A total of fourteen labs submitted final results during this stage of the G-probe 5 study. Technique breakdown was, 10 reports by LA-ICP-MS, four by SEM, two by EPMA and one lab used Micro-XRF. At the time of data analysis up to three labs had yet to submit their final results. When results from these labs are provided their scores will be calculated but the summary results will not be modified. The glass material used in this study was obtained using from a USGS basalt material (BBM-1) that was used in the past as a laboratory QC material. The glass was prepared at the USGS

Below you will find summary results for each element studied in this test. The range of elements does not cover all those reported by participants but is limited to those elements with certified or recommended values from USGS analysis of the original powder or ground glass material. In element diagrams you will find information for each technique providing a value. Also included is the target value (♦)   and calculated precision (X ± Ha) (♦) based on the Horowitz equation. A figure is also presented representing the data compilation for the entire study when more that one technique reported values. The study average is represented by ■ , the standard deviation of the average by ▪ and the maximum and minimum values by □. This study average is calculated primarily for the analysis of the major elements where multiple techniques provided data.   For individual techniques an average value is presented (ex LA-ICP-MS, ▲) as well as ± one standard deviation (ex LA-ICP-MS, ▲) , and the maximum and minimum values reported (ex LA-ICP-MS, △).

Table 1   Symbols used on figures 1 through 48

Symbol type		Represents
Large solid symbol,	●	Study or method average
Small solid symbol,	●	Study or method one standard deviation
Large open symbol,	○	Study or method Maximum or Minimum

Table 2 Summary results G-probe 5

Oxide	Xₐ % m/m	Hₐ % m/m	s.d.m % m/m	Mean % m/m	Max % m/m	Min % m/m
SiO2	53.15	1.169	1.462	54.365	57.970	52.790
TiO2	1.48	0.056	0.076	1.529	1.680	1.378
Al2O3	17.56	0.456	1.316	17.316	19.348	14.200
Fe2O3T	7.88	0.231	0.373	8.204	8.600	7.470
Fe(II)O	7.09	0.211				
MnO	0.12	0.007	0.006	0.129	0.140	0.120
MgO	5.19	0.162	0.189	5.224	5.680	5.000
CaO	6.65	0.200	0.240	6.786	7.120	6.087
Na2O	3.86	0.126	0.288	3.828	4.170	3.200
K2O	2.43	0.085	0.133	2.462	2.712	2.242
P2O5	0.94	0.038	0.225	0.949	1.120	0.460

Element	Xₐ mg/kg	Hₐ mg/kg	s.d.m mg/kg	Mean mg/kg	Max mg/kg	Min mg/kg	Element	Xₐ mg/kg	Hₐ mg/kg	s.d.m. mg/kg	Mean mg/kg	Max mg/kg	Min mg/kg
B	16.68	1.747	0.723	16.680	17.76	15.9	Hf	7.74	0.910	1.731	6.833	10.2	3.6
Ba	2031	103.259	168.954	2060.923	2406	1848	Ho	0.81	0.134	0.145	0.769	1.04	0.47
Be	2.275	0.322	0.301	2.042	2.55	1.6	In	0.055	0.014	0.022	0.062	0.09	0.04
Cd	0.08	0.019	1.441	1.390	3.2	0.23	La	81.56	6.727	10.627	82.895	100.9	57.3
Ce	152.9	11.473	14.530	162.177	190.6	137	Li	9.78	1.110	2.608	11.179	18.22	8.9
Co	24.5	2.422	3.453	26.150	37.2	23.3	Lu	0.345	0.065	0.050	0.250	0.308	0.13
Cr	126.4	9.760	11.068	99.968	124	90.1	Mo	1.9	0.276	0.281	1.005	1.4	0.72
Cs	1.42	0.215	0.112	1.552	1.74	1.35	Nb	22.53	2.255	2.171	25.117	28.5	21.9
Cu	25.58	2.512	3.433	29.641	37.1	25.8	Nd	61.73	5.310	7.791	61.120	74.4	43.1
Dy	4.31	0.553	0.827	3.986	5.2	2.1	Ni	70.07	5.913	7.128	79.317	98.5	73.1
Er	2.015	0.290	0.356	1.856	2.22	1.01	Pb	24.017	2.381	2.972	27.041	33.4	22.5
Eu	2.278	0.322	0.224	2.472	2.84	2	Pr	17.55	1.824	2.444	17.412	20.9	12.1
Ga	20.9	2.116	8.491	27.170	44.14	20.8	Rb	33.3	3.143	1.775	35.335	37.76	31.7
Gd	6.65	0.800	0.860	6.467	8.25	5	Sb	1.02	0.163	0.643	1.687	2.96	1
Ge	1.5	0.226	0.281	1.608	1.99	1.21	Sc	14.41	1.543	8.270	18.982	38.5	13.41
							Sm	9.35	1.068	1.255	9.110	11.6	6.6
							Sn	2.175	0.310	0.551	3.202	3.9	2.485
							Sr	1256	68.6	101.1	1226.4	1378	978
							Ta	1.35	0.206	0.252	1.185	1.58	0.73
							Tb	0.83	0.137	0.168	0.765	1.05	0.46
							Th	9.09	1.043	1.555	8.710	11.9	5.5
							Tl	0.185	0.038	1.514	0.914	3.62	0.17
							Tm	0.302	0.058	0.066	0.266	0.34	0.13
							U	2.246	0.318	0.126	2.170	2.43	2
							V	136.6	10.425	4.396	144.955	153.4	139.3
							W	0.51	0.090	0.020	0.404	0.43	0.37
							Y	22.78	2.277	4.421	19.673	25.6	10.1
							Yb	1.908	0.277	0.324	1.746	2.12	1.03
							Zn	88.32	7.198	6.219	110.744	122	99.95
							Zr	322.83	21.647	62.386	307.023	412.6	182

Xa   = Target value obtained from USGS bulk analysis, study consensus values
Ha   = Target precision calculated using modified version of Horowitz equation for data quality 2 ($H_a = 0.01 X_a^{0.8495}$)
s.d.m. = Standard deviation of population mean
mean = Mean element concentration for all techniques reporting
Max. = Maximum element/oxide concentration reported
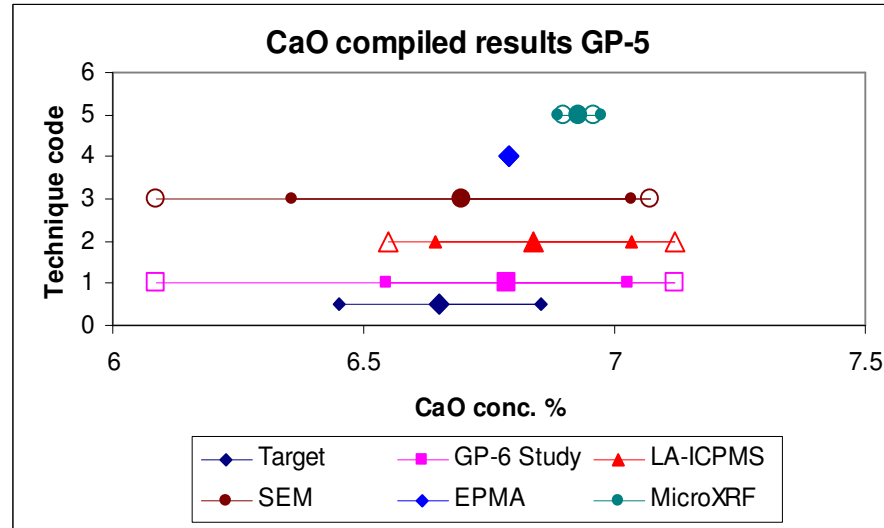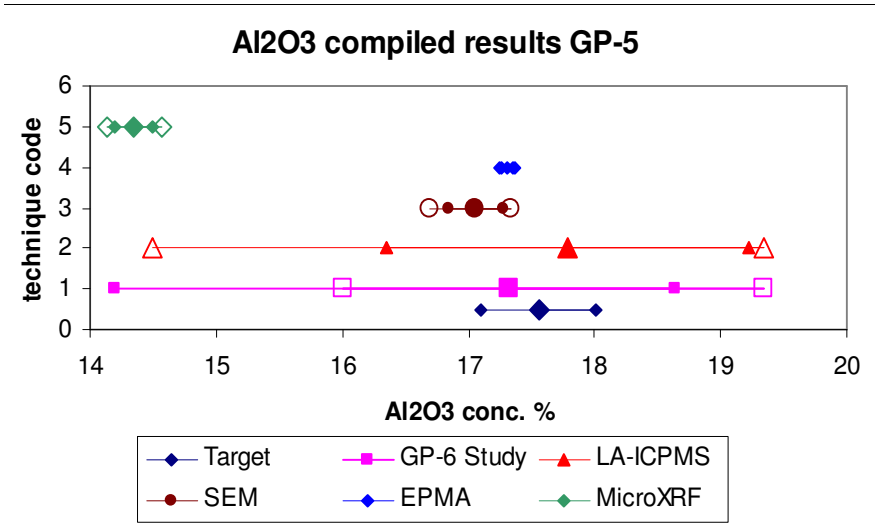Min.   = Minimum element/oxide concentration reported

Figure 1. Al$_2$O$_3$ results for G-probe 5 study
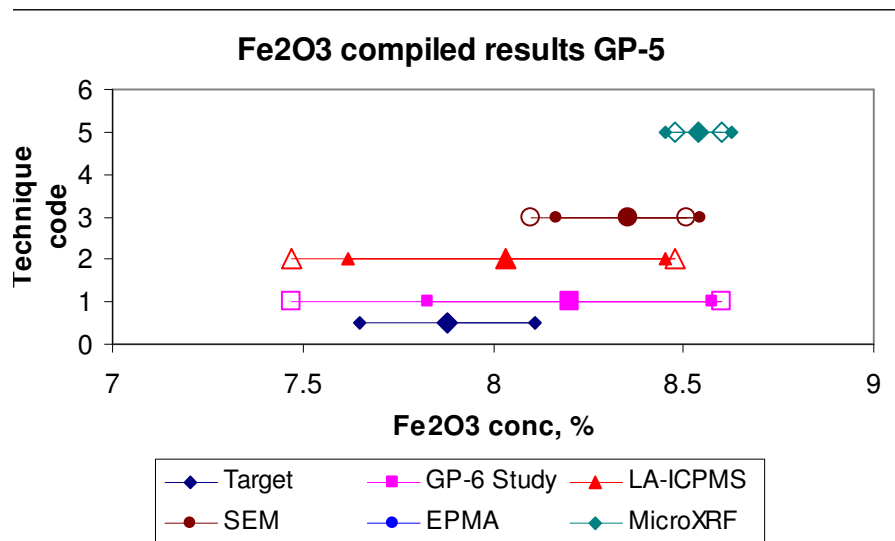

