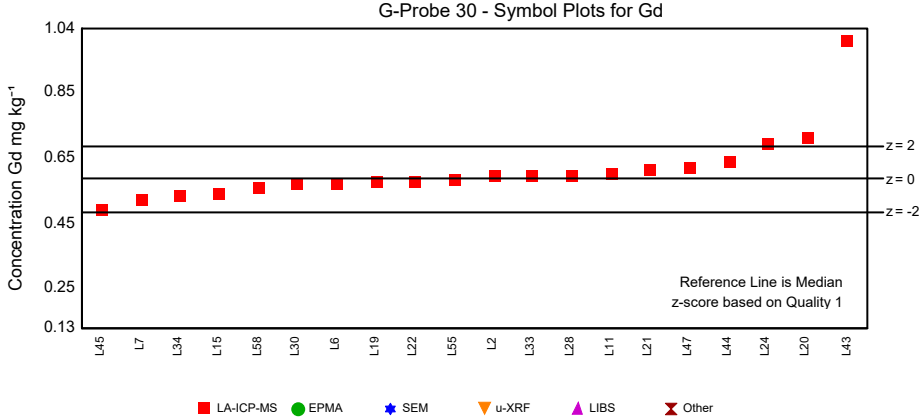

G-Probe 30 - Symbol Plots for Cu
Concentration Cu mg kg⁻¹
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.3
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L33
L45
L58
L1
L6
L30
L7
L20
L34
L47
L15
L11
L55
L22
L21
L2
L28
L19
LA-ICP-MS
EPMA
SEM
u-XRF
LIBS
Other

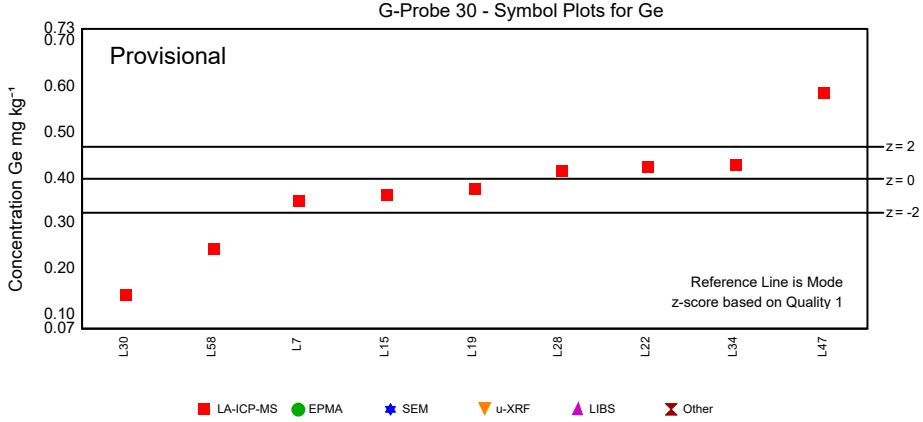

G-Probe 30 - Symbol Plots for Dy
Concentration Dy mg kg⁻¹
0.90
0.80
0.60
0.40
0.20
0.10
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L33
L45
L7
L6
L34
L30
L58
L15
L2
L19
L55
L47
L44
L22
L11
L21
L24
L28
L20
L43
LA-ICP-MS
EPMA
SEM
u-XRF
LIBS
Other

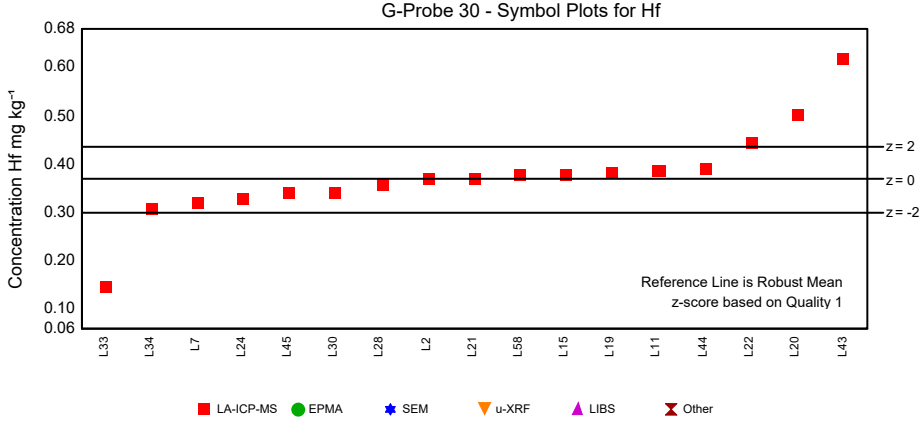

G-Probe 30 - Symbol Plots for Er
Concentration Er mg kg⁻¹
0.53
0.50
0.40
0.30
0.20
0.10
0.04
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L33 L45 L34 L7 L30 L2 L58 L15 L6 L47 L44 L55 L28 L11 L22 L21 L19 L24 L20 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

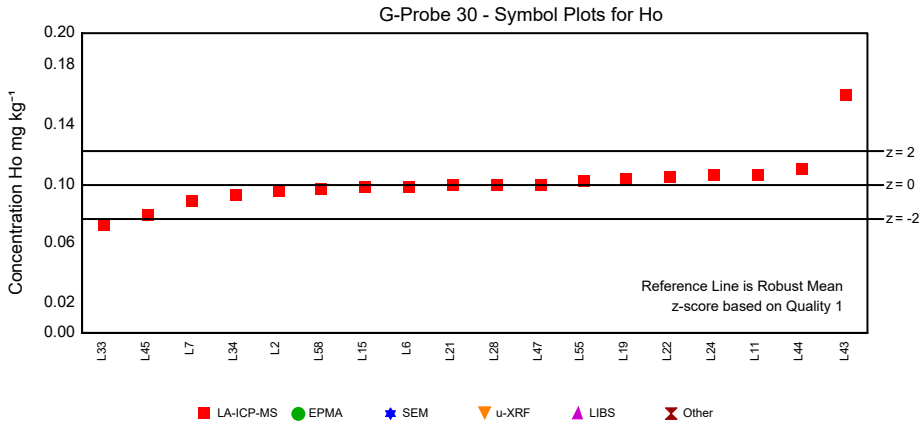

G-Probe 30 - Symbol Plots for Eu
Concentration Eu mg kg⁻¹
0.27
0.24
0.20
0.16
0.12
0.08
0.04
0.00
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L45 L6 L7 L34 L44 L15 L22 L62 L19 L55 L47 L2 L21 L28 L33 L11 L58 L24 L20 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

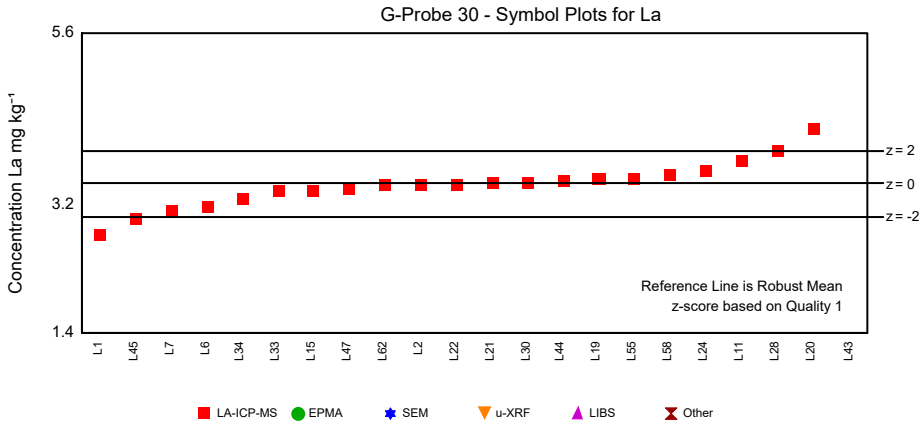

G-Probe 30 - Symbol Plots for Ga
Concentration Ga mg kg⁻¹
2.4
2.0
1.6
1.2
0.8
0.4
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L58 L1 L6 L7 L34 L33 L20 L19 L21 L15 L11 L22 L30 L62 L28 L44
LA-ICP-MS EPMA SEM u-XRF LIBS Other

