Metallurgical Testing of the Revel Ridge Deposit

BL0801
August 16, 2022
Revision 1

METALLURGICAL TESTING OF THE REVEL RIDGE DEPOSIT BL0801

Contents

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1.0 Executive Summary

Base Metallurgical Laboratories Ltd. (BML) were requested to evaluate and optimize a flotation-pressure oxidation-leaching flowsheet for extracting gold from select Revel Ridge exit streams. This objective was obtained by building off of flowsheet development undertaken in BL0604 and using these evaluations to develop and simplify the flowsheet such that metal recoveries were maximized. Material was prepared from the same mineralization, used in a previous test program, which was being stored at BML.

The sample designated JL-1 Comp contained 0.14 percent copper, 2.49 percent lead, 4.01 percent zinc, 60 g/tonne silver and 7.08 g/tonne gold.

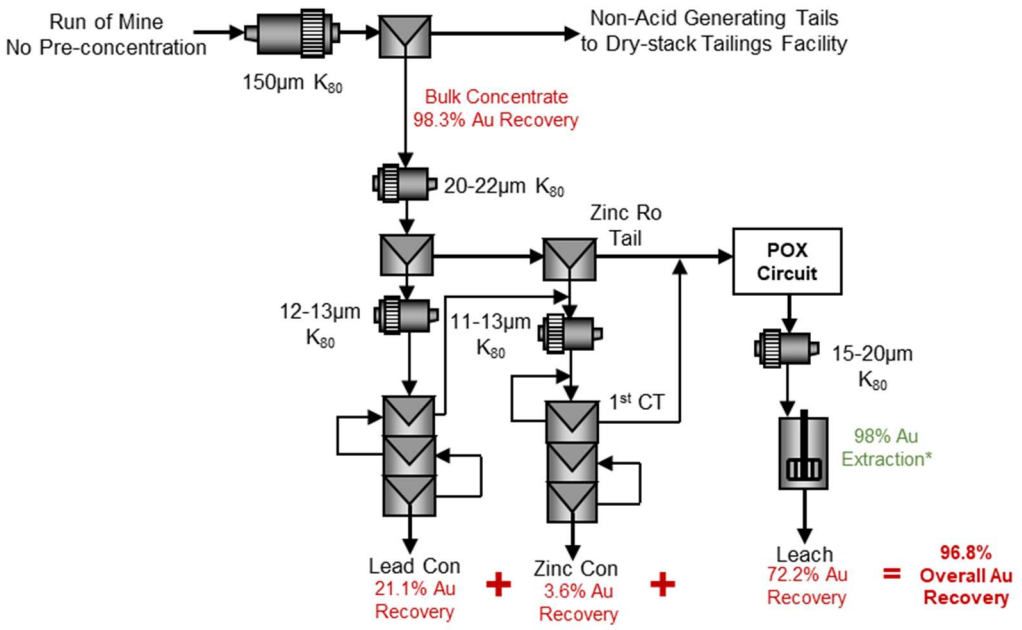
Mineral analysis was completed on the sample; sulphides were present as chalcopyrite, tetrahedrite/tennantite, bournonite, galena, playfairite, sphalerite, pyrite, pyrrhotite and arsenopyrite. Galena and sphalerite at a nominal 75µm K_{80} were 34 and 50 percent liberated, respectively. Previous testing had indicated gold in this sample was mainly associated with arsenopyrite, which was well liberated at 61 percent.

Flowsheet optimization was evaluated by performing gravity-rougher, gravity-cleaner and cleaner tests followed by locked cycle testing. The zinc rougher tailings, and in some instances, combined with the zinc first cleaner tails, from the locked cycle tests (LCT), were submitted for external Pressure Oxidation (POX) procedures.

The optimized flowsheet along with average gold recovery to the lead and zinc concentrates from locked cycle tests 24 to 26, is illustrated in the figure following. LCT 27 showed slightly relatively improved lead and zinc flotation recoveries and concentrate grades, however due to schedule, this sample was not sent for POX testing. Gold recovery from the SGS Lakefield POX tests HC9A + HC9B and SGS leach test CN13 is shown as per Report 18988-01, produced by SGS and submitted by Mr. Stacy Freudigmann of Canenco Consulting Corp.

On average, 98.3 percent of the feed gold was recovered to the bulk rougher concentrate and following regrind and sequential flotation, gold recovery to the lead and zinc concentrates averaged 21.1 and 3.6 percent. Following leaching of the POX residue, performed on the zinc final tail, an additional 72.2 percent gold from the zinc final tailings was recovered for a total average gold recovery of 96.8 percent.

OVERALL OPTIMIZED FLOWSHEET
TESTS 24, 25, 26 AVERAGE RESULTS



*Note: POX residue leach extraction value reported from SGS Report 18988-01, SGS POX test HC9A and HC9B and SGS leach test CN13.

Further flotation test work should repeat LCT 27 flowsheet and assess arsenic depressants. It is recommended that upon optimization and review, concentrates produced using this flowsheet as the foundation, should form the basis of the process flotation flowsheet moving forward.

2.0 Introduction

Rokmaster Resources Corp is evaluating the Revel Ridge project, located 30 kilometers north of Revelstoke, British Columbia. The test program was developed by Mr. Stacy Freudigmann, metallurgical consultant to Rokmaster Resources Corp.

The objective of this program was to assess the gold metallurgical performance of a composite from the Revel Ridge project by performing optimization pressure oxidation testing on select exit streams and to investigate the effect of cyanide leaching on the pressure oxidation residue. A secondary objective of this test program was to optimize a previously determined flowsheet.

Samples used to construct the composite tested, were being stored at Base Metallurgical Laboratories Ltd. (BML) and were received under a previous test program[1].

This report summarizes key results from the test program, using data summaries and graphical displays. Detailed test conditions, results, and certificates can be found in the appendices as follows:

- Appendix A: Sample Origin
- Appendix B: Metallurgical Testing
- Appendix C: Assays
- Appendix D: Sizings
- Appendix E: Mineralogy

[1] BL604 "Metallurgical Testing of the Revel Ridge Gold Project", November 27, 2020.

3.0 Feed Characteristics

A single composite, designated JL-1 Comp, was constructed from the samples transferred into this program from BL604. This sample was previously tested in BL604. Detailed composite construction data can be reviewed in Appendix A. This sample was subject to chemical analysis to ensure uniformity with the previously constructed JL-1. Mineral analysis as well as a series of metallurgical tests were also conducted on the sample which are discussed in the following sub-sections:

3.1 Chemical Analysis

Duplicate head cuts were removed from the JL-1 Composite and assayed for elements of interest in this project. Average results are summarized in Table 1. Detailed assay data can be reviewed in Appendix C.

TABLE 1: HEAD ASSAYS

Composite	Assay							
	Cu %	Pb %	Zn %	Fe %	Au g/t	Ag g/t	S %	As %
JL-1 Comp	0.14	2.49	4.01	10.1	7.08	59.8	11.0	5.94

The JL-1 Composite contained 0.14 percent copper, 2.49 percent lead and 4.01 percent zinc. Gold in the sample was high at 7.08 g/tonne and will be of economic value. Arsenic content at 5.9 percent in the feed was elevated and arsenic content in the concentrates will need to be monitored.

The head assays were consistent with the previously tested sample.

3.2 Mineral Content

The content and fragmentation characteristics of the sample was measured in this test program. The mineral content was determined quantitatively by QEMSCAN using the Particle Mineral Analysis (PMA) protocols on four sized fractions. The overall mineral content for the sample is displayed in Table 2. The distribution of copper, lead, zinc and arsenic bearing minerals is summarized in Table 3. Detailed mineralogical data can be reviewed in Appendix E.

The sample contained approximately 35 percent by weight sulphides. These were dominated by arsenopyrite and pyrite, followed by sphalerite and galena.

Galena accounted for the majority of the lead minerals in the sample at 90 percent, with the remaining lead present as bournonite and playfairite. These two minerals are lead sulphide minerals and would be expected to be recovered via flotation.

Zinc was almost entirely present as sphalerite at 99.9 percent of the total zinc.

The copper minerals were dominated by chalcopyrite at 38 percent, followed by tetrahedrite and/or tennantite at 35 percent and bournonite at 25 percent. Minor amounts of chalcocite and covellite were also measured.

Arsenic in the sample was almost entirely present as arsenopyrite, which is also expected to be recovered via flotation.

The non-sulphide suite of elements were dominated by quartz, muscovite and calcite.

TABLE 2: MINERAL CONTENT

Class	Mineral	Mineral Content - percent JL-1 Composite
Sulphides	Chalcopyrite	0.13
	Chalcocite	0.01
	Tetrahedrite/Tennantite	0.12
	Bournonite	0.23
	Galena	2.42
	Playfairite	0.26
	Sphalerite	5.76
	Pyrite	11.5
	Pyrrhotite	1.63
	Arsenopyrite	13.3
Silicates, Oxides, Carbonates and Others	Iron Oxides	0.23
	Quartz	31.3
	Muscovite	14.3
	Calcite	14.3
	Dolomite/Ankerite	1.73
	Fluorite	0.32
	K-Feldspars	0.22
	Plagioclase Feldspar	0.28
	Chlorite	0.53
	Biotite/Phlogopite	0.29
	Amphibole (Actinolite)	0.03
	Wollastonite	0.10
	Rutile/Anatase	0.28
	Apatite	0.21
	Ca-sulphate (Gypsum)	0.06
	Zircon	0.05
	Lollingite	0.03
	Others	0.36
Total		**100**

TABLE 3: DISTRIBUTION of Cu, Pb, Zn, and As BEARING MINERALS

Metal	Mineral	Distribution - percent JL-1 Composite
Copper	Chalcopyrite	37.5
	Chalcocite/Covellite	3.0
	Tetrahedrite/Tennantite	35.1
	Bournonite	24.5
Total		**100**
Lead	Bournonite	4.1
	Galena	90.4
	Playfairite	5.5
Total		**100**
Zinc	Tetrahedrite/Tennantite	0.1
	Sphalerite	99.9
Total		**100**
Arsenic	Tetrahedrite/Tennantite	0.1
	Arsenopyrite	99.6
	Lollingite	0.3
Total		**100**

3.3 Mineral Fragmentation

The mineral liberation measurements of JL-1 Composite was also measured by the PMA, on the sample ground to 71µm K_{80}. Four size fractions were measured for this sample. The resulting data is displayed in Table 4 and Figure 1. Detailed mineralogical data can be located in Appendix E.

Galena in the sample was 34 percent liberated at 71µm K_{80}. The majority of the unliberated galena was locked in complex multiphase structures, with a high concentration also locked in with either sphalerite or non-sulphide gangue minerals. The liberation value is not considered sufficient to adequately recover galena to a rougher concentrate. Generally, for similar mineralizations, galena liberations of over 50 percent are required for favorable recovery to the rougher concentrates.

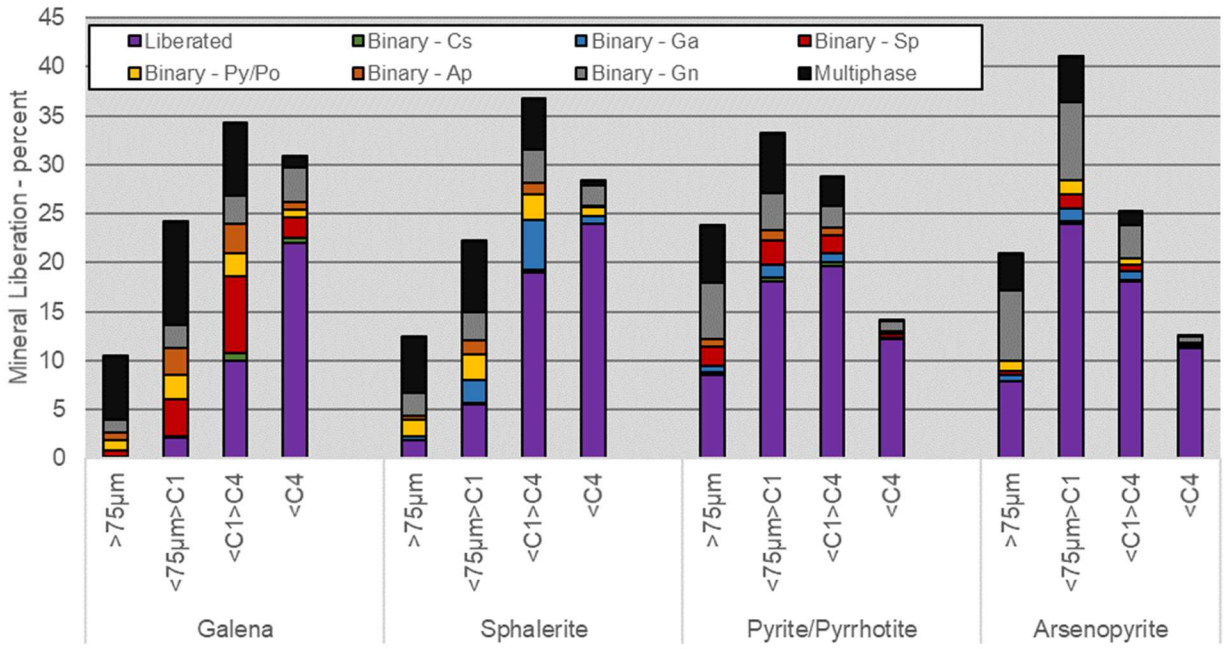
Sphalerite in these samples was 50 percent liberated. This value is just sufficient to adequately recover the mineral into a rougher concentrate. The majority of the locked sphalerite was present in complex multiphase structures with significant quantities locked in binary form with non-sulphide gangue, galena and iron sulphides.

As determined in a previous test program, it is understood that gold in this sample was mainly associated with arsenopyrite. Fortuitously, arsenopyrite in this sample was well liberated at 61 percent.

TABLE 4: MINERAL LIBERATION

Mineral Status	Mineral Liberation 2D - percent					
	JL-1 Composite - 71µm					
	Cs	Ga	Sp	Py/Po	Ap	Gn
Liberated	32	34	50	58	61	91
Binary - Cs		1	<1	1	1	<1
Binary - Ga	9		9	3	3	1
Binary - Sp	3	14		7	3	1
Binary - Py/Po	13	7	8		3	2
Binary - Ap	8	7	3	3		3
Binary - Gn	8	10	11	13	19	
Multiphase	28	26	19	15	10	2
Total	100	100	100	100	100	100

FIGURE 1: MINERAL LIBERATION BY SIZE AND CLASS



4.0 Concentrate Generation and POX Optimization

An initial cleaner test using previously determined test conditions was performed to confirm metallurgical results. Once confirmed, the cleaner test was repeated on 150 kilograms of material, in order to generate material for pressure oxidation testing. Pressure oxidation testing was performed externally with the residue shipped back to BML for downstream cyanide leach tests. A flowsheet schematic of the tests and summary of results is displayed in Figure 2.

Gold was 22 recovered to the gravity concentrate from Test 1. The lead concentrate contained 11.4 percent of the feed lead and 1 percent of the feed gold, assaying 45.1 percent lead and 19.8 g/tonne gold. The zinc concentrate contained 40 percent of the feed zinc, assaying 53.6 percent zinc. The sequential rougher concentrate contained 9 percent of the feed gold.

For Test 2, the gravity concentrate, along with the zinc first and second cleaner tails, which would provide the feed to the autoclave, contained 76 percent of the feed gold, assaying 24 g/tonne.

FIGURE 2: CLEANER TEST FLOWSHEET SCHEMATIC

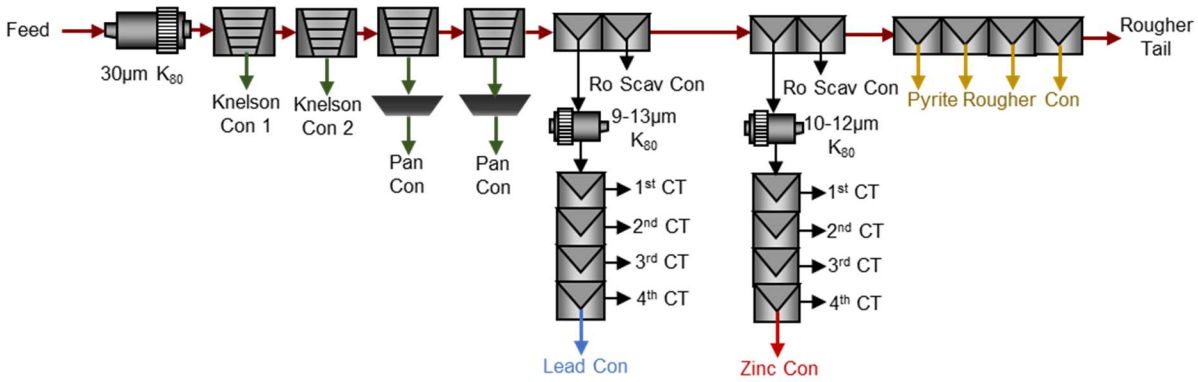


TABLE 5: CLEANER TEST RESULTS

Test	Product	Mass	Assay - percent or g/t							Distribution - percent						
		%	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
1	Grav Con	5.6	4.32	2.97	25.8	38.1	133	27.6	25.4	10.8	4.7	15.2	22.1	9.9	14.3	21.8
	Pb Con	0.6	45.1	4.46	5.6	19.8	3021	19.8	1.3	11.4	0.7	0.3	1.2	22.6	1.0	0.1
	Zn Con	2.1	2.20	53.6	5.5	1.31	69	32.9	0.7	2.0	31.3	1.2	0.3	1.9	6.4	0.2
	Py Ro Con	9.7	0.61	0.30	21.4	8.64	16	21.3	9.4	2.6	0.8	21.8	8.7	2.0	19.1	13.9
2	Grav Con	7.0	5.13	3.87	29.4	34.7	120	27.0	21.8	13.9	8.4	23.7	32.0	12.4	16.3	23.7
	Pb Con	0.4	19.4	6.60	20.6	37.4	1600	30.0	1.5	3.0	0.8	0.9	2.0	9.5	1.0	0.1
	Zn Con	1.2	1.96	55.0	6.1	1.25	43	32.9	0.6	0.9	19.6	0.8	0.2	0.7	3.3	0.1
	Py Ro Con	4.0	0.77	0.46	12.6	3.35	14	6.1	4.3	1.2	0.6	5.8	1.8	0.8	2.1	2.7
	Grav Con + Zn 1CT + Zn 2CT	24.0	2.53	4.99	18.8	24.0	56	28.2	21.2	23.6	36.9	51.8	75.7	19.9	58.2	79.0

4.1 Concentrate Properties

From these cleaner tests, Test 1 Combined Concentrate, Test 2 Bulk Concentrate 1 and Test 2 Bulk Concentrate 2 were constructed for downstream testing. Bulk Concentrate 1 consisted of the gravity concentrates, along with zinc first and second cleaner tails. Bulk concentrate 2 consisted of the gravity concentrates along with zinc first and second cleaner tails, zinc rougher scavenger concentrate and pyrite rougher one concentrate. Details on streams used to construct these concentrate samples can be reviewed in Appendix A. Chemical and mineral analysis were performed on the concentrate samples as discussed in the following subsection:

4.1.1 Chemical Content

Representative duplicate cuts were removed from Test 2 Bulk Concentrate 1 and 2 and assayed for elements of interest in the project prior to additional testing. Average results are summarized in Table 6, detailed assay data can be reviewed in Appendix C.

TABLE 6: BULK CONCENTRATE HEAD ASSAYS

Composite	Assay									
	Cu	Pb	Zn	Fe	Au	Ag	S	As	SO4-	S2-
	%	%	%	%	g/t	g/t	%	%	%	%
Bulk Con 1	0.14	2.25	6.10	27.0	23.0	54.0	27.4	2.89	0.09	27.3
Bulk Con 2	0.14	1.99	5.15	25.3	19.7	56.5	23.8	2.40	0.10	23.7

These two concentrates contained 23.0 and 19.7 g/tonne gold, respectively, and 14 percent copper in each concentrate sample. Bulk Concentrate 1, with the higher gold grade, was submitted for POX testing.

4.1.2 Mineral Content

A Bulk Mineral Analysis (BMA) via QEMSCAN was also conducted on these samples as well as the Combined concentrate from Test 1. This analysis provides a quantitative measure of the mineral composition of the samples along with information pertaining to copper and sulphide distribution. Results are shown in Table 7 and 8. Detailed mineralogical data can be reviewed in Appendix E.

The sulphide minerals in the concentrate samples were comprised mainly of arsenopyrite/pyrite and pyrrhotite, followed by sphalerite and galena. Bulk Con 1 and 2 contained a much higher concentration of sphalerite compared to Test 1 Combined Con. The non-sulphide suite of minerals were dominated by quartz.

TABLE 7: MINERAL CONTENT

Class	Mineral	Mineral Compositions - weight percent		
		T01 Combined Con	Bulk Con 1	Bulk Con 2
Sulphides	Chalcopyrite	0.11	0.18	0.09
	Chalcocite	0.02	0.02	0.02
	Tetrahedrite/Tennantite	0.07	0.06	0.02
	Galena	1.74	2.89	2.24
	Sphalerite	2.36	9.24	7.76
	Pyrite	29.4	25.8	23.2
	Pyrrhotite	4.69	3.69	4.89
	Arsenopyrite	35.2	44.8	37.0
Silicates, Oxides, Carbonates and Others	Iron Metal/Goethite	2.60	0.80	2.56
	Quartz	11.00	5.08	10.40
	Calcite	3.91	1.54	2.97
	Plagioclase Feldspar	0.26	0.12	0.22
	K-Feldspars	0.95	0.61	1.09
	Wollastonite	0.10	0.01	0.04
	Biotite/Phlogopite	0.07	0.01	0.06
	Amphibole (Actinolite)	0.03	0.01	0.02
	Chlorite	0.51	0.26	0.47
	Muscovite	2.69	1.26	2.63
	Dolomite/Ankerite	0.94	0.41	0.68
	Siderite	0.39	0.27	0.27
	Ti Minerals	0.22	0.05	0.09
	Apatite	0.11	0.04	0.07
	Ca-sulphate (Gypsum)	0.87	0.90	1.33
	Zircon	0.03	0.01	0.03
	Lollingite	0.37	0.50	0.24
	Fluorite	0.08	0.05	0.07
	Barite	0.03	0.03	0.02
	Others	1.25	1.36	1.57
Total		**100**	**100**	**100**

TABLE 8: DISTRIBUTION OF Cu AND S BEARING MINERALS

Metal	Mineral	Distribution - percent		
		T01 Combined Con	Bulk Con 1	Bulk Con 2
Copper	Chalcopyrite	47.8	61.2	54.5
	Chalcocite/Covellite	18.9	18.0	32.1
	Tetrahedrite/Tennantite	33.3	20.9	13.3
Total		**100**	**100**	**100**
Sulphur	Cu Sulphides	0.24	0.29	0.17
	Galena	0.92	1.47	1.28
	Sphalerite	3.00	10.8	10.2
	Pyrite	60.5	49.0	49.2
	Pyrrhotite	8.10	6.55	9.30
	Arsenopyrite	26.6	31.3	28.9
	Ca-sulphate/Barite	0.60	0.62	0.97
Total		**100**	**100**	**100**

4.2 POX – Cyanide Leach

Following the initial cleaner tests, Test 1 Combined Concentrate and Test 2 Bulk Concentrate 1 were submitted for pressure oxidation testing as an alternative method for extracting gold. This process utilizes high temperature and pressure to release refractory gold from select sulphide particles, thus allowing it to be leached. Test conditions were provided by the client and tests were performed by Bureau Veritas in Vancouver. The POX residues were returned to Base Metallurgical Laboratories for subsequent leaching and assaying. No cyanide leaching was performed on the leach residue from Test 1 Combined Concentrate. A summary of relevant test conditions and results is shown in Table 9 and 10. Detailed test data can be reviewed in Appendix B.

For POX tests performed on Test 2 Bulk Con 1, initial conditions were used to provide the best chance at successful extraction, including 220 degrees Celsius, 100PSI, for a duration of 1 to 2 hours. A number of tests indicated incomplete oxidation. POX optimization resulted in oxidation values of up to 98.4 percent being obtained.

A number of the POX residues were then subject to 48-hour cyanide leach tests. Leach test conditions consisted of a sodium cyanide (NaCN) concentration of 20000 ppm, pH 10.5, density of 10 to 25 percent and sparged with oxygen.

Gold extraction from the POX residues of up to 90 percent were obtained, indication this process to be very successful at extracting gold from the gravity concentrate and zinc cleaner tailing streams.

TABLE 9: POX TESTING

Sample	Test	Duration hours	Grind Size µm K_{80}	Feed Density % solids	Initial ORP (mV)	Final ORP (mV)	Oxidation percent	CN Leach Extraction
BL801-01 Combined Con	POX 1	1	as is	15			13.4	
	POX 2	2	as is	15			90.3	
	POX 3	4	as is	15			91.2	
BL801-02 Bulk Con 1	POX 4	1	as is	15			74.3	52.6
	POX 5	1	as is	5	N/A	N/A	86.4	85.6
	POX 6	1	as is	10	N/A	N/A	12.6	62.4
	POX 7	2	as is	15	N/A	N/A	71.5	66.4
	POX 8	2	as is	20	N/A	N/A	51.5	56.9
	POX 9	2	as is	30	270	225	8.3	27.5
	POX 10	2	as is	15	188	398	96.1	96.0
	POX 11	2	as is	15	116	380	96.8	96.3
	POX 12	2	as is	15	45	362	22.3	80.7
	POX 13	1	7.5	15	232	308	33.7	
	POX 14	2	7.5	15	271	320	97.7	90.6
	POX 15	2	7.5	15	320	282	98.4	90.8

TABLE 10: POX RESIDUE LEACH TEST RESULTS

Test	Residue Sample	Au Extraction at Time(hours) percent						Extraction at 48 hrs - %	Consumption kg/tonne	
		2	4	6	8	24	48	Ag	NaCN	Lime
3	POX 4	19	26	31	34	46	53	66	21.2	7.5
4	POX 5	58	68	72	77	83	86	79	41.7	2.1
5	POX 6	39	47	52	53	60	62	81	65.5	10.7
6	POX 8	40	46	46	51	53	57	72	21.5	4.5
7	POX 7	24	38	49	56	65	66	62	30.9	7.2
8	POX 9	13	15	18	21	27	28	37	132.2	55.5
9	POX 10	58	72	76	81	89	96	90	37.8	48.9
10	POX 11	48	58	67	77	87	96	90	118.0	35.0
11	POX 12	59	63	67	70	81	81	82	68.8	81.5
12	POX 14	48	60	72	79	89	91	56	50.9	8.9
13	POX 15	59	69	73	78	88	91	43	52.7	3.0

5.0 Flowsheet Optimization

A number of optimization gravity-rougher, gravity-cleaner and cleaner tests were performed in order to improve the metallurgical performance of the sample. These tests were culminated with a series of locked cycle optimization tests. The following sub-sections describe the tests in further detail. Detailed results can be found in Appendix B.

5.1 Gravity Rougher Tests

A number of gravity rougher flotation tests were performed on the JL-1 Composite in order to evaluate the effect of primary grind sizing on gold metallurgical performance. Results are displayed in Figure 3. Detailed test data can be reviewed in Appendix B.

Tests initially evaluated primary grind size over the range of 75 and 212µm K_{80}. The flowsheet consisted of two sequential Knelson gravity concentrations followed by kinetic rougher flotations.

For these tests gold was between 92 and 99 percent recovered into the combined gravity/bulk rougher concentrates. The effect of primary grind sizing was evident; gold recovery increased when primary grind size was reduced to 150µm K_{80}. Finer primary grind sizings slightly improved rougher kinetics, however final gold recovery remained unchanged.

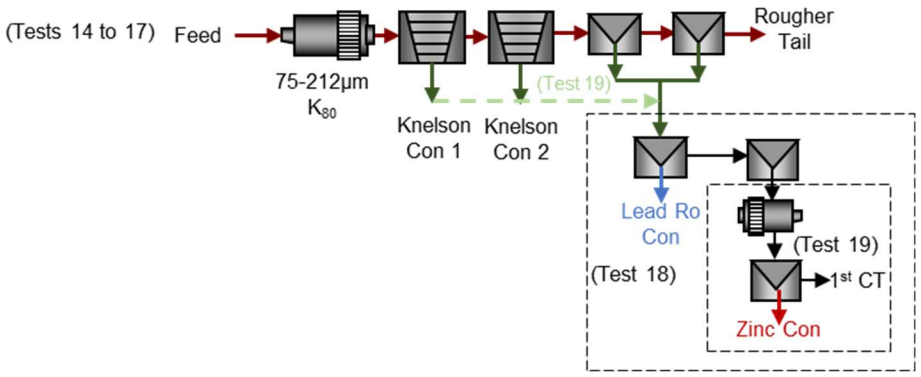
Two additional gravity rougher tests were performed, investigating the regrinding of the bulk rougher concentrate and performing sequential lead and zinc rougher circuits and one zinc cleaning stage for the last test. These tests were performed at a primary grind size of 150µm K_{80}. Results are also shown in Figure 3.

The initial test indicated 18 percent gold recovery to the gravity concentrate, and the majority at 56 percent, recovered to the lead rougher concentrate.

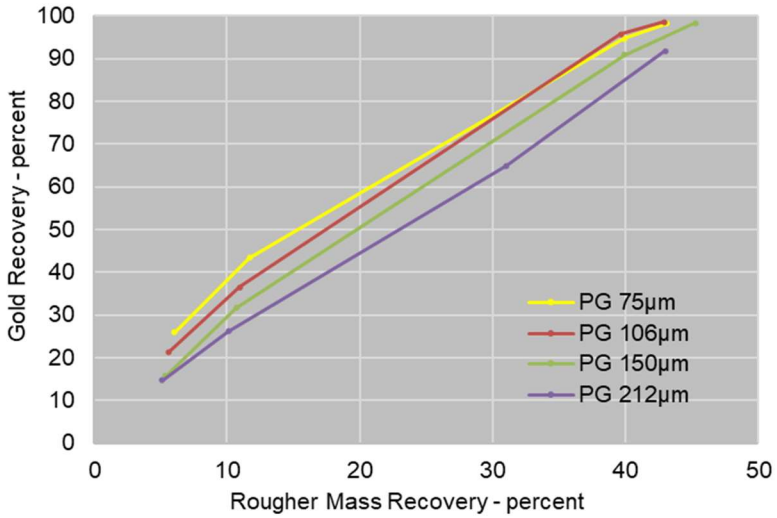
The subsequent gravity-rougher test evaluated recirculating the gravity concentrates into the lead rougher circuit feed. For this test, lead recovery of 84 percent was obtained to the lead rougher concentrate, which also contained 37 percent of the feed gold. This test included a single zinc cleaning stage to determine if adequate zinc concentration could be obtained; for this test, 60 percent of the feed zinc reported to the zinc concentrate, assaying 50.6 percent zinc.

FIGURE 3: GRAVITY ROUGHER TESTS

Flowsheet Schematic



Effect of Primary Grind Size on Au Recovery



Gravity-Rougher Test Result Summary

Test	PG µm K_{80}	Product	Mass	Assay - percent or g/t							Recovery - percent						
			%	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
18	150	Grav Con	10.8	4.15	4.86	20.9	8.37	12	22.7	0.25	18.9	12.9	21.6	17.5	2.5	22.0	0.6
		Pb Ro Con	16.8	10.1	15.0	24.2	17.2	269	27.8	15.5	71.4	62.1	38.6	56.1	87.6	41.8	61.4
		Zn Ro Con	1.1	1.4	20.3	18.2	6.0	43	25.6	7.0	0.7	5.7	2.0	1.3	0.9	2.6	1.9
19	150	Pb Ro Con	8.8	22.0	12.1	17.8	27.5	578	26.4	10.8	83.9	28.7	15.1	36.5	83.8	20.5	16.3
		Zn Clnr Con	4.4	0.65	50.6	9.0	3.11	43	33.4	2.5	1.2	59.9	3.8	2.1	3.1	13.0	1.9

Note: a) Detailed test conditions and results are provided in Appendix B.
b) Au and Ag assays are in g/tonne, all others in percent.

5.1.1 Cleaner Cycle Tests

A limited number of cleaner optimization tests were performed on JL-1 Composite, using previously determined test conditions as a baseline. The flowsheet schematic utilized, along with a summary of results is displayed in Figure 3. These tests were conducted at a primary grind size of 150µm K_{80}. Detailed test conditions can be reviewed in Appendix B.

Initially, the lead concentrate contained 74 percent lead, assaying 40.7 percent lead. This concentrate also contained 28 percent of the feed gold. About 11 percent of the feed zinc also reported to this concentrate. The zinc concentrate contained 34 percent of the feed zinc, assaying 55.8 percent zinc. The majority of zinc and gold losses occurred to the lead cleaner tailings. In a locked cycle test, with recirculation of the lead and zinc cleaner tailings, slightly higher zinc recoveries to the zinc concentrate may be obtained, albeit at slightly lower concentrate grades.

The next test investigated further hand panning of the Knelson gravity concentrates, and not recirculating the gravity concentrates. This test also evaluated recirculating the lead first cleaner tailings into the zinc circuit feed. With this configuration, about 11 percent of the feed gold and 4 percent of the silver were recovered into the gravity concentrate. However, 6 percent of the feed zinc was also recovered in this concentrate while 18 percent of the lead and 13 percent of the zinc as well as considerable gold reported to the gravity tailings stream. The lead concentrate recovery declined to 46 percent at a higher lead grade of 46 percent. As previously anticipated, by recirculating the lead first cleaner tailings into the zinc stream, zinc recovery to the zinc concentrate increased to 48 percent, at a zinc grade of 56 percent.

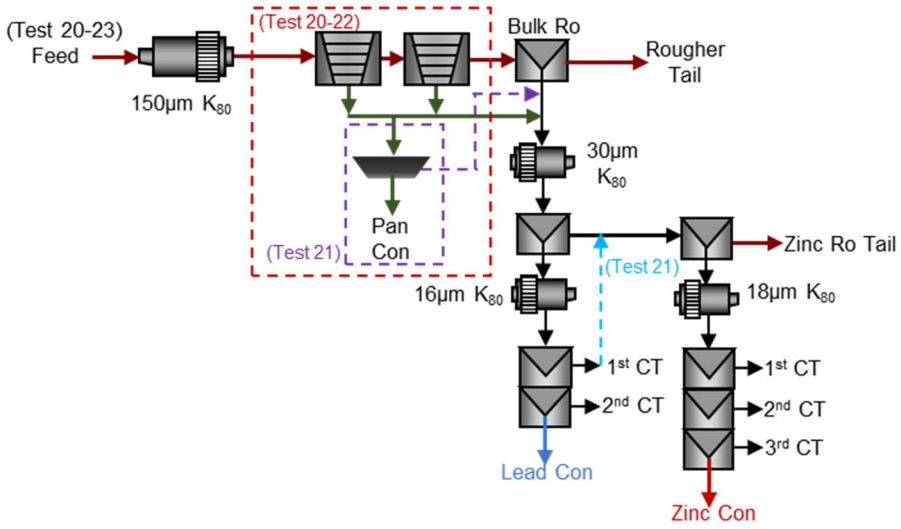
The next test evaluated recirculating the gravity tailings back into the bulk rougher concentrate, prior to regrinding. For this test, lead recovery increased to 76 percent, albeit at a much lower grade of 38 percent lead. Zinc performance also declined, with 27 percent zinc recovery to the zinc concentrate, at a grade of 54 percent zinc.

The final cleaner test evaluated fully removing the gravity circuit. Results were superior with 77 percent lead recovered into a lead concentrate, assaying 49 percent lead. The zinc concentrate contained 42 percent of the feed zinc, at a zinc grade of 54 percent. About 19 percent of the feed gold reported to the lead concentrate.

For all tests, arsenic concentration in the lead concentrates were high and will likely impose concentrate penalties. Advice from experts in the field of smelter penalty thresholds should be sought.

FIGURE 4: GRAVITY CLEANER TESTS

Flowsheet Schematic



Cleaner Test Result Summary

Test	Product	Mass	Assay - percent or g/t							Recovery - percent						
		%	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
20	Pb Con	4.2	**40.7**	9.50	11.9	48.7	864	22.8	6.7	**73.5**	10.5	4.7	27.9	63.7	8.3	5.1
	Zn Con	2.3	1.25	**55.8**	6.5	2.11	53	33.2	0.5	1.2	**33.6**	1.4	0.7	2.1	6.5	0.2
21	Grav Con	1.3	11.5	1.49	29.3	59.3	185	26.8	31.5	6.4	0.5	3.7	10.9	4.0	3.0	6.8
	Pb Con	2.3	**46.0**	9.60	8.6	29.7	617	21.6	4.7	**46.2**	5.9	2.0	9.9	24.1	4.4	1.9
	Zn Con	3.2	1.16	**56.0**	6.4	1.39	51	33.6	0.6	1.6	**48.4**	2.0	0.7	2.8	9.7	0.3
22	Pan Con	2.0	7.90	3.10	29.9	40.3	150	26.9	28.5	7.2	1.7	5.9	12.1	5.3	5.1	9.8
	Pb Con	4.4	**38.4**	12.6	12.6	30.1	653	22.7	6.9	**75.9**	14.6	5.4	19.7	49.6	9.3	5.1
	Zn Con	1.9	1.28	**53.6**	8.6	3.40	92	32.3	1.9	1.1	**27.4**	1.6	1.0	3.1	5.9	0.6
23	Pb Con	3.7	**49.0**	10.8	9.8	32.9	662	21.2	5.3	**77.4**	10.4	3.4	18.9	43.0	7.2	3.3
	Zn Con	3.0	1.24	**54.0**	8.6	2.82	79	32.1	1.8	1.6	**41.7**	2.4	1.3	4.1	8.8	0.9

5.1.2 Locked Cycle Test

Four locked cycle tests were performed in this program in order to establish estimates of metallurgical performance, anticipated from a continuous process. Initially, the most favorable results from the cleaner tests were used as a baseline with the subsequent tests evaluating limited optimization. Figure 5 displays the flowsheet schematics utilized along with a summary of results. Detailed test data can be reviewed in Appendix B.

Using conditions from batch cleaner Test 23, lead and zinc were 79 and 59 percent respectively, recovered into their respective concentrates, assaying 43 percent lead and 45 percent zinc.

Finer regrinding and modifications to reagent dosage were performed in an attempt to improve performance. These tests were successful in increasing concentrate grade for both lead and zinc, albeit at a significant detriment to zinc recovery.

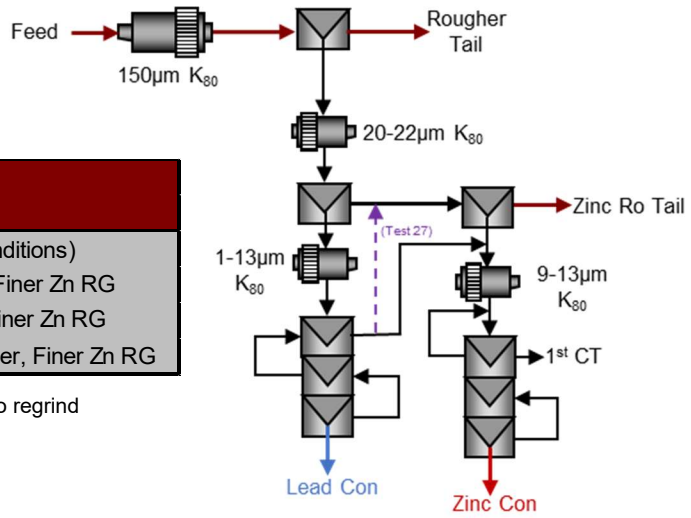
An additional locked cycle test was performed, investigating recirculating the lead first cleaner tail into the zinc rougher feed, in place of the zinc regrind stage. This test was successful in improving the overall zinc metallurgical performance significantly. Lead from the feed was 72 percent recovered into a lead concentrate, assaying 48.5 percent lead. Zinc from the feed was 70 percent recovered into a final concentrate, assaying 53.9 percent zinc.

This test was also successful in drastically reducing the arsenic concentration in the zinc concentrate. However, arsenic concentration at 4.8 percent in the lead concentrate was still high and would likely impose smelter penalties. Specific advice should be sought regarding penalty thresholds from experts in such field. Further optimization may be required to attempt to reject arsenic from the lead concentrate.

Gold recovery to the lead and zinc concentrates was measured at 21 and 1 percent respectively and will result in payment. An additional 75 percent gold from the feed was recovered into the zinc first cleaner tail and zinc rougher tail. These two streams are expected to be subject to pressure oxidation to further extract the gold.

FIGURE 5: LOCKED CYCLE TESTS

Flowsheet Schematic



Locked Cycle Test Conditions

Test	RG-µm K_{80}			Modified Conditions
	Bulk	Lead	Zinc	
24	20	13	12	Baseline (Cleaner T23 Conditions)
25	20	13	11	Increase $ZnSO_4$ in Pb Circuit, Finer Zn RG
26	22	12	13	Increase SIPX in Zn Circuit, Finer Zn RG
27	20	11	9	Pb 1CT recirculated into Zn Rougher, Finer Zn RG

Notes: Finer zinc regrind for Tests 25 and 26 was not achieved as mass to regrind circuit increased. Regrind time was increased for these tests.

Locked Cycle Test Results

Test	Product	Mass	Assay - percent or g/t							Recovery - percent						
		%	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
24	Feed	100	2.20	3.64	10.2	6.46	55	10.8	5.5	100	100	100	100	100	100	100
	Pb Con	4.0	**43.1**	9.92	10.5	34.4	691	20.9	**5.6**	**79**	11	4	21	51	8	**4**
	Zn Con	4.7	1.75	**45.1**	9.7	5.88	142	30.7	3.5	4	**59**	5	4	12	13	3
	Zn 1st Clnr Tail	10.6	1.43	8.51	22.8	12.8	154	23.9	13.2	7	25	24	21	30	23	25
	Zn Ro Tail	26.4	0.54	0.61	24.6	12.7	10	22.1	13.7	6	4	64	52	5	54	66
	Bulk Ro Tail	54.2	0.15	0.07	0.7	0.15	2	0.26	0.2	4	1	4	1	2	1	2
25	Feed	100	2.36	3.55	10.3	6.31	52	10.9	5.6	100	100	100	100	100	100	100
	Pb Con	3.6	**49.2**	8.71	8.2	37.5	628	20.4	**4.3**	**76**	9	3	22	44	7	**3**
	Zn Con	3.8	2.66	**46.3**	9.7	5.69	108	30.3	3.1	4	**49**	4	3	8	11	2
	Zn 1st Clnr Tail	14.4	1.36	9.15	23.3	12.3	154	24.2	13.3	8	37	33	28	43	32	34
	Zn Ro Tail	23.0	0.40	0.32	25.2	12.3	2	23.1	14.3	4	2	56	45	1	49	58
	Bulk Ro Tail	55.1	0.34	0.17	0.9	0.24	5	0.30	0.3	8	3	5	2	5	2	3
26	Feed	100	2.36	3.66	10.3	6.69	59	10.8	5.5	100	100	100	100	100	100	100
	Pb Con	3.3	**53.4**	7.84	6.8	41.4	703	20.0	**3.7**	**74**	7	2	20	39	6	**2**
	Zn Con	3.7	2.43	**48.8**	4.7	5.53	122	30.9	2.6	4	**49**	2	3	8	11	2
	Zn 1st Clnr Tail	12.1	2.30	11.9	22.7	13.7	220	24.1	12.7	12	39	27	25	45	27	28
	Zn Ro Tail	26.5	0.37	0.26	25.1	12.6	8	22.0	13.5	4	2	65	50	4	54	66
	Bulk Ro Tail	54.4	0.29	0.15	0.8	0.22	5	0.39	0.2	7	2	4	2	5	2	2
27	Feed	100	2.08	3.61	10.8	6.74	50	10.7	5.6	100	100	100	100	100	100	100
	Pb Con	3.1	**48.5**	7.80	8.2	45.9	645	19.7	**4.8**	**72**	7	2	21	40	6	**3**
	Zn Con	4.7	1.66	**53.9**	6.6	1.72	65	33.0	0.8	4	**70**	3	1	6	14	1
	Zn 1st Clnr Tail	7.5	2.23	8.68	23.1	13.3	212	22.7	12.2	8	18	16	15	32	16	17
	Zn Ro Tail	29.7	0.57	0.39	26.8	13.7	27	22.3	14.5	8	3	74	61	16	62	77
	Bulk Ro Tail	55.0	0.32	0.17	0.9	0.30	5	0.47	0.3	8	3	5	2	6	2	3

Notes: a) Detailed test conditions and results are provided in Appendix B.
b) Au and Ag assays are in g/tonne, all others in percent.

6.0 Conclusions and Recommendations

A metallurgical test program was conducted on a sample from the Revel Ridge project, located near Revelstoke, British Columbia. The testing focused around generating concentrate for POX testing and POX residue leaching, as well as for optimizing a previously determined flowsheet.

A sample designated JL-1 Composite was constructed from material previously stored at BML. Head assays indicated the sample contained 0.14 percent copper, 2.49 percent lead, 4.01 percent zinc and 60 g/tonne silver. The sample contained significant gold value at 7.08 g/tonne. Arsenic content was elevated at 5.94 percent and will require monitoring in the concentrates.

A detailed Particle Mineral Analysis (PMA) via QEMSCAN indicated the JL-1 sample contained a high concentration of sulphides at 35 percent, dominated by arsenopyrite and pyrite, followed by sphalerite and galena. Galena accounted for the majority of the lead while sphalerite accounted for almost all of the zinc. Arsenic was almost entirely resent as arsenopyrite, which is expected to be recovered via flotation.

The PMA also indicated at a primary grind sizing of 71µm K_{80}, galena liberation was low at 34 percent while sphalerite liberation was just adequate at 50 percent liberated. The majority of the unliberated galena and sphalerite were locked in complex multiphase structures. It was understood that gold in this sample was mainly associated with arsenopyrite. Fortuitously, arsenopyrite in this sample was well liberated at 61 percent.

A bulk batch cleaner test was performed on the sample ground to 30µm K_{80} using previously determined test conditions. Two bulk concentrates were generated and submitted to an external laboratory for optimization POX testing. These tests resulted in oxidation values of up to 98.4 percent. The POX residues were subject to cyanide leach tests, with gold extractions of up to 90 percent obtained.

The next phase of testing evaluated optimizing the previously determined flowsheet. Initially gravity rougher tests were performed evaluating primary grind sizing over the range of 75 and 212µm K_{80}. Tests revealed reducing primary grind sizing to 150µm K_{80} is beneficial to gold recovery. Finer primary grind sizing did not impact gold recovery to the rougher concentrates.

A series of cleaner tests investigated various flowsheet configurations. Ultimately, results indicated superior metallurgical performance can be obtained by removing the gravity circuit altogether. This test resulted in 77 percent of the feed lead recovered into a lead concentrate, assaying 49 percent lead. The zinc concentrate contained 42 percent of the feed zinc, at a zinc

grade of 54 percent. About 19 percent of the feed gold reported to the lead concentrate. The majority of the gold not recovered to the concentrates, reported to the zinc first cleaner tailing and zinc rougher tailings.

Limited optimization locked cycle testing was performed on the samples at 150µm K_{80}, without the implementation of the gravity circuit. These tests evaluated finer regrinding of the zinc rougher concentrates, along with various flowsheet configurations. The most favorable results were obtained when the lead first cleaner tailing was recirculated into the zinc rougher feed, with a fine zinc regrind sizing of 9µm K_{80}. For this test, lead from the feed was 72 percent recovered into a lead concentrate, assaying 48.5 percent lead. The majority of the silver was also recovered into the lead concentrate. Zinc from the feed was 70 percent recovered into a final concentrate, assaying 53.9 percent zinc. Gold recovery to the lead and zinc concentrates was measured at 21 and 1 percent respectively and will result in payment. An additional 75 percent gold from the feed was recovered into the zinc first cleaner tail and zinc rougher tail. These two streams are expected to be subject to pressure oxidation to further extract the gold. This test also drastically reduced arsenic concentration to the zinc concentrate. Arsenic in the lead concentrate was still high at 4.8 percent and additional testing is required to attempt and further reject arsenic from the lead circuit.

APPENDIX A – CHAIN OF CUSTODY

APPENDIX A
CHAIN OF CUSTODY

Samples were received at Base Metallurgical Laboratories under a previous test program, " BL604 "Metallurgical Testing of the Revel Ridge Gold Project", November 27, 2020. Table A-1 presents a list of samples transferred to this program.

Samples were combined to construct a single composite, designated JL-1 Composite. The composite was stage crushed to pass 3.35mm (6 mesh) and 12 kilograms were split into 2-kilogram charges in preparation for testing. The remaining sample mass was split into 10-kilogram charges for bulk testing. Grind calibrations were performed on the sample. Results from the grind calibrations are provided in Appendix E while flotation testing results are located in Appendix B. Duplicate representative head cuts were also removed and assayed. Full assay results, and the assay certificate, are provided in Appendix C.

A bulk cleaner tests as performed to generate concentrate which was shipped to Bureau Veritas for POX testing. The POX residue was shipped back to BML for further analysis. Table A-2 presents the concentrate composition.

TABLE A-1
SAMPLE RECEIVED

Sample ID	Form	Mass (kg)
HM 1C (Barrel)	Crush	43.4
HM 2B (Barrel)	Crush	25.0
Hm 3B (Barrel)	Crush	12.7
1103106 HM 4A (Barrel)	Crush	18.7
HM 6C (Barrel)*	Crush	75.1
1103106 - HM 7B	Rock	75.1
Total		**250.0**

TABLE A-2
CONCENTRATE COMPOSITION

Sample ID	Test	Product	Mass in Comp kg
Bulk Con 1	2	Knelson Con 1	244.6
		Knelson Con 2	251.9
		Knelson Con 3	216.7
		Knelson Con 4	228.9
		Knelson Con 5	234.3
		Knelson Con 6	249.6
		Zn 2 CT	575.3
		Zn 1 CT	2998.7
Bulk Con 2	2	Knelson Con 1	77.9
		Knelson Con 2	80.3
		Knelson Con 3	69.1
		Knelson Con 4	72.9
		Knelson Con 5	74.7
		Knelson Con 6	79.5
		Zn 2 CT	183.3
		Zn 1 CT	955.5
		Zn Ro Scav Con	145.2
		Py Ro 1	261.5

APPENDIX B – METALLURGICAL TESTING

APPENDIX B
METALLURGICAL TESTING

Reference
Burveau Veritas Commodities, Project 2100702, Pressure Oxidation Leach Tests, January 2022 SGS Canada, Project 18988-01, Pressure Oxidation Testing for the Revel Ridge Project, August 18, 2022

Test No: BL0801-01
Date: 28-Apr-21
Test Type: Gravity/Cleaner Test.
Test Objective: Initial Cleaner Evaluation
Sample: 4 kg of JL-1
Nominal Sizing: 30µm K_{80}

Lead Regrind Discharge: 9.45µm K_{80}
Zinc Regrind Discharge: 10.2µm K_{80}

Stage	Reagents - g/tonne						Time Minutes		Electrochemistry	
	Lime	$ZnSO_4$	Na_2SO_3	SEX	A241	MIBC	Condition	Float	pH	Eh-mV
Primary Grind							60		8.4	12
Knelson 1										
Knelson 2										
Knelson/Pan 3										
Knelson/Pan 4										
Condition		100	100				10		7.9	-156
Pb Rougher 1	715			25		14	1	5	10.5	-241
Pb Rougher 2	140			25		7	1	10	10.5	-65
Pb Rougher Scav	125			25			1	3	10.5	-44
Regrind							30		8.6	98
Pb Cleaner 1	170	250		10	5	4	3	12	10.5	-1
Pb Cleaner 2	√	125		10	5		2	5	10.5	17
Pb Cleaner 3	√			5	5		1	6	10.8	11
Pb Cleaner 4	√						1	5	10.8	24
		$CuSO_4$			SIPX					
Condition	375	800					2		11.0	-32
Zn Rougher 1					80	7	1	8	11.0	-31
Zn Rougher Scav	110				10		1	5	11.0	-15
Regrind							20		8.4	139
Zn Cleaner 1	200	150			15	14	2	7	11.0	-67
Zn Cleaner 2	√	50			5	7	1	4.5	11.3	-12
Zn Cleaner 3	√						1	3	11.5	-27
Zn Cleaner 4	√						1	2.5	11.5	-23
					PAX					
Py Rougher 1		100			100		2	5	10.7	2
Py Rougher 2		50			50	7	1	3	10.3	28
Py Rougher 3		25			50		1	2	10.0	17
Py Rougher 4					50		1	2	10.0	10

Primary Grind	
Mill	Mild Steel
Media	20 kg Mild
Water Addn:	1000 ml
Regrind	
Mill	Mild Steel
Media	8 kg Mild

Flotation Information	Rougher	Clnr 1	Clnr 2
Flotation Device:	D12	TF1	TF1
Cell Volume:	4.4L	2.6L	1.5L
Impellar Speed:	800rpm	35 Hz	35 Hz
Flotation Gas:	Air		
Water Type:	Kamloops Tap		

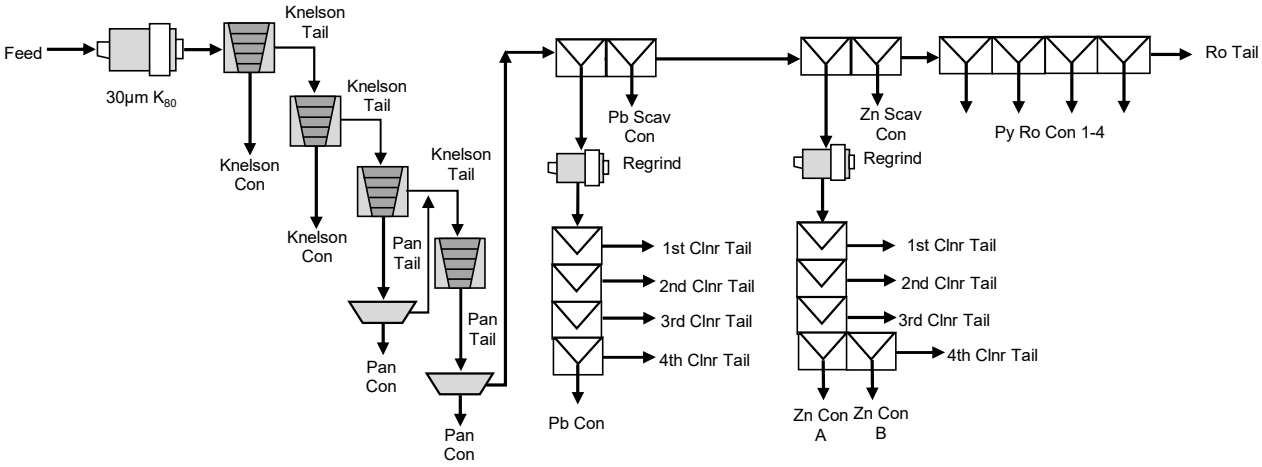
BL0801-01 JL-1
Metallurgical Balance

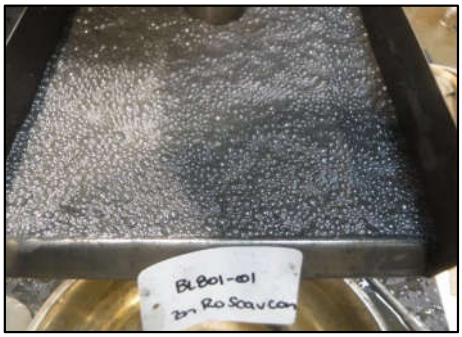
Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Knelson Con 1	2.7	105.8	4.40	2.68	26.3	52.1	147	27.7	27.0	5.2	2.0	7.3	14.3	5.1	6.8	10.9
Knelson Con 2	2.4	96.8	4.21	3.61	24.4	25.7	121	26.7	22.5	4.5	2.4	6.2	6.5	3.9	6.0	8.4
Pan Con 3	0.3	13.6	4.37	1.47	29.9	24.2	117	31.7	31.3	0.7	0.1	1.1	0.9	0.5	1.0	1.6
Pan Con 4	0.2	7.8	4.44	1.56	29.1	25.8	123	30.7	31.0	0.4	0.1	0.6	0.5	0.3	0.6	0.9
Pb Con	0.6	22.6	45.1	4.46	5.6	19.8	3021	19.8	1.32	11.4	0.7	0.3	1.2	22.6	1.0	0.1
Pb 4 CT	1.6	64.4	38.6	8.10	7.3	25.7	1389	18.3	2.93	27.7	3.6	1.2	4.3	29.7	2.7	0.7
Pb 3 CT	0.6	25.4	18.0	10.0	11.4	43.8	526	17.6	5.53	5.1	1.8	0.8	2.9	4.4	1.0	0.5
Pb 2 CT	0.9	34.0	14.2	10.3	11.8	13.8	411	17.1	6.72	5.4	2.5	1.1	1.2	4.6	1.3	0.9
Pb 1 CT	5.8	232.5	6.40	9.60	12.4	8.08	156	15.8	6.69	16.6	15.6	7.6	4.9	12.1	8.5	6.0
Pb Ro Scav Con	2.4	94.0	6.00	8.60	13.6	3.34	130	17.5	7.61	6.3	5.7	3.4	0.8	4.0	3.8	2.7
Zn Con A	2.1	83.4	2.20	53.6	5.5	1.31	69	32.9	0.65	2.0	31.3	1.2	0.3	1.9	6.4	0.2
Zn Con B	0.6	23.2	3.00	53.7	5.8	1.65	58	32.5	0.58	0.8	8.7	0.4	0.1	0.4	1.7	0.1
Zn 4 CT	0.6	25.4	4.84	45.3	8.5	3.61	129	31.9	2.14	1.4	8.1	0.6	0.2	1.1	1.9	0.2
Zn 3 CT	0.8	32.3	4.64	31.1	14.4	8.81	129	32.7	6.80	1.7	7.0	1.2	0.7	1.4	2.4	0.8
Zn 2 CT	1.3	50.5	2.43	7.40	25.0	12.3	79	30.5	19.2	1.4	2.6	3.3	1.6	1.3	3.6	3.7
Zn 1 CT	7.8	313.1	0.81	2.51	26.2	22.5	27	24.1	26.2	2.8	5.5	21.6	18.3	2.8	17.5	31.4
Zn Ro Scav Con	4.6	184.0	0.81	0.34	30.7	67.7	25	32.4	22.6	1.7	0.4	14.9	32.3	1.5	13.8	15.9
Py Ro 1	5.3	213.0	0.61	0.25	28.8	13.8	19	31.4	13.8	1.4	0.4	16.2	7.6	1.3	15.5	11.3
Py Ro 2	1.3	52.3	0.72	0.35	18.6	4.56	16	15.5	7.21	0.4	0.1	2.6	0.6	0.3	1.9	1.4
Py Ro 3	1.8	71.8	0.58	0.33	11.3	1.31	10	7.63	3.15	0.5	0.2	2.1	0.2	0.2	1.3	0.9
Py Ro 4	1.2	49.7	0.50	0.38	7.4	1.63	9.0	4.13	1.90	0.3	0.1	1.0	0.2	0.1	0.5	0.4
RT	55.0	2194.8	0.10	0.07	0.9	0.09	0.1	0.14	0.10	2.4	1.1	5.4	0.5	0.1	0.7	0.9
Recalc. Feed	100.0	3990.4	2.25	3.58	9.5	9.67	76	10.8	6.54	100	100	100	100	100	100	100
Measured Feed			2.49	4.01	10.1	7.66	60	11.0	5.25							

BL0801-01 JL-1
Cumulative Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Product 1	2.7	105.8	4.40	2.68	26.3	52.1	147	27.7	27.0	5.2	2.0	7.3	14.3	5.1	6.8	10.9
Products 1 to 2	5.1	202.6	4.31	3.12	25.4	39.5	134	27.2	24.8	9.7	4.4	13.6	20.7	9.0	12.8	19.3
Products 1 to 3	5.4	216.2	4.31	3.02	25.7	38.5	133	27.5	25.2	10.4	4.6	14.6	21.6	9.6	13.8	20.9
Products 1 to 4	5.6	224.0	4.32	2.97	25.8	38.1	133	27.6	25.4	10.8	4.7	15.2	22.1	9.9	14.3	21.8
Product 5	0.6	22.6	45.1	4.46	5.6	19.8	3021	19.8	1.3	11.4	0.7	0.3	1.2	22.6	1.0	0.1
Product 5 to 6	2.2	87.0	40.3	7.15	6.9	24.2	1813	18.7	2.5	39.1	4.4	1.6	5.4	52.3	3.8	0.8
Product 5 to 7	2.8	112.4	35.3	7.80	7.9	28.6	1522	18.4	3.2	44.2	6.1	2.3	8.3	56.8	4.8	1.4
Product 5 to 8	3.7	146.4	30.4	8.38	8.8	25.2	1264	18.1	4.0	49.6	8.6	3.4	9.5	61.4	6.2	2.3
Product 5 to 9	9.5	378.9	15.7	9.13	11.0	14.7	584	16.7	5.7	66.2	24.2	11.0	14.4	73.4	14.7	8.2
Product 10	2.4	94.0	6.00	8.60	13.6	3.34	130	17.5	7.6	6.3	5.7	3.4	0.8	4.0	3.8	2.7
Product 11	2.1	83.4	2.20	53.6	5.5	1.31	69	32.9	0.7	2.0	31.3	1.2	0.3	1.9	6.4	0.2
Product 11 to 12	2.7	106.6	2.37	53.6	5.6	1.38	67	32.8	0.6	2.8	40.0	1.6	0.4	2.4	8.1	0.3
Product 11 to 13	3.3	132.0	2.85	52.0	6.1	1.81	79	32.6	0.9	4.2	48.0	2.1	0.6	3.4	10.0	0.5
Product 11 to 14	4.1	164.3	3.20	47.9	7.8	3.19	89	32.6	2.1	5.9	55.1	3.4	1.4	4.8	12.4	1.3
Product 11 to 15	5.4	214.8	3.02	38.4	11.8	5.33	86	32.1	6.1	7.2	57.7	6.7	3.0	6.1	16.0	5.0
Product 11 to 16	13.2	527.9	1.71	17.1	20.3	15.5	51	27.4	18.0	10.1	63.2	28.3	21.2	9.0	33.5	36.5
Product 17	4.6	184.0	0.81	0.34	30.7	67.7	25	32.4	22.6	1.7	0.4	14.9	32.3	1.5	13.8	15.9
Product 18	5.3	213.0	0.61	0.25	28.8	13.8	19	31.4	13.8	1.4	0.4	16.2	7.6	1.3	15.5	11.3
Product 18 to 19	6.6	265.3	0.63	0.27	26.8	11.9	18	28.3	12.5	1.9	0.5	18.7	8.2	1.6	17.4	12.7
Product 18 to 20	8.4	337.1	0.62	0.28	23.5	9.67	17	23.9	10.5	2.3	0.7	20.9	8.5	1.9	18.7	13.6
Product 18 to 21	9.7	386.8	0.61	0.30	21.4	8.64	16	21.3	9.4	2.6	0.8	21.8	8.7	2.0	19.1	13.9
Product 22	55.0	2194.8	0.10	0.07	0.9	0.09	0	0.1	0.1	2.4	1.1	5.4	0.5	0.1	0.7	0.9
Recalc. Feed	100.0	3990.4	2.25	3.58	9.5	9.67	76	10.81	6.5	100	100	100	100	100	100	100
P 1to4+16to21	27.8	1107.9	1.45	1.5	25.2	28.3	44	25.2	19.6	17.9	11.4	73.6	81.3	16.3	64.8	83.1

BL0801-01 JL-1
Flowsheet Schematic





Test No: BL0801-02
Date: 28-Apr-21
Test Type: Gravity/Cleaner Test.
Test Objective: Bulk Cleaner Test
Sample: 150 kg of JL-1
Nominal Sizing: 30µm K_{80}

Lead Regrind Discharge: 12.6µm K_{80}
Zinc Regrind Discharge: 12.3µm K_{80}

Stage	Reagents - g/tonne							Time Minutes		Electrochemistry	
	Lime	$ZnSO_4$	Na_2SO_3	SEX	A241	W31	MIBC	Condition	Float	pH	Eh-mV
Primary Grind								60			
Knelson 1											
Knelson 2											
Knelson/Pan 3											
Knelson/Pan 4											
Condition		100	100					10		7.8	155
Pb Rougher 1	225			25			7	1	5	10.5	21
Pb Rougher 2	√			25			7	1	10	10.5	46
Pb Rougher Scav	√			25			1	1	3	10.5	75
Regrind								30		8.6	
Pb Cleaner 1	360	250		10	5		4	3	15	10.5	76
Pb Cleaner 2	60	125		10	5		1	2	25	10.5	103
Pb Cleaner 3	75	-		5	5		1	1	20	10.8	154
Pb Cleaner 4	70	-		-	-		-	1	5	10.8	114
		$CuSO_4$			SIPX						
Condition	160	800						2		11.0	75
Zn Rougher 1	√	-			80	2		1	8	11.0	19
Zn Rougher Scav	√	-			10	1		1	5	11.0	27
Regrind								20		7.6	124
Zn Cleaner 1	1100	150			15	4		2	20	11.0	162
Zn Cleaner 2	210	50			5	1		1	13.5	11.3	24
Zn Cleaner 3	175	-				4		1	14	11.5	28
Zn Cleaner 4	160	-				8		1	20.0	11.5	105
					PAX						
Py Rougher 1		100			100	2		2	5	10.7	46
Py Rougher 2		50			50	1		1	3	10.4	69
Py Rougher 3		25			50	2		1	2	10.2	80
Py Rougher 4		-			50	2		1	2	10.0	89

Primary Grind	
Mill	Mild Steel
Media	20 kg Mild
Water Addn:	1000 ml
Regrind	
Mill	Mild Steel
Media	8 kg Mild

Flotation Information	Rougher	Clnr 1	Clnr 2
Flotation Device:	D12	TF1	TF1
Cell Volume:	4.4L	2.6L	1.5L
Impellar Speed:	800rpm	35 Hz	35 Hz
Flotation Gas:	Air		
Water Type:	Kamloops Tap		

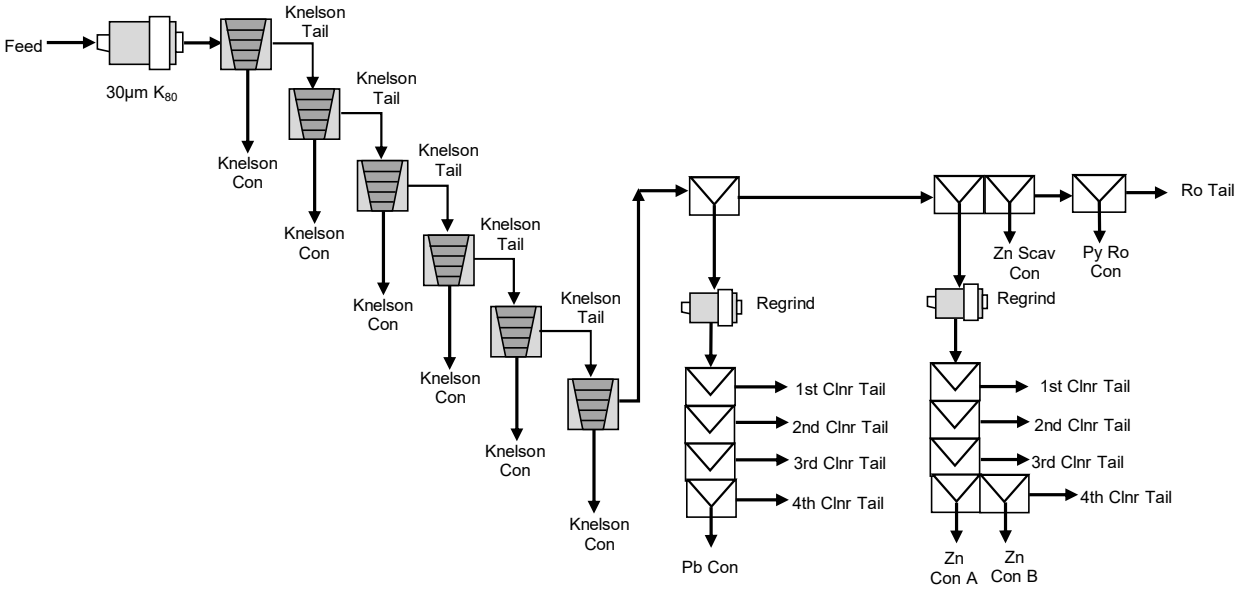
BL0801-02 JL-1
Metallurgical Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Knelson Con 1	1.2	1769.7	5.24	3.20	30.8	66.4	138	26.8	22.8	2.4	1.2	4.3	10.5	2.5	2.8	4.3
Knelson Con 2	1.2	1822.8	5.05	3.50	29.9	37.2	116	29.0	23.2	2.4	1.3	4.3	6.0	2.1	3.1	4.5
Knelson Con 3	1.1	1568.1	4.82	3.80	29.2	30.1	118	26.8	21.2	2.0	1.2	3.6	4.2	1.9	2.5	3.5
Knelson Con 4	1.1	1656.4	4.80	4.00	29.3	26.6	118	27.1	21.2	2.1	1.4	3.8	3.9	2.0	2.6	3.7
Knelson Con 5	1.1	1695.5	5.40	3.90	28.4	25.4	116	26.3	21.0	2.4	1.4	3.8	3.8	2.0	2.6	3.8
Knelson Con 6	1.2	1805.9	5.40	4.80	28.8	21.6	114	26.1	21.2	2.6	1.8	4.1	3.5	2.1	2.7	4.0
Pb Con	0.4	589.4	19.4	6.60	20.6	37.4	1600	30.0	1.53	3.0	0.8	0.9	2.0	9.5	1.0	0.1
Pb 4 CT	0.2	275.0	9.00	1.58	31.0	9.69	592	35.5	2.97	0.7	0.1	0.7	0.2	1.6	0.6	0.1
Pb 3 CT	0.2	246.3	11.9	2.96	25.4	17.6	804	31.0	3.61	0.8	0.2	0.5	0.4	2.0	0.4	0.1
Pb 2 CT	1.0	1502.4	12.6	6.00	20.8	17.6	676	12.9	3.78	5.0	1.9	2.4	2.4	10.2	1.1	0.6
Pb 1 CT	11.9	17609.2	12.9	8.10	21.1	8.62	296	25.4	6.18	59.9	29.8	29.0	13.5	52.4	26.1	11.5
Zn Con	1.2	1705.4	1.96	55.0	6.1	1.25	43	32.9	0.61	0.9	19.6	0.8	0.2	0.7	3.3	0.1
Zn 4 CT	0.4	551.4	3.52	48.0	8.2	3.07	68	32.1	2.25	0.5	5.5	0.4	0.2	0.4	1.0	0.1
Zn 3 CT	0.3	405.4	5.24	33.8	14.8	6.77	93	33.1	2.60	0.6	2.9	0.5	0.2	0.4	0.8	0.1
Zn 2 CT	0.8	1224.9	4.54	20.0	22.0	12.6	79	31.1	12.4	1.5	5.1	2.1	1.4	1.0	2.2	1.6
Zn 1 CT	16.1	23790.5	1.30	4.70	14.0	20.0	27	28.6	21.4	8.2	23.4	26.0	42.4	6.5	39.7	53.7
Zn Ro Scav Con	2.2	3298.0	0.95	1.04	24.3	9.30	20	23.7	11.5	0.8	0.7	6.3	2.7	0.7	4.6	4.0
Py Ro 1	4.0	5939.1	0.77	0.46	12.6	3.35	14	6.11	4.31	1.2	0.6	5.8	1.8	0.8	2.1	2.7
RT	54.3	80000.0	0.15	0.06	0.2	0.10	2	0.17	0.18	3.2	1.0	0.9	0.7	1.4	0.8	1.6
Recalc. Feed	100.0	147455.4	2.57	3.24	8.7	7.61	67	11.6	6.42	100	100	100	100	100	100	100
Measured Feed			2.49	4.01	10.1	7.66	60	11.0	5.25							

BL0801-02 JL-1
Cumulative Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Product 1	1.2	1769.7	5.24	3.20	30.8	66.4	138	26.8	22.8	2.4	1.2	4.3	10.5	2.5	2.8	4.3
Products 1 to 2	2.4	3592.5	5.14	3.35	30.3	51.6	127	27.9	23.0	4.9	2.5	8.5	16.5	4.6	5.8	8.7
Products 1 to 3	3.5	5160.6	5.05	3.49	30.0	45.0	124	27.6	22.4	6.9	3.8	12.1	20.7	6.4	8.3	12.2
Products 1 to 4	4.6	6817.0	4.99	3.61	29.8	40.5	123	27.5	22.1	9.0	5.2	15.9	24.6	8.4	10.9	15.9
Products 1 to 5	5.8	8512.5	5.07	3.67	29.5	37.5	121	27.2	21.9	11.4	6.5	19.6	28.5	10.4	13.5	19.7
Products 1 to 6	7.0	10318.4	5.13	3.87	29.4	34.7	120	27.0	21.8	13.9	8.4	23.7	32.0	12.4	16.3	23.7
Product 5	0.4	4612.1	19.4	6.60	20.6	37.4	1600	30.0	1.53	3.0	0.8	0.9	2.0	9.5	1.0	0.1
Product 5 to 6	0.6	6114.5	16.1	5.00	23.9	28.6	1279	31.7	1.99	3.7	0.9	1.6	2.2	11.1	1.6	0.2
Product 5 to 7	0.8	23723.7	15.2	4.55	24.2	26.1	1174	31.6	2.35	4.4	1.1	2.1	2.6	13.1	2.0	0.3
Product 5 to 8	1.8	23723.7	13.7	5.38	22.3	21.2	888	20.8	3.17	9.4	2.9	4.5	4.9	23.3	3.2	0.9
Product 5 to 9	13.7	23723.7	13.0	7.75	21.3	10.3	372	24.8	5.79	69.3	32.8	33.5	18.5	75.7	29.3	12.4
Product 11	1.2	19866.0	1.96	55.0	6.1	1.25	43	32.9	0.61	0.9	19.6	0.8	0.2	0.7	3.3	0.1
Product 11 to 12	1.5	20271.4	2.34	53.3	6.6	1.69	49	32.7	1.01	1.4	25.2	1.2	0.3	1.1	4.3	0.2
Product 11 to 13	1.8	21496.3	2.78	50.3	7.9	2.47	56	32.8	1.25	2.0	28.0	1.6	0.6	1.5	5.1	0.4
Product 11 to 14	2.6	45286.8	3.34	40.8	12.3	5.64	63	32.2	4.77	3.4	33.2	3.7	2.0	2.5	7.3	2.0
Product 11 to 15	18.8	48584.8	1.59	9.77	13.8	18.0	32	29.1	19.0	11.6	56.6	29.7	44.3	8.9	47.0	55.6
Product 17	2.2	34252.5	0.95	1.04	24.3	9.30	20	23.7	11.5	0.8	0.7	6.3	2.7	0.7	4.6	4.0
Product 18	4.0	33027.6	0.77	0.46	12.6	3.35	14	6.11	4.31	1.2	0.6	5.8	1.8	0.8	2.1	2.7
Product 22	54.3	80000.0	0.15	0.06	0.2	0.10	2	0.17	0.18	3.2	1.0	0.9	0.7	1.4	0.8	1.6
Recalc. Feed	100.0	147455.4	2.57	3.24	8.7	7.61	67	11.6	6.42	100	100	100	100	100	100	100
P 1to4+16to21	29.4	43346.0	2.11	3.6	18.3	19.2	47	24.8	18.4	24.1	33.0	61.8	74.3	20.4	62.6	84.1

BL0801-02 JL-1
Flowsheet Schematic



Test No: BL0801-03
Date: 22-Sep-21
Test Type: Cyanide Leach Test.
Test Objective: Leach on POX Residue
Sample: BL801 POX 4 Residue
Sizing: as is

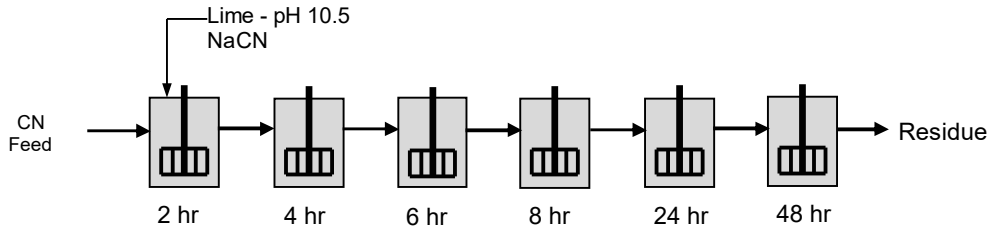
Cyanidation Leaching @ pH 10.5, 5000ppm NaCN, Air Sparged, 25% solids.

Parameter	Time Cum	Added (g)		Residual (g)	Consumed (g)	pH		Dissolved O_2 (mg/L)
		NaCN	Lime	NaCN	NaCN	Measured	Adjusted	
Natural	-	-	-	-	-	5.5	-	6.8
Leach 1	0	1.65	0.31	-	-	5.5	10.5	6.8
Leach 2	2	1.01	0.51	0.64	1.01	9.6	10.5	6.7
Leach 3	4	0.00	-	1.65	0.00	11.1	-	7.0
Leach 4	6	0.07	-	1.58	0.07	11.0	-	6.8
Leach 5	8	0.07	-	1.58	0.07	10.9	-	6.7
Leach 6	24	0.36	-	1.29	0.36	10.7	-	6.7
Leach 7	48	0.00	-	0.83	0.82	10.5	-	6.7
Total	48	3.2	0.82	0.83	2.33		-	-

Mass of Sample	110
Volume of Water	330
Pulp Density	25

NaCN Consumption	21.2 kg/tonne
Lime Consumption	7.45 kg/tonne

Flowsheet Schematic



BL0801-03

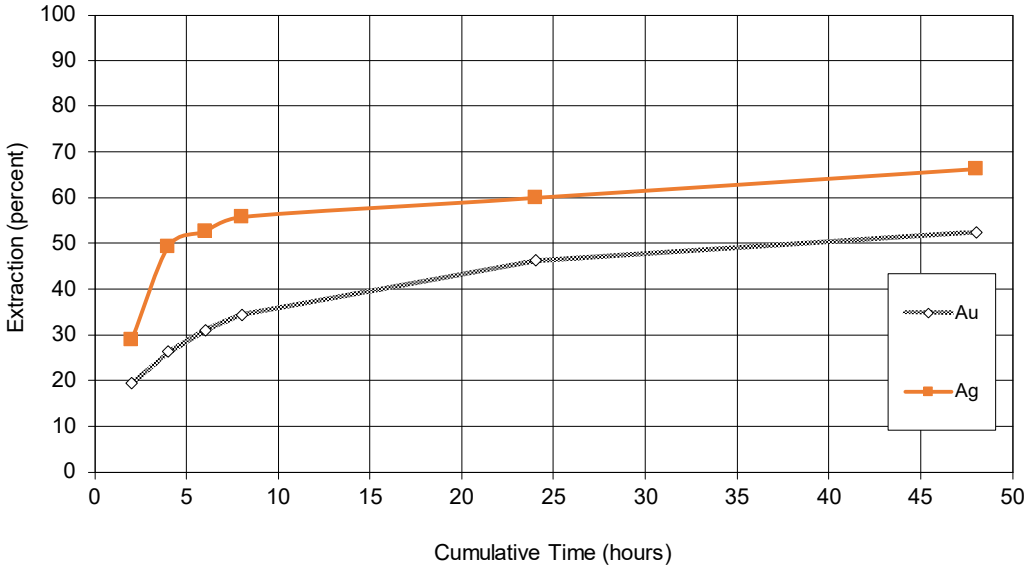
BL801 POX 4 Residue

Cumulative Metallurgical Balance

Product	Cumulative Time - Hrs	Vol or Mass	Units	Assay - g/tonne		Distribution - percent	
				Au	Ag	Au	Ag
Cyanide Liquor (2 hr)	2	330	mL	1.91	16	19.4	29.0
Cyanide Liquor (4 hr)	4	330	mL	2.48	27	26.4	49.3
Cyanide Liquor (6 hr)	6	330	mL	2.79	27	31.1	52.7
Cyanide Liquor (8 hr)	8	330	mL	2.95	27	34.5	55.8
Cyanide Liquor (24 hr)	24	330	mL	3.94	28	46.4	60.0
Cyanide Liquor (48hr)	48	330	mL	4.31	30	52.6	66.3
Cyanidation Tails	-	107	g	14.4	59	47.4	33.7
Calculated Feed		107	g	30.3	174	100.0	100.0

Duplicate CnTL Assays - g/t		
Cut	1	2
Gold	14.3	14.4

Cyanide Leach Kinetic Curves



Test No: BL0801-03B
Date: 4-Oct-21
Test Type: Cyanide Leach Test.
Test Objective: Releach Test 3 Cyanide Tail
Sample: Test 3 Cyanide Tail
Grind 30 sec grind polish

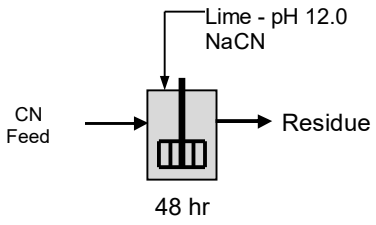
Cyanidation Leaching @ pH 12.0 5000ppm NaCN, Oxygen Sparged, 20% solids.

Parameter	Time Cum	Added (g)		Residual (g)	Consumed (g)	pH		Dissolved O_2 (mg/L)
		NaCN	Lime	NaCN	NaCN	Measured	Adjusted	
Natural	-	-	-	-	-	7.8	-	6.9
Leach 1	0	0.86	0.25	-	-	12.0	12.0	6.9
Leach 2	48	0.00	-	0.77	0.09	12.2	-	>20
Total	48	0.9	0.25	0.77	0.09		-	-

Mass of Sample	43
Volume of Water	172
Pulp Density	20

NaCN Consumption	2.1 kg/tonne
Lime Consumption	5.81 kg/tonne

Flowsheet Schematic



BL0801-03B

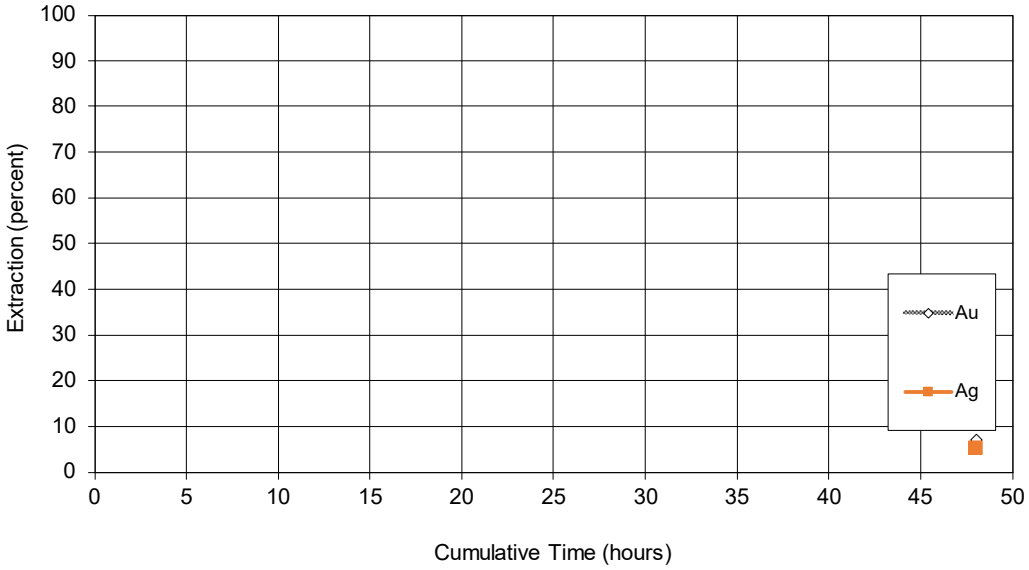
Test 3 Cyanide Tail

Cumulative Metallurgical Balance

Product	Cumulative Time - Hrs	Vol or Mass	Units	Assay - g/tonne		Distribution - percent	
				Au	Ag	Au	Ag
Cyanide Liquor (48hr)	48	172	mL	0.24	0.7	7.0	5.2
Cyanidation Tails	-	42	g	13.1	55.0	93.0	94.8
Calculated Feed		42	g	14.0	58.0	100.0	100.0

Duplicate CnTL Assays - g/t		
Cut	1	2
Gold	12.8	13.3

Cyanide Leach Kinetic Curves



Test No: BL0801-04
Date: 25-Oct-21
Test Type: Cyanide Leach Test.
Test Objective: Leach on POX Residue
Sample: BL801 POX 5 Residue
Sizing: as is

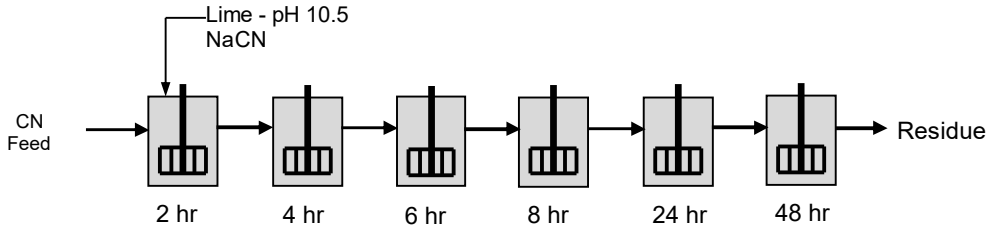
Cyanidation Leaching @ pH 10.5, 20,000ppm NaCN, O2 Sparged, 25% solids.

Parameter	Time Cum	Added (g)		Residual (g)	Consumed (g)	pH		Dissolved O_2 (mg/L)
		NaCN	Lime	NaCN	NaCN	Measured	Adjusted	
Natural	-	-	-	-	-	3.4	-	6.8
Leach 1	0	2.52	0.09	-	-	3.4	10.5	6.8
Leach 2	2	0.38	-	2.14	0.38	11.5	-	>20
Leach 3	4	0.19	-	2.33	0.19	11.5	-	>20
Leach 4	6	0.29	-	2.23	0.29	11.5	-	>20
Leach 5	8	0.24	-	2.28	0.24	11.7	-	>20
Leach 6	24	0.37	-	2.15	0.37	11.1	-	>20
Leach 7	48	-	-	2.24	0.28	11.2	-	>20
Total	48	4.0	0.09	2.24	1.75		-	-

Mass of Sample	42
Volume of Water	126
Pulp Density	25

NaCN Consumption	41.7 kg/tonne
Lime Consumption	2.14 kg/tonne

Flowsheet Schematic



BL0801-04

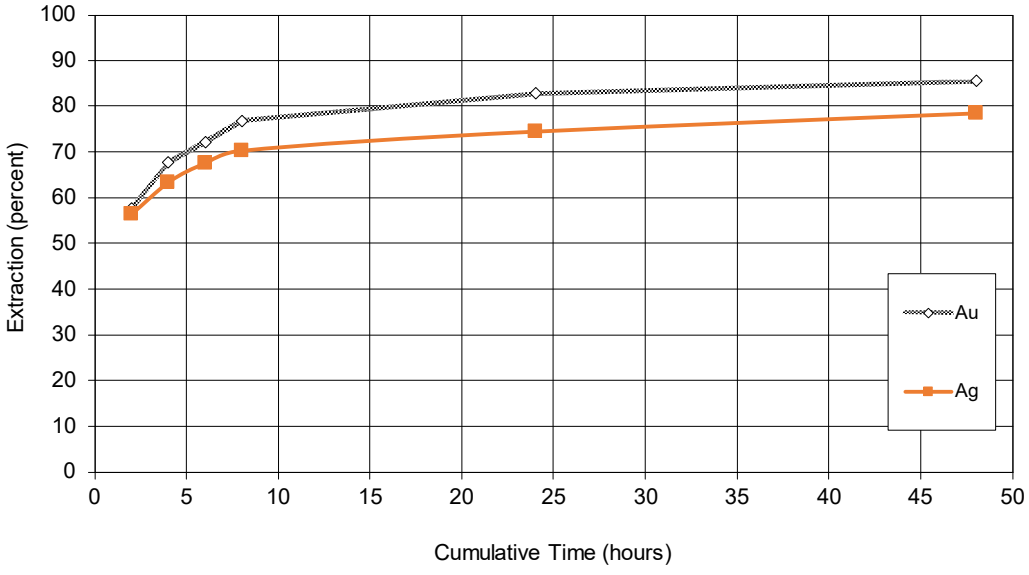
BL801 POX 5 Residue

Cumulative Metallurgical Balance

Product	Cumulative Time - Hrs	Vol or Mass	Units	Assay - g/tonne		Distribution - percent	
				Au	Ag	Au	Ag
Cyanide Liquor (2 hr)	2	126	mL	5.90	13	57.7	56.5
Cyanide Liquor (4 hr)	4	126	mL	6.00	13	67.9	63.3
Cyanide Liquor (6 hr)	6	126	mL	5.50	12	72.3	67.7
Cyanide Liquor (8 hr)	8	126	mL	5.10	10	76.9	70.4
Cyanide Liquor (24 hr)	24	126	mL	4.90	10	82.9	74.5
Cyanide Liquor (48hr)	48	126	mL	4.40	9	85.6	78.6
Cyanidation Tails	-	42	g	4.44	15	14.4	21.4
Calculated Feed		42	g	30.9	70	100.0	100.0

Duplicate CnTL Assays - g/t		
Cut	1	2
Gold	4.46	4.42

Cyanide Leach Kinetic Curves



Test No: BL0801-05
Date: 25-Oct-21
Test Type: Cyanide Leach Test.
Test Objective: Leach on POX Residue
Sample: BL801 POX 6 Residue
Sizing: as is

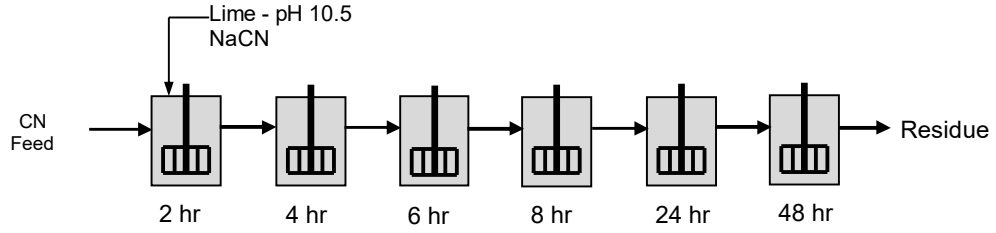
Cyanidation Leaching @ pH 10.5, 20,000ppm NaCN, O2 Sparged, 25% solids.

Parameter	Time Cum	Added (g)		Residual (g)	Consumed (g)	pH		Dissolved O_2 (mg/L)
		NaCN	Lime	NaCN	NaCN	Measured	Adjusted	
Natural	-	-	-	-	-	2.6	-	6.4
Leach 1	0	4.00	0.49	-	-	10.5	10.5	6.4
Leach 2	2	1.42	0.03	2.58	1.42	10.0	10.5	>20
Leach 3	4	0.36	0.08	3.64	0.36	10.2	10.5	>20
Leach 4	6	0.32	0.11	3.68	0.32	10.3	10.5	>20
Leach 5	8	0.20	-	3.80	0.20	10.9	-	>20
Leach 6	24	1.06	-	2.94	1.06	10.9	-	>20
Leach 7	48	-	-	3.00	1.00	11.0	-	>20
Total	48	7.4	0.71	3.00	4.36		-	-

Mass of Sample	66.6
Volume of Water	200
Pulp Density	25

NaCN Consumption	65.5 kg/tonne
Lime Consumption	10.66 kg/tonne

Flowsheet Schematic



BL0801-05

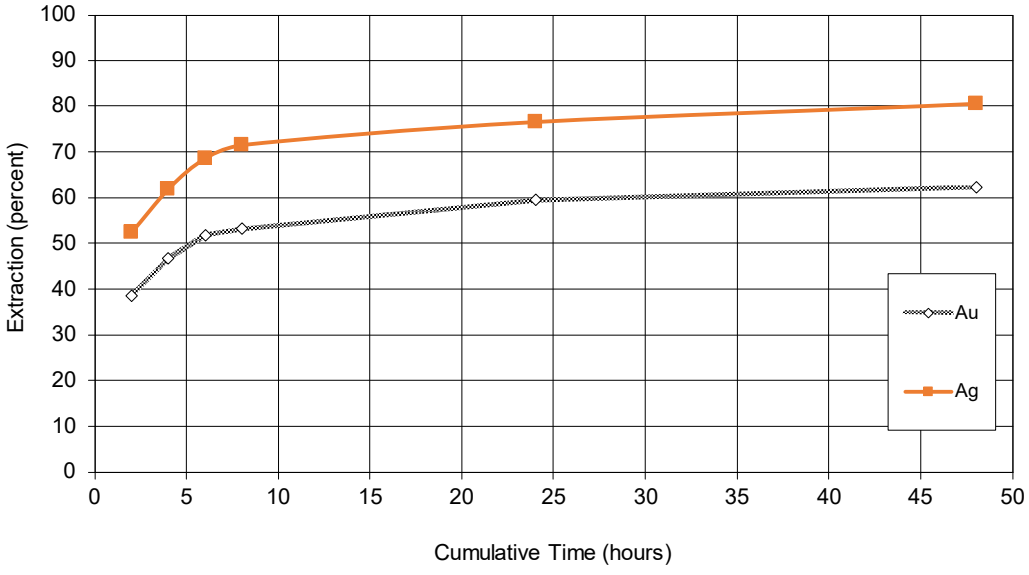
BL801 POX 6 Residue

Cumulative Metallurgical Balance

Product	Cumulative Time - Hrs	Vol or Mass	Units	Assay - g/tonne		Distribution - percent	
				Au	Ag	Au	Ag
Cyanide Liquor (2 hr)	2	200	mL	5.13	14	38.7	52.5
Cyanide Liquor (4 hr)	4	200	mL	5.70	15	46.8	61.9
Cyanide Liquor (6 hr)	6	200	mL	5.80	15	51.9	68.7
Cyanide Liquor (8 hr)	8	200	mL	5.40	15	53.3	71.5
Cyanide Liquor (24 hr)	24	200	mL	5.70	14	59.6	76.6
Cyanide Liquor (48hr)	48	200	mL	5.50	14	62.4	80.5
Cyanidation Tails	-	64	g	15.7	16	37.6	19.5
Calculated Feed		64	g	41.7	83	100.0	100.0

Duplicate CnTL Assays - g/t		
Cut	1	2
Gold	15.3	16.1

Cyanide Leach Kinetic Curves



Test No: BL0801-06
Date: 25-Oct-21
Test Type: Cyanide Leach Test.
Test Objective: Leach on POX Residue
Sample: BL801 POX 8 Residue
Sizing: as is

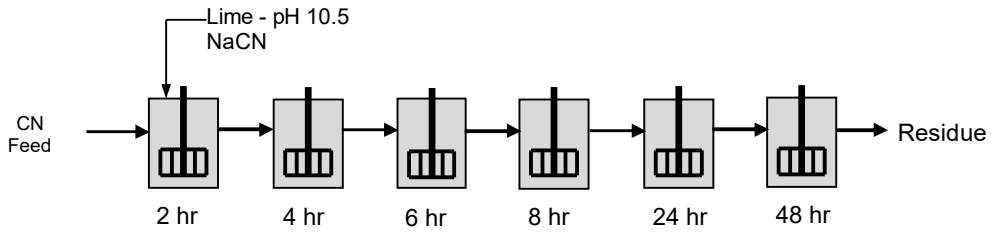
Cyanidation Leaching @ pH 10.5, 20,000ppm NaCN, O2 Sparged, 25% solids.

Parameter	Time Cum	Added (g)		Residual (g)	Consumed (g)	pH		Dissolved O_2 (mg/L)
		NaCN	Lime	NaCN	NaCN	Measured	Adjusted	
Natural	-	-	-	-	-	2.7	-	6.3
Leach 1	0	6.61	0.50	-	-	10.5	10.5	6.3
Leach 2	2	1.02	-	5.59	1.02	10.8	-	>20
Leach 3	4	0.16	-	6.45	0.16	10.7	-	>20
Leach 4	6	0.30	-	6.31	0.30	10.6	-	>20
Leach 5	8	0.06	-	6.55	0.06	10.8	-	>20
Leach 6	24	0.46	-	6.15	0.46	10.5	-	>20
Leach 7	48	-	-	6.25	0.36	10.5	-	>20
Total	48	8.6	0.50	6.25	2.36		-	-

Mass of Sample	110
Volume of Water	331
Pulp Density	25

NaCN Consumption	21.5 kg/tonne
Lime Consumption	4.55 kg/tonne

Flowsheet Schematic



BL0801-06

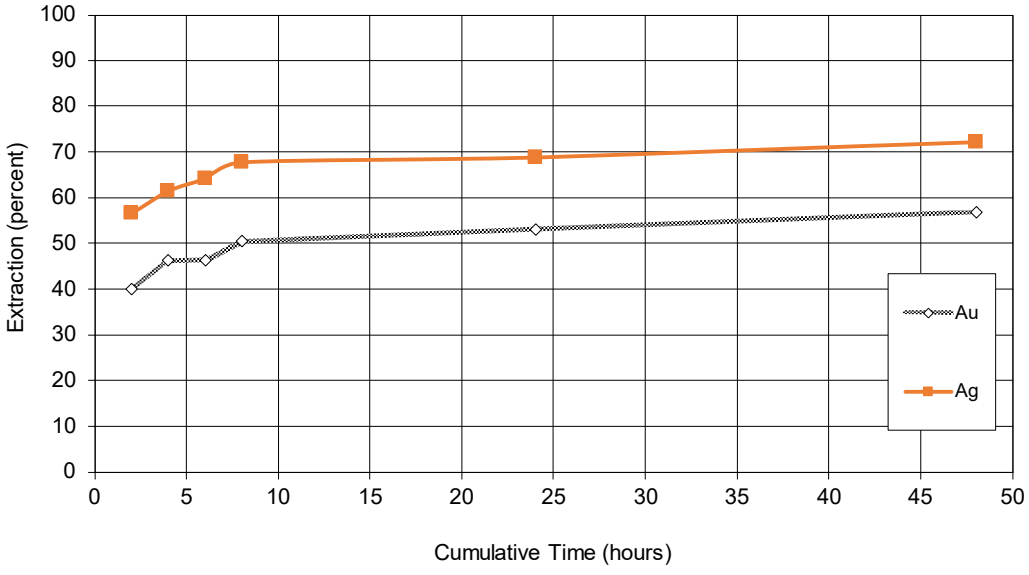
BL801 POX 8 Residue

Cumulative Metallurgical Balance

Product	Cumulative Time - Hrs	Vol or Mass	Units	Assay - g/tonne		Distribution - percent	
				Au	Ag	Au	Ag
Cyanide Liquor (2 hr)	2	331	mL	4.47	14	40.2	56.6
Cyanide Liquor (4 hr)	4	331	mL	4.89	15	46.4	61.6
Cyanide Liquor (6 hr)	6	331	mL	4.59	15	46.4	64.3
Cyanide Liquor (8 hr)	8	331	mL	4.78	15	50.6	67.8
Cyanide Liquor (24 hr)	24	331	mL	4.78	14	53.2	68.9
Cyanide Liquor (48hr)	48	331	mL	4.91	14	56.9	72.2
Cyanidation Tails	-	106	g	14.9	22	43.1	27.8
Calculated Feed		106	g	34.6	79	100.0	100.0

Duplicate CnTL Assays - g/t		
Cut	1	2
Gold	14.9	14.9

Cyanide Leach Kinetic Curves



Test No: BL0801-07
Date: 25-Oct-21
Test Type: Cyanide Leach Test.
Test Objective: Leach on POX Residue
Sample: BL801 POX 7 Residue
Sizing: as is

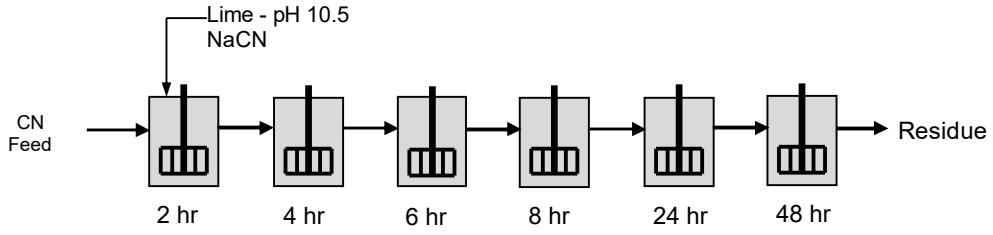
Cyanidation Leaching @ pH 10.5, 20,000ppm NaCN, O2 Sparged, 25% solids.

Parameter	Time Cum	Added (g)		Residual (g)	Consumed (g)	pH		Dissolved O_2 (mg/L)
		NaCN	Lime	NaCN	NaCN	Measured	Adjusted	
Natural	-	-	-	-	-	2.5	-	6.7
Leach 1	0	6.90	0.49	-	-	10.5	10.5	6.7
Leach 2	2	1.07	0.06	5.83	1.07	10.3	10.5	>20
Leach 3	4	1.00	0.11	5.90	1.00	10.3	10.5	>20
Leach 4	6	0.34	0.17	6.56	0.34	10.4	10.5	>20
Leach 5	8	0.24	-	6.66	0.24	10.8	-	>20
Leach 6	24	0.45	-	6.45	0.45	10.6	-	>20
Leach 7	48	-	-	6.45	0.45	10.5 10.60	-	>20
Total	48	10.0	0.83	6.45	3.55		-	-

Mass of Sample	115
Volume of Water	345
Pulp Density	25

NaCN Consumption	30.9 kg/tonne
Lime Consumption	7.22 kg/tonne

Flowsheet Schematic



BL0801-07

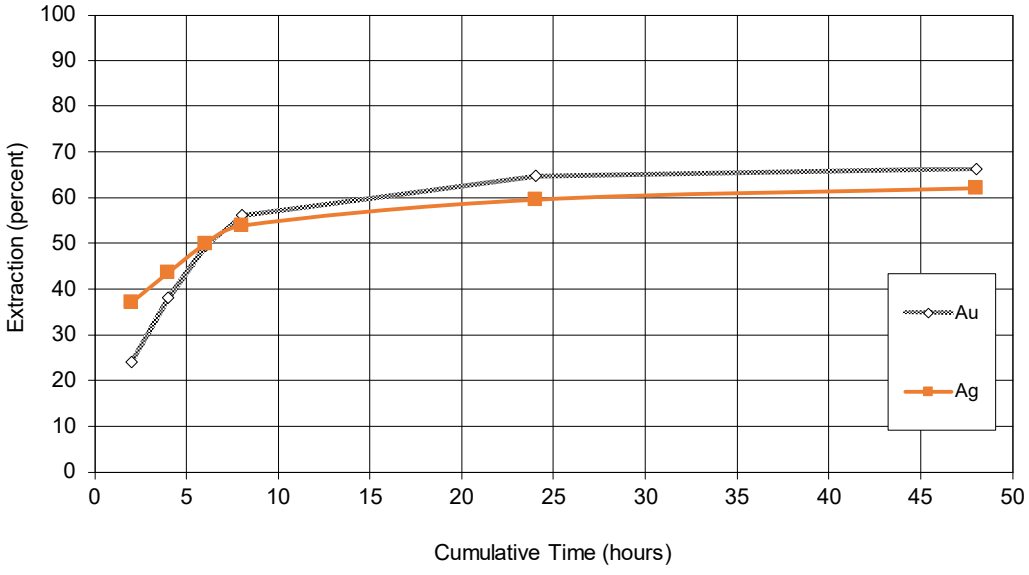
BL801 POX 7 Residue

Cumulative Metallurgical Balance

Product	Cumulative Time - Hrs	Vol or Mass	Units	Assay - g/tonne		Distribution - percent	
				Au	Ag	Au	Ag
Cyanide Liquor (2 hr)	2	345	mL	2.95	9	24.2	37.2
Cyanide Liquor (4 hr)	4	345	mL	4.50	10	38.3	43.7
Cyanide Liquor (6 hr)	6	345	mL	5.60	11	49.4	50.0
Cyanide Liquor (8 hr)	8	345	mL	6.10	11	56.2	53.9
Cyanide Liquor (24 hr)	24	345	mL	6.80	12	64.8	59.7
Cyanide Liquor (48hr)	48	345	mL	6.60	11	66.4	62.1
Cyanidation Tails	-	107	g	13.2	28	33.6	37.9
Calculated Feed		107	g	39.3	74	100.0	100.0

Duplicate CnTL Assays - g/t		
Cut	1	2
Gold	13.3	13.1

Cyanide Leach Kinetic Curves



Test No: BL0801-08
Date: 25-Oct-21
Test Type: Cyanide Leach Test.
Test Objective: Leach on POX Residue
Sample: BL801 POX 9 Residue
Sizing: as is

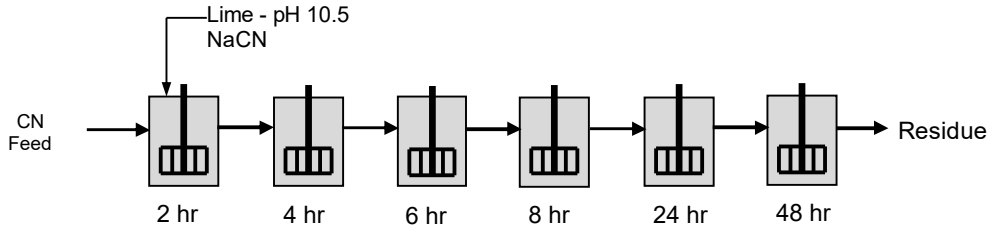
Cyanidation Leaching @ pH 10.5, 20,000ppm NaCN, O2 Sparged, 25% solids.

Parameter	Time Cum	Added (g)		Residual (g)	Consumed (g)	pH		Dissolved O_2 (mg/L)
		NaCN	Lime	NaCN	NaCN	Measured	Adjusted	
Natural	-	-	-	-	-	2.5	-	6.7
Leach 1	0	11.40	1.65	-	-	10.5	10.5	6.7
Leach 2	2	4.73	0.17	6.67	4.73	10.3	10.5	>20
Leach 3	4	2.11	0.29	9.29	2.11	10.3	10.5	>20
Leach 4	6	0.17	0.60	11.23	0.17	10.4	10.5	>20
Leach 5	8	2.79	6.13	8.61	2.79	10.8	-	>20
Leach 6	24	0.00	1.71	11.40	0.00	10.6	-	>20
Leach 7	48	-	-	11.40	0.45	10.5	-	>20
Total	48	21.7	10.55	11.40	15.20	10.60	-	-

Mass of Sample	190
Volume of Water	570
Pulp Density	25

NaCN Consumption	132.2 kg/tonne
Lime Consumption	55.53 kg/tonne

Flowsheet Schematic



BL0801-08

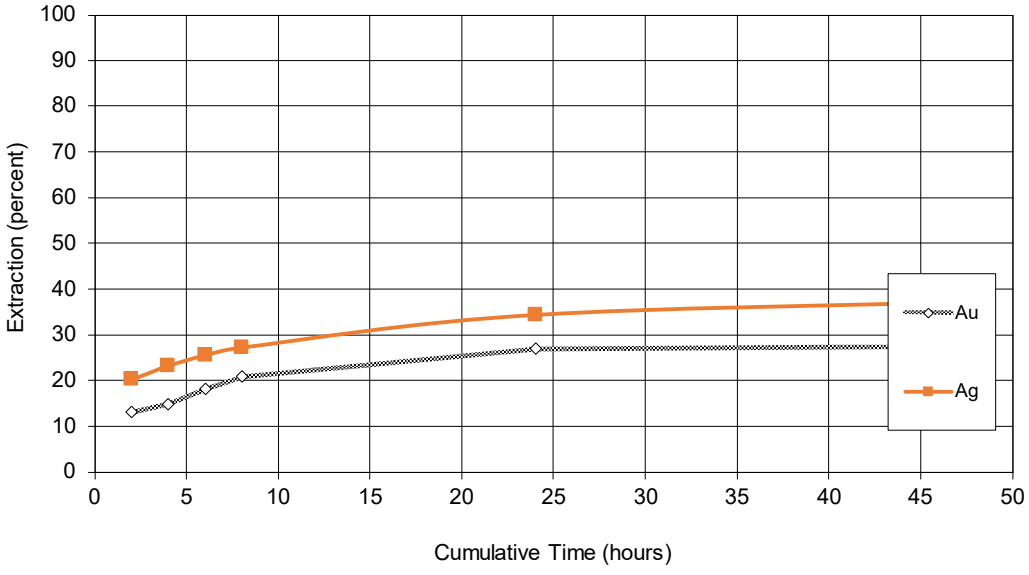
BL801 POX 9 Residue

Cumulative Metallurgical Balance

Product	Cumulative Time - Hrs	Vol or Mass	Units	Assay - g/tonne		Distribution - percent	
				Au	Ag	Au	Ag
Cyanide Liquor (2 hr)	2	570	mL	1.32	4	13.2	20.3
Cyanide Liquor (4 hr)	4	570	mL	1.45	4	14.9	23.3
Cyanide Liquor (6 hr)	6	570	mL	1.73	4	18.2	25.6
Cyanide Liquor (8 hr)	8	570	mL	1.94	5	20.9	27.3
Cyanide Liquor (24 hr)	24	570	mL	2.48	6	27.0	34.5
Cyanide Liquor (48hr)	48	570	mL	2.45	6	27.5	37.3
Cyanidation Tails	-	187	g	22.2	36	72.5	62.7
Calculated Feed		187	g	30.6	57	100.0	100.0

Duplicate CnTL Assays - g/t		
Cut	1	2
Gold	22.0	22.4

Cyanide Leach Kinetic Curves



Test No: BL0801-09
Date: 8-Dec-21
Test Type: Cyanide Leach Test.
Test Objective: Leach on POX Residue
Sample: BL801 POX 10 Residue
Sizing: as is

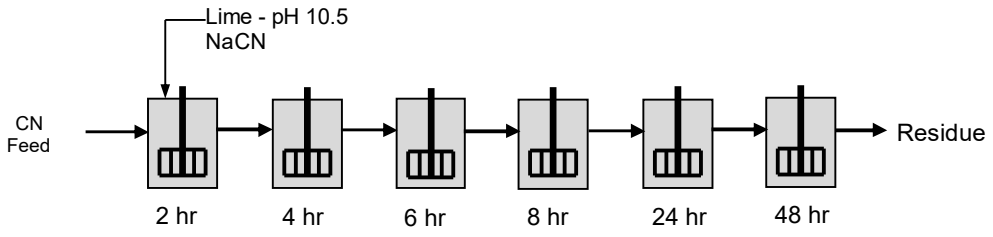
Cyanidation Leaching @ pH 10.5, 20,000ppm NaCN, O2 Sparged, 10% solids.