Figure 2. CaO results for G-probe 5 study

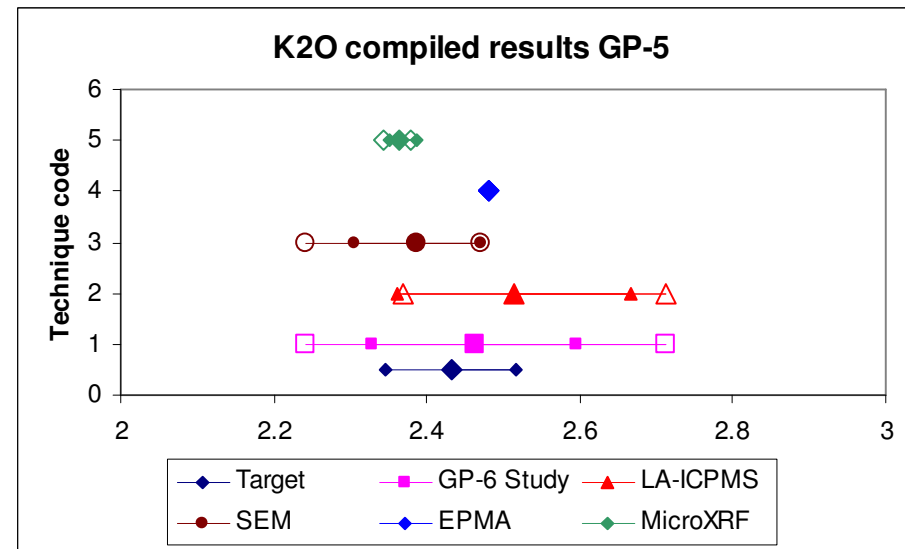Figure 3. Fe$_2$O$_3$ results for G-probe 5 study

Figure 4. K$_2$O results for G-Probe 5 study
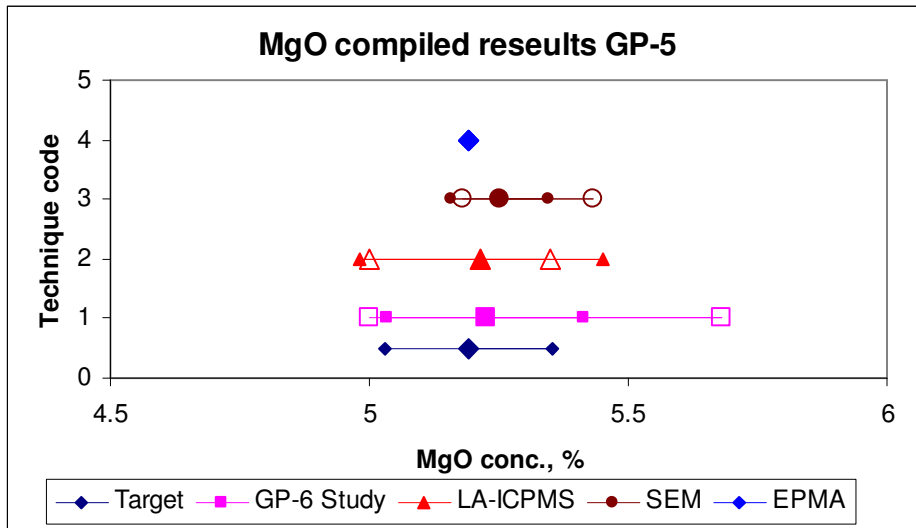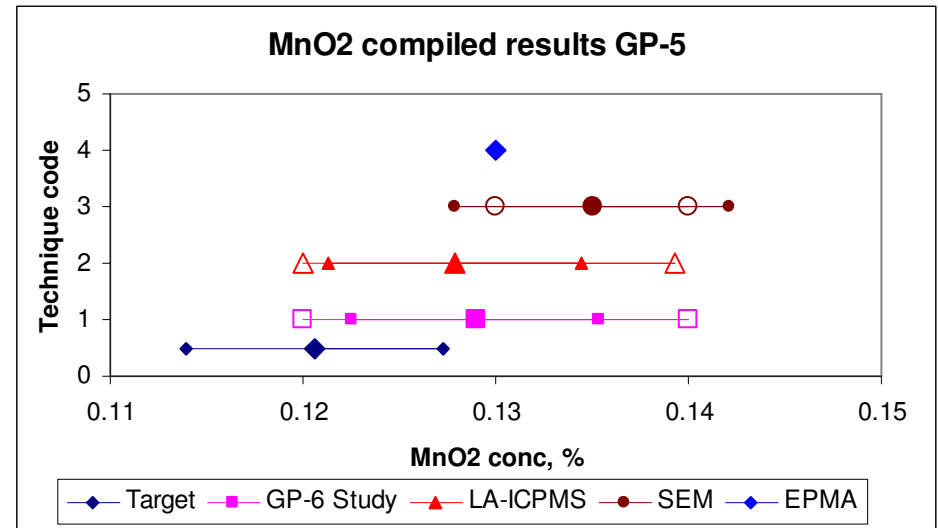
Figure 5. MgO results for G-probe 5 study
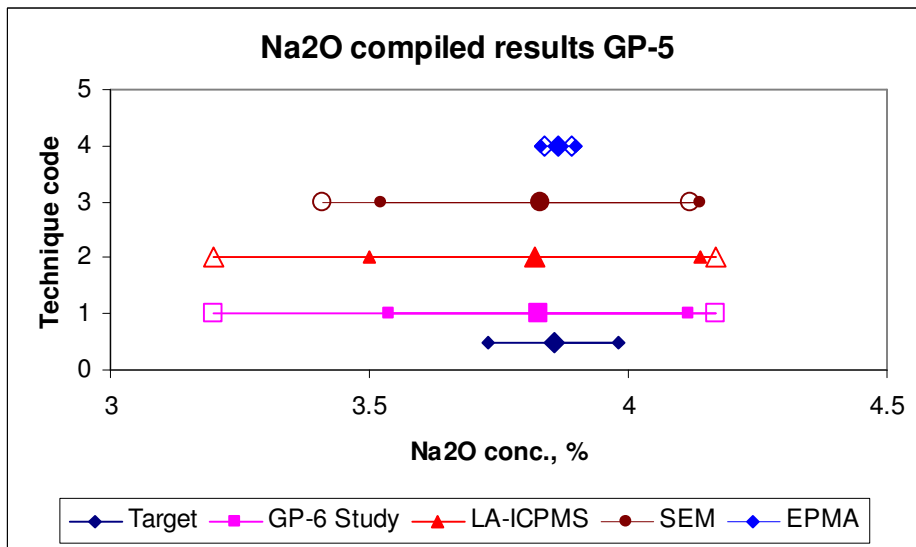

