Assay Laboratory Quality Assurance SOP

1 Purpose and Scope

This procedure describes the steps necessary to save quality control data generated in the routine analysis of mill, mine and geology samples.

2 Procedure

2.1 Required Reagents

1. ZNC-01   High zinc concentrate standard
2. PBC-01   High lead concentrate standard
3. ZF-QC   High zinc concentrate standard; titration analysis
4. FT-QC   Final tails standard
5. ZNGL or ZNGL2   Mid-range zinc ore standard
6. ZNGH   High-range zinc ore standard

Note: The specific standards required for each method will be specified in the analytical SOP. As the standards are expended and replaced, the methods will define the new standards.

2.2 Daily Mill Analysis

1. The atomic absorption analysis of daily mill samples requires ZNC-01, PBC-01 and FT-QC. The required assays for each sample are:

Standard	Pb	Zn	Fe	Ag	Si	TOC
ZNC-01	X	X	X		X	
PBC-01	X	X	X	X		
ZF-QC		X				
FT-QC	X	X	X			
ZNGH						X

2. Lead, zinc, iron, silver and silica assays are generated by the AA spectrometer and are entered into the final report sheet by "cut and paste."

3. TOC and zinc by titration results are entered manually into the report sheet.

4. The final report sheet automatically generates a "Data" spreadsheet for entry into the quality control database.

5. Review the "Data" sheet to assure that all of the needed quality control data is in place. The data should include all numeric results, the analysis date and the assayers' names.

6. Data that is highlighted in the final report sheet, or appears to be out of the normal range to the assayer should be reviewed with the senior assayer or laboratory supervisor before proceeding.

7. Use the "Import Data" function of the Dynamic Databases software to enter the daily mill quality control data. Do not delete the original sheet.

2.3 Mine Pit or Geology Analysis by XRF

8. XRF analysis of ore samples requires ZNGL2 and ZNGH. The required assays for each sample are:

Standard	Pb	Zn	Fe	Ba	Si
ZNGL2	X	X	X	X	X
ZNGH	X	X	X	X	X

9. The final report sheet automatically generates a "Data" spreadsheet for entry into the quality control database.

10. Review the "Data" sheet to assure that all of the needed quality control data is in place. The data should include all numeric results, the analysis date and the assayers' names.

11. Mean and standard deviation results for the standards will be posted near the XRF analyzer. Data that are outside the listed ranges should be reviewed with the senior assayer or laboratory supervisor before proceeding.

12. Use the "Import Data" function of the Dynamic Databases software to enter the XRF quality control data. Do not delete the original sheet.

2.4 Mine Pit or Geology Analysis by Atomic Absorption

13. AA analysis of ore samples requires ZNGL2 and ZNGH. The required assays for each sample are:

Standard	Pb	Zn	Fe	Ag*	Cu*	sPb*
ZNGL2	X	X	X			
ZNGH	X	X	X	X	X	X

*Required for geology samples only; not required for mine pit samples.

14. The final report sheet for Mine Pit analysis automatically generates a "Data" spreadsheet for entry into the quality control database.

15. Geology data is "cut and pasted" into a spreadsheet for the geology department that does not include the needed "Data" sheet. In order to report the quality control data for geology samples, the data should be copied to a QC report data sheet.

16. Review the "Data" sheet to assure that all of the needed quality control data is in place. The data should include all numeric results, the analysis date and the assayers' names.

17. Mean and standard deviation results for the standards will be posted near the AA instruments. Data that are outside the listed ranges should be reviewed with the senior assayer or laboratory supervisor before proceeding.

18. Use the "Import Data" function of the Dynamic Databases software to enter the AA quality control data. Do not delete the original sheet for mine pit sample sets; you should delete the spreadsheets for geology samples as the data in these sheets will not be used further.

3   Key Responsibilities

3.0 Laboratory Supervisor

The laboratory supervisor will oversee general laboratory operation and assign analytical tasks to the laboratory assistant(s), assay technician(s) and chemist. (S)He review will review recommendations for method improvements, determine appropriate tests to evaluate the proposed changes and assign the chemist to perform the needed studies.

3.1 Chemist / Trainer

The chemist will perform the procedure as described. Recommendations for improving the process should be directed to the laboratory supervisor. When directed by the laboratory supervisor, the chemist will perform studies necessary to determine if recommended modifications to the procedure improve performance and/or reduce the time required. The chemist will train, or assist in training as required, assay technicians in the techniques required to perform the method as described.

3.2 Assay Technician

The assay technician(s) will perform the procedure as described. The assay technician(s) will train lower level assay technicians and laboratory assistants in the techniques required to perform the method as described. Recommendations for improving the process should be directed to the laboratory supervisor.

3.3 Laboratory Assistant

The laboratory assistant(s) will perform the procedure as described. Recommendations for improving the process should be directed to the laboratory supervisor.

4   Departure from Procedure

Departure from this procedure can result in inaccurate data being reported to the quality control database, and to laboratory customers.

5   Definitions

There are no unique definitions in this procedure.

6   General Requirements

This procedure describes techniques that conform to Good Laboratory Practices. There should be no deviation from the procedure without specific instruction from the laboratory supervisor.

7   Key Documents/Tools/References

None

METHOD SUMMARY

1. Run the analyses per the appropriate SOP. Required standards are given in the analytical method.

2. Review the quality control data to assure that it falls within acceptable ranges.

3. Transfer the data to the quality control database, using the "Import Data" feature.