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WARDELL ARMSTRONG LLP

Metallurgical Testing of Samples from the Amulsar Deposit

January 2011

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DATE ISSUED: 13 January 2011
JOB NUMBER: 64-0279
REPORT NUMBER: MM530
REPORT STATUS: Final
VERSION NUMBER: V1.0

WARDELL ARMSTRONG LLP

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January 2011

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Appendix 3: Column Test Results

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EXECUTIVE SUMMARY

WAI were commissioned by Lydian to undertake a programme of laboratory testwork on samples from the Amulsar deposit. The test programme consisted of bottle rolls and column leach tests and focussed on leaching at finer crush sizes and using higher cyanide concentrations than had been used previously. The two samples tested were "Sample A" (HWA 149, weighing 120kg) and "Sample B" (HWA 150, weighing 330kg).

The programme of column testwork was undertaken using cyanide concentrations of 0.075, 0.050 and 0.025%. The crush sizes investigated were 38, 25, 18 and 12mm. The columns were irrigated at a rate of 10 l/m²/h and the leach period was 68 days.

The test results confirmed that the Amulsar gold mineralisation is amenable to recovery using heap leach technology. Initial column leaching was exceptionally rapid for both samples with up to 80% gold recovery being recovered after seven days of leaching.

The column leach test results are given in the table below.

Sample	Crush	Cyanide	Recovery
	Size (mm)	Conc.(%)	Au (%)
A	25	0.05	91.9
A	19	0.05	93.5
A	12	0.05	94.8
B	38	0.05	88.6
B	25	0.05	88.6
B	25	0.075	89.1
B	19	0.025	89.2
B	19	0.05	93.1
B	19	0.075	92.3
B	12	0.025	89.3
B	12	0.05	90.7
B	12	0.075	94.9

It is concluded that, from the column test results, the optimum crush size for both samples is probably 19mm and the optimum cyanide concentration is 0.05% although further work will be required to substantiate this. Tests using the higher cyanide concentrations also

gave higher cyanide consumptions and the additional gold recovery achieved needs to be related to the additional cyanide costs. The same is true for the additional capital and operating costs of crushing to the finer sizes.

1 INTRODUCTION

Lydian is in the process of evaluating the Amulsar gold deposit in Armenia. Previous test work programmes undertaken by SGS have indicated that the gold mineralisation is non refractory, with gold recoveries of 94-97% being achieved after grinding to between 75 and 150 μ m.

Column testing on two Composite samples, designated "A" and "B" gave gold recoveries of approximately 90% at a crush size of 19mm after 70 days of leaching. Bottle rolls testing had indicated that gold recoveries of up to 94.7% were achievable at a crush size of 12mm.

Lydian commissioned WAI to undertake a further programme of laboratory testwork on samples from the Amulsar deposit, through further bottle rolls and column tests on the two composite samples originally tested by SGS. The testwork generally focussed on leaching at finer crush sizes and using higher cyanide concentrations than were used in the SGS testwork.

The two samples tested were "Sample A" (HWA 149, weighing 120kg) and "Sample B" (HWA 150, weighing 330kg).

2 SAMPLE PREPARATION

The two samples consisted of competent rock fragments which appeared to have been crushed to pass 40mm.

Each sample was thoroughly mixed, split and crushed according to the flowsheets given in Figure 2.1 and Figure 2.2.