Parameter	Time Cum	Added (g)		Residual (g)	Consumed (g)	pH		Dissolved O_2 (mg/L)
		NaCN	Lime	NaCN	NaCN	Measured	Adjusted	
Natural	-	-	-	-	-	2.3	-	6.7
Leach 1	0	4.86	1.32	-	-	2.3	10.5	6.7
Leach 2	2	0.29	-	4.57	0.29	11.2	-	>20
Leach 3	4	0.19	-	4.67	0.19	11.2	-	>20
Leach 4	6	0.15	-	4.71	0.15	11.1		>20
Leach 5	8	0.00	-	4.86	0.00	11.2	-	>20
Leach 6	24	0.15	-	4.71	0.15	11.1	-	>20
Leach 7	48	-	-	4.62	0.24	11.3	-	>20
Total	48	5.6	1.32	4.62	1.02		-	-

Mass of Sample	27
Volume of Water	243
Pulp Density	10

NaCN Consumption	37.8 kg/tonne
Lime Consumption	48.9 kg/tonne

Flowsheet Schematic



BL0801-09

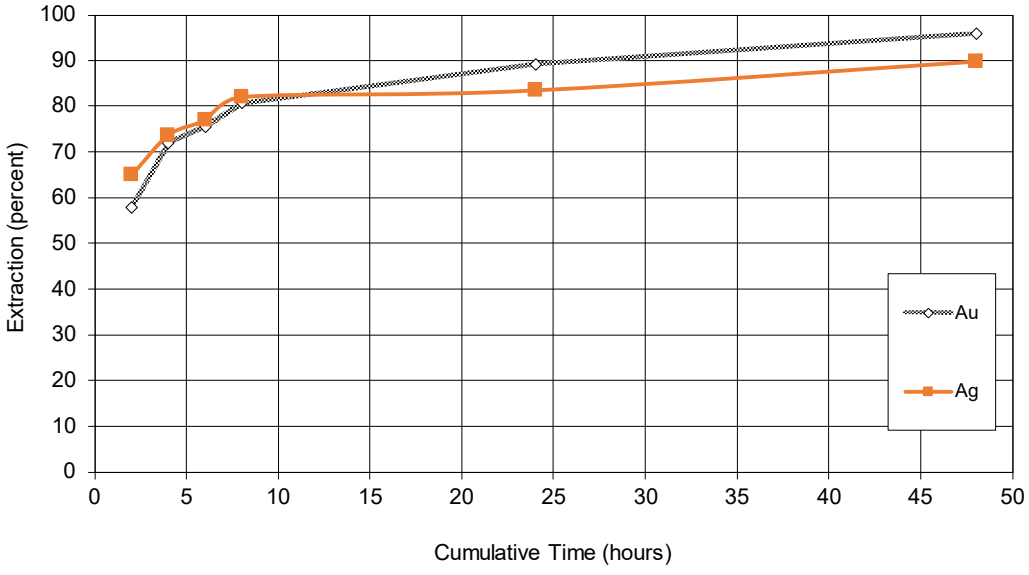
BL801 POX 10 Residue

Cumulative Metallurgical Balance

Product	Cumulative Time - Hrs	Vol or Mass	Units	Assay - g/tonne		Distribution - percent	
				Au	Ag	Au	Ag
Cyanide Liquor (2 hr)	2	243	mL	2.61	5	58.0	65.0
Cyanide Liquor (4 hr)	4	243	mL	3.03	6	72.1	73.7
Cyanide Liquor (6 hr)	6	243	mL	2.94	6	75.6	77.1
Cyanide Liquor (8 hr)	8	243	mL	2.93	5	80.8	82.1
Cyanide Liquor (24 hr)	24	243	mL	3.07	5	89.3	83.5
Cyanide Liquor (48hr)	48	243	mL	3.12	5	96.0	89.9
Cyanidation Tails	-	26	g	1.71	8	4.0	10.1
Calculated Feed		26	g	42.6	79	100.0	100.0

Duplicate CnTL Assays - g/t		
Cut	1	2
Gold	1.66	1.75

Cyanide Leach Kinetic Curves



Test No: BL0801-10
Date: 8-Dec-21
Test Type: Cyanide Leach Test.
Test Objective: Leach on POX Residue
Sample: BL801 POX 11 Residue
Sizing: as is

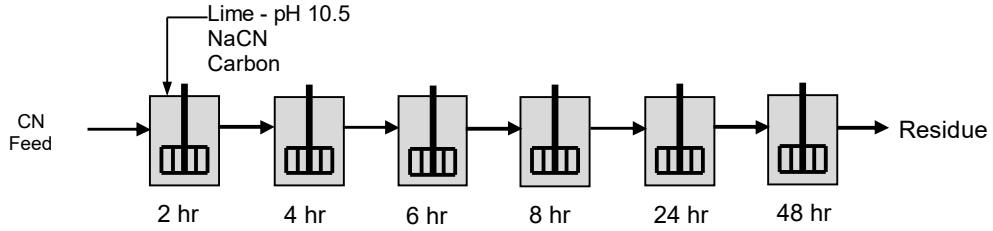
Cyanidation Leaching @ pH 10.5, 20,000ppm NaCN, O2 Sparged, 10% solids.

Parameter	Time Cum	Added (g)		Residual (g)	Consumed (g)	pH		Dissolved O_2 (mg/L)
		NaCN	Lime	NaCN	NaCN	Measured	Adjusted	
Natural	-	-	-	-	-	2.5	-	6.7
Leach 1	0	1.80	0.29	-	-	2.5	10.5	6.7
Leach 2	2	0.31	0.06	1.49	0.31	10.3	10.5	>20
Leach 3	4	0.13	-	1.67	0.13	10.7	-	>20
Leach 4	6	0.09	-	1.71	0.09	10.7		>20
Leach 5	8	0.27	-	1.53	0.27	10.8	-	>20
Leach 6	24	0.18	-	1.62	0.18	10.8	-	>20
Leach 7	48	-	-	1.60	0.20	10.7	-	>20
Total	48	2.8	0.35	1.60	1.18		-	-

Mass of Sample	10
Volume of Water	90
Pulp Density	10

NaCN Consumption	118.0 kg/tonne
Lime Consumption	35.00 kg/tonne

Flowsheet Schematic



BL0801-10

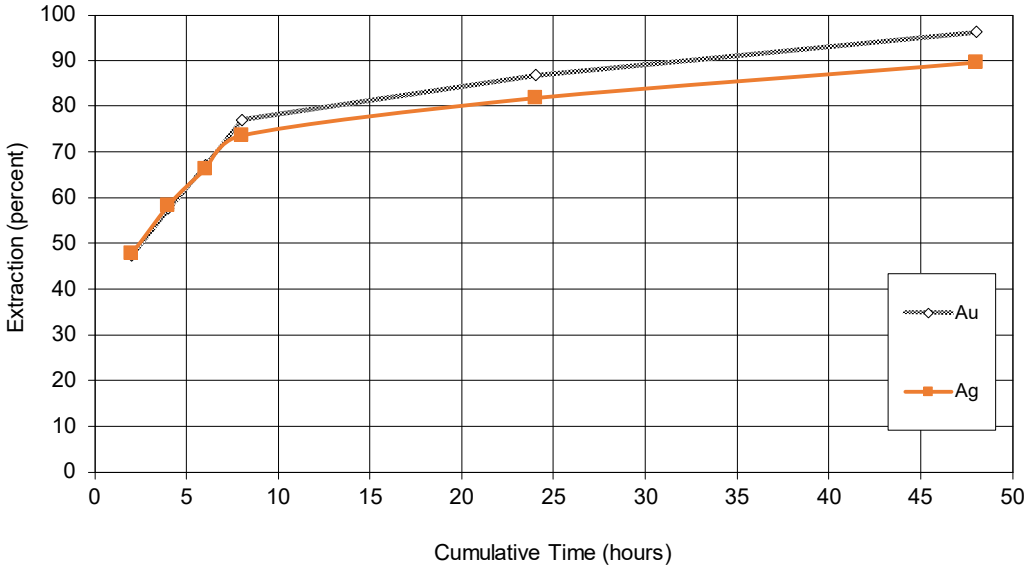
BL801 POX 11 Residue

Cumulative Metallurgical Balance

Product	Cumulative Time - Hrs	Vol or Mass	Units	Assay - g/tonne		Distribution - percent	
				Au	Ag	Au	Ag
Cyanide Liquor (2 hr)	2	90	mL	2.22	4	47.5	47.8
Cyanide Liquor (4 hr)	4	90	mL	2.20	4	57.7	58.4
Cyanide Liquor (6 hr)	6	90	mL	2.15	3	67.1	66.3
Cyanide Liquor (8 hr)	8	90	mL	2.14	3	77.1	73.7
Cyanide Liquor (24 hr)	24	90	mL	2.12	3	86.8	81.8
Cyanide Liquor (48hr)	48	90	mL	2.09	3	96.3	89.6
Cyanidation Tails	-	9	g	1.77	8	3.7	10.4
Calculated Feed		9	g	47.8	77	100.0	100.0

Duplicate CnTL Assays - g/t		
Cut	1	2
Gold	1.76	1.78

Cyanide Leach Kinetic Curves



Test No: BL0801-11
Date: 27-Dec-21
Test Type: Cyanide Leach Test.
Test Objective: Leach on POX Residue
Sample: BL801 POX 12 Residue
Sizing: as is

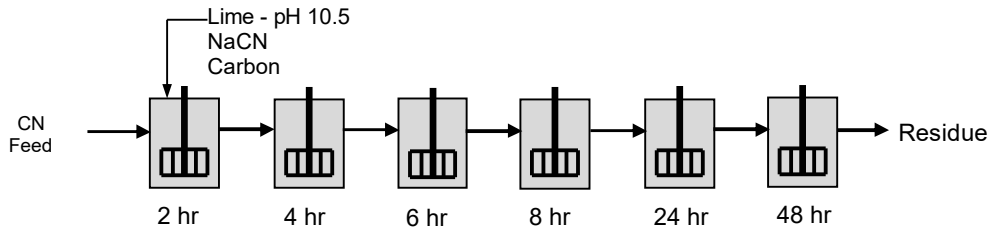
Cyanidation Leaching @ pH 10.5, 20,000ppm NaCN, O2 Sparged, 10% solids.

Parameter	Time Cum	Added (g)		Residual (g)	Consumed (g)	pH		Dissolved O_2 (mg/L)
		NaCN	Lime	NaCN	NaCN	Measured	Adjusted	
Natural	-	-	-	-	-	6	-	7.8
Leach 1	0	7.67	0.16	-	-	6.0	10.5	7.8
Leach 2	2	1.15	0.14	6.52	1.15	9.9	10.5	>20
Leach 3	4	0.39	0.37	7.28	0.39	10.0	10.5	>20
Leach 4	6	0.16	0.55	7.51	0.16	10.1	10.5	>20
Leach 5	8	0.00	0.95	7.67	0.00	10.2	10.5	>20
Leach 6	24	1.23	1.30	6.44	1.23	9.8	10.5	>20
Leach 7	48	-	-	7.67	0.00	10.4	-	>20
Total	48	10.6	3.47	7.67	2.93		-	-

Mass of Sample	42.6
Volume of Water	383
Pulp Density	10

NaCN Consumption	68.8 kg/tonne
Lime Consumption	81.46 kg/tonne

Flowsheet Schematic



BL0801-11

BL801 POX 12 Residue

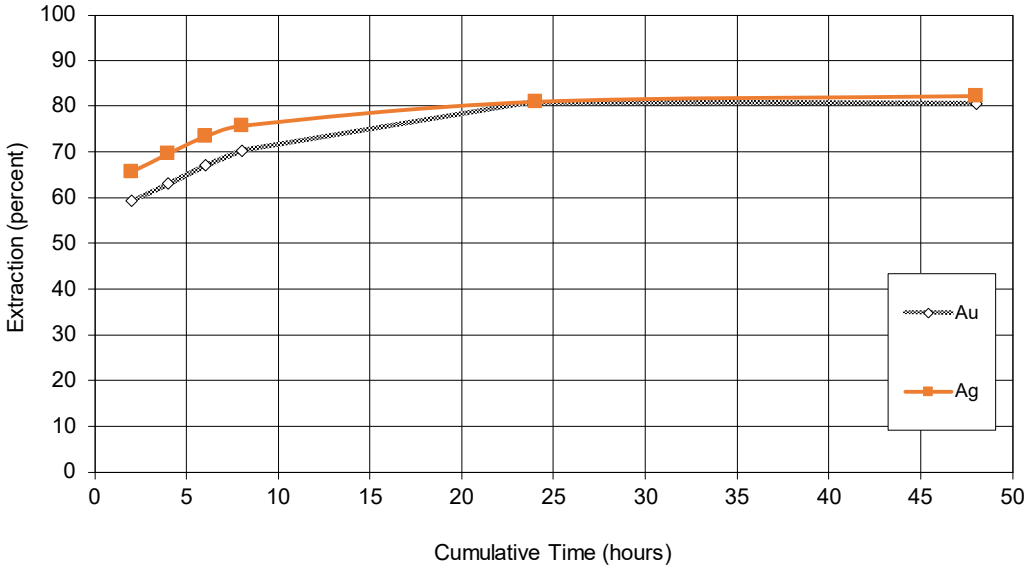
Cumulative Metallurgical Balance

Product	Cumulative Time - Hrs	Vol or Mass	Units	Assay - g/tonne		Distribution - percent	
				Au	Ag	Au	Ag
Cyanide Liquor (2 hr)	2	383	mL	2.67	7	59.4	65.6
Cyanide Liquor (4 hr)	4	383	mL	2.70	7	63.1	69.6
Cyanide Liquor (6 hr)	6	383	mL	2.74	7	67.2	73.4
Cyanide Liquor (8 hr)	8	383	mL	2.74	7	70.3	75.9
Cyanide Liquor (24 hr)	24	383	mL	3.08	7	81.1	81.0
Cyanide Liquor (48hr)	48	383	mL	2.90	7	80.7	82.2
Cyanidation Tails	-	41	g	8.18	17	19.3	17.8
Calculated Feed		41	g	42.3	96	100.0	100.0

Head Assay

Duplicate CnTL Assays - g/t		
Cut	1	2
Gold	7.90	8.45

Cyanide Leach Kinetic Curves



Test No: BL0801-12
Date: 24-Jan-22
Test Type: Cyanide Leach Test.
Test Objective: Leach on POX Residue
Sample: BL801 POX 14 Residue
Sizing: as is

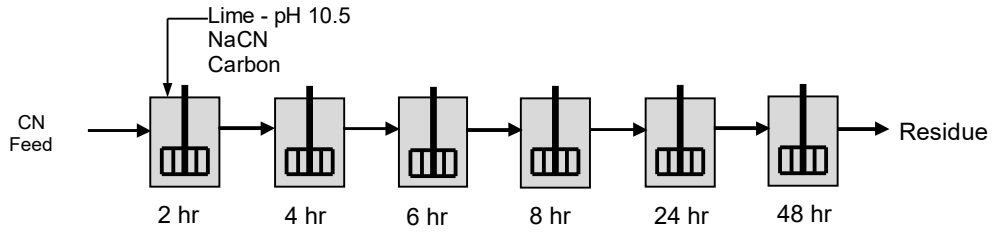
Cyanidation Leaching @ pH 10.5, 20,000ppm NaCN, O2 Sparged, 10% solids.

Parameter	Time Cum	Added (g)		Residual (g)	Consumed (g)	pH		Dissolved O_2 (mg/L)
		NaCN	Lime	NaCN	NaCN	Measured	Adjusted	
Natural	-	-	-	-	-	5	-	6.8
Leach 1	0	6.05	0.30	-	-	5.0	10.5	6.8
Leach 2	2	0.55	-	5.50	0.55	11.0	-	>20
Leach 3	4	0.06	-	5.99	0.06	11.0	-	>20
Leach 4	6	0.38	-	5.67	0.38	11.0	-	>20
Leach 5	8	0.18	-	5.87	0.18	11.1	-	>20
Leach 6	24	0.18	-	5.87	0.18	10.9	-	>20
Leach 7	48	0.00	-	5.69	0.36	10.7	-	>20
Total	48	7.4	0.30	5.69	1.71		-	-

Mass of Sample	33.6
Volume of Water	302
Pulp Density	10

NaCN Consumption	50.9 kg/tonne
Lime Consumption	8.93 kg/tonne

Flowsheet Schematic



BL0801-12

BL801 POX 14 Residue

Cumulative Metallurgical Balance

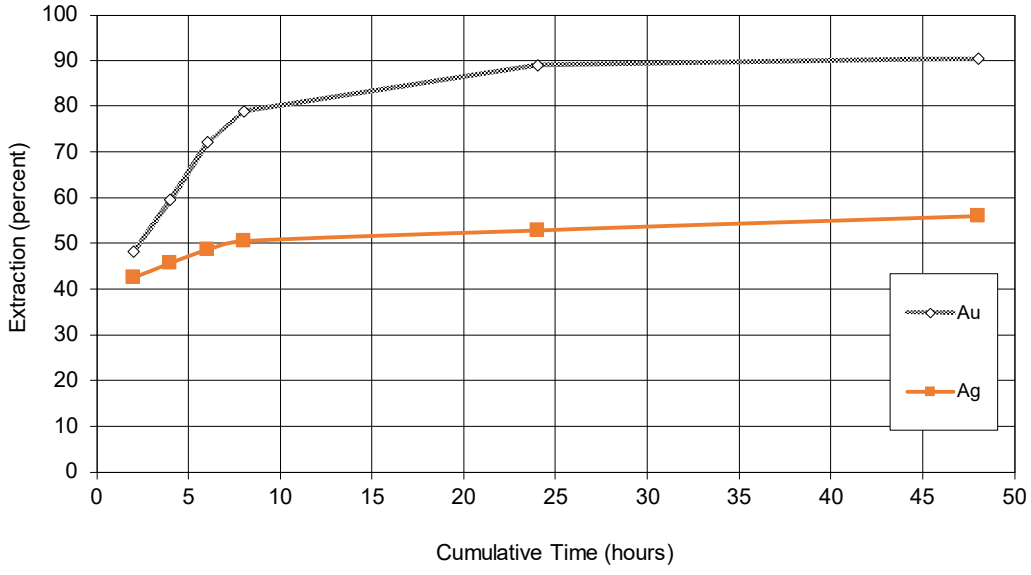
Product	Cumulative Time - Hrs	Vol or Mass	Units	Assay - g/tonne		Distribution - percent	
				Au	Ag	Au	Ag
Cyanide Liquor (2 hr)	2	302	mL	2.74	3	48.3	42.7
Cyanide Liquor (4 hr)	4	302	mL	3.20	3	59.6	45.7
Cyanide Liquor (6 hr)	6	302	mL	3.70	3	72.2	48.7
Cyanide Liquor (8 hr)	8	302	mL	3.84	3	79.0	50.5
Cyanide Liquor (24 hr)	24	302	mL	4.16	3	89.1	52.9
Cyanide Liquor (48hr)	48	302	mL	3.97	3	90.6	55.9
Cyanidation Tails*	-	32	g	5.12	34	9.4	44.1
Calculated Feed		32	g	54.3	77	100.0	100.0

Head Assay

* Ag assay estimated

Duplicate CnTL Assays - g/t		
Cut	1	2
Gold	5.13	5.10

Cyanide Leach Kinetic Curves



Test No: BL0801-13
Date: 24-Jan-22
Test Type: Cyanide Leach Test.
Test Objective: Leach on POX Residue
Sample: BL801 POX 15 Residue
Sizing: as is

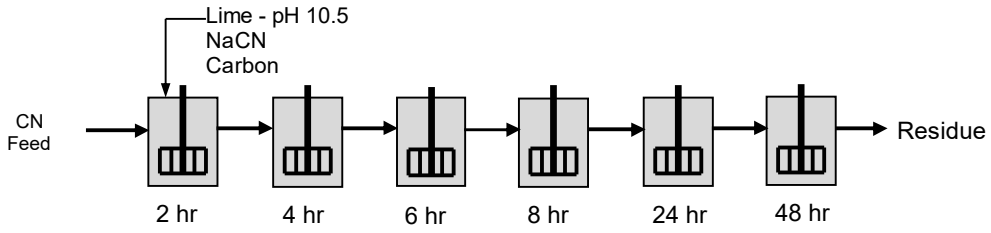
Cyanidation Leaching @ pH 10.5, 20,000ppm NaCN, O2 Sparged, 10% solids.

Parameter	Time Cum	Added (g)		Residual (g)	Consumed (g)	pH		Dissolved O_2 (mg/L)
		NaCN	Lime	NaCN	NaCN	Measured	Adjusted	
Natural	-	-	-	-	-	5	-	6.8
Leach 1	0	6.70	0.11	-	-	5.0	10.5	6.8
Leach 2	2	0.68	-	6.02	0.68	10.6	-	>20
Leach 3	4	0.27	-	6.43	0.27	10.7	-	>20
Leach 4	6	0.27	-	6.43	0.27	10.7	-	>20
Leach 5	8	0.20	-	6.50	0.20	10.8	-	>20
Leach 6	24	0.27	-	6.43	0.27	10.6	-	>20
Leach 7	48	0.00	-	6.43	0.27	10.5	-	>20
Total	48	8.4	0.11	6.43	1.96		-	-

Mass of Sample	37.2
Volume of Water	335
Pulp Density	10

NaCN Consumption	52.7 kg/tonne
Lime Consumption	2.96 kg/tonne

Flowsheet Schematic



BL0801-13

BL801 POX 15 Residue

Cumulative Metallurgical Balance

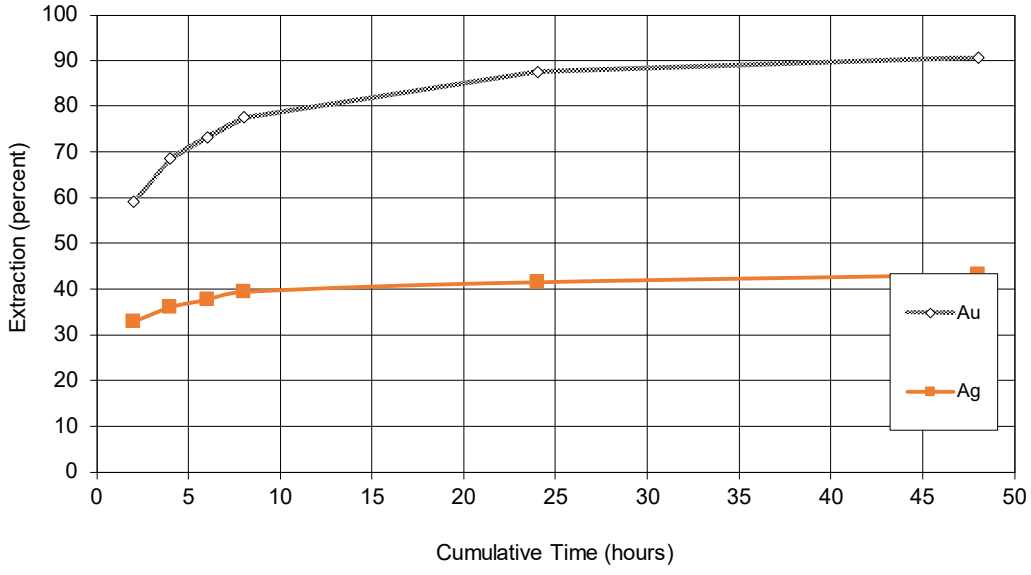
Product	Cumulative Time - Hrs	Vol or Mass	Units	Assay - g/tonne		Distribution - percent	
				Au	Ag	Au	Ag
Cyanide Liquor (2 hr)	2	335	mL	3.05	3	59.1	32.9
Cyanide Liquor (4 hr)	4	335	mL	3.36	3	68.7	36.1
Cyanide Liquor (6 hr)	6	335	mL	3.40	3	73.3	37.7
Cyanide Liquor (8 hr)	8	335	mL	3.42	3	77.7	39.5
Cyanide Liquor (24 hr)	24	335	mL	3.73	3	87.6	41.6
Cyanide Liquor (48hr)	48	335	mL	3.67	3	90.8	43.1
Cyanidation Tails*	-	35	g	4.61	44	9.2	56.9
Calculated Feed		35	g	50.1	77	100.0	100.0

Head Assay

* Ag assay estimated

Duplicate CnTL Assays - g/t		
Cut	1	2
Gold	4.57	4.64

Cyanide Leach Kinetic Curves



Test No: BL801-14
Date: 22-Feb-22
Test Type: Gravity/Rougher Test
Test Objective: Preliminary Batch Rougher Test
Sample: 2 kg of JL-1
Nominal Sizing: 75µm K_{80}

Stage	Reagents - g/tonne			Time Minutes		Electrochemistry	
	PAX	CuSO4	MIBC	Condition	Float	pH	Eh-mV
Primary Grind				18			
Knelson1							
Knelson 2							
Rougher	100	800	21	1	4	7.1	170
Rougher Scav	70	-	14	1	2	7.7	125

Primary Grind	
Mill	Mild Steel Mill
Media	20kg Mild Steel Rods
Water Addn:	1000ml

Flotation Information	Rougher
Flotation Device:	D12
Cell Volume:	4.4 L
Impellar Speed:	800 rpm
Flotation Gas:	Air
Water Type:	Kamloops Tap

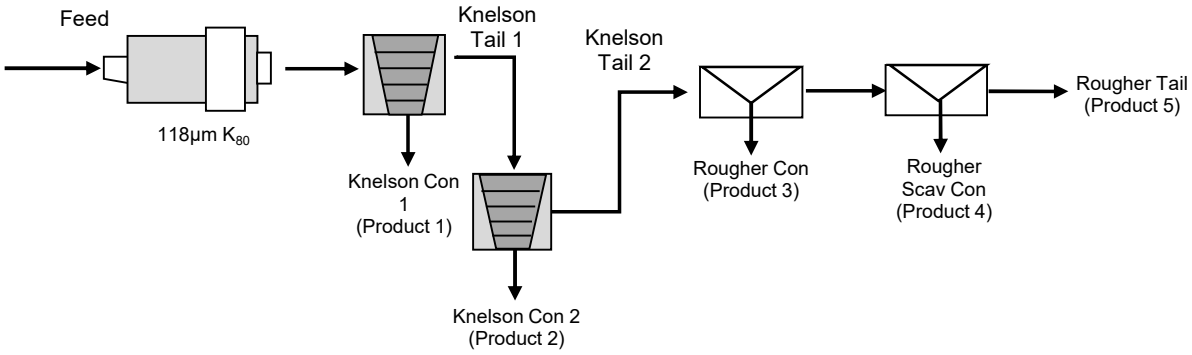
BL801-14 JL-1
Metallurgical Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Knelson Con 1	6.0	120.7	5.05	3.80	25.9	28.6	117	26.5	21.1	13.1	6.3	15.3	25.9	12.6	14.0	19.1
Knelson Con 2	5.6	112.7	5.17	4.70	26.1	20.5	113	27.0	20.0	12.5	7.2	14.3	17.4	11.3	13.4	16.9
Rougher Con	28.2	563.0	5.50	10.8	22.4	12.1	140	27.4	13.8	66.7	82.9	61.5	51.3	70.1	67.7	58.0
Rougher Scav Con	3.2	63.6	2.38	2.40	12.9	7.40	50	11.3	8.46	3.3	2.1	4.0	3.5	2.8	3.2	4.0
Ro Tail	56.9	1135.1	0.18	0.10	0.9	0.22	3	0.34	0.24	4.4	1.5	4.9	1.9	3.1	1.7	2.0
Recalc. Feed	100.0	1995.1	2.33	3.68	10.3	6.67	56	11.4	6.70	100	100	100	100	100	100	100
Measured Feed			2.49	4.01	10.1	7.66	60	11.0	5.25							

BL801-14 JL-1
Cumulative Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Product 1	6.0	120.7	5.05	3.80	25.9	28.6	117	26.5	21.1	13.1	6.3	15.3	25.9	12.6	14.0	19.1
Products 1 to 2	11.7	233.4	5.11	4.23	26.0	24.7	115	26.7	20.6	25.7	13.5	29.6	43.3	23.9	27.4	36.0
Products 1 to 3	39.9	796.4	5.39	8.88	23.5	15.8	133	27.2	15.8	92.3	96.4	91.1	94.6	94.0	95.1	94.0
Products 1 to 4	43.1	860.0	5.16	8.40	22.7	15.2	127	26.0	15.2	95.6	98.5	95.1	98.1	96.9	98.3	98.0
Products 5	56.9	1135.1	0.18	0.10	0.9	0.22	3	0.34	0.24	4.4	1.5	4.9	1.9	3.1	1.7	2.0
Recalc. Feed	100.0	1995.1	2.33	3.68	10.3	6.67	56	11.4	6.70	100	100	100	100	100	100	100

Flowsheet Schematic



Test No: BL801-15
Date: 25-Feb-22
Test Type: Gravity/Rougher Test
Test Objective: Investigate effect of primary grind
Sample: 2 kg of JL-1
Nominal Sizing: 106µm K_{80}

Stage	Reagents - g/tonne			Time Minutes		Electrochemistry	
	PAX	CuSO4	MIBC	Condition	Float	pH	Eh-mV
Primary Grind				14			
Knelson1							
Knelson 2							
						8.0	-140
Rougher	100	800	14	1	4	6.9	-50
Rougher Scav	70	-	-	1	2	7.8	-2

Primary Grind	
Mill	Mild Steel Mill
Media	20kg Mild Steel Rods
Water Addn:	1000ml

Flotation Information	Rougher
Flotation Device:	D12
Cell Volume:	4.4 L
Impellar Speed:	800 rpm
Flotation Gas:	Air
Water Type:	Kamloops Tap

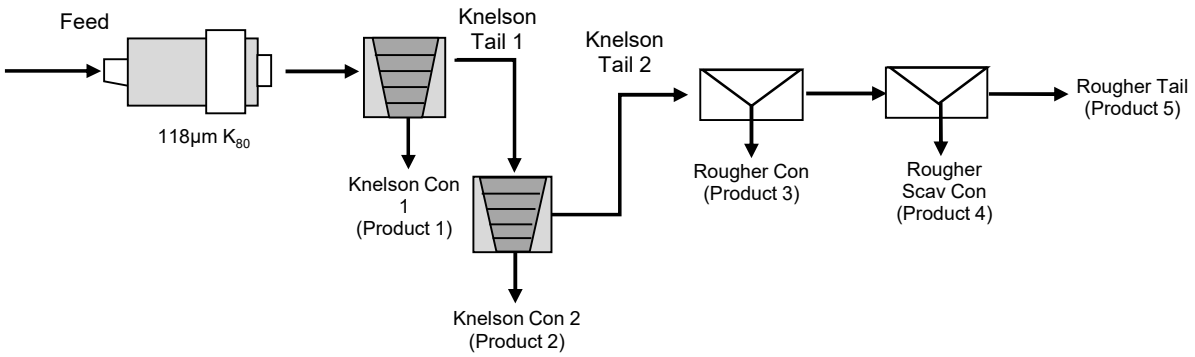
BL801-15 JL-1
Metallurgical Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Knelson Con 1	5.6	111.1	5.80	4.80	21.5	24.6	113	24.0	19.3	12.5	7.0	12.9	21.2	10.4	11.8	17.6
Knelson Con 2	5.3	106.3	4.90	4.90	22.0	18.5	111	24.0	18.0	10.1	6.8	12.7	15.3	9.8	11.2	15.7
Rougher Con	28.7	570.7	6.20	11.1	21.4	13.4	156	29.1	13.1	68.8	83.0	66.2	59.2	73.9	73.2	61.3
Rougher Scav Con	3.3	65.0	3.49	2.13	9.9	5.66	60	8.49	6.68	4.4	1.8	3.5	2.8	3.2	2.4	3.6
Ro Tail	57.1	1134.3	0.19	0.09	0.8	0.17	3	0.274	0.20	4.2	1.3	4.7	1.5	2.6	1.4	1.8
Recalc. Feed	100.0	1987.4	2.59	3.84	9.3	6.50	61	11.4	6.14	100	100	100	100	100	100	100
Measured Feed			2.49	4.01	10.1	7.66	60	11.0	5.25							

BL801-15 JL-1
Cumulative Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Product 1	5.6	111.1	5.80	4.80	21.5	24.6	113	24.0	19.3	12.5	7.0	12.9	21.2	10.4	11.8	17.6
Products 1 to 2	10.9	217.4	5.36	4.85	21.7	21.6	112	24.0	18.7	22.6	13.8	25.6	36.4	20.2	23.0	33.3
Products 1 to 3	39.7	788.1	5.97	9.38	21.5	15.7	144	27.7	14.7	91.4	96.8	91.8	95.7	94.1	96.2	94.6
Products 1 to 4	42.9	853.1	5.78	8.82	20.6	14.9	137	26.2	14.0	95.8	98.7	95.3	99	97.4	98.6	98.2
Products 5	57.1	1134.3	0.19	0.09	0.8	0.17	3	0.27	0.20	4.2	1.3	4.7	1.5	2.6	1.4	1.8
Recalc. Feed	100.0	1987.4	2.59	3.84	9.3	6.50	61	11.4	6.14	100	100	100	100	100	100	100

Flowsheet Schematic



Test No: BL801-16
Date: 25-Feb-22
Test Type: Gravity/Rougher Test
Test Objective: Investigate effect of primary grind
Sample: 2 kg of JL-1
Nominal Sizing: 150µm K_{80}

Stage	Reagents - g/tonne			Time Minutes		Electrochemistry	
	PAX	CuSO4	MIBC	Condition	Float	pH	Eh-mV
Primary Grind				9.5			
Knelson1							
Knelson 2							
						7.8	-134
Rougher	100	800	14	1	4	6.8	44
Rougher Scav	70	-	-	1	2	7.9	6

Primary Grind	
Mill	Mild Steel Mill
Media	20kg Mild Steel Rods
Water Addn:	1000ml

Flotation Information	Rougher
Flotation Device:	D12
Cell Volume:	4.4 L
Impellar Speed:	800 rpm
Flotation Gas:	Air
Water Type:	Kamloops Tap

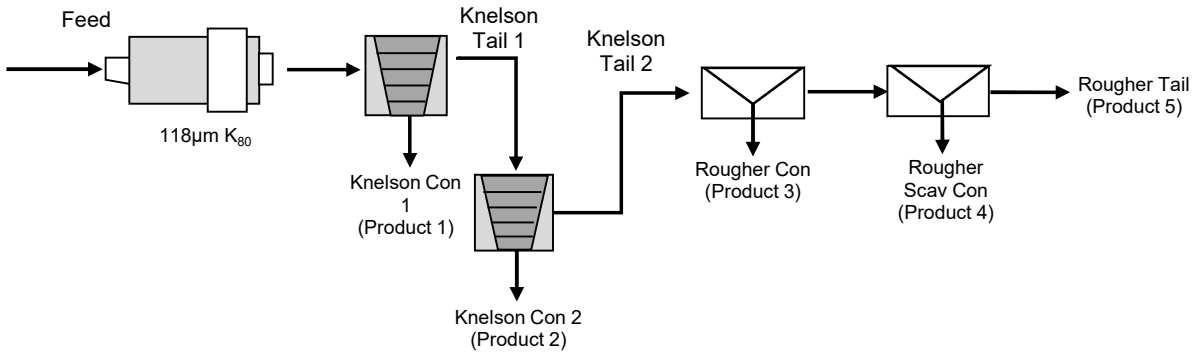
BL801-16 JL-1
Metallurgical Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Knelson Con 1	5.4	107.0	6.30	4.50	21.5	18.4	121	21.4	17.6	11.9	6.5	12.3	15.7	10.6	10.0	15.8
Knelson Con 2	5.3	106.2	5.60	5.20	21.0	18.7	119	21.6	16.9	10.5	7.4	11.9	15.9	10.4	10.1	15.1
Rougher Con	29.2	582.2	6.80	10.5	20.9	12.7	151	27.3	11.5	69.6	82.1	64.9	59.2	72.2	69.6	56.7
Rougher Scav Con	5.3	106.4	2.45	1.91	12.0	8.84	50	11.1	11.6	4.6	2.7	6.8	7.5	4.3	5.2	10.4
Ro Tail	54.7	1089.9	0.18	0.09	0.7	0.19	3	1.07	0.22	3.5	1.3	4.1	1.7	2.4	5.1	2.0
Recalc. Feed	100.0	1991.7	2.85	3.74	9.4	6.28	61	11.5	5.96	100	100	100	100	100	100	100
Measured Feed			2.49	4.01	10.1	7.66	60	11.0	5.25							

BL801-16 JL-1
Cumulative Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Product 1	5.4	107.0	6.30	4.50	21.5	18.4	121	21.4	17.6	11.9	6.5	12.3	15.7	10.6	10.0	15.8
Products 1 to 2	10.7	213.2	5.95	4.85	21.3	18.6	120	21.5	17.2	22.3	13.9	24.2	31.6	21.0	20.1	31.0
Products 1 to 3	39.9	795.4	6.57	8.99	21.0	14.3	143	25.7	13.1	92.0	96.0	89.1	90.8	93.2	89.7	87.6
Products 1 to 4	45.3	901.8	6.09	8.15	19.9	13.6	132	24.0	12.9	96.5	98.7	95.9	98.3	97.6	94.9	98.0
Products 5	54.7	1089.9	0.18	0.09	0.7	0.19	3	1.07	0.22	3.5	1.3	4.1	1.7	2.4	5.1	2.0
Recalc. Feed	100.0	1991.7	2.85	3.74	9.4	6.28	61	11.5	5.96	100	100	100	100	100	100	100

Flowsheet Schematic



Test No: BL801-17
Date: 28-Feb-22
Test Type: Gravity/Rougher Test
Test Objective: Repeat Test 16 at a coarser primary grind size.
Sample: 2 kg of JL-1
Nominal Sizing: 212µm K_{80}

Stage	Reagents - g/tonne			Time Minutes		Electrochemistry	
	PAX	CuSO4	MIBC	Condition	Float	pH	Eh-mV
Primary Grind				7			
Knelson1							
Knelson 2						7.8	-134
Rougher	100	800	14	1	4	6.8	44
Rougher Scav	70	-	-	1	2	7.9	6

Primary Grind	
Mill	Mild Steel Mill
Media	20kg Mild Steel Rods
Water Addn:	1000ml

Flotation Information	Rougher
Flotation Device:	D12
Cell Volume:	4.4 L
Impellar Speed:	800 rpm
Flotation Gas:	Air
Water Type:	Kamloops Tap

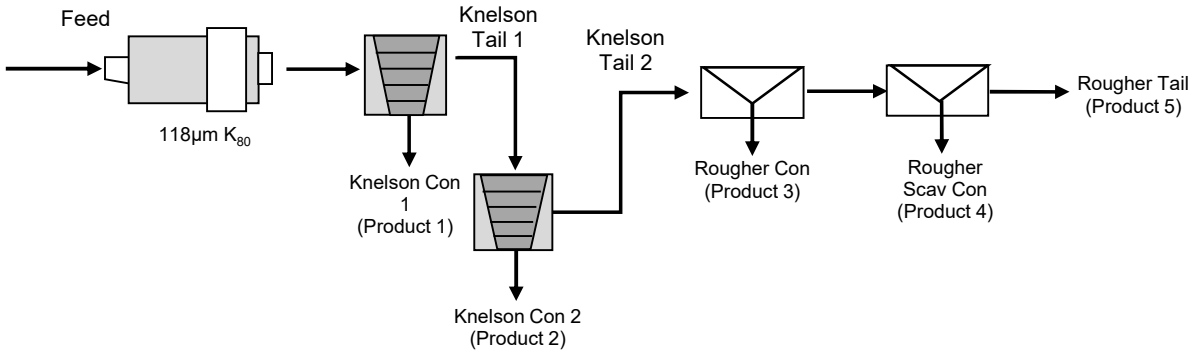
BL801-17 JL-1
Metallurgical Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Knelson Con 1	5.1	102.0	5.15	5.30	15.6	19.2	116	19.1	15.2	11.3	7.3	9.7	14.7	10.1	8.6	12.2
Knelson Con 2	5.0	99.0	4.49	5.30	15.1	15.4	103	19.1	14.2	9.5	7.1	9.2	11.4	8.7	8.3	11.1
Rougher Con	20.9	416.4	6.70	12.8	16.8	12.4	174	28.4	10.9	59.8	72.0	42.9	38.7	61.7	52.1	35.5
Rougher Scav Con	11.9	237.5	2.51	3.30	17.6	15.1	71	23.0	16.8	12.8	10.6	25.6	26.9	14.3	24.1	31.3
Ro Tail	57.0	1133.1	0.27	0.20	1.8	0.96	5	1.37	1.11	6.6	3.1	12.6	8.2	5.2	6.8	9.9
Recalc. Feed	100.0	1988.0	2.34	3.73	8.2	6.69	59	11.4	6.40	100	100	100	100	100	100	100
Measured Feed			2.49	4.01	10.1	7.66	60	11.0	5.25							

BL801-17 JL-1
Cumulative Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Product 1	5.1	102.0	5.15	5.30	15.6	19.2	116	19.1	15.2	11.3	7.3	9.7	14.7	10.1	8.6	12.2
Products 1 to 2	10.1	201.0	4.82	5.30	15.4	17.3	110	19.1	14.7	20.8	14.4	18.9	26.1	18.8	16.9	23.2
Products 1 to 3	31.1	617.4	6.09	10.36	16.3	14.0	153	25.4	12.1	80.6	86.4	61.8	64.9	80.5	69.1	58.8
Products 1 to 4	43.0	854.9	5.10	8.40	16.7	14.3	130	24.7	13.4	93.4	96.9	87.4	91.8	94.8	93.2	90.1
Products 5	57.0	1133.1	0.27	0.20	1.8	0.96	5	1.37	1.11	6.6	3.1	12.6	8.2	5.2	6.8	9.9
Recalc. Feed	100.0	1988.0	2.34	3.73	8.2	6.69	59	11.4	6.40	100	100	100	100	100	100	100

Flowsheet Schematic



Test No: BL801-18
Date: 10-Mar-22
Test Type: Gravity/Rougher Test
Test Objective: Perform bulk rougher followed sequential rougher
Sample: 2 kg of JL-1
Nominal Sizing: 150µm K_{80}

Stage	Reagents - g/tonne						Time Minutes		Electrochemistry	
	Lime	PAX	$CuSO_4$	$ZnSO_4$	NaCN	MIBC	Condition	Float	pH	Eh-mV
Primary Grind							9.5			
Knelson1										
Knelson 2									7.2	-213
Rougher		100	800			7	1	4	6.5	50
Rougher Scav		70	-			-	1	2	7.5	-21
Regrind	500			450	150		20		9.1	150
Condition		A214		900	300		5			
Pb Rougher 1		10				7	1	4	9.1	140
Pb Rougher 2		5				-	1	2	9.0	151
Pb Rougher 3		5				-	1	2	9.0	140
Condition	400	SIPX	1300				5		10.0	148
Zinc Rougher 1	√	20				7	1	2	10.0	88
Zinc Rougher 2	√	20				-	1	2	10.0	75

Primary Grind	
Mill	Mild Steel Mill
Media	20kg Mild Steel Rods
Water Addn:	1000ml
Regrind	
Mill	Stainless Steel
Media	8kg Stainless

Flotation Information	Rougher
Flotation Device:	D12
Cell Volume:	4.4 L
Impellar Speed:	800 rpm
Flotation Gas:	Air
Water Type:	Kamloops Tap

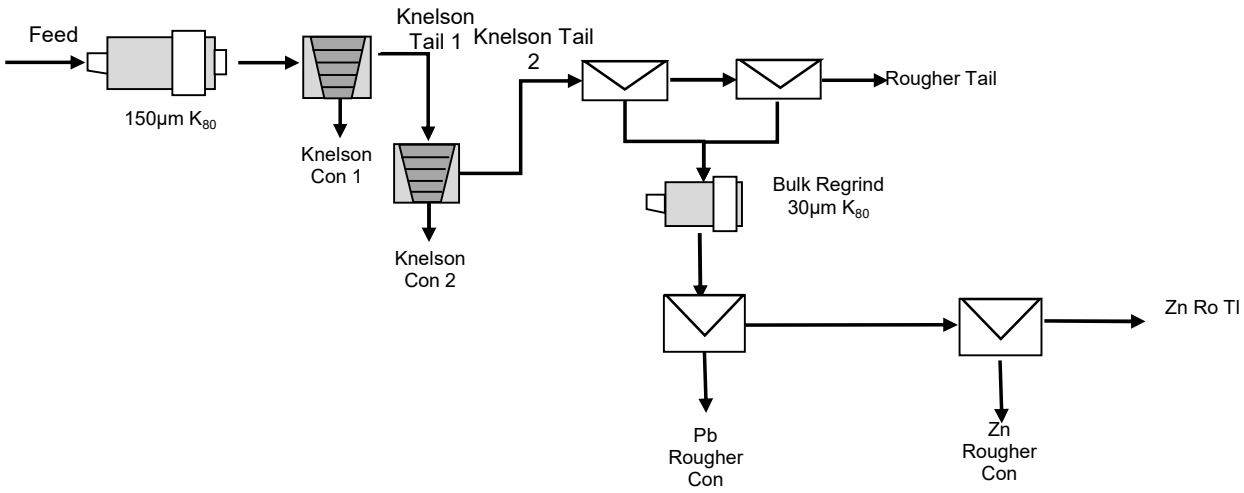
BL801-18 JL-1
Metallurgical Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Knelson Con 1	5.6	110.3	4.81	5.00	23.1	11.4	12	23.8	0.25	11.3	6.9	12.3	12.3	1.3	11.9	0.3
Knelson Con 2	5.2	103.0	3.45	4.70	18.6	5.16	12	21.6	0.25	7.6	6.1	9.3	5.2	1.2	10.1	0.3
Pb Rougher 1	6.6	129.6	17.5	18.4	20.2	17.7	472	27.8	11.8	48.4	29.8	12.6	22.6	60.2	16.3	18.3
Pb Rougher 2	6.1	121.2	7.30	14.4	25.9	17.5	180	27.7	17.4	18.9	21.8	15.2	20.9	21.5	15.2	25.1
Pb Rougher 3	4.1	80.3	2.44	10.4	27.9	16.1	74.4	28.00	18.8	4.2	10.4	10.8	12.7	5.9	10.2	18.0
Zn Rougher 1	0.3	5.3	1.91	13.2	19.3	6.58	60	22.2	8.2	0.2	0.9	0.5	0.3	0.3	0.5	0.5
Zn Rougher 2	0.9	17.0	1.20	22.5	17.9	5.78	38	26.6	6.7	0.4	4.8	1.5	1.0	0.6	2.1	1.4
Zn Ro Tail	12.1	238.5	0.60	5.80	27.2	8.94	16	28.6	10.2	3.1	17.3	31.3	20.9	3.9	30.9	28.9
Ro Tail	59.2	1167.5	0.24	0.14	1.2	0.36	4	0.511	0.51	6.0	2.0	6.5	4.1	5.1	2.7	7.2
Recalc. Feed	100.0	1972.7	2.38	4.06	10.5	5.16	51	11.2	4.25	100	100	100	100	100	100	100
Measured Feed			2.49	4.01	10.1	7.66	60	11.0	5.25							

BL801-18 JL-1
Cumulative Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Product 1	5.6	110.3	4.81	5.00	23.1	11.4	12	23.8	0.25	11.3	6.9	12.3	12.3	1.3	11.9	0.3
Products 1 to 2	10.8	213.3	4.15	4.86	20.9	8.37	12	22.7	0.25	18.9	12.9	21.6	17.5	2.5	22.0	0.6
Products 3	17.4	129.6	6.61	6.95	7.6	6.70	178	10.5	4.47	48.4	29.8	12.6	22.6	60.2	16.3	18.3
Products 3 to 4	12.7	250.8	12.6	16.5	23.0	17.6	331	27.8	14.5	67.2	51.6	27.8	43.4	81.7	31.6	43.4
Products 3 to 5	16.8	331.1	10.1	15.0	24.2	17.2	269	27.8	15.5	71.4	62.1	38.6	56.1	87.6	41.8	61.4
Products 6	0.3	5.3	1.91	13.2	19.3	6.58	60	22.2	8.15	0.2	0.9	0.5	0.3	0.3	0.5	0.5
Product 6 to 7	1.1	22.3	1.37	20.3	18.2	5.97	43	25.6	7.03	0.7	5.7	2.0	1.3	0.9	2.6	1.9
Product 1 to 8	40.8	805.2	5.47	9.73	24.0	12.1	120	26.6	9.67	94.0	98.0	93.5	95.9	94.9	97.3	92.8
Products 9	59.2	1167.5	0.24	0.14	1.2	0.36	4	0.51	0.51	6.0	2.0	6.5	4.1	5.1	2.7	7.2
Recalc. Feed	100.0	1972.7	2.38	4.06	10.5	5.16	51	11.2	4.25	100	100	100	100	100	100	100

Flowsheet Schematic



Test No: BL801-18
Date: 16-Mar-22
Test Type: Gravity/Rougher Test
Test Objective: Repeat Test 18 with gravity sent to regrind and a single Zn cleaning stage
Sample: 2 kg of JL-1
Nominal Sizing: 150µm K_{80}

Bulk Regrind 20µm K_{80}
Zn Regrind 16µm K_{80}

Stage	Reagents - g/tonne						Time Minutes		Electrochemistry	
	Soda Ash	PAX	$CuSO_4$	$ZnSO_4$	NaCN	MIBC	Condition	Float	pH	Eh-mV
Primary Grind							9.5			
Knelson1										
Knelson 2									7.3	123
Rougher		40	800			14	1	4	6.8	103
Rougher Scav		35	-			7	1	2	7.6	104
Regrind	1000			900	300		30		9.1	150
Condition		A214		300	100		5			
Pb Rougher 1		-				14	1	4	9.1	140
Pb Rougher 2		5				14	1	2	9.0	151
Pb Rougher 3		5				7	1	2	9.0	140
	Lime	SIPX			H57					
Condition	500		1300				5		10.0	148
Zinc Rougher 1	-	10			20	14	1	2	10.0	88
Zinc Rougher 2	-	5				-	1	2	10.0	75
Zinc Regrind	200		200				5		8.0	158
Zinc Cleaner	200	3			20	14	1	5	11.0	30

Primary Grind	
Mill	Mild Steel Mill
Media	20kg Mild Steel Rods
Water Addn:	1000ml
Bulk Regrind	
Mill	Stainless Steel
Media	20kg Stainless
Zinc Regrind	
Mill	Stirred Mill
Media	1.2kg Ceramic

Flotation Information	Rougher
Flotation Device:	D12
Cell Volume:	4.4 L
Impellar Speed:	800 rpm
Flotation Gas:	Air
Water Type:	Kamloops Tap

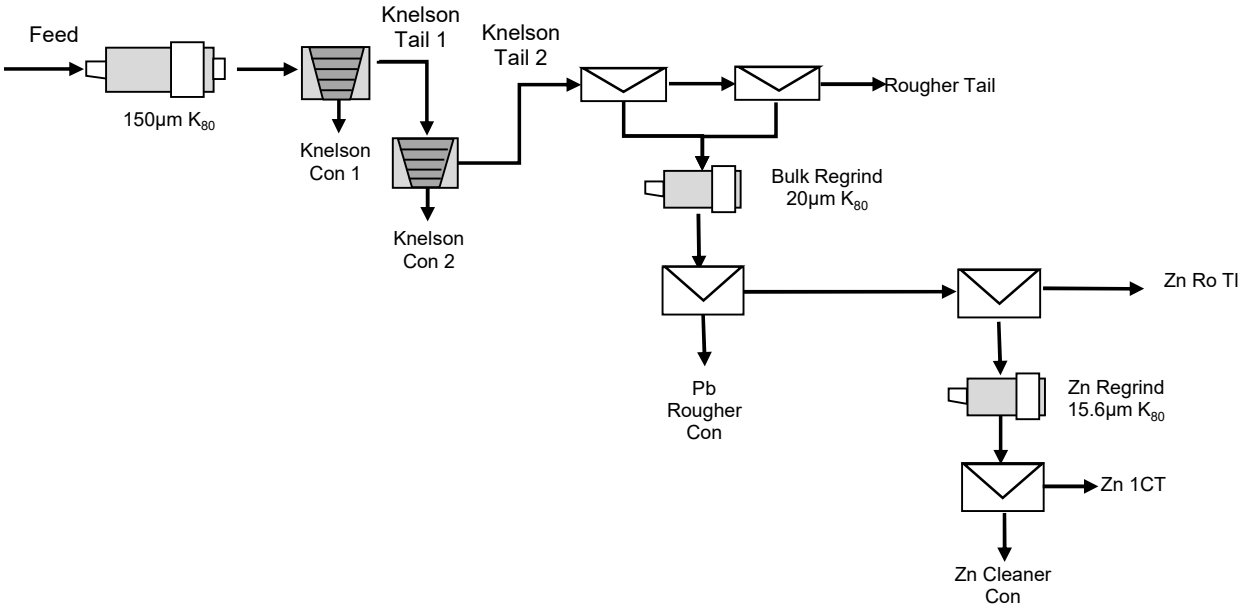
BL801-18 JL-1
Metallurgical Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Pb Rougher 1	5.7	113.5	31.2	11.8	13.9	31.8	773	25.0	8.30	76.5	18.0	7.6	27.2	72.3	12.5	8.0
Pb Rougher 2	1.8	35.1	7.10	12.9	24.6	21.4	279	28.7	14.7	5.4	6.1	4.1	5.6	8.1	4.4	4.4
Pb Rougher 3	1.4	27.6	3.39	12.6	25.4	17.7	155	29.3	16.3	2.0	4.7	3.4	3.7	3.5	3.6	3.8
Zn Cleaner Con	4.4	88.2	0.65	50.6	9.0	3.11	43	33.4	2.48	1.2	59.9	3.8	2.1	3.1	13.0	1.9
Zn 1st Clnr Tail	2.1	41.4	1.02	5.90	26.3	17.1	39	25.5	14.8	0.9	3.3	5.2	5.3	1.3	4.7	5.2
Zn Ro Tail	24.7	494.5	0.48	0.69	27.9	13.7	13	25.9	16.2	5.1	4.6	66.2	50.9	5.4	56.5	68.4
Ro Tail	60.0	1200.7	0.34	0.22	1.7	0.58	6	1.01	0.81	8.8	3.5	9.6	5.2	6.3	5.3	8.2
Recalc. Feed	100.0	2001.0	2.31	3.72	10.4	6.64	61	11.3	5.86	100	100	100	100	100	100	100
Measured Feed			2.49	4.01	10.1	7.66	60	11.0	5.25							

BL801-18 JL-1
Cumulative Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Products 1	5.7	113.5	31.2	11.8	13.9	31.8	773	25.0	8.30	76.5	18.0	7.6	27.2	72.3	12.5	8.0
Products 1 to 2	7.4	148.6	25.5	12.1	16.4	29.3	656	25.9	9.80	81.9	24.0	11.7	32.8	80.3	17.0	12.4
Products 1 to 3	8.8	176.2	22.0	12.1	17.8	27.5	578	26.4	10.8	83.9	28.7	15.1	36.5	83.8	20.5	16.3
Products 4	4.4	88.2	0.65	50.6	9.0	3.11	43	33.4	2.48	1.2	59.9	3.8	2.1	3.1	13.0	1.9
Products 4 to 5	6.5	129.6	0.77	36.3	14.5	7.57	42	30.9	6.41	2.2	63.2	9.0	7.4	4.5	17.6	7.1
Products 1 to 6	40.0	800.3	5.27	8.98	23.5	15.7	142	26.8	13.4	91.2	96.5	90.4	94.8	93.7	94.7	91.8
Products 7	60.0	1200.7	0.34	0.22	1.7	0.58	6	1.01	0.81	8.8	3.5	9.6	5.2	6.3	5.3	8.2
Recalc. Feed	100.0	2001.0	2.31	3.72	10.4	6.64	61	11.3	5.86	100	100	100	100	100	100	100

Flowsheet Schematic



Test No: BL801-20
Date: 16-Mar-22
Test Type: Gravity/Cleaner Test
Test Objective: Repeat Test 19 with Pb cleaners
Sample: 2 kg of JL-1
Nominal Sizing: 150µm K_{80}

Bulk Rgd 30 µm K_{80}
Pb Rgd 16 µm K_{80}
Zn Rgd 18 µm K_{80}

Stage	Reagents - g/tonne						Time Minutes		Electrochemistry	
	Soda Ash	PAX	$CuSO_4$	$ZnSO_4$	NaCN	MIBC	Condition	Float	pH	Eh-mV
Primary Grind							9.5			
Knelson1										
Knelson 2									7.9	27
Rougher		40	800			14	4	4	7.0	81
Rougher Scav		35	-			7	1	2	7.8	58
Regrind	1000			900	300		17		9.6	257
Condition		A241		300	100		5		9.5	268
Pb Rougher 1	-	-				21	1	4	9.4	264
Pb Rougher 2	-	5				-	1	2	9.2	252
Pb Rougher 3	-	5				-	1	2	9.2	228
Pb Regrind				900	300		12		8.0	225
Pb Cleaner 1	110	5				35	1	4	9.0	210
Pb Cleaner 2	√	-				21	1	3	9.0	174
	Lime	SIPX			H57					
Condition	600		1300				5		10.2	160
Zinc Rougher 1	-	10				14	1	2	10.2	157
Zinc Rougher 2	√	5				-	1	2	10.0	158
Zinc Regrind	200		200				6		10.6	126
Zinc Cleaner 1	60	3			30	14	1	5	11.0	94
Zinc Cleaner 2	√	2			-	21	1	4	11.0	100
Zinc Cleaner 3	√	-			-	14	1	3	11.0	98

Primary Grind	
Mill	Mild Steel Mill
Media	20kg Mild Steel Rods
Water Addn:	1000ml
Bulk Regrind	
Mill	Stainless Steel
Media	20kg Stainless
Zinc and Lead Regrind	
Mill	Stirred Mill
Media	1.2kg Ceramic

Flotation Information	Rougher	Clnr 1	Clnr 2
Flotation Device:	D12	TF1	TF1
Cell Volume:	4.4L	2.5L	1.5L
Impellar Speed:	800rpm	1200rpm	900rpm
Flotation Gas:	Air		
Water Type:	Kamloops Tap		

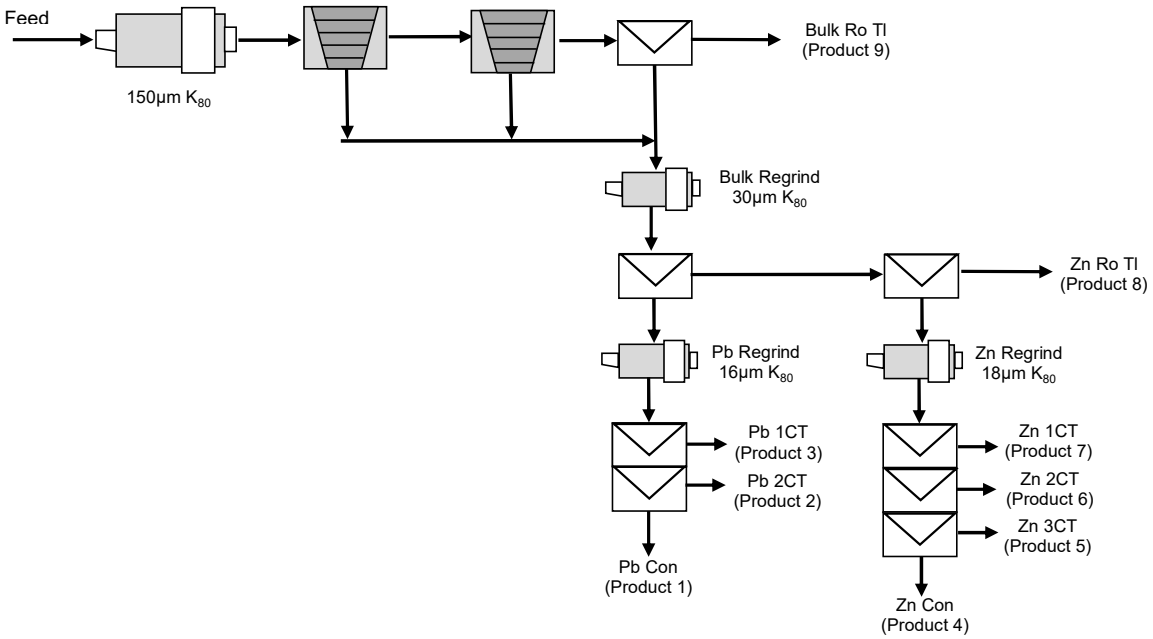
BL801-20 JL-1
Metallurgical Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Pb Cleaner Con	4.2	80.1	40.7	9.50	11.9	48.7	864	22.8	6.74	73.5	10.5	4.7	27.9	63.7	8.3	5.1
Pb 2nd Clnr Tl	2.8	53.4	6.70	13.5	24.0	19.4	259	28.9	14.3	8.1	10.0	6.4	7.4	12.7	7.0	7.1
Pb 1st Clnr Tl	11.3	218.3	1.37	12.6	25.1	15.3	55	28.0	14.9	6.7	38.0	27.2	23.9	11.1	27.6	30.4
Zn Cleaner Con	2.3	43.6	1.25	55.8	6.5	2.11	53	33.2	0.47	1.2	33.6	1.4	0.7	2.1	6.5	0.2
Zn 3rd Clnr Tl	0.2	3.1	2.61	27.4	16.4	15.5	95	28.7	6.06	0.2	1.2	0.3	0.3	0.3	0.4	0.2
Zn 2nd Clnr Tl	0.4	7.1	2.65	12.9	21.7	15.3	86	26.1	8.79	0.4	1.3	0.8	0.8	0.6	0.8	0.6
Zn 1st Clnr Tail	1.9	37.2	1.54	3.50	25.2	11.0	45	26.4	10.2	1.3	1.8	4.6	2.9	1.5	4.4	3.6
Zn Ro Tail	23.2	446.8	0.52	0.41	22.9	10.8	12	21.3	12.1	5.2	2.5	50.7	34.6	4.9	43.0	50.4
Ro Tail	53.9	1040.3	0.14	0.08	0.8	0.19	3	0.41	0.26	3.3	1.1	4.0	1.4	3.1	1.9	2.5
Recalc. Feed	100.0	1929.9	2.30	3.75	10.5	7.24	56	11.5	5.54	100	100	100	100	100	100	100
Measured Feed			2.49	4.01	10.1	7.66	60	11.0	5.25							

BL801-20 JL-1
Cumulative Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Products 1	4.2	80.1	40.7	9.5	11.9	48.7	864	22.8	6.74	73.5	10.5	4.7	27.9	63.7	8.3	5.1
Products 1 to 2	6.9	133.5	27.1	11.1	16.7	37.0	622	25.2	9.74	81.6	20.5	11.1	35.3	76.4	15.2	12.2
Products 1 to 3	18.2	351.8	11.1	12.0	21.9	23.5	270	27.0	12.9	88.3	58.5	38.2	59.2	87.5	42.9	42.6
Products 4	2.3	43.6	1.25	55.8	6.5	2.11	53	33.2	0.47	1.2	33.6	1.4	0.7	2.1	6.5	0.2
Products 4 to 5	2.4	46.7	1.34	53.9	7.2	3.00	56	32.9	0.84	1.4	34.8	1.7	1.0	2.4	6.9	0.4
Products 4 to 6	2.8	53.8	1.51	48.5	9.1	4.62	60	32.0	1.89	1.8	36.0	2.4	1.8	3.0	7.8	1.0
Products 4 to 7	4.7	91.0	1.52	30.1	15.7	7.24	54	29.7	5.30	3.1	37.8	7.1	4.7	4.5	12.2	4.5
Products 1 to 8	46.1	889.6	4.82	8.04	21.8	15.5	118	24.4	11.7	96.7	98.9	96.0	98.6	96.9	98.1	97.5
Products 9	53.9	1040.3	0.14	0.08	0.8	0.19	3	0.41	0.26	3.3	1.1	4.0	1.4	3.1	1.9	2.5
Recalc. Feed	100.0	1929.9	2.30	3.75	10.5	7.24	56	11.5	5.54	100	100	100	100	100	100	100

Flowsheet Schematic



Test No: BL801-21
Date: 23-Mar-22
Test Type: Gravity/Cleaner Test
Test Objective: Repeat Test 20 with Pb 1CT recirculated into the Zn Rougher
Sample: 2 kg of JL-1
Nominal Sizing: 150µm K_{80}

Bulk Rgd	18.0 µm K_{80}
Pb Rgd	12.0 µm K_{80}
Zn Rgd	10.0 µm K_{80}

Stage	Reagents - g/tonne						Time Minutes		Electrochemistry	
	Soda Ash	PAX	$CuSO_4$	$ZnSO_4$	NaCN	MIBC	Condition	Float	pH	Eh-mV
Primary Grind							9.5			
Knelson1										
Knelson 2										
Panning									8.2	57
Rougher		40	800			35	4	4	7.2	-42
Rougher Scav		35	-			14	1	2	7.8	-6
Regrind	750			900	300		20		9.4	255
Condition		A241		300	100		5			
Pb Rougher 1	-	-				7	1	4	9.0	271
Pb Rougher 2	√	5				7	1	2	9.0	265
Pb Rougher 3	√	5				-	1	2	9.0	260
Pb Regrind	100			900	300		8		8.5	273
Pb Cleaner 1	200	5		150	50	7	1	4	9.0	215
Pb Cleaner 2	-	-				-	1	3	9.0	243
Pb Cleaner 3	√	-				-	1	2	9.0	246
	Lime	SIPX			H57					
Condition	700		1700				5		10.0	141
Zinc Rougher 1		10				14	1	2	10.0	141
Zinc Rougher 2		5				-	1	2	10.0	135
Zinc Regrind	200		200				7		10.5	140
Zinc Cleaner 1	55	3				28	1	5	11.0	108
Zinc Cleaner 2	√	2				28	1	4	11.0	105
Zinc Cleaner 3	√	-				14	1	3	11.0	104

Primary Grind	
Mill	Mild Steel Mill
Media	20kg Mild Steel Rods
Water Addn:	1000ml
Bulk Regrind	
Mill	Stainless Steel
Media	20kg Stainless
Zinc and Lead Regrind	
Mill	Stirred Mill
Media	1.2kg Ceramic

Flotation Information	Rougher	Clnr 1	Clnr 2
Flotation Device:	D12	TF1	TF1
Cell Volume:	4.4L	2.5L	1.5L
Impellar Speed:	800rpm	1200rpm	900rpm
Flotation Gas:	Air		
Water Type:	Kamloops Tap		

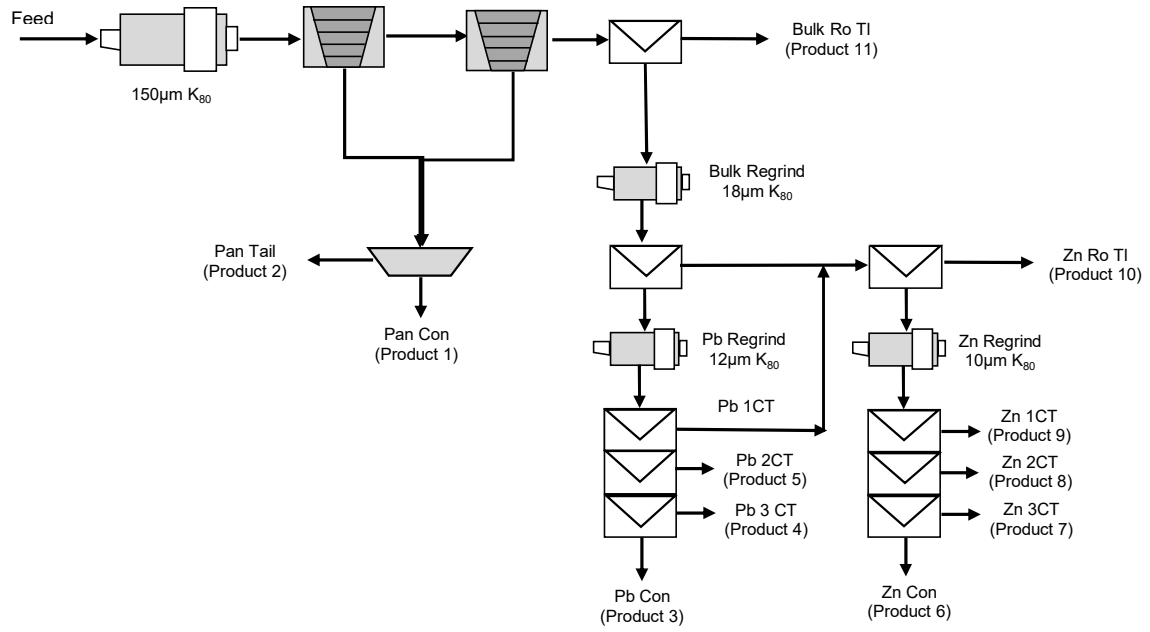
BL801-21 JL-1
Metallurgical Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Pan Con	1.3	24.9	11.5	1.49	29.3	59.3	185	26.8	31.5	6.4	0.5	3.7	10.9	4.0	3.0	6.8
Pan Tail	9.6	190.8	4.30	4.90	21.8	18.6	117	21.9	15.0	18.2	12.7	20.9	26.2	19.3	19.0	24.9
Pb Cleaner Con	2.3	45.2	46.0	9.60	8.6	29.7	617	21.6	4.75	46.2	5.9	2.0	9.9	24.1	4.4	1.9
Pb 3rd Clnr Tl	0.3	6.8	11.8	13.3	18.0	18.7	608	28.0	11.9	1.8	1.2	0.6	0.9	3.6	0.9	0.7
Pb 2nd Clnr Tl	1.0	20.1	0.88	15.1	22.8	16.6	565	28.3	13.0	0.4	4.1	2.3	2.5	9.8	2.6	2.3
Zn Cleaner Con	3.2	63.5	1.16	56.0	6.4	1.39	51.0	33.6	0.61	1.6	48.4	2.0	0.7	2.8	9.7	0.3
Zn 3rd Clnr Tl	0.3	6.8	3.25	36.0	13.1	8.43	151	29.5	4.98	0.5	3.3	0.4	0.4	0.9	0.9	0.3
Zn 2nd Clnr Tl	0.4	8.9	3.39	25.0	17.6	9.86	190	27.7	8.02	0.7	3.0	0.8	0.7	1.5	1.1	0.6
Zn 1st Clnr Tail	2.3	46.1	2.10	11.1	24.2	14.1	206	26.9	11.9	2.2	7.0	5.6	4.8	8.2	5.6	4.8
Zn Ro Tail	17.0	337.2	0.75	1.03	29.3	13.8	52	28.3	15.4	5.6	4.7	49.7	34.4	15.1	43.4	45.2
Ro Tail	62.1	1229.7	0.60	0.54	1.9	0.94	10	1.67	1.14	16.4	9.0	11.9	8.6	10.8	9.3	12.2
Recalc. Feed	89.1	1980.0	2.27	3.71	10.0	6.82	58	11.1	5.81	100	100	100	100	100	100	100
Measured Feed			2.49	4.01	10.1	7.66	60	11.0	5.25							

BL801-21 JL-1
Cumulative Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Products 1	1.3	24.9	11.5	1.49	29.3	59.3	185	26.8	31.5	6.4	0.5	3.7	10.9	4.0	3.0	6.8
Products 1 to 2	10.9	215.7	5.13	4.51	22.7	23.3	125	22.5	16.9	24.6	13.2	24.6	37.2	23.3	22.0	31.7
Products 3	2.3	45.2	46.0	9.60	8.6	29.7	617	21.6	4.75	46.2	5.9	2.0	9.9	24.1	4.4	1.9
Products 3 to 4	2.6	52.0	41.5	10.1	9.8	28.3	616	22.4	5.68	48.0	7.1	2.6	10.9	27.7	5.3	2.6
Products 3 to 5	3.6	72.1	30.2	11.5	13.4	25.0	602	24.1	7.72	48.4	11.3	4.9	13.4	37.5	7.9	4.8
Products 6	3.2	63.5	1.16	56.0	6.4	1.39	51	33.6	0.61	1.6	48.4	2.0	0.7	2.8	9.7	0.3
Products 6 to 8	3.6	70.3	1.36	54.1	7.0	2.07	61	33.2	1.03	2.1	51.7	2.5	1.1	3.7	10.6	0.6
Products 6 to 9	4.0	79.2	1.59	50.8	8.2	2.95	75	32.6	1.82	2.8	54.8	3.3	1.7	5.1	11.7	1.2
Products 6 to 9	6.3	125.3	1.78	36.2	14.1	7.04	123	30.5	5.52	5.0	61.7	8.9	6.5	13.3	17.4	6.0
Products 3 to 10	27.0	534.6	4.96	10.7	23.6	13.7	143	28.2	12.08	59.0	77.7	63.5	54.3	65.9	68.6	56.1
Products 11	62.1	1229.7	0.60	0.54	1.9	0.94	10	1.67	1.14	16.4	9.0	11.9	8.6	10.8	9.3	12.2
Recalc. Feed	89.1	1980.0	2.27	3.71	10.0	6.82	58	11.1	5.81	100	100	100	100	100	100	100

Flowsheet Schematic



Test No: BL801-22
Date: 28-Mar-22
Test Type: Gravity/Cleaner Test
Test Objective: Repeat Test 21 - with pan tail added to bulk rougher regrind
Sample: 2 kg of JL-1
Nominal Sizing: 150µm K_{80}

Bulk Rgd	20.2 µm K_{80}
Pb Rgd	13.3 µm K_{80}
Zn Rgd	10.1 µm K_{80}

Stage	Reagents - g/tonne						Time Minutes		Electrochemistry	
	Soda Ash	PAX	$CuSO_4$	$ZnSO_4$	NaCN	MIBC	Condition	Float	pH	Eh-mV
Primary Grind							9.5			
Knelson1										
Knelson 2										
Panning									7.8	83
Rougher		40	800			14	4	4	6.8	162
Rougher Scav		35	-			7	1	2	7.3	150
Regrind	750			900	300		30		9.0	7.1
Condition	-	A241		300	100		5		8.6	35
Pb Rougher 1	√	-				28	1	4	8.6	11
Pb Rougher 2	√	5				7	1	2	9.0	-2
Pb Rougher 3	√	5				-	1	2	9.0	-2
Pb Regrind	100			900	300		8		8.3	220
Pb Cleaner 1	2000	5		150	50	14	1	4	10.5	121
Pb Cleaner 2	√	-				-	1	3	10.8	106
Pb Cleaner 3	√	-				-	1	2	10.8	105
	Lime	SIPX			H57					
Condition	780		1700				5		10.0	-6
Zinc Rougher 1	√	10			-	14	1	2	10.0	-4
Zinc Rougher 2	√	5			10	14	1	2	10.0	-5
Zinc Regrind	200		200				8		9.8	157
Zinc Cleaner 1	150	8			10	14	1	5	11.0	96
Zinc Cleaner 2	√	4			-	-	1	4	11.0	80
Zinc Cleaner 3	√	2			-	-	1	3	11.0	74

Primary Grind	
Mill	Mild Steel Mill
Media	20kg Mild Steel Rods
Water Addn:	1000ml
Bulk Regrind	
Mill	Stainless Steel
Media	20kg Stainless
Zinc and Lead Regrind	
Mill	Stirred Mill
Media	1.2kg Ceramic

Flotation Information	Rougher	Clnr 1	Clnr 2
Flotation Device:	D12	TF1	TF1
Cell Volume:	4.4L	2.5L	1.5L
Impellar Speed:	800rpm	1200rpm	900rpm
Flotation Gas:	Air		
Water Type:	Kamloops Tap		

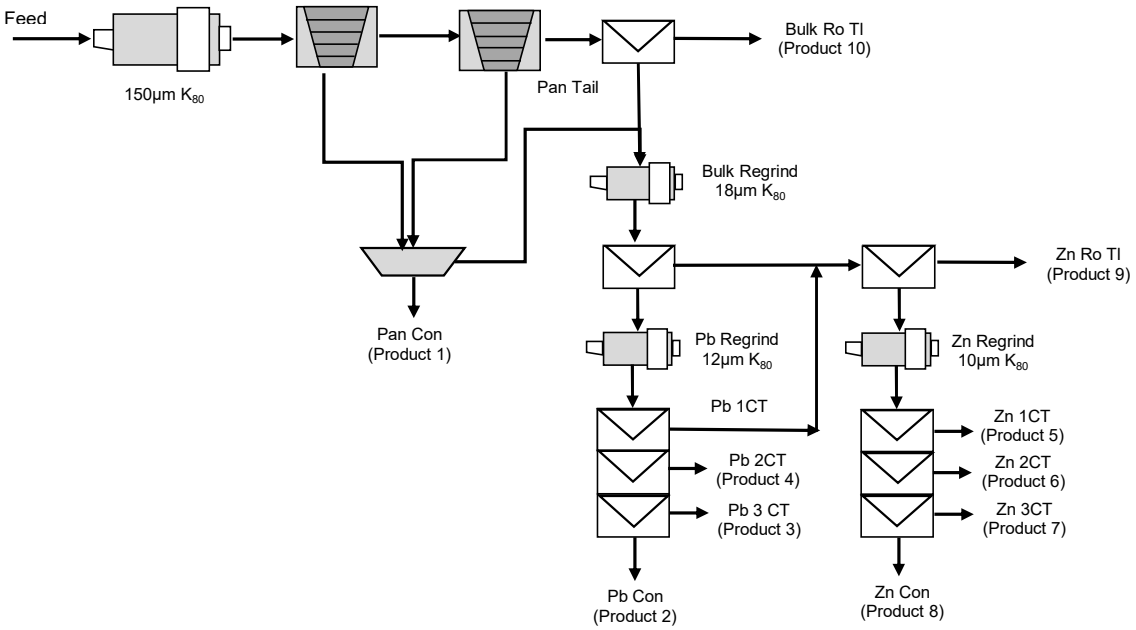
BL801-22 JL-1
Metallurgical Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Pan Con	2.0	40.3	7.90	3.10	29.9	40.3	150	26.9	28.5	7.2	1.7	5.9	12.1	5.3	5.1	9.8
Pb Cleaner Con	4.4	87.4	38.4	12.6	12.6	30.1	653	22.7	6.90	75.9	14.6	5.4	19.7	49.6	9.3	5.1
Pb 3rd Clnr Tl	0.7	14.8	5.09	15.8	24.0	18.8	639	27.7	14.5	1.7	3.1	1.7	2.1	8.2	1.9	1.8
Pb 2nd Clnr Tl	1.2	23.6	2.61	16.0	23.5	15.9	508	27.3	14.2	1.4	5.0	2.7	2.8	10.4	3.0	2.9
Zn Cleaner Con	1.9	38.6	1.28	53.6	8.6	3.40	92	32.3	1.90	1.1	27.4	1.6	1.0	3.1	5.9	0.6
Zn 3rd Clnr Tl	0.2	4.0	2.02	32.4	14.8	12.6	206	27.1	7.07	0.2	1.7	0.3	0.4	0.7	0.5	0.2
Zn 2nd Clnr Tl	0.5	9.5	1.72	31.8	15.9	10.0	197	28.4	7.64	0.4	4.0	0.7	0.7	1.6	1.3	0.6
Zn 1st Clnr Tail	5.3	104.0	1.18	27.4	18.7	9.36	153	28.5	9.15	2.8	37.8	9.5	7.3	13.8	14.0	8.1
Zn Ro Tail	27.7	548.4	0.47	0.52	25.3	12.7	10	22.0	14.4	5.8	3.8	67.5	52.2	4.8	56.8	67.4
Ro Tail	56.0	1109.1	0.14	0.06	0.9	0.21	3	0.40	0.36	3.5	0.9	4.7	1.7	2.5	2.1	3.4
Recalc. Feed	98.0	1979.7	2.23	3.81	10.4	6.75	58	10.7	5.93	100	100	100	100	100	100	100
Measured Feed			2.49	4.01	10.1	7.66	60	11.0	5.25							

BL801-22 JL-1
Cumulative Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Products 1	2.0	40.3	7.9	3.10	29.9	40.3	150	26.9	28.5	7.2	1.7	5.9	12.1	5.3	5.1	9.8
Products 2	4.4	87.4	38.4	12.6	12.6	30.1	653	22.7	6.90	75.9	14.6	5.4	19.7	49.6	9.3	5.1
Products 2 to 3	5.2	102.2	33.6	13.1	14.3	28.4	651	23.4	8.01	77.6	17.7	7.1	21.7	57.8	11.3	7.0
Products 2 to 4	6.4	125.8	27.8	13.6	16.0	26.1	624	24.2	9.17	79.0	22.7	9.8	24.6	68.2	14.3	9.8
Products 5	1.9	38.6	1.28	53.6	8.6	3.40	92	32.3	1.90	1.1	27.4	1.6	1.0	3.1	5.9	0.6
Products 5 to 7	2.2	42.6	1.35	51.6	9.2	4.27	103	31.8	2.39	1.3	29.2	1.9	1.4	3.8	6.4	0.9
Products 5 to 8	2.6	52.1	1.42	48.0	10.4	5.32	120	31.2	3.34	1.7	33.2	2.6	2.1	5.4	7.7	1.5
Products 5 to 8	7.9	156.1	1.26	34.3	15.9	8.01	142	29.4	7.21	4.4	71.0	12.1	9.4	19.3	21.6	9.6
Products 2 to 9	41.9	830.3	4.75	8.85	22.1	13.9	128	23.7	12.3	89.3	97.5	89.4	86.1	92.2	92.8	86.8
Products 10	56.0	1109.1	0.14	0.06	0.9	0.21	3	0.40	0.36	3.5	0.9	4.7	1.7	2.5	2.1	3.4
Recalc. Feed	98.0	1979.7	2.23	3.81	10.4	6.75	58	10.7	5.93	100	100	100	100	100	100	100

Flowsheet Schematic



Test No: BL801-23
Date: 28-Mar-22
Test Type: Cleaner Test
Test Objective: Repeat Test 22 with no gravity
Sample: 2 kg of JL-1
Nominal Sizing: 150µm K_{80}

Bulk Rgd 19.7 µm K_{80}
Pb Rgd 13.5 µm K_{80}
Zn Rgd 10.6 µm K_{80}

Stage	Reagents - g/tonne						Time Minutes		Electrochemistry	
	Soda Ash	PAX	$CuSO_4$	$ZnSO_4$	NaCN	MIBC	Condition	Float	pH	Eh-mV
Primary Grind							9.5		7.7	150
Rougher		40	800			14	4	4	6.9	158
Rougher Scav		35	-			7	1	2	7.8	101
Regrind	750			900	300		30		9.0	257
Condition		A241		300	100					
Pb Rougher 1	-	-				28	1	4	9.0	259
Pb Rougher 2	-	5				7	1	2	9.0	221
Pb Rougher 3	-	5				-	1	2	9.0	210
Pb Regrind	100			900	300		8		8.3	304
Pb Cleaner 1	1900	5		300	100	35	1	4	10.5	192
Pb Cleaner 2	√	-				14	1	3	10.8	187
Pb Cleaner 3	√	-				7	1	2	10.8	182
	Lime	SIPX			H57					
Condition	700		1700				5		10.0	161
Zinc Rougher 1	√	10				14	1	2	10.0	124
Zinc Rougher 2	√	5				-	1	2	10.0	121
Zinc Regrind	200		200				9		9.4	212
Zinc Cleaner 1	550	8			10	14	1	7	11.0	38
Zinc Cleaner 2	√	4				-	1	5	11.0	15
Zinc Cleaner 3	√					-	1	4	11.0	27

Primary Grind	
Mill	Mild Steel Mill
Media	20kg Mild Steel Rods
Water Addn:	1000ml
Bulk Regrind	
Mill	Stainless Steel
Media	20kg Stainless
Zinc and Lead Regrind	
Mill	Stirred Mill
Media	1.2kg Ceramic

Flotation Information	Rougher	Clnr 1	Clnr 2
Flotation Device:	D12	TF1	TF1
Cell Volume:	4.4L	2.5L	1.5L
Impellar Speed:	800rpm	1200rpm	900rpm
Flotation Gas:	Air		
Water Type:	Kamloops Tap		

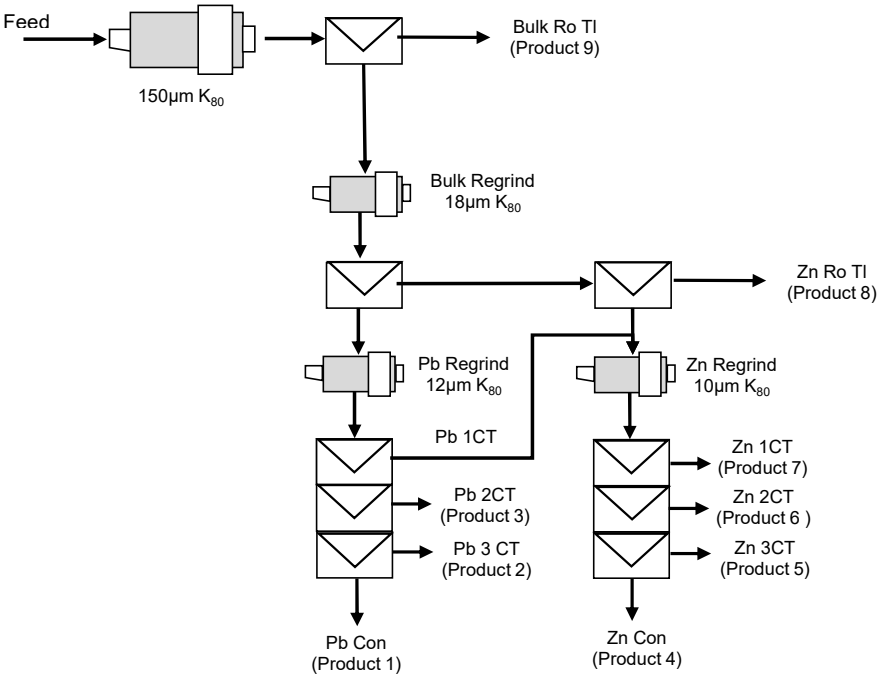
BL801-23 JL-1
Metallurgical Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Pb Cleaner Con	3.7	75.1	49.0	10.8	9.8	32.9	662	21.2	5.32	77.4	10.4	3.4	18.9	43.0	7.2	3.3
Pb 3rd Clnr Tl	0.8	15.9	10.3	16.3	22.6	19.5	682	28.1	14.3	3.4	3.3	1.7	2.4	9.4	2.0	1.9
Pb 2nd Clnr Tl	1.2	24.5	5.17	17.4	22.7	15.7	559	27.9	13.5	2.7	5.4	2.6	2.9	11.9	3.1	2.8
Zn Cleaner Con	3.0	60.5	1.24	54.0	8.6	2.82	79	32.1	1.83	1.6	41.7	2.4	1.3	4.1	8.8	0.9
Zn 3rd Clnr Tl	0.6	12.4	2.39	32.4	15.1	7.54	199	28.1	7.06	0.6	5.1	0.9	0.7	2.1	1.6	0.7
Zn 2nd Clnr Tl	1.8	36.7	2.02	28.1	17.1	8.62	200	27.9	8.29	1.6	13.2	2.9	2.4	6.4	4.7	2.5
Zn 1st Clnr Tail	6.7	135.1	1.19	10.4	26.5	13.7	143	26.7	13.4	3.4	18.0	16.6	14.2	16.7	16.4	15.2
Zn Ro Tail	24.1	482.2	0.49	0.32	28.4	14.6	9	24.2	16.5	5.0	2.0	63.5	53.8	3.7	53.0	66.5
Ro Tail	57.9	1160.5	0.18	0.06	1.1	0.37	3	0.60	0.62	4.4	0.9	6.0	3.3	2.7	3.1	6.0
Recalc. Feed	100.0	2002.9	2.37	3.91	10.8	6.51	58	11.0	5.96	100	100	100	100	100	100	100
Measured Feed			2.49	4.01	10.1	7.66	60	11.0	5.25							

BL801-23 JL-1
Cumulative Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Products 1	3.7	75.1	49.0	10.80	9.8	32.9	662	21.2	5.32	77.4	10.4	3.4	18.9	43.0	7.2	3.3
Products 1 to 2	4.5	91.0	42.2	11.8	12.0	30.6	665	22.4	6.88	80.8	13.7	5.1	21.3	52.4	9.3	5.2
Products 1 to 3	5.8	115.5	34.4	13.0	14.3	27.4	643	23.6	8.29	83.5	19.1	7.7	24.3	64.3	12.4	8.0
Products 4	3.0	60.5	1.24	54.0	8.6	2.82	79	32.1	1.83	1.6	41.7	2.4	1.3	4.1	8.8	0.9
Products 4 to 5	3.6	72.9	1.44	50.3	9.7	3.62	99	31.4	2.72	2.2	46.9	3.3	2.0	6.3	10.4	1.7
Products 4 to 6	5.5	109.6	1.63	42.9	12.2	5.30	133	30.2	4.58	3.8	60.1	6.2	4.4	12.6	15.1	4.2
Products 4 to 7	12.2	244.7	1.39	24.9	20.1	9.95	139	28.3	9.47	7.1	78.0	22.8	18.7	29.3	31.5	19.4
Products 1 to 8	42.1	842.4	5.40	9.21	24.1	15.0	133	25.3	13.3	95.6	99.1	94.0	96.7	97.3	96.9	94.0
Products 9	57.9	1160.5	0.18	0.06	1.1	0.37	3	0.60	0.62	4.4	0.9	6.0	3.3	2.7	3.1	6.0
Recalc. Feed	100.0	2002.9	2.37	3.91	10.8	6.51	58	11.0	5.96	100	100	100	100	100	100	100

Flowsheet Schematic



Test No: BL801-24
Date: 4-Apr-22
Test Type: LCT
Test Objective: Perform LCT using Test 23 conditions
Sample: 5x2 kg of JL-1
Nominal Sizing: 150µm K_{80}

Bulk Rgd 20.4 µm K_{80}
Pb Rgd 12.8 µm K_{80}
Zn Rgd 11.6 µm K_{80}

Stage	Reagents - g/tonne						Time Minutes		Electrochemistry	
	Soda Ash	PAX	$CuSO_4$	$ZnSO_4$	NaCN	MIBC	Condition	Float	pH	Eh-mV
Primary Grind							9.5		7.8	47
Rougher		40	800			14	4	4	6.3	80
Rougher Scav		35	-			-	1	2	7.6	-50
Regrind	750			900	300		30		8.5	47
Condition	335	A241		300	100				9.0	26
Pb Rougher 1	-	-				14	1	4	9.0	12
Pb Rougher 2	-	5				-	1	2	9.0	8
Pb Rougher 3	-	5				-	1	2	9.0	5
Pb Regrind	100			900	300		8		9.5	236
Pb Cleaner 1	1900	5		300	100	21	1	4	10.5	195
Pb Cleaner 2	√	-				14	1	3	10.8	164
Pb Cleaner 3	√	-				7	1	2	10.8	183
	Lime	SIPX								
Condition	700		1700				5		10.0	-4
Zinc Rougher 1	√	10				14	1	2	10.0	-6
Zinc Rougher 2	√	5				-	1	2	10.0	-5
Zinc Regrind	700		1500				9		10.0	60
Zinc Cleaner 1	200	20				14	1	7	11.0	47
Zinc Cleaner 2	√	10				-	1	5	11.0	57
Zinc Cleaner 3	√	5				-	1	4	11.0	46

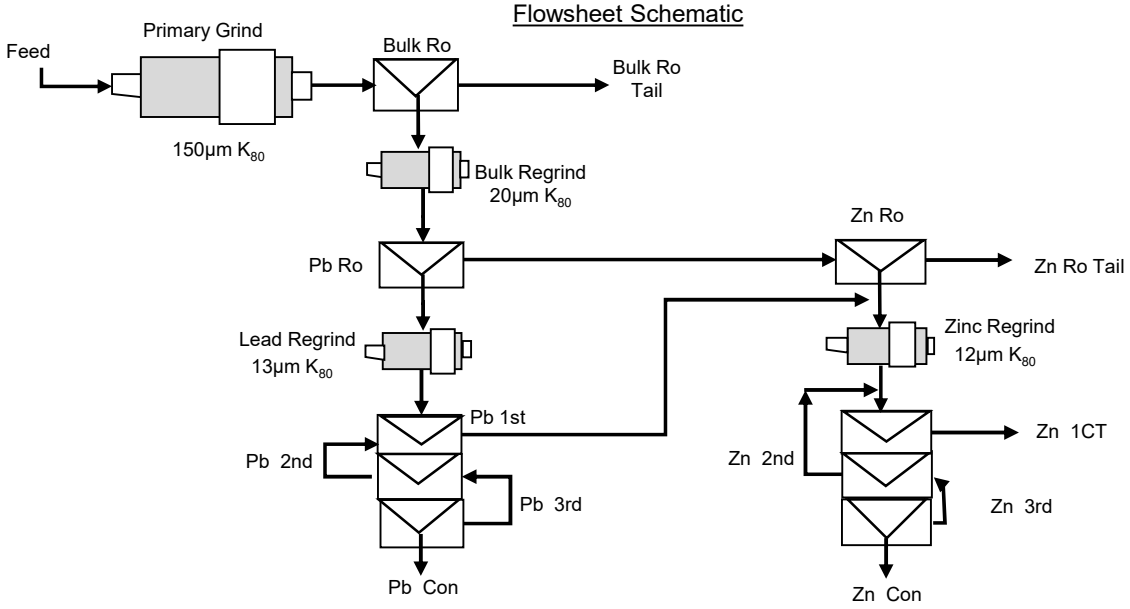
Primary Grind	
Mill	Mild Steel Mill
Media	20kg Mild Steel Rods
Water Addn:	1000ml
Bulk Regrind	
Mill	Stainless Steel
Media	20kg Stainless
Zinc and Lead Regrind	
Mill	Stirred Mill
Media	1.2kg Ceramic

Flotation Information	Rougher	Clnr 1	Clnr 2
Flotation Device:	D12	TF1	TF1
Cell Volume:	4.4L	2.5L	1.5L
Impellar Speed:	800rpm	1200rpm	900rpm
Flotation Gas:	Air		
Water Type:	Kamloops Tap		

BL801-24 JL-1
Metallurgical Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Pb Con A	0.7	73.0	45.6	9.00	9.1	36.4	734	20.9	5.14	14.7	1.9	0.7	4.1	9.1	1.4	0.7
Pb Con B	0.8	84.4	43.5	10.0	10.4	36.4	736	20.9	5.62	16.2	2.4	0.9	4.8	10.6	1.7	0.9
Pb Con C	0.9	90.1	41.9	10.2	10.8	39.5	678	21.0	5.99	16.7	2.6	1.0	5.5	10.4	1.8	1.0
Pb Con D	0.9	84.9	42.2	10.3	10.9	32.3	686	21.2	5.82	15.8	2.5	0.9	4.3	9.9	1.7	0.9
Pb Con E	0.8	76.7	44.1	9.50	10.1	36.9	696	20.5	5.26	14.9	2.1	0.8	4.4	9.1	1.5	0.7
Pb 3rd Clnr Tl	0.3	25.8	10.8	14.7	21.8	18.1	616	27.7	13.8	1.2	1.1	0.6	0.7	2.7	0.7	0.6
Pb 2nd Clnr Tl	0.5	49.0	5.80	14.3	23.0	15.7	519	26.7	14.2	1.3	2.0	1.1	1.2	4.3	1.2	1.3
Pb 1st Clnr Tl	1.9	191.1	1.96	12.6	22.6	12.7	266	25.6	12.7	1.7	6.8	4.3	3.8	8.6	4.6	4.4
Zn Con A	0.5	45.7	0.88	50.8	7.2	3.83	38	31.8	1.48	0.2	6.6	0.3	0.3	0.3	1.4	0.1
Zn Con B	0.9	90.6	1.39	44.2	10.0	4.44	97	31.5	3.55	0.6	11.4	0.9	0.6	1.5	2.7	0.6
Zn Con C	1.0	96.3	1.80	42.2	10.6	5.98	193	30.9	4.24	0.8	11.5	1.0	0.9	3.2	2.8	0.7
Zn Con D	1.0	97.2	1.62	45.2	9.8	7.09	145	30.6	3.50	0.7	12.5	0.9	1.1	2.4	2.8	0.6
Zn Con E	0.9	92.8	1.88	45.0	9.6	4.61	139	30.9	3.50	0.8	11.9	0.9	0.7	2.2	2.7	0.6
Zn 3rd Clnr Tail	0.1	11.8	2.67	10.7	22.1	13.0	303	23.8	13.2	0.1	0.4	0.3	0.2	0.6	0.3	0.3
Zn 2nd Clnr Tail	0.5	45.7	1.78	7.10	22.6	13.2	254	22.5	13.7	0.4	0.9	1.0	0.9	2.0	1.0	1.1
Zn 1st Clnr Tail A	0.3	24.9	1.03	19.3	18.0	8.9	36	24.7	9.48	0.1	1.4	0.4	0.3	0.2	0.6	0.4
Zn 1st Clnr Tail B	0.9	86.2	0.99	9.70	23.2	11.3	131	24.4	12.1	0.4	2.4	2.0	1.5	1.9	2.0	1.9
Zn 1st Clnr Tail C	1.7	167.3	1.06	8.70	23.2	11.7	124	24.7	12.4	0.8	4.1	3.8	3.0	3.5	3.9	3.8
Zn 1st Clnr Tail D	1.8	178.6	1.58	7.00	23.3	13.5	139	23.0	13.6	1.2	3.6	4.1	3.7	4.2	3.9	4.4
Zn 1st Clnr Tail E	2.5	246.8	1.33	9.60	22.4	12.3	164	24.6	12.8	1.4	6.7	5.5	4.7	6.9	5.7	5.8
Zn Ro Tail A	5.3	527.4	0.43	0.64	25.2	12.8	8	21.8	14.6	1.0	1.0	13.1	10.5	0.7	10.8	14.0
Zn Ro Tail B	5.1	507.9	0.47	0.40	25.7	13.2	9	23.1	15.0	1.1	0.6	12.9	10.4	0.8	11.0	13.9
Zn Ro Tail C	5.7	562.1	0.43	0.39	23.2	11.6	8	20.3	13.1	1.1	0.6	12.9	10.1	0.7	10.7	13.4
Zn Ro Tail D	5.3	527.7	0.53	0.51	24.2	12.8	10	22.2	13.4	1.2	0.8	12.6	10.5	0.9	11.0	12.9
Zn Ro Tail E	5.3	530.1	0.54	0.70	25.0	12.6	10	22.0	13.9	1.3	1.1	13.1	10.4	0.9	11.0	13.4
Bulk Ro Tail A	11.0	1094.8	0.22	0.08	0.8	0.18	3	0.42	0.18	1.1	0.2	0.9	0.3	0.6	0.4	0.4
Bulk Ro Tail B	11.2	1111.4	0.21	0.13	0.9	0.16	3	0.23	0.13	1.0	0.4	1.0	0.3	0.5	0.2	0.3
Bulk Ro Tail C	10.6	1052.8	0.22	0.10	0.7	0.15	3	0.22	0.17	1.0	0.3	0.7	0.2	0.6	0.2	0.3
Bulk Ro Tail D	10.9	1081.5	0.13	0.05	0.7	0.13	2	0.16	0.17	0.6	0.2	0.7	0.2	0.4	0.2	0.3
Bulk Ro Tail E	10.9	1088.7	0.17	0.08	0.7	0.16	3	0.36	0.17	0.8	0.2	0.8	0.3	0.5	0.4	0.3
Recalc. Feed	100.0	9943	2.28	3.54	10.2	6.48	59	10.7	5.53	100	100	100	100	100	100	100
Measured Feed			2.49	4.01	10.1	7.66	60	11.0	5.94							

Flowsheet Schematic



BL801-24 JL-1
Balances for Cycles

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Cycle D																
Feed	100.0	1969.9	2.26	3.47	9.9	6.47	53	10.5	5.4	100	100	100	100	100	100	100
Pb Con	4.3	84.9	42.2	10.3	10.9	32.3	686	21.2	5.8	80.6	12.8	4.7	21.5	55.7	8.7	4.7
Zn Con	4.9	97.2	1.62	45.2	9.8	7.09	145	30.6	3.5	3.5	64.2	4.9	5.4	13.5	14.3	3.2
Zn 1st Clnr Tail	9.1	178.6	1.58	7.00	23.3	13.5	139	23.0	13.6	6.4	18.3	21.3	18.9	23.7	19.8	23.1
Zn Ro Tail	26.8	527.7	0.53	0.51	24.2	12.8	10	22.2	13.4	6.3	3.9	65.4	53.1	5.0	56.4	67.3
Bulk Ro Tail	54.9	1081.5	0.13	0.05	0.7	0.13	2	0.16	0.17	3.2	0.8	3.6	1.1	2.1	0.8	1.7
Cycle E																
Feed	100.0	2035.1	2.14	3.80	10.4	6.46	56	11.1	5.6	100	100	100	100	100	100	100
Pb Con	3.8	76.7	44.1	9.50	10.1	36.9	696	20.5	5.3	77.6	9.4	3.7	21.5	46.5	7.0	3.5
Zn Con	4.6	92.8	1.88	45.0	9.6	4.61	139	30.9	3.5	4.0	54.0	4.2	3.3	11.2	12.7	2.8
Zn 1st Clnr Tail	12.1	246.8	1.33	9.60	22.4	12.3	164	24.6	12.8	7.5	30.6	26.1	23.1	35.3	26.9	27.6
Zn Ro Tail	26.0	530.1	0.54	0.70	25.0	12.6	10	22.0	13.9	6.6	4.8	62.5	50.8	4.5	51.7	64.4
Bulk Ro Tail	53.5	1088.7	0.17	0.08	0.7	0.16	3	0.36	0.17	4.2	1.1	3.6	1.3	2.5	1.7	1.6
Cycles D + E																
Feed	100.0	4005.0	2.20	3.64	10.2	6.46	55	10.8	5.5	100	100	100	100	100	100	100
Pb Con	4.0	161.6	43.1	9.92	10.5	34.4	691	20.9	5.6	79.2	11.0	4.2	21.5	50.9	7.8	4.1
Zn Con	4.7	190.0	1.75	45.1	9.7	5.88	142	30.7	3.5	3.8	58.8	4.5	4.3	12.3	13.5	3.0
Zn 1st Clnr Tail	10.6	425.4	1.43	8.51	22.8	12.8	154	23.9	13.2	6.9	24.8	23.8	21.0	29.8	23.5	25.4
Zn Ro Tail	26.4	1057.8	0.54	0.61	24.6	12.7	10	22.1	13.7	6.4	4.4	63.9	51.9	4.8	54.0	65.8
Bulk Ro Tail	54.2	2170.2	0.15	0.07	0.7	0.15	2	0.26	0.17	3.7	1.0	3.6	1.2	2.3	1.3	1.7

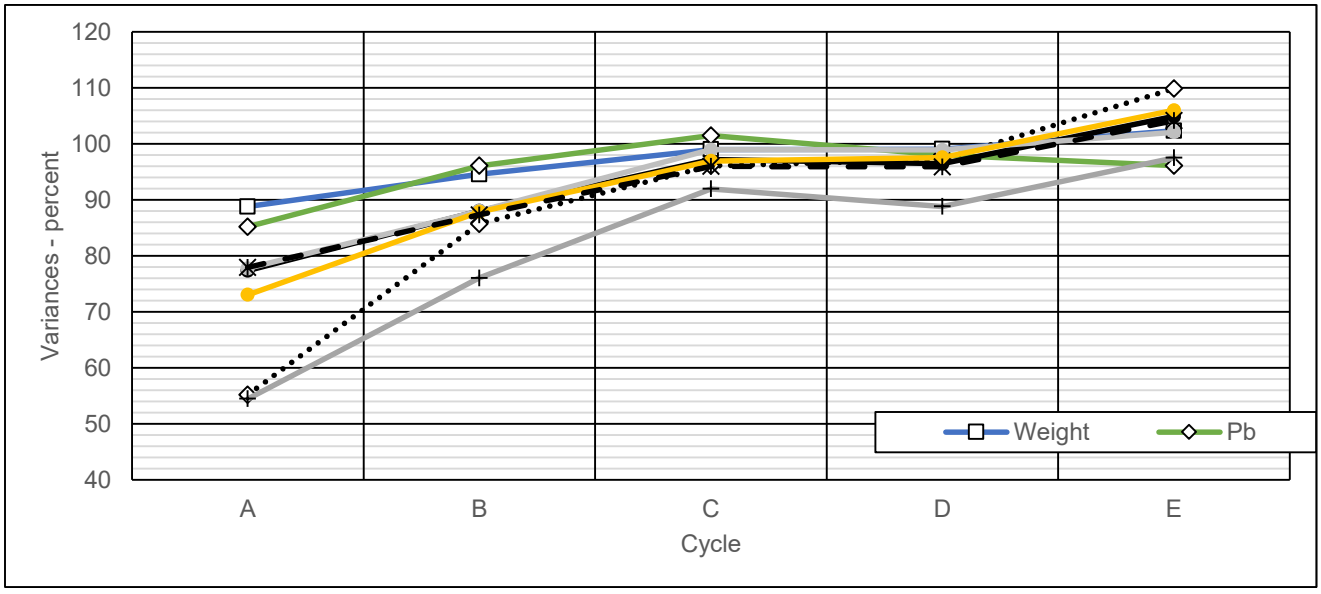
BL801-24 JL-1
Stream Balance - Cycle E

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Pb Con	3.8	76.7	44.1	9.50	10.1	36.9	696	20.5	5.3	77.6	9.4	3.7	21.5	46.5	7.0	3.5
Pb 3rd Clnr Tl	1.3	25.8	10.8	14.7	21.8	18.1	616	27.7	13.8	6.4	4.9	2.7	3.6	13.8	3.2	3.1
Pb 2nd Clnr Con	5.0	102.5	35.7	10.8	13.0	32.1	676	22.3	7.4	84.0	14.3	6.3	25.1	60.4	10.1	6.6
Pb 2nd Clnr Tail	2.4	49.0	5.80	14.3	23.0	15.7	519	26.7	14.2	6.5	9.1	5.3	5.9	22.2	5.8	6.1
Pb 2nd Clnr Feed	7.4	151.5	26.0	11.9	16.3	26.8	625	23.7	9.6	90.6	23.4	11.6	30.9	82.5	15.9	12.7
Pb1st Clnr Con	6.2	125.7	29.2	11.4	15.1	28.6	627	22.9	8.7	84.2	18.5	9.0	27.4	68.7	12.8	9.6
Pb 1st Clnr Tail	9.4	191.1	1.96	12.6	22.6	12.7	266	25.6	12.7	8.6	31.1	20.4	18.4	44.3	21.7	21.2
Pb 1st Clnr Feed	15.6	316.8	12.8	12.1	19.6	19.0	409	24.5	11.1	92.8	49.6	29.3	45.8	112.9	34.4	30.8
Pb Ro Con	13.2	267.8	14.0	11.7	19.0	19.6	389	24.1	10.6	86.2	40.6	24.0	39.9	90.8	28.7	24.7
Pb Ro Tail	33.3	678.6	0.61	6.64	22.6	11.4	11	23.1	12.4	9.5	58.3	72.4	58.8	6.7	69.6	73.7
Pb Ro Feed	46.5	946.4	4.41	8.08	21.6	13.7	118	23.4	11.9	95.8	98.9	96.4	98.7	97.5	98.3	98.4
Zn Con	4.6	92.8	1.88	45.0	9.6	4.61	139	30.9	3.5	4.0	54.0	4.2	3.3	11.2	12.7	2.8
Zn 3rd Clnr Tail	0.6	11.8	2.67	10.7	22.1	13.0	303	23.8	13.2	0.7	1.6	1.2	1.2	3.1	1.2	1.4
Zn 2nd Clnr Con	5.1	104.6	1.97	41.1	11.0	5.56	158	30.1	4.6	4.7	55.6	5.4	4.4	14.4	14.0	4.2
Zn 2nd Clnr Tail	2.2	45.7	1.78	7.10	22.6	13.2	254	22.5	13.7	1.9	4.2	4.9	4.6	10.1	4.6	5.5
Zn 1st Clnr Con	6.8	138.5	1.85	32.5	13.9	7.44	177	28.1	6.9	5.9	58.2	9.1	7.8	21.4	17.3	8.3
Zn 1st Clnr Tail	12.1	246.8	1.33	9.6	22.4	12.3	164	24.6	12.8	7.5	30.6	26.1	23.1	35.3	26.9	27.6
Zn 1st Clnr Feed	18.9	385.3	1.52	17.8	19.3	10.6	169	25.9	10.7	13.4	88.8	35.1	31.0	56.6	44.2	35.9
Zn Ro Con	7.3	148.5	0.86	27.9	14.1	7.05	17	27.3	7.2	2.9	53.5	9.9	8.0	2.2	17.9	9.3
Zn Ro Tail	26.0	530.1	0.54	0.70	25.0	12.6	10	22.0	13.9	6.6	4.8	62.5	50.8	4.5	51.7	64.4
Zn Ro Feed	33.3	678.6	0.61	6.64	22.6	11.4	11	23.1	12.4	9.5	58.3	72.4	58.8	6.7	69.6	73.7
Bulk Ro Tail	53.5	1088.7	0.17	0.08	0.7	0.16	3	0.36	0.2	4.2	1.1	3.6	1.3	2.5	1.7	1.6
Bulk Ro Con	46.5	946.4	4.41	8.08	21.6	13.7	118	23.4	11.9	95.8	98.9	96.4	98.7	97.5	98.3	98.4
Flotation Feed	100.0	2035.1	2.14	3.80	10.43	6.46	56	11.1	5.62	100	100	100	100	100	100	100

