



# **Burnie** RESEARCH LABORATORY

METALLURGICAL ASSESSMENT  
OF  
QUEEN HILL INTERSECTIONS  
FOR  
STELLAR RESOURCES LIMITED

REPORT NO: T0587

J R GLEN

DEC 2010

## CONTENTS

SUMMARY.....	1
SAMPLE RECEIVED.....	3
TEST METHODS.....	4
RESULTS AND DISCUSSION.....	11
APPENDIX	
A – GRIND ESTABLISHMENTS.....	23
B – SIZING.....	38
C – HEAVY LIQUID SEPARATION.....	43
D – FLOTATION.....	46

## 1. SUMMARY

Three Queen Hill core composites were generated from core intersections received for metallurgical assessment. Assessments included analytical, mineralogical and flotation assessments for each and was based on a Renison style flowsheet. Composite 3 was assessed for sulphide lead recovery only. Diagram 1 shows the overall assessment routine and the table below summarises the key findings for each type.

Parameter		COMP 1	COMP 2
Head Grades	Sn (%)	1.00	0.93
	Fe (%)	25.1	29.6
	S (%)	15.5	23.1
Mineral Suite	Pyrite (%)	43.4	59.2
	Pyrrhotite (%)	0.2	4.3
	Iron Oxides (%)	18.9	13.4
	Quartz (%)	21.0	17.2
	Micas (%)	8.4	1.0
	Cassiterite (%)	1.9	1.3
	Sphalerite (%)	0.4	0.9
Heavy Liquid 2.95sg	Floats Mass (%)	17.9	8.8
	Sn Rec to Float (%)	1.2	0.6
Sulphide Concentrate	S Recovery (%)	78.4	93.0
	Sn Recovery (%)	15.4	18.1
Reground Sulphide Tail	Sn (%)	1.25	1.52
	S (%)	5.0	3.3
	Sn Dist >53um (%)	42	33
	Sn Lib >53um (%)	15	16
Slime Tail	Sn Dist (%)	1.3	1.9
Tin Float Feed	Sn Dist (%)	41.9	44.0
Tin Ro Conc	Sn Dist (%)	16.6	17.8
Tin Float Tail	Sn Dist (%)	25.3	26.2

Heavy liquid separation of coarse crushed whole ore indicates scope for rejection of up to 18% of mass and 36% of silicate with very low tin loss.

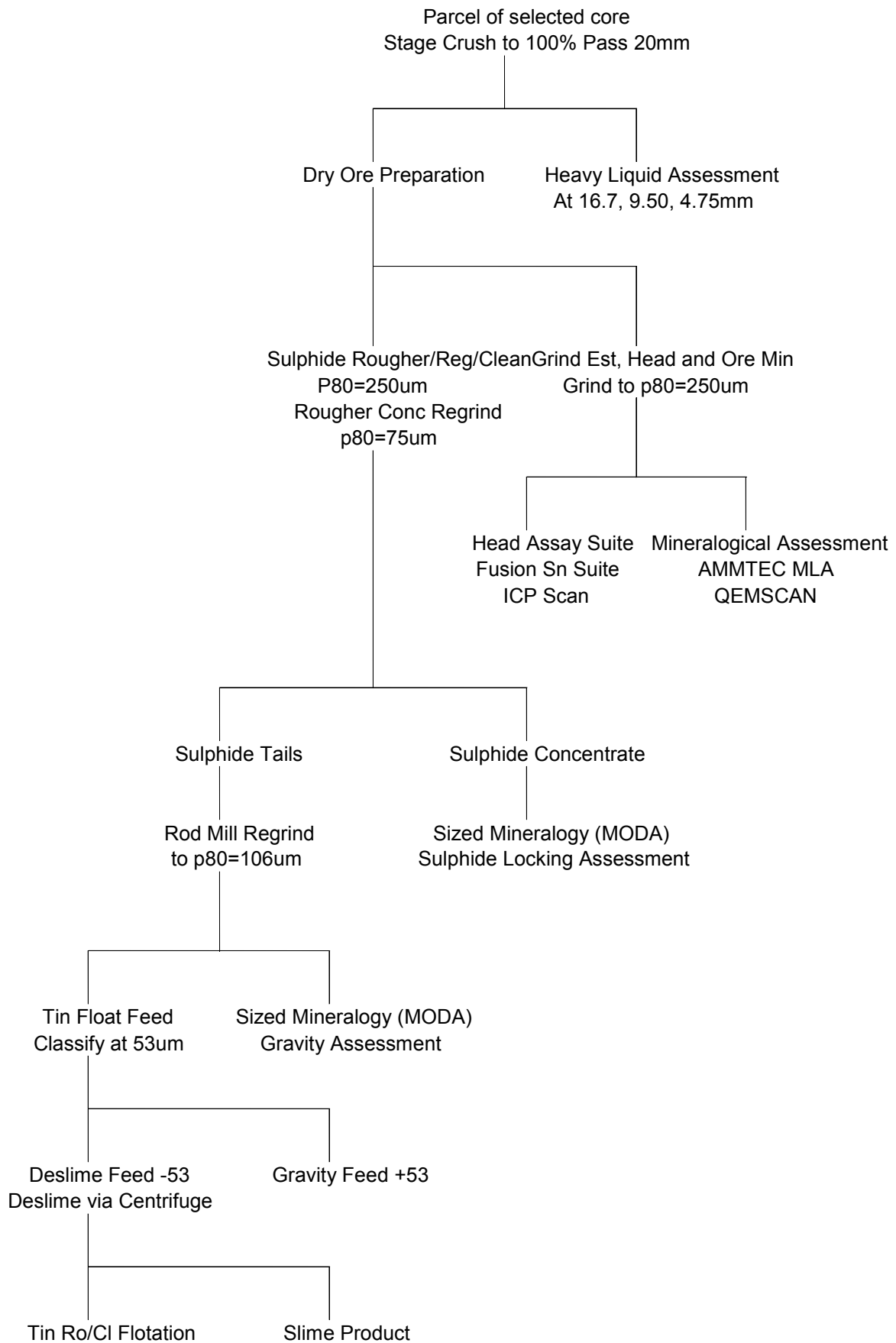
Mineralogical assessments indicate cassiterite is present in a host matrix of pyrite, iron oxides and silicates. Iron sulphides and iron oxides represent over 70% of the ore volume. No stannite was indicated in quantitative scanning microscopy. As expected cassiterite demonstrates strong overall association with pyrite and iron oxides with liberation to high grade grains commences at 75um.

Queen Hill ores contain fine grained cassiterite with an average grain size of some 23um. Liberation values are sufficiently high below 40um for efficient recovery. Fine gravity processing routines are available and tin flotation can yield good recovery of cassiterite to moderate grade concentrates.

Both composites behave in a similar manner in sulphide flotation. 14% of feed cassiterite remains in the sulphide concentrate, a high proportion of this cassiterite is fine and free and potentially recoverable.

A very high proportion of the tin present is in the sub 53um size range thus a robust tin float regime is required to ensure overall recovery is high. Initial tin flotation tests yielded moderate upgrade with around 55% recovery of tin to rougher concentrate. Further tests are required to confirm that a selective reagent scheme can be determined.

## QUEEN HILL ORE CHARACTERISATION: SUMMARY



## 2. SAMPLE RECEIVED

Samples were received as bagged dry split core. Samples were coarse crushed and samples individually for analysis. Remnant prepared core was then fine crushed to 1.70mm and split for testing. Remnant ore has been stored.

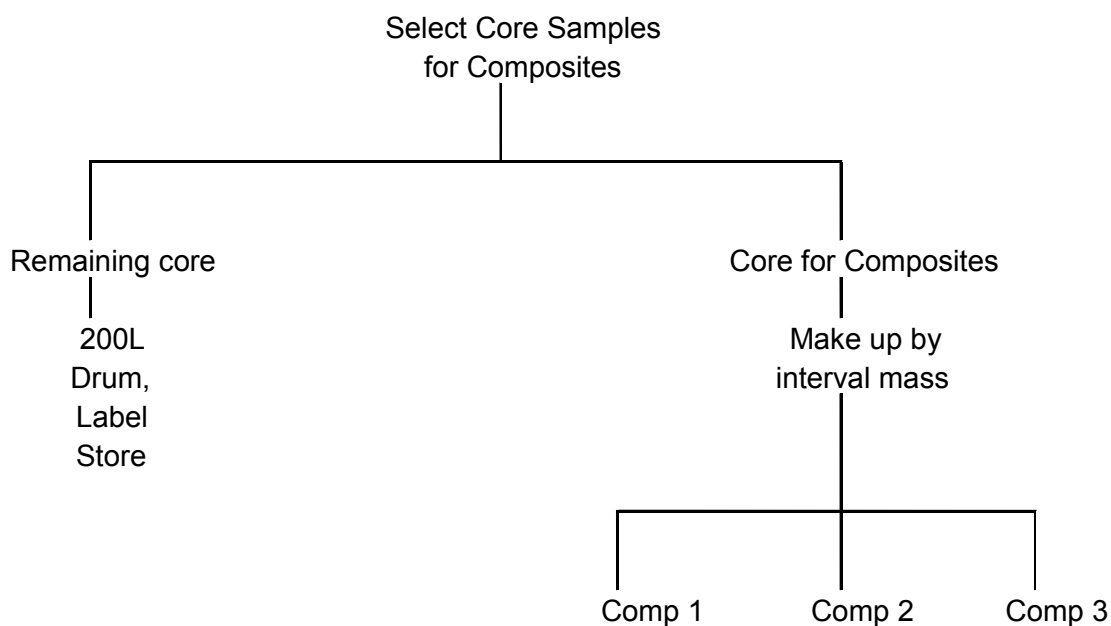
SAMPLE NAME	Kg
94327	4.3
94328	3.9
94329	3.5
94330	2.2
94331	5.8
94332	5.7
94360	7.2
94361	5.7
94362	7.1
94363	6.3
94364	6.3
94365	5.2
94385	3.8
94466	2.2
94467	1.0

SAMPLE NAME	Kg
94423	1
94424	4.5
94425	4.1
94426	3.2
94427	3.2
94428	3.8
94429	4.1
94430	4
94431	4
94432	3.1
94433	3.3
94434	4.4
94435	3.6
94436	4.3
94437	3.3
94438	3.5
94439	3.8

SAMPLE NAME	Kg
94405	3.20
94406	3.50
94407	3.00
94408	2.70
94409	2.90
94410	2.50
94411	2.80
94412	2.70

### 3. TEST METHODS

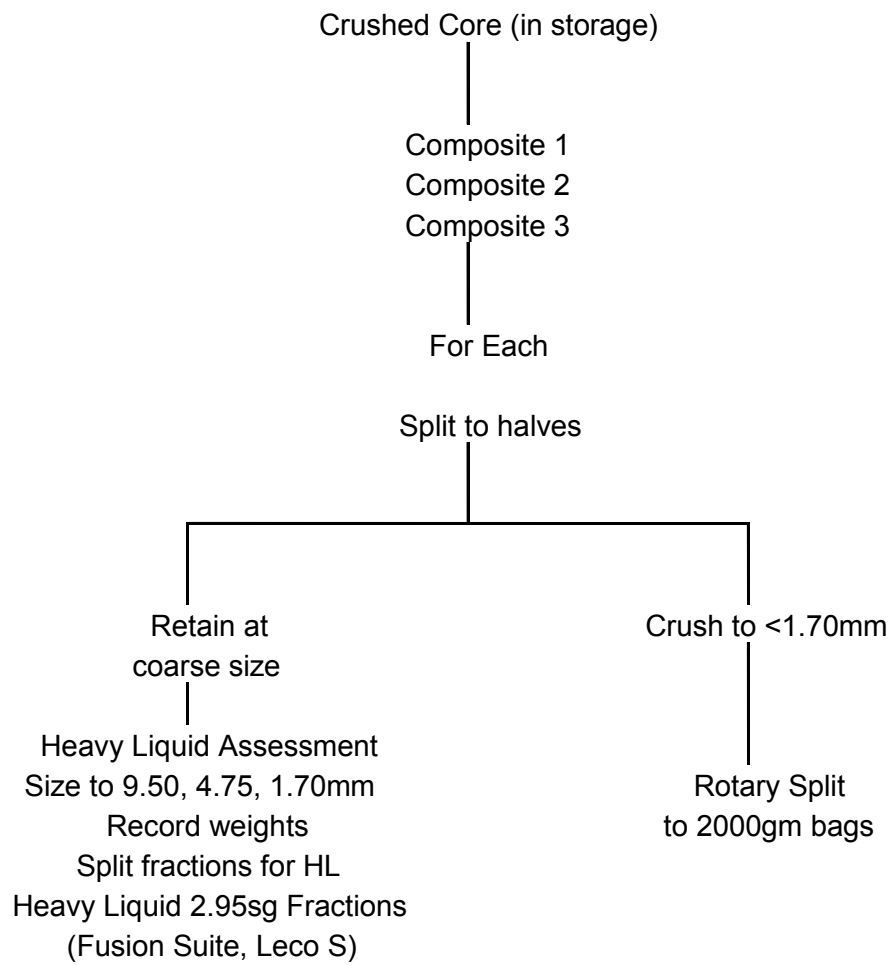
The following diagrams detail the individual laboratory routines for the assessment.

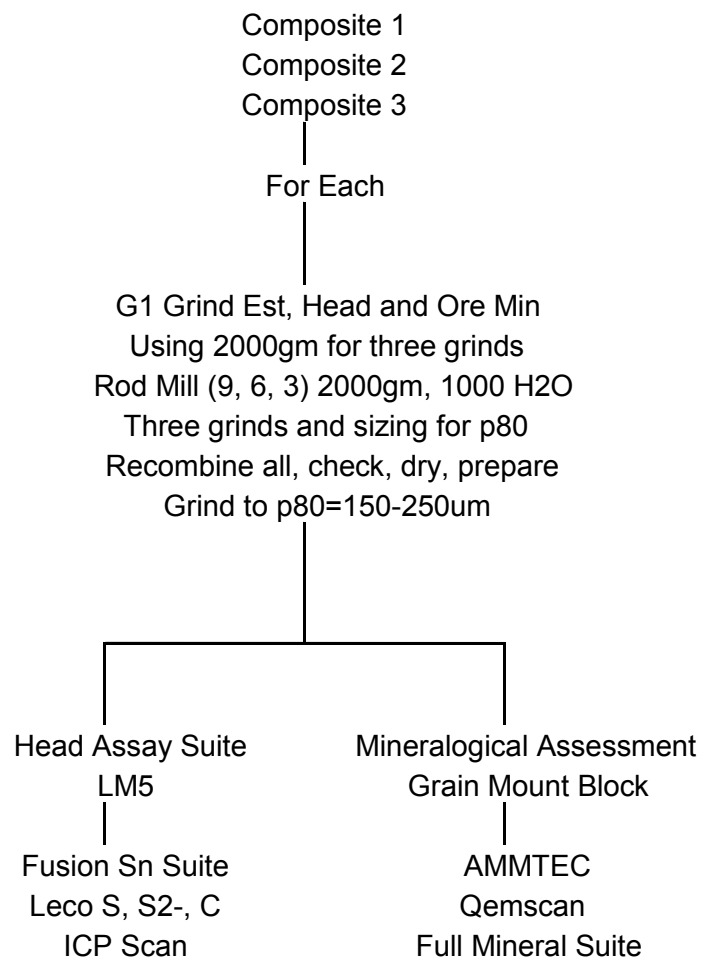


Composite 1 kg	
94327	0.86
94328	0.74
94329	0.86
94330	0.37
94331-32	1.23
94360-65	1.23
94385	0.86
94466	1.48
94467	0.98

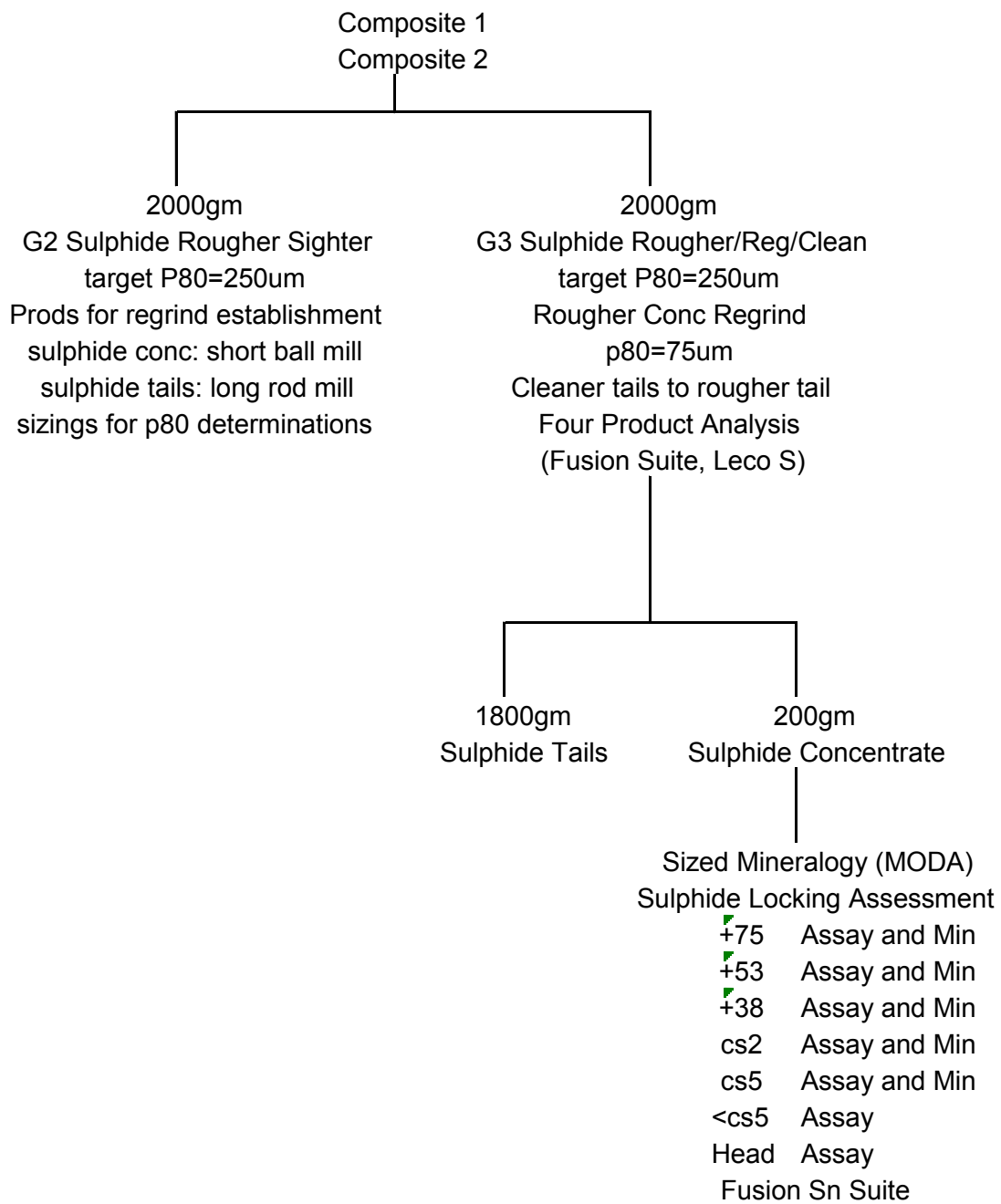
Composite 2 kg	
94423	0.11
94424-44	0.57
94504	0.57
94505	0.57
94506	0.57
94507	0.57
94508	0.57
94509	0.57

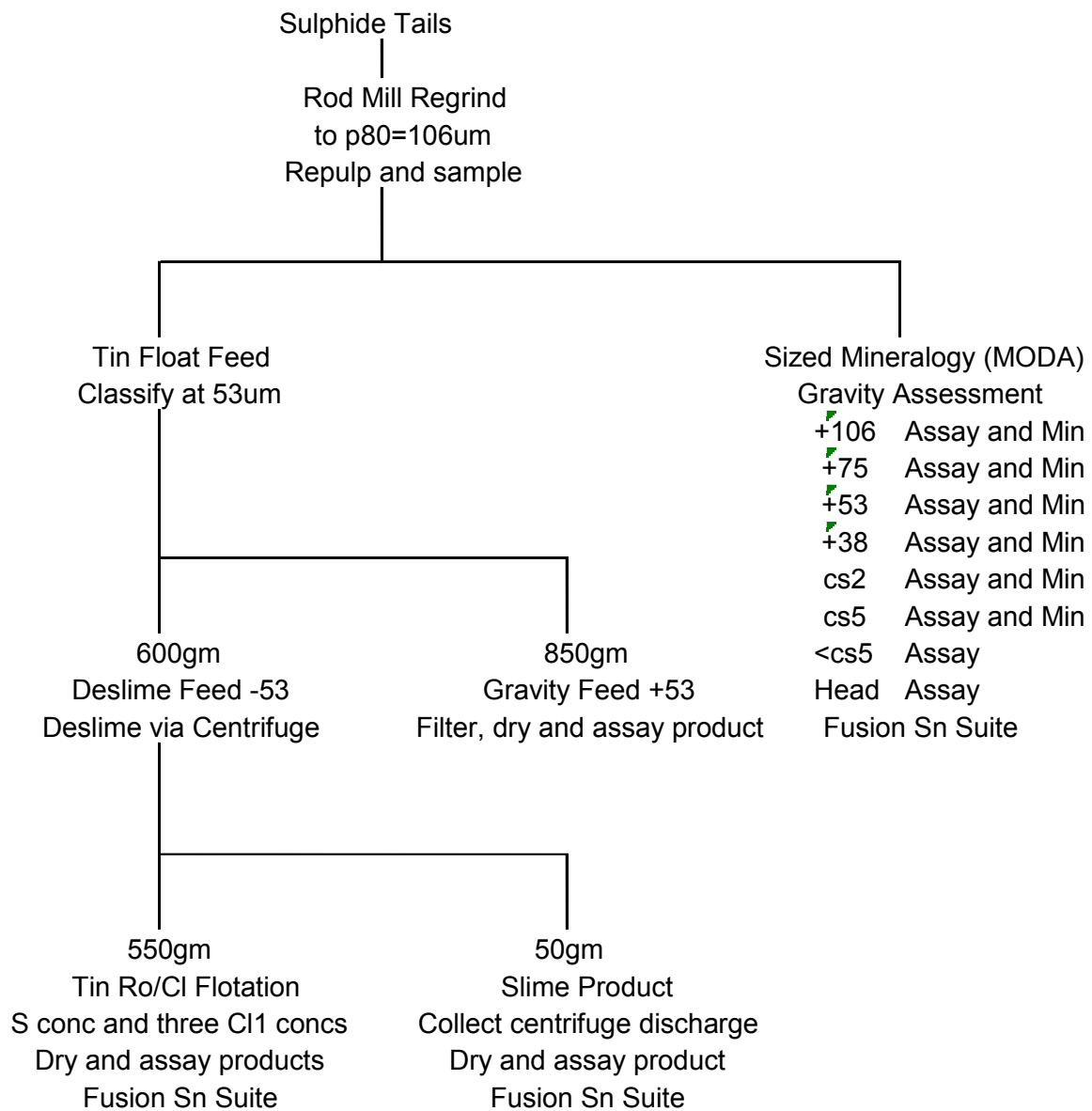
Composite 3 kg	
94405	1.00
94406	1.00
94407	1.00
94408	1.00
94409	1.00
94410	1.00
94411	1.00
94412	1.00











## SAMPLE PREPARATION: DRILL CORE

Samples were received as bagged damp half core. Samples were crushed in a single toggle lab jaw crusher to 100% passing 25mm. Crusher discharge was screened at 1.70mm and screen oversize stage rolls crushed to 100% passing 1.70mm. The combined crushed ore was rotary split to lots for cold storage.

## SIZING AND MINERALOGY

Samples of 200gm were riffle split from selected products and wet screened at 38um. Oversize was dried and dry screened to generate dry fractions with the dry -38 returned to the undersize. Undersize was also screened to generate +/- 20 micron fractions. Individual fractions were riffle split for analysis and recombined as required for mineralogy.

## GRIND ESTABLISHMENTS

Samples of fine ore (100% passing 1.70mm) were assessed by batch grinding to establish a curve for discharge p80 versus grind time for the grind conditions required for further testing. The following grind conditions were used:

- 400mm long x 320mm diameter open ended mill steel rod mill.
- 14kg of mild steel rods of 25mm, 15mm and 10mm diameter used.
- 2000gm of prepared ore at 66% solids.
- Grind for 10 minutes; remove slurry, sample and size.
- Grind a further 10 minutes; remove slurry, sample and size.
- Grind a further 10 minutes; remove slurry, sample and size.
- Discharge solids were also prepared for head analysis samples.

A similar procedure is used for sulphide tails regrind establishment:

- 400mm long x 320mm diameter open ended mill steel rod mill.
- 14kg of mild steel rods of 25mm, 15mm and 10mm diameter used.
- Around 1500gm of prepared tails at 66% solids.
- Grind for 5 minutes; remove slurry, sample and size.
- Grind a further 5 minutes; remove slurry, sample and size.
- Grind a further 5 minutes; remove slurry, sample and size.

