

# GEOSTATS PTY LTD

Mining Industry Consultants  
Reference Material Manufacture and Sales  
10A Marsh Close, O'Connor  
WESTERN AUSTRALIA 6163  
Ph: (+618) 9314 2566, Fax: (+618) 9314 3699  
[www.geostats.com.au](http://www.geostats.com.au)

## *Certificate of Participation*

This is to certify that

*Zarazma Minerals Studies Company*

has participated in the April 2012  
Geostats Survey of International Laboratories

*S. Romero*  
Operations Manager

*P.J. Hayes*  
Managing Director

Geostats Laboratory Survey  
April 2012

Prepared for  
Zarazma Minerals Studies Company

Confidential



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THIS DOCUMENT SHOULD NOT BE CIRCULATED OUTSIDE THE COMPANY WHOSE NAME APPEARS ON THE COVER.**

To the reader,

This survey of laboratories undertaken by Geostats is performed as a service to both the Mining Industry and the Analytical Industry. It is envisaged that it can be used as a tool for the maintenance of high standards in both industries.

The report to the Mining Houses identifies most commercial laboratories and should be treated as confidential information. Some commercial facilities prefer to pay for the inclusion of their sites and these are not identified to the Mining Houses. This report should not be circulated outside of the Client Company or reproduced for the benefit of other mining groups.

It is not the intent of this survey to provide marketing tools for the analytical industry. A laboratory report is available which identifies only the laboratory or group requesting the report. This allows the laboratory to assess their performance in relation to the rest of the analytical industry. All the laboratories identified have taken advantage of this report and included it as part of their ongoing quality control procedures. Participation in these surveys is an indication of the laboratory's interest in quality and should be regarded as a positive sign regardless of the outcome.

Many thanks to both the laboratories and the Mining Houses for their ongoing support of this survey.

**Stuart Romero** BSc, BEng

**Operations Manager | Geostats Pty Ltd**

10A Marsh Close, O'Connor, Western Australia 6163, Australia

**Ph:** +618 9314 2566 | **Fax:** +618 9314 3699 | **Skype:** srr-geostats.com.au

**Email:** srr@geostats.com.au | **Website:** www.geostats.com.au

# Geostats Pty Ltd, O'Connor, Western Australia.

## Listing of Participating Laboratories for Round Robin - April 2012

<b>Western Australia</b>	ALS Minerals - Kalgoorlie	<b>Laos</b>	ALS Minerals Vientiane (Laos)
ALSM KAL	ALS Minerals - Perth	ALSM LAOS	Lane Xang Minerals
ALSM PERTH	Ammtec Laboratory	<b>Malaysia</b>	
AMMTEC	Amdel Laboratory - Kalgoorlie	PENJOM MALAYSIA	Penjom Gold Mine
BV KAL	Ultra Trace Pty Ltd	<b>Mali</b>	
BV ULTRA TRACE	Darlot Gold Mine Assay Lab	ALSM MALI	Groupe de Laboratoire ALS Mali SAREL
DARLOT MINE	Genalysis Laboratory Services Pty Ltd	SADIOLA MALI	Sadiola Mine Site Laboratory
GEN PER	MMG Golden Grove	SGS KAYES	SGS Laboratory - Kayes
GOLDEN GROVE	Granny Smith Gold Mine Laboratory	SGS MALI GCEX	Analabs Morla Laboratory
GRANNYS	Kalassay Group (Perth Assay Laboratory)	SGS SYAMA	SGS Minerals Syama Laboratory
KAL PER	Kalassay Group (Kalgoorlie Assay Laboratory)	<b>Mauritania</b>	
KALGOORLIE AL	LabWest	SGS MAURITANIA	SGS Mineral Services Mauritania
LABWEST	Lawlers Gold Mine Assay Lab	<b>Mexico</b>	
LAWLERS MINE	Kalassay Group (Leonora-Laverton Assay Laboratory)	ACTLABS MEXICO	Actlabs Mexico SA de CV
LEONORA AL	MinAnalytical	<b>Monrovia</b>	
MINANALYTICAL	Newcrest Mining Limited - Telfer Gold Mine Lab	ACTLABS MONGOLIA	Actlabs Asia LLC
NEWCREST TELFER	Nifty Minesite Laboratory	SGS ULAAN	SGS Mongolia LLC
NIFTY CU OP	Plutonic Gold Mine Assay Lab	STEWART MONGOLIA	Stewart Mongolia LLC
PLUTONIC MINE	Standard & Reference Laboratories	<b>Morocco</b>	
SAR LAB	SGS Jundee	ONHYM MOROCCO	ONHYM
SGS JUNDEE	SGS Kalgoolie	<b>New Zealand</b>	
SGS KALG	SGS Newburn	SGS NZ MACRAES	SGS New Zealand, Macraes Laboratory
SGS NEWBURN	SGS Orestest	SGS NZ REEFTON	SGS New Zealand, Reeflon Laboratory
SGS ORESTEST	ALS Minerals - Orange	SGS NZ WAIHI	SGS New Zealand, Minerals Laboratory
<b>New South Wales</b>	SGS Wyalong	<b>Papua New Guinea</b>	
ALSM ORANGE	SGS Wyalong	PORGERA	Porgera Gold Mine Laboratory
SGS WYALONG	Granites Gold Mine	<b>Peru</b>	
<b>Northern Territory</b>	Northern Territory Environmental Laboratories	ACTLABS LIMA	Actlabs - Skyline Peru SAC
GRANITES	ALS Minerals - Brisbane	ALSM LIMA	ALS Peru SA
NTEL DARWIN	ALS Minerals - Mt Isa	CERTIMIN PERU	CIMM Peru SA
<b>Queensland</b>	ALS Minerals - Townsville	CMH PERU	Consorcio Minero Horizonte S.A.
ALSM BRIS	BHP Billiton Cannington	INSPECTORATE PERU	Inspectorate Services Peru SAC
ALSM MT ISA	Armdel Mt Isa	LAGUNAS MINE	Minera Barrick Misquichilca - Unidad Lagunas Norte
ALSM TVL	Xstrata Chemical Laboratory	NEW PERU	Minera Yanacocha SRL - Newmont Lab (Peru)
BHP CANNINGTON	Ernest Henry Mine Laboratory	PIERINA MINE	Minera Barrick Misquichilca - Unidad Pierina
BV MT ISA	Genalysis Testing Services, Townsville	SGS LIMA	SGS del Peru SAC
CHEM LAB XSTR	SGS Townsville	<b>Philippines</b>	
EH MINE XSTR	BHP Billiton	McPHAR	McPhar Geoservices Inc
GEN TOWNSVILLE	Amdel Laboratory - Adelaide	<b>Romania</b>	
SGS TOWNSVILLE	Genalysis Laboratory Services - Adelaide	ALSM ROMANIA	ALS Romania
<b>South Australia</b>	SGS Burnie	<b>Russia</b>	
BHP OLYMPIC	Burnie Research Laboratory	ALSM CHITA	ALS Minerals - Chita
BV ADL	Alex Stewart Assayers Argentina SA - Mendoza	IRGIREDMET RUSSIA	IRGIREDMET JSC
GEN ADEL	Alex Stewart Assayers Argentina SA - Perito Moreno	SGS CHITA	SGS Chita
<b>Tasmania</b>	Veladero Project Assay Lab	STEWART MOSCOW	Stewart Geochemical and Assay Ltd
BURNIE RL		TOMS RUSSIA	TOMS-Irkutsk
<b>Argentina</b>		VSEGEI RUSSIA	VSEGEI All-Russia Geological research Institute
ASA MENDOZA		<b>Saudi Arabia</b>	
ASA PERITO MORENO		ALAMRI JEDDAH	Ai Amri Laboratory
VELADERO MINE		SGS SABODALA	SGS Sabodala
<b>Armenia</b>		<b>Serbia</b>	
DENO ARMENIA		SGS BOR	SGS Bor
<b>Botswana</b>		<b>South Africa</b>	
MUPANE BOTS		ALSM JOBURG	ALS Minerals - Johannesburg
<b>Brazil</b>		AR BMP	Anglo Research, Crown Mines - BMP
BV BRAZIL		AR JOBURG	Anglo Research, Crown Mines - AS
SGS LF BELO HOR		GEN JOBURG	Genalysis Laboratory Services - Joburg
<b>Bulgaria</b>		GOLD FIELDS CHARL	Gold Fields West Wits Analytical Laboratories
CHELOPECH MINE		INSPECTORATE RSA	Inspectorate Services Rustenburg
<b>Burkina Faso</b>		MINTEK SA	Mintek Analytical Services Division
ALSM OUAGADOUGOU		PERF BARBERTON	Performance Laboratories Barberton
SGS OUAGADOUGOU		PERF PLR	Performance Laboratories (PLR)
<b>Canada</b>		PERF PLW	Performance Laboratories (PLW)
ACCURASSAY		SCI SER	Scientific Services Pty Ltd
ACME VAN		SET POINT SA	Set Point Laboratories
ACTLABS CAN		SGS JOBURG	SGS South Africa Booyens
ACTLABS TB		VAAL RIVER SA	Vaal River Chemical laboratory
AGAT ONTARIO		<b>Spain</b>	
ALSM QUEBEC		KINBAURI	Kinbauri España S.L.U.
ALSM VAN		FILAB SURINAME	Filab Suriname
BARRICK VAN		<b>Tanzania</b>	
BECQUEREL-NAA		BULYANHULU TANZ	Bulyanhulu Mine Assay Lab
HEMLO MINE		BUZWAGI	Pangea Minerals Ltd
INSPECTORATE VAN		GEITA TANZ	Geita Gold Mine Laboratory
MUSSELWHITE		SGS GOLDEN PRIDE	Golden Pride Mine Site Lab
SGS LAKEFIELD		SGS MWANZA	African Assay Laboratories (Tanzania) Ltd
SGS TORONTO		TMAA TANZANIA	Tanzania Minerals Audit Agency (TMAA)
SGS VANCOUVER		TULAWAKA TANZ	Tulawaka Mine Assay Lab
TSL SASKATCHEWAN		<b>Thailand</b>	
<b>Chile</b>		CHATREE THAI	Chatree Gold Mine Laboratory
ACME CHILE		<b>Turkey</b>	
ALSM LASERENA		ACME TURKEY	Acme Analytical Laboratories Ltd - Turkey
BV CESMEC		ALSM TURKEY	ALS Minerals - Turkey
BV GEOANALITICA		ANAGOLD TURK	Anatolia Minerals Ltd
VIGLAB CHILE		KOZAGOLD KAYMAZ	Koza Gold Mine Kaymaz Laboratory
<b>China</b>		KOZAGOLD TURKEY	Koza Gold Mine Laboratory
ALSM CHINA		SGS TURKEY	SGS Turkey
ITS BEIJING		STANDARD LAB	Standard Laboratories Inc
<b>Cote d'Ivoire</b>		TUPRAG TURK	Tuprag Kisladag Gold Mine
BV COTE		<b>USA</b>	
<b>Democratic Republic of Congo</b>		AALLABS	American Assay Laboratories
SGS DIKULUSHI		ACME ALASKA	Acme Analytical Laboratories Ltd - Alaska
SGS KINSEVERE		ALSM RENO	ALS Minerals - Reno
<b>Eritrea</b>		BALD MOUNT	Bald Mountain Mine Assay Lab
SGS BISHA		CORTEZ MINE	Cortez JV Mine Assay Lab
<b>Finland</b>		FLORIN RENO	Florin Analytical Services
LABTIUM FIN		GOLD SUNLIGHT MINE	Golden Sunlight Mine Assay Lab
<b>Ghana</b>		GOLDSTRIKE	Barrick Analytical Laboratory
AG GHANA ASSA		INSPECTORATE NEV	Inspectorate Services Sparks
AG GHANA CHEM		MARIGOLD MINES	Marigold Mining Company - Assay Lab
ALSM GHANA		MCCELLAND NEV	McClelland Laboratories, Inc.
GOLD FIELDS GHANA		NEW GC	Newmont Mining Corporation - Carlin Assay Lab
ITS GHANA		NEW LONE	Newmont - Lone Tree Mine
NEW AHAFO GHANA		NEW MET SER	Newmont Metallurgical Services
PERF BIBIANI		NEW TWIN CM	Newmont - Twin Creek Mine
SGS TARKWA		PINNACLE	Pinnacle Analytical Laboratories
<b>Guatemala</b>		ROUND MOUNT MINE	Round Mountain Gold Assay Lab
GC GUATEMALA		SKYLINE ARIZONA	Skyline Assayers & Laboratories
<b>Guyana</b>		TURO RIDGE MINE	Turquoise Ridge JV Mine Assay Lab
ACTLABS GUYANA		<b>Venezuela</b>	
<b>India</b>		PHOENIX EL CALLAO	Phoenix Corporation CA
SHIVA INDIA		PHOENIX LA CAMORRA	Phoenix Corporation CA
<b>Indonesia</b>		<b>Vietnam</b>	
FREEPRT IND		BONG MIEU	Olympus Pacific - Bong Bieu
GEOSERVICES IND		PHUOC SON	Olympus Pacific - Phuoc Son
ITS GOSOWONG		<b>Zambia</b>	
ITS INDO		ALSM KANSANSHI	ALS Minerals - Kansanshi
ITS MATARAM		<b>Zimbabwe</b>	
SGS JAKARTA		ANTECH	Antech Laboratories
SUCOFINDO INDO		PERF ZIMBABWE	Performance Laboratories Zimbabwe
WAY LINGGO			
<b>Iran</b>			
ZARAZMA			
<b>Ireland</b>			
OMAC			
<b>Kyrgyz Republic</b>			
KUMTOR KYRGYZ			
STEWART KYRGYZ			

Commercial Laboratory  
 Minesite Laboratory  
 Government Laboratory

## REPORT ON LABORATORY SURVEY – April 2012

A round robin to measure the accuracy of gold, silver, sulphur and base metal analyses from 199 laboratories was conducted during April 2012. The results of this survey are a measure of the ability of a laboratory to accurately analyse a pre-prepared pulp.

The ability of a laboratory to crush, split and prepare the sample without contamination is not measured by this survey. Knowledge of sampling machinery and the ability to design efficient flow systems with in-built homogeneity checks is required in order to develop confidence in the sample preparation.

The reference samples submitted to the laboratories consisted of:

- 10 gold standards
- 5 low level gold standards
- 6 gold and silver on carbon standards
- 10 geochemical base metal standards
- 6 ore-grade base metal standards
- 10 sulphur standards

Companies operating more than one laboratory have received extra filler samples, which are not used in the calculations. The Geostats numbering system makes it extremely difficult for any cross collation of results from one laboratory to the next. This provides a level playing field for all laboratories, whether they are sole operators or members of a large laboratory group.

We use a double entry system to build an accurate database. Two individuals enter all the data and when complete these two files are cross-checked and the source data is consulted to rectify any errors. The mean values used for calculations in this study are checked visually by preparing histograms. Outliers are removed and the remaining population distributions are tested for normality. All outliers are checked back to the original assay report for a third and final time.

### GOLD SAMPLES

Three lots of gold samples were submitted to the laboratories, one lot for fire assay, one for aqua regia digest (or similar) and one for low-level (<200 ppb) gold. Becquerel Canada performed Neutron Activation Analysis on all samples, reporting a gold + 33 element analysis which has been included at the end of this report. Becquerel Canada can be contacted through Steven Simpson at [ssimpson@becquerellabs.com](mailto:ssimpson@becquerellabs.com)

### GOLD AND SILVER ON CARBON SAMPLES

Six gold and silver on carbon standards were included in this survey, both loaded and barren. The method of analysis for these samples was left up to the individual laboratories.