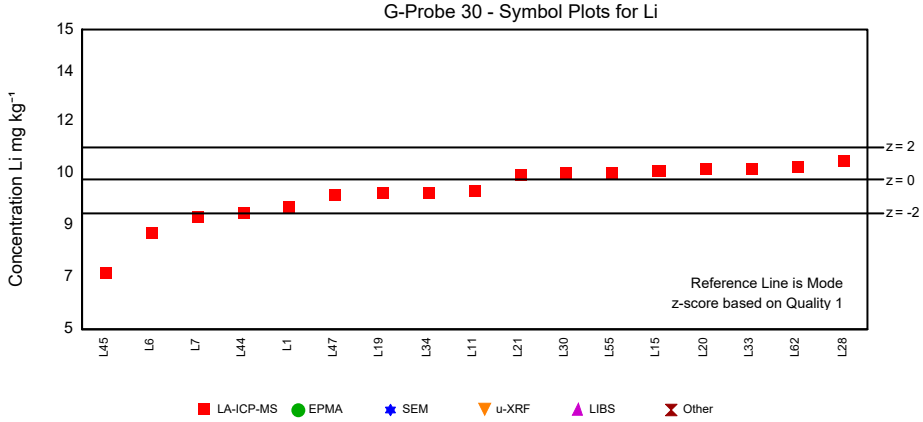

G-Probe 30 - Symbol Plots for Gd
Concentration Gd mg kg⁻¹
1.04
0.85
0.65
0.45
0.25
0.13
z = 2
z = 0
z = -2
Reference Line is Median
z-score based on Quality 1
L45 L7 L34 L15 L58 L30 L6 L19 L22 L55 L2 L33 L28 L11 L21 L47 L44 L24 L20 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

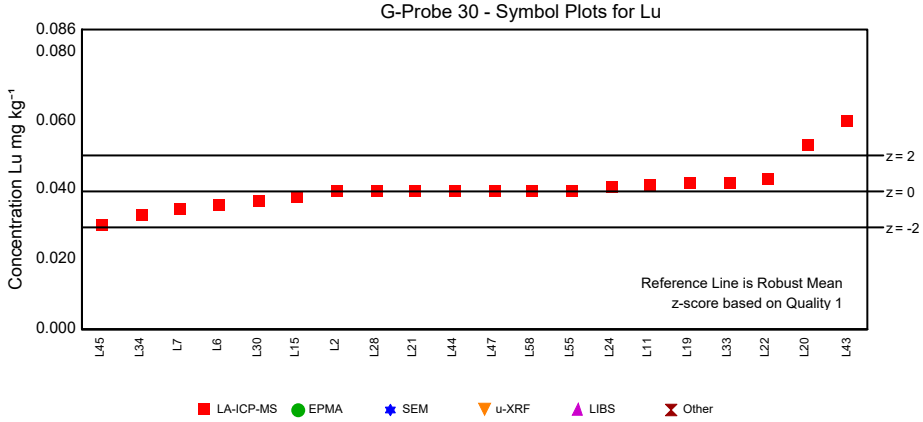

G-Probe 30 - Symbol Plots for Ge
Concentration Ge mg kg⁻¹
0.73
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.07
Provisional
z = 2
z = 0
z = -2
Reference Line is Mode
z-score based on Quality 1
L30 L58 L7 L15 L19 L28 L22 L34 L47
LA-ICP-MS EPMA SEM u-XRF LIBS Other

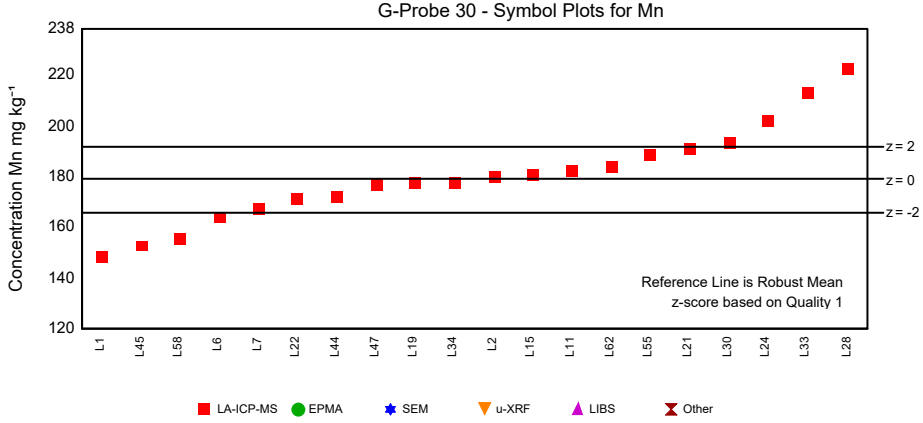

G-Probe 30 - Symbol Plots for Hf
Concentration Hf mg kg⁻¹
0.68
0.60
0.50
0.40
0.30
0.20
0.10
0.06
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L33 L34 L7 L24 L45 L30 L28 L2 L21 L58 L15 L19 L11 L44 L22 L20 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

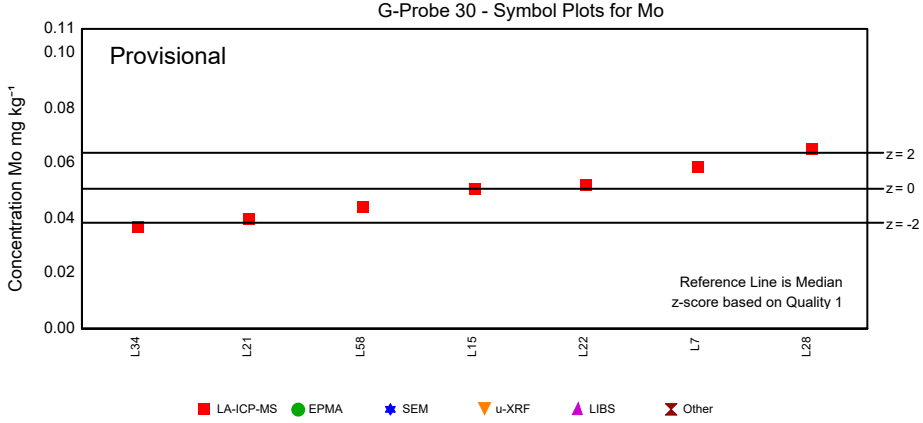

G-Probe 30 - Symbol Plots for Ho
Concentration Ho mg kg⁻¹
0.20
0.18
0.14
0.10
0.06
0.02
0.00
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L33 L45 L7 L34 L2 L58 L15 L6 L21 L28 L47 L55 L19 L22 L24 L11 L44 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

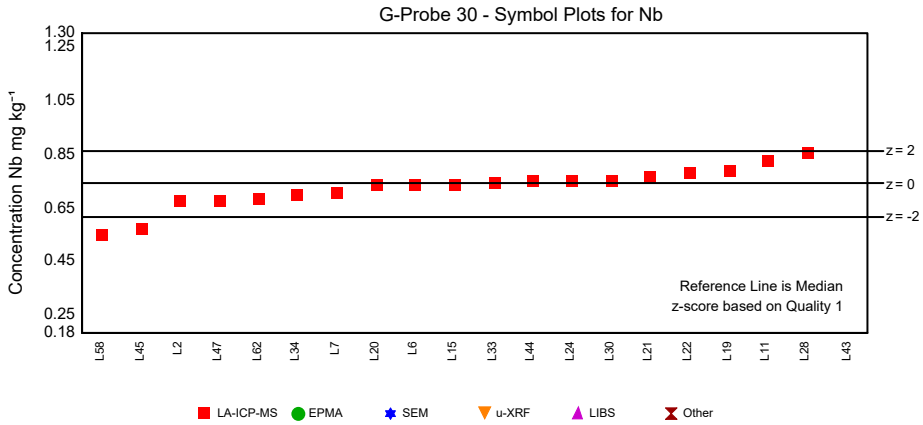

G-Probe 30 - Symbol Plots for La
Concentration La mg kg⁻¹
5.6
3.2
1.4
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L1 L45 L7 L6 L34 L33 L15 L47 L62 L2 L22 L21 L30 L44 L19 L55 L58 L24 L11 L28 L20 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