A similar procedure is also used for sulphide conc regrind establishment:

- 300mm long x 320mm diameter open ended mill steel ball mill.
- 6kg of mild steel balls of 25mm, 15mm and 10mm diameter used.
- Around 300gm of prepared conc at 66% solids.
- Grind for 2 minutes; remove slurry, sample and size.
- Grind a further 2 minutes; remove slurry, sample and size.
- Grind a further 2 minutes; remove slurry, sample and size.

## SULPHIDE FLOTATION

Sulphide rougher and cleaner flotation tests were performed under the following conditions:

- Grind at 66% solids in an open mild steel rod mill and charge to a p80 of 250um.
- Flotation rougher performed in a 3.7L Agitaire style laboratory cell.
- Dilute reagents were added and conditioned for two minutes prior to flotation.
- Wet concentrate, air rate and time were recorded for each concentrate.

- Rougher concentrate was then ball mill reground to target p80 of 106µm.
- A single 2.2L cleaner float was then performed to produce three concs and a tail.
- The cleaner tail is combined with the sulphide rougher tail for further processing.
- Products were filtered and dried for weight determination and analysis.

#### CASSITERITE FLOTATION

Cassiterite rougher and cleaner flotation tests are performed under the following conditions:

- Floats are performed on the flotation tails of a previous sulphide recovery stage.
- Flotation rougher performed in a 3.7L Agitaire style laboratory cell.
- A short sulphide scavenger float is performed at pH<7 using a xanthate collector.
- A surface reagent (SSF) is added and pulp allowed to condition for 10 minutes.
- Pulp pH is monitored and held at pH 5.5 with SSF if required.
- Dilute collector (SPA) is added and allowed to condition for 15 minutes.
- Rougher concentrate froth is removed in stages with further SPA additions.
- Air rate and time are recorded for each concentrate.
- A single 2.2L cleaner float was then performed on combined rougher concentrate to produce three concs and a tail.
- Products were filtered and dried for weight determination and analysis.

#### REAGENTS USED

The following reagents were used in this test program:

- SIBX, collector, Sodium Iso Butyl Xanthate, Orica
- SPA, Styrene Phosphoric Acid, Indian source.
- H<sub>2</sub>SO<sub>4</sub>, Sulphuric Acid, Reagent Grade.
- CuSO<sub>4</sub>, activator, Reagent Grade.
- SSF, Sodium Silica Fluoride, Reagent Grade.
- IF56, Frother, commercial alcohol/polyglycol blend.
- Lime, pH modifier, dry slaked lime.
- MIBC, frother, methyl Iso Butyl Carbinol, Shell.

TABLE 1: TESTS PERFORMED

TEST	Ore	TEST	NOTES
T01	Composite 1	Rougher	Sulphide Ro
T02	Composite 2	Rougher	Sulphide Ro
T03	Composite 1	Cleaner	Sulphide Ro
T04	Composite 2	Cleaner	Sulphide Ro
T05	Composite 3	Rougher	Pb Rougher
T06	Composite 1	Heavy Liquid	SG 2.95
T11	Composite 2	Heavy Liquid	SG 2.95
T07	Composite 1	Cleaner	Sulphide Ro/Cl
T08	Composite 2	Cleaner	Sulphide Ro/Cl
T09	Composite 1	Cleaner	Sulphide Ro/Cl
T10	Composite 2	Cleaner	Sulphide Ro/Cl
T12	Composite 1	Ro/Cl	Tin Ro/Cl
T13	Composite 2	Ro/Cl	Tin Ro/Cl

## 4. RESULTS AND DISCUSSION

### HEAD ANALYSIS

Table 2 details head analysis results.

TABLE 2: HEAD SAMPLE ANALYSES

#### Fusion XRF

Sample Description	Sn (%)	As (%)	Fe (%)	MgO (%)	SiO <sub>2</sub> (%)
587001 Composite 1	1.00	<0.01	25.11	1.18	28.66
587002 Composite 2	0.93	<0.01	29.63	0.50	25.98

#### Leco, Gravimetric:

Sample Description	S <sub>2</sub> - (%)	S (%)	C (%)	Pycno (kg/l)	
587001 Composite 1	14.73	15.51	2.04	3.69	
587002 Composite 2	22.51	23.08	1.60	3.89	

#### ICP

Sample Description	Ag(ppm)	Al(%)	Ba(ppm)	Bi(ppm)	Ca(%)
587001 Composite 1	4	2.60	155	<10	2.51
587002 Composite 2	10	1.00	60	10	1.39

Sample Description	Cd(ppm)	Co(ppm)	Cr(ppm)	Cu(ppm)	Fe(%)
587001 Composite 1	<5	30	130	115	23.3
587002 Composite 2	15	5	60	135	29.9

Sample Description	K(ppm)	Li(ppm)	Mg(ppm)	Mn(ppm)	Mo(ppm)
587001 Composite 1	7000	15	7540	2200	<5
587002 Composite 2	1500	15	2480	1900	<5

Sample Description	Na(ppm)	Ni(ppm)	P(ppm)	Pb(ppm)	Sr(ppm)
587001 Composite 1	460	180	1300	560	64
587002 Composite 2	360	90	900	2860	54

Sample Description	Ti(ppm)	V(ppm)	Y(ppm)	Zn(ppm)	Zr(ppm)
587001 Composite 1	4200	36	10	1445	85
587002 Composite 2	600	8	5	5775	45

## MINERALOGY

An extensive mineralogical assessment has been made of each ore type. This consisted of assessment of tin distribution, liberation and locking in the following streams.

- Ground Ore composites (QEMSCAN)
- Sulphide Flotation concentrate (OPTICAL)
- Reground Sulphide Flotation tails(OPTICAL)

These are reported separately (reports appended) with the QEMSCAN and the optical assessments summarised, using a typical Renison ore for comparison, in the following tables.

### QEMSCAN ASSESSMENT

These assessments were performed on ore wet ground to a p80=250um. Table 4 summarises pertinent results for the QEMSCAN analysis.

TABLE 4: QEMSCAN SUMMARY

MINERAL PARAMETER	COMP 1	COMP 2
Grind Size p80 (um)	250	250
Grind Size d50 (um)	120	130
Scan Grain Size d50 (um)	86	90
Cassiterite Grain Size d50 (um)	22	25
Pyrite Grain Size d50 (um)	60	73
Pyrite Volume (%)	43	59
Sphalerite Volume (%)	0.4	0.9
Cassiterite >60% Liberated (% of Cs)	41	45
Cassiterite Binary with Pyrite (% of Cs)	13	11
Cassiterite Binary with Iron Oxides (% of Cs)	18	22
Cassiterite Ternaries: Cs, Fl, Qz (% of Cs)	24	20
Cum Liberation Yield Cs at 50% Sn	70	73
Cum Liberation Yield Sp at 50% Zn	50	70

Over 95% of cassiterite is present in only four categories of grains, as indicated above. Cassiterite shows good liberation at this relatively coarse grind size with 40-45% of cassiterite in grains of more than 60% Cs. Around 30% of cassiterite is in binary associations with pyrite and iron oxides with the remainder associated with gangue.

Assessment: Cassiterite is present in host matrix of pyrite, iron oxides and silicates. Iron sulphides and iron oxides represent over 70% of the ore volume. Tin is present as cassiterite with no traces of stannite indicated by quantitative scanning microscopy. As expected, cassiterite demonstrates strong overall association with pyrite and iron oxides. Liberation to high grade grains commencing at 75um and very good liberation from these below 38um.

## OPTICAL ASSESSMENT

### SULPHIDE CONCENTRATES

Table 5 summarises the sulphide population determined for each ore type. Table 6 compares tin residence for a typical Renison ore of similar grades (“Dalcoath”) and the Queen Hill composites (T09 and T10 products).

TABLE 5: SULPHIDE CONCENTRATE SULPHIDE VOLUMES

ORE (% Volume)	RENISON	COMP 1	COMP 2
Pyrite	15	87	80
Pyrrhotite	61	0	9
Arsenopyrite	13	0	0
Sulphur Dist (from Feed)	72	92	77

TABLE 6: SULPHIDE CONC TIN DEPARTMENT

ORE TIN DIST (%)	RENISON	COMP 1	COMP 2
Tin Dist >38um	35	46	66
Free Cassiterite	11	7	6
Binary with Pyrite	2	35	21
Binary with Pyrrhotite	35	0	1
Binary with Chalcopyrite	9	0	0
Binary with Gangue	10	9	23
Tin Dist (from Feed)	2.8	13.4	14.9

Note: Comparisons are made for >38um fractions only

The Queen Hill composite sulphides are dominated by pyrite rather than the pyrrhotite in Renison ores. Queen Hill ore sulphide flotation results in a higher proportion of tin loss in to the sulphide stream; this consists of tin locked in pyrite and finer free tin. Mineralogy indicates that the level of liberation of cassiterite is low at >38um suggesting a finer regrind is required for adequate separation.

Assessment: Tin loss to sulphide concentrate is too high due to the loss of coarser (>38um) locked cassiterite and loss of finer (<38um) free cassiterite. Further assessment of regrind size and routines for reducing this loss are required.

## SULPHIDE TAILS

A similar comparison is made for sulphide tails in Table 7 below. Queen Hill composite mineralogy indicates a finer overall tin distribution with an average tin grain size of around 40um compared with 70um for the Renison ore. Table 7 indicates that the cassiterite present in Queen Hill ores is significantly finer than the Renison ore and also liberates at a significantly finer size.

TABLE 7: SULPHIDE TAILS TIN DEPORTMENTS

ORE TIN	RENISON Dist (%)	COMP 1 Dist (%)	COMP 2 Dist (%)
Stream p80 (um)	150	106	106
All Cassiterite >106	20	12	6
All Cassiterite >75	24	16	12
All Cassiterite >53	16	14	14
All Cassiterite >38	12	10	11
All Cassiterite >20	13	15	20
All Cassiterite <20	16	33	37
Free Cassiterite in >106	46	0	0
Free Cassiterite in >75	32	14	8
Free Cassiterite in >53	40	16	22
Free Cassiterite in >38	58	19	22
Free Cassiterite in >20	75	52	55
Free Cassiterite in <20	(80)	77	77

Assessment: Queen Hill ores contain finer grained cassiterite than Renison ore. Liberation values are sufficiently high below 40um for efficient recovery. Fine gravity processing routines are available and tin flotation can yield good recovery of cassiterite to moderate grade concentrates.



## HEAVY LIQUID TESTING

Composites were sized between 2.36 and 9.50mm and fractions separated by heavy liquid fractionation. Tables below summarise results. Results indicate a moderate mass rejection of low sg material (18% and 9% respectively for Composites 1 and 2) with around 1% tin rejection. Analyses also indicate floats are dominantly silicates and contain 26% and 36% of feed silicate respectively, a very significant result.

TABLE 8: COMPOSITE 1

Fractions mm	SG kg/l	WT %	Overall		Overall		Overall		Overall	
			%Sn	dist	%Fe	dist	%SiO2	dist	%S	dist
Float+9.50	3.05	3.12	0.10	0.29	9.71	1.19	59.71	6.15	1.75	0.33
Float+6.70	2.96	5.40	0.05	0.26	9.85	2.09	60.01	10.69	1.98	0.65
Float+4.75	3.02	4.55	0.05	0.23	9.46	1.80	61.50	9.84	1.95	0.57
Float +2.36	2.94	4.85	0.10	0.46	8.89	1.69	66.48	10.64	1.74	0.51
Sink+9.50	3.86	6.59	1.42	8.83	30.74	7.93	20.28	4.40	21.21	8.45
Sink+6.70	3.91	18.74	1.32	23.36	30.97	22.74	21.18	13.09	22.58	25.59
Sink+4.75	3.90	16.47	1.28	19.91	31.16	20.11	18.58	10.09	21.99	21.90
Sink +2.36	3.85	14.49	1.47	20.12	30.61	17.38	19.01	9.08	21.04	18.44
Total Floats	2.98	17.93	0.07	1.22	9.47	6.65	62.09	36.70	1.87	2.02
Total Sinks	3.89	56.28	1.36	72.23	30.91	68.17	19.76	36.66	21.85	74.38
Total Fines	3.57	25.79	1.09	26.55	24.92	25.18	31.32	26.63	15.13	23.60
Calc Feed	3.61	100.00	1.06	100.00	25.52	100.00	30.33	100.00	16.53	100.00

TABLE 9: COMPOSITE 2

Fractions mm	SG kg/l	WT %	Overall		Overall		Overall		Overall	
			%Sn	dist	%Fe	dist	%SiO2	dist	%S	dist
Float+9.50	3.12	0.77	0.02	0.02	7.80	0.19	78.90	2.17	4.59	0.15
Float+6.70	2.93	3.10	0.05	0.16	5.50	0.55	84.90	9.41	3.31	0.43
Float+4.75	2.95	1.85	0.05	0.16	5.90	0.58	82.50	8.92	3.65	0.46
Float +2.36	2.83	3.03	0.09	0.28	5.10	0.50	85.60	9.25	2.90	0.37
Sink+9.50	4.04	13.49	0.93	12.88	34.70	15.09	18.20	8.77	25.34	14.31
Sink+6.70	4.14	19.49	0.93	18.61	33.40	20.99	19.60	13.64	26.59	21.69
Sink+4.75	4.10	16.69	1.44	24.67	34.00	18.29	19.20	11.44	27.12	18.94
Sink +2.36	3.97	15.06	1.02	15.78	34.00	16.51	19.01	10.22	24.94	15.72
Total Floats	2.91	8.75	0.06	0.55	5.65	1.59	84.11	26.28	3.35	1.23
Total Sinks	4.07	64.73	1.08	71.95	33.97	70.88	19.07	44.07	26.08	70.66
Total Fines	3.64	26.52	1.01	27.50	32.20	27.53	31.32	29.65	25.33	28.11
Calc Feed	3.82	100.00	0.97	100.00	31.02	15.09	28.01	100.00	23.89	100.00

Assessment: Results indicate scope for rejection of up to a third of silicates with minor tin loss. Further assessments at higher sg and at finer sizes (to 1mm) are warranted.

## FLOTATION TESTING

### SULPHIDE FLOTATION

Sulphide float results are presented in the summary tables below. Sulphide rejection is quite acceptable at around 90% for most tests with less than 4% S in combined non-sulphide tails. Tin loss to concentrate is high, up to 35% of feed tin, when using PAX and without a depressant. A silicate depressant (sodium silicate) strongly reduces the loss of tin to the concentrate with losses reduced to around 15% of feed tin. Mineralogical assessment of sulphide concentrate indicates further gains can be made as a high proportion of the cassiterite is liberated in this product.

Assessment: Both composites behave in a similar manner in sulphide flotation. 14% of feed cassiterite remains in the sulphide concentrate, a high proportion of this cassiterite is free and potentially recoverable.

TABLE 10: SULPHIDE FLOTATION

TEST	REAGENTS			CONCENTRATE							
	PAX	H2SO4	Na2SiO3	%Sn	Rec	%Fe	Rec	%SiO2	Rec	%S	Rec
T01	109	200	0	0.80	33.6	36.98	63.4	10.2	14.7	33.7	92.0
T02	119	540	0	0.56	35.5	38.78	80.2	10.0	21.8	36.7	97.1
T03	155	350	400	0.64	19.7	40.30	51.8	5.96	6.5	40.2	82.8
T04	155	790	400	0.40	20.0	42.20	70.3	5.30	9.5	42.50	91.1
T07	156	406	507	0.52	13.7	41.00	45.1	4.37	4.0	43.1	76.5
T08	155	1390	506	0.31	14.3	42.60	65.4	4.15	6.2	44.3	87.2
T09	155	426	502	0.54	15.4	42.20	48.0	4.30	4.5	42.8	78.4
T10	172	1390	505	0.33	18.1	43.50	70.6	4.60	8.4	43.6	93.0

GRAPH 1: SULPHIDE FLOTATION

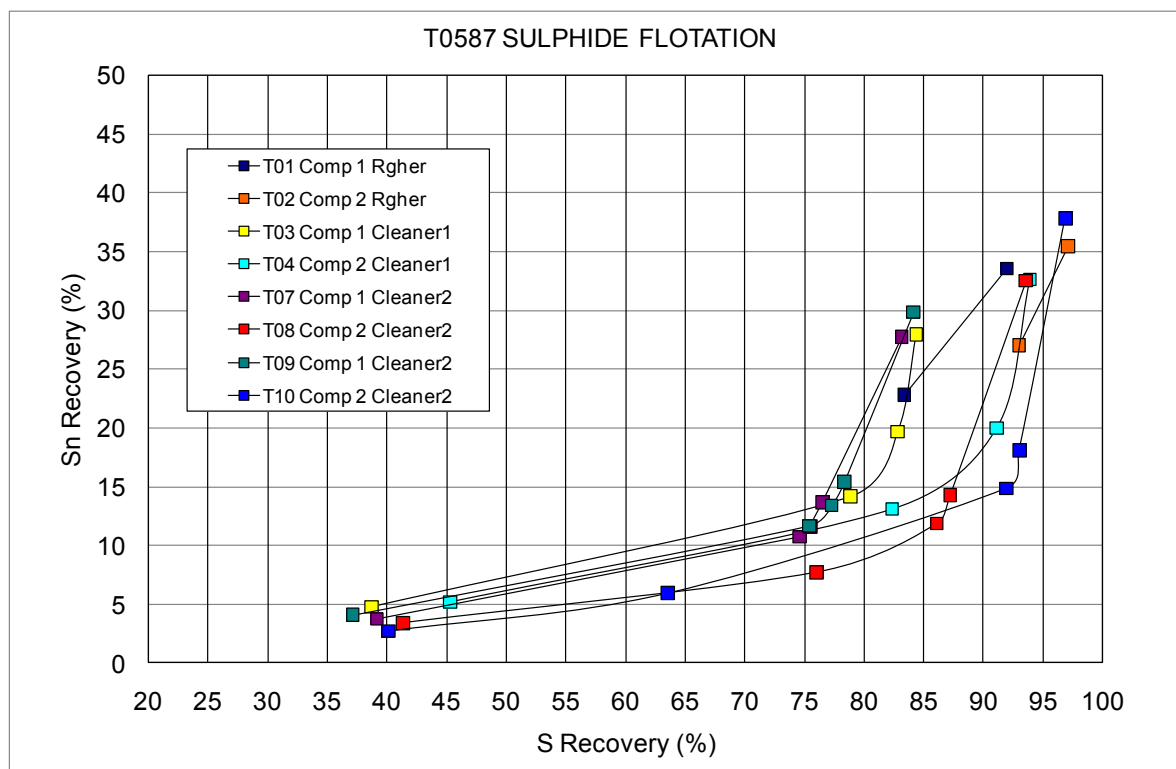
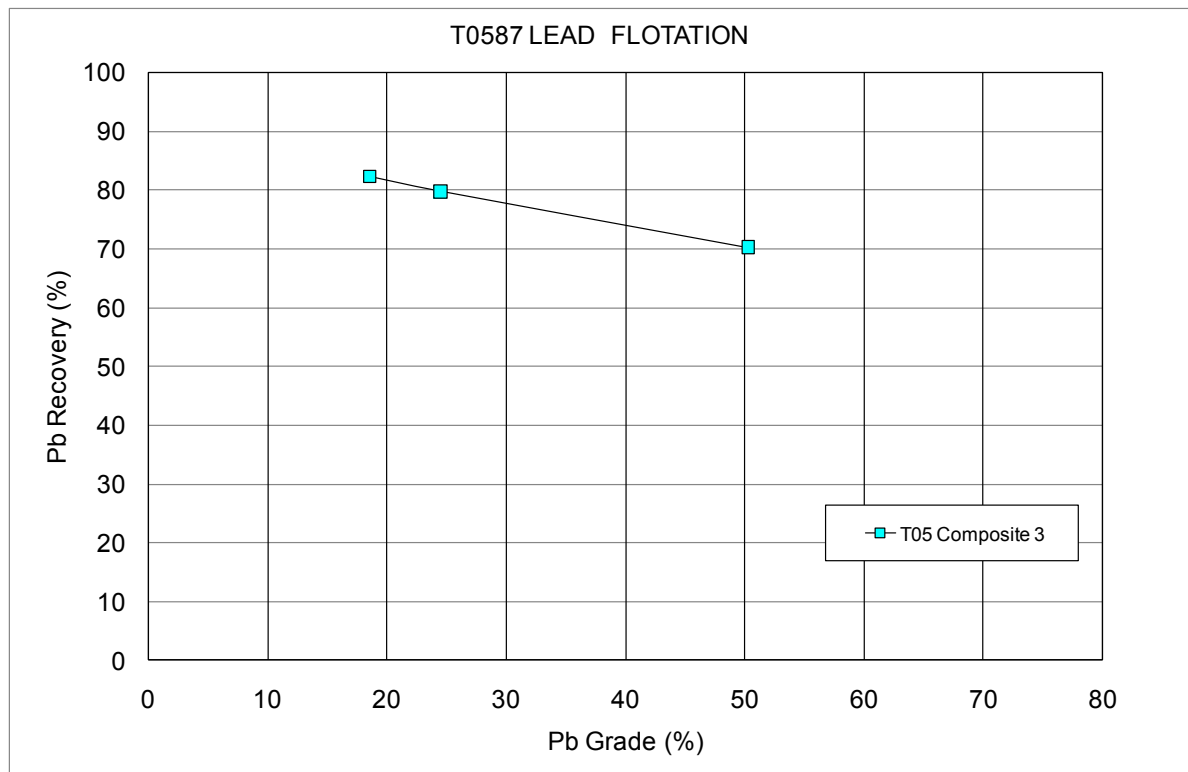


TABLE 11: LEAD FLOTATION

A single lead rougher float was performed on Composite 3 with the following results.

TEST	P80 (um)	SEX (gpt)	Concentrate							
			%Cu	Rec	%Pb	Rec	%Zn	Rec	%Fe	Rec
T05	167	64	0.06	3.7	18.6	87.8	1.53	20.9	26.90	22.4

GRAPH 2: LEAD FLOTATION

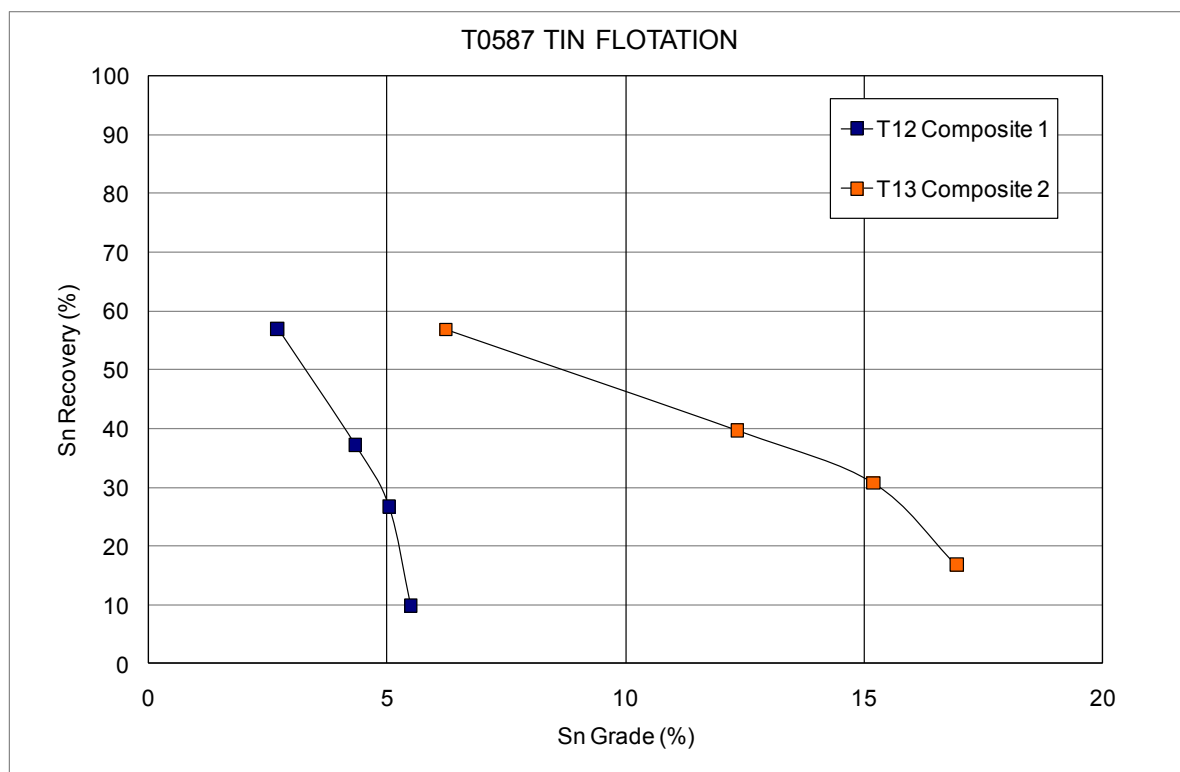


Assessment: Easily upgraded with good potential to produce a lead concentrate from this ore.