### GEOCHEM BASE METAL SAMPLES

The base metal samples were analysed for copper, lead, zinc, nickel, arsenic, silver and cobalt. The method of analysis for base metal samples was left to the discretion of the laboratory manager. Becquerel Canada performed Neutron Activation Analysis and some mine laboratories performed XRF analyses. Digest levels were read on ICP or AAS. Methods are listed in the results page for the respective analyte.

## **ORE GRADE BASE METAL SAMPLES**

Six ore-grade and concentrate samples are included in the survey. These are assayed primarily for copper, lead, zinc, nickel, silver and sulphur. Other elements are reported but not in sufficient numbers for inclusion in the report. These high-grade materials are analysed at the chemist's discretion but almost always using ore-grade techniques. Some use classical analyses while others use XRF or other methods. However, some of these products have, for example, high lead but low copper and the method for copper analysis may be inappropriate for low levels. Owing to this characteristic, only higher grade analyses are plotted in the related charts.

## **SULPHUR SAMPLES**

Ten sulphur and carbon standards were prepared for the survey. These ten new standards are a good mix of values with sulphur values up to 10.6% and carbon values up to 3.1%.

All the standards used in this survey are available for purchase.

## **RESULTS**

The results of the analyses are presented in three forms:

1. A table showing values as reported from the laboratories. These are presented in columns according to their respective sample identifiers, with each result's standardised Z value also displayed. Outliers are highlighted and assigned a Z value of 3.00 or -3.00. General statistics are listed at the top of each table.
2. Bar chart for each element showing the sum of absolute standardised values divided by the count of absolute standardised values.
3. Bar chart for the mean of standardised values.

## **EXAMINATION OF RESULTS - METHODOLOGY**

1. Double entry of all data and validation by cross-checking. Confirm any anomalous values.
2. Produce basic statistics on results, including:
  - a. count
  - b. mean
  - c. median
  - d. standard deviation
  - e. minimum
  - f. maximum
  - g. error (95% Confidence Interval)
  - h. percentage error of mean (error as a percentage of the calculated mean).
3. Produce summary statistics and assay sheet.
4. Run outlier macro to find obvious outlier values.
5. Generate 'Z' intervals for remaining data (from calculated mean).
6. Check that median and mean are similar to verify a normal distribution.
7. Standardise remaining values i.e. subtract the mean and divide by the standard deviation.

8. Add results from each laboratory in 'standardised values' calculations (positive and negative) and divide by count.
9. Produce 'Mean of Standardised Values' Bar Charts.
10. Add absolute values from each laboratory in 'standardised values' calculations.
11. Divide result by count of results to calculate average absolute standard value for laboratory performance on each element.
12. Produce 'Mean of Absolute Standardised Values' Bar Charts.

## CHARTS

The 'Mean of Standardised Values' charts (blue in reports) indicate any bias shown by laboratories on a particular element, but do not show any general error which might be plus and minus the mean. The 'Mean of Absolute Standardised Values' charts (pink in reports) indicate the general error but no bias.

## INTERPRETATION OF RESULTS

### SUMMARY STATISTICS AND ASSAY TABLES

These tables are self-explanatory. The row titled 'error' refers to the margin of error expected at 95% confidence. That is, the standard normal probability or 'Z' statistic representing 95% (1.96) is multiplied by the standard deviation and the result is divided by the square root of the population. We can be 95% confident that the true mean lies between mean minus error and mean plus error. The row titled '% error in mean' is simply this margin of error expressed as a percentage of the calculated mean. Outliers are highlighted and not used for calculations at the top of the tables.

### STANDARDISED VALUES

These numbers are generated using the following formula. Reported value minus the mean, result of this divided by the standard deviation. This creates a new distribution with mean '0' and standard deviation '1'. Positive and negative numbers result from this calculation depending on whether the reported value is above or below the mean. Laboratories reporting outliers are manually assigned 3.00 or -3.00 as these results have been removed from automatic calculation. The higher the absolute number reported, the further the reported assay is from the calculated mean.

### MEAN OF ABSOLUTE STANDARDISED VALUES (RED CHARTS)

The bar representing each laboratory is the mean of the sum of the absolute standardised values reported on all assays of the element in question. That is, the absolute sum of the rows in the Standardised Values Table divided by the number of assays. These charts give a visual representation to the general error shown by the particular laboratories. These charts do not show bias.

### MEAN OF STANDARDISED VALUES (BLUE CHARTS)

These charts show the mean of standardised values with negative values included. A direction of error or bias can be interpreted from laboratories showing high values, negative or positive.



## BRIEFLY

General error is indicated in absolute column charts.

Bias is indicated in negative/positive column charts.

The column charts show indications of error or direction of error - check the real data in the tables before coming to any decision as to the significance of this error. Also pay attention to the grade of the standard materials with regard to the laboratory level of detection. Some laboratories may report outliers due to the limitations of their methodology.

## LEGEND FOR METHODS & READINGS

METHODS		READINGS	
1A	1 Acid Digest	AAS	Atomic Absorption Spectroscopy
2A	2 Acid Digest	GRAV	Gravimetric
3A	3 Acid Digest	ICP	Inductively Coupled Plasma - Unspecified
4A	4 Acid Digest	ES	ICP - Emission Spectroscopy
AD	Acid Digest	MS	ICP - Mass Spectroscopy
AR	Aqua Regia	IR	Infrared
CSA	Carbon and Sulphur Analyser	XRF	X-Ray Fluorescence
FA	Fire Assay	DIBK	DIBK Extraction
FUS	Fusion	MIBK	MIBK Extraction
GF	Graphite Furnace		
GRAV	Gravimetric		
MAD	Multi-Acid Digest		
NAA	Neutron Activation Analysis		
PP	Pressed Powder		
PR	Pre-Roast		
VOL	Volumetric		

## ADDITIONAL COMMENTS

The gold results on material G312-3 are showing very high variability for both Fire Assay and Aqua Regia techniques. Additionally, the gold grades on this material are not as expected from the manufacturing process. The material was a blend of a basaltic base material with some copper concentrate material, with an expected gold grade of ~0.5ppm.

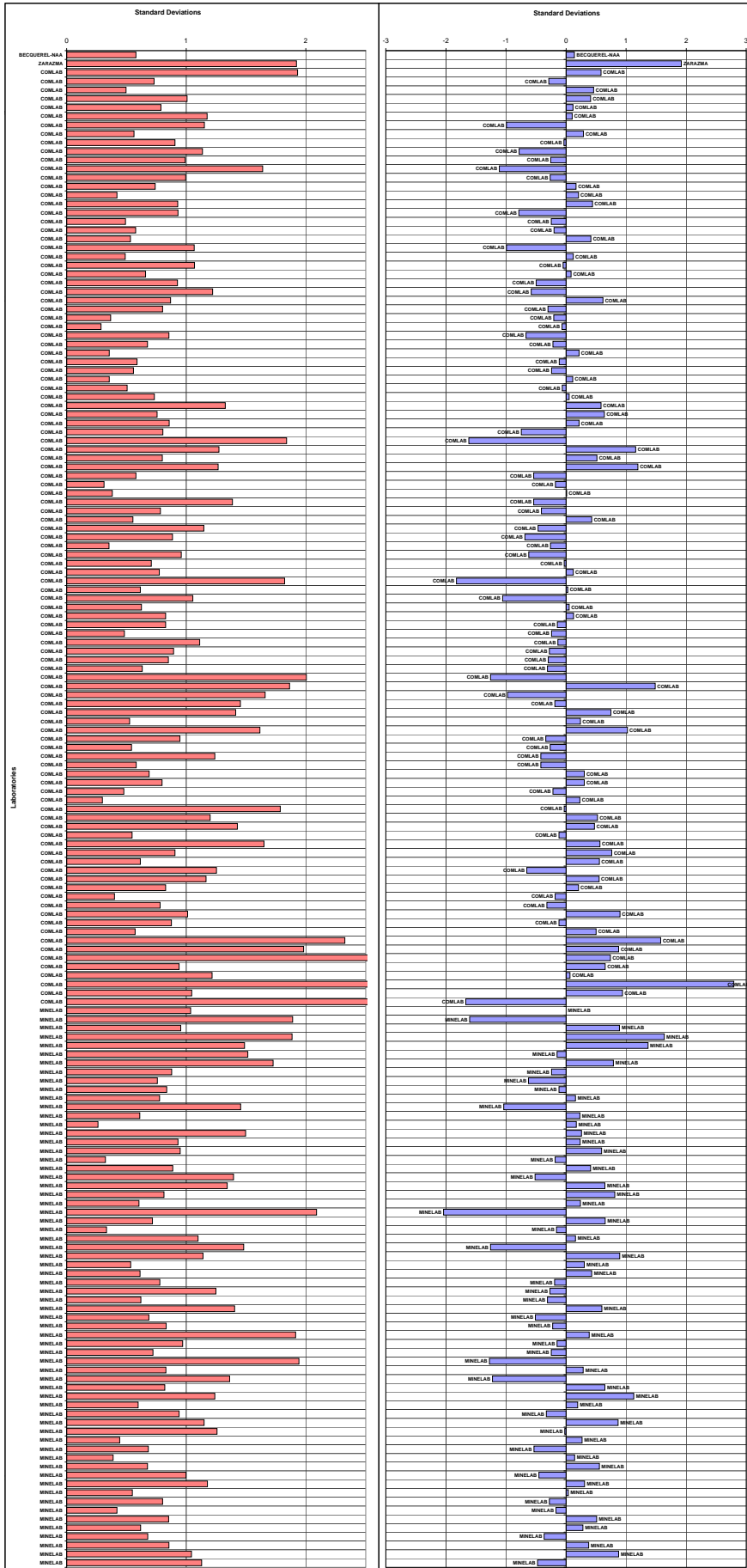
The results of G312-3 are not included in the calculation of laboratory performance.

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## RESULTS OF ANALYSES PRESENTED AS TABLES AND PLOTS

ANALYSIS	PAGE	DESCRIPTION
FIRE ASSAY	1	Summary statistics, Assays, Standardised Values
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		Mean of Standardised Values (General Bias)
AQUA REGIA DIGEST	3	Summary statistics, Assays, Standardised Values
	4	Mean of Positive Standardised Values (General Error)
		Mean of Standardised Values (General Bias)
LOW GRADE GOLD ANALYSIS	5	Summary statistics, Assays, Standardised Values
	6	Mean of Positive Standardised Values (General Error)
		Mean of Standardised Values (General Bias)
GOLD ON CARBON ANALYSIS	7	Summary statistics, Assays, Standardised Values
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		Mean of Standardised Values (General Bias)
SILVER ON CARBON ANALYSIS	9	Summary statistics, Assays, Standardised Values
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SILVER ANALYSIS	11	Summary statistics, Assays, Standardised Values
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COPPER ANALYSIS (Geochem)	13	Summary statistics, Assays, Standardised Values
	14	Mean of Positive Standardised Values (General Error)
		Mean of Standardised Values (General Bias)
LEAD ANALYSIS (Geochem)	15	Summary statistics, Assays, Standardised Values
	16	Mean of Positive Standardised Values (General Error)
		Mean of Standardised Values (General Bias)
ZINC ANALYSIS (Geochem)	17	Summary statistics, Assays, Standardised Values
	18	Mean of Positive Standardised Values (General Error)
		Mean of Standardised Values (General Bias)
NICKEL ANALYSIS (Geochem)	19	Summary statistics, Assays, Standardised Values
	20	Mean of Positive Standardised Values (General Error)
		Mean of Standardised Values (General Bias)
ARSENIC ANALYSIS	21	Summary statistics, Assays, Standardised Values
	22	Mean of Positive Standardised Values (General Error)
		Mean of Standardised Values (General Bias)
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ZINC ANALYSIS (Ore Grade)	29	Summary statistics, Assays, Standardised Values
	30	Mean of Positive Standardised Values (General Error)
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NICKEL ANALYSIS (Ore Grade)	31	Summary statistics, Assays, Standardised Values
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		Mean of Standardised Values (General Bias)
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		Mean of Standardised Values (General Bias)
CARBON ANALYSIS	39	Summary statistics, Assays, Standardised Values
	40	Mean of Positive Standardised Values (General Error)
		Mean of Standardised Values (General Bias)
BECQUEREL ANALYSIS	41	Becquerel Gold + 33 element analysis (Gold, Base Metals)



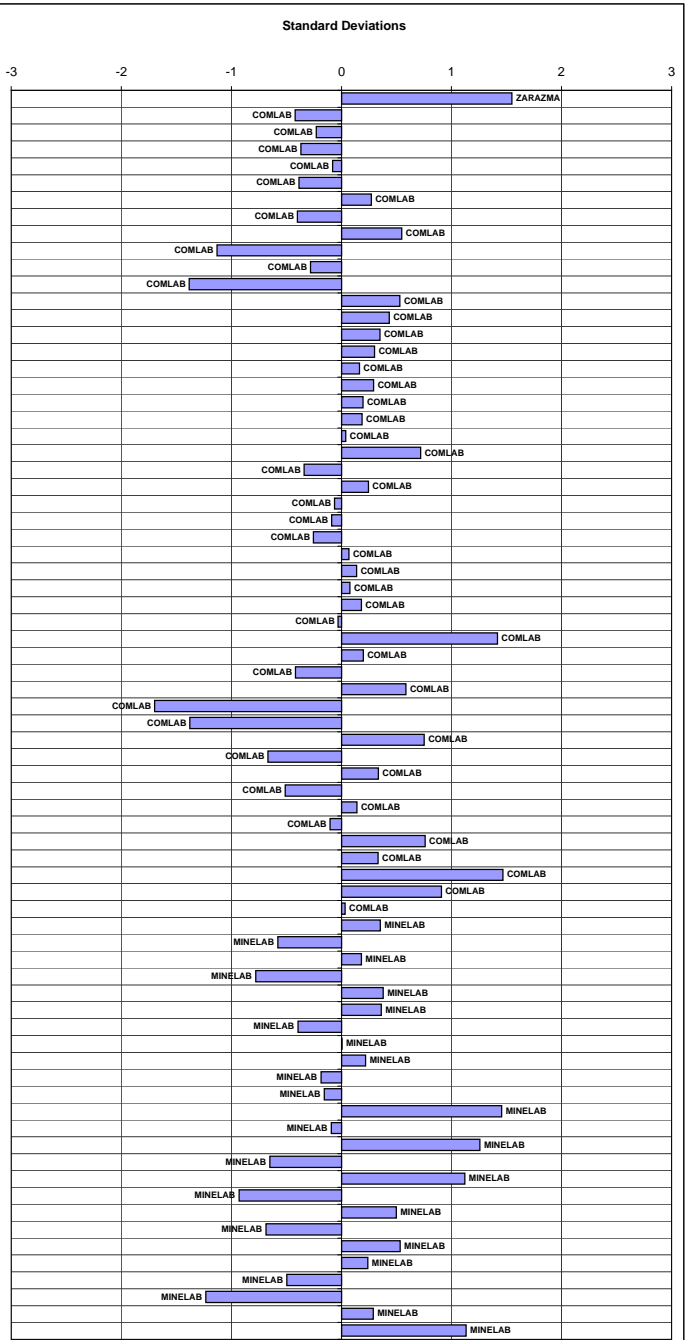


Aqua Regia Gold Round Robin - Summary Statistics, Assays, Standardised Values and Graphs - April 2012

Summary statistics table with columns for Standard Reference (MEAN, STDEV, 95% CI, MIN, MEDIAN, MAX, IQR, COUNT) and assay ranges G312-1 through G312-10.