BL801-24 JL-1
Test Stability Measures

Cycle	Weight		Recalc. Feed Assay - % or g/t							Metal Variances - percent						
	Var %	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
A	89	1765.8	2.19	2.20	8.86	5.7	36.3	8.8	4.9	85	55	77	78	54	73	78
B	95	1880.5	2.32	3.21	9.47	6.0	47.6	9.9	5.1	96	86	88	88	76	88	87
C	99	1968.6	2.34	3.44	9.99	6.5	55.0	10.5	5.4	101	96	97	99	92	97	96
D	99	1969.9	2.26	3.47	9.91	6.5	53.1	10.5	5.4	98	97	96	99	89	98	96
E	102	2035.1	2.14	3.80	10.43	6.5	56.4	11.1	5.6	96	110	105	102	97	106	104

BL801-24 JL-1
Variances



Test No:	BL801-25		
Date:	11-Apr-22		
Test Type:	LCT		
Test Objective:	Increase depressants in lead cleaning, finer zinc regrind	Bulk Rgd	19.8 µm K_{80}
Sample:	5x2 kg of JL-1	Pb Rgd	12.7 µm K_{80}
Nominal Sizing:	150µm K_{80}	Zn Rgd	10.9 µm K_{80}

Stage	Reagents - g/tonne						Time Minutes		Electrochemistry	
	Soda Ash	PAX	$CuSO_4$	$ZnSO_4$	NaCN	MIBC	Condition	Float	pH	Eh-mV
Primary Grind							9.5		7.8	-136
Rougher		40	800				4	4	6.9	-61
Rougher Scav		35	-				1	2	7.3	-60
Regrind	750			900	300		30		8.7	96
Condition	250	A241		300	100		5		9.0	81
Pb Rougher 1	-	-				21	1	4	9.0	79
Pb Rougher 2	-	5				7	1	2	9.0	91
Pb Rougher 3	-	5				-	1	2	9.0	90
Pb Regrind	100			900	300		8		9.7	235
Pb Cleaner 1	1700	5		450	150		1	5	10.5	179
Pb Cleaner 2	√	-		150	50		1	4	10.8	169
Pb Cleaner 3	√	-		90	30		1	3	10.8	166
	Lime	SIPX								
Condition	√		1700		H57		5		10.5	33
Zinc Rougher 1	√	10			10	14	1	2	10.5	32
Zinc Rougher 2	√	5			10	7	1	2	10.5	30
Zinc Regrind	1000		1500				12		11.8	56
Zinc Cleaner 1	-	7				7	1	6	11.8	55
Zinc Cleaner 2	-	-				7	1	5	11.0	92
Zinc Cleaner 3	-	-				-	1	4	11.0	77

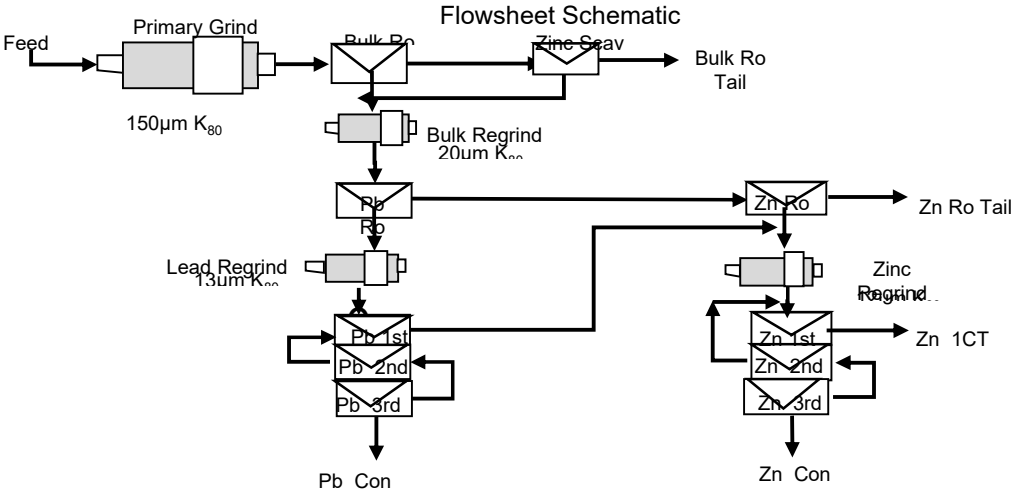
Primary Grind	
Mill	Mild Steel Mill
Media	20kg Mild Steel Rods
Water Addn:	1000ml
Bulk Regrind	
Mill	Stainless Steel
Media	20kg Stainless
Zinc and Lead Regrind	
Mill	Stirred Mill
Media	1.2kg Ceramic

Flotation Information	Rougher	Clnr 1	Clnr 2
Flotation Device:	D12	TF1	TF1
Cell Volume:	4.4L	2.5L	1.5L
Impellar Speed:	800rpm	1200rpm	900rpm
Flotation Gas:	Air		
Water Type:	Kamloops Tap		

BL801-25 JL-1

Metallurgical Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Pb Con A	0.6	61.1	52.3	7.70	7.2	40.0	640	19.7	3.9	13.7	1.3	0.4	3.8	7.2	1.1	0.4
Pb Con B	0.7	65.3	51.3	8.30	7.4	39.7	660	18.6	3.9	14.4	1.5	0.5	4.0	7.9	1.1	0.4
Pb Con C	0.7	71.9	48.1	9.10	8.4	36.2	626	26.6	4.4	14.9	1.8	0.6	4.0	8.3	1.8	0.6
Pb Con D	0.7	73.6	49.3	9.00	8.4	35.1	636	20.3	4.4	15.6	1.8	0.6	4.0	8.6	1.4	0.6
Pb Con E	0.7	69.7	49.1	8.40	7.9	40.1	620	20.6	4.2	14.7	1.6	0.5	4.3	7.9	1.3	0.5
Pb 3rd Clnr Tl	0.2	20.9	15.8	15.0	19.6	23.4	536	25.6	12.2	1.4	0.9	0.4	0.8	2.1	0.5	0.4
Pb 2nd Clnr Tl	0.4	40.8	9.50	14.7	23.3	18.0	506	27.1	14.5	1.7	1.6	0.9	1.1	3.8	1.0	1.0
Pb 1st Clnr Tl	2.1	206.2	2.57	11.6	24.3	13.7	283	25.5	14.0	2.3	6.6	4.8	4.4	10.7	4.8	5.0
Zn Con A	0.6	55.8	0.53	55.4	7.8	1.70	26	33.6	1.0	0.1	8.5	0.4	0.1	0.3	1.7	0.1
Zn Con B	0.4	43.0	3.49	44.2	11.0	6.80	120	30.3	3.8	0.6	5.2	0.5	0.5	0.9	1.2	0.3
Zn Con C	0.7	73.0	2.85	48.4	9.4	7.49	96	30.5	2.6	0.9	9.7	0.7	0.9	1.3	2.1	0.3
Zn Con D	0.9	90.1	2.03	48.4	9.0	5.03	89	29.8	2.4	0.8	11.9	0.8	0.7	1.5	2.5	0.4
Zn Con E	0.6	58.9	3.62	43.0	10.8	6.69	138	31.1	4.0	0.9	6.9	0.6	0.6	1.5	1.7	0.4
Zn 3rd Clnr Tail	0.3	33.8	3.04	30.4	16.0	9.56	200	28.6	8.3	0.4	2.8	0.5	0.5	1.2	0.9	0.5
Zn 2nd Clnr Tail	0.8	76.8	2.33	21.9	19.7	10.9	197	27.0	10.5	0.8	4.6	1.5	1.3	2.8	1.9	1.4
Zn 1st Clnr Tail A	0.8	81.3	0.86	6.10	24.4	12.0	19	23.5	13.3	0.3	1.4	1.9	1.5	0.3	1.8	1.9
Zn 1st Clnr Tail B	2.6	261.2	1.05	10.0	23.4	12.5	95	23.8	13.1	1.2	7.2	5.9	5.1	4.6	5.7	6.0
Zn 1st Clnr Tail C	3.3	325.7	1.26	7.60	24.1	12.5	121	24.5	14.0	1.8	6.8	7.5	6.4	7.2	7.4	8.0
Zn 1st Clnr Tail D	2.8	274.9	1.52	7.70	23.7	12.2	158	23.0	13.4	1.8	5.8	6.3	5.2	8.0	5.8	6.4
Zn 1st Clnr Tail E	3.0	295.7	1.21	10.5	23.0	12.4	176	25.4	13.2	1.5	8.5	6.5	5.7	9.6	6.9	6.8
Zn Ro Tail A	4.3	432.6	0.47	0.34	26.9	13.6	2	24.6	15.4	0.9	0.4	11.2	9.1	0.2	9.8	11.7
Zn Ro Tail B	4.5	445.7	0.49	0.38	26.0	12.9	2	21.5	15.0	0.9	0.5	11.1	8.9	0.2	8.8	11.7
Zn Ro Tail C	4.4	438.2	0.41	0.27	23.6	11.5	2	20.7	13.4	0.8	0.3	9.9	7.8	0.1	8.4	10.3
Zn Ro Tail D	4.8	478.7	0.40	0.28	24.0	11.8	2	22.3	13.9	0.8	0.4	11.0	8.8	0.1	9.8	11.6
Zn Ro Tail E	4.3	430.6	0.39	0.37	26.6	12.8	2	24.0	14.7	0.7	0.4	11.0	8.6	0.1	9.5	11.1
Bulk Ro Tail A	11.2	1121	0.19	0.07	0.7	0.17	3	0.11	0.22	0.9	0.2	0.8	0.3	0.5	0.1	0.4
Bulk Ro Tail B	10.9	1088	0.20	0.08	0.7	0.14	3	0.11	0.21	0.9	0.2	0.8	0.2	0.6	0.1	0.4
Bulk Ro Tail C	10.8	1077	0.23	0.10	0.7	0.24	3	0.15	0.20	1.1	0.3	0.8	0.4	0.6	0.1	0.4
Bulk Ro Tail D	10.5	1045	0.28	0.13	0.8	0.18	4	0.21	0.22	1.3	0.4	0.8	0.3	0.7	0.2	0.4
Bulk Ro Tail E	11.4	1134	0.39	0.20	0.9	0.29	5	0.38	0.32	1.9	0.6	1.0	0.5	1.1	0.4	0.6
Recalc. Feed	100	9970	2.33	3.66	10.5	6.45	55	10.9	5.8	100	100	100	100	100	100	100
Measured Feed			2.49	4.01	10.1	7.66	60	11.0	5.9							



BL801-25 JL-1
Balances for Cycles

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Cycle D																
Feed	100.0	1962.5	2.40	3.78	10.3	6.23	52	10.9	5.7	100	100	100	100	100	100	100
Pb Con	3.8	73.6	49.3	9.00	8.4	35.1	636	20.3	4.4	77.0	8.9	3.1	21.1	45.4	7.0	2.9
Zn Con	4.6	90.1	2.03	48.4	9.0	5.03	89	29.8	2.4	3.9	58.9	4.0	3.7	7.8	12.5	2.0
Zn 1st Clnr Tail	14.0	274.9	1.52	7.70	23.7	12.2	158	23.0	13.4	8.9	28.6	32.1	27.4	42.2	29.5	33.1
Zn Ro Tail	24.4	478.7	0.40	0.28	24.0	11.8	2	22.3	13.9	4.1	1.8	56.7	46.2	0.7	49.9	59.9
Bulk Ro Tail	53.3	1045.2	0.28	0.13	0.8	0.18	4	0.21	0.22	6.2	1.8	4.1	1.5	3.9	1.0	2.1
Cycle E																
Feed	100.0	1988.6	2.31	3.3	10.3	6.4	55	10.8	5.6	100	100	100	100	100	100	100
Pb Con	3.5	69.7	49.1	8.4	7.9	40.1	620	20.6	4.2	74.3	8.9	2.7	22.0	39.3	6.7	2.6
Zn Con	3.0	58.9	3.62	43.0	10.8	6.69	138	31.1	4.0	4.6	38.3	3.1	3.1	7.4	8.5	2.1
Zn 1st Clnr Tail	14.9	295.7	1.21	10.5	23.0	12.4	176	25.4	13.2	7.8	47.0	33.2	28.9	47.3	34.9	35.1
Zn Ro Tail	21.7	430.6	0.39	0.37	26.6	12.8	2	24.0	14.7	3.6	2.4	55.9	43.4	0.6	48.0	56.9
Bulk Ro Tail	57.0	1133.7	0.39	0.20	0.9	0.29	5	0.38	0.32	9.6	3.4	5.1	2.6	5.5	2.0	3.2
Cycles D + E																
Feed	100.0	3951.1	2.36	3.55	10.3	6.31	54	10.9	5.6	100	100	100	100	100	100	100
Pb Con	3.6	143.3	49.2	8.71	8.2	37.5	628	20.4	4.3	75.7	8.9	2.9	21.5	42.2	6.8	2.8
Zn Con	3.8	149.0	2.66	46.3	9.7	5.69	108	30.3	3.1	4.3	49.2	3.6	3.4	7.6	10.5	2.1
Zn 1st Clnr Tail	14.4	570.6	1.36	9.15	23.3	12.3	167	24.2	13.3	8.3	37.2	32.7	28.2	44.8	32.2	34.1
Zn Ro Tail	23.0	909.3	0.40	0.32	25.2	12.3	2	23.1	14.3	3.9	2.1	56.3	44.8	0.7	48.9	58.4
Bulk Ro Tail	55.1	2178.9	0.34	0.17	0.9	0.24	5	0.30	0.27	7.9	2.6	4.6	2.1	4.7	1.5	2.7

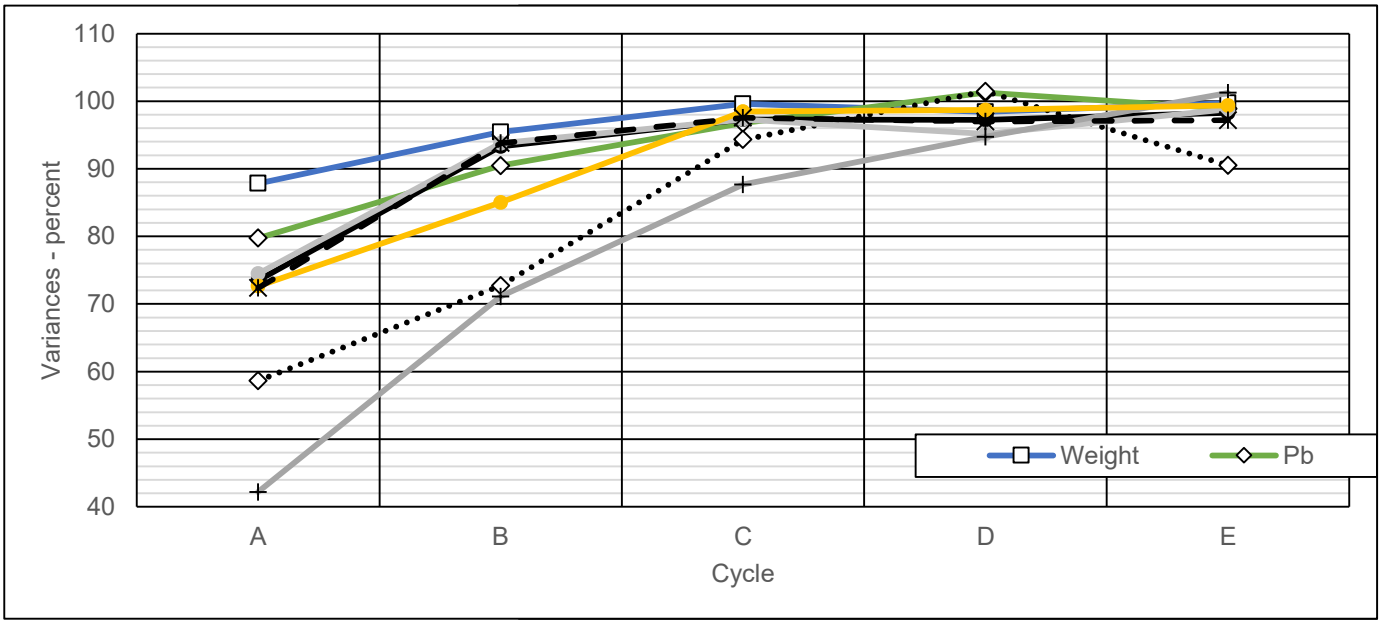
BL801-25 JL-1
Stream Balance - Cycle E

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Pb Con	3.5	69.7	49.1	8.4	7.9	40.1	620	20.6	4.2	74.3	8.9	2.7	22.0	39.3	6.7	2.6
Pb 3rd Clnr Tl	1.1	20.9	15.8	15.0	19.6	23.4	536	25.6	12.2	7.2	4.7	2.0	3.8	10.2	2.5	2.3
Pb 2nd Clnr Con	4.6	90.6	41.4	9.9	10.6	36.2	601	21.8	6.1	81.5	13.6	4.7	25.8	49.4	9.1	4.9
Pb 2nd Clnr Tail	2.1	40.8	9.50	14.7	23.3	18.0	506	27.1	14.5	8.4	9.1	4.6	5.8	18.8	5.1	5.3
Pb 2nd Clnr Feed	6.6	131.4	31.5	11.4	14.5	30.5	571	23.4	8.7	89.9	22.7	9.3	31.6	68.2	14.3	10.2
Pb1st Clnr Con	5.6	110.5	34.5	10.7	13.6	31.9	578	23.0	8.0	82.8	17.9	7.3	27.7	58.0	11.8	7.9
Pb 1st Clnr Tail	10.4	206.2	2.57	11.6	24.3	13.7	283	25.5	14.0	11.5	36.2	24.5	22.3	53.0	24.4	26.0
Pb 1st Clnr Feed	15.9	316.7	13.7	11.3	20.6	20.1	386	24.6	11.9	94.3	54.1	31.8	50.0	111	36.2	33.9
Pb Ro Con	13.9	275.9	14.3	10.8	20.2	20.4	368	24.3	11.6	85.9	45.1	27.1	44.2	92	31.1	28.6
Pb Ro Tail	29.1	579.0	0.36	5.88	24.0	11.7	4	24.9	13.1	4.5	51.5	67.8	53.2	2.3	66.9	68.2
Pb Ro Feed	43.0	854.9	4.87	7.47	22.7	14.5	122	24.7	12.6	90.4	96.6	94.9	97.4	94.5	98.0	96.8
Zn Con	3.0	58.9	3.62	43.0	10.8	6.69	138	31.1	4.0	4.6	38.3	3.1	3.1	7.4	8.5	2.1
Zn 3rd Clnr Tail	1.7	33.8	3.04	30.4	16.0	9.56	200	28.6	8.3	2.2	15.5	2.6	2.5	6.1	4.5	2.5
Zn 2nd Clnr Con	4.7	92.7	3.41	38.4	12.7	7.74	161	30.2	5.6	6.9	53.9	5.7	5.6	13.5	13.0	4.7
Zn 2nd Clnr Tail	3.9	76.8	2.33	21.9	19.7	10.9	197	27.0	10.5	3.9	25.4	7.4	6.6	13.7	9.6	7.3
Zn 1st Clnr Con	6.8	135.7	2.89	31.1	15.8	9.05	171	28.8	7.7	8.5	63.8	10.5	9.7	21.1	18.1	9.4
Zn 1st Clnr Tail	14.9	295.7	1.21	10.5	23.0	12.4	176	25.4	13.2	7.8	47.0	33.2	28.9	47.3	34.9	35.1
Zn 1st Clnr Feed	21.7	431.4	1.74	17.0	20.7	11.4	175	26.5	11.5	16.3	111	43.7	38.6	68.4	53.0	44.5
Zn Ro Con	7.5	148.4	0.28	21.9	16.4	8.4	12	27.5	8.5	0.9	49.1	11.8	9.8	1.7	19.0	11.3
Zn Ro Tail	21.7	430.6	0.39	0.37	26.6	12.8	2	24.0	14.7	3.6	2.4	55.9	43.4	0.6	48.0	56.9
Zn Ro Feed	29.1	579.0	0.36	5.88	24.0	11.7	4	24.9	13.1	4.5	51.5	67.8	53.2	2.3	66.9	68.2
Bulk Ro Tail	57.0	1133.7	0.39	0.20	0.9	0.29	5	0.38	0.3	9.6	3.4	5.1	2.6	5.5	2.0	3.2
Bulk Ro Con	43.0	854.9	4.87	7.47	22.7	14.5	122	24.7	12.6	90.4	96.6	94.9	97.4	94.5	98.0	96.8
Flotation Feed	100.0	1988.6	2.31	3.32	10.3	6.39	55.4	10.8	5.60	100	100	100	100	100	100	100

BL801-25 JL-1
Test Stability Measures

Cycle	Weight		Recalc. Feed Assay - % or g/t							Metal Variances - percent						
	Var %	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
A	88	1751.5	2.12	2.45	8.7	5.47	26.2	8.99	4.7	80	59	73	74	42	73	72
B	95	1903.1	2.21	2.79	10.2	6.34	40.6	9.69	5.7	90	73	93	94	71	85	94
C	100	1985.7	2.27	3.47	10.2	6.30	48.0	10.8	5.6	97	94	97	97	88	98	98
D	98	1962.5	2.40	3.78	10.3	6.23	52.5	10.9	5.7	101	101	97	95	95	99	97
E	100	1988.6	2.31	3.32	10.3	6.39	55.4	10.8	5.6	99	90	98	99	101	99	97

BL801-25 JL-1
Variances



Test No: BL801-26
Date: 19-Apr-22
Test Type: LCT
Test Objective: Finer zinc regrind and more collector in zinc cleaner
Sample: 5x2 kg JL-1
Nominal Sizing: 150µm K_{80}

Bulk Rgd 22.0 µm K_{80}
Pb Rgd 12.0 µm K_{80}
Zn Rgd 13.0 µm K_{80}

Stage	Reagents - g/tonne							Time Minutes		Electrochemistry	
	Soda Ash	PAX	$CuSO_4$	$ZnSO_4$	NaCN	H57	MIBC	Condition	Float	pH	Eh-mV
Primary Grind								9.5		7.7	195
Rougher		40	800			20	-	4	4	7.1	174
Rougher Scav		35	-			-	-	1	4	7.3	171
Regrind	750			900	300			30		9.0	50
Condition	150	A241		300	100			5		9.0	13
Pb Rougher 1	√	-					21	1	4	9.0	11
Pb Rougher 2	√	5					-	1	2	9.0	19
Pb Rougher 3	√	5					-	1	2	9.0	22
Pb Regrind	100			900	300			10		9.8	110
Pb Cleaner 1	2200	5		450	150		7	1	5	10.5	41
Pb Cleaner 2	√	-		150	50		-	1	4	10.8	25
Pb Cleaner 3	√	-		90	30		7	1	3	10.8	26
	Lime	SIPX									
Condition	800		1700					5		10.5	20
Zinc Rougher 1	√	10				10	-	1	2	10.5	16
Zinc Rougher 2	√	5				-	-	1	2	10.5	6
Zinc Regrind	1000		1500					14		11.3	74
Zinc Cleaner 1	100	10					21	1	6	11.8	55
Zinc Cleaner 2	√	2					14	1	5	11.8	61
Zinc Cleaner 3	√	1					14	1	4	11.8	58

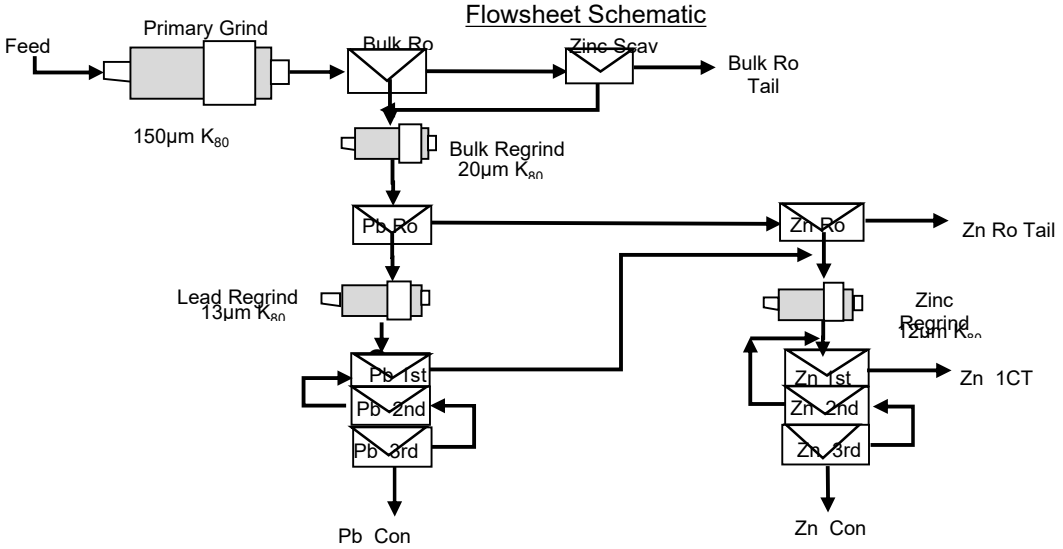
Primary Grind	
Mill	Mild Steel Mill
Media	20kg Mild Steel Rods
Water Addn:	1000ml
Bulk Regrind	
Mill	Stainless Steel
Media	20kg Stainless
Zinc and Lead Regrind	
Mill	Stirred Mill
Media	1.2kg Ceramic

Flotation Information	Rougher	Clnr 1	Clnr 2
Flotation Device:	D12	TF1	TF1
Cell Volume:	4.4L	2.5L	1.5L
Impellar Speed:	800rpm	1200rpm	900rpm
Flotation Gas:	Air		
Water Type:	Kamloops Tap		

BL801-26 JL-1
Metallurgical Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Pb Con A	0.6	55.2	56.8	7.10	6.0	50.5	698	18.6	3.1	13.5	1.0	0.3	4.1	6.5	0.9	0.3
Pb Con B	0.5	48.9	58.0	6.00	5.4	50.1	708	19.5	2.8	12.2	0.8	0.3	3.6	5.9	0.9	0.2
Pb Con C	0.7	66.3	53.7	8.10	6.7	41.9	690	20.1	3.6	15.3	1.4	0.4	4.1	7.7	1.2	0.4
Pb Con D	0.6	60.0	54.7	7.20	6.2	45.3	720	19.6	3.3	14.1	1.1	0.4	4.0	7.3	1.1	0.3
Pb Con E	0.7	68.9	52.3	8.40	7.4	38.0	688	20.3	4.0	15.5	1.5	0.5	3.8	8.0	1.3	0.5
Pb 3rd Clnr Tl	0.2	21.3	20.3	15.8	19.5	21.0	678	26.6	11.5	1.9	0.9	0.4	0.7	2.4	0.5	0.4
Pb 2nd Clnr Tl	0.5	47.2	13.50	15.4	21.1	17.7	602	27.2	12.9	2.7	1.9	1.0	1.2	4.8	1.2	1.1
Pb 1st Clnr Tl	1.9	190.7	3.32	12.9	23.4	13.2	280	25.4	13.1	2.7	6.4	4.3	3.7	9.0	4.4	4.4
Zn Con A	0.7	74.2	0.70	54.8	3.9	2.09	34	32.3	1.2	0.2	10.6	0.3	0.2	0.4	2.2	0.2
Zn Con B	0.7	74.1	0.91	52.4	4.1	2.77	64	32.2	1.8	0.3	10.1	0.3	0.3	0.8	2.2	0.2
Zn Con C	0.8	76.8	1.28	52.4	4.0	5.86	78	33.4	1.7	0.4	10.5	0.3	0.7	1.0	2.3	0.2
Zn Con D	0.7	68.2	2.90	46.6	5.1	6.45	147	29.7	3.1	0.8	8.3	0.3	0.6	1.7	1.8	0.4
Zn Con E	0.8	78.6	2.03	50.8	4.3	4.73	100	31.9	2.1	0.7	10.4	0.3	0.5	1.3	2.3	0.3
Zn 3rd Clnr Tail	0.2	17.5	4.02	33.2	14.6	11.60	236	27.2	6.9	0.3	1.5	0.2	0.3	0.7	0.4	0.2
Zn 2nd Clnr Tail	0.5	54.1	3.92	24.0	17.9	10.9	263	24.8	9.3	0.9	3.4	0.9	0.9	2.4	1.2	0.9
Zn 1st Clnr Tail A	1.0	95.9	0.64	3.10	23.7	12.7	22	21.1	13.2	0.3	0.8	2.2	1.8	0.4	1.8	2.2
Zn 1st Clnr Tail B	1.7	169.3	1.21	10.9	23.3	12.4	182	24.6	12.1	0.9	4.8	3.8	3.1	5.2	3.8	3.6
Zn 1st Clnr Tail C	2.2	223.3	1.55	9.60	23.6	13.4	205	23.9	13.4	1.5	5.6	5.0	4.4	7.7	4.9	5.3
Zn 1st Clnr Tail D	2.2	216.9	1.83	12.40	22.6	13.8	215	24.5	12.4	1.7	7.0	4.7	4.4	7.9	4.8	4.8
Zn 1st Clnr Tail E	2.6	263.3	2.68	11.5	22.8	13.6	225	23.8	12.9	3.0	7.9	5.7	5.3	10.0	5.7	6.0
Zn Ro Tail A	5.3	528.6	0.36	0.33	25.0	12.6	8	21.1	14.1	0.8	0.5	12.7	9.8	0.7	10.1	13.3
Zn Ro Tail B	5.7	568.9	0.37	0.26	25.1	13.5	9	22.4	14.4	0.9	0.4	13.7	11.3	0.8	11.6	14.5
Zn Ro Tail C	5.4	535.4	0.36	0.25	24.5	12.4	8	20.7	13.4	0.8	0.3	12.6	9.7	0.7	10.1	12.7
Zn Ro Tail D	5.5	550.2	0.38	0.27	25.0	12.8	8	21.9	13.4	0.9	0.4	13.2	10.3	0.7	11.0	13.1
Zn Ro Tail E	5.0	499.7	0.35	0.24	25.2	12.4	8	22.2	13.6	0.8	0.3	12.1	9.1	0.6	10.1	12.1
Bulk Ro Tail A	10.7	1072	0.33	0.17	0.9	0.36	7	0.45	0.26	1.5	0.5	0.9	0.6	1.3	0.4	0.5
Bulk Ro Tail B	10.6	1059	0.33	0.18	0.9	0.24	5	0.45	0.27	1.5	0.5	0.9	0.4	1.0	0.4	0.5
Bulk Ro Tail C	10.7	1070	0.28	0.13	0.8	0.25	5	0.55	0.24	1.3	0.4	0.8	0.4	0.9	0.5	0.5
Bulk Ro Tail D	10.8	1077	0.26	0.13	0.8	0.21	5	0.37	0.22	1.2	0.4	0.8	0.3	0.9	0.4	0.4
Bulk Ro Tail E	10.7	1075	0.32	0.17	0.9	0.24	6	0.41	0.24	1.5	0.5	0.9	0.4	1.0	0.4	0.5
Recalc. Feed	100	10007	2.33	3.83	10.4	6.80	59	11.0	5.6	100	100	100	100	100	100	100
Measured Feed			2.49	4.01	10.1	7.66	60	11.0	5.9							

Flowsheet Schematic



BL801-26 JL-1
Balances for Cycles

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Cycle D																
Feed	100.0	1972.3	2.21	3.34	10.3	6.81	56	10.6	5.4	100	100	100	100	100	100	100
Pb Con	3.0	60.0	54.7	7.20	6.2	45.3	720	19.6	3.3	75.2	6.6	1.8	20.2	39.4	5.6	1.8
Zn Con	3.5	68.2	2.90	46.6	5.1	6.45	147	29.7	3.1	4.5	48.2	1.7	3.3	9.2	9.7	2.0
Zn 1st Clnr Tail	11.0	216.9	1.83	12.4	22.6	13.8	215	24.5	12.4	9.1	40.8	24.2	22.4	42.6	25.4	25.1
Zn Ro Tail	27.9	550.2	0.38	0.27	25.0	12.8	8	21.9	13.4	4.8	2.3	68.0	52.4	4.0	57.5	68.8
Bulk Ro Tail	54.6	1077.0	0.26	0.13	0.8	0.21	5	0.37	0.22	6.4	2.1	4.2	1.7	4.8	1.9	2.2
Cycle E																
Feed	100.0	1985.2	2.51	3.98	10.3	6.57	63	10.9	5.5	100	100	100	100	100	100	100
Pb Con	3.5	68.9	52.3	8.40	7.4	38.0	688	20.3	4.0	72.3	7.3	2.5	20.1	38.1	6.4	2.5
Zn Con	4.0	78.6	2.03	50.8	4.3	4.73	100	31.9	2.1	3.2	50.5	1.7	2.9	6.3	11.6	1.5
Zn 1st Clnr Tail	13.3	263.3	2.68	11.5	22.8	13.6	225	23.8	12.9	14.1	38.3	29.5	27.5	47.7	28.9	31.1
Zn Ro Tail	25.2	499.7	0.35	0.24	25.2	12.4	8	22.2	13.6	3.5	1.5	61.8	47.6	3.1	51.1	62.5
Bulk Ro Tail	54.1	1074.7	0.32	0.17	0.9	0.24	6	0.41	0.24	6.9	2.3	4.6	2.0	4.8	2.0	2.3
Cycles D + E																
Feed	100.0	3957.5	2.36	3.66	10.3	6.69	59	10.8	5.5	100	100	100	100	100	100	100
Pb Con	3.3	128.9	53.4	7.84	6.8	41.4	703	20.0	3.7	73.6	7.0	2.2	20.2	38.7	6.0	2.2
Zn Con	3.7	146.8	2.43	48.8	4.7	5.53	122	30.9	2.6	3.8	49.5	1.7	3.1	7.6	10.6	1.8
Zn 1st Clnr Tail	12.1	480.2	2.30	11.9	22.7	13.7	220	24.1	12.7	11.8	39.5	26.9	24.9	45.3	27.1	28.1
Zn Ro Tail	26.5	1049.9	0.37	0.26	25.1	12.6	8	22.0	13.5	4.1	1.9	64.9	50.0	3.5	54.2	65.6
Bulk Ro Tail	54.4	2151.7	0.29	0.15	0.8	0.22	5	0.39	0.23	6.7	2.2	4.4	1.8	4.8	2.0	2.3

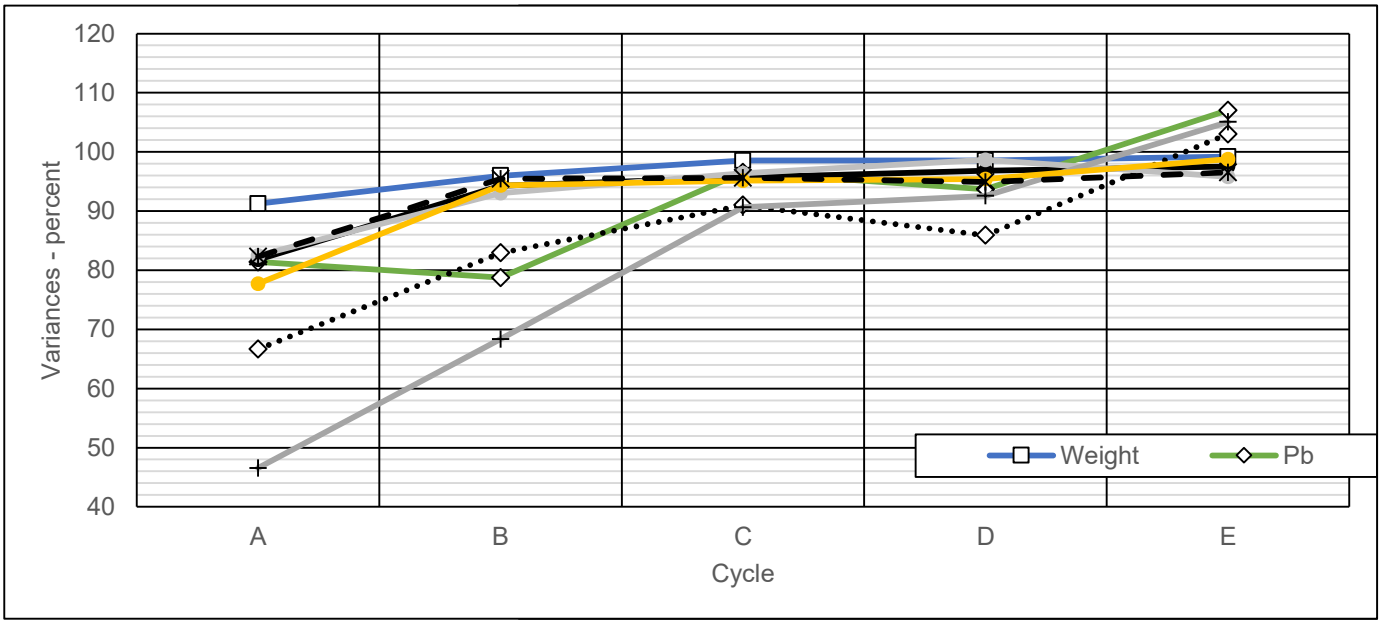
BL801-26 JL-1
Stream Balance - Cycle E

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Pb Con	3.5	68.9	52.3	8.40	7.4	38.0	688	20.3	4.0	72.3	7.3	2.5	20.1	38.1	6.4	2.5
Pb 3rd Clnr Tl	1.1	21.3	20.3	15.8	19.5	21.0	678	26.6	11.5	8.7	4.3	2.0	3.4	11.6	2.6	2.2
Pb 2nd Clnr Con	4.5	90.2	44.7	10.1	10.3	34.0	686	21.8	5.8	80.9	11.6	4.5	23.5	49.7	9.1	4.8
Pb 2nd Clnr Tail	2.4	47.2	13.5	15.4	21.1	17.7	602	27.2	12.9	12.8	9.2	4.9	6.4	22.9	5.9	5.6
Pb 2nd Clnr Feed	6.9	137.4	34.0	12.0	14.0	28.4	657	23.6	8.2	93.7	20.8	9.4	29.9	72.6	15.0	10.4
Pb1st Clnr Con	5.8	116.1	36.5	11.2	13.0	29.7	653	23.1	7.6	85.0	16.5	7.4	26.5	61.0	12.4	8.1
Pb 1st Clnr Tail	9.6	190.7	3.32	12.9	23.4	13.2	280	25.4	13.1	12.7	31.1	21.9	19.3	42.9	22.3	23.0
Pb 1st Clnr Feed	15.5	306.8	15.9	12.3	19.5	19.5	421	24.5	11.0	97.7	47.7	29.3	45.8	104	34.7	31.1
Pb Ro Con	13.1	259.6	16.3	11.7	19.2	19.8	388	24.0	10.7	84.9	38.5	24.4	39.4	81.1	28.8	25.5
Pb Ro Tail	32.8	650.9	0.63	7.19	22.2	11.7	27	23.1	12.1	8.2	59.2	71.0	58.6	14.1	69.2	72.2
Pb Ro Feed	45.9	910.5	5.10	8.48	21.4	14.0	130	23.4	11.7	93.1	97.7	95.4	98.0	95.2	98.0	97.7
Zn Con	4.0	78.6	2.03	50.8	4.3	4.73	100	31.9	2.1	3.2	50.5	1.7	2.9	6.3	11.6	1.5
Zn 3rd Clnr Tail	0.9	17.5	4.02	33.2	14.6	11.6	236	27.2	6.9	1.4	7.4	1.3	1.6	3.3	2.2	1.1
Zn 2nd Clnr Con	4.8	96.1	2.39	47.6	6.2	5.98	125	31.0	3.0	4.6	57.9	2.9	4.4	9.6	13.7	2.7
Zn 2nd Clnr Tail	2.7	54.1	3.92	24.0	17.9	10.9	263	24.8	9.3	4.3	16.4	4.8	4.5	11.4	6.2	4.6
Zn 1st Clnr Con	6.7	132.7	2.80	39.9	9.8	7.24	166	29.0	5.1	7.5	67.0	6.4	7.4	17.8	17.7	6.2
Zn 1st Clnr Tail	13.3	263.3	2.68	11.5	22.8	13.6	225	23.8	12.9	14.1	38.3	29.5	27.5	47.7	28.9	31.1
Zn 1st Clnr Feed	19.9	396.0	2.72	21.0	18.5	11.5	205	25.5	10.2	21.6	105	35.9	34.9	65.4	46.6	37.3
Zn Ro Con	7.6	151.2	1.53	30.2	12.4	9.55	91	26.0	7.0	4.7	57.7	9.2	11.1	11.0	18.1	9.7
Zn Ro Tail	25.2	499.7	0.35	0.24	25.2	12.4	8	22.2	13.6	3.5	1.5	61.8	47.6	3.1	51.1	62.5
Zn Ro Feed	32.8	650.9	0.63	7.19	22.2	11.7	27	23.1	12.1	8.2	59.2	71.0	58.6	14.1	69.2	72.2
Bulk Ro Tail	54.1	1074.7	0.32	0.17	0.9	0.24	6	0.41	0.2	6.9	2.3	4.6	2.0	4.8	2.0	2.3
Bulk Ro Con	45.9	910.5	5.10	8.48	21.4	14.0	130	23.4	11.7	93.1	97.7	95.4	98.0	95.2	98.0	97.7
Flotation Feed	100.0	1985.2	2.51	3.98	10.3	6.57	63	10.9	5.49	100	100	100	100	100	100	100

BL801-26 JL-1
Test Stability Measures

Cycle	Weight		Recalc. Feed Assay - % or g/t							Metal Variances - percent						
	Var %	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
A	91	1826.2	2.08	2.80	9.4	6.15	30.2	9.35	5.1	81	67	82	82	47	78	82
B	96	1920.6	1.91	3.31	10.3	6.59	42.1	10.8	5.6	79	83	94	93	68	94	95
C	99	1971.9	2.28	3.54	10.1	6.65	54.4	10.6	5.5	97	91	96	96	91	95	96
D	99	1972.3	2.21	3.34	10.3	6.81	55.5	10.6	5.4	94	86	97	99	93	95	95
E	99	1985.2	2.51	3.98	10.3	6.57	62.6	10.9	5.5	107	103	98	96	105	99	97

BL801-26 JL-1
Variances



Test No: BL801-27
Date: 2-May-22
Test Type: LCT
Test Objective: Finer Zinc Regrind, Lead 1CT recirculated into the zinc rougher
Sample: 5x2 kg JL-1
Nominal Sizing: 150µm K_{80}

Bulk Rgd 19.7 µm K_{80}
Pb Rgd 10.9 µm K_{80}
Zn Rgd 8.6 µm K_{80}

Stage	Reagents - g/tonne							Time Minutes		Electrochemistry	
	Soda Ash	PAX	$CuSO_4$	$ZnSO_4$	NaCN	H57	MIBC	Condition	Float	pH	Eh-mV
Primary Grind								9.5		7.8	88
Rougher		40	800			20	21	4	4	7.1	-78
Rougher Scav		35	-			-	7	1	4	7.7	-81
Regrind	750			900	300			30		9.0	61
Condition	350	A241		300	100			5		9.5	-54
Pb Rougher 1	√	-					14	1	4	9.5	-54
Pb Rougher 2	√	5					-	1	2	9.5	-42
Pb Rougher 3	-	5					-	1	2	9.5	-40
Pb Regrind	100			900	300			10		8.5	225
Pb Cleaner 1	3250	5		450	150		14	1	4	10.5	122
Pb Cleaner 2	√	-		150	50		-	1	3	10.8	91
Pb Cleaner 3	√	-		90	30		-	1	2	10.8	95
	Lime	SIPX									
Condition	1000		2000					5		10.5	-10
Zinc Rougher 1	√	30					21	1	2	10.5	-13
Zinc Rougher 2	√	10					-	1	2	10.5	-10
Zinc Regrind	1000		1500					20		11.4	140
Zinc Cleaner 1	125	10					14	1	5	11.8	121
Zinc Cleaner 2	√	2					14	1	4	11.8	127
Zinc Cleaner 3	√	1					14	1	3	11.8	123

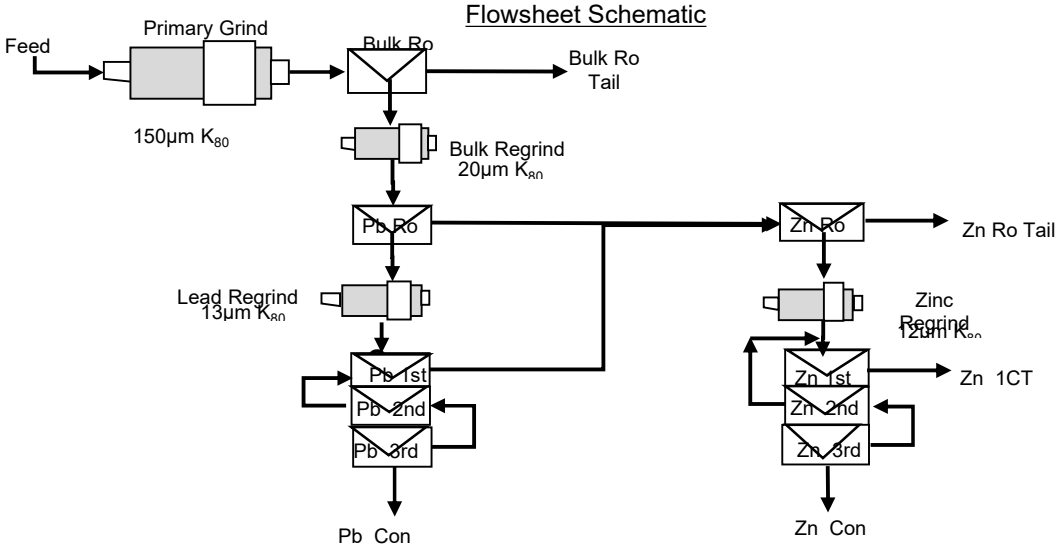
Primary Grind	
Mill	Mild Steel Mill
Media	20kg Mild Steel Rods
Water Addn:	1000ml
Bulk Regrind	
Mill	Stainless Steel
Media	20kg Stainless
Zinc and Lead Regrind	
Mill	Stirred Mill
Media	1.2kg Ceramic

Flotation Information	Rougher	Clnr 1	Clnr 2
Flotation Device:	D12	TF1	TF1
Cell Volume:	4.4L	2.5L	1.5L
Impellar Speed:	800rpm	1200rpm	900rpm
Flotation Gas:	Air		
Water Type:	Kamloops Tap		

BL801-27 JL-1
Metallurgical Balance

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Pb Con A	0.6	57.1	53.6	8.00	6.8	43.8	671	20.6	3.9	13.5	1.2	0.4	3.7	7.0	1.1	0.4
Pb Con B	0.7	66.9	49.4	10.00	8.6	42.1	636	20.7	5.0	14.5	1.8	0.5	4.2	7.7	1.3	0.6
Pb Con C	0.6	60.2	49.3	7.70	7.9	46.2	642	20.0	4.4	13.1	1.3	0.4	4.1	7.0	1.1	0.5
Pb Con D	0.6	61.2	49.3	7.70	8.0	44.1	631	19.8	4.8	13.3	1.3	0.5	4.0	7.0	1.1	0.5
Pb Con E	0.6	61.8	47.7	7.90	8.3	47.7	658	19.7	4.8	13.0	1.3	0.5	4.4	7.4	1.1	0.5
Pb 3rd Clnr Tl	0.4	35.2	21.4	13.3	18.1	17.7	607	25.2	11.1	3.3	1.3	0.6	0.9	3.9	0.8	0.7
Pb 2nd Clnr Tl	0.7	71.5	12.9	13.8	21.1	15.7	536	26.3	12.6	4.1	2.7	1.4	1.7	7.0	1.7	1.6
Pb 1st Clnr Tl	1.6	163.0	5.27	12.6	23.5	13.8	374	26.1	13.1	3.8	5.6	3.6	3.3	11.1	3.9	3.8
Zn Con A	0.5	54.4	0.50	56.0	7.0	2.01	35	32.3	0.9	0.1	8.3	0.4	0.2	0.3	1.6	0.1
Zn Con B	0.8	80.9	0.86	54.6	6.8	1.44	49	32.4	0.9	0.3	12.0	0.5	0.2	0.7	2.4	0.1
Zn Con C	0.9	87.1	1.46	55.2	6.6	1.59	59	33.0	0.7	0.6	13.1	0.5	0.2	0.9	2.6	0.1
Zn Con D	0.9	92.7	1.51	54.2	6.7	1.70	59	34.0	0.8	0.6	13.7	0.6	0.2	1.0	2.9	0.1
Zn Con E	0.9	92.9	1.81	53.6	6.6	1.73	72	32.0	0.9	0.7	13.6	0.6	0.2	1.2	2.7	0.1
Zn 3rd Clnr Tail	0.1	13.4	3.69	36.4	11.6	6.11	162	29.1	4.4	0.2	1.3	0.1	0.1	0.4	0.4	0.1
Zn 2nd Clnr Tail	0.3	27.2	3.90	23.9	16.5	9.4	216	26.8	7.9	0.5	1.8	0.4	0.4	1.1	0.7	0.4
Zn 1st Clnr Tail A	0.5	53.5	0.90	4.70	26.1	14.8	28	23.3	14.3	0.2	0.7	1.3	1.2	0.3	1.1	1.4
Zn 1st Clnr Tail B	0.8	76.5	1.62	11.6	22.9	12.2	226	23.9	11.5	0.5	2.4	1.6	1.4	3.1	1.7	1.6
Zn 1st Clnr Tail C	1.1	107.4	1.85	12.10	22.1	12.1	241	24.8	11.5	0.9	3.5	2.2	1.9	4.7	2.4	2.2
Zn 1st Clnr Tail D	1.4	144.2	2.05	9.20	23.2	12.6	203	22.5	12.2	1.3	3.6	3.1	2.7	5.3	3.0	3.1
Zn 1st Clnr Tail E	1.6	155.9	2.39	8.2	23.0	13.8	221	22.9	12.3	1.6	3.5	3.3	3.2	6.3	3.3	3.4
Zn Ro Tail A	5.1	505.7	0.53	0.47	27.7	14.6	11	25.0	15.0	1.2	0.6	13.1	10.9	1.0	11.6	13.6
Zn Ro Tail B	6.1	603.9	0.55	0.68	27.4	13.9	20	23.0	14.9	1.5	1.1	15.4	12.4	2.2	12.7	16.1
Zn Ro Tail C	5.9	587.8	0.53	0.42	27.2	14.0	25	23.4	14.6	1.4	0.7	14.9	12.2	2.7	12.6	15.4
Zn Ro Tail D	5.9	589.8	0.54	0.38	27.2	13.5	24	22.3	14.8	1.4	0.6	15.0	11.8	2.6	12.0	15.7
Zn Ro Tail E	5.9	591.9	0.59	0.40	26.4	14.0	30	22.3	14.2	1.5	0.6	14.6	12.2	3.3	12.1	15.0
Bulk Ro Tail A	11.4	1141	0.19	0.07	0.7	0.18	3	0.29	0.21	1.0	0.2	0.8	0.3	0.6	0.3	0.4
Bulk Ro Tail B	11.3	1124	0.30	0.14	0.9	0.25	5	0.43	0.28	1.5	0.4	0.9	0.4	1.0	0.4	0.6
Bulk Ro Tail C	10.8	1080	0.31	0.18	0.9	0.27	5	0.45	0.29	1.5	0.5	0.9	0.4	1.0	0.4	0.6
Bulk Ro Tail D	11.0	1099	0.32	0.17	1.0	0.31	5	0.49	0.32	1.5	0.5	1.0	0.5	1.1	0.5	0.6
Bulk Ro Tail E	10.9	1092	0.31	0.16	0.9	0.28	5	0.45	0.28	1.5	0.5	0.9	0.5	1.0	0.4	0.6
Recalc. Feed	100	9978	2.28	3.67	10.8	6.76	55	10.9	5.6	100	100	100	100	100	100	100
Measured Feed			2.49	4.01	10.1	7.66	60	11.0	5.9							

Flowsheet Schematic



BL801-27 JL-1
Balances for Cycles

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Cycle D																
Feed	100.0	1987.0	2.07	3.64	10.9	6.54	47	10.7	5.6	100	100	100	100	100	100	100
Pb Con	3.1	61.2	49.3	7.7	8.0	44.1	631	19.8	4.8	73.2	6.5	2.3	20.8	41.3	5.7	2.6
Zn Con	4.7	92.7	1.51	54.2	6.7	1.70	59	34.0	0.8	3.4	69.5	2.9	1.2	5.8	14.8	0.7
Zn 1st Clnr Tail	7.3	144.2	2.05	9.20	23.2	12.6	203	22.5	12.2	7.2	18.3	15.5	14.0	31.3	15.2	15.7
Zn Ro Tail	29.7	589.8	0.54	0.38	27.2	13.5	24	22.3	14.8	7.7	3.1	74.4	61.4	15.3	61.8	77.9
Bulk Ro Tail	55.3	1099.1	0.32	0.17	1.0	0.31	5	0.49	0.32	8.5	2.6	4.9	2.6	6.3	2.5	3.1
Cycle E																
Feed	100.0	1994.9	2.09	3.6	10.7	6.9	53	10.8	5.5	100	100	100	100	100	100	100
Pb Con	3.1	61.8	47.7	7.9	8.3	47.7	658	19.7	4.8	70.6	6.8	2.4	21.3	38.6	5.7	2.7
Zn Con	4.7	92.9	1.81	53.6	6.6	1.73	72	32.0	0.9	4.0	69.6	2.9	1.2	6.3	13.9	0.7
Zn 1st Clnr Tail	7.8	155.9	2.39	8.2	23.0	13.8	221	22.9	12.3	8.9	17.9	16.8	15.6	32.7	16.6	17.4
Zn Ro Tail	29.7	591.9	0.59	0.40	26.4	14.0	30	22.3	14.2	8.4	3.3	73.3	59.7	17.1	61.5	76.4
Bulk Ro Tail	54.8	1092.4	0.31	0.16	0.9	0.28	5	0.45	0.28	8.1	2.4	4.6	2.2	5.4	2.3	2.8
Cycles D + E																
Feed	100.0	3981.9	2.08	3.61	10.8	6.74	50	10.7	5.6	100	100	100	100	100	100	100
Pb Con	3.1	123.0	48.5	7.80	8.2	45.9	645	19.7	4.8	71.9	6.7	2.3	21.1	39.8	5.7	2.7
Zn Con	4.7	185.6	1.66	53.9	6.6	1.72	65	33.0	0.8	3.7	69.5	2.9	1.2	6.1	14.3	0.7
Zn 1st Clnr Tail	7.5	300.1	2.23	8.68	23.1	13.3	212	22.7	12.2	8.1	18.1	16.2	14.8	32.0	15.9	16.5
Zn Ro Tail	29.7	1181.7	0.57	0.39	26.8	13.7	27	22.3	14.5	8.0	3.2	73.8	60.5	16.2	61.6	77.2
Bulk Ro Tail	55.0	2191.5	0.32	0.17	0.9	0.30	5	0.47	0.30	8.3	2.5	4.8	2.4	5.8	2.4	3.0

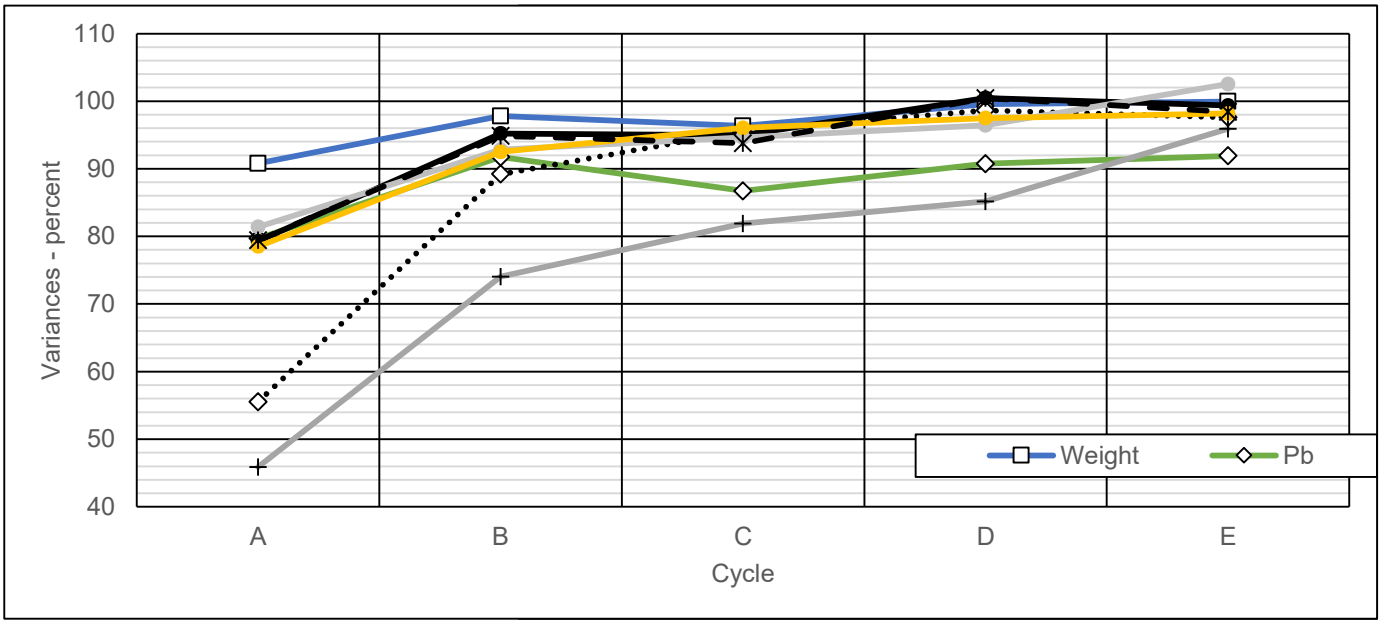
BL801-27 JL-1
Stream Balance - Cycle E

Product	Weight		Assay - percent or g/t							Distribution - percent						
	%	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
Pb Con	2.9	61.8	47.7	7.9	8.3	47.7	658	19.7	4.8	58.5	5.3	2.0	18.3	24.4	4.7	2.3
Pb 3rd Clnr Tl	1.6	35.2	21.4	13.3	18.1	17.7	607	25.2	11.1	15.0	5.1	2.5	3.9	12.8	3.5	3.0
Pb 2nd Clnr Con	4.5	97.0	38.2	9.9	11.9	36.8	639	21.7	7.1	73.5	10.4	4.6	22.2	37.3	8.2	5.2
Pb 2nd Clnr Tail	3.3	71.5	12.9	13.8	21.1	15.7	536	26.3	12.6	18.3	10.7	6.0	7.0	23.0	7.3	6.9
Pb 2nd Clnr Feed	7.8	168.5	27.4	11.5	15.8	27.8	596	23.6	9.4	91.8	21.1	10.6	29.1	60.3	15.5	12.1
Pb1st Clnr Con	6.2	133.3	29.0	11.1	15.2	30.5	593	23.2	9.0	76.9	16.0	8.0	25.3	47.5	12.1	9.1
Pb 1st Clnr Tail	7.6	163.0	5.3	12.6	23.5	13.8	374	26.1	13.1	17.1	22.3	15.2	14.0	36.6	16.6	16.3
Pb 1st Clnr Feed	13.7	296.3	16.0	11.9	19.8	21.3	472	24.8	11.2	93.9	38.3	23.3	39.3	84	28.6	25.4
Pb Ro Con	10.4	224.8	16.9	11.3	19.3	23.1	452	24.3	10.8	75.6	27.6	17.3	32.3	61.1	21.3	18.5
Pb Ro Tail	39.0	840.7	1.1	7.73	23.6	12.6	70	23.5	12.4	17.7	70.5	78.8	65.8	35.5	76.8	79.1
Pb Ro Feed	49.4	1065.5	4.4	8.48	22.7	14.8	151	23.7	12.0	93.3	98.1	96.1	98.1	96.6	98.1	97.7
Zn Con	4.3	92.9	1.8	53.6	6.6	1.7	72	32.0	0.9	3.3	54.1	2.4	1.0	4.0	11.6	0.6
Zn 3rd Clnr Tail	0.6	13.4	3.7	36.4	11.6	6.1	162	29.1	4.4	1.0	5.3	0.6	0.5	1.3	1.5	0.5
Zn 2nd Clnr Con	4.9	106.3	2.0	51.4	7.2	2.3	83	31.6	1.3	4.3	59.4	3.1	1.5	5.3	13.1	1.1
Zn 2nd Clnr Tail	1.3	27.2	3.9	23.9	16.5	9.4	216	26.8	7.9	2.1	7.1	1.8	1.6	3.5	2.8	1.6
Zn 1st Clnr Con	5.6	120.1	2.3	46.9	8.8	3.5	104	30.8	2.4	5.4	61.1	4.2	2.6	7.5	14.4	2.2
Zn 1st Clnr Tail	7.2	155.9	2.4	8.2	23.0	13.8	221	22.9	12.3	7.4	13.9	14.3	13.4	20.7	13.9	14.6
Zn 1st Clnr Feed	12.8	276.0	2.3	25.0	16.8	9.3	170	26.3	8.0	12.8	75	18.5	16.0	28.2	28.3	16.8
Zn Ro Con	11.5	248.8	2.2	25.2	16.9	9	165	26	8.0	10.7	67.9	16.7	14.4	24.7	25.5	15.2
Zn Ro Tail	27.4	591.9	0.6	0.40	26.4	14.0	30	22.3	14.2	6.9	2.6	62.1	51.3	10.8	51.4	64.0
Zn Ro Feed	39.0	840.7	1.1	7.73	23.6	12.6	70	23.5	12.4	17.7	70.5	78.8	65.8	35.5	76.8	79.1
Bulk Ro Tail	50.6	1092.4	0.3	0.16	0.9	0.3	5	0.4	0.3	6.7	1.9	3.9	1.9	3.4	1.9	2.3
Bulk Ro Con	49.4	1065.5	4.4	8.48	22.7	14.8	151	23.7	12.0	93.3	98.1	96.1	98.1	96.6	98.1	97.7
Flotation Feed	100.0	2157.9	2.33	4.27	11.7	7.45	77.1	11.9	6.09	100	100	100	100	100	100	100

BL801-27 JL-1
Test Stability Measures

Cycle	Weight		Recalc. Feed Assay - % or g/t							Metal Variances - percent						
	Var %	grams	Pb	Zn	Fe	Au	Ag	S	As	Pb	Zn	Fe	Au	Ag	S	As
A	91	1811.9	2.00	2.25	9.39	6.1	27.8	9.5	4.9	80	56	79	81	46	79	79
B	98	1951.8	2.14	3.35	10.47	6.4	41.7	10.4	5.4	92	89	95	93	74	92	95
C	96	1922.4	2.05	3.65	10.60	6.6	46.8	10.9	5.5	87	96	95	95	82	96	94
D	100	1987.0	2.07	3.64	10.85	6.5	47.1	10.7	5.6	91	99	100	96	85	97	100
E	100	1994.9	2.09	3.59	10.69	6.9	52.8	10.8	5.5	92	98	99	103	96	98	98

BL801-27 JL-1
Variances



PRESSURE LEACH + HOT ACID CURE TEST WORK SHEET

Client: Base Metallurgical Laboratories Ltd
Test: POX BL 801
Sample: ME2103805 BL 801 Combined Concentrate

Date: 02-Jun-21
Project: 2100702

Objective: POX test on as-received concentrate at ~15% solids followed by hot acid cure

POX conditions:

Temperature:	220 °C
O2 Overpressure:	100 psi
Duration:	1 hour

HOT ACID CURE conditions:

Start slurry weight:	1094 g
Temperature:	98 °C
12N H2SO4 addition:	36ml to pH 0.9
Duration:	6 hours

POX TEST DATA:

Test #	Sample id	Weight, g	Initial pH	H2SO4 addition g/Kg Ro Conc.	Final pH	Initial Slurry Weight, g	Final Slurry Weight, g	Slurry cut for assay		Calculated POX residue, g
								wet, g	dry, g	
BL 801 POX	BL 801 Combined Concentrate	200.0	7.7	25.9	2.2	1333	1296	202.03	26.4	169.2

HOT ACID CURE TEST DATA:

Test #	Sample id	Weight, g	Time, hours	pH	mV	Final slurry	Note
HA Cure	POX Slurry	1094 g	0	0.94	370		Hot cure slurry packed in double container and shipped to Envirolab
			1.0	0.50	357		
			2.5	0.55	349		
			4.5	0.69	348		
			6.0	0.92	355	1150g	

PRESSURE LEACH TEST - POX FINAL SOLUTION ANALYSIS

Client: Base Metallurgical Laborat
Test: POX BL 801
Sample: as specified

Date: 11-Jun-21
Project: 2100702

Elements	UNITS	Final Solution	
		BL801 POX PLS	
Total Hardness (CaCO3)	mg/L	47300	
Dissolved Sulphate (SO4)	mg/L	44000	
Dissolved Gold (Au)	mg/L	<0.2	
Total Metals by ICPMS			
Total Aluminum (Al)	mg/L	563	
Total Antimony (Sb)	mg/L	<25	
Total Arsenic (As)	mg/L	13800	
Total Barium (Ba)	mg/L	<50	
Total Beryllium (Be)	mg/L	<5	
Total Bismuth (Bi)	mg/L	<50	
Total Boron (B)	mg/L	<2500	
Total Cadmium (Cd)	mg/L	14.3	
Total Chromium (Cr)	mg/L	<50	
Total Cobalt (Co)	mg/L	<10	
Total Copper (Cu)	mg/L	150	
Total Iron (Fe)	mg/L	13100	
Total Lead (Pb)	mg/L	12	
Total Lithium (Li)	mg/L	<100	
Total Manganese (Mn)	mg/L	101	
Total Molybdenum (Mo)	mg/L	<50	
Total Nickel (Ni)	mg/L	<50	
Total Phosphorus (P)	mg/L	554	
Total Selenium (Se)	mg/L	<5	
Total Silicon (Si)	mg/L	<5000	
Total Silver (Ag)	mg/L	<1	
Total Strontium (Sr)	mg/L	<50	
Total Tin (Sn)	mg/L	<250	
Total Titanium (Ti)	mg/L	<250	
Total Vanadium (V)	mg/L	<250	
Total Zinc (Zn)	mg/L	2530	
Total Zirconium (Zr)	mg/L	<5	
Total Calcium (Ca)	mg/L	18900	
Total Magnesium (Mg)	mg/L	<2500	
Total Potassium (K)	mg/L	<2500	
Total Sodium (Na)	mg/L	5810	
Total Sulphur (S)	mg/L	<150000	

PRESSURE LEACH TEST - POX RESIDUE ASSAY

Client: Base Metallurgical Laboratories Ltd
Test: POX BL 801
Sample: as specified

Date: 11-Jun-21
Project: 2100702

Analyte	UNITS	POX Residue	MDL	Method
		BL801 POX Residue		
Au	PPM	23.367	0.005	FA430
As	PPM	90822	5	NA301
TOT/S	%	23.36	0.02	TC000
S/S-	%	20.48	0.05	TC008
Mo	PPM	70	0.5	MA270
Cu	PPM	294.8	0.5	MA270
Pb	PPM	18869.1	0.5	MA270
Zn	PPM	3199	5	MA270
Ag	PPM	50.5	0.5	MA270
Ni	PPM	751.7	0.5	MA270
Co	PPM	38	1	MA270
Mn	PPM	202	5	MA270
Fe	%	29.25	0.01	MA270
As	PPM	94958	5	MA270
U	PPM	<0.5	0.5	MA270
Th	PPM	7.6	0.5	MA270
Sr	PPM	80	5	MA270
Cd	PPM	23.7	0.5	MA270
Sb	PPM	995.7	0.5	MA270
Bi	PPM	26.7	0.5	MA270
V	PPM	20	10	MA270
Ca	%	3.16	0.01	MA270
P	%	0.02	0.01	MA270
La	PPM	19	0.5	MA270
Cr	PPM	1332	1	MA270
Mg	%	0.08	0.01	MA270
Ba	PPM	127	5	MA270
Ti	%	0.108	0.001	MA270
Al	%	1.18	0.01	MA270
Na	%	0.03	0.01	MA270
K	%	0.57	0.01	MA270
W	PPM	6	0.5	MA270
Zr	PPM	25.7	0.5	MA270
Ce	PPM	38	5	MA270
Sn	PPM	20.5	0.5	MA270
Y	PPM	4.5	0.5	MA270
Nb	PPM	2.3	0.5	MA270
Ta	PPM	<0.5	0.5	MA270
Be	PPM	<5	5	MA270
Sc	PPM	1	1	MA270
Li	PPM	5.7	0.5	MA270
S	%	23.57	0.05	MA270
Rb	PPM	22.1	0.5	MA270
Hf	PPM	<0.5	0.5	MA270
Se	PPM	<5	5	MA270

PRESSURE LEACH + HOT ACID CURE TEST WORK SHEET

Client: Base Metallurgical Laboratories Ltd
Test: BL 801, POX 2
Sample: ME2103805 BL 801 T01 Combined Concentrate

Date: 29-Jun-21
Project: 2100702

Objective: POX test on as-received concentrate at ~15% solids followed by hot acid cure

POX conditions:

Temperature:	220 °C
O2 Overpressure:	100 psi
Duration:	2 hours

HOT ACID CURE conditions:

Start slurry weight:	286 g
Temperature:	95 °C
12N H2SO4 addition:	n/a
Duration:	6 hours

POX TEST DATA:

Test #	Sample id	Weight, g	Initial pH	H2SO4 addition g/Kg Ro Conc.	Final pH	Initial Slurry Weight, g	Final Slurry Weight, g	Slurry cut for assay		Calculated POX residue, g
								wet, g	dry, g	
BL 801 POX 2	BL 801 Combined Concentrate	70.0	7.5	31.9	2.2	450	250	34.04	6.6	48.6

HOT ACID CURE TEST DATA:

Test #	Sample id	Weight, g	Time, hours	pH	Final slurry	Note
HA Cure	POX Slurry	286 g	0	<1		Hot cure slurry packed in double container and shipped to Envirolab
			1.0	<1		
			2.5	<1		
			4.5	<1		
			6.0	0.24	196.00	

PRESSURE LEACH + HOT ACID CURE TEST WORK SHEET

Client: Base Metallurgical Laboratories Ltd
Test: BL 801, POX 3
Sample: ME2103805 BL 801 T01 Combined Concentrate

Date: 29-Jun-21
Project: 2100702

Objective: POX test on as-received concentrate at ~15% solids followed by hot acid cure

POX conditions:

Temperature:	220 °C
O2 Overpressure:	100 psi
Duration:	4 hours

HOT ACID CURE conditions:

Start slurry weight:	620 g
Temperature:	95 °C
12N H2SO4 addition:	n/a
Duration:	6 hours

POX TEST DATA:

Test #	Sample id	Weight, g	Initial pH	H2SO4 addition g/Kg Ro Conc.	Final pH	Initial Slurry Weight, g	Final Slurry Weight, g	Slurry cut for assay		Calculated POX residue, g
								wet, g	dry, g	
BL 801 POX 3	BL 801 Combined Concentrate	104.2	7.8	31.1	2.2	695	690	68.55	6.4	64.2

HOT ACID CURE TEST DATA:

Test #	Sample id	Weight, g	Time, hours	pH	Final slurry	Note
HA Cure	POX Slurry	620 g	0	<1		Hot cure slurry packed in double container and shipped to Envirolab
			1.0	<1		
			2.5	<1		
			4.5	<1		
			6.0	0.53	603g	

PRESSURE LEACH + HOT ACID CURE TEST WORK SHEET

Client: Base Metallurgical Laboratories Ltd
Test: BL 801, POX 4
Sample: ME2103805 BL 801 T02 Bulk Con 1

Date: 21-Sep-21
Project: 2100702

Objective: POX test on as-received concentrate at ~15% solids followed by hot acid cure

POX conditions:

Temperature:	220 °C
O2 Overpressure:	100 psi
Duration:	1 hour

HOT ACID CURE conditions:

Start slurry weight:	1002 g
Temperature:	95 °C
12N H2SO4 addition:	n/a
Duration:	6 hours

POX TEST DATA:

Test #	Sample id	Weight, g	Initial pH	H2SO4 addition g/Kg Ro Conc.	Final pH	Initial Slurry Weight, g	Final Slurry Weight, g	Slurry cut for assay		Calculated POX residue, g
								wet, g	dry, g	
BL 801 POX 4	BL801 T02 Bulk Con 1	203.0	6.5	13.3	2.2	1353	1160	166.85	18.9	131.1

HOT ACID CURE TEST DATA:

Test #	Sample id	Weight, g	Time, hours	pH	Final slurry	Note
HA Cure	POX Slurry	1002 g	0	0.85		Hot cure slurry packed in double container and shipped to BML
			1.0	<1		
			2.5	<1		
			4.5	<1		
			6.0	0.81	942.00	

PRESSURE LEACH TEST - POX FINAL SOLUTION ANALYSIS

Client: Base Metallurgical Laboratories Ltd
Test: as specified
Sample: as specified

Date: 21-Sep-21
Project: 2100702

Element	Unit	BL801 POX2 PLS	RE BL801 POX2 PLS	BL801 POX3 PLS	BL801 POX4 PLS	RE: BL801 POX4 PLS	Minimum detection	Maximum detection	Method
Al	mg/L	2866.00	2860.00	660.10	326.00	316.00	0.08	10000.00	ICPH2O
As	mg/L	18240.0	17490.0	6154.0	13440.0	13280.0	0.2	10000.0	ICPH2O
B	mg/L	25.14	24.84	11.66	11.95	11.81	0.06	10000.00	ICPH2O
Ba	mg/L	0.143	0.108	<0.003	0.026	0.025	0.003	1000.000	ICPH2O
Ca	mg/L	692.00	611.80	615.90	708.00	695.60	0.05	10000.00	ICPH2O
Cd	mg/L	18.47	17.42	13.18	64.43	63.91	0.01	1000.00	ICPH2O
Co	mg/L	16.23	15.60	7.58	7.01	6.95	0.03	10000.00	ICPH2O
Cr	mg/L	407.50	398.90	45.18	32.23	31.61	0.03	10000.00	ICPH2O
Cu	mg/L	290.90	290.20	135.60	205.00	199.20	0.04	10000.00	ICPH2O
Fe	mg/L	38320.00	37820.00	21040.00	16140.00	15840.00	0.02	10000.00	ICPH2O
K	mg/L	1216.0	1229.0	78.9	183.4	177.3	0.4	10000.0	ICPH2O
Li	mg/L	1.80	1.81	0.72	0.38	0.34	0.02	10000.00	ICPH2O
Mg	mg/L	617.40	603.20	277.60	165.90	161.40	0.05	10000.00	ICPH2O
Mn	mg/L	112.20	108.50	47.05	30.36	29.65	0.01	1000.00	ICPH2O
Mo	mg/L	20.76	20.03	1.41	1.47	1.54	0.05	10000.00	ICPH2O
Na	mg/L	182.5	183.0	24.3	25.7	24.6	0.1	10000.0	ICPH2O
Ni	mg/L	327.20	312.70	130.40	50.84	50.49	0.06	10000.00	ICPH2O
P	mg/L	26.7	25.4	3.4	8.0	5.8	0.2	10000.0	ICPH2O
Pb	mg/L	15.3	14.7	8.1	7.6	7.3	0.2	10000.0	ICPH2O
S	mg/L	57740.0	54410.0	30010.0	41590.0	41390.0	0.3	10000.0	ICPH2O
Sb	mg/L	50.9	49.0	3.4	12.8	13.0	0.2	10000.0	ICPH2O
Se	mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	0.4	10000.0	ICPH2O
Si	mg/L	171.8	166.5	492.9	615.7	601.5	0.2	10000.0	ICPH2O
Sr	mg/L	3.261	3.167	1.593	0.413	0.400	0.002	1000.000	ICPH2O
Tl	mg/L	<2	<2	<2	<2	<2	2	1000	ICPH2O
V	mg/L	7.95	7.69	2.37	1.33	1.40	0.06	1000.00	ICPH2O
Zn	mg/L	4118.00	3955.00	2166.00	8038.00	7977.00	0.02	10000.00	ICPH2O

PRESSURE LEACH TEST - POX RESIDUE ASSAY

Client: Base Metallurgical Laboratories Ltd
Test: as specified
Sample: as specified

Analyte	UNITS	POX 2 Residue	POX 3 Residue	POX 4 Residue
Au	PPM	23.384	25.532	27.033
As	PPM	>10000	>10000	>10000
TOT/S	%	5.57	4.08	9.44
S/S-	%	2.29	2.09	7.01
Mo	PPM	40.5	82.2	22.1
Cu	PPM	205.4	287.9	472.1
Pb	PPM	20310.7	21339.7	33180
Zn	PPM	4577	4246	22520
Ag	PPM	43.3	66.7	173.4
Ni	PPM	118.6	118.8	140.9
Co	PPM	19	17	25
Mn	PPM	51	48	34
Fe	%	21.94	22.02	27.82
As	PPM	>100000	>100000	>100000
U	PPM	0.5	<0.5	<0.5
Th	PPM	7.7	6.3	7
Sr	PPM	78	46	38
Cd	PPM	39.5	6.2	21.6
Sb	PPM	934	1056.4	1637.9
Bi	PPM	25.5	28.2	27.1
V	PPM	10	15	<10
Ca	%	3.11	1.83	0.75
P	%	0.02	0.02	0.01
La	PPM	20.1	15.8	14.4
Cr	PPM	893	1872	747
Mg	%	0.04	0.05	0.03
Ba	PPM	203	155	216
Ti	%	0.138	0.191	0.082
Al	%	0.72	1	0.43
Na	%	0.02	0.02	0.01
K	%	0.32	0.68	0.15
W	PPM	6.1	7.3	3.1
Zr	PPM	21.9	29	56.4
Ce	PPM	40	35	28
Sn	PPM	16.3	19.9	13.5
Y	PPM	3.4	2.3	1.4
Nb	PPM	1.6	2.1	1
Ta	PPM	<0.5	<0.5	<0.5
Be	PPM	<5	<5	<5
Sc	PPM	1	2	<1
Li	PPM	3.5	7.3	3.1
S	%	5.57	4.11	9.06
Rb	PPM	9.5	16.2	7.3
Hf	PPM	1.5	0.7	1.8
Se	PPM	<5	<5	<5

PRESSURE LEACH TEST - P

Client: Base Metallurg
Test: as specified
Sample: as specified

Date: 21-Sep-21
Project: 2100702

Analyte	UNITS	MDL	Method
Au	PPM	0.005	FA430
As	PPM	5	NA301
TOT/S	%	0.02	TC000
S/S-	%	0.05	TC008
Mo	PPM	0.5	MA270
Cu	PPM	0.5	MA270
Pb	PPM	0.5	MA270
Zn	PPM	5	MA270
Ag	PPM	0.5	MA270
Ni	PPM	0.5	MA270
Co	PPM	1	MA270
Mn	PPM	5	MA270
Fe	%	0.01	MA270
As	PPM	5	MA270
U	PPM	0.5	MA270
Th	PPM	0.5	MA270
Sr	PPM	5	MA270
Cd	PPM	0.5	MA270
Sb	PPM	0.5	MA270
Bi	PPM	0.5	MA270
V	PPM	10	MA270
Ca	%	0.01	MA270
P	%	0.01	MA270
La	PPM	0.5	MA270
Cr	PPM	1	MA270
Mg	%	0.01	MA270
Ba	PPM	5	MA270
Ti	%	0.001	MA270
Al	%	0.01	MA270
Na	%	0.01	MA270
K	%	0.01	MA270
W	PPM	0.5	MA270
Zr	PPM	0.5	MA270
Ce	PPM	5	MA270
Sn	PPM	0.5	MA270
Y	PPM	0.5	MA270
Nb	PPM	0.5	MA270
Ta	PPM	0.5	MA270
Be	PPM	5	MA270
Sc	PPM	1	MA270
Li	PPM	0.5	MA270
S	%	0.05	MA270
Rb	PPM	0.5	MA270
Hf	PPM	0.5	MA270
Se	PPM	5	MA270

PRESSURE LEACH + HOT ACID CURE TEST WORK SHEET

Client: Base Metallurgical Laboratories Ltd
Test: **BL 801 POX 5**
Sample: ME2103805 BL 801 Combined Concentrate

Date: 13-Oct-21
Project: 2100702

Objective: POX test on as-received concentrate at **5%** solids followed by hot acid cure

POX conditions:

Temperature: 220 °C
O2 Overpressure: 100 psi
Duration: **1.0** hour

HOT ACID CURE conditions:

Temperature: 98 °C
Duration: 6 hours

POX TEST DATA:(Pre-acidification @ room temperature)

Test #	Sample id	Weight, g	Initial pH	Initial ORP (mV)	H2SO4 addition g/Kg Ro Conc.	Final pH	Final ORP (mV)	Initial Slurry Weight, g	Final Slurry Weight, g	Slurry cut for assay		Calculated POX residue, g
										wet, g	dry, g	
BL 801 POX 5	BL 801 Combined Concentrate	75.0	6.3	N/A	31.4	2.2	N/A	1500	1505	372.00	15.9	64.1

POX Temp.&Total Pressure Profile

Time(min.)	Temp. C	Total Pressure(psi)
0.0	220	430
20.0	pretty stable	
40.0		
60.0	220	430

HOT ACID CURE TEST DATA:

Test #	Sample id	Weight, g	Time, hours	pH	ORP(mV)	Sampling ml	Slurry weight	H2SO4 addition ml(12N)	NOTICE
HA Cure	POX Slurry	1133.0	0	0.76	410		1133.00		pH ORPmeaeured @ room temperature
			1.0	<1					
			2.0	<1					
			3.0	<1					
			4.0	<1					
			5.0	<1					
			6.0	0.88	402	15.00	~1067		

Note: All ORP measured with Ag/AgCl reference electrode

PRESSURE LEACH + HOT ACID CURE TEST WORK SHEET

Client: Base Metallurgical Laboratories Ltd
Test: **BL 801 POX 6**
Sample: ME2103805 BL 801 Combined Concentrate

Date: 13-Oct-21
Project: 2100702

Objective: POX test on as-received concentrate at **10%** solids followed by hot acid cure

POX conditions:

Temperature: 220 °C
O2 Overpressure: 100 psi
Duration: **1.0** hour

HOT ACID CURE conditions:

Temperature: 98 °C
Duration: 6 hours

POX TEST DATA:(Pre-acidification @ room temperature)

Test #	Sample id	Weight, g	Initial pH	Initial ORP (mV)	H2SO4 addition g/Kg Ro Conc.	Final pH	Final ORP (mV)	Initial Slurry Weight, g	Final Slurry Weight, g	Slurry cut for assay wet, g	Slurry cut for assay dry, g	Calculated POX residue, g
BL 801 POX 6	BL 801 Combined Concentrate	150.0	6.4	N/A	25.5	2.2	N/A	1500	1505	251.00	16.6	99.3

POX Temp.&Total Pressure Profile

Time(min.)	Temp. C	Total Pressure(psi)
0.0	220	430
20.0	pretty stable	
40.0		
60.0	220	430

HOT ACID CURE TEST DATA:

Test #	Sample id	Weight, g	Time, hours	pH	ORP(mV)	Sampling ml	Slurry weight	H2SO4 addition ml(12N)	NOTICE
HA Cure	POX Slurry	1254.0	Initial	1.35	336		1313.0	40.0	pH ORPmeaeured @ room temperature
			0.0	0.96	322	15.0		10.0	
			1.0	0.87	320	15.0			
			2.0	0.78	315	15.0			
			3.0	0.95	326	15.0		5.0	
			4.0	0.80	318	15.0			
			5.0	0.85	320	15.0			
			6.0	0.88	310	15.0	1258.0		

Note: All ORP measured with Ag/AgCl reference electrode

PRESSURE LEACH + HOT ACID CURE TEST WORK SHEET

Client: Base Metallurgical Laboratories Ltd
Test: **BL 801 POX 7**
Sample: ME2103805 BL 801 Combined Concentrate

Date: 13-Oct-21
Project: 2100702

Objective: POX test on as-received concentrate at **15%** solids followed by hot acid cure

POX conditions:

Temperature: 220 °C
O2 Overpressure: 100 psi
Duration: **2.0** hour

HOT ACID CURE conditions:

Temperature: 98 °C
Duration: 6 hours

POX TEST DATA:(Pre-acidification @ room temperature)

Test #	Sample id	Weight, g	Initial pH	Initial ORP (mV)	H2SO4 addition g/Kg Ro Conc.	Final pH	Final ORP (mV)	Initial Slurry Weight, g	Final Slurry Weight, g	Slurry cut for assay wet, g	Slurry cut for assay dry, g	Calculated POX residue, g
BL 801 POX 7	BL 801 Combined Concentrate	225.0	6.4	N/A	27.2	2.2	N/A	1500	1510	201.20	17.9	134.1

POX Temp.&Total Pressure Profile

Time(min.)	Temp. C	Total Pressure(psi)
0.0	220	430
20.0	pretty stable	
40.0		
60.0		
80.0		
100.0		
120.0	220	430

HOT ACID CURE TEST DATA:

Test #	Sample id	Weight, g	Time, hours	pH	ORP(mV)	Sampling ml	Slurry weight	H2SO4 addition ml(12N)	NOTICE
HA Cure	POX Slurry	1308.8	Initial	1.21	345		1397.0	65.0	pH ORPmeaeured @ room temperature
			0.0	0.65	355	15.0		5.0	
			1.0	0.85	353	15.0			
			2.0	0.84	345	15.0			
			3.0	0.77	315	15.0			
			4.0	0.60	325	15.0			
			5.0	0.75	315	15.0		5.0	
			6.0	0.78	318	15.0	1352.0		

Note: All ORP measured with Ag/AgCl reference electrode

PRESSURE LEACH + HOT ACID CURE TEST WORK SHEET

Client: Base Metallurgical Laboratories Ltd
Test: **BL 801 POX 8**
Sample: ME2103805 BL 801 Combined Concentrate

Date: 13-Oct-21
Project: 2100702

Objective: POX test on as-received concentrate at **20%** solids followed by hot acid cure

POX conditions:

Temperature: 220 °C
O2 Overpressure: 100 psi
Duration: **2.0** hour

HOT ACID CURE conditions:

Temperature: 98 °C
Duration: 6 hours

POX TEST DATA:(Pre-acidification @ room temperature)

Test #	Sample id	Weight, g	Initial pH	Initial ORP (mV)	H2SO4 addition g/Kg Ro Conc.	Final pH	Final ORP (mV)	Initial Slurry Weight, g	Final Slurry Weight, g	Slurry cut for assay wet, g	Slurry cut for assay dry, g	Calculated POX residue, g
BL 801 POX 8	BL 801 Combined Concentrate	250.0	6.4	N/A	25.7	2.2	N/A	1250	1302	156.00	22.1	184.2

POX Temp.&Total Pressure Profile

Time(min.)	Temp. C	Total Pressure(psi)
0.0	220	430
20.0	220	pretty stable
40.0	220	
60.0	220	
80.0	219	
100.0	220	
120.0	220	430

HOT ACID CURE TEST DATA:

Test #	Sample id	Weight, g	Time, hours	pH	ORP(mV)	Sampling ml	Slurry weight	H2SO4 addition ml(12N)	NOTICE
HA Cure	POX Slurry	1146.0	Initial	1.17	392		1244.0	60.0	pH ORPmeaeured @ room temperature
			0.0	0.65	370	15.0			
			1.0	0.47	373	15.0			
			2.0	0.42	375	15.0			
			3.0	0.77	372	15.0			
			4.0	0.56	370	15.0			
			5.0	0.57	370	15.0			
			6.0	0.69	385	15.0	1160.0		

Note: All ORP measured with Ag/AgCl reference electrode

PRESSURE LEACH + HOT ACID CURE TEST WORK SHEET

Client: Base Metallurgical Laboratories Ltd
Test: **BL 801 POX 9**
Sample: ME2103805 BL 801 Combined Concentrate

Date: 13-Oct-21
Project: 2100702

Objective: POX test on as-received concentrate at **30%** solids followed by hot acid cure

POX conditions:

Temperature: 220 °C
O2 Overpressure: 100 psi
Duration: **2.0** hour

HOT ACID CURE conditions:

Temperature: 98 °C
Duration: 6 hours

POX TEST DATA:(Pre-acidification @ 60 C,pH ORPmeaeured @ 60c as well)

Test #	Sample id	Weight, g	Initial pH	Initial ORP (mV)	H2SO4 addition g/Kg Ro Conc.	Final pH	Final ORP (mV)	Initial Slurry Weight, g	Final Slurry Weight, g	Slurry cut for assay wet, g	Slurry cut for assay dry, g	Calculated POX residue, g
BL 801 POX 9	BL 801 Combined Concentrate	300.0	5.6	270.0	29.0	2.2	225.0	1000	940	122.1	25.9	199.0

POX Temp.&Total Pressure Profile

Time(min.)	Temp. C	Total Pressure(psi)
0.0	220	430
20.0	220	430
40.0	221	432
60.0	220	430
80.0	219	430
100.0	219	429
120.0	220	428

HOT ACID CURE TEST DATA:

Test #	Sample id	Weight, g	Time, hours	pH	ORP(mV)	Sampling ml	Slurry weight	H2SO4 addition ml(12N)	NOTICE
HA Cure	POX Slurry	817.9	Initial	2.14	244		923.0	55.0	pH ORPmeaeured @ room temperature
			0.0	0.76	288	15.0			
			1.0	0.69	262	15.0			
			2.0	0.89	255	15.0		5.0	
			3.0	0.87	253	15.0		10.0	
			4.0	0.77	250	15.0			
			5.0	0.72	257	15.0			
			6.0	0.79	256	15.0	938.0		

Note: All ORP measured with Ag/AgCl reference electrode

PRESSURE LEACH + HOT ACID CURE TEST WORK SHEET

Client: Base Metallurgical Laboratories Ltd
Test: **BL 801 POX 10**
Sample: ME2103805 BL 801 Combined Concentrate

Date: 29-Nov-21
Project: 2100702

Objective: POX test on as-received concentrate at 15**%** solids followed by hot acid cure

POX conditions:

Feed sample size:	As received
Temperature:	220 °C
O2 Overpressure:	100 psi
Duration:	2.0 hour

HOT ACID CURE conditions:

Temperature:	98 °C
Duration:	6 hours

POX TEST DATA:(Pre-acidification @ 60 C,pH ORPmeaeured @ 60c as well)

Test #	Sample id	Weight, g	Initial pH	Initial ORP (mV)	H2SO4 addition g/Kg Ro Conc.	Final pH	Final ORP (mV)	Initial Slurry Weight, g	Final Slurry Weight, g	Slurry cut for assay wet, g	Slurry cut for assay dry, g	Calculated POX residue, g
BL 801 POX 10	BL 801 Combined Concentrate	70.0	6.1	188.0	19.8	2.2	398.0	466	480	82.2	9.1	52.9

POX Temp.&Total Pressure Profile

Time(min.)	Temp. C	Total Pressure(psi)
0.0	220	430
20.0	218	430
40.0	221	430
60.0	220	432
80.0	218	430
100.0	219	429
120.0	220	430

HOT ACID CURE TEST DATA:

Test #	Sample id	Weight, g	Time, hours	pH	ORP(mV)	Sampling ml	Slurry weight	H2SO4 addition ml(12N)	NOTICE
HA Cure	POX Slurry	434.0	Initial	0.98	480		454.0	10.0	pH ORPmeaeured @ room temperature
			0.0	0.81		N/A			
			1.0	0.45		N/A			
			2.0			N/A			
			3.0	0.25		N/A			
			4.0			N/A			
			5.0	0.37		N/A			
			6.0	0.40	460	N/A	364.0		

Note: All ORP measured with Ag/AgCl reference electrode

PRESSURE LEACH + HOT ACID CURE TEST WORK SHEET

Client: Base Metallurgical Laboratories Ltd
Test: **BL 801 POX 11**
Sample: ME2103805 BL 801 Combined Concentrate

Date: 29-Nov-21
Project: 2100702

Objective: POX test on as-received concentrate at 15**%** solids followed by hot acid cure

POX conditions:

Feed sample size:	As received
Temperature:	220 °C
O2 Overpressure:	100 psi
Duration:	2.0 hour

HOT ACID CURE conditions:

Temperature:	98 °C
Duration:	6 hours

POX TEST DATA:(Pre-acidification @ 60 C,pH ORPmeaeured @ 60c as well)

Test #	Sample id	Weight, g	Initial pH	Initial ORP (mV)	H2SO4 addition g/Kg Ro Conc.	Final pH	Final ORP (mV)	Initial Slurry Weight, g	Final Slurry Weight, g	Slurry cut for assay wet, g	Slurry cut for assay dry, g	Calculated POX residue, g
BL 801 POX 11	BL 801 Combined Concentrate	70.0	6.0	116.0	18.5	2.2	380.0	466	315	62.6	8.0	40.1

POX Temp.&Total Pressure Profile

Time(min.)	Temp. C	Total Pressure(psi)
0.0	220	430
20.0	220	430
40.0	217	428
60.0	220	432
80.0	219	430
100.0	218	429
120.0	220	430

HOT ACID CURE TEST DATA:

Test #	Sample id	Weight, g	Time, hours	pH	ORP(mV)	Sampling ml	Slurry weight	H2SO4 addition ml(12N)	NOTICE
HA Cure	POX Slurry	282.0	Initial	0.86	493		295.0	5.0	pH ORPmeaeured @ room temperature
			0.0	0.67		N/A			
			1.0	0.58		N/A			
			2.0	0.62		N/A		5.0	
			3.0			N/A			
			4.0	0.36		N/A			
			5.0			N/A			
			6.0	0.30		N/A	167.0		

Note: All ORP measured with Ag/AgCl reference electrode

PRESSURE LEACH + HOT ACID CURE TEST WORK SHEET

Client: Base Metallurgical Laboratories Ltd
Test: **BL 801 POX 12**
Sample: ME2103805 BL 801 Combined Concentrate

Date: 15-Dec-21
Project: 2100702

Objective: POX test on as-received concentrate at 15**%** solids followed by hot acid cure

POX conditions:

Feed sample size:	As received
Temperature:	220 °C
O2 Overpressure:	100 psi
Duration:	2.0 hour

HOT ACID CURE conditions:

Temperature:	98 °C
Duration:	6 hours

POX TEST DATA:(Pre-acidification @ 60 C,pH ORPmeaeured @ 60c as well)

Test #	Sample id	Weight, g	Initial pH	Initial ORP (mV)	H2SO4 addition g/Kg Ro Conc.	Final pH	Final ORP (mV)	Initial Slurry Weight, g	Final Slurry Weight, g	Slurry cut for assay wet, g	Slurry cut for assay dry, g	Calculated POX residue, g
BL 801 POX 12	BL 801 Combined Concentrate	100.0	6.0	45.0	23.5	2.2	362.0	666	615	85.7	6.4	45.7

POX Temp.&Total Pressure Profile

Time(min.)	Temp. C	Total Pressure(psi)
0.0	220	430
20.0	218	428
40.0	220	429
60.0	220	432
80.0	218	430
100.0	218	427
120.0	220	430

HOT ACID CURE TEST DATA:

Test #	Sample id	Weight, g	Time, hours	pH	ORP(mV)	Sampling ml	Slurry weight	H2SO4 addition ml(12N)	NOTICE
HA Cure	POX Slurry	580.0	Initial	1.19	335		644.0	35.0	pH ORPmeaeured @ room temperature
			0.0	0.85		N/A			
			1.0	0.62		N/A			
			2.0	0.55		N/A			
			3.0	0.66		N/A			
			4.0	0.78		N/A		5.0	
			5.0	0.71		N/A			
			6.0	0.65		N/A	568.0		

Note: All ORP measured with Ag/AgCl reference electrode

PRESSURE LEACH + HOT ACID CURE TEST WORK SHEET

Client: Base Metallurgical Laboratories Ltd
Test: **BL 801 POX 13**
Sample: ME2103805 BL 801 Combined Concentrate

Date: 16-Dec-21
Project: 2100702

Objective: POX test on reground concentrate at **15%** solids followed by hot acid cure

POX conditions:

Feed sample size:	7.5 micron
Temperature:	220 °C
O2 Overpressure:	100 psi
Duration:	1.0

HOT ACID CURE conditions:

Temperature:	98 °C
Duration:	6 hours

POX TEST DATA:(Pre-acidification @ 60 C,pH ORPmeaeured @ 60c as well)

Test #	Sample id	Weight, g	Initial pH	Initial ORP (mV)	H2SO4 addition g/Kg Ro Conc.	Final pH	Final ORP (mV)	Initial Slurry Weight, g	Final Slurry Weight, g	Slurry cut for assay wet, g	Slurry cut for assay dry, g	Calculated POX residue, g
BL 801 POX 13	BL 801 Combined Concentrate	100.0	6.1	232.0	37.7	2.2	308.0	666	535	87.1	9.6	59.2

POX Temp.&Total Pressure Profile

Time(min.)	Temp. C	Total Pressure(psi)
0.0	220	430
20.0	219	429
40.0	220	429
60.0	220	430

HOT ACID CURE TEST DATA:

Test #	Sample id	Weight, g	Time, hours	pH	ORP(mV)	Sampling ml	Slurry weight	H2SO4 addition ml(12N)	NOTICE
HA Cure	POX Slurry	498.0	Initial	1.02	320		520.0	10.0	pH ORPmeaeured @ room temperature
			0.0	0.86	335	N/A			
			1.0	0.72		N/A			
			2.0	0.67		N/A			
			3.0			N/A			
			4.0	0.85		N/A		5.0	
			5.0	0.60		N/A			
			6.0			N/A	493.0		

Note: All ORP measured with Ag/AgCl reference electrode

PRESSURE LEACH + HOT ACID CURE TEST WORK SHEET

Client: Base Metallurgical Laboratories Ltd
Test: **BL 801 POX 14**
Sample: ME2103805 BL 801 Combined Concentrate

Date: 23-Dec-21
Project: 2100702

Objective: POX test on reground concentrate at **15%** solids followed by hot acid cure

POX conditions:

Feed sample size:	7.5 micron
Temperature:	220 °C
O2 Overpressure:	100 psi
Duration:	2.0

HOT ACID CURE conditions:

Temperature:	98 °C
Duration:	6 hours

POX TEST DATA:(Pre-acidification @ 60 C,pH ORPmeaeured @ 60c as well)

Test #	Sample id	Weight, g	Initial pH	Initial ORP (mV)	H2SO4 addition g/Kg Ro Conc.	Final pH	Final ORP (mV)	Initial Slurry Weight, g	Final Slurry Weight, g	Slurry cut for assay wet, g	Slurry cut for assay dry, g	Calculated POX residue, g
BL 801 POX 14	BL 801 Combined Concentrate	100.0	5.9	271.0	38.8	2.2	320.0	666	440	67.1	8.1	53.2

POX Temp.&Total Pressure Profile

Time(min.)	Temp. C	Total Pressure(psi)
0.0	220	430
20.0	220	430
40.0	219	429
60.0	220	430
80.0	217	428
100.0	218	427
120.0	220	430

HOT ACID CURE TEST DATA:

Test #	Sample id	Weight, g	Time, hours	pH	ORP(mV)	Sampling ml	Slurry weight	H2SO4 addition ml(12N)	NOTICE
HA Cure	POX Slurry	409.0	Initial	0.32	480		409.0		pH ORPmeaeured @ room temperature
			0.0	0.32		N/A			
			1.0	0.30		N/A			
			2.0	0.30		N/A			
			3.0			N/A			
			4.0	0.20		N/A			
			5.0	0.15		N/A			
			6.0			N/A	354.0		

Note: All ORP measured with Ag/AgCl reference electrode

PRESSURE LEACH + HOT ACID CURE TEST WORK SHEET

Client: Base Metallurgical Laboratories Ltd
Test: **BL 801 POX 15**
Sample: ME2103805 BL 801 Combined Concentrate

Date: 03-Jan-22
Project: 2100702

Objective: POX test on reground concentrate at **15%** solids followed by hot acid cure

POX conditions:

Feed sample size:	7.5 micron
Temperature:	220 °C
O2 Overpressure:	100 psi
Duration:	2.0

HOT ACID CURE conditions:

Temperature:	98 °C
Duration:	6 hours

POX TEST DATA:(Pre-acidification @ 60 C,pH ORPmeaeured @ 60c as well)

Test #	Sample id	Weight, g	Initial pH	Initial ORP (mV)	H2SO4 addition g/Kg Ro Conc.	Final pH	Final ORP (mV)	Initial Slurry Weight, g	Final Slurry Weight, g	Slurry cut for assay wet, g	Slurry cut for assay dry, g	Calculated POX residue, g
BL 801 POX 15	BL 801 Combined Concentrate	100.0	5.7	320.0	39.4	2.2	282.0	666	390	54.9	6.9	49.0

POX Temp.&Total Pressure Profile

Time(min.)	Temp. C	Total Pressure(psi)
0.0	220	430
20.0	218	430
40.0	219	427
60.0	220	430
80.0	218	430
100.0	218	428
120.0	220	430

HOT ACID CURE TEST DATA:

Test #	Sample id	Weight, g	Time, hours	pH	ORP(mV)	Sampling ml	Slurry weight	H2SO4 addition ml(12N)	NOTICE
HA Cure	POX Slurry	362.0	Initial	0.57	460		362.0		pH ORPmeaeured @ room temperature
			0.0	0.57		N/A			
			1.0	0.55		N/A			
			2.0	0.47		N/A			
			3.0			N/A			
			4.0	0.40		N/A			
			5.0			N/A			
			6.0	0.38		N/A	277.0		

Note: All ORP measured with Ag/AgCl reference electrode

PRESSURE LEACH TEST - POX FINAL SOLUTION ANALYSIS

Client: Base Metallurgical Laboratories Ltd
Test: as specified
Sample: as specified

Date: 03-Jan-22
Project: 2100702

Element	Unit	BL801 POX5 PLS	RE BL801 POX6 PLS	BL801 POX7 PLS	BL801 POX8 PLS	BL801 POX9 PLS	RE: BL801 POX10 PLS	BL801 POX11 PLS	BL801 POX12 PLS	BL801 POX13 PLS	BL801 POX14 PLS	BL801 POX15 PLS	RE: BL801 POX10 PLS	Minimum detection	Maximum detection	Method
Al	mg/L	53.12	24.38	111.86	310.27	58.56	665.40	1203.00	85.92	293.50	1011.00	1318.00	672.90	0.08	10000.00	ICPH2O
As	mg/L	971.6	13029.5	19297.0	15076.5	18296.5	8829.0	21520.0	15370.0	19230.0	26620.0	25320.0	8551.0	0.2	10000.0	ICPH2O
B	mg/L	3.40	9.09	23.16	25.93	34.70	9.16	20.02	12.81	12.71	25.07	29.46	9.38	0.06	10000.00	ICPH2O
Ba	mg/L	0.020	0.040	0.030	<0.003	0.030	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	1000.000	ICPH2O
Ca	mg/L	636.90	578.16	650.87	580.03	506.22	570.70	386.90	587.80	575.70	341.20	279.40	584.80	0.05	10000.00	ICPH2O
Cd	mg/L	16.51	31.39	50.79	72.44	5.43	60.29	96.90	65.68	78.10	100.70	109.70	58.64	0.01	1000.00	ICPH2O
Co	mg/L	1.73	2.07	4.11	7.61	<0.03	8.49	14.13	7.16	7.37	15.28	17.42	8.15	0.03	10000.00	ICPH2O
Cr	mg/L	6.89	0.86	8.22	35.94	4.95	75.00	138.40	9.90	17.35	132.30	188.80	76.87	0.03	10000.00	ICPH2O
Cu	mg/L	60.12	27.52	9.45	41.33	5.69	194.50	358.30	94.92	116.20	412.90	425.50	195.70	0.04	10000.00	ICPH2O
Fe	mg/L	1898.40	6671.52	15198.50	24758.30	31809.50	17440.00	33880.00	23600.00	23990.00	40740.00	45870.00	17950.00	0.02	10000.00	ICPH2O
K	mg/L	37.2	11.2	86.2	158.5	37.1	324.8	573.4	78.2	148.8	455.6	520.4	327.5	0.4	10000.0	ICPH2O
Li	mg/L	0.09	<0.02	0.14	0.29	0.27	0.55	0.81	0.27	0.40	0.80	0.89	0.52	0.02	10000.00	ICPH2O
Mg	mg/L	40.08	69.37	120.98	176.99	262.66	167.00	286.40	164.40	190.30	279.90	305.20	171.60	0.05	10000.00	ICPH2O
Mn	mg/L	7.37	11.06	20.18	29.34	36.44	30.10	52.40	25.20	26.46	48.89	53.97	31.22	0.01	1000.00	ICPH2O
Mo	mg/L	<0.05	0.24	<0.05	0.74	<0.05	4.11	7.02	0.45	0.98	4.05	3.95	3.82	0.05	10000.00	ICPH2O
Na	mg/L	12.7	13.3	29.4	20.4	30.3	25.1	38.5	21.1	26.4	37.3	40.8	25.8	0.1	10000.0	ICPH2O
Ni	mg/L	11.13	9.11	25.21	54.98	1.19	75.95	125.30	33.39	32.72	125.40	142.40	72.82	0.06	10000.00	ICPH2O
P	mg/L	<0.2	1.4	1.4	2.5	0.5	3.6	19.6	2.8	4.4	15.6	26.9	5.7	0.2	10000.0	ICPH2O
Pb	mg/L	3.6	3.3	2.8	5.1	4.3	6.1	7.8	6.1	7.9	9.2	9.0	5.7	0.2	10000.0	ICPH2O
S	mg/L	10410.0	9874.0	22540.0	41440.0	20430.0	49520.0	79310.0	33430.0	39760.0	85390.0	93740.0	50500.0	0.3	10000.0	ICPH2O
Sb	mg/L	2.9	7.2	2.8	9.3	1.6	11.8	51.5	12.1	35.0	55.5	96.9	12.0	0.2	10000.0	ICPH2O
Se	mg/L	2.8	4.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.4	10000.0	ICPH2O
Si	mg/L	140.8	178.7	399.1	554.0	364.2	541.7	107.1	420.2	506.1	128.4	122.3	570.1	0.2	10000.0	ICPH2O
Sr	mg/L	0.780	0.340	0.410	0.310	0.270	0.681	0.773	0.543	0.235	0.403	0.345	0.690	0.002	1000.000	ICPH2O
Tl	mg/L	9	9	6	<2	<2	<2	<2	<2	<2	<2	<2	<2	2	1000	ICPH2O
V	mg/L	<0.06	0.83	0.87	1.24	1.30	1.67	3.13	0.65	1.20	2.86	3.36	1.72	0.06	1000.00	ICPH2O
Zn	mg/L	2648.50	5855.80	8307.60	12259.00	3105.00	7544.00	11600.00	9791.00	10200.00	13270.00	14780.00	7390.00	0.02	10000.00	ICPH2O

PRESSURE LEACH TEST - POX RESIDUE ASSAY

Client: Base Metallurgical Laboratories Ltd
Test: as specified
Sample: as specified

Analyte	UNITS	POX 5 Residue	POX 6 Residue	POX 7 Residue	POX 8 Residue	POX 9 Residue	POX 10 Residue	POX 11 Residue
Au	PPM	22.472	38.678	30.182	29.231	29.682	24.975	33.54
As	PPM	>10000	>10000	>10000	>10000	>10000	>10000	>10000
TOT/S	%	5.57	24.82	9.46	14.72	28.7	3.15	2.93
S/S-	%	3.72	23.87	7.78	13.23	25.03	1.07	0.86
TOT/C	%						0.05	0.05
C/ORG	%						0.04	0.04
CVHg	PPM						12.9	35.97
Mo	PPM	20.6	29.1	27.5	28	26	14.8	25.7
Cu	PPM	253.5	1715.2	528.3	839.6	1890.5	609.5	596.6
Pb	PPM	25538.9	35936.8	36562.3	38465.8	29215.4	29731	31608.1
Zn	PPM	15908	12086	12753	16500	77373	24172	24442
Ag	PPM	61.4	83.7	85	77.4	65	56	81.3
Ni	PPM	192.8	373.4	109.9	281.4	513.3	48	65.8
Co	PPM	17	51	25	38	76	14	16
Mn	PPM	35	60	30	45	81	30	32
Fe	%	31.3	35.43	28.53	31.59	28.58	28.04	27.41
As	PPM	>100000	>100000	>100000	>100000	>100000	>100000	>100000
U	PPM	<0.5	0.7	<0.5	<0.5	0.9	<0.5	<0.5
Th	PPM	6.5	8.8	5.9	7.5	6.2	5.1	4.9
Sr	PPM	9	25	39	34	37	84	45
Cd	PPM	15.2	48.9	16.4	12.5	523.4	20.7	23.7
Sb	PPM	1282.9	1599.8	1653.5	1794	1385	1556.2	1720
Bi	PPM	34.3	47	46.4	47.9	39.8	25.1	39.1
V	PPM	<10	15	12	14	16	13	26
Ca	%	0.02	0.09	0.81	0.6	1.21	0.13	0.31
P	%	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
La	PPM	7.9	12.6	15.6	15.3	12.4	12.8	15
Cr	PPM	668	771	718	936	746	514	600
Mg	%	0.02	0.03	0.02	0.02	0.04	0.02	0.02
Ba	PPM	263	97	205	161	85	336	386
Ti	%	0.02	0.041	0.029	0.042	0.025	0.011	0.012
Al	%	0.37	0.63	0.41	0.56	0.59	0.23	0.31
Na	%	<0.01	0.01	0.01	0.02	0.01	<0.01	<0.01
K	%	0.16	0.3	0.2	0.22	0.28	0.07	0.09
W	PPM	2.7	3.7	3.8	3.5	3.4	3.1	2.9
Zr	PPM	34.7	49.6	50.1	62	47.9	42.8	46.4
Ce	PPM	15	24	31	30	27	25	28
Sn	PPM	11.4	15.2	13.4	15.8	12.3	11.1	12.4
Y	PPM	0.8	1.5	1.5	1.7	2.4	0.9	1.1
Nb	PPM	0.5	0.9	0.7	0.7	0.8	0.9	0.9
Ta	PPM	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Be	PPM	<5	<5	<5	<5	<5	<5	<5
Sc	PPM	2	3	4	3	4	<1	<1
Li	PPM	2.9	2.7	2.5	3.1	4.4	2.5	2.1
S	%	5.9	25.64	9.87	15.05	28.7	3.07	2.96
Rb	PPM	5.7	9.3	6.6	7.7	11	2.7	3.7
Hf	PPM	0.9	1.2	1.1	1.6	1	0.8	1.3
Se	PPM	<5	<5	<5	5	<5	<5	<5

PRESSURE LEACH TEST - P

Client: Base Metallurg
Test: as specified
Sample: as specified

Date: 03-Jan-22
Project: 2100702

Analyte	UNITS	POX 12 Residue	POX 13 Residue	POX 14 Residue	POX 15 Residue	MDL	Method
Au	PPM	42.486	36.976	39.22	41.313	0.005	FA430
As	PPM	>10000	>10000	>10000	>10000	5	NA301
TOT/S	%	22.83	19.17	2.21	1.73	0.02	TC000
S/S-	%	21.2	18.09	0.62	0.44	0.05	TC008
TOT/C	%	0.07	0.06	0.05	0.05	0.02	TC000
C/ORG	%	0.04	0.04	0.03	0.03	0.02	TC005
CVHg	PPM	55.25	58.41	83.35	62.68	0.01	CV402
Mo	PPM	33.2	27.7	29	42.3	0.5	MA270
Cu	PPM	1864.7	1522.7	435.2	621.5	0.5	MA270
Pb	PPM	45544.1	37736.8	41567.7	45831.4	0.5	MA270
Zn	PPM	9236	15121	7951	4281	5	MA270
Ag	PPM	105.2	96.1	98.7	114.5	0.5	MA270
Ni	PPM	380.2	436.9	59.9	57.7	0.5	MA270
Co	PPM	39	45	14	8	1	MA270
Mn	PPM	69	65	11	17	5	MA270
Fe	%	31.28	31.87	24.8	22.3	0.01	MA270
As	PPM	>100000	>100000	>100000	>100000	5	MA270
U	PPM	0.7	<0.5	<0.5	<0.5	0.5	MA270
Th	PPM	6.8	4.5	4.7	4.7	0.5	MA270
Sr	PPM	42	38	47	52	5	MA270
Cd	PPM	22.8	7.5	8.4	9.6	0.5	MA270
Sb	PPM	1721.1	1355.9	1799.2	1586.9	0.5	MA270
Bi	PPM	54.7	34	48.8	54.8	0.5	MA270
V	PPM	20	15	<10	12	10	MA270
Ca	%	0.83	0.33	0.39	0.58	0.01	MA270
P	%	0.02	0.01	0.02	<0.01	0.01	MA270
La	PPM	17.3	15.7	19.9	21.2	0.5	MA270
Cr	PPM	877	825	757	659	1	MA270
Mg	%	0.04	0.03	0.02	0.02	0.01	MA270
Ba	PPM	115	111	448	477	5	MA270
Ti	%	0.023	0.029	0.017	0.015	0.001	MA270
Al	%	0.85	0.73	0.49	0.44	0.01	MA270
Na	%	0.01	0.02	<0.01	0.01	0.01	MA270
K	%	0.35	0.27	0.12	0.14	0.01	MA270
W	PPM	4.4	4.7	4.4	4.1	0.5	MA270
Zr	PPM	68	295.1	317.3	329.9	0.5	MA270
Ce	PPM	34	33	38	40	5	MA270
Sn	PPM	21	18.1	16.9	16.5	0.5	MA270
Y	PPM	3.4	3.4	1.8	3.3	0.5	MA270
Nb	PPM	1.5	1.5	1	0.9	0.5	MA270
Ta	PPM	<0.5	<0.5	<0.5	<0.5	0.5	MA270
Be	PPM	<5	<5	<5	<5	5	MA270
Sc	PPM	<1	<1	<1	1	1	MA270
Li	PPM	4.7	4.8	1.5	1.8	0.5	MA270
S	%	22.95	21.38	2.1	1.63	0.05	MA270
Rb	PPM	12.1	9.3	4.8	5.4	0.5	MA270
Hf	PPM	1.9	5.9	7.5	7.8	0.5	MA270
Se	PPM	<5	<5	6	6	5	MA270

PRESSURE LEACH TEST - HOT CURE SOLUTION ANALYSIS

Client: Base Metallurgical Laboratories Ltd
Test: as specified
Sample: as specified

Date: 20-Oct-21
Project: 2100702

Test #	Sample ID	Fe, mg/L	As, mg/L	Free Acid, g/L
POX5 HC	POX5 HC-Solution 6 Hr	4362.9	2071	27.49
POX6 HC	POX6 HC-Solution 0 Hr	8786.9	14881	29.5
	POX6 HC-Solution 1 Hr	9235.5	14272	30.44
	POX6 HC-Solution 2 Hr	9590.3	14283	30.681
	POX6 HC-Solution 3 Hr	9774.5	13904	29.21
	POX6 HC-Solution 4 Hr	9586.9	14283	31.66
	POX6 HC-Solution 5 Hr	9962.1	14329	32.40
	POX6 HC-Solution 6 Hr	10356.5	14594	30.44
POX7 HC	POX7 HC-Solution 0 Hr	19221.3	23357	58.91
	POX7 HC-Solution 1 Hr	20972.8	23702	68.73
	POX7 HC-Solution 2 Hr	20181.8	23092	58.9
	POX7 HC-Solution 3 Hr	19662.0	20907	56.45
	POX7 HC-Solution 4 Hr	19786.3	20171	54.00
	POX7 HC-Solution 5 Hr	20001.0	19113	54.00
	POX7 HC-Solution 6 Hr	18803.2	17837	61.36
POX8 HC	POX8 HC-Solution 0 Hr	31176.7	20424	110.5
	POX8 HC-Solution 1 Hr	30928.1	19493	108.00
	POX8 HC-Solution 2 Hr	30193.6	18918	108.0
	POX8 HC-Solution 3 Hr	30769.9	18998	105.5
	POX8 HC-Solution 4 Hr	32996.0	19918	110.5
	POX8 HC-Solution 5 Hr	32035.5	18872	103.1
	POX8 HC-Solution 6 Hr	32464.9	18998	103.1
POX9 HC	POX9 HC-Solution 0 Hr	30758.6	16284	56.5
	POX9 HC-Solution 1 Hr	31617.4	17906	43.199
	POX9 HC-Solution 2 Hr	32046.8	19573	41
	POX9 HC-Solution 3 Hr	30589.1	18251	49.09
	POX9 HC-Solution 4 Hr	29210.5	16871	54
	POX9 HC-Solution 5 Hr	29120.1	17561	44.18
	POX9 HC-Solution 6 Hr	29210.5	17733	39
	RE POX5 HC Solution 6 Hr	4223.9	2154	
	RE POX8 HC-Solution 4 Hr	33753.1	19803	

Test No.	Sample	Sample weight, g	% solids	Residence, hrs	T, C	O2 pressure, psi	
POX-10	As-received	70	15	2	220	100	repeat POX7 but with less weight
POX-11	As-received	70	15	2	220	100	repeat POX10
POX-12	As-received	100	15	2	220	100	
POX-13	<10 um	100	15	1	220	100	
POX-14	<10 um	100	15	2	220	100	
POX-15	<10 um	100	15	2	220	100	

An Investigation into

PRESSURE OXIDATION TESTING FOR THE REVEL RIDGE PROJECT

prepared for

ROKMASTER RESOURCES

Project 18988-01 – Final Report
August 18, 2022

NOTES

WARNING: The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.