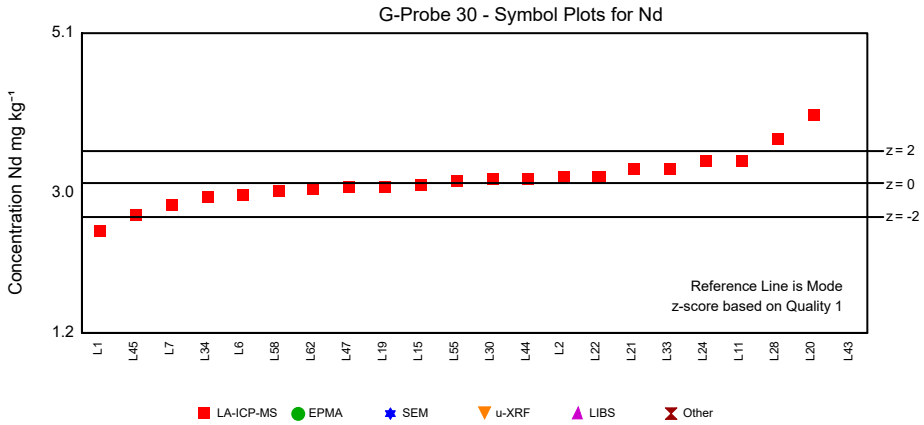

G-Probe 30 - Symbol Plots for Li
Concentration Li mg kg⁻¹
15
14
12
10
9
7
5
z = 2
z = 0
z = -2
Reference Line is Mode
z-score based on Quality 1
L45 L6 L7 L44 L1 L47 L19 L34 L11 L21 L30 L55 L15 L20 L33 L62 L28
LA-ICP-MS EPMA SEM u-XRF LIBS Other

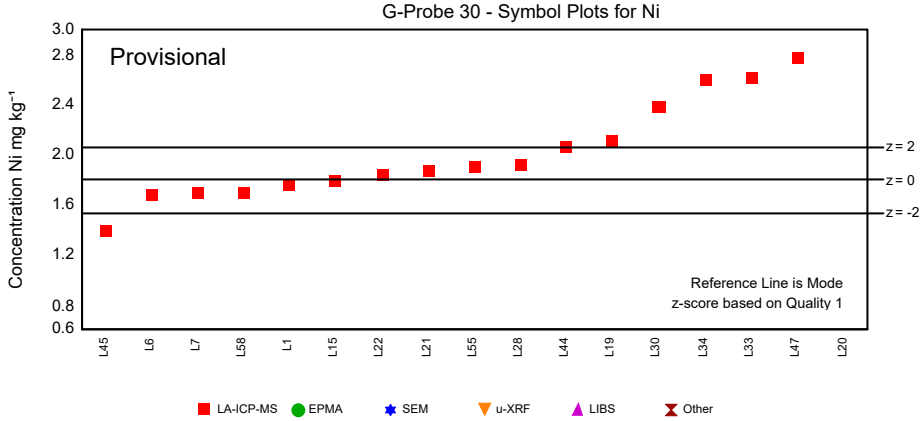

G-Probe 30 - Symbol Plots for Lu
Concentration Lu mg kg⁻¹
0.086
0.080
0.060
0.040
0.020
0.000
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L45 L34 L7 L6 L30 L15 L2 L28 L21 L44 L47 L58 L55 L24 L11 L19 L33 L22 L20 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

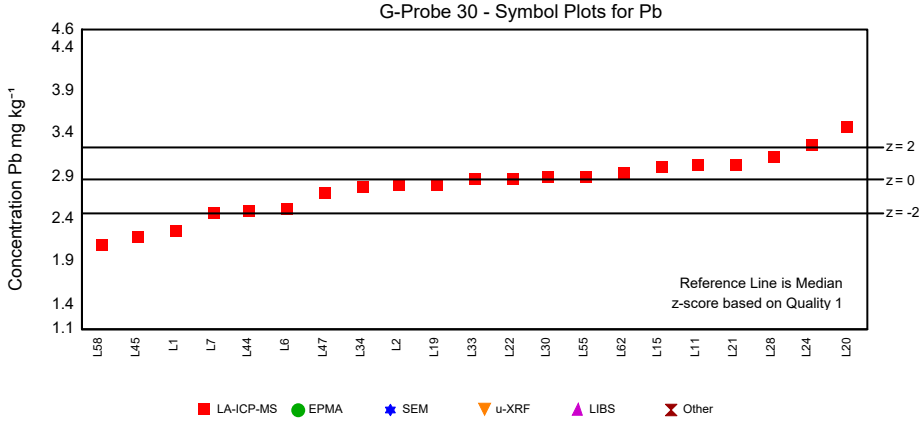

G-Probe 30 - Symbol Plots for Mn
Concentration Mn mg kg⁻¹
238
220
200
180
160
140
120
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L1 L45 L58 L6 L7 L22 L44 L47 L19 L34 L2 L15 L11 L62 L55 L21 L30 L24 L33 L28
LA-ICP-MS EPMA SEM u-XRF LIBS Other

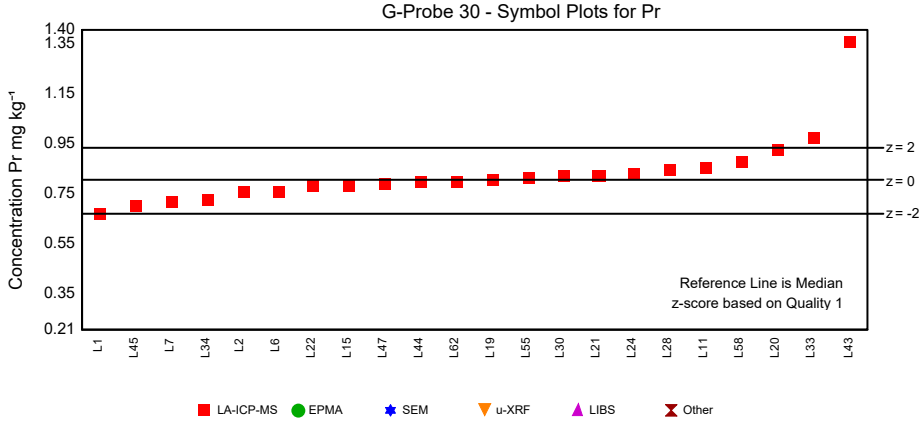

G-Probe 30 - Symbol Plots for Mo
Provisional
Concentration Mo mg kg⁻¹
0.11
0.10
0.08
0.06
0.04
0.02
0.00
z = 2
z = 0
z = -2
Reference Line is Median
z-score based on Quality 1
L34 L21 L58 L15 L22 L7 L28
LA-ICP-MS EPMA SEM u-XRF LIBS Other

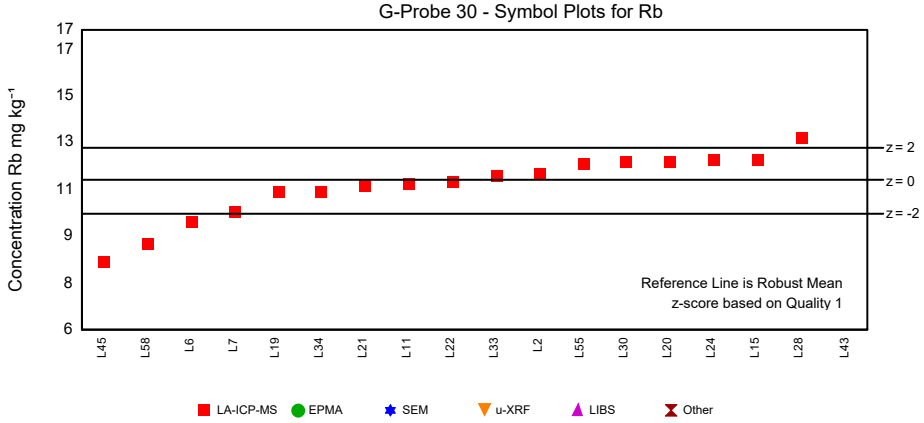

G-Probe 30 - Symbol Plots for Nb
Concentration Nb mg kg⁻¹
1.30
1.25
1.05
0.85
0.65
0.45
0.25
0.18
z = 2
z = 0
z = -2
Reference Line is Median
z-score based on Quality 1
L58 L45 L2 L47 L62 L34 L7 L20 L6 L15 L33 L44 L24 L30 L21 L22 L19 L11 L28 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