Figure 6. MnO₂ results for G-probe 5 study

Figure 7 Na₂O results for G-probe 5 study

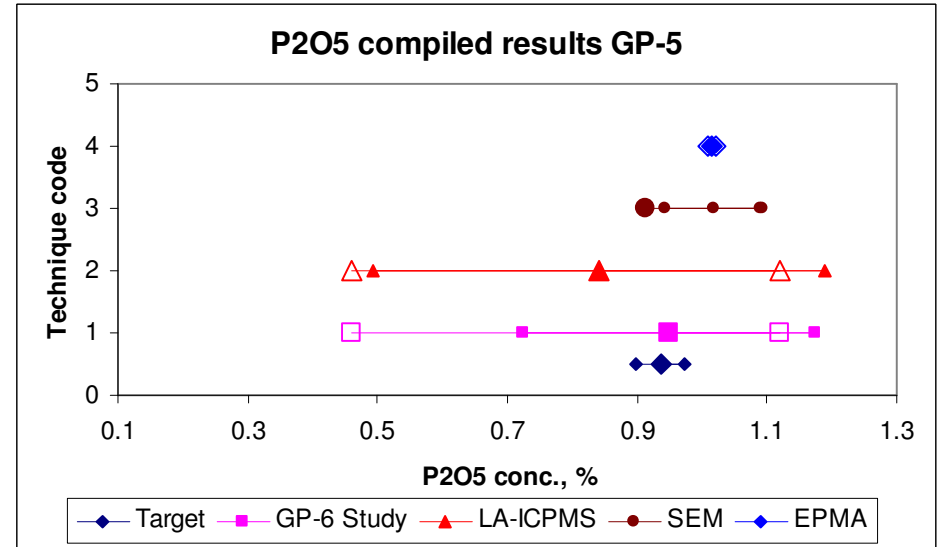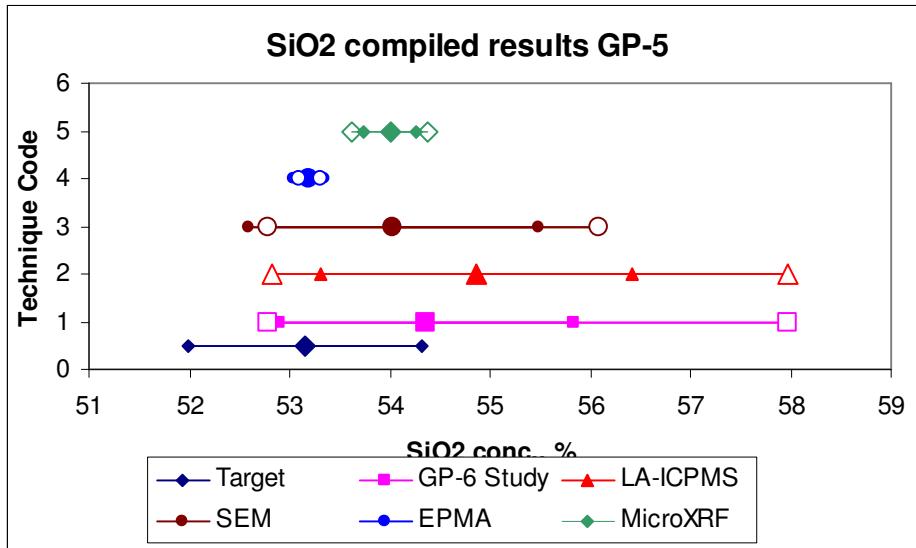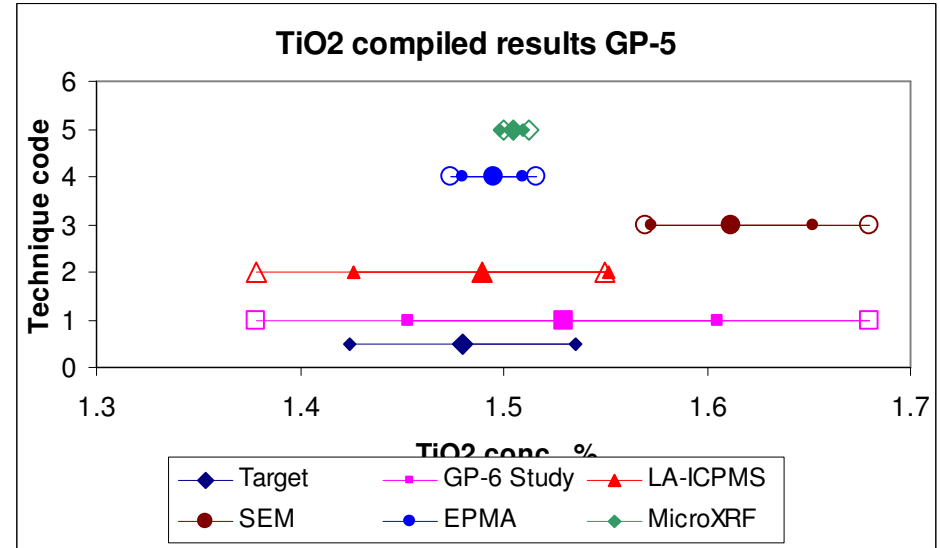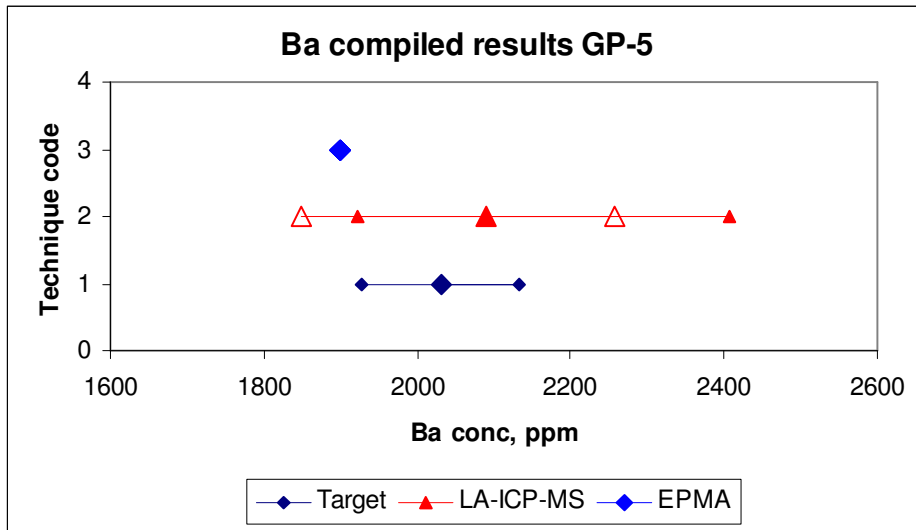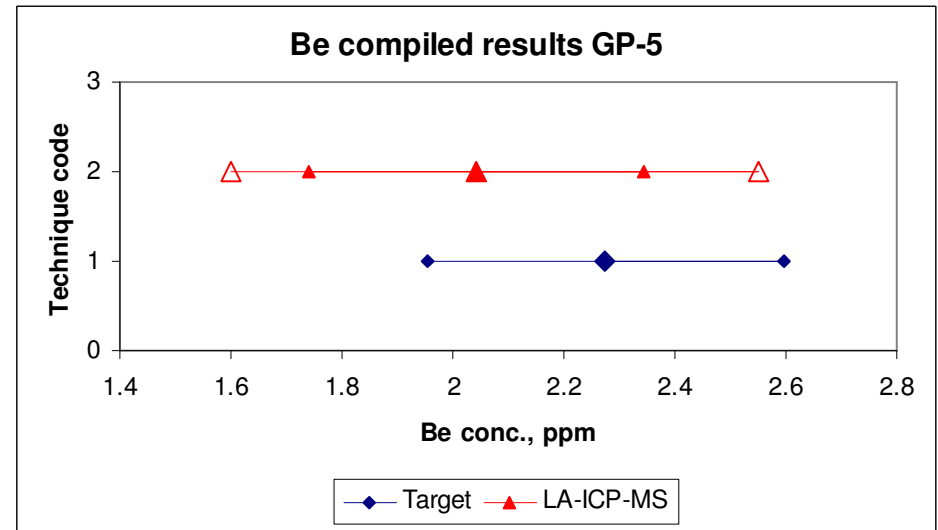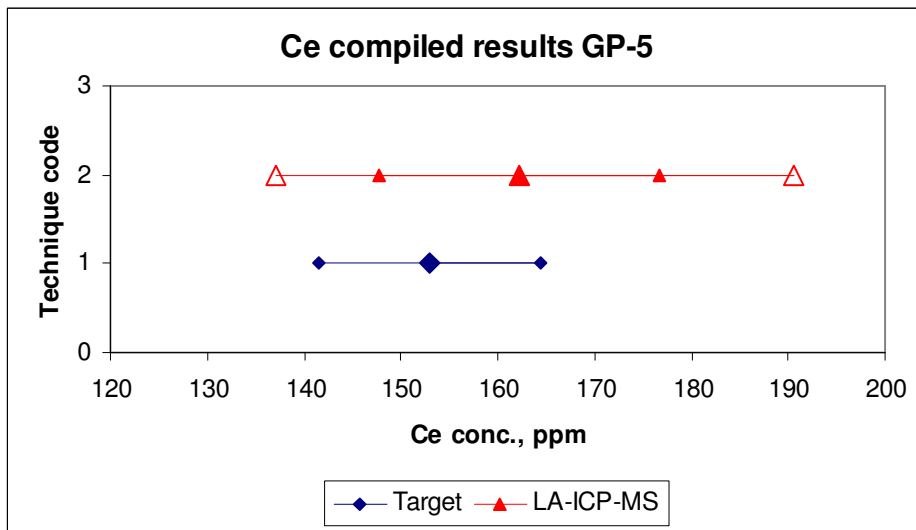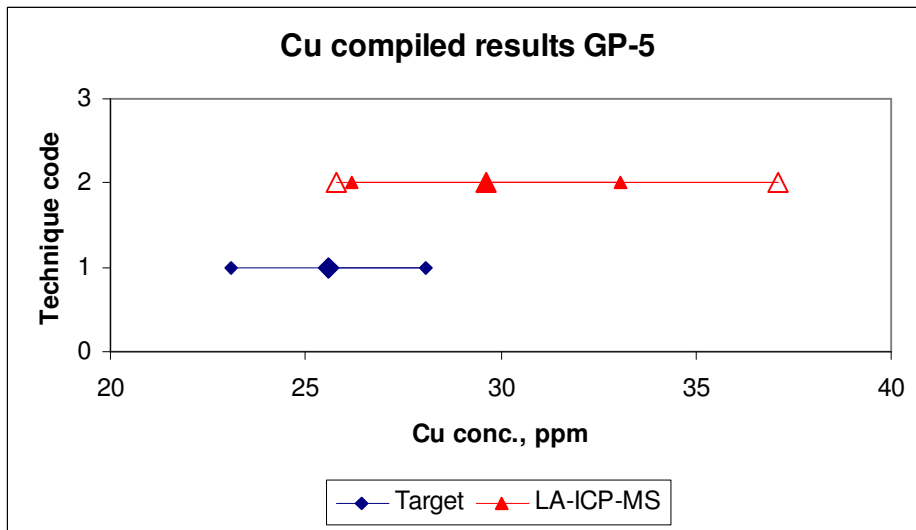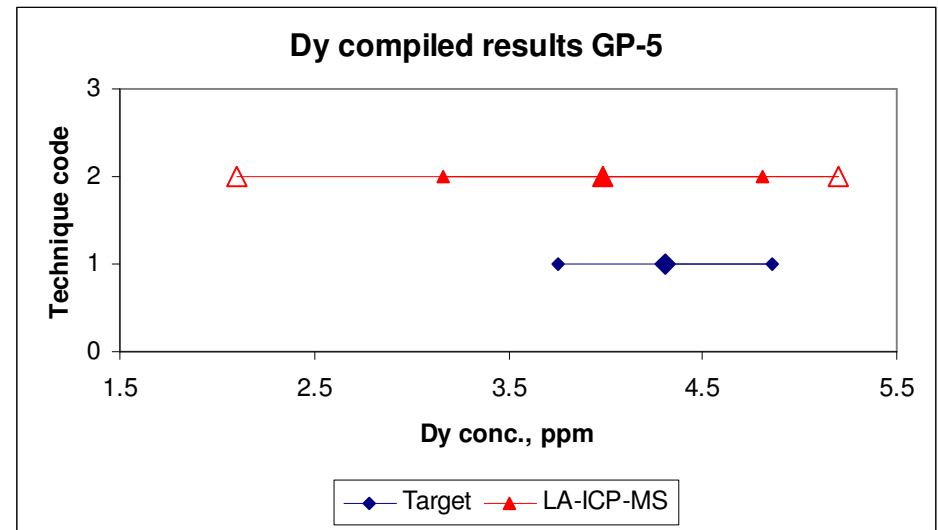Figure 8. P₂O₅ results for G-probe 5 study