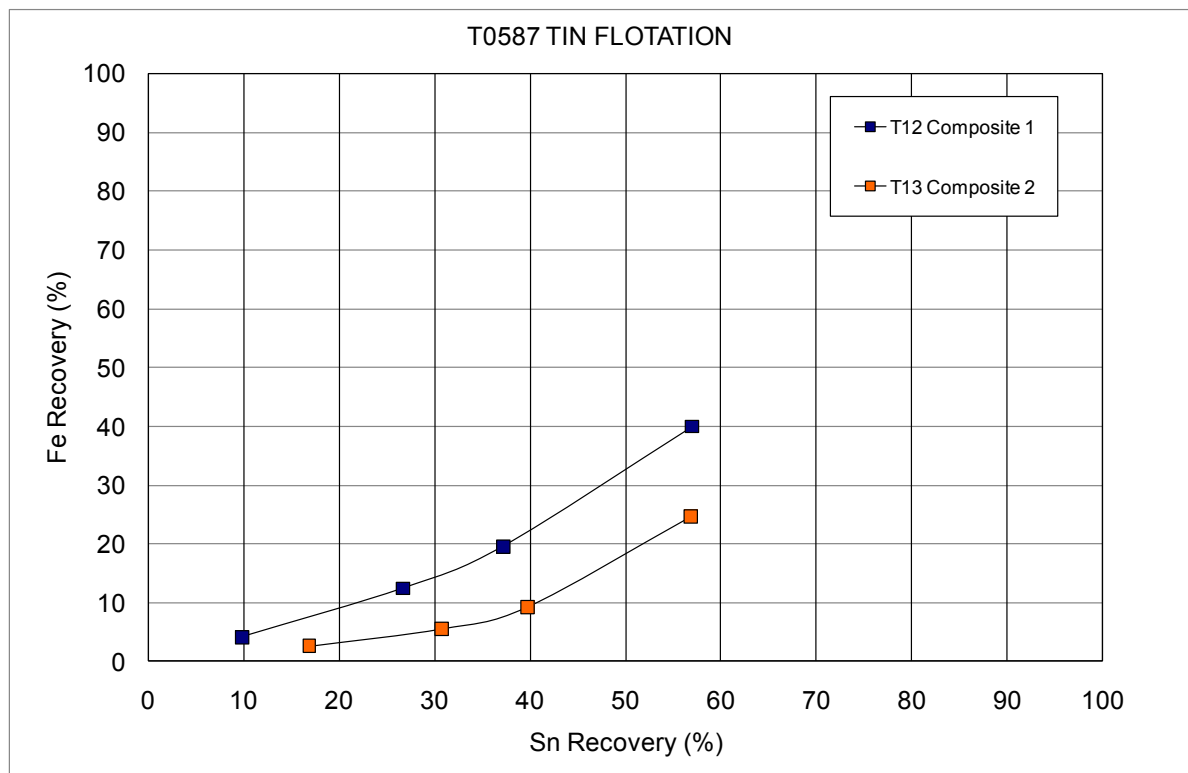
## TIN FLOTATION

Tin flotation results are detailed in the appended flotation sheets and summarised in the tables below. Graph 3 plots the tin float grade/recovery performance. As indicated rougher recovery response was moderate for both ores. Recovery at 10% Sn grade should exceed 80% in roughing and 75% in cleaning. Further work is required to assess routines for recovery improvement. Tin grade in concentrate is strongly diluted by the high level of iron recovered with the tin. Assessments are required to find a routine to enhance tin/iron selectivity – either a depressant or improved tin collector.

GRAPH 3: TIN FLOTATION



GRAPH 4: TIN FLOTATION SELECTIVITY



Assessment: A high proportion of the tin present is in the finer size range thus a robust tin float regime is required. Further tests are required to confirm that a selective reagent scheme can be determined.

## OVERALL BALANCES

The following two tables present the overall metal balances for the two assessments performed.

SRF GRIND (MIN TO 250UM)				17.0				SRT GRIND (MIN TO 106UM)				15.0				SRC GRIND (MIN TO 56UM)				14.0			
SULPHIDE FLOAT T09	WEIGHT gm	WT %	Sn %	REC	Fe %	REC	Ca %	REC	S %	REC	Mn %	REC	Al %	REC	Cu %	REC	SiO2 %	REC					
S CONC	570.5	28.6	0.49	13.5	42.8	46.8	0.42	5.2	44.0	77.3	0.03	3.5	0.33	3.2	0.06	52.8	3.56	3.5					
S CL2 TAIL	23.9	1.2	1.70	2.0	27.6	1.3	2.42	1.2	14.1	1.0	0.19	0.9	3.91	1.6	0.11	4.1	22.10	0.9					
S RO+CL1 TAIL	1398.8	70.2	1.25	84.5	19.4	52.0	3.10	93.6	5.0	21.7	0.33	95.5	4.01	95.2	0.02	43.1	39.23	95.5					
CALC FEED	1993.2	100.0	1.04	100.0	26.20	100.0	2.32	100.0	16.3	100.0	0.24	100.0	2.96	100.0	0.03	100.0	28.82	100.0					
ASSAY FEED			1.00		25.10		2.25		15.5		0.24		3.05		0.02		28.70						
GRIND AND CLASS	WEIGHT gm	WT %	Sn %	REC	Fe %	REC	Ca %	REC	S %	REC	Mn %	REC	Al %	REC	Cu %	REC	SiO2 %	REC					
COARSE GRAV +53	573.1	48.5	1.22	46.4	17.9	44.5	2.71	43.0	4.83	47.8	0.34	49.3	3.40	41.5	0.02	46.4	45.40	56.3					
TIN FLOAT FEED	544.0	46.0	1.44	52.1	21.2	50.1	3.76	56.6	4.97	46.6	0.35	47.9	3.92	45.5	0.02	48.3	33.28	39.2					
SLIME TAIL <CS6	65.7	5.6	0.35	1.5	18.9	5.4	0.26	0.5	4.93	5.6	0.17	2.8	9.30	13.0	0.02	5.3	32.20	4.6					
CALC SRT	1182.8	100.0	1.27	100.0	19.49	100.0	3.06	100.0	4.90	100.0	0.33	100.0	3.97	100.0	0.02	100.0	39.09	100.0					
ASSAY SRT			1.25		19.40		3.10		5.00		0.33		4.01		0.02		39.23						
GRIND AND CLASS	WEIGHT gm	WT %	Sn %	REC	Fe %	REC	Ca %	REC	S %	REC	Mn %	REC	Al %	REC	Cu %	REC	SiO2 %	REC					
T12 S/Scav Con	55.2	10.1	0.92	6.5	36.1	17.3	1.20	3.2	29.70	60.7	0.12	3.5	2.16	5.6	0.08	37.0	12.10	3.7					
CI1 C1	14.0	2.6	5.50	9.8	33.9	4.1	0.39	0.3	6.38	3.3	0.50	3.7	1.23	0.8	0.03	3.5	12.40	1.0					
C2	27.6	5.1	4.81	16.9	34.8	8.3	0.51	0.7	6.08	6.2	0.52	7.6	1.50	1.9	0.05	11.6	15.50	2.4					
C3	25.8	4.7	3.19	10.5	32.0	7.1	0.75	0.9	5.74	5.5	0.47	6.4	1.98	2.4	0.02	4.3	21.30	3.0					
CL1 T	98.5	18.1	1.58	19.8	23.9	20.4	1.96	9.4	3.39	12.4	0.40	20.8	3.90	18.0	0.02	16.5	31.90	17.4					
Ro T	322.9	59.4	0.89	36.6	15.3	42.8	5.41	85.4	1.00	12.0	0.34	58.0	4.71	71.3	0.01	27.1	40.70	72.6					
CALC TFF	544.0	100.0	1.44	100.0	21.23	100.0	3.8	100.0	5.0	100.0	0.3	100.0	3.92	100.0	0.02	100.0	33.28	100.0					
PRODUCTS	WEIGHT gm	WT %	Sn %	REC	Fe %	REC	Ca %	REC	S %	REC	Mn %	REC	Al %	REC	Cu %	REC	SiO2 %	REC					
SULPHIDE CONC	594.4	29.8	0.49	14.0	42.8	48.3	0.42	5.5	44.00	79.2	0.03	3.7	0.33	3.4	0.06	55.0	3.56	3.7					
COARSE GRAVITY	677.8	34.0	1.22	39.9	17.9	23.0	2.71	40.6	4.83	9.9	0.34	47.5	3.40	40.1	0.02	20.9	45.40	54.2					
SLIME TAIL	77.7	3.9	0.35	1.3	18.9	2.8	0.26	0.4	4.93	1.2	0.17	2.7	9.30	12.6	0.02	2.4	32.20	4.4					
S SCAV CONC	65.3	3.3	0.92	2.9	36.1	4.5	1.20	1.7	29.70	5.9	0.12	1.6	2.16	2.5	0.08	8.0	12.10	1.4					
TIN FLOAT TAIL	498.4	25.0	1.05	25.3	17.3	16.4	4.60	50.7	1.56	2.4	0.35	36.4	4.52	39.2	0.01	9.5	38.64	33.9					
TIN FLOAT CONC	79.7	4.0	4.33	16.6	33.5	5.1	0.58	1.0	6.01	1.5	0.50	8.2	1.63	2.3	0.03	4.2	17.08	2.4					
CALC FEED	1993.2	100.0	1.04	100.0	26.4	100.0	2.27	100.0	16.56	100.0	0.24	100.0	2.88	100.0	0.03	100.0	28.50	100.0					
ASSAY FEED			1.00		25.1		2.25		15.50		0.24		3.05		0.02		28.70						

Project	T0587	ORE	Composite 1
---------	-------	-----	-------------

S REC TO S CONC	79.2
SN REC TO S CONC	14.0
WT REC TO S CONC	28.6

SN REC TO GRAVITY FEED	39.9
SN REC TO SLIME TAIL	1.3
SN REC TO TIN FLOAT FEED	41.9
SN REC TO TIN RO CONC	16.6

SRF GRIND (MIN TO 250UM)				17.0				SRT GRIND (MIN TO 106UM)				11.5				SRC GRIND (MIN TO 70UM)				18.0			
SULPHIDE FLOAT T10	WEIGHT gm	WT %	Sn %	REC	Fe %	REC	Ca %	REC	S %	REC	Mn %	REC	Al %	REC	Cu %	REC	SiO2 %	REC					
S CONC	959.7	48.4	0.28	14.7	44.0	67.6	0.10	3.7	44.7	91.9	0.04	10.0	0.38	14.2	0.07	76.0	3.81	6.8					
S CL2 TAIL	35.9	1.8	1.65	3.2	31.0	1.8	1.28	1.8	14.2	1.1	0.25	2.3	2.24	3.1	0.04	1.6	25.20	1.7					
S RO+CL1 TAIL	986.2	49.8	1.52	82.0	19.4	30.6	2.51	94.6	3.3	7.0	0.34	87.6	2.16	82.7	0.02	22.3	50.22	91.6					
CALC FEED	1981.8	100.0	0.92	100.0	31.52	100.0	1.32	100.0	23.5	100.0	0.19	100.0	1.30	100.0	0.04	100.0	27.29	100.0					
ASSAY FEED			0.93		29.60		1.22		23.1		0.19		1.13		0.04		26.00						
GRIND AND CLASS	WEIGHT gm	WT %	Sn %	REC	Fe %	REC	Ca %	REC	S %	REC	Mn %	REC	Al %	REC	Cu %	REC	SiO2 %	REC					
COARSE GRAV +53	573.1	55.6	1.26	44.8	15.4	46.1	2.24	54.0	3.71	49.1	0.33	54.6	1.42	39.8	0.02	44.8	58.00	64.9					
TIN FLOAT FEED	391.9	38.0	2.18	53.0	21.8	44.6	2.76	45.5	4.21	38.1	0.37	41.8	2.22	42.5	0.03	44.9	40.92	31.3					
SLIME TAIL <CS6	65.7	6.4	0.56	2.3	26.8	9.2	0.20	0.6	8.46	12.8	0.19	3.6	5.51	17.7	0.04	10.3	29.70	3.8					
CALC SRT	1030.7	100.0	1.57	100.0	18.55	100.0	2.31	100.0	4.20	100.0	0.34	100.0	1.99	100.0	0.02	100.0	49.70	100.0					
ASSAY SRT			1.52		19.40		2.51		3.30		0.34		2.16		0.02		50.22						
GRIND AND CLASS T13	WEIGHT gm	WT %	Sn %	REC	Fe %	REC	Ca %	REC	S %	REC	Mn %	REC	Al %	REC	Cu %	REC	SiO2 %	REC					
T13 S/Scav Con	22.9	5.8	0.75	2.0	33.3	8.9	0.69	1.5	30.26	42.0	0.13	2.1	1.30	3.4	0.10	20.0	13.50	1.9					
CI1 C1	8.5	2.2	16.90	16.8	26.5	2.6	0.48	0.4	8.66	4.5	0.26	1.5	1.82	1.8	0.14	10.4	11.80	0.6					
C2	8.8	2.2	13.50	13.9	28.7	3.0	0.64	0.5	8.30	4.4	0.30	1.8	1.73	1.7	0.04	3.1	14.70	0.8					
C3	10.2	2.6	7.50	9.0	30.9	3.7	0.74	0.7	8.12	5.0	0.31	2.2	2.35	2.8	0.08	7.1	19.40	1.2					
CL1 T	50.5	12.9	2.90	17.1	25.9	15.3	1.80	8.4	4.98	15.3	0.34	11.9	2.78	16.1	0.02	8.8	32.70	10.3					
Ro T	291.0	74.3	1.21	41.2	19.5	66.5	3.29	88.5	1.63	28.8	0.40	80.5	2.22	74.2	0.02	50.7	46.90	85.1					
CALC TFF	391.9	100.0	2.18	100.0	21.79	100.0	2.8	100.0	4.21	100.0	0.37	100.0	2.22	100.0	0.03	100.0	40.92	100.0					
PRODUCTS	WEIGHT gm	WT %	Sn %	REC	Fe %	REC	Ca %	REC	S %	REC	Mn %	REC	Al %	REC	Cu %	REC	SiO2 %	REC					
SULPHIDE CONC	995.6	50.2	0.28	15.3	44.0	70.5	0.10	4.2	44.70	91.5	0.04	10.7	0.38	16.2	0.07	74.0	3.81	7.2					
COARSE GRAVITY	548.4	27.7	1.26	37.9	15.4	13.6	2.24	51.7	3.71	4.2	0.33	48.8	1.42	33.3	0.02	11.6	58.00	60.2					
SLIME TAIL	62.9	3.2	0.56	1.9	26.8	2.7	0.20	0.5	8.46	1.1	0.19	3.2	5.51	14.8	0.04	2.7	29.70	3.5					
S SCAV CONC	21.9	1.1	0.75	0.9	33.3	1.2	0.69	0.6	30.26	1.4	0.13	0.8	1.30	1.2	0.10	2.3	13.50	0.6					
TIN FLOAT TAIL	326.8	16.5	1.46	26.2	20.4	10.8	3.07	42.2	2.13	1.4	0.39	34.4	2.30	32.2	0.02	6.9	44.80	27.7					
TIN FLOAT CONC	26.3	1.3	12.33	17.8	28.8	1.2	0.63	0.7	8.34	0.5	0.29	2.1	1.99	2.2	0.09	2.4	15.55	0.8					
CALC FEED	1981.8	100.0	0.92	100.0	31.3	100.0	1.20	100.0	24.55	100.0	0.19	100.0	1.18	100.0	0.05	100.0	26.65	100.0					
ASSAY FEED			0.93		29.6		1.22		23.10		0.19		1.13		0.04		26.00						

Project	T0587	ORE	Composite 2
---------	-------	-----	-------------

S REC TO S CONC	91.5
SN REC TO S CONC	15.3
WT REC TO S CONC	48.4

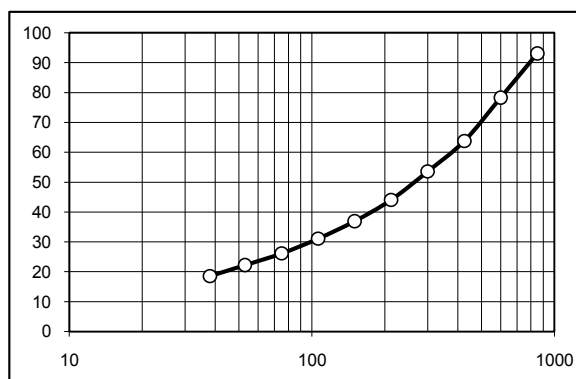
SN REC TO GRAVITY FEED	37.9
SN REC TO SLIME TAIL	1.9
SN REC TO TIN FLOAT FEED	44.0
SN REC TO TIN RO CONC	17.8



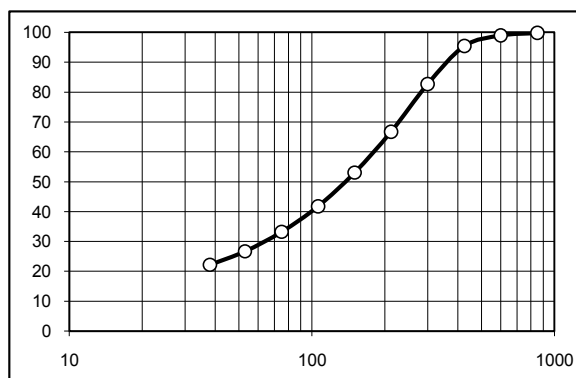
APPENDIX A  
GRIND ESTABLISHMENTS

PROJECT	T0587
ORE	Comp 1
DATE	6/10/2010
TECHNICIAN	DK

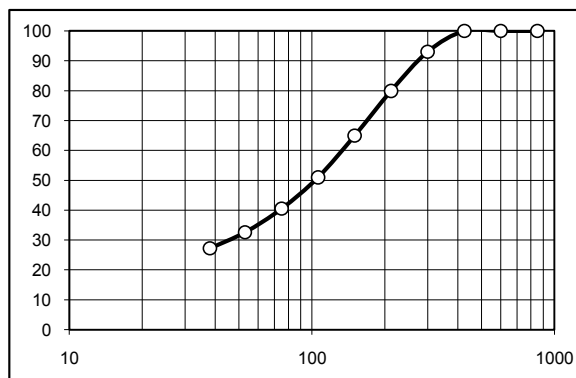
Comp 1		SIZE	WEIGHTS			SIZE
G1		um	gm	(%)	%PASS	p80
Feed Size mm	1.700	850	6.46	6.93	93.1	629
Mill Length	Long	600	13.77	14.77	78.3	
Media Type	Rods	425	13.54	14.52	63.8	
Media kg	9,6,3	300	9.51	10.20	53.6	
Solids kg	2.00	212	8.86	9.50	44.1	
Water kg	1.00	150	6.65	7.13	36.9	
Speed rpm	50	106	5.45	5.85	31.1	
TIME min	5	75	4.61	4.95	26.1	
		53	3.65	3.92	22.2	
		38	3.42	3.67	18.6	
		SUB	17.30	18.56		
		TOTAL	93.22	100.00		



Comp 1		SIZE	WEIGHTS			SIZE
G2		um	gm	(%)	%PASS	p80
Feed Size mm	1.700	850	0.16	0.18	99.8	285
Mill Length	Long	600	0.73	0.84	99.0	
Media Type	Rods	425	3.09	3.56	95.4	
Media kg	9,6,3	300	11.06	12.74	82.7	
Solids kg	3.00	212	13.83	15.93	66.7	
Water kg	1.00	150	11.88	13.69	53.1	
Speed rpm	50	106	9.80	11.29	41.8	
TIME min	15	75	7.42	8.55	33.2	
		53	5.67	6.53	26.7	
		38	3.91	4.50	22.2	
		SUB	19.25	22.18		
		TOTAL	86.80	100.00		



Comp 1		SIZE	WEIGHTS			SIZE
G3		um	gm	(%)	%PASS	p80
Feed Size mm	1.700	850	0.00	0.00	100.0	213
Mill Length	Long	600	0.00	0.00	100.0	
Media Type	Rods	425	0.00	0.00	100.0	
Media kg	9,6,3	300	5.60	7.00	93.0	
Solids kg	2.00	212	10.47	13.09	79.9	
Water kg	1.00	150	11.98	14.98	64.9	
Speed rpm	50	106	11.16	13.95	51.0	
TIME min	20	75	8.38	10.48	40.5	
		53	6.33	7.91	32.6	
		38	4.29	5.36	27.2	
		SUB	21.79	27.24		
		TOTAL	80.00	100.00		



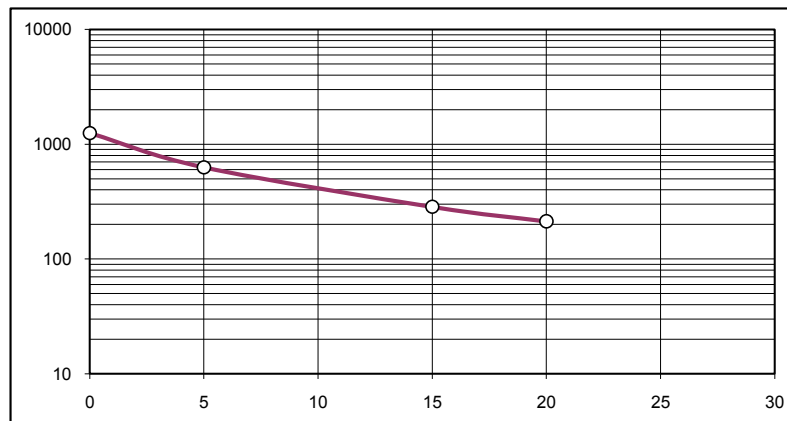
PROJECT	T0587
ORE	Comp 1
DATE	6/10/2010
TECHNICIAN	DK

GRIND CONDITIONS

ORE	Comp 1
FEED mm	1.700
TYPE	Long
MEDIA	Rods
MEDIA kg	9,6,3
SOLIDS kg	2.00
WATER kg	1.00

GRIND DATA

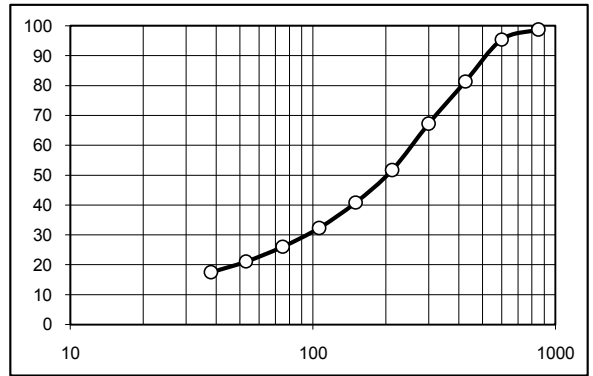
GRIND	TIME	p80
NIL	0	1250
G1	5	629
G2	15	285
G3	20	213
G4	25	



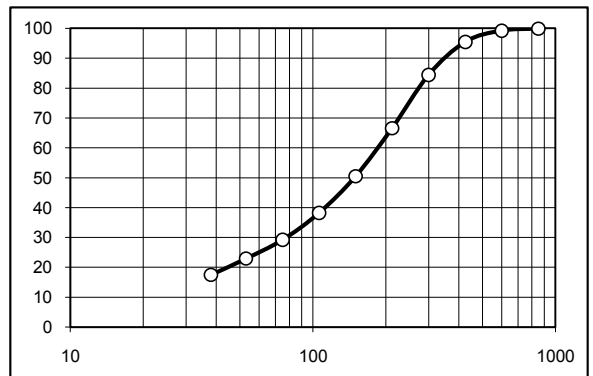
EST	DIFF	FIT	TIME	P80	START VALUES FOR FIT	
1250	3E-07	637.428	17	253		1000
629	1E-09	0.28				0.10
285	4E-05	613				250
213	7E-05	0.05				0.02
162	3E+04					
SUM	1E-04					

PROJECT	T0587
ORE	Comp 2
DATE	6/10/2010
TECHNICIAN	DK

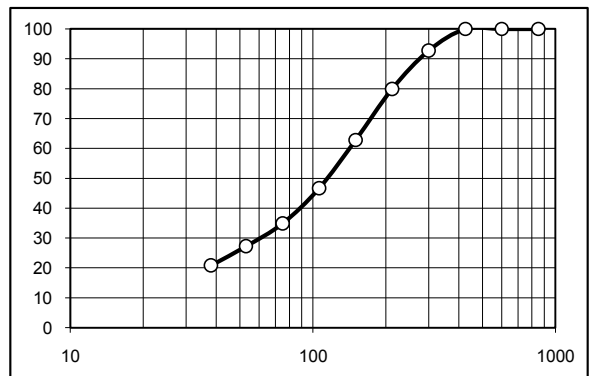
Comp 2		SIZE	WEIGHTS			SIZE
G1		um	gm	(%)	%PASS	p80
Feed Size mm	1.700	850	1.18	1.26	98.7	413
Mill Length	long	600	3.16	3.37	95.4	
Media Type	Rods	425	13.17	14.05	81.3	
Media kg	9,6,3	300	13.20	14.08	67.2	
Solids kg	2.00	212	14.57	15.54	51.7	
Water kg	1.00	150	10.16	10.84	40.9	
Speed rpm	50	106	7.99	8.52	32.3	
TIME min	10	75	5.88	6.27	26.1	
		53	4.65	4.96	21.1	
		38	3.35	3.57	17.5	
		SUB	16.43	17.53		
		TOTAL	93.74	100.00		