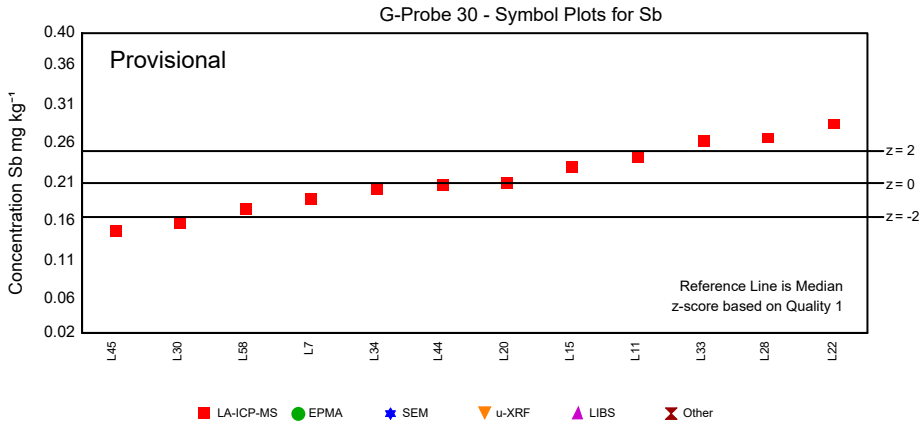

G-Probe 30 - Symbol Plots for Nd
Concentration Nd mg kg⁻¹
5.1
3.0
1.2
z = 2
z = 0
z = -2
Reference Line is Mode
z-score based on Quality 1
L1 L45 L7 L34 L6 L58 L62 L47 L19 L15 L55 L30 L44 L2 L22 L21 L33 L24 L11 L28 L20 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

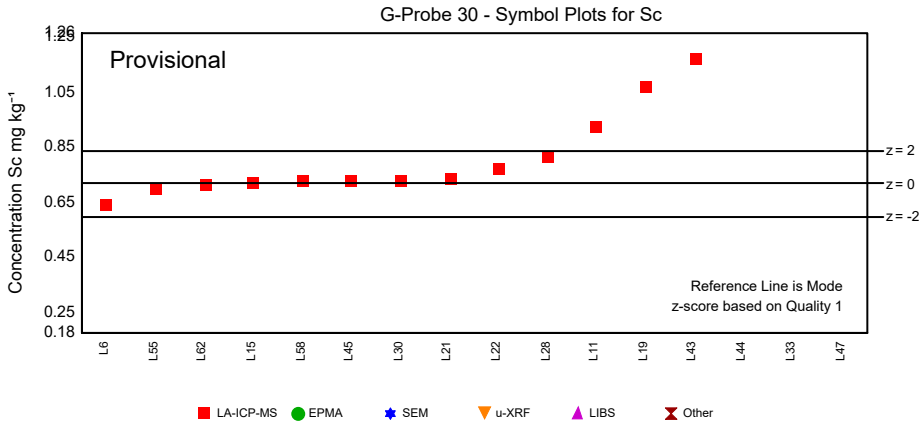

G-Probe 30 - Symbol Plots for Ni
Provisional
Concentration Ni mg kg⁻¹
3.0
2.8
2.4
2.0
1.6
1.2
0.8
0.6
z = 2
z = 0
z = -2
Reference Line is Mode
z-score based on Quality 1
L45 L6 L7 L58 L1 L15 L22 L21 L55 L28 L44 L19 L30 L34 L33 L47 L20
LA-ICP-MS EPMA SEM u-XRF LIBS Other

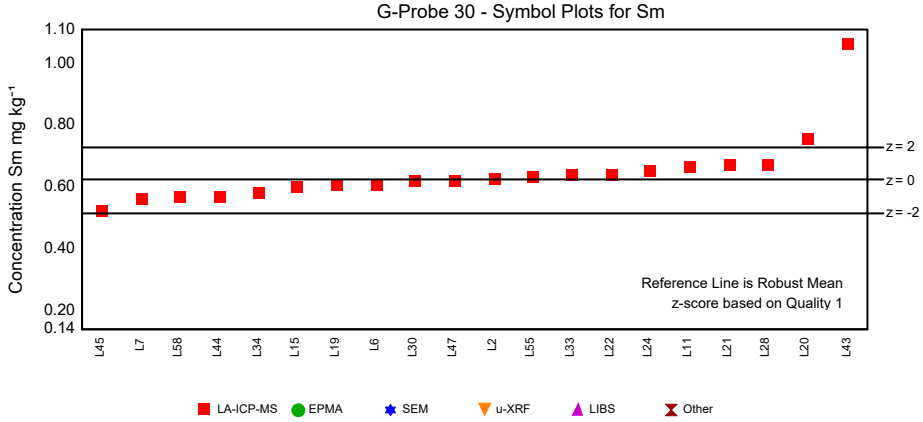

G-Probe 30 - Symbol Plots for Pb
Concentration Pb mg kg⁻¹
4.6
4.4
3.9
3.4
2.9
2.4
1.9
1.4
1.1
z = 2
z = 0
z = -2
Reference Line is Median
z-score based on Quality 1
L58 L45 L1 L7 L44 L6 L47 L34 L2 L19 L33 L22 L30 L55 L62 L15 L11 L21 L28 L24 L20
LA-ICP-MS EPMA SEM u-XRF LIBS Other

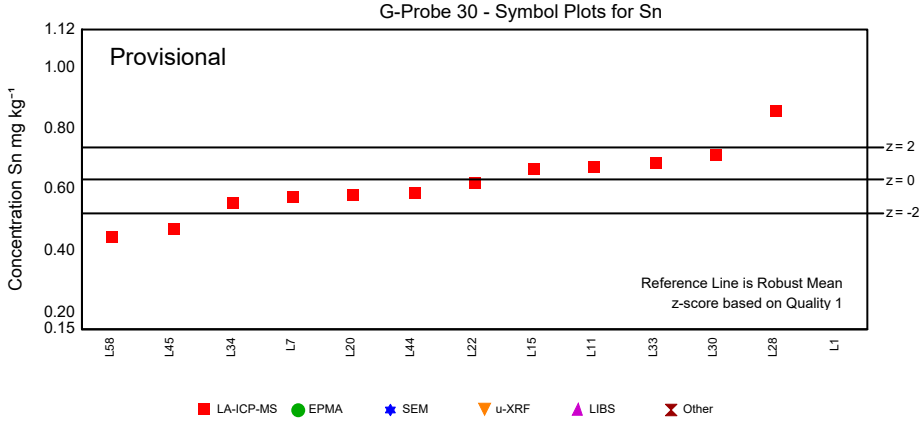

G-Probe 30 - Symbol Plots for Pr
Concentration Pr mg kg⁻¹
1.40
1.35
1.15
0.95
0.75
0.55
0.35
0.21
z = 2
z = 0
z = -2
Reference Line is Median
z-score based on Quality 1
L1 L45 L7 L34 L2 L6 L22 L15 L47 L44 L62 L19 L55 L30 L21 L24 L28 L11 L58 L20 L33 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