ACCREDITATION: SGS Minerals Lakefield is accredited to the requirements of ISO/IEC 17025 for specific tests as listed on our scope of accreditation, including geochemical, mineralogical, and trade mineral tests. To view a list of the accredited methods, please visit the following website and search SGS Lakefield: *http://palcan.scc.ca/SpecsSearch/GLSearchForm.do*.

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Executive Summary

A metallurgical test program was conducted for Rokmaster Resources Corp. on their Revel Ridge project located in British Columbia, Canada. The testwork,requested and directed by Stacy Freudigmann of Canenco Consulting Corp., included pressure oxidation (POX) and hot curing followed by cyanidation for the recovery of gold from sulphide concentrates.

Four samples were received at SGS in Lakefield, Ontario and analyzed for gold (13.7 to 25.5 g/t), silver (40.6 to 128 g/t), sulphur (23.0 to 27.3%), and sulphide (22.2 to 27%) analysis.

Three tests were conducted on the first sample (BL 801 Bulk Concentrate 1) to examine the effects of pre-acidulation pH and retention time. An excess of acid was added during pre-acidulation for the first test (POX), resulting in a POX feed pH of around 0.8 with 959 kg/t H_2SO_4 added. Sulphide oxidation after 120 minutes at 220ºC was very high (>99%), with a high final free acid in the POX solution (145 g/L), and significant iron and As were solubilized. Despite the high oxidation, gold extraction from the POX residue by CIL (following hot curing) was low at 63% while silver extraction was fair at 84%. This was a somewhat surprising result for a POX residue without a lime boil pre-treatment, which is normally required to break down refractory silver jarosite compounds formed during POX. In the second test (POX2), a more typical acid dosage was used (65 kg/t, to pH 2) and oxidation remained high at 99%. This approach was used in the tests following. In POX3, the residence time was lowered to 60 minutes and sulphide oxidation was 97%. The POX2 and 3 residues were combined and split to compare cyanidation with and without a regrind (as it was indicated by the client that previous testing had indicated regrinding the POX residue may be required to increase gold extraction) and to decrease residence times. Consequently, gold extraction from the unground POX residue returned 92% versus 98% from the reground residue. The 92% extraction from unground CIL feed took 48 hours while the 98% extraction from reground CIL feed was achieved in under 10 hours. Cyanide consumption increased following regrind, from ~7 kg/t to 58 kg/t NaCN, however optimization of dosage and other parameters in subsequent testing reduced this to 8.8 kg/t (CN13).

The following three tests was completed on sample BL 802 Bulk Concentrate 2, looking at the effects of POX feed grind size (POX6), temperature (POX5) and retention time (POX4). Acid added during pre-acidulation increased relatively slightly with regrinding, prior to oxidation, but produced similar concentrations of iron, arsenic, and sulphur in the POX filtrate as the test with no regrind (POX 4). Cyanidation of the reground POX feed had relatively lower consumption of cyanide while lime consumptions remained similar however of these comparative tests, (POX6) produced the best gold recovery at 96.7%. Dissolution of iron and sulphur were lower in the test at increased temperature of 230°C but shorter retention time (POX5). This POX5 test resulted in the best sulphide oxidation and overall weight loss and gad a similar gold extraction to POX 6 of 96.4%.

A third set of tests (POX 7 and 8) were undertaken on the BL 801-16 concentrate, a bulk concentrate with a coarse primary grind target of ~150μm P80, to examine the effects of regrinding such a concentrate and potentially understand the indicative effects of a lime boil step. Regrinding of the POX feed (POX 8a and 8b) produced iron tenors that were double those found in tests POX 7a and 7b with unground feed. Hot cure solution concentrations of iron, arsenic, and sulphur in the reground feed tests were also all higher than the tests with the unground feed. Comparative cyanidation tests indicated that gold extraction increased slightly with regrinding the POX feed from ~184μm P80 to 16μm P80 (from 80.3% to 82.4%) and both sets of tests indicated that a finer POX feed (~16-30μm P80) may provide lower cyanide and lime consumptions. Lime boiling produced relatively higher gold extractions on reground and unground POX feeds, however on the coarser POX feed the improvement of gold recovery was only 3.2% from 80.3% to 83.1%. Silver recoveries increased on both the unground and reground POX feeds.

POX tests were finally undertaken on the fourth concentrate (BL 801-24 Final Tails + BL 801-25 Final tails, from the recently developed flowsheet locked cycle tests 24 and 25), to study the effects of hot curing (HC) as well as oxygen and air sparging post neutralization reground samples prior to cyanidation. Two POX tests (POX 9a and 9b) were carried out and the POX residues were combined and then split in half. One half was hot cured for four hours and the other not. The POX and hot cure residues were then ground and each one was split in half prior to cyanide leaching, resulting in four cyanidation tests – two with oxygen and two with air sparging. Cyanide consumption was lower with oxygen sparging and lime consumption was lower with HC and oxygen relative to the non-HC tests. Oxygen sparging had minimal effect on gold recovery but marginally improved silver recovery. Hot curing resulted in significantly lower cyanide and lime consumption, may impact gold recovery slightly, from 98.7% to 98.2%. As expected for POX residues, silver recovery was poor for all tests and according to the client, similar to previous testing without lime boiling. POX 10 was conducted with concentrate to produce oxidized solids for mineralogy examination at SGS and Surface Science Western while POX11 produced oxidized concentrate for testing of cyanide alternatives.

Introduction

This report presents the details from testwork conducted on samples from the Revel Ridge project in British Columbia, Canada. SGS was contacted by Stacy Freudigmann from Basemet (for Canerco) to undertake POX testing and to examine the effect of a Hot Cure step following pressure oxidation to potentially reduce lime consumption during cyanidation.

The test program was directed by Stacy Freudigmann and all results were forwarded to him as they became available.

Chris Silva
Position, Extractive Metallurgy – Gold

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Manager, Extractive Metallurgy Manager

Experimental work by: C. Silva
Report preparation by: C. Silva, C. Fleming
Reviewed by: C. Mina, J. Brown

Testwork Summary

1. Sample Receipt and Characterization

Four flotation concentrate samples were received at SGS in Lakefield, Ontario for testing purposes: Bulk Conc 1 (BL 801), BL 801 Conc 2, BL 801-16 (products 1-4), and a combination of the two concentrates (BL 801-24 final tails + BL 801-25 final tails). The head assays and size analyses are presented in Table 1.

Table 1: Head Analysis

Element		Bulk Con 1 (BL 801)	BL 801 Conc. 2 Head	BL 801-16 pdts 1-4	BL 801-24 Final Tails + BL 801-25 Final Tails
Au	g/t	25.5	20.7	15.3	13
Ag	g/t	41	40.6	128	60
Al	g/t	3940	-	-	11900
As	%	20.6	18.0	11.8	13.2
Ba	g/t	205	-	-	98
Be	g/t	0.1	-	-	0.29
Bi	g/t	< 30	-	-	< 30
Ca	g/t	11300	-	-	35000
Cd	g/t	323	-	-	178
Co	g/t	52	-	-	63
Cr	g/t	634	-	-	1630
Cu	g/t	1350	-	-	3640
Fe	%	30.8	28.4	22.9	25.2
K	g/t	1990	-	-	5810
Li	g/t	< 20	-	-	< 20
Mg	g/t	870	-	-	2180
Mn	g/t	143	-	-	298
Mo	g/t	18	-	-	50
Na	g/t	184	-	-	591
Ni	g/t	309	-	-	777
P	g/t	< 200	-	-	223
Pb	g/t	23200	-	52700	7330
Sb	g/t	999	-	-	807
Se	g/t	< 30	-	-	< 30
Sn	g/t	< 20	-	-	< 20
Sr	g/t	25.4	-	-	68
Ti	g/t	772	-	-	1160
Tl	g/t	< 30	-	-	< 30
V	g/t	< 10	-	-	21
Y	g/t	3	-	-	3.4
Zn	g/t	60200	-	86500	33700
S	%	27.3	23.7	24.2	23.0
$S^{=}$	%	27	23.0	23.9	22.2
C(t)	%	0.33	-	-	-
CO_3	%	1.46	-	-	-
C(g)	%	< 0.05	-	< 0.05	< 0.05
TOC	%	< 0.05	-	0.13	0.15
Cl (HNO_3 soluble)	%	< 10	-	26	< 10
K80	µm	28.9	26.1	184.0	20.6

2. Head Characterization

The four concentrates were analyzed for gold, silver, sulphur, and sulphide with two of the four samples receiving a full ICP scan analysis. In addition to the ICP scan, three of the four samples were also assayed for carbon speciation (C(g), C(t) and TOC) and Cl (HNO_3 soluble). Gold assays ranged from a low of 13.0 g/t for the combined feed of BL 801-24 Final Tails + BL 801-25 Final Tails to a high of 25.5 g/t for BL 801 Bulk Conc. 1. The BL 801-16 (products 1-4) concentrate contained the most silver at 128 g/t, with the other three samples ranging from 40-60 g/t Ag. The BL 80-16 (products 1-4) concentrate was the coarsest sample with a K80 of 184 µm while the other 3 samples were all finer than 30 µm.

3. Pressure Oxidation- Hot Cure – CIL/CN Testwork

3.1. POX-HC Tests 1 to 3 and CN Tests 1 to 3

The first three POX (pressure oxidation) tests were conducted on sample BL 801 Bulk Con 1. Pressure oxidation tests were conducted in a 2 L titanium vessel at the target temperature and retention time and then cooled to 95°C. As soon as the temperature reached 95°C, a sample was taken for assays then heating at 95°C for several hours for the hot cure stage. The pre-acid pH target and retention time were varied in the three POX tests as shown in Table 2. By changing the pre-acid pH target from a pH of 2 to pH 1, the acid addition increased significantly from about 65 kg/t to 959 kg/t. This resulted in a POX PLS with a free acid of 145 g/L H_2SO_4, which was more than double that produced when the pre-acid target was pH 2. In addition, with the higher acid addition the average O_2% in the off gas was lower at 83% compared to 95%.

Table 2: POX Tests 1 to 3 Operating Parameters

Test	Feed	Pulp Density % solids w/w	Ground for POX	Feed K80 µm	Pre-acid pH Target	Acid Addi'n H_2SO_4 kg/t	POX Temp. °C	POX Time at Temp. mins.
POX 1	BL 801 Bulk Con 1	9.1	No	28.9	1.0	959	220	120
POX 2	BL 801 Bulk Con 1	9.0	No	28.9	2.0	66	220	120
POX 3	BL 801 Bulk Con 1	9.0	No	28.9	2.0	65	220	60

Table 3: POX Tests 1 to 3 Test Details

Test	POX Average Temp. °C	POX Average Total psi	POX Average off gas flow mL/min	POX Average O_2% in offgas	POX Pulp pH units	POX Pulp ORP mV	POX PLS pH units	POX PLS ORP mV	POX PLS FAT g/L H_2SO_4
POX 1	220	435	250	83	0.73	802	1.08	612	145.1
POX 2	220	428	204	95	1.03	776	1.66	576	59.1
POX 3	220	432	250	95	1.25	783	1.69	548	64.9

Reducing the retention time from 120 minutes (POX 2) to 60 minutes (POX 3) appeared to have a slight effect in producing a POX PLS with a free acid of ~65 g/L compared to 59 g/L H_2SO_4. Acid is produced in POX from the oxidation of sulphides and some of this acid is then consumed during POX to form a basic iron sulphate (BFS) precipitate by hydrolysis. Therefore, the lower acid concentration in POX2 indicates more BFS was formed in POX2 owing to the longer retention time.

At the end of the POX, the oxidized slurry was cooled to 95°C, the vessel removed from the heating mantle, and the head removed. The pulp was mixed and sampled, and the sample was filtered and washed, with only the POX PLS being submitted for analysis. The autoclave head was then re-installed and the vessel returned to the heating mantle. The pulp was heated back up to 95°C for the hot cure stage. Upon completion of the hot cure, the vessel was removed from the heating mantle and opened, with a sample once again being removed and filtered. Samples of solution and washed solids were submitted for assay and the remaining washed solids were forwarded for cyanidation testing.

The extra acid added in POX 1 resulted in a lower pH and a significantly higher free acid concentration after POX and hot curing than in the other two tests, as seen in Table 4. Analysis of the POX filtrates (Table 5) showed that the very high acid in POX1 produced a solution with four times the iron and five times the arsenic concentrations compared to POX2 and POX 3. This indicates that ferric arsenate, which is the normal stable autoclave product under standard POX conditions, was unstable in ~150 g/L acid, and re-dissolved. Hot curing of the pulp resulted in higher concentrations of iron and arsenic compared to the POX discharge in all three tests. Sulphide oxidation in the high acid test (POX 1) was 99.3%, was only 1 to 2% higher than the lower acid addition POX tests. The solids weight loss was about double in POX 1 compared to POX 2 and 3, owing to the redissolution of ferric arsenate and basic iron sulphate in strong acid.

Shortening the retention time in POX 3 resulted in slightly lower sulphur oxidation of ~97% compared to 98%, as seen by the residue assay of 0.96% sulphide compared to 0.44%.

Table 4: Hot Cure Tests 1 to 3 Details

Test	Feed	Hot Cure Time at Temp. hours	Hot Cure Average Temp.	Hot Cure Pulp pH units	Hot Cure Pulp ORP mV	Hot Cure PLS pH units	Hot Cure PLS ORP mV	Hot Cure PLS FAT g/L H_2SO_4	Hot Cure Residue Colour
POX 1	BL 801 Bulk Con 1	4	94.6	0.63	750	1.14	556	167.4	green
POX 2	BL 801 Bulk Con 1	4	94.8	0.94	710	1.58	559	59.4	orange
POX 3	BL 801 Bulk Con 1	4	95.0	0.94	744	1.70	550	58.2	org-yell

Table 5: POX-HC Test 1 to 3 Chemical Analysis

Test	POX PLS Fe mg/L	POX PLS As mg/L	POX PLS S by Bromine mg/L	HC PLS Fe mg/L	HC PLS As mg/L	HC PLS S by Bromine mg/L	Hot Cure Residue Fe %	Hot Cure Residue As %	Hot Cure Residue Ag %	Hot Cure Residue $S^{=}$ %	Hot Cure Residue $S^{=}$ Oxd'n %	Weightloss % Overall
POX 1	20600	5750	68000	22900	6670	77200	21.8	28.5	58	0.43	99.3	55.3
POX 2	5000	1020	23100	7520	2110	24200	27.7	22.2	57	0.44	98.8	27.8
POX 3	5820	1000	25200	8490	2260	25800	27.7	22.9	57	0.96	97.2	21.9

The bulk of the hot cure residue after washing was forwarded for cyanidation testing. The residue from POX-HC 1 was subjected to carbon-in-leach testing (CIL) whereas the other two tests were standard cyanidation tests (no carbon) with kinetic samples taken at prescribed intervals. For CN-2 and CN-3, the hot cure residues from POX-HC 2 and 3 were first combined then split in half with one half being leached as-is and the second half being ground in the attrition mill for 30 minutes at 34% solids. Test details for the cyanidation tests can be found in Table 6 and the results in Table 7.

Table 6: CN Test Details (CN tests on POX-HC Test 1 to 3 Residues)

Test	Feed	LB, CN / CIL Test Number	Feed	Ground for CN	Reagent Addition kg/t of Cyanide Feed		Reagent Consumption kg/t of Cyanide Feed		Final Free CN mg/L
					NaCN	CaO	NaCN	CaO	
POX 1	BL 801 Bulk Con 1	CIL-1	HC-1	No	24.63	14.01	4.22	13.24	1250
POX 2	BL 801 Bulk Con 1	CN-2	HC2 + HC3	No	48.52	2.29	6.73	1.86	2727
POX 3	BL 801 Bulk Con 1	CN-3	HC2 + HC3	Yes	93.66	11.42	58.11	9.78	2234

Cyanide leaching of POX-HC 1 residue with carbon achieved 63% Au extraction and 83.6% Ag extraction (Table 7). The poor gold recovery despite ~100% sulphide oxidation in POX, suggests that there might be a preg robbing problem with this concentrate. The high silver recovery indicated that silver jarosite, which is refractory to cyanide leaching, was destabilized in the high acid concentration generated in POX1. The POX-HC1 solids required the highest lime addition at 14 kg/t of cyanide feed as a result of the lower starting pH of 4.8 compared to CN-2 and 3 which had starting pH values of 6.5.

Table 7: CN Tests 1 to 3 Results

Test	LB, CN / CIL Test Number	Carbon Au Assay g/t	Barren /PLS Au Assay mg/L	Residue Au Assay g/t	Carbon Ag Assay g/t	Barren /PLS Ag Assay mg/L	Residue Ag Assay g/t	Au Extraction %	Ag Extraction %	Calc Head Au	Calc Head Ag	Direct Head Au	Direct Head Ag
POX 1	CIL-1	258	0.02	14.5	583	0.27	11.4	63.2	83.6	39.36	69.60	25.0	41.0
POX 2	CN-2	-	2.60	2.12	-	0.58	54.6	92.1	9.3	26.74	60.22	25.0	41.0
POX 3	CN-3	-	2.47	0.39	-	1.01	11	98.4	47.0	24.60	20.76	25.0	41.0

CN-3 Residue assayed to Extinction, No more sample

Fine regrinding of the feed to cyanide leaching in CN-3 resulted in significantly higher cyanide consumption values of ~58 kg/t NaCN, probably due to exposure of fresh reactive iron surface in the finely ground

sample. With the extra cyanide and additional grinding, gold recovery increased from ~92% in the unground sample to 98%, while Ag recovery increased from 9% to 47%. An examining of the kinetic data for CN-2 and CN-3 presented in Figure 1 indicates that leaching is fast and that 56 hours of leaching is not required. In fact, a shorter period of 8 hours would be closer to optimum as calculated extractions in CN-2 and CN-3 were 92.3 and 99.9%, respectively, after 8 hours. The apparent dip in recovery in the 24 hour and 48 hour samples may not be a real effect but the results of assay uncertainty, since these calculated recoveries were based on a solution assay only rather than a full mass balance. In order to determine the optimum leach residence time more accurately, it will be necessary to conduct several leaches with variable residence times, with a full assay suite and mass balance at the end of each.

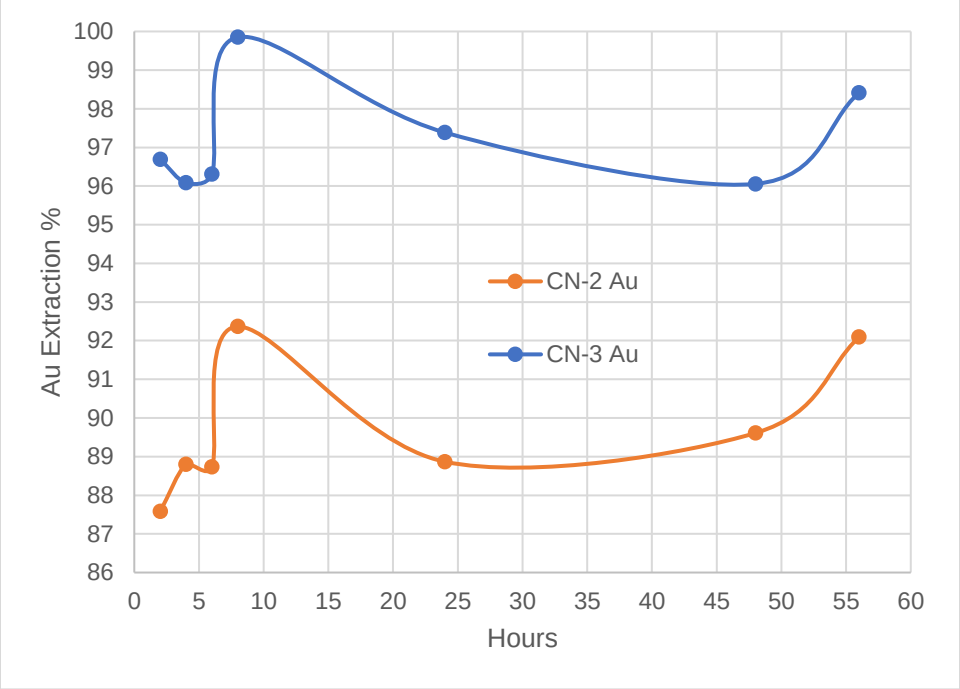

Figure 1: CN-2 and CN-3 Au Extraction % as a Function of Time

3.2. POX-HC Tests 4 to 6 and CN Tests 4 to 6

Pressure oxidation tests POX 4 to 6 were conducted on the second sample received (BL 801- Bulk Conc 2). The effects of grind size (POX6), temperature (POX5) and retention time (POX5) were examined (Table 8) in the three tests run. Grinding of the feed to POX (POX6), resulted in additional acid being required during pre-acidulation of 101 kg/t compared to 89 kg/t in the other two tests. Although POX 6 required the most acid in pre-acidulation, the final free acid concentrations were similar in the three tests (49-54 g/L).

Table 8: POX Test 4 to 6 Operating Parameters

Test	Feed	Pulp Density % solids w/w	Ground for POX	Feed K80 µm	Pre-acid pH Target	Acid Addi'n H_2SO_4 kg/t	POX Temp. °C	POX Time at Temp. mins.
POX 4	BL 801 Bulk Con 2	9.0	No	26.0	2.0	89	220	90
POX 5	BL 801 Bulk Con 2	9.0	No	26.0	2.0	89	230	60
POX 6	BL 801 Bulk Con 2	9.0	Yes	7.7	2.0	101	220	90

Table 9: POX 4 to 6 Test Details

Test	POX Average Temp. °C	POX Average Total psi	POX Average off gas flow mL/min	POX Average O_2% in offgas	POX Pulp pH units	POX Pulp ORP mV	POX PLS pH units	POX PLS ORP mV	POX PLS FAT g/L H_2SO_4
POX 4	220	436	225	95	1.05	740	1.49	561	54.0
POX 5	230	505	229	96	0.94	749	1.69	547	48.4
POX 6	220	434	250	97	0.99	788	1.80	575	48.8

Hot curing of the pulp resulted in similar results for the three tests, as seen in Table 10. Residue colour was the only noticeable difference, with hot cure POX 4 and 5 producing orange residues and hot cure 6 (highest POX acid addition) producing a gold coloured residue

Table 10: Hot Cure Tests 4 to 6 Details

Test	Feed	Hot Cure Time at Temp. hours	Hot Cure Average Temp.	Hot Cure Pulp pH units	Hot Cure Pulp ORP mV	Hot Cure PLS pH units	Hot Cure PLS ORP mV	Hot Cure PLS FAT g/L H_2SO_4	Hot Cure Residue Colour
POX 4	BL 801 Bulk Con 2	4	95.6	1.00	693	1.61	538	50.2	orange
POX 5	BL 801 Bulk Con 2	4	95.0	1.00	647	1.54	510	45.0	orange
POX 6	BL 801 Bulk Con 2	4	95.4	1.10	752	1.69	588	44.3	gold

The test at 230°C (POX5) produced the lowest residual sulphide of 0.43% (98.7% oxidation), while the test with regrinding of the concentrate produced the highest residual sulphide of 0.98% (96.9% oxidation). It is unclear why fine grinding failed to improve oxidation efficiency. Weight loss in POX and hot curing was similar in the three tests (27 to 30%).

Table 11: POX-HC Tests 4 to 6 Chemical Analysis

Test	POX PLS Fe mg/L	POX PLS As mg/L	POX PLS S by Bromine mg/L	HC PLS Fe mg/L	HC PLS As mg/L	HC PLS S by Bromine mg/L	Hot Cure Residue Fe %	Hot Cure Residue As %	Hot Cure Residue Ag %	Hot Cure Residue $S^{=}$ %	Hot Cure Residue $S^{=}$ Oxd'n %	Weightloss % Overall
POX 4	6060	1230	22600	7990	2640	22300	25.7	19.2	57	0.68	97.8	26.6
POX 5	4580	1250	22200	8220	3320	24500	25.8	17.6	52	0.43	98.7	29.5
POX 6	6360	1520	23300	10600	3460	26900	24.8	19.5	55	0.98	96.9	27.6

Cyanide consumption was similar in the three tests (6-9 kg/t NaCN), but it was highest in POX 5, the test at the higher POX temperature, and lowest in the test in which the feed was reground prior to POX (POX 4). This was unexpected. Lime consumption was similar in the three tests (3.3-3.9 kg/t CaO).

Table 12: CN Test Details (CN tests on POX-HC test 4 to 6 Residues)

Test	Feed	LB, CN / CIL Test Number	Feed	Ground for CN	Reagent Addition kg/t of Cyanide Feed		Reagent Consumption kg/t of Cyanide Feed		Final Free CN mg/L
					NaCN	CaO	NaCN	CaO	
POX 4	BL 801 Bulk Con 2	CN-4	HC-4	No	51.84	4.42	8.03	3.90	2658
POX 5	BL 801 Bulk Con 2	CN-5	HC-5	No	53.16	4.36	9.02	3.78	2633
POX 6	BL 801 Bulk Con 2	CN-6	HC-6	No	51.61	3.93	6.32	3.32	2707

All three residues from hot cure were forwarded for cyanidation for 56 hours, achieving excellent gold recovery ranging between 94% to 96.7% but, poor silver recovery with less than 16% in all three tests (Table 13). The best gold recoveries of ~97% were achieved in the tests with higher POX temperature (POX5) and reground feed (POX4). The calculated gold extractions in the kinetic tests suggested gold recovery increased over the 56-hour duration of the tests. This contradicts the results with the products of POX 1, 2, and 3 (Figure 1), but should be viewed with caution as stated previously, since the individual data points are based on solution assays only and subject to analytical variance.

Table 13: CN Tests 4 to 6 Results

Test	LB, CN / CIL Test Number	Barren /PLS Au Assay mg/L	Residue Au Assay g/t	Barren /PLS Ag Assay mg/L	Residue Ag Assay g/t	Au Extraction %	Ag Extraction %	Calc Head Au	Calc Head Ag	Direct Head	
										Au	Ag
POX 4	CN-4	2.24	1.40	1.06	53.5	94.2	15.7	24.0	63.5	20.7	40.6
POX 5	CN-5	2.23	0.85	0.64	48.9	96.4	11.7	23.9	55.4	20.7	40.6
POX 6	CN-6	2.43	0.86	0.28	55.1	96.7	4.6	25.7	57.8	20.7	40.6

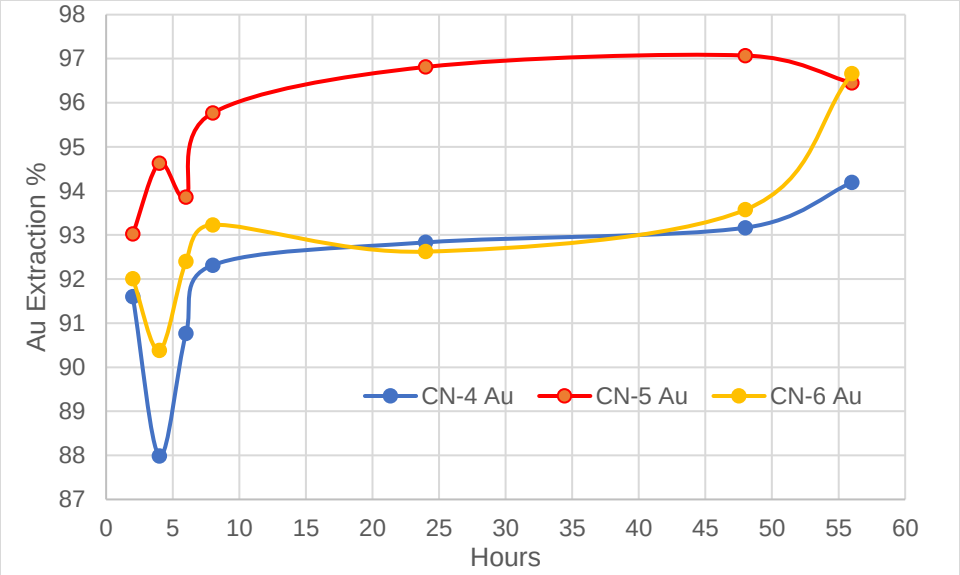

Figure 2: CN-4 to CN-6 Gold Extraction % as a Function of Time

3.3. POX-HC Tests 7 and 8, and CN Tests 7 to 10

On receipt of a third ore sample (BL 801-16 products 1-4 concentrate) a series of four pressure oxidation-hot cure tests was undertaken to examine the effects of regrinding and lime boiling. Feed to POX tests 7a and 7b was unground whereas the feed to POX 8a and 8b was reground. The sample was ground in the attrition mill at 50% solids. The first regrind for 30 minutes produced a k80 of 4.6 μm, which was too fine, and the second attempt at 2.5 minutes resulted in an acceptable K80 of 32.5 μm. The two pulps were combined, mixed, and sampled. The k80 on the combined feed to POX-HC 8a and 8b was 16.3 μm.

This series of four tests was run differently than previous tests with each test being comprised of an “a” and “b" procedure, and the two products were combined after hot curing. A sample was removed for analysis and the remaining pulp being split in half for two cyanidation tests, one preceded by a lime boil step to liberate silver, and the other a direct cyanidation without lime boiling. The percent solids for the POX tests was increased from 9% to 12% solids to ensure there would be sufficient solids for the two cyanidations. Acid addition to pH target of 2 prior to POX resulted in a range between 78 to 103 kg/t of sulphuric acid as displayed in Table 14.

Table 14: POX Test 7a, 7b, and 8a, 8b Operating Parameters

Test	Feed	Pulp Density % solids w/w	Ground for POX	Feed K80 µm	Pre-acid pH Target	Acid Addi'n H_2SO_4 kg/t	POX Temp. °C	POX Time at Temp. mins.
POX 7a	BL 801-16 pdts 1-4	12.0	No	184.0	2.0	96	220	90
POX 7b	BL 801-16 pdts 1-4	12.0	No	184.0	2.0	78	220	90
POX 8a	BL 801-16 pdts 1-4	12.0	Yes	16.3	2.0	103	220	90
POX 8b	BL 801-16 pdts 1-4	12.0	Yes	16.3	2.0	88	220	90

Some variability within individual tests on the same concentrate was also seen in the POX pulp pH, ORP, PLS pH, ORP, and free acid values (Table 15). The variability was not consistently related to whether the feed was reground or not. The variability had almost disappeared after hot curing and the slurries produced in the four tests were very similar in terms of POX pulp pH, ORP, PLS pH, ORP, and free acid values (Table 15).

Table 15: POX 7a, 7b, and 8a, 8b Test Details

Test	POX Average Temp. °C	POX Average Total psi	POX Average off gas flow mL/min	POX Average O_2% in offgas	POX Pulp pH units	POX Pulp ORP mV	POX PLS pH units	POX PLS ORP mV	POX PLS FAT g/L H_2SO_4
POX 7a	220	436	233	97	0.96	594	1.27	431	55.7
POX 7b	220	440	256	95	1.19	528	1.30	407	35.7
POX 8a	220	439	250	98	1.15	650	1.38	491	56.7
POX 8b	220	438	256	97	1.38	473	1.35	356	40.9

Table 16: Hot Cure Tests 7a, 7b and 8a, 8b Details

Test	Feed	Hot Cure Time at Temp. hours	Hot Cure Average Temp.	Hot Cure Pulp pH units	Hot Cure Pulp ORP mV	Hot Cure PLS pH units	Hot Cure PLS ORP mV	Hot Cure PLS FAT g/L H_2SO_4	Hot Cure Residue Colour
POX 7a	BL 801-16 pdts 1-4	4	95.4	1.18	474	1.34	413	42.6	red
POX 7b	BL 801-16 pdts 1-4	4	94.8	1.18	474	1.34	413	42.6	red
POX 8a	BL 801-16 pdts 1-4	4	94.8	1.27	476	1.41	404	49.5	brown
POX 8b	BL 801-16 pdts 1-4	4	94.6	1.27	476	1.41	404	49.5	brown

Pregnant leach solution from pressure oxidation contained significantly higher iron, arsenic, and total sulphur concentrations in the reground concentrate, and greater weight loss compared to the unground feed. This suggests that the ferric arsenate and basic iron sulphate precipitates were less stable in the POX tests on reground feed.

Table 17: POX-HC Tests 7a, 7b, and 8a, 8b Chemical Analysis

Test	POX PLS Fe mg/L	POX PLS As mg/L	POX PLS S by Bromine mg/L	HC PLS Fe mg/L	HC PLS As mg/L	HC PLS S by Bromine mg/L	Hot Cure Residue Fe %	Hot Cure Residue As %	Hot Cure Residue Ag %	Hot Cure Residue $S^{=}$ %	Hot Cure Residue $S^{=}$ Oxd'n %	Weightloss % Overall
POX 7a	4080	1690	26900	7020	4370	24100	21.7	12.1	149	5.75	83.1	29.7
POX 7b	5100	3590	20900	7020	4370	24100	21.7	12.1	149	5.75	83.1	29.7
POX 8a	12300	3020	32700	13300	5370	30200	19.3	12.0	159	3.52	90.3	34.4
POX 8b	11500	5640	26400	13300	5370	30200	19.3	12.0	159	3.52	90.3	34.5

After hot cure, the POX 7a and 7b pulps were combined, sampled, then filtered and washed. The same with the POX 8a and 8b pulps. The washed POX 7 and POX8 residues were split in half, with one half going directly to cyanidation and the other half processed by lime boiling prior to cyanidation. The lime boil procedures were conducted by pulping the two washed solids from POX 7 and POX 8 in deionized water and heating them to 95°C in a glass reaction vessel. Once at temperature, hydrated lime was added (0.25 g of $Ca(OH)_2$ per gram of feed) and the slurry was maintained at temperature for two hours. The temperature, pH, and ORP were monitored throughout the test. The amounts of cyanide and lime added and consumed during the lime boiling and cyanidation are shown in Table 18. Lime addition and consumption was obviously significantly higher in the two tests involving the lime boil step, but cyanide consumption was much lower. This indicated that certain cyanide-consuming species (probably iron) were passivated during the lime boil step.

Table 18: CN Test Details (CN tests on POX-HC test 7a, 7b, and 8a, 8b Residues)

Test	Feed	LB, CN / CIL Test Number	Feed	Ground for CN	Reagent Addition kg/t of Cyanide Feed		Reagent Consumption kg/t of Cyanide Feed		Final Free CN mg/L
					NaCN	CaO	NaCN	CaO	
POX 7a	BL 801-16 pdts 1-4	LB-1, CN-7	LB-1	No	39.7	143.1	8.4	136.7	2699
POX 7b	BL 801-16 pdts 1-4	CN-8	HC 7a + 7b	No	80.4	8.6	19.2	8.6	4216
POX 8a	BL 801-16 pdts 1-4	LB-2, CN-9	LB-2	No	42.0	159.7	6.6	154.5	2776
POX 8b	BL 801-16 pdts 1-4	CN-10	HC 8a + 8b	No	58.3	5.8	14.7	5.6	2757

Note: Reagent addition of CaO also takes into account lime added during lime boil

The lime added during the lime boil step was converted to gypsum ($CaSO_4.2H_2O$), so the addition of ~150 kg/t lime in Tests CN7 and CN9 increased the mass of solids in these two tests by at least 30% compared to the two direct cyanidation tests (CN8 and CN10). This is reflected in the calculated head values for gold and silver in the cyanidation tests, which were ~30% lower in CN7 and CN9 than in CN8 and CN10 (Table 19), and also in the residue values for gold.

Once the change in the mass of solids is taken into consideration, it appears that the lime boil step had minimal effect on gold recovery, which is consistent with previous investigations, but had a significant effect on silver recovery, particularly with the finely reground feed (CN9 and CN10). The results of CN10 show

that fine regrinding produced a higher proportion of refractory silver jarosite (silver extraction 40%) that produced with the unground CN8 feed (silver extraction 67%). Lime boiling improved silver recovery significantly in both cases, to the 75% - 81% range. Gold extraction was over 80% in all the tests, with the best recovery of ~90% achieved in after fine grinding and lime boiling (CN9). Gold and silver extractions are displayed graphically in Figure 3 and Figure 4.

Further testing is needed to optimize and minimize the addition of lime in the lime boil step so that a cost benefit analysis can be conducted, balancing the value of the additional silver recovery (and possibly lower cyanide consumption) against the cost of the higher lime consumption.

Table 19: CN Tests 7a, 7b, and 8a, 8b Results

Test	LB, CN / CIL Test Number	Au Assay mg/L	Residue Au Assay g/t	Barren /PLS Ag Assay mg/L	Residue Ag Assay g/t	Au Extraction %	Ag Extraction %	Calc Head Au	Calc Head Ag	Direct Head Au	Direct Head Ag
POX 7a	LB-1, CN-7	1.73	2.42	12.9	30.2	83.1	74.9	14.3	120.4	15.3	128
POX 7b	CN-8	2.01	4.08	13.8	56.3	80.3	67.3	20.4	172.4	15.3	128
POX 8a	LB-2, CN-9	1.66	1.48	12.4	22.3	89.5	81.0	14.0	117.6	15.3	128
POX 8b	CN-10	1.50	3.07	6.7	101.2	82.4	39.6	17.5	167.6	15.3	128

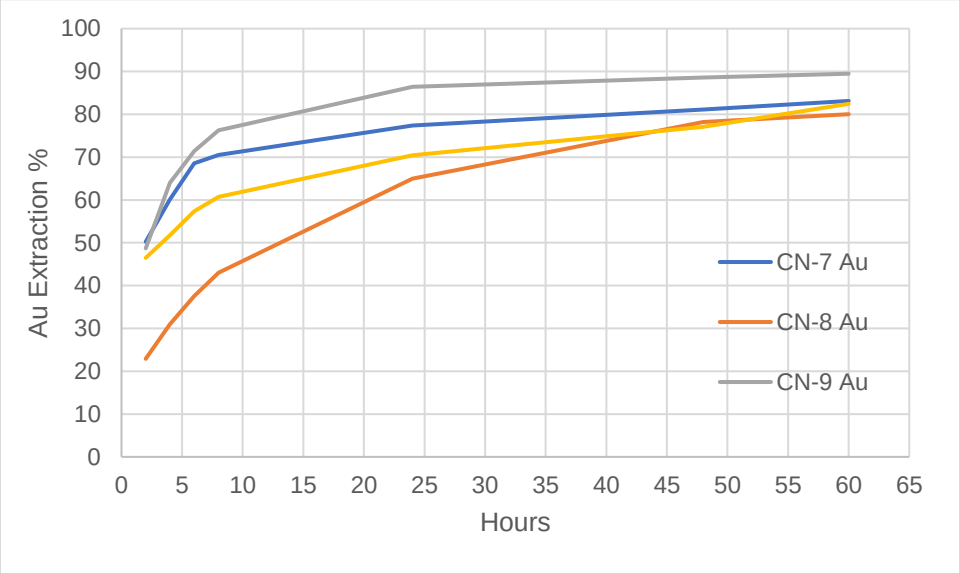

Figure 3: CN-7 to CN-10 Gold Extraction % as a Function of Time

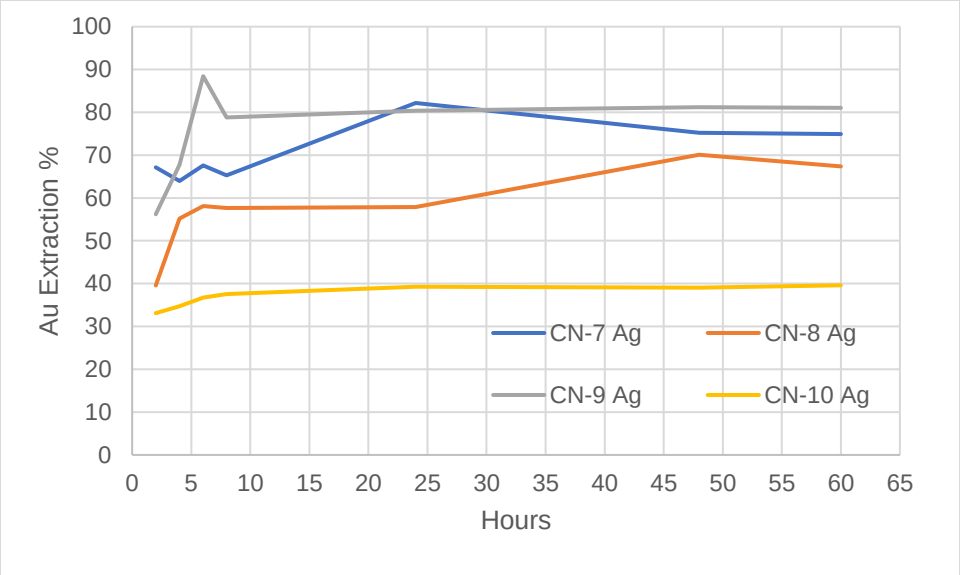

Figure 4: CN-7 to CN-10 Silver Extraction % as a Function of Time

3.4. POX-HC Test 9 and CN Tests 11 to 14

A fourth concentrate sample (BL 801-24 Final Tails + BL 801-25 Final Tails) was delivered to SGS Lakefield to examine the effects of hot curing along with a comparison of oxygen and air sparging during cyanide leaching. Two identical POX tests were conducted and the percent solids in the autoclave was increased slightly to 13.2% to ensure there would be sufficient solids for all tests that were planned. The feed for two POX tests was pre-acidified to pH 2 and run under the same POX conditions, and after POX the oxidized slurries were mixed and weighed. The test conditions and results are summarized in Table 20 and Table 21.

While continuing to mix the combined oxidized slurry, half of the pulp by weight was removed, filtered, and washed in preparation for direct cyanidation with either air or oxygen. The other half remained on the heating mantle and was heated at 95°C for 4 hours of hot curing before splitting for cyanidation tests with either air or oxygen sparging.

Table 20: POX 9 Operating Parameters

Test	Feed	Pulp Density % solids w/w	Ground for POX	Feed K80 mm	Pre-acid pH Target	Acid Addi'n H_2SO_4 kg/t	POX Temp. °C	POX Time at Temp. mins.
POX 9	BL 801-24 Final Tails + BL 801-25 Final Tails	13.2	No	20.6	2.0	107	220	90

Table 21: POX 9 Test Details

Test	POX Average Temp. °C	POX Average Total psi	POX Average off gas flow mL/min	POX Average O_2% in offgas	POX Pulp pH units	POX Pulp ORP mV	POX PLS pH units	POX PLS ORP mV	POX PLS FAT g/L H_2SO_4
POX 9	220	432	263	96	1.20	831	1.41	670	66.2

The pulp that had been hot cured (9b) produced an orange solution with a pH of 1.06 and an ORP of 687 mV (Table 22). Measurements done on the filtrate showed it contained 55 g/L free acid as H_2SO_4 at a pH of 1.65 and ORP of 514 mV.

Table 22: Hot Cure 9 Test Details

Test	Feed	Hot Cure Time at Temp. hours	Hot Cure Average Temp.	Hot Cure Pulp pH units	Hot Cure Pulp ORP mV	Hot Cure PLS pH units	Hot Cure PLS ORP mV	Hot Cure PLS FAT g/L H_2SO_4	Hot Cure Residue Colour
POX 9	BL 801-24 Final Tails + BL 801-25 Final Tails	4	95.0	1.06	687	1.65	514	55.2	orange

Analysis of the POX and hot cure solutions from test 9 showed that the arsenic concentrations doubled, from 2140 mg/L to 4320 mg/L from POX to hot cure, and iron levels almost doubled, from 9380 mg/L to 16,200 mg/L (Table 23). This was due to the breakdown of ferric arsenate and BFS during hot curing. Sulphide oxidation was very high (99.7%) and weight loss was 33.5% after POX and hot cure,

Table 23: POX-HC 9 Chemical Analysis

Test	POX PLS Fe mg/L	POX PLS As mg/L	POX PLS S by Bromine mg/L	HC PLS Fe mg/L	HC PLS As mg/L	HC PLS S by Bromine mg/L	Hot Cure Residue Fe %	Hot Cure Residue As %	Hot Cure Residue Ag %	Hot Cure Residue $S^{=}$ %	Hot Cure Residue $S^{=}$ Oxd'n %	Weightloss % Overall
POX 9	9380	2140	32800	16200	4320	37300	18.4	14.6	71	0.20	99.7	33.5

Prior to running the four cyanidation tests, both residues (1 x POX and 1 x Hot cure) were reground in the attrition mill. The POX residue was ground for 3.6 minutes per 171 g at 50% solids and the hot cure residue was ground for 2.1 minutes per 120 g at 50% solids. Malvern analysis of the ground products reported a d80 of 10.9 μm for the POX residue and 12.0 μm for the hot cure residue (Malvern results appended). After grinding, the two samples were filtered separately and each was split in half for cyanide leaching, one half with oxygen-sparging and the other with air sparging, to compare the effect on gold and silver recovery.

In general, the purpose of the hot cure process is to lower lime consumption during gold leaching, by breaking down the basic iron sulphate complex in the POX solids before cyanidation and removing the solution by solid liquid separation. As can be seen in Table 24, the consumptions of both lime and cyanide were lowered significantly (by up to 80%) in the two cyanidation tests that were done on the hot cured POX

solids. Moreover, the consumption of cyanide was reduced by a further 50% in the cyanide leach that was conducted with oxygen sparging relative to the air-sparged test. The k80 values displayed in Table 24 are from measurements on the final residue of each cyanide test.

Table 24: POX_HC 9 CN Test Details (CN-11 to CN-14)

Test	Feed	LB, CN / CIL Test Number	Feed	Ground for CN	Oxygen / Air Sparging	Size K80 mm	Reagent Addition kg/t of Cyanide Feed		Reagent Consumption kg/t of Cyanide Feed		Final Free CN mg/L
							NaCN	CaO	NaCN	CaO	
POX 9a + POX 9b Residue	BL 801-24 +BL 801-25 Final Tails	CN-11	POX 9a + 9b	Yes	Oxygen	12.24	68.2	41.9	47.1	41.9	1150
POX 9a + POX 9b Residue	BL 801-24 +BL 801-25 Final Tails	CN-12	POX 9a + 9b	Yes	Air	12.73	78.7	38.0	65.3	38.0	741
HC 9a + HC 9b Residue	BL 801-24 +BL 801-25 Final Tails	CN-13	HC 9a +9b	Yes	Oxygen	13.03	33.4	6.1	8.8	5.8	1398
HC 9a + HC 9b Residue	BL 801-24 +BL 801-25 Final Tails	CN-14	HC 9a +9b	Yes	Air	13.24	39.9	6.0	17.1	6.0	1365

The results of the four cyanidation tests are summarized in Table 25 and displayed in Figure 4 and Figure 5. Gold extraction was excellent in all four tests (>98%), with the average extraction from the POX residue (98.7%) being slightly higher than that of the hot cure residues (98.2%). The use of oxygen versus air lowered the consumption of cyanide and improved the kinetics of gold leaching but had no effect on final gold recovery after 48 hours.

Silver recovery was poor in all four tests, with less than 25% being recovered. These tests proved that the lime boil process, which was not used in any of these tests, is critical for maximizing silver recovery

Table 25: CN-11 to CN-14 Results

Test	LB, CN / CIL Test Number	Au Assay mg/L	Residue Au Assay g/t	Barren /PLS Ag Assay mg/L	Residue Ag Assay g/t	Au Extraction %	Ag Extraction %	Calc Head Au	Calc Head Ag	Direct Head	
										Au	Ag
POX 9a + POX 9b Residue	CN-11	1.42	0.19	1.42	46.2	98.8	24.6	15.3	61.3	13.7	60
POX 9a + POX 9b Residue	CN-12	1.46	0.21	1.46	49.1	98.6	23.7	15.4	64.3	13.7	60
HC 9a + HC 9b Residue	CN-13	1.74	0.38	1.74	78.8	98.0	18.8	18.7	97.1	13.7	60
HC 9a + HC 9b Residue	CN-14	1.83	0.33	1.83	58.1	98.3	24.0	18.7	76.4	13.7	60

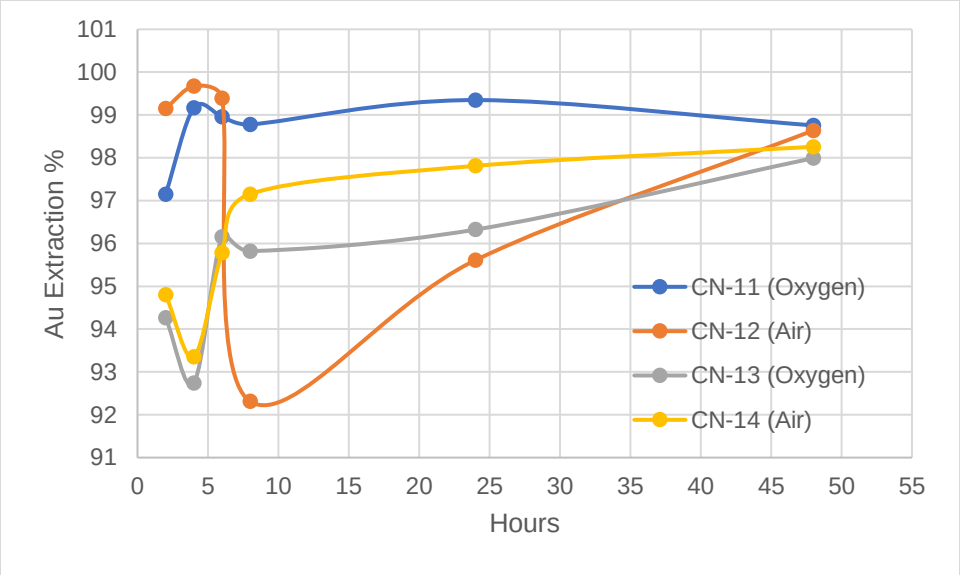

Figure 5: CN-11 to CN-14 Gold Extraction as a Function of Time

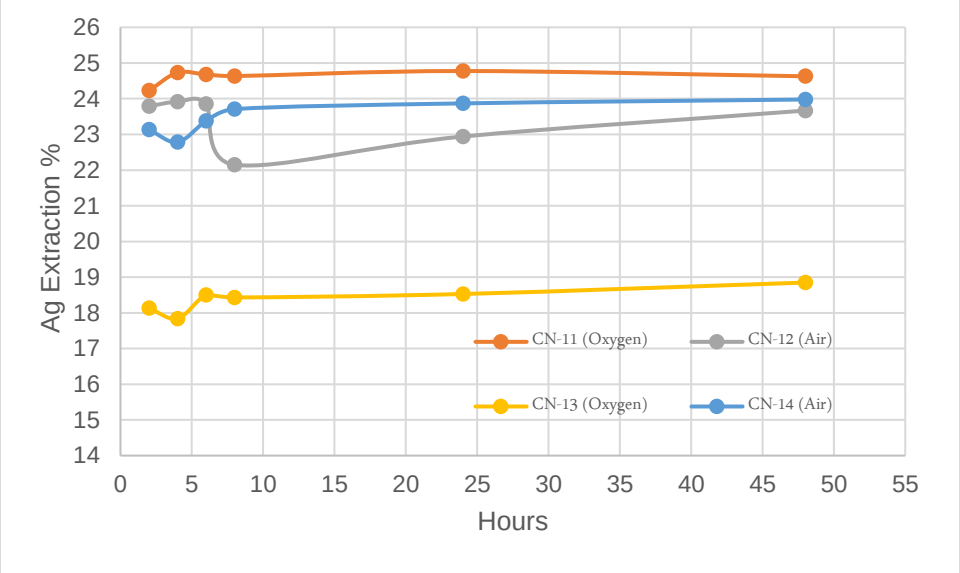

Figure 6: CN-11 to CN-14 Silver Extraction as a Function of Time

3.5. POX-HC Tests 10 and 11

Pressure oxidation-hot cure tests 10 and 11 were conducted to produce feed for downstream testing. As in previous tests, there were two POX tests, an "a" and a "b" for both POX 10 and 11, to ensure there were sufficient solids for downstream testing. There was no sampling of the POX products and the entire pulp was hot cured after each POX test. The final hot cure residue from POX 10 was sent to Surface Science Western for mineralogical investigation and the residue from POX 11 was sent to Environmental Technologies in BC. Additionally, a sample of the hot cure residue from POX 10 was sent to the SGS Mineralogy group for testing. Those findings will be presented in a separate report.

The feed for POX 10a and 10 b was a 50:50 blend of the first two samples received (BL 801 Bulk Conc 1 and BL 801 Bulk Conc. 2) and the feed to POX 11a and 11b was the combined final tails of BL 801-24 and BL 801-25. There was no regrinding of the feed material in any of the tests and the pulp density was kept at 13.2% solids. The feed was pre-acidulated to pH 2 for all tests.

Table 26: POX 10 and 11 Operating Parameters

Test	Feed	Pulp Density % solids w/w	Ground for POX	Feed K80 µm	Pre-acid pH Target	Acid Addi'n H_2SO_4 kg/t	POX Temp. °C	POX Time at Temp. mins.	POX Average Temp. °C	POX Average Total psi	POX Average off gas flow mL/min	POX Average O_2% in offgas
POX 10a	Blend of Bulk Conc. 1 and Bulk Conc. 2	13.2	No	27.5	2	94	220	90	220	430	256	90
POX 10b	Blend of Bulk Conc. 1 and Bulk Conc. 2	13.2	No	27.5	2	52	220	90	220	439	261	95
POX 11a	BL 801-24 Final Tails + BL 801-25 Final Tails	13.2	No	20.6	2	115	220	90	220	432	239	94
POX 11b	BL 801-24 Final Tails + BL 801-25 Final Tails	13.2	No	20.6	2	100	220	90	220	439	261	95

After 4 hours of hot curing separately, the "a" and "b" products were weighed, combined, and mixed. While mixing the pulp, the pH and ORP were measured, and the results are shown seen in Table 27. The "a" and "b" pulps for each test were then combined and mixed to ensure homogeneity and the pH and ORP readings taken again. The pulps were then filtered, and the residues well washed. Measurements on the filtrate showed good oxidation as determined by the high ORP values of 611 and 583 mV with free acids of 71 and 51 g/L H_2SO_4 for tests 10 and 11, along with low residual sulphide levels, as seen in Table 28.

Table 27: Hot Cure 10 and 11 Test Details

Test	Feed	Hot Cure Time at Temp. hours	Hot Cure Average Temp.	Hot Cure Pulp pH units	Hot Cure Pulp ORP mV	Hot Cure PLS pH units	Hot Cure PLS ORP mV	Hot Cure PLS FAT g/L H_2SO_4	Hot Cure Residue Colour
POX 10a	Blend of Bulk Conc. 1 and Bulk Conc. 2	4	95.0	1.36	677	-	-	-	-
POX 10b	Blend of Bulk Conc. 1 and Bulk Conc. 2	4	95.4	1.41	707	-	-	-	-
	Hot Cure 10a + 10b Combined	-	-	1.38	680	1.51	611	71.3	yellow
POX 11a	BL 801-24 Final Tails + BL 801-25 Final Tails	4	95.2	1.19	656	-	-	-	-
POX 11b	BL 801-24 Final Tails + BL 801-25 Final Tails	4	94.8	1.17	628	-	-	-	-
	Hot Cure 11a + 11b Combined	-	-	1.13	632	1.14	583	50.9	orange

Table 28: Hot Cure 10 and 11 Test Results

Test	HC PLS Fe mg/L	HC PLS As mg/L	HC PLS S by Bromine mg/L	Hot Cure Residue Fe %	Hot Cure Residue As %	Hot Cure Residue Ag %	Hot Cure Residue $S^{=}$ %	Hot Cure Residue $S^{=}$ Oxd'n %	Weightloss % Overall
POX 10a	-	-	-	-	-	-	-	-	-
POX 10b	-	-	-	-	-	-	-	-	-
HC 10a + 10b Comb	13100	6470	36400	25.2	20.9	54	0.64	98.2	29.0
POX 11a	-	-	-	-	-	-	-	-	-
POX 11b	-	-	-	-	-	-	-	-	-
HC 11a + 11b Comb	19100	3910	35500	18.0	14.6	73	0.17	99.5	32.1

Summary

4. BL 801 Bulk Concentrate 1 (POX-HC 1-3, CIL-1, CN-2 and CN-3)

The effects of varying the pre-acidulation pH target (pH1 and pH2) and regrinding the oxidized POX solids before cyanidation were examined in the three tests with this concentrate. The POX slurry was hot cured for 4 hours after POX in each of these tests. Hot curing is a technique that is designed to break down the BSF that is formed during POX, thereby lowering lime consumption in the downstream cyanidation process.

- Raising the pre-acidulation pH target from pH 1 to 2 resulted in a significant drop in acid addition, from 959 kg/t H_2SO_4 to ~65 kg/t H_2SO_4.

- The higher acid addition during pre-acidulation at pH 1 destabilized jarosites, ferric arsenate, and basic iron sulphate (BFS), resulting in significantly higher concentrations of iron and arsenic in the POX and hot cure liquors.

- Gold recovery by cyanidation after pre-acidulation at pH 2 and POX was good (92%) but silver recovery was very poor (~9%). Reducing the POX residence time from 120 to 60 minutes and finely regrinding the oxidized POX solids prior to cyanidation improved gold recovery from 92% to ~99% and also increased silver recovery significantly, from 9% to 47%. However, cyanide and lime consumptions increased five to ten-fold as a direct result of fine regrinding, and further testing is needed to determine the economically optimum regrind particle size.

- The higher acid addition during pre-acidulation at pH 1 also destabilized silver jarosite, the compound that is very refractory to cyanidation. As a result, silver recovery increased from ~9 % when pre-acidulating was conducted at pH2, to ~84% at a pre-acidulation target of pH1. However, gold recovery dropped from ~92% to ~63% in the strong acid POX, possibly because of preg robbing. Since gold is the principal pay metal, strong acid POX is not recommended.

- Reducing the POX retention time from 120 to 60 minutes (both at 220°C) produced a much higher concentration of iron in the POX and hot cure solutions, indicating less BFS precipitate was formed in the shorter POX residence time.

5. BL 801 Bulk Concentrate 2 (POX-HC 4-6, CN-4 to CN-6)

The effects of POX temperature (220° and 230°C), retention time (60, 90 minutes) and regrinding of the feed to POX were examined in the series of three tests with this concentrate. The POX slurries were again hot cured for 4 hours after POX in each of these tests.

- Very good sulphide oxidation (97-99%) was achieved in all three tests. The higher temperature (230°C) and shorter retention time (60 minutes) resulted in slightly higher oxidation (99%) than 220°C POX for 90 minutes (~97%),

- The higher temperature also resulted in a slightly lower concentration of iron in the POX solution, indicating that more BSF precipitate was produced under these conditions.

- Regrinding the feed to POX did not improve sulphide oxidation.

- Gold recoveries by cyanidation were very good in all the tests (94-97%) but silver recoveries were poor (5-16%). The worst silver recovery of 5% was achieved in the test where the POX feed was reground, indicating that more silver jarosite was produced under those conditions.

- Cyanide (6-9 kg/t NaCN) and lime (~4 kg/t CaO) consumptions were very similar in the three tests.

6. BL 801-16 products 1-4 (POX-HC 7 and 8, CN-7 to CN-10)

The tests with this concentrate examined the effects of regrinding the feed to POX and lime boiling the feed to cyanidation. Lime boiling is designed to break down silver jarosite and enhance silver recovery by cyanidation.

- Sulphide oxidation under "standard" POX conditions of 220°C temperature and 90 minutes retention time was relatively poor (83-90%) in all the tests with this concentrate.

- Regrinding the feed to POX from a K80 of ~ 160 µm to ~16µm improved sulphide oxidation from 83% to 90%. Regrinding also resulted in higher concentrations of iron and arsenic in the POX and hot cure liquors.

- Gold recovery was adversely affected by the poor sulphide oxidation, which was in the 80-89% range, compared to the 92-99% range with the other concentrates.

- Silver recovery was enhanced by the lime boil process, from 40-67% without lime boiling to 75%-81% with lime boiling. The best silver recovery of 81% was achieved with the feed that had been reground prior to POX and lime-boiled prior to cyanidation.

- Lime boiling increased lime consumption from <10 kg/t to >130 kg/t CaO. Further optimization is needed to determine the improvement in silver recovery with an economically optimum lime dosage.

7. BL 801-24 Final Tails + BL 801-25 Final Tails (POX-HC 9, CN-1 to CN-14)

The four tests with this concentrate examined the benefit of hot curing as well as the effect of sparging with oxygen or air during cyanidation. All the POX tests were conducted under the same "standard" conditions of 220°C temperature for 90 minutes, and all the POX or hot cure residues were washed and reground prior to cyanidation.

- Gold extraction from this concentrate was excellent (98-99%) in all four cyanidations, after applying the standard POX conditions. Lime boiling was not applied in these tests and silver extraction was therefore poor (<25% in all tests).

- Hot curing had a dramatic beneficial effect on the consumption of lime as expected, and also on cyanide consumption. Lime consumption was reduced from ~40 kg/t CaO in the two tests without hot curing to ~6 kg/t in the tests with hot curing. In the tests with air sparging during cyanidation, cyanide consumption was reduced from 65 kg/t NaCN without hot curing to 17 kg/t with hot curing. The improvement was even more dramatic in the two tests with oxygen sparging, with cyanide consumption reducing from 47 kg/t NaCN to 9 kg/t.

- Cyanide consumption after POX is normally less than 2 kg/t NaCN, so detailed analysis of cyanidation liquors and further testwork is needed to determine the reason for the generally much higher cyanide consumption in the tests with all these concentrates.

Conclusions and Recommendations

The optimum POX conditions established in the testwork involved pre-acidulation of the concentrates at pH 2, followed by autoclaving at either 220°C for 90 minutes or 230°C for 60 minutes. Under these conditions, sulphide oxidation of 97-99% was generally achieved. The only exception was concentrate "BL 801-16 products 1-4", where the sulphide oxidation was in the range 83-90%. Further testwork is needed to optimize the POX conditions for this concentrate. In addition, concentrate "BL801 Bulk Concentrate 1" exhibited some evidence of preg robbing during cyanidation, particularly after autoclaving under aggressive conditions.

Pre-acidifying at pH 1 destabilized silver jarosite and improved silver recovery significantly but was generally not beneficial. Acid addition/consumption was very high and gold recovery actually decreased quite significantly.

Gold recovery by cyanidation after oxidizing the concentrates was excellent (94-99%) for three of the four concentrates. The only exception was Concentrate "BL 801-16 products 1-4", which suffered lower gold recoveries (82-89%); undoubtedly owing to incomplete oxidation of this feed in POX. Recovery from Concentrate "BL801 Bulk Con 1" improved from 92% to 99% when the oxidized solids were reground prior to cyanidation.

Silver recovery was influenced by the formation of the refractory silver jarosite compound during POX. Under the standard autoclave conditions, silver recovery was generally very low (<25%). Recovery improved dramatically to >80% by incorporation of the well-known lime boil process to break down the jarosites prior to cyanidation. However, lime consumption was very high under the lime boil conditions tested and further testing is needed to optimize this process and determine whether the value of additional silver recovered is greater than the cost of additional lime.

Lime and cyanide consumption were both reduced by >80% when the hot cure process was incorporated in the flowsheet, and cyanide consumption was further reduced by sparging the slurry with oxygen during the cyanide leach process.

The flowsheet developed in this testwork should incorporate the following unit operations and conditions:

- Regrinding the feed concentrate (it will likely be better to regrind the feed rather than the oxidized solids).
- POX at 220°C for 90 minutes or 230°C for 60 minutes. Economics of the two options to be established.

- Hot curing for 4 hours (optimum residence time to be established)
- Solid/liquid separation of the hot cure discharge by vacuum filtration of CCD and washing of the solids. Testwork required.
- Neutralization of the POX liquor with limestone or flotation tailings. To be tested.
- Repulping of the washed solids and neutralization to pH 10-10.5 with lime (lime boiling probably not justified because of low silver concentration in the concentrates relative to the cost of extra lime).
- Cyanidation and CIL or CIP to recovery gold. Further testwork needed to confirm the beneficial role of oxygen sparging during leaching and examine methods of minimizing cyanide consumption, which has been high in the testwork (4-6 kg/t NaCN under best conditions).

Appendix A – Head Characterization

Appendix A – Head Characterization

Element		Bulk Con 1 (BL 801)	BL 801 Conc. 2 Head	BL 801-16 pdts 1-4	BL 801-24 Final Tails + BL 801-25 Final Tails
Au	g/t	25.5	20.7	15.3	13
Ag	g/t	41	40.6	128	60
Al	g/t	3940	-	-	11900
As	%	20.6	18.0	11.8	13.2
Ba	g/t	205	-	-	98
Be	g/t	0.1	-	-	0.29
Bi	g/t	< 30	-	-	< 30
Ca	g/t	11300	-	-	35000
Cd	g/t	323	-	-	178
Co	g/t	52	-	-	63
Cr	g/t	634	-	-	1630
Cu	g/t	1350	-	-	3640
Fe	%	30.8	28.4	22.9	25.2
K	g/t	1990	-	-	5810
Li	g/t	< 20	-	-	< 20
Mg	g/t	870	-	-	2180
Mn	g/t	143	-	-	298
Mo	g/t	18	-	-	50
Na	g/t	184	-	-	591
Ni	g/t	309	-	-	777
P	g/t	< 200	-	-	223
Pb	g/t	23200	-	52700	7330
Sb	g/t	999	-	-	807
Se	g/t	< 30	-	-	< 30
Sn	g/t	< 20	-	-	< 20
Sr	g/t	25.4	-	-	68
Ti	g/t	772	-	-	1160
Tl	g/t	< 30	-	-	< 30
V	g/t	< 10	-	-	21
Y	g/t	3	-	-	3.4
Zn	g/t	60200	-	86500	33700
S	%	27.3	23.7	24.2	23.0
$S^{=}$	%	27	23.0	23.9	22.2
C(t)	%	0.33	-	-	-
CO_3	%	1.46	-	-	-
C(g)	%	< 0.05	-	< 0.05	< 0.05
TOC	%	< 0.05	-	0.13	0.15
Cl (HNO_3 soluble)	%	< 10	-	26	< 10
K80	µm	28.9	26.1	184.0	20.6

Result Analysis Report

Sample Name:
18988-01 Pdts 1-4 - Average

SOP Name:
Defaultar

Measured:
March-24-22 2:09:07 PM

Sample Source & type:
BL 801-16

Measured by:
lr_malvern1

Analysed:
March-24-22 2:09:09 PM

Sample bulk lot ref:
KS

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
13.34 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
0.473 %

Result Emulation:
Off

Concentration:
0.0274 %Vol

Span :
2.970

Uniformity:
0.96

Result units:
Volume

Specific Surface Area:
0.48 m²/g

Surface Weighted Mean D[3,2]:
12.508 um

Vol. Weighted Mean D[4,3]:
104.497 um

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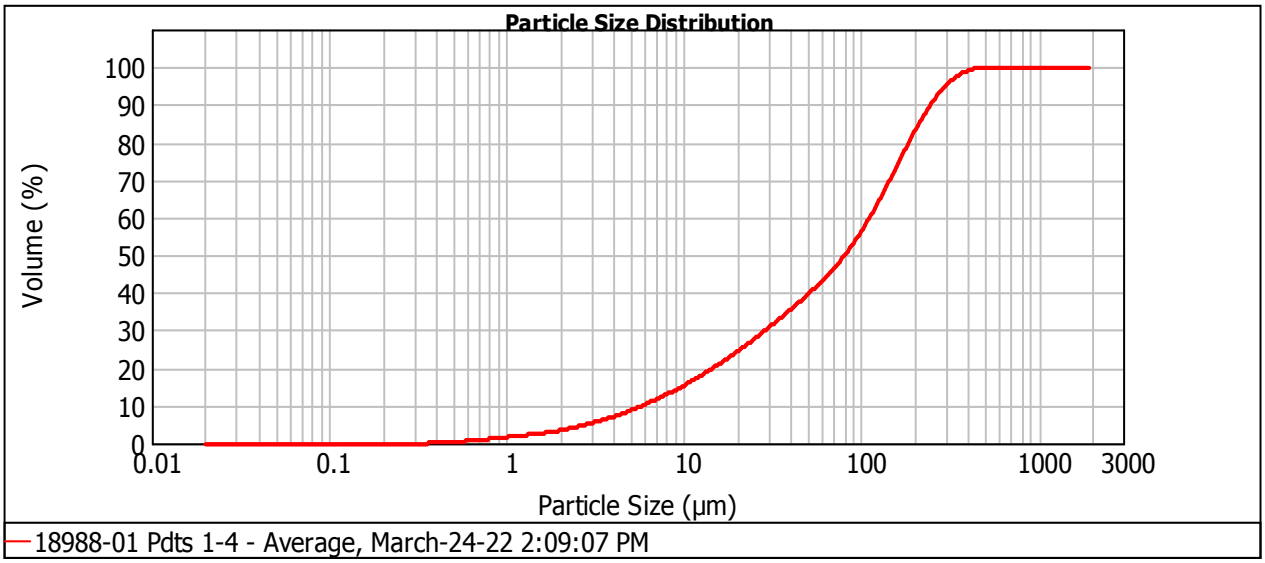
d(0.1): 5.823 um **d(0.5):** 80.100 um **d(0.8):** 184.014 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	1.79	11.482	17.01	120.226	63.03	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	2.08	13.183	18.71	138.038	68.39	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	2.41	15.136	20.50	158.489	73.98	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	2.79	17.378	22.40	181.970	79.56	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	3.23	19.953	24.39	208.930	84.83	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	3.76	22.909	26.47	239.883	89.51	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	4.37	26.303	28.64	275.423	93.38	2884.032	100.00
0.026	0.00	0.275	0.00	2.884	5.07	30.200	30.88	316.228	96.31	3311.311	100.00
0.030	0.00	0.316	0.00	3.311	5.86	34.674	33.19	363.078	98.30	3801.894	100.00
0.035	0.00	0.363	0.01	3.802	6.73	39.811	35.56	416.869	99.45	4365.158	100.00
0.040	0.00	0.417	0.08	4.365	7.70	45.709	38.00	478.630	99.94	5011.872	100.00
0.046	0.00	0.479	0.23	5.012	8.75	52.481	40.57	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	0.44	5.754	9.90	60.256	43.33	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	0.68	6.607	11.14	69.183	46.36	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	0.95	7.586	12.46	79.433	49.78	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	1.22	8.710	13.89	91.201	53.67	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	1.50	10.000	15.40	104.713	58.09	1096.478	100.00		

Operator notes:

Result Analysis Report

Sample Name:
18988-01 BL 801 Con 1 - Average

SOP Name:
Defaultar

Measured:
March-22-22 7:58:17 AM

Sample Source & type:

Measured by:
lr_malvern1

Analysed:
March-22-22 7:58:19 AM

Sample bulk lot ref:
Les

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
15.82 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
0.363 %

Result Emulation:
Off

Concentration:
0.0118 %Vol

Span :
5.676

Uniformity:
4.1

Result units:
Volume

Specific Surface Area:
1.33 m²/g

Surface Weighted Mean D[3,2]:
4.510 um

Vol. Weighted Mean D[4,3]:
37.999 um

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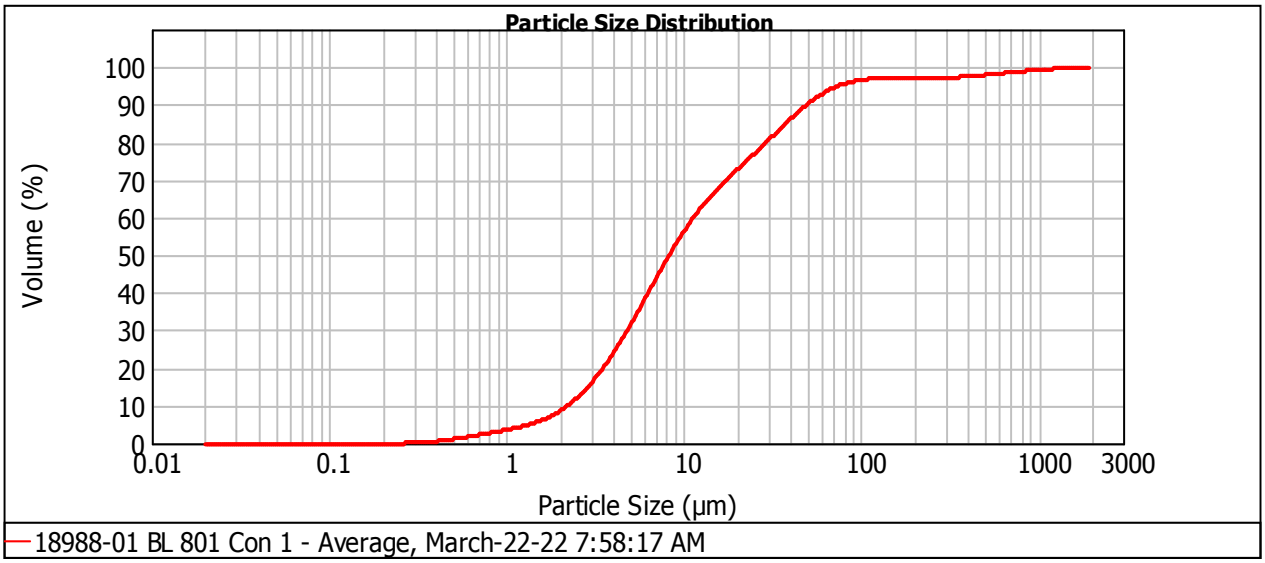
d(0.1): 2.208 um **d(0.5):** 8.244 um **d(0.8):** 28.931 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	3.95	11.482	60.47	120.226	96.98	1258.925	99.59
0.011	0.00	0.120	0.00	1.259	4.62	13.183	64.08	138.038	97.06	1445.440	99.75
0.013	0.00	0.138	0.00	1.445	5.45	15.136	67.27	158.489	97.06	1659.587	99.89
0.015	0.00	0.158	0.00	1.660	6.55	17.378	70.15	181.970	97.06	1905.461	99.98
0.017	0.00	0.182	0.00	1.905	7.99	19.953	72.85	208.930	97.06	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	9.86	22.909	75.48	239.883	97.06	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	12.21	26.303	78.13	275.423	97.11	2884.032	100.00
0.026	0.00	0.275	0.01	2.884	15.08	30.200	80.85	316.228	97.20	3311.311	100.00
0.030	0.00	0.316	0.10	3.311	18.49	34.674	83.59	363.078	97.36	3801.894	100.00
0.035	0.00	0.363	0.29	3.802	22.44	39.811	86.29	416.869	97.59	4365.158	100.00
0.040	0.00	0.417	0.58	4.365	26.86	45.709	88.82	478.630	97.85	5011.872	100.00
0.046	0.00	0.479	0.95	5.012	31.67	52.481	91.08	549.541	98.14	5754.399	100.00
0.052	0.00	0.550	1.39	5.754	36.75	60.256	92.97	630.957	98.44	6606.934	100.00
0.060	0.00	0.631	1.86	6.607	41.92	69.183	94.46	724.436	98.72	7585.776	100.00
0.069	0.00	0.724	2.36	7.586	47.03	79.433	95.55	831.764	98.98	8709.636	100.00
0.079	0.00	0.832	2.86	8.710	51.90	91.201	96.29	954.993	99.20	10000.000	100.00
0.091	0.00	0.955	3.38	10.000	56.41	104.713	96.74	1096.478	99.41		

Operator notes:

Result Analysis Report

Sample Name:
18988-01 BL 801 Conc 2 - Average

SOP Name:
Defaultar

Measured:
March-10-22 8:43:55 AM

Sample Source & type:
Head

Measured by:
lr_malvern1

Analysed:
March-10-22 8:43:57 AM

Sample bulk lot ref:
ar

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
15.31 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
0.759 %

Result Emulation:
Off

Concentration:
0.0120 %Vol

Span :
4.010

Uniformity:
1.27

Result units:
Volume

Specific Surface Area:
1.23 m²/g

Surface Weighted Mean D[3,2]:
4.875 um

Vol. Weighted Mean D[4,3]:
16.226 um

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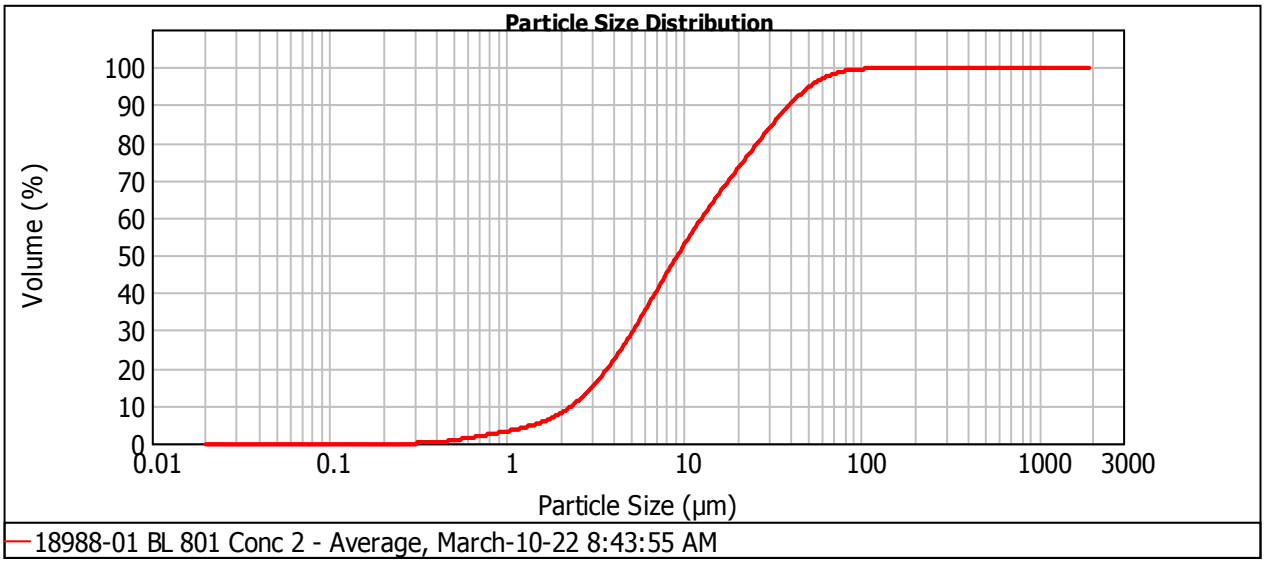
d(0.1): 2.338 um **d(0.5):** 9.187 um **d(0.8):** 26.058 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	3.51	11.482	57.20	120.226	99.65	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	4.15	13.183	61.35	138.038	99.71	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	4.94	15.136	65.32	158.489	99.76	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	5.96	17.378	69.14	181.970	99.82	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	7.30	19.953	72.88	208.930	99.89	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	9.02	22.909	76.58	239.883	99.95	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	11.18	26.303	80.25	275.423	100.00	2884.032	100.00
0.026	0.00	0.275	0.00	2.884	13.81	30.200	83.83	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	0.01	3.311	16.93	34.674	87.23	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	0.11	3.802	20.53	39.811	90.34	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	0.33	4.365	24.58	45.709	93.05	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	0.64	5.012	28.99	52.481	95.27	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	1.02	5.754	33.68	60.256	96.97	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	1.47	6.607	38.53	69.183	98.16	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	1.94	7.586	43.40	79.433	98.92	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	2.44	8.710	48.19	91.201	99.35	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	2.95	10.000	52.81	104.713	99.56	1096.478	100.00		

Operator notes:

Appendix B – Tests 1 to 3

Appendix B – Tests 1 to 3

Project: 18988-01 **Date:** December 8, 2021
Client: **Technologist:** Chris Silva

Test: POX-1

Purpose:

Sample: **BL 801 Bulk Con 1** **Target K80:** - µm
Actual K80: µm
(Screen + Malvern)

H&S: Review MSDS for H_2SO_4

Procedure: The target amount of R.O. water was weighed out in a 2 L titanium vessel less 100 g.
145 g of BL 801 Bulk Concentrate (dry equivalent) was added to the mixture.
13.113 g Ferric Sulphate was then added to the mixture.
The pH was then adjusted with concentrated sulphuric acid to pH 1 and held for 15 minutes.
The pH and ORP was recorded during the 15 minutes.

After 15 minutes the vessel was sealed and heat up begun.
Once the sample was at temperature 100 psi oxygen over pressure was applied.
An off gas bleed was started once at temperature and pressure.
At the end of the 120 mins the pulp was cooled to 95°C.
Once at 95°C, the autoclave was removed from the mantle, the head removed, the pulp mixed and a sample removed - HC- Time 0.
The head was then placed back onto the vessel, secured and placed back into the mantle and heated to 95°C.
The Time 0 sample was filtered and the products submitted for analysis.
Once the pulp was back at 95°C it was then held for 240 minutes.

The 120 min POX sample was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water. The POX residue was not submitted for assay.

After 240 minutes (4 Hours) the vessel was removed from the heating mantle.
The pulp was agitated by an overhead mixer the pH and ORP measured and a sample (~150 mL) removed.
The 240 min sample (150 mL) was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water.

The remaining pulp was then filtered and the residue washed with 100 mL of pH 2 water.
The residue was then further displacement washed with 3 x 250 mL of D.I.
The final washed residue was forwarded for CN leaching.

Analysis:

POX PLS:	Fe, Fe^{2+}, As, ICP Scan and S	Hot Cure PLS:	Fe, Fe^{2+}, As, ICP Scan and S
POX Residue:	Not Submitted	Hot Cure Residue:	S(t), $S^{=}$, Fe, As and ICP Scan

Conditions:

Feed Moisture (%):	**0.00**	
Target Pulp Density (%):	**10.0**	
Feed Weight (dry equiv.) (g):	**145**	
Feed Weight Wet Req'd (g):	**145.0**	
H_20 Weight Added:	**1300**	
H_2O Weight Req'd (g):	**1300**	
Pre-acidulation H_2SO_4 added (g):	**139.101**	
2 g /L Fe^{3+} added as $Fe_2(SO_4)_3$-$9H_2O$ (g):	**13.08**	
Total Pulp Weight with reagents (g):	1597	(Actual Pulp weight)
Pulp Density (% solids w/w):	9.1	(w/w)
Temperature (°C):	**220**	
O_2 Over Pressure (psi):	**100**	Total = 422 psi
Time (at temperature) (min):	**120**	

Acidulation Data:

Time	Time (mins)	Temp (°C)	pH (units)	ORP (mV)	H_2SO_4 Add'n (g)	H_2SO_4 Add'n (Cum g)	Observations
5:43	0	17.7	6.64	216		0	Add Feed
5:43	0	17.7	4.06	436		0	Ad Fe
5:54	0	31.3	1.06	460	139.101	139.101	Add Acid
5:59	5	30.5	0.96	452		139.101	
6:04	10	30.1	0.89	448		139.101	
6:09	15	29.4	0.84	443		139.101	
						959	**kg/t H_2SO_4 Addition**

Autoclave Leach Data:

Elapsed Time	D time	Temp	Pressure (psi)				Off-Gas		Remarks
			Total	Steam	Over	O_2	Flow	O_2	
min		°C	meas	calculated			mL/min	%	
6:25		30		-	-	-	-		Start Heating
7:17	0.0	220	430	**322**	**108**	**0**			Start Test
7:27	10.0	218	435	**309**	**126**	**0**	250		Calibrate New O2 sensor
7:37	10.0	221	434	**328**	**106**	**0**	250		Dave B adjusted parameters
7:47	10.0	221	440	**328**	**112**	**110**	250	98	
7:57	10.0	218	437	**309**	**128**	**128**	250	100	
8:07	10.0	220	441	**322**	**119**	**119**	250	100	
8:17	10.0	221	446	**328**	**118**	**118**	250	100	
8:27	10.0	221	428	**328**	**100**	**100**	250	100	8:22 Dave B installed cooling pulse on for 1 s off for 6 s
8:37	10.0	220	434	**322**	**112**	**112**	250	100	
8:47	10.0	221	431	**328**	**103**	**103**	250	100	
8:57	10.0	219	424	**315**	**109**	**109**	250	100	
9:07	10.0	221	441	**328**	**113**	**113**	250	100	
9:17	10.0	219	426	**315**	**111**	**111**	250	100	End Test, Cool Down, Sample
9:18		218							Cool Down
9:27		95							
AVG. 0:240	**120**	**220**	**435**	**322**	**113**	**93**	**250**	**83**	

Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
120 min POX Pulp	802	0.73	77.3	67.9	57	1.1835	65	5.8		100.0	yellow	yellow	fast	0.0%	612	1.08
120 min POX Pulp B4 Sa	802	0.73	1417.4	1417.4	1198	1.1835	1198		0.0		yellow	yellow	fast	0.0%	612	1.08

denotes calculated value

Final Sample Filtration:

Diameter of filtration paper:		mm	
type of paper (Whatman ##):			
Filtration time:		min	
Washing time:			
Volume of wash:		mL	
Cake thickness:		cm	
% Moisture			
% Weightloss:			

Clarity of filtrate:	clear
Colour of filtrate:	yellow (gold)
Clarity of wash:	clear
Colour of wash:	light yellow
Colour of residue:	yellow (gold)

Temp of POX Pulp:	83.5	°C
Temp of POX PLS:	32.5	°C
Note:	Froth through the off gas system, had to rinse out off gas system	
Condensate =	86.9 g	

Hot Cure Data:

POX pulp weight for Hot Cure: 1340.1 g wt. not transferred to Hot Cure 77.3 g POX Residue to HC: 0.0 g

Time	Time mins	Temp	pH	ORP	Observations
9:30	0	83.5			Sample
9:33	0				Back in Mantle
9:39	0	95			Start Test
10:39	60	94			
11:39	120	94			
12:39	180	94			
13:39	240	96			End Test, Sample, Filter
		94.6			

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Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
240 min HC Pulp	750	0.63	219.0	197.9	166	1.1933	175	14.2	10.3	27.5	yellow	green	fast	4.7%	556	1.14
240 min HC Pulp B4 Sar	750	0.63	1302.5	1162.4	974	1.1933	1040	85.8	61.3	28.6	yellow	green	fast	4.7%	556	1.14
240 min HC Pulp After S	750	0.63	1083.5	964.5	808	1.1933	865	71.6	51.0	28.8	yellow	green	fast	4.7%	556	1.14

Temp of Hot Cure 240 min Pulp:	87.2	°C
Temp of Hot Cure 240 min PLS:	46.7	°C
Notes: sulphur scale all around vessel at pulp height after POX (HC 0) sample		

Metallurgical Balance POX

Product	Amount	%Wt.	Assay (mg/L, %, g/t)											S	FA, g/L
	(mL, g)	Loss	Fe	Fe^{2+}	Cu	As	S	$S^{=}$	SO_4	SO_4†	Au	Ag	Cl	Bromine	H_2SO_4
BL 801 Bulk Con	145		30.8		1350	20.6	27.3	27.0			25.5	41.0	< 10		
120 min PLS	1198		20600		255	5750				204000		1.32	16	68000	145

Metallurgical Balance Hot Cure

Product	Amount	%Wt.	Assay (mg/L, %, g/t)											S	FA, g/L
	(mL, g)	Loss	Fe	Fe^{2+}	Cu	As	S	$S^{=}$	SO_4	SO_4†	Au	Ag	Cl	Bromine	H_2SO_4
240 min Filtrat	1040		22900		269	6670				231600		0.91	21	77200	167
240 min Resid	61	55.3	21.8		36	28.5	1.27	0.43	2.5			58			
Dissolution			Fe		Cu	As									
Final HC			64%		99%	28%									

†SO4 in solution calculated from S by bromine ICP

99.3 % Sulphide oxidation based on HC residue

55.3 % Weight loss Overall

Weight for CIL: 51.0 g

POX Feed Eq.: 114.0 g

Project: 18988-01 **Date:** January 26, 2022
Client: **Technologist:** Chris Silva

Test: POX-2

Purpose:

Sample: **BL 801 Bulk Con 1** **Target K80:** - µm
Actual K80: µm
(Screen + Malvern)

H&S: Review MSDS for H_2SO_4

Procedure: The target amount of R.O. water was weighed out in a 2 L titanium vessel less 100 g.
119.95 g of BL 801 Bulk Concentrate (dry equivalent) was added to the mixture.
12.08 g Ferric Sulphate was then added to the mixture.
The pH was then adjusted with concentrated sulphuric acid to pH 2 and held for 15 minutes.
The pH and ORP was recorded during the 15 minutes.

After 15 minutes the vessel was sealed and heat up begun.
Once the sample was at temperature 100 psi oxygen over pressure was applied.
An off gas bleed was started once at temperature and pressure.
At the end of the 120 mins the pulp was cooled to 95°C.
Once at 95°C, the autoclave was removed from the mantle, the head removed, the pulp mixed and a sample removed - HC- Time 0.
The head was then placed back onto the vessel, secured and placed back into the mantle and heated to 95°C.
The Time 0 sample was filtered and the products submitted for analysis.
Once the pulp was back at 95°C it was then held for 240 minutes.

The 120 min POX sample was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water. The POX residue was not submitted for assay.

After 240 minutes (4 Hours) the vessel was removed from the heating mantle.
The pulp was agitated by an overhead mixer the pH and ORP measured and a sample (~150 mL) removed.
The 240 min sample (150 mL) was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water.

The remaining pulp was then filtered and the residue washed with 100 mL of pH 2 water.
The residue was then further displacement washed with 3 x 250 mL of D.I.
The final washed residue was forwarded for CN leaching.

Analysis:

POX PLS:	Fe, Fe^{2+}, As, ICP Scan and S	Hot Cure PLS:	Fe, Fe^{2+}, As, ICP Scan and S
POX Residue:	Not Submitted	Hot Cure Residue:	S(t), $S^{=}$, Fe, As and ICP Scan

Conditions:

Feed Moisture (%):	**0.00**	
Target Pulp Density (%):	**10.0**	
Feed Weight (dry equiv.) (g):	**119.95**	Wt for POX 2 and 3 - all there was left
Feed Weight Wet Req'd (g):	**119.95**	
H_20 Weight Added:	**1200**	
H_2O Weight Req'd (g):	**1200**	
Pre-acidulation H_2SO_4 added (g):	**0.000**	
2 g /L Fe^{3+} added as $Fe_2(SO_4)_3$-$9H_2O$ (g):	**12.08**	
Total Pulp Weight with reagents (g):	1332	(Actual Pulp weight)
Pulp Density (% solids w/w):	9.0	(w/w)
Temperature (°C):	**220**	
O_2 Over Pressure (psi):	**100**	Total = 422 psi
Time (at temperature) (min):	**120**	

Acidulation Data:

Time	Time (mins)	Temp (°C)	pH (units)	ORP (mV)	H_2SO_4 Add'n (g)	H_2SO_4 Add'n (Cum g)	Observations
5:28	0	17.1	6.86	201		0	Add Feed
5:28	0	17.1	3.86	436		0	Ad Fe
5:38	0	18.4	2.02	438	7.901	7.901	Add Acid
5:43	5	18.3	2.01	427		7.901	
5:48	10	18.2	2.00	417		7.901	
5:53	15	18.2	2.00	413		7.901	
						66	**kg/t H_2SO_4 Addition**

Autoclave Leach Data:

Elapsed Time	D time	Temp	Pressure (psi)				Off-Gas			Remarks
			Total	Steam	Over	O_2	O_2 Total	O_2	O_2	
min		°C	meas	calculated			L	%	Flow	
6:05		18		-	-	-				Start Heat
7:04	0.0	220	427	**322**	**105**	**0**				Start test
7:14	10.0	221	419	**328**	**91**	**85**	37.1	94	250	Start Test, using Cooling Pulse
7:24	10.0	220	420	**322**	**98**	**92**	71.7	94	250	
7:34	10.0	219	427	**315**	**112**	**105**	79.1	94	250	
7:44	10.0	220	435	**322**	**113**	**106**	83.8	94	250	
7:54	10.0	221	430	**328**	**102**	**96**	88.4	94	250	
8:04	10.0	221	422	**328**	**94**	**89**	93.9	95	150	
8:14	10.0	221	433	**328**	**105**	**100**	100.4	95	0	
8:24	10.0	219	425	**315**	**110**	**105**	109.7	96	250	
8:34	10.0	221	422	**328**	**94**	**90**	115.9	96	250	
8:44	10.0	221	430	**328**	**102**	**98**	124.7	96	250	
8:54	10.0	220	446	**322**	**124**	**119**	131.2	96	250	
9:04	10.0	219	428	**315**	**113**	**108**	136.4	96	50	
9:05		220								
9:10		140								
9:15		95								
AVG. 0:240	**120**	**220**	**428**	**323**	**105**	**99**		**95**	**204**	

Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
120 min POX Pulp	776	1.03	70.1	59.3	55	1.0700	61	7.7	4.9	36.4	yellow	orange	fast	7.0%	576	1.66
120 min POX Pulp B4 Sa	776	1.03	1286.2	1196.3	1118	1.0700	1118		89.9	#DIV/0!	yellow	orange	fast	7.0%	576	1.66

denotes calculated value

Final Sample Filtration:

Diameter of filtration paper:	mm	Clarity of filtrate:	clear
type of paper (Whatman ##):		Colour of filtrate:	yellow (gold)
Filtration time:	min	Clarity of wash:	clear
Washing time:		Colour of wash:	light yellow
Volume of wash:	mL	Colour of residue:	Orange
Cake thickness:	cm		

% Moisture	
% Weightloss:	

Temp of POX Pulp:	84.4	°C
Temp of POX PLS:	30.4	°C
Note:	Froth through the off gas system, had to rinse out off gas system	
	Sulphur scale around vessel at interface, thicker by cooling coils	
Condensate =	42.8 g	

Hot Cure Data:

POX pulp weight for Hot Cure: 1216.1 g wt. not transferred to Hot Cure 70.1 g POX Residue to HC: 85.0 g

Time	Time mins	Temp	pH	ORP	Observations
9:20	0	84	1.03	776	Sample
9:23	0	63			Back in Mantle
9:31	0	95			Start Test
10:31	60	94			
11:31	120	96			
12:31	180	94			
13:31	240	95	0.94	710	End Test, Sample, Filter
		94.8			

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Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
240 min HC Pulp	710	0.94	203.1	178.0	165	1.0795	175	20.7	14.0	32.4	yellow	orange	fast	6.9%	559	1.58
240 min HC Pulp B4 Sar	710	0.94	1187.4	1024.7	949	1.0795	1024	122.0	81.8	32.9	yellow	orange	fast	6.9%	559	1.58
240 min HC Pulp After S	710	0.94	984.3	846.7	784	1.0795	849	101.3	67.8	33.0	yellow	orange	fast	6.9%	559	1.58

Temp of Hot Cure 240 min Pulp:	82.7	°C
Temp of Hot Cure 240 min PLS:	44.2	°C
Notes: Sulphur scale around vessel at interface, thicker by cooling coils		

Metallurgical Balance POX

Product	Amount	%Wt.	Assay (mg/L, %, g/t)											S	FA, g/L
	(mL, g)	Loss	Fe	Fe^{2+}	Cu	As	S	$S^{=}$	SO_4	SO_4†	Au	Ag	Cl	Bromine	H_2SO_4
Bulk Con 1 (BL 8(	120		30.8		1350	20.6	27.3	27.0			25.5	41.0	< 10		
120 min PLS	1118		5000	75	112	1020				69300		0.17		23100	59

Metallurgical Balance Hot Cure

Product	Amount	%Wt.	Assay (mg/L, %, g/t)											S	FA, g/L
	(mL, g)	Loss	Fe	Fe^{2+}	Cu	As	S	$S^{=}$	SO_4	SO_4†	Au	Ag	Cl	Bromine	H_2SO_4
240 min Filtrat	1024		7520	470	125	2110				72600		0.11		24200	59
240 min Resid	82	27.8	27.7		380	22.2	3.31	0.44	8.6			57			
Dissolution			Fe		Cu	As									
Final HC			25%		80%	11%									

†SO4 in solution calculated from S by bromine ICP

98.8 % Sulphide oxidation based on HC residue

27.8 % Weight loss Overall

Weight for CIL: 67.8 g

POX Feed Eq.: 94.0 g

Project: 18988-01 **Date:** January 26, 2022
Client: **Technologist:** Chris Silva

Test: POX-3

Purpose:

Sample: **BL 801 Bulk Con 1** **Target K80:** - µm
Actual K80: µm
(Screen + Malvern)

H&S: Review MSDS for H_2SO_4

Procedure: The target amount of R.O. water was weighed out in a 2 L titanium vessel less 100 g.
119.95 g of BL 801 Bulk Concentrate (dry equivalent) was added to the mixture.
12.08 g Ferric Sulphate was then added to the mixture.
The pH was then adjusted with concentrated sulphuric acid to pH 2 and held for 15 minutes.
The pH and ORP was recorded during the 15 minutes.

After 15 minutes the vessel was sealed and heat up begun.
Once the sample was at temperature 100 psi oxygen over pressure was applied.
An off gas bleed was started once at temperature and pressure.
At the end of the 60 mins the pulp was cooled to 95°C.
Once at 95°C, the autoclave was removed from the mantle, the head removed, the pulp mixed and a sample removed - HC- Time 0.
The head was then placed back onto the vessel, secured and placed back into the mantle and heated to 95°C.
The Time 0 sample was filtered and the products submitted for analysis.
Once the pulp was back at 95°C it was then held for 240 minutes.

The 60 min POX sample was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water. The POX residue was not submitted for assay.

After 240 minutes (4 Hours) the vessel was removed from the heating mantle.
The pulp was agitated by an overhead mixer the pH and ORP measured and a sample (~150 mL) removed.
The 240 min sample (150 mL) was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water.

The remaining pulp was then filtered and the residue washed with 100 mL of pH 2 water.
The residue was then further displacement washed with 3 x 250 mL of D.I.
The final washed residue was forwarded for CN leaching.