Main data table with columns for Lab Reference, Standard Reference, assay, z-score, and Method. It contains detailed assay results for various samples like ZARAZMA, COMLAB, and MINELAB across different assay groups.

Highlighted values are outliers which are assigned a z-score of -3.00 or 3.00 in the standardised values. Please refer to the report for comments regarding G312-3.

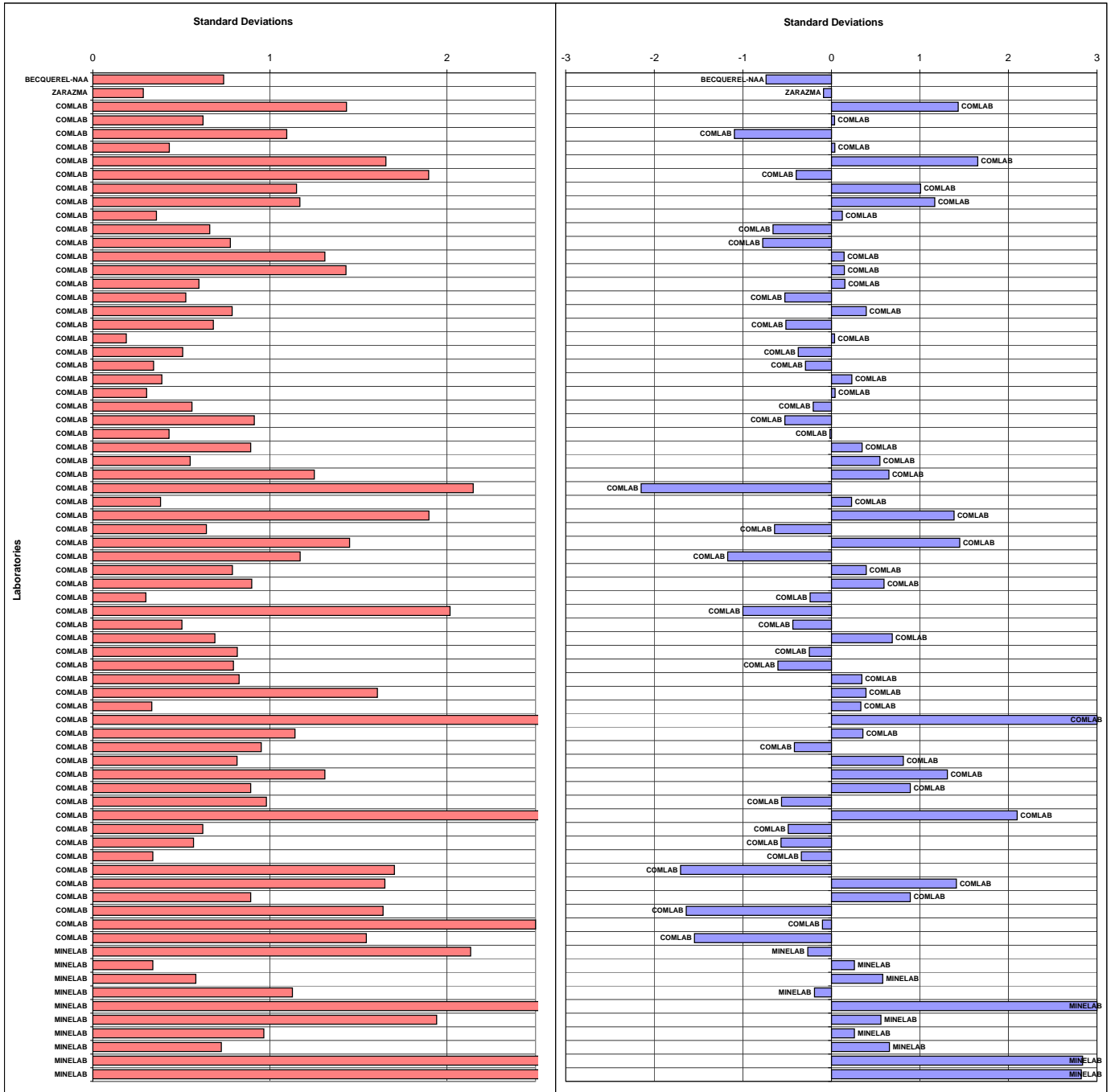


**Low Grade Gold Round Robin - Summary Statistics, Assays, Standardised Values and Graphs - April 2012**

Standard Reference	GLG312-1	GLG312-2	GLG312-3	GLG312-4	GLG312-5
MEAN (ppb)	21	3	49	18	3
STDEV (ppb)	3	1	4	3	1
95% CI (ppb)	1	0	1	1	0
95% CI (%)	3.34%	16.25%	2.20%	3.80%	17.33%
MIN (ppb)	13	1	40	11	1
MEDIAN (ppb)	20	3	49	19	3
MAX (ppb)	26	6	60	25	7
IQR (ppb)	4	2	4	4	1
COUNT	65	35	64	66	37

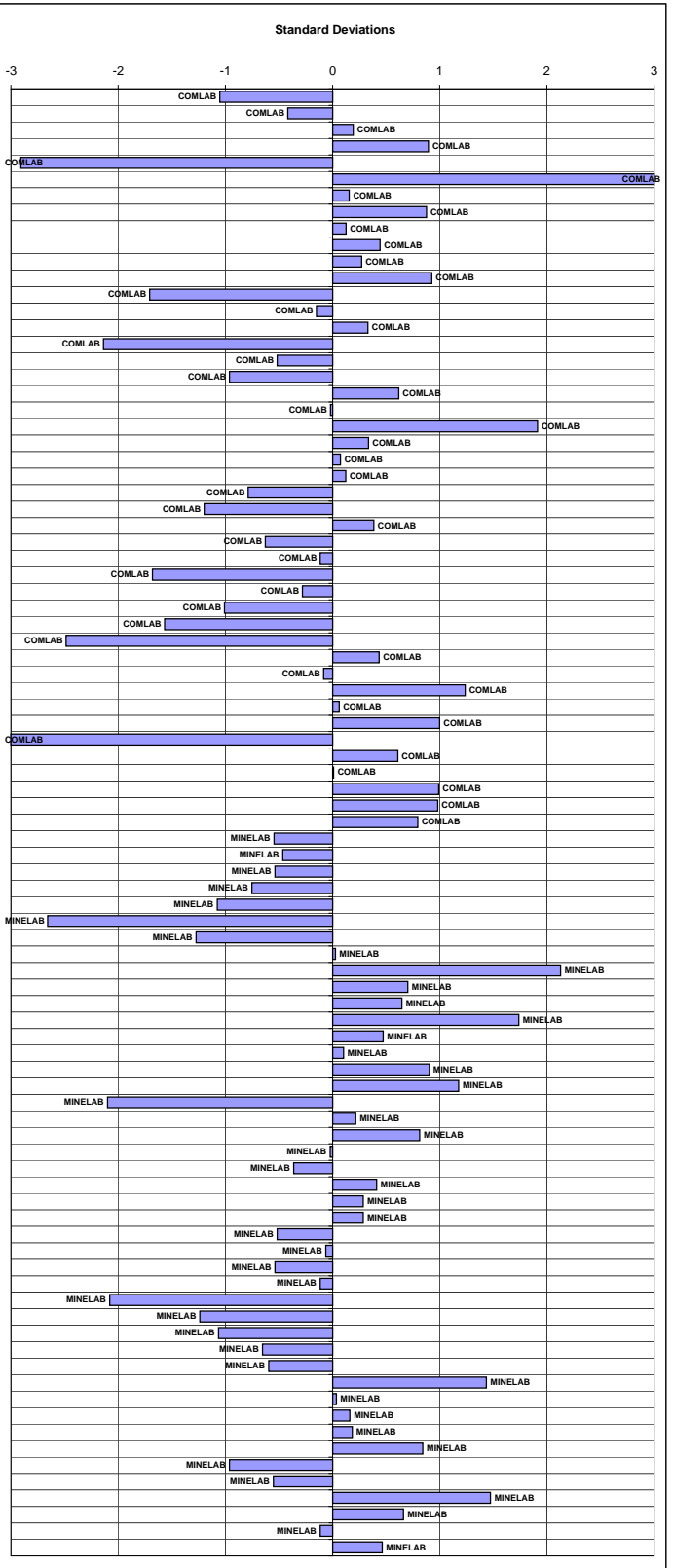
Standard Reference	GLG312-1		GLG312-2		GLG312-3		GLG312-4		GLG312-5		Method	Reading
Lab Reference	assay	z-score	assay	z-score	assay	z-score	assay	z-score	assay	z-score		
BECQUEREL-NAA	20	-0.23	<2	bld	45	-0.82	15	-1.16	<2	bld	NAA	NAA
ZARAZMA	20	-0.23	2	-0.59	50	0.33	18	-0.12	3	0.16	FA	ES
COMLAB	26	1.90	4	0.89	52	0.80	20	0.58	13	3.00	FA	ES
COMLAB	22	0.48	<2	bld	47	-0.36	16	-0.81	4	0.84	FA	ES
COMLAB	16	-1.65	1	-1.33	43	-1.28	18	-0.12	<1	bld	FA	MS
COMLAB	21	0.12	<5	bld	46	-0.59	20	0.58	<5	bld	FA	AAS
COMLAB	25	1.54	9	3.00	52	0.80	22	1.28	<5	bld	FA	AAS
COMLAB	13	-2.72	<5	bld	47	-0.36	14	-1.51	19	3.00	FA	AAS,NAA
COMLAB	20	-0.23	4	0.89	48	-0.13	23	1.63	7	2.88		
COMLAB	25	1.54	<5	bld	50	0.33	23	1.63	<5	bld	FA	AAS
COMLAB	22	0.48	2	-0.59	50	0.33	19	0.23	3	0.16	FA	AAS
COMLAB	20	-0.23	<1	bld	43	-1.28	17	-0.46	<1	bld	FA	AAS
COMLAB	20	-0.23	<5	bld	43	-1.28	16	-0.81	<5	bld	FA	AAS
COMLAB	19	-0.59	<1	bld	58	2.18	15	-1.16	<1	bld	FA	MS
COMLAB	53	3.00	<2	bld	44	-1.05	14	-1.51	3	0.16	FA	AAS
COMLAB	25	1.54	2	-0.59	49	0.10	19	0.23	2	-0.52	PR,AR	MS
COMLAB	19	-0.59	2	-0.59	48	-0.13	18	-0.12	1	-1.20	FA	ES
COMLAB	24	1.19	<5	bld	46	-0.59	20	0.58	<5	bld		
COMLAB	18	-0.94	1	-1.33	50	0.33	18	-0.12	<1	bld	FA	ES
COMLAB	20	-0.23	<1	bld	49	0.10	19	0.23	<1	bld	FA	ES
COMLAB	20	-0.23	1	-1.33	50	0.33	18	-0.12	2	-0.52	FA	ES
COMLAB	21	0.12	2	-0.59	47	-0.36	18	-0.12	2	-0.52	FA	AAS
COMLAB	21	0.26	2	-0.30	48	-0.10	20	0.65	4	0.63	FA	ES
COMLAB	21	0.12	<2	bld	50	0.33	19	0.23	2	-0.52	FA	AAS
COMLAB	20	-0.23	4	0.89	47	-0.36	18	-0.12	1	-1.20	FA	ES
COMLAB	22	0.48	2	-0.59	50	0.33	2	3.00	3	0.16	FA,PR	AAS
COMLAB	21	0.12	2	-0.59	50	0.33	20	0.58	2	-0.52	FA	AAS,ES
COMLAB	23	0.83	<2	bld	53	1.03	16	-0.81	<2	bld	FA,AR	AAS
COMLAB	22	0.48	3	0.15	50	0.33	23	1.63	3	0.16	FA	AAS
COMLAB	20	-0.23	14	3.00	52	0.82	21	0.93	1	-1.27	FA	ES
COMLAB	17	-1.30	<5	bld	16	3.00	<5	bld	<5	bld	AR	DIBK
COMLAB	20	-0.23	<1	bld	50	0.33	20	0.58	<1	bld	FA	ES
COMLAB	30	3.00	5	1.63	43	-1.28	20	0.58	15	3.00	FA	AAS
COMLAB	19	-0.59	1	-1.33	49	-0.01	17	-0.64	<0.5	bld	AR	MS
COMLAB	25	1.54	6	2.36	51	0.57	20	0.58	6	2.20	FA	ES
COMLAB	16	-1.65	<5	bld	41	-1.75	18	-0.12	<5	bld	FA	AAS
COMLAB	25	1.54	<5	bld	46	-0.59	19	0.23	<5	bld	FA	AAS
COMLAB	20	-0.23	3	0.15	54	1.26	25	2.33	2	-0.52	FA	MS
COMLAB	20	-0.23	3	0.15	48	-0.13	17	-0.46	2	-0.52	FA	AAS
COMLAB	14	-2.54	4	0.96	27	3.00	13	-2.00	5	1.59	FA	AAS
COMLAB	18	-0.94	<1	bld	49	0.10	17	-0.46	<1	bld	FA	MS
COMLAB	23	0.83	3	0.15	53	1.03	22	1.28	3	0.16		
COMLAB	23	0.83	1	-1.33	48	-0.13	20	0.58	1	-1.20	AR	GF
COMLAB	22	0.48	1	-1.33	48	-0.13	14	-1.51	2	-0.52	FA	GF
COMLAB	21	0.12	3	0.15	53	1.03	23	1.63	1	-1.20	FA	AAS,MBK
COMLAB	18	-0.84	<10	bld	70	3.00	16	-0.99	<10	bld	FA	ES
COMLAB	21	0.09	3	0.37	50	0.33	20	0.58	3	0.29	AR	MS
COMLAB	110	3.00	<100	bld	<100	bld	190	3.00	140	3.00	FA	AAS
COMLAB	20	-0.23	nr	nr	69	3.00	16	-0.81	2	-0.52		
COMLAB	24	1.19	3	0.15	44	-1.05	15	-1.16	1	-1.20	FA	ES
COMLAB	23	0.83	<5	bld	53	1.03	20	0.58	<5	bld	FA	AAS
COMLAB	24	1.19	<5	bld	57	1.95	20	0.58	5	1.52	FA	AAS
COMLAB	23	0.83	5	1.63	54	1.26	20	0.58	3	0.16	FA	AAS,ES
COMLAB	17	-1.30	4	0.89	41	-1.75	16	-0.81	3	0.16	AR	MS
COMLAB	33	3.00	21	3.00	42	-1.51	32	3.00	20	3.00	FA,AR	DIBK
COMLAB	20	-0.23	1	-1.33	49	0.10	19	0.23	1	-1.20	FA	ES
COMLAB	20	-0.23	<2	bld	44	-1.05	17	-0.46	2	-0.52	FA	ES
COMLAB	19	-0.59	<1	bld	48	-0.13	18	-0.12	2	-0.52	FA	DIBK
COMLAB	17	-1.30	<5	bld	34	3.00	16	-0.81	<5	bld	FA	AAS
COMLAB	25	1.54	2	-0.59	88	3.00	19	0.23	7	2.88	FA	MS
COMLAB	23	0.83	<5	bld	54	1.26	20	0.58	<5	bld	FA	AAS
COMLAB	15	-2.01	<5	bld	44	-1.05	13	-1.86	<5	bld	FA	AAS
COMLAB	18	-0.94	30	3.00	32	3.00	11	-2.56	17	3.00	PR,3A	MS
COMLAB	12	3.00	<10	bld	45	-0.82	16	-0.81	<10	bld	FA	AAS
MINELAB	30	3.00	3	0.15	24	3.00	8	3.00	5	1.52	FA	AAS
MINELAB	20	-0.20	3	0.30	51	0.47	19	0.16	4	0.56	FA	AAS
MINELAB	22	0.48	<5	bld	50	0.33	21	0.93	<5	bld	FA,AR	AAS
MINELAB	21	0.12	<5	bld	40	-1.98	22	1.28	<5	bld	FA	GF
MINELAB	34	3.00	17	3.00	72	3.00	38	3.00	17	3.00	FA,AR	AAS
MINELAB	21	0.26	44	3.00	41	-1.67	13	-1.78	11	3.00	FA	AAS
MINELAB	18	-0.94	5	1.63	45	-0.82	22	1.28	3	0.16	AR	DIBK
MINELAB	24	1.15	4	0.89	48	-0.17	20	0.58	4	0.84	FA	AAS
MINELAB	51	3.00	19	3.00	58	2.18	34	3.00	24	3.00	FA,AR	AAS
MINELAB	<50	bld	<50	bld	60	2.65	62	3.00	<50	bld	FA	AAS

Highlighted values are outliers which are assigned a z-score of -3.00 or 3.00 in the standardised values.