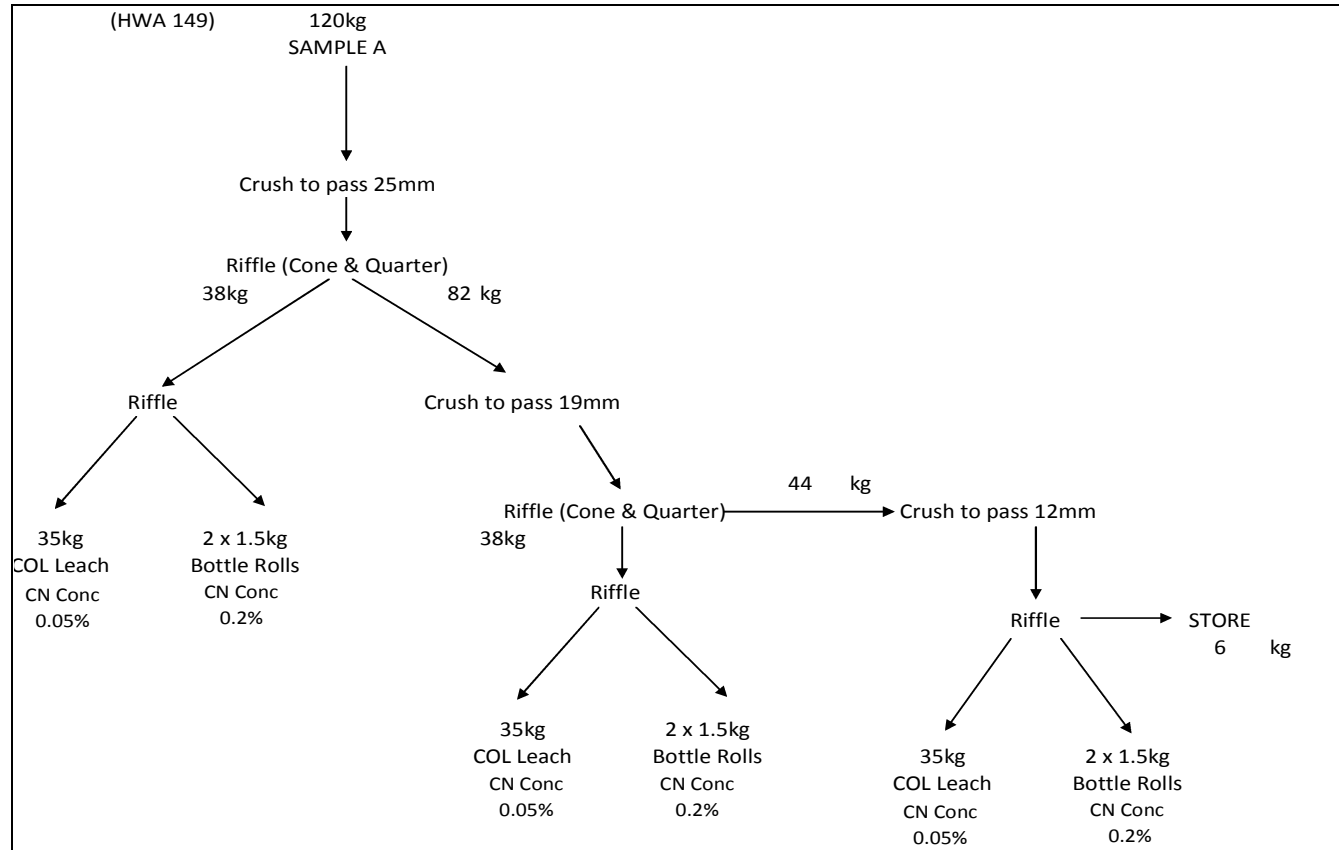


Figure 2.1: Sample A Preparation Flowsheet

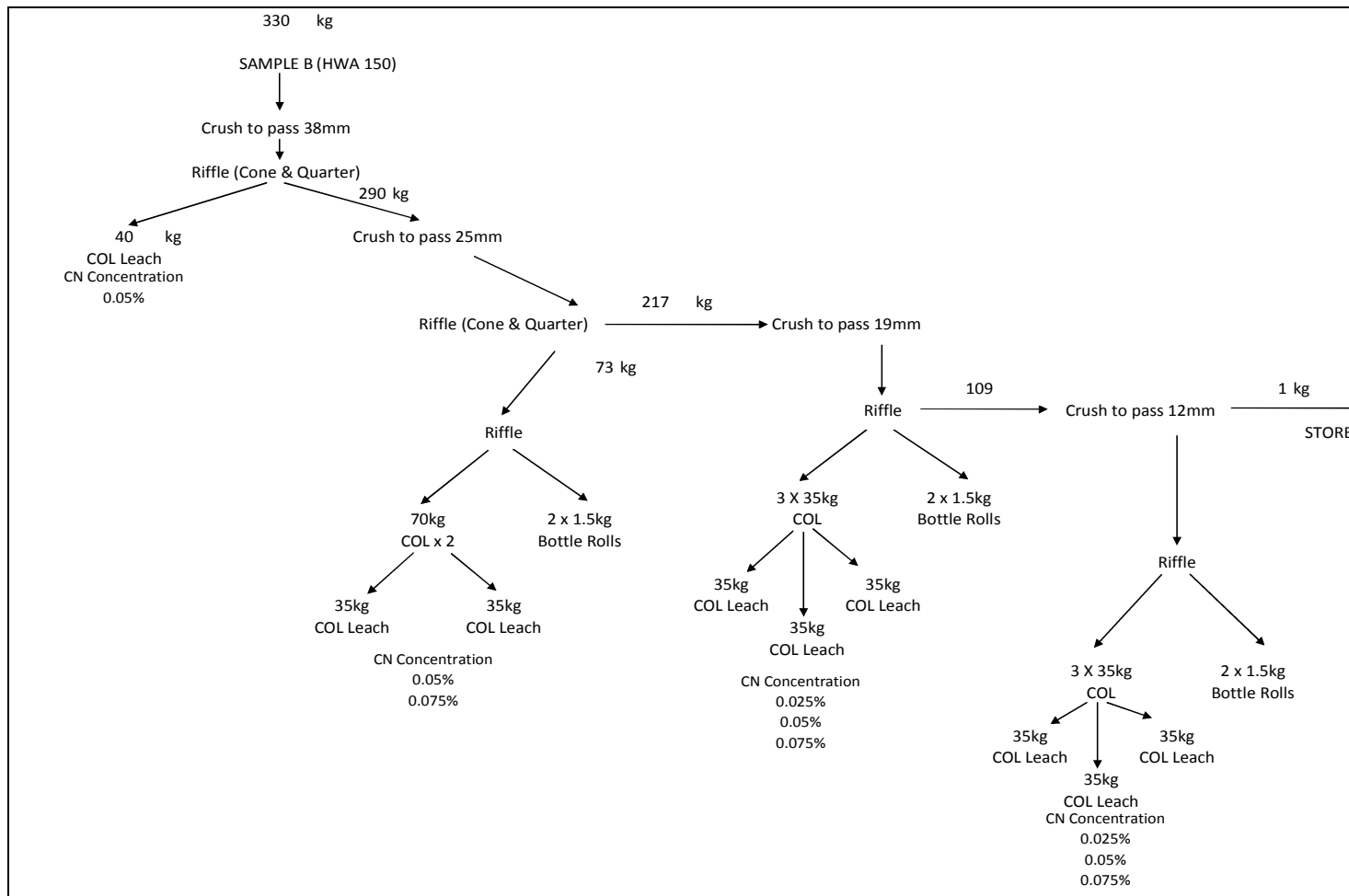


Figure 2.2: Sample B Preparation Flowsheet

Samples were prepared at crush sizes of -38mm, -25mm, -19mm, and -12m for bottle rolls and column testing. The tests undertaken are summarised in Table 2.1 below.

Table 2.1: WAI Leach Test Summary			
Crush Size	Sample A	Sample B	NaCN %
Bottle Rolls Tests			
-25mm	x	x	0.20
-19mm	x	x	0.20
-12mm	x	x	0.20
Column Tests			
-38mm		x	0.05
-25mm	x	x	0.05
		x	0.075
-19mm	x	x	0.05
		x	0.075
		x	0.025
-12mm	x	x	0.05
		x	0.075
		x	0.025

3 HEAD SAMPLE ANALYSIS

A representative head sample was riffled from each composite and assayed for gold. Sample A assayed 1.26ppm Au and Sample B assayed 1.14ppm Au.

4 HEAD FRACTION ASSAYS

The crushed samples were subjected to fraction assays. The results are given in Appendix 1. In general, the gold values were concentrated in the finer sizes although the weight recovery to the fines fractions was low.

The back calculated head grades from the fraction assays are given in Table 4.1 below.

Sample	Crush Size (mm)	Head Au (ppm)
A	25	1.19
A	19	1.57
A	12	1.28
B	38	1.62
B	25	1.06
B	19	1.07
B	12	1.16

The head grades were in reasonable agreement with the assayed head, although more variable due to the lower sample weights used.

5 BOTTLE ROLLS TESTS

The results of duplicate bottle rolls tests undertaken on Sample A are given in Table 5.1 and results of the tests undertaken on Composite B are summarised in Table 5.2. Tests were undertaken using 0.2% sodium cyanide for 28 days with 1.5kg sample weights.

The detailed bottle rolls test results are given in Appendix 2.

Table 5.1: Composite A Bottle Rolls Testwork			
	-25mm	-19mm	-12mm
Average Recovery %	92.8	94.0	91.8
Average Head Grade ppm Au	1.42	1.28	1.09
Average residue Assay ppm Au	0.140	0.075	0.075

Table 5.2: Composite B Bottle Rolls Testwork			
	-25mm	-19mm	-12mm
Average Recovery %	85.5	91.4	89.2
Average Head Grade ppm Au	0.99	1.16	1.27
Average residue Assay ppm Au	0.143	0.090	0.118

The two samples both gave excellent leach recoveries. Sample A gave the higher recoveries, and it is tentatively concluded that recovery is independent of crush size. For the Composite B sample, the lower recovery at the -25mm crush size is probably significant and indicative of the maximum leach size.

6 COLUMN LEACH TESTS

6.1 Test Conditions

A programme of column testwork was undertaken using 1.5m high x 0.15m diameter columns at cyanide concentrations of 0.075%, 0.05% and 0.025%. The crush sizes investigated were 38, 25, 18 and 12mm. The columns were irrigated at a rate of 10 l/m²/h and the leach period was 68 days.

The detailed column leach test results are given in Appendix 3.

6.2 Sample A Results

The column leach results for Sample A are given in Table 6.1 and Figure 6.1.

Crush Size (mm)	Cyanide concentration %	Au Recovery %
25	0.05	91.9
19	0.05	93.5
12	0.05	94.8

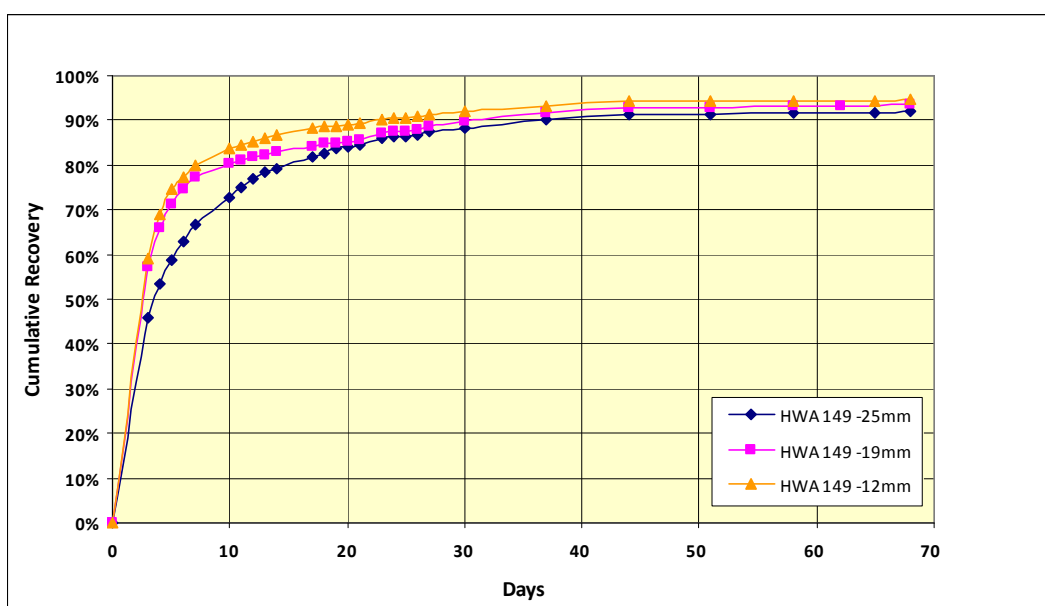


Figure 6.1: Composite A Column Test Results

The results indicated that marginally higher gold recoveries are achieved at the finer crush sizes, with overall gold recoveries increasing by 2.9% as the crush size decreases from 25mm to 12mm. As is often the case in such tests, the leach kinetics at the coarser crush size (25mm) were significantly lower in the initial stages but, as the test progressed, the leach recoveries increased to levels closer to the finer crush size tests.