Comp 2		SIZE	WEIGHTS			SIZE
G2		um	gm	(%)	%PASS	p80
Feed Size mm	1.700	850	0.09	0.10	99.9	278
Mill Length	long	600	0.60	0.69	99.2	
Media Type	Rods	425	3.26	3.76	95.4	
Media kg	9,6,3	300	9.57	11.04	84.4	
Solids kg	3.00	212	15.48	17.85	66.6	
Water kg	1.00	150	13.92	16.06	50.5	
Speed rpm	50	106	10.63	12.26	38.2	
TIME min	15	75	7.80	9.00	29.2	
		53	5.46	6.30	22.9	
		38	4.72	5.44	17.5	
		SUB	15.17	17.50		
		TOTAL	86.70	100.00		



Comp 2		SIZE	WEIGHTS			SIZE
G3		um	gm	(%)	%PASS	p80
Feed Size mm	1.700	850	0.00	0.00	100.0	213
Mill Length	long	600	0.00	0.00	100.0	
Media Type	Rods	425	0.00	0.00	100.0	
Media kg	9,6,3	300	6.99	7.27	92.7	
Solids kg	2.00	212	12.33	12.82	79.9	
Water kg	1.00	150	16.43	17.09	62.8	
Speed rpm	50	106	15.54	16.16	46.7	
TIME min	20	75	11.30	11.75	34.9	
		53	7.35	7.64	27.3	
		38	6.18	6.43	20.8	
		SUB	20.04	20.84		
		TOTAL	96.16	100.00		



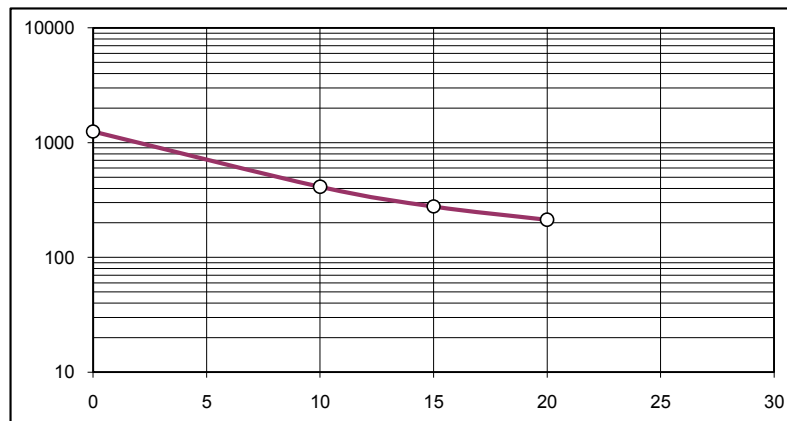
PROJECT	T0587
ORE	Comp 2
DATE	6/10/2010
TECHNICIAN	DK

GRIND CONDITIONS

ORE	Comp 2
FEED mm	1.700
TYPE	long
MEDIA	Rods
MEDIA kg	9,6,3
SOLIDS kg	2.00
WATER kg	1.00

GRIND DATA

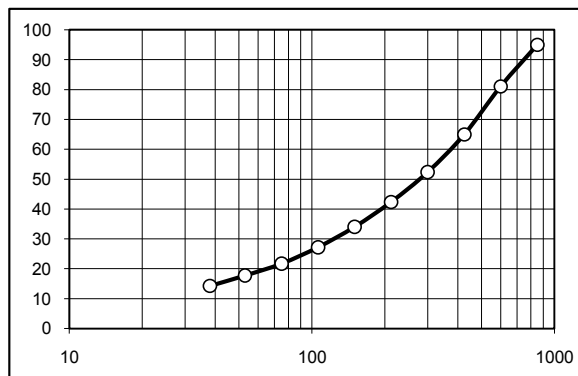
GRIND	TIME	p80
NIL	0	1250
G1	10	413
G2	15	278
G3	20	213
G4		



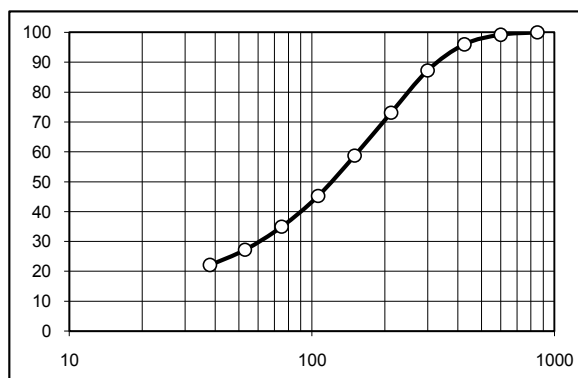
EST	DIFF	FIT	TIME	P80	START VALUES FOR FIT	
1250	3E-07	1118.7	17	246		1000
413	5E-08	0.14				0.10
278	2E-07	131				250
213	5E-08	-0.01				0.02
1250	2E+06					
SUM	5E-07					

PROJECT	T0587
ORE	Comp 3
DATE	6/10/2010
TECHNICIAN	DK

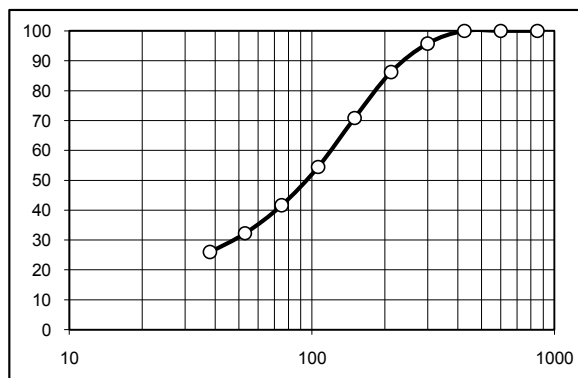
Comp 3		SIZE	WEIGHTS			SIZE
G1		um	gm	(%)	%PASS	p80
Feed Size mm	1.700	850	5.03	5.02	95.0	589
Mill Length	Long	600	13.98	13.96	81.0	
Media Tyle	Balls	425	16.07	16.05	65.0	
Media kg	9,6,3	300	12.64	12.62	52.3	
Solids kg	2.00	212	10.00	9.99	42.4	
Water kg	1.00	150	8.34	8.33	34.0	
Speed rpm	50	106	6.83	6.82	27.2	
TIME min	5	75	5.50	5.49	21.7	
		53	3.99	3.98	17.7	
		38	3.48	3.48	14.3	
		SUB	14.27	14.25		
		TOTAL	100.13	100.00		



Comp 3		SIZE	WEIGHTS			SIZE
G2		um	gm	(%)	%PASS	p80
Feed Size mm	1.700	850	0.00	0.00	100.0	255
Mill Length	Long	600	0.77	0.80	99.2	
Media Tyle	Balls	425	3.08	3.20	96.0	
Media kg	9,6,3	300	8.42	8.76	87.2	
Solids kg	3.00	212	13.60	14.15	73.1	
Water kg	1.00	150	13.80	14.36	58.7	
Speed rpm	50	106	12.97	13.49	45.2	
TIME min	15	75	9.89	10.29	34.9	
		53	7.40	7.70	27.2	
		38	4.93	5.13	22.1	
		SUB	21.26	22.12		
		TOTAL	96.12	100.00		



Comp 3		SIZE	WEIGHTS			SIZE
G3		um	gm	(%)	%PASS	p80
Feed Size mm	1.700	850	0.00	0.00	100.0	187
Mill Length	Long	600	0.00	0.00	100.0	
Media Tyle	Balls	425	0.00	0.00	100.0	
Media kg	9,6,3	300	4.11	4.26	95.7	
Solids kg	2.00	212	9.18	9.52	86.2	
Water kg	1.00	150	14.81	15.36	70.9	
Speed rpm	50	106	15.85	16.43	54.4	
TIME min	20	75	12.33	12.78	41.6	
		53	9.03	9.36	32.3	
		38	6.07	6.29	26.0	
		SUB	25.07	25.99		
		TOTAL	96.45	100.00		



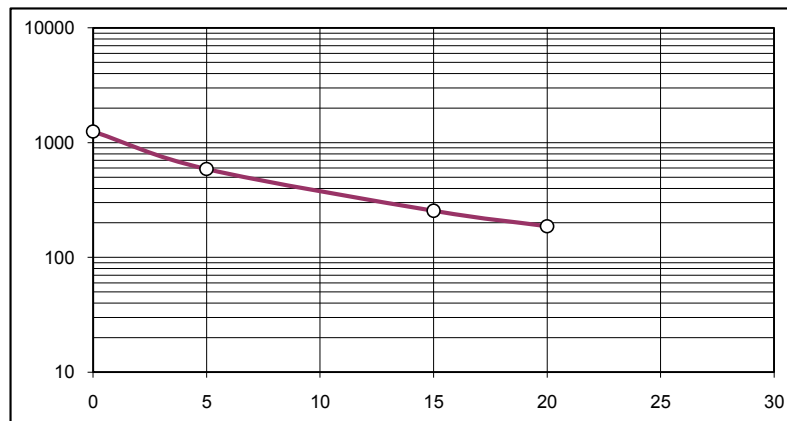
PROJECT	T0587
ORE	Comp 3
DATE	6/10/2010
TECHNICIAN	DK

GRIND CONDITIONS

ORE	Comp 3
FEED mm	1.700
TYPE	Long
MEDIA	Balls
MEDIA kg	9.6.3
SOLIDS kg	2.00
WATER kg	1.00

GRIND DATA

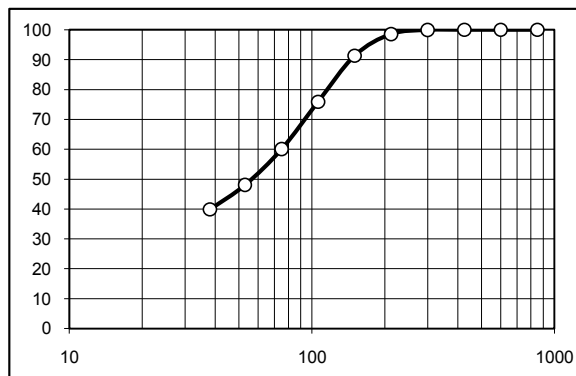
GRIND	TIME	p80
NIL	0	1250
G1	5	589
G2	15	255
G3	20	187
G4		



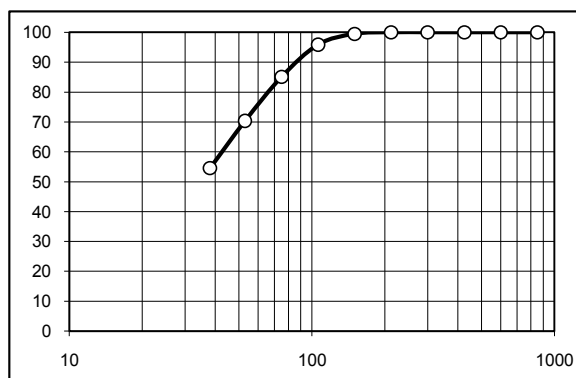
EST	DIFF	FIT	TIME	P80	START VALUES FOR FIT	
1250	2E-06	658.906	18	211		1000
589	1E-06	0.30				0.10
255	4E-05	591				250
187	3E-05	0.06				0.02
1250	2E+06					
SUM	7E-05					

PROJECT	T0587
ORE	T01 RoCon
DATE	6/10/2010
TECHNICIAN	DK

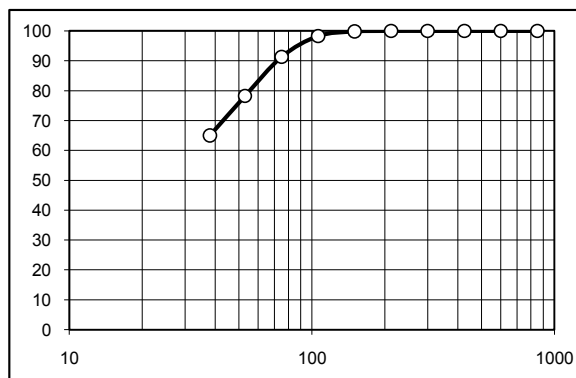
T01 RoCon		SIZE	WEIGHTS			SIZE
G1		um	gm	(%)	%PASS	p80
Feed Size mm	0.213	850	0.00	0.00	100.0	118
Mill Length	Short	600	0.00	0.00	100.0	
Media Type	Ball	425	0.00	0.00	100.0	
Media kg	6.00	300	0.02	0.05	99.9	
Solids kg	0.87	212	0.54	1.39	98.6	
Water kg	0.50	150	2.81	7.24	91.3	
Speed rpm	50	106	5.98	15.42	75.9	
TIME min	4.5	75	6.14	15.83	60.1	
		53	4.65	11.99	48.1	
		38	3.18	8.20	39.9	
		SUB	15.47	39.88		
		TOTAL	38.79	100.00		



T01 RoCon		SIZE	WEIGHTS			SIZE
G2		um	gm	(%)	%PASS	p80
Feed Size mm	0.213	850	0.00	0.00	100.0	67
Mill Length	Short	600	0.00	0.00	100.0	
Media Type	Ball	425	0.00	0.00	100.0	
Media kg	6.00	300	0.00	0.00	100.0	
Solids kg	0.87	212	0.00	0.00	100.0	
Water kg	0.50	150	0.32	0.53	99.5	
Speed rpm	50	106	2.18	3.61	95.9	
TIME min	9	75	6.49	10.76	85.1	
		53	8.89	14.74	70.4	
		38	9.54	15.82	54.5	
		SUB	32.90	54.54		
		TOTAL	60.32	100.00		



T07 RoC1		SIZE	WEIGHTS			SIZE
G3		um	gm	(%)	%PASS	p80
Feed Size mm	0.213	850	0.00	0.00	100.0	56
Mill Length	Short	600	0.00	0.00	100.0	
Media Type	Ball	425	0.00	0.00	100.0	
Media kg	6.00	300	0.00	0.00	100.0	
Solids kg	0.87	212	0.00	0.00	100.0	
Water kg	0.50	150	0.06	0.19	99.8	
Speed rpm	50	106	0.49	1.54	98.3	
TIME min	14.0	75	2.21	6.97	91.3	
		53	4.15	13.08	78.2	
		38	4.19	13.21	65.0	
		SUB	20.63	65.02		
		TOTAL	31.73	100.00		





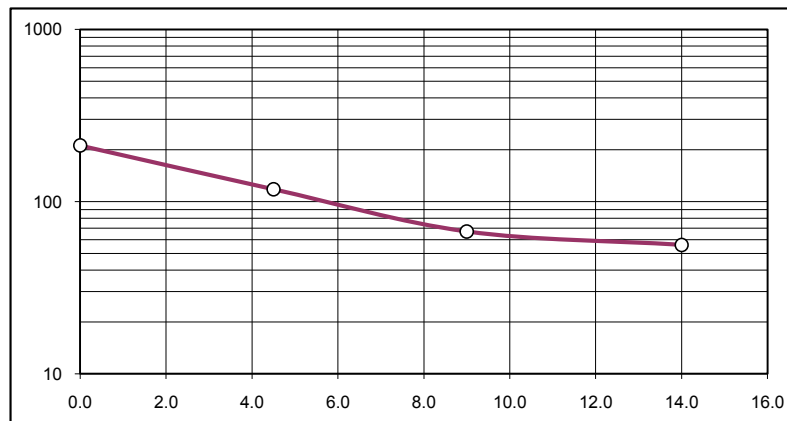
PROJECT	T0587
ORE	T01 RoCon
DATE	6/10/2010
TECHNICIAN	DK

GRIND CONDITIONS

ORE	T01 RoCon
FEED mm	0.213
TYPE	Short
MEDIA	Ball
MEDIA kg	6.00
SOLIDS kg	0.87
WATER kg	0.50

GRIND DATA

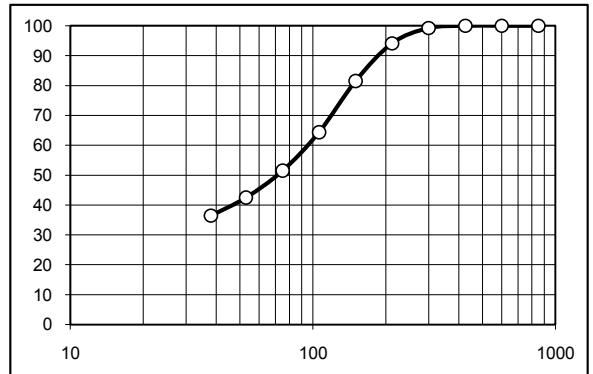
GRIND	TIME	p80
NIL	0.0	212
G1	4.5	118
G2	9.0	67
G3	14.0	56
G4		



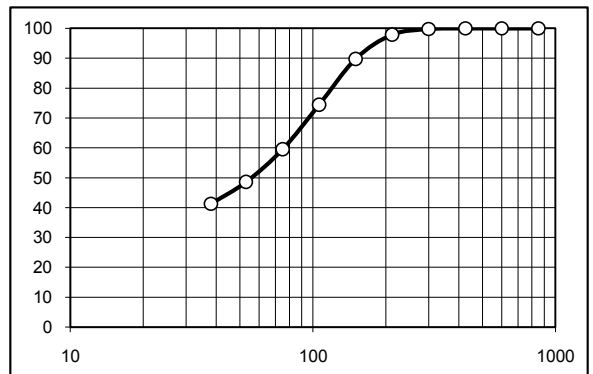
EST	DIFF	FIT	TIME	P80	START VALUES FOR FIT	
212	1E-05	211.986	14.0	56		210
118	1E-06	0.13				0.10
67	5E-06	0.0				0
56	8E-06	-0.54				0.02
SUM	2E-05					

PROJECT	T0587
ORE	T09 RoTail
DATE	25/10/2010
TECHNICIAN	DK

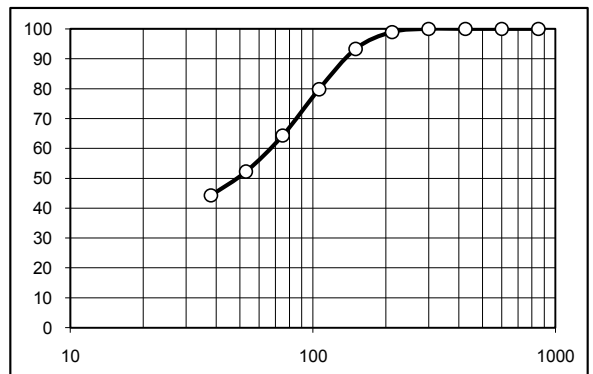
T09 RoTail		SIZE	WEIGHTS			SIZE
G1		um	gm	(%)	%PASS	p80
Feed Size mm	0.213	850	0.00	0.00	100.0	146
Mill Length	Short	600	0.00	0.00	100.0	
Media Type	Ball	425	0.00	0.00	100.0	
Media kg	6.00	300	0.68	0.78	99.2	
Solids kg	1.22	212	4.47	5.10	94.1	
Water kg	0.55	150	11.05	12.61	81.5	
Speed rpm	50	106	15.00	17.12	64.4	
TIME min	8.5	75	11.30	12.90	51.5	
		53	7.88	9.00	42.5	
		38	5.31	6.06	36.4	
		SUB	31.91	36.43		
		TOTAL	87.60	100.00		



T09 RoTail		SIZE	WEIGHTS			SIZE
G2		um	gm	(%)	%PASS	p80
Feed Size mm	0.213	850	0.00	0.00	100.0	122
Mill Length	Short	600	0.00	0.00	100.0	
Media Type	Ball	425	0.00	0.00	100.0	
Media kg	6.00	300	0.14	0.22	99.8	
Solids kg	1.22	212	1.20	1.89	97.9	
Water kg	0.55	150	5.15	8.11	89.8	
Speed rpm	50	106	9.75	15.35	74.4	
TIME min	12.5	75	9.45	14.88	59.5	
		53	6.95	10.94	48.6	
		38	4.64	7.31	41.3	
		SUB	26.22	41.29		
		TOTAL	63.50	100.00		



T09 RoTail		SIZE	WEIGHTS			SIZE
G3		um	gm	(%)	%PASS	p80
Feed Size mm	0.213	850	0.00	0.00	100.0	107
Mill Length	Short	600	0.00	0.00	100.0	
Media Type	Ball	425	0.00	0.00	100.0	
Media kg	6.00	300	0.00	0.00	100.0	
Solids kg	1.13	212	0.79	1.06	98.9	
Water kg	0.55	150	4.23	5.66	93.3	
Speed rpm	50	106	10.07	13.48	79.8	
TIME min	15.0	75	11.59	15.51	64.3	
		53	8.99	12.03	52.3	
		38	5.97	7.99	44.3	
		SUB	33.07	44.26		
		TOTAL	74.71	100.00		



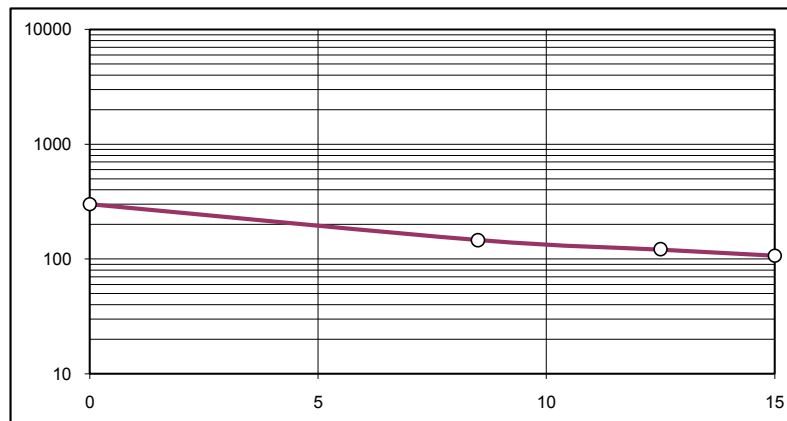
PROJECT	T0587
ORE	T09 RoTail
DATE	25/10/2010
TECHNICIAN	DK

GRIND CONDITIONS

ORE	T09 RoTail
FEED mm	0.213
TYPE	Short
MEDIA	Ball
MEDIA kg	6.00
SOLIDS kg	1.22
WATER kg	0.55

GRIND DATA

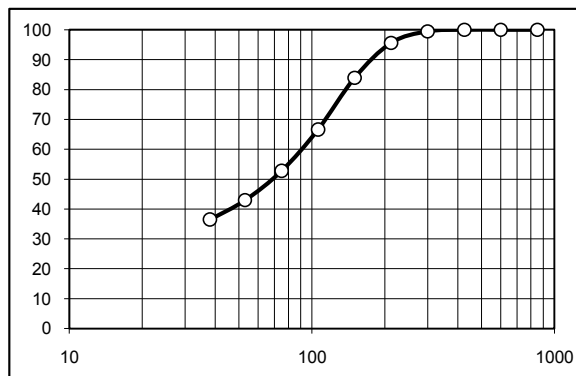
GRIND	TIME	p80
NIL	0	300
G1	8.5	146
G2	12.5	122
G3	15.0	107
G4		



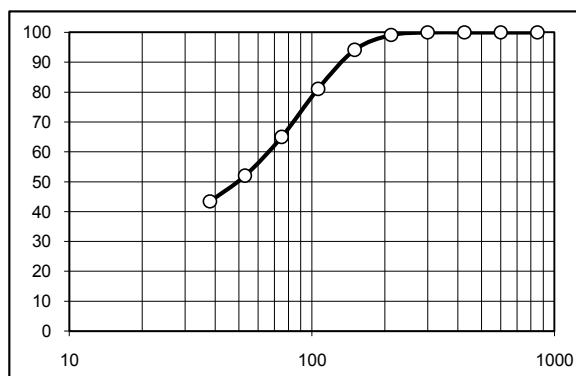
EST	DIFF	FIT	TIME	P80	START VALUES FOR FIT	
300	8E-09	79.1324	15	107		210
146	2E-01	2.64				0.10
121	2E+00	221				0
107	5E-03	0.05				0.02
SUM	2E+00					