Figure 9. SiO₂ results for G-probe 5 study

Figure 10. TiO₂ results for G-probe 5 study

Figure 11. Ba results for G-probe 5 study

Figure 12. Be results for G-probe 5 study

Figure 13. Ce results for G-probe 5 study
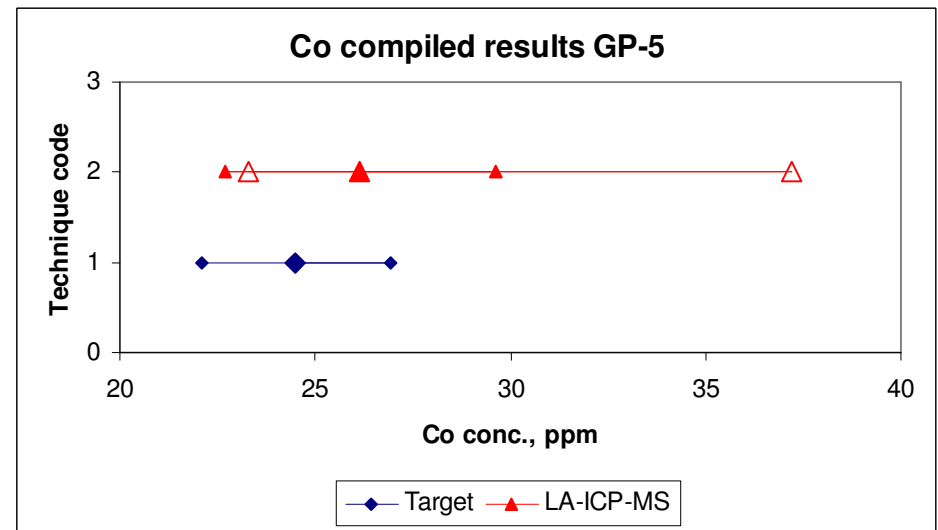
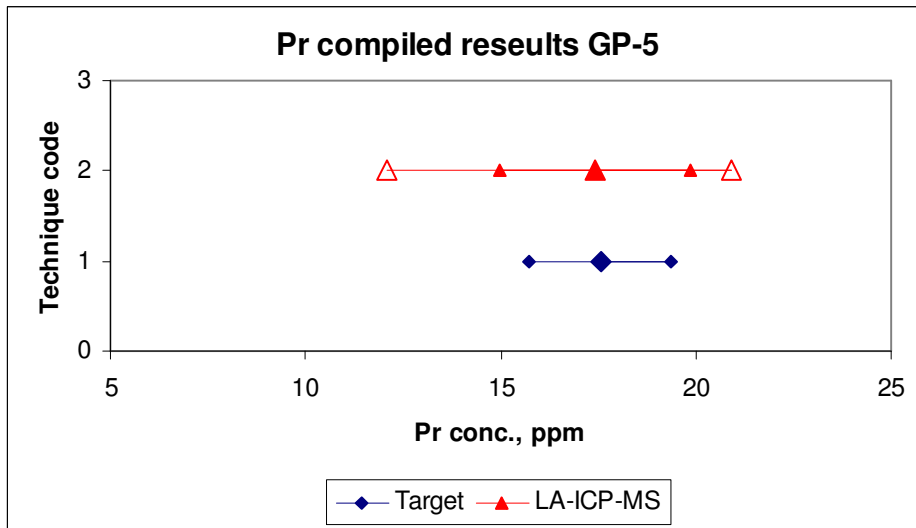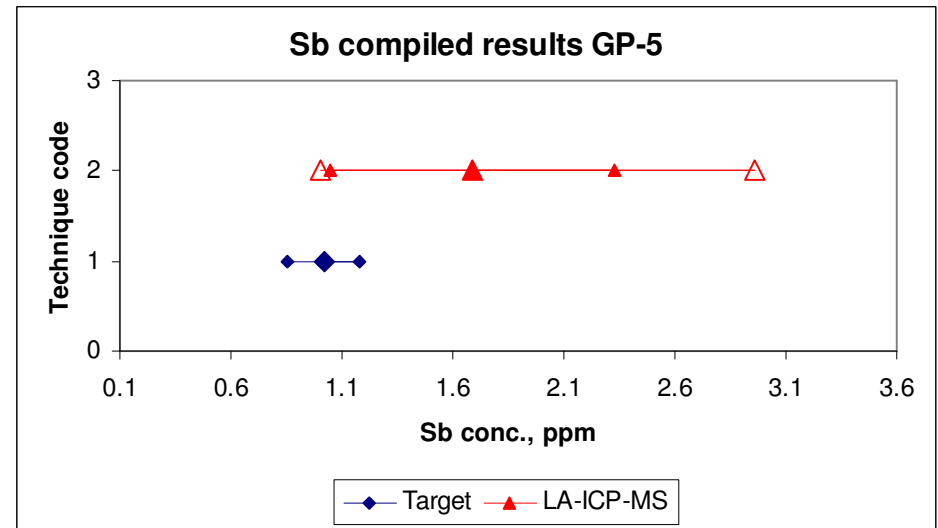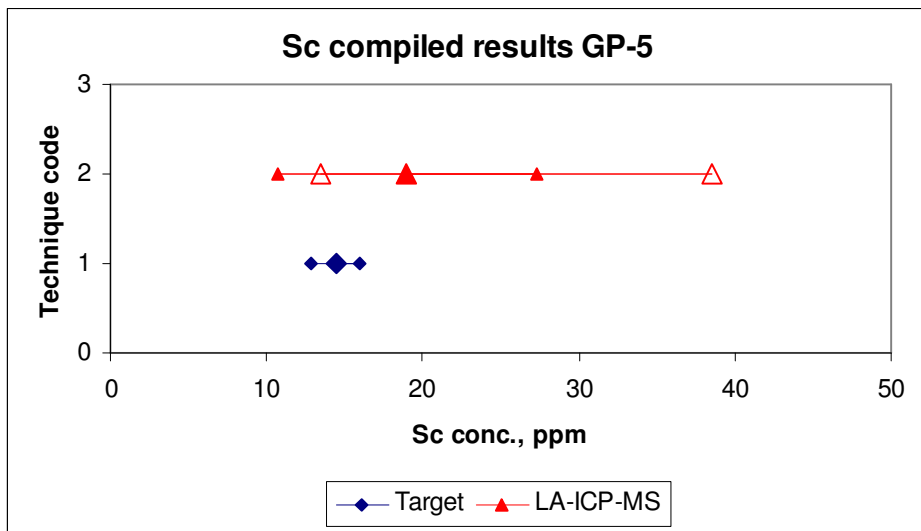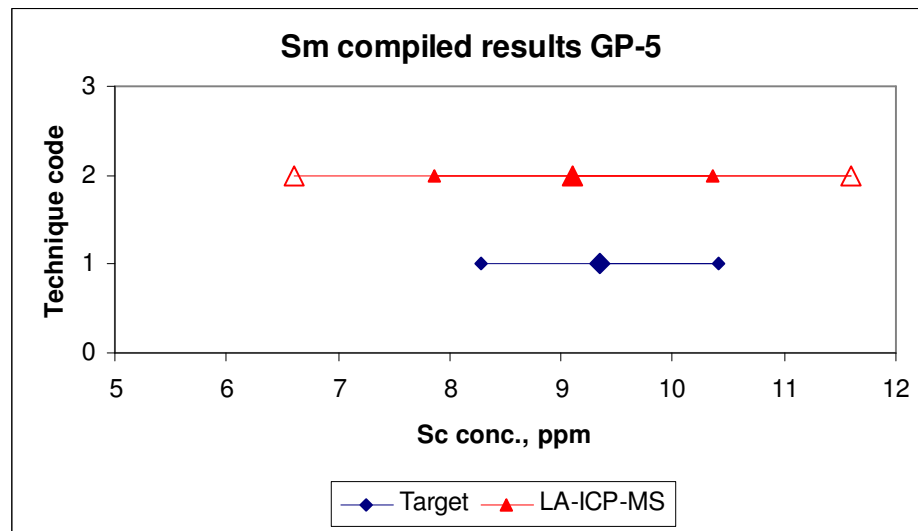Figure 14. Co results G-probe 5 study
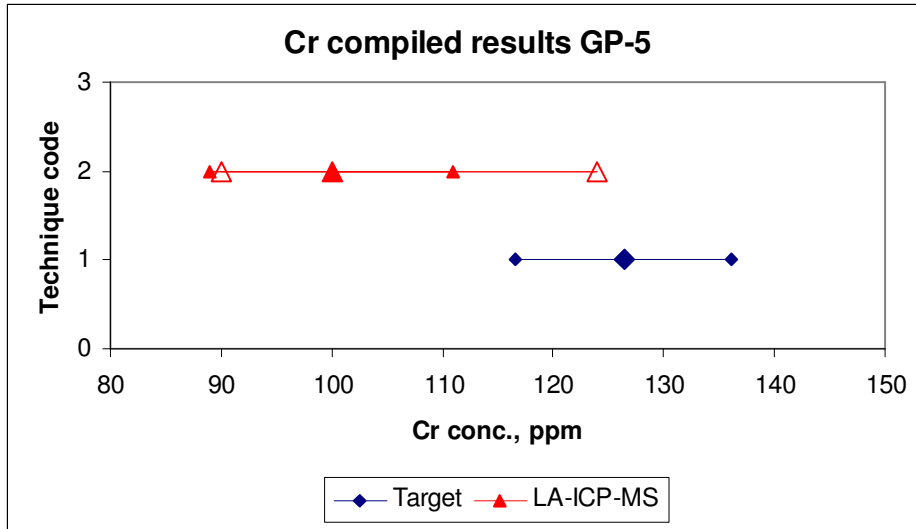
Figure 15. Cr results G-probe 5 study
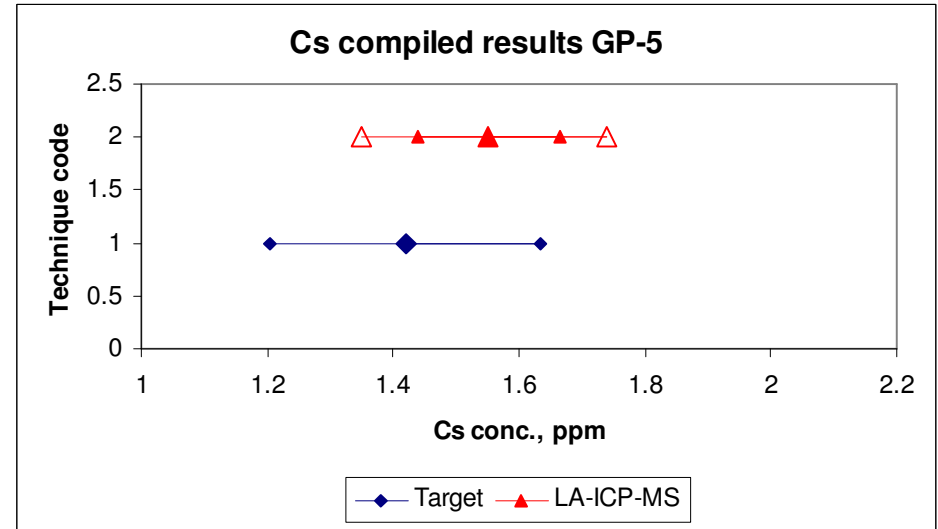
Figure 16. Cs results G-probe 5 study