Based on these results, it is tentatively concluded that 19mm will be the optimum crush size for the treatment of Sample A, as the additional costs of crushing to 12mm may not be justifiable given the modest recovery increase that would be achieved.

Note: The SGS tests gave a 68.5% gold recovery at the 38mm crush size and the 89.1% recovery at a 19mm crush size.

Cyanide consumptions ranged from 0.88 to 0.99kg/t.

6.3 Sample B Results

The results of the column tests on Sample B are given in Table 6.2 and summarised in Figure 6.2, Figure 6.3, Figure 6.4, and Figure 6.5.

Table 6.2: Sample B Column Leach Test Results		
Crush Size (mm)	Cyanide Concentration	Recovery Au %
38	0.050%	88.60%
25	0.050%	88.62%
25	0.075%	89.13%
19	0.025%	89.16%
19	0.050%	93.08%
19	0.075%	92.29%
12	0.025%	89.32%
12	0.050%	90.71%
12	0.075%	94.95%

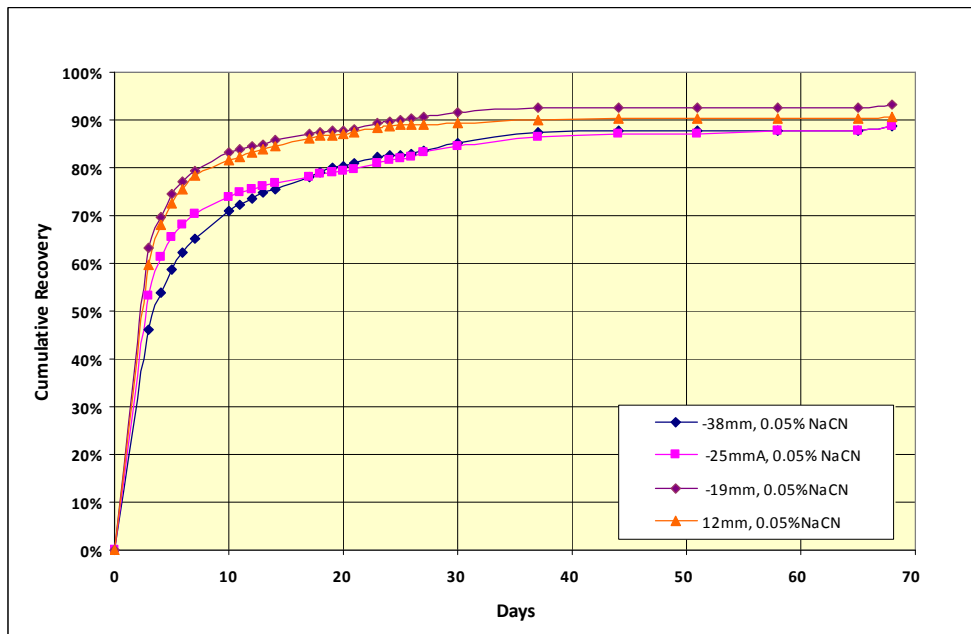


Figure 6.2: Effect of Crush Size on Leach Recovery using 0.05% NaCN

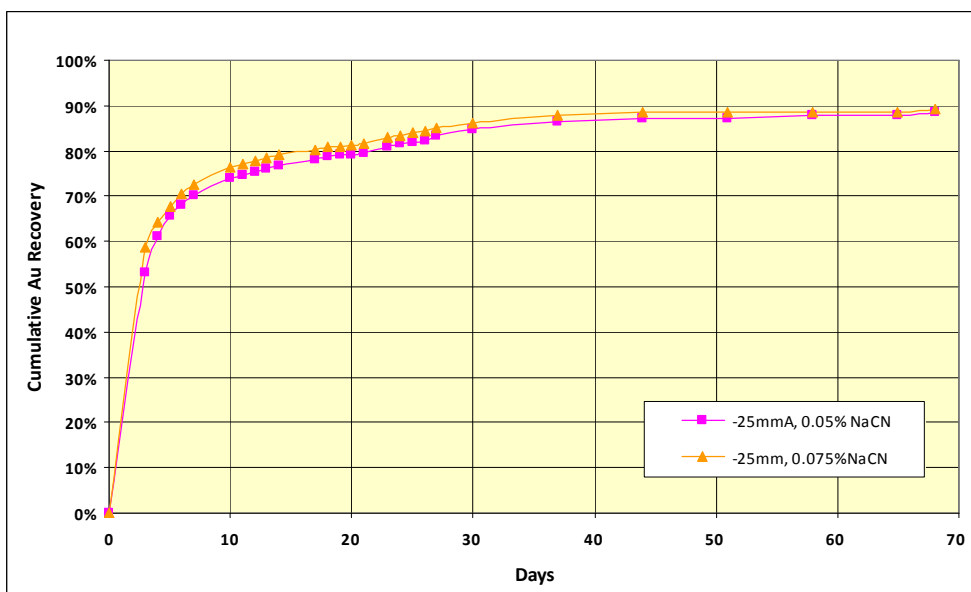


Figure 6.3: Sample B Column Leach Results at 25mm Crush Size

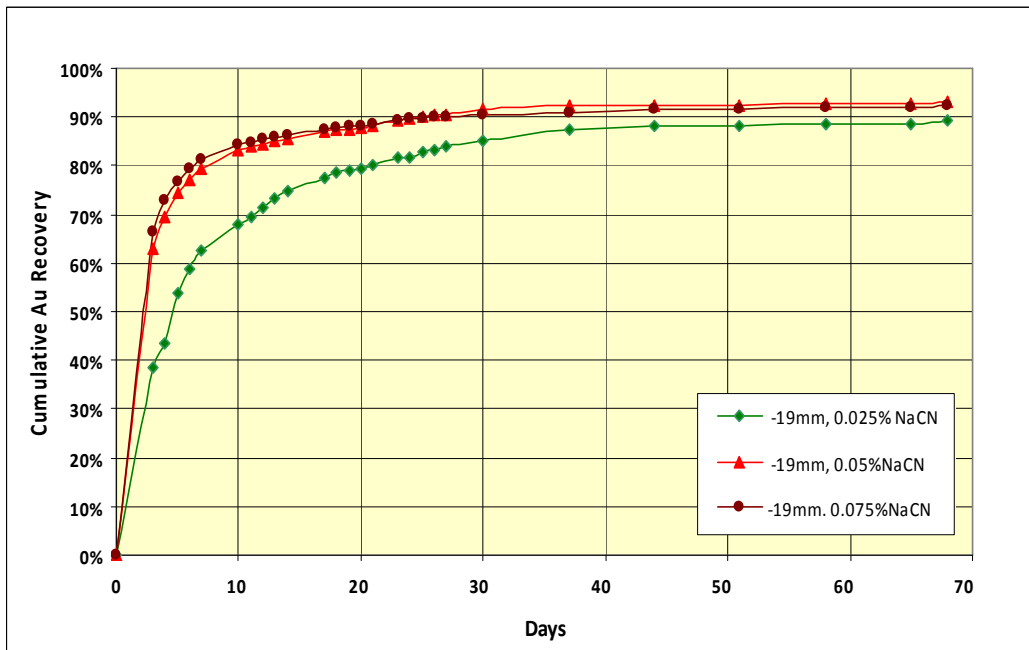


Figure 6.4: Composite B Column Test Results at 19mm Crush Size

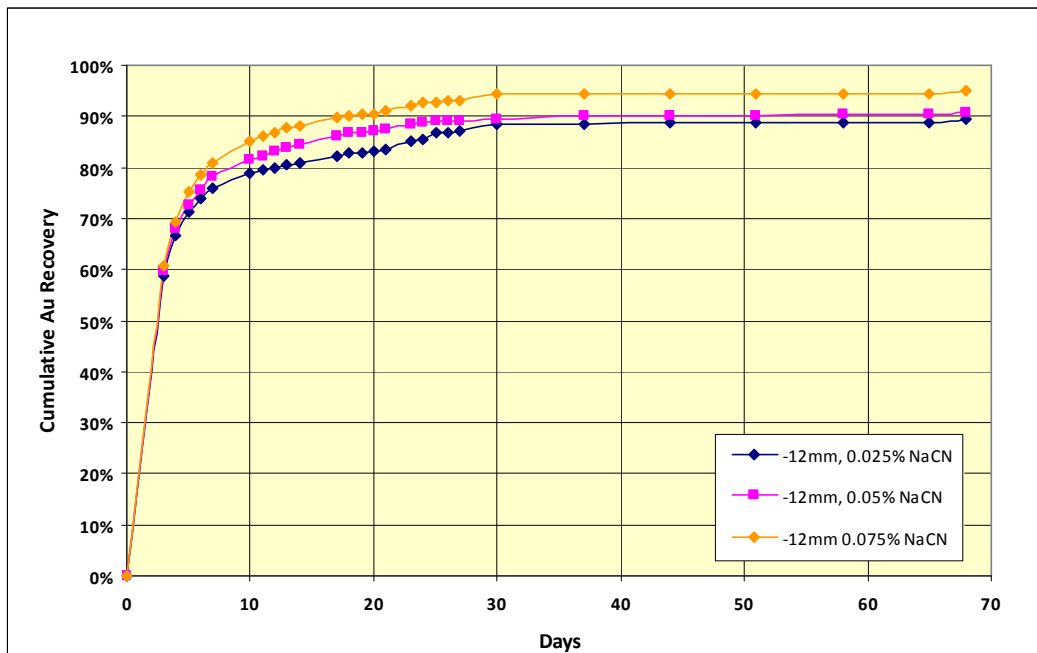


Figure 6.5: Composite B Column Test Results at 12mm Crush Size

Using 0.05% NaCN there is an increase in recovery with decreasing crush size although the recovery at -19mm is slightly higher than at -12mm, possibly due to experimental variations. It is therefore tentatively concluded that -19mm is probably the optimum crush size.

At a crush size of 25mm there is little difference in the final leach recoveries using 0.05% and 0.075% sodium cyanide but both tests gave recoveries less than 90%.

At the crush size of 19mm the recoveries using 0.025% NaCN were lower than the tests with 0.05% and 0.075% NaCN, which gave similar results.

At the crush size of -12mm there was a clear trend of increase in recovery with increased cyanide concentration.

Some degree of caution is needed in interpreting the results as some of the recovery differences between tests are relatively small and there will be certain degree of both sampling errors at the coarse crush size used to make the original sample split (38mm) as well as experimental errors and variations.

Overall, the recoveries ranged from 88.6% to 94.9%, with the lowest recovery being achieved in the test at the coarser crush size (38mm) and the highest recovery being achieved in the test at the finer crush size (12mm) and highest cyanide concentration (0.075%).

Note: The SGS tests gave a 80.3% gold recovery at the 38mm crush size and the 88.6% recovery at a 19mm crush size using 0.025% cyanide.

7 COLUMN TAILINGS FRACTION ASSAYS

The column tailings samples were subjected to size analyses and the results are given in Appendix 4.

8 CONCLUSIONS

It is clear from the test results that the Amulsar gold mineralisation is amenable to recovery using heap leach technology. Initial column leaching was exceptionally rapid for both samples with up to 80% gold recovery being recovered after seven days of leaching. Cyanide consumptions were high with Sample A at up to 0.99kg/t although consumptions in the laboratory may be up to twice that achieved in practice. Cyanide consumptions with Sample B were lower, ranging from 0.39 to 0.92kg/t.