PROJECT	T0587
ORE	T10 Ro Tail
DATE	6/10/2010
TECHNICIAN	DK

T10 Ro Tail		SIZE	WEIGHTS			SIZE
G1		um	gm	(%)	%PASS	p80
Feed Size mm	0.213	850	0.00	0.00	100.0	140
Mill Length	Short	600	0.00	0.00	100.0	
Media Tyle	Ball	425	0.00	0.00	100.0	
Media kg	6.00	300	0.27	0.53	99.5	
Solids kg	0.78	212	1.99	3.87	95.6	
Water kg	0.40	150	6.00	11.67	83.9	
Speed rpm	50	106	8.89	17.30	66.6	
TIME min	6.5	75	7.11	13.83	52.8	
		53	5.05	9.82	43.0	
		38	3.34	6.50	36.5	
		SUB	18.75	36.48		
		TOTAL	51.40	100.00		



T10 Ro Tail		SIZE um	WEIGHTS			SIZE p80
G2			gm	(%)	%PASS	
Feed Size mm	0.213	850	0.00	0.00	100.0	104
Mill Length	Short	600	0.00	0.00	100.0	
Media Tyle	Ball	425	0.00	0.00	100.0	
Media kg	6.00	300	0.00	0.00	100.0	
Solids kg	0.78	212	0.49	0.89	99.1	
Water kg	0.40	150	2.74	4.99	94.1	
Speed rpm	50	106	7.16	13.03	81.1	
TIME min	11.5	75	8.85	16.10	65.0	
		53	7.12	12.95	52.0	
		38	4.74	8.62	43.4	
		SUB	23.86	43.41		
		TOTAL	54.96	100.00		



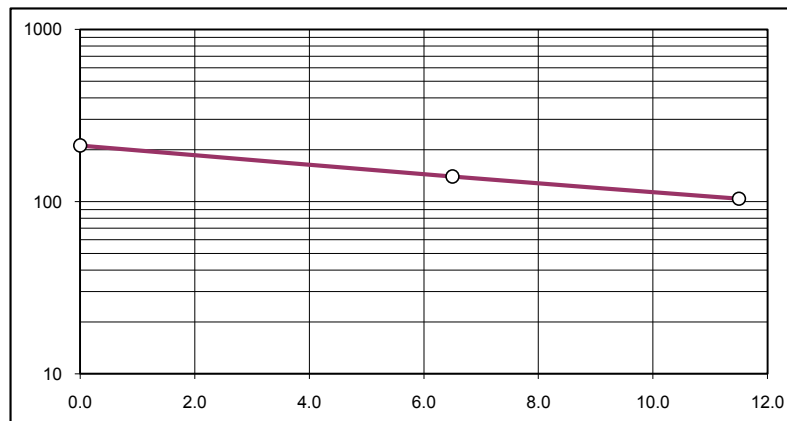
PROJECT	T0587
ORE	T10 Ro Tail
DATE	6/10/2010
TECHNICIAN	DK

GRIND CONDITIONS

ORE	T10 Ro Tail
FEED mm	0.213
TYPE	Short
MEDIA	Ball
MEDIA kg	6.00
SOLIDS kg	0.78
WATER kg	0.40

GRIND DATA

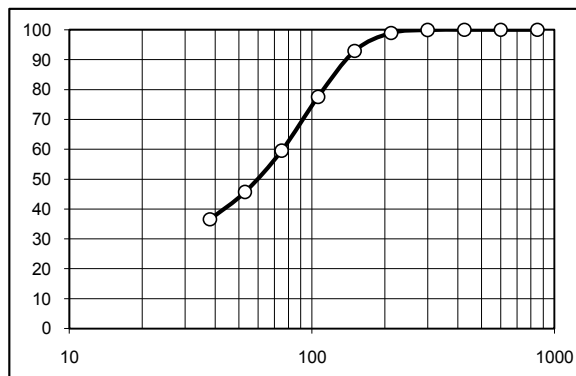
GRIND	TIME	p80
NIL	0.0	212
G1	6.5	140
G2	11.5	104
G3		
G4		



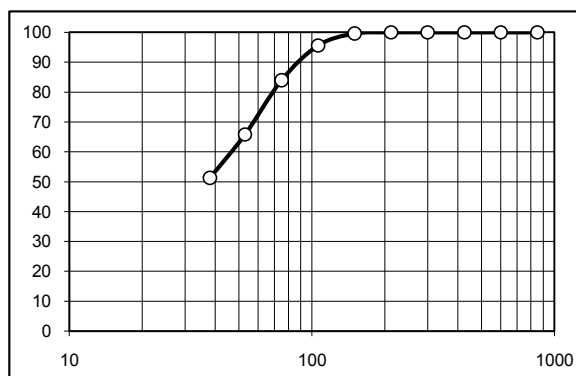
EST	DIFF	FIT	TIME	P80	START VALUES FOR FIT	
212	1E-08	211.996	11.5	104		210
140	1E-08	0.06				0.10
104	1E-08	0.0				0
		-0.56				0.02
SUM	4E-08					

PROJECT	T0587
ORE	T02 RoCon
DATE	6/10/2010
TECHNICIAN	DK

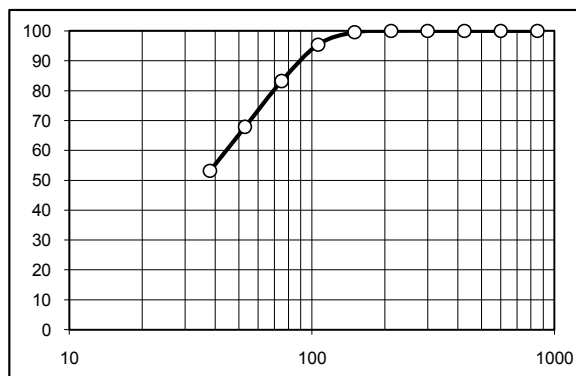
T02 RoCon		SIZE um	WEIGHTS			SIZE p80
G1			gm	(%)	%PASS	
Feed Size mm	0.213	850	0.00	0.00	100.0	113
Mill Length	Short	600	0.00	0.00	100.0	
Media Type	Ball	425	0.00	0.00	100.0	
Media kg	6.00	300	0.06	0.08	99.9	
Solids kg		212	0.75	1.00	98.9	
Water kg	0.60	150	4.51	6.01	92.9	
Speed rpm	50	106	11.52	15.35	77.6	
TIME min	6.0	75	13.52	18.01	59.5	
		53	10.37	13.82	45.7	
		38	6.87	9.15	36.6	
		SUB	27.45	36.58		
		TOTAL	75.05	100.00		



T02 RoCon		SIZE um	WEIGHTS			SIZE p80
G2			gm	(%)	%PASS	
Feed Size mm	0.213	850	0.00	0.00	100.0	70
Mill Length	Short	600	0.00	0.00	100.0	
Media Type	Ball	425	0.00	0.00	100.0	
Media kg	6.00	300	0.00	0.00	100.0	
Solids kg	12.20	212	0.00	0.00	100.0	
Water kg	0.60	150	0.41	0.41	99.6	
Speed rpm	50	106	3.99	4.00	95.6	
TIME min	12	75	11.57	11.60	84.0	
		53	18.14	18.18	65.8	
		38	14.48	14.51	51.3	
		SUB	51.17	51.29		
		TOTAL	99.76	100.00		



T02 RoCon		SIZE um	WEIGHTS			SIZE p80
G3			gm	(%)	%PASS	
Feed Size mm	0.213	850	0.00	0.00	100.0	70
Mill Length	Short	600	0.00	0.00	100.0	
Media Type	Ball	425	0.00	0.00	100.0	
Media kg	6.00	300	0.00	0.00	100.0	
Solids kg	0.00	212	0.00	0.00	100.0	
Water kg	0.60	150	0.29	0.46	99.5	
Speed rpm	50	106	2.62	4.14	95.4	
TIME min	18	75	7.72	12.19	83.2	
		53	9.71	15.33	67.9	
		38	9.31	14.70	53.2	
		SUB	33.68	53.18		
		TOTAL	63.33	100.00		



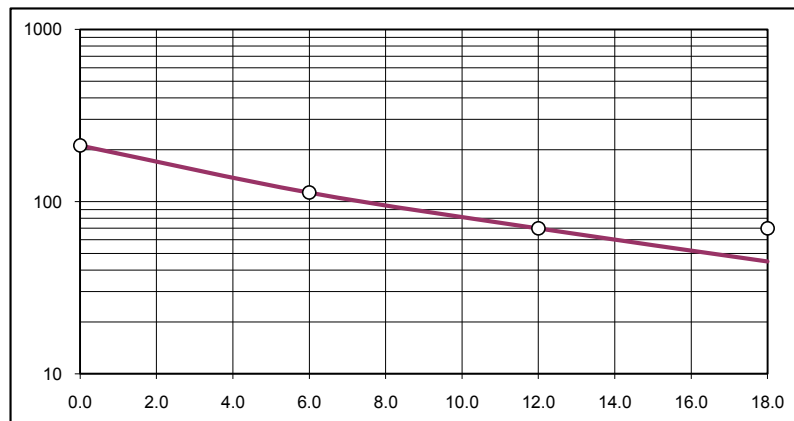
PROJECT	T0587
ORE	T02 RoCon
DATE	6/10/2010
TECHNICIAN	DK

GRIND CONDITIONS

ORE	T02 RoCon
FEED mm	0.213
TYPE	Short
MEDIA	Ball
MEDIA kg	6.00
SOLIDS kg	0.00
WATER kg	0.60

GRIND DATA

GRIND	TIME	p80
NIL	0.0	212
G1	6.0	113
G2	12.0	70
G3	18.0	70
G4		



EST	DIFF	FIT	TIME	P80	START VALUES FOR FIT	
212	3E-09	48.3228	10.5	78		210
113	3E-07	0.33				0.10
70	6E-06	164				0
45	6E+02	0.07				0.02
SUM	6E+02					

## APPENDIX B

### SIZING

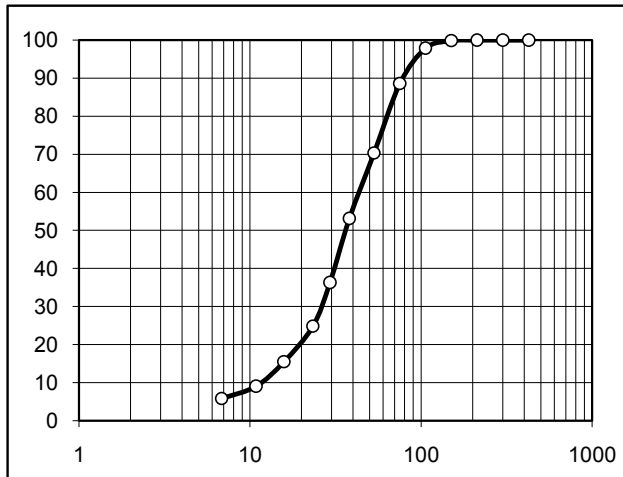


**Burnie** RESEARCH LABORATORY  
MINERALOGY SIZE ANALYSIS REPORT SHEET

PROJECT	T0587
SAMPLE	Comp 1 Sulphide Conc
FROM TEST NO	T09
DATE	26/10/2010
TECHNICIAN	DK

-sizing

Comp 1 Sulphide Conc T09 Comp 1		SIZE um	WEIGHTS		
			gm	(%)	%PASS
	P80	425	0.00	0.00	100.0
		300	0.00	0.00	100.0
		212	0.00	0.00	100.0
		150	0.23	0.15	99.9
		106	3.03	1.96	97.9
		75	14.35	9.29	88.6
		53	28.22	18.26	70.3
		38	26.56	17.19	53.2
CYCLOSIZER	CS1	29	25.99	16.82	36.3
	CS2	23	17.76	11.49	24.8
	CS3	16	14.38	9.31	15.5
	CS4	11	9.99	6.47	9.1
	CS5	7	5.00	3.24	5.8
		SUB	9.01	5.83	
		TOTAL	154.52	100.00	



ANALYSES

SIZE um	WT %	Sn		As		Fe		SiO2		Mount Number
		%	dist	%	dist	%	dist	%	dist	
106	2.11	0.68	3.1	0.01	2.1	36.20	1.8	16.78	10.8	587083
75	9.29	0.60	12.2	0.01	9.3	40.54	8.7	6.59	18.6	587084
53	18.26	0.52	20.8	0.01	18.3	42.61	17.9	4.00	22.2	587085
38	17.19	0.46	17.3	0.01	17.2	44.56	17.7	2.89	15.1	587086
23	28.31	0.34	21.1	0.01	28.3	44.55	29.1	1.51	13.0	587087
7	19.01	0.42	17.5	0.01	19.0	45.08	19.8	1.94	11.2	587088
<7	5.83	0.61	7.8	0.01	5.8	38.06	5.1	5.15	9.1	
CALC	100.00	0.46	100.0	0.01	100.0	43.37	100.0	3.29	100.0	
ASSAY		0.45		0.01		43.32		3.24		

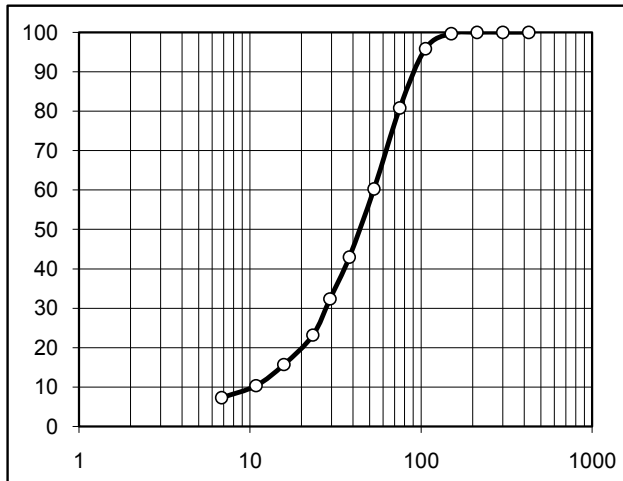
<0.01

**Burnie** RESEARCH LABORATORY  
MINERALOGY SIZE ANALYSIS REPORT SHEET

PROJECT	T0587
SAMPLE	Comp 2 Sulphide Conc
FROM TEST NO	T10
DATE	26/10/2010
TECHNICIAN	DK

SIZING

Comp 2 Sulphide Conc T10 Comp 2		SIZE um	WEIGHTS		
			gm	(%)	%PASS
	P80	425	0.00	0.00	100.0
		300	0.00	0.00	100.0
		212	0.00	0.00	100.0
		150	0.54	0.32	99.7
		106	6.38	3.82	95.9
		75	25.09	15.04	80.8
		53	34.26	20.53	60.3
	74	38	28.89	17.31	43.0
		29	17.68	10.60	32.4
		23	15.35	9.20	23.2
		16	12.42	7.44	15.7
		11	8.97	5.38	10.4
		7	5.08	3.04	7.3
CYCLOSIZER	CS1	29	17.68	10.60	32.4
FLOW 200	CS2	23	15.35	9.20	23.2
TEMP 21	CS3	16	12.42	7.44	15.7
SG 3.60	CS4	11	8.97	5.38	10.4
MINS 15	CS5	7	5.08	3.04	7.3
		SUB	12.20	7.31	
		TOTAL	166.86	100.00	



ANALYSES

SIZE um	WT %	Sn		As		Fe		SiO2		Mount Number
		%	dist	%	dist	%	dist	%	dist	
106	4.15	0.37	5.4	0.01	4.1	39.84	3.8	12.52	13.7	587091
75	15.04	0.36	19.0	0.01	15.0	42.78	14.7	5.83	23.1	587092
53	20.53	0.34	24.5	0.01	20.5	43.73	20.5	4.17	22.6	587093
38	17.31	0.28	17.0	0.01	17.3	44.68	17.7	3.05	13.9	587094
23	19.80	0.23	16.0	0.01	19.8	44.92	20.3	1.54	8.0	587095
7	15.86	0.21	11.7	0.01	15.9	44.12	16.0	2.53	10.6	587096
<7	7.31	0.25	6.4	0.01	7.3	41.31	6.9	4.22	8.1	
CALC	100.00	0.28	100.0	0.01	100.0	43.71	100.0	3.79	100.0	
ASSAY		0.29		0.01		43.64		3.71		

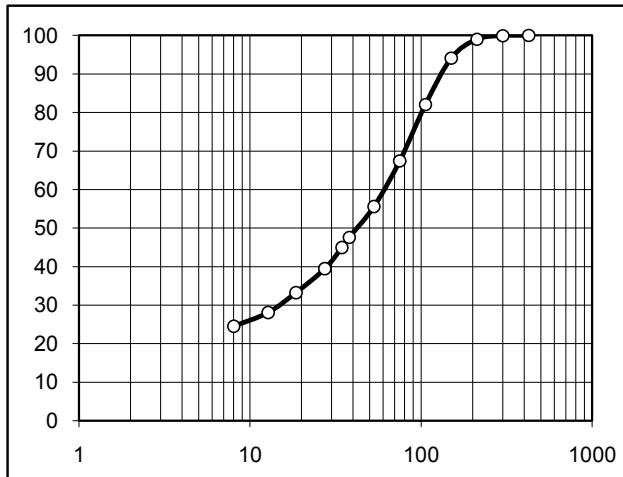
<0.01

**Burnie** RESEARCH LABORATORY  
MINERALOGY SIZE ANALYSIS REPORT SHEET

PROJECT	T0587
SAMPLE	Comp 1 Sulphide Tails
FROM TEST NO	T09
DATE	26/10/2010
TECHNICIAN	DK

-sizing

Comp 1 Sulphide Tails T09 Comp 1		SIZE um	WEIGHTS		
			gm	(%)	%PASS
	P80	425	0.00	0.00	100.0
		300	0.09	0.07	99.9
		212	1.19	0.92	99.0
		150	6.31	4.90	94.1
		106	15.51	12.04	82.1
		75	18.87	14.65	67.4
		53	15.22	11.82	55.6
	102	38	10.31	8.01	47.6
		CS1	34	3.37	2.62
		CS2	27	7.10	5.51
		CS3	19	7.99	6.20
		CS4	13	6.67	5.18
CYCLOSIZER	CS5	8	4.57	3.55	24.5
FLOW 200					
TEMP 21					
SG 2.80					
MINS 15					
SUB			31.58	24.52	
TOTAL			128.78	100.00	



ANALYSES

SIZE um	WT %	Sn		As		Fe		SiO2		Mount Number
		%	dist	%	dist	%	dist	%	dist	
106	17.94	0.81	12.3	0.01	17.9	14.65	14.0	51.22	23.5	587099
75	14.65	1.25	15.5	0.01	14.7	18.29	14.2	43.52	16.3	587100
53	11.82	1.41	14.1	0.01	11.8	18.55	11.6	41.86	12.6	587101
38	8.01	1.48	10.0	0.01	8.0	18.46	7.8	40.28	8.2	587102
27	8.13	2.53	17.4	0.01	8.1	24.02	10.4	28.79	6.0	587103
8	14.93	1.46	18.4	0.01	14.9	19.36	15.4	38.23	14.6	587104
<8	24.52	0.60	12.4	0.01	24.5	20.42	26.6	29.88	18.7	
CALC	100.00	1.18	100.0	0.01	100.0	18.83	100.0	39.11	100.0	
ASSAY		1.24		0.01		19.00		39.64		

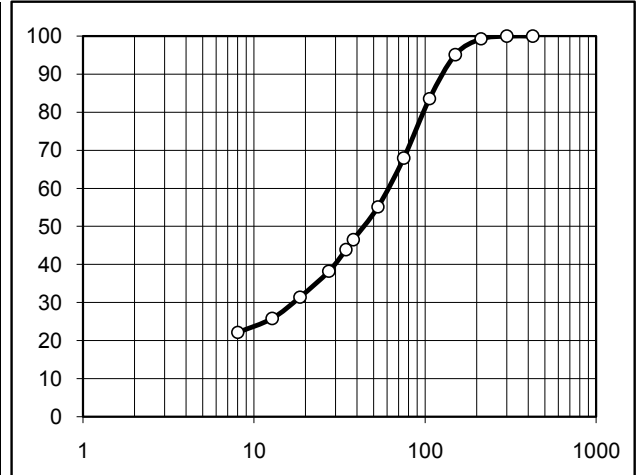
<0.01

**Burnie** RESEARCH LABORATORY  
MINERALOGY SIZE ANALYSIS REPORT SHEET

PROJECT	T0587
SAMPLE	Comp 2 Sulphide Tails
FROM TEST NO	T10
DATE	26/10/2010
TECHNICIAN	DK

-sizing

Comp 2 Sulphide Tails T10 Comp 2		SIZE um	WEIGHTS		
			gm	(%)	%PASS
	P80	425	0.00	0.00	100.0
		300	0.00	0.00	100.0
		212	0.71	0.73	99.3
		150	4.02	4.14	95.1
		106	11.25	11.58	83.6
		75	15.15	15.59	68.0
	99	53	12.46	12.82	55.1
		38	8.38	8.62	46.5
		34	2.55	2.62	43.9
CYCLOSIZER	CS1	34	2.55	2.62	43.9
FLOW 200	CS2	27	5.52	5.68	38.2
TEMP 21	CS3	19	6.60	6.79	31.4
SG 2.80	CS4	13	5.45	5.61	25.8
MINS 15	CS5	8	3.57	3.67	22.1
		SUB	21.52	22.14	
		TOTAL	97.18	100.00	



ANALYSES

SIZE um	WT %	Sn		As		Fe		SiO2		Mount Number
		%	dist	%	dist	%	dist	%	dist	
106	16.44	0.54	5.9	0.01	16.4	11.59	10.4	67.58	22.6	587107
75	15.59	1.19	12.3	0.01	15.6	15.60	13.3	54.06	17.2	587108
53	12.82	1.69	14.3	0.01	12.8	17.10	12.0	53.15	13.9	587109
38	8.62	1.88	10.7	0.01	8.6	17.95	8.5	51.65	9.1	587110
27	8.30	4.12	22.6	0.01	8.3	22.85	10.4	33.57	5.7	587111
8	16.07	2.04	21.7	0.01	16.1	17.56	15.5	48.97	16.0	587112
<8	22.14	0.85	12.5	0.01	22.1	24.63	29.9	34.48	15.5	
CALC	100.00	1.51	100.0	0.01	100.0	18.25	100.0	49.10	100.0	
ASSAY		1.60		0.01		18.09		49.61		

<0.01

APPENDIX C  
HEAVY LIQUID SEPARATION

# Burnie RESEARCH LABORATORY

## SIZE AND HEAVY LIQUID ANALYSIS REPORT SHEET

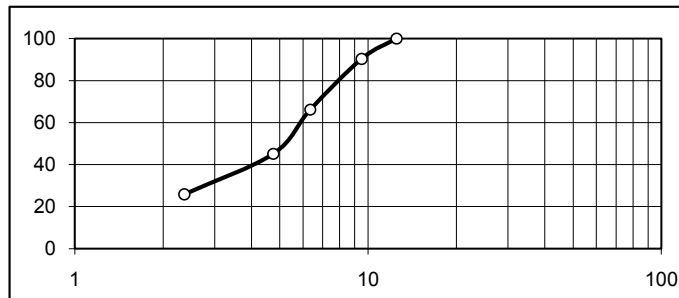
### CONDITIONS

Liquid	hpt soln
Measured SG	2.95
Test Temp (deg)	47
Method	beaker

PROJECT	T0587
SAMPLE	Composite 1
FROM TEST NO	T06
DATE	13/10/2010
TECHNICIAN	ID

### SIZING

SIZE um	WEIGHTS			
	gm	(%)	%PASS	p80
12.50	0.0	0.00	100.0	8.16
9.50	407.4	9.71	90.3	
6.35	1013.3	24.14	66.2	
4.75	882.2	21.02	45.1	
2.36	811.9	19.34	25.8	
<2.36	1082.4	25.79	0.0	
TOTAL	4197.2	100.00		



### SEPARATIONS

SIZE mm	WT gm	WT %	Fraction		Fraction		Fraction		Fraction	
			%Sn	dist	%Fe	dist	%SiO2	dist	%S	dist
Float+9.50	67.40	3.12	0.10	3.2	9.71	13.0	59.71	58.3	1.75	3.8
Sink+9.50	142.20	6.59	1.42	96.8	30.74	87.0	20.28	41.7	21.21	96.2
Calc 9.50 Total	209.60	9.71	1.00	100.0	23.98	100.0	32.96	100.0	14.95	100.0
Float+6.70	61.20	5.40	0.05	1.1	9.85	8.4	60.01	45.0	1.98	2.5
Sink+6.70	212.30	18.74	1.32	98.9	30.97	91.6	21.18	55.0	22.58	97.5
Calc 6.70 Total	273.50	24.14	1.04	100.0	26.24	100.0	29.87	100.0	17.97	100.0
Float+4.75	46.10	4.55	0.05	1.1	9.46	7.7	61.50	47.8	1.95	2.4
Sink+4.75	166.80	16.47	1.28	98.9	31.16	92.3	18.58	52.2	21.99	97.6
Calc 4.75 Total	212.90	21.02	1.01	100.0	26.46	100.0	27.87	100.0	17.65	100.0
Float+2.36	29.00	4.85	0.10	2.2	8.89	8.9	66.48	53.9	1.74	2.7
Sink+2.36	86.60	14.49	1.47	97.8	30.61	91.1	19.01	46.1	21.04	97.3
Calc 2.36 Total	115.60	19.34	1.13	100.0	25.16	100.0	30.92	100.0	16.20	100.0
<2.36 Fines	1082.40	25.79	1.09		24.92		31.32		15.13	
CALC FEED	1894.0	100.00	1.06		25.52		30.33		16.53	