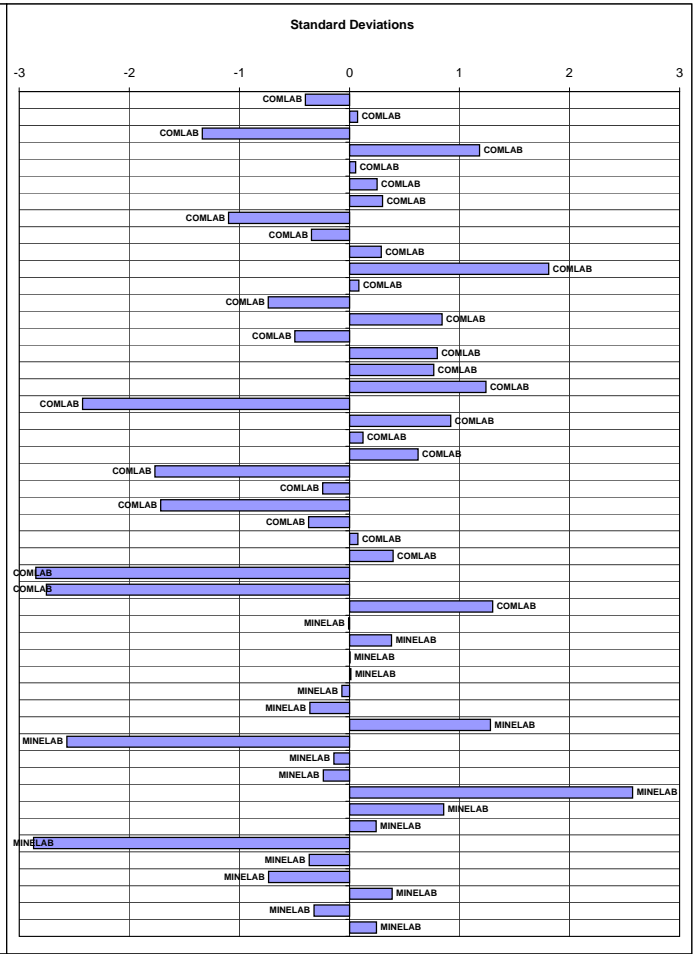


**Silver on Carbon Round Robin - Summary Statistics, Assays, Standardised Values and Graphs - April 2012**

Standard Reference	GLC312-4	GBC312-2	GBC312-3	GLC312-1	GLC312-2	GLC312-3
MEAN (ppm)	1655	480	491	1346	1058	947
STDEV (ppm)	88	74	34	94	93	77
95% CI (ppm)	28	21	11	29	28	23
95% CI (%)	1.69%	4.42%	2.26%	2.13%	2.63%	2.47%
MIN (ppm)	1444	317	419	1181	816	775
MEDIAN (ppm)	1665	498	490	1359	1061	949
MAX (ppm)	1860	627	560	1586	1250	1100
IQR (ppm)	102	80	42	120	103	96
COUNT	39	47	38	42	44	43

Standard Reference	GLC312-4		GBC312-2		GBC312-3		GLC312-1		GLC312-2		GLC312-3		Method	Reading
Lab Reference	assay	z-score	assay	z-score	assay	z-score	assay	z-score	assay	z-score	assay	z-score		
COMLAB	1690	0.40	497	0.22	453	-1.11	1220	-1.35	973	-0.92	974	0.36	FA	GRAV
COMLAB	1608	-0.53	484	0.05	560	2.00	1280	-0.71	1045	-0.14	930	-0.21	FA	GRAV
COMLAB	1600	-0.62	320	-2.18	242	-3.00	1240	-1.13	987	-0.77	922	-0.32	FA	GRAV
COMLAB	7160	3.00	340	-1.91	299	-3.00	4210	3.00	3150	3.00	1820	3.00	FA	GRAV
COMLAB	1640	-0.17	454	-0.36	510	0.54	1390	0.47	1110	0.55	892	-0.71	PR,AR	AAS
COMLAB	1665	0.12	494	0.18	503	0.34	1365	0.20	1075	0.18	984	0.48	FA	GRAV
COMLAB	1704	0.55	513	0.44	490	-0.03	1381	0.37	1082	0.25	964	0.22	FA	GRAV
COMLAB	1528	-1.44	459	-0.29	442	-1.43	1226	-1.28	964	-1.01	859	-1.13	FA	AAS
COMLAB	1630	-0.28	508	0.37	442	-1.43	1325	-0.23	1008	-0.54	950	0.04	FUS	XRF
COMLAB	1670	0.18	397	-1.14	520	0.82	1394	0.51	1099	0.43	1018	0.93	1A	AAS
COMLAB	1957	3.00	526	0.62	539	1.39	1518	1.83	1248	2.04	1100	1.99	FA,PR	GRAV
COMLAB	1616	-0.44	507	0.36	479	-0.36	1392	0.49	1059	0.01	981	0.45	FA	GRAV
COMLAB	1600	-0.63	403	-1.06	442	-1.42	1314	-0.34	1020	-0.42	903	-0.57	PR,AR	MS
COMLAB	1739	0.96	547	0.90	521	0.86	1430	0.90	1112	0.57	1012	0.85	FA	GRAV
COMLAB	1594	-0.69	461	-0.27	458	-0.97	1318	-0.30	990	-0.73	945	-0.02	FA	GRAV
COMLAB	1743	1.00	567	1.18	495	0.11	1434	0.94	1134	0.81	1005	0.76	FA	GRAV
COMLAB	1678	0.27	518	0.51	485	-0.18	1430	0.90	1176	1.26	1088	1.84	FA,PR	GRAV
COMLAB	1770	1.31	627	1.99	515	0.69	1410	0.68	1180	1.30	1060	1.47	FA	GRAV
COMLAB	415	-3.00	428	-0.71	301	-3.00	718	-3.00	816	-2.60	775	-2.22	3A	MS
COMLAB	1311	-3.00	566	1.16	700	3.00	1300	-0.49	1231	1.85	1186	3.00	FA	GRAV
COMLAB	>1000	ald	520	0.54	510	0.54	>1000	ald	1000	-0.63	950	0.04	AR	AAS
COMLAB	1700	0.52	540	0.81	519	0.81	1092	0.36	1006	0.36	1006	0.77	FA	GRAV
COMLAB	1444	-2.39	437	-0.59	419	-2.10	1183	-1.74	888	-1.83	797	-1.94	FA	AAS
COMLAB	1600	-0.62	500	0.27	490	-0.04	1320	-0.28	1030	-0.31	910	-0.47	AR	AAS
COMLAB	1490	-1.87	317	-2.22	354	-3.00	1240	-1.13	966	-0.99	864	-1.07	PR,AR	AAS
COMLAB	1550	-1.19	530	0.67	376	-3.00	1410	0.68	1090	0.34	967	0.26	AR	AAS
COMLAB	1735	0.91	461	-0.27	489	-0.07	1386	0.43	1066	0.08	898	-0.63	PR,AR	AAS
COMLAB	1710	0.63	512	0.43	478	-0.39	1360	0.15	1140	0.87	1000	0.69	FA	GRAV
COMLAB	1123	-3.00	327	-2.09	297	-3.00	860	-3.00	601	-3.00	700	-3.00	FA,PR	GRAV
COMLAB	1018	-3.00	369	-1.52	295	-3.00	881	-3.00	572	-3.00	644	-3.00	FA,PR	GRAV
COMLAB	1950	3.00	598	1.60	508	0.49	1260	-0.92	1250	2.06	1070	1.60	FUS	ES
MINELAB	1685	0.34	469	-0.16	457	-1.00	1358	0.13	1080	0.23	978	0.41	FA	AAS
MINELAB	1530	-1.42	519	0.52	533	1.20	1407	0.65	1080	0.23	1032	1.11	PR,AR	AAS
MINELAB	1546	-1.23	412	-0.93	542	1.49	1495	1.59	959	-1.08	961	0.19	FA	GRAV
MINELAB	1670	0.17	504	0.32	470	-0.62	1360	0.15	1060	0.02	949	0.03	FA	AAS,GRAV
MINELAB	1559	-1.09	498	0.24	492	0.02	1388	0.45	1061	0.02	943	-0.05	FA	
MINELAB	1669	0.16	465	-0.21	466	-0.73	1295	-0.55	1000	-0.63	931	-0.20	3A	AAS
MINELAB	1780	1.42	552	0.97	531	1.15	1500	1.64	1186	1.37	1034	1.13	FA	GRAV
MINELAB	1277	-3.00	374	-1.45	381	-3.00	1006	-3.00	717	-3.00	796	-1.95	PP	XRF
MINELAB	1665	0.12	450	-0.41	476	-0.44	1336	-0.11	1065	0.07	941	-0.07	AR	AAS
MINELAB	1646	-0.10	435	-0.62	482	-0.28	1334	-0.13	1059	0.01	924	-0.29	AR	AAS
MINELAB	1732	0.88	780	3.00	778	3.00	1586	2.56	1352	3.00	1250	3.00	FA,AR	AAS
MINELAB	1700	0.52	530	0.67	560	2.00	1410	0.68	1100	0.45	1010	0.82	AR	AAS
MINELAB	1823	1.91	522	0.56	507	0.46	1302	-0.47	1039	-0.21	885	-0.80	FA,PR	GRAV
MINELAB	787	-3.00	244	-3.00	103	-3.00	784	-3.00	852	-2.22	640	-3.00	FA	GRAV
MINELAB	1619	-0.40	508	0.37	486	-0.15	1181	-1.77	1061	0.03	926	-0.27	FA	GRAV
MINELAB	1658	0.03	471	-0.14	431	-1.75	1208	-1.48	1141	0.88	796	-1.95	FA	GRAV
MINELAB	1735	0.91	525	0.61	496	0.14	1332	-0.15	1110	0.55	868	0.28		
MINELAB	1687	0.37	545	0.88	484	-0.21	1242	-1.11	992	-0.71	959	-1.13	AR	AAS
MINELAB	1860	2.33	603	1.67	484	-0.21	1220	-1.35	1010	-0.52	912	-0.45	AR	AAS

Highlighted values are outliers which are assigned a z-score of -3.00 or 3.00 in the standardised values.

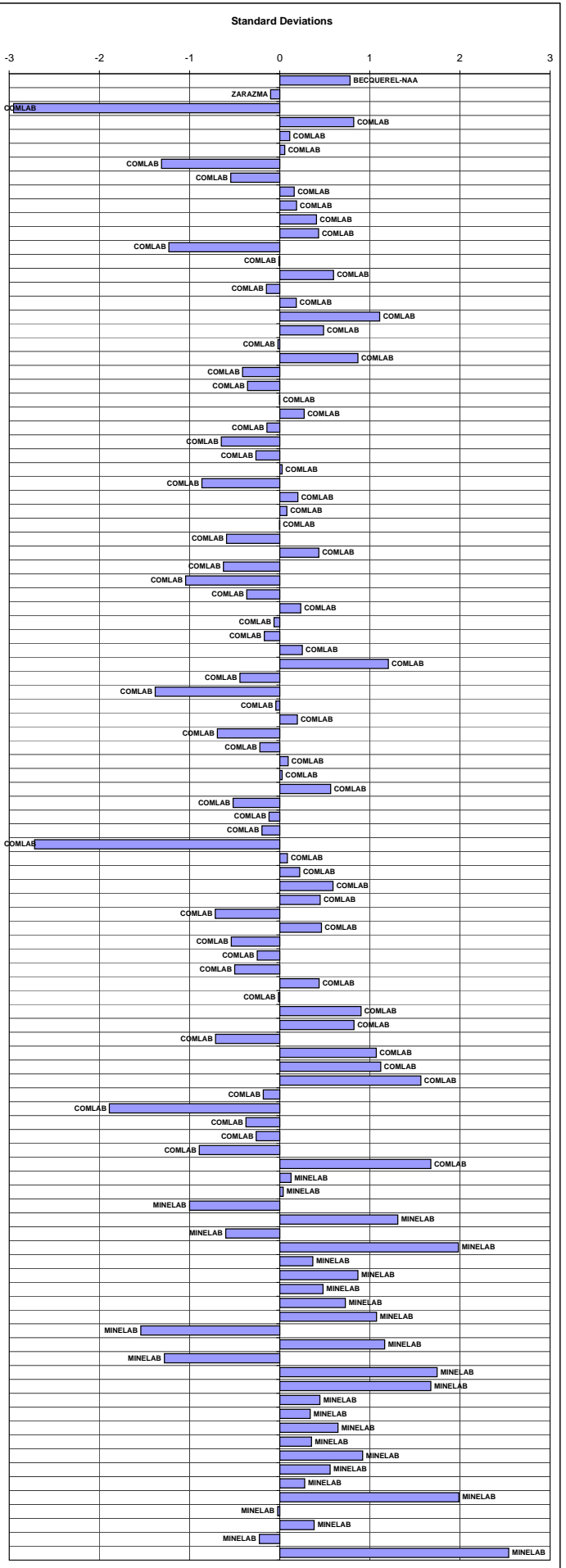
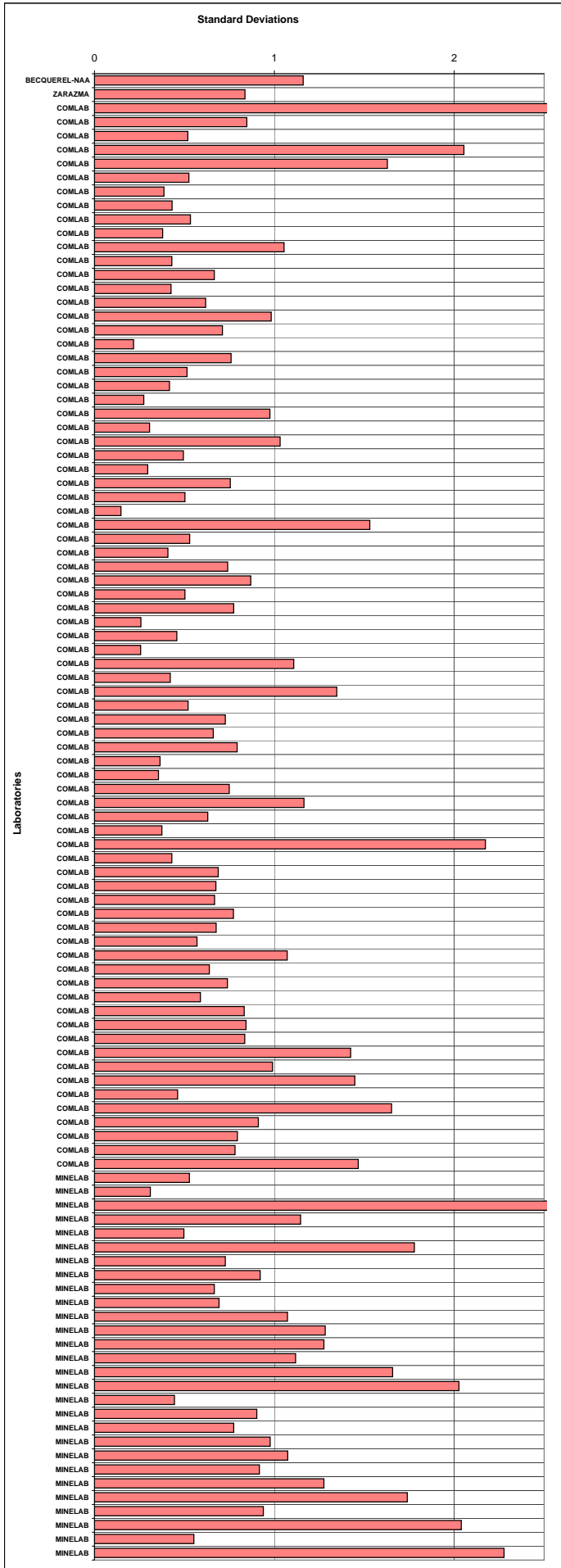


Silver Round Robin - Summary Statistics, Assays, Standardised Values and Graphs - April 2012

Summary statistics table with columns for Standard Reference, GBM312-1 to GBM312-10, and rows for MEAN (ppm), STDEV (ppm), 95% CI (ppm), 95% CI (%), MIN (ppm), MEDIAN (ppm), MAX (ppm), IQR (ppm), and COUNT.