Analysis:

POX PLS:	Fe, Fe^{2+}, As, ICP Scan and S	Hot Cure PLS:	Fe, Fe^{2+}, As, ICP Scan and S
POX Residue:	Not Submitted	Hot Cure Residue:	S(t), $S^{=}$, Fe, As and ICP Scan

Conditions:

Feed Moisture (%):	**0.00**	
Target Pulp Density (%):	**10.0**	
Feed Weight (dry equiv.) (g):	**119.95**	Wt for POX 2 and 3 - all there was left
Feed Weight Wet Req'd (g):	**119.95**	
H_20 Weight Added:	**1200**	
H_2O Weight Req'd (g):	**1200**	
Pre-acidulation H_2SO_4 added (g):	**7.315**	
2 g /L Fe^{3+} added as $Fe_2(SO_4)_3$-$9H_2O$ (g):	**12.08**	
Total Pulp Weight with reagents (g):	1332	(Actual Pulp weight)
Pulp Density (% solids w/w):	9.0	(w/w)
Temperature (°C):	**220**	
O_2 Over Pressure (psi):	**100**	Total = 422 psi
Time (at temperature) (min):	**60**	

Acidulation Data:

Time	Time (mins)	Temp (°C)	pH (units)	ORP (mV)	H_2SO_4 Add'n (g)	H_2SO_4 Add'n (Cum g)	Observations
6:05	0	16.6	6.67	40		0	Add Feed
6:05	0	16.7	3.93	394		0	Ad Fe
6:15	0	17.9	2.02	453	7.315	7.315	Add Acid
6:20	5	17.9	2.01	428	0.278	7.593	
6:25	10	18.0	2.00	419	0.168	7.761	
6:30	15					7.761	
						65	**kg/t H_2SO_4 Addition**

Autoclave Leach Data:

Elapsed Time	D time	Temp °C	Pressure (psi)				Off-Gas		Remarks
			Total	Steam	Over	O_2	Flow	O_2	
min			meas	calculated			mL/min	%	
6:35		17		-	-	-	-		Start Heating
7:40	0.0	220	437	**322**	**115**	**0**			Start Test, using Cooling Pulse
7:50	10.0	222	421	**335**	**86**	**79**	250	92	
8:00	10.0	219	434	**315**	**119**	**114**	250	96	
8:10	10.0	220	437	**322**	**115**	**111**	250	96	
8:20	10.0	219	436	**315**	**121**	**116**	200	96	
8:30	10.0	221	424	**328**	**96**	**92**	250	96	
8:40	10.0	220	440	**322**	**118**	**114**	300	96	End Test, Cool Down, Sample
8:41		214							Cool Down
8:44		140							
8:47		95							
AVG. 0:240	**60**	**220**	**432**	**323**	**109**	**104**	**250**	**95**	

Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
60 min POX Pulp	783	1.25	72.0	58.7	55	1.0758	62	8.6	5.3	38.4	yellow	gold	fast	7.4%	548	1.69
60 min POX Pulp B4 Sar	783	1.25	1336.3	1237.9	1151	1.0758	1151		98.4		yellow	gold	fast	7.4%	548	1.69
									denotes calculated value							

Final Sample Filtration:

Diameter of filtration paper:	mm	Clarity of filtrate:	clear
type of paper (Whatman ##):		Colour of filtrate:	yellow (gold)
Filtration time:	min	Clarity of wash:	clear
Washing time:		Colour of wash:	light yellow
Volume of wash:	mL	Colour of residue:	gold
Cake thickness:	cm		

% Moisture	
% Weightloss:	

Temp of POX Pulp:	81.6	°C
Temp of POX PLS:	20.7	°C
Note:	Froth through the off gas system, had to rinse out off gas system	
	Sulphur scale around vessel at interface, thicker by cooling coils	
Condensate =	66.2 g	

Hot Cure Data:

POX pulp weight for Hot Cure: 1264.3 g wt. not transferred to Hot Cure 72.0 g POX Residue to HC: 93.1 g

Time	Time mins	Temp	pH	ORP	Observations
8:51	0	81	1.25	783	Sample
8:55	0	65			Back in Mantle
9:03	0	95			Start Test
10:03	60	95			
11:03	120	94			
12:03	180	96			
13:03	240	95	0.94	744	End Test, Sample, Filter
		95.0			

Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
240 min HC Pulp	744	0.94	203.0	176.2	163	1.0834	174	21.1	14.6	30.8	yellow	org-yell	fast	7.2%	550	1.70
240 min HC Pulp B4 Sar	744	0.94	1232.7	1056.0	975	1.0834	1056	130.5	88.7	32.1	yellow	org-yell	fast	7.2%	550	1.70
240 min HC Pulp After S	744	0.94	1029.7	879.8	812	1.0834	882	109.4	74.1	32.3	yellow	org-yell	fast	7.2%	550	1.70

Temp of Hot Cure 240 min Pulp:	85.3	°C
Temp of Hot Cure 240 min PLS:	38	°C
Notes: Sulphur scale around vessel at interface, thicker by cooling coils		

Metallurgical Balance POX

Product	Amount	%Wt.	Assay (mg/L, %, g/t)											S	FA, g/L
	(mL, g)	Loss	Fe	Fe^{2+}	Cu	As	S	$S^{=}$	SO_4	SO_4†	Au	Ag	Cl	Bromine	H_2SO_4
Bulk Con 1 (BL 80	120		30.8		1350	20.6	27.3	27.0			25.5	41.0	< 10		
60 min PLS	1151		5820	89	120	1000				75600		0.24		25200	65

Metallurgical Balance Hot Cure

Product	Amount	%Wt.	Assay (mg/L, %, g/t)											S	FA, g/L
	(mL, g)	Loss	Fe	Fe^{2+}	Cu	As	S	$S^{=}$	SO_4	SO_4†	Au	Ag	Cl	Bromine	H_2SO_4
240 min Filtrat	1056		8490	318	124	2260				77400		0.18		25800	58
240 min Resid	89	21.9	27.7		398	22.9	3.45	0.96	7.5			57			
Dissolution			Fe		Cu	As									
Final HC			27%		79%	11%									

†SO4 in solution calculated from S by bromine ICP

97.2 % Sulphide oxidation based on HC residue

21.9 % Weight loss Overall

Weight for CIL: 74.1 g

POX Feed Eq.: 94.8 g

Test	Feed	Pulp Density % solids w/w	Ground for POX	Feed K80 µm	Pre-acid pH Target	Acid Addi'n H_2SO_4 kg/t	POX Temp. °C	POX Time at Temp. mins.
POX 1	BL 801 Bulk Con 1	9.1	No	28.9	1.0	959	220	120
POX 2	BL 801 Bulk Con 1	9.0	No	28.9	2.0	66	220	120
POX 3	BL 801 Bulk Con 1	9.0	No	28.9	2.0	65	220	60

Test	POX Average Temp. °C	POX Average Total psi	POX Average off gas flow mL/min	POX Average O_2% in offgas	POX Pulp pH units	POX Pulp ORP mV	POX PLS pH units	POX PLS ORP mV	POX PLS FAT g/L H_2SO_4
POX 1	220	435	250	83	0.73	802	1.08	612	145.1
POX 2	220	428	204	95	1.03	776	1.66	576	59.1
POX 3	220	432	250	95	1.25	783	1.69	548	64.9

Test	Feed	Hot Cure Time at Temp. hours	Hot Cure Average Temp.	Hot Cure Pulp pH units	Hot Cure Pulp ORP mV	Hot Cure PLS pH units	Hot Cure PLS ORP mV	Hot Cure PLS FAT g/L H_2SO_4	Hot Cure Residue Colour
POX 1	BL 801 Bulk Con 1	4	94.6	0.63	750	1.14	556	167.4	green
POX 2	BL 801 Bulk Con 1	4	94.8	0.94	710	1.58	559	59.4	orange
POX 3	BL 801 Bulk Con 1	4	95.0	0.94	744	1.70	550	58.2	org-yell

Test	POX PLS Fe mg/L	POX PLS As mg/L	POX PLS S by Bromine mg/L	HC PLS Fe mg/L	HC PLS As mg/L	HC PLS S by Bromine mg/L	Hot Cure Residue Fe %	Hot Cure Residue As %	Hot Cure Residue Ag %	Hot Cure Residue $S^{=}$ %	Hot Cure Residue $S^{=}$ Oxd'n %	Weightloss % Overall
POX 1	20600	5750	68000	22900	6670	77200	21.8	28.5	58	0.43	99.3	55.3
POX 2	5000	1020	23100	7520	2110	24200	27.7	22.2	57	0.44	98.8	27.8
POX 3	5820	1000	25200	8490	2260	25800	27.7	22.9	57	0.96	97.2	21.9

Result Analysis Report

Sample Name:
18988-01 Residue - Average

SOP Name:
Defaultar

Measured:
March-24-22 9:29:27 AM

Sample Source & type:
Hot Cure 2

Measured by:
lr_malvern1

Analysed:
March-24-22 9:29:29 AM

Sample bulk lot ref:
KS

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
12.28 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
1.356 %

Result Emulation:
Off

Concentration:
0.0081 %Vol

Span :
1.873

Uniformity:
0.587

Result units:
Volume

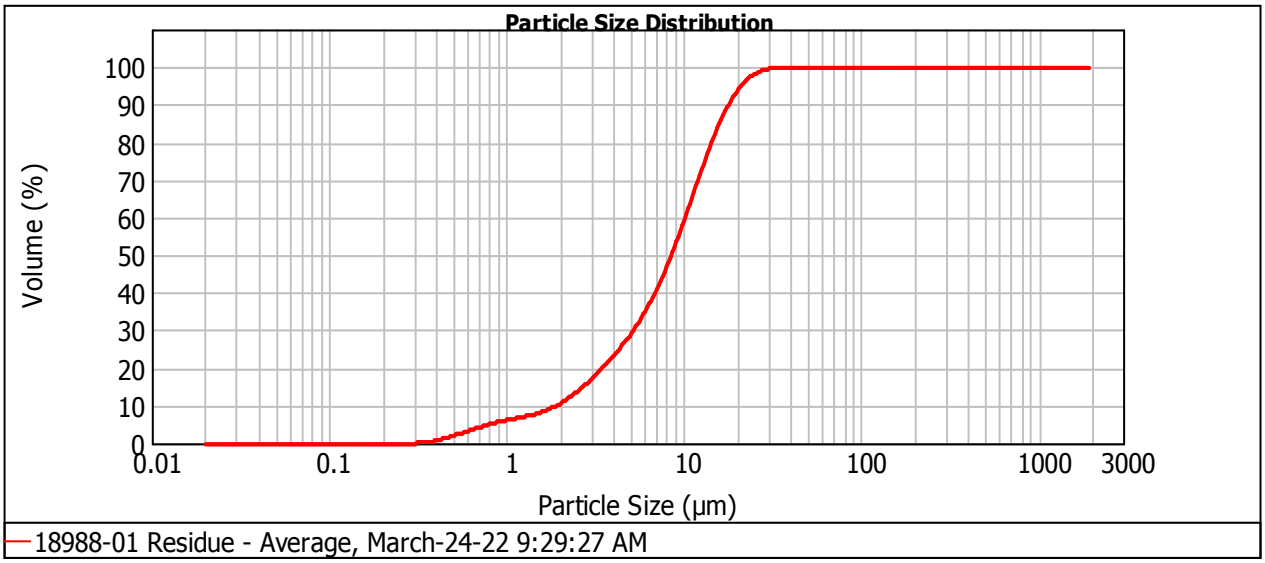
Specific Surface Area:
1.59 m²/g

Surface Weighted Mean D[3,2]:
3.771 um

Vol. Weighted Mean D[4,3]:
9.302 um

---

d(0.1): 1.914 um **d(0.5):** 8.479 um **d(0.8):** 14.293 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	6.46	11.482	67.46	120.226	100.00	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	7.04	13.183	75.56	138.038	100.00	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	7.73	15.136	82.93	158.489	100.00	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	8.66	17.378	89.09	181.970	100.00	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	9.95	19.953	93.74	208.930	100.00	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	11.66	22.909	96.88	239.883	100.00	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	13.78	26.303	98.71	275.423	100.00	2884.032	100.00
0.026	0.00	0.275	0.00	2.884	16.25	30.200	99.62	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	0.02	3.311	19.00	34.674	99.93	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	0.33	3.802	22.01	39.811	100.00	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	0.88	4.365	25.31	45.709	100.00	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	1.64	5.012	29.03	52.481	100.00	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	2.54	5.754	33.32	60.256	100.00	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	3.49	6.607	38.41	69.183	100.00	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	4.39	7.586	44.43	79.433	100.00	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	5.19	8.710	51.43	91.201	100.00	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	5.87	10.000	59.23	104.713	100.00	1096.478	100.00		

Operator notes:

Result Analysis Report

Sample Name:
18988-01 Residue - Average

SOP Name:
Defaultar

Measured:
March-24-22 10:14:15 AM

Sample Source & type:
Hot Cure 3

Measured by:
lr_malvern1

Analysed:
March-24-22 10:14:16 AM

Sample bulk lot ref:
KS

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
11.89 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
1.140 %

Result Emulation:
Off

Concentration:
0.0091 %Vol

Span :
1.919

Uniformity:
0.642

Result units:
Volume

Specific Surface Area:
1.36 m²/g

Surface Weighted Mean D[3,2]:
4.414 um

Vol. Weighted Mean D[4,3]:
11.998 um

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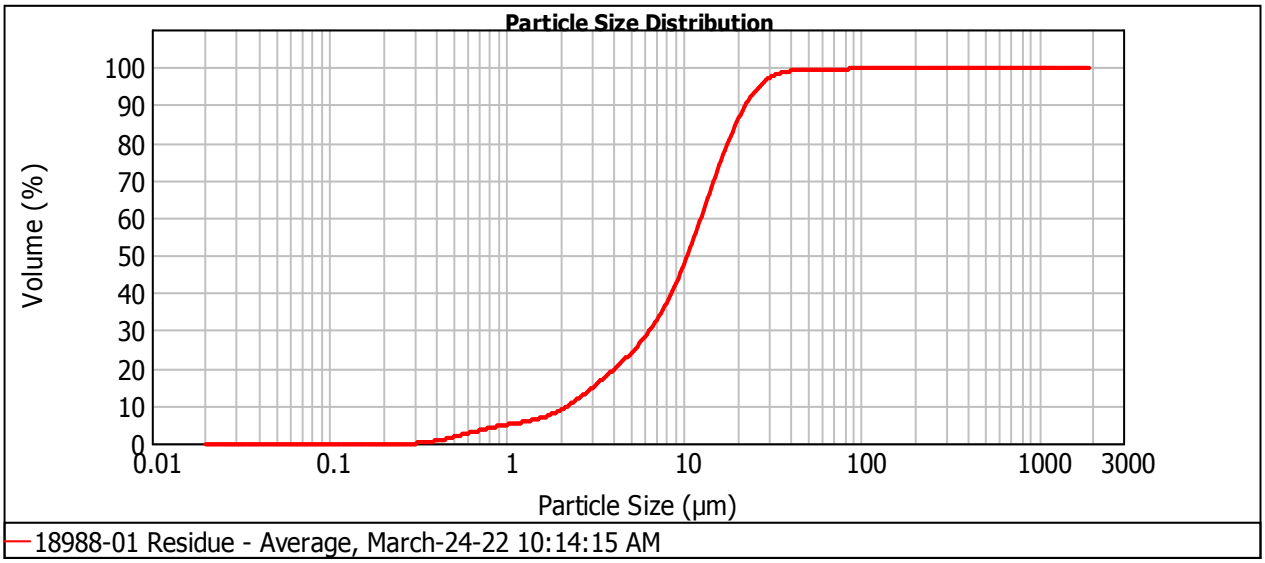
d(0.1): 2.220 um **d(0.5):** 10.439 um **d(0.8):** 17.671 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	5.18	11.482	55.28	120.226	99.90	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	5.67	13.183	63.38	138.038	99.97	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	6.27	15.136	71.52	158.489	100.00	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	7.11	17.378	79.14	181.970	100.00	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	8.28	19.953	85.73	208.930	100.00	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	9.82	22.909	90.98	239.883	100.00	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	11.69	26.303	94.74	275.423	100.00	2884.032	100.00
0.026	0.00	0.275	0.00	2.884	13.83	30.200	97.14	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	0.01	3.311	16.16	34.674	98.44	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	0.29	3.802	18.60	39.811	99.00	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	0.75	4.365	21.17	45.709	99.16	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	1.37	5.012	23.95	52.481	99.20	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	2.08	5.754	27.10	60.256	99.24	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	2.82	6.607	30.87	69.183	99.34	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	3.53	7.586	35.47	79.433	99.48	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	4.16	8.710	41.08	91.201	99.64	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	4.71	10.000	47.73	104.713	99.79	1096.478	100.00		

Operator notes:

Appendix C – Tests 4 to 6

Appendix C – Tests 4 to 6

Project: 18988-01 **Date:** March 7, 2022
Client: **Technologist:** Chris Silva

Test: POX-4

Purpose: **To repeat POX 3 but, on BL 801 Bulk Concentrate 2 for 90 minutes.**

Sample: **BL 801 Bulk Con 2**

Target K80: - µm
Actual K80: µm
(Screen + Malvern)

H&S: Review MSDS for H_2SO_4

Procedure: The target amount of R.O. water was weighed out in a 2 L titanium vessel less 100 g.
119.95 g of BL 801 Bulk Concentrate (dry equivalent) was added to the mixture.
12.08 g Ferric Sulphate was then added to the mixture.
The pH was then adjusted with concentrated sulphuric acid to pH 2 and held for 15 minutes.
The pH and ORP was recorded during the 15 minutes.

After 15 minutes the vessel was sealed and heat up begun.
Once the sample was at temperature 100 psi oxygen over pressure was applied.
An off gas bleed was started once at temperature and pressure.
At the end of the 90 mins the pulp was cooled to 95°C.
Once at 95°C, the autoclave was removed from the mantle, the head removed, the pulp mixed and a sample removed - HC- Time 0.
The head was then placed back onto the vessel, secured and placed back into the mantle and heated to 95°C.
The Time 0 sample was filtered and the products submitted for analysis.
Once the pulp was back at 95°C it was then held for 240 minutes.

The 60 min POX sample was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water. The POX residue was not submitted for assay.

After 240 minutes (4 Hours) the vessel was removed from the heating mantle.
The pulp was agitated by an overhead mixer the pH and ORP measured and a sample (~150 mL) removed.
The 240 min sample (150 mL) was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water.

The remaining pulp was then filtered and the residue washed with 100 mL of pH 2 water.
The residue was then further displacement washed with 3 x 250 mL of D.I.
The final washed residue was forwarded for CN leaching.

Analysis:

POX PLS:	Fe, Fe^{2+}, As, ICP Scan and S	Hot Cure PLS:	Fe, Fe^{2+}, As, ICP Scan and S
POX Residue:	Not Submitted	Hot Cure Residue:	S(t), $S^{=}$, Fe, As and ICP Scan

Conditions:

Feed Moisture (%):	**0.00**	
Target Pulp Density (%):	**10.0**	
Feed Weight (dry equiv.) (g):	**119.95**	
Feed Weight Wet Req'd (g):	**119.95**	
H_20 Weight Added:	**1200**	
H_2O Weight Req'd (g):	**1200**	
Pre-acidulation H_2SO_4 added (g):	**10.454**	
2 g /L Fe^{3+} added as $Fe_2(SO_4)_3$-$9H_2O$ (g):	**12.08**	
Total Pulp Weight with reagents (g):	1332	(Actual Pulp weight)
Pulp Density (% solids w/w):	9.0	(w/w)
Temperature (°C):	**220**	
O_2 Over Pressure (psi):	**100**	Total = 422 psi
Time (at temperature) (min):	**90**	

Acidulation Data:

Time	Time (mins)	Temp (°C)	pH (units)	ORP (mV)	H_2SO_4 Add'n (g)	H_2SO_4 Add'n (Cum g)	Observations
5:20	0	19.6	6.52	275		0	Add Feed
5:20	0	19.8	4.09	388		0	Ad Fe
5:30	0	21.7	2.02	425	10.454	10.454	Add Acid
5:35	5	21.7	2.00	414	0.247	10.701	
5:40	10	21.7	2.00	408	0	10.701	
5:45	15	21.7	2.00	402	0	10.701	
						89	**kg/t H_2SO_4 Addition**

Autoclave Leach Data:

Elapsed Time	D time	Temp	Pressure (psi)				Off-Gas			Remarks
			Total	Steam	Over	O_2	O_2 Total	O_2	O_2	
min		°C	meas	calculated			L	%	Flow	
5:52		21		-	-	-				Start Heat
6:48	0.0	221	432	**328**	**104**	**0**			250	Start test
6:58	10.0	221	431	**328**	**103**	**92**	33.0	90	250	Operating with Cooling Pulse
7;08	10.0	220	433	**322**	**111**	**106**	62.7	95	250	
7:18	10.0	220	437	**322**	**115**	**111**	74.5	96	250	
7:28	10.0	221	425	**328**	**97**	**93**	81.0	96	250	
7:38	10.0	220	446	**322**	**124**	**119**	85.3	96	100	
7:48	10.0	219	458	**315**	**143**	**137**	87.8	96	0	
7:58	10.0	219	435	**315**	**120**	**115**	95.8	96	250	
8:08	10.0	221	426	**328**	**98**	**94**	102.4	96	250	
8:18	10.0	221	435	**328**	**107**	**102**	110.3	96	400	
8:19		218								
8:24		145								
8:27		95								
AVG. 0:240	**90**	**220**	**436**	**323**	**113**	**108**		**95**	**225**	

Sampling Data:

Sample #	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
90 min POX Pulp	740	1.05	72.3	57.9	54	1.0676	62	8.5	5.9	30.6	green	orange	fast	8.2%	561	1.49
90 min POX Pulp B4 Sar	740	1.05	1291.7	1186.3	1111	1.0676	1111		105.4	#DIV/0!	green	orange	fast	8.2%	561	1.49

denotes calculated value

Final Sample Filtration:

Diameter of filtration paper:		mm	Clarity of filtrate:	clear
type of paper (Whatman ##):			Colour of filtrate:	green
Filtration time:		min	Clarity of wash:	clear
Washing time:			Colour of wash:	light green
Volume of wash:		mL	Colour of residue:	orange
Cake thickness:		cm		

% Moisture	
% Weightloss:	

Temp of POX Pulp:	83.3	°C
Temp of POX PLS:	30.6	°C
Note:	Froth through the off gas system, had to rinse out off gas system	
	Sulphur scale around vessel at interface, thicker by cooling coils	
Condensate =	81.6 g	

Hot Cure Data:

POX pulp weight for Hot Cure: 1219.4 g wt. not transferred to Hot Cure 72.3 g POX Residue to HC: 99.5 g

Time	Time mins	Temp	pH	ORP	Observations
8:33	0	83.3	1.05	740	Sample
8:37	0	77			Back in Mantle
8:43	0	95			Start Test
9:43	60	96			
10:43	120	96			
11:43	180	96			
12:43	240	95	1.00	693	End Test, Sample, Filter
		95.6			

4

Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
240 min HC Pulp	693	1.00	202.1	176.0	164	1.0755	175	20.3	14.2	30.0	green	orange	fast	7.0%	538	1.61
240 min HC Pulp B4 Sar	693	1.00	1183.5	1006.5	936	1.0755	1023	125.5	83.2	33.7	green	orange	fast	7.0%	538	1.61
240 min HC Pulp After S	693	1.00	981.4	830.5	772	1.0755	848	105.2	69.0	34.5	green	orange	fast	7.0%	538	1.61

Temp of Hot Cure 240 min Pulp:	84.9	°C
Temp of Hot Cure 240 min PLS:	47.7	°C
Notes: Sulphur scale around vessel at interface, thicker by cooling coils		

Metallurgical Balance POX

Product	Amount	%Wt.	Assay (mg/L, %, *g/t*)										S	FA, g/L
	(mL, g)	Loss	Fe	Fe^{2+}	Cu	As	S	$S^{=}$	SO_4	SO_4†	Au	Ag	Bromine	H_2SO_4
BL 801 Bulk Con	120		28.4			18.0	23.7	23.0			20.7	40.6		
90 min PLS	1111		6060	120		1230				67800		< 0.2	22600	54

Metallurgical Balance Hot Cure

Product	Amount	%Wt.	Assay (mg/L, %, *g/t*)										S	FA, g/L
	(mL, g)	Loss	Fe	Fe^{2+}	Cu	As	S	$S^{=}$	SO_4	SO_4†	Au	Ag	Bromine	H_2SO_4
240 min Filtrat	1023		7990	512		2640				66900		< 0.2	22300	50
240 min Resid	83	26.6	25.7	9.20	638	19.2	3.55	0.68	8.6			57		
Dissolution			Fe		Cu	As								
Final HC			28%		0%	14%								

†SO4 in solution calculated from S by bromine ICP

97.8 % Sulphide oxidation based on HC residue

26.6 % Weight loss Overall

Weight for CIL: 69.0 g

POX Feed Eq.: 93.9 g

Project: 18988-01 **Date:** March 8, 2022
Client: **Technologist:** Chris Silva

Test: POX-5

Purpose: **To repeat POX 3 but, on BL 801 Bulk Concentrate 2 at 230°C.**

Sample: **BL 801 Bulk Con 2**

Target K80: - µm
Actual K80: µm
(Screen + Malvern)

H&S: Review MSDS for H_2SO_4

Procedure: The target amount of R.O. water was weighed out in a 2 L titanium vessel less 100 g.
119.95 g of BL 801 Bulk Concentrate (dry equivalent) was added to the mixture.
12.08 g Ferric Sulphate was then added to the mixture.
The pH was then adjusted with concentrated sulphuric acid to pH 2 and held for 15 minutes.
The pH and ORP was recorded during the 15 minutes.

After 15 minutes the vessel was sealed and heat up begun.
Once the sample was at temperature 100 psi oxygen over pressure was applied.
An off gas bleed was started once at temperature and pressure.
At the end of the 60 mins the pulp was cooled to 95°C.
Once at 95°C, the autoclave was removed from the mantle, the head removed, the pulp mixed and a sample removed - HC- Time 0.
The head was then placed back onto the vessel, secured and placed back into the mantle and heated to 95°C.
The Time 0 sample was filtered and the products submitted for analysis.
Once the pulp was back at 95°C it was then held for 240 minutes.

The 60 min POX sample was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water. The POX residue was not submitted for assay.

After 240 minutes (4 Hours) the vessel was removed from the heating mantle.
The pulp was agitated by an overhead mixer the pH and ORP measured and a sample (~150 mL) removed.
The 240 min sample (150 mL) was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water.

The remaining pulp was then filtered and the residue washed with 100 mL of pH 2 water.
The residue was then further displacement washed with 3 x 250 mL of D.I.
The final washed residue was forwarded for CN leaching.

Analysis:

POX PLS:	Fe, Fe^{2+}, As, ICP Scan and S	Hot Cure PLS:	Fe, Fe^{2+}, As, ICP Scan and S
POX Residue:	Not Submitted	Hot Cure Residue:	S(t), $S^{=}$, Fe, As and ICP Scan

Conditions:

Feed Moisture (%):	**0.00**	
Target Pulp Density (%):	**10.0**	
Feed Weight (dry equiv.) (g):	**119.95**	
Feed Weight Wet Req'd (g):	**119.95**	
H_20 Weight Added:	**1200**	
H_2O Weight Req'd (g):	**1200**	
Pre-acidulation H_2SO_4 added (g):	**10.606**	
2 g /L Fe^{3+} added as $Fe_2(SO_4)_3$-$9H_2O$ (g):	**12.08**	
Total Pulp Weight with reagents (g):	1332	(Actual Pulp weight)
Pulp Density (% solids w/w):	9.0	(w/w)
Temperature (°C):	**230**	
O_2 Over Pressure (psi):	**100**	Total = 491 psi
Time (at temperature) (min):	**60**	

Acidulation Data:

Time	Time (mins)	Temp (°C)	pH (units)	ORP (mV)	H_2SO_4 Add'n (g)	H_2SO_4 Add'n (Cum g)	Observations
5:20	0	18.6	6.84	77		0	Add Feed
5:20	0	18.6	4.23	374		0	Ad Fe
5:30	0	20.4	2.01	432	10.606	10.606	Add Acid
5:35	5	20.4	2.01	420	0	10.606	
5:40	10	20.0	2.00	412	0.08	10.686	
5:45	15	20.4	2.00	407		10.686	
						89	**kg/t H_2SO_4 Addition**

Autoclave Leach Data:

Elapsed Time	D time	Temp °C	Pressure (psi)				Off-Gas			Remarks
			Total	Steam	Over	O_2	O_2 Total	O_2	O_2	
min			meas	calculated			L	%	Flow	
5:53		21		-	-	-				Start Heat
6:51	0.0	231	491	**399**	**92**	**0**			250	Start test
7:01	10.0	231	490	**399**	**91**	**82**	37.0	90	250	Operating with Cooling Pulse
7:11	10.0	229	506	**384**	**122**	**115**	63.9	94	250	
7:21	10.0	231	517	**399**	**118**	**114**	71	96	250	
7:31	10.0	230	514	**391**	**123**	**120**	76.8	98	0	
7:41	10.0	230	494	**391**	**103**	**101**	79.4	98	300	
7:51	10.0	229	507	**384**	**123**	**121**	88	98	300	
7:52		231								
7:57		145								
		95								
AVG. 0:240	**60**	**230**	**505**	**391**	**114**	**109**		**96**	**229**	

Sampling Data:

Sample #	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
60 min POX Pulp	749	0.94	72.2	60.1	57	1.0611	63	8.7	5.8	33.3	green	orange	fast	8.0%	547	1.69
60 min POX Pulp B4 Sar	749	0.94	1287.6	1184.2	1116	1.0611	1116		103.4	#DIV/0!	green	orange	fast	8.0%	547	1.69

denotes calculated value

Final Sample Filtration:

Diameter of filtration paper:		mm	Clarity of filtrate:	clear
type of paper (Whatman ##):			Colour of filtrate:	green
Filtration time:		min	Clarity of wash:	clear
Washing time:			Colour of wash:	light green
Volume of wash:		mL	Colour of residue:	orange
Cake thickness:		cm		

% Moisture	
% Weightloss:	

Temp of POX Pulp:	83.2	°C
Temp of POX PLS:	33.0	°C
Note:	Froth through the off gas system, had to rinse out off gas system	
	Sulphur scale around vessel at interface, thicker by cooling coils	
Condensate =	84.1 g	

Hot Cure Data:

POX pulp weight for Hot Cure: 1215.4 g wt. not transferred to Hot Cure 72.2 g POX Residue to HC: 97.6 g

Time	Time mins	Temp	pH	ORP	Observations
8:06	0	83.2	0.94	749	Sample
8:09	0	77			Back in Mantle
8:16	0	95			Start Test
9:16	60	95			
10:16	120	95			
11:16	180	96			
12:16	240	94	1.00	647	End Test, Sample, Filter
		95.0			

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Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
240 min HC Pulp	647	1.00	202.8	176.0	164	1.0726	176	20.3	13.6	33.0	green	orange	fast	6.7%	510	1.54
240 min HC Pulp B4 Sar	647	1.00	1189.7	1019.7	951	1.0726	1035	121.8	79.8	34.5	green	orange	fast	6.7%	510	1.54
240 min HC Pulp After S	647	1.00	986.9	843.7	787	1.0726	858	101.5	66.2	34.8	green	orange	fast	6.7%	510	1.54

Temp of Hot Cure 240 min Pulp:	84.1	°C
Temp of Hot Cure 240 min PLS:	47.7	°C
Notes: Sulphur scale around vessel at interface, thicker by cooling coils		

Metallurgical Balance POX

Product	Amount	%Wt.	Assay (mg/L, %, *g/t*)										S	FA, g/L
	(mL, g)	Loss	Fe	Fe^{2+}	Cu	As	S	$S^{=}$	SO_4	SO_4†	Au	Ag	Bromine	H_2SO_4
BL 801 Bulk Con	120		28.4			18.0	23.7	23.0			20.7	40.6		
60 min PLS	1116		4580	93	126	1250				66600		0.22	22200	48

Metallurgical Balance Hot Cure

Product	Amount	%Wt.	Assay (mg/L, %, *g/t*)										S	FA, g/L
	(mL, g)	Loss	Fe	Fe^{2+}	Cu	As	S	$S^{=}$	SO_4	SO_4†	Au	Ag	Bromine	H_2SO_4
240 min Filtrat	1035		8220	1310	139	3320				73500		0.11	24500	45
240 min Resid	80	29.5	25.8		396	17.6	3.83	0.43	10.2			52		
Dissolution			Fe		Cu	As								
Final HC			29%		82%	20%								

†SO4 in solution calculated from S by bromine ICP

98.7 % Sulphide oxidation based on HC residue

29.5 % Weight loss Overall

Weight for CIL: 66.2 g

POX Feed Eq.: 93.9 g

Project: 18988-01 **Date:** March 9, 2022
Client: **Technologist:** Chris Silva

Test: POX-6

Purpose: **To repeat POX 3 but, on ground BL 801 Bulk Concentrate 2 (target K80 ~ 20µm).**

Sample: **BL 801 Bulk Con 2**

Target K80:	10	µm
Actual K80:	7.7	µm

(Screen + Malvern)

H&S: Review MSDS for H_2SO_4

Procedure: 150 g of BL Conc 2 was ground in the Attrition Mill at 50% solids for 10 minutes.
The Attrtion mill balls were screened out to obtain ground pulp.
The pulp was filtered and 119.95 g (dry equiv) was weighed out into a 2 L titanium vessel for POX 6.
The target amount of R.O. water was weighed out into the 2 L titanium vessel less 100 g.
12.08 g Ferric Sulphate was then added to the mixture.
The pH was then adjusted with concentrated sulphuric acid to pH 2 and held for 15 minutes.
The pH and ORP was recorded during the 15 minutes.

After 15 minutes the vessel was sealed and heat up begun.
Once the sample was at temperature 100 psi oxygen over pressure was applied.
An off gas bleed was started once at temperature and pressure.
At the end of the 90 mins the pulp was cooled to 95°C.
Once at 95°C, the autoclave was removed from the mantle, the head removed, the pulp mixed and a sample removed - HC- Time 0.
The head was then placed back onto the vessel, secured and placed back into the mantle and heated to 95°C.
The Time 0 sample was filtered and the products submitted for analysis.
Once the pulp was back at 95°C it was then held for 240 minutes.

The 90 min POX sample was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water. The POX residue was not submitted for assay.

After 240 minutes (4 Hours) the vessel was removed from the heating mantle.
The pulp was agitated by an overhead mixer the pH and ORP measured and a sample (~150 mL) removed.
The 240 min sample (150 mL) was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water.

The remaining pulp was then filtered and the residue washed with 100 mL of pH 2 water.
The residue was then further displacement washed with 3 x 250 mL of D.I.
The final washed residue was forwarded for CN leaching.

Analysis:

POX PLS:	Fe, Fe^{2+}, As, ICP Scan and S	Hot Cure PLS:	Fe, Fe^{2+}, As, ICP Scan and S
POX Residue:	Not Submitted	Hot Cure Residue:	S(t), $S^{=}$, Fe, As and ICP Scan

Conditions:

Feed Moisture (%):	**0.00**	
Target Pulp Density (%):	**10.0**	
Feed Weight (dry equiv.) (g):	**119.95**	
Feed Weight Wet Req'd (g):	**119.95**	
H_20 Weight Added:	**1200**	
H_2O Weight Req'd (g):	**1200**	
Pre-acidulation H_2SO_4 added (g):	**11.594**	
2 g /L Fe^{3+} added as $Fe_2(SO_4)_3$-$9H_2O$ (g):	**12.08**	
Total Pulp Weight with reagents (g):	1332	(Actual Pulp weight)
Pulp Density (% solids w/w):	9.0	(w/w)
Temperature (°C):	**220**	
O_2 Over Pressure (psi):	**100**	Total = 422 psi
Time (at temperature) (min):	**90**	

Acidulation Data:

Time	Time (mins)	Temp (°C)	pH (units)	ORP (mV)	H_2SO_4 Add'n (g)	H_2SO_4 Add'n (Cum g)	Observations
5:10	0	18.2	7.30	-304		0	Add Feed
5:10	0	18.4	5.01	58		0	Ad Fe
5:20	0	20.8	2.01	346	11.594	11.594	Add Acid
5:25	5	20.8	2.00	328	0.359	11.953	
5:30	10	20.9	2.01	311	0.136	12.089	
5:35	15	20.9	2.00	308	0.093	12.089	frothy, shiny sheen on surface
						101	**kg/t H_2SO_4 Addition**

Autoclave Leach Data:

Elapsed Time	D time	Temp	Pressure (psi)				Off-Gas			Remarks
			Total	Steam	Over	O_2	O_2 Total	O_2	O_2	
min		°C	meas	calculated			L	%	Flow	
5:43		20		-	-	-				Start Heat
6:39	0.0	221	442	**328**	**114**	**0**				Start test
6:49	10.0	221	423	**328**	**95**	**85**	34.6	90	250	Operating with Cooling Pulse
6:59	10.0	217	441	**303**	**138**	**135**	68.2	98	250	
7:09	10.0	219	437	**315**	**122**	**119**	74.3	98	250	
7:19	10.0	219	433	**315**	**118**	**115**	82.2	98	250	
7:29	10.0	220	422	**322**	**100**	**98**	88.5	98	250	
7:39	10.0	221	438	**328**	**110**	**108**	95.8	98	250	
7:49	10.0	219	433	**315**	**118**	**115**	103.3	98	250	
7:59	10.0	221	439	**328**	**111**	**109**	110.7	98	250	
8:09	10.0	219	438	**315**	**123**	**120**	117	98	250	
8:10		221								
8:15		145								
8:20		95								
AVG. 0:240	**90**	**220**	**434**	**319**	**115**	**112**		**97**	**250**	

Sampling Data:

Sample #	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
90 min POX Pulp	788	0.99	71.8	58.6	55	1.0657	62	9.8	6.0	38.8	green	yellow	fast	8.4%	575	1.80
90 min POX Pulp B4 Sar	788	0.99	1328.6	1217.6	1143	1.0657	1143		111.0	#DIV/0!	green	yellow	fast	8.4%	575	1.80

denotes calculated value

Final Sample Filtration:

Diameter of filtration paper:		mm	Clarity of filtrate:	clear
type of paper (Whatman ##):			Colour of filtrate:	green
Filtration time:		min	Clarity of wash:	clear
Washing time:			Colour of wash:	light green
Volume of wash:		mL	Colour of residue:	yellow
Cake thickness:		cm		

% Moisture	
% Weightloss:	

Temp of POX Pulp:	82.5	°C
Temp of POX PLS:	31.1	°C
Note:	Froth through the off gas system, had to rinse out off gas system	
	Sulphur scale around vessel at interface, thicker by cooling coils	
Condensate =	78.9 g	

Hot Cure Data:

POX pulp weight for Hot Cure: 1256.8 g wt. not transferred to Hot Cure 71.8 g POX Residue to HC: 105.0 g

Time	Time mins	Temp	pH	ORP	Observations
8:24	0	82.5	0.99	788	Sample
8:27	0	77			Back in Mantle
8:34	0	95			Start Test
9:34	60	96			
10:34	120	96			
11:34	180	95			
12:34	240	95	1.10	752	End Test, Sample, Filter
		95.4			

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Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
240 min HC Pulp	752	1.10	210.3	182.5	169	1.0826	181	23.0	14.1	38.7	green	gold	fast	6.7%	588	1.69
240 min HC Pulp B4 Sar	752	1.10	1226.1	1047.5	968	1.0826	1057	132.1	82.2	37.8	green	gold	fast	6.7%	588	1.69
240 min HC Pulp After S	752	1.10	1015.8	865.0	799	1.0826	875	109.1	68.1	37.6	green	gold	fast	6.7%	588	1.69

Temp of Hot Cure 240 min Pulp:	81.5	°C
Temp of Hot Cure 240 min PLS:	45.9	°C
Notes: Sulphur scale around vessel at interface, thicker by cooling coils		

Metallurgical Balance POX

Product	Amount	%Wt.	Assay (mg/L, %, *g/t*)										S	FA, g/L
	(mL, g)	Loss	Fe	Fe^{2+}	Cu	As	S	$S^{=}$	SO_4	SO_4†	Au	Ag	Bromine	H_2SO_4
BL 801 Bulk Con 2	120		28.4			18.0	23.7	23.0			20.7	40.6		
90 min PLS	1143		6360	99	139	1520				69900		< 0.08	23300	49

Metallurgical Balance Hot Cure

Product	Amount	%Wt.	Assay (mg/L, %, *g/t*)										S	FA, g/L
	(mL, g)	Loss	Fe	Fe^{2+}	Cu	As	S	$S^{=}$	SO_4	SO_4†	Au	Ag	Bromine	H_2SO_4
240 min Filtrat	1057		10600	358	139	3460				80700		< 0.08	26900	44
240 min Resid	82	27.6	24.8		333	19.5	3.74	0.98	8.3			55		
Dissolution			Fe		Cu	As								
Final HC			35%		84%	19%								

†SO4 in solution calculated from S by bromine ICP

96.9 % Sulphide oxidation based on HC residue

27.6 % Weight loss Overall

Weight for CIL: 68.1 g

POX Feed Eq.: 94.0 g

Test	Feed	Pulp Density % solids w/w	Ground for POX	Feed K80 µm	Pre-acid pH Target	Acid Addi'n H_2SO_4 kg/t	POX Temp. °C	POX Time at Temp. mins.
POX 4	BL 801 Bulk Con 2	9.0	No	26.0	2.0	89	220	90
POX 5	BL 801 Bulk Con 2	9.0	No	26.0	2.0	89	230	60
POX 6	BL 801 Bulk Con 2	9.0	Yes	7.7	2.0	101	220	90

Test	POX Average Temp. °C	POX Average Total psi	POX Average off gas flow mL/min	POX Average O_2% in offgas	POX Pulp pH units	POX Pulp ORP mV	POX PLS pH units	POX PLS ORP mV	POX PLS FAT g/L H_2SO_4
POX 4	220	436	225	95	1.05	740	1.49	561	54.0
POX 5	230	505	229	96	0.94	749	1.69	547	48.4
POX 6	220	434	250	97	0.99	788	1.80	575	48.8

Test	Feed	Hot Cure Time at Temp. hours	Hot Cure Average Temp.	Hot Cure Pulp pH units	Hot Cure Pulp ORP mV	Hot Cure PLS pH units	Hot Cure PLS ORP mV	Hot Cure PLS FAT g/L H_2SO_4	Hot Cure Residue Colour
POX 4	BL 801 Bulk Con 2	4	95.6	1.00	693	1.61	538	50.2	orange
POX 5	BL 801 Bulk Con 2	4	95.0	1.00	647	1.54	510	45.0	orange
POX 6	BL 801 Bulk Con 2	4	95.4	1.10	752	1.69	588	44.3	gold

Test	POX PLS Fe mg/L	POX PLS As mg/L	POX PLS S by Bromine mg/L	HC PLS Fe mg/L	HC PLS As mg/L	HC PLS S by Bromine mg/L	Hot Cure Residue Fe %	Hot Cure Residue As %	Hot Cure Residue Ag %	Hot Cure Residue $S^{=}$ %	Hot Cure Residue $S^{=}$ Oxd'n %	Weightloss % Overall
POX 4	6060	1230	22600	7990	2640	22300	25.7	19.2	57	0.68	97.8	26.6
POX 5	4580	1250	22200	8220	3320	24500	25.8	17.6	52	0.43	98.7	29.5
POX 6	6360	1520	23300	10600	3460	26900	24.8	19.5	55	0.98	96.9	27.6

Test	Feed	LB, CN / CIL Test Number	Feed	Ground for CN	Reagent Addition kg/t of Cyanide Feed		Reagent Consumption kg/t of Cyanide Feed		Final Free CN mg/L
					NaCN	CaO	NaCN	CaO	
POX 4	BL 801 Bulk Con 2	CN-4	HC-4	No	51.84	4.42	8.03	3.90	2658
POX 5	BL 801 Bulk Con 2	CN-5	HC-5	No	53.16	4.36	9.02	3.78	2633
POX 6	BL 801 Bulk Con 2	CN-6	HC-6	No	51.61	3.93	6.32	3.32	2707

Test	LB, CN / CIL Test Number	Barren /PLS Au Assay mg/L	Residue Au Assay g/t	Barren /PLS Ag Assay mg/L	Residue Ag Assay g/t	Au Extraction %	Ag Extraction %	Calc Head Au	Calc Head Ag	Direct Head	
										Au	Ag
POX 4	CN-4	2.24	1.40	1.06	53.5	94.2	15.7	24.0	63.5	20.7	40.6
POX 5	CN-5	2.23	0.85	0.64	48.9	96.4	11.7	23.9	55.4	20.7	40.6
POX 6	CN-6	2.43	0.86	0.28	55.1	96.7	4.6	25.7	57.8	20.7	40.6

Result Analysis Report

Sample Name:
18988-01 Feed - Average

SOP Name:
Defaultar

Measured:
March-14-22 2:32:50 PM

Sample Source & type:
POX 6

Measured by:
lr_malvern1

Analysed:
March-14-22 2:32:52 PM

Sample bulk lot ref:
KS

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
21.55 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
0.458 %

Result Emulation:
Off

Concentration:
0.0085 %Vol

Span :
3.323

Uniformity:
1.36

Result units:
Volume

Specific Surface Area:
3.04 m²/g

Surface Weighted Mean D[3,2]:
1.974 um

Vol. Weighted Mean D[4,3]:
6.678 um

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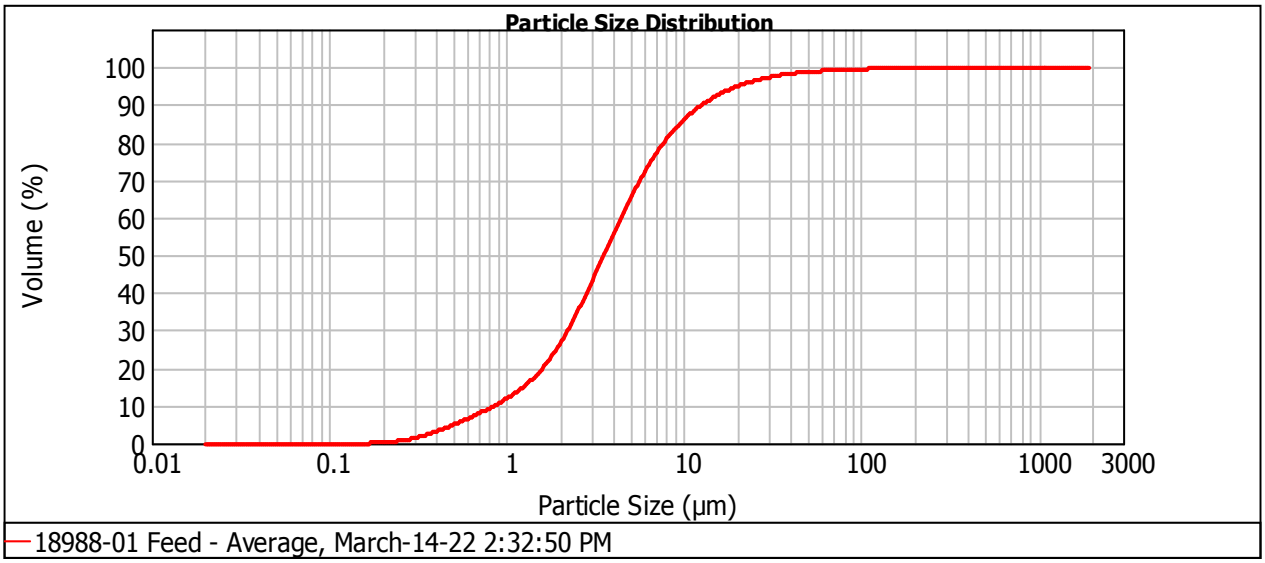
d(0.1): 0.855 um **d(0.5):** 3.533 um **d(0.8):** 7.696 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	12.99	11.482	88.60	120.226	99.62	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	15.09	13.183	90.63	138.038	99.71	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	17.68	15.136	92.31	158.489	99.79	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	20.92	17.378	93.71	181.970	99.86	1905.461	100.00
0.017	0.00	0.182	0.05	1.905	24.90	19.953	94.88	208.930	99.91	2187.762	100.00
0.020	0.00	0.209	0.20	2.188	29.61	22.909	95.86	239.883	99.95	2511.886	100.00
0.023	0.00	0.240	0.50	2.512	34.99	26.303	96.66	275.423	99.98	2884.032	100.00
0.026	0.00	0.275	0.95	2.884	40.87	30.200	97.33	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	1.58	3.311	47.06	34.674	97.86	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	2.38	3.802	53.33	39.811	98.28	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	3.34	4.365	59.47	45.709	98.60	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	4.43	5.012	65.29	52.481	98.84	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	5.64	5.754	70.65	60.256	99.02	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	6.93	6.607	75.43	69.183	99.17	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	8.28	7.586	79.60	79.433	99.30	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	9.70	8.710	83.15	91.201	99.42	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	11.24	10.000	86.13	104.713	99.52	1096.478	100.00		

Operator notes:

Appendix D – Tests 7 to 8

Appendix D – Tests 7 and 8

Project: 18988-01 **Date:** March 31, 2022
Client: **Technologist:** Chris Silva

Test: POX-7a

Purpose: **To conduct a POX test on the as-received BL 801-16 products 1-4 Concentrate in duplicate to produce enough feed for downstream testing.**

Sample: **BL 801-16 products 1-4 Concentrate**

Target K80: - µm
Actual K80: 184 µm
(Screen + Malvern)

H&S: Review MSDS for H_2SO_4

Procedure: The target amount of R.O. water was weighed out in a 2 L titanium vessel less 100 g.
125 g of BL 801-16 products 1-4 Concentrate (dry equivalent) was added to the mixture.
9.06 g Ferric Sulphate was then added to the mixture.
The pH was then adjusted with concentrated sulphuric acid to pH 2 and held for 15 minutes.
The pH and ORP was recorded during the 15 minutes.

After 15 minutes the vessel was sealed and heat up begun.
Once the sample was at temperature 100 psi oxygen over pressure was applied.
An off gas bleed was started once at temperature and pressure.
At the end of the 60 mins the pulp was cooled to 95°C.
Once at 95°C, the autoclave was removed from the mantle, the head removed, the pulp mixed and a sample removed - HC- Time 0.
The head was then placed back onto the vessel, secured and placed back into the mantle and heated to 95°C.
The Time 0 sample was filtered and the products submitted for analysis.
Once the pulp was back at 95°C it was then held for 240 minutes.

The 60 min POX sample was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water. The POX residue was not submitted for assay.

After 240 minutes (4 Hours) the vessel was removed from the heating mantle.
The pulp was then combined with the Hot Cure pulp from 7b.
The Combined pulp was agitated by an overhead mixer the pH and ORP measured and a sample (~150 mL) removed.
The 240 min sample (150 mL) was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water.

The remaining pulp was then filtered and the residue washed with 100 mL of pH 2 water.
The residue was then further displacement washed with 3 x 250 mL of D.I.
The residue was then split in half with half going directly to CN leaching and the 2nd half going for Lime Boil followed by CN leaching.

Analysis:

POX PLS:	Fe, Fe^{2+}, As, ICP Scan and S	Hot Cure PLS:	Fe, Fe^{2+}, As, ICP Scan and S
POX Residue:	Not Submitted	Hot Cure Residue:	S(t), $S^{=}$, Fe, As and ICP Scan

Conditions:

Feed Moisture (%):	**0.00**	
Target Pulp Density (%):	**10.0**	
Feed Weight (dry equiv.) (g):	**125.0**	
Feed Weight Wet Req'd (g):	**125.0**	
H_20 Weight Added:	**900**	
H_2O Weight Req'd (g):	**900**	
Pre-acidulation H_2SO_4 added (g):	**12.006**	
2 g /L Fe^{3+} added as $Fe_2(SO_4)_3$-$9H_2O$ (g):	**9.06**	
Total Pulp Weight with reagents (g):	1034	(Actual Pulp weight)
Pulp Density (% solids w/w):	12.1	(w/w)
Temperature (°C):	**220**	
O_2 Over Pressure (psi):	**100**	Total = 422 psi
Time (at temperature) (min):	**90**	

Acidulation Data:

Time	Time (mins)	Temp (°C)	pH (units)	ORP (mV)	H_2SO_4 Add'n (g)	H_2SO_4 Add'n (Cum g)	Observations
4:55	0	17.8	7.26	-95		0	Add Feed
4:55	0	18.1	4.26	240		0	Ad Fe
5:02	0	20.5	2.00	476	12.006	12.006	Add Acid, froths
5:07	5	20.5	1.95	476		12.006	
5:12	10	20.4	1.95	473		12.006	
5:17	15	20.4	1.95	471		12.006	
						96.0	**kg/t H_2SO_4 Addition**

Autoclave Leach Data:

Elapsed Time	D time	Temp	Pressure (psi)				Off-Gas			Remarks
			Total	Steam	Over	O_2	O_2 Total	O_2	O_2	
min		°C	meas	calculated			L	%	Flow	
5:23		19		-	-	-				Start Heat
6:12	0.0	220	446	**322**	**124**	**0**				Start test
6:22	10.0	221	431	**328**	**103**	**95**	15.9	92	250	Operating with Cooling Pulse
6:32	10.0	219	444	**315**	**129**	**123**	28.2	96	250	
6:42	10.0	219	448	**315**	**133**	**130**	42.7	98	250	
6:52	10.0	220	423	**322**	**101**	**99**	56.5	98	250	
7:02	10.0	221	424	**328**	**96**	**94**	70.8	98	250	
7:12	10.0	220	459	**322**	**137**	**134**	83.0	98	200	
7:22	10.0	219	451	**315**	**136**	**133**	92.9	98	150	
7:32	10.0	221	424	**328**	**96**	**94**	101.0	98	250	
7:42	10.0	221	424	**328**	**96**	**94**	114.3	98	250	
7:43		220								
7:48		140								
7:52		95								
AVG. 0:240	**90**	**220**	**436**	**323**	**114**	**111**	**114**	**97**	**233**	

Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
90 min POX Pulp	594	0.96	49.3	39.4	37	1.0790	42	7.0	4.4	37.1	yellow	red	fast	8.9%	431	1.27
90 min POX Pulp B4 Sar	594	0.96	985.8	897.8	832	1.0790	832		88.0	#DIV/0!	yellow	red	fast	8.9%	431	1.27

denotes calculated value

Final Sample Filtration:

Diameter of filtration paper:		mm	
type of paper (Whatman ##):			
Filtration time:		min	
Washing time:			
Volume of wash:		mL	
Cake thickness:		cm	
% Moisture			
% Weightloss:			

Clarity of filtrate:	clear
Colour of filtrate:	yellow
Clarity of wash:	clear
Colour of wash:	light yellow
Colour of residue:	red

Temp of POX Pulp:	79.3	°C
Temp of POX PLS:	21.8	°C
Note:	sulphur scale on side of vessel cooling coils are	
Condensate =	77.2 g	

Hot Cure Data:

POX pulp weight for Hot Cure: 936.5 g wt. not transferred to Hot Cure 49.3 g POX Residue to HC: 83.6 g

Time	Time mins	Temp	pH	ORP	Observations
7:57	0	79	0.96	594	Sample
8:01	0	74			Back in Mantle
8:08	0	95			Start Test
9:08	60	95			
10:08	120	94			
11:08	180	96			
12:08	240	97	1.18	474	End Test, Sample, Filter
		95.4			

Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
HC Pulp Sample	474	1.18	207.2	171.6	158	1.0848	174	26.2	18.3	30.2	green	red	fast	8.8%	413	1.34
HC 7a Pulp	-	-	914.4	749.1	691	1.0848	768		80.8		green	red	fast	8.8%	413	1.34
HC 7b Pulp	-	-	977.0	800.3	738	1.0848	821		86.3		green	red	fast	8.8%	413	1.34
Comb HC Pulp	474	1.18	1891.4	1549.4	1428	1.0848	1590	261.6	167.0	36.1	green	red	fast	8.8%	413	1.34
HC Pulp After Sample	474	1.18	1684.2	1377.8	1270	1.0848	1415	235.4	148.7	36.8	green	red	fast	8.8%	413	1.34

Temp of Hot Cure 240 min Pulp:	76.8	°C
Temp of Hot Cure 240 min PLS:	48.5	°C
Notes: Sulphur scale around vessel at interface, thicker by cooling coils. Whitish scale.		

Metallurgical Balance POX

Product	Amount	Assay (mg/L, %, *g/t*)														S	FA, g/L
	(mL, g)	Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO_4	SO_4†	Au	Ag	C (g)	TOC	Bromine	H_2SO_4
BL 801-16 produc	250	22.9			11.8	5.27	8.65	24.2	23.9			15.3	128	< 0.05	0.13		
90 min PLS	832	4080	1270	417	1690	7	11100				80700		0.68			26900	56

Metallurgical Balance Hot Cure

Product	Amount	Assay (mg/L, %, *g/t*)														S	FA, g/L
	(mL, g)	Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO_4	SO_4†	Au	Ag	C (g)	TOC	Bromine	H_2SO_4
240 min Filtrat	1590	7020	5200	439	4370	6	11400				72300		0.16			24100	43
240 min Resid	167	21.7		0.038	12.1	6.3	1.4	9.68	5.75	11.8			149				
Dissolution		Fe		Cu	As	Pb	Zn										
Final HC		24%		100%	26%	0%	89%										

†SO4 in solution calculated from S by bromine ICP

83.1 % Sulphide oxidation based on HC residue

29.7 % Weight loss Overall

Weight for CIL: 148.7 g

POX Feed Eq.: 211.5 g

Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO4	Au	Ag
%		%	%			%	%		**g/t**	**g/t**

Project: 18988-01 **Date:** March 31, 2022
Client: **Technologist:** Chris Silva

Test: POX-7b

Purpose: **To conduct a POX test on the as-received BL 801-16 products 1-4 Concentrate in duplicate to produce enough feed for downstream testing.**

Sample: **BL 801-16 products 1-4 Concentrate**

Target K80: - µm
Actual K80: 184 µm
(Screen + Malvern)

H&S: Review MSDS for H_2SO_4

Procedure: The target amount of R.O. water was weighed out in a 2 L titanium vessel less 100 g.
125 g of BL 801-16 products 1-4 Concentrate (dry equivalent) was added to the mixture.
9.06 g Ferric Sulphate was then added to the mixture.
The pH was then adjusted with concentrated sulphuric acid to pH 2 and held for 15 minutes.
The pH and ORP was recorded during the 15 minutes.

After 15 minutes the vessel was sealed and heat up begun.
Once the sample was at temperature 100 psi oxygen over pressure was applied.
An off gas bleed was started once at temperature and pressure.
At the end of the 90 mins the pulp was cooled to 95°C.
Once at 95°C, the autoclave was removed from the mantle, the head removed, the pulp mixed and a sample removed - HC- Time 0.
The head was then placed back onto the vessel, secured and placed back into the mantle and heated to 95°C.
The Time 0 sample was filtered and the products submitted for analysis.
Once the pulp was back at 95°C it was then held for 240 minutes.

The 90 min POX sample was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water. The POX residue was not submitted for assay.

After 240 minutes (4 Hours) the vessel was removed from the heating mantle.
The pulp was then combined with the Hot Cure pulp from 7a.
The Combined pulp was agitated by an overhead mixer the pH and ORP measured and a sample (~150 mL) removed.
The 240 min sample (150 mL) was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water.

The remaining pulp was then filtered and the residue washed with 100 mL of pH 2 water.
The residue was then further displacement washed with 3 x 250 mL of D.I.
The residue was then split in half with half going directly to CN leaching and the 2nd half going for Lime Boil followed by CN leaching.

Analysis:

POX PLS:	Fe, Fe^{2+}, As, ICP Scan and S	Hot Cure PLS:	Fe, Fe^{2+}, As, ICP Scan and S
POX Residue:	Not Submitted	Hot Cure Residue:	S(t), $S^{=}$, Fe, As and ICP Scan

Conditions:

Feed Moisture (%):	**0.00**	
Target Pulp Density (%):	**10.0**	
Feed Weight (dry equiv.) (g):	**125.0**	
Feed Weight Wet Req'd (g):	**125.0**	
H_20 Weight Added:	**900**	
H_2O Weight Req'd (g):	**900**	
Pre-acidulation H_2SO_4 added (g):	**9.771**	
2 g /L Fe^{3+} added as $Fe_2(SO_4)_3$-$9H_2O$ (g):	**9.06**	
Total Pulp Weight with reagents (g):	1034	(Actual Pulp weight)
Pulp Density (% solids w/w):	12.1	(w/w)
Temperature (°C):	**220**	
O_2 Over Pressure (psi):	**100**	Total = 422 psi
Time (at temperature) (min):	**90**	

Acidulation Data:

Time	Time (mins)	Temp (°C)	pH (units)	ORP (mV)	H_2SO_4 Add'n (g)	H_2SO_4 Add'n (Cum g)	Observations
5:05	0	17.1	7.08	-128		0	Add Feed
5:05	0	17.1	3.90	289		0	Ad Fe
5:15	0	19.1	2.00	448		0	Add Acid, froths
5:20	5	19.1	1.98	443		0	
5:25	10	19.1	1.96	438	9.771	9.771	
5:30	15	19.0	1.97	435		9.771	
						78.2	**kg/t H_2SO_4 Addition**

Autoclave Leach Data:

Elapsed Time	D time	Temp	Pressure (psi)				Off-Gas			Remarks
			Total	Steam	Over	O_2	O_2 Total	O_2	O_2	
min		°C	meas	calculated			L	%	Flow	
5:37		19		-	-	-				Start Heat
6:32	0.0	220	437	**322**	**115**	**0**				Start test
6:42	10.0	221	433	**328**	**105**	**84**		80	250	Operating with Cooling Pulse
6:52	10.0	221	423	**328**	**95**	**88**		93	250	
7:02	10.0	220	436	**322**	**114**	**109**		95	250	
7:12	10.0	221	455	**328**	**127**	**122**		96	250	
7:22	10.0	220	420	**322**	**98**	**96**		98	250	
7:32	10.0	221	428	**328**	**100**	**98**		98	300	
7:42	10.0	220	460	**322**	**138**	**135**		98	250	
7:52	10.0	219	451	**315**	**136**	**133**		98	250	
8:02	10.0	219	458	**315**	**143**	**140**		98	250	
8:03		221								
8:06		140								
8:09		95								
AVG. 0:240	**90**	**220**	**440**	**323**	**117**	**112**		**95**	**256**	

Sampling Data:

Sample #	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
90 min POX Pulp	528	1.19	51.3	38.5	36	1.0705	44	7.1	4.5	36.6	yellow	red	fast	8.8%	407	1.30
90 min POX Pulp B4 Sar	528	1.19	1029.4	939.1	877	1.0705	877		90.3	#DIV/0!	yellow	red	fast	8.8%	407	1.30

denotes calculated value

Final Sample Filtration:

Diameter of filtration paper:		mm	Clarity of filtrate:	clear
type of paper (Whatman ##):			Colour of filtrate:	yellow
Filtration time:		min	Clarity of wash:	clear
Washing time:			Colour of wash:	light yellow
Volume of wash:		mL	Colour of residue:	red
Cake thickness:		cm		

% Moisture	
% Weightloss:	

Temp of POX Pulp:	82.0	°C
Temp of POX PLS:	24.5	°C
Note:	sulphur scale on side of vessel cooling coils are	
Condensate =	9.1 g	

Hot Cure Data:

POX pulp weight for Hot Cure: 978.1 g wt. not transferred to Hot Cure 51.3 g POX Residue to HC: 85.8 g

Time	Time mins	Temp	pH	ORP	Observations
8:14	0	82	1.19	528	Sample
8:18	0	68			Back in Mantle
8:25	0	95			Start Test
9:25	60	96			
10:25	120	94			
11:25	180	94			
12:25	240		1.18	474	End Test, Sample, Filter
		94.8			

Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
HC Pulp Sample	474	1.18	207.2	171.6	158	1.0848	174	26.2	18.3	30.2	green	red	fast	8.8%	413	1.34
HC 7a Pulp	-	-	914.4	749.1	691	1.0848	768		80.8		green	red	fast	8.8%	413	1.34
HC 7b Pulp	-	-	977.0	800.3	738	1.0848	821		86.3		green	red	fast	8.8%	413	1.34
Comb HC Pulp	474	1.18	1891.4	1549.4	1428	1.0848	1590	261.6	167.0	36.1	green	red	fast	8.8%	413	1.34
HC Pulp After Sample	474	1.18	1684.2	1377.8	1270	1.0848	1415	235.4	148.7	36.8	green	red	fast	8.8%	413	1.34

Temp of Hot Cure 240 min Pulp:	76.8	°C
Temp of Hot Cure 240 min PLS:	48.5	°C
Notes: Sulphur scale around vessel at interface, thicker by cooling coils. Whitish scale.		

Metallurgical Balance POX

Product	Amount	Assay (mg/L, %, *g/t*)														S	FA, g/L
	(mL, g)	Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO_4	SO_4†	Au	Ag	C (g)	TOC	Bromine	H_2SO_4
BL 801-16 produc	250	22.9			11.8	5.27	8.65	24.2	23.9			15.3	128	< 0.05	0.13		
90 min PLS	877	5100	2910	325	3590	7	10400				62700		0.98			20900	36

Metallurgical Balance Hot Cure

Product	Amount	Assay (mg/L, %, *g/t*)														S	FA, g/L
	(mL, g)	Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO_4	SO_4†	Au	Ag	C (g)	TOC	Bromine	H_2SO_4
240 min Filtrat	1590	7020	5200	439	4370	6	11400				72300		0.16			24100	43
240 min Resid	167	21.7		0.038	12.1	6.3	1.4	9.68	5.75	11.8			149				
Dissolution		Fe		Cu	As	Pb	Zn										
Final HC		24%		100%	26%	0%	89%										

†SO4 in solution calculated from S by bromine ICP

83.1 % Sulphide oxidation based on HC residue

29.7 % Weight loss Overall

Weight for CIL: 148.7 g

POX Feed Eq.: 211.5 g

Project: 18988-01 **Date:** April 1, 2022
Client: **Technologist:** Chris Silva

Test: POX-8a

Purpose: **To conduct a POX test on ground BL 801-16 products 1-4 Concentrate in duplicate to produce enough feed for downstream testing.**

Sample: **BL 801-16 products 1-4 Concentrate**

Target K80: - µm
Actual K80: 16.3 µm
(Screen + Malvern)

H&S: Review MSDS for H_2SO_4

Procedure: BL 801-16 products 1-4 Conc was ground in the Attrition Mill at 50% solids.
The target amount of R.O. water was weighed out in a 2 L titanium vessel less 100 g.
125 g of BL 801-16 products 1-4 Concentrate (dry equivalent) was added to the mixture.
9.06 g Ferric Sulphate was then added to the mixture.
The pH was then adjusted with concentrated sulphuric acid to pH 2 and held for 15 minutes.
The pH and ORP was recorded during the 15 minutes.

After 15 minutes the vessel was sealed and heat up begun.
Once the sample was at temperature 100 psi oxygen over pressure was applied.
An off gas bleed was started once at temperature and pressure.
At the end of the 90 mins the pulp was cooled to 95°C.
Once at 95°C, the autoclave was removed from the mantle, the head removed, the pulp mixed and a sample removed - HC- Time 0.
The head was then placed back onto the vessel, secured and placed back into the mantle and heated to 95°C.
The Time 0 sample was filtered and the products submitted for analysis.
Once the pulp was back at 95°C it was then held for 240 minutes.

The 90 min POX sample was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water. The POX residue was not submitted for assay.

After 240 minutes (4 Hours) the vessel was removed from the heating mantle.
The pulp was then combined with the Hot Cure pulp from 8b.
The Combined pulp was agitated by an overhead mixer the pH and ORP measured and a sample (~150 mL) removed.
The 240 min sample (150 mL) was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water.

The remaining pulp was then filtered and the residue washed with 100 mL of pH 2 water.
The residue was then further displacement washed with 3 x 250 mL of D.I.
The residue was then split in half with half going directly to CN leaching and the 2nd half going for Lime Boil followed by CN leaching.

Analysis:

POX PLS:	Fe, Fe^{2+}, As, ICP Scan and S	Hot Cure PLS:	Fe, Fe^{2+}, As, ICP Scan and S
POX Residue:	Not Submitted	Hot Cure Residue:	S(t), $S^{=}$, Fe, As and ICP Scan

Conditions:

Feed Moisture (%):	**0.00**	
Target Pulp Density (%):	**10.0**	
Feed Weight (dry equiv.) (g):	**125.0**	
Feed Weight Wet Req'd (g):	**125.0**	
H_20 Weight Added:	**900**	
H_2O Weight Req'd (g):	**900**	
Pre-acidulation H_2SO_4 added (g):	**12.460**	
2 g /L Fe^{3+} added as $Fe_2(SO_4)_3$-$9H_2O$ (g):	**9.06**	
Total Pulp Weight with reagents (g):	1034	(Actual Pulp weight)
Pulp Density (% solids w/w):	12.1	(w/w)
Temperature (°C):	**220**	
O_2 Over Pressure (psi):	**100**	Total = 422 psi
Time (at temperature) (min):	**90**	

Acidulation Data:

Time	Time (mins)	Temp (°C)	pH (units)	ORP (mV)	H_2SO_4 Add'n (g)	H_2SO_4 Add'n (Cum g)	Observations
4:43	0	18.1	7.96	-232		0	Add Feed
4:43	0	18.2	5.51	-52		0	Ad Fe
4:51	0	20.8	2.04	343	12.46	12.46	Add Acid, frothy
4:56	5	20.8	2.03	294		12.46	
5:01	10	20.8	2.04	268		12.46	
5:06	15	20.8	2.01	257	0.357	12.817	
						103	**kg/t H_2SO_4 Addition**

Autoclave Leach Data:

Elapsed Time	D time	Temp	Pressure (psi)				Off-Gas			Remarks
			Total	Steam	Over	O_2	O_2 Total	O_2	O_2	
min		°C	meas	calculated			L	%	Flow	
5:14		19		-	-	-				Start Heat
6:04	0.0	220	441	**322**	**119**	**0**	3.3		250	Start test
6:14	10.0	220	456	**322**	**134**	**129**	18.1	96	250	Operating with Cooling Pulse
6:24	10.0	220	426	**322**	**104**	**102**	31.9	98	250	
6:34	10.0	221	427	**328**	**99**	**97**	44.7	98	250	
6:44	10.0	220	457	**322**	**135**	**133**	56.7	98	250	
6:54	10.0	219	444	**315**	**129**	**126**	69.6	98	250	
7:04	10.0	220	455	**322**	**133**	**131**	82.4	98	250	
7:14	10.0	219	428	**315**	**113**	**110**	93.6	98	250	
7:24	10.0	220	415	**322**	**93**	**91**	106.4	98	250	
7:34	10.0	221	443	**328**	**115**	**112**	118.2	98	250	
7:35		217								
7:40		140								
7:45		95								
AVG. 0:240	**90**	**220**	**439**	**322**	**117**	**115**	**118**	**98**	**250**	

Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
60 min POX Pulp	650	1.15	54.1	42.5	38	1.1042	45	8.6	4.0	53.5	yellow	brown	fast	7.4%	491	1.38
60 min POX Pulp B4 Sar	650	1.15	993.3	919.9	833	1.1042	833		73.4	#DIV/0!	yellow	brown	fast	7.4%	491	1.38

denotes calculated value

Final Sample Filtration:

Diameter of filtration paper:		mm	Clarity of filtrate: clear
type of paper (Whatman ##):			Colour of filtrate: yellow
Filtration time:		min	Clarity of wash: clear
Washing time:			Colour of wash: light yellow
Volume of wash:		mL	Colour of residue: brown
Cake thickness:		cm	
% Moisture			
% Weightloss:			

Temp of POX Pulp:	80.7	°C
Temp of POX PLS:	20.6	°C
Note:	sulphur smell from off gas upon initially opening off gas	
	sulphur scale on side of vessel cooling coils are	
Condensate =	77.7 g	

Hot Cure Data:

POX pulp weight for Hot Cure: 939.2 g wt. not transferred to Hot Cure 54.1 g POX Residue to HC: 69.4 g

Time	Time mins	Temp	pH	ORP	Observations
7:49	0	81	1.15	650	Sample
7:52	0	74			Back in Mantle
7:58	0	95			Start Test
8:08	60	94			
9:08	120	96			
10:08	180	94			
11:08	240		1.27	476	End Test, Sample, Filter
		94.8			

Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
HC Pulp Sample	476	1.27	215.4	173.0	157	1.1039	179	31.6	18.1	42.7	green	brown	med	8.4%	404	1.41
HC 8a Pulp	-	-	879.5	691.5	626	1.1039	730		73.9		green	brown	med	8.4%	404	1.41
HC 8b Pulp	-	-	965.8	759.3	688	1.1039	801		81.2		green	brown	med	8.4%	404	1.41
Comb HC Pulp	476	1.27	1845.3	1450.8	1314	1.1039	1531	268.9	155.1	42.3	green	brown	med	8.4%	404	1.41
HC Pulp After Sample	476	1.27	1629.9	1277.8	1158	1.1039	1352	237.3	137.0	42.3	green	brown	med	8.4%	404	1.41

Temp of Hot Cure 240 min Pulp:	67.2	°C
Temp of Hot Cure 240 min PLS:	42.1	°C
Notes:	Sulphur scale around vessel at interface, thicker by cooling coils	
	Sulphur scale very hard to chip off.	

Metallurgical Balance POX

Product	Amount	Assay (mg/L, %, *g/t*)														S	FA, g/L
	(mL, g)	Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO_4	SO_4†	Au	Ag	C (g)	TOC	Bromine	H_2SO_4
BL 801-16 produc	250	22.9			11.8	5.27	8.65	24.2	23.9			15.3	128	< 0.05	0.13		
60 min PLS	833	12300	1620	428	3020	< 20	10600				98100		0.22			32700	57

Metallurgical Balance Hot Cure

Product	Amount	Assay (mg/L, %, *g/t*)														S	FA, g/L
	(mL, g)	Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO_4	SO_4†	Au	Ag	C (g)	TOC	Bromine	H_2SO_4
240 min Filtrat	1531	13300	6900	426	5370	< 20	10500				90600		0.55			30200	50
240 min Resid	155	19.3		0.021	12.0	7.4	1.6	7.43	3.52	11.7			159				
Dissolution		Fe		Cu	As	Pb	Zn										
Final HC		40%		95%	31%	0%	87%										

†SO4 in solution calculated from S by bromine ICP

90.3 % Sulphide oxidation based on HC residue

34.4 % Weight loss Overall

Weight for CIL: 137.0 g

POX Feed Eq.: 208.8 g

Project: 18988-01 **Date:** April 1, 2022
Client: **Technologist:** Chris Silva

Test: POX-8b

Purpose: **To conduct a POX test on ground BL 801-16 products 1-4 Concentrate in duplicate to produce enough feed for downstream testing.**

Sample: **BL 801-16 products 1-4 Concentrate**

Target K80: - µm
Actual K80: 16.3 µm
(Screen + Malvern)

H&S: Review MSDS for H_2SO_4

Procedure: BL 801-16 products 1-4 Conc was ground in the Attrition Mill at 50% solids.
The target amount of R.O. water was weighed out in a 2 L titanium vessel less 100 g.
125 g of BL 801-16 products 1-4 Concentrate (dry equivalent) was added to the mixture.
9.06 g Ferric Sulphate was then added to the mixture.
The pH was then adjusted with concentrated sulphuric acid to pH 2 and held for 15 minutes.
The pH and ORP was recorded during the 15 minutes.

After 15 minutes the vessel was sealed and heat up begun.
Once the sample was at temperature 100 psi oxygen over pressure was applied.
An off gas bleed was started once at temperature and pressure.
At the end of the 90 mins the pulp was cooled to 95°C.
Once at 95°C, the autoclave was removed from the mantle, the head removed, the pulp mixed and a sample removed - HC- Time 0.
The head was then placed back onto the vessel, secured and placed back into the mantle and heated to 95°C.
The Time 0 sample was filtered and the products submitted for analysis.
Once the pulp was back at 95°C it was then held for 240 minutes.

The 90 min POX sample was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water. The POX residue was not submitted for assay.

After 240 minutes (4 Hours) the vessel was removed from the heating mantle.
The pulp was then combined with the Hot Cure pulp from 8a.
The Combined pulp was agitated by an overhead mixer the pH and ORP measured and a sample (~150 mL) removed.
The 240 min sample (150 mL) was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water.

The remaining pulp was then filtered and the residue washed with 100 mL of pH 2 water.
The residue was then further displacement washed with 3 x 250 mL of D.I.
The residue was then split in half with half going directly to CN leaching and the 2nd half going for Lime Boil followed by CN leaching.

Analysis:

POX PLS:	Fe, Fe^{2+}, As, ICP Scan and S	Hot Cure PLS:	Fe, Fe^{2+}, As, ICP Scan and S
POX Residue:	Not Submitted	Hot Cure Residue:	S(t), $S^{=}$, Fe, As and ICP Scan

Conditions:

Feed Moisture (%):	**0.00**	
Target Pulp Density (%):	**10.0**	
Feed Weight (dry equiv.) (g):	**125.0**	
Feed Weight Wet Req'd (g):	**125.0**	
H_20 Weight Added:	**900**	
H_2O Weight Req'd (g):	**900**	
Pre-acidulation H_2SO_4 added (g):	**9.901**	
2 g /L Fe^{3+} added as $Fe_2(SO_4)_3$-$9H_2O$ (g):	**9.06**	
Total Pulp Weight with reagents (g):	1034	(Actual Pulp weight)
Pulp Density (% solids w/w):	12.1	(w/w)
Temperature (°C):	**220**	
O_2 Over Pressure (psi):	**100**	Total = 422 psi
Time (at temperature) (min):	**90**	

Acidulation Data:

Time	Time (mins)	Temp (°C)	pH (units)	ORP (mV)	H_2SO_4 Add'n (g)	H_2SO_4 Add'n (Cum g)	Observations
4:50	0	16.9	8.15	-272		0	Add Feed
4:50	0	16.9	4.36	115		0	Ad Fe
4:57	0	19.3	22.00	342	9.901	9.901	Add Acid, frothy
5:02	5	19.3	1.94	268	0.70	10.60	
5:07	10	19.3	2.02	220		10.60	
5:12	15	19.3	1.96	214	0.402	11.00	
						88	**kg/t H_2SO_4 Addition**

Autoclave Leach Data:

Elapsed Time	D time	Temp	Pressure (psi)				Off-Gas			Remarks
			Total	Steam	Over	O_2	O_2 Total	O_2	O_2	
min		°C	meas	calculated			L	%	Flow	
5:27		20		-	-	-				Start Heat
6:25	0.0	220	437	**322**	**115**	**0**				Start test
6:35	10.0	221	425	**328**	**97**	**83**		86	250	Operating with Cooling Pulse
6:45	10.0	221	421	**328**	**93**	**91**		98	300	
6:55	10.0	221	426	**328**	**98**	**96**		98	250	
7:05	10.0	219	448	**315**	**133**	**130**		98	250	
7:15	10.0	219	449	**315**	**134**	**131**		98	250	
7:25	10.0	220	451	**322**	**129**	**127**		98	250	
7:35	10.0	219	448	**315**	**133**	**130**		98	250	
7:45	10.0	221	451	**328**	**123**	**120**		98	250	
7:55	10.0	221	424	**328**	**96**	**94**		98	250	
7:56		220								
7:59		140								
8:02		95								
AVG. 0:240	**90**	**220**	**438**	**323**	**115**	**111**		**97**	**256**	

Sampling Data:

Sample #	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
60 min POX Pulp	473	1.38	55.6	43.5	40	1.0910	47	8.2	3.9	52.4	green	brown	fast	7.0%	356	1.35
60 min POX Pulp B4 Sar	473	1.38	1038.2	965.4	885	1.0910	885		72.8	#DIV/0!	green	brown	fast	7.0%	356	1.35

denotes calculated value

Final Sample Filtration:

Diameter of filtration paper:		mm	
type of paper (Whatman ##):			
Filtration time:		min	
Washing time:			
Volume of wash:		mL	
Cake thickness:		cm	
% Moisture			
% Weightloss:			

Clarity of filtrate:	clear
Colour of filtrate:	green
Clarity of wash:	clear
Colour of wash:	light green
Colour of residue:	brown

Temp of POX Pulp:	81.1	°C
Temp of POX PLS:	23.6	°C
Note:	sulphur smell from off gas upon initially opening off gas	
	sulphur scale on side of vessel cooling coils are	
Condensate =	32.3 g	

Hot Cure Data:

POX pulp weight for Hot Cure: 982.6 g wt. not transferred to Hot Cure 55.6 g POX Residue to HC: 68.9 g

Time	Time mins	Temp	pH	ORP	Observations
8:06	0	81	1.38	473	Sample
8:11	0	74			Back in Mantle
8:18	0	95			Start Test
9:18	60	95			
10:18	120	95			
11:18	180	94			
12:18	240	94	1.27	476	End Test, Sample, Filter
		94.6			

Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
HC Pulp Sample	476	1.27	215.4	173.0	157	1.1039	179	31.6	18.1	42.7	green	brown	med	8.4%	404	1.41
HC 8a Pulp	-	-	879.5	691.5	626	1.1039	730		73.9		green	brown	med	8.4%	404	1.41
HC 8b Pulp	-	-	965.8	759.3	688	1.1039	801		81.2		green	brown	med	8.4%	404	1.41
Comb HC Pulp	476	1.27	1845.3	1450.8	1314	1.1039	1531	268.9	155.1	42.3	green	brown	med	8.4%	404	1.41
HC Pulp After Sample	476	1.27	1629.9	1277.8	1158	1.1039	1352	237.3	137.0	42.3	green	brown	med	8.4%	404	1.41

Temp of Hot Cure 240 min Pulp:	67.2	°C
Temp of Hot Cure 240 min PLS:	42.1	°C
Notes:	Sulphur scale around vessel at interface, thicker by cooling coils	
	Sulphur scale very hard to chip off.	

Metallurgical Balance POX

Product	Amount	Assay (mg/L, %, *g/t*)														S	FA, g/L
	(mL, g)	Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO_4	SO_4†	Au	Ag	C (g)	TOC	Bromine	H_2SO_4
BL 801-16 produc	250	22.9			11.8	5.27	8.65	24.2	23.9			15.3	128	< 0.05	0.13		
60 min PLS	885	11500	8740	399	5640	< 20	9990				79200		2.84			26400	41

Metallurgical Balance Hot Cure

Product	Amount	Assay (mg/L, %, *g/t*)														S	FA, g/L
	(mL, g)	Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO_4	SO_4†	Au	Ag	C (g)	TOC	Bromine	H_2SO_4
240 min Filtrat	1531	13300	6900	426	5370	< 20	10500				90600		0.55			30200	50
240 min Resid	155	19.3		0.021	12.0	7.4	1.6	7.43	3.52	11.7			159				
Dissolution		Fe		Cu	As	Pb	Zn										
Final HC		40%		95%	31%	0%	87%										

†SO4 in solution calculated from S by bromine ICP

90.3 % Sulphide oxidation based on HC residue

34.5 % Weight loss Overall

Weight for CIL: 137.0 g

POX Feed Eq.: 209.0 g

Test	Feed	Pulp Density % solids w/w	Ground for POX	Feed K80 µm	Pre-acid pH Target	Acid Addi'n H_2SO_4 kg/t	POX Temp. °C	POX Time at Temp. mins.
POX 7a	BL 801-16 pdts 1-4	12.0	No	184.0	2.0	96	220	90
POX 7b	BL 801-16 pdts 1-4	12.0	No	184.0	2.0	78	220	90
POX 8a	BL 801-16 pdts 1-4	12.0	Yes	16.3	2.0	103	220	90
POX 8b	BL 801-16 pdts 1-4	12.0	Yes	16.3	2.0	88	220	90

Test	POX Average Temp. °C	POX Average Total psi	POX Average off gas flow mL/min	POX Average O_2% in offgas	POX Pulp pH units	POX Pulp ORP mV	POX PLS pH units	POX PLS ORP mV	POX PLS FAT g/L H_2SO_4
POX 7a	220	436	233	97	0.96	594	1.27	431	55.7
POX 7b	220	440	256	95	1.19	528	1.30	407	35.7
POX 8a	220	439	250	98	1.15	650	1.38	491	56.7
POX 8b	220	438	256	97	1.38	473	1.35	356	40.9

Test	Feed	Hot Cure Time at Temp. hours	Hot Cure Average Temp.	Hot Cure Pulp pH units	Hot Cure Pulp ORP mV	Hot Cure PLS pH units	Hot Cure PLS ORP mV	Hot Cure PLS FAT g/L H_2SO_4	Hot Cure Residue Colour
POX 7a	BL 801-16 pdts 1-4	4	95.4	1.18	474	1.34	413	42.6	red
POX 7b	BL 801-16 pdts 1-4	4	94.8	1.18	474	1.34	413	42.6	red
POX 8a	BL 801-16 pdts 1-4	4	94.8	1.27	476	1.41	404	49.5	brown
POX 8b	BL 801-16 pdts 1-4	4	94.6	1.27	476	1.41	404	49.5	brown

Test	POX PLS Fe mg/L	POX PLS As mg/L	POX PLS S by Bromine mg/L	HC PLS Fe mg/L	HC PLS As mg/L	HC PLS S by Bromine mg/L	Hot Cure Residue Fe %	Hot Cure Residue As %	Hot Cure Residue Ag %	Hot Cure Residue $S^{=}$ %	Hot Cure Residue $S^{=}$ Oxd'n %	Weightloss % Overall
POX 7a	4080	1690	26900	7020	4370	24100	21.7	12.1	149	5.75	83.1	29.7
POX 7b	5100	3590	20900	7020	4370	24100	21.7	12.1	149	5.75	83.1	29.7
POX 8a	12300	3020	32700	13300	5370	30200	19.3	12.0	159	3.52	90.3	34.4
POX 8b	11500	5640	26400	13300	5370	30200	19.3	12.0	159	3.52	90.3	34.5

Test	Feed	LB, CN / CIL Test Number	Feed	Ground for CN	Reagent Addition kg/t of Cyanide Feed		Reagent Consumption kg/t of Cyanide Feed		Final Free CN mg/L
					NaCN	CaO	NaCN	CaO	
POX 7a	BL 801-16 pdts 1-4	LB-1, CN-7	LB-1	No	39.7	143.1	8.4	136.7	2699
POX 7b	BL 801-16 pdts 1-4	CN-8	HC 7a + 7b	No	80.4	8.6	19.2	8.6	4216
POX 8a	BL 801-16 pdts 1-4	LB-2, CN-9	LB-2	No	42.0	159.7	6.6	154.5	2776
POX 8b	BL 801-16 pdts 1-4	CN-10	HC 8a + 8b	No	58.3	5.8	14.7	5.6	2757

Note: Reagent addition of CaO also takes into account lime added during lime boil

Test	LB, CN / CIL Test Number	Au Assay mg/L	Residue Au Assay g/t	Barren /PLS Ag Assay mg/L	Residue Ag Assay g/t	Au Extraction %	Ag Extraction %	Calc Head Au	Calc Head Ag	Direct Head Au	Direct Head Ag
POX 7a	LB-1, CN-7	1.73	2.42	12.9	30.2	83.1	74.9	14.3	120.4	15.3	128
POX 7b	CN-8	2.01	4.08	13.8	56.3	80.3	67.3	20.4	172.4	15.3	128
POX 8a	LB-2, CN-9	1.66	1.48	12.4	22.3	89.5	81.0	14.0	117.6	15.3	128
POX 8b	CN-10	1.50	3.07	6.7	101.2	82.4	39.6	17.5	167.6	15.3	128

Result Analysis Report

Sample Name:
18988-01 POX 8 Comb Feed - Average

SOP Name:
Defaultar

Measured:
March-30-22 11:48:59 AM

Sample Source & type:
19125-02

Measured by:
lr_malvern1

Analysed:
March-30-22 11:49:01 AM

Sample bulk lot ref:
MW

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
17.18 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
0.486 %

Result Emulation:
Off

Concentration:
0.0077 %Vol

Span :
5.433

Uniformity:
1.82

Result units:
Volume

Specific Surface Area:
2.5 m²/g

Surface Weighted Mean D[3,2]:
2.397 um

Vol. Weighted Mean D[4,3]:
10.718 um

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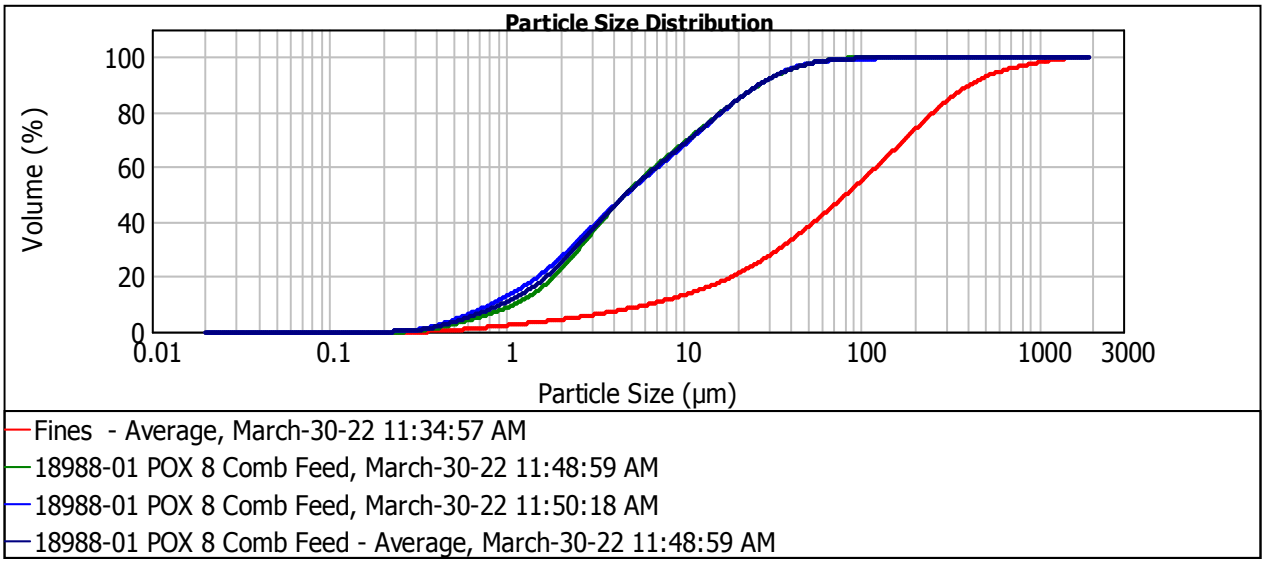
d(0.1): 0.945 um **d(0.5):** 4.708 um **d(0.8):** 16.339 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	12.00	11.482	71.68	120.226	99.67	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	14.15	13.183	74.96	138.038	99.74	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	16.68	15.136	78.22	158.489	99.79	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	19.67	17.378	81.41	181.970	99.82	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	23.14	19.953	84.45	208.930	99.86	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	27.02	22.909	87.29	239.883	99.90	2511.886	100.00
0.023	0.00	0.240	0.02	2.512	31.19	26.303	89.85	275.423	99.94	2884.032	100.00
0.026	0.00	0.275	0.13	2.884	35.49	30.200	92.11	316.228	99.98	3311.311	100.00
0.030	0.00	0.316	0.53	3.311	39.78	34.674	94.03	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	1.13	3.802	43.95	39.811	95.61	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	1.96	4.365	47.92	45.709	96.85	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	2.98	5.012	51.67	52.481	97.79	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	4.17	5.754	55.22	60.256	98.47	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	5.49	6.607	58.61	69.183	98.93	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	6.92	7.586	61.90	79.433	99.25	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	8.46	8.710	65.15	91.201	99.45	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	10.13	10.000	68.41	104.713	99.58	1096.478	100.00		

Operator notes:

Result Analysis Report

Sample Name:
18988-01 Pdts 1-4 - Average

SOP Name:
Defaultar

Measured:
March-24-22 2:09:07 PM

Sample Source & type:
BL 801-16

Measured by:
lr_malvern1

Analysed:
March-24-22 2:09:09 PM

Sample bulk lot ref:
KS

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
13.34 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
0.473 %

Result Emulation:
Off

Concentration:
0.0274 %Vol

Span :
2.970

Uniformity:
0.96

Result units:
Volume

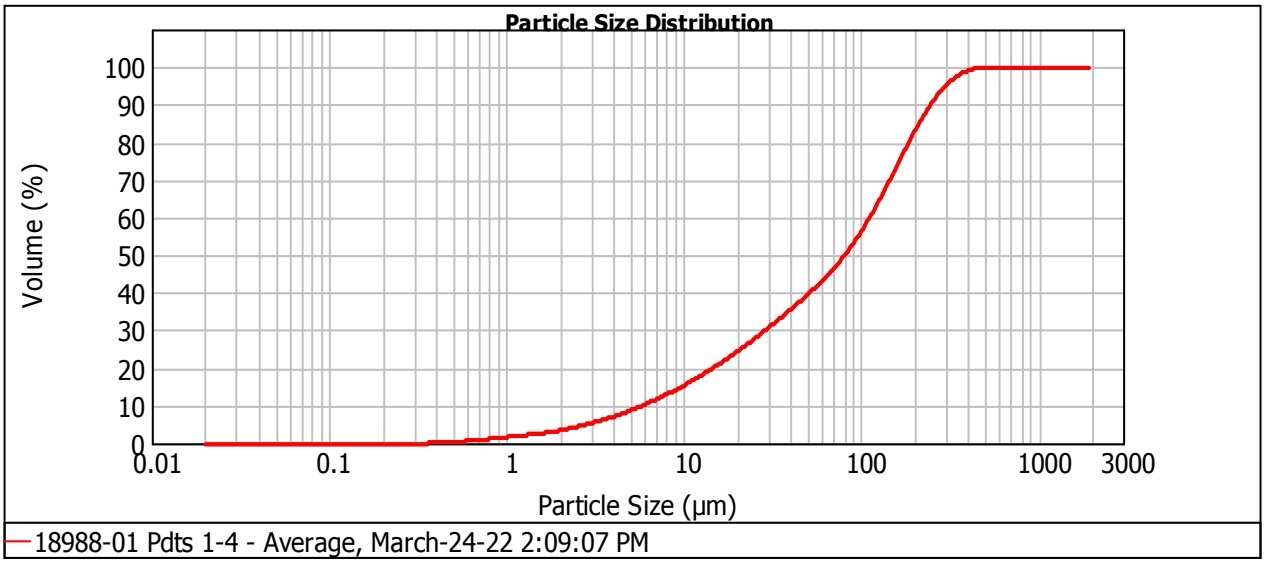
Specific Surface Area:
0.48 m²/g

Surface Weighted Mean D[3,2]:
12.508 um

Vol. Weighted Mean D[4,3]:
104.497 um

---

d(0.1): 5.823 um **d(0.5):** 80.100 um **d(0.8):** 184.014 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	1.79	11.482	17.01	120.226	63.03	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	2.08	13.183	18.71	138.038	68.39	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	2.41	15.136	20.50	158.489	73.98	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	2.79	17.378	22.40	181.970	79.56	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	3.23	19.953	24.39	208.930	84.83	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	3.76	22.909	26.47	239.883	89.51	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	4.37	26.303	28.64	275.423	93.38	2884.032	100.00
0.026	0.00	0.275	0.00	2.884	5.07	30.200	30.88	316.228	96.31	3311.311	100.00
0.030	0.00	0.316	0.00	3.311	5.86	34.674	33.19	363.078	98.30	3801.894	100.00
0.035	0.00	0.363	0.01	3.802	6.73	39.811	35.56	416.869	99.45	4365.158	100.00
0.040	0.00	0.417	0.08	4.365	7.70	45.709	38.00	478.630	99.94	5011.872	100.00
0.046	0.00	0.479	0.23	5.012	8.75	52.481	40.57	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	0.44	5.754	9.90	60.256	43.33	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	0.68	6.607	11.14	69.183	46.36	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	0.95	7.586	12.46	79.433	49.78	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	1.22	8.710	13.89	91.201	53.67	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	1.50	10.000	15.40	104.713	58.09	1096.478	100.00		

Operator notes:

Result Analysis Report

Sample Name:
18988-01 POX 8 Feed 200gé30 mins -

SOP Name:
Defaultar

Measured:
March-30-22 7:26:08 AM

Sample Source & type:
13086-08

Measured by:
lr_malvern1

Analysed:
March-30-22 7:26:09 AM

Sample bulk lot ref:
DA

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
23.00 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
1.977 %

Result Emulation:
Off

Concentration:
0.0072 %Vol

Span :
2.555

Uniformity:
0.861

Result units:
Volume

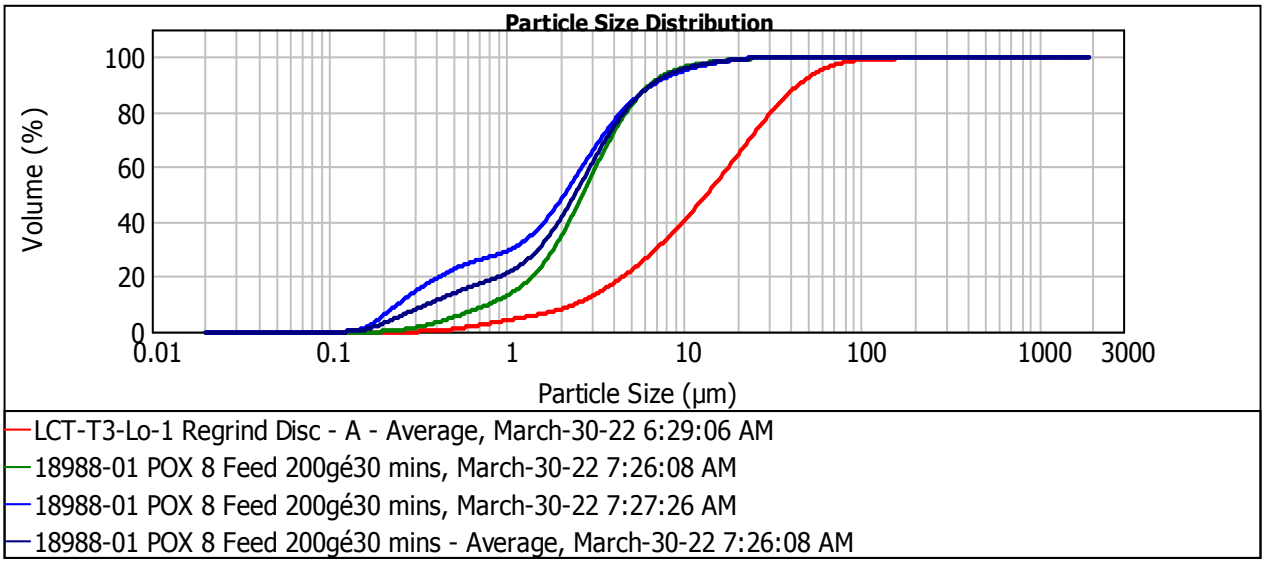
Specific Surface Area:
5.56 m²/g

Surface Weighted Mean D[3,2]:
1.080 um

Vol. Weighted Mean D[4,3]:
3.293 um

---

d(0.1): 0.361 um **d(0.5):** 2.430 um **d(0.8):** 4.613 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	22.50	11.482	96.69	120.226	100.00	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	25.14	13.183	97.47	138.038	100.00	1445.440	100.00
0.013	0.00	0.138	0.12	1.445	28.65	15.136	98.11	158.489	100.00	1659.587	100.00
0.015	0.00	0.158	0.64	1.660	33.13	17.378	98.64	181.970	100.00	1905.461	100.00
0.017	0.00	0.182	1.78	1.905	38.58	19.953	99.09	208.930	100.00	2187.762	100.00
0.020	0.00	0.209	3.24	2.188	44.84	22.909	99.44	239.883	100.00	2511.886	100.00
0.023	0.00	0.240	4.93	2.512	51.67	26.303	99.71	275.423	100.00	2884.032	100.00
0.026	0.00	0.275	6.67	2.884	58.71	30.200	99.87	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	8.38	3.311	65.64	34.674	99.97	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	10.06	3.802	72.12	39.811	100.00	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	11.71	4.365	77.92	45.709	100.00	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	13.32	5.012	82.87	52.481	100.00	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	14.84	5.754	86.92	60.256	100.00	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	16.27	6.607	90.11	69.183	100.00	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	17.62	7.586	92.55	79.433	100.00	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	18.98	8.710	94.35	91.201	100.00	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	20.53	10.000	95.69	104.713	100.00	1096.478	100.00		

Operator notes:

Result Analysis Report

Sample Name:
18988-01 2.5 mins per 150 g - Average

SOP Name:
Defaultar

Measured:
March-30-22 8:37:58 AM

Sample Source & type:
13086-08

Measured by:
lr_malvern1

Analysed:
March-30-22 8:38:00 AM

Sample bulk lot ref:
DA

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
13.77 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
1.606 %

Result Emulation:
Off

Concentration:
0.0115 %Vol

Span :
5.865

Uniformity:
3.28

Result units:
Volume

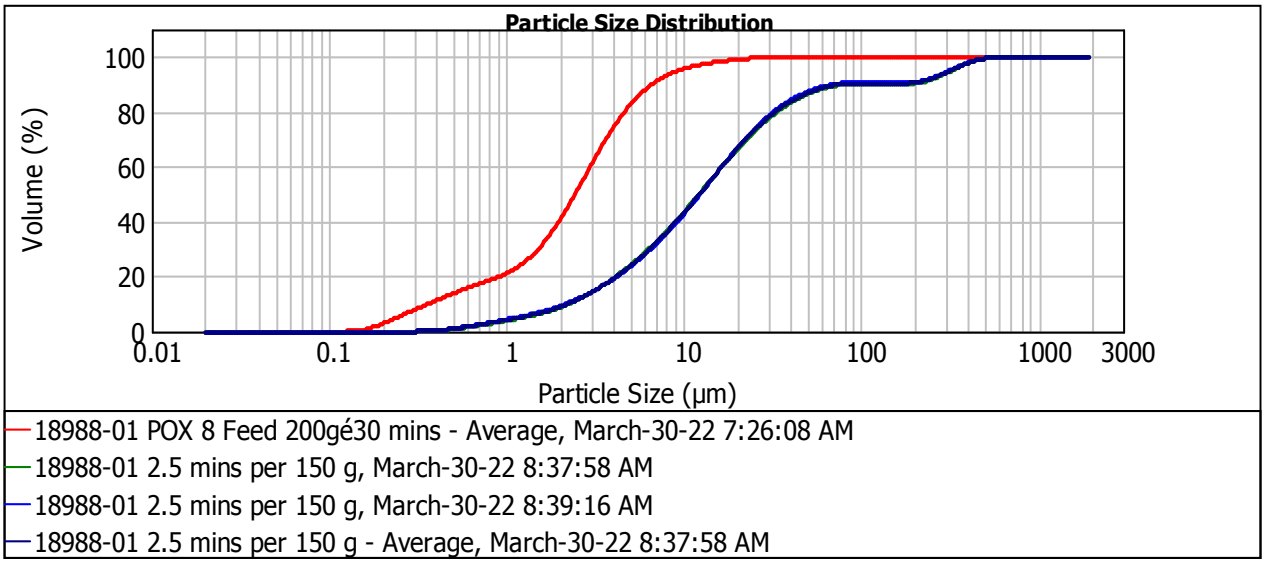
Specific Surface Area:
1.2 m²/g

Surface Weighted Mean D[3,2]:
4.994 um

Vol. Weighted Mean D[4,3]:
45.570 um

---

d(0.1): 2.192 um **d(0.5):** 12.210 um **d(0.8):** 32.548 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	4.63	11.482	47.89	120.226	90.38	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	5.39	13.183	52.65	138.038	90.38	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	6.25	15.136	57.45	158.489	90.38	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	7.28	17.378	62.18	181.970	90.41	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	8.51	19.953	66.73	208.930	90.80	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	9.98	22.909	70.99	239.883	91.78	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	11.69	26.303	74.87	275.423	93.27	2884.032	100.00
0.026	0.00	0.275	0.00	2.884	13.65	30.200	78.32	316.228	95.07	3311.311	100.00
0.030	0.00	0.316	0.01	3.311	15.85	34.674	81.31	363.078	96.85	3801.894	100.00
0.035	0.00	0.363	0.12	3.802	18.31	39.811	83.83	416.869	98.33	4365.158	100.00
0.040	0.00	0.417	0.39	4.365	21.02	45.709	85.90	478.630	99.33	5011.872	100.00
0.046	0.00	0.479	0.80	5.012	24.01	52.481	87.56	549.541	99.88	5754.399	100.00
0.052	0.00	0.550	1.32	5.754	27.27	60.256	88.82	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	1.92	6.607	30.84	69.183	89.70	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	2.57	7.586	34.70	79.433	90.24	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	3.24	8.710	38.86	91.201	90.38	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	3.92	10.000	43.27	104.713	90.38	1096.478	100.00		

Operator notes:

Appendix E – Tests 9 to 11

Appendix E – Tests 9 and 11

Project: 18988-01 **Date:** May 5, 2022
Client: **Technologist:** Chris Silva

Test: POX-9a

Purpose: **To conduct a POX test on a blend of BL 801-24 Final Tails and BL 801-25 Final Tails in duplicate to produce enough feed for downstream testing.**

Sample: **Blend of BL 801-24 Final Tails and BL 801-25 Final Tails**

Target K80: - µm
Actual K80: 20.6 µm
(Screen + Malvern)

H&S: Review MSDS for H_2SO_4

Procedure: The target amount of R.O. water was weighed out in a 2 L titanium vessel less 100 g.
200 g of a blend of BL 801-24 Final Tails and BL 801-25 Final Tails (dry equivalent) was added to the mixture.
13.08 g Ferric Sulphate was then added to the mixture.
The pH was then adjusted with concentrated sulphuric acid to pH 2 and held for 15 minutes.
The pH and ORP was recorded during the 15 minutes.

After 15 minutes the vessel was sealed and heat up begun.
Once the sample was at temperature 100 psi oxygen over pressure was applied.
An off gas bleed was started once at temperature and pressure.
At the end of the 90 mins the pulp was cooled to 95°C.
Once at 95°C, the autoclave was removed from the mantle, the head removed, the pulp weighed and then mixed.
1/2 of the pulp (by weight) was removed and combined with half of the POX weight removed from POX 9B, mixed and filtered.
Note: Have to do procedure this way as volume would be too much for one 2 L autoclave vessel to contain
The remaining half of POX 9a pulp was combined with the remaining half of POX 9b pulp in the autoclave vessel.
The head was then placed back onto the vessel, secured and placed back into the mantle and heated to 95°C.
The Time 0 sample was filtered and the products submitted for analysis.
Once the pulp was back at 95°C it was then held for 240 minutes.

The 90 min combined POX 9a + 9b sample was filtered and the residue washed with 1 x 150 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 350 mL's with deionized water.
The POX residue ground to a target of 15µm and then split in half for CN leaching 1/2 with oxygen sparging and the 2nd half with air sparging.

After 240 minutes (4 Hours) the vessel was removed from the heating mantle.
The pulp was then combined with the Hot Cure pulp from 9b.
The Combined pulp was agitated by an overhead mixer the pH and ORP measured and a sample (~150 mL) removed.
The 240 min sample (150 mL) was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water.

The remaining pulp was then filtered and the residue washed with 100 mL of pH 2 water.
The residue was then further displacement washed with 3 x 250 mL of D.I.
The Hot Cure residue ground to a target of 15µm and then split in half for CN leaching 1/2 with oxygen sparging and the 2nd half with air sparging.