Figure 17. Cu results G-probe 5 study

Figure 18.   Dy results for G-probe 5 study
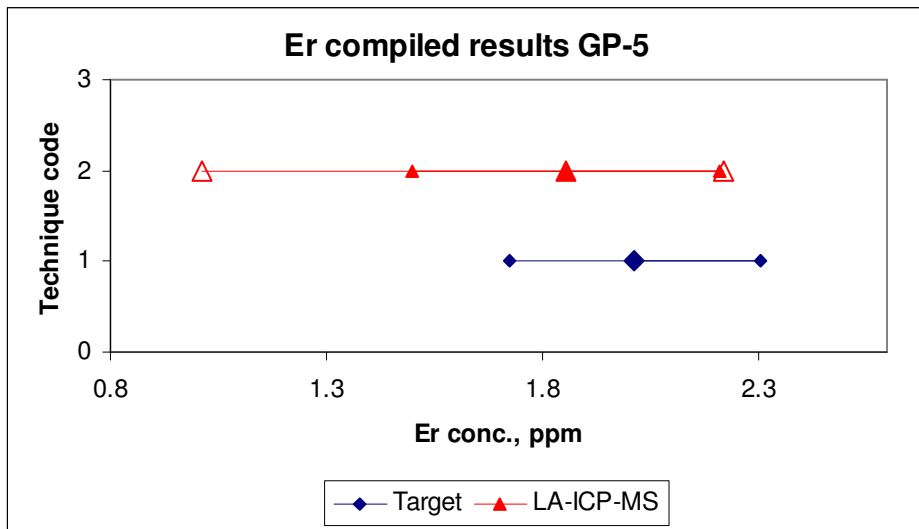
Figure 19.   Er results for G-probe 5 study
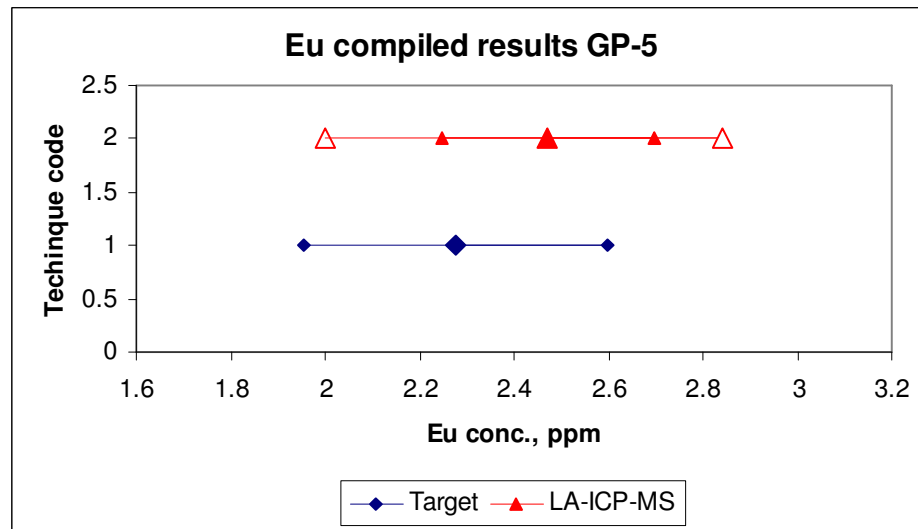
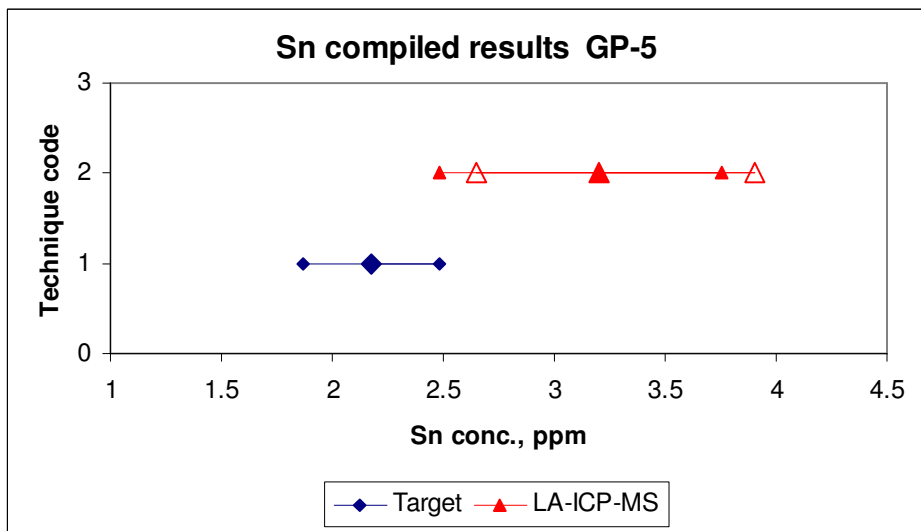Figure 20.   Eu results G-probe 5 study
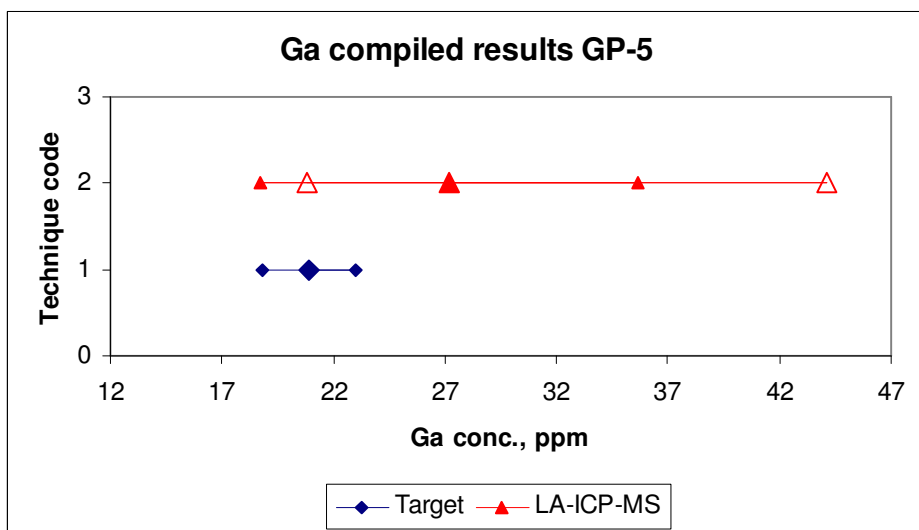
Figure 21.   Ga results G-probe 5 study
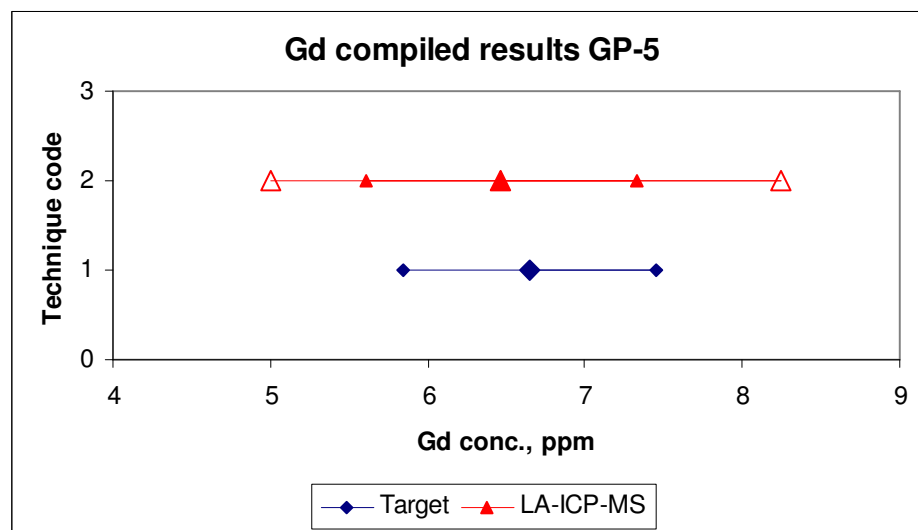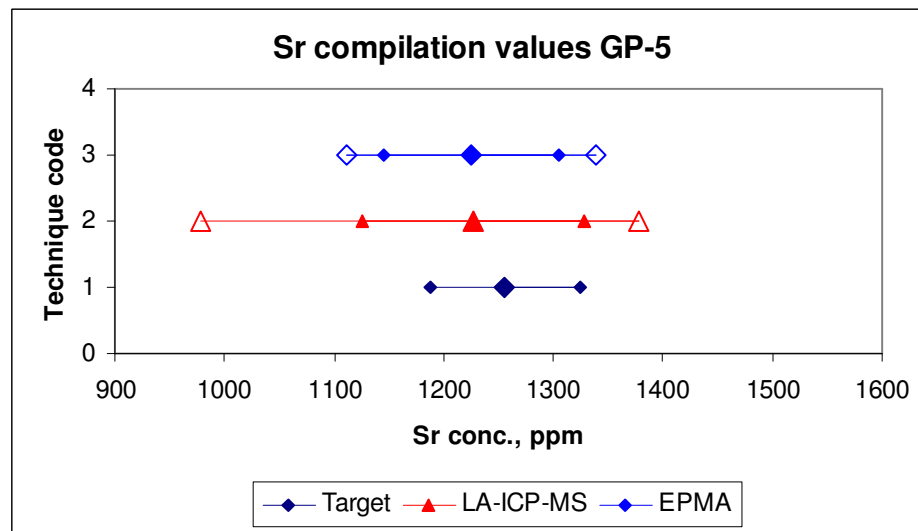