It is concluded that, from the column test results, the optimum crush size is probably 19mm and the optimum cyanide concentration is 0.05% although further work will be required to substantiate this. The tests using the higher cyanide concentrations also gave higher cyanide consumptions and the additional gold recovery achieved needs to be related to the additional cyanide costs. The same is true for the additional capital and operating costs of crushing to the finer sizes. As a general comment, for the WAI test programme results, the higher revenues that might be achieved at the finer crush sizes and higher cyanide concentrations are probably broadly similar to the increased operating costs although this will depend on the gold price and plant feed grade.

APPENDIX 1

Head Fraction Assays

Head Sample Size Fraction Assays

Client Lydian
 Project Amulsar
 Sample Sample A HWA 149

-25mm

Product (μm)	Weight (%)	Assay	Distribution Au (%)	Cum Dist. (%) Au
		Au (ppm)		
-25000 +19000	50.52	1.03	43.7	56.26
-19000 +12000	21.08	0.84	14.9	41.38
-12000 +5000	16.42	1.29	17.8	23.58
-5000 +125	10.27	1.9	16.4	7.18
-125	1.72	4.97	7.2	
Head	100.00	1.190	100.00	

-19mm

Product (μm)	Weight (%)	Assay	Distribution Au (%)	Cum Dist. (%) Au
		Au (ppm)		
-19000 +12000	38.32	1.06	25.9	74.06
-12000 +5000	30.78	1.05	20.6	53.43
-5000 +1000	19.95	2.59	33.0	20.44
-1000 +125	6.68	2.01	8.6	11.87
-125	4.27	4.35	11.9	
Head	100.00	1.566	100.00	

-12mm

Product (μm)	Weight (%)	Assay	Distribution Au (%)	Cum Dist. (%) Au
		Au (ppm)		
-12000 +5000	67.96	1.09	58.0	42.04
-5000 +1000	22.55	1.3	22.9	19.10
-1000 +500	2.67	1.5	3.1	15.97
-500 +125	2.71	1.65	3.5	12.47
-125	4.11	3.88	12.5	
Head	100.00	1.278	100.00	

Head Sample Size Fraction Assays

Client Lydian
 Project Amulsar
 Sample Sample B HWA 150

-38mm

Product (μm)	Weight (%)	Assay Au (ppm)	Distribution Au (%)	Cum Dist. (%) Au
-38000 +25000	20.86	1.79	23.0	76.99
-25000 +12000	57.98	1.72	61.5	15.53
-12000 +5000	14.93	1.22	11.2	4.30
-5000 +125	5.58	0.88	3.0	1.28
-125	0.65	3.19	1.3	
Head	100.00	1.623	100.00	

-25mm

Product (μm)	Weight (%)	Assay Au (ppm)	Distribution Au (%)	Cum Dist. (%) Au
-25000 +19000	46.25	0.81	35.4	64.63
-19000 +12000	25.00	0.73	17.2	47.40
-12000 +5000	13.60	1.29	16.6	30.84
-5000 +125	12.17	1.87	21.5	9.36
-125	2.98	3.33	9.4	
Head	100.00	1.059	100.00	

-19mm

Product (μm)	Weight (%)	Assay Au (ppm)	Distribution Au (%)	Cum Dist. (%) Au
-19000 +12000	44.19	0.65	26.8	73.21
-12000 +5000	30.28	0.94	26.5	46.66
-5000 +1000	16.10	1.62	24.3	22.32
-1000 +125	5.52	1.87	9.6	12.69
-125	3.91	3.48	12.7	
Head	100.00	1.072	100.00	

-12mm

Product (μm)	Weight (%)	Assay Au (ppm)	Distribution Au (%)	Cum Dist. (%) Au
-12000 +5000	64.82	1.06	59.3	40.75
-5000 +1000	24.73	1.03	22.0	18.78
-1000 +500	2.93	1.29	3.3	15.52
-500 +125	3.20	1.45	4.0	11.52
-125	4.32	3.09	11.5	
Head	100.00	1.160	100.00	

APPENDIX 2

Bottle Rolls Test Results

Kinetic Cyanide Leach Bottle Roll Test

Client: Lydian
 Project: Amulsar
 Sample: Sample A HWA 149
 Size: -25mm

Head Assay Au, g/t	
	WAI
	1.13

Calculated Head Assay	
	Au, g/t
	1.68

Test Name	Date	Pre Treatment	NaCN Concentration, g/l		Initial Solids Wt g	Initial Solution g	Solids %	Feed	Initial leach pH
			Initial	Maintained					
25A	10-Aug-10	None	2.0	2.0	1455.8	1456.2	50	As R'cd	8.34