### SUMMARY

FRACTIONS mm	Pycno SG kg/m3	WT %	Overall		Overall		Overall		Overall	
			%Sn	dist	%Fe	dist	%SiO2	dist	%S	dist
Float+9.50	3.05	3.12	0.10	0.29	9.71	1.19	59.71	6.15	1.75	0.33
Float+6.70	2.96	5.40	0.05	0.26	9.85	2.09	60.01	10.69	1.98	0.65
Float+4.75	3.02	4.55	0.05	0.23	9.46	1.80	61.50	9.84	1.95	0.57
Float +2.36	2.94	4.85	0.10	0.46	8.89	1.69	66.48	10.64	1.74	0.51
Sink+9.50	3.86	6.59	1.42	8.83	30.74	191.20	20.28	4.40	21.21	8.45
Sink+6.70	3.91	18.74	1.32	23.36	30.97	548.19	21.18	13.09	22.58	25.59
Sink+4.75	3.9	16.47	1.28	19.91	31.16	484.66	18.58	10.09	21.99	21.90
Sink +2.36	3.85	14.49	1.47	20.12	30.61	418.97	19.01	9.08	21.04	18.44
Total Floats	2.98	17.93	0.07	1.22	9.47	6.65	62.09	36.70	1.87	2.02
Total Sinks	3.89	56.28	1.36	72.23	30.91	68.17	19.76	36.66	21.85	74.38
Total Fines	3.57	25.79	1.09	26.55	24.92	25.18	31.32	26.63	15.13	23.60
CALC FEED	3.61	100.00	1.06	100.00	25.52	100.00	30.33	100.00	16.53	100.00

# Burnie RESEARCH LABORATORY

## SIZE AND HEAVY LIQUID ANALYSIS REPORT SHEET

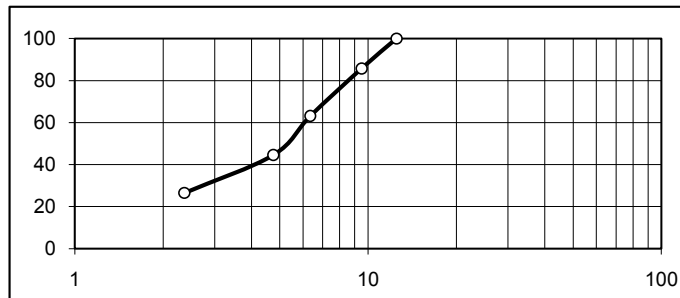
### CONDITIONS

Liquid	hpt soln
Measured SG	2.95
Test Temp (deg)	49
Method	beaker

PROJECT	T0587
SAMPLE	Composite 2
FROM TEST NO	T11
DATE	25/10/2010
TECHNICIAN	ID

### SIZING

SIZE um	WEIGHTS			
	gm	(%)	%PASS	p80
12.50	0.0	0.00	100.0	8.70
9.50	612.2	14.26	85.7	
6.35	969.8	22.60	63.1	
4.75	795.6	18.54	44.6	
2.36	776.4	18.09	26.5	
<2.36	1138.1	26.52	0.0	
TOTAL	4292.1	100.00		



### SEPARATIONS

SIZE mm	WT gm	WT %	Fraction		Fraction		Fraction		Fraction	
			%Sn	dist	%Fe	dist	%SiO2	dist	%S	dist
Float+9.50	13.10	0.77	0.02	0.1	7.80	1.3	78.90	19.8	4.59	1.0
Sink+9.50	229.50	13.49	0.93	99.9	34.70	98.7	18.20	80.2	25.34	99.0
Calc 9.50 Total	242.60	14.26	0.88	100.0	33.25	100.0	21.48	100.0	24.22	100.0
Float+6.70	32.90	3.10	0.05	0.8	5.50	2.6	84.90	40.8	3.31	1.9
Sink+6.70	206.60	19.49	0.93	99.2	33.40	97.4	19.60	59.2	26.59	98.1
Calc 6.70 Total	239.50	22.60	0.81	100.0	29.57	100.0	28.57	100.0	23.39	100.0
Float+4.75	23.90	1.85	0.05	0.4	5.90	1.9	82.50	32.3	3.65	1.5
Sink+4.75	215.60	16.69	1.44	99.6	34.00	98.1	19.20	67.7	27.12	98.5
Calc 4.75 Total	239.50	18.54	1.30	100.0	31.20	100.0	25.52	100.0	24.78	100.0
Float+2.36	19.30	3.03	0.09	1.7	5.10	2.9	85.60	47.5	2.90	2.3
Sink+2.36	96.00	15.06	1.02	98.3	34.00	97.1	19.01	52.5	24.94	97.7
Calc 2.36 Total	115.30	18.09	0.86	100.0	29.16	100.0	30.16	100.0	21.25	100.0
<2.36 Fines	1138.10	26.52	1.01		32.20		31.32		25.33	
CALC FEED	1975.0	100.00	0.97		31.02		28.01		23.89	

### SUMMARY

FRACTIONS mm	Pycno SG kg/m3	WT %	Overall		Overall		Overall		Overall	
			%Sn	dist	%Fe	dist	%SiO2	dist	%S	dist
Float+9.50	3.12	0.77	0.02	0.02	7.80	0.19	78.90	2.17	4.59	0.15
Float+6.70	2.93	3.10	0.05	0.16	5.50	0.55	84.90	9.41	3.31	0.43
Float+4.75	2.95	1.85	0.05	0.16	5.90	0.58	82.50	8.92	3.65	0.46
Float +2.36	2.83	3.03	0.09	0.28	5.10	0.50	85.60	9.25	2.90	0.37
Sink+9.50	4.04	13.49	0.93	12.88	34.70	480.68	18.20	8.77	25.34	14.31
Sink+6.70	4.14	19.49	0.93	18.61	33.40	668.49	19.60	13.64	26.59	21.69
Sink+4.75	4.1	16.69	1.44	24.67	34.00	582.59	19.20	11.44	27.12	18.94
Sink +2.36	3.97	15.06	1.02	15.78	34.00	525.84	19.01	10.22	24.94	15.72
Total Floats	2.91	8.75	0.06	0.55	5.65	1.59	84.11	26.28	3.35	1.23
Total Sinks	4.07	64.73	1.08	71.95	33.97	70.88	19.07	44.07	26.08	70.66
Total Fines	3.64	26.52	1.01	27.50	32.20	27.53	31.32	29.65	25.33	28.11
CALC FEED	3.82	100.00	0.97	100.00	31.02	100.00	28.01	100.00	23.89	100.00

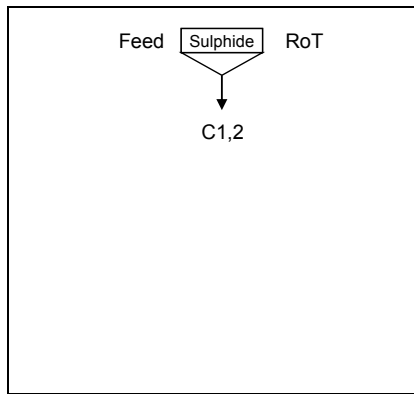
APPENDIX D  
FLOTATION



**Burnie** RESEARCH LABORATORY  
ROUGHER FLOTATION REPORT SHEET

Milling		Primary	Regrind
Mill	type	Long	Stirred
Media	type	MS	Sand
Media	kg	Rod	0
Solids	g	2000	0
Water	g	1000	0
Time	min	20	0
Speed	rpm	50	0
Lime	g	0	0
End pH	pH	6.65	0
End p80	µm	212	0

Float Cell	Volume	Regrind Power
Rougher	3.8	Start
Clean 1	2.7	Finish
0		W/h
Speed	800	kWh/t



PROJECT	T0587
TEST NO	01
DATE	7/10/2010
TECHNICIAN	MJR

PRODUCT FLOATED
Stellar Resources
Composite 1

NOTES
Standard Sulphide Rougher Test

	pH	100 H2SO4 g/t	0.2 PAX g/t	100 MIBC g/t					Cond Time min	Air L/min	Float Time min	Cum Float Time	Wet Wt g	Con % Solids
Condition	6.4	199							5					
Sulphide Ro C1	6.4		20	40					1	3-6	2.0	2.0	400	
Condition			20	10					2					
Sulphide Ro C2	6.4		30	10					1	3-6	2.0	4.0	500	
Condition				10					2					
Sulphide Ro C3	6.4			10					1	3-7	5.0	9.0	600	48
Condition			40						2					
Sulphide Ro C4	6.5								1	4-10	7.0	16.0	800	20
REAGENT TOTALS (g/t)		199	109	70										

PRODUCTS	WT g	WT %	Sn %	DIST	As %	DIST	Fe %	DIST	MgO %	DIST	Ca %	DIST	Mn %	DIST
T01 Sulphide RoC1	712.5	35.4	0.67	22.8	0.05	35.4	38.7	54.1	0.45	13.4	0.97	14.7	0.07	9.7
RoC2	160.7	8.0	1.40	10.8	0.05	8.0	29.5	9.3	0.95	6.4	2.60	8.9	0.21	6.5
RoT	1139.6	56.6	1.22	66.4	0.05	56.6	16.4	36.6	1.69	80.3	3.14	76.3	0.38	83.8
CALC	2012.8	100.0	1.04	100.0	0.05	100.0	25.3	100.0	1.19	100.0	2.33	100.0	0.26	100.0
ASSAY HEAD			1.00		0.05		25.1		1.18		2.25		0.24	

CUM PRODUCTS	CUM Wt	WT %	Sn %	CUM	As %	CUM	Fe %	DIST	MgO %	DIST	Ca %	DIST	Mn %	DIST
T01 Sulphide RoC1	712.5	35.4	0.67	22.8	0.05	35.4	38.7	54.1	0.45	13.4	0.97	14.7	0.07	9.7
RoC2	873.2	43.4	0.80	33.6	0.05	43.4	37.0	63.4	0.54	19.7	1.27	23.7	0.10	16.2
FEED	2012.8	100.0	1.04	100.0	0.05	100.0	25.3	100.0	1.19	100.0	2.33	100.0	0.26	100.0

PRODUCTS	WT g	WT %	Al %	DIST	Cu %	DIST	SiO2 %	DIST	S %	DIST
T01 Sulphide RoC1	712.5	35.4	1.21	13.9	0.06	68.8	7.61	9.0	37.4	83.4
RoC2	160.7	8.0	2.55	6.6	0.05	12.9	21.4	5.7	17.1	8.6
RoT	1139.6	56.6	4.34	79.5	0.01	18.3	45.2	85.3	2.25	8.0
CALC	2012.8	100.0	3.09	100.0	0.03	100.0	30.0	100.0	15.9	100.0
ASSAY HEAD			3.05		0.02		28.7		15.5	

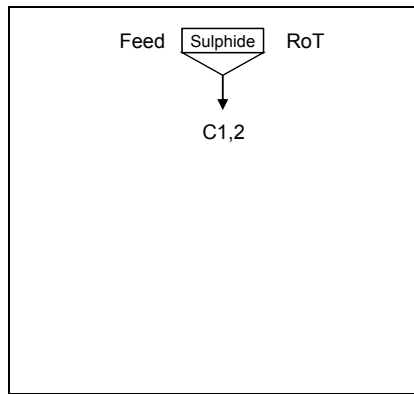
S Tails
4.09
2.25

CUM PRODUCTS	CUM Wt	WT %	Al %	CUM	Cu %	CUM	SiO2 %	DIST	S %	DIST
T01 Sulphide RoC1	712.5	35.4	1.21	13.9	0.06	68.8	7.61	9.0	37.4	83.4
RoC2	873.2	43.4	1.46	20.5	0.06	81.7	10.2	14.7	33.7	92.0
FEED	2012.8	100.0	3.09	100.0	0.03	100.0	30.0	100.0	15.9	100.0

**Burnie** RESEARCH LABORATORY  
ROUGHER FLOTATION REPORT SHEET

Milling		Primary	Regrind
Mill	type	Long	Stirred
Media	type	MS	Sand
Media	kg	Rod	0
Solids	g	2000	0
Water	g	1000	0
Time	min	20	0
Speed	rpm	50	0
Lime	g	0	0
End pH	pH	7.2	0
End p80	µm	212	0

Float Cell	Volume	Regrind	Power
Rougher	3.8	Start	
Clean 1	2.7	Finish	
0		W/h	
Speed	800	kWh/t	



PROJECT	T0587
TEST NO	02
DATE	7/10/2010
TECHNICIAN	MJR

PRODUCT FLOATED
Stellar Resources Composite 2

NOTES
Standard Sulphide Rougher Test

	pH	100 H2SO4 g/t	0.2 PAX g/t	100 MIBC g/t					Cond Time min	Air L/min	Float Time min	Cum Float Time	Wet Wt g	Con % Solids
Condition	6.4	542							5					
Sulphide Ro C1	6.4		30	40					1	3-7	3.0	3.0	400	
Condition			20	10					2					
Sulphide Ro C2	6.4			10					1	3-7	3.0	6.0	1000	
Condition			30						2					
Sulphide Ro C3	6.4			10					1	3-7	5.0	11.0	700	52
Condition			40						2					
Sulphide Ro C4	6.5								1	3-7	8.0	19.0	800	16
REAGENT TOTALS (g/t)		542	119	70										

PRODUCTS	WT g	WT %	Sn %	DIST	As %	DIST	Fe %	DIST	MgO %	DIST	Ca %	DIST	Mn %	DIST
T02 Sulphide RoC1	1099.1	54.7	0.48	27.0	0.05	54.7	40.2	74.4	0.30	34.7	0.31	13.5	0.07	19.6
RoC2	128.3	6.4	1.29	8.5	0.05	6.4	27.1	5.9	0.68	9.2	1.35	6.9	0.26	8.5
RoT	783.2	39.0	1.61	64.5	0.05	39.0	15.0	19.8	0.68	56.1	2.57	79.7	0.36	71.9
CALC	2010.6	100.0	0.97	100.0	0.05	100.0	29.5	100.0	0.47	100.0	1.26	100.0	0.20	100.0
ASSAY HEAD			0.93		0.05		29.6		0.50		1.22		0.19	

CUM PRODUCTS	CUM Wt	WT %	Sn %	CUM	As %	CUM	Fe %	DIST	MgO %	DIST	Ca %	DIST	Mn %	DIST
T02 Sulphide RoC1	1099.1	54.7	0.48	27.0	0.05	54.7	40.2	74.4	0.30	34.7	0.31	13.5	0.07	19.6
RoC2	1227.4	61.0	0.56	35.5	0.05	61.0	38.8	80.2	0.34	43.9	0.42	20.3	0.09	28.1
FEED	2010.6	100.0	0.97	100.0	0.05	100.0	29.5	100.0	0.47	100.0	1.26	100.0	0.20	100.0

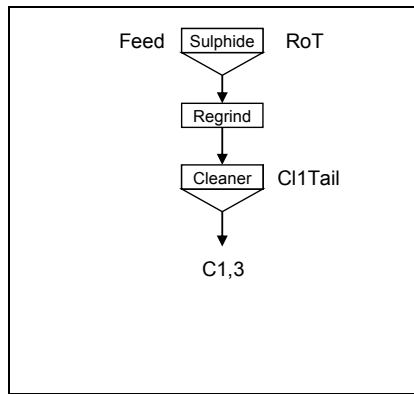
PRODUCTS	WT g	WT %	Al %	DIST	Cu %	DIST	SiO2 %	DIST	S %	DIST	S Tails
T02 Sulphide RoC1	1099.1	54.7	0.56	26.6	0.03	73.8	7.65	14.9	39.3	93.0	
RoC2	128.3	6.4	1.90	10.5	0.03	8.6	30.4	6.9	14.9	4.1	3.57
RoT	783.2	39.0	1.86	62.9	0.01	17.5	56.2	78.2	1.71	2.9	1.71
CALC	2010.6	100.0	1.15	100.0	0.02	100.0	28.0	100.0	23.1	100.0	
ASSAY HEAD			1.13		0.04		26.0		23.1		

CUM PRODUCTS	CUM Wt	WT %	Al %	CUM	Cu %	CUM	SiO2 %	DIST	S %	DIST
T02 Sulphide RoC1	1099.1	54.7	0.56	26.6	0.03	73.8	7.65	14.9	39.3	93.0
RoC2	1227.4	61.0	0.70	37.1	0.03	82.5	10.0	21.8	36.7	97.1
FEED	2010.6	100.0	1.15	100.0	0.02	100.0	28.0	100.0	23.1	100.0

**Burnie** RESEARCH LABORATORY  
ROUGHER FLOTATION REPORT SHEET

Milling		Primary	Regrind
Mill	type	Long	Short
Media	type	MS	Ball
Media	kg	Rod	6
Solids	g	2000	884
Water	g	1000	400
Time	min	20	7.0
Speed	rpm	50	50
Lime	g	0	0
End pH	pH	6.65	6.7
End p80	µm	212	75

Float Cell	Volume	Regrind Power
Rougher	3.8	Start
Clean 1	2.7	Finish
0		W/h
Speed	800	kWh/t



PROJECT	T0587
TEST NO	03
DATE	11/10/2010
TECHNICIAN	MJR

PRODUCT FLOATED
Stellar Resources Composite 1

NOTES
Standard Sulphide Cleaner Test Sulphide Regrind 75µm

	pH	100 H2SO4 g/t	0.2 PAX g/t	100 MIBC g/t	2 Na2SiO3 g/t				Cond Time min	Air L/min	Float Time min	Cum Float Time	Wet Wt g	Con % Solids
Condition	6.4	200							5					
Sulphide Ro C1	6.4		20	40	200				1	3-6	2.0	2.0	400	
Condition			20	10					2					
Sulphide Ro C2	6.4		30	10					1	3-6	2.0	4.0	500	
Condition				10					2					
Sulphide Ro C3	6.4			10					1	3-7	5.0	9.0	600	
Condition			40						2					
Sulphide Ro C4	6.5								1	4-10	7.0	16.0	950	
Condition	6.3	150			200				2					
Sulphide Cl1C1	6.3		10	10					1	3-6	2.0	2.0	400	67
Condition			10	10					1					
Sulphide Cl1C2	6.8									4-10	4.0	6.0	600	52
Condition			25	5					1					
Sulphide Cl1C3	6.9									4-10	14.0	20.0	1000	123
REAGENT TOTALS (g/t)		350	155	95	400									

PRODUCTS	WT g	WT %	Sn %	DIST	As %	DIST	Fe %	DIST	MgO %	DIST	Ca %	DIST	Mn %	DIST
T03 Sulphide Cl1C1	267.1	13.3	0.38	4.8	0.01	13.3	42.3	22.2	0.23	2.7	0.32	1.8	0.03	1.6
Cl1C2	310.6	15.5	0.64	9.4	0.01	15.5	41.2	25.1	0.33	4.5	0.65	4.3	0.05	3.0
Cl1C3	75.6	3.8	1.55	5.5	0.01	3.8	29.6	4.4	0.85	2.8	2.41	3.9	0.19	2.8
Cl1Tail	115.8	5.8	1.52	8.3	0.01	5.8	21.5	4.9	1.29	6.5	4.14	10.2	0.30	6.7
RoT	1232.1	61.6	1.24	72.0	0.01	61.6	17.9	43.4	1.56	83.5	3.06	79.9	0.36	85.9
CALC	2001.2	100.0	1.06	100.0	0.01	100.0	25.4	100.0	1.15	100.0	2.36	100.0	0.26	100.0
ASSAY HEAD			1.00		0.05		25.1		1.18		2.25		0.24	

CUM PRODUCTS	CUM Wt	WT %	Sn %	CUM	As %	CUM	Fe %	DIST	MgO %	DIST	Ca %	DIST	Mn %	DIST
T03 Sulphide Cl1C1	267.1	13.3	0.38	4.8	0.01	13.3	42.3	22.2	0.23	2.7	0.32	1.8	0.03	1.6
Cl1C2	577.7	28.9	0.52	14.2	0.01	28.9	41.7	47.4	0.29	7.2	0.50	6.1	0.04	4.6
Cl1C3	653.3	32.6	0.64	19.7	0.01	32.6	40.3	51.8	0.35	10.0	0.72	9.9	0.06	7.3
Cl1Tail	769.1	38.4	0.77	28.0	0.01	38.4	37.5	56.6	0.49	16.5	1.23	20.1	0.09	14.1
FEED	2001.2	100.0	1.06	100.0	0.01	100.0	25.4	100.0	1.15	100.0	2.36	100.0	0.26	100.0

PRODUCTS	WT g	WT %	Al %	DIST	Cu %	DIST	SiO2 %	DIST	S %	DIST
T03 Sulphide Cl1C1	267.1	13.3	0.44	2.0	0.04	25.9	2.70	1.2	45.9	38.7
Cl1C2	310.6	15.5	0.94	4.9	0.05	37.7	5.11	2.6	41.0	40.2
Cl1C3	75.6	3.8	2.60	3.3	0.02	3.7	21.0	2.6	16.6	4.0
Cl1Tail	115.8	5.8	4.51	8.7	0.01	2.8	35.0	6.7	4.25	1.6
RoT	1232.1	61.6	3.95	81.2	0.01	29.9	42.5	86.8	4.02	15.6
CALC	2001.2	100.0	3.00	100.0	0.02	100.0	30.2	100.0	15.8	100.0
ASSAY HEAD			3.05		0.02		28.7		15.5	

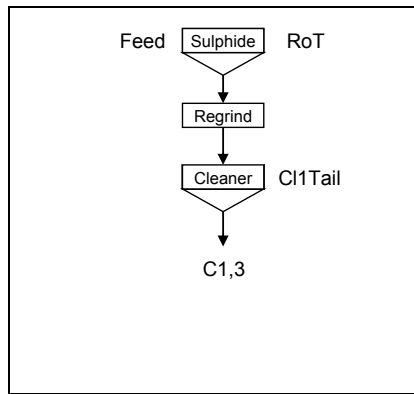
S Tails
4.04
4.02

CUM PRODUCTS	CUM Wt	WT %	Al %	CUM	Cu %	CUM	SiO2 %	DIST	S %	DIST
T03 Sulphide Cl1C1	267.1	13.3	0.44	2.0	0.04	25.9	2.70	1.2	45.9	38.7
Cl1C2	577.7	28.9	0.71	6.8	0.05	63.6	4.00	3.8	43.2	78.8
Cl1C3	653.3	32.6	0.93	10.1	0.04	67.3	5.96	6.5	40.2	82.8
Cl1Tail	769.1	38.4	1.47	18.8	0.04	70.1	10.3	13.2	34.7	84.4
FEED	2001.2	100.0	3.00	100.0	0.02	100.0	30.2	100.0	15.8	100.0

**Burnie** RESEARCH LABORATORY  
ROUGHER FLOTATION REPORT SHEET

Milling		Primary	Regrind
Mill	type	Long	Short
Media	type	MS	Ball
Media	kg	Rod	6
Solids	g	2000	1285
Water	g	1000	500
Time	min	20	9.5
Speed	rpm	50	50
Lime	g	0	0
End pH	pH	7.2	7.1
End p80	µm	212	75

Float Cell	Volume	Regrind Power
Rougher	3.8	Start
Clean 1	2.7	Finish
0		W/h
Speed	800	kWh/t



PROJECT	T0587
TEST NO	04
DATE	11/10/2010
TECHNICIAN	MJR

PRODUCT FLOATED
Stellar Resources Composite 2

NOTES
Standard Sulphide Cleaner Test Sulphide Regrind 75µm

	pH	100 H2SO4 g/t	0.2 PAX g/t	100 MIBC g/t	2 Na2SiO3 g/t				Cond Time min	Air L/min	Float Time min	Cum Float Time	Wet Wt g	Con % Solids
Condition	6.4	549							5					
Sulphide Ro C1	6.4		20	40	199				1	3-6	2.0	2.0	400	
Condition			20	10					2					
Sulphide Ro C2	6.4								1	3-6	2.0	4.0	1000	
Condition			30	10					2					
Sulphide Ro C3	6.4			10					1	3-7	5.0	9.0	700	
Condition			40						2					
Sulphide Ro C4	6.5								1	4-10	7.0	16.0	800	
Condition	6.3	239			199				2					
Sulphide C1C1	6.3		10	10					1	3-6	2.0	2.0	700	65
Condition			10	10					1					
Sulphide C1C2	6.8									4-10	3.5	5.5	700	58
Condition			25	5					1					
Sulphide C1C3	6.9									4-10	10.0	15.5	900	94
REAGENT TOTALS (g/t)		788	155	95	399									