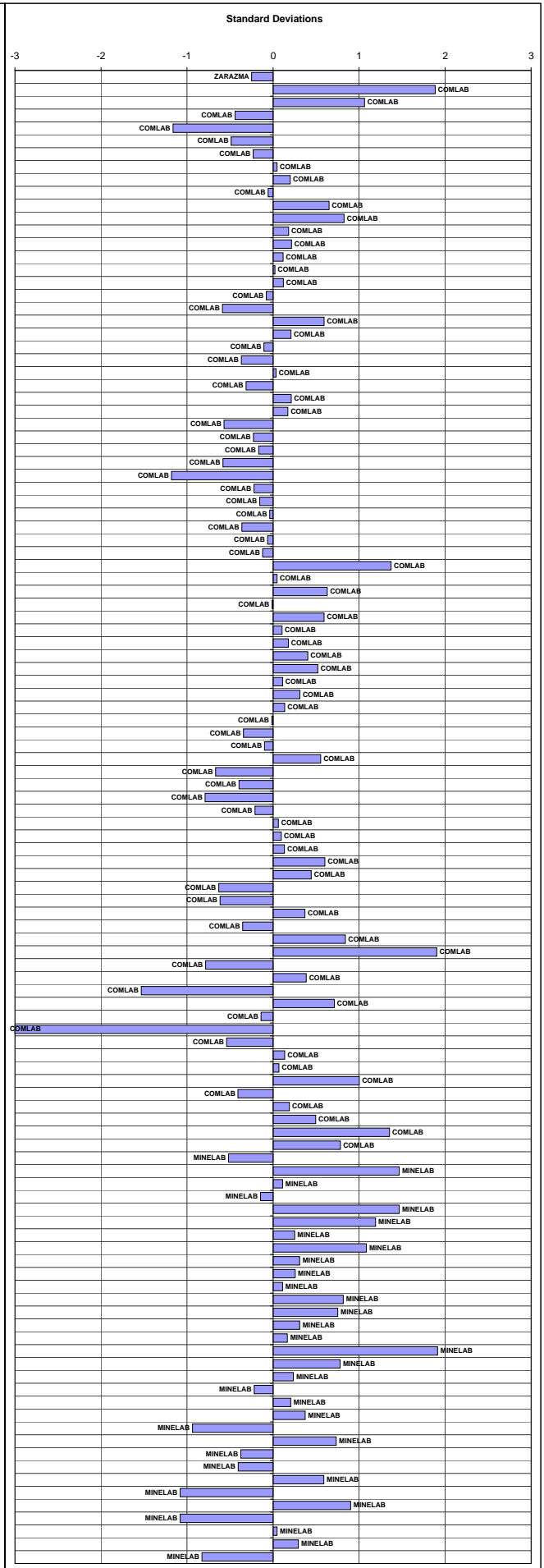
Main data table with columns for Lab Reference, Standard Reference, GBM312-1 to GBM312-10 (assay and z-score), Method, and Reading. Contains assay results and standardized values for various materials like BECQUEREL, ZARAZMA, and MINELAB.

Highlighted values are outliers which are assigned a z-score of -3.00 or 3.00 in the standardised values. Insufficient results were received for the highlighted materials. These results do not contribute to the error charts.



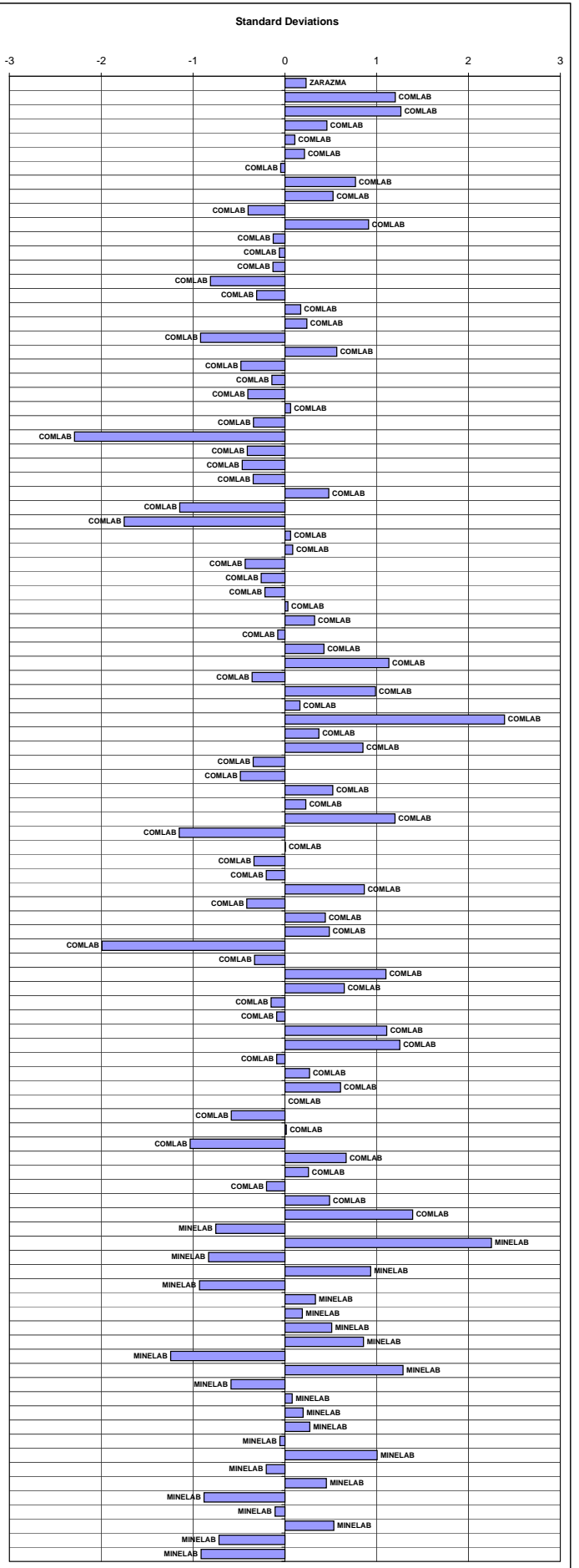




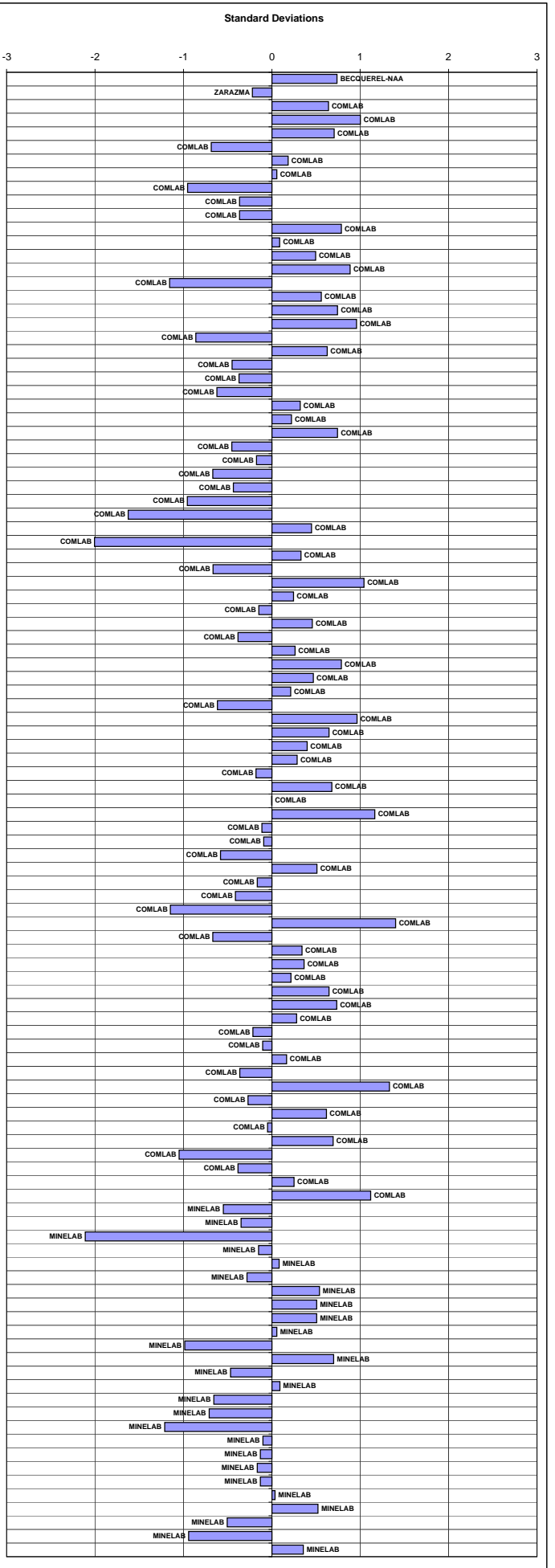
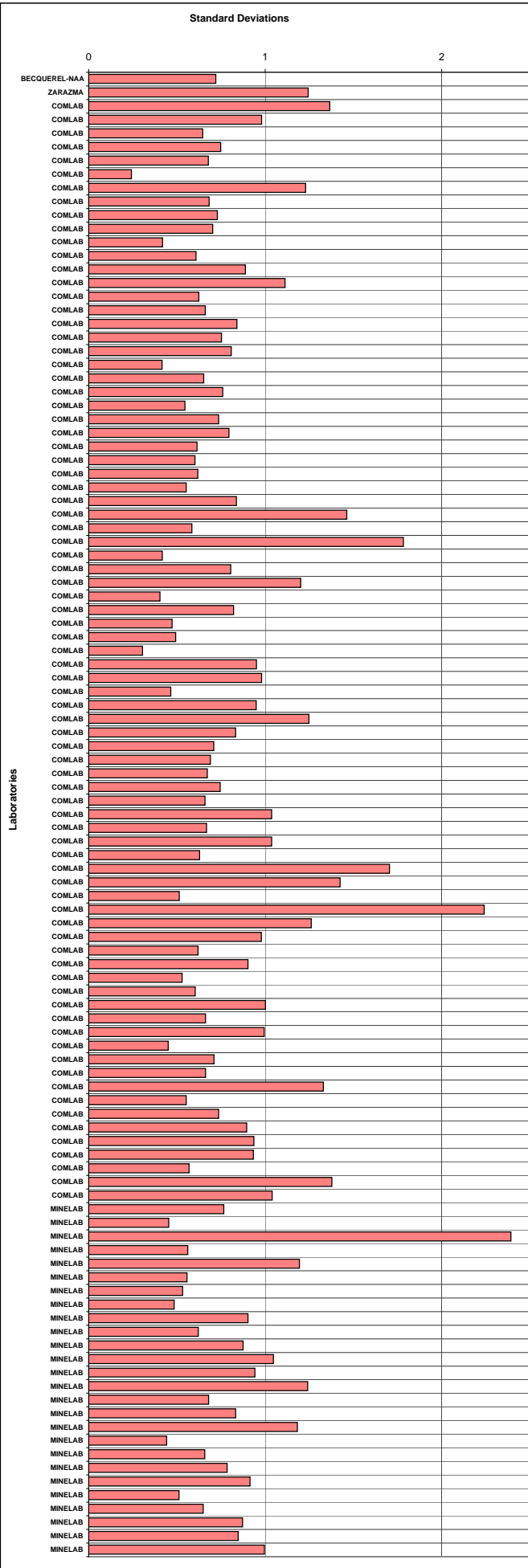