Residue		
Wt, g	Au, ppm	Au, ppm
1452.87	0.14	0.14

Time Days	Reagent					Measurement			
	NaCN			Ca(OH) ₂		Solution		Titre	pH
	Added, g	Consumed, g	"Free", %	Added, g	Consumed, kg/t	Wt, g	Extraction, ml		
0	2.91	0.0	0.20	0.1		1456.2	0	-	10.2
1	0.4	0.4	0.20		0.07	1456.2	25	3.50	10.3
2	0.1	0.5	0.20	0.1	0.07	1431.2	25	3.85	10.5
3		0.5	0.20		0.14	1456.2	25	4.00	10.4
7	0.3	0.8	0.20	0.1	0.14	1456.2	25	3.60	10.4
14	0.1	0.9	0.20		0.21	1431.2	25	3.90	10.7
21	0.2	1.0	0.20		0.21	1456.2	25	3.80	10.5
28	1.2	1.1	0.27			1431.2	25	3.85	10.4
Kg/t	2.7	1.57			0.21				

Liquor Assay	Recovery	
Au ppm	Au g/t	Au %
	0.00	0
1.154	1.15	68.9
1.284	1.28	76.5
1.404	1.45	86.3
1.422	1.49	88.8
1.501	1.57	93.4
1.396	1.51	90.3
1.420	1.54	91.7
Total	1.54	91.7

Head Assay Au, g/t	
	WAI
	1.13

Calculated Head Assay	
	Au, g/t
	1.17

Test Name	Date	Pre Treatment	NaCN Concentration, g/l		Initial Solids Wt g	Initial Solution g	Solids %	Feed	Initial leach pH
			Initial	Maintained					
25 B	10-Aug-10	None	2.0	2.0	1455.5	1455.6	50	As R'cd	8.44

Residue		
Wt, g	Au, ppm	Au, ppm
1451.7	0.07	0.08

Time Days	Reagent					Measurement			
	NaCN			Ca(OH) ₂		Solution		Titre	pH
	Added, g	Consumed, g	"Free", %	Added, g	Consumed, kg/t	Wt, g	Extraction, ml		
0	2.91	0.0	0.20	0.1		1455.6	0	-	10.2
1	0.2	0.2	0.20		0.03	1455.6	25	3.70	10.5
2	0.2	0.4	0.20		0.03	1430.6	25	3.75	10.4
3		0.4	0.20		0.03	1455.6	25	4.05	10.4
7	0.6	1.0	0.20	0.2	0.17	1455.6	25	3.20	10.4
14		1.0	0.20		0.17	1430.6	25	4.00	10.8
21		1.0	0.20		0.17	1455.6	25	4.00	10.5
28		0.9	0.21		0.2	1430.6	25	4.15	10.5
Kg/t	2.7	0.63			0.17				

Liquor Assay	Recovery	
Au ppm	Au g/t	Au %
	0.00	0
0.662	0.66	56.5
0.831	0.83	70.6
0.983	1.01	86.0
1.017	1.06	90.4
1.074	1.12	95.1
1.023	1.10	93.9
1.024	1.10	94.0
Total	1.10	94.0

Kinetic Cyanide Leach Bottle Roll Test

Client: Lydian
 Project: Amulsar
 Sample: Sample A HWA 149
 Size: -19mm

Head Assay Au, g/t	
	WAI
	1.13

Calculated Head Assay	
	Au, g/t
	1.33

Test Name	Date	Pre Treatment	NaCN Concentration, g/l		Initial Solids Wt g	Initial Solution g	Solids %	Feed	Initial leach pH
			Initial	Maintained					
19A	10-Aug-10	None	2.0	2.0	1430.6	1430.5	50	As R'cd	8.57

Residue		
Wt, g	Au, ppm	Au, ppm
1420.54	0.07	0.08

Time Days	Reagent					Measurement			
	NaCN			Ca(OH) ₂		Solution		Titre	pH
	Added, g	Consumed, g	"Free", %	Added, g	Consumed, kg/t	Wt, g	Extraction, ml		
0	2.86	0.0	0.20	0.1		1430.5	0	-	10.2
1	0.3	0.3	0.20		0.04	1430.5	25	3.60	10.5
2	0.3	0.6	0.20		0.04	1405.5	25	3.60	10.4
3		0.5	0.21		0.04	1430.5	25	4.15	10.3
7		0.6	0.20		0.04	1430.5	25	4.00	10.4
14	0.1	0.8	0.20	0.3	0.04	1405.5	25	3.80	10.7
21	0.2	0.9	0.20		0.25	1430.5	25	3.70	10.6
28						1405.5	25	4.20	10.5
Kg/t	2.6	0.59			0.25				

Total Au, g/t: 1.26 Recovery %: 94.8

Liquor Assay Au ppm	Recovery	
	Au g/t	Au %
0.845	0.00	0
1.010	0.84	63.7
1.138	1.01	75.9
1.160	1.17	88.2
1.218	1.21	91.4
1.218	1.27	95.7
1.418	1.27	95.7
1.159	1.26	94.8
Total	1.26	94.8

Head Assay Au, g/t	
	WAI
	1.13

Calculated Head Assay	
	Au, g/t
	1.23

Test Name	Date	Pre Treatment	NaCN Concentration, g/l		Initial Solids Wt g	Initial Solution g	Solids %	Feed	Initial leach pH
			Initial	Maintained					
19B	10-Aug-10	None	2.0	2.0	1438.3	1448.9	50	As R'cd	8.58

Residue		
Wt, g	Au, ppm	Au, ppm
1433.43	0.09	0.10

Time Days	Reagent					Measurement			
	NaCN			Ca(OH) ₂		Solution		Titre	pH
	Added, g	Consumed, g	"Free", %	Added, g	Consumed, kg/t	Wt, g	Extraction, ml		
0	2.90	0.0	0.20	0.1		1448.9	0	-	10.1
1	0.3	0.3	0.20		0.03	1448.9	25	3.60	10.4
2	0.1	0.4	0.20		0.03	1423.9	25	3.85	10.4
3		0.4	0.20		0.03	1448.9	25	4.00	10.4
7	0.2	0.5	0.20	0.2	0.17	1448.9	25	3.80	10.4
14		0.9	0.18		0.17	1423.9	25	3.95	10.7
21	0.3	1.1	0.18		0.17	1448.9	25	3.60	10.5
28		1.1	0.19		0.2	1423.9	25	3.75	10.4
Kg/t	2.6	0.74			0.17				

Total Au, g/t: 1.14 Recovery %: 93.2

Liquor Assay Au ppm	Recovery	
	Au g/t	Au %
0.833	0.00	0
0.948	0.84	68.9
1.017	0.96	78.2
1.017	1.06	86.6
1.030	1.09	89.1
1.077	1.10	89.8
1.012	1.11	90.7
1.043	1.14	93.2
Total	1.14	93.2

Kinetic Cyanide Leach Bottle Roll Test

Client: Lydian
 Project: Amulsar
 Sample: Sample A HWA 149
 Size: -12mm

Head Assay Au, g/t	
	WAI
	1.13

Calculated Head Assay	
	Au, g/t
	1.26

Test Name	Date	Pre Treatment	NaCN Concentration, g/l		Initial Solids Wt g	Initial Solution g	Solids %	Feed	Initial leach pH
			Initial	Maintained					
12A	10-Aug-10	None	2.0	2.0	1458.7	1458.6	50	As R'cd	8.27

Residue		
Wt, g	Au, ppm	Au, ppm
1454.83	0.08	0.07

Time Days	Reagent					Measurement			
	NaCN			Ca(OH) ₂		Solution		Titre	pH
	Added, g	Consumed, g	"Free", %	Added, g	Consumed, kg/t	Wt, g	Extraction, ml		
0	2.92	0.0	0.20	0.1		1458.6	0	-	10.0
1	0.4	0.4	0.20		0.04	1458.6	25	3.50	10.5
2		0.5	0.20		0.04	1433.6	25	3.90	10.4
3	0.2	0.5	0.20	0.1	0.04	1458.6	25	3.80	10.6
7	0.2	0.7	0.20		0.11	1458.0	25	3.80	10.5
14	0.2	0.9	0.20		0.11	1433.0	25	3.80	10.7
21	0.2	1.0	0.20		0.11	1458.6	25	3.80	10.5
28		1.4	0.17			1433.6	25	3.45	10.4
Kg/t	2.7	0.96			0.11				