PRODUCTS	WT g	WT %	Sn %	DIST	As %	DIST	Fe %	DIST	MgO %	DIST	Ca %	DIST	Mn %	DIST
T04 Sulphide C1C1	452.1	22.5	0.23	5.2	0.01	22.5	43.3	32.3	0.20	10.4	0.06	1.1	0.03	3.3
C1C2	406.7	20.3	0.39	7.9	0.01	20.3	41.7	28.0	0.23	10.9	0.16	2.5	0.05	5.0
C1C3	152.4	7.6	0.91	6.9	0.01	7.6	39.9	10.0	0.35	6.1	0.53	3.1	0.15	5.6
C1Tail	149.3	7.4	1.70	12.6	0.01	7.4	26.8	6.6	0.63	10.9	1.93	11.2	0.31	11.4
RoT	844.8	42.1	1.60	67.4	0.01	42.1	16.5	23.0	0.63	61.6	2.51	82.1	0.36	74.7
CALC	2005.3	100.0	1.00	100.0	0.01	100.0	30.2	100.0	0.43	100.0	1.29	100.0	0.20	100.0
ASSAY HEAD			0.93		0.05		29.6		0.50		1.22		0.19	

CUM PRODUCTS	CUM Wt	WT %	Sn %	CUM	As %	CUM	Fe %	DIST	MgO %	DIST	Ca %	DIST	Mn %	DIST
T04 Sulphide C1C1	452.1	22.5	0.23	5.2	0.01	22.5	43.3	32.3	0.20	10.4	0.06	1.1	0.03	3.3
C1C2	858.8	42.8	0.31	13.1	0.01	42.8	42.5	60.3	0.21	21.3	0.11	3.6	0.04	8.3
C1C3	1011.2	50.4	0.40	20.0	0.01	50.4	42.2	70.3	0.23	27.5	0.17	6.7	0.06	13.9
C1Tail	1160.5	57.9	0.56	32.6	0.01	57.9	40.2	77.0	0.29	38.4	0.40	17.9	0.09	25.3
FEED	2005.3	100.0	1.00	100.0	0.01	100.0	30.2	100.0	0.43	100.0	1.29	100.0	0.20	100.0

PRODUCTS	WT g	WT %	Al %	DIST	Cu %	DIST	SiO2 %	DIST	S %	DIST
T04 Sulphide C1C1	452.1	22.5	0.51	9.0	0.01	5.5	2.42	1.9	47.3	45.3
C1C2	406.7	20.3	0.42	6.7	0.12	59.3	5.37	3.9	43.0	37.0
C1C3	152.4	7.6	1.12	6.7	0.19	35.2	13.7	3.7	27.3	8.8
C1Tail	149.3	7.4	1.99	11.6	0.00	0.0	33.5	8.9	8.81	2.8
RoT	844.8	42.1	2.00	66.0	0.00	0.0	54.2	81.5	3.40	6.1
CALC	2005.3	100.0	1.28	100.0	0.04	100.0	28.0	100.0	23.5	100.0
ASSAY HEAD			1.13		0.04		26.0		23.1	

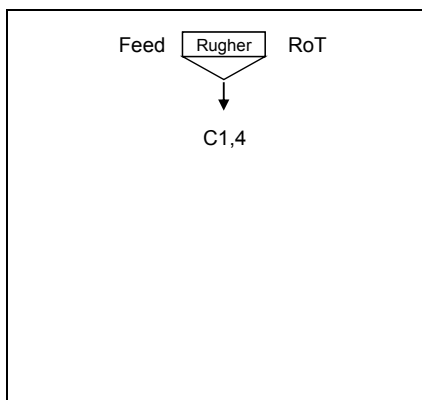
S Tails
4.21
3.40

CUM PRODUCTS	CUM Wt	WT %	Al %	CUM	Cu %	CUM	SiO2 %	DIST	S %	DIST
T04 Sulphide C1C1	452.1	22.5	0.51	9.0	0.01	5.5	2.42	1.9	47.3	45.3
C1C2	858.8	42.8	0.47	15.7	0.06	64.8	3.82	5.8	45.3	82.3
C1C3	1011.2	50.4	0.57	22.4	0.08	100.0	5.30	9.5	42.5	91.1
C1Tail	1160.5	57.9	0.75	34.0	0.07	100.0	8.93	18.5	38.2	93.9
FEED	2005.3	100.0	1.28	100.0	0.04	100.0	28.0	100.0	23.5	100.0

**Burnie** RESEARCH LABORATORY  
ROUGHER FLOTATION REPORT SHEET

Milling		Primary	Regrind
Mill	type	Long	Short
Media	type	MS	Ball
Media	kg	Rod	6
Solids	g	2000	0
Water	g	1000	0
Time	min	20	0
Speed	rpm	50	50
Lime	g	3	0
End pH	pH	7.2	0
End p80	µm	212	75

Float Cell	Volume	Regrind	Power
Rougher	3.8	Start	
Clean 1	2.7	Finish	
0		W/h	
Speed	800	kWh/t	



PROJECT	T0587
TEST NO	05
DATE	11/10/2010
TECHNICIAN	MJR

PRODUCT FLOATED
Stellar Resources Composite 3

NOTES
Standard Rougher Test High Carbon Con1

	pH	100 LIME g/t	100 H2SO4 g/t	0.2 SEX g/t	100 MIBC g/t	2.0 Na2SiO3 g/t			Cond Time min	Air L/min	Float Time min	Cum Float Time	Wet Wt g	Con % Solids
Primary Grind	9.0	1237							5					
Condition Pb RoC1	9.0			15	49				1	3-6	4.0	4.0	300	7
Condition Pb RoC2	9.3			25	25				2	3-6	2.5	6.5	200	44
Condition Pb RoC3	9.2			20	10				1	3-7	3.0	9.5	300	39
Condition Pb RoC4	9.2			5	10				2	4-10	5.0	14.5	500	15
REAGENT TOTALS (g/t)		1237		64	94									

PRODUCTS	WT g	WT %	Sn %	DIST	As %	DIST	Fe %	DIST	MgO %	DIST	Ag ppm	DIST	Au ppm	DIST
T05 Prefloat C1	21.8	1.1	0.36	1.0	0.13	1.1	10.3	0.6	0.68	1.3	1574	17.8	0.07	6.7
Pb Ro C2	88.5	4.4	0.37	4.2	0.34	12.1	14.0	3.6	0.27	2.1	1086	49.7	0.03	11.6
Pb Ro C3	118.1	5.8	0.27	4.1	0.24	11.4	35.4	12.0	0.25	2.6	193	11.8	0.06	31.1
Pb Ro C4	74.1	3.7	0.32	3.0	0.20	6.0	28.9	6.2	0.50	3.3	77	3.0	0.04	13.0
RoT	1717.9	85.0	0.40	87.7	0.10	69.3	15.7	77.6	0.60	90.7	20	17.8	0.01	37.6
CALC	2020.4	100.0	0.39	100.0	0.12	100.0	17.2	100.0	0.56	100.0	96	100.0	0.01	100.0
ASSAY HEAD			0.38		0.12		16.6		0.58		91		0.01	

CUM PRODUCTS	CUM Wt	WT %	Sn %	CUM	As %	CUM	Fe %	DIST	MgO %	DIST	Ag ppm	DIST	Au ppm	DIST
T05 Prefloat C1	21.8	1.1	0.36	1.0	0.13	1.1	10.3	0.6	0.68	1.3	1574	17.8	0.07	6.7
Pb Ro C2	88.5	4.4	0.37	4.2	0.34	12.1	14.0	3.6	0.27	2.1	1086	49.7	0.03	11.6
Pb Ro C3	206.6	10.2	0.31	8.3	0.28	23.6	26.3	15.6	0.26	4.7	576	61.5	0.05	42.7
Pb Ro C4	280.7	13.9	0.31	11.3	0.26	29.6	26.9	21.8	0.32	7.9	444	64.5	0.05	55.7
FEED	2020.4	100.0	0.39	100.0	0.12	100.0	17.2	100.0	0.56	100.0	96	100.0	0.01	100.0

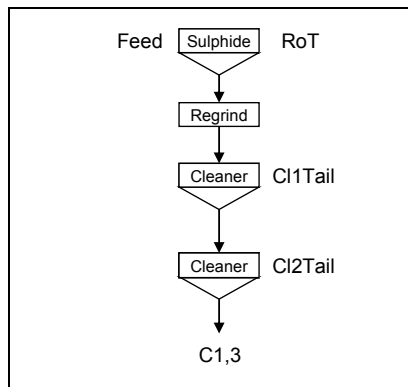
PRODUCTS	WT g	WT %	Al %	DIST	Cu %	DIST	SiO2 %	DIST	S %	DIST	Pb %	DIST	Zn %	DIST
T05 Prefloat C1	21.8	1.1	5.66	1.8	0.22	6.5	28.0	0.6	9.95	0.7	16.0	5.5	0.65	0.7
Pb Ro C2	88.5	4.4	0.73	0.9	0.11	13.3	4.69	0.4	22.4	6.5	50.3	70.3	1.71	7.1
Pb Ro C3	118.1	5.8	1.29	2.2	0.05	8.0	8.50	1.0	40.3	15.5	5.11	9.5	1.54	8.5
Pb Ro C4	74.1	3.7	3.04	3.2	0.02	2.0	21.1	1.6	30.1	7.3	2.11	2.5	1.31	4.6
RoT	1717.9	85.0	3.72	91.9	0.03	70.2	54.0	96.3	12.6	70.1	0.45	12.2	0.98	79.1
CALC	2020.4	100.0	3.44	100.0	0.04	100.0	47.7	100.0	15.2	100.0	3.13	100.0	1.05	100.0
ASSAY HEAD			3.17		0.01		47.5		14.4		3.10		1.02	

CUM PRODUCTS	CUM Wt	WT %	Al %	CUM	Cu %	CUM	SiO2 %	DIST	S %	DIST	Pb %	DIST	Zn %	DIST
T05 Prefloat C1	21.8	1.1	5.66	1.8	0.22	6.5	28.0	0.6	9.95	0.7	16.0	5.5	5.01	0.7
Pb Ro C2	110.3	4.4	0.73	0.9	0.11	13.3	4.69	0.4	22.4	6.5	50.3	70.3	1.71	7.1
Pb Ro C3	228.4	10.2	1.05	3.1	0.08	21.3	6.87	1.5	32.6	21.9	24.5	79.8	1.61	15.7
Pb Ro C4	302.5	13.9	1.58	6.4	0.06	23.3	10.6	3.1	31.9	29.2	18.6	82.3	1.53	20.2
FEED	2020.4	100.0	3.44	100.0	0.04	100.0	47.7	100.0	15.2	100.0	3.13	100.0	1.05	100.0

**Burnie** RESEARCH LABORATORY  
ROUGHER FLOTATION REPORT SHEET

Milling		Primary	Regrind
Mill	type	Long	Short
Media	type	MS	Ball
Media	kg	Rod	6
Solids	g	2000	890
Water	g	1000	400
Time	min	20	14.0
Speed	rpm	50	50
Lime	g	0	0
End pH	pH	6.65	6.7
End p80	µm	212	56

Float Cell	Volume	Regrind	Power
Rougher	3.8	Start	
Clean 1	3.8	Finish	
Clean 2	2.7	W/h	
Speed	800	kWh/t	



PROJECT	T0587
TEST NO	07
DATE	14/10/2010
TECHNICIAN	MJR

PRODUCT FLOATED
Stellar Resources Composite 1

NOTES  
Standard Sulphide Rougher  
2 Stage Cleaning

	pH	100 H2SO4 g/t	0.4 PAX g/t	100 MIBC g/t	2 Na2SiO3 g/t				Cond Time min	Air L/min	Float Time min	Cum Float Time	Wet Wt g	Con % Solids
Condition	6.4	203							5					
Sulphide Ro C1	6.4		20	41	203				1	3-6	2.0	2.0	400	
Condition			20	10					2					
Sulphide Ro C2	6.4		30	10					1	3-6	2.0	4.0	500	
Condition									2					
Sulphide Ro C3	6.4			10					1	3-7	5.0	9.0	600	
Condition			41						2					
Sulphide Ro C4	6.5								1	4-10	7.0	16.0	950	
Condition		152		10	203				2					
Sulphide Cl1on	6.5		34						1	4-10	7.0	7.0	1800	
Condition	6.3	51		10	101				2					
Sulphide Cl2C1	6.3			10					1	3-6	2.0	2.0	400	64
Condition														
Sulphide Cl2C2	6.8			5					1	4-10	4.0	6.0	600	43
Condition														
Sulphide Cl2C3	6.9		10						1	4-10	6.0	12.0	400	3
REAGENT TOTALS (g/t)		406	156	106	507									

PRODUCTS	WT g	WT %	Sn %	DIST	As %	DIST	Fe %	DIST	MgO %	DIST	Ca %	DIST	Mn %	DIST
T07 Sulphide Cl2C1	254.5	12.9	0.31	3.8	0.05	12.9	43.0	21.9	0.20	2.2	0.18	1.0	0.02	1.0
Cl2C2	258.0	13.1	0.57	7.0	0.05	13.1	40.8	21.1	0.27	3.0	0.51	2.7	0.04	2.1
Cl2C3	10.1	0.5	1.85	0.9	0.05	0.5	34.2	0.7	0.53	0.2	1.66	0.4	0.13	0.3
Cl2Tail	26.1	1.3	1.63	2.0	0.05	1.3	26.3	1.4	1.09	1.2	2.43	1.3	0.20	1.1
Cl1Tail	198.4	10.1	1.49	14.1	0.05	10.1	26.3	10.5	1.04	9.0	3.37	14.0	0.24	9.8
RoT	1225.1	62.1	1.24	72.3	0.05	62.1	18.1	44.5	1.58	84.3	3.15	80.6	0.34	85.7
CALC	1972.2	100.0	1.07	100.0	0.05	100.0	25.3	100.0	1.16	100.0	2.43	100.0	0.25	100.0
ASSAY HEAD			1.00		0.05		25.1		1.18		2.25		0.24	

CUM PRODUCTS	CUM Wt	WT %	Sn %	CUM	As %	CUM	Fe %	DIST	MgO %	DIST	Ca %	DIST	Mn %	DIST
T07 Sulphide Cl2C1	254.5	12.9	0.31	3.8	0.05	12.9	43.0	21.9	0.20	2.2	0.18	1.0	0.02	1.0
Cl2C2	512.5	26.0	0.44	10.7	0.05	26.0	41.9	43.0	0.24	5.3	0.35	3.7	0.03	3.2
Cl2C3	522.6	26.5	0.47	11.6	0.05	26.5	41.7	43.7	0.24	5.5	0.37	4.1	0.03	3.4
Cl2Tail	548.7	27.8	0.52	13.7	0.05	27.8	41.0	45.1	0.28	6.7	0.47	5.4	0.04	4.5
Cl1Tail	747.1	37.9	0.78	27.7	0.05	37.9	37.1	55.5	0.48	15.7	1.24	19.4	0.09	14.3
FEED	1972.2	100.0	1.07	100.0	0.05	100.0	25.3	100.0	1.16	100.0	2.43	100.0	0.25	100.0

PRODUCTS	WT g	WT %	Al %	DIST	Cu %	DIST	SiO2 %	DIST	S %	DIST
T07 Sulphide Cl2C1	254.5	12.9	0.48	2.0	0.02	6.2	1.82	0.8	47.6	39.2
Cl2C2	258.0	13.1	0.63	2.7	0.02	6.2	4.54	2.0	42.5	35.4
Cl2C3	10.1	0.5	1.78	0.3	0.04	0.5	12.5	0.2	26.3	0.9
Cl2Tail	26.1	1.3	3.92	1.7	0.03	0.9	24.4	1.1	12.2	1.0
Cl1Tail	198.4	10.1	3.47	11.4	0.05	12.0	26.8	8.9	10.4	6.7
RoT	1225.1	62.1	4.02	81.8	0.05	74.1	42.3	87.0	4.25	16.8
CALC	1972.2	100.0	3.05	100.0	0.04	100.0	30.2	100.0	15.7	100.0
ASSAY HEAD			3.05		0.02		28.7		15.5	

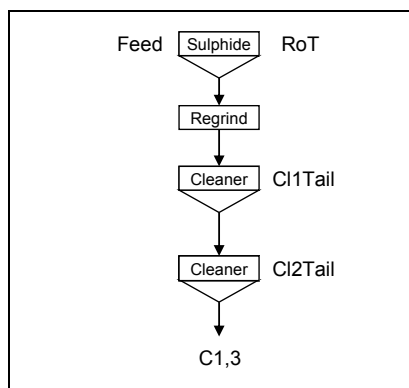
S Tails
5.11
4.25

CUM PRODUCTS	CUM Wt	WT %	Al %	CUM	Cu %	CUM	SiO2 %	DIST	S %	DIST
T07 Sulphide Cl2C1	254.5	12.9	0.48	2.0	0.02	6.2	1.82	0.8	47.6	39.2
Cl2C2	512.5	26.0	0.56	4.7	0.02	12.4	3.19	2.7	45.0	74.6
Cl2C3	522.6	26.5	0.58	5.0	0.02	12.9	3.37	3.0	44.7	75.5
Cl2Tail	548.7	27.8	0.74	6.7	0.02	13.8	4.37	4.0	43.1	76.5
Cl1Tail	747.1	37.9	1.46	18.2	0.03	25.9	10.3	13.0	34.4	83.2
FEED	1972.2	100.0	3.05	100.0	0.04	100.0	30.2	100.0	15.7	100.0

**Burnie** RESEARCH LABORATORY  
ROUGHER FLOTATION REPORT SHEET

Milling		Primary	Regrind
Mill	type	Long	Short
Media	type	MS	Ball
Media	kg	Rod	6
Solids	g	2000	1330
Water	g	1000	600
Time	min	20	18.0
Speed	rpm	50	50
Lime	g	0	0
End pH	pH	6.65	7.2
End p80	µm	212	70

Float Cell	Volume	Regrind	Power
Rougher	3.8	Start	
Clean 1	3.8	Finish	
Clean 2	2.7	W/h	
Speed	800	kWh/t	



PROJECT	T0587
TEST NO	08
DATE	18/10/2010
TECHNICIAN	MJR

PRODUCT FLOATED
Stellar Resources Composite 2

NOTES
Standard Sulphide Rougher 2 Stage Cleaning

	pH	100 H2SO4 g/t	0.4 PAX g/t	100 MIBC g/t	2 Na2SiO3 g/t				Cond Time min	Air L/min	Float Time min	Cum Float Time	Wet Wt g	Con % Solids
Condition	6.4	684							5					
Sulphide Ro C1	6.4		30	41	203				1	3-6	2.0	2.0	400	
Condition			20	10					2					
Sulphide Ro C2	6.4		30	10					1	3-6	2.0	4.0	1000	
Condition									2					
Sulphide Ro C3	6.4			10					1	3-7	5.0	9.0	700	
Condition			41						2					
Sulphide Ro C4	6.5								1	4-10	7.0	16.0	850	
Condition		658		25	203				2					
Sulphide Cl1on	6.5		30	10					1	4-10	7.0	7.0	2200	
Condition	6.5	51		10	101				2					
Sulphide Cl2C1	6.5			10					1	3-6	2.0	2.0	600	65
Condition														
Sulphide Cl2C2	6.7			5					1	4-10	4.0	6.0	600	56
Condition														
Sulphide Cl2C3	6.8		10						1	4-10	7.0	13.0	600	22
REAGENT TOTALS (g/t)		1393	172	132	506									

PRODUCTS	WT g	WT %	Sn %	DIST	As %	DIST	Fe %	DIST	MgO %	DIST	Ca %	DIST	Mn %	DIST
T08 Sulphide Cl2C1	391.9	19.8	0.17	3.4	0.01	19.8	43.5	29.1	0.20	9.3	0.02	0.3	0.21	3.4
Cl2C2	338.1	17.1	0.25	4.3	0.01	17.1	42.9	24.8	0.20	8.0	0.07	0.9	0.52	7.2
Cl2C3	131.6	6.7	0.62	4.2	0.01	6.7	43.8	9.9	0.28	4.4	0.28	1.5	0.64	3.4
Cl2Tail	30.9	1.6	1.54	2.4	0.01	1.6	31.3	1.7	0.56	2.0	1.20	1.5	2.22	2.8
Cl1Tail	233.7	11.8	1.53	18.2	0.01	11.8	27.8	11.1	0.58	16.0	1.73	16.1	1.73	16.5
RoT	848.2	43.0	1.56	67.5	0.01	43.0	16.2	23.5	0.60	60.3	2.36	79.7	1.92	66.6
CALC	1974.4	100.0	0.99	100.0	0.01	100.0	29.6	100.0	0.43	100.0	1.27	100.0	1.24	100.0
ASSAY HEAD			0.93		0.05		29.6		0.50		1.22		0.19	

CUM PRODUCTS	CUM Wt	WT %	Sn %	CUM	As %	CUM	Fe %	DIST	MgO %	DIST	Ca %	DIST	Mn %	DIST
T08 Sulphide Cl2C1	391.9	19.8	0.17	3.4	0.01	19.8	43.5	29.1	0.20	9.3	0.02	0.3	0.21	3.4
Cl2C2	730.0	37.0	0.21	7.7	0.01	37.0	43.2	53.9	0.20	17.3	0.04	1.3	0.35	10.6
Cl2C3	861.6	43.6	0.27	11.9	0.01	43.6	43.3	63.7	0.21	21.6	0.08	2.7	0.40	14.0
Cl2Tail	892.5	45.2	0.31	14.3	0.01	45.2	42.9	65.4	0.22	23.7	0.12	4.2	0.46	16.8
Cl1Tail	1126.2	57.0	0.57	32.5	0.01	57.0	39.7	76.5	0.30	39.7	0.45	20.3	0.72	33.4
FEED	1974.4	100.0	0.99	100.0	0.01	100.0	29.6	100.0	0.43	100.0	1.27	100.0	1.24	100.0

PRODUCTS	WT g	WT %	Al %	DIST	Cu %	DIST	SiO2 %	DIST	S %	DIST
T08 Sulphide Cl2C1	391.9	19.8	0.02	2.0	0.12	30.7	1.72	1.1	47.9	41.4
Cl2C2	338.1	17.1	0.03	2.6	0.08	17.7	3.27	1.8	46.5	34.7
Cl2C3	131.6	6.7	0.08	2.7	0.07	6.0	8.95	2.0	34.8	10.1
Cl2Tail	30.9	1.6	0.22	1.7	0.08	1.6	24.1	1.2	16.1	1.1
Cl1Tail	233.7	11.8	0.27	16.0	0.07	10.7	31.5	12.3	12.3	6.4
RoT	848.2	43.0	0.35	75.1	0.06	33.3	57.7	81.6	3.44	6.4
CALC	1974.4	100.0	0.20	100.0	0.08	100.0	30.4	100.0	23.0	100.0
ASSAY HEAD			1.13		0.04		26.0		23.1	

S Tails
5.36
3.44

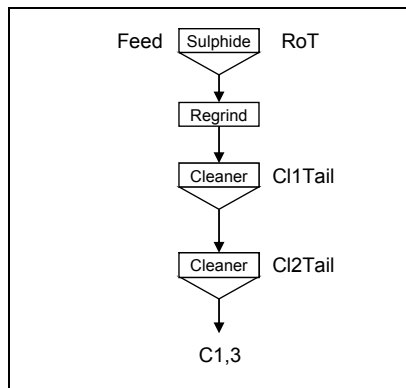
CUM PRODUCTS	CUM Wt	WT %	Al %	CUM	Cu %	CUM	SiO2 %	DIST	S %	DIST
T08 Sulphide Cl2C1	391.9	19.8	0.02	2.0	0.12	30.7	1.72	1.1	47.9	41.4
Cl2C2	730.0	37.0	0.02	4.5	0.10	48.4	2.44	3.0	47.2	76.0
Cl2C3	861.6	43.6	0.03	7.2	0.10	54.4	3.43	4.9	45.3	86.1
Cl2Tail	892.5	45.2	0.04	8.9	0.10	56.0	4.15	6.2	44.3	87.2
Cl1Tail	1126.2	57.0	0.09	24.9	0.09	66.7	9.82	18.4	37.7	93.6
FEED	1974.4	100.0	0.20	100.0	0.08	100.0	30.4	100.0	23.0	100.0



**Burnie** RESEARCH LABORATORY  
ROUGHER FLOTATION REPORT SHEET

Milling		Primary	Regrind
Mill	type	Long	Short
Media	type	MS	Ball
Media	kg	Rod	6
Solids	g	2000	887
Water	g	1000	450
Time	min	20	14.0
Speed	rpm	50	50
Lime	g	0	0
End pH	pH	6.65	6.7
End p80	µm	212	56

Float Cell	Volume	Regrind Power
Rougher	3.8	Start
Clean 1	3.8	Finish
Clean 2	2.7	W/h
Speed	800	kWh/t