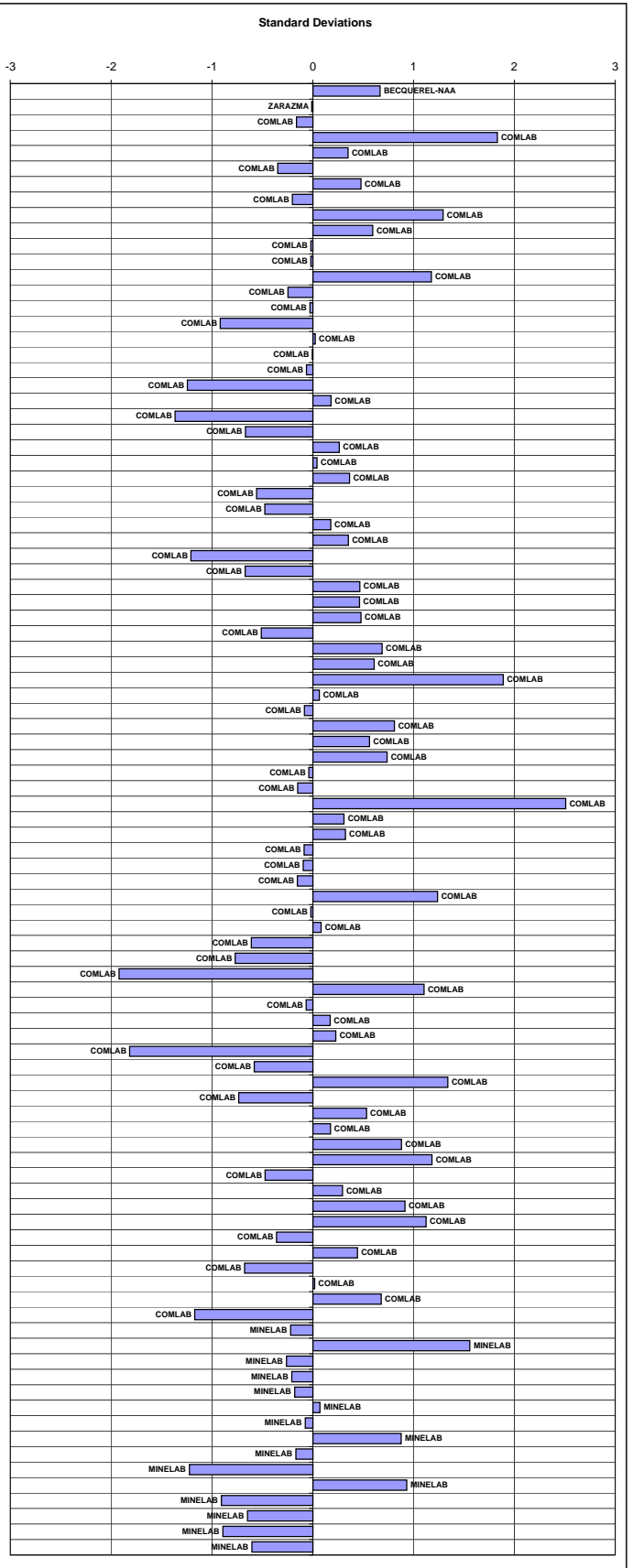
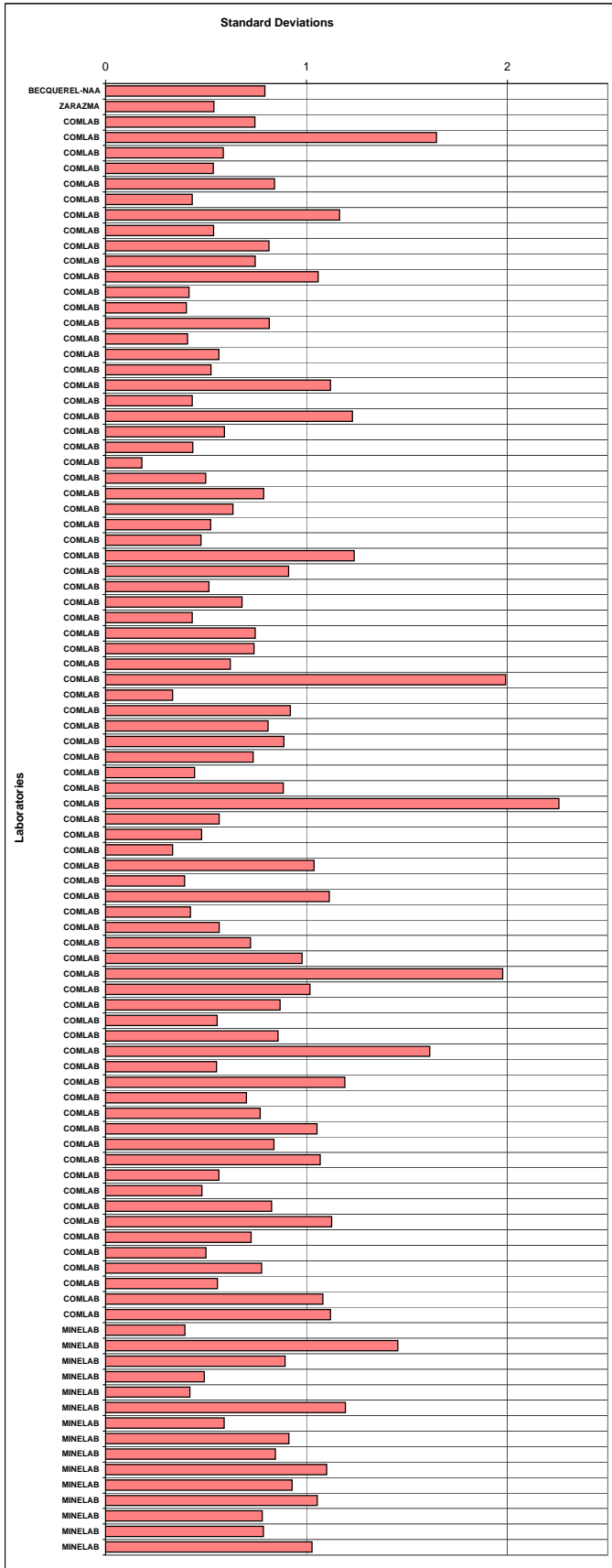






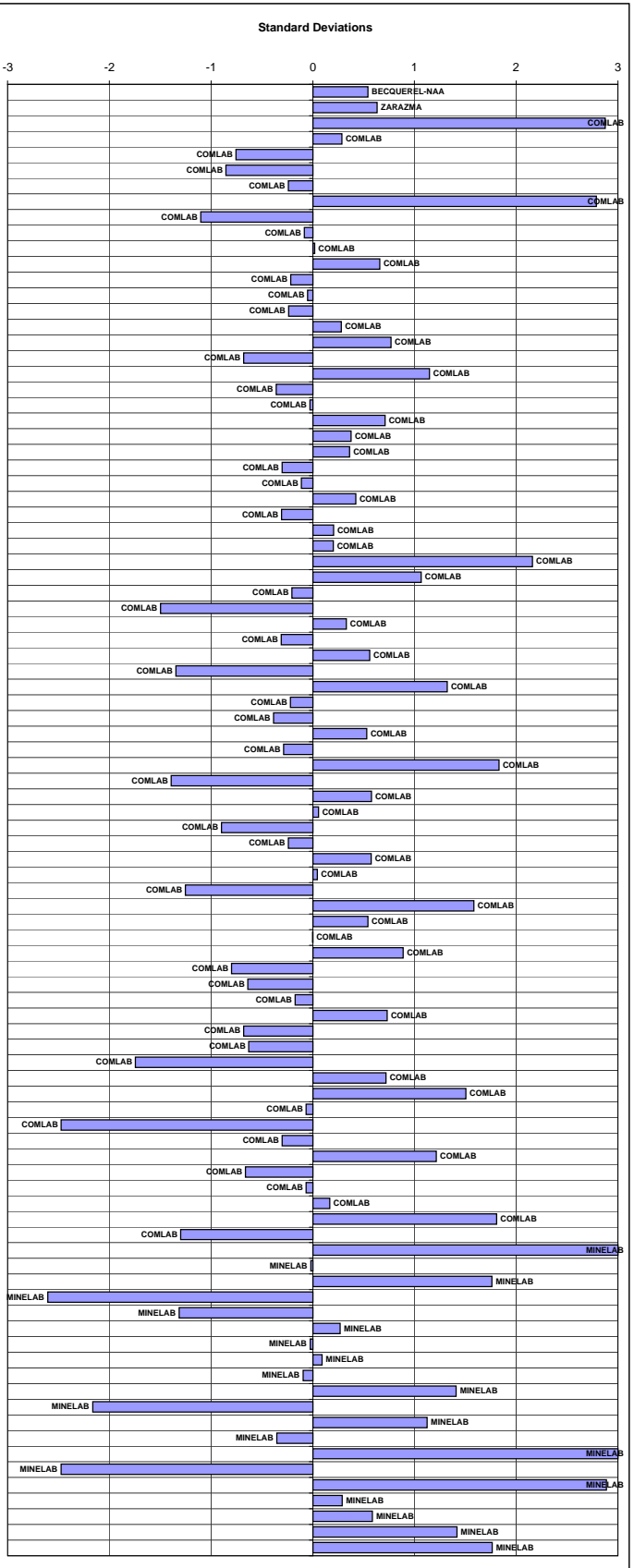
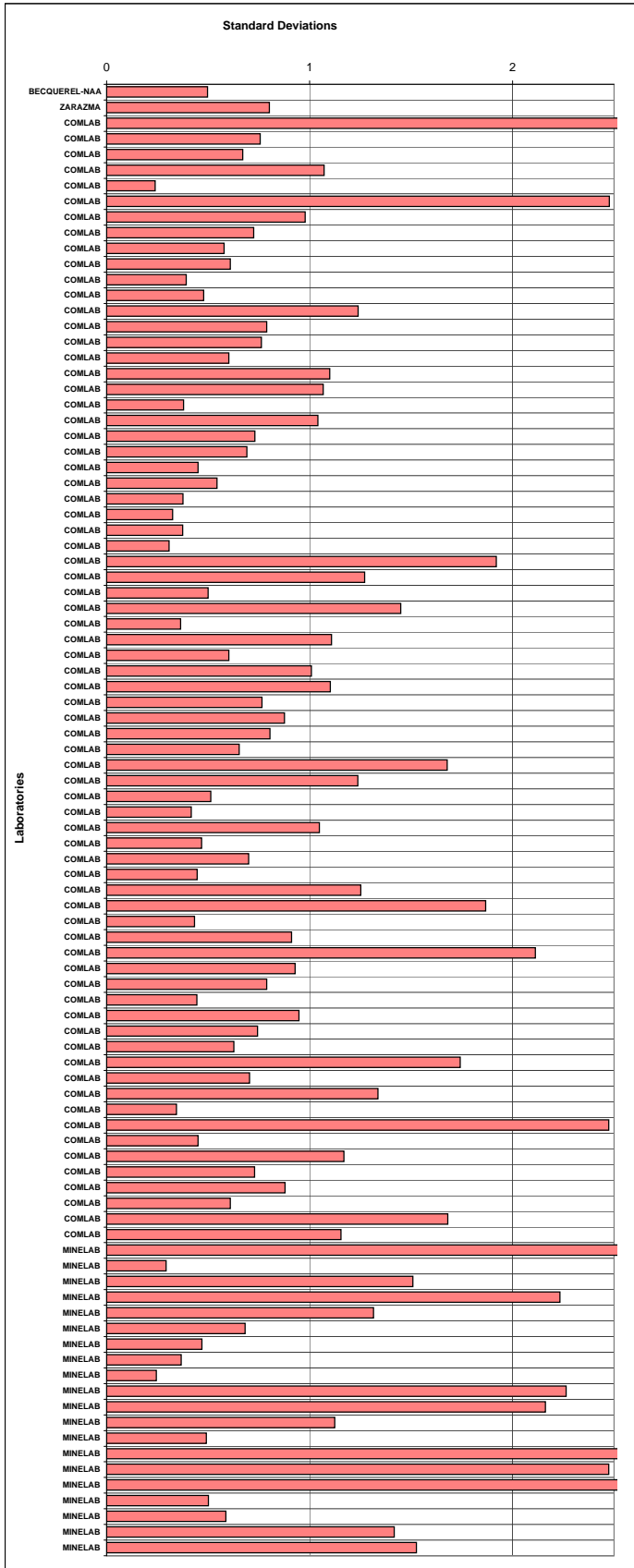