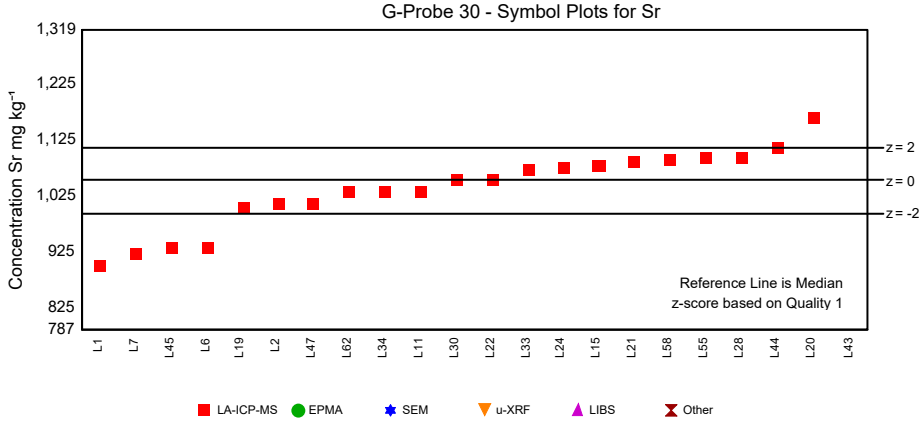

G-Probe 30 - Symbol Plots for Rb
Concentration Rb mg kg⁻¹
17
17
15
13
11
9
8
6
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L45 L58 L6 L7 L19 L34 L21 L11 L22 L33 L2 L55 L30 L20 L24 L15 L28 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

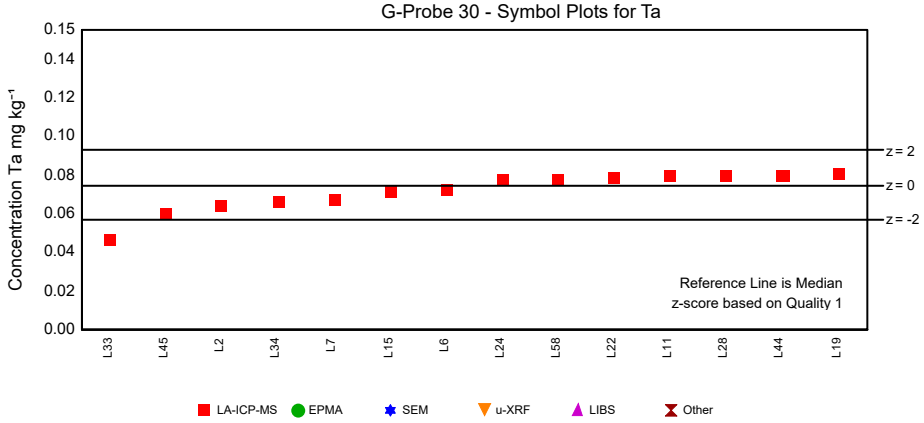

G-Probe 30 - Symbol Plots for Sb
Provisional
Concentration Sb mg kg⁻¹
0.40
0.36
0.31
0.26
0.21
0.16
0.11
0.06
0.02
z = 2
z = 0
z = -2
Reference Line is Median
z-score based on Quality 1
L45 L30 L58 L7 L34 L44 L20 L15 L11 L33 L28 L22
LA-ICP-MS EPMA SEM u-XRF LIBS Other

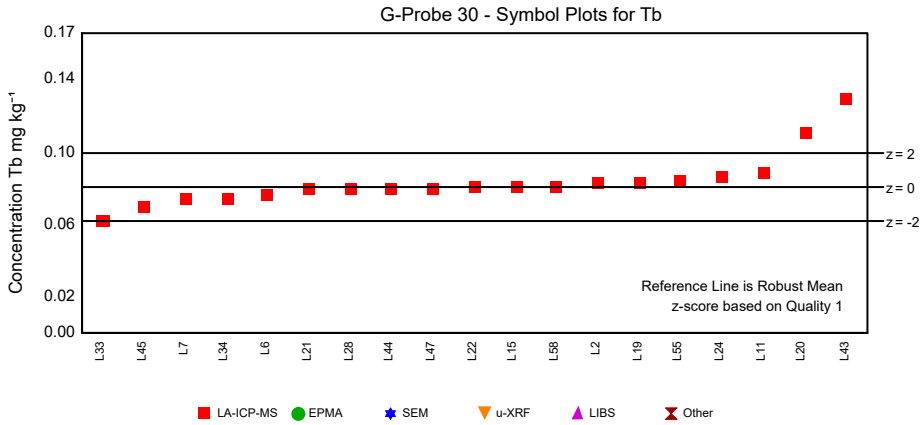

G-Probe 30 - Symbol Plots for Sc
Provisional
Concentration Sc mg kg⁻¹
1.26
1.25
1.05
0.85
0.65
0.45
0.25
0.18
z = 2
z = 0
z = -2
Reference Line is Mode
z-score based on Quality 1
L6 L55 L62 L15 L58 L45 L30 L21 L22 L28 L11 L19 L43 L44 L33 L47
LA-ICP-MS EPMA SEM u-XRF LIBS Other

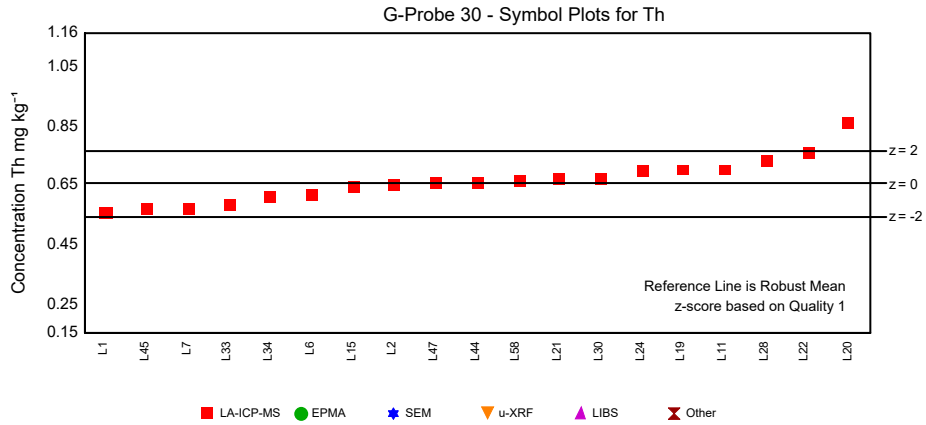

G-Probe 30 - Symbol Plots for Sm
Concentration Sm mg kg⁻¹
1.10
1.00
0.80
0.60
0.40
0.20
0.14
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L45 L7 L58 L44 L34 L15 L19 L6 L30 L47 L2 L55 L33 L22 L24 L11 L21 L28 L20 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

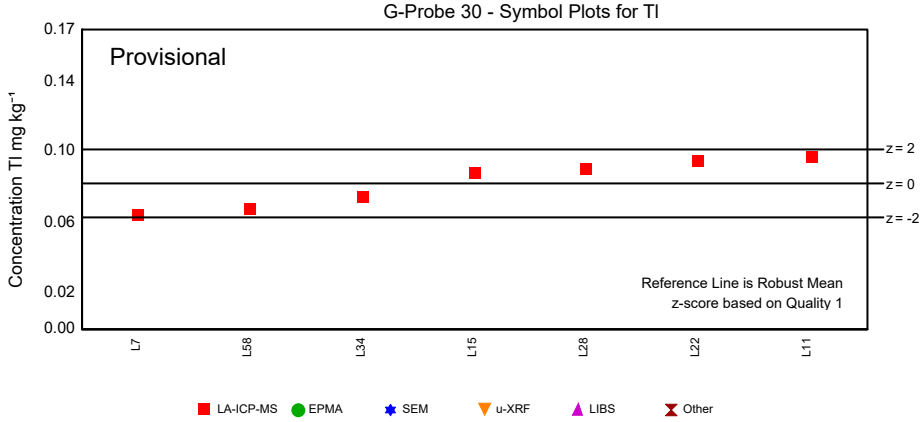

G-Probe 30 - Symbol Plots for Sn
Provisional
Concentration Sn mg kg⁻¹
1.12
1.00
0.80
0.60
0.40
0.20
0.15
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L58 L45 L34 L7 L20 L44 L22 L15 L11 L33 L30 L28 L1
LA-ICP-MS EPMA SEM u-XRF LIBS Other