Liquor Assay		Recovery	
Au ppm	Au g/t	Au g/t	Au %
0.880	0.88	0.00	0
0.990	0.99	0.880	70.1
1.065	1.10	0.990	78.7
1.086	1.14	1.065	87.4
1.126	1.18	1.086	90.5
1.126	1.18	1.126	93.6
1.070	1.16	1.070	92.2
1.088	1.18	1.088	93.6
Total		1.18	93.6

Head Assay Au, g/t	
	WAI
	1.13

Calculated Head Assay	
	Au, g/t
	0.93

Test Name	Date	Pre Treatment	NaCN Concentration, g/l		Initial Solids Wt g	Initial Solution g	Solids %	Feed	Initial leach pH
			Initial	Maintained					
12B	10-Aug-10	None	2.0	2.0	1435.4	1435.5	50	As R'cd	8.32

Residue		
Wt, g	Au, ppm	Au, ppm
1432.54	0.08	0.09

Time Days	Reagent					Measurement			
	NaCN			Ca(OH) ₂		Solution		Titre	pH
	Added, g	Consumed, g	"Free", %	Added, g	Consumed, kg/t	Wt, g	Extraction, ml		
0	2.87	0.0	0.20	0.1		1435.5	0	-	10.2
1	0.4	0.4	0.20		0.03	1435.5	25	3.50	10.5
2		0.5	0.20		0.03	1410.5	25	3.90	10.4
3	0.1	0.4	0.20		0.03	1435.5	25	3.90	10.3
7	0.1	0.6	0.20	0.3	0.24	1435.5	25	3.80	10.4
14	0.1	0.8	0.20		0.24	1410.5	25	3.80	10.8
21	0.2	0.9	0.20		0.24	1435.5	25	3.70	10.6
28		1.3	0.18		0.24	1410.5	25	3.60	10.5
Kg/t	2.6	0.88			0.24				

Liquor Assay		Recovery	
Au ppm	Au g/t	Au g/t	Au %
0.664	0.65	0.00	0
0.718	0.71	0.664	70.5
0.797	0.81	0.718	76.2
0.787	0.81	0.797	87.2
0.811	0.84	0.787	87.6
0.811	0.84	0.811	90.1
0.771	0.82	0.771	88.9
0.781	0.83	0.781	89.9
Total		0.83	89.9

Kinetic Cyanide Leach Bottle Roll Test

Client: Lydian
 Project: Amulsar
 Sample: Composite B - HWA 150
 Size: -25mm

Head Assay Au, g/t	
	WAI
	1.03

Calculated Head Assay	
	Au, g/t
	0.97

Test Name	Date	Pre Treatment	NaCN Concentration, g/l		Initial Solids Wt g	Initial Solution g	Solids %	Feed	Initial leach pH
			Initial	Maintained					
25A	10-Aug-10	None	2.0	2.0	1473.4	1473.7	50	As R'cd	8.49

Residue		
Wt, g	Au, ppm	Au, ppm
1469.92	0.16	0.17

Time Days	Reagent					Measurement			
	NaCN			Ca(OH) ₂		Solution		Titre	pH
	Added, g	Consumed, g	"Free", %	Added, g	Consumed, kg/t	Wt, g	Extraction, ml		
0	2.95	0.0	0.20	0.1		1473.7	0	-	10.3
1	0.2	0.1	0.20		0.04	1473.7	25	3.80	10.7
2		0.2	0.20		0.04	1448.7	25	3.95	10.6
3	0.2	0.3	0.20		0.04	1473.7	25	3.80	10.5
7	0.1	0.4	0.20		0.04	1473.7	25	3.85	10.5
14	0.2	0.6	0.20		0.04	1448.7	25	3.80	10.7
21	0.2	0.8	0.20		0.04	1473.7	25	3.70	10.6
28		1.0	0.19		0.04	1448.7	25	3.75	10.4
Kg/t	2.5	0.69			0.04				

Liquor Assay		Recovery	
Au ppm	Au g/t	Au g/t	Au %
0.512	0.51	0.00	0
0.607	0.61	53.0	53.0
0.685	0.70	62.6	62.6
0.722	0.75	72.8	72.8
0.749	0.78	77.9	77.9
0.719	0.77	80.6	80.6
0.752	0.81	80.1	80.1
Total	0.81	83.5	83.5

Head Assay Au, g/t	
	WAI
	1.03

Calculated Head Assay	
	Au, g/t
	1.02

Test Name	Date	Pre Treatment	NaCN Concentration, g/l		Initial Solids Wt g	Initial Solution g	Solids %	Feed	Initial leach pH
			Initial	Maintained					
25 B	10-Aug-10	None	2.0	2.0	1461.4	1461.9	50	As R'cd	8.48

Residue		
Wt, g	Au, ppm	Au, ppm
1457.39	0.12	0.12

Time Days	Reagent					Measurement			
	NaCN			Ca(OH) ₂		Solution		Titre	pH
	Added, g	Consumed, g	"Free", %	Added, g	Consumed, kg/t	Wt, g	Extraction, ml		
0	2.92	0.0	0.20	0.1		1461.9	0	-	10.1
1	0.2	0.2	0.20		0.03	1461.9	25	3.75	10.7
2		0.3	0.20		0.03	1436.9	25	3.95	10.6
3	0.1	0.2	0.20		0.03	1461.9	25	3.90	10.6
7	0.2	0.4	0.20		0.03	1461.9	25	3.80	10.5
14	0.2	0.6	0.20		0.03	1436.9	25	3.80	10.7
21	0.2	0.7	0.20		0.03	1461.9	25	3.80	10.6
28		1.1	0.18		0.03	1436.9	25	3.55	10.4
Kg/t	2.5	0.73			0.03				

Liquor Assay		Recovery	
Au ppm	Au g/t	Au g/t	Au %
0.599	0.59	0.00	0
0.701	0.69	58.3	58.3
0.794	0.81	68.0	68.0
0.815	0.84	79.4	79.4
0.847	0.88	82.8	82.8
0.816	0.87	85.8	85.8
0.836	0.89	85.6	85.6
Total	0.89	87.5	87.5

Kinetic Cyanide Leach Bottle Roll Test

Client: Lydian
 Project: Amulsar
 Sample: Composite B - HWA 150
 Size: -19mm

Head Assay Au, g/t	
	WAI
	1.03

Calculated Head Assay	
	Au, g/t
	1.08

Test Name	Date	Pre Treatment	NaCN Concentration, g/l		Initial Solids Wt g	Initial Solution g	Solids %	Feed	Initial leach pH
			Initial	Maintained					
19A	10-Aug-10	None	2.0	2.0	1503.9	1505.4	50	As R'cd	8.79

Residue		
Wt, g	Au, ppm	Au, ppm
1498.65	0.10	0.10

Time Days	Reagent					Measurement			
	NaCN			Ca(OH) ₂		Solution		Titre	pH
	Added, g	Consumed, g	"Free", %	Added, g	Consumed, kg/t	Wt, g	Extraction, ml		
0	3.01	0.0	0.20	0.1		1505.4	0	-	10.1
1	0.4	0.4	0.20		0.03	1505.4	25	3.50	10.5
2		0.4	0.21		0.03	1480.4	25	4.10	10.5
3	0.2	0.5	0.20		0.03	1505.4	25	3.80	10.4
7		0.6	0.20		0.03	1500.0	25	3.90	10.4
14	0.2	0.8	0.20		0.03	1475.0	25	3.70	10.6
21		0.8	0.20		0.03	1505.4	25	4.00	10.5
28		1.0	0.19		0.03	1480.4	25	3.70	10.4
Kg/t	2.5	0.69			0.03				

Liquor Assay		Recovery	
Au ppm	Au g/t	Au %	
0.731	0.73	0	
0.863	0.86	67.5	
0.918	0.95	87.3	
0.930	0.97	89.5	
0.957	1.00	91.9	
0.895	0.97	89.4	
0.910	0.98	90.8	
Total	0.98	90.8	