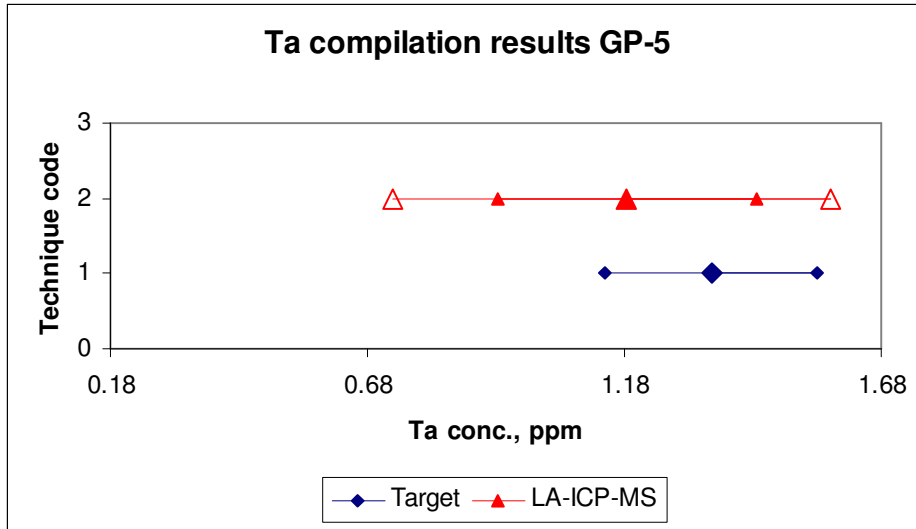Figure 22.   Gd results G-probe 5 study
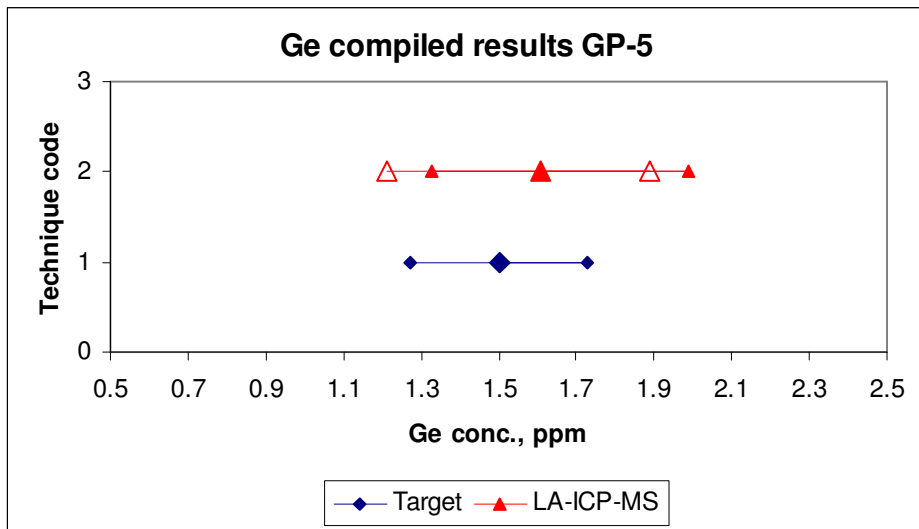
Figure 23.   Ge results G-probe 5 study
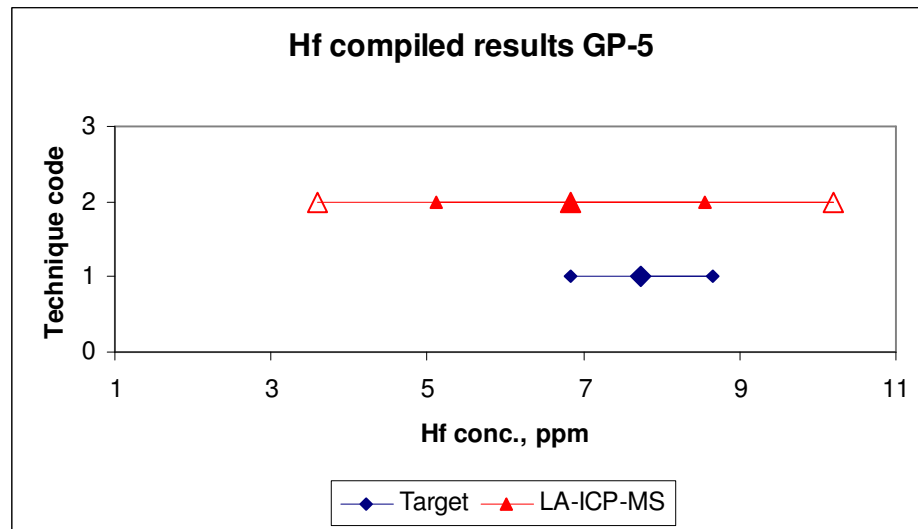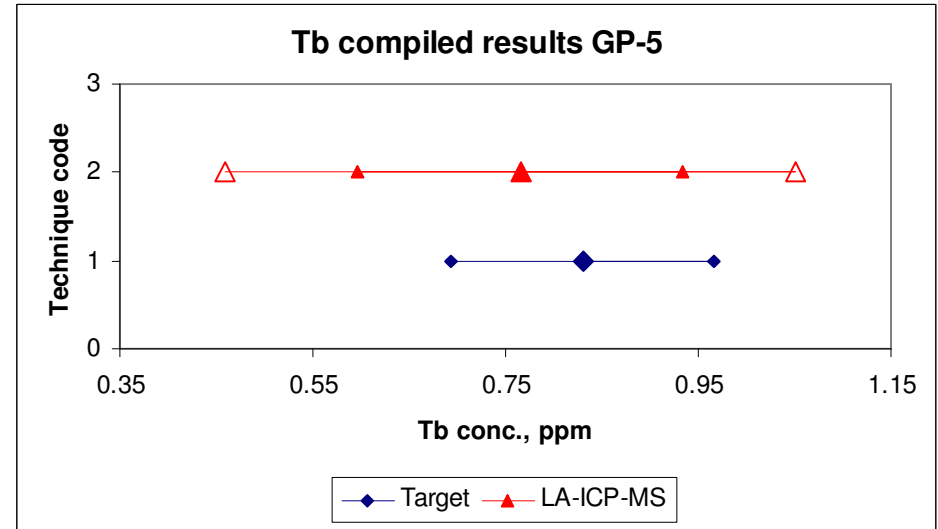