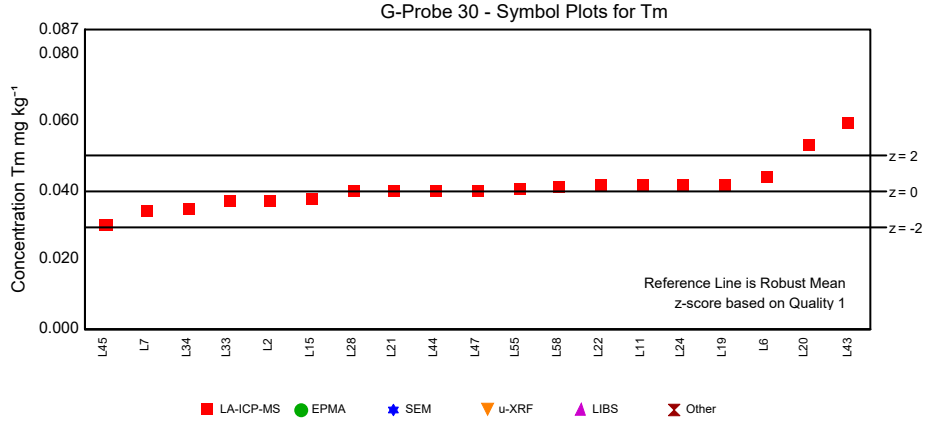

G-Probe 30 - Symbol Plots for Sr
Concentration Sr mg kg⁻¹
1,319
1,225
1,125
1,025
925
825
787
z = 2
z = 0
z = -2
Reference Line is Median
z-score based on Quality 1
L1 L7 L45 L6 L19 L2 L47 L62 L34 L11 L30 L22 L33 L24 L15 L21 L58 L55 L28 L44 L20 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

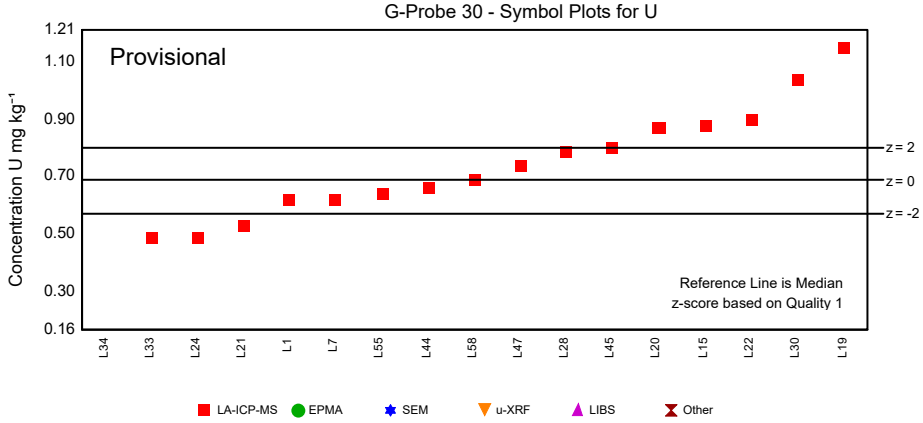

G-Probe 30 - Symbol Plots for Ta
Concentration Ta mg kg⁻¹
0.15
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
z = 2
z = 0
z = -2
Reference Line is Median
z-score based on Quality 1
L33 L45 L2 L34 L7 L15 L6 L24 L58 L22 L11 L28 L44 L19
LA-ICP-MS EPMA SEM u-XRF LIBS Other

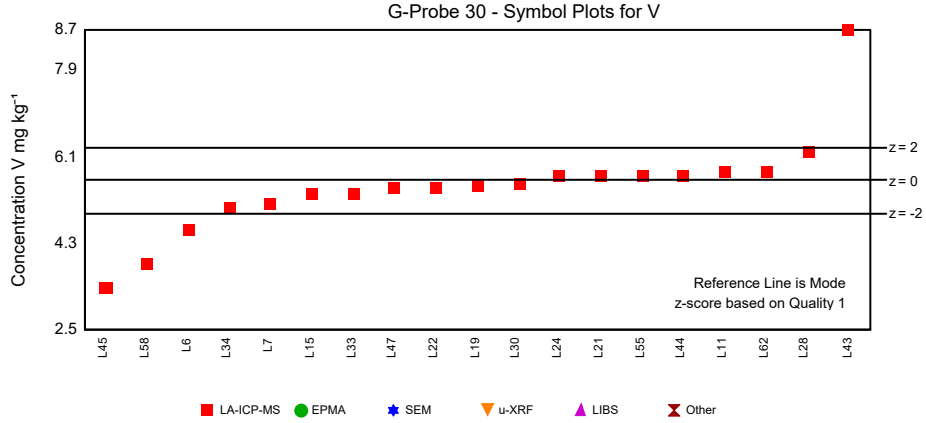

G-Probe 30 - Symbol Plots for Tb
Concentration Tb mg kg⁻¹
0.17
0.14
0.10
0.06
0.02
0.00
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L33 L45 L7 L34 L6 L21 L28 L44 L47 L22 L15 L58 L2 L19 L55 L24 L11 L20 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

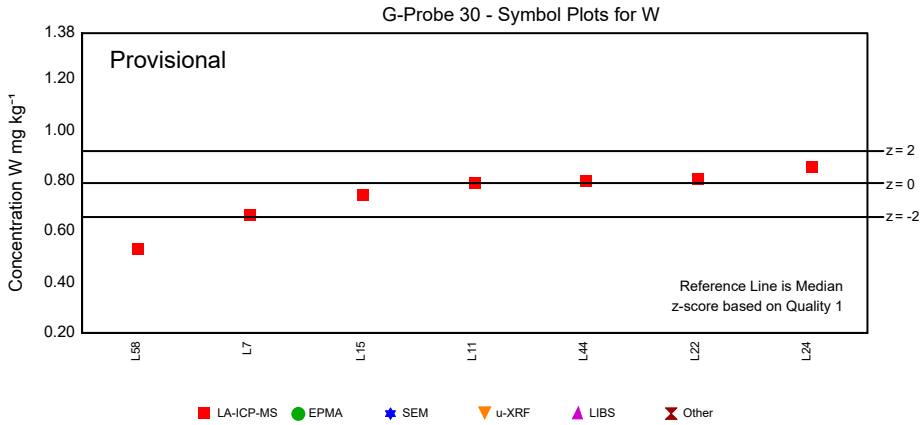

G-Probe 30 - Symbol Plots for Th
Concentration Th mg kg⁻¹
1.16
1.05
0.85
0.65
0.45
0.25
0.15
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L1 L45 L7 L33 L34 L6 L15 L2 L47 L44 L58 L21 L30 L24 L19 L11 L28 L22 L20
LA-ICP-MS EPMA SEM u-XRF LIBS Other

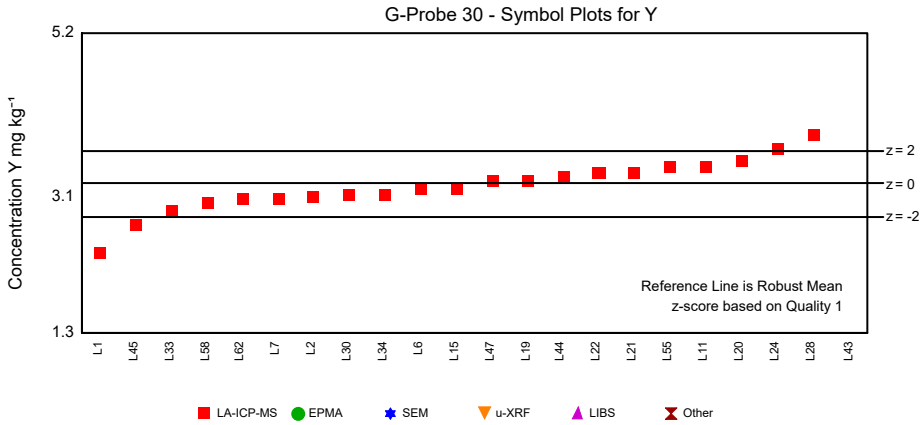

G-Probe 30 - Symbol Plots for Tl
Provisional
Concentration Tl mg kg⁻¹
0.17
0.14
0.10
0.06
0.02
0.00
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L7 L58 L34 L15 L28 L22 L11
LA-ICP-MS EPMA SEM u-XRF LIBS Other