Head Assay Au, g/t	
	WAI
	1.03

Calculated Head Assay	
	Au, g/t
	1.23

Test Name	Date	Pre Treatment	NaCN Concentration, g/l		Initial Solids Wt g	Initial Solution g	Solids %	Feed	Initial leach pH
			Initial	Maintained					
19B	10-Aug-10	None	2.0	2.0	1466.4	1466	50	As R'cd	8.64

Residue		
Wt, g	Au, ppm	Au, ppm
1462.6	0.07	0.09

Time Days	Reagent					Measurement			
	NaCN			Ca(OH) ₂		Solution		Titre	pH
	Added, g	Consumed, g	"Free", %	Added, g	Consumed, kg/t	Wt, g	Extraction, ml		
0	2.93	0.0	0.20	0.1		1466	0	-	10.0
1	0.4	0.4	0.20		0.05	1466.0	25	3.50	10.5
2		0.4	0.20		0.05	1441.0	25	4.00	10.5
3	0.1	0.4	0.20		0.05	1466.0	25	3.90	10.4
7		0.3	0.21		0.05	1466.0	25	4.15	10.4
14	0.2	0.7	0.20		0.05	1441.0	25	3.70	10.6
21		0.7	0.20		0.05	1466.0	25	4.00	10.5
28		1.1	0.17		0.1	1441.0	25	3.45	10.4
Kg/t	2.4	0.75			0.05				

Liquor Assay		Recovery	
Au ppm	Au g/t	Au %	
0.873	0.85	0	
0.956	0.93	75.9	
1.049	1.05	85.8	
1.053	1.07	87.6	
1.098	1.12	91.1	
1.034	1.09	89.0	
1.072	1.13	92.0	
Total	1.13	92.0	

Kinetic Cyanide Leach Bottle Roll Test

Client: Lydian
 Project: Amulsar
 Sample: Composite B - HWA 150
 Size: -12mm

Head Assay Au, g/t	
	WAI
	1.03

Calculated Head Assay	
	Au, g/t
	1.24

Test Name	Date	Pre Treatment	NaCN Concentration, g/l		Initial Solids Wt g	Initial Solution g	Solids %	Feed	Initial leach pH
			Initial	Maintained					
12A	10-Aug-10	None	2.0	2.0	1455.1	1456.3	50	As R'cd	8.83

Residue		
Wt, g	Au, ppm	Au, ppm
1458.44	0.15	0.11

Time Days	Reagent					Measurement			
	NaCN			Ca(OH) ₂		Solution		Titre	pH
	Added, g	Consumed, g	"Free", %	Added, g	Consumed, kg/t	Wt, g	Extraction, ml		
0	2.91	0.0	0.20	0.1		1456.3	0	-	10.4
1	0.3	0.3	0.20		0.04	1456.3	25	3.60	10.6
2		0.4	0.20		0.04	1431.3	25	3.90	10.5
3		0.3	0.20		0.04	1456.3	25	4.00	10.4
7	0.2	0.5	0.20		0.04	1456.3	25	3.70	10.4
14	0.2	0.8	0.20		0.04	1431.3	25	3.70	10.6
21		0.7	0.20		0.04	1456.3	25	4.00	10.5
28		1.0	0.19		0.04	1431.3	25	3.75	10.4
Kg/t	2.5	0.66			0.04				

Liquor Assay			Recovery	
Au ppm	Au g/t	Au %		
0.822	0.82	63.4		
0.828	0.98	75.6		
0.988	1.02	78.4		
0.957	1.00	77.3		
1.004	1.05	80.9		
0.975	1.05	81.3		
1.011	1.09	84.1		
Total	1.09	84.1		

Head Assay Au, g/t	
	WAI
	1.03

Calculated Head Assay	
	Au, g/t
	1.30

Test Name	Date	Pre Treatment	NaCN Concentration, g/l		Initial Solids Wt g	Initial Solution g	Solids %	Feed	Initial leach pH
			Initial	Maintained					
12B	10-Aug-10	None	2.0	2.0	1474.2	1475.2	50	As R'cd	8.88

Residue		
Wt, g	Au, ppm	Au, ppm
1470.8	0.09	0.12

Time Days	Reagent					Measurement			
	NaCN			Ca(OH) ₂		Solution		Titre	pH
	Added, g	Consumed, g	"Free", %	Added, g	Consumed, kg/t	Wt, g	Extraction, ml		
0	2.95	0.0	0.20	0.1		1475.2	0	-	10.1
1	0.3	0.3	0.20		0.05	1475.2	25	3.60	10.5
2		0.4	0.20		0.05	1450.2	25	3.95	10.4
3	0.2	0.4	0.20	0.2	0.19	1475.2	25	3.80	10.6
7	0.2	0.7	0.20		0.19	1475.2	25	3.70	10.5
14	0.1	0.8	0.20		0.19	1450.2	25	3.85	10.7
21	0.2	1.0	0.20		0.19	1475.2	25	3.70	10.5
28		1.1	0.20		0.19	1450.2	25	3.90	10.5
Kg/t	2.7	0.76			0.19				

Liquor Assay			Recovery	
Au ppm	Au g/t	Au %		
0.980	0.99	76.6		
1.066	1.08	83.2		
1.133	1.15	88.7		
1.106	1.18	90.7		
1.142	1.21	93.4		
1.087	1.20	92.1		
1.115	1.22	94.3		
Total	1.22	94.3		

APPENDIX 3

Column Leach Test Results

Amulsar Column Leach Test Report

Client : Lydian
 Sample : A HWA 149
 Crush size 19.0 mm
 Start Date: 10-Sep-10
 Date Completed: 15-Sep-10

Preparation Parameters

Column diam. (mm)	150
Solution Rate (ml/min)	3.0
Sample Wet Wt kg	24.9
Sample Dry Wt kg	24.9
Moisture (%)	
Ca(OH) ₂ kg	
Cyanide concentration (%)	0.05

Height Parameters

Final height mm	1434.0
Initial height mm	1435.7
Slump %	-0.12

Residue

Wet Wt (kg)	26.9
% Solids (wt/wt)	90.7
Moisture (%)	9.3
Dry Wt (kg)	24.4
Assay (mg/kg)	
0.11	0.11

	mg Au
Head Assay g/t*	1.21 30.12
Extracted g/t	1.55 38.59
Tails Assay g/t	0.11 2.68
Calculated Head g/t	1.66 41.27
Recovery on Head	128%
Rec on Calc head	93%