Figure 24.   Hf results G-probe 5 study
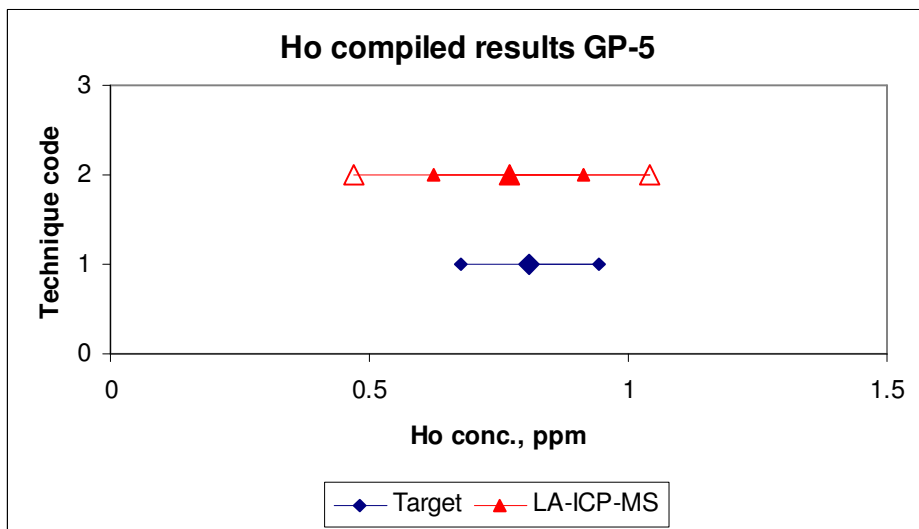
Figure 25.   Ho results G-probe 5 study
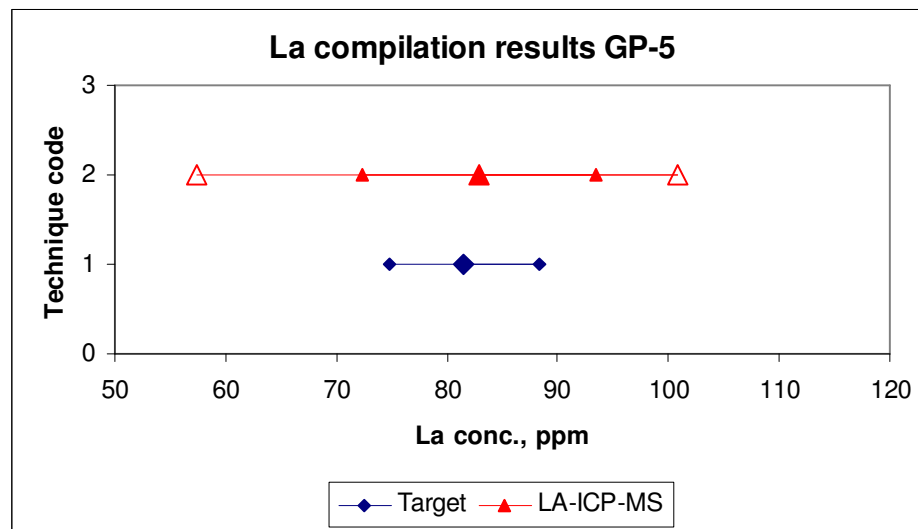
Figure 26. La results G-probe 5 study
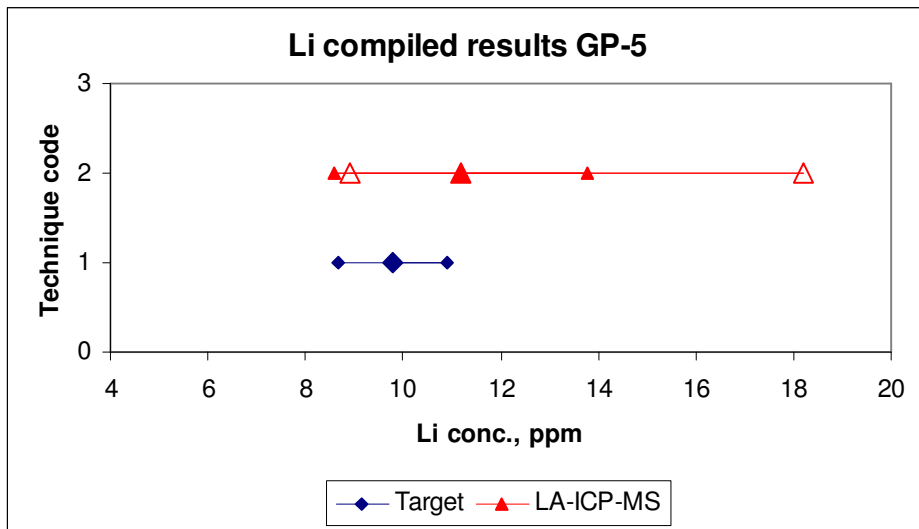
Figure 27. Li results G-probe 5 study
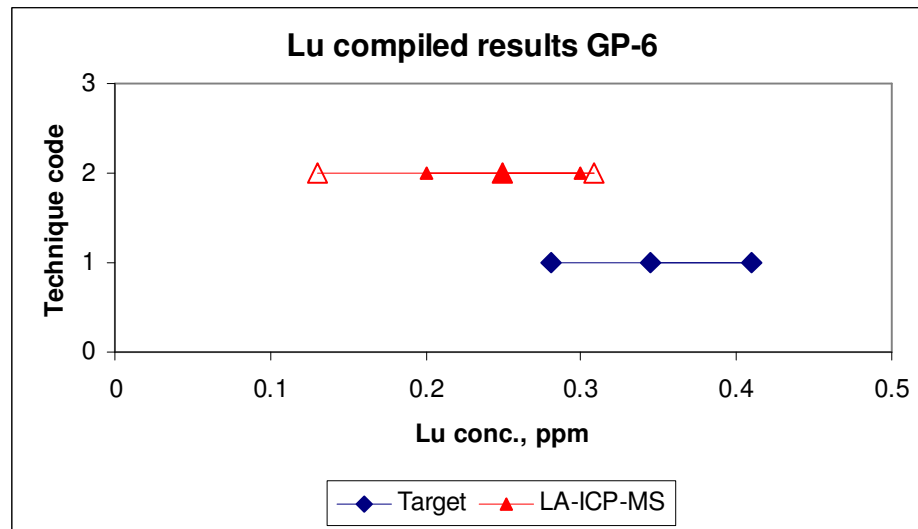
Figure 28. Lu results G-probe 5 study
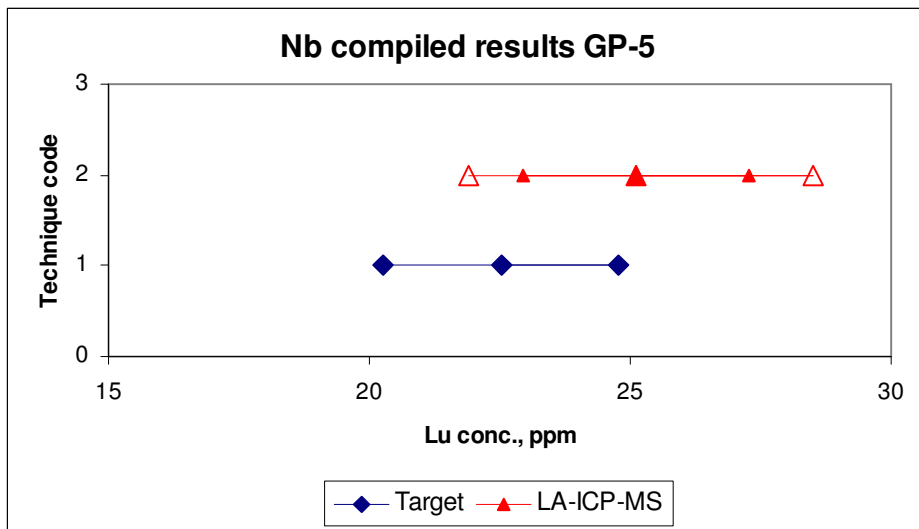
Figure 29. Nb results G-probe 5 study
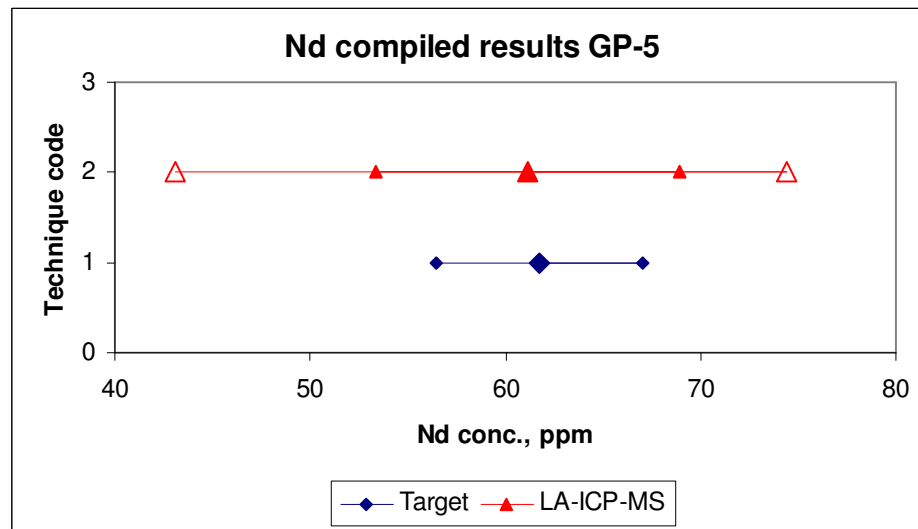
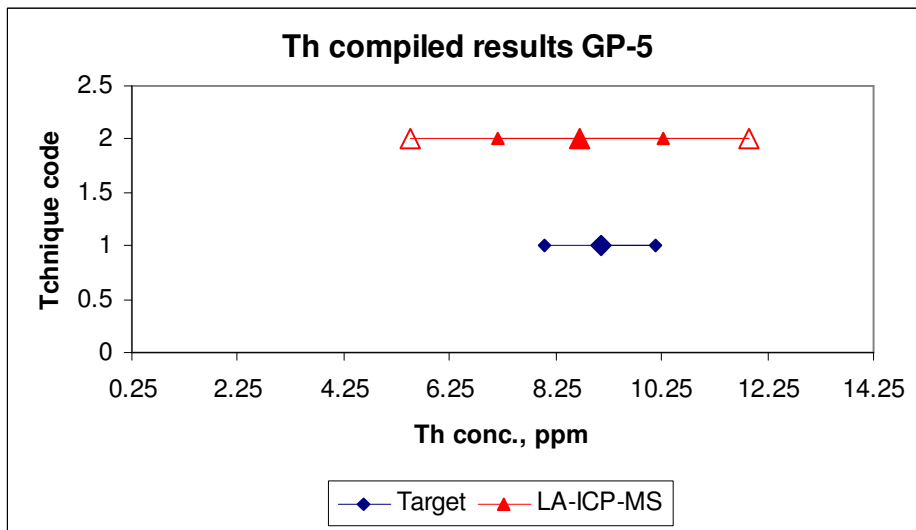Figure 30. Nd results G-probe 5 study
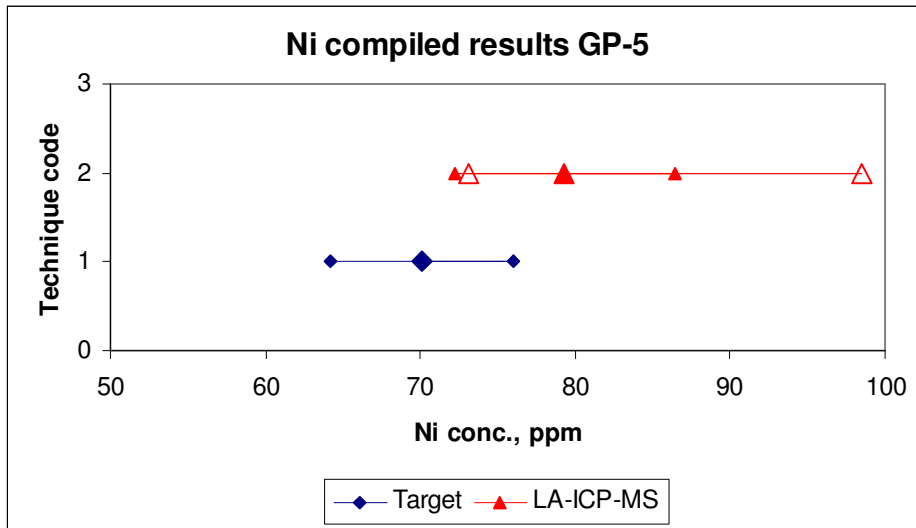
Figure 31. Ni results G-probe 5 study
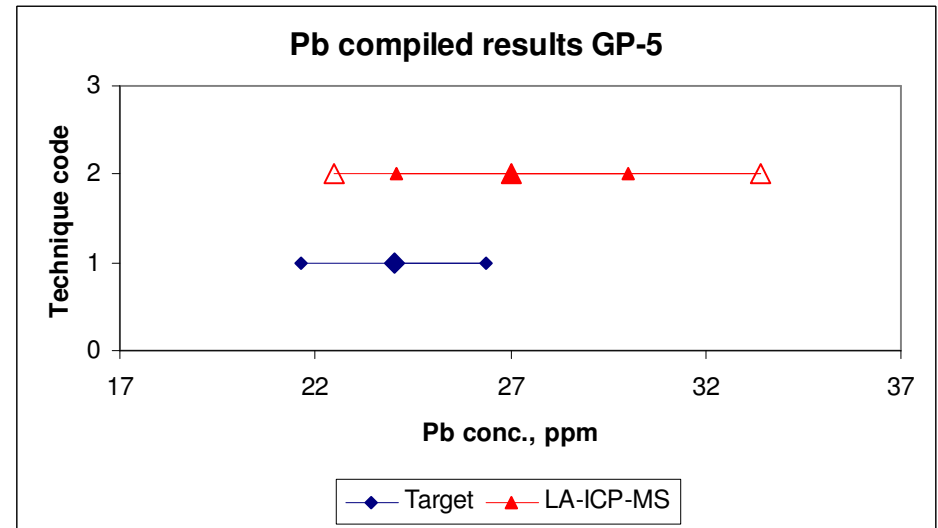
Figure 32.   Pb results G-probe 5 study