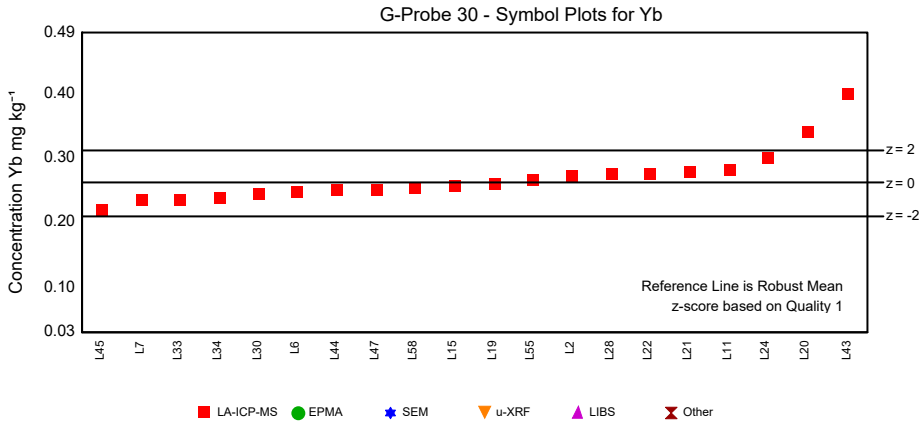

G-Probe 30 - Symbol Plots for Tm
Concentration Tm mg kg⁻¹
0.087
0.080
0.060
0.040
0.020
0.000
z = 2
z = 0
z = -2
Reference Line is Robust Mean
z-score based on Quality 1
L45 L7 L34 L33 L2 L15 L28 L21 L44 L47 L55 L58 L22 L11 L24 L19 L6 L20 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other

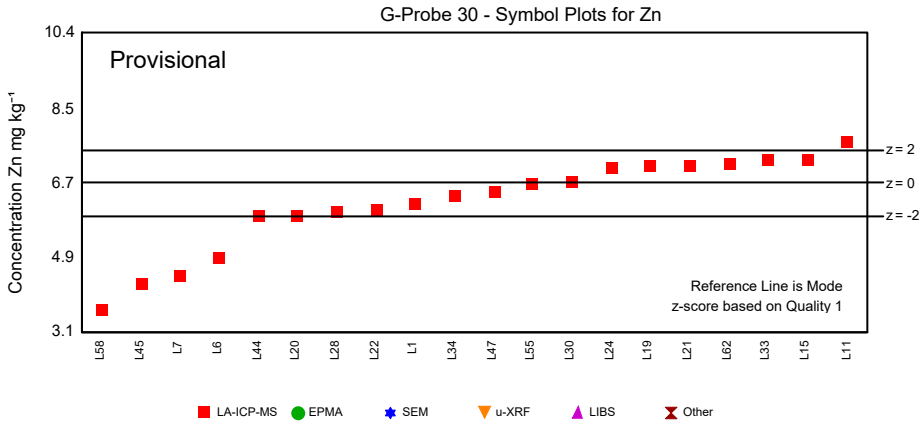

G-Probe 30 - Symbol Plots for U
Provisional
Concentration U mg kg⁻¹
1.21
1.10
0.90
0.70
0.50
0.30
0.16
z = 2
z = 0
z = -2
Reference Line is Median
z-score based on Quality 1
L34 L33 L24 L21 L1 L7 L55 L44 L58 L47 L28 L45 L20 L15 L22 L30 L19
LA-ICP-MS EPMA SEM u-XRF LIBS Other


G-Probe 30 - Symbol Plots for V
Concentration V mg kg⁻¹
8.7
7.9
6.1
4.3
2.5
z = 2
z = 0
z = -2
Reference Line is Mode
z-score based on Quality 1
L45 L58 L6 L34 L7 L15 L33 L47 L22 L19 L30 L24 L21 L55 L44 L11 L62 L28 L43
LA-ICP-MS EPMA SEM u-XRF LIBS Other



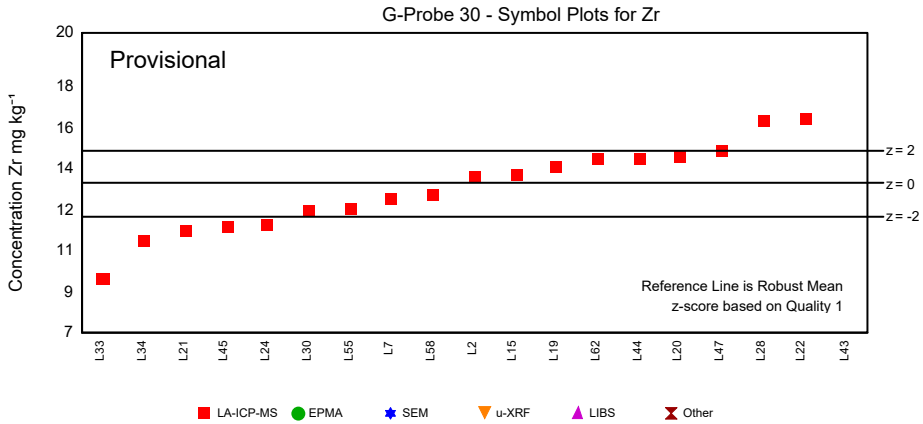
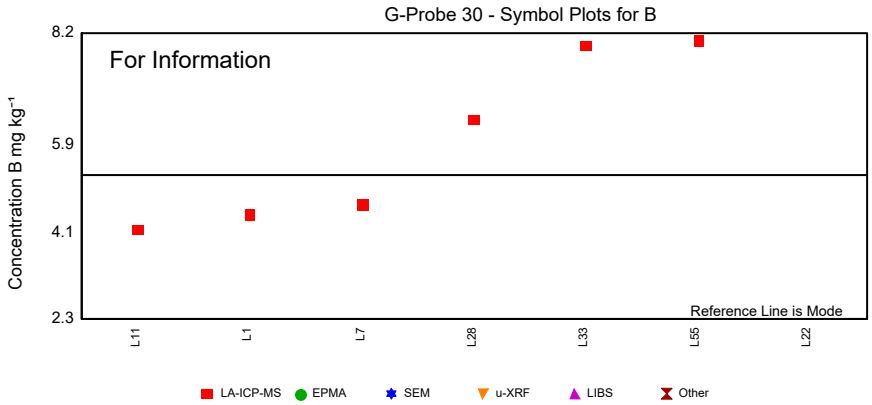
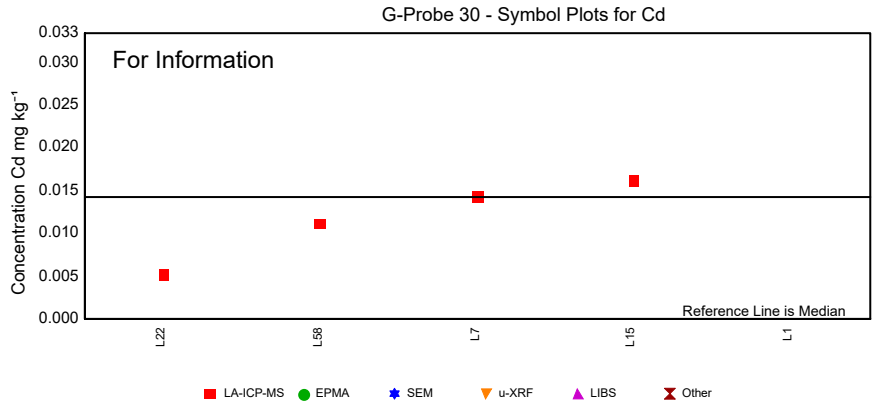
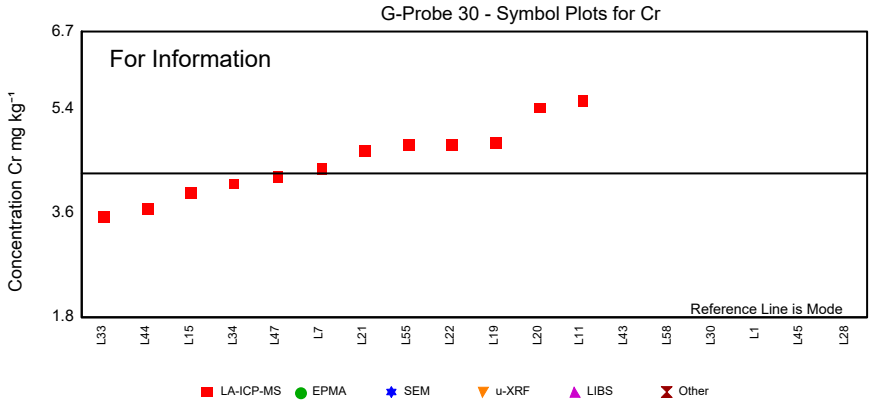




Figure 1: G-Probe 30 - Limestone, KCLs-1NP Pellet. Data distribution charts for elements for which values were assigned or provisional values given for guidance. Horizontal lines show the limits for -2<z<2 where the z-score is derived according to the Quality specified.