Analysis:

POX PLS:	Fe, Fe^{2+}, As, ICP Scan and S	Hot Cure PLS:	Fe, Fe^{2+}, As, ICP Scan and S
POX Residue:	Not Submitted	Hot Cure Residue:	S(t), $S^{=}$, Fe, As and ICP Scan

Conditions:

Feed Moisture (%):	**0.00**	
Target Pulp Density (%):	**10.0**	
Feed Weight (dry equiv.) (g):	**200.0**	
Feed Weight Wet Req'd (g):	**200.0**	
H_20 Weight Added:	**1300**	
H_2O Weight Req'd (g):	**1300**	
Pre-acidulation H_2SO_4 added (g):	**22.246**	
2 g /L Fe^{3+} added as $Fe_2(SO_4)_3$-$9H_2O$ (g):	**13.08**	
Total Pulp Weight with reagents (g):	1513	(Actual Pulp weight)
Pulp Density (% solids w/w):	13.2	(w/w)
Temperature (°C):	**220**	
O_2 Over Pressure (psi):	**100**	Total = 422 psi
Time (at temperature) (min):	**90**	

Acidulation Data:

Time	Time (mins)	Temp (°C)	pH (units)	ORP (mV)	H_2SO_4 Add'n (g)	H_2SO_4 Add'n (Cum g)	Observations
5:38	0	19.9	7.45	-93		0	Add Feed
5:38	0	19.9	4.71	154		0	Ad Fe
6:05	0	22.7	2.04	374	22.246	22.246	Add Acid, froths
6:10	5	22.5	2.01	368	0.746	22.992	froth
6;15	10	22.2	2.01	364		22.992	froth
6:20	15	21.8	2.00	359	0.234	23.226	froth
						116.1	**kg/t H_2SO_4 Addition**

Autoclave Leach Data:

Elapsed Time min	D time	Temp °C	Pressure (psi) Total meas	Steam calculated	Over calculated	O_2 calculated	Off-Gas O_2 Total L	Off-Gas O_2 %	Off-Gas O_2 Flow	Remarks
6:35		21		-	-	-				Start Heat
7:29	0.0	220	427	**322**	**105**	**0**	4.8		250	Start test
7;39	10.0	220	427	**322**	**105**	**99**	37.6	94	250	Operating with Cooling Pulse
7:49	10.0	221	426	**328**	**98**	**94**	64.6	96	250	
7:59	10.0	218	428	**309**	**119**	**112**	93.6	94	250	
8:09	10.0	221	419	**328**	**91**	**85**	98.7	94	250	
8:19	10.0	219	435	**315**	**120**	**115**	105.5	96	300	
8:29	10.0	220	425	**322**	**103**	**97**	111.6	94	250	
8:39	10.0	221	423	**328**	**95**	**89**	117.0	94	250	
8:49	10.0	220	434	**322**	**112**	**106**	122.3	94	250	
8:59	10.0	219	434	**315**	**119**	**112**	130.1	94	300	
9:00		220								
9:06		140								
9:10		95								
AVG. 0:240	**90**	**220**	**428**	**321**	**107**	**101**	**130**	**94**	**260**	

Sampling Data:

Sample #	Pulp ORP	Pulp pH	Weights pulp, g	Weights PLS, g	Volume PLS, mL	SG g/mL	Calc PLS Vol, mL	Wet res, g	Dry res, g	$\%H_2O$	Colours PLS	Colours Residue	Filtration fst /slw	Pulp % solids	PLS ORP	PLS pH
POX 9a Pulp	808	1.22	1484.6	-	-	-	-	-	-	-	-	-	-	-	-	-
POX 9b Pulp	854	1.17	1514.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Comb 9a+9b POX Pulp	715	1.43	2998.8	2335.4	2131	1.0961	2425	516.3	341.2	33.9	green	red	fast	11.4%	670	1.41
Comb 9a+9b POX Pulp Filtered			1471.4	1171.5	1069	1.0961	1186	259.0	171.2	33.9	green	red	fast	11.6%	670	1.41
Comb 9a+9b POX Pulp for Hot Cure			1461.8	1163.9	1062	1.0961	1178	257.3	170.1	33.9	green	red	fast	11.6%	670	1.41

denotes calculated value

Final Sample Filtration:

Diameter of filtration paper:		mm	
type of paper (Whatman ##):			
Filtration time:		min	
Washing time:			
Volume of wash:		mL	
Cake thickness:		cm	
% Moisture			
% Weightloss:			

Clarity of filtrate:	clear
Colour of filtrate:	green
Clarity of wash:	clear
Colour of wash:	light green
Colour of residue:	red

Temp of POX 9a Pulp:	83.2	°C
Temp of POX 9b Pulp:	85.5	°C
Temp of POX 9a + 9b Pulp:	54.8	°C
Temp of POX PLS:	38.7	°C

Note: Frothed through off gas system

Condensate = 83.2 g

Hot Cure Data:

POX pulp weight for Hot Cure: 1461.8 g wt. not transferred to Hot Cure 0.0 g POX Residue to HC: 170.1 g

Time	Time mins	Temp	pH	ORP	Observations
9:43	0	60	1.43	715	Back in Mantle
9:54	0	95			Start Test
10:54	60	95			
11:54	120	94			
12:54	180	96			
13:54	240	95	1.06	687	End Test, Sample, Filter
		95			

Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
HC Pulp Sample	687	1.06	192.1	157.8	140	1.1237	155	27.6	18.3	33.7	dk grn	orange	fast	9.5%	514	1.65
Comb HC Pulp	687	1.06	1449.0	1186.4	1056	1.1237	1167	212.6	138.0	35.1	dk grn	orange	fast	9.5%	514	1.65
HC Pulp After Sample	687	1.06	1256.9	1028.6	915	1.1237	1012	185.0	119.7	35.3	dk grn	orange	fast	9.5%	514	1.65

Temp of Hot Cure 240 min Pulp:	81.7	°C
Temp of Hot Cure 240 min PLS:	48.5	°C
Notes:		

Metallurgical Balance POX

Product	Amount	Assay (mg/L, %, *g/t*)														S	FA, g/L
	(mL, g)	Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO_4	SO_4†	Au	Ag	C (g)	TOC	Bromine	H_2SO_4
Blend of BL 801-2	400	25.2		3640	13.2	7330	33700	23.0	22.2			13.7	60	< 0.05	0.15		
90 min PLS	1186	9380	85	384	2140	15	4450				98400		0.49			32800	66

Metallurgical Balance Hot Cure

Product	Amount	Assay (mg/L, %, *g/t*)														S	FA, g/L
	(mL, g)	Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO_4	SO_4†	Au	Ag	C (g)	TOC	Bromine	H_2SO_4
240 min Filtrat	1167	16200	2200	418	4320	7	5010				111900		< 0.6			37300	55
240 min Resid	138	18.4		1630	14.6	9450	7660	4.49	0.20	12.9			71				
Dissolution		Fe		Cu	As	Pb	Zn										
Final HC		43%		68%	20%	1%	85%										

†SO4 in solution calculated from S by bromine ICP

99.7% % Sulphide oxidation based on HC residue

	14.7	% POX Weight loss Overall
	18.8	% Hot Cure Weight loss Overall
Weight for CIL:	**119.7**	**g**
POX Feed Eq.:	**140.4**	**g**

Project: 18988-01 **Date:** May 5, 2022
Client: **Technologist:** Chris Silva

Test: POX-9b

Purpose: **To conduct a POX test on a blend of BL 801-24 Final Tails and BL 801-25 Final Tails in duplicate to produce enough feed for downstream testing.**

Sample: **Blend of BL 801-24 Final Tails and BL 801-25 Final Tails**

Target K80: - µm
Actual K80: 20.6 µm
(Screen + Malvern)

H&S: Review MSDS for H_2SO_4

Procedure: The target amount of R.O. water was weighed out in a 2 L titanium vessel less 100 g.
200 g of a blend of BL 801-24 Final Tails and BL 801-25 Final Tails (dry equivalent) was added to the mixture.
13.08 g Ferric Sulphate was then added to the mixture.
The pH was then adjusted with concentrated sulphuric acid to pH 2 and held for 15 minutes.
The pH and ORP was recorded during the 15 minutes.

After 15 minutes the vessel was sealed and heat up begun.
Once the sample was at temperature 100 psi oxygen over pressure was applied.
An off gas bleed was started once at temperature and pressure.
At the end of the 90 mins the pulp was cooled to 95°C.
Once at 95°C, the autoclave was removed from the mantle, the head removed, the pulp weighed and then mixed.
1/2 of the pulp (by weight) was removed and combined with half of the POX weight removed from POX 9B, mixed and filtered.
Note: Have to do procedure this way as volume would be too much for one 2 L autoclave vessel to contain
The remaining half of POX 9a pulp was combined with the remaining half of POX 9b pulp in the autoclave vessel.
The head was then placed back onto the vessel, secured and placed back into the mantle and heated to 95°C.
The Time 0 sample was filtered and the products submitted for analysis.
Once the pulp was back at 95°C it was then held for 240 minutes.

The 90 min combined POX 9a + 9b sample was filtered and the residue washed with 1 x 150 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 350 mL's with deionized water.
The POX residue ground to a target of 15µm and then split in half for CN leaching 1/2 with oxygen sparging and the 2nd half with air sparging.

After 240 minutes (4 Hours) the vessel was removed from the heating mantle.
The pulp was then combined with the Hot Cure pulp from 9a.
The Combined pulp was agitated by an overhead mixer the pH and ORP measured and a sample (~150 mL) removed.
The 240 min sample (150 mL) was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water.

The remaining pulp was then filtered and the residue washed with 100 mL of pH 2 water.
The residue was then further displacement washed with 3 x 250 mL of D.I.
The Hot Cure residue ground to a target of 15µm and then split in half for CN leaching 1/2 with oxygen sparging and the 2nd half with air sparging.

Analysis:

POX PLS:	Fe, Fe^{2+}, As, ICP Scan and S	Hot Cure PLS:	Fe, Fe^{2+}, As, ICP Scan and S
POX Residue:	Not Submitted	Hot Cure Residue:	S(t), $S^{=}$, Fe, As and ICP Scan

Conditions:

Feed Moisture (%):	**0.00**	
Target Pulp Density (%):	**10.0**	
Feed Weight (dry equiv.) (g):	**200.0**	
Feed Weight Wet Req'd (g):	**200.0**	
H_20 Weight Added:	**1300**	
H_2O Weight Req'd (g):	**1300**	
Pre-acidulation H_2SO_4 added (g):	**18.346**	
2 g /L Fe^{3+} added as $Fe_2(SO_4)_3$-$9H_2O$ (g):	**13.08**	
Total Pulp Weight with reagents (g):	1513	(Actual Pulp weight)
Pulp Density (% solids w/w):	13.2	(w/w)
Temperature (°C):	**220**	
O_2 Over Pressure (psi):	**100**	Total = 422 psi
Time (at temperature) (min):	**90**	

Acidulation Data:

Time	Time (mins)	Temp (°C)	pH (units)	ORP (mV)	H_2SO_4 Add'n (g)	H_2SO_4 Add'n (Cum g)	Observations
5:40	0	18.4	7.50	-174		0	Add Feed
5:40	0	18.5	4.63	105		0	Ad Fe
6:10	0	21.0	1.96	349	18.346	18.346	Add Acid, froths
6:15	5	20.8	1.95	339	0.394	18.740	froths
6:20	10	20.6	1.95	329	0.431	19.171	froths
6:25	15	20.3	1.95	320	0.313	19.484	froths
						97.4	**kg/t H_2SO_4 Addition**

Autoclave Leach Data:

Elapsed Time	D time	Temp °C	Pressure (psi)				Off-Gas			Remarks
			Total	Steam	Over	O_2	O_2 Total	O_2	O_2	
min			meas	calculated			L	%	Flow	
6:45		20		-	-	-				Start Heat
7:49	0.0	221	419	**328**	**91**	**0**				Start test
7:59	10.0	219	431	**315**	**116**	**108**		93	250	Operating with Cooling Pulse
8:09	10.0	219	435	**315**	**120**	**116**		97	250	
8:19	10.0	218	439	**309**	**130**	**127**		98	300	
8:29	10.0	221	439	**328**	**111**	**109**		98	250	
8:39	10.0	221	434	**328**	**106**	**104**		98	300	
8:49	10.0	219	437	**315**	**122**	**119**		98	250	
8:59	10.0	219	434	**315**	**119**	**116**		98	250	
9:09	10.0	221	443	**328**	**115**	**112**		98	300	
9:19	10.0	220	440	**322**	**118**	**116**		98	250	
AVG. 0:240	**90**	**220**	**437**	**320**	**117**	**114**	**0**	**97**	**267**	

Sampling Data:

Sample #	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
POX 9a Pulp	808	1.22	1484.6	-	-	-	-	-	-	-	-	-	-	-	-	-
POX 9b Pulp	854	1.17	1514.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Comb 9a+9b POX Pulp	715	1.43	2998.8	2335.4	2131	1.0961	2425	516.3	341.2	33.9	green	red	fast	11.4%	670	1.41
Comb 9a+9b POX Pulp Filtered			1471.4	1171.5	1069	1.0961	1186	259.0	171.2	33.9	green	red	fast	11.6%	670	1.41
Comb 9a+9b POX Pulp for Hot Cure			1461.8	1163.9	1062	1.0961	1178	257.3	170.1	33.9	green	red	fast	11.6%	670	1.41

denotes calculated value
denotes calculated value

Final Sample Filtration:

Diameter of filtration paper:		mm	
type of paper (Whatman ##):			
Filtration time:		min	
Washing time:			
Volume of wash:		mL	
Cake thickness:		cm	
% Moisture			
% Weightloss:			

Clarity of filtrate:	clear
Colour of filtrate:	green
Clarity of wash:	clear
Colour of wash:	light green
Colour of residue:	red

Temp of POX 9a Pulp:	83.2	°C
Temp of POX 9b Pulp:	85.5	°C
Temp of POX 9a + 9b Pulp:	54.8	°C
Temp of POX PLS:	38.7	°C

Note: Frothed through off gas system

Condensate = 69.4 g

Hot Cure Data:

POX pulp weight for Hot Cure: 1461.8 g wt. not transferred to Hot Cure 0.0 g POX Residue to HC: 170.1 g

Time	Time mins	Temp	pH	ORP	Observations
9:43	0	60	1.43	715	Back in Mantle
9:54	0	95			Start Test
10:54	60	95			
11:54	120	94			
12:54	180	96			
13:54	240	95	1.06	687	End Test, Sample, Filter
		95			

Sampling Data:

	Pulp		Weights		Volume	SG	Calc PLS	Wet	Dry	$\%H_2O$	Colours		Filtration	Pulp	PLS	
Sample #	ORP	pH	pulp, g	PLS, g	PLS, mL	g/mL	Vol, mL	res, g	res, g		PLS	Residue	fst /slw	% solids	ORP	pH
HC Pulp Sample	687	1.06	192.1	157.8	140	1.1237	155	27.6	18.3	33.7	dk grn	orange	fast	9.5%	514	1.65
Comb HC Pulp	687	1.06	1449.0	1186.4	1056	1.1237	1167	212.6	138.0	35.1	dk grn	orange	fast	9.5%	514	1.65
HC Pulp After Sample	687	1.06	1256.9	1028.6	915	1.1237	1012	185.0	119.7	35.3	dk grn	orange	fast	9.5%	514	1.65

Temp of Hot Cure 240 min Pulp:	81.7	°C
Temp of Hot Cure 240 min PLS:	48.5	°C
Notes:		

Metallurgical Balance POX

Product	Amount	Assay (mg/L, %, *g/t*)														S	FA, g/L
	(mL, g)	Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO_4	SO_4†	Au	Ag	C (g)	TOC	Bromine	H_2SO_4
Blend of BL 801-2	400	25.2		3640	13.2	7330	33700	23.0	22.2			13.7	60	< 0.05	0.15		
90 min PLS	1186	9380	85	384	2140	15	4450				98400		0.49			32800	66

Metallurgical Balance Hot Cure

Product	Amount	Assay (mg/L, %, *g/t*)														S	FA, g/L
	(mL, g)	Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO_4	SO_4†	Au	Ag	C (g)	TOC	Bromine	H_2SO_4
240 min Filtrat	1167	16200	2200	418	4320	7	5010				111900		< 0.6			37300	55
240 min Resid	138	18.4		1630	14.6	9450	7660	4.49	0.20	12.9			71				
Dissolution		Fe		Cu	As	Pb	Zn										
Final HC		43%		68%	20%	1%	85%										

†SO4 in solution calculated from S by bromine ICP

99.7% % Sulphide oxidation based on HC residue

	14.7	% Weight loss Overall
	18.8	% Hot Cure Weight loss Overall
Weight for CIL:	**119.7**	**g**
POX Feed Eq.:	**140.4**	**g**

Project: 18988-01 **Date:** May 6, 2022
Client: **Technologist:** Chris Silva

Test: POX-10a

Purpose: **To conduct a POX test on a blend of BL 801 Bulk Conc 1 and BL 801 Bulk Conc 2 i to produce enough feed for downstream testing.**

Sample: **100 g of BL 801 Bulk Conc. 1 and 100 g of BL 801 Bulk Conc. 2**

Target K80: - µm
Actual K80: 27.5 µm
(Screen + Malvern)

H&S: Review MSDS for H_2SO_4

Procedure: The target amount of R.O. water was weighed out in a 2 L titanium vessel less 100 g.
100 g each of BL 801 Bulk Conc. 1 and BL 801 Bulk Conc. 2 (dry equivalent) was added to the mixture.
13.08 g Ferric Sulphate was then added to the mixture.
The pH was then adjusted with concentrated sulphuric acid to pH 2 and held for 15 minutes.
The pH and ORP was recorded during the 15 minutes.

After 15 minutes the vessel was sealed and heat up begun.
Once the sample was at temperature 100 psi oxygen over pressure was applied.
An off gas bleed was started once at temperature and pressure.
At the end of the 90 mins the pulp was cooled to 95°C.
Once the pulp was at 95°C it was then held for 240 minutes.

After 240 minutes (4 Hours) the vessel was removed from the heating mantle.
The pulp was then combined with the Hot Cure pulp from 10b.
The Combined pulp was agitated by an overhead mixer the pH and ORP measured and a sample (~150 mL) removed.
The 240 min sample (150 mL) was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water.

The remaining pulp was then filtered and the residue washed with 100 mL of pH 2 water.
The residue was then further displacement washed with 3 x 250 mL of D.I.
The residue was then sent to SSW.

Analysis:
POX PLS: -
POX Residue: -
Hot Cure PLS: Fe, Fe^{2+}, As, ICP Scan and S
Hot Cure Residue: S(t), $S^{=}$, Fe, As and ICP Scan

Conditions:

Feed Moisture (%):	**0.00**	
Target Pulp Density (%):	**10.0**	
Feed Weight (dry equiv.) (g):	**200.0**	
Feed Weight Wet Req'd (g):	**200.0**	
H_20 Weight Added:	**1300**	
H_2O Weight Req'd (g):	**1300**	
Pre-acidulation H_2SO_4 added (g):	**0.000**	
2 g /L Fe^{3+} added as $Fe_2(SO_4)_3$-$9H_2O$ (g):	**13.08**	
Total Pulp Weight with reagents (g):	1513	(Actual Pulp weight)
Pulp Density (% solids w/w):	13.2	(w/w)
Temperature (°C):	**220**	
O_2 Over Pressure (psi):	**100**	Total = 422 psi
Time (at temperature) (min):	**90**	

Acidulation Data:

Time	Time (mins)	Temp (°C)	pH (units)	ORP (mV)	H_2SO_4 Add'n (g)	H_2SO_4 Add'n (Cum g)	Observations
5:10	0	19.5	7.14	-97		0	Add Feed
5:10	0	19.5	4.67	248		0	Ad Fe
5:18	0	22.2	2.01	385		0	Add Acid, froths
5:23	5	22.2	2.00	372		0	froths
5:28	10	22.2	1.99	364		0	froths
5:33	15	22.2	1.98	350	18.818	18.818	froths
						94.1	**kg/t H_2SO_4 Addition**

Autoclave Leach Data:

Elapsed Time min	D time	Temp °C	Pressure (psi) Total meas	Steam calculated	Over calculated	O_2 calculated	Off-Gas O_2 Total L	Off-Gas O_2 %	Off-Gas O_2 Flow	Remarks
5:50		22		-	-	-				Start Heat
6:41	0.0	221	427	**328**	**99**	**0**				Start test
6:51	10.0	220	429	**322**	**107**	**77**	31.4	72	250	Operating with Cooling Pulse
7:01	10.0	221	429	**328**	**101**	**93**	62.5	92	300	
7:11	10.0	220	430	**322**	**108**	**100**	94.1	92	200	
7:21	10.0	219	432	**315**	**117**	**107**	112.2	92	300	
7:31	10.0	220	431	**322**	**109**	**100**	118.0	92	250	
7:41	10.0	218	430	**309**	**121**	**111**	120.5	92	200	
7:51	10.0	220	423	**322**	**101**	**93**	124.9	92	250	
8:01	10.0	219	426	**315**	**111**	**102**	128.4	92	300	
8:11	10.0	221	436	**328**	**108**	**99**	133.8	92	250	
8:12		217								
8:17		140								
8:22		95								
AVG. 0:240	**90**	**220**	**430**	**320**	**109**	**98**	**134**	**90**	**256**	

Note:
Condensate = 45.3 g

Hot Cure Data:

POX pulp weight for Hot Cure: 1513.1 g wt. not transferred to Hot Cure 0.0 g POX Residue to HC: #REF! g

Time	Time mins	Temp	pH	ORP	Observations
8:22	0	95			Start Test
9:22	60	95			
10:22	120	95			
11:22	180	94			
12:22	240	96	1.38	680	End Test, Sample, Filter
		95			

Sampling Data:

Sample #	Pulp ORP	Pulp pH	Weights pulp, g	Weights PLS, g	Volume PLS, mL	SG g/mL	Calc PLS Vol, mL	Wet res, g	Dry res, g	%H_2O	Colours PLS	Colours Residue	Filtration fst /slw	Pulp % solids	PLS ORP	PLS pH
HC Pulp Sample	680	1.38	215.9	179.8	160	1.1206	175	29.1	19.8	32.0	dk grn	yellow	med	9.2%	611	1.51
HC 10a Pulp	677	1.36	1552.7	1303.1	1163	1.1206	1259	-	142.4	-	-	-	-	9.2%	-	-
HC 10b Pulp	707	1.41	1544.2	1296.0	1157	1.1206	1252	-	141.6	-	-	-	-	9.2%	-	-
Comb HC Pulp	680	1.38	3096.9	2599.1	2319	1.1206	2510	418.1	284.0	32.1	dk grn	yellow	med	9.2%	611	1.51
HC Pulp After Sample	680	1.38	2881.0	2419.3	2159	1.1206	2335	389.0	264.2	32.1	dk grn	yellow	med	9.2%	611	1.51

Temp of Hot Cure 10a 240 min Pulp:	51.1	°C
Temp of Hot Cure 10b 240 min Pulp:	53.0	°C
Temp of Hot Cure 10a + 10b 240 min Pulp:	47.4	°C
Temp of Hot Cure 10a + 10b 240 min PLS:	26.8	°C
Notes: Some scale at interface, thicker by cooling coils		

Metallurgical Balance Hot Cure

Product	Amount (mL, g)	Assay (mg/L, %, *g/t*) Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO_4	SO_4†	Au	Ag	C (g)	TOC	S Bromine	FA, g/L H_2SO_4
Conc 1	200	30.8			20.6			27.3	27.0			25.5	41.0				
Conc 2	200	28.4			18.0			23.7	23.0			20.7	40.6				
240 min Filtrat	2510	13100	204	160	6470	10	7490				109200		< 0.4			36400	71
240 min Resid	284	25.2		523	20.9	28300	13400	3.49	0.64	8.6		22.3	54				
Dissolution		Fe		Cu	As	Pb	Zn										
Final HC		31%		73%	21%	0%	83%										

†SO4 in solution calculated from S by bromine ICP

98.2% % Sulphide oxidation based on HC residue

29.0 % Weight loss Overall

Weight for CIL: 264.2 g

POX Feed Eq.: 372.1 g

Project: 18988-01 **Date:** May 6, 2022
Client: **Technologist:** Chris Silva

Test: POX-10b

Purpose: **To conduct a POX test on a blend of BL 801 Bulk Conc 1 and BL 801 Bulk Conc 2 i to produce enough feed for downstream testing.**

Sample: **100 g of BL 801 Bulk Conc. 1 and 100 g of BL 801 Bulk Conc. 2**

Target K80: - µm
Actual K80: 27.5 µm
(Screen + Malvern)

H&S: Review MSDS for H_2SO_4

Procedure: The target amount of R.O. water was weighed out in a 2 L titanium vessel less 100 g.
100 g each of BL 801 Bulk Conc. 1 and BL 801 Bulk Conc. 2 (dry equivalent) was added to the mixture.
13.08 g Ferric Sulphate was then added to the mixture.
The pH was then adjusted with concentrated sulphuric acid to pH 2 and held for 15 minutes.
The pH and ORP was recorded during the 15 minutes.

After 15 minutes the vessel was sealed and heat up begun.
Once the sample was at temperature 100 psi oxygen over pressure was applied.
An off gas bleed was started once at temperature and pressure.
At the end of the 90 mins the pulp was cooled to 95°C.
Once the pulp was at 95°C it was then held for 240 minutes.

After 240 minutes (4 Hours) the vessel was removed from the heating mantle.
The pulp was then combined with the Hot Cure pulp from 10a.
The Combined pulp was agitated by an overhead mixer the pH and ORP measured and a sample (~150 mL) removed.
The 240 min sample (150 mL) was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water.

The remaining pulp was then filtered and the residue washed with 100 mL of pH 2 water.
The residue was then further displacement washed with 3 x 250 mL of D.I.
The residue was then sent to SSW.

Analysis:
POX PLS: -
POX Residue: -
Hot Cure PLS: Fe, Fe^{2+}, As, ICP Scan and S
Hot Cure Residue: S(t), $S^{=}$, Fe, As and ICP Scan

Conditions:

Feed Moisture (%):	**0.00**	
Target Pulp Density (%):	**10.0**	
Feed Weight (dry equiv.) (g):	**200.0**	
Feed Weight Wet Req'd (g):	**200.0**	
H_20 Weight Added:	**1300**	
H_2O Weight Req'd (g):	**1300**	
Pre-acidulation H_2SO_4 added (g):	**0.000**	
2 g /L Fe^{3+} added as $Fe_2(SO_4)_3$-$9H_2O$ (g):	**13.08**	
Total Pulp Weight with reagents (g):	1513	(Actual Pulp weight)
Pulp Density (% solids w/w):	13.2	(w/w)
Temperature (°C):	**220**	
O_2 Over Pressure (psi):	**100**	Total = 422 psi
Time (at temperature) (min):	**90**	

Acidulation Data:

Time	Time (mins)	Temp (°C)	pH (units)	ORP (mV)	H_2SO_4 Add'n (g)	H_2SO_4 Add'n (Cum g)	Observations
5:15	0	18.2	6.95	-140		0	Add Feed
5:15	0	18.2	4.26	239		0	Ad Fe
5:23	0	20.0	2.01	335		0	Add Acid, froths
5:28	5	20.1	1.95	314		0	froths
5:33	10	20.1	1.95	294		0	froths
5:38	15	20.1	1.96	281	10.384	10.384	froths
						51.9	**kg/t H_2SO_4 Addition**

Autoclave Leach Data:

Elapsed Time min	D time	Temp °C	Pressure (psi) Total meas	Steam calculated	Over calculated	O_2 calculated	Off-Gas O_2 Total L	Off-Gas O_2 %	Off-Gas O_2 Flow	Remarks
5:52		20		-	-	-				Start Heat
6:55	0.0	220	422	**322**	**100**	**0**				Start test
7:05	10.0	221	424	**328**	**96**	**86**		90	250	Operating with Cooling Pulse
7:15	10.0	220	436	**322**	**114**	**110**		96	250	
7:25	10.0	219	436	**315**	**121**	**116**		96	250	
7:35	10.0	220	442	**322**	**120**	**115**		96	250	
7:45	10.0	220	443	**322**	**121**	**116**		96	300	
7:55	10.0	219	440	**315**	**125**	**120**		96	200	
8:05	10.0	220	441	**322**	**119**	**114**		96	250	
8:15	10.0	220	442	**322**	**120**	**115**		96	300	
8:25	10.0	220	443	**322**	**121**	**116**		96	300	
8:26		219								
8:30		140								
8:33		95								
AVG. 0:240	**90**	**220**	**439**	**321**	**117**	**112**	**0**	**95**	**261**	

Note:
Condensate = 65.0 g

Hot Cure Data:

POX pulp weight for Hot Cure: 1513.1 g wt. not transferred to Hot Cure 0.0 g POX Residue to HC: #REF! g

Time	Time mins	Temp	pH	ORP	Observations
8:33	0	95			Start Test
9:33	60	96			
10:33	120	94			
11:33	180	96			
12:33	240	96	1.38	680	End Test, Sample, Filter
		95			

Sampling Data:

Sample #	Pulp ORP	Pulp pH	Weights pulp, g	Weights PLS, g	Volume PLS, mL	SG g/mL	Calc PLS Vol, mL	Wet res, g	Dry res, g	%H_2O	Colours PLS	Colours Residue	Filtration fst /slw	Pulp % solids	PLS ORP	PLS pH
HC Pulp Sample	680	1.38	215.9	179.8	160	1.1206	175	29.1	19.8	32.0	dk grn	yellow	med	9.2%	611	1.51
HC 10a Pulp	677	1.36	1552.7	1303.1	1163	1.1206	1259	-	142.4	-	-	-	-	9.2%	-	-
HC 10b Pulp	707	1.41	1544.2	1296.0	1157	1.1206	1252	-	141.6	-	-	-	-	9.2%	-	-
Comb HC Pulp	680	1.38	3096.9	2599.1	2319	1.1206	2510	418.1	284.0	32.1	dk grn	yellow	med	9.2%	611	1.51
HC Pulp After Sample	680	1.38	2881.0	2419.3	2159	1.1206	2335	389.0	264.2	32.1	dk grn	yellow	med	9.2%	611	1.51

Temp of Hot Cure 10a 240 min Pulp:	51.1	°C
Temp of Hot Cure 10b 240 min Pulp:	53.0	°C
Temp of Hot Cure 10a + 10b 240 min Pulp:	47.4	°C
Temp of Hot Cure 10a + 10b 240 min PLS:	26.8	°C
Notes: Some scale at interface, thicker by cooling coils		

Metallurgical Balance Hot Cure

Product	Amount (mL, g)	Assay (mg/L, %, *g/t*) Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO_4	SO_4†	Au	Ag	C (g)	TOC	S Bromine	FA, g/L H_2SO_4
Conc 1	200	30.8		1350	20.6			27.3	27.0			25.5	41.0				
Conc 2	200	28.4			18.0			23.7	23.0			20.7	40.6				
240 min Filtrat	2510	13100	204	160	6470	10	7490				0		< 0.4				71
240 min Resid	284	25.2		523	20.9	28300	13400	3.49	0.64	8.6		22.3	54				
Dissolution		Fe		Cu	As	Pb	Zn										
Final HC		31%		73%	21%	0%	83%										

†SO4 in solution calculated from S by bromine ICP

98.2% % Sulphide oxidation based on HC residue

29.0 % Weight loss Overall

Weight for CIL: 264.2 g

POX Feed Eq.: 372.1 g

Project: 18988-01 **Date:**
Client: **Technologist:** Chris Silva

Test: POX-11a

Purpose: **To conduct a POX test on a blend of BL 801-24 Final Tails and BL 801-25 Final Tails in duplicate to produce enough feed for downstream testing.**

Sample: **Blend of BL 801-24 Final Tails and BL 801-25 Final Tails**

Target K80: - µm
Actual K80: 20.6 µm
(Screen + Malvern)

H&S: Review MSDS for H_2SO_4

Procedure: The target amount of R.O. water was weighed out in a 2 L titanium vessel less 100 g.
200 g of a blend of BL 801-24 Final Tails and BL 801-25 Final Tails (dry equivalent) was added to the mixture.
13.08 g Ferric Sulphate was then added to the mixture.
The pH was then adjusted with concentrated sulphuric acid to pH 2 and held for 15 minutes.
The pH and ORP was recorded during the 15 minutes.

After 15 minutes the vessel was sealed and heat up begun.
Once the sample was at temperature 100 psi oxygen over pressure was applied.
An off gas bleed was started once at temperature and pressure.
At the end of the 90 mins the pulp was cooled to 95°C.
Once the pulp was at 95°C it was then held for 240 minutes.

After 240 minutes (4 Hours) the vessel was removed from the heating mantle.
The pulp was then combined with the Hot Cure pulp from 11b.
The Combined pulp was agitated by an overhead mixer the pH and ORP measured and a sample (~150 mL) removed.
The 240 min sample (150 mL) was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water.

The remaining pulp was then filtered and the residue washed with 100 mL of pH 2 water.
The residue was then further displacement washed with 3 x 250 mL of D.I.
The residue was then split into 2 halves and each half ground to a target of 15µm.
The residue was then sent to Environmental Technologies in BC.

Analysis:

POX PLS:	-	Hot Cure PLS:	Fe, Fe^{2+}, As, ICP Scan and S
POX Residue:	-	Hot Cure Residue:	S(t), $S^{=}$, Fe, As and ICP Scan

Conditions:

Feed Moisture (%):	**0.00**	
Target Pulp Density (%):	**10.0**	
Feed Weight (dry equiv.) (g):	**200.0**	
Feed Weight Wet Req'd (g):	**200.0**	
H_20 Weight Added:	**1300**	
H_2O Weight Req'd (g):	**1300**	
Pre-acidulation H_2SO_4 added (g):	**0.000**	
2 g /L Fe^{3+} added as $Fe_2(SO_4)_3$-$9H_2O$ (g):	**13.08**	
Total Pulp Weight with reagents (g):	1513	(Actual Pulp weight)
Pulp Density (% solids w/w):	13.2	(w/w)
Temperature (°C):	**220**	
O_2 Over Pressure (psi):	**100**	Total = 422 psi
Time (at temperature) (min):	**90**	

Acidulation Data:

Time	Time (mins)	Temp (°C)	pH (units)	ORP (mV)	H_2SO_4 Add'n (g)	H_2SO_4 Add'n (Cum g)	Observations
5:50	0	19.4	7.36	-85		0	Add Feed
5:50	0	19.4	4.37	258		0	Ad Fe
6:05	0	22.8	2.01	410		0	Add Acid, froths
6:10	5	22.8	2.00	395		0	
6:15	10	22.8	2.00	386		0	
6:25	15	22.8	2.01	382	22.912	22.912	
						114.6	**kg/t H_2SO_4 Addition**

Autoclave Leach Data:

Elapsed Time min	D time	Temp °C	Pressure (psi) Total meas	Steam calculated	Over calculated	O_2 calculated	Off-Gas O_2 Total L	Off-Gas O_2 %	Off-Gas O_2 Flow	Remarks
6:36		23		-	-	-				Start Heat
7:30	0.0	220	428	**322**	**106**	**0**				Start test
7:40	10.0	221	429	**328**	**101**	**81**	25.3	80	250	Operating with Cooling Pulse
7:50	10.0	220	432	**322**	**110**	**106**	53.1	96	250	
8:00	10.0	219	432	**315**	**117**	**112**	80.5	96	200	
8:10	10.0	216	432	**297**	**135**	**130**	99.0	96	250	
8:20	10.0	220	434	**322**	**112**	**108**	103.1	96	200	
8:30	10.0	221	422	**328**	**94**	**90**	108.1	96	200	
8:40	10.0	220	437	**322**	**115**	**111**	112.6	96	300	
8:50	10.0	219	434	**315**	**119**	**114**	118.1	96	250	
9:00	10.0	220	436	**322**	**114**	**110**	122.6	96	250	
9:01		218								
9:06		140								
9:11		95								
AVG. 0:240	**90**	**220**	**432**	**319**	**113**	**107**	**123**	**94**	**239**	

Note:
Condensate = 79.1 g

Hot Cure Data:

POX pulp weight for Hot Cure: 1513.1 g wt. not transferred to Hot Cure #REF! g POX Residue to HC: #REF! g

Time	Time mins	Temp	pH	ORP	Observations
9:11	0	95			Start Test
10:11	60	95			
11:11	120	96			
12:11	180	94			
13:11	240	96	1.13	632	End Test, Sample, Filter
		95			

Sampling Data:

Sample #	Pulp ORP	Pulp pH	Weights pulp, g	Weights PLS, g	Volume PLS, mL	SG g/mL	Calc PLS Vol, mL	Wet res, g	Dry res, g	%H_2O	Colours PLS	Colours Residue	Filtration fst /slw	Pulp % solids	PLS ORP	PLS pH
HC Pulp Sample	632	1.13	219.0	183.2	164	1.1159	179	29.7	19.6	34.0	green	orange	med	8.9%	583	1.14
HC 11a Pulp	656	1.19	1499.3	1249.5	1120	1.1159	1223	-	134.2	-	-	-	-	8.9%	-	-
HC 11b Pulp	628	1.17	1536.1	1280.1	1147	1.1159	1253	-	137.5	-	-	-	-	8.9%	-	-
Comb HC Pulp	632	1.13	3035.4	2529.6	2267	1.1159	2477	405.4	271.7	33.0	green	orange	med	8.9%	583	1.14
HC Pulp After Sample	632	1.13	2816.4	2346.4	2103	1.1159	2298	375.7	252.1	32.9	green	orange	med	8.9%	583	1.14

Temp of Hot Cure 11a 240 min Pulp:	53.3	°C
Temp of Hot Cure 11b 240 min Pulp:	53.9	°C
Temp of Hot Cure 11a + 11b 240 min Pulp:	49.2	°C
Temp of Hot Cure 11a + 11b 240 min PLS:	32.3	°C
Notes:		

Metallurgical Balance Hot Cure

Product	Amount (mL, g)	Assay (mg/L, %, *g/t*) Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO_4	SO_4†	Au	Ag	C (g)	TOC	S Bromine	FA, g/L H_2SO_4
Blend of BL 801-2	400	25.2		3640	13.2	7330	33700	23.0	22.2			13.7	60	< 0.05	0.15		
240 min Filtrat	2477	19100	615	392	3910	12	4530				106500		0.37			35500	51
240 min Resid	272	18.0		1660	14.6	9430	8270	4.26	0.17	12.3		16.8	73				
Dissolution		Fe		Cu	As	Pb	Zn										
Final HC		49%		68%	20%	1%	83%										

†SO4 in solution calculated from S by bromine ICP

99.5% % Sulphide oxidation based on HC residue

32.1 % Weight loss Overall

Weight for CIL: 252.1 g

POX Feed Eq.: 371.1 g

Project: 18988-01 **Date:**
Client: **Technologist:** Chris Silva

Test: POX-11b

Purpose: **To conduct a POX test on a blend of BL 801-24 Final Tails and BL 801-25 Final Tails in duplicate to produce enough feed for downstream testing.**

Sample: **Blend of BL 801-24 Final Tails and BL 801-25 Final Tails**

Target K80: - µm
Actual K80: 20.6 µm
(Screen + Malvern)

H&S: Review MSDS for H_2SO_4

Procedure: The target amount of R.O. water was weighed out in a 2 L titanium vessel less 100 g.
200 g of a blend of BL 801-24 Final Tails and BL 801-25 Final Tails (dry equivalent) was added to the mixture.
13.08 g Ferric Sulphate was then added to the mixture.
The pH was then adjusted with concentrated sulphuric acid to pH 2 and held for 15 minutes.
The pH and ORP was recorded during the 15 minutes.

After 15 minutes the vessel was sealed and heat up begun.
Once the sample was at temperature 100 psi oxygen over pressure was applied.
An off gas bleed was started once at temperature and pressure.
At the end of the 90 mins the pulp was cooled to 95°C.
Once the pulp was at 95°C it was then held for 240 minutes.

After 240 minutes (4 Hours) the vessel was removed from the heating mantle.
The pulp was then combined with the Hot Cure pulp from 11a.
The Combined pulp was agitated by an overhead mixer the pH and ORP measured and a sample (~150 mL) removed.
The 240 min sample (150 mL) was filtered and the residue washed with 1 x 50 mL pH 2 sulphuric acid deionized water.
The residue was then further displacement washed 3 x 50 mL's with deionized water.

The remaining pulp was then filtered and the residue washed with 100 mL of pH 2 water.
The residue was then further displacement washed with 3 x 250 mL of D.I.
The residue was then split into 2 halves and each half ground to a target of 15µm.
The residue was then sent to Environmental Technologies in BC.

Analysis:

POX PLS:	-	Hot Cure PLS:	Fe, Fe^{2+}, As, ICP Scan and S
POX Residue:	-	Hot Cure Residue:	S(t), $S^{=}$, Fe, As and ICP Scan

Conditions:

Feed Moisture (%):	**0.00**	
Target Pulp Density (%):	**10.0**	
Feed Weight (dry equiv.) (g):	**200.0**	
Feed Weight Wet Req'd (g):	**200.0**	
H_20 Weight Added:	**1300**	
H_2O Weight Req'd (g):	**1300**	
Pre-acidulation H_2SO_4 added (g):	**0.000**	
2 g /L Fe^{3+} added as $Fe_2(SO_4)_3$-$9H_2O$ (g):	**13.08**	
Total Pulp Weight with reagents (g):	1513	(Actual Pulp weight)
Pulp Density (% solids w/w):	13.2	(w/w)
Temperature (°C):	**220**	
O_2 Over Pressure (psi):	**100**	Total = 422 psi
Time (at temperature) (min):	**90**	

Acidulation Data:

Time	Time (mins)	Temp (°C)	pH (units)	ORP (mV)	H_2SO_4 Add'n (g)	H_2SO_4 Add'n (Cum g)	Observations
5:55	0	18.4	7.39	-137		0	Add Feed
5:55	0	18.4	4.22	237		0	Ad Fe
6:10	0	21.4	1.95	366		0	Add Acid, froths
6:15	5	21.4	1.96	354		0	
6:20	10	21.3	1.95	346		0	
6:25	15	21.2	1.95	334	20.034	20.034	
						100.2	**kg/t H_2SO_4 Addition**

Autoclave Leach Data:

Elapsed Time min	D time	Temp °C	Pressure (psi) Total meas	Steam calculated	Over calculated	O_2 calculated	Off-Gas O_2 Total L	Off-Gas O_2 %	Off-Gas O_2 Flow	Remarks
6:41		21		-	-	-				Start Heat
7:43	0.0	220	408	**322**	**86**	**0**				Start test
7:53	10.0	221	425	**328**	**97**	**83**		86	250	Operating with Cooling Pulse
8:03	10.0	220	440	**322**	**118**	**114**		96	300	
8:13	10.0	217	449	**303**	**146**	**140**		96	250	
8:23	10.0	219	439	**315**	**124**	**119**		96	250	
8:33	10.0	221	447	**328**	**119**	**114**		96	300	
8:43	10.0	221	434	**328**	**106**	**102**		96	250	
8:53	10.0	219	438	**315**	**123**	**118**		96	200	
9:03	10.0	221	439	**328**	**111**	**106**		96	300	
9:13	10.0	219	442	**315**	**127**	**124**		98	250	
9:14		219								
9:17		140								
9:20		95								
AVG. 0:240	**90**	**220**	**439**	**320**	**119**	**113**	**0**	**95**	**261**	

Note:
Condensate = 56.6 g

Hot Cure Data:

POX pulp weight for Hot Cure: 1513.1 g wt. not transferred to Hot Cure #REF! g POX Residue to HC: #REF! g

Time	Time mins	Temp	pH	ORP	Observations
9:20	0	95			Start Test
10:20	60	94			
11:20	120	95			
12:20	180	96			
13:20	240	94	1.13	632	End Test, Sample, Filter
		95			

Sampling Data:

Sample #	Pulp ORP	Pulp pH	Weights pulp, g	Weights PLS, g	Volume PLS, mL	SG g/mL	Calc PLS Vol, mL	Wet res, g	Dry res, g	%H_2O	Colours PLS	Colours Residue	Filtration fst /slw	Pulp % solids	PLS ORP	PLS pH
HC Pulp Sample	632	1.13	219.0	183.2	164	1.1159	179	29.7	19.6	34.0	green	orange	med	8.9%	583	1.14
HC 11a Pulp	656	1.19	1499.3	1249.5	1120	1.1159	1223	-	134.2	-	-	-	-	8.9%	-	-
HC 11b Pulp	628	1.17	1536.1	1280.1	1147	1.1159	1253	-	137.5	-	-	-	-	8.9%	-	-
Comb HC Pulp	632	1.13	3035.4	2529.6	2267	1.1159	2477	405.4	271.7	33.0	green	orange	med	8.9%	583	1.14
HC Pulp After Sample	632	1.13	2816.4	2346.4	2103	1.1159	2298	375.7	252.1	32.9	green	orange	med	8.9%	583	1.14

Temp of Hot Cure 11a 240 min Pulp:	53.3	°C
Temp of Hot Cure 11b 240 min Pulp:	53.9	°C
Temp of Hot Cure 11a + 11b 240 min Pulp:	49.2	°C
Temp of Hot Cure 11a + 11b 240 min PLS:	32.3	°C
Notes:		

Metallurgical Balance POX

Product	Amount (mL, g)	Assay (mg/L, %, *g/t*) Fe	Fe^{2+}	Cu	As	Pb	Zn	S	$S^{=}$	SO_4	SO_4†	Au	Ag	C (g)	TOC	S Bromine	FA, g/L H_2SO_4
Blend of BL 801-2	400	25.2		3640	13.2	7330	33700	23.0	22.2			13.7	60	< 0.05	0.15		
240 min Filtrat	2477	19100	615	392	3910	12	4530				106500		0.37			35500	51
240 min Resid	272	18.0		1660	14.6	9430	8270	4.26	0.17	12.3		16.8	73				
Dissolution		Fe		Cu	As	Pb	Zn										
Final HC		49%		68%	20%	1%	83%										

†SO4 in solution calculated from S by bromine ICP

99.5% % Sulphide oxidation based on HC residue

32.1 % Weight loss Overall

Weight for CIL: 252.1 g

POX Feed Eq.: 371.1 g

Test	Feed	Pulp Density % solids w/w	Ground for POX	Feed K80 mm	Pre-acid pH Target	Acid Addi'n H_2SO_4 kg/t	POX Temp. °C	POX Time at Temp. mins.
POX 9	BL 801-24 Final Tails + BL 801-25 Final Tails	13.2	No	20.6	2.0	107	220	90

Test	POX Average Temp. °C	POX Average Total psi	POX Average off gas flow mL/min	POX Average O_2% in offgas	POX Pulp pH units	POX Pulp ORP mV	POX PLS pH units	POX PLS ORP mV	POX PLS FAT g/L H_2SO_4
POX 9	220	432	263	96	1.20	831	1.41	670	66.2

Test	Feed	Hot Cure Time at Temp. hours	Hot Cure Average Temp.	Hot Cure Pulp pH units	Hot Cure Pulp ORP mV	Hot Cure PLS pH units	Hot Cure PLS ORP mV	Hot Cure PLS FAT g/L H_2SO_4	Hot Cure Residue Colour
POX 9	BL 801-24 Final Tails + BL 801-25 Final Tails	4	95.0	1.06	687	1.65	514	55.2	orange

Test	POX PLS Fe mg/L	POX PLS As mg/L	POX PLS S by Bromine mg/L	HC PLS Fe mg/L	HC PLS As mg/L	HC PLS S by Bromine mg/L	Hot Cure Residue Fe %	Hot Cure Residue As %	Hot Cure Residue Ag %	Hot Cure Residue $S^{=}$ %	Hot Cure Residue $S^{=}$ Oxd'n %	Weightloss % Overall
POX 9	9380	2140	32800	16200	4320	37300	18.4	14.6	71	0.20	99.7	33.5

Test	Feed	LB, CN / CIL Test Number	Feed	Ground for CN	Oxygen / Air Sparging	Size K80 mm	Reagent Addition kg/t of Cyanide Feed NaCN	Reagent Addition kg/t of Cyanide Feed CaO	Reagent Consumption kg/t of Cyanide Feed NaCN	Reagent Consumption kg/t of Cyanide Feed CaO	Final Free CN mg/L
POX 9a + POX 9b Residue	BL 801-24 +BL 801-25 Final Tails	CN-11	POX 9a + 9b	Yes	Oxygen	12.24	68.2	41.9	47.1	41.9	1150
POX 9a + POX 9b Residue	BL 801-24 +BL 801-25 Final Tails	CN-12	POX 9a + 9b	Yes	Air	12.73	78.7	38.0	65.3	38.0	741
HC 9a + HC 9b Residue	BL 801-24 +BL 801-25 Final Tails	CN-13	HC 9a +9b	Yes	Oxygen	13.03	33.4	6.1	8.8	5.8	1398
HC 9a + HC 9b Residue	BL 801-24 +BL 801-25 Final Tails	CN-14	HC 9a +9b	Yes	Air	13.24	39.9	6.0	17.1	6.0	1365

Test	LB, CN / CIL Test Number	Au Assay mg/L	Residue Au Assay g/t	Barren /PLS Ag Assay mg/L	Residue Ag Assay g/t	Au Extraction %	Ag Extraction %	Calc Head Au	Calc Head Ag	Direct Head Au	Direct Head Ag
POX 9a + POX 9b Residue	CN-11	1.42	0.19	1.42	46.2	98.8	24.6	15.3	61.3	13.7	60
POX 9a + POX 9b Residue	CN-12	1.46	0.21	1.46	49.1	98.6	23.7	15.4	64.3	13.7	60
HC 9a + HC 9b Residue	CN-13	1.74	0.38	1.74	78.8	98.0	18.8	18.7	97.1	13.7	60
HC 9a + HC 9b Residue	CN-14	1.83	0.33	1.83	58.1	98.3	24.0	18.7	76.4	13.7	60

Test	Feed	Pulp Density % solids w/w	Ground for POX	Feed K80 µm	Pre-acid pH Target	Acid Addi'n H_2SO_4 kg/t	POX Temp. °C	POX Time at Temp. mins.	POX Average Temp. °C	POX Average Total psi	POX Average off gas flow mL/min	POX Average O_2% in offgas
POX 10a	Blend of Bulk Conc. 1 and Bulk Conc. 2	13.2	No	27.5	2	94	220	90	220	430	256	90
POX 10b	Blend of Bulk Conc. 1 and Bulk Conc. 2	13.2	No	27.5	2	52	220	90	220	439	261	95
POX 11a	BL 801-24 Final Tails + BL 801-25 Final Tails	13.2	No	20.6	2	115	220	90	220	432	239	94
POX 11b	BL 801-24 Final Tails + BL 801-25 Final Tails	13.2	No	20.6	2	100	220	90	220	439	261	95

Test	Feed	Hot Cure Time at Temp. hours	Hot Cure Average Temp.	Hot Cure Pulp pH units	Hot Cure Pulp ORP mV	Hot Cure PLS pH units	Hot Cure PLS ORP mV	Hot Cure PLS FAT g/L H_2SO_4	Hot Cure Residue Colour
POX 10a	Blend of Bulk Conc. 1 and Bulk Conc. 2	4	95.0	1.36	677	-	-	-	-
POX 10b	Blend of Bulk Conc. 1 and Bulk Conc. 2	4	95.4	1.41	707	-	-	-	-
	Hot Cure 10a + 10b Combined	-	-	1.38	680	1.51	611	71.3	yellow
POX 11a	BL 801-24 Final Tails + BL 801-25 Final Tails	4	95.2	1.19	656	-	-	-	-
POX 11b	BL 801-24 Final Tails + BL 801-25 Final Tails	4	94.8	1.17	628	-	-	-	-
	Hot Cure 11a + 11b Combined	-	-	1.13	632	1.14	583	50.9	orange

Test	HC PLS Fe mg/L	HC PLS As mg/L	HC PLS S by Bromine mg/L	Hot Cure Residue Fe %	Hot Cure Residue As %	Hot Cure Residue Ag %	Hot Cure Residue $S^=$ %	Hot Cure Residue $S^=$ Oxd'n %	Weightloss % Overall
POX 10a	-	-	-	-	-	-	-	-	-
POX 10b	-	-	-	-	-	-	-	-	-
HC 10a + 10b Comb	13100	6470	36400	25.2	20.9	54	0.64	98.2	29.0
POX 11a	-	-	-	-	-	-	-	-	-
POX 11b	-	-	-	-	-	-	-	-	-
HC 11a + 11b Comb	19100	3910	35500	18.0	14.6	73	0.17	99.5	32.1

MASTERSIZER 2000 95

Result Analysis Report

Sample Name:
18988-01 Comb. HC 11a+11b Resiodue

SOP Name:
Defaultar

Measured:
May-10-22 7:46:35 AM

Sample Source & type:

Measured by:
lr_malvern1

Analysed:
May-10-22 7:46:37 AM

Sample bulk lot ref:

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
14.69 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
1.231 %

Result Emulation:
Off

Concentration:
0.0092 %Vol

Span :
2.419

Uniformity:
0.782

Result units:
Volume

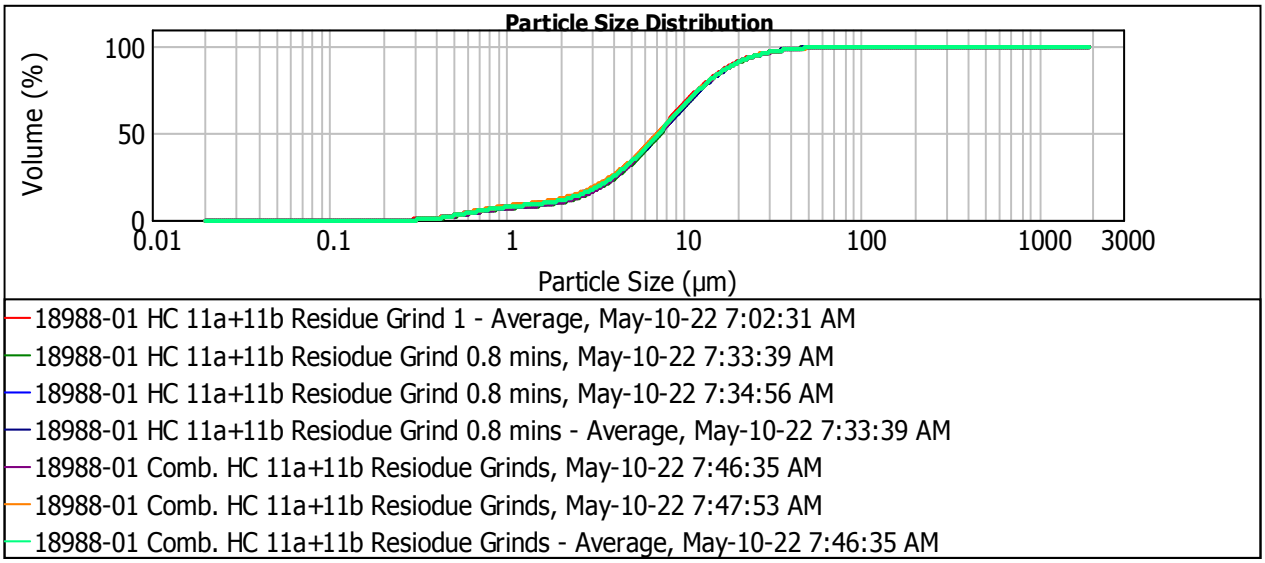
Specific Surface Area:
1.74 m²/g

Surface Weighted Mean D[3,2]:
3.442 um

Vol. Weighted Mean D[4,3]:
9.455 um

---

d(0.1): 1.726 um **d(0.5):** 7.197 um **d(0.8):** 13.720 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	7.81	11.482	72.72	120.226	100.00	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	8.41	13.183	78.48	138.038	100.00	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	9.01	15.136	83.46	158.489	100.00	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	9.75	17.378	87.60	181.970	100.00	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	10.75	19.953	90.91	208.930	100.00	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	12.13	22.909	93.48	239.883	100.00	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	14.01	26.303	95.41	275.423	100.00	2884.032	100.00
0.026	0.00	0.275	0.00	2.884	16.46	30.200	96.83	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	0.02	3.311	19.58	34.674	97.86	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	0.39	3.802	23.42	39.811	98.60	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	1.03	4.365	28.00	45.709	99.12	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	1.93	5.012	33.32	52.481	99.47	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	3.00	5.754	39.29	60.256	99.71	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	4.15	6.607	45.79	69.183	99.86	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	5.27	7.586	52.63	79.433	99.94	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	6.27	8.710	59.57	91.201	99.99	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	7.11	10.000	66.35	104.713	100.00	1096.478	100.00		

Operator notes:

MASTERSIZER 2000 96

Result Analysis Report

Sample Name:
18988-01 HC 11a+11b Residue Grind 1

SOP Name:
Defaultar

Measured:
May-10-22 7:02:31 AM

Sample Source & type:

Measured by:
lr_malvern1

Analysed:
May-10-22 7:02:33 AM

Sample bulk lot ref:
ar

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
15.94 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
1.225 %

Result Emulation:
Off

Concentration:
0.0100 %Vol

Span :
2.437

Uniformity:
0.784

Result units:
Volume

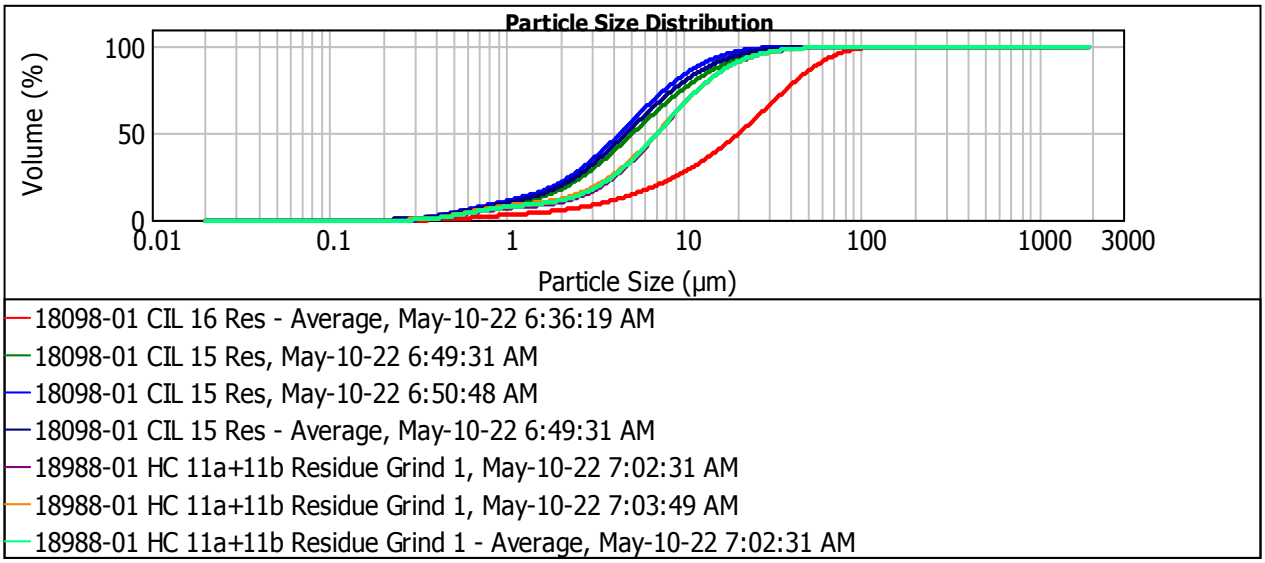
Specific Surface Area:
1.76 m²/g

Surface Weighted Mean D[3,2]:
3.414 um

Vol. Weighted Mean D[4,3]:
9.323 um

---

d(0.1): 1.745 um **d(0.5):** 7.061 um **d(0.8):** 13.510 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	7.84	11.482	73.50	120.226	100.00	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	8.42	13.183	79.09	138.038	100.00	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	8.99	15.136	83.90	158.489	100.00	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	9.69	17.378	87.90	181.970	100.00	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	10.66	19.953	91.11	208.930	100.00	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	12.02	22.909	93.61	239.883	100.00	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	13.91	26.303	95.51	275.423	100.00	2884.032	100.00
0.026	0.00	0.275	0.00	2.884	16.42	30.200	96.92	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	0.04	3.311	19.64	34.674	97.94	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	0.41	3.802	23.62	39.811	98.67	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	1.07	4.365	28.39	45.709	99.18	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	1.98	5.012	33.90	52.481	99.52	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	3.06	5.754	40.06	60.256	99.74	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	4.22	6.607	46.70	69.183	99.87	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	5.34	7.586	53.61	79.433	99.95	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	6.34	8.710	60.55	91.201	99.99	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	7.17	10.000	67.26	104.713	100.00	1096.478	100.00		

Operator notes:

MASTERSIZER 2000 97

Result Analysis Report

Sample Name:
18988-01 HC 9 Residue 2.1 min per 120

SOP Name:
Defaultar1

Measured:
May-09-22 8:36:36 AM

Sample Source & type:

Measured by:
lr_malvern1

Analysed:
May-09-22 8:36:38 AM

Sample bulk lot ref:

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
18.45 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
1.351 %

Result Emulation:
Off

Concentration:
0.0101 %Vol

Span :
2.887

Uniformity:
0.946

Result units:
Volume

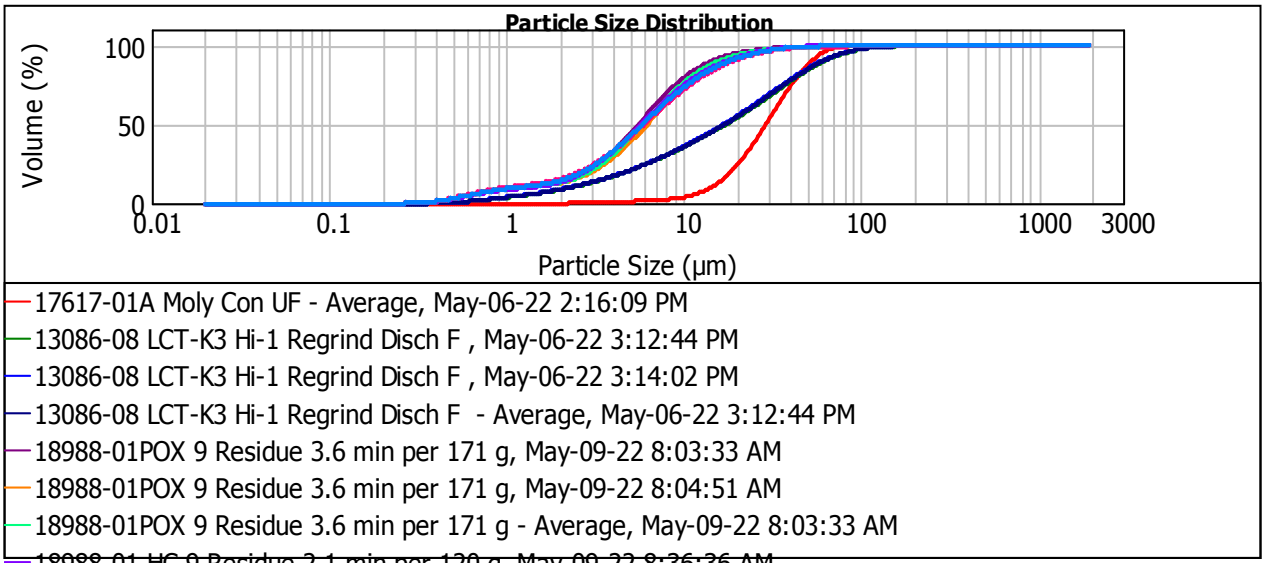
Specific Surface Area:
2.09 m²/g

Surface Weighted Mean D[3,2]:
2.871 um

Vol. Weighted Mean D[4,3]:
8.576 um

---

d(0.1): 1.160 um **d(0.5):** 5.824 um **d(0.8):** 12.044 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	9.70	11.482	78.46	120.226	99.86	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	10.43	13.183	82.70	138.038	99.90	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	11.20	15.136	86.31	158.489	99.93	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	12.20	17.378	89.34	181.970	99.96	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	13.62	19.953	91.85	208.930	99.98	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	15.62	22.909	93.90	239.883	100.00	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	18.34	26.303	95.55	275.423	100.00	2884.032	100.00
0.026	0.00	0.275	0.02	2.884	21.83	30.200	96.85	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	0.16	3.311	26.13	34.674	97.84	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	0.68	3.802	31.17	39.811	98.57	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	1.52	4.365	36.85	45.709	99.07	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	2.64	5.012	43.01	52.481	99.39	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	3.96	5.754	49.44	60.256	99.58	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	5.34	6.607	55.91	69.183	99.69	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	6.68	7.586	62.22	79.433	99.75	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	7.88	8.710	68.16	91.201	99.79	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	8.88	10.000	73.61	104.713	99.82	1096.478	100.00		

Operator notes:

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Result Analysis Report

Sample Name:
18988-01 HC 11a+11b Resiodue Grind

SOP Name:
Defaultar

Measured:
May-10-22 7:33:39 AM

Sample Source & type:

Measured by:
lr_malvern1

Analysed:
May-10-22 7:33:41 AM

Sample bulk lot ref:

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
15.14 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
1.208 %

Result Emulation:
Off

Concentration:
0.0097 %Vol

Span :
2.394

Uniformity:
0.766

Result units:
Volume

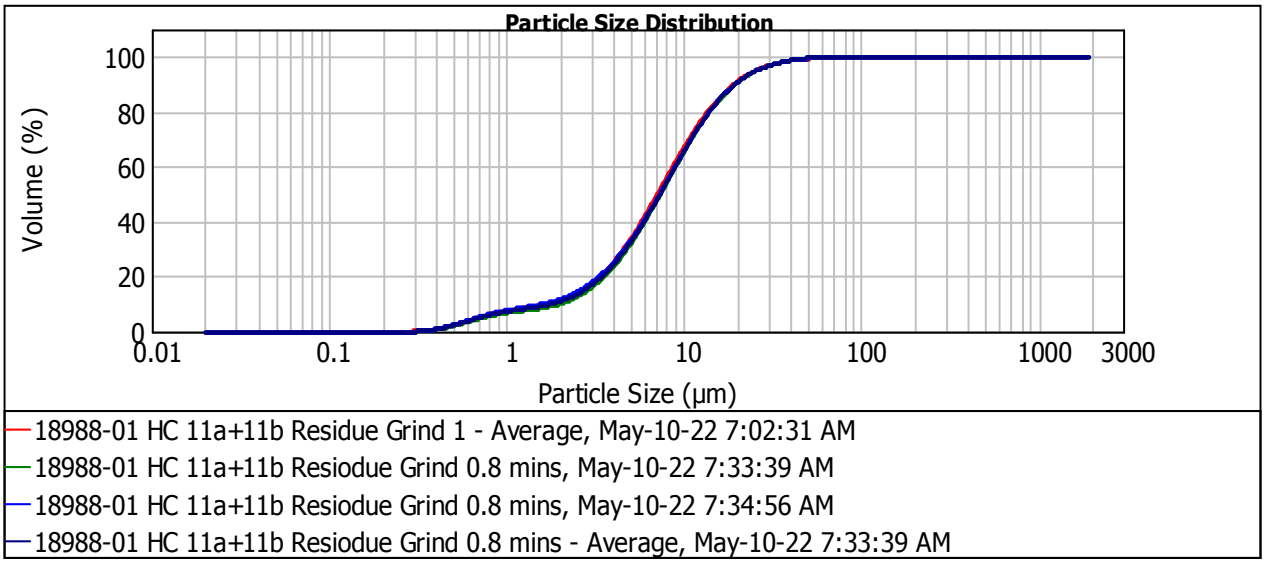
Specific Surface Area:
1.72 m²/g

Surface Weighted Mean D[3,2]:
3.498 um

Vol. Weighted Mean D[4,3]:
9.506 um

---

d(0.1): 1.793 um **d(0.5):** 7.319 um **d(0.8):** 13.882 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	7.63	11.482	72.14	120.226	100.00	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	8.21	13.183	78.00	138.038	100.00	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	8.79	15.136	83.08	158.489	100.00	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	9.50	17.378	87.32	181.970	100.00	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	10.46	19.953	90.73	208.930	100.00	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	11.80	22.909	93.38	239.883	100.00	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	13.61	26.303	95.38	275.423	100.00	2884.032	100.00
0.026	0.00	0.275	0.00	2.884	16.00	30.200	96.87	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	0.02	3.311	19.03	34.674	97.95	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	0.38	3.802	22.79	39.811	98.72	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	1.01	4.365	27.29	45.709	99.26	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	1.89	5.012	32.53	52.481	99.61	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	2.95	5.754	38.46	60.256	99.83	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	4.07	6.607	44.94	69.183	99.94	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	5.16	7.586	51.80	79.433	99.99	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	6.14	8.710	58.79	91.201	100.00	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	6.96	10.000	65.66	104.713	100.00	1096.478	100.00		

Operator notes:

MASTERSIZER 2000 99

Result Analysis Report

Sample Name:
18988-01 POX 9 Feed 1 min Grind -

SOP Name:
Defaultar1

Measured:
May-06-22 6:45:23 AM

Sample Source & type:

Measured by:
lr_malvern1

Analysed:
May-06-22 6:45:25 AM

Sample bulk lot ref:
CK

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
14.18 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
0.967 %

Result Emulation:
Off

Concentration:
0.0102 %Vol

Span :
2.639

Uniformity:
0.932

Result units:
Volume

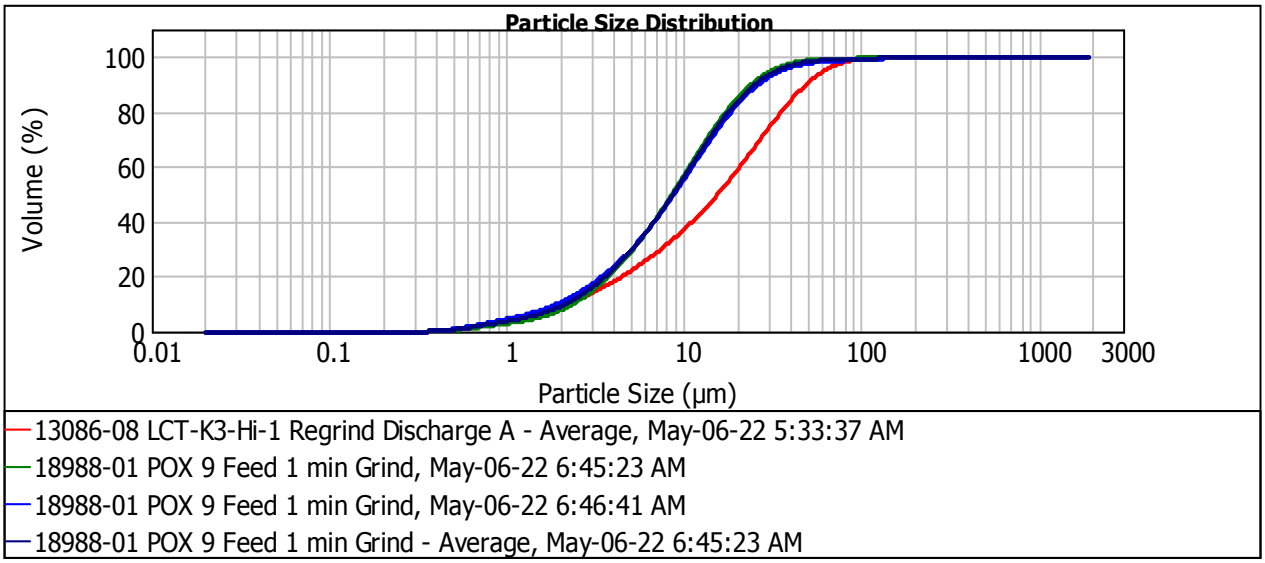
Specific Surface Area:
1.32 m²/g

Surface Weighted Mean D[3,2]:
4.535 um

Vol. Weighted Mean D[4,3]:
12.500 um

---

d(0.1): 2.145 um **d(0.5):** 8.666 um **d(0.8):** 17.765 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	4.14	11.482	62.28	120.226	99.41	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	4.93	13.183	68.26	138.038	99.61	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	5.87	15.136	73.96	158.489	99.81	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	7.03	17.378	79.22	181.970	99.94	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	8.48	19.953	83.87	208.930	100.00	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	10.28	22.909	87.85	239.883	100.00	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	12.45	26.303	91.10	275.423	100.00	2884.032	100.00
0.026	0.00	0.275	0.00	2.884	15.01	30.200	93.66	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	0.00	3.311	17.96	34.674	95.57	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	0.01	3.802	21.32	39.811	96.94	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	0.21	4.365	25.09	45.709	97.86	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	0.55	5.012	29.30	52.481	98.44	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	1.00	5.754	33.93	60.256	98.77	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	1.55	6.607	38.99	69.183	98.95	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	2.15	7.586	44.44	79.433	99.06	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	2.78	8.710	50.22	91.201	99.14	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	3.44	10.000	56.21	104.713	99.25	1096.478	100.00		

Operator notes:

MASTERSIZER 2000 100

Result Analysis Report

Sample Name:
18988-01 POX 9 Feed 2 min Grtind -

SOP Name:
Defaultar1

Measured:
May-06-22 8:56:04 AM

Sample Source & type:
13086-08

Measured by:
lr_malvern1

Analysed:
May-06-22 8:56:06 AM

Sample bulk lot ref:
DA

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
16.46 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
0.941 %

Result Emulation:
Off

Concentration:
0.0098 %Vol

Span :
2.924

Uniformity:
1

Result units:
Volume

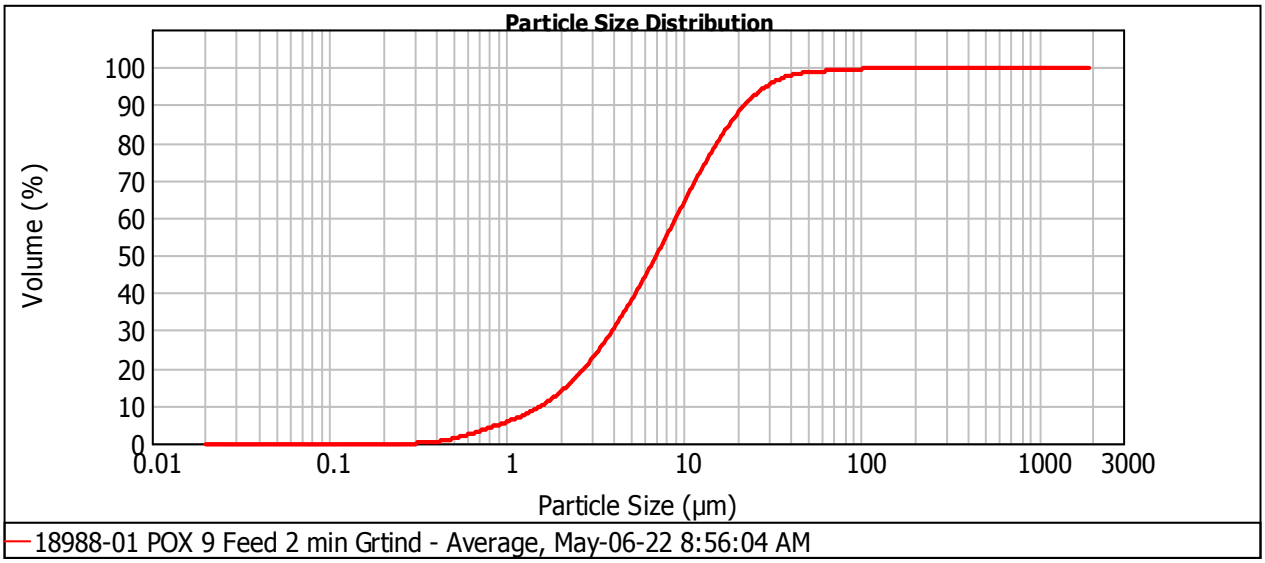
Specific Surface Area:
1.68 m²/g

Surface Weighted Mean D[3,2]:
3.563 um

Vol. Weighted Mean D[4,3]:
10.464 um

---

d(0.1): 1.578 um **d(0.5):** 6.990 um **d(0.8):** 15.350 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	6.36	11.482	69.55	120.226	99.79	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	7.55	13.183	74.72	138.038	99.93	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	8.96	15.136	79.53	158.489	100.00	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	10.65	17.378	83.88	181.970	100.00	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	12.71	19.953	87.67	208.930	100.00	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	15.16	22.909	90.85	239.883	100.00	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	18.01	26.303	93.42	275.423	100.00	2884.032	100.00
0.026	0.00	0.275	0.00	2.884	21.26	30.200	95.39	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	0.01	3.311	24.87	34.674	96.82	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	0.15	3.802	28.84	39.811	97.80	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	0.51	4.365	33.14	45.709	98.41	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	1.04	5.012	37.76	52.481	98.77	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	1.72	5.754	42.67	60.256	98.97	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	2.51	6.607	47.83	69.183	99.11	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	3.39	7.586	53.19	79.433	99.25	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	4.31	8.710	58.67	91.201	99.41	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	5.30	10.000	64.16	104.713	99.60	1096.478	100.00		

Operator notes:

Result Analysis Report

Sample Name:
18988-01 POX 9 Feed 3 min Grind -

SOP Name:
Defaultar1

Measured:
May-06-22 7:24:28 AM

Sample Source & type:

Measured by:
lr_malvern1

Analysed:
May-06-22 7:24:30 AM

Sample bulk lot ref:
CK

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
15.03 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
0.807 %

Result Emulation:
Off

Concentration:
0.0081 %Vol

Span :
3.030

Uniformity:
1.03

Result units:
Volume

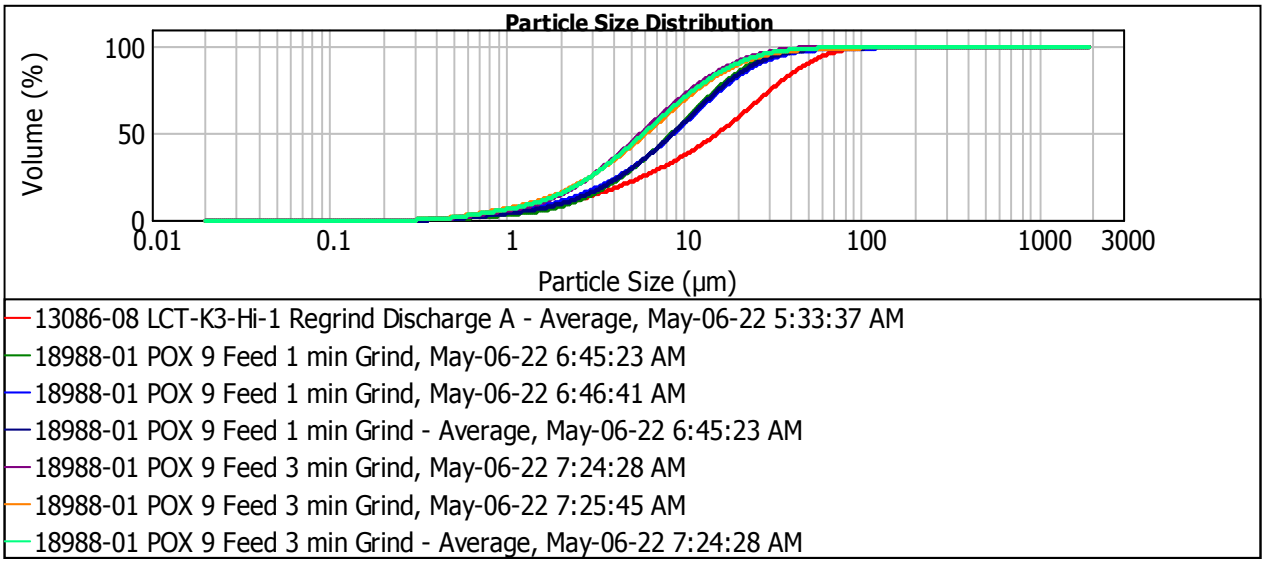
Specific Surface Area:
1.83 m²/g

Surface Weighted Mean D[3,2]:
3.281 um

Vol. Weighted Mean D[4,3]:
9.164 um

---

d(0.1): 1.479 um **d(0.5):** 5.928 um **d(0.8):** 13.160 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	6.79	11.482	75.55	120.226	99.76	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	8.12	13.183	80.05	138.038	99.87	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	9.70	15.136	84.07	158.489	99.95	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	11.64	17.378	87.56	181.970	100.00	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	14.02	19.953	90.51	208.930	100.00	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	16.88	22.909	92.94	239.883	100.00	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	20.24	26.303	94.87	275.423	100.00	2884.032	100.00
0.026	0.00	0.275	0.00	2.884	24.07	30.200	96.36	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	0.02	3.311	28.35	34.674	97.47	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	0.17	3.802	33.03	39.811	98.26	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	0.54	4.365	38.05	45.709	98.79	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	1.11	5.012	43.33	52.481	99.12	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	1.82	5.754	48.80	60.256	99.32	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	2.66	6.607	54.38	69.183	99.44	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	3.58	7.586	59.95	79.433	99.51	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	4.57	8.710	65.40	91.201	99.58	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	5.63	10.000	70.64	104.713	99.66	1096.478	100.00		

Operator notes:

Result Analysis Report

Sample Name:
18988-01POX 9 Residue 3.6 min per

SOP Name:
Defaultar1

Measured:
May-09-22 8:03:33 AM

Sample Source & type:

Measured by:
lr_malvern1

Analysed:
May-09-22 8:03:35 AM

Sample bulk lot ref:

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
16.10 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
1.420 %

Result Emulation:
Off

Concentration:
0.0089 %Vol

Span :
2.471

Uniformity:
0.844

Result units:
Volume

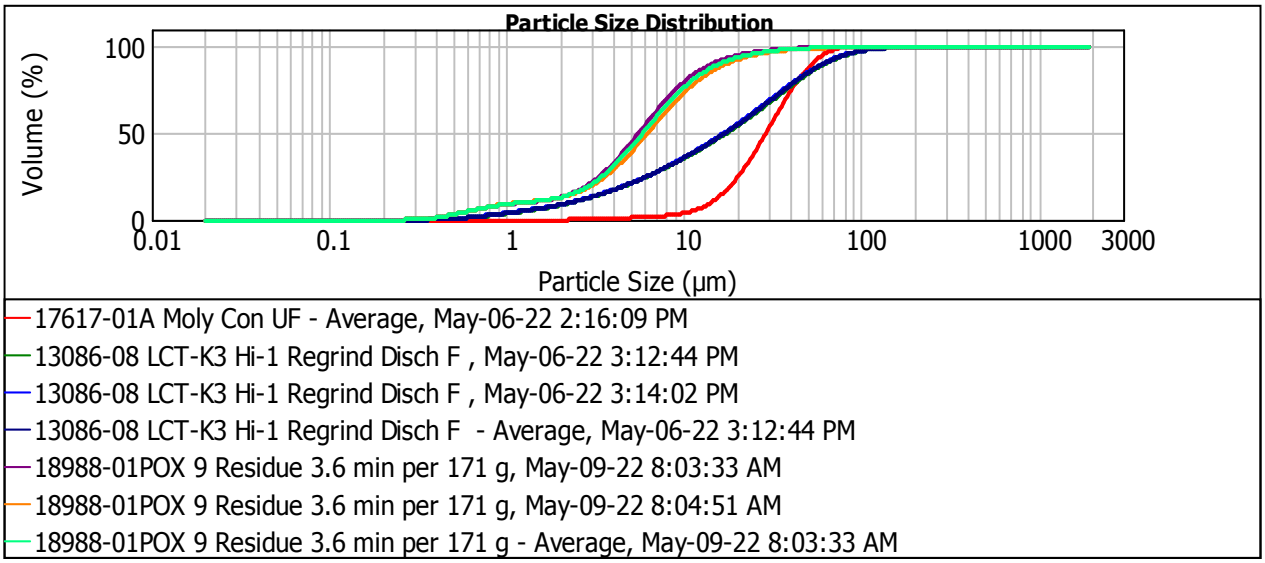
Specific Surface Area:
2.05 m²/g

Surface Weighted Mean D[3,2]:
2.932 um

Vol. Weighted Mean D[4,3]:
8.158 um

---

d(0.1): 1.208 um **d(0.5):** 5.852 um **d(0.8):** 10.913 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	9.58	11.482	81.77	120.226	99.86	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	10.17	13.183	85.96	138.038	99.90	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	10.73	15.136	89.29	158.489	99.94	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	11.42	17.378	91.88	181.970	99.98	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	12.45	19.953	93.86	208.930	100.00	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	14.00	22.909	95.38	239.883	100.00	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	16.28	26.303	96.53	275.423	100.00	2884.032	100.00
0.026	0.00	0.275	0.01	2.884	19.44	30.200	97.42	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	0.12	3.311	23.59	34.674	98.10	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	0.62	3.802	28.76	39.811	98.62	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	1.44	4.365	34.87	45.709	99.01	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	2.56	5.012	41.74	52.481	99.29	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	3.89	5.754	49.09	60.256	99.49	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	5.30	6.607	56.59	69.183	99.63	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	6.66	7.586	63.89	79.433	99.72	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	7.85	8.710	70.66	91.201	99.78	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	8.83	10.000	76.67	104.713	99.83	1096.478	100.00		

Operator notes:

Result Analysis Report

Sample Name:
18988-01 Residue - Average

SOP Name:
Defaultar

Measured:
May-17-22 10:39:13 AM

Sample Source & type:
CN 11

Measured by:
lr_malvern1

Analysed:
May-17-22 10:39:15 AM

Sample bulk lot ref:
KS

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
14.76 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
1.617 %

Result Emulation:
Off

Concentration:
0.0071 %Vol

Span :
3.158

Uniformity:
1.16

Result units:
Volume

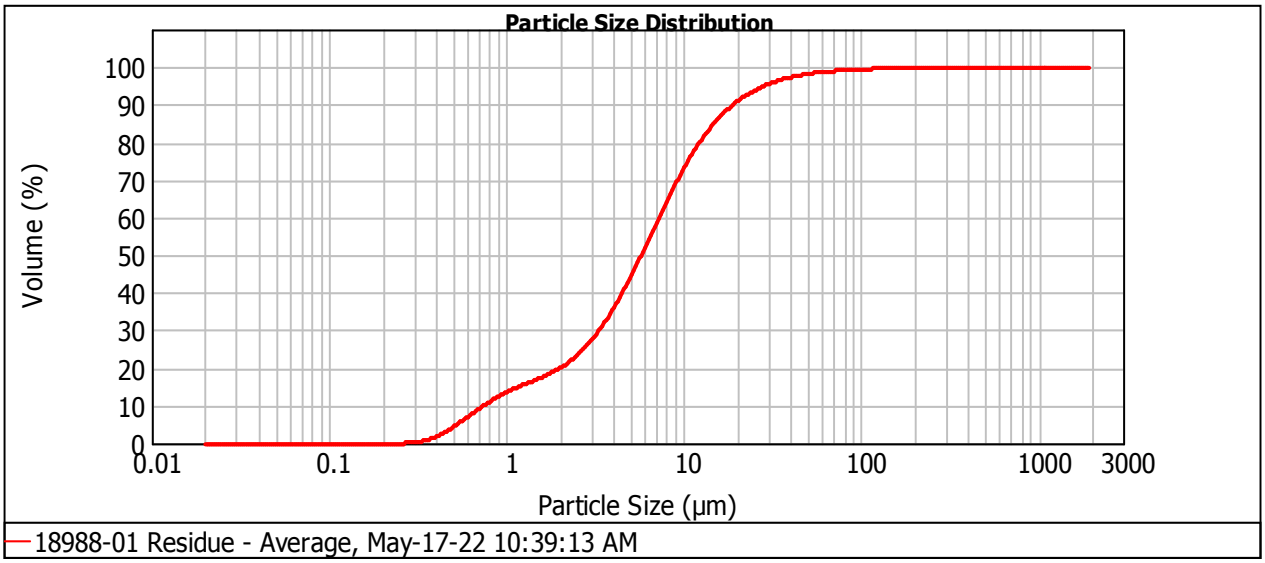
Specific Surface Area:
2.51 m²/g

Surface Weighted Mean D[3,2]:
2.386 um

Vol. Weighted Mean D[4,3]:
9.334 um

---

d(0.1): 0.746 um **d(0.5):** 5.736 um **d(0.8):** 12.240 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	14.48	11.482	78.00	120.226	99.60	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	15.66	13.183	82.14	138.038	99.72	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	16.76	15.136	85.64	158.489	99.82	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	17.95	17.378	88.54	181.970	99.90	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	19.37	19.953	90.90	208.930	99.95	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	21.18	22.909	92.81	239.883	99.98	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	23.48	26.303	94.34	275.423	100.00	2884.032	100.00
0.026	0.00	0.275	0.03	2.884	26.36	30.200	95.57	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	0.24	3.311	29.89	34.674	96.55	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	0.97	3.802	34.10	39.811	97.32	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	2.13	4.365	38.94	45.709	97.92	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	3.70	5.012	44.34	52.481	98.37	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	5.56	5.754	50.14	60.256	98.72	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	7.58	6.607	56.15	69.183	98.97	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	9.60	7.586	62.14	79.433	99.16	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	11.46	8.710	67.90	91.201	99.32	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	13.10	10.000	73.23	104.713	99.47	1096.478	100.00		

Operator notes:

Result Analysis Report

Sample Name:
18988-01 Residue - Average

SOP Name:
Defaultar

Measured:
May-17-22 10:51:05 AM

Sample Source & type:
CN 12

Measured by:
lr_malvern1

Analysed:
May-17-22 10:51:07 AM

Sample bulk lot ref:
KS

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
16.36 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
1.557 %

Result Emulation:
Off

Concentration:
0.0082 %Vol

Span :
3.279

Uniformity:
1.27

Result units:
Volume

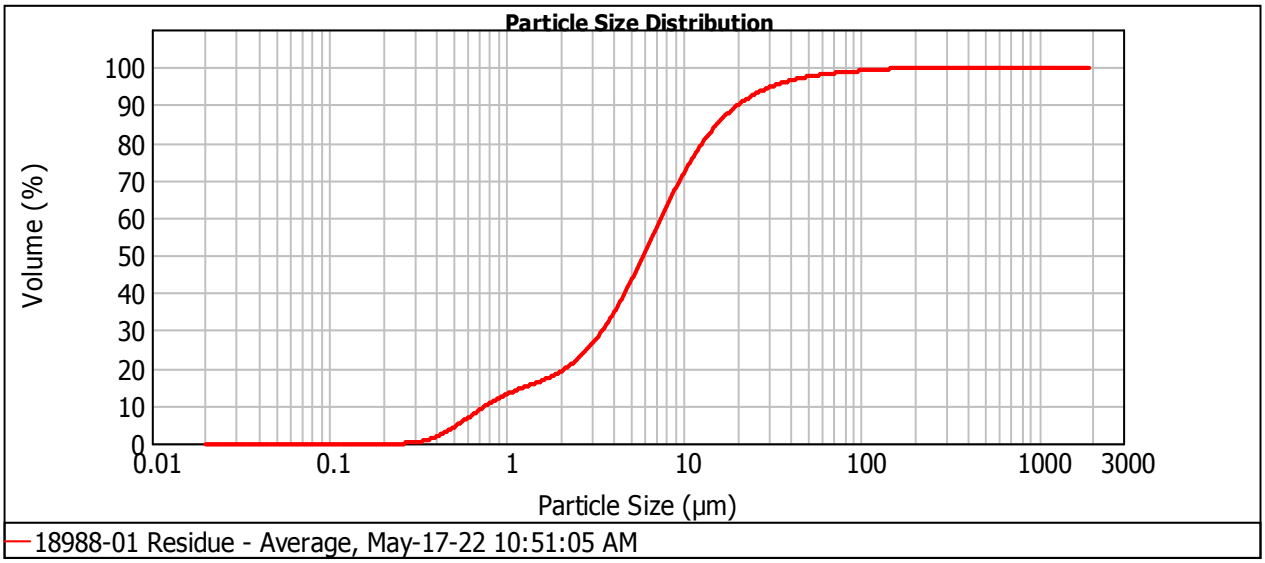
Specific Surface Area:
2.43 m²/g

Surface Weighted Mean D[3,2]:
2.465 um

Vol. Weighted Mean D[4,3]:
10.332 um

---

d(0.1): 0.768 um **d(0.5):** 5.909 um **d(0.8):** 12.732 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	13.81	11.482	76.81	120.226	99.33	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	14.90	13.183	80.99	138.038	99.51	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	15.93	15.136	84.53	158.489	99.66	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	17.03	17.378	87.46	181.970	99.78	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	18.39	19.953	89.85	208.930	99.87	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	20.12	22.909	91.79	239.883	99.94	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	22.36	26.303	93.35	275.423	99.98	2884.032	100.00
0.026	0.00	0.275	0.03	2.884	25.20	30.200	94.61	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	0.24	3.311	28.69	34.674	95.63	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	0.95	3.802	32.86	39.811	96.45	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	2.08	4.365	37.68	45.709	97.11	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	3.59	5.012	43.06	52.481	97.63	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	5.38	5.754	48.86	60.256	98.05	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	7.31	6.607	54.87	69.183	98.40	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	9.22	7.586	60.87	79.433	98.68	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	10.99	8.710	66.65	91.201	98.92	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	12.53	10.000	72.01	104.713	99.13	1096.478	100.00		

Operator notes:

Result Analysis Report

Sample Name:
18988-01 Residue - Average

SOP Name:
Defaultar

Measured:
May-17-22 11:10:53 AM

Sample Source & type:
CN 13

Measured by:
lr_malvern1

Analysed:
May-17-22 11:10:55 AM

Sample bulk lot ref:
KS

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
13.78 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
1.467 %

Result Emulation:
Off

Concentration:
0.0073 %Vol

Span :
2.953

Uniformity:
0.948

Result units:
Volume

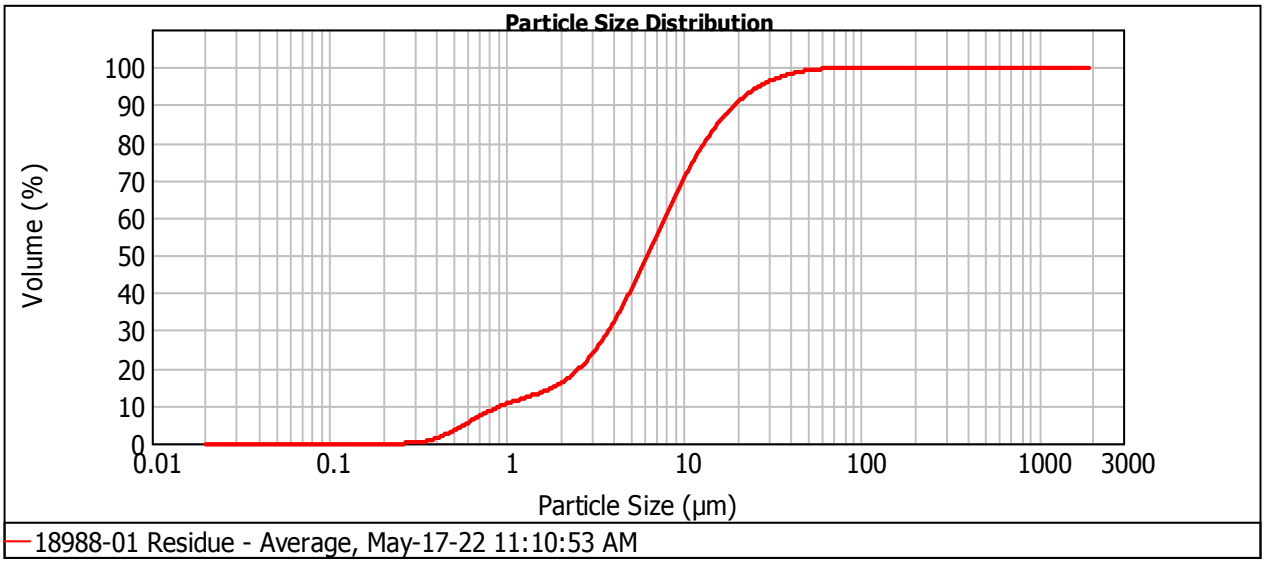
Specific Surface Area:
2.17 m²/g

Surface Weighted Mean D[3,2]:
2.771 um

Vol. Weighted Mean D[4,3]:
8.983 um

---

d(0.1): 0.944 um **d(0.5):** 6.216 um **d(0.8):** 13.034 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	11.12	11.482	75.72	120.226	99.95	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	12.01	13.183	80.36	138.038	99.97	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	12.89	15.136	84.38	158.489	99.99	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	13.93	17.378	87.80	181.970	100.00	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	15.28	19.953	90.63	208.930	100.00	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	17.08	22.909	92.94	239.883	100.00	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	19.44	26.303	94.79	275.423	100.00	2884.032	100.00
0.026	0.00	0.275	0.02	2.884	22.41	30.200	96.26	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	0.16	3.311	26.05	34.674	97.39	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	0.72	3.802	30.35	39.811	98.24	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	1.64	4.365	35.28	45.709	98.87	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	2.88	5.012	40.74	52.481	99.30	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	4.35	5.754	46.61	60.256	99.58	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	5.92	6.607	52.71	69.183	99.75	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	7.47	7.586	58.86	79.433	99.84	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	8.88	8.710	64.86	91.201	99.89	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	10.10	10.000	70.53	104.713	99.92	1096.478	100.00		

Operator notes:

Result Analysis Report

Sample Name:
18988-01 Residue - Average

SOP Name:
Defaultar

Measured:
May-17-22 11:22:09 AM

Sample Source & type:
CN 14

Measured by:
lr_malvern1

Analysed:
May-17-22 11:22:11 AM

Sample bulk lot ref:
KS

Result Source:
Averaged

Particle Name:
Default

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Enhanced

Particle RI:
1.520

Absorption:
0.1

Size range:
0.020 to 2000.000 um

Obscuration:
14.37 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
1.453 %

Result Emulation:
Off

Concentration:
0.0078 %Vol

Span :
2.890

Uniformity:
0.927

Result units:
Volume

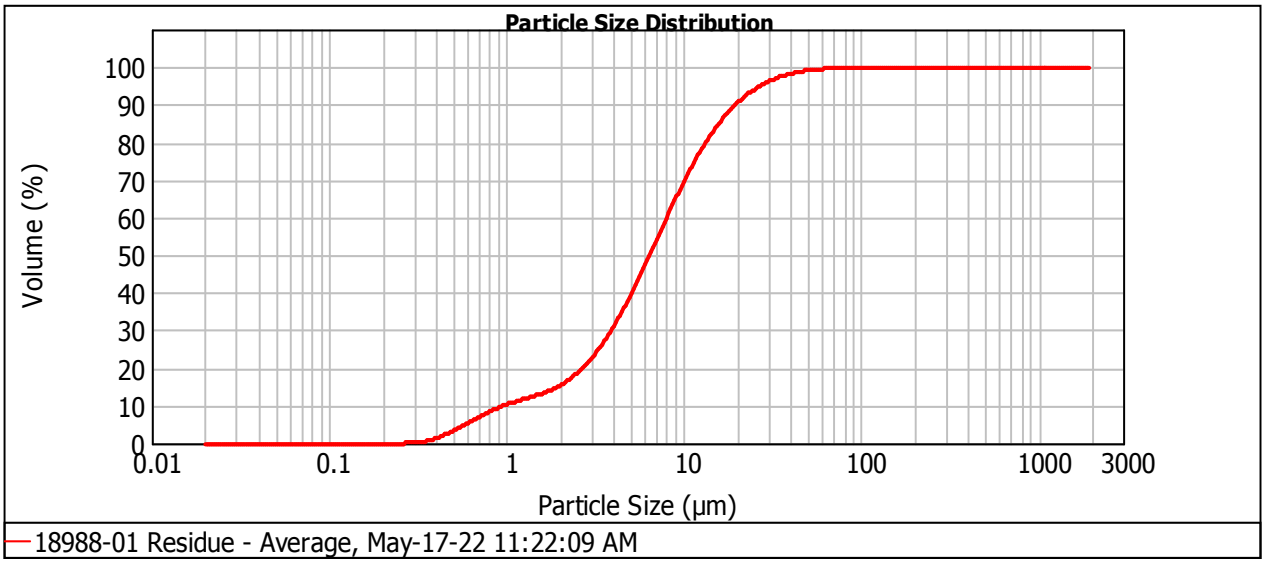
Specific Surface Area:
2.12 m²/g

Surface Weighted Mean D[3,2]:
2.826 um

Vol. Weighted Mean D[4,3]:
9.111 um

---

d(0.1): 0.969 um **d(0.5):** 6.392 um **d(0.8):** 13.240 um



Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %	Size (µm)	Vol Under %
0.010	0.00	0.105	0.00	1.096	10.87	11.482	75.06	120.226	99.96	1258.925	100.00
0.011	0.00	0.120	0.00	1.259	11.72	13.183	79.86	138.038	99.99	1445.440	100.00
0.013	0.00	0.138	0.00	1.445	12.55	15.136	84.03	158.489	100.00	1659.587	100.00
0.015	0.00	0.158	0.00	1.660	13.53	17.378	87.57	181.970	100.00	1905.461	100.00
0.017	0.00	0.182	0.00	1.905	14.80	19.953	90.51	208.930	100.00	2187.762	100.00
0.020	0.00	0.209	0.00	2.188	16.50	22.909	92.90	239.883	100.00	2511.886	100.00
0.023	0.00	0.240	0.00	2.512	18.73	26.303	94.80	275.423	100.00	2884.032	100.00
0.026	0.00	0.275	0.02	2.884	21.57	30.200	96.29	316.228	100.00	3311.311	100.00
0.030	0.00	0.316	0.16	3.311	25.07	34.674	97.42	363.078	100.00	3801.894	100.00
0.035	0.00	0.363	0.72	3.802	29.25	39.811	98.26	416.869	100.00	4365.158	100.00
0.040	0.00	0.417	1.62	4.365	34.08	45.709	98.86	478.630	100.00	5011.872	100.00
0.046	0.00	0.479	2.84	5.012	39.48	52.481	99.27	549.541	100.00	5754.399	100.00
0.052	0.00	0.550	4.28	5.754	45.34	60.256	99.54	630.957	100.00	6606.934	100.00
0.060	0.00	0.631	5.82	6.607	51.49	69.183	99.72	724.436	100.00	7585.776	100.00
0.069	0.00	0.724	7.33	7.586	57.73	79.433	99.83	831.764	100.00	8709.636	100.00
0.079	0.00	0.832	8.71	8.710	63.86	91.201	99.89	954.993	100.00	10000.000	100.00
0.091	0.00	0.955	9.89	10.000	69.69	104.713	99.93	1096.478	100.00		

Operator notes:

SGS Minerals

Malvern

Measurement Details

Project Number	Project #18988-01
Sample Name	Average of '18988-01 POX 9 Feed'
Operator	initials

Measurement Details

Measurement Date Time	05/05/2022 12:16:51 PM
Result Source	Averaged
SOP File Name	RheoDefault - Manual Clean.msop
Record Number	98

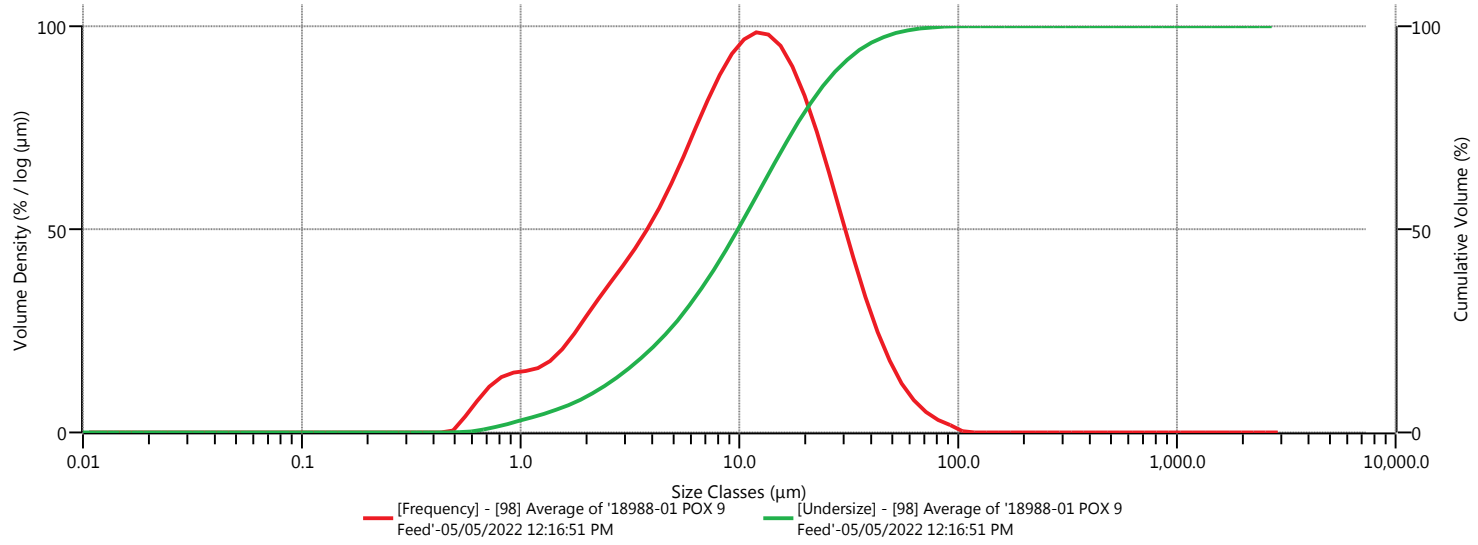
Analysis

Particle Name	Default
Particle Refractive Index	1.520
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.43 %
Laser Obscuration	15.77 %

Result

Concentration	0.0114 %
Span	2.704
Uniformity	0.857
Dv (10)	2.19 µm
Dv (50)	9.86 µm
Dv (80)	20.6 µm

Frequency (ISO) and Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under
0.0100	0.00	0.0606	0.00	0.367	0.00	1.96	8.56	11.9	57.79	63.2	99.24	383	100.00	2320	100.00
0.0114	0.00	0.0689	0.00	0.418	0.00	2.23	10.24	13.5	63.28	71.8	99.59	435	100.00	2640	100.00
0.0129	0.00	0.0784	0.00	0.475	0.01	2.53	12.15	15.3	68.68	81.7	99.81	495	100.00	3000	100.00
0.0147	0.00	0.0891	0.00	0.540	0.08	2.88	14.30	17.4	73.87	92.9	99.94	563	100.00		
0.0167	0.00	0.101	0.00	0.614	0.35	3.27	16.67	19.8	78.72	106	99.99	640	100.00		
0.0190	0.00	0.115	0.00	0.699	0.84	3.72	19.30	20.0	79.01	120	100.00	728	100.00		
0.0216	0.00	0.131	0.00	0.795	1.50	4.23	22.20	22.6	83.11	137	100.00	828	100.00		
0.0246	0.00	0.149	0.00	0.904	2.28	4.82	25.42	25.7	86.98	155	100.00	942	100.00		
0.0280	0.00	0.170	0.00	1.00	2.92	5.48	28.99	29.2	90.27	177	100.00	1070	100.00		
0.0318	0.00	0.193	0.00	1.03	3.11	6.23	32.94	33.2	92.96	201	100.00	1220	100.00		
0.0362	0.00	0.219	0.00	1.17	3.96	7.08	37.28	37.7	95.09	229	100.00	1390	100.00		
0.0412	0.00	0.250	0.00	1.33	4.88	8.06	42.00	42.9	96.70	260	100.00	1580	100.00		
0.0468	0.00	0.284	0.00	1.51	5.91	9.16	47.04	48.8	97.88	296	100.00	1790	100.00		
0.0533	0.00	0.323	0.00	1.72	7.12	10.4	52.34	55.5	98.70	337	100.00	2040	100.00		

APPENDIX C – ASSAYS

APPENDIX C
ASSAYS

Reference
Activation Laboratories Ltd. Certificates of Analyses Burveau Veritas Commodities Canada Ltd. Certificates of Analyses

TABLE C-1
HEAD ASSAYS

Sample	Element									
	Cu	Pb	Zn	Fe	Au	Ag	S	As	SO4-	S2-
JL-1 Comp Hd 1	0.14	2.46	4.02	10.0	7.08	59.6	10.7	4.65		
JL-1 Comp Hd 2	0.14	2.51	4.00	10.2	7.08	60.0	11.3	5.86		
Average	**0.14**	**2.49**	**4.01**	**10.1**	**7.08**	**59.8**	**11.0**	**5.25**		
Bulk Con 1 Hd 1	0.14	2.25	6.40	27.3	23.1	55.0	27.2	2.93	0.09	27.1
Bulk Con 1 Hd 2	0.13	2.25	5.80	26.6	23.0	53.0	27.6	2.85	0.08	27.5
Average	**0.14**	**2.25**	**6.10**	**27.0**	**23.0**	**54.0**	**27.4**	**2.89**	**0.09**	**27.3**
Bulk Con 2 Hd 1	0.14	1.99	5.30	25.4	19.3	49.0	24.0	2.43	0.10	23.9
Bulk Con 2 Hd 2	0.13	1.99	5.00	25.2	20.0	64.0	23.5	2.38	0.10	23.4
Average	**0.14**	**1.99**	**5.15**	**25.3**	**19.7**	**56.5**	**23.8**	**2.40**	**0.10**	**23.7**

TABLE C-2

COMPARISON OF RECALCULATED AND MEASURED HEADS

JL-1 Composite

Test	Assay - percent or g/tonne						
	Pb	Zn	Fe	Au	Ag	S	As
1	2.25	3.58	9.51	9.67	75.5	10.8	6.5
2	2.62	3.25	8.74	7.69	71.5	11.7	6.4
14	2.33	3.68	10.27	6.67	56.3	11.4	6.7
15	2.59	3.84	9.28	6.50	60.6	11.4	6.1
16	2.85	3.74	9.41	6.28	61.1	11.5	6.0
17	2.34	3.73	8.21	6.69	59.1	11.4	6.4
18	2.38	4.06	10.49	5.16	62.4	11.2	6.2
19	2.31	3.72	10.41	6.64	60.7	11.3	5.9
20	2.30	3.75	10.45	7.24	56.3	11.5	5.5
21	2.27	3.71	10.03	6.82	58.5	11.1	5.8
22	2.23	3.81	10.38	6.75	58.1	10.7	5.9
23	2.37	3.91	10.76	6.51	57.7	11.0	6.0
24	2.28	3.54	10.17	6.48	59.2	10.7	5.5
25	2.33	3.66	10.45	6.45	54.0	10.9	5.8
Calculated Head	2.39	3.71	9.90	6.83	60.8	11.2	6.0
Measured Head	2.49	4.01	10.10	7.08	59.8	11.0	5.9

Report No.: **A21-14797-Final2**
Report Date: **26-Aug-21**
Date Submitted: **06-Aug-21**
Your Reference: **BL801**

Base Metallurgical Laboratories Ltd.
4-1425 Cariboo Place
Kamloops BC
Canada

ATTN: Tom Shouldice

CERTIFICATE OF ANALYSIS

1 Pulp samples were submitted for analysis.

The following analytical package(s) were requested:		Testing Date:
1E3-Kamloops	QOP AquaGeo (Aqua Regia ICPOES)	

REPORT **A21-14797-Final2**

Notes:

Values which exceed the upper limit should be assayed for accurate numbers.

SCC Accredited LAB Accrédité CCN TM

LabID: 790

CERTIFIED BY:

Emmanuel Eseme , Ph.D.
Quality Control Coordinator

ACTIVATION LABORATORIES LTD.
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TELEPHONE +250 573-4484 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Kamloops@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	As	Pb
Unit Symbol	%	%
Lower Limit	0.01	0.003
Method Code	ICP-OES	ICP-OES
BL801 GV204	13.9	2.54

Analyte Symbol	As	Pb
Unit Symbol	%	%
Lower Limit	0.01	0.003
Method Code	ICP-OES	ICP-OES
OREAS 134b (AQUA REGIA) Meas	0.03	13.4
OREAS 134b (AQUA REGIA) Cert		13.3
MP-1b Meas	2.30	2.09
MP-1b Cert	2.30	2.09
OREAS 98 (Aqua Regia) Meas		0.033
OREAS 98 (Aqua Regia) Cert		0.034
CZN-4 Meas	0.04	0.189
CZN-4 Cert	0.0356	0.1861
PTC-1b Meas	0.03	0.085
PTC-1b Cert	0.02	0.080
CCU-1e Meas	0.11	0.708
CCU-1e Cert	0.101	0.703
Oreas 621 (Aqua Regia) Meas	< 0.01	1.42
Oreas 621 (Aqua Regia) Cert	0.00750	1.36
Method Blank	< 0.01	< 0.003

Quality Analysis ... *Innovative Technologies*

Report No.: **A21-17086**
Report Date: **16-Sep-21**
Date Submitted: **09-Sep-21**
Your Reference: **BL801**

Base Metallurgical Laboratories Ltd.
4-1425 Cariboo Place
Kamloops BC
Canada

ATTN: Tom Shouldice

CERTIFICATE OF ANALYSIS

2 Pulp samples were submitted for analysis.

The following analytical package(s) were requested:		Testing Date:
1E3-Kamloops	QOP AquaGeo (Aqua Regia ICPOES)	2021-09-14 00:52:51

REPORT **A21-17086**

Notes:

Values which exceed the upper limit should be assayed for accurate numbers.