Figure 33.   Pr results G-probe 5 study

Figure 34.   Sb results G-probe 5 study

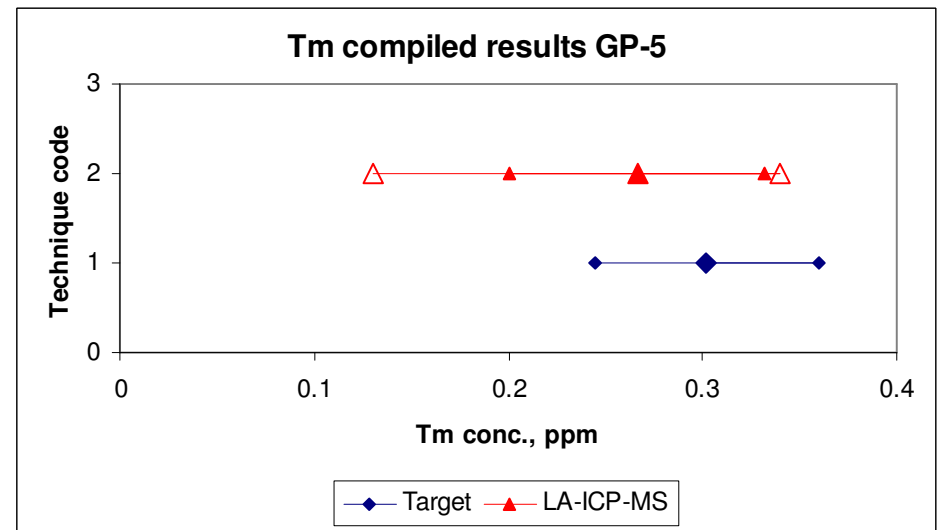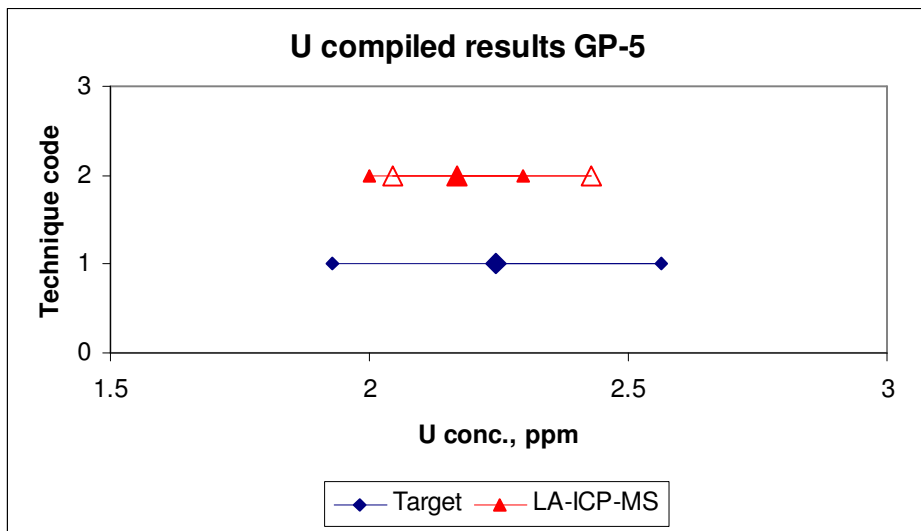Figure 35.   Sc results G-probe 5 study

Figure 36.   Sm results G-probe 5 study

Figure 37.   Sn results G-probe 5 study

Figure 38.   Sr results G-probe study

Figure 39.   Ta results G-probe 5 study

Figure 40.   Tb results G-probe 5 study

Figure 41.   Th results G-probe 5 study

Figure 42.   Tm results G-probe 5 study

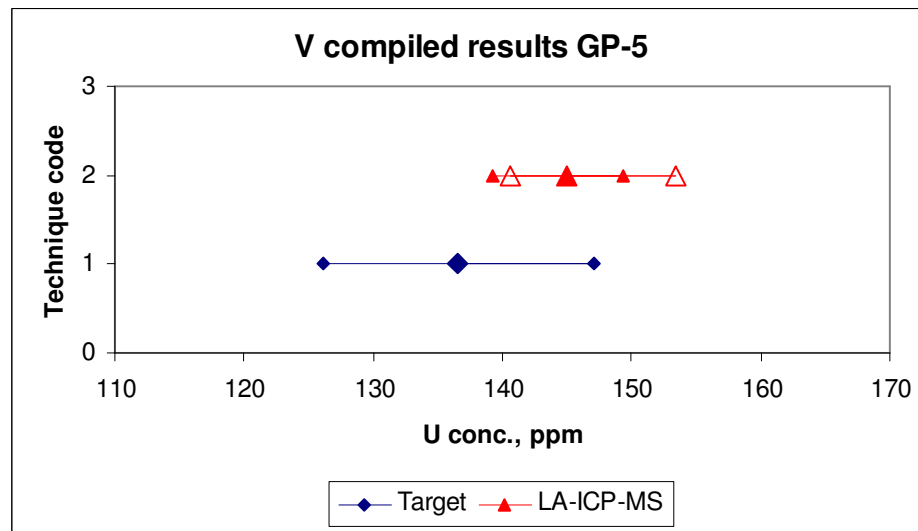Figure 43.   U results G-probe 5 study

Figure 44.   V results G-probe study
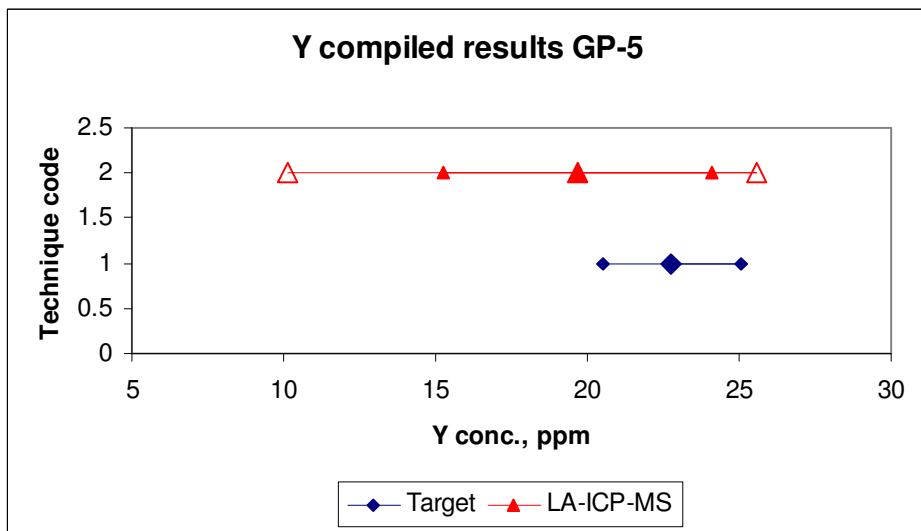

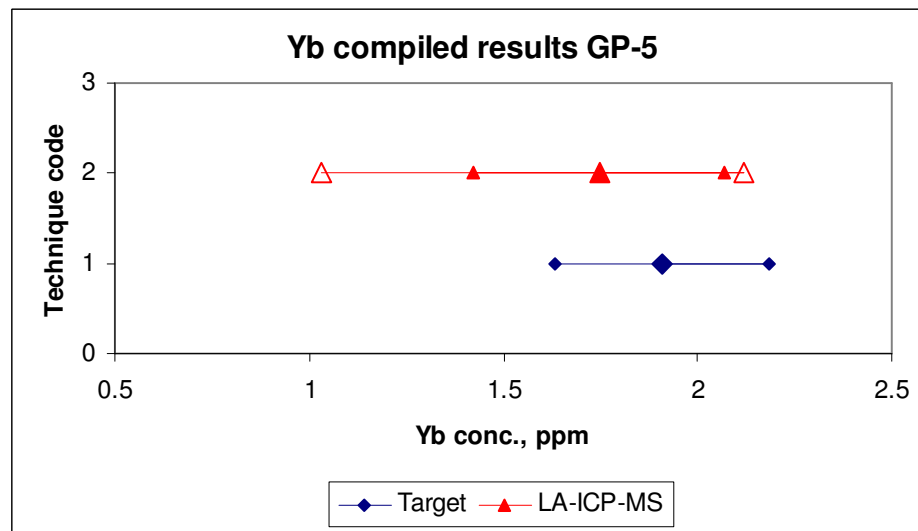Figure 45.   Y results G-probe 5 study

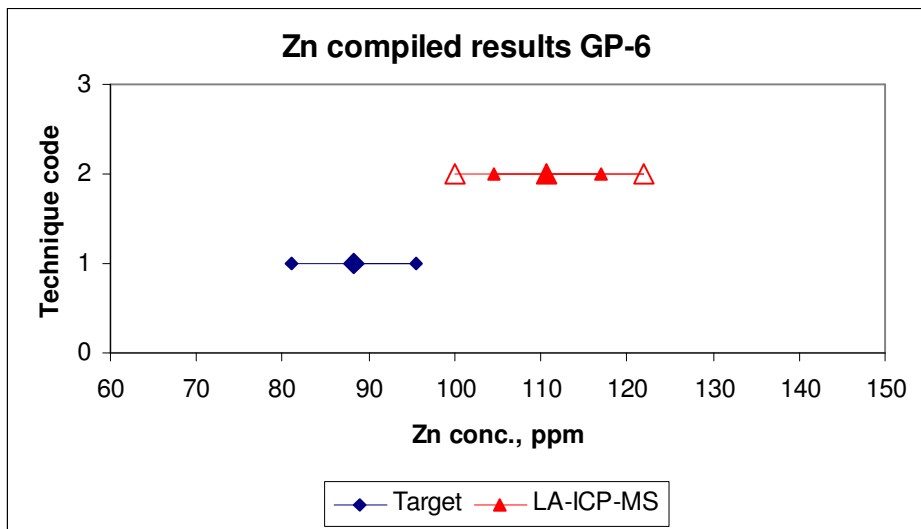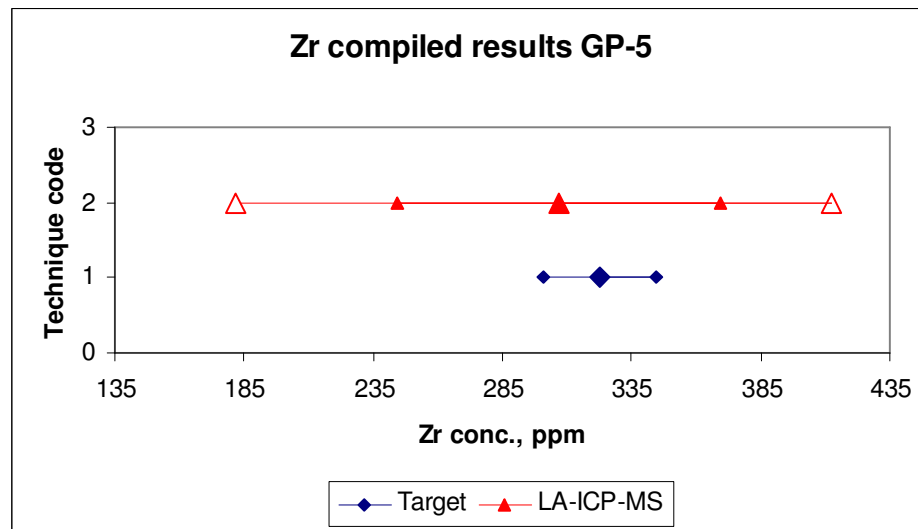Figure 46.   Yb results G-probe 5 study

Figure 47.   Zn results G-probe 5 study

Figure 48.   Zr results G-probe 5 study