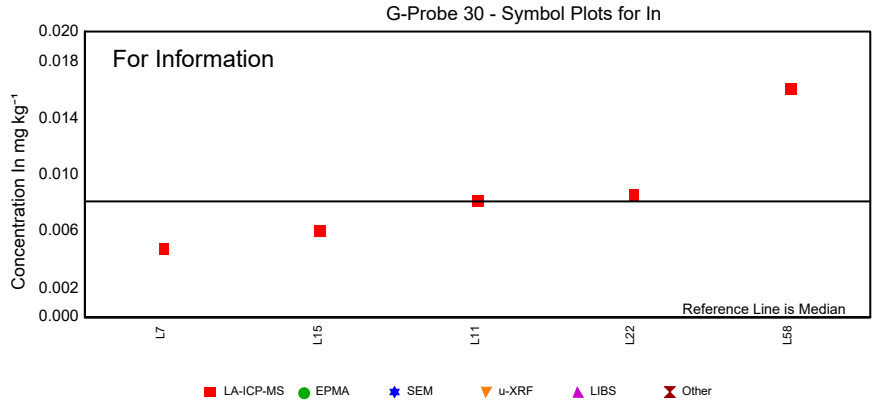
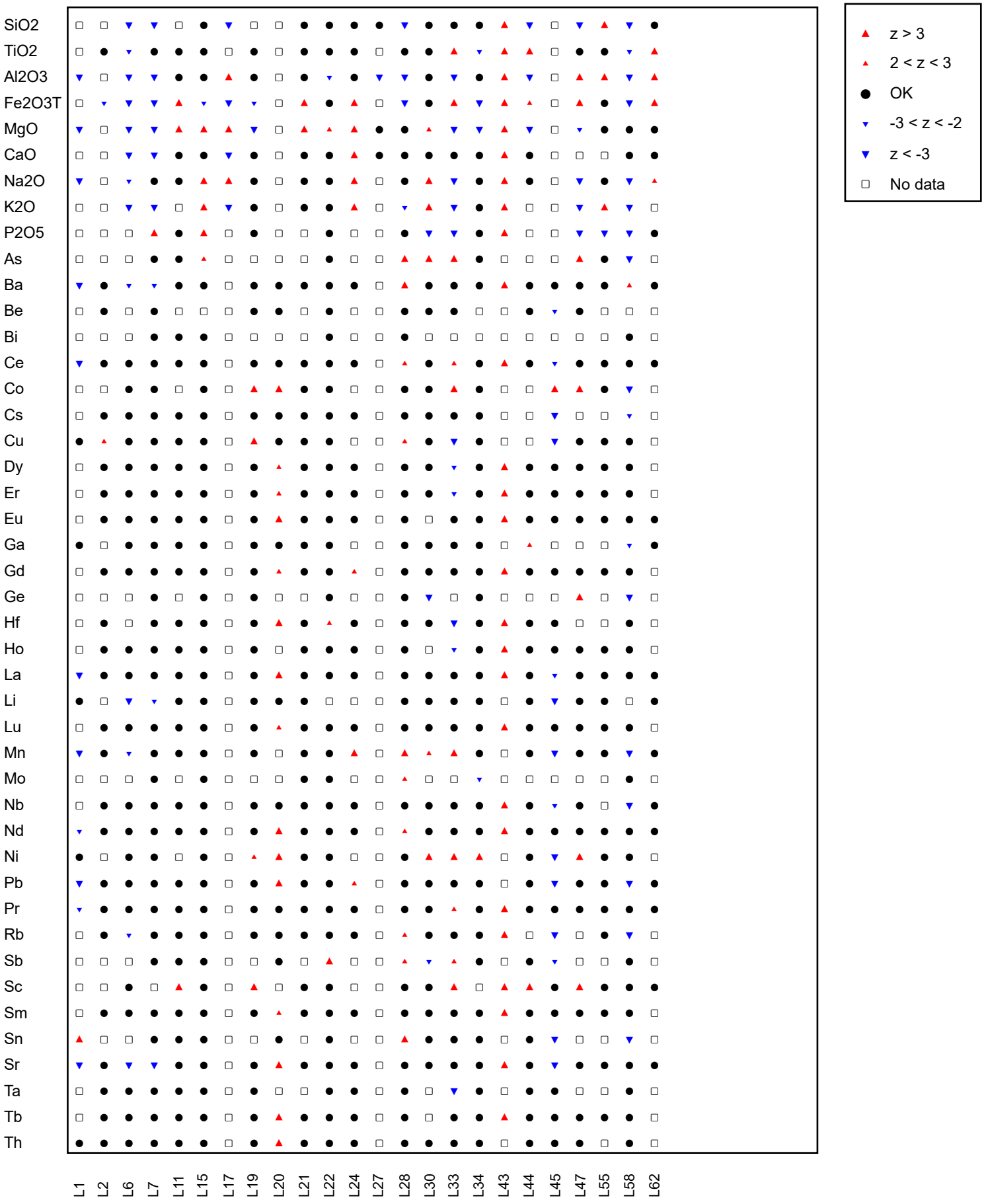




Figure 2: G-Probe 30 - Limestone, KCLs-1NP Pellet. Data distribution charts provided for information only for elements for which values could not be credited with assigned or provisional status.

## Multiple Z-Score Chart for G-Probe 30



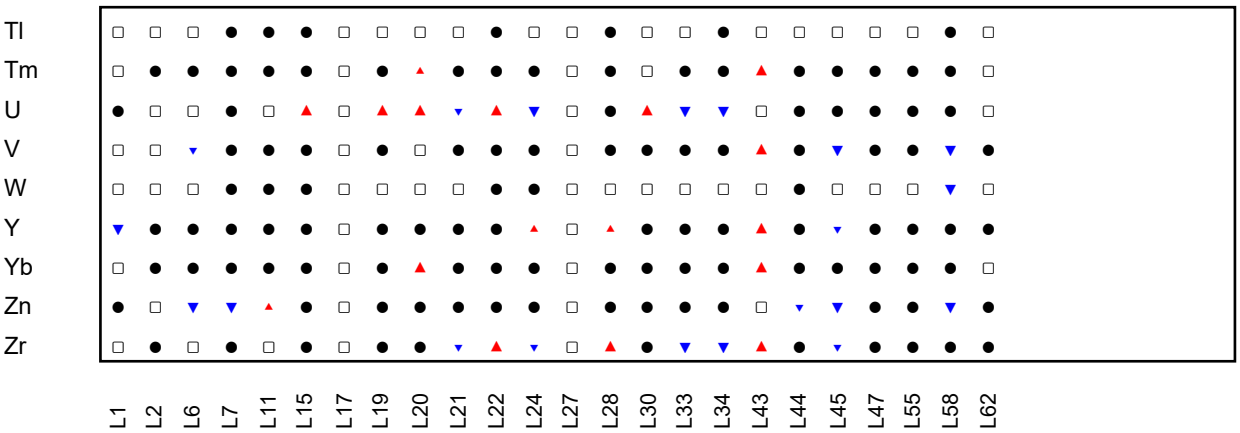



Figure 3: G-Probe 30 - Limestone, KCLs-1NP Pellet. Multiple z-score charts for laboratories participating in the G-Probe 30 round. Symbols indicate whether or not an elemental result complies with the -2<z<+2 criteria (see key).