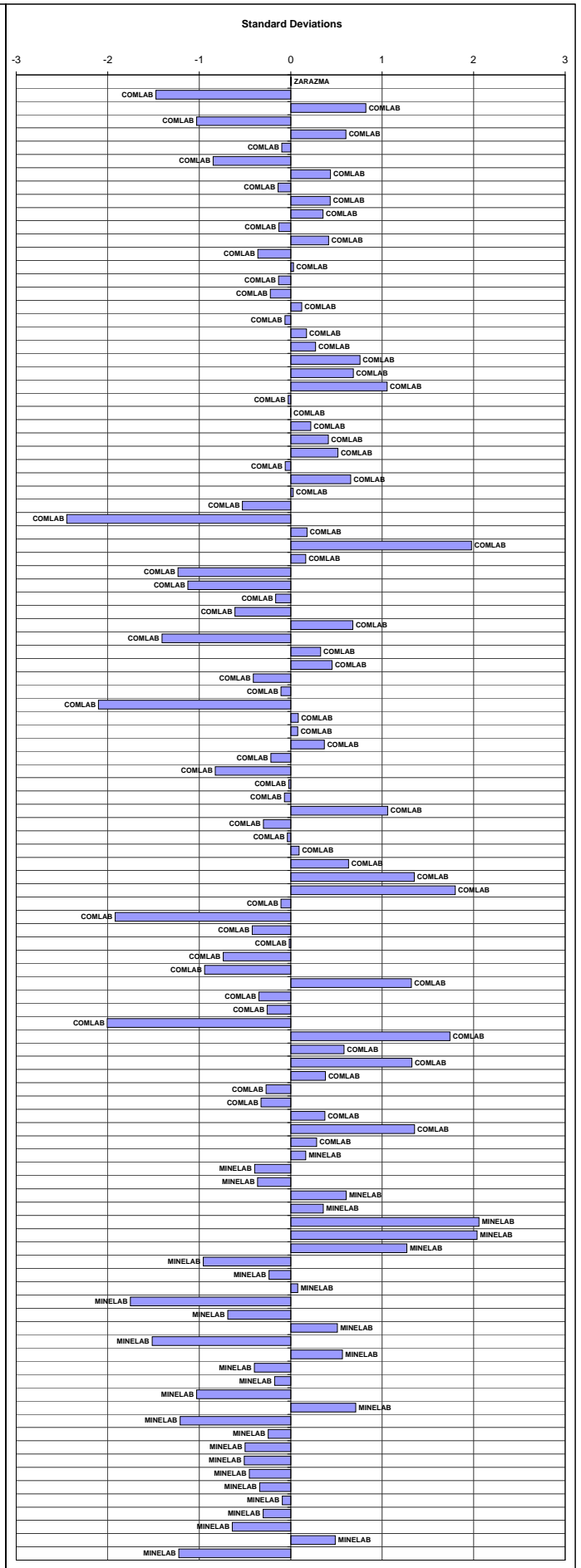
Laboratories



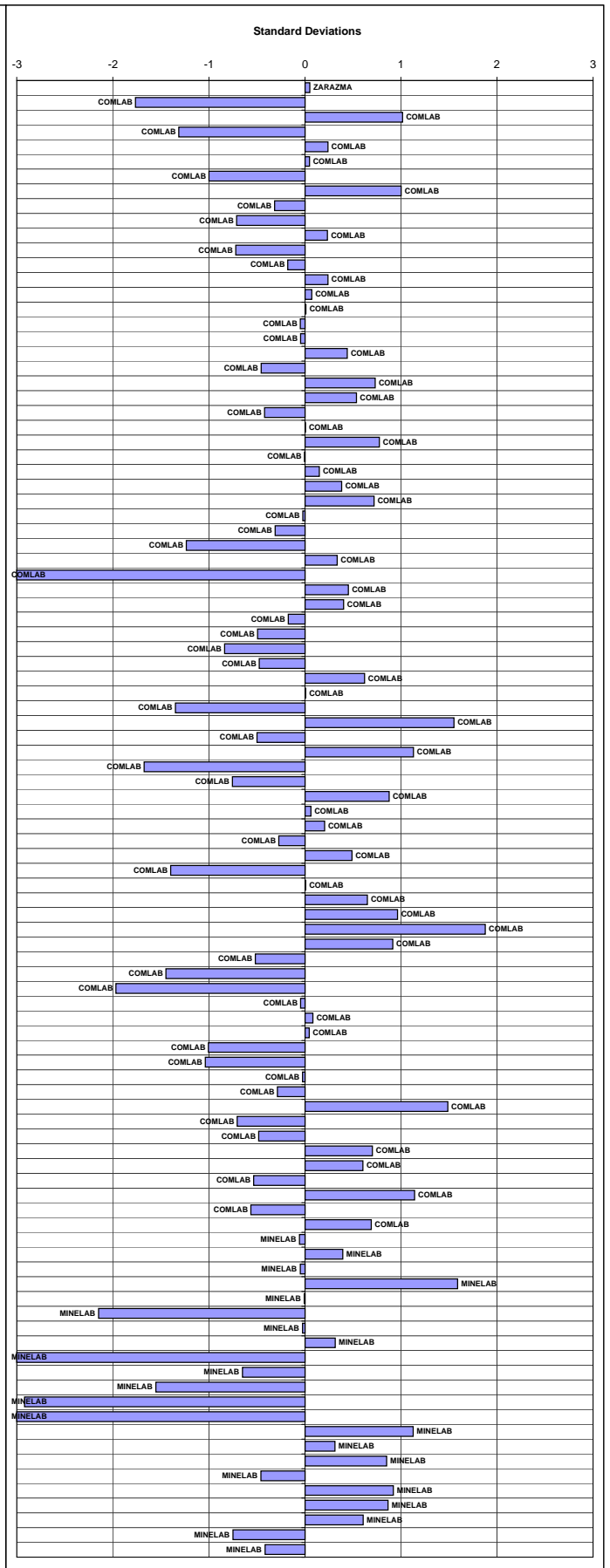
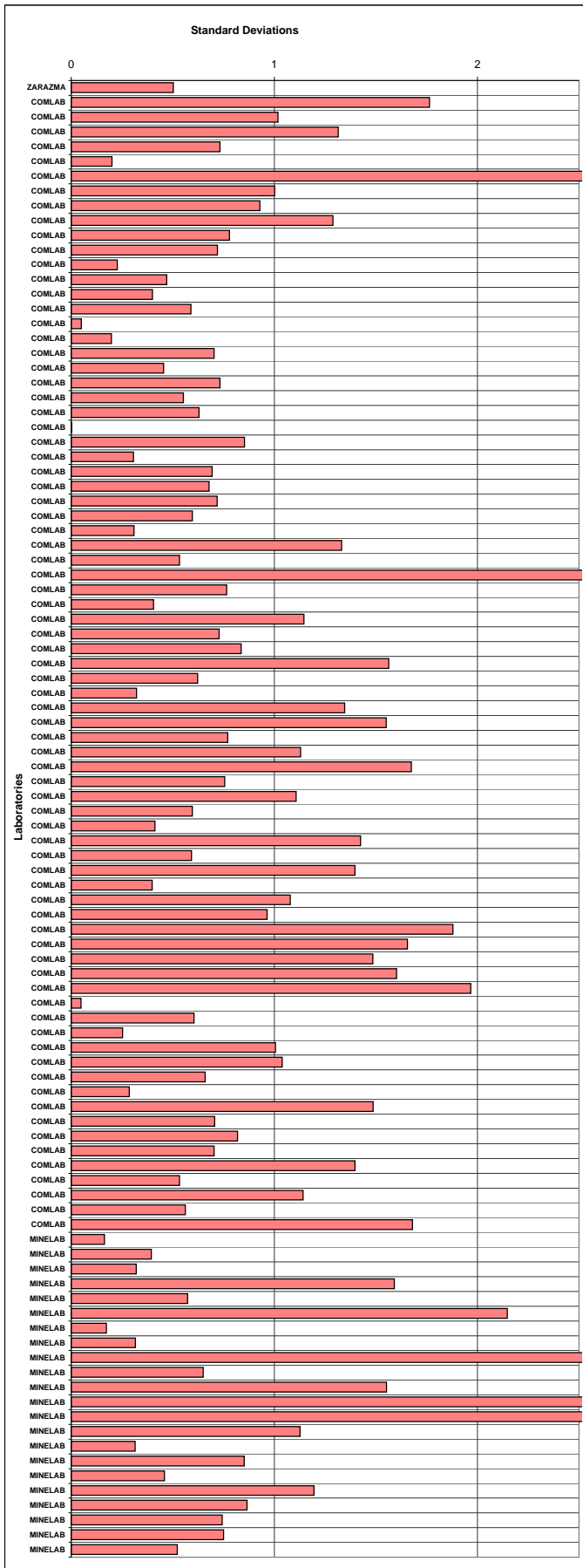






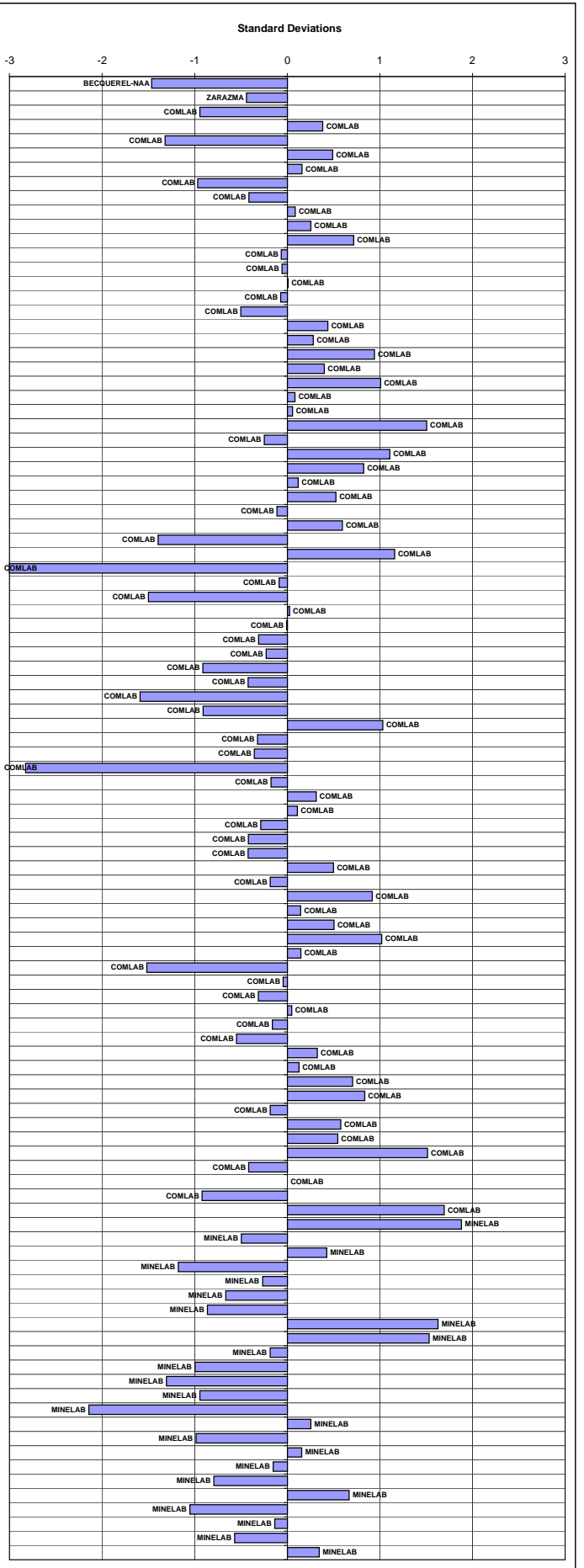








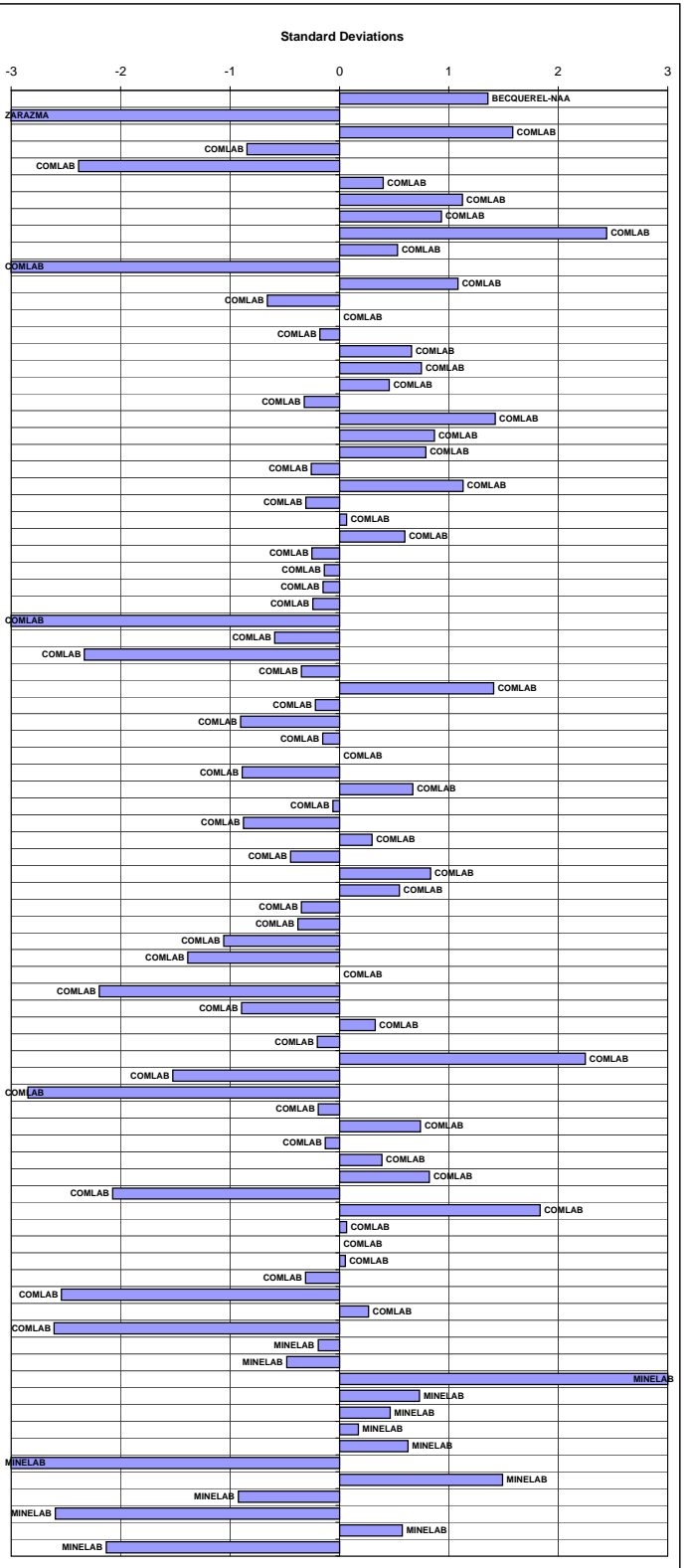
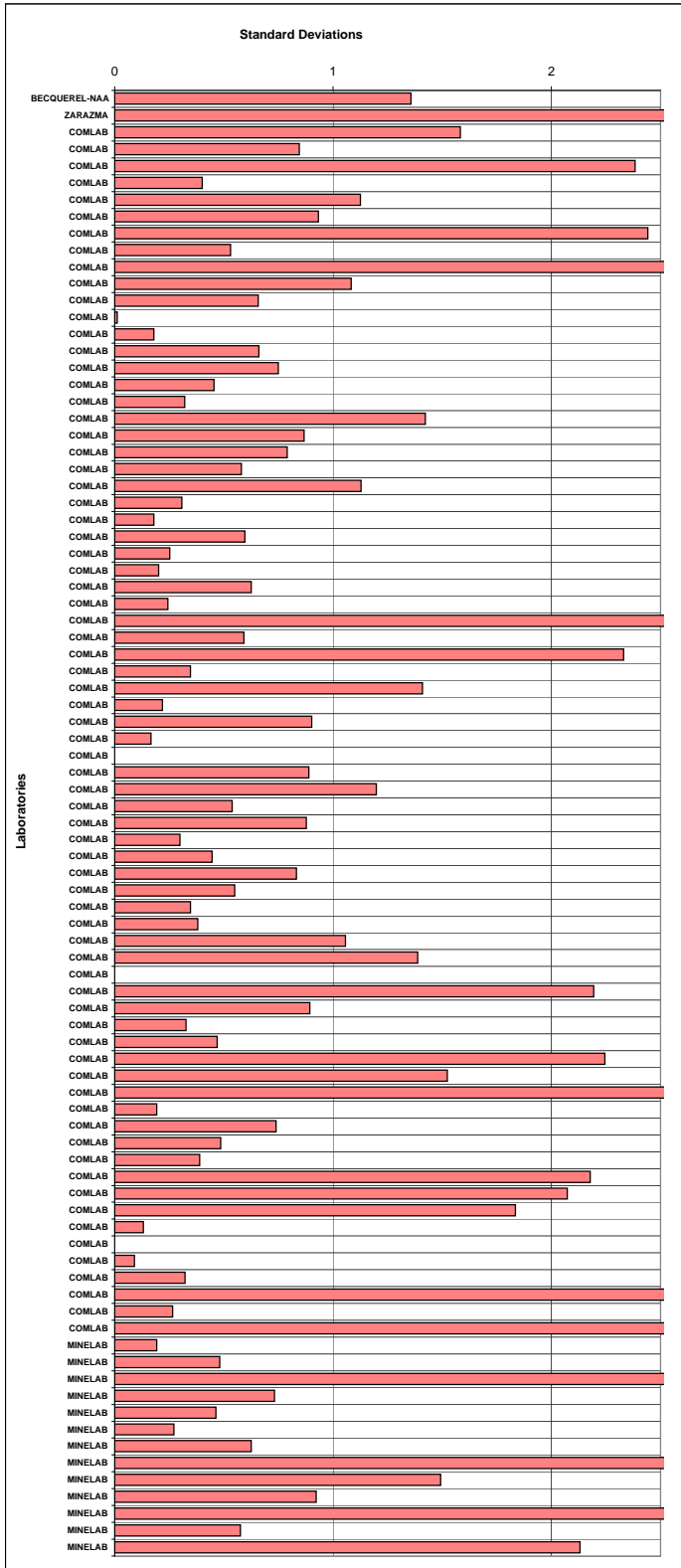