SCC Accredited LAB Accrédité CCN TM

LabID: 790

CERTIFIED BY:

Emmanuel Eseme , Ph.D.
Quality Control Coordinator

ACTIVATION LABORATORIES LTD.
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TELEPHONE +250 573-4484 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Kamloops@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Lower Limit	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Method Code	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
BL801 Bulk Con 1 Hd 1	42.1	295	1280	136	13	298	> 5000	> 10000	0.10	> 10000	< 10	< 10	< 0.5	19	0.96	34	511	18.5	< 10	26	0.04	< 10	0.06
BL801 Bulk Con 2 Hd 1	35.4	239	1310	245	40	808	> 5000	> 10000	0.18	> 10000	< 10	< 10	< 0.5	18	1.82	42	1400	17.8	< 10	20	0.07	< 10	0.12

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Th	Te	Tl	U	V	W	Y	Zr
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.001	0.001	0.01	2	1	1	0.01	20	1	2	10	1	10	1	1
Method Code	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
BL801 Bulk Con 1 Hd 1	0.011	0.008	12.1	852	< 1	18	< 0.01	< 20	< 1	< 2	< 10	8	27	1	24
BL801 Bulk Con 2 Hd 1	0.014	0.013	11.5	739	< 1	32	< 0.01	< 20	< 1	< 2	< 10	10	25	2	19

Analyte Symbol	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Lower Limit	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Method Code	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
OREAS 904 (Aqua Regia) Meas	0.3	< 0.5	5990	436	2	33	9	23	1.84	92		76	7.1	4	0.04	89	22	6.11	< 10		0.87	38	0.20
OREAS 904 (Aqua Regia) Cert	0.366	0.0580	6300	410	2.02	36.6	8.49	22.4	1.25	91.0		68.0	6.54	3.74	0.0404	82.0	17.5	6.40	3.40		0.603	33.9	0.143
OREAS 924 (AQUA REGIA) Meas	1.7	< 0.5	5330				86	349	2.78	13					0.38	21		5.93					1.45
OREAS 924 (AQUA REGIA) Cert	1.92	0.46	5610				92	370	2.76	7.80					0.318	22.7		5.88					1.45
OREAS 520 (Aqua Regia) Meas			3070	2120	54	66	4	20	1.56	161			0.6	3	3.54	183	32	16.2	10		0.47	66	1.15
OREAS 520 (Aqua Regia) Cert			2960	2280	62.0	73.0	5.22	20.7	1.56	152			0.540	2.90	3.84	196	37.4	15.74	13.7		0.506	83.0	1.14
OREAS 907 (Aqua Regia) Meas	1.5	0.8	6290	344	4	5	32	141	1.25	41		232	1.0	25	0.27	47	8	7.83	20		0.37	38	0.23
OREAS 907 (Aqua Regia) Cert	1.30	0.540	6370	330	5.64	4.74	34.1	139	0.945	37.0		225	0.870	22.3	0.280	43.7	8.59	8.18	14.7		0.286	36.1	0.221
Oreas 621 (Aqua Regia) Meas	70.2	295	3760	549	13	25	> 5000	> 10000	1.81	103			0.6	6	1.64	30	30	3.47	10	4	0.36	18	0.45
Oreas 621 (Aqua Regia) Cert	68.0	278	3660	520	13.3	25.8	13600	51700	1.60	75.0			0.530	3.85	1.65	27.9	31.3	3.43	9.29	3.93	0.333	19.4	0.436
OREAS 263 (Aqua Regia) Meas	0.2	< 0.5	92	530	< 1	74	34	127	1.99	43		178	1.4	2	1.04	33	54	3.79	< 10	< 1	0.39		0.63
OREAS 263 (Aqua Regia) Cert	0.285	0.270	87.0	490	0.570	72.0	34.0	127	1.29	30.8		175	1.22	0.570	1.03	31.0	48.0	3.68	4.92	0.170	0.288		0.593
Method Blank	< 0.2	< 0.5	< 1	< 5	< 1	< 1	< 2	< 2	< 0.01	13	< 10	11	< 0.5	< 2	< 0.01	< 1	< 1	< 0.01	< 10	< 1	< 0.01	< 10	< 0.01

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Th	Te	Tl	U	V	W	Y	Zr
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.001	0.001	0.01	2	1	1	0.01	20	1	2	10	1	10	1	1
Method Code	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
OREAS 904 (Aqua Regia) Meas		0.095	0.04	4	4	19		< 20		< 2	< 10	30		18	
OREAS 904 (Aqua Regia) Cert		0.0950	0.0340	0.780	3.83	16.5		7.56		0.150	5.20	21.7		17.2	
OREAS 924 (AQUA REGIA) Meas			0.78	3											
OREAS 924 (AQUA REGIA) Cert			0.810	0.60											
OREAS 520 (Aqua Regia) Meas	0.062	0.071	0.91	7	10	28	0.18	< 20	1	< 2	< 10	227	23	12	31
OREAS 520 (Aqua Regia) Cert	0.0520	0.0740	1.03	1.97	11.8	36.0	0.135	8.03	0.33	0.0900	14.9	247	29.6	14.3	28.0
OREAS 907 (Aqua Regia) Meas	0.099	0.023	0.06	5	2	14	0.03	< 20	< 1	< 2	< 10	6	< 10	7	22
OREAS 907 (Aqua Regia) Cert	0.0860	0.0240	0.0660	2.28	2.16	11.7	0.0170	8.04	0.230	0.120	2.15	5.12	0.980	6.52	43.7
Oreas 621 (Aqua Regia) Meas	0.186	0.031	4.71	102	2	17		< 20		< 2	< 10	12	< 10	8	25
Oreas 621 (Aqua Regia) Cert	0.160	0.0335	4.50	107	2.20	18.9		5.91		0.770	1.63	10.9	1.00	6.87	55.0
OREAS 263 (Aqua Regia) Meas	0.094	0.042	0.12	9	4	19		< 20	< 1	2	< 10	28		13	
OREAS 263 (Aqua Regia) Cert	0.0790	0.0410	0.126	7.37	3.52	16.9		10.6	0.210	0.530	1.28	22.8		12.0	
Method Blank	0.016	< 0.001	< 0.01	< 2	< 1	< 1	< 0.01	< 20	< 1	< 2	< 10	< 1	< 10	< 1	< 1

Quality Analysis ... *Innovative Technologies*

Report No.: **A22-01065**
Report Date: **11-Mar-22**
Date Submitted: **28-Jan-22**
Your Reference: **BL801**

Base Metallurgical Laboratories Ltd.
4-1425 Cariboo Place
Kamloops BC
Canada

ATTN: Tom Shouldice

CERTIFICATE OF ANALYSIS

1 Pulp samples were submitted for analysis.

The following analytical package(s) were requested:		Testing Date:
1G-Hg CV	QOP HgFIMS (Hg-Cold Vapour AA)	2022-03-10 18:32:05
4F-Cl	QOP INAA – Short Lived (INAA)	2022-03-04 12:25:54

REPORT **A22-01065**

Notes:

Values which exceed the upper limit should be assayed for accurate numbers.

SCC Accredited LAB Accrédité CCN TM

LabID: 266

CERTIFIED BY:

Emmanuel Eseme , Ph.D.
Quality Control Coordinator

ACTIVATION LABORATORIES LTD.
41 Bittern Street, Ancaster, Ontario, Canada, L9G 4V5
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E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	Cl	Mass	Hg
Unit Symbol	%	g	ppb
Lower Limit	0.01		5
Method Code	INAA	INAA	1G
BL801 POX 13	0.02	1.01	37500

Analyte Symbol	Cl	Hg
Unit Symbol	%	ppb
Lower Limit	0.01	5
Method Code	INAA	1G
MAG-1 (Depleted) Meas	3.12	
MAG-1 (Depleted) Cert	3.10	
NIST 1632c Meas	0.10	
NIST 1632c Cert	0.110	
Oreas 610 (Aqua Regia) Meas		799
Oreas 610 (Aqua Regia) Cert		800
Method Blank		< 5

Your Project #: ME2103805
Site Location: RICHMOND
Your C.O.C. #: 08497848

Attention: Jennifer Lou

Bureau Veritas Commodities Canada Ltd.
ACME
9050 Shaughnessy St.
Vancouver, BC
CANADA V6P 6E5

Report Date: 2021/09/30
Report #: R3078591
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C171715
Received: 2021/09/24, 12:20

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Chloride in Soil (5:1 DI extract)	2	2021/09/28	2021/09/29	BBY6SOP-00011	SM 23 4500-Cl- E m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Your Project #: ME2103805
Site Location: RICHMOND
Your C.O.C. #: 08497848

Attention: Jennifer Lou

Bureau Veritas Commodities Canada Ltd.
ACME
9050 Shaughnessy St.
Vancouver, BC
CANADA V6P 6E5

Report Date: 2021/09/30
Report #: R3078591
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C171715
Received: 2021/09/24, 12:20

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (604) 734 7276
==========
This report has been generated and distributed using a secure automated process.
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RESULTS OF CHEMICAL ANALYSES OF SOIL

BV Labs ID		AGR872	AGR873		
Sampling Date					
COC Number		08497848	08497848		
	UNITS	BL801 BULK CON 1	BL801 BULK CON 2	RDL	QC Batch
ANIONS					
Chloride (Cl)	ug/g	162	191	100	A370585
RDL = Reportable Detection Limit					

GENERAL COMMENTS

Results relate only to the items tested.

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BV Labs Job #: C171715
Report Date: 2021/09/30

Bureau Veritas Commodities Canada Ltd.
Client Project #: ME2103805
Site Location: RICHMOND

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A370585	BO3	Matrix Spike	Chloride (Cl)	2021/09/29		101	%	75 - 125
A370585	BO3	Spiked Blank	Chloride (Cl)	2021/09/29		105	%	75 - 125
A370585	BO3	Method Blank	Chloride (Cl)	2021/09/29	<100		ug/g	
A370585	BO3	RPD	Chloride (Cl)	2021/09/29	0.58		%	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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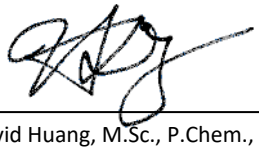
BV Labs Job #: C171715
Report Date: 2021/09/30

Bureau Veritas Commodities Canada Ltd.
Client Project #: ME2103805
Site Location: RICHMOND

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

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BUREAU VERITAS MINERAL LABORATORIES Canada

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Bureau Veritas Commodities Canada Ltd.
9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: **Bureau Veritas Commodities Canada Ltd.**
11620 Horseshoe Way
Richmond British Columbia V7A 4V5 Canada

Submitted By:	Met Assays
Receiving Lab:	Richmond Metlab
Received:	May 20, 2021
Analysis Start:	May 21, 2021
Report Date:	May 27, 2021
Page:	1 of 2

CERTIFICATE OF ANALYSIS RBC21000169.1

CLIENT JOB INFORMATION

Project:	None Given
Shipment ID:	
P.O. Number	ME2103805, 21E0370
Number of Samples:	1

SAMPLE DISPOSAL

STOR-PLP Store After 90 days Invoice for Storage

Bureau Veritas does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Procedure Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
FA530	1	Lead collection fire assay 30G fusion - Grav finish	30	Completed	VAN
MA270	1	4 Acid digestion - ICP-ES/ICP-MS analysis	0.5	Completed	VAN
GC820	1	Copper Assay by Classical Titration	0.5	Completed	VAN
LF300	1	LiBO2/Li2B4O7 fusion ICP-ES analysis	0.1	Completed	VAN
TC000	1	Analysis by Leco	0.1	Completed	VAN
TC005-ORG	1	Org/C: Total C minus Graphite C & CO2	0.1	Completed	VAN
TC008	1	Sulphate-S by ignition and Sulphide-S by difference	0.1	Completed	VAN

ADDITIONAL COMMENTS

Invoice To: Bureau Veritas Commodities Canada Ltd.
11620 Horseshoe Way
Richmond British Columbia V7A 4V5
Canada

CC:

BRITISH COLUMBIA CERTIFIED ASSAYER
Gerald Chik
Sample Preparation Manager

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Client: **Bureau Veritas Commodities Canada Ltd.**
11620 Horseshoe Way
Richmond British Columbia V7A 4V5 Canada

Project: None Given
Report Date: May 27, 2021

CERTIFICATE OF ANALYSIS RBC21000169.1

		Method	FA530	FA530	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270
		Analyte	Au	Ag	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Th	Sr	Cd	Sb	Bi	V	Ca
		Unit	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
		MDL	0.9	20	0.5	0.5	0.5	5	0.5	0.5	1	5	0.01	5	0.5	0.5	5	0.5	0.5	0.5	10	0.01
BL801 01 Combined Con	Pulp		19.2	58	59.5	972.4	15515.4	15992	37.3	823.4	60	340	29.95>100000		1.5	6.9	58	99.9	873.6	21.6	23	2.92

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Project: None Given
Report Date: May 27, 2021

CERTIFICATE OF ANALYSIS RBC21000169.1

	Method	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270
	Analyte	P	La	Cr	Mg	Ba	Ti	Al	Na	K	W	Zr	Ce	Sn	Y	Nb	Ta	Be	Sc	Li	S
	Unit	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
	MDL	0.01	0.5	1	0.01	5	0.001	0.01	0.01	0.01	0.5	0.5	5	0.5	0.5	0.5	0.5	5	1	0.5	0.05
BL801 01 Combined Con	Pulp	0.02	14.9	1229	0.22	94	0.022	0.95	0.03	0.46	4.8	16.3	31	18.3	3.4	2.0	<0.5	<5	<1	7.1	21.51

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Report Date: May 27, 2021

CERTIFICATE OF ANALYSIS RBC21000169.1

	Method	MA270	MA270	MA270	GC820	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	TC000	TC000
	Analyte	Rb	Hf	Se	Cu	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	BaO	LOI	Sum	TOT/C	TOT/S
	Unit	ppm	ppm	ppm	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
	MDL	0.5	0.5	5	1	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.002	0.01	0.1	0.01	0.02	0.02
BL801 01 Combined Con	Pulp	19.4	0.8	<5	<1	15.03	1.79	44.51	0.31	4.09	0.03	0.55	0.25	0.01	0.04	0.231	<0.01	29.6	96.55	0.87	25.34

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11620 Horseshoe Way
Richmond British Columbia V7A 4V5 Canada

Project: None Given
Report Date: May 27, 2021

CERTIFICATE OF ANALYSIS RBC21000169.1

	Method	TC005	TC008	TC008
	Analyte	C/ORG	S/S-	SO4
	Unit	%	%	%
	MDL	0.02	0.05	0.05
BL801 01 Combined Con	Pulp	0.07	23.66	5.05

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11620 Horseshoe Way
Richmond British Columbia V7A 4V5 Canada

Project: None Given
Report Date: May 27, 2021

QUALITY CONTROL REPORT RBC21000169.1

		Method	FA530	FA530	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270
		Analyte	Au	Ag	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Th	Sr	Cd	Sb	Bi	V	Ca
		Unit	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
		MDL	0.9	20	0.5	0.5	0.5	5	0.5	0.5	1	5	0.01	5	0.5	0.5	5	0.5	0.5	0.5	10	0.01
Pulp Duplicates																						
BL801 01 Combined Con	Pulp		19.2	58	59.5	972.4	15515.4	15992	37.3	823.4	60	340	29.95	>100000	1.5	6.9	58	99.9	873.6	21.6	23	2.92
REP BL801 01 Combined Con	QC		19.1	56																		
Reference Materials																						
STD AGPROOF	Standard		<0.9	98																		
STD CCU-1E	Standard																					
STD CCU-1E	Standard																					
STD GGC-09	Standard																					
STD GGC-09	Standard																					
STD GS311-1	Standard																					
STD GS314-1	Standard																					
STD GS910-4	Standard																					
STD OREAS210	Standard				3.8	182.9	16.9	134	1.3	95.8	35	3823	11.56	3939	1.4	4.0	262	<0.5	9.6	<0.5	174	5.59
STD OREAS605	Standard				5.0	50531.3	1433.4	2202	954.0	1546.3	98	92	3.78	1753	2.9	4.5	361	14.6	327.4	19.8	40	0.26
STD OXQ132	Standard		34.9	121																		
STD OXQ132	Standard		34.8	120																		
STD RTS-3A	Standard																					
STD SO-19	Standard																					
STD SO-19	Standard																					
STD GS311-1 Expected																						
STD GS910-4 Expected																						
STD GS314-1 Expected																						
STD RTS-3A Expected																						
STD CCU-1E Expected																						
STD AGPROOF Expected				96																		
STD OXQ132 Expected			34.69	128.5																		
STD OREAS210 Expected														3715								
STD OREAS605 Expected					5.07	50200	1400	2190	972	1568	100	91	3.8		2.9	5.12	407	14.5	324	19.3	39.9	0.276
STD SO-19 Expected																						

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11620 Horseshoe Way
Richmond British Columbia V7A 4V5 Canada

Project: None Given
Report Date: May 27, 2021

QUALITY CONTROL REPORT RBC21000169.1

	Method	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270
	Analyte	P	La	Cr	Mg	Ba	Ti	Al	Na	K	W	Zr	Ce	Sn	Y	Nb	Ta	Be	Sc	Li	S
	Unit	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
	MDL	0.01	0.5	1	0.01	5	0.001	0.01	0.01	0.01	0.5	0.5	5	0.5	0.5	0.5	0.5	5	1	0.5	0.05
Pulp Duplicates																					
BL801 01 Combined Con	Pulp	0.02	14.9	1229	0.22	94	0.022	0.95	0.03	0.46	4.8	16.3	31	18.3	3.4	2.0	<0.5	<5	<1	7.1	21.51
REP BL801 01 Combined Con	QC																				
Reference Materials																					
STD AGPROOF	Standard																				
STD CCU-1E	Standard																				
STD CCU-1E	Standard																				
STD GGC-09	Standard																				
STD GGC-09	Standard																				
STD GS311-1	Standard																				
STD GS314-1	Standard																				
STD GS910-4	Standard																				
STD OREAS210	Standard	0.22	21.0	141	3.06	563	0.610	5.81	1.37	0.62	3.5	85.9	31	1.0	21.0	11.1	0.7	<5	19	15.0	2.75
STD OREAS605	Standard	0.05	8.8	24	0.05	448	0.174	5.35	0.56	1.07	27.8	95.4	21	2.5	4.6	6.5	0.5	<5	5	25.7	8.45
STD OXQ132	Standard																				
STD OXQ132	Standard																				
STD RTS-3A	Standard																				
STD SO-19	Standard																				
STD SO-19	Standard																				
STD GS311-1 Expected																					
STD GS910-4 Expected																					
STD GS314-1 Expected																					
STD RTS-3A Expected																					
STD CCU-1E Expected																					
STD AGPROOF Expected																					
STD OXQ132 Expected																					
STD OREAS210 Expected																					
STD OREAS605 Expected		0.0507		24	0.0505		0.177	5.51	0.58	1.1	27	92	25	2.73	4.5	6.92			5.03	24	7.89
STD SO-19 Expected																					

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Client: **Bureau Veritas Commodities Canada Ltd.**
11620 Horseshoe Way
Richmond British Columbia V7A 4V5 Canada

Project: None Given
Report Date: May 27, 2021

QUALITY CONTROL REPORT RBC21000169.1

	Method	MA270	MA270	MA270	GC820	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	TC000	TC000
	Analyte	Rb	Hf	Se	Cu	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	BaO	LOI	Sum	TOT/C	TOT/S
	Unit	ppm	ppm	ppm	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
	MDL	0.5	0.5	5	1	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.002	0.01	0.1	0.01	0.02	0.02
Pulp Duplicates																					
BL801 01 Combined Con	Pulp	19.4	0.8	<5	<1	15.03	1.79	44.51	0.31	4.09	0.03	0.55	0.25	0.01	0.04	0.231	<0.01	29.6	96.55	0.87	25.34
REP BL801 01 Combined Con	QC																				
Reference Materials																					
STD AGPROOF	Standard																				
STD CCU-1E	Standard				23.38																
STD CCU-1E	Standard				23.29																
STD GGC-09	Standard																				
STD GGC-09	Standard																				
STD GS311-1	Standard																			0.98	2.29
STD GS314-1	Standard																			1.29	29.04
STD GS910-4	Standard																			2.61	8.30
STD OREAS210	Standard	21.3	2.0	7																	
STD OREAS605	Standard	32.3	2.3	86																	
STD OXQ132	Standard																				
STD OXQ132	Standard																				
STD RTS-3A	Standard																				
STD SO-19	Standard					60.85	13.80	7.40	2.87	5.90	4.02	1.27	0.70	0.32	0.13	0.490	0.05	1.9	99.88		
STD SO-19	Standard					60.38	13.94	7.57	2.90	5.94	4.02	1.30	0.70	0.33	0.13	0.502	0.05	1.9	99.85		
STD GS311-1 Expected																				1.02	2.35
STD GS910-4 Expected																				2.65	8.27
STD GS314-1 Expected																				1.41	29.11
STD RTS-3A Expected																					
STD CCU-1E Expected					23.07																
STD AGPROOF Expected																					
STD OXQ132 Expected																					
STD OREAS210 Expected																					
STD OREAS605 Expected		29.2	2.58	79																	
STD SO-19 Expected						61.13	13.95	7.47	2.88	6	4.11	1.29	0.69	0.32	0.13	0.5					

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Client: **Bureau Veritas Commodities Canada Ltd.**
11620 Horseshoe Way
Richmond British Columbia V7A 4V5 Canada

Project: None Given
Report Date: May 27, 2021

QUALITY CONTROL REPORT RBC21000169.1

	Method	TC005	TC008	TC008
	Analyte	C/ORG	S/S-	SO4
	Unit	%	%	%
	MDL	0.02	0.05	0.05
Pulp Duplicates				
BL801 01 Combined Con	Pulp	0.07	23.66	5.05
REP BL801 01 Combined Con	QC			5.05
Reference Materials				
STD AGPROOF	Standard			
STD CCU-1E	Standard			
STD CCU-1E	Standard			
STD GGC-09	Standard			
STD GGC-09	Standard			
STD GS311-1	Standard			
STD GS314-1	Standard			
STD GS910-4	Standard			
STD OREAS210	Standard			
STD OREAS605	Standard			
STD OXQ132	Standard			
STD OXQ132	Standard			
STD RTS-3A	Standard			3.11
STD SO-19	Standard			
STD SO-19	Standard			
STD GS311-1 Expected				
STD GS910-4 Expected				
STD GS314-1 Expected				
STD RTS-3A Expected				3.3
STD CCU-1E Expected				
STD AGPROOF Expected				
STD OXQ132 Expected				
STD OREAS210 Expected				
STD OREAS605 Expected				
STD SO-19 Expected				

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Project: None Given
Report Date: May 27, 2021

QUALITY CONTROL REPORT RBC21000169.1

		FA530 Au ppm 0.9	FA530 Ag ppm 20	MA270 Mo ppm 0.5	MA270 Cu ppm 0.5	MA270 Pb ppm 0.5	MA270 Zn ppm 5	MA270 Ag ppm 0.5	MA270 Ni ppm 0.5	MA270 Co ppm 1	MA270 Mn ppm 5	MA270 Fe % 0.01	MA270 As ppm 5	MA270 U ppm 0.5	MA270 Th ppm 0.5	MA270 Sr ppm 5	MA270 Cd ppm 0.5	MA270 Sb ppm 0.5	MA270 Bi ppm 0.5	MA270 V ppm 10	MA270 Ca % 0.01
BLK	Blank																				
BLK	Blank																				
BLK	Blank																				
BLK	Blank	<0.9	<20																		
BLK	Blank			<0.5	3.2	1.6	<5	<0.5	<0.5	<1	<5	<0.01	<5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<10	<0.01
BLK	Blank																				

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Project: None Given
Report Date: May 27, 2021

QUALITY CONTROL REPORT RBC21000169.1

		MA270 P % 0.01	MA270 La ppm 0.5	MA270 Cr ppm 1	MA270 Mg % 0.01	MA270 Ba ppm 5	MA270 Ti % 0.001	MA270 Al % 0.01	MA270 Na % 0.01	MA270 K % 0.01	MA270 W ppm 0.5	MA270 Zr ppm 0.5	MA270 Ce ppm 5	MA270 Sn ppm 0.5	MA270 Y ppm 0.5	MA270 Nb ppm 0.5	MA270 Ta ppm 0.5	MA270 Be ppm 5	MA270 Sc ppm 1	MA270 Li ppm 0.5	MA270 S % 0.05
BLK	Blank																				
BLK	Blank																				
BLK	Blank																				
BLK	Blank																				
BLK	Blank	<0.01	<0.5	<1	<0.01	<5	<0.001	<0.01	<0.01	<0.01	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<5	<1	<0.5	<0.05
BLK	Blank																				

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Bureau Veritas Commodities Canada Ltd.
9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: **Bureau Veritas Commodities Canada Ltd.**
11620 Horseshoe Way
Richmond British Columbia V7A 4V5 Canada

Project: None Given
Report Date: May 27, 2021

QUALITY CONTROL REPORT RBC21000169.1

		MA270 Rb ppm 0.5	MA270 Hf ppm 0.5	MA270 Se ppm 5	GC820 Cu % 1	LF300 SiO2 % 0.01	LF300 Al2O3 % 0.01	LF300 Fe2O3 % 0.04	LF300 MgO % 0.01	LF300 CaO % 0.01	LF300 Na2O % 0.01	LF300 K2O % 0.01	LF300 TiO2 % 0.01	LF300 P2O5 % 0.01	LF300 MnO % 0.01	LF300 Cr2O3 % 0.002	LF300 BaO % 0.01	LF300 LOI % 0.1	LF300 Sum % 0.01	TC000 TOT/C % 0.02	TC000 TOT/S % 0.02
BLK	Blank																			<0.02	<0.02
BLK	Blank																				
BLK	Blank																				
BLK	Blank																				
BLK	Blank	<0.5	<0.5	<5																	
BLK	Blank					<0.01	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.002	<0.01	<0.1	0.05		

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QUALITY CONTROL REPORT RBC21000169.1

		TC005 C/ORG % 0.02	TC008 S/S- % 0.05	TC008 SO4 % 0.05
BLK	Blank			
BLK	Blank			<0.05
BLK	Blank			
BLK	Blank			
BLK	Blank			
BLK	Blank			

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11620 Horseshoe Way
Richmond British Columbia V7A 4V5 Canada

Submitted By:	Met Assays
Receiving Lab:	Richmond Metlab
Received:	September 23, 2021
Analysis Start:	September 23, 2021
Report Date:	October 05, 2021
Page:	1 of 2

CERTIFICATE OF ANALYSIS RBC21000314.1

CLIENT JOB INFORMATION

Project:	None Given
Shipment ID:	
P.O. Number	ME2103805, 21I0623
Number of Samples:	2

SAMPLE DISPOSAL

STOR-PLP Store After 90 days Invoice for Storage

Bureau Veritas does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Procedure Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
MA270	2	4 Acid digestion - ICP-ES/ICP-MS analysis	0.5	Completed	VAN
LF300	2	LiBO2/Li2B4O7 fusion ICP-ES analysis	0.1	Completed	VAN
GC820	2	Copper Assay by Classical Titration	0.5	Completed	VAN
TC000-S	2	Total S analysis by Leco	0.1	Completed	VAN
TC008	2	Sulphate-S by ignition and Sulphide-S by difference	0.1	Completed	VAN
TC005-ORG	2	Org/C: Total C minus Graphite C & CO2	0.1	Completed	VAN

ADDITIONAL COMMENTS

Invoice To: Bureau Veritas Commodities Canada Ltd.
11620 Horseshoe Way
Richmond British Columbia V7A 4V5
Canada

CC:

BRITISH COLUMBIA CERTIFIED ASSAYER
Marcus Lau
MARCUS LAU
Production Manager

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Richmond British Columbia V7A 4V5 Canada

Project: None Given
Report Date: October 05, 2021

CERTIFICATE OF ANALYSIS RBC21000314.1

		Method	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270
		Analyte	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Th	Sr	Cd	Sb	Bi	V	Ca	P	La
		Unit	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm
		MDL	0.5	0.5	0.5	5	0.5	0.5	1	5	0.01	5	0.5	0.5	5	0.5	0.5	0.5	10	0.01	0.01	0.5
BL801 Bulk Con1	Pulp		19.3	1431.1	24250.9	62490	56.3	355.2	56	145	31.38>100000		0.7	10.5	28	358.5	1171.4	26.2	10	1.18	<0.01	7.7
BL801 Bulk Con2	Pulp		52.5	1443.6	20900.0	51658	47.4	895.4	60	268	27.43>100000		1.1	5.4	47	276.6	958.4	22.3	20	2.25	<0.01	12.4

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Project: None Given
Report Date: October 05, 2021

CERTIFICATE OF ANALYSIS RBC21000314.1

		Method	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270
		Analyte	Cr	Mg	Ba	Ti	Al	Na	K	W	Zr	Ce	Sn	Y	Nb	Ta	Be	Sc	Li	S	Rb	Hf
		Unit	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm
		MDL	1	0.01	5	0.001	0.01	0.01	0.01	0.5	0.5	5	0.5	0.5	0.5	0.5	5	1	0.5	0.05	0.5	0.5
BL801 Bulk Con1	Pulp		583	0.09	93	0.014	0.41	0.01	0.21	2.2	34.8	17	10.9	1.7	1.1	<0.5	<5	2	2.4	23.87	7.7	1.0
BL801 Bulk Con2	Pulp		1454	0.16	103	0.017	0.69	0.02	0.34	4.7	27.4	26	12.2	2.8	1.8	<0.5	<5	3	4.4	20.58	13.1	<0.5

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Project: None Given
Report Date: October 05, 2021

CERTIFICATE OF ANALYSIS RBC21000314.1

Method		MA270	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	GC820	TC000	TC000	TC008	TC008
Analyte		Se	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	BaO	LOI	Sum	Cu	TOT/C	TOT/S	S/S-	SO4
Unit		ppm	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
MDL		5	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.002	0.01	0.1	0.01	1	0.02	0.02	0.05	0.05
BL801 Bulk Con1	Pulp	8	7.14	0.83	44.10	0.15	1.64	<0.01	0.24	0.13	0.03	0.02	0.093	0.02	35.5	89.97	<1	0.36	28.79	26.46	6.98
BL801 Bulk Con2	Pulp	11	13.70	1.40	41.58	0.31	3.38	0.04	0.43	0.22	0.05	0.04	0.268	0.03	29.6	91.17	<1	0.71	26.33	23.81	7.55

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Project: None Given
Report Date: October 05, 2021

CERTIFICATE OF ANALYSIS RBC21000314.1

		Method	TC005
		Analyte	C/ORG
		Unit	%
		MDL	0.02
BL801 Bulk Con1	Pulp		0.07
BL801 Bulk Con2	Pulp		0.12

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Project: None Given
Report Date: October 05, 2021

QUALITY CONTROL REPORT RBC21000314.1

		Method	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270
		Analyte	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Th	Sr	Cd	Sb	Bi	V	Ca	P	La
		Unit	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm
		MDL	0.5	0.5	0.5	5	0.5	0.5	1	5	0.01	5	0.5	0.5	5	0.5	0.5	0.5	10	0.01	0.01	0.5
Pulp Duplicates																						
BL801 Bulk Con1	Pulp		19.3	1431.1	24250.9	62490	56.3	355.2	56	145	31.38	>100000	0.7	10.5	28	358.5	1171.4	26.2	10	1.18	<0.01	7.7
REP BL801 Bulk Con1	QC																					
BL801 Bulk Con2	Pulp		52.5	1443.6	20900.0	51658	47.4	895.4	60	268	27.43	>100000	1.1	5.4	47	276.6	958.4	22.3	20	2.25	<0.01	12.4
REP BL801 Bulk Con2	QC		52.0	1515.3	21979.6	52654	53.7	900.6	62	280	28.79	>100000	1.1	5.7	49	293.2	1019.6	24.0	20	2.33	0.01	13.4
Reference Materials																						
STD CCU-1E	Standard																					
STD CCU-1E	Standard																					
STD GGC-09	Standard																					
STD GGC-09	Standard																					
STD GS311-1	Standard																					
STD GS910-4	Standard																					
STD OREAS210	Standard		3.9	175.4	16.0	135	0.9	117.1	37	3848	11.72	3985	1.5	3.8	258	<0.5	8.8	<0.5	175	5.70	0.23	21.1
STD OREAS605	Standard		5.3	48106.1	1464.2	2168	956.5	1575.8	100	87	3.68	1637	2.5	6.0	351	13.9	324.3	18.9	37	0.26	0.04	10.7
STD RTS-3A	Standard																					
STD SO-19	Standard																					
STD SO-19	Standard																					
STD CCU-1E Expected																						
STD GS311-1 Expected																						
STD GS910-4 Expected																						
STD RTS-3A Expected																						
STD SO-19 Expected																						
STD OREAS210 Expected												3715										
STD OREAS605 Expected			5.07	50200	1400	2190	972	1568	100	91	3.8		2.9	5.12	407	14.5	324	19.3	39.9	0.276	0.0507	
BLK	Blank																					
BLK	Blank																					
BLK	Blank																					
BLK	Blank																					
BLK	Blank		<0.5	<0.5	<0.5	7	<0.5	0.6	<1	<5	<0.01	<5	<0.5	<0.5	<5	<0.5	<0.5	1.4	<10	<0.01	<0.01	<0.5

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Project: None Given
Report Date: October 05, 2021

QUALITY CONTROL REPORT RBC21000314.1

		Method	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270
		Analyte	Cr	Mg	Ba	Ti	Al	Na	K	W	Zr	Ce	Sn	Y	Nb	Ta	Be	Sc	Li	S	Rb	Hf
		Unit	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm
		MDL	1	0.01	5	0.001	0.01	0.01	0.01	0.5	0.5	5	0.5	0.5	0.5	0.5	5	1	0.5	0.05	0.5	0.5
Pulp Duplicates																						
BL801 Bulk Con1	Pulp		583	0.09	93	0.014	0.41	0.01	0.21	2.2	34.8	17	10.9	1.7	1.1	<0.5	<5	2	2.4	23.87	7.7	1.0
REP BL801 Bulk Con1	QC																					
BL801 Bulk Con2	Pulp		1454	0.16	103	0.017	0.69	0.02	0.34	4.7	27.4	26	12.2	2.8	1.8	<0.5	<5	3	4.4	20.58	13.1	<0.5
REP BL801 Bulk Con2	QC		1519	0.17	107	0.019	0.71	0.02	0.36	4.6	28.0	27	13.7	3.2	1.6	<0.5	<5	4	5.4	21.78	13.4	0.7
Reference Materials																						
STD CCU-1E	Standard																					
STD CCU-1E	Standard																					
STD GGC-09	Standard																					
STD GGC-09	Standard																					
STD GS311-1	Standard																					
STD GS910-4	Standard																					
STD OREAS210	Standard		153	3.23	535	0.637	5.79	1.32	0.61	3.4	82.1	31	<0.5	19.7	11.6	0.6	<5	24	12.9	2.86	20.8	2.1
STD OREAS605	Standard		21	0.04	215	0.176	5.03	0.55	1.04	27.0	89.2	22	2.5	4.4	6.8	<0.5	<5	7	21.8	8.17	28.9	2.3
STD RTS-3A	Standard																					
STD SO-19	Standard																					
STD SO-19	Standard																					
STD CCU-1E Expected																						
STD GS311-1 Expected																						
STD GS910-4 Expected																						
STD RTS-3A Expected																						
STD SO-19 Expected																						
STD OREAS210 Expected																						
STD OREAS605 Expected			24	0.0505		0.177	5.51	0.58	1.1	27	92	25	2.73	4.5	6.92			5.03	24	7.89	29.2	2.58
BLK	Blank																					
BLK	Blank																					
BLK	Blank																					
BLK	Blank																					
BLK	Blank		<1	<0.01	<5	<0.001	<0.01	<0.01	<0.01	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<5	1	<0.5	<0.05	<0.5	<0.5

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QUALITY CONTROL REPORT RBC21000314.1

		Method	MA270	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	GC820	TC000	TC000	TC008	TC008
		Analyte	Se	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	BaO	LOI	Sum	Cu	TOT/C	TOT/S	S/S-	SO4
		Unit	ppm	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
		MDL	5	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.002	0.01	0.1	0.01	1	0.02	0.02	0.05	0.05
Pulp Duplicates																						
BL801 Bulk Con1	Pulp		8	7.14	0.83	44.10	0.15	1.64	<0.01	0.24	0.13	0.03	0.02	0.093	0.02	35.5	89.97	<1	0.36	28.79	26.46	6.98
REP BL801 Bulk Con1	QC			7.00	0.79	44.39	0.15	1.62	0.04	0.25	0.12	0.03	0.03	0.093	0.02	35.5	90.09		0.36	29.22		
BL801 Bulk Con2	Pulp		11	13.70	1.40	41.58	0.31	3.38	0.04	0.43	0.22	0.05	0.04	0.268	0.03	29.6	91.17	<1	0.71	26.33	23.81	7.55
REP BL801 Bulk Con2	QC		9															<1				7.68
Reference Materials																						
STD CCU-1E	Standard																	22.85				
STD CCU-1E	Standard																	22.83				
STD GGC-09	Standard																					
STD GGC-09	Standard																					
STD GS311-1	Standard																		1.03	2.20		
STD GS910-4	Standard																		2.70	8.15		
STD OREAS210	Standard		16																			
STD OREAS605	Standard		92																			
STD RTS-3A	Standard																					3.49
STD SO-19	Standard			60.67	13.86	7.52	2.91	5.93	4.01	1.28	0.70	0.35	0.13	0.490	0.05	1.9	99.97					
STD SO-19	Standard			60.42	14.05	7.50	2.92	5.98	4.03	1.29	0.70	0.34	0.13	0.492	0.05	1.9	99.98					
STD CCU-1E Expected																		23.07				
STD GS311-1 Expected																			1.02	2.35		
STD GS910-4 Expected																			2.65	8.27		
STD RTS-3A Expected																						3.3
STD SO-19 Expected				61.13	13.95	7.47	2.88	6	4.11	1.29	0.69	0.32	0.13	0.5								
STD OREAS210 Expected																						
STD OREAS605 Expected			79																			
BLK	Blank																		<0.02	<0.02		
BLK	Blank																					<0.05
BLK	Blank																					
BLK	Blank			<0.01	<0.01	<0.04	<0.01	<0.01	0.01	0.02	<0.01	0.02	<0.01	<0.002	<0.01	<0.1	0.01					
BLK	Blank		13																			

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Report Date: October 05, 2021

QUALITY CONTROL REPORT RBC21000314.1

		Method	TC005
		Analyte	C/ORG
		Unit	%
		MDL	0.02
Pulp Duplicates			
BL801 Bulk Con1	Pulp		0.07
REP BL801 Bulk Con1	QC		
BL801 Bulk Con2	Pulp		0.12
REP BL801 Bulk Con2	QC		
Reference Materials			
STD CCU-1E	Standard		
STD CCU-1E	Standard		
STD GGC-09	Standard		
STD GGC-09	Standard		
STD GS311-1	Standard		
STD GS910-4	Standard		
STD OREAS210	Standard		
STD OREAS605	Standard		
STD RTS-3A	Standard		
STD SO-19	Standard		
STD SO-19	Standard		
STD CCU-1E Expected			
STD GS311-1 Expected			
STD GS910-4 Expected			
STD RTS-3A Expected			
STD SO-19 Expected			
STD OREAS210 Expected			
STD OREAS605 Expected			
BLK	Blank		
BLK	Blank		
BLK	Blank		
BLK	Blank		
BLK	Blank		

APPENDIX D – SIZINGS

APPENDIX D
SIZINGS

TABLE D-1
GRIND CALIBRATION DATA

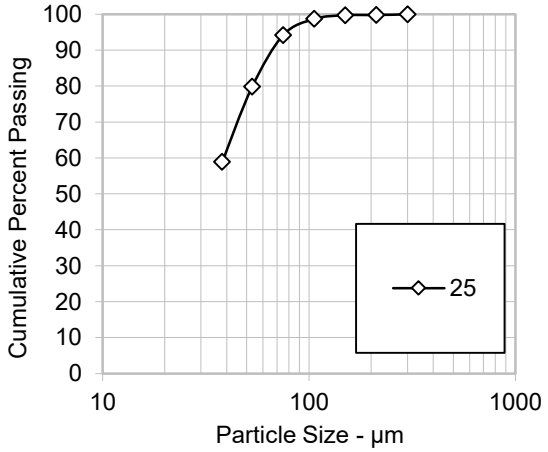
JL-01

Sieve Size (µm)	Cumulative Percent Passing		
	Grind 1	Grind 2	Grind 3
300	100.0	N/A	N/A
212	99.8	N/A	N/A
150	99.7	N/A	N/A
106	98.7	N/A	N/A
75	94.2	N/A	N/A
53	79.8	N/A	N/A
38	58.9	N/A	N/A

Parameter	Grind Calibration Data		
	Grind 1	Grind 2	Grind 3
Grind Time - min	25	N/A	N/A
Sample - g	2000	N/A	N/A
Water - mL	1000	N/A	N/A
K_{80} - µm	53	N/A	N/A

Grinding Mill: M1 **Grinding Media:** 20kg Mild Steel

Cumulative Size Distribution



Grind Time versus K80

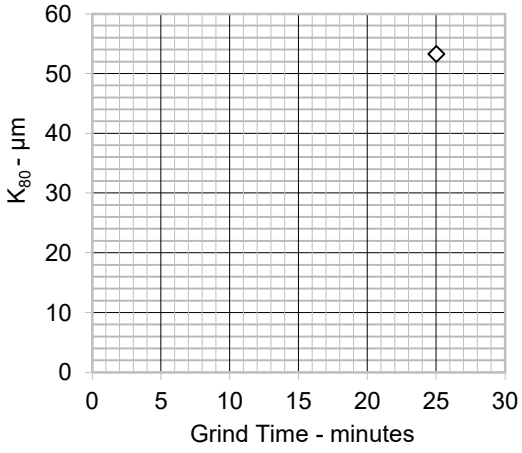


TABLE D-2
GRIND CALIBRATION DATA

JL-01

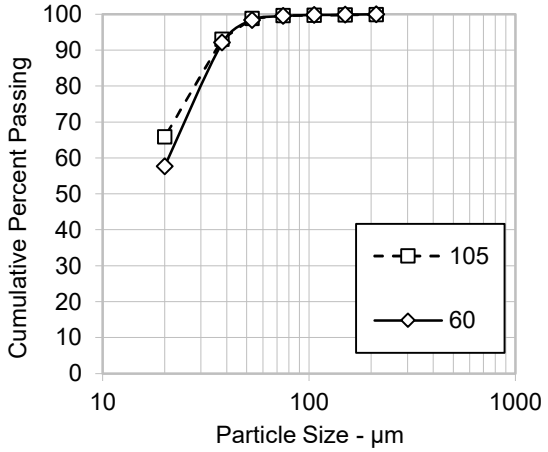
Sieve Size (µm)	Cumulative Percent Passing		
	Grind 1	Grind 2	Grind 3
212	100.0	99.9	N/A
150	99.9	99.8	N/A
106	99.8	99.7	N/A
75	99.5	99.6	N/A
53	98.4	98.8	N/A
38	92.1	93.0	N/A
20	57.7	65.9	N/A

Parameter	Grind Calibration Data		
	Grind 1	Grind 2	Grind 3
Grind Time - min	60	105	N/A
Sample - g	10000	10000	N/A
Water - mL	5000	5000	N/A
K_{80} - µm	30	28	N/A

Grinding Mill: Hulk

Grinding Media: 100kg Stainless Steel

Cumulative Size Distribution



Grind Time versus K80

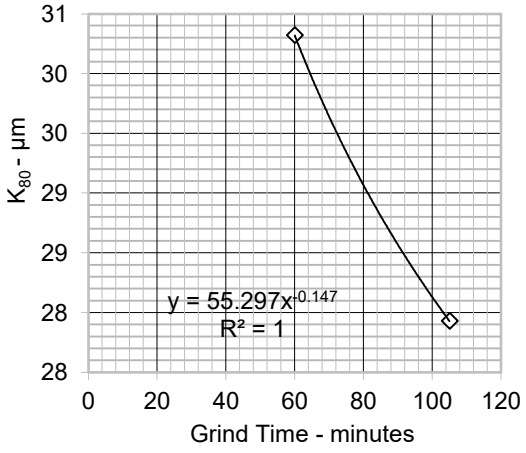
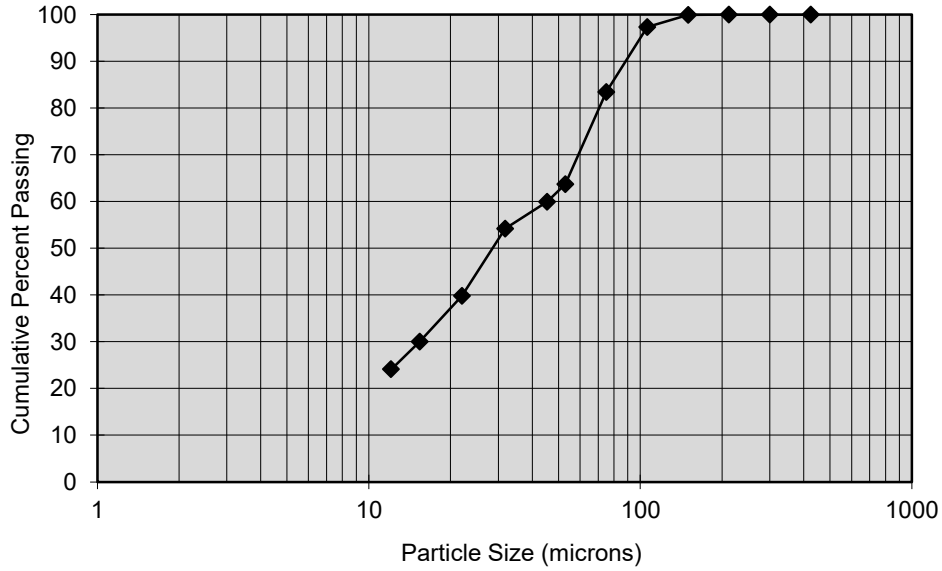


TABLE D-3
CYCLOSIZING ANALYSIS
BL801 JL-01 Composite - 18 Minute Grind Calibration

Product	Size (µm)		Weight % Retained	Cumulative % Passing
	Limiting	Effective		
35 Mesh	425	425	0.00	100.0
48 Mesh	300	300	0.00	100.0
65 Mesh	212	212	0.00	100.0
100 Mesh	150	150	0.10	99.9
150 Mesh	106	106	2.60	97.3
200 Mesh	75	75	13.90	83.4
270 Mesh	53	53	19.70	63.7
Cyclone 1	45	45	3.80	59.9
Cyclone 2	31	32	5.70	54.2
Cyclone 3	22	22	14.40	39.8
Cyclone 4	15	15	9.80	30.0
Cyclone 5	12	12	5.90	24.1
Total			100.00	**

Operating Conditions	Measured	Factor
Temperature (°C)	5.00	1.228
Specific Gravity	3.27	0.855
Flow Rate (mm)	180	1.012
Elutriation Time (min)	20	0.955
Overall Factor		1.015
K80 Size (microns)		**71**

Particle Size Distribution Plot



Analysis

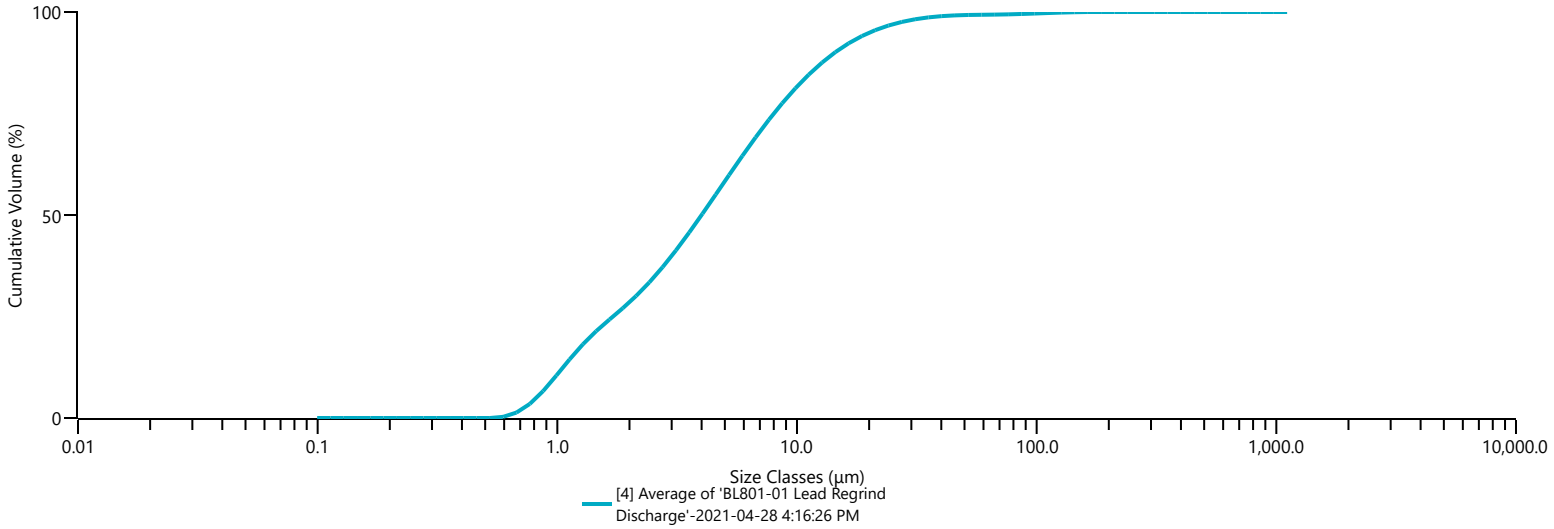
Measurement Details	
Sample Name	Average of 'BL801-01 Lead Regrind Discharge'

Measurement Details	
Analysis Date Time	2021-04-28 4:16:26 PM
Measurement Date Time	2021-04-28 4:16:26 PM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	1.07 %
Laser Obscuration	22.07 %

Result	
Dv (90)	14.4 µm
Dv (80)	9.45 µm
Dv (50)	4.00 µm
Dv (10)	0.976 µm
Volume Below (75) µm	99.41 %
Volume Below (53) µm	99.28 %
Volume Below (38) µm	98.85 %
Volume Below (20) µm	94.87 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	24.26	6.72	69.13	27.4	97.55	111	99.75	454	100.00
0.113	0.00	0.461	0.00	1.88	27.05	7.64	73.47	31.1	98.21	127	99.86	516	100.00
0.128	0.00	0.523	0.00	2.13	30.05	8.68	77.52	35.3	98.68	144	99.95	586	100.00
0.146	0.00	0.594	0.29	2.42	33.42	9.86	81.24	40.1	98.98	163	100.00	666	100.00
0.166	0.00	0.675	1.34	2.75	37.17	11.2	84.58	45.6	99.17	186	100.00	756	100.00
0.188	0.00	0.767	3.46	3.12	41.28	12.7	87.55	51.8	99.27	211	100.00	859	100.00
0.214	0.00	0.872	6.62	3.55	45.69	14.5	90.12	58.9	99.31	240	100.00	976	100.00
0.243	0.00	0.991	10.45	4.03	50.32	16.4	92.29	66.9	99.36	272	100.00	1110	100.00
0.276	0.00	1.13	14.45	4.58	55.06	18.7	94.09	76.0	99.42	310	100.00		
0.314	0.00	1.28	18.16	5.21	59.84	21.2	95.53	86.4	99.51	352	100.00		
0.357	0.00	1.45	21.40	5.92	64.56	24.1	96.67	98.1	99.62	400	100.00		

Analysis

TABLE D-5

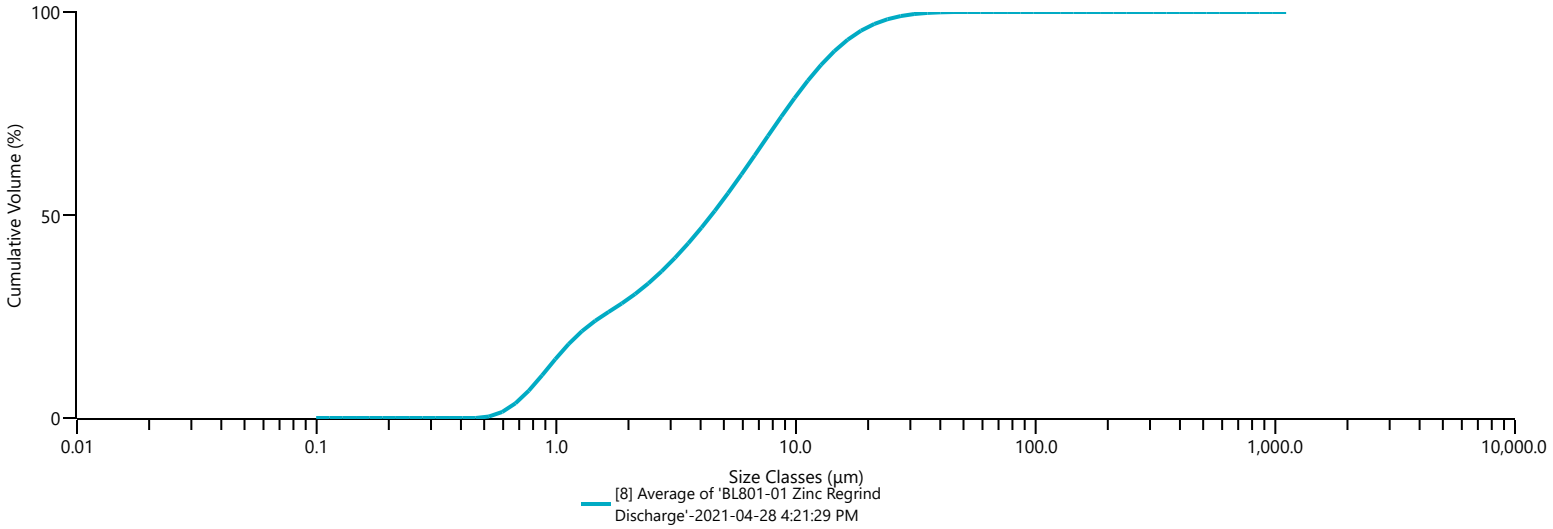
Measurement Details	
Sample Name	Average of 'BL801-01 Zinc Regrind Discharge'

Measurement Details	
Analysis Date Time	2021-04-28 4:21:29 PM
Measurement Date Time	2021-04-28 4:21:29 PM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.66 %
Laser Obscuration	22.87 %

Result	
Dv (90)	14.3 µm
Dv (80)	10.2 µm
Dv (50)	4.44 µm
Dv (10)	0.857 µm
Volume Below (75) µm	100.00 %
Volume Below (53) µm	100.00 %
Volume Below (38) µm	99.86 %
Volume Below (20) µm	96.29 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	26.11	6.72	64.68	27.4	99.01	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	28.21	7.64	69.46	31.1	99.50	127	100.00	516	100.00
0.128	0.00	0.523	0.36	2.13	30.52	8.68	74.20	35.3	99.78	144	100.00	586	100.00
0.146	0.00	0.594	1.49	2.42	33.15	9.86	78.79	40.1	99.93	163	100.00	666	100.00
0.166	0.00	0.675	3.62	2.75	36.13	11.2	83.08	45.6	100.00	186	100.00	756	100.00
0.188	0.00	0.767	6.72	3.12	39.42	12.7	86.98	51.8	100.00	211	100.00	859	100.00
0.214	0.00	0.872	10.50	3.55	43.02	14.5	90.36	58.9	100.00	240	100.00	976	100.00
0.243	0.00	0.991	14.49	4.03	46.89	16.4	93.17	66.9	100.00	272	100.00	1110	100.00
0.276	0.00	1.13	18.22	4.58	51.02	18.7	95.39	76.0	100.00	310	100.00		
0.314	0.00	1.28	21.38	5.21	55.39	21.2	97.05	86.4	100.00	352	100.00		
0.357	0.00	1.45	23.94	5.92	59.96	24.1	98.22	98.1	100.00	400	100.00		

Analysis

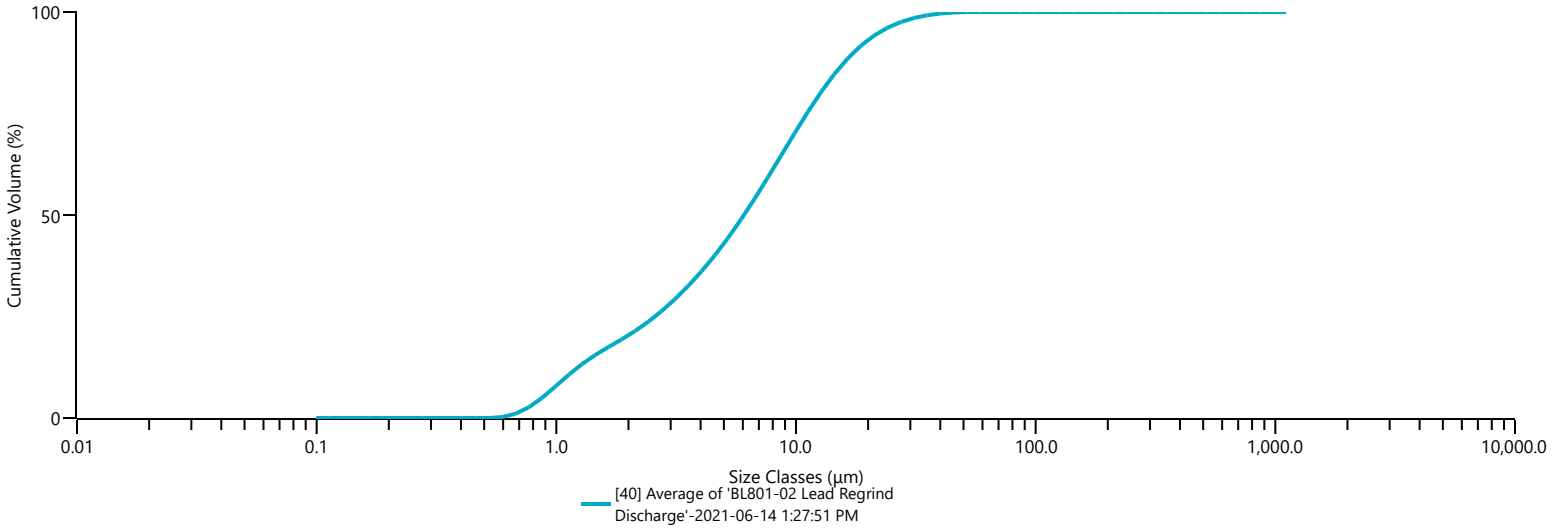
Measurement Details	
Sample Name	Average of 'BL801-02 Lead Regrind Discharge'

Measurement Details	
Analysis Date Time	2021-06-14 1:27:51 PM
Measurement Date Time	2021-06-14 1:27:51 PM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.83 %
Laser Obscuration	20.90 %

Result	
Dv (90)	17.4 µm
Dv (80)	12.6 µm
Dv (50)	6.06 µm
Dv (10)	1.09 µm
Volume Below (75) µm	100.00 %
Volume Below (53) µm	100.00 %
Volume Below (38) µm	99.45 %
Volume Below (20) µm	93.06 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	17.48	6.72	54.03	27.4	97.53	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	19.38	7.64	59.29	31.1	98.53	127	100.00	516	100.00
0.128	0.00	0.523	0.00	2.13	21.42	8.68	64.69	35.3	99.21	144	100.00	586	100.00
0.146	0.00	0.594	0.24	2.42	23.73	9.86	70.11	40.1	99.64	163	100.00	666	100.00
0.166	0.00	0.675	1.05	2.75	26.34	11.2	75.36	45.6	99.89	186	100.00	756	100.00
0.188	0.00	0.767	2.64	3.12	29.27	12.7	80.29	51.8	100.00	211	100.00	859	100.00
0.214	0.00	0.872	4.96	3.55	32.53	14.5	84.72	58.9	100.00	240	100.00	976	100.00
0.243	0.00	0.991	7.75	4.03	36.12	16.4	88.55	66.9	100.00	272	100.00	1110	100.00
0.276	0.00	1.13	10.62	4.58	40.06	18.7	91.71	76.0	100.00	310	100.00		
0.314	0.00	1.28	13.25	5.21	44.37	21.2	94.21	86.4	100.00	352	100.00		
0.357	0.00	1.45	15.51	5.92	49.03	24.1	96.12	98.1	100.00	400	100.00		

Analysis

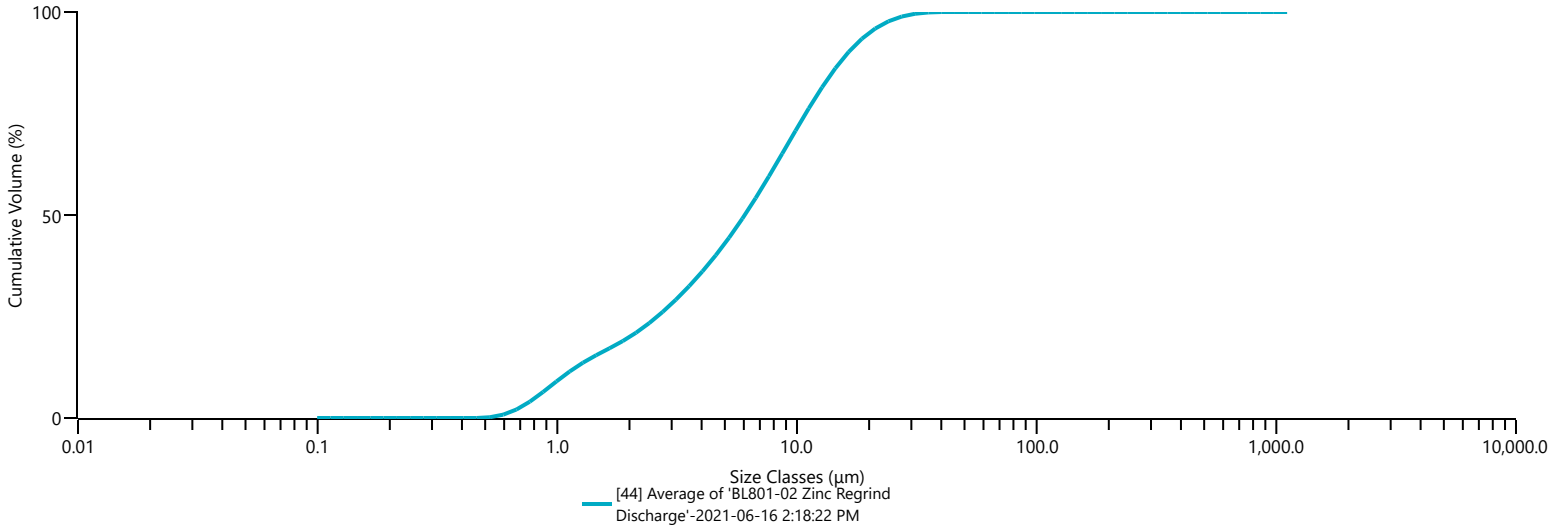
Measurement Details	
Sample Name	Average of 'BL801-02 Zinc Regrind Discharge'

Measurement Details	
Analysis Date Time	2021-06-16 2:18:22 PM
Measurement Date Time	2021-06-16 2:18:22 PM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.67 %
Laser Obscuration	17.76 %

Result	
Dv (90)	16.3 µm
Dv (80)	12.3 µm
Dv (50)	6.05 µm
Dv (10)	1.04 µm
Volume Below (75) µm	100.00 %
Volume Below (53) µm	100.00 %
Volume Below (38) µm	99.95 %
Volume Below (20) µm	94.78 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	17.17	6.72	54.16	27.4	98.88	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	18.96	7.64	59.53	31.1	99.57	127	100.00	516	100.00
0.128	0.00	0.523	0.19	2.13	21.01	8.68	65.11	35.3	99.89	144	100.00	586	100.00
0.146	0.00	0.594	0.82	2.42	23.40	9.86	70.75	40.1	100.00	163	100.00	666	100.00
0.166	0.00	0.675	2.09	2.75	26.12	11.2	76.27	45.6	100.00	186	100.00	756	100.00
0.188	0.00	0.767	4.01	3.12	29.16	12.7	81.46	51.8	100.00	211	100.00	859	100.00
0.214	0.00	0.872	6.41	3.55	32.49	14.5	86.14	58.9	100.00	240	100.00	976	100.00
0.243	0.00	0.991	8.99	4.03	36.13	16.4	90.16	66.9	100.00	272	100.00	1110	100.00
0.276	0.00	1.13	11.45	4.58	40.09	18.7	93.43	76.0	100.00	310	100.00		
0.314	0.00	1.28	13.62	5.21	44.41	21.2	95.93	86.4	100.00	352	100.00		
0.357	0.00	1.45	15.47	5.92	49.10	24.1	97.71	98.1	100.00	400	100.00		

Analysis

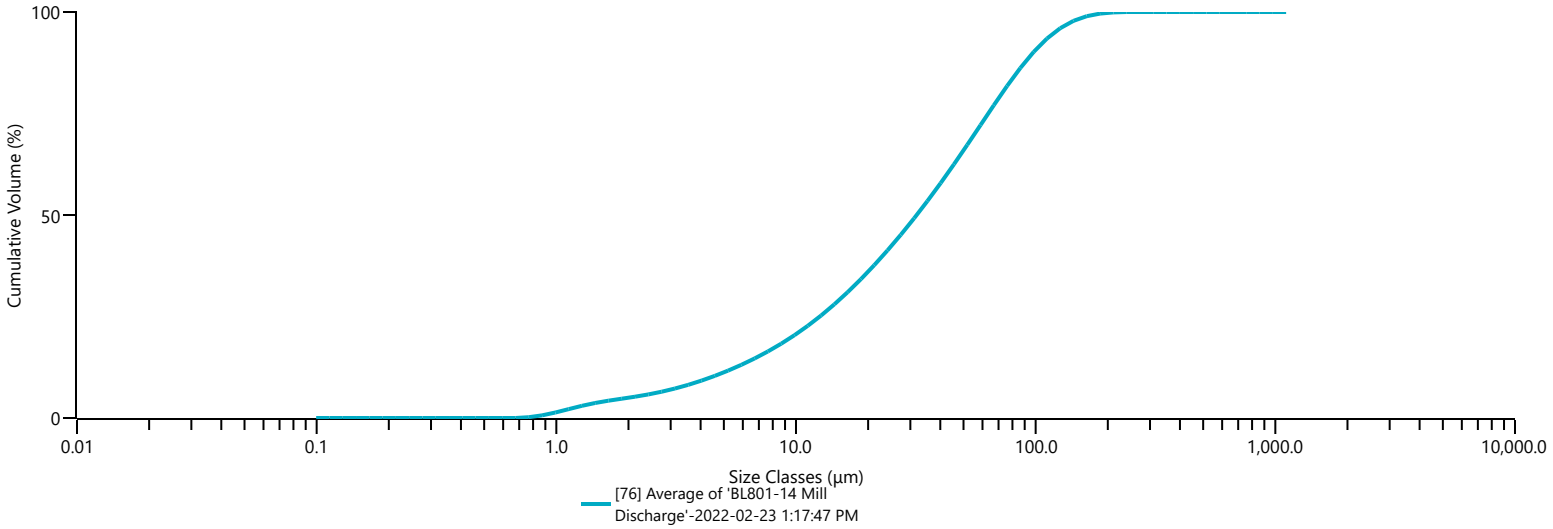
Measurement Details	
Sample Name	Average of 'BL801-14 Mill Discharge'

Measurement Details	
Analysis Date Time	2022-02-23 1:17:47 PM
Measurement Date Time	2022-02-23 1:17:47 PM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.53 %
Laser Obscuration	21.31 %

Result	
Dv (90)	97.6 µm
Dv (80)	72.4 µm
Dv (50)	31.9 µm
Dv (10)	4.40 µm
Volume Below (75) µm	81.29 %
Volume Below (53) µm	68.13 %
Volume Below (38) µm	55.96 %
Volume Below (20) µm	36.07 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	4.27	6.72	14.67	27.4	45.14	111	93.46	454	100.00
0.113	0.00	0.461	0.00	1.88	4.75	7.64	16.40	31.1	49.18	127	96.02	516	100.00
0.128	0.00	0.523	0.00	2.13	5.25	8.68	18.31	35.3	53.43	144	97.83	586	100.00
0.146	0.00	0.594	0.00	2.42	5.81	9.86	20.40	40.1	57.87	163	98.98	666	100.00
0.166	0.00	0.675	0.00	2.75	6.48	11.2	22.71	45.6	62.49	186	99.61	756	100.00
0.188	0.00	0.767	0.20	3.12	7.26	12.7	25.24	51.8	67.27	211	99.90	859	100.00
0.214	0.00	0.872	0.65	3.55	8.17	14.5	28.00	58.9	72.15	240	100.00	976	100.00
0.243	0.00	0.991	1.35	4.03	9.21	16.4	30.99	66.9	77.04	272	100.00	1110	100.00
0.276	0.00	1.13	2.18	4.58	10.37	18.7	34.21	76.0	81.79	310	100.00		
0.314	0.00	1.28	3.00	5.21	11.67	21.2	37.64	86.4	86.22	352	100.00		
0.357	0.00	1.45	3.70	5.92	13.10	24.1	41.29	98.1	90.17	400	100.00		

Analysis

Measurement Details

Sample Name Average of 'BL801-18 Bulk Regrind Discharge'

Measurement Details

Analysis Date Time 2022-03-10 12:22:43 PM
Measurement Date Time 2022-03-10 12:22:43 PM
Result Source Averaged

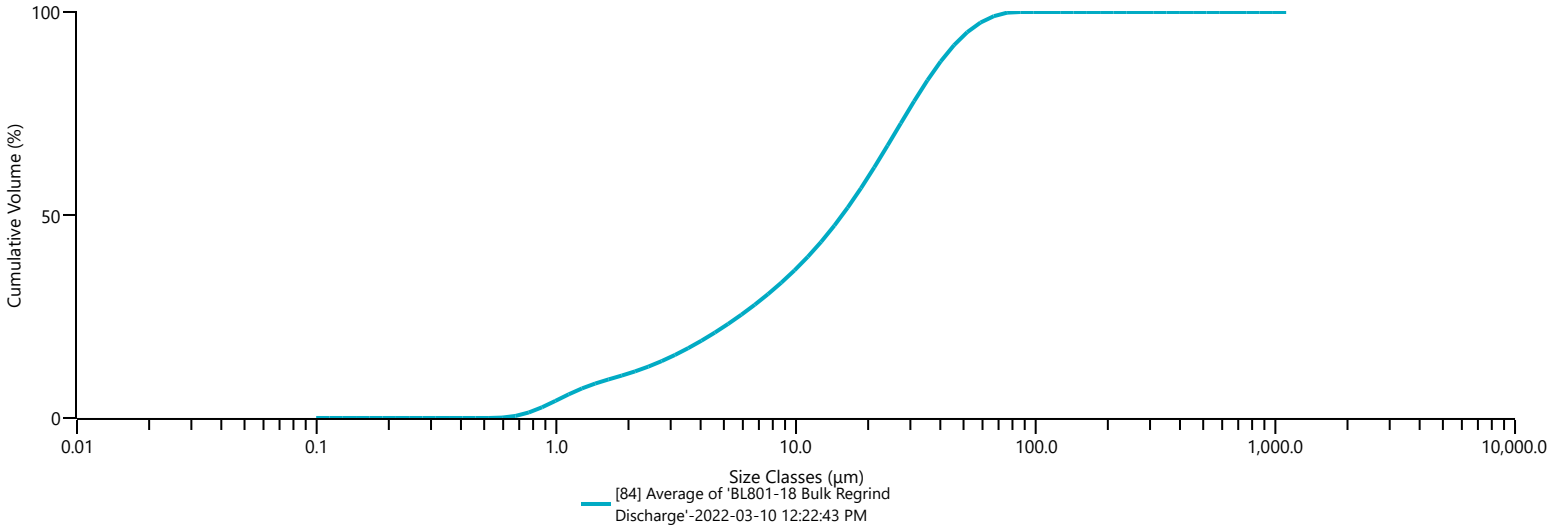
Analysis

Particle Name Silica (RI 1.45, AI 0.1)
Particle Refractive Index 1.450
Particle Absorption Index 0.100
Dispersant Name Water
Dispersant Refractive Index 1.330
Scattering Model Mie
Analysis Model General Purpose
Weighted Residual 0.86 %
Laser Obscuration 18.06 %

Result

Dv (90) 43.0 µm
Dv (80) 32.7 µm
Dv (50) 15.6 µm
Dv (10) 1.77 µm
Volume Below (75) µm 99.74 %
Volume Below (53) µm 95.45 %
Volume Below (38) µm 85.81 %
Volume Below (20) µm 59.37 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	9.50	6.72	27.88	27.4	72.59	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	10.45	7.64	30.49	31.1	78.01	127	100.00	516	100.00
0.128	0.00	0.523	0.00	2.13	11.48	8.68	33.31	35.3	83.16	144	100.00	586	100.00
0.146	0.00	0.594	0.10	2.42	12.65	9.86	36.37	40.1	87.82	163	100.00	666	100.00
0.166	0.00	0.675	0.50	2.75	14.00	11.2	39.71	45.6	91.82	186	100.00	756	100.00
0.188	0.00	0.767	1.35	3.12	15.52	12.7	43.37	51.8	95.03	211	100.00	859	100.00
0.214	0.00	0.872	2.64	3.55	17.21	14.5	47.40	58.9	97.40	240	100.00	976	100.00
0.243	0.00	0.991	4.20	4.03	19.05	16.4	51.81	66.9	98.97	272	100.00	1110	100.00
0.276	0.00	1.13	5.82	4.58	21.03	18.7	56.60	76.0	99.83	310	100.00		
0.314	0.00	1.28	7.27	5.21	23.16	21.2	61.72	86.4	100.00	352	100.00		
0.357	0.00	1.45	8.49	5.92	25.44	24.1	67.10	98.1	100.00	400	100.00		

Analysis

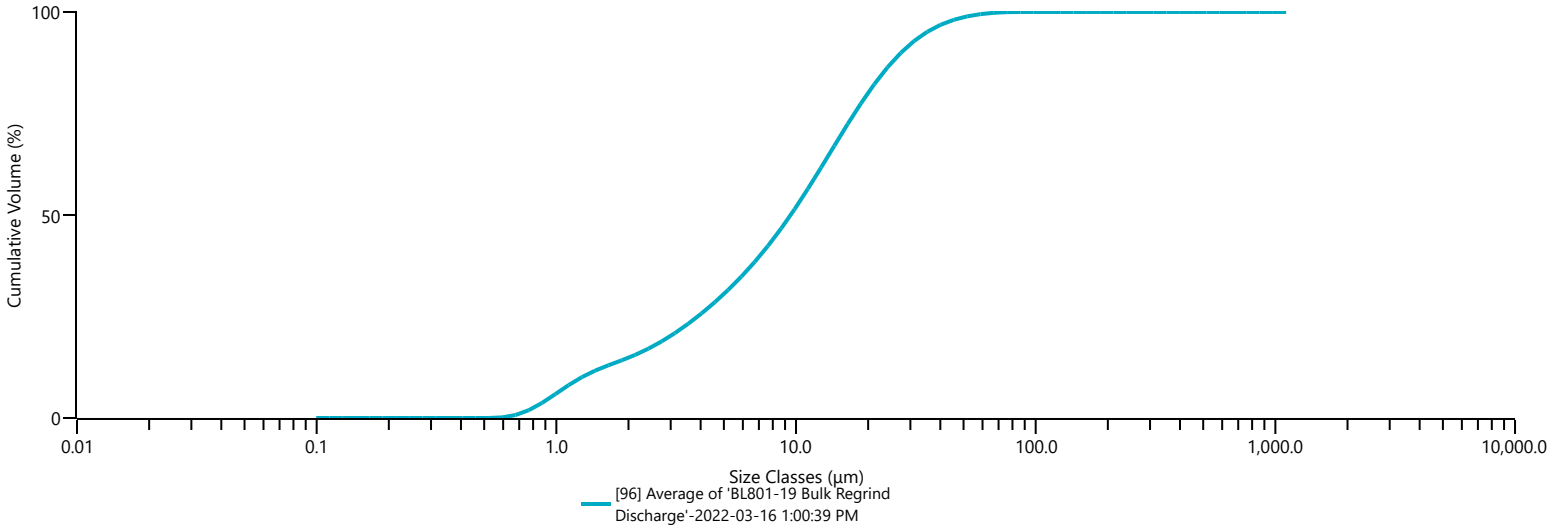
Measurement Details	
Sample Name	Average of 'BL801-19 Bulk Regrind Discharge'

Measurement Details	
Analysis Date Time	2022-03-16 1:00:39 PM
Measurement Date Time	2022-03-16 1:00:39 PM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.78 %
Laser Obscuration	14.08 %

Result	
Dv (90)	27.4 µm
Dv (80)	20.0 µm
Dv (50)	9.49 µm
Dv (10)	1.27 µm
Volume Below (75) µm	99.95 %
Volume Below (53) µm	99.02 %
Volume Below (38) µm	96.12 %
Volume Below (20) µm	80.04 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	12.99	6.72	38.43	27.4	89.94	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	14.21	7.64	42.38	31.1	92.86	127	100.00	516	100.00
0.128	0.00	0.523	0.00	2.13	15.53	8.68	46.70	35.3	95.14	144	100.00	586	100.00
0.146	0.00	0.594	0.15	2.42	17.07	9.86	51.39	40.1	96.86	163	100.00	666	100.00
0.166	0.00	0.675	0.72	2.75	18.86	11.2	56.41	45.6	98.08	186	100.00	756	100.00
0.188	0.00	0.767	1.92	3.12	20.91	12.7	61.68	51.8	98.93	211	100.00	859	100.00
0.214	0.00	0.872	3.72	3.55	23.21	14.5	67.07	58.9	99.47	240	100.00	976	100.00
0.243	0.00	0.991	5.88	4.03	25.74	16.4	72.40	66.9	99.80	272	100.00	1110	100.00
0.276	0.00	1.13	8.09	4.58	28.51	18.7	77.49	76.0	99.96	310	100.00		
0.314	0.00	1.28	10.07	5.21	31.53	21.2	82.20	86.4	100.00	352	100.00		
0.357	0.00	1.45	11.67	5.92	34.82	24.1	86.38	98.1	100.00	400	100.00		

Analysis

Measurement Details

Sample Name Average of 'BL801-19 Zinc Regrind Discharge'

Measurement Details

Analysis Date Time 2022-03-18 11:17:57 AM
Measurement Date Time 2022-03-18 11:17:57 AM
Result Source Averaged

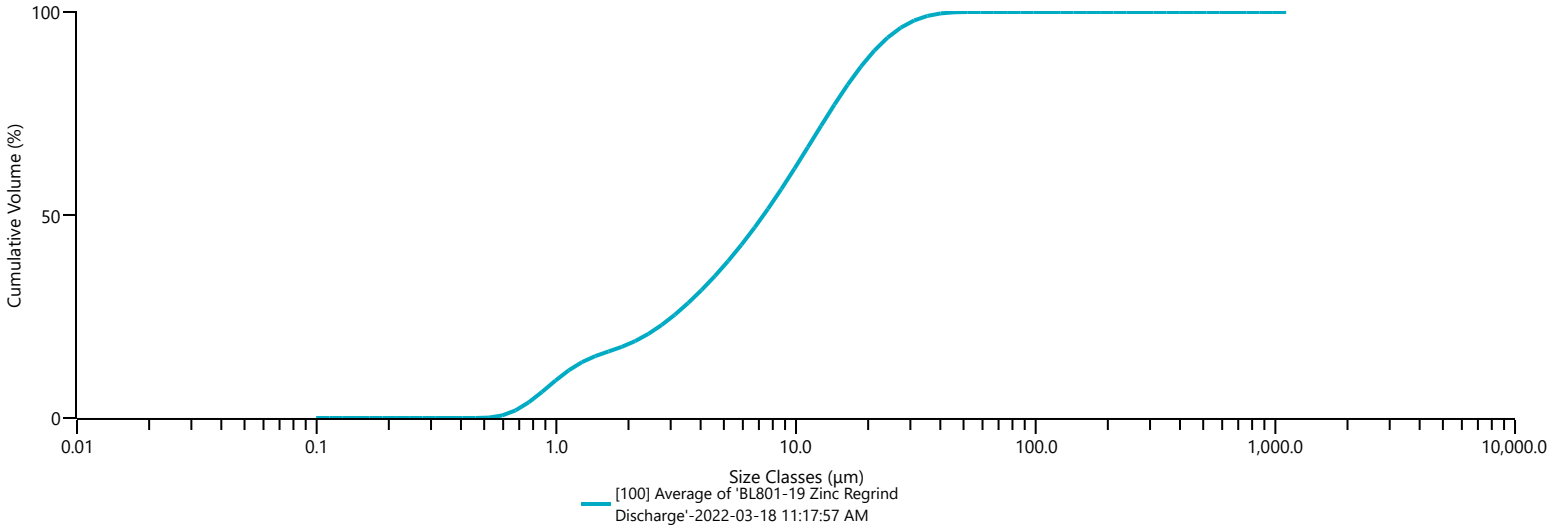
Analysis

Particle Name Silica (RI 1.45, AI 0.1)
Particle Refractive Index 1.450
Particle Absorption Index 0.100
Dispersant Name Water
Dispersant Refractive Index 1.330
Scattering Model Mie
Analysis Model General Purpose
Weighted Residual 0.77 %
Laser Obscuration 16.69 %

Result

Dv (90) 20.9 µm
Dv (80) 15.6 µm
Dv (50) 7.32 µm
Dv (10) 1.03 µm
Volume Below (75) µm 100.00 %
Volume Below (53) µm 100.00 %
Volume Below (38) µm 99.38 %
Volume Below (20) µm 88.68 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	16.39	6.72	46.92	27.4	96.15	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	17.52	7.64	51.49	31.1	97.91	127	100.00	516	100.00
0.128	0.00	0.523	0.10	2.13	18.92	8.68	56.35	35.3	99.03	144	100.00	586	100.00
0.146	0.00	0.594	0.63	2.42	20.71	9.86	61.43	40.1	99.65	163	100.00	666	100.00
0.166	0.00	0.675	1.86	2.75	22.90	11.2	66.68	45.6	99.92	186	100.00	756	100.00
0.188	0.00	0.767	3.86	3.12	25.46	12.7	71.97	51.8	100.00	211	100.00	859	100.00
0.214	0.00	0.872	6.43	3.55	28.33	14.5	77.17	58.9	100.00	240	100.00	976	100.00
0.243	0.00	0.991	9.19	4.03	31.50	16.4	82.09	66.9	100.00	272	100.00	1110	100.00
0.276	0.00	1.13	11.72	4.58	34.94	18.7	86.57	76.0	100.00	310	100.00		
0.314	0.00	1.28	13.75	5.21	38.65	21.2	90.47	86.4	100.00	352	100.00		
0.357	0.00	1.45	15.24	5.92	42.64	24.1	93.68	98.1	100.00	400	100.00		

Analysis

TABLE D-12

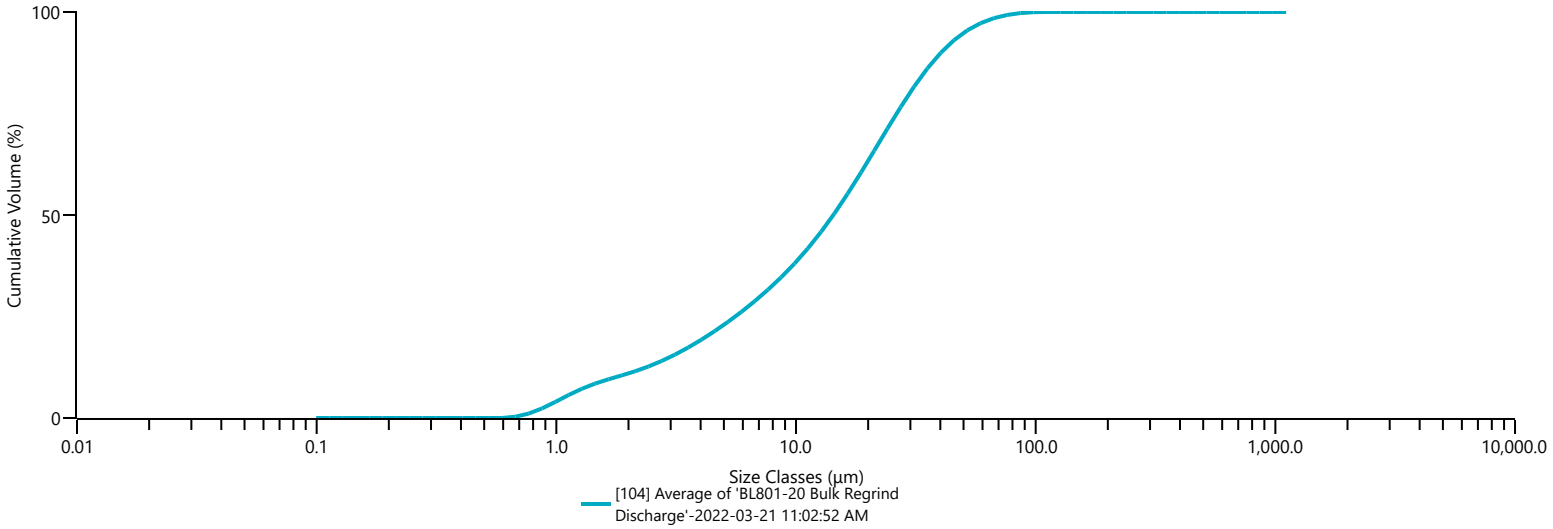
Measurement Details	
Sample Name	Average of 'BL801-20 Bulk Regrind Discharge'

Measurement Details	
Analysis Date Time	2022-03-21 11:02:52 AM
Measurement Date Time	2022-03-21 11:02:52 AM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.67 %
Laser Obscuration	15.62 %

Result	
Dv (90)	40.3 µm
Dv (80)	29.8 µm
Dv (50)	14.3 µm
Dv (10)	1.76 µm
Volume Below (75) µm	99.18 %
Volume Below (53) µm	95.78 %
Volume Below (38) µm	88.28 %
Volume Below (20) µm	63.37 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	9.53	6.72	28.76	27.4	76.63	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	10.49	7.64	31.59	31.1	81.62	127	100.00	516	100.00
0.128	0.00	0.523	0.00	2.13	11.50	8.68	34.66	35.3	86.10	144	100.00	586	100.00
0.146	0.00	0.594	0.00	2.42	12.67	9.86	38.04	40.1	89.93	163	100.00	666	100.00
0.166	0.00	0.675	0.32	2.75	14.04	11.2	41.75	45.6	93.05	186	100.00	756	100.00
0.188	0.00	0.767	1.09	3.12	15.60	12.7	45.86	51.8	95.47	211	100.00	859	100.00
0.214	0.00	0.872	2.36	3.55	17.36	14.5	50.36	58.9	97.24	240	100.00	976	100.00
0.243	0.00	0.991	3.96	4.03	19.30	16.4	55.25	66.9	98.47	272	100.00	1110	100.00
0.276	0.00	1.13	5.65	4.58	21.41	18.7	60.45	76.0	99.27	310	100.00		
0.314	0.00	1.28	7.20	5.21	23.69	21.2	65.85	86.4	99.73	352	100.00		
0.357	0.00	1.45	8.48	5.92	26.13	24.1	71.31	98.1	99.95	400	100.00		

Analysis

Measurement Details

Sample Name Average of 'BL801-20 Lead Regrind Discharge'

Measurement Details

Analysis Date Time 2022-03-21 1:24:37 PM
Measurement Date Time 2022-03-21 1:24:37 PM
Result Source Averaged

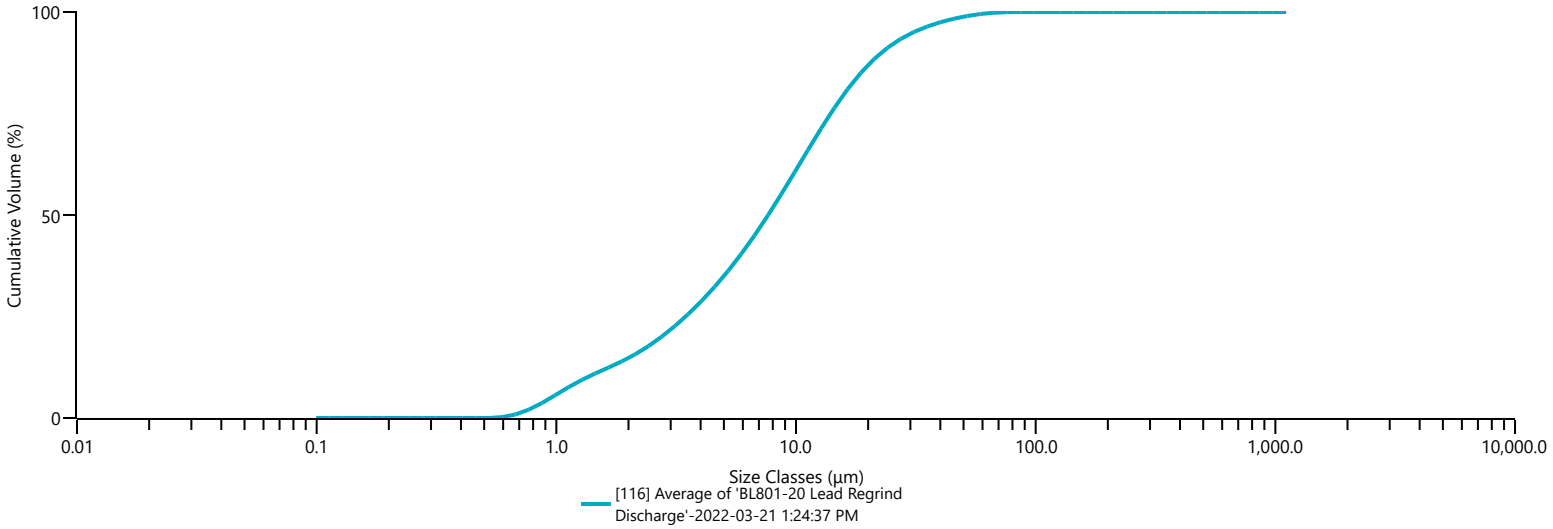
Analysis

Particle Name Silica (RI 1.45, AI 0.1)
Particle Refractive Index 1.450
Particle Absorption Index 0.100
Dispersant Name Water
Dispersant Refractive Index 1.330
Scattering Model Mie
Analysis Model General Purpose
Weighted Residual 0.60 %
Laser Obscuration 16.23 %

Result

Dv (90) 22.8 µm
Dv (80) 16.0 µm
Dv (50) 7.65 µm
Dv (10) 1.34 µm
Volume Below (75) µm 99.94 %
Volume Below (53) µm 99.10 %
Volume Below (38) µm 97.04 %
Volume Below (20) µm 86.88 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	12.42	6.72	45.00	27.4	93.38	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	13.94	7.64	49.91	31.1	95.09	127	100.00	516	100.00
0.128	0.00	0.523	0.00	2.13	15.67	8.68	55.10	35.3	96.43	144	100.00	586	100.00
0.146	0.00	0.594	0.22	2.42	17.69	9.86	60.49	40.1	97.50	163	100.00	666	100.00
0.166	0.00	0.675	0.87	2.75	20.02	11.2	65.95	45.6	98.35	186	100.00	756	100.00
0.188	0.00	0.767	2.05	3.12	22.65	12.7	71.30	51.8	99.01	211	100.00	859	100.00
0.214	0.00	0.872	3.71	3.55	25.58	14.5	76.38	58.9	99.50	240	100.00	976	100.00
0.243	0.00	0.991	5.64	4.03	28.81	16.4	81.00	66.9	99.82	272	100.00	1110	100.00
0.276	0.00	1.13	7.59	4.58	32.35	18.7	85.04	76.0	99.96	310	100.00		
0.314	0.00	1.28	9.38	5.21	36.22	21.2	88.43	86.4	100.00	352	100.00		
0.357	0.00	1.45	10.96	5.92	40.44	24.1	91.19	98.1	100.00	400	100.00		

Analysis

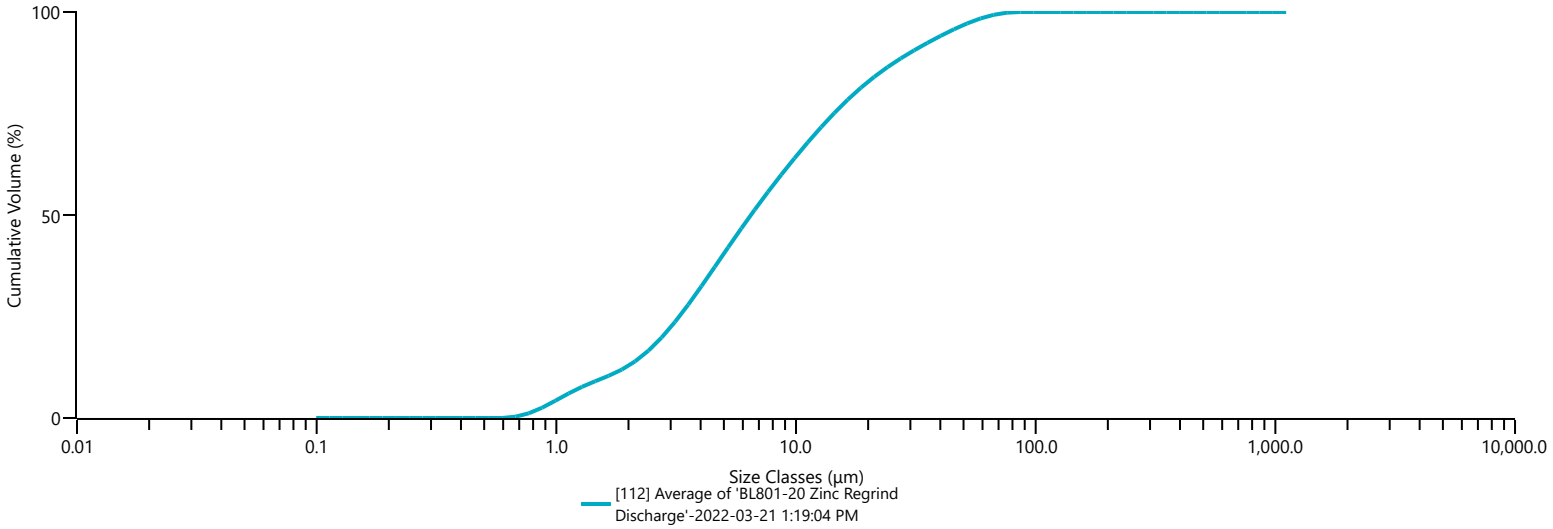
Measurement Details	
Sample Name	Average of 'BL801-20 Zinc Regrind Discharge'

Measurement Details	
Analysis Date Time	2022-03-21 1:19:04 PM
Measurement Date Time	2022-03-21 1:19:04 PM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	1.07 %
Laser Obscuration	2.10 %

Result	
Dv (90)	30.0 µm
Dv (80)	17.6 µm
Dv (50)	6.49 µm
Dv (10)	1.59 µm
Volume Below (75) µm	99.78 %
Volume Below (53) µm	97.40 %
Volume Below (38) µm	93.38 %
Volume Below (20) µm	82.80 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	10.38	6.72	51.27	27.4	88.58	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	11.92	7.64	55.67	31.1	90.55	127	100.00	516	100.00
0.128	0.00	0.523	0.00	2.13	13.93	8.68	59.91	35.3	92.39	144	100.00	586	100.00
0.146	0.00	0.594	0.00	2.42	16.57	9.86	63.98	40.1	94.12	163	100.00	666	100.00
0.166	0.00	0.675	0.32	2.75	19.82	11.2	67.89	45.6	95.73	186	100.00	756	100.00
0.188	0.00	0.767	1.15	3.12	23.64	12.7	71.62	51.8	97.19	211	100.00	859	100.00
0.214	0.00	0.872	2.53	3.55	27.91	14.5	75.14	58.9	98.41	240	100.00	976	100.00
0.243	0.00	0.991	4.25	4.03	32.49	16.4	78.39	66.9	99.30	272	100.00	1110	100.00
0.276	0.00	1.13	6.05	4.58	37.23	18.7	81.36	76.0	99.83	310	100.00		
0.314	0.00	1.28	7.67	5.21	42.00	21.2	84.02	86.4	100.00	352	100.00		
0.357	0.00	1.45	9.06	5.92	46.71	24.1	86.42	98.1	100.00	400	100.00		

Analysis

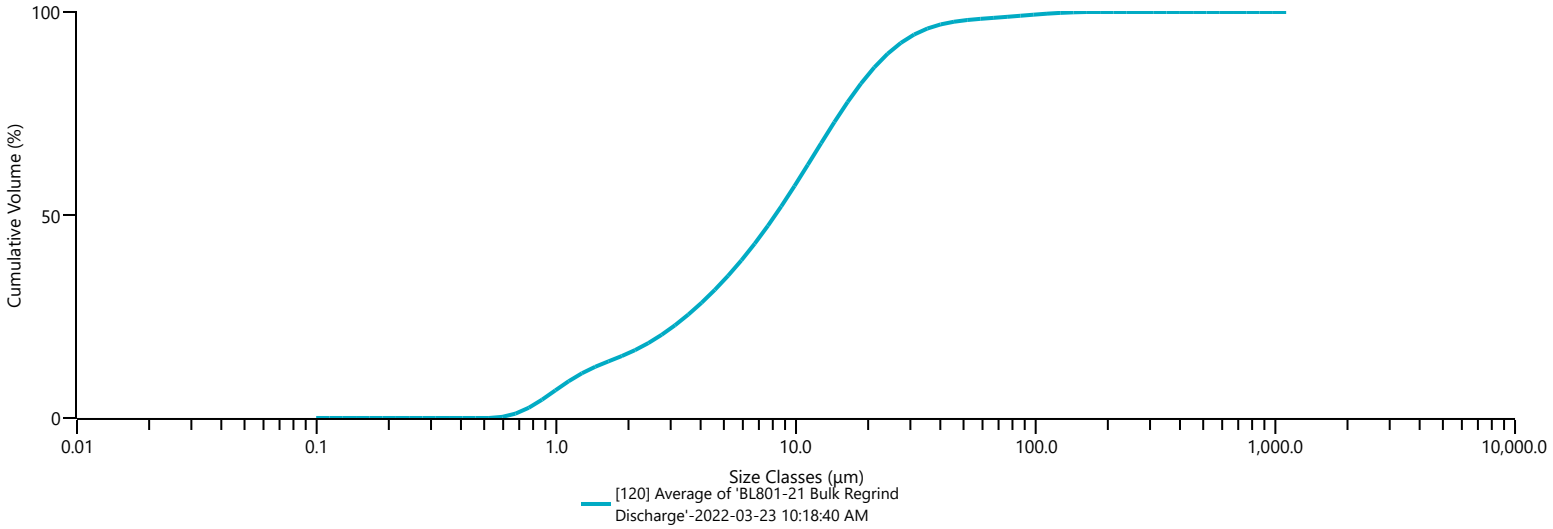
Measurement Details	
Sample Name	Average of 'BL801-21 Bulk Regrind Discharge'

Measurement Details	
Analysis Date Time	2022-03-23 10:18:40 AM
Measurement Date Time	2022-03-23 10:18:40 AM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.57 %
Laser Obscuration	17.51 %

Result	
Dv (90)	24.4 µm
Dv (80)	17.5 µm
Dv (50)	8.20 µm
Dv (10)	1.20 µm
Volume Below (75) µm	98.78 %
Volume Below (53) µm	98.07 %
Volume Below (38) µm	96.50 %
Volume Below (20) µm	84.52 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	13.95	6.72	42.93	27.4	92.39	111	99.58	454	100.00
0.113	0.00	0.461	0.00	1.88	15.26	7.64	47.36	31.1	94.44	127	99.78	516	100.00
0.128	0.00	0.523	0.00	2.13	16.72	8.68	52.11	35.3	95.93	144	99.91	586	100.00
0.146	0.00	0.594	0.27	2.42	18.46	9.86	57.14	40.1	96.94	163	100.00	666	100.00
0.166	0.00	0.675	1.07	2.75	20.49	11.2	62.37	45.6	97.60	186	100.00	756	100.00
0.188	0.00	0.767	2.52	3.12	22.83	12.7	67.67	51.8	98.02	211	100.00	859	100.00
0.214	0.00	0.872	4.51	3.55	25.46	14.5	72.88	58.9	98.31	240	100.00	976	100.00
0.243	0.00	0.991	6.80	4.03	28.37	16.4	77.83	66.9	98.56	272	100.00	1110	100.00
0.276	0.00	1.13	9.05	4.58	31.56	18.7	82.37	76.0	98.81	310	100.00		
0.314	0.00	1.28	11.01	5.21	35.03	21.2	86.35	86.4	99.07	352	100.00		
0.357	0.00	1.45	12.61	5.92	38.82	24.1	89.70	98.1	99.34	400	100.00		

Analysis

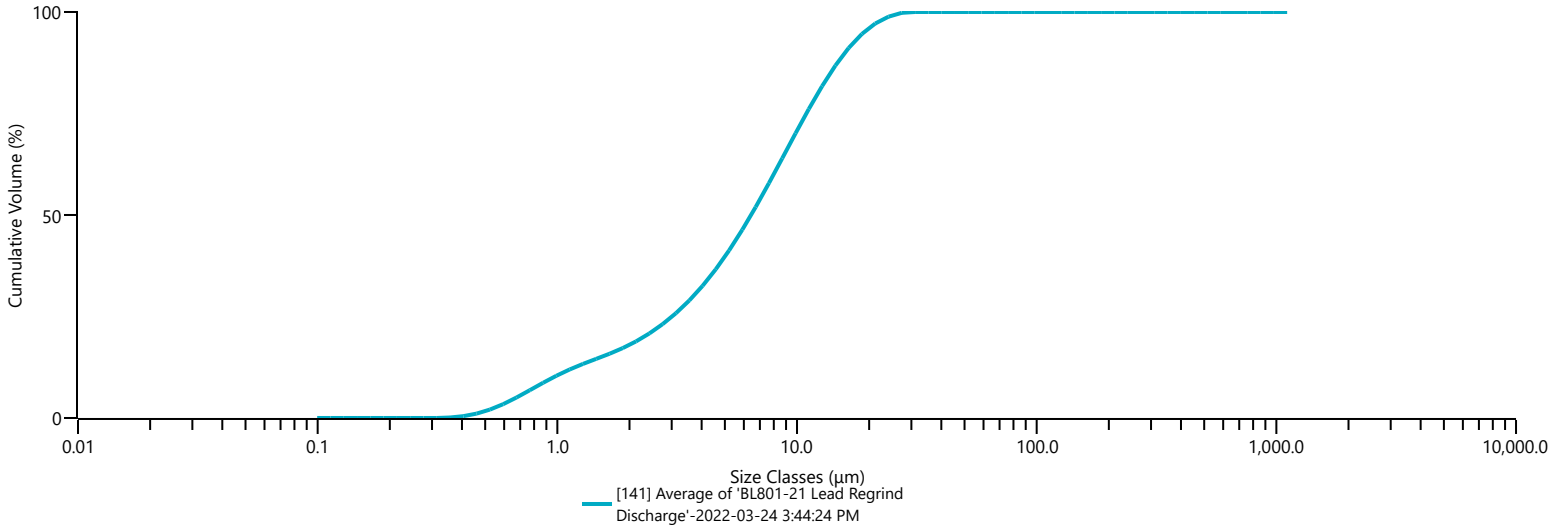
Measurement Details	
Sample Name	Average of 'BL801-21 Lead Regrind Discharge'

Measurement Details	
Analysis Date Time	2022-03-24 3:44:24 PM
Measurement Date Time	2022-03-24 3:44:24 PM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.48 %
Laser Obscuration	23.30 %

Result	
Dv (90)	15.9 µm
Dv (80)	12.2 µm
Dv (50)	6.43 µm
Dv (10)	0.962 µm
Volume Below (75) µm	100.00 %
Volume Below (53) µm	100.00 %
Volume Below (38) µm	100.00 %
Volume Below (20) µm	95.98 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.45	1.65	15.82	6.72	51.95	27.4	99.79	111	100.00	454	100.00
0.113	0.00	0.461	1.08	1.88	17.22	7.64	57.85	31.1	100.00	127	100.00	516	100.00
0.128	0.00	0.523	2.07	2.13	18.87	8.68	63.95	35.3	100.00	144	100.00	586	100.00
0.146	0.00	0.594	3.41	2.42	20.82	9.86	70.10	40.1	100.00	163	100.00	666	100.00
0.166	0.00	0.675	5.04	2.75	23.12	11.2	76.10	45.6	100.00	186	100.00	756	100.00
0.188	0.00	0.767	6.84	3.12	25.81	12.7	81.73	51.8	100.00	211	100.00	859	100.00
0.214	0.00	0.872	8.67	3.55	28.93	14.5	86.81	58.9	100.00	240	100.00	976	100.00
0.243	0.00	0.991	10.40	4.03	32.53	16.4	91.13	66.9	100.00	272	100.00	1110	100.00
0.276	0.00	1.13	11.95	4.58	36.64	18.7	94.60	76.0	100.00	310	100.00		
0.314	0.00	1.28	13.31	5.21	41.26	21.2	97.16	86.4	100.00	352	100.00		
0.357	0.12	1.45	14.56	5.92	46.39	24.1	98.84	98.1	100.00	400	100.00		

Analysis

Measurement Details

Sample Name Average of 'BL801-21 Zinc Regrind Discharge'

Measurement Details

Analysis Date Time 2022-03-23 12:34:39 PM
Measurement Date Time 2022-03-23 12:34:39 PM
Result Source Averaged

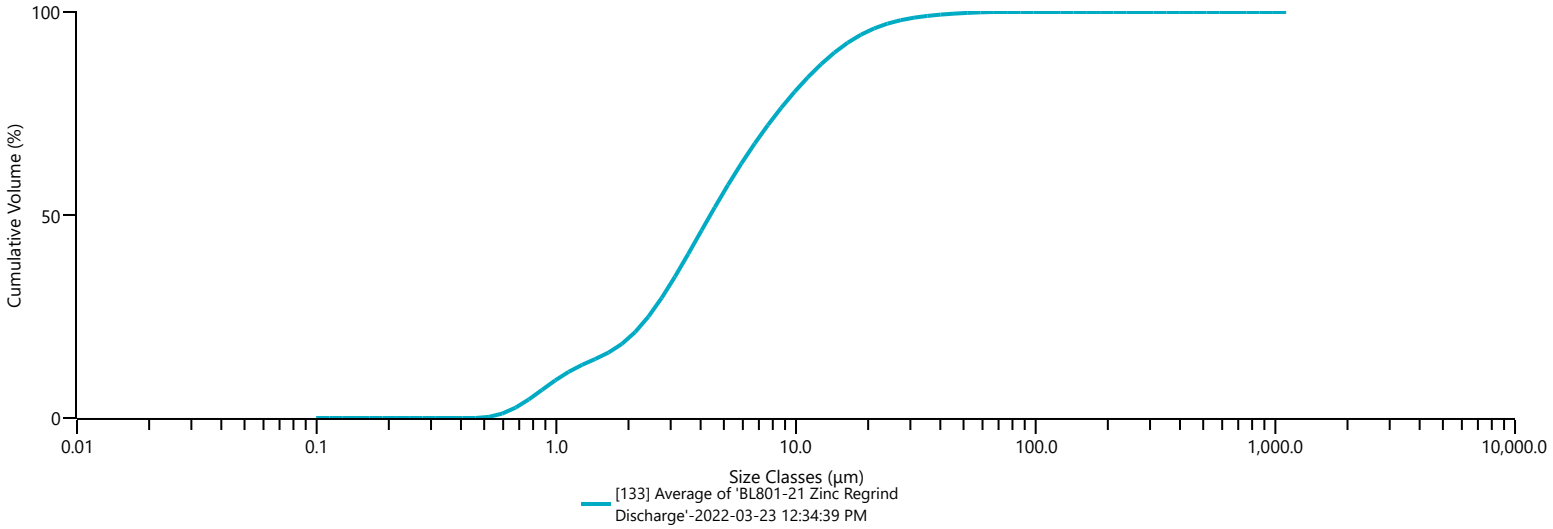
Analysis

Particle Name Silica (RI 1.45, AI 0.1)
Particle Refractive Index 1.450
Particle Absorption Index 0.100
Dispersant Name Water
Dispersant Refractive Index 1.330
Scattering Model Mie
Analysis Model General Purpose
Weighted Residual 0.57 %
Laser Obscuration 22.32 %