PROJECT	T0587
TEST NO	9
DATE	19/10/2010
TECHNICIAN	MJR

PRODUCT FLOATED
Stellar Resources
Composite 1

NOTES
Standard Sulphide Rougher
2 Stage Cleaning

	pH	100 H2SO4 g/t	0.4 PAX g/t	100 MIBC g/t	2 Na2SiO3 g/t				Cond Time min	Air L/min	Float Time min	Cum Float Time	Wet Wt g	Con % Solids
Condition	6.4	201							5					
Sulphide Ro C1	6.4		20	40	201				1	3-6	2.0	2.0	400	
Condition			20	10					2					
Sulphide Ro C2	6.4								1	3-6	2.0	4.0	500	
Condition			30	10					2					
Sulphide Ro C3	6.4			10					1	3-7	5.0	9.0	600	
Condition			40						2					
Sulphide Ro C4	6.5								1	4-10	7.0	16.0	950	
Condition		161		10	201				2					
Sulphide Cl1on	6.5		34						1	4-10	14.0	14.0	1700	
Condition	6.3	65		10	100				2					
Sulphide Cl2C1	6.3			10					1	3-6	2.0	2.0	400	64
Condition														
Sulphide Cl2C2	6.8			5					1	4-10	4.0	6.0	600	49
Condition														
Sulphide Cl2C3	6.9		10						1	4-10	4.0	10.0	300	8
REAGENT TOTALS (g/t)		426	155	105	502									

PRODUCTS	WT g	WT %	Sn %	DIST	As %	DIST	Fe %	DIST	MgO %	DIST	Ca %	DIST	Mn %	DIST
T09 Sulphide Cl2C1	256.6	12.9	0.33	4.1	0.01	12.9	43.5	21.4	0.22	2.6	0.24	1.3	0.02	1.0
Cl2C2	291.3	14.6	0.54	7.6	0.01	14.6	42.7	23.8	0.27	3.6	0.49	3.1	0.04	2.4
Cl2C3	22.6	1.1	1.60	1.7	0.01	1.1	35.4	1.5	0.55	0.6	1.66	0.8	0.12	0.6
Cl2Tail	23.9	1.2	1.70	2.0	0.01	1.2	27.6	1.3	1.00	1.1	2.42	1.2	0.19	0.9
Cl1Tail	197.2	9.9	1.52	14.5	0.01	9.9	25.3	9.6	1.03	9.2	3.54	15.1	0.24	9.6
RoT	1201.5	60.3	1.21	70.2	0.01	60.3	18.4	42.4	1.53	83.1	3.03	78.5	0.35	85.5
CALC	1993.2	100.00	1.04	100.0	0.01	100.0	26.2	100.0	1.11	100.0	2.33	100.0	0.25	100.0
ASSAY HEAD			1.00		0.05		25.1		1.18		2.25		0.24	

CUM PRODUCTS	CUM Wt	WT %	Sn %	CUM	As %	CUM	Fe %	DIST	MgO %	DIST	Ca %	DIST	Mn %	DIST
T09 Sulphide Cl2C1	256.6	12.9	0.33	4.1	0.01	12.9	43.5	21.4	0.22	2.6	0.24	1.3	0.02	1.0
Cl2C2	547.9	27.5	0.44	11.7	0.01	27.5	43.1	45.2	0.25	6.1	0.37	4.4	0.03	3.4
Cl2C3	570.5	28.6	0.49	13.4	0.01	28.6	42.8	46.8	0.26	6.7	0.42	5.2	0.03	4.0
Cl2Tail	594.4	29.8	0.54	15.4	0.01	29.8	42.2	48.0	0.29	7.7	0.50	6.5	0.04	4.9
Cl1Tail	791.6	39.7	0.78	29.8	0.01	39.7	38.0	57.6	0.47	16.9	1.26	21.5	0.09	14.5
FEED	1993.2	100.00	1.04	100.0	0.01	100.0	26.2	100.0	1.11	100.0	2.33	100.0	0.25	100.0

PRODUCTS	WT g	WT %	Al %	DIST	Cu %	DIST	SiO2 %	DIST	S %	DIST
T09 Sulphide Cl2C1	256.6	12.9	0.33	1.4	0.05	19.9	2.10	0.9	47.0	37.1
Cl2C2	291.3	14.6	0.78	3.8	0.06	27.1	4.20	2.1	42.7	38.3
Cl2C3	22.6	1.1	1.49	0.6	0.07	2.5	12.0	0.5	27.2	1.9
Cl2Tail	23.9	1.2	3.91	1.5	0.11	4.1	22.1	0.9	14.1	1.0
Cl1Tail	197.2	9.9	3.24	10.6	0.03	9.2	27.2	9.3	9.58	5.8
RoT	1201.5	60.3	4.14	82.2	0.02	37.3	41.2	86.2	4.29	15.9
CALC	1993.2	100.00	3.04	100.0	0.03	100.0	28.8	100.0	16.3	100.0
ASSAY HEAD			3.05		0.02		28.7		15.5	

S Tails
5.04
4.29

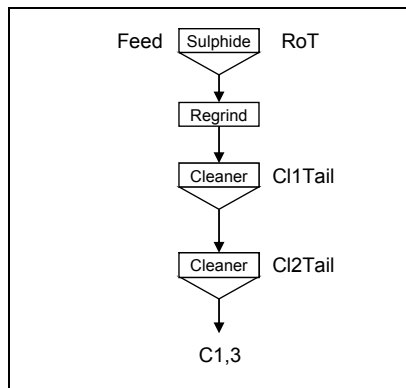
CUM PRODUCTS	CUM Wt	WT %	Al %	CUM	Cu %	CUM	SiO2 %	DIST	S %	DIST
T09 Sulphide Cl2C1	256.6	12.9	0.33	1.4	0.05	19.9	2.10	0.9	47.0	37.1
Cl2C2	547.9	27.5	0.57	5.2	0.06	47.0	3.22	3.1	44.7	75.4
Cl2C3	570.5	28.6	0.61	5.7	0.06	49.5	3.56	3.5	44.0	77.3
Cl2Tail	594.4	29.8	0.74	7.3	0.06	53.5	4.31	4.5	42.8	78.3
Cl1Tail	791.6	39.7	1.36	17.8	0.05	62.7	10.0	13.8	34.5	84.1
FEED	1993.2	100.00	3.04	100.0	0.03	100.0	28.8	100.0	16.3	100.0



**Burnie** RESEARCH LABORATORY  
ROUGHER FLOTATION REPORT SHEET

Milling		Primary	Regrind
Mill	type	Long	Short
Media	type	MS	Ball
Media	kg	Rod	6
Solids	g	2000	1360
Water	g	1000	600
Time	min	20	18.0
Speed	rpm	50	50
Lime	g	0	0
End pH	pH	6.65	7.2
End p80	µm	212	70

Float Cell	Volume	Regrind Power
Rougher	3.8	Start
Clean 1	3.8	Finish
Clean 2	2.7	W/h
Speed	800	kWh/t



PROJECT	T0587
TEST NO	10
DATE	20/10/2010
TECHNICIAN	MJR

PRODUCT FLOATED
Stellar Resources Composite 2

NOTES
Standard Sulphide Rougher 2 Stage Cleaning

	pH	100 H2SO4 g/t	0.4 PAX g/t	100 MIBC g/t	2 Na2SiO3 g/t				Cond Time min	Air L/min	Float Time min	Cum Float Time	Wet Wt g	Con % Solids
Condition	6.4	681							5					
Sulphide Ro C1	6.4		30	40	202				1	3-6	2.0	2.0	400	
Condition			20	10					2					
Sulphide Ro C2	6.4								1	3-6	2.0	4.0	1000	
Condition			30	10					2					
Sulphide Ro C3	6.4			10					1	3-7	5.0	9.0	700	
Condition			40						2					
Sulphide Ro C4	6.5								1	4-10	7.0	16.0	850	
Condition		656		25	202				2					
Sulphide Cl1on	6.5		30	10					1	4-10	7.0	7.0	2200	
Condition	6.3	50		10	101				2					
Sulphide Cl2C1	6.3			10					1	3-6	2.0	2.0	600	64
Condition				10					1					
Sulphide Cl2C2	6.8			5					1	4-10	4.0	6.0	600	41
Condition			10						1					
Sulphide Cl2C3	6.9									4-10	6.0	12.0	600	55
REAGENT TOTALS (g/t)		1388	172	131	505									

PRODUCTS	WT g	WT %	Sn %	DIST	As %	DIST	Fe %	DIST	MgO %	DIST	Ca %	DIST	Mn %	DIST
T10 Sulphide Cl2C1	383.4	19.3	0.13	2.7	0.01	19.3	44.4	27.8	0.17	7.8	0.01	0.1	0.02	2.0
Cl2C2	244.2	12.3	0.24	3.2	0.01	12.3	44.4	17.7	0.18	5.3	0.05	0.5	0.04	2.6
Cl2C3	332.1	16.8	0.49	8.9	0.01	16.8	43.2	23.4	0.25	9.9	0.23	2.9	0.06	5.2
Cl2Tail	35.9	1.8	1.65	3.2	0.01	1.8	31.0	1.8	0.60	2.6	1.28	1.8	0.25	2.4
Cl1Tail	209.3	10.6	1.72	19.7	0.01	10.6	25.9	8.8	0.63	15.8	1.86	14.9	0.30	16.5
RoT	776.9	39.2	1.46	62.2	0.01	39.2	16.2	20.5	0.63	58.6	2.69	79.8	0.35	71.4
CALC	1981.8	100.0	0.92	100.0	0.01	100.0	30.9	100.0	0.42	100.0	1.32	100.0	0.19	100.0
ASSAY HEAD			0.93		0.05		29.6		0.50		1.22		0.19	

CUM PRODUCTS	CUM Wt	WT %	Sn %	CUM	As %	CUM	Fe %	DIST	MgO %	DIST	Ca %	DIST	Mn %	DIST
T10 Sulphide Cl2C1	383.4	19.3	0.13	2.7	0.01	19.3	44.4	27.8	0.17	7.8	0.01	0.1	0.02	2.0
Cl2C2	627.6	31.7	0.17	5.9	0.01	31.7	44.4	45.4	0.17	13.1	0.03	0.6	0.03	4.6
Cl2C3	959.7	48.4	0.28	14.9	0.01	48.4	44.0	68.8	0.20	23.0	0.10	3.5	0.04	9.8
Cl2Tail	995.6	50.2	0.33	18.1	0.01	50.2	43.5	70.6	0.21	25.6	0.14	5.3	0.05	12.2
Cl1Tail	1204.9	60.8	0.57	37.8	0.01	60.8	40.5	79.5	0.29	41.4	0.44	20.2	0.09	28.6
FEED	1981.8	100.0	0.92	100.0	0.01	100.0	30.9	100.0	0.42	100.0	1.32	100.0	0.19	100.0

PRODUCTS	WT g	WT %	Al %	DIST	Cu %	DIST	SiO2 %	DIST	S %	DIST
T10 Sulphide Cl2C1	383.4	19.3	0.17	2.5	0.10	44.5	1.30	0.9	48.9	40.1
Cl2C2	244.2	12.3	0.50	4.7	0.06	17.0	3.40	1.5	44.7	23.4
Cl2C3	332.1	16.8	0.53	6.8	0.03	11.6	7.00	4.3	40.0	28.4
Cl2Tail	35.9	1.8	2.24	3.1	0.04	1.7	25.2	1.7	14.2	1.1
Cl1Tail	209.3	10.6	1.96	16.0	0.03	7.3	33.6	13.0	8.61	3.9
RoT	776.9	39.2	2.21	66.8	0.02	18.0	54.7	78.6	1.87	3.1
CALC	1981.8	100.0	1.30	100.0	0.04	100.0	27.3	100.0	23.6	100.0
ASSAY HEAD			1.13		0.04		26.0		23.1	

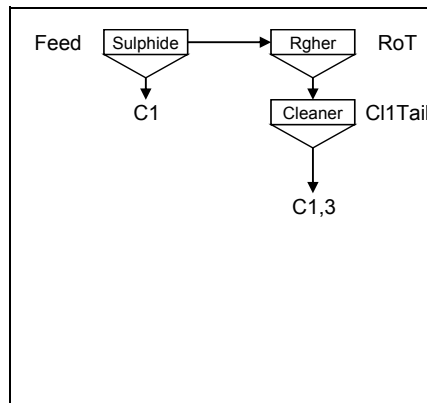
S Tails
3.30
1.87

CUM PRODUCTS	CUM Wt	WT %	Al %	CUM	Cu %	CUM	SiO2 %	DIST	S %	DIST
T10 Sulphide Cl2C1	383.4	19.3	0.17	2.5	0.10	44.5	1.30	0.9	48.9	40.1
Cl2C2	627.6	31.7	0.30	7.3	0.08	61.5	2.12	2.5	47.3	63.5
Cl2C3	959.7	48.4	0.38	14.1	0.07	73.0	3.81	6.8	44.7	91.9
Cl2Tail	995.6	50.2	0.45	17.3	0.06	74.7	4.58	8.4	43.6	93.0
Cl1Tail	1204.9	60.8	0.71	33.2	0.06	82.0	9.62	21.4	37.5	96.9
FEED	1981.8	100.0	1.30	100.0	0.04	100.0	27.3	100.0	23.6	100.0

**Burnie** RESEARCH LABORATORY  
ROUGHER FLOTATION REPORT SHEET

Milling		Primary	Regrind
Mill	type	Ball	Stirred
Media	type	MS	Sand
Media	kg	0	0
Solids	g	675	574
Water	g	0	0
Time	min	0	0
Speed	rpm	0	0
Lime	g	0	0
End pH	pH	0	0
End p80	µm	0	0

Float Cell	Volume	Regrind	Power
Rougher	2.7	Start	
Clean 1	2.7	Finish	
0		W/h	
Speed	800	kWh/t	



PROJECT	T0587
TEST NO	12
DATE	26/10/2010
TECHNICIAN	MJR

PRODUCT FLOATED
Stellar Resources
Composite 1

NOTES
Standard Sulphide Rougher
Standard Tin Rougher
1 Stage Cleaning
SPA Collector
Deslimed -53µm

	pH	100 H2SO4 g/t	0.4 PAX g/t	100 MIBC g/t	100 SSF g/t	1.0 SPA g/t	1.0 SPA dose	SPA min	Cond Time min	Air L/min	Float Time min	Cum Float Time	Wet Wt g	Con % Solids
Condition	6.5	239							1					
Condition S Sc Conc 1	6.5		51	147					1	3-9	6.0	6.0	400	14
Condition SSF	5.8				386				5					
Condition pH	5.0	478							5					
Condition SPA	5.2					221	775	2	12					
Sn Ro Conc 1	5.2			92						1-9	5.5	5.5	500	
Condition						147	775	2	8					
Sn Ro Conc 2	5.2			37						1-8	7.5	13.0	600	
Condition						147	775	2	8					
Sn Ro Conc 3	5.2			37						3-7	8.0	21.0	700	
Condition pH	5.3								1					
C1 Con 1				18						2-4	2.0	2.0	100	14
C1 Con 2										2-4	2.0	4.0	200	14
C1 Con 3										2-6	4.0	8.0	350	7
REAGENT TOTALS (g/t)		717	51	331	386	515								

PRODUCTS	WT g	WT %	Sn %	DIST	Fe %	DIST	Ca %	DIST	Mn %	DIST	Al %	DIST	Cu %	DIST
T12 S Con	55.2	10.1	0.92	6.5	36.1	17.3	1.20	3.2	0.12	3.5	2.16	5.6	0.08	37.0
SnCl1C1	14.0	2.6	5.50	9.8	33.9	4.1	0.39	0.3	0.50	3.7	1.23	0.8	0.03	3.5
SnCl1C2	27.6	5.1	4.81	16.9	34.8	8.3	0.51	0.7	0.52	7.6	1.50	1.9	0.05	11.6
SnCl1C3	25.8	4.7	3.19	10.5	32.0	7.1	0.75	0.9	0.47	6.4	1.98	2.4	0.02	4.3
C1Tail	98.5	18.1	1.58	19.8	23.9	20.4	1.96	9.4	0.40	20.8	3.90	18.0	0.02	16.5
RoT	322.9	59.4	0.89	36.6	15.3	42.8	5.41	85.4	0.34	58.0	4.71	71.3	0.01	27.1
CALC	544.0	100.0	1.44	100.0	21.2	100.0	3.76	100.0	0.35	100.0	3.92	100.0	0.02	100.0
ASSAY HEAD			0.00		0.00		0.00		0.00		0.00		0.00	

CUM PRODUCTS	CUM Wt	WT %	Sn %	CUM	Fe %	CUM	Ca %	DIST	Mn %	DIST	Al %	DIST	Cu %	DIST
T12 S Con	55.2	10.1	0.92	6.5	36.1	17.3	1.20	3.2	0.12	3.5	2.16	5.6	0.08	37.0
SnCl1C1	14.0	2.6	5.50	9.8	33.9	4.1	0.39	0.3	0.50	3.7	1.23	0.8	0.03	3.5
SnCl1C2	41.6	7.6	5.04	26.7	34.5	12.4	0.47	1.0	0.51	11.3	1.41	2.7	0.04	15.1
SnCl1C3	67.4	12.4	4.33	37.2	33.5	19.6	0.58	1.9	0.50	17.7	1.63	5.1	0.03	19.4
C1Tail	165.9	30.5	2.70	57.0	27.8	40.0	1.40	11.3	0.44	38.5	2.98	23.1	0.03	35.9
FEED	544.0	100.0	1.44	100.0	21.2	100.0	3.76	100.0	0.35	100.0	3.92	100.0	0.02	100.0

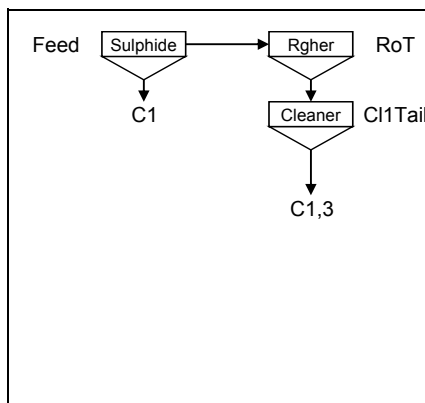
PRODUCTS	WT g	WT %	SiO2 %	DIST	S %	DIST
T12 S Con	55.2	10.1	12.1	3.7	29.7	60.7
SnCl1C1	14.0	2.6	12.4	1.0	6.38	3.3
SnCl1C2	27.6	5.1	15.5	2.4	6.08	6.2
SnCl1C3	25.8	4.7	21.3	3.0	5.74	5.5
C1Tail	98.5	18.1	31.9	17.4	3.39	12.4
RoT	322.9	59.4	40.7	72.6	1.00	12.0
CALC	544.0	100.0	33.3	100.0	4.96	100.0
ASSAY HEAD			0.00		0.00	

CUM PRODUCTS	CUM Wt	WT %	SiO2 %	CUM	S %	CUM
T12 S Con	55.2	10.1	12.1	3.7	29.7	60.7
SnCl1C1	14.0	2.6	12.4	1.0	6.38	3.3
SnCl1C2	41.6	7.6	14.5	3.3	6.18	9.5
SnCl1C3	67.4	12.4	17.1	6.4	6.01	15.0
C1Tail	165.9	30.5	25.9	23.7	4.46	27.4
FEED	544.0	100.0	33.3	100.0	4.96	100.0

**Burnie** RESEARCH LABORATORY  
ROUGHER FLOTATION REPORT SHEET

Milling		Primary	Regrind
Mill	type	Ball	Stirred
Media	type	MS	Sand
Media	kg	0	0
Solids	g	486	413.1
Water	g	0	0
Time	min	0	0
Speed	rpm	0	0
Lime	g	0	0
End pH	pH	0	0
End p80	µm	0	0

Float Cell	Volume	Regrind	Power
Rougher	2.7	Start	
Clean 1	2.7	Finish	
0		W/h	
Speed	800	kWh/t	



PROJECT	T0587
TEST NO	13
DATE	26/10/2010
TECHNICIAN	MJR

PRODUCT FLOATED
Stellar Resources
Composite 1

NOTES
Standard Sulphide Rougher
Standard Tin Rougher
1 Stage Cleaning
SPA Collector
Deslimed -53um

	pH	100 H2SO4 g/t	0.4 PAX g/t	100 MIBC g/t	100 SSF g/t	1.0 SPA g/t	1.0 SPA dose	SPA min	Cond Time min	Air L/min	Float Time min	Cum Float Time	Wet Wt g	Con % Solids
Condition	6.5	128							1					
Condition S Sc Conc 1	6.5		51	204					1	3-9	6.0	6.0	300	8
Condition SSF	5.8				357				5					
Condition pH	5.0	306							5					
Condition SPA	5.2					306	1961	2	12					
Sn Ro Conc 1	5.2			128		204	1961	2	8	1-9	5.5	5.5	500	
Condition														
Sn Ro Conc 2	5.2			51		204	1961	2	8	1-8	7.5	13.0	600	
Condition														
Sn Ro Conc 3	5.2			51		204	1961	2	8	3-7	8.0	21.0	600	
Condition pH	5.3								1					
C1 Con 1				26						2-4	2.0	2.0	100	9
C1 Con 2										2-4	2.0	4.0	200	4
C1 Con 3										2-6	4.0	8.0	350	3
REAGENT TOTALS (g/t)		434	51	459	357	714								

PRODUCTS	WT g	WT %	Sn %	DIST	Fe %	DIST	Ca %	DIST	Mn %	DIST	Al %	DIST	Cu %	DIST
T13 S Con	22.9	5.8	0.75	2.0	33.3	8.9	0.69	1.5	0.13	2.1	1.30	3.4	0.10	20.0
SnCl1C1	8.5	2.2	16.9	16.8	26.5	2.6	0.48	0.4	0.26	1.5	1.82	1.8	0.14	10.4
SnCl1C2	8.8	2.2	13.5	13.9	28.7	3.0	0.64	0.5	0.30	1.8	1.73	1.7	0.04	3.1
SnCl1C3	10.2	2.6	7.50	8.9	30.9	3.7	0.74	0.7	0.31	2.2	2.35	2.8	0.08	7.1
C1Tail	50.5	12.9	2.90	17.1	25.9	15.3	1.80	8.4	0.34	11.9	2.78	16.1	0.02	8.8
RoT	291.0	74.3	1.21	41.2	19.5	66.5	3.29	88.5	0.40	80.5	2.22	74.2	0.02	50.7
CALC	391.9	100.0	2.18	100.0	21.8	100.0	2.76	100.0	0.37	100.0	2.22	100.0	0.03	100.0
ASSAY HEAD			0.00		0.00		0.00		0.00		0.00		0.00	

CUM PRODUCTS	CUM Wt	WT %	Sn %	CUM	Fe %	CUM	Ca %	DIST	Mn %	DIST	Al %	DIST	Cu %	DIST
T13 S Con	22.9	5.8	0.75	2.0	33.3	8.9	0.69	1.5	0.13	2.1	1.30	3.4	0.10	20.0
SnCl1C1	8.5	2.2	16.9	16.8	26.5	2.6	0.48	0.4	0.26	1.5	1.82	1.8	0.14	10.4
SnCl1C2	17.3	4.4	15.2	30.7	27.6	5.6	0.56	0.9	0.28	3.4	1.77	3.5	0.09	13.4
SnCl1C3	27.5	7.0	12.3	39.7	28.8	9.3	0.63	1.6	0.29	5.5	1.99	6.3	0.09	20.5
C1Tail	78.0	19.9	6.2	56.8	26.9	24.6	1.39	10.0	0.32	17.4	2.50	22.4	0.04	29.3
FEED	391.9	100.0	2.18	100.0	21.8	100.0	2.76	100.0	0.37	100.0	2.22	100.0	0.03	100.0

PRODUCTS	WT g	WT %	SiO2 %	DIST	S %	DIST
T13 S Con	22.9	5.8	13.5	1.9	30.3	42.0
SnCl1C1	8.5	2.2	11.8	0.6	8.66	4.5
SnCl1C2	8.8	2.2	14.7	0.8	8.30	4.4
SnCl1C3	10.2	2.6	19.4	1.2	8.12	5.0
C1Tail	50.5	12.9	32.7	10.3	4.98	15.3
RoT	291.0	74.3	46.9	85.1	1.63	28.8
CALC	391.9	100.0	40.9	100.0	4.21	100.0
ASSAY HEAD			0.00		0.00	

CUM PRODUCTS	CUM Wt	WT %	SiO2 %	CUM	S %	CUM
T13 S Con	22.9	5.8	13.5	1.9	30.3	42.0
SnCl1C1	8.5	2.2	11.8	0.6	8.66	4.5
SnCl1C2	17.3	4.4	13.3	1.4	8.48	8.9
SnCl1C3	27.5	7.0	15.5	2.7	8.34	13.9
C1Tail	78.0	19.9	26.7	13.0	6.17	29.2
FEED	391.9	100.0	40.9	100.0	4.21	100.0



# **Burnie** RESEARCH LABORATORY

---

JOHN GLEN  
MANAGER