Laboratories

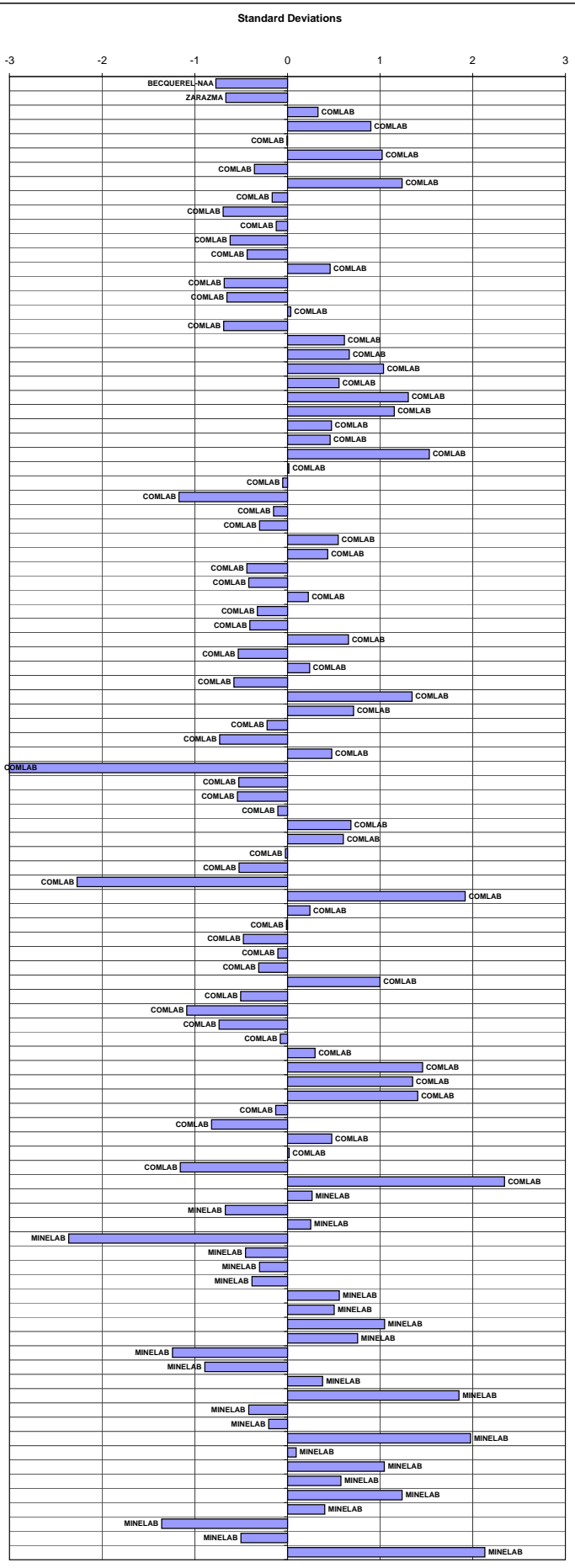
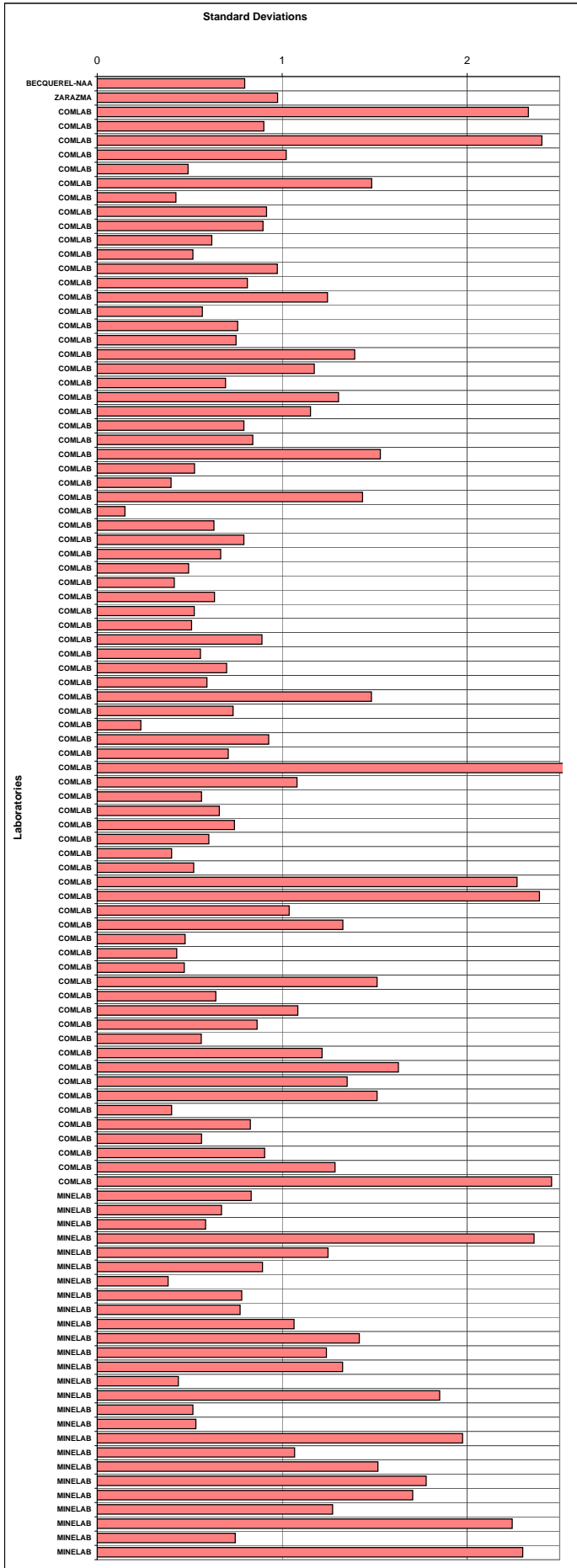






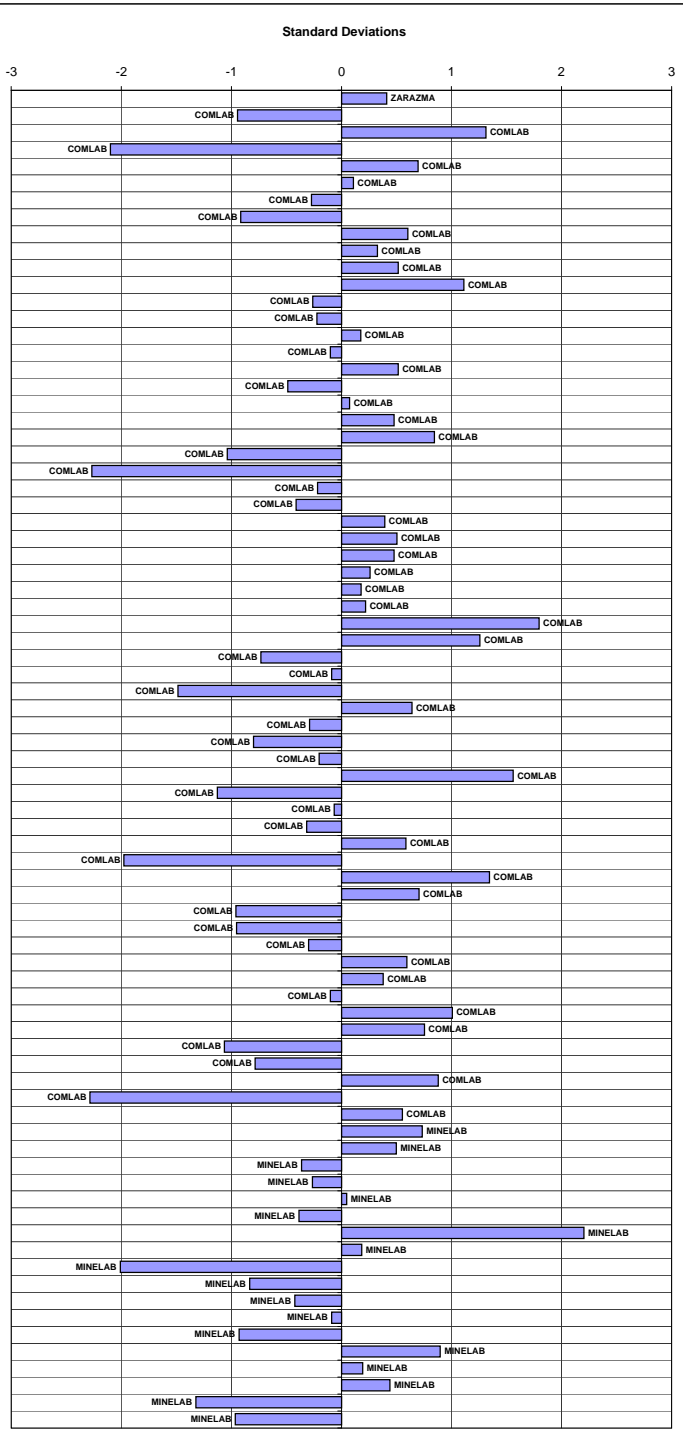
Laboratories



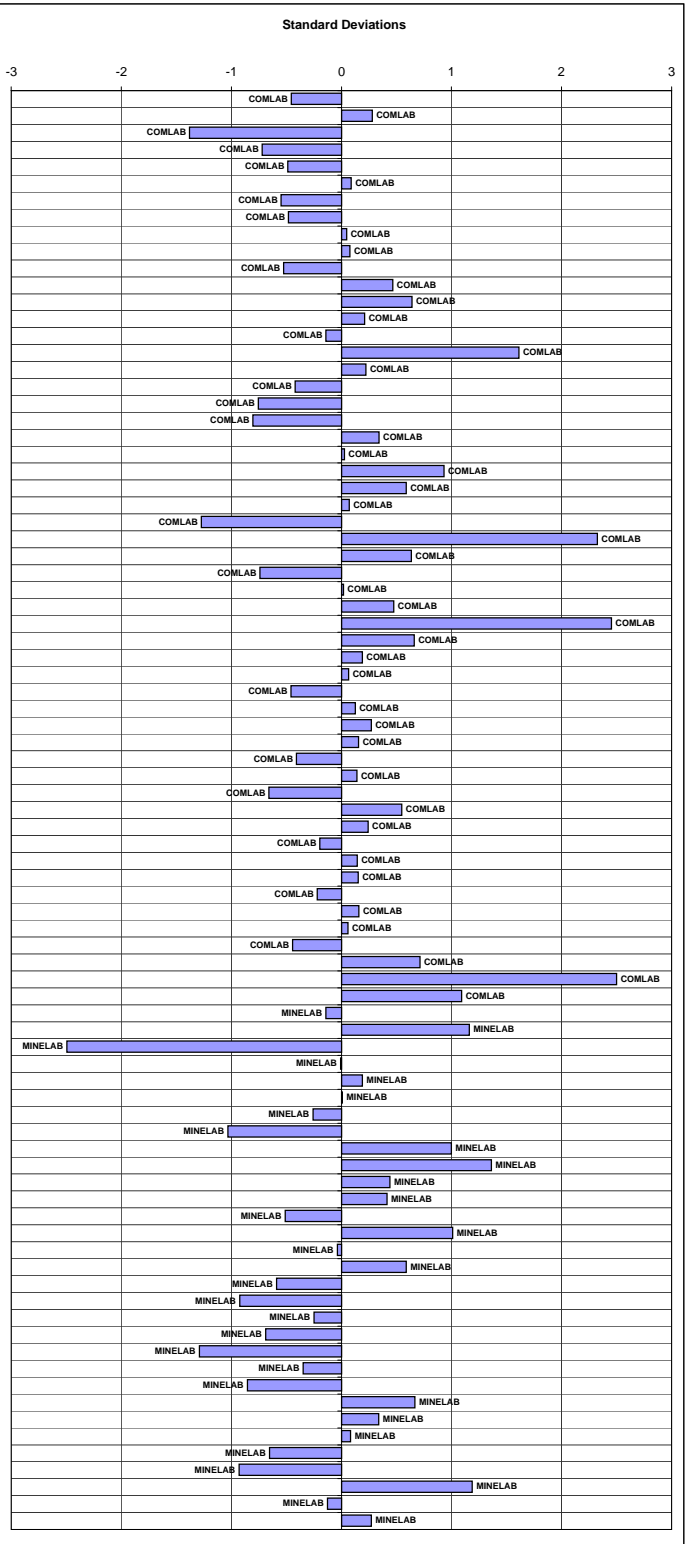


Laboratories



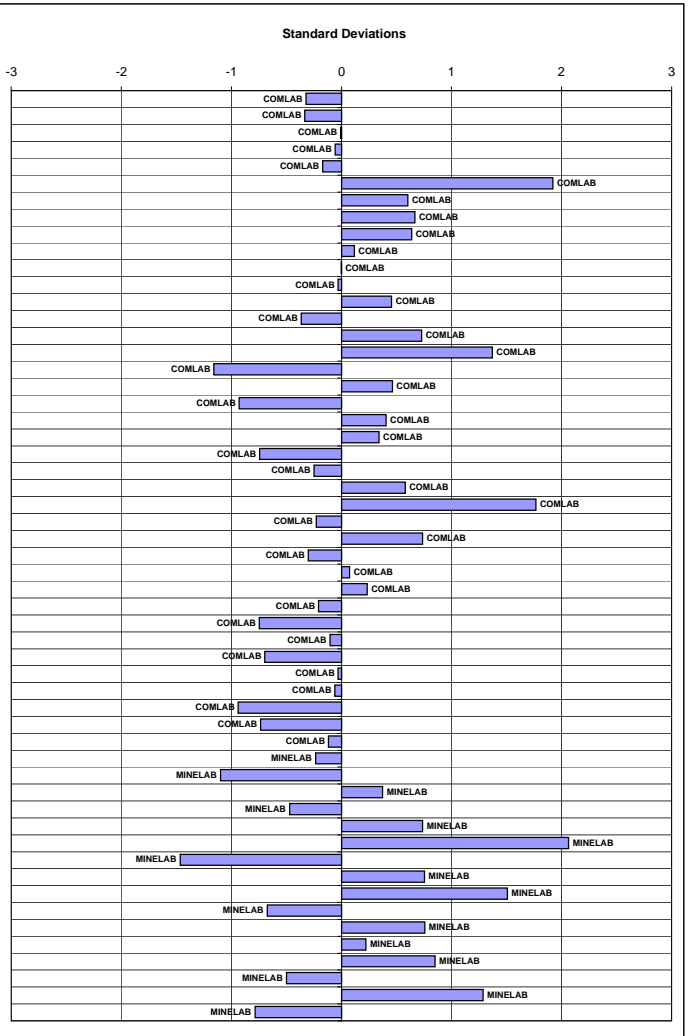














**SUMMARY REPORT OF INDIVIDUAL LABORATORY PERFORMANCE**  
**Zarazma Minerals Studies Company**

**GOLD SAMPLES**

10 samples were sent to the laboratory for Fire Assay analysis. The laboratory reported their Fire Assay results, and these contained 2 outliers.

10 samples were sent to the laboratory for Aqua Regia analysis. The laboratory reported their Aqua Regia results, and these contained 4 outliers.

5 samples were sent to the laboratory for Low Level Gold analysis. The laboratory reported their Low Level Gold results, and these contained no outliers.

**Au & Ag IN CARBON SAMPLES**

The laboratory were not sent any samples for Au & Ag in carbon analysis.

**BASE METAL SAMPLES**

10 Base Metal samples were sent to the laboratory for analysis.

The laboratory reported for Silver content, and these contained 1 outlier.

The laboratory reported for Copper content, and these contained no outliers.

The laboratory reported for Lead content, and these contained no outliers.

The laboratory reported for Zinc content, and these contained 1 outlier.

The laboratory reported for Nickel content, and these contained no outliers.

The laboratory reported for Arsenic content, and these contained 1 outlier.

The laboratory reported for Cobalt content, and these contained 1 outlier.

**ORE GRADE BASE METAL SAMPLES**

6 Ore Grade Base Metal samples were sent to the laboratory for analysis.

The laboratory reported for Copper content, and these contained no outliers.

The laboratory reported for Lead content, and these contained no outliers.

The laboratory reported for Zinc content, and these contained no outliers.

The laboratory reported for Nickel content, and these contained 2 outliers.

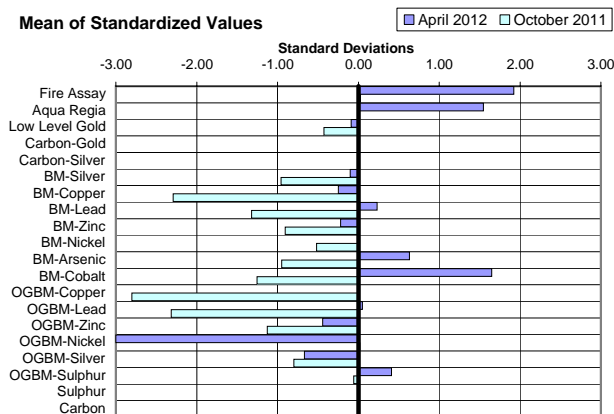
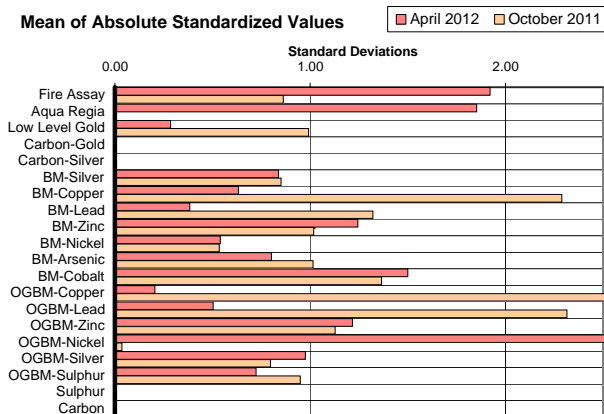
The laboratory reported for Silver content, and these contained 1 outlier.

The laboratory reported for Sulphur content, and these contained no outliers.

**SULPHUR SAMPLES**

The laboratory were not sent any Sulphur samples for analysis.

**ERROR GRAPHS**



**FURTHER INFORMATION**

The samples analysed in this survey are available for purchase. Please contact us or visit [www.geostats.com.au](http://www.geostats.com.au) for a complete listing of available materials.

To discuss this report, please contact us on +618 9314 2566, or [srr@geostats.com.au](mailto:srr@geostats.com.au)