Result

Dv (90) 14.5 µm
Dv (80) 9.76 µm
Dv (50) 4.39 µm
Dv (10) 1.04 µm
Volume Below (75) µm 100.00 %
Volume Below (53) µm 99.80 %
Volume Below (38) µm 99.22 %
Volume Below (20) µm 95.26 %

Undersize

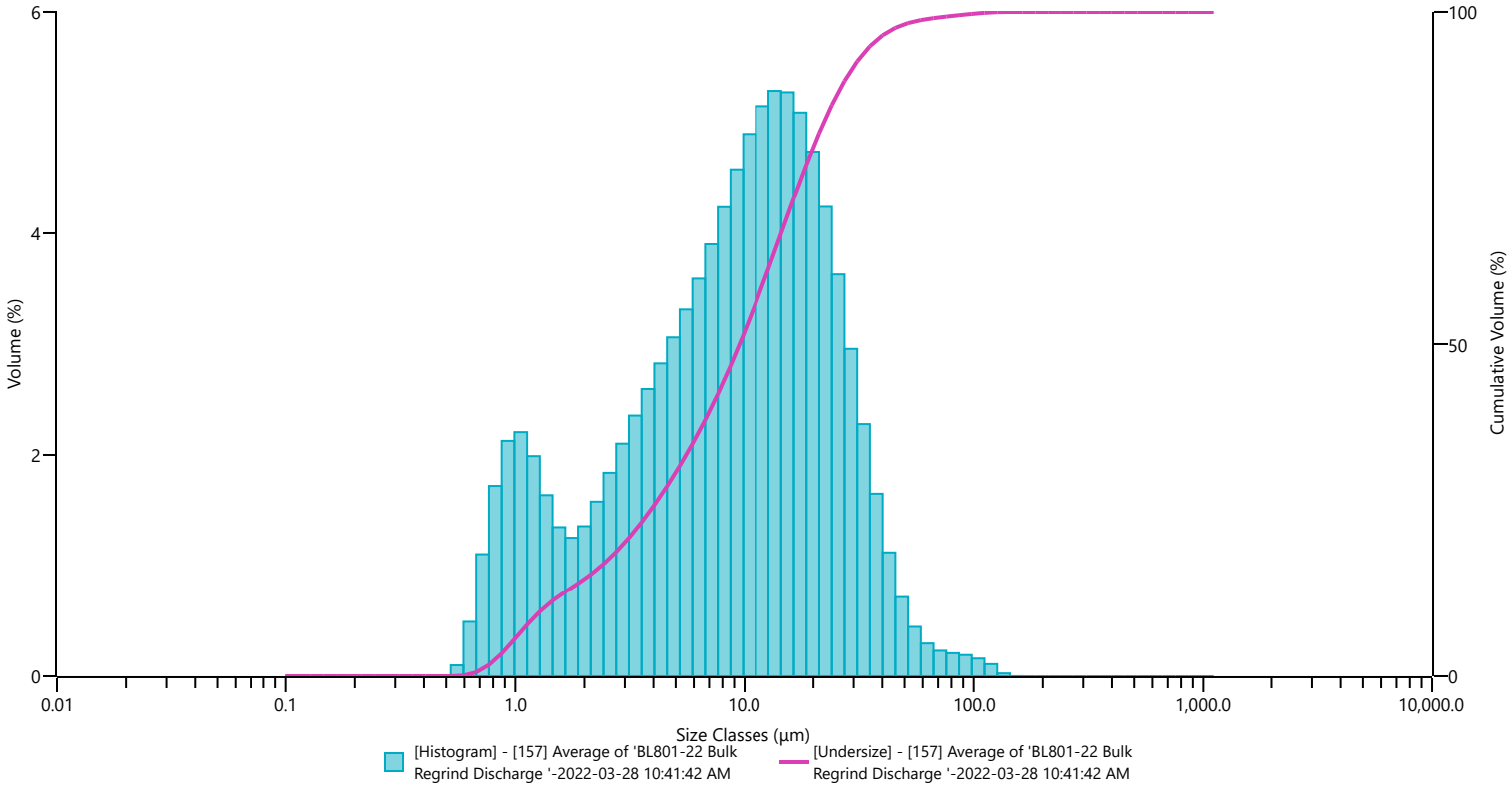


Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	16.11	6.72	67.60	27.4	97.99	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	18.22	7.64	72.17	31.1	98.60	127	100.00	516	100.00
0.128	0.00	0.523	0.28	2.13	21.14	8.68	76.41	35.3	99.04	144	100.00	586	100.00
0.146	0.00	0.594	1.08	2.42	24.95	9.86	80.32	40.1	99.35	163	100.00	666	100.00
0.166	0.00	0.675	2.53	2.75	29.56	11.2	83.91	45.6	99.59	186	100.00	756	100.00
0.188	0.00	0.767	4.56	3.12	34.79	12.7	87.15	51.8	99.77	211	100.00	859	100.00
0.214	0.00	0.872	6.92	3.55	40.40	14.5	90.00	58.9	99.91	240	100.00	976	100.00
0.243	0.00	0.991	9.28	4.03	46.17	16.4	92.43	66.9	100.00	272	100.00	1110	100.00
0.276	0.00	1.13	11.36	4.58	51.90	18.7	94.41	76.0	100.00	310	100.00		
0.314	0.00	1.28	13.06	5.21	57.44	21.2	95.97	86.4	100.00	352	100.00		
0.357	0.00	1.45	14.53	5.92	62.68	24.1	97.14	98.1	100.00	400	100.00		

Result overlay

Histogram and Undersize



Trend

	Record Number	Sample Name	Dx (10) (µm)	Dx (50) (µm)	Dx (80) (µm)	Dx (90) (µm)
	157	Average of 'BL801-22 Bulk Regrind Discharge '	1.31	9.51	20.2	27.8
Mean			**1.31**	**9.51**	**20.2**	**27.8**
1xStd Dev			**0.00**	**0.00**	**0.00**	**0.00**
1xRSD (%)			**0.00**	**0.00**	**0.00**	**0.00**

Analysis

Measurement Details

Sample Name Average of 'BL801-22 Lead Regrind Discharge '

Measurement Details

Analysis Date Time 2022-03-28 12:14:03 PM
Measurement Date Time 2022-03-28 12:14:03 PM
Result Source Averaged

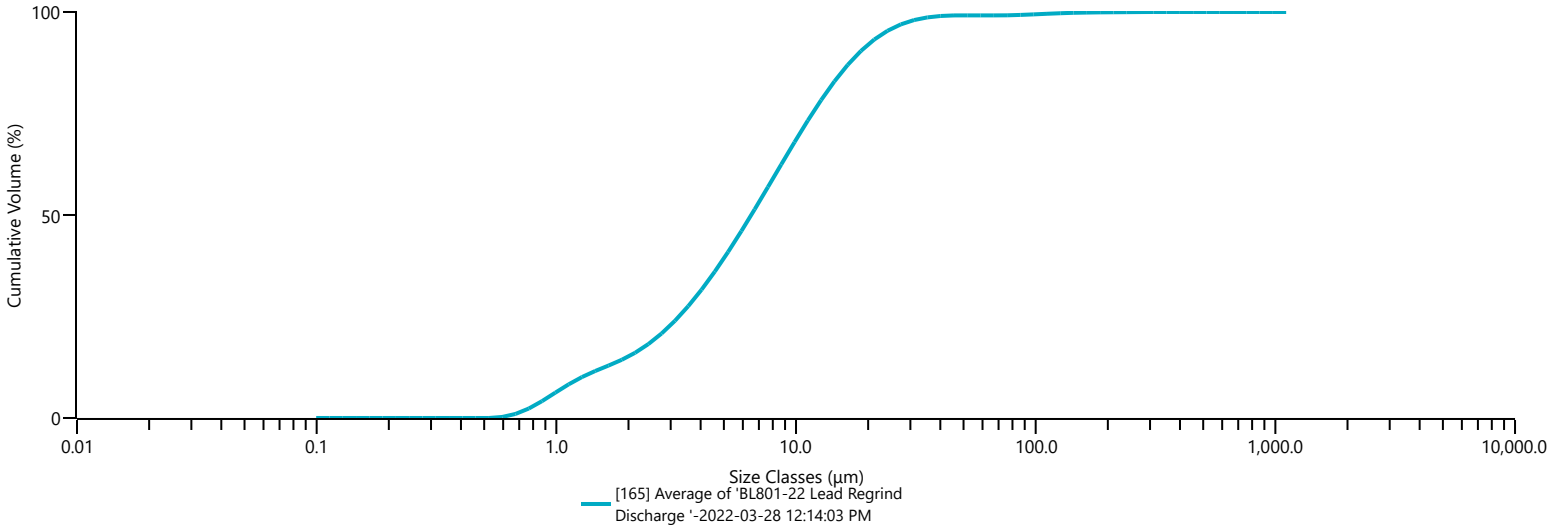
Analysis

Particle Name Silica (RI 1.45, AI 0.1)
Particle Refractive Index 1.450
Particle Absorption Index 0.100
Dispersant Name Water
Dispersant Refractive Index 1.330
Scattering Model Mie
Analysis Model General Purpose
Weighted Residual 0.54 %
Laser Obscuration 12.54 %

Result

Dv (90) 18.4 µm
Dv (80) 13.3 µm
Dv (50) 6.50 µm
Dv (10) 1.27 µm
Volume Below (75) µm 99.18 %
Volume Below (53) µm 99.16 %
Volume Below (38) µm 98.86 %
Volume Below (20) µm 91.93 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	12.91	6.72	51.39	27.4	96.95	111	99.56	454	100.00
0.113	0.00	0.461	0.00	1.88	14.33	7.64	56.89	31.1	98.01	127	99.69	516	100.00
0.128	0.00	0.523	0.00	2.13	16.05	8.68	62.44	35.3	98.67	144	99.80	586	100.00
0.146	0.00	0.594	0.25	2.42	18.20	9.86	67.94	40.1	99.01	163	99.86	666	100.00
0.166	0.00	0.675	0.99	2.75	20.82	11.2	73.26	45.6	99.15	186	99.91	756	100.00
0.188	0.00	0.767	2.33	3.12	23.94	12.7	78.29	51.8	99.16	211	99.93	859	100.00
0.214	0.00	0.872	4.16	3.55	27.54	14.5	82.89	58.9	99.16	240	99.96	976	100.00
0.243	0.00	0.991	6.24	4.03	31.59	16.4	86.96	66.9	99.16	272	99.98	1110	100.00
0.276	0.00	1.13	8.28	4.58	36.06	18.7	90.41	76.0	99.18	310	100.00		
0.314	0.00	1.28	10.07	5.21	40.89	21.2	93.21	86.4	99.28	352	100.00		
0.357	0.00	1.45	11.57	5.92	46.03	24.1	95.37	98.1	99.41	400	100.00		

Analysis

Measurement Details

Sample Name Average of 'BL801-22 Zinc Regrind Discharge '

Measurement Details

Analysis Date Time 2022-03-28 1:58:18 PM
Measurement Date Time 2022-03-28 1:58:18 PM
Result Source Averaged

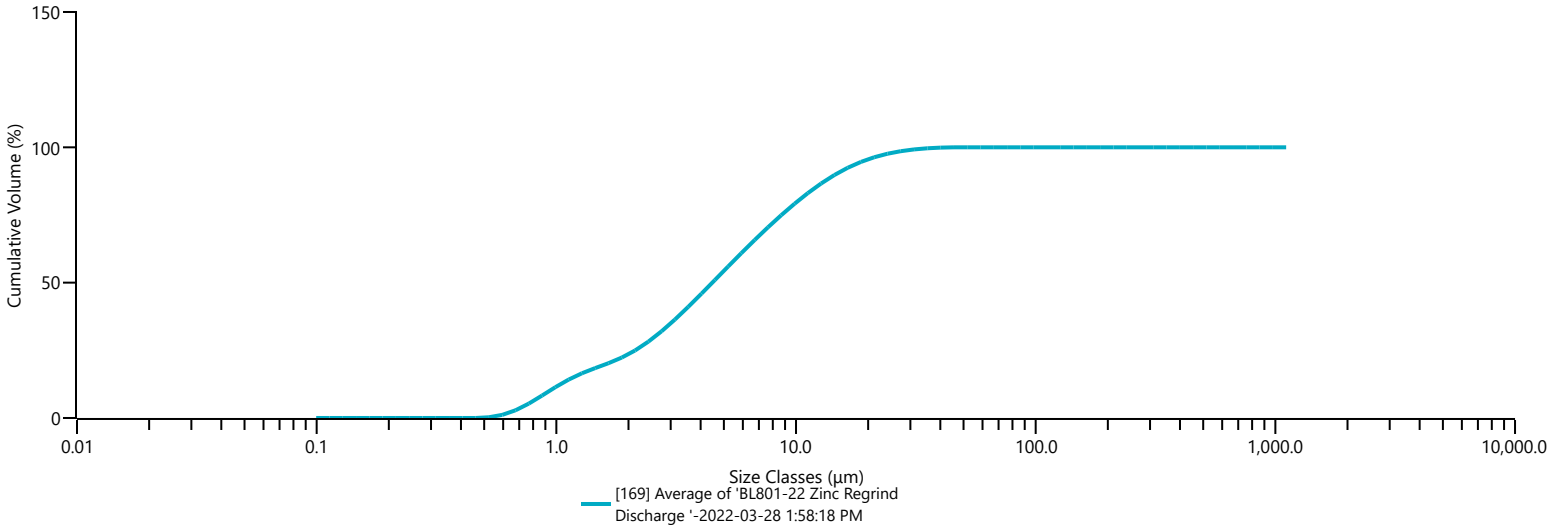
Analysis

Particle Name Silica (RI 1.45, AI 0.1)
Particle Refractive Index 1.450
Particle Absorption Index 0.100
Dispersant Name Water
Dispersant Refractive Index 1.330
Scattering Model Mie
Analysis Model General Purpose
Weighted Residual 0.70 %
Laser Obscuration 21.89 %

Result

Dv (90) 14.6 µm
Dv (80) 10.1 µm
Dv (50) 4.47 µm
Dv (10) 0.936 µm
Volume Below (75) µm 100.00 %
Volume Below (53) µm 100.00 %
Volume Below (38) µm 99.78 %
Volume Below (20) µm 95.54 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	20.25	6.72	65.75	27.4	98.57	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	22.32	7.64	70.44	31.1	99.22	127	100.00	516	100.00
0.128	0.00	0.523	0.27	2.13	24.94	8.68	74.92	35.3	99.64	144	100.00	586	100.00
0.146	0.00	0.594	1.15	2.42	28.20	9.86	79.15	40.1	99.88	163	100.00	666	100.00
0.166	0.00	0.675	2.84	2.75	32.05	11.2	83.07	45.6	100.00	186	100.00	756	100.00
0.188	0.00	0.767	5.31	3.12	36.38	12.7	86.63	51.8	100.00	211	100.00	859	100.00
0.214	0.00	0.872	8.29	3.55	41.05	14.5	89.76	58.9	100.00	240	100.00	976	100.00
0.243	0.00	0.991	11.37	4.03	45.94	16.4	92.43	66.9	100.00	272	100.00	1110	100.00
0.276	0.00	1.13	14.18	4.58	50.94	18.7	94.61	76.0	100.00	310	100.00		
0.314	0.00	1.28	16.51	5.21	55.95	21.2	96.33	86.4	100.00	352	100.00		
0.357	0.00	1.45	18.44	5.92	60.91	24.1	97.63	98.1	100.00	400	100.00		

Analysis

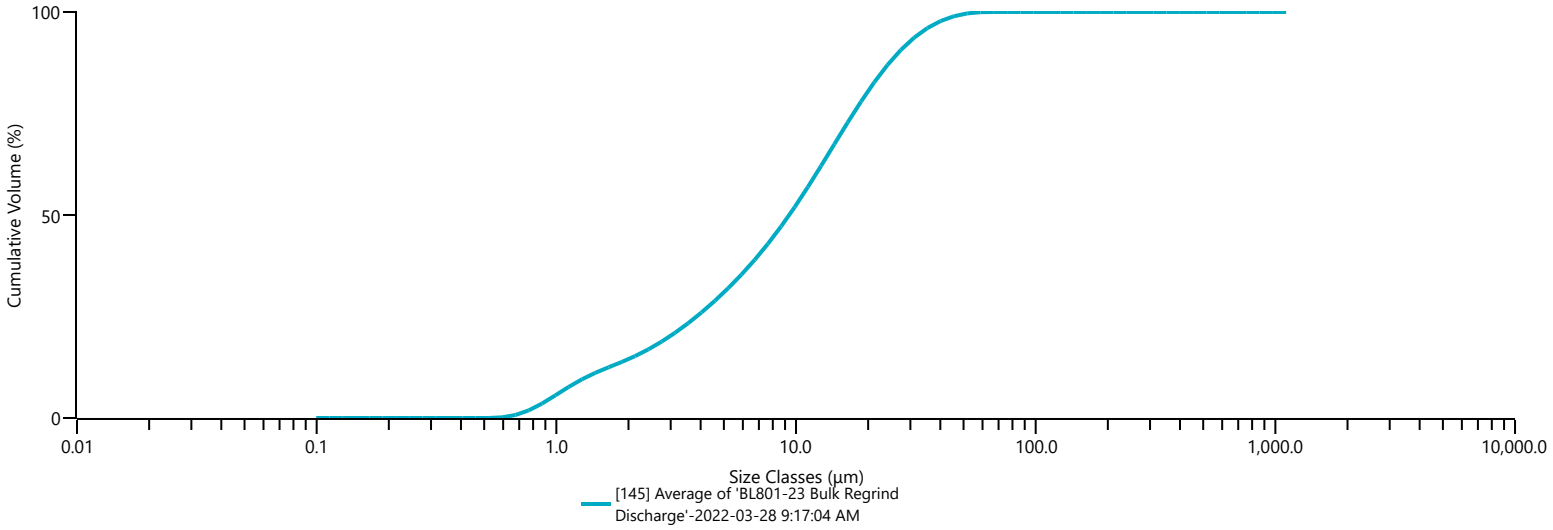
Measurement Details	
Sample Name	Average of 'BL801-23 Bulk Regrind Discharge'

Measurement Details	
Analysis Date Time	2022-03-28 9:17:04 AM
Measurement Date Time	2022-03-28 9:17:04 AM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.79 %
Laser Obscuration	23.64 %

Result	
Dv (90)	26.8 µm
Dv (80)	19.7 µm
Dv (50)	9.36 µm
Dv (10)	1.33 µm
Volume Below (75) µm	100.00 %
Volume Below (53) µm	99.70 %
Volume Below (38) µm	97.03 %
Volume Below (20) µm	80.50 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	12.48	6.72	38.95	27.4	90.64	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	13.80	7.64	42.91	31.1	93.67	127	100.00	516	100.00
0.128	0.00	0.523	0.00	2.13	15.24	8.68	47.23	35.3	96.04	144	100.00	586	100.00
0.146	0.00	0.594	0.16	2.42	16.90	9.86	51.89	40.1	97.78	163	100.00	666	100.00
0.166	0.00	0.675	0.73	2.75	18.81	11.2	56.87	45.6	98.95	186	100.00	756	100.00
0.188	0.00	0.767	1.88	3.12	20.97	12.7	62.10	51.8	99.65	211	100.00	859	100.00
0.214	0.00	0.872	3.56	3.55	23.36	14.5	67.46	58.9	99.95	240	100.00	976	100.00
0.243	0.00	0.991	5.58	4.03	25.99	16.4	72.78	66.9	100.00	272	100.00	1110	100.00
0.276	0.00	1.13	7.64	4.58	28.85	18.7	77.91	76.0	100.00	310	100.00		
0.314	0.00	1.28	9.52	5.21	31.94	21.2	82.68	86.4	100.00	352	100.00		
0.357	0.00	1.45	11.11	5.92	35.30	24.1	86.96	98.1	100.00	400	100.00		

Analysis

Measurement Details

Sample Name Average of 'BL801-23 Lead Regrind Discharge '

Measurement Details

Analysis Date Time 2022-03-28 4:16:11 PM
Measurement Date Time 2022-03-28 4:16:11 PM
Result Source Averaged

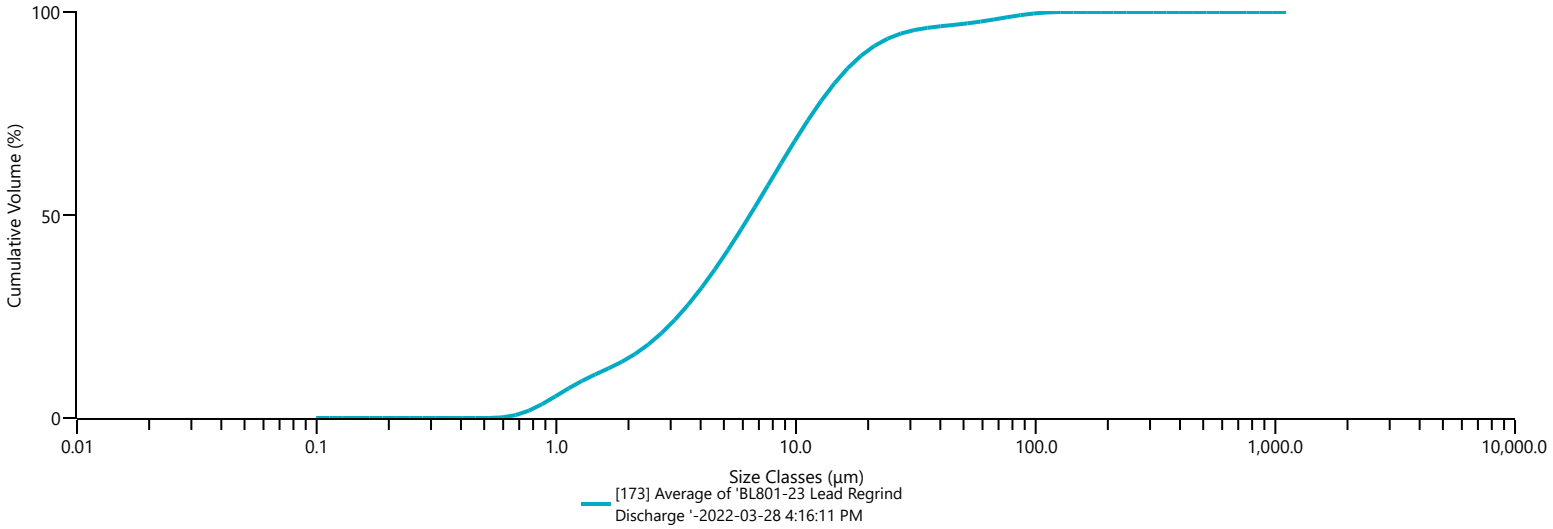
Analysis

Particle Name Silica (RI 1.45, AI 0.1)
Particle Refractive Index 1.450
Particle Absorption Index 0.100
Dispersant Name Water
Dispersant Refractive Index 1.330
Scattering Model Mie
Analysis Model General Purpose
Weighted Residual 0.65 %
Laser Obscuration 9.11 %

Result

Dv (90) 19.5 µm
Dv (80) 13.5 µm
Dv (50) 6.43 µm
Dv (10) 1.37 µm
Volume Below (75) µm 98.65 %
Volume Below (53) µm 97.27 %
Volume Below (38) µm 96.32 %
Volume Below (20) µm 90.52 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	12.22	6.72	51.86	27.4	94.69	111	99.88	454	100.00
0.113	0.00	0.461	0.00	1.88	13.84	7.64	57.30	31.1	95.54	127	100.00	516	100.00
0.128	0.00	0.523	0.00	2.13	15.76	8.68	62.77	35.3	96.09	144	100.00	586	100.00
0.146	0.00	0.594	0.15	2.42	18.12	9.86	68.14	40.1	96.49	163	100.00	666	100.00
0.166	0.00	0.675	0.70	2.75	20.93	11.2	73.29	45.6	96.82	186	100.00	756	100.00
0.188	0.00	0.767	1.79	3.12	24.21	12.7	78.09	51.8	97.19	211	100.00	859	100.00
0.214	0.00	0.872	3.40	3.55	27.93	14.5	82.41	58.9	97.64	240	100.00	976	100.00
0.243	0.00	0.991	5.33	4.03	32.06	16.4	86.14	66.9	98.15	272	100.00	1110	100.00
0.276	0.00	1.13	7.30	4.58	36.57	18.7	89.21	76.0	98.70	310	100.00		
0.314	0.00	1.28	9.12	5.21	41.41	21.2	91.63	86.4	99.22	352	100.00		
0.357	0.00	1.45	10.72	5.92	46.53	24.1	93.42	98.1	99.62	400	100.00		

Analysis

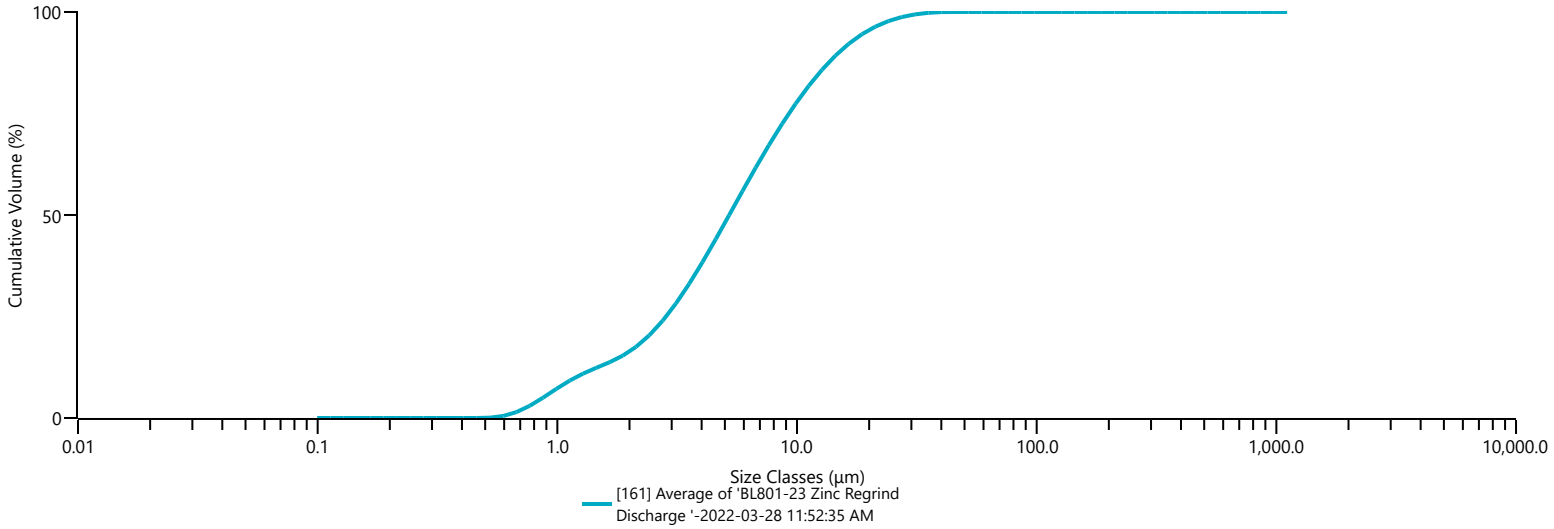
Measurement Details	
Sample Name	Average of 'BL801-23 Zinc Regrind Discharge '

Measurement Details	
Analysis Date Time	2022-03-28 11:52:35 AM
Measurement Date Time	2022-03-28 11:52:35 AM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.61 %
Laser Obscuration	20.04 %

Result	
Dv (90)	14.9 µm
Dv (80)	10.6 µm
Dv (50)	5.21 µm
Dv (10)	1.19 µm
Volume Below (75) µm	100.00 %
Volume Below (53) µm	100.00 %
Volume Below (38) µm	99.90 %
Volume Below (20) µm	95.53 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	13.72	6.72	61.64	27.4	98.76	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	15.35	7.64	67.22	31.1	99.41	127	100.00	516	100.00
0.128	0.00	0.523	0.08	2.13	17.52	8.68	72.48	35.3	99.79	144	100.00	586	100.00
0.146	0.00	0.594	0.49	2.42	20.38	9.86	77.37	40.1	99.97	163	100.00	666	100.00
0.166	0.00	0.675	1.45	2.75	23.95	11.2	81.82	45.6	100.00	186	100.00	756	100.00
0.188	0.00	0.767	3.01	3.12	28.20	12.7	85.79	51.8	100.00	211	100.00	859	100.00
0.214	0.00	0.872	5.01	3.55	33.06	14.5	89.24	58.9	100.00	240	100.00	976	100.00
0.243	0.00	0.991	7.17	4.03	38.40	16.4	92.15	66.9	100.00	272	100.00	1110	100.00
0.276	0.00	1.13	9.20	4.58	44.08	18.7	94.52	76.0	100.00	310	100.00		
0.314	0.00	1.28	10.91	5.21	49.94	21.2	96.38	86.4	100.00	352	100.00		
0.357	0.00	1.45	12.35	5.92	55.84	24.1	97.77	98.1	100.00	400	100.00		

Analysis

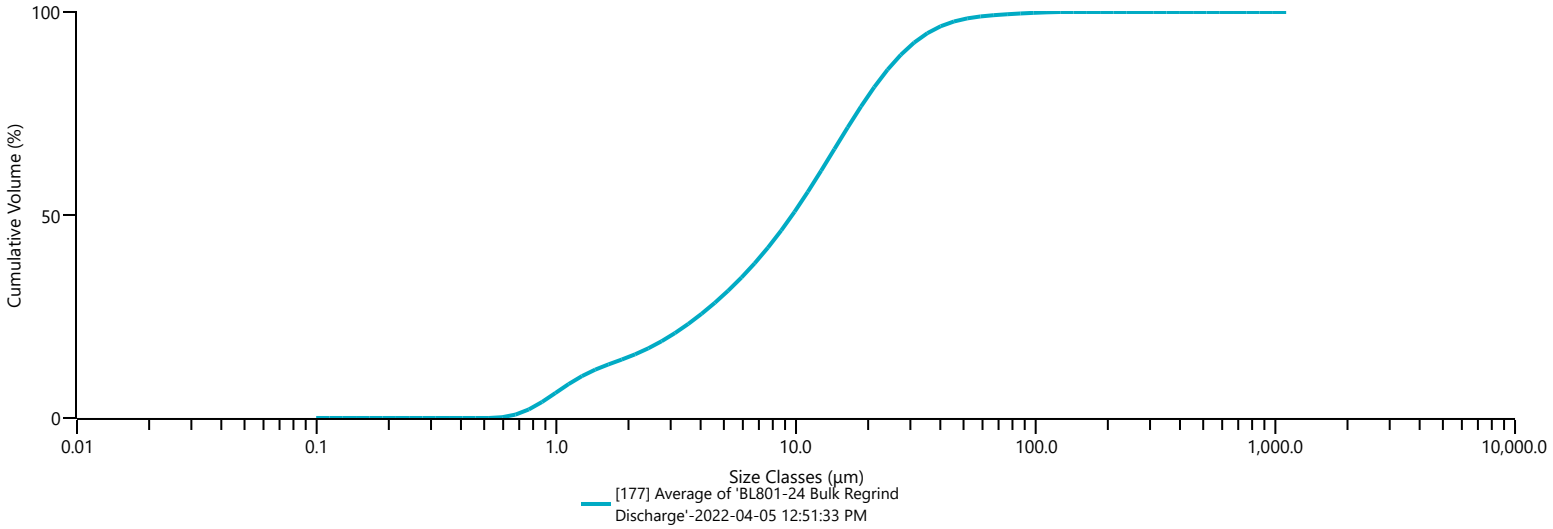
Measurement Details	
Sample Name	Average of 'BL801-24 Bulk Regrind Discharge'

Measurement Details	
Analysis Date Time	2022-04-05 12:51:33 PM
Measurement Date Time	2022-04-05 12:51:33 PM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.63 %
Laser Obscuration	23.20 %

Result	
Dv (90)	28.0 µm
Dv (80)	20.4 µm
Dv (50)	9.65 µm
Dv (10)	1.25 µm
Volume Below (75) µm	99.42 %
Volume Below (53) µm	98.51 %
Volume Below (38) µm	95.75 %
Volume Below (20) µm	79.30 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	13.20	6.72	38.10	27.4	89.45	111	99.92	454	100.00
0.113	0.00	0.461	0.00	1.88	14.39	7.64	41.96	31.1	92.46	127	100.00	516	100.00
0.128	0.00	0.523	0.00	2.13	15.68	8.68	46.18	35.3	94.78	144	100.00	586	100.00
0.146	0.00	0.594	0.19	2.42	17.17	9.86	50.77	40.1	96.49	163	100.00	666	100.00
0.166	0.00	0.675	0.83	2.75	18.91	11.2	55.69	45.6	97.66	186	100.00	756	100.00
0.188	0.00	0.767	2.10	3.12	20.91	12.7	60.88	51.8	98.42	211	100.00	859	100.00
0.214	0.00	0.872	3.95	3.55	23.16	14.5	66.22	58.9	98.90	240	100.00	976	100.00
0.243	0.00	0.991	6.14	4.03	25.64	16.4	71.56	66.9	99.21	272	100.00	1110	100.00
0.276	0.00	1.13	8.35	4.58	28.37	18.7	76.70	76.0	99.44	310	100.00		
0.314	0.00	1.28	10.31	5.21	31.33	21.2	81.50	86.4	99.63	352	100.00		
0.357	0.00	1.45	11.90	5.92	34.57	24.1	85.78	98.1	99.79	400	100.00		

Analysis

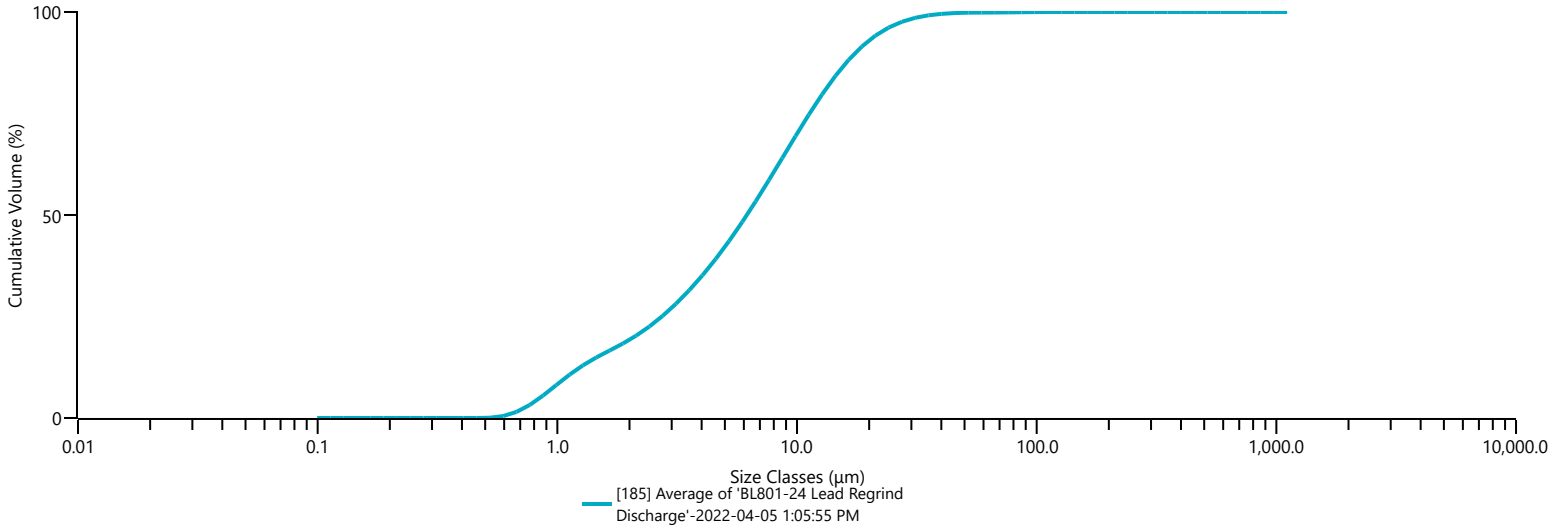
Measurement Details	
Sample Name	Average of 'BL801-24 Lead Regrind Discharge'

Measurement Details	
Analysis Date Time	2022-04-05 1:05:55 PM
Measurement Date Time	2022-04-05 1:05:55 PM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.59 %
Laser Obscuration	20.91 %

Result	
Dv (90)	17.6 µm
Dv (80)	12.8 µm
Dv (50)	6.17 µm
Dv (10)	1.09 µm
Volume Below (75) µm	99.90 %
Volume Below (53) µm	99.83 %
Volume Below (38) µm	99.38 %
Volume Below (20) µm	92.94 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	16.60	6.72	53.35	27.4	97.58	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	18.32	7.64	58.61	31.1	98.56	127	100.00	516	100.00
0.128	0.00	0.523	0.06	2.13	20.26	8.68	64.00	35.3	99.18	144	100.00	586	100.00
0.146	0.00	0.594	0.47	2.42	22.52	9.86	69.42	40.1	99.54	163	100.00	666	100.00
0.166	0.00	0.675	1.49	2.75	25.15	11.2	74.70	45.6	99.74	186	100.00	756	100.00
0.188	0.00	0.767	3.22	3.12	28.12	12.7	79.70	51.8	99.83	211	100.00	859	100.00
0.214	0.00	0.872	5.52	3.55	31.46	14.5	84.24	58.9	99.85	240	100.00	976	100.00
0.243	0.00	0.991	8.12	4.03	35.15	16.4	88.21	66.9	99.87	272	100.00	1110	100.00
0.276	0.00	1.13	10.68	4.58	39.19	18.7	91.51	76.0	99.90	310	100.00		
0.314	0.00	1.28	12.96	5.21	43.59	21.2	94.15	86.4	99.94	352	100.00		
0.357	0.00	1.45	14.89	5.92	48.32	24.1	96.14	98.1	99.97	400	100.00		

Analysis

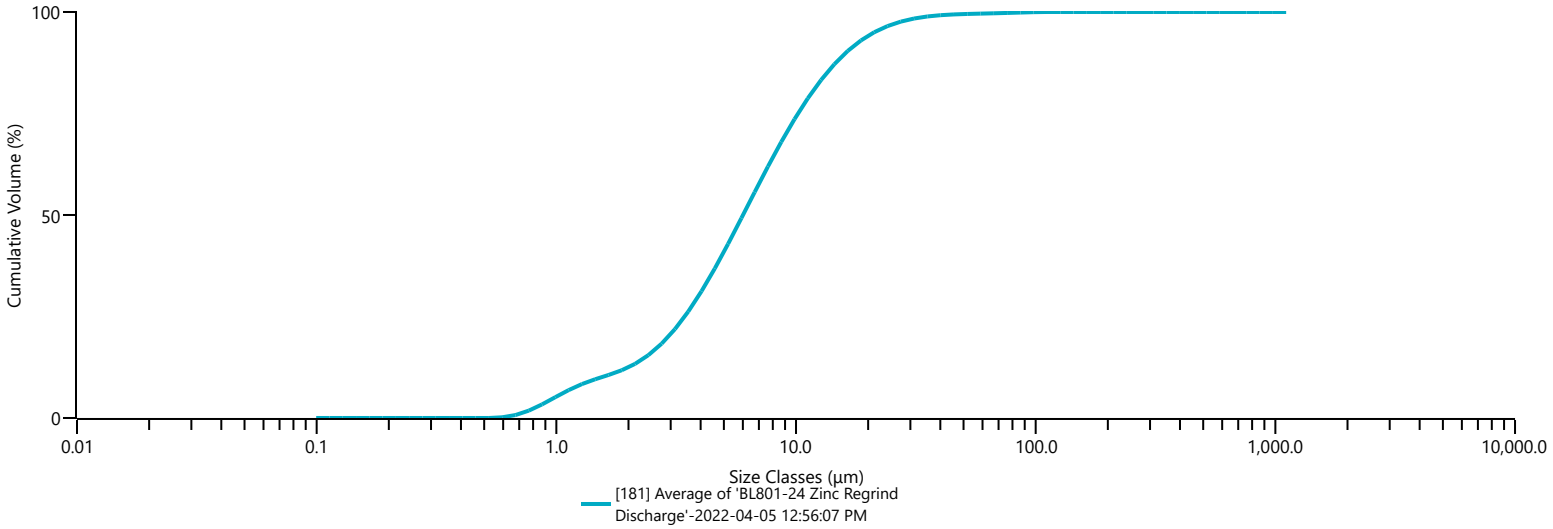
Measurement Details	
Sample Name	Average of 'BL801-24 Zinc Regrind Discharge'

Measurement Details	
Analysis Date Time	2022-04-05 12:56:07 PM
Measurement Date Time	2022-04-05 12:56:07 PM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.57 %
Laser Obscuration	17.56 %

Result	
Dv (90)	16.2 µm
Dv (80)	11.6 µm
Dv (50)	6.01 µm
Dv (10)	1.54 µm
Volume Below (75) µm	99.76 %
Volume Below (53) µm	99.53 %
Volume Below (38) µm	99.08 %
Volume Below (20) µm	94.09 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	10.59	6.72	55.62	27.4	97.63	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	11.76	7.64	61.93	31.1	98.39	127	100.00	516	100.00
0.128	0.00	0.523	0.00	2.13	13.33	8.68	67.98	35.3	98.90	144	100.00	586	100.00
0.146	0.00	0.594	0.17	2.42	15.48	9.86	73.61	40.1	99.21	163	100.00	666	100.00
0.166	0.00	0.675	0.73	2.75	18.31	11.2	78.73	45.6	99.40	186	100.00	756	100.00
0.188	0.00	0.767	1.81	3.12	21.88	12.7	83.26	51.8	99.51	211	100.00	859	100.00
0.214	0.00	0.872	3.35	3.55	26.20	14.5	87.15	58.9	99.60	240	100.00	976	100.00
0.243	0.00	0.991	5.13	4.03	31.21	16.4	90.39	66.9	99.67	272	100.00	1110	100.00
0.276	0.00	1.13	6.86	4.58	36.82	18.7	92.99	76.0	99.77	310	100.00		
0.314	0.00	1.28	8.35	5.21	42.88	21.2	95.01	86.4	99.86	352	100.00		
0.357	0.00	1.45	9.54	5.92	49.21	24.1	96.53	98.1	99.95	400	100.00		

Analysis

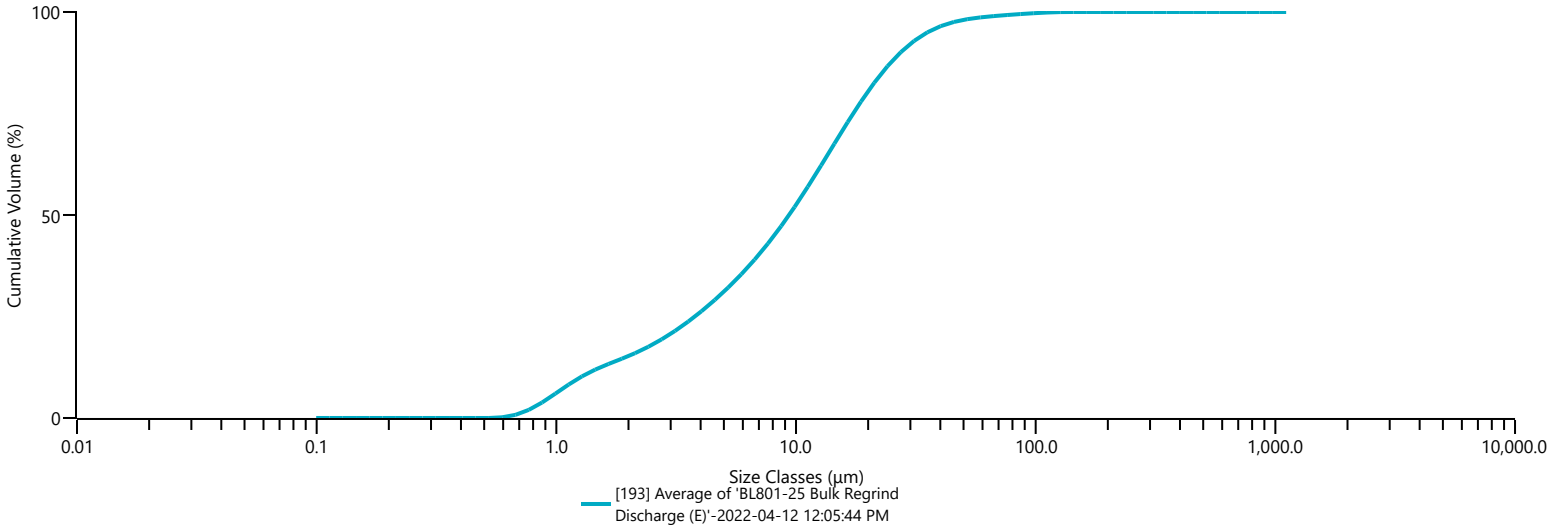
Measurement Details	
Sample Name	Average of 'BL801-25 Bulk Regrind Discharge (E)'

Measurement Details	
Analysis Date Time	2022-04-12 12:05:44 PM
Measurement Date Time	2022-04-12 12:05:44 PM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.64 %
Laser Obscuration	22.22 %

Result	
Dv (90)	27.3 µm
Dv (80)	19.8 µm
Dv (50)	9.35 µm
Dv (10)	1.26 µm
Volume Below (75) µm	99.22 %
Volume Below (53) µm	98.30 %
Volume Below (38) µm	95.86 %
Volume Below (20) µm	80.43 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	13.30	6.72	39.02	27.4	90.11	111	99.87	454	100.00
0.113	0.00	0.461	0.00	1.88	14.59	7.64	42.96	31.1	92.88	127	99.98	516	100.00
0.128	0.00	0.523	0.00	2.13	15.97	8.68	47.27	35.3	94.99	144	100.00	586	100.00
0.146	0.00	0.594	0.17	2.42	17.54	9.86	51.95	40.1	96.51	163	100.00	666	100.00
0.166	0.00	0.675	0.77	2.75	19.37	11.2	56.96	45.6	97.55	186	100.00	756	100.00
0.188	0.00	0.767	2.00	3.12	21.43	12.7	62.20	51.8	98.23	211	100.00	859	100.00
0.214	0.00	0.872	3.81	3.55	23.75	14.5	67.56	58.9	98.67	240	100.00	976	100.00
0.243	0.00	0.991	6.00	4.03	26.29	16.4	72.86	66.9	98.99	272	100.00	1110	100.00
0.276	0.00	1.13	8.23	4.58	29.08	18.7	77.92	76.0	99.25	310	100.00		
0.314	0.00	1.28	10.25	5.21	32.11	21.2	82.56	86.4	99.49	352	100.00		
0.357	0.00	1.45	11.92	5.92	35.41	24.1	86.65	98.1	99.70	400	100.00		

Analysis

Measurement Details

Sample Name Average of 'BL801-25 Lead Regrind Discharge (E)'

Measurement Details

Analysis Date Time 2022-04-12 12:10:40 PM
Measurement Date Time 2022-04-12 12:10:40 PM
Result Source Averaged

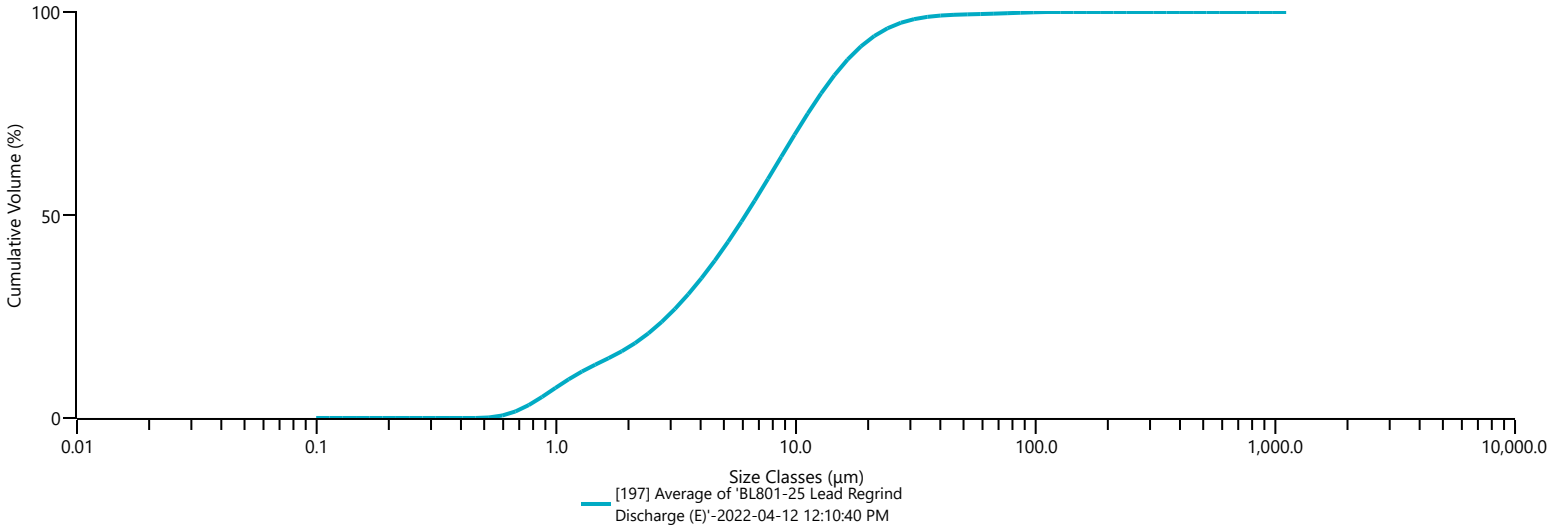
Analysis

Particle Name Silica (RI 1.45, AI 0.1)
Particle Refractive Index 1.450
Particle Absorption Index 0.100
Dispersant Name Water
Dispersant Refractive Index 1.330
Scattering Model Mie
Analysis Model General Purpose
Weighted Residual 0.41 %
Laser Obscuration 24.74 %

Result

Dv (90) 17.6 µm
Dv (80) 12.7 µm
Dv (50) 6.16 µm
Dv (10) 1.16 µm
Volume Below (75) µm 99.68 %
Volume Below (53) µm 99.43 %
Volume Below (38) µm 98.98 %
Volume Below (20) µm 92.91 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	14.72	6.72	53.52	27.4	97.34	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	16.43	7.64	58.88	31.1	98.24	127	100.00	516	100.00
0.128	0.00	0.523	0.13	2.13	18.44	8.68	64.33	35.3	98.80	144	100.00	586	100.00
0.146	0.00	0.594	0.60	2.42	20.84	9.86	69.75	40.1	99.13	163	100.00	666	100.00
0.166	0.00	0.675	1.61	2.75	23.65	11.2	75.01	45.6	99.31	186	100.00	756	100.00
0.188	0.00	0.767	3.18	3.12	26.86	12.7	79.95	51.8	99.41	211	100.00	859	100.00
0.214	0.00	0.872	5.18	3.55	30.47	14.5	84.42	58.9	99.49	240	100.00	976	100.00
0.243	0.00	0.991	7.38	4.03	34.44	16.4	88.31	66.9	99.59	272	100.00	1110	100.00
0.276	0.00	1.13	9.52	4.58	38.76	18.7	91.54	76.0	99.69	310	100.00		
0.314	0.00	1.28	11.44	5.21	43.40	21.2	94.08	86.4	99.81	352	100.00		
0.357	0.00	1.45	13.13	5.92	48.34	24.1	95.99	98.1	99.92	400	100.00		

Analysis

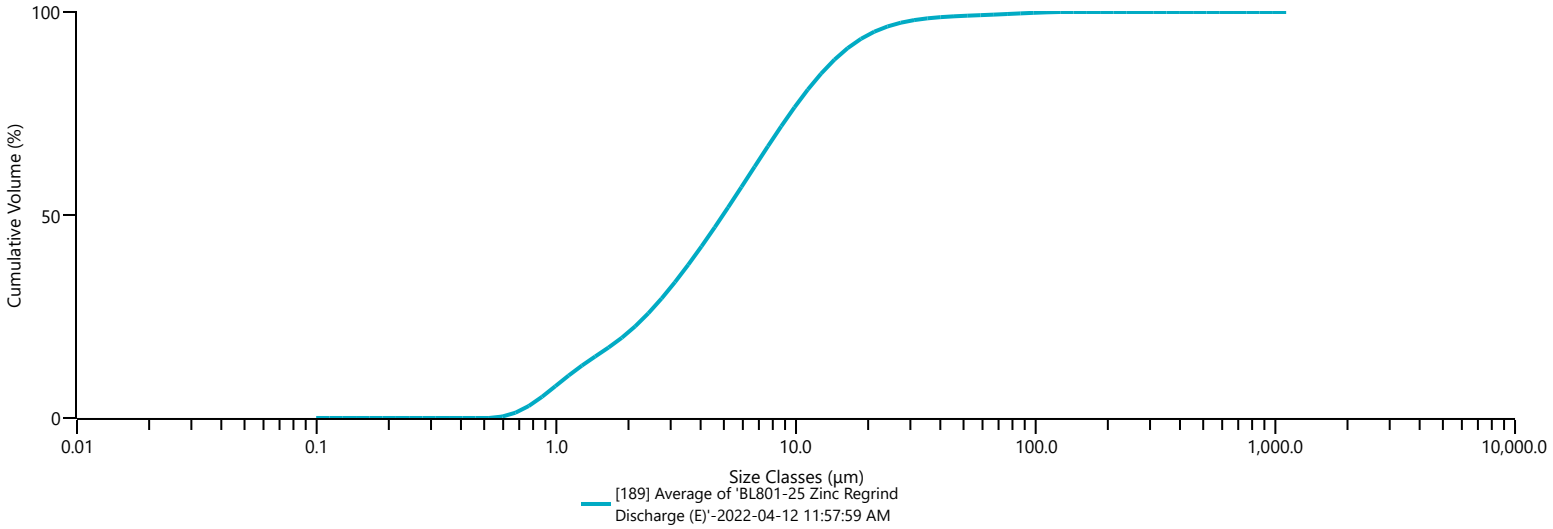
Measurement Details	
Sample Name	Average of 'BL801-25 Zinc Regrind Discharge (E)'

Measurement Details	
Analysis Date Time	2022-04-12 11:57:59 AM
Measurement Date Time	2022-04-12 11:57:59 AM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.61 %
Laser Obscuration	22.14 %

Result	
Dv (90)	15.6 µm
Dv (80)	10.9 µm
Dv (50)	4.96 µm
Dv (10)	1.10 µm
Volume Below (75) µm	99.48 %
Volume Below (53) µm	99.11 %
Volume Below (38) µm	98.60 %
Volume Below (20) µm	94.34 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	17.35	6.72	61.91	27.4	97.36	111	99.91	454	100.00
0.113	0.00	0.461	0.00	1.88	19.75	7.64	66.94	31.1	98.00	127	100.00	516	100.00
0.128	0.00	0.523	0.00	2.13	22.55	8.68	71.84	35.3	98.43	144	100.00	586	100.00
0.146	0.00	0.594	0.35	2.42	25.79	9.86	76.53	40.1	98.73	163	100.00	666	100.00
0.166	0.00	0.675	1.30	2.75	29.45	11.2	80.89	45.6	98.93	186	100.00	756	100.00
0.188	0.00	0.767	2.96	3.12	33.45	12.7	84.82	51.8	99.08	211	100.00	859	100.00
0.214	0.00	0.872	5.22	3.55	37.74	14.5	88.24	58.9	99.22	240	100.00	976	100.00
0.243	0.00	0.991	7.83	4.03	42.26	16.4	91.10	66.9	99.35	272	100.00	1110	100.00
0.276	0.00	1.13	10.46	4.58	46.98	18.7	93.39	76.0	99.50	310	100.00		
0.314	0.00	1.28	12.91	5.21	51.87	21.2	95.14	86.4	99.65	352	100.00		
0.357	0.00	1.45	15.15	5.92	56.86	24.1	96.44	98.1	99.79	400	100.00		

Analysis

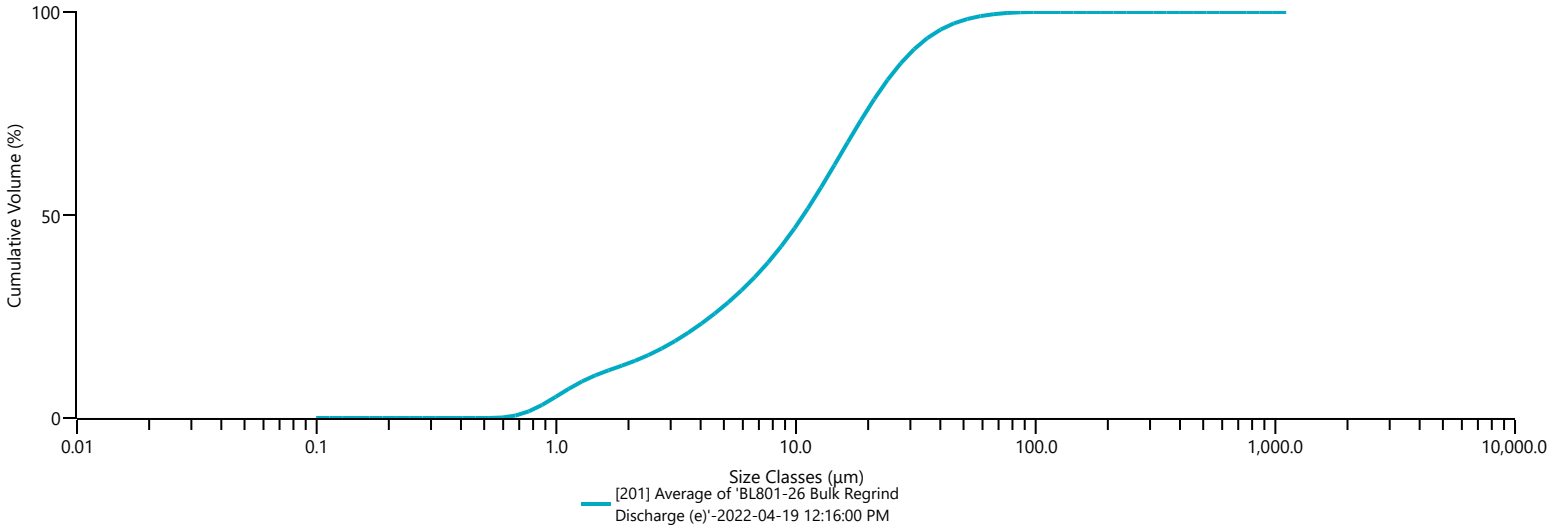
Measurement Details	
Sample Name	Average of 'BL801-26 Bulk Regrind Discharge (e)'

Measurement Details	
Analysis Date Time	2022-04-19 12:16:00 PM
Measurement Date Time	2022-04-19 12:16:00 PM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.67 %
Laser Obscuration	23.56 %

Result	
Dv (90)	30.2 µm
Dv (80)	22.1 µm
Dv (50)	10.7 µm
Dv (10)	1.39 µm
Volume Below (75) µm	99.73 %
Volume Below (53) µm	98.39 %
Volume Below (38) µm	94.77 %
Volume Below (20) µm	76.16 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	11.74	6.72	34.66	27.4	87.38	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	12.88	7.64	38.27	31.1	90.83	127	100.00	516	100.00
0.128	0.00	0.523	0.00	2.13	14.10	8.68	42.27	35.3	93.58	144	100.00	586	100.00
0.146	0.00	0.594	0.11	2.42	15.49	9.86	46.71	40.1	95.68	163	100.00	666	100.00
0.166	0.00	0.675	0.59	2.75	17.10	11.2	51.58	45.6	97.20	186	100.00	756	100.00
0.188	0.00	0.767	1.63	3.12	18.94	12.7	56.81	51.8	98.27	211	100.00	859	100.00
0.214	0.00	0.872	3.21	3.55	21.00	14.5	62.30	58.9	98.99	240	100.00	976	100.00
0.243	0.00	0.991	5.16	4.03	23.27	16.4	67.88	66.9	99.46	272	100.00	1110	100.00
0.276	0.00	1.13	7.17	4.58	25.74	18.7	73.36	76.0	99.76	310	100.00		
0.314	0.00	1.28	8.99	5.21	28.45	21.2	78.54	86.4	99.93	352	100.00		
0.357	0.00	1.45	10.50	5.92	31.40	24.1	83.26	98.1	100.00	400	100.00		

Analysis

Measurement Details

Sample Name Average of 'BL801-26 Lead Regrind Discharge'

Measurement Details

Analysis Date Time 2022-04-19 3:05:05 PM
Measurement Date Time 2022-04-19 3:05:05 PM
Result Source Averaged

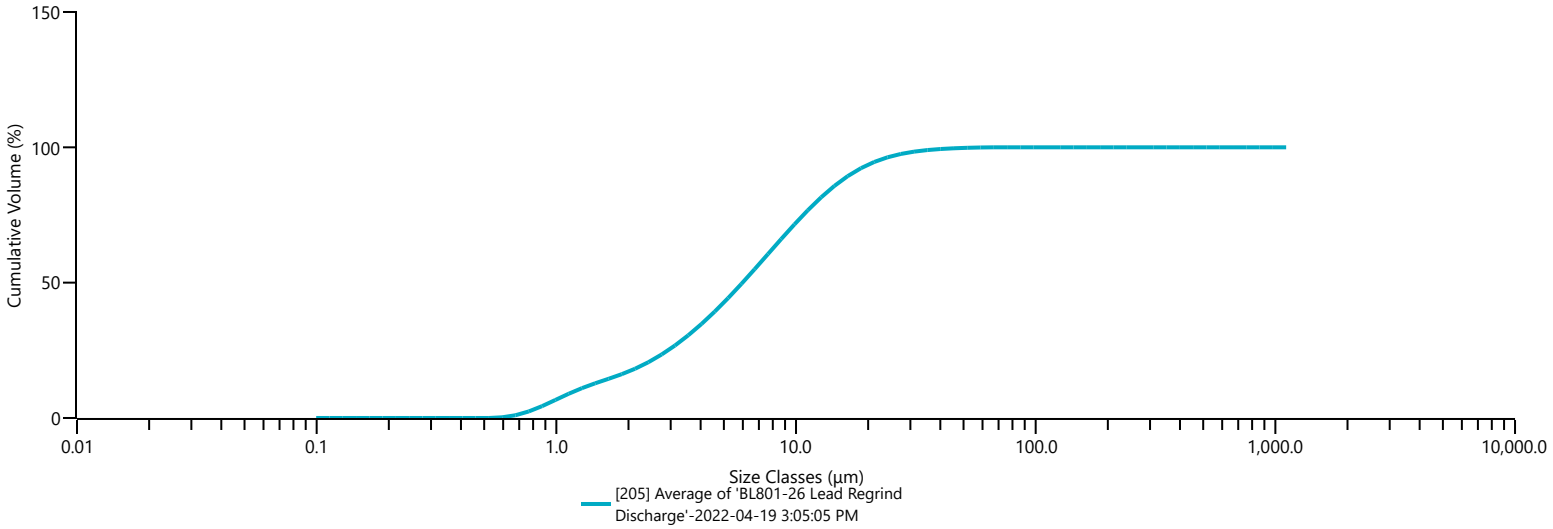
Analysis

Particle Name Silica (RI 1.45, AI 0.1)
Particle Refractive Index 1.450
Particle Absorption Index 0.100
Dispersant Name Water
Dispersant Refractive Index 1.330
Scattering Model Mie
Analysis Model General Purpose
Weighted Residual 0.59 %
Laser Obscuration 18.07 %

Result

Dv (90) 16.9 µm
Dv (80) 12.2 µm
Dv (50) 5.98 µm
Dv (10) 1.20 µm
Volume Below (75) µm 100.00 %
Volume Below (53) µm 99.84 %
Volume Below (38) µm 99.21 %
Volume Below (20) µm 93.54 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	14.47	6.72	54.98	27.4	97.54	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	16.19	7.64	60.56	31.1	98.40	127	100.00	516	100.00
0.128	0.00	0.523	0.00	2.13	18.19	8.68	66.13	35.3	98.99	144	100.00	586	100.00
0.146	0.00	0.594	0.25	2.42	20.60	9.86	71.56	40.1	99.38	163	100.00	666	100.00
0.166	0.00	0.675	1.01	2.75	23.46	11.2	76.74	45.6	99.64	186	100.00	756	100.00
0.188	0.00	0.767	2.42	3.12	26.77	12.7	81.50	51.8	99.82	211	100.00	859	100.00
0.214	0.00	0.872	4.38	3.55	30.54	14.5	85.73	58.9	99.94	240	100.00	976	100.00
0.243	0.00	0.991	6.65	4.03	34.74	16.4	89.34	66.9	100.00	272	100.00	1110	100.00
0.276	0.00	1.13	8.94	4.58	39.33	18.7	92.29	76.0	100.00	310	100.00		
0.314	0.00	1.28	11.02	5.21	44.28	21.2	94.59	86.4	100.00	352	100.00		
0.357	0.00	1.45	12.82	5.92	49.53	24.1	96.31	98.1	100.00	400	100.00		

Analysis

Measurement Details

Sample Name Average of 'BL801-26 Zinc Regrind Discharge '

Measurement Details

Analysis Date Time 2022-04-21 9:06:05 AM
Measurement Date Time 2022-04-21 9:06:05 AM
Result Source Averaged

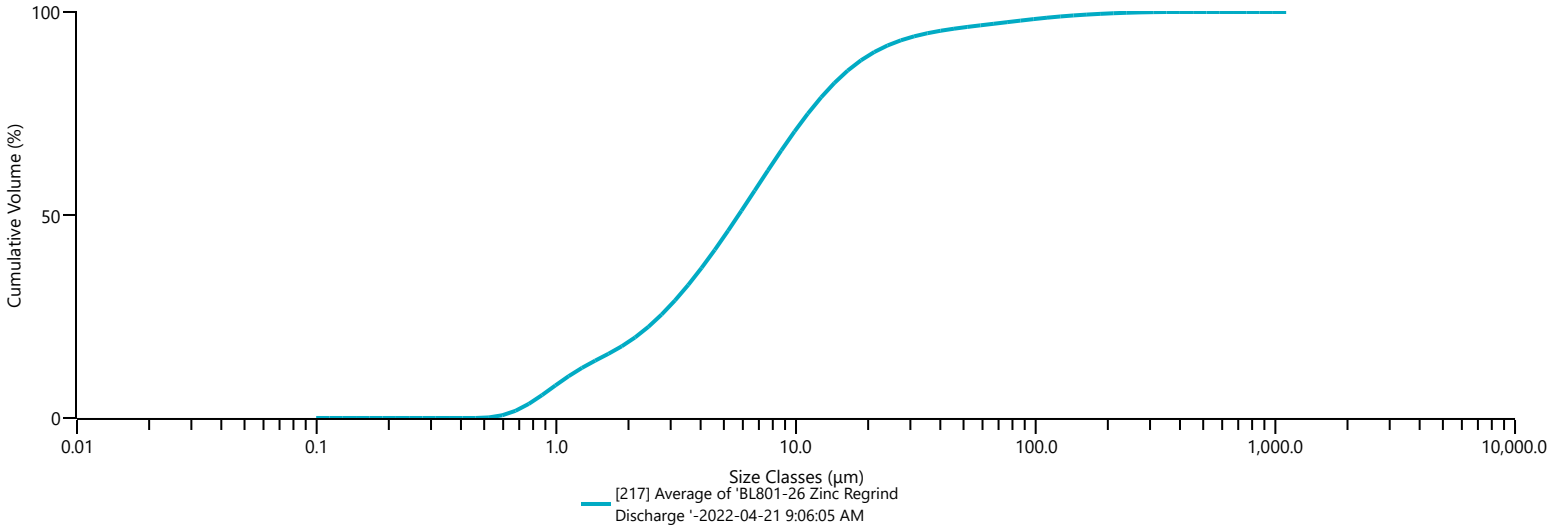
Analysis

Particle Name Silica (RI 1.45, AI 0.1)
Particle Refractive Index 1.450
Particle Absorption Index 0.100
Dispersant Name Water
Dispersant Refractive Index 1.330
Scattering Model Mie
Analysis Model General Purpose
Weighted Residual 0.46 %
Laser Obscuration 23.69 %

Result

Dv (90) 21.0 µm
Dv (80) 13.2 µm
Dv (50) 5.76 µm
Dv (10) 1.11 µm
Volume Below (75) µm 97.45 %
Volume Below (53) µm 96.39 %
Volume Below (38) µm 95.12 %
Volume Below (20) µm 89.20 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	15.82	6.72	56.00	27.4	93.01	111	98.59	454	100.00
0.113	0.00	0.461	0.00	1.88	17.67	7.64	60.98	31.1	94.00	127	98.89	516	100.00
0.128	0.00	0.523	0.14	2.13	19.84	8.68	65.87	35.3	94.77	144	99.15	586	100.00
0.146	0.00	0.594	0.66	2.42	22.45	9.86	70.56	40.1	95.38	163	99.36	666	100.00
0.166	0.00	0.675	1.76	2.75	25.49	11.2	74.96	45.6	95.88	186	99.54	756	100.00
0.188	0.00	0.767	3.47	3.12	28.94	12.7	78.97	51.8	96.32	211	99.69	859	100.00
0.214	0.00	0.872	5.64	3.55	32.77	14.5	82.52	58.9	96.71	240	99.81	976	100.00
0.243	0.00	0.991	8.01	4.03	36.94	16.4	85.56	66.9	97.10	272	99.90	1110	100.00
0.276	0.00	1.13	10.30	4.58	41.41	18.7	88.09	76.0	97.49	310	99.96		
0.314	0.00	1.28	12.34	5.21	46.13	21.2	90.14	86.4	97.87	352	100.00		
0.357	0.00	1.45	14.13	5.92	51.01	24.1	91.75	98.1	98.25	400	100.00		

Analysis

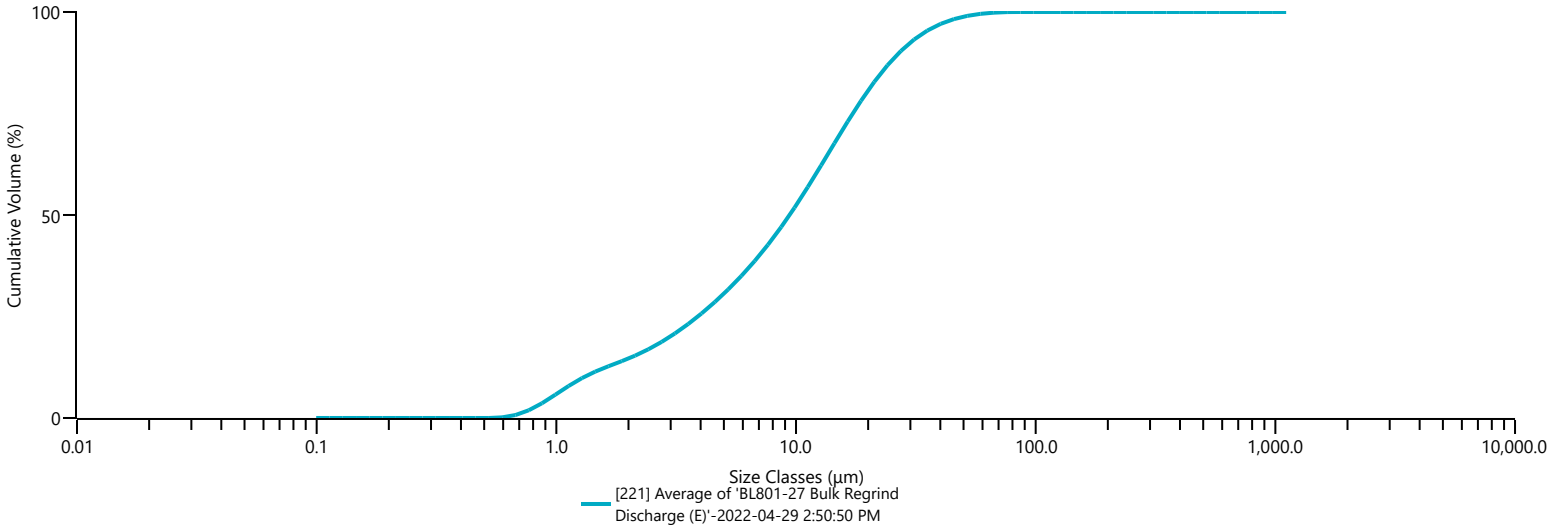
Measurement Details	
Sample Name	Average of 'BL801-27 Bulk Regrind Discharge (E)'

Measurement Details	
Analysis Date Time	2022-04-29 2:50:50 PM
Measurement Date Time	2022-04-29 2:50:50 PM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.72 %
Laser Obscuration	24.73 %

Result	
Dv (90)	27.0 µm
Dv (80)	19.7 µm
Dv (50)	9.39 µm
Dv (10)	1.30 µm
Volume Below (75) µm	99.96 %
Volume Below (53) µm	99.13 %
Volume Below (38) µm	96.36 %
Volume Below (20) µm	80.63 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	12.75	6.72	38.65	27.4	90.38	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	14.00	7.64	42.66	31.1	93.22	127	100.00	516	100.00
0.128	0.00	0.523	0.00	2.13	15.35	8.68	47.05	35.3	95.43	144	100.00	586	100.00
0.146	0.00	0.594	0.15	2.42	16.92	9.86	51.80	40.1	97.07	163	100.00	666	100.00
0.166	0.00	0.675	0.73	2.75	18.74	11.2	56.89	45.6	98.25	186	100.00	756	100.00
0.188	0.00	0.767	1.90	3.12	20.82	12.7	62.22	51.8	99.04	211	100.00	859	100.00
0.214	0.00	0.872	3.64	3.55	23.16	14.5	67.65	58.9	99.54	240	100.00	976	100.00
0.243	0.00	0.991	5.74	4.03	25.73	16.4	73.00	66.9	99.83	272	100.00	1110	100.00
0.276	0.00	1.13	7.89	4.58	28.56	18.7	78.10	76.0	99.97	310	100.00		
0.314	0.00	1.28	9.82	5.21	31.63	21.2	82.77	86.4	100.00	352	100.00		
0.357	0.00	1.45	11.42	5.92	34.99	24.1	86.89	98.1	100.00	400	100.00		

Analysis

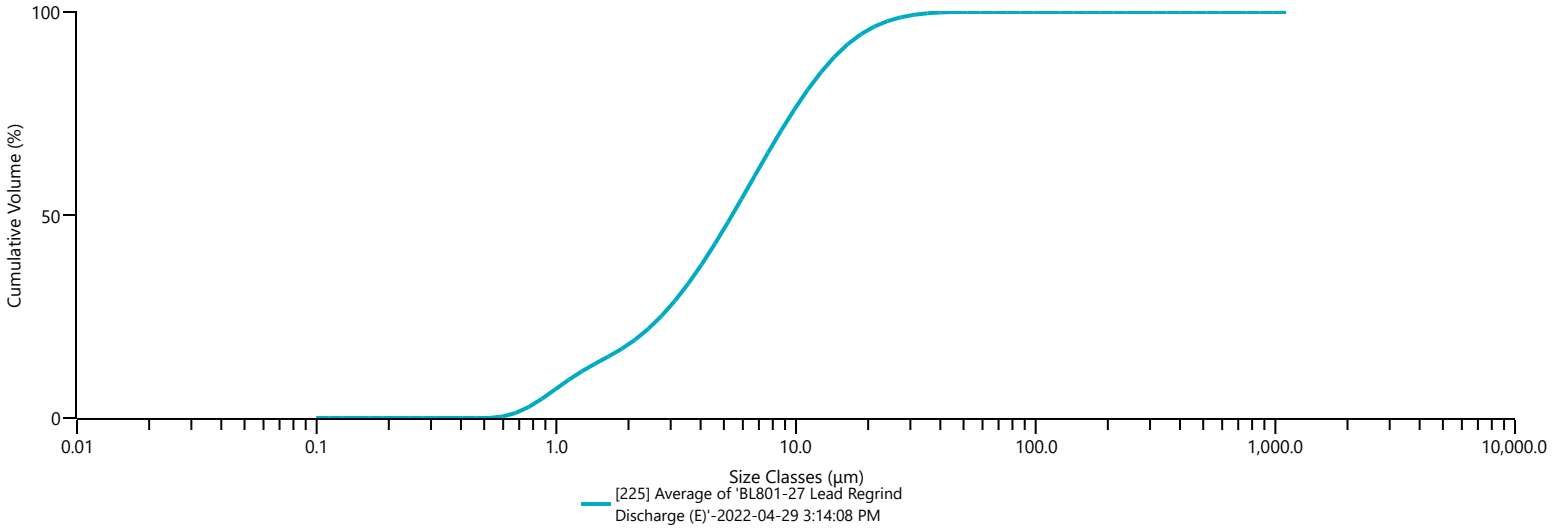
Measurement Details	
Sample Name	Average of 'BL801-27 Lead Regrind Discharge (E)'

Measurement Details	
Analysis Date Time	2022-04-29 3:14:08 PM
Measurement Date Time	2022-04-29 3:14:08 PM
Result Source	Averaged

Analysis	
Particle Name	Silica (RI 1.45, AI 0.1)
Particle Refractive Index	1.450
Particle Absorption Index	0.100
Dispersant Name	Water
Dispersant Refractive Index	1.330
Scattering Model	Mie
Analysis Model	General Purpose
Weighted Residual	0.54 %
Laser Obscuration	20.66 %

Result	
Dv (90)	15.1 µm
Dv (80)	10.9 µm
Dv (50)	5.42 µm
Dv (10)	1.17 µm
Volume Below (75) µm	100.00 %
Volume Below (53) µm	100.00 %
Volume Below (38) µm	99.80 %
Volume Below (20) µm	95.54 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	15.15	6.72	59.62	27.4	98.70	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	17.05	7.64	65.31	31.1	99.31	127	100.00	516	100.00
0.128	0.00	0.523	0.00	2.13	19.28	8.68	70.83	35.3	99.68	144	100.00	586	100.00
0.146	0.00	0.594	0.34	2.42	21.97	9.86	76.05	40.1	99.89	163	100.00	666	100.00
0.166	0.00	0.675	1.21	2.75	25.16	11.2	80.88	45.6	100.00	186	100.00	756	100.00
0.188	0.00	0.767	2.72	3.12	28.87	12.7	85.20	51.8	100.00	211	100.00	859	100.00
0.214	0.00	0.872	4.75	3.55	33.08	14.5	88.94	58.9	100.00	240	100.00	976	100.00
0.243	0.00	0.991	7.07	4.03	37.76	16.4	92.05	66.9	100.00	272	100.00	1110	100.00
0.276	0.00	1.13	9.39	4.58	42.85	18.7	94.53	76.0	100.00	310	100.00		
0.314	0.00	1.28	11.51	5.21	48.27	21.2	96.40	86.4	100.00	352	100.00		
0.357	0.00	1.45	13.38	5.92	53.90	24.1	97.76	98.1	100.00	400	100.00		

Analysis

Measurement Details

Sample Name Average of 'BL801-27 Zinc Regrind Discharge (E)'

Measurement Details

Analysis Date Time 2022-04-29 3:35:30 PM
Measurement Date Time 2022-04-29 3:35:30 PM
Result Source Averaged

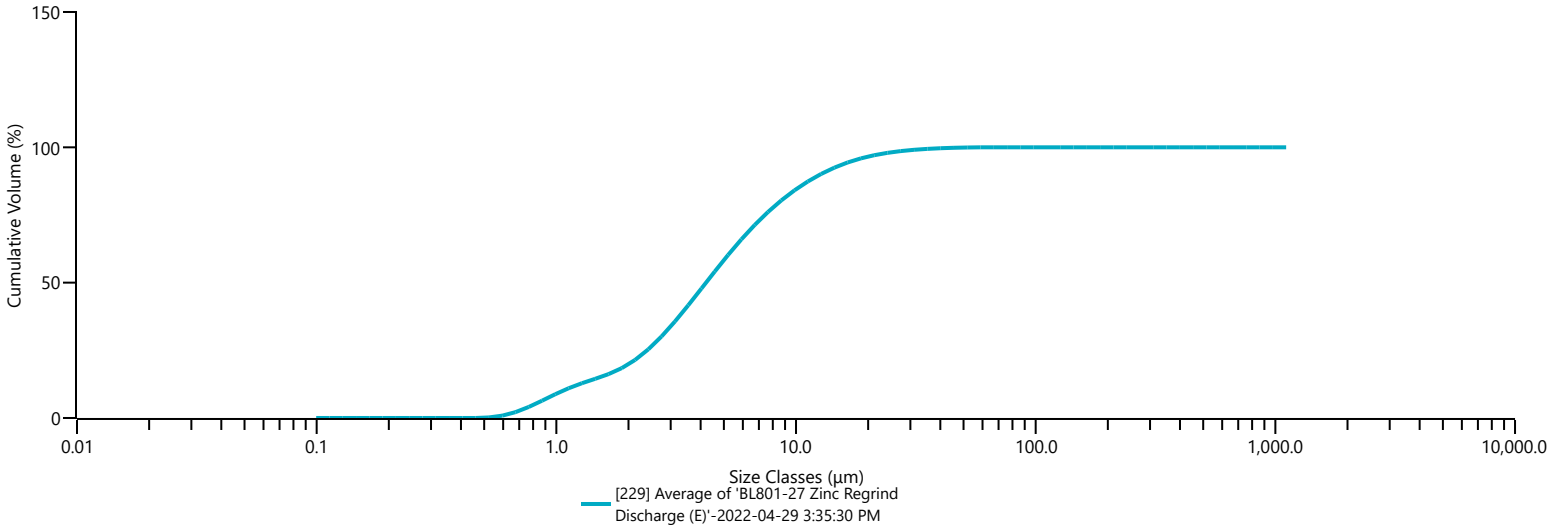
Analysis

Particle Name Silica (RI 1.45, AI 0.1)
Particle Refractive Index 1.450
Particle Absorption Index 0.100
Dispersant Name Water
Dispersant Refractive Index 1.330
Scattering Model Mie
Analysis Model General Purpose
Weighted Residual 0.54 %
Laser Obscuration 24.89 %

Result

Dv (90) 12.6 µm
Dv (80) 8.58 µm
Dv (50) 4.21 µm
Dv (10) 1.06 µm
Volume Below (75) µm 100.00 %
Volume Below (53) µm 99.94 %
Volume Below (38) µm 99.56 %
Volume Below (20) µm 96.55 %

Undersize



Result

Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	olume Under
0.0995	0.00	0.405	0.00	1.65	16.21	6.72	71.29	27.4	98.61	111	100.00	454	100.00
0.113	0.00	0.461	0.00	1.88	18.43	7.64	76.10	31.1	99.08	127	100.00	516	100.00
0.128	0.00	0.523	0.20	2.13	21.45	8.68	80.36	35.3	99.42	144	100.00	586	100.00
0.146	0.00	0.594	0.86	2.42	25.37	9.86	84.11	40.1	99.66	163	100.00	666	100.00
0.166	0.00	0.675	2.16	2.75	30.16	11.2	87.37	45.6	99.83	186	100.00	756	100.00
0.188	0.00	0.767	4.08	3.12	35.65	12.7	90.16	51.8	99.93	211	100.00	859	100.00
0.214	0.00	0.872	6.39	3.55	41.63	14.5	92.49	58.9	100.00	240	100.00	976	100.00
0.243	0.00	0.991	8.79	4.03	47.87	16.4	94.40	66.9	100.00	272	100.00	1110	100.00
0.276	0.00	1.13	10.99	4.58	54.14	18.7	95.92	76.0	100.00	310	100.00		
0.314	0.00	1.28	12.84	5.21	60.23	21.2	97.08	86.4	100.00	352	100.00		
0.357	0.00	1.45	14.48	5.92	65.98	24.1	97.96	98.1	100.00	400	100.00		

APPENDIX E – MINERALOGY

APPENDIX E
MINERALOGY

TABLE 1A
SIZE BY ASSAY AND DISTRIBUTION BASED ON METAL CONTENT
BL801 - JL-1 Composite
ME2201402

Size Fraction	Mass %	Assays - percent						Distribution - percent					
		Cu	Pb	Zn	Fe	S	As	Cu	Pb	Zn	Fe	S	As
>75µm	16.6	0.08	1.47	2.70	15.0	15.4	7.80	11.5	10.5	12.5	22.4	20.8	21.0
<75µm>C1	23.5	0.12	2.43	3.40	15.9	17.7	10.8	23.5	24.6	22.3	33.6	33.9	41.2
<C1>C4	29.9	0.14	2.63	4.40	10.2	12.6	5.20	34.9	33.9	36.7	27.4	30.7	25.2
<C4	30.0	0.12	2.39	3.40	6.20	6.00	2.60	30.0	30.9	28.5	16.7	14.7	12.6
Total	100	0.12	2.32	3.58	11.1	12.3	6.17	100	100	100	100	100	100

Notes: 1. The assays shown in this table are utilized to determine the mineralogical distribution shown in Table B.
2. 75µm sizing fractions correspond to the Tyler 200 mesh screens,
C1 to C4 sizing fractions corresponde to the cyclone sizer of C1 to C5.

TABLE 1B
SIZE BY ASSAY AND DISTRIBUTION BASED ON MINERAL CONTENT
BL801 - JL-1 Composite

Size Fraction	Mass %	Assays - percent						Distribution - percent					
		Cs	Ga	Sp	Py/Po	Ap	Gn	Cs	Ga	Sp	Py/Po	Ap	Gn
>75µm	16.6	0.18	1.84	4.34	19.8	17.0	56.9	12.2	10.5	12.5	23.8	21.0	14.8
<75µm>C1	23.5	0.25	3.01	5.47	19.5	23.5	48.3	23.2	24.3	22.3	33.2	41.2	17.8
<C1>C4	29.9	0.30	3.34	7.08	13.3	11.3	64.7	35.9	34.3	36.7	28.8	25.2	30.3
<C4	30.0	0.24	2.99	5.47	6.53	5.65	79.1	28.7	30.9	28.5	14.2	12.6	37.2
Total	100	0.25	2.91	5.76	13.8	13.4	63.9	100	100	100	100	100	100

Notes: 1. Cs-Copper Sulphides including Chalcopyrite, Chalcocite/Covellite and Tetrahedrite/Tennantite,
Ga-Galena including Pb.Sb.Cu-sulphide (Bournonite) and PbSb-Sulphide (Playfairite), Sp-Sphalerite,
Py/Po-Pyrite and Pyrrhotite, Ap-Arsenopyrite, Gn - Non-Sulphide Gangue including Iron Oxides.
2. Mineral assays are based on gravimetric factors to convert the metal to the pure mineral.

TABLE 1C
DISTRIBUTION BY SIZE RANGE OF COPPER, LEAD, ZINC AND ARSENIC BEARING MINERALS
BL801 - JL-1 Composite

Size Fraction	Mass %	% Copper of Total Copper				%Lead of Total Lead			%Zinc of Total Zinc			%Arsenic of Total Arsenic			
		Cp	Cc	Td	Bou	Bou	Ga	Pf	Td	Sp		Td	Ap	Lg	
>75µm	16.6	51.5	2.0	34.3	12.2	2.2	89.9	7.9	0.1	99.9		0.0	99.9	0.1	
<75µm>C1	23.5	37.0	0.8	40.5	21.7	3.3	92.0	4.7	0.1	99.9		0.0	99.7	0.3	
<C1>C4	29.9	40.3	1.0	31.3	27.4	4.8	89.0	6.3	0.1	99.9		0.1	99.5	0.4	
<C4	30.0	29.1	7.5	35.4	28.0	4.8	90.8	4.4	0.1	99.9		0.2	99.1	0.7	
Total	100	37.5	3.0	35.1	24.5	4.1	90.4	5.5	0.1	99.9		0.1	99.6	0.3	

Notes 1) Cp-Chalcopyrite, Cc-Chalcocite/Covellite, Td-Tetrahedrite/Tennantite, Bou-Pb.Sb.Cu-sulphide (Bournonite)
2) Bou-Pb.Sb.Cu-sulphide (Bournonite), Ga-Galena, Pf-Pb.Sb Sulphide (Playfairite), Sp-Sphalerite,
Ap-Arsenopyrite, Lg-Lollingite

TABLE 1D
SUMMARY OF PERCENT LIBERATION BY SIZE AND CLASS
BL801 - JL-1 Composite

Size Range	>75µm						<75µm>C1					
Mineral Status	Cs	Ga	Sp	Py/Po	Ap	Gn	Cs	Ga	Sp	Py/Po	Ap	Gn
Liberated	0.5	0.1	1.8	8.6	7.9	11.7	1.8	2.2	5.6	18.0	24.0	15.1
Binary - Cs		0.0	0.0	0.3	0.1	0.0		0.1	0.1	0.4	0.3	0.0
Binary - Ga	0.1		0.4	0.6	0.6	0.1	1.0		2.3	1.3	1.3	0.1
Binary - Sp	0.1	0.7		2.0	0.5	0.3	0.7	3.8		2.4	1.4	0.3
Binary - Py/Po	2.7	1.1	1.7		1.0	0.7	4.5	2.5	2.7		1.5	0.4
Binary - Ap	0.7	0.8	0.3	0.7		0.9	3.5	2.8	1.5	1.1		1.1
Binary - Gn	2.0	1.3	2.4	5.8	7.2		1.3	2.3	2.8	3.8	8.0	
Multiphase	6.1	6.5	5.8	5.9	3.8	1.0	10.3	10.7	7.4	6.2	4.8	0.8
Total	12.2	10.5	12.5	23.8	21.0	14.8	23.2	24.3	22.3	33.2	41.2	17.8

Size Range	<C1>C4						<C4					
Mineral Status	Cs	Ga	Sp	Py/Po	Ap	Gn	Cs	Ga	Sp	Py/Po	Ap	Gn
Liberated	8.6	9.9	19.0	19.7	18.1	28.0	20.6	22.0	23.9	12.2	11.3	35.9
Binary - Cs		0.8	0.2	0.3	0.1	0.0		0.5	0.0	0.0	0.0	0.0
Binary - Ga	5.9		5.1	1.0	0.9	0.2	2.3		0.9	0.2	0.1	0.2
Binary - Sp	1.5	7.9		1.8	0.6	0.4	0.5	2.1		0.4	0.1	0.3
Binary - Py/Po	4.5	2.3	2.7		0.7	0.3	1.0	0.9	0.8		0.3	0.4
Binary - Ap	3.1	3.0	1.2	0.8		0.9	0.7	0.7	0.2	0.2		0.2
Binary - Gn	2.3	2.9	3.4	2.2	3.4		2.0	3.5	2.1	1.1	0.7	
Multiphase	10.2	7.5	5.2	3.0	1.4	0.5	1.6	1.2	0.6	0.2	0.1	0.1
Total	35.9	34.3	36.7	28.8	25.2	30.3	28.7	30.9	28.5	14.2	12.6	37.2

Mineral Status	Mineral Liberation-2 Dimensions					
	Cs	Ga	Sp	Py/Po	Ap	Gn
Liberated	31.5	34.2	50.3	58.5	61.2	90.8
Binary - Cs		1.5	0.3	1.0	0.5	0.1
Binary - Ga	9.3		8.8	3.1	2.9	0.6
Binary - Sp	2.7	14.5		6.6	2.6	1.3
Binary - Py/Po	12.7	6.7	8.0		3.4	1.7
Binary - Ap	7.9	7.2	3.1	2.8		3.0
Binary - Gn	7.6	10.0	10.6	12.9	19.3	
Multiphase	28.2	25.9	18.9	15.2	10.1	2.4
Total	100	100	100	100	100	100

Notes: 1. Cs-Copper Sulphides including Chalcopyrite, Chalcocite/Covellite and Tetrahedrite/Tennantite, Ga-Galena including Pb.Sb.Cu-sulphide (Bournonite) and PbSb-Sulphide (Playfairite), Sp-Sphalerite, Py/Po-Pyrite and Pyrrhotite, Ap-Arsenopyrite, Gn - Non-Sulphide Gangue including Iron Oxides.
2. 75µm sizing fractions correspond to the Tyler 200 mesh screens, C1 to C4 sizing fractions corresponde to the cyclone sizer of C1 to C5.
3. The liberated particle means that the measured particles contain >95% by area of the target minerals. The mineral liberation was based on the mineral occurences.

TABLE 1E
ESTIMATED RELATIVE PROPORTION AND COMPOSITION OF MINERAL GRAINS
BL801 - JL-1 Composite

Binary Component	Proportion by Weight-2D						Proportion by Weight-3D					
	Cs	Ga	Sp	Py/Po	Ap	Gn	Cs	Ga	Sp	Py/Po	Ap	Gn
Liberated	0.08	0.99	2.9	8.07	8.21	58.0	0.04	0.52	2.18	6.64	6.91	56.5
Binary - Cs		0.04	0.02	0.14	0.07	0.06		0.05	0.02	0.17	0.08	0.07
Binary - Ga	0.02		0.50	0.43	0.39	0.41	0.03		0.63	0.54	0.48	0.52
Binary - Sp	0.01	0.42		0.91	0.35	0.84	0.01	0.53		1.14	0.43	1.04
Binary - Py/Po	0.03	0.20	0.46		0.46	1.12	0.04	0.24	0.57		0.57	1.40
Binary - Ap	0.02	0.21	0.18	0.38		1.90	0.02	0.26	0.23	0.48		2.38
Binary - Gn	0.02	0.29	0.61	1.78	2.58		0.02	0.36	0.77	2.23	3.23	
Multiphase	0.07	0.75	1.09	2.09	1.36	1.54	0.09	0.94	1.36	2.62	1.69	1.93
Average Composition	0.25	2.91	5.76	13.8	13.4	63.9	0.25	2.91	5.76	13.8	13.4	63.9

Notes 1) The two-dimensional proportion of minerals is a weighted estimate which is based on the liberation and the mineral content of the unsized sample.

TABLE 1F
ASSAY RECONCILATION
BL801 - JL-1 Composite

Size Fraction	Mass %	Chemical Assay (percent)						QEMSCAN Assay (percent)					
		Cu	Pb	Zn	Fe	S	As	Cu	Pb	Zn	Fe	S	As
>75µm	16.6	0.08	1.47	2.70	15.0	15.4	7.80	0.07	1.26	2.86	15.5	14.9	7.69
<75µm>C1	23.5	0.12	2.43	3.40	15.9	17.7	10.8	0.11	2.27	3.55	16.6	16.0	10.3
<C1>C4	29.9	0.14	2.63	4.40	10.2	12.6	5.20	0.13	2.51	4.20	10.4	11.1	5.40
<C4	30.0	0.12	2.39	3.40	6.20	6.00	2.60	0.15	2.75	3.39	7.03	7.76	2.83
Total	100	0.12	2.32	3.58	11.1	12.3	6.17	0.12	2.32	3.58	11.7	11.9	6.17

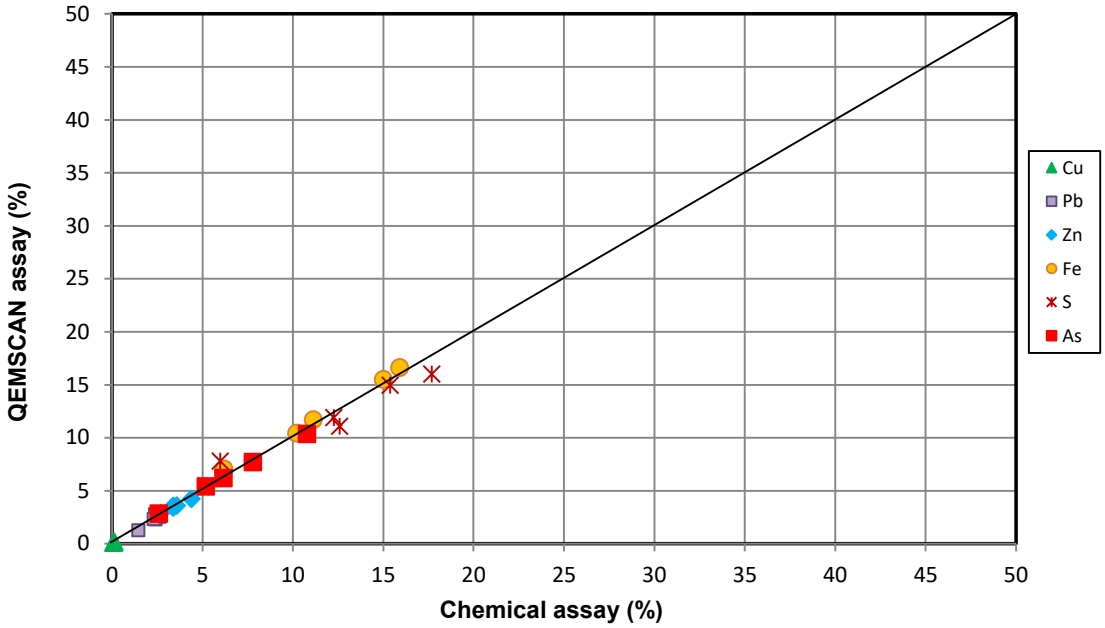
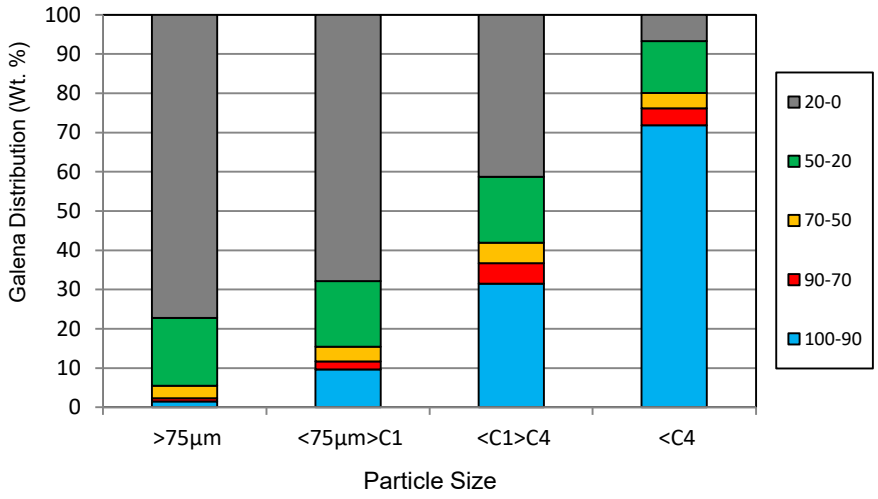


TABLE 1G
QUALITY OF THE GALENA AND SPHALERITE BINARY PARTICLES
BL801 - JL-1 Composite

Galena	Galena Distribution by Size				
Area %	>75µm	<75µm>C1	<C1>C4	<C4	Total
100-90	1.5	9.6	31.5	71.8	35.5
90-70	0.8	2.1	5.2	4.3	3.7
70-50	3.1	3.7	5.2	3.9	4.2
50-20	17.3	16.7	16.8	13.2	15.7
20-0	77.3	67.8	41.3	6.7	40.9
Total	100.0	100.0	100.0	100.0	100.0



Sphalerite	Sphalerite Distribution by Size				
Area %	>75µm	<75µm>C1	<C1>C4	<C4	Total
100-90	16.7	27.7	54.9	84.5	52.5
90-70	6.1	8.7	8.5	3.5	6.8
70-50	7.1	8.1	7.4	2.1	6.0
50-20	22.8	19.7	11.8	7.4	13.7
20-0	47.2	35.9	17.4	2.5	21.0
Total	100.0	100.0	100.0	100.0	100.0

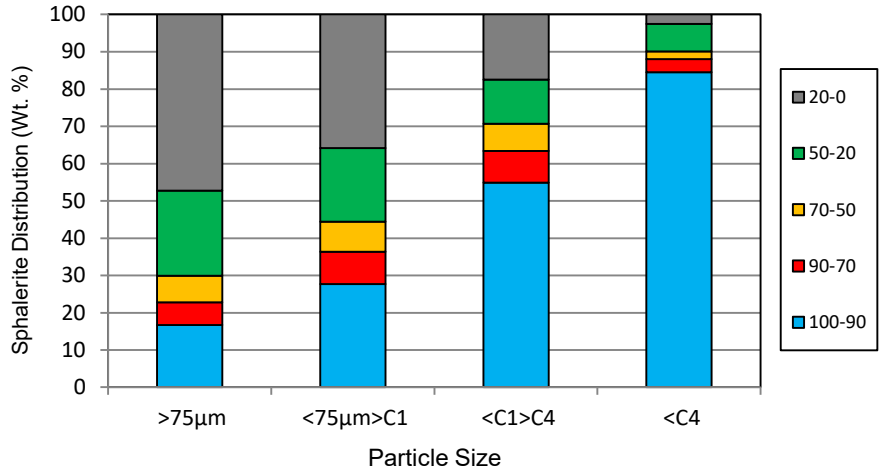


TABLE 1H
MEASURED WEIGHT PERCENT OF THE IDENTIFIED MINERALS
BL801 - JL-1 Composite

Mineral	Mineral Assays (Wt. percent)				
	>75µm	<75µm>C1	<C1>C4	<C4	Total
Chalcopyrite	0.10	0.11	0.16	0.12	0.13
Chalcocite	0.00	0.00	0.00	0.01	0.01
Tetrahedrite/Tennantite	0.06	0.12	0.12	0.14	0.12
Pb.Sb.Cu-sulphide (Bournonite)	0.06	0.18	0.28	0.31	0.23
Galena	1.31	2.41	2.58	2.89	2.42
Pb.Sb Sulphide (Playfairite)	0.21	0.22	0.33	0.25	0.26
Sphalerite	4.60	5.71	6.76	5.45	5.76
Pyrite	16.5	16.4	10.1	6.20	11.5
Pyrrhotite	2.45	1.17	1.44	1.73	1.63
Arsenopyrite	16.7	22.4	11.7	6.08	13.3
Iron Oxides	0.16	0.09	0.17	0.43	0.23
Quartz	37.4	33.1	35.6	22.3	31.3
Muscovite	8.66	6.20	8.84	29.2	14.3
Calcite	8.56	9.06	17.4	18.5	14.3
Dolomite/Ankerite	1.28	1.34	2.23	1.79	1.73
Fluorite	0.28	0.32	0.49	0.18	0.32
K-Feldspars	0.19	0.13	0.17	0.37	0.22
Plagioclase Feldspar	0.22	0.17	0.24	0.45	0.28
Chlorite	0.28	0.19	0.30	1.16	0.53
Biotite/Phlogopite	0.32	0.17	0.17	0.48	0.29
Amphibole (Actinolite)	0.04	0.02	0.03	0.03	0.03
Wollastonite	0.07	0.07	0.09	0.15	0.10
Rutile/Anatase	0.25	0.15	0.34	0.33	0.28
Apatite	0.08	0.09	0.34	0.25	0.21
Ca-sulphate (Gypsum)	0.06	0.03	0.03	0.10	0.06
Zircon	0.02	0.03	0.04	0.09	0.05
Lollingite	0.01	0.04	0.03	0.03	0.03
Others	0.10	0.06	0.08	1.00	0.36
Total	100.0	100.0	100.0	100.0	100.0

Note: 1) Iron Oxides include Geothite, Magnetite, Hematite, Iron Metal.
2) Others includes trace amount of Barite, Corumdum, Ce-Phosphate, Cassiterite, and unresolved mineral species.

TABLE 2
MINERAL COMPOSITION OF THE COMBINED CONCENTRATE SAMPLE
ME2103805

Minerals	Mineral Compositions (wt. %)		
	BL801 01 Combined Con	BL801 Bulk Con 1	BL801 Bulk Con 2
Chalcopyrite	0.11	0.18	0.09
Chalcocite	0.02	0.02	0.02
Tetrahedrite/Tennantite	0.07	0.06	0.02
Galena	1.74	2.89	2.24
Sphalerite	2.36	9.24	7.76
Pyrite	29.4	25.8	23.2
Pyrrhotite	4.69	3.69	4.89
Arsenopyrite	35.2	44.8	37.0
Iron Metal/Goethite	2.60	0.80	2.56
Quartz	11.0	5.08	10.4
Calcite	3.91	1.54	2.97
Plagioclase Feldspar	0.26	0.12	0.22
K-Feldspars	0.95	0.61	1.09
Wollastonite	0.10	0.01	0.04
Biotite/Phlogopite	0.07	0.01	0.06
Amphibole (Actinolite)	0.03	0.01	0.02
Chlorite	0.51	0.26	0.47
Muscovite	2.69	1.26	2.63
Dolomite/Ankerite	0.94	0.41	0.68
Siderite	0.39	0.27	0.27
Ti Minerals	0.22	0.05	0.09
Apatite	0.11	0.04	0.07
Ca-sulphate (Gypsum)	0.87	0.90	1.33
Zircon	0.03	0.01	0.03
Lollingite	0.37	0.50	0.24
Fluorite	0.08	0.05	0.07
Barite	0.03	0.03	0.02
Others	1.25	1.36	1.57
Total	100.0	100.0	100.0

Note: 1) Iron Oxides include magnetite, Goethite and Hematite.
2) Ti Minerals include Sphene, Rutile/Anatase and Ilmenite.
3) Others includes trace amount of Corumdum and unresolved mineral species.

TABLE 2A - 1
DISTRIBUTION OF COPPER BEARING MINERALS
BL801 01 Combined Con

Mineral	Assays Mass %	% Copper Bearing Mineral	% Copper Bearing Mineral of Total Copper
Chalcopyrite	0.11	54.6	47.8
Chalcocite	0.02	9.5	18.9
Tetrahedrite/Tennantite	0.07	35.9	33.3
Total	0.21	100.0	100.0

TABLE 2A - 2
DISTRIBUTION OF COPPER BEARING MINERALS
BL801 Bulk Con 1

Mineral	Assays Mass %	% Copper Bearing Mineral	% Copper Bearing Mineral of Total Copper
Chalcopyrite	0.18	68.9	61.2
Chalcocite	0.02	8.8	18.0
Tetrahedrite/Tennantite	0.06	22.3	20.9
Total	0.26	100.0	100.0

TABLE 2A - 3
DISTRIBUTION OF COPPER BEARING MINERALS
BL801 Bulk Con 2

Mineral	Assays Mass %	% Copper Bearing Mineral	% Copper Bearing Mineral of Total Copper
Chalcopyrite	0.09	35.9	54.5
Chalcocite	0.02	9.1	32.1
Tetrahedrite/Tennantite	0.02	7.3	13.3
Total	0.1	52.3	100.0

TABLE 2B - 1
SULPHUR DISTRIBUTION BY SULPHUR BEARING MINERALS
BL801 01 Combined Con

Mineral	Assays Mass %	% Sulphur Bearing Mineral	% Sulphur Bearing Mineral of Total Sulphur
Cu Sulphides	0.2	0.3	0.2
Galena	1.7	2.3	0.9
Sphalerite	2.4	3.2	3.0
Pyrite	29.4	39.5	60.5
Pyrrhotite	4.7	6.3	8.1
Arsenopyrite	35.2	47.2	26.6
Ca-sulphate/Barite	0.9	1.2	0.6
Total	74.5	100.0	100.0

TABLE 2B - 2
SULPHUR DISTRIBUTION BY SULPHUR BEARING MINERALS
BL801 Bulk Con 1

Mineral	Assays Mass %	% Sulphur Bearing Mineral	% Sulphur Bearing Mineral of Total Sulphur
Cu Sulphides	0.3	0.3	0.3
Galena	2.9	3.3	1.5
Sphalerite	9.2	10.5	10.8
Pyrite	25.8	29.5	49.0
Pyrrhotite	3.7	4.2	6.6
Arsenopyrite	44.8	51.1	31.3
Ca-sulphate/Barite	0.9	1.0	0.6
Total	87.6	100.0	100.0

TABLE 2B - 3
SULPHUR DISTRIBUTION BY SULPHUR BEARING MINERALS
BL801 Bulk Con 2

Mineral	Assays Mass %	% Sulphur Bearing Mineral	% Sulphur Bearing Mineral of Total Sulphur
Cu Sulphides	0.1	0.2	0.2
Galena	2.2	2.9	1.3
Sphalerite	7.8	10.1	10.2
Pyrite	23.2	30.3	49.2
Pyrrhotite	4.9	6.4	9.3
Arsenopyrite	37.0	48.3	28.9
Ca-sulphate/Barite	1.3	1.7	1.0
Total	76.5	100.0	100.0

TABLE 2C
ASSAY RESULTS AND RECONCILIATION
ME2103805

Element	Assay Methods	Chemical Assays (%)		
		BL801 01 Combined Con	BL801 Bulk Con 1	BL801 Bulk Con 2
Al	QEMSCAN	0.85	0.40	0.79
	Chemical	0.95	0.44	0.74
As	QEMSCAN	16.5	21.0	17.2
	Chemical	16.3	21.0	17.2
C	QEMSCAN	0.62	0.26	0.47
	Chemical	0.87	0.36	0.71
Cu	QEMSCAN	0.08	0.10	0.06
	Chemical	0.10	0.14	0.14
Fe	QEMSCAN	30.2	30.0	27.6
	Chemical	31.1	30.8	29.1
K	QEMSCAN	0.35	0.17	0.35
	Chemical	0.46	0.20	0.36
Pb	QEMSCAN	1.49	2.43	1.88
	Chemical	1.55	2.43	2.09
S	QEMSCAN	26.0	28.2	25.2
	Chemical	25.3	28.8	26.3
Si	QEMSCAN	6.03	2.76	5.70
	Chemical	7.01	3.33	6.39
Zn	QEMSCAN	1.58	6.18	5.20
	Chemical	1.60	6.25	5.17

Notes: 1) Arsenic assays for Bulk Con 1 and Con 2 were above detection limits of ICP.
As a result, the assays shown in the table were measured from QEMSCAN.