*Based on Head and back calculated head fraction assays

Daily** = Solution recovered on that date

Solution Data

Date	Day	Feed Solution					Pregnant Solution							Gold Extraction				Ratio	NaCN		Flowrate						
		Vol (l)				Au	NaCN	Vol (l)		pH	Au	NaCN	Effective Au	Cum. Au	Ave. Au	Au	Cum. Au	Au	Cum. Au	Solids :Solution	Daily**	Cum	Daily**	Average Cum.			
		New	Rem.	Applied	Cum.	(ppm)	%	Daily**	Cum.	(ppm)	%	(ppm)	(mg)	(mg)	(ppm)	(g/t)	(g/t)	(%)	(%)		(kg/t)	(l/hr/m ²)	(l/hr/m ²)	(ml/min)			
10-Sep	0	12.4					0.050											0.00%									
13-Sep	3	12.2	0.5	11.8	24.2		0.050	8.5	8.5	9.23	2.760	0.018	2.76	23.59	23.59	2.76	0.948	0.95	57.16%	57.16%	0.00	0.112	0.112	20.15	6.72	1.98	
14-Sep	4							3.1	11.6	10.11	1.170	0.015	1.17	3.61	27.20	2.34	0.145	1.09	8.75%	65.91%	0.00	0.043	0.155	7.28	6.86	2.02	
15-Sep	5	12.1	3.89	8.3	32.5		0.050	4.8	16.4	10.39	0.460	0.025	0.46	2.19	29.39	1.79	0.088	1.18	5.31%	71.22%	1.30	0.048	0.203	11.23	7.73	2.28	
16-Sep	6							3.8	20.2	10.47	0.360	0.018	0.36	1.35	30.75	1.53	0.054	1.24	3.28%	74.50%	0.00	0.049	0.252	8.86	7.92	2.33	
17-Sep	7	12.4	2.84	9.2	41.7		0.050	5.0	25.2	10.57	0.220	0.028	0.22	1.11	31.85	1.26	0.044	1.28	2.68%	77.18%	1.68	0.046	0.298	11.87	8.48	2.50	
20-Sep	10	12.1	2.58	9.8	51.5		0.050	9.7	34.9	10.73	0.140	0.035	0.14	1.36	33.22	0.95	0.055	1.33	3.30%	80.48%	2.07	0.059	0.356	22.97	8.24	2.43	
21-Sep	11							4.4	39.3	10.65	0.060	0.018	0.06	0.26	33.48	0.85	0.010	1.35	0.63%	81.11%	0.00	0.057	0.413	10.26	8.42	2.48	
22-Sep	12	11.6	3.29	8.8	60.3		0.050	4.3	43.6	10.71	0.060	0.030	0.06	0.26	33.74	0.77	0.010	1.36	0.63%	81.75%	2.42	0.035	0.448	10.22	8.57	2.52	
23-Sep	13							4.4	48.0	10.76	0.060	0.028	0.06	0.26	34.00	0.71	0.011	1.37	0.63%	82.38%	0.00	0.039	0.487	10.27	8.70	2.56	
24-Sep	14	12.4	3.17	8.4	68.7		0.050	4.5	52.5	10.81	0.040	0.028	0.04	0.18	34.18	0.65	0.007	1.37	0.43%	82.81%	2.76	0.040	0.528	10.56	8.83	2.60	
27-Sep	17	12.0	0.42	11.9	80.7		0.050	11.9	64.3	10.84	0.050	0.035	0.05	0.59	34.77	0.54	0.024	1.40	1.44%	84.25%	3.24	0.072	0.599	28.03	8.92	2.63	
28-Sep	18							4.5	68.8	10.74	0.050	0.035	0.05	0.22	35.00	0.51	0.009	1.41	0.54%	84.79%	0.00	0.027	0.626	10.51	9.01	2.65	
29-Sep	19	12.2	2.93	9.1	89.7	0.0005	0.050	4.7	73.5	10.79	0.020	0.030	0.02	0.09	35.09	0.48	0.004	1.41	0.23%	85.02%	3.61	0.038	0.664	11.09	9.12	2.69	
30-Sep	20							2.2	75.7	10.79	0.040	0.025	0.04	0.09	35.18	0.46	0.004	1.41	0.22%	85.24%	0.00	0.022	0.686	5.25	8.93	2.63	
01-Oct	21	12.3	4.99	7.2	97.0	0.0005	0.050	4.6	80.4	7.37	0.020	0.028	0.02	0.09	35.27	0.44	0.004	1.42	0.22%	85.46%	3.90	0.042	0.728	10.94	9.02	2.66	
04-Oct	23	10.6	0.16	12.1	109.1	0.0005	0.050	12.5	92.8	10.75	0.050	0.030	0.05	0.62	35.90	0.39	0.025	1.44	1.51%	86.97%	4.38	0.100	0.828	29.39	9.52	2.80	
05-Oct	24							3.3	96.2	10.61	0.046	0.030	0.05	0.15	36.05	0.37	0.006	1.45	0.37%	87.34%	0.00	0.027	0.855	7.83	9.45	2.78	
06-Oct	25	12.3	4.02	8.3	117.3	0.0005	0.050	4.9	101.0	10.54	0.018	0.030	0.02	0.09	36.14	0.36	0.004	1.45	0.21%	87.55%	4.71	0.039	0.894	11.53	9.53	2.81	
07-Oct	26							4.3	105.3	10.73	0.033	0.030	0.03	0.14	36.28	0.34	0.006	1.46	0.34%	87.89%	0.00	0.035	0.929	10.04	9.55	2.81	
08-Oct	27	12.2	4.40	7.9	125.2	0.0005	0.050	3.3	108.6	10.48	0.070	0.025	0.07	0.23	36.51	0.34	0.009	1.47	0.56%	88.45%	5.03	0.034	0.963	7.76	9.48	2.79	
11/10/2010 ""	30	18.5		12.2	137.4	0.0005	0.050	12.1	120.7	11.04	0.044	0.028	0.04	0.52	37.03	0.31	0.021	1.49	1.27%	89.72%	5.52	0.009	0.972	28.41	9.48	2.79	
18-Oct	37			18.5	155.9	0.0500		17.5	138.2	10.73	0.050	0.028	0.05	0.87	37.90	0.27	0.035	1.52	2.10%	91.82%	6.26	0.000	0.972	41.31	8.81	2.59	
25-Oct	44	17.5		18.5	174.4	0.0750	0.050	17.1	155.2	10.40	0.075	0.028	0.03	0.43	38.32	0.25	0.017	1.54	1.03%	92.85%	7.01	0.009	0.981	40.22	8.32	2.45	
01-Nov	51			17.5	191.9			17.3	172.5		0.025	0.003	0.00	0.00	38.32	0.22	0.000	1.54	0.00%	92.85%	7.71	0.000	0.981	40.79	7.98	2.35	
08-Nov	58	18.7		17.5	209.4	0.0800	0.050	17.1	189.6	10.68	0.080	0.028	0.01	0.09	38.41	0.20	0.003	1.54	0.21%	93.06%	8.41	0.009	0.990	40.20	7.71	2.27	
12/11/2010 Wash	62	18.1		18.7	227.0			19.4	208.9	10.43	0.028	0.003	0.00	0.00	38.41	0.18	0.000	1.54	0.00%	93.06%	9.12	0.000	0.990	45.62	7.95	2.34	
15-Nov	68			18.1	245.0			18.0	227.0	10.56	0.010	0.005	0.01	0.18	38.59	0.17	0.007	1.55	0.44%	93.50%	9.84	0.000	0.990	42.49	7.87	2.32	
															38.59			1.55		93.50%			0.99				

"" Closed circuit

Balance

Column Leach Test Report

Client : Lydian
 Sample : HWA 150
 Crush size (mm) 12.0
 Cyanide conc gpl 0.25
 Start Date: 10-Sep-10
 Date Completed: 15-Nov-10
 Column No. Col 10 A

Preparation Parameters

Column diam. (mm)	1500.0
Solution Rate (ml/min)	3.0
Sample Wet Wt kg	29.7
Sample Dry Wt kg	29.7
Moisture (%)	
Ca(OH) ₂ kg	
Cyanide concentration gpl	0.25

	g/t	mg Au
Head Assay g/t	1.19	35.33
Extracted g/t	1.11	33.07
Tails Assay g/t	0.14	3.95
Calculated Head g/t	1.25	37.02
Recovery on Head	94%	
Rec on Calc head	89%	

Height Parameters

Final height mm 1438.0
 Initial height mm 1438.9
 Slump % -0.06

Residue

Wet Wt (kg)	31.9		
% Solids (wt/wt)	91.8		
Moisture (%)	8.2		
Dry Wt (kg)	29.3		
Assay (mg/kg)			
0.14	0.13		

Solution Data

Date	Day	Feed Solution					Pregnant Solution					Gold Extraction				Ratio		NaCN		Flowrate						
		Vol (l).				Au	NaCN	Vol (l).		pH	Au	NaCN	Effective Au	Cum. Au	Ave. Au	Au	Cum. Au	Au	Cum. Au	Solids	Daily**	Cum	Daily**	Average Cum.		
		New	Rem.	Applied	Cum.	(ppm)	%	Daily	Cum.		(ppm)	%	(ppm)	(mg)	(mg)	(ppm)	(g/t)	(g/t)	(%)	(%)	Solution	(kg/t)	(l/hr/m ²)	(l/hr/m ²)	(ml/min)	
10-Sep	0	12.4																	0.00%							
13-Sep	3	12.0	0.2	12.2	12.2		0.025	9.2	9.2	9.13	2.360	0.010	2.36	21.80	21.80	2.36	0.734	0.73	58.88%	58.88%	0.047	0.047	0.22	0.07	2.14	
14-Sep	4							3.0	12.2	9.69	0.960	0.013	0.96	2.88	24.67	2.02	0.097	0.83	7.77%	66.65%	0.00	0.013	0.059	0.07	0.07	2.12
15-Sep	5	12.1	3.83	8.2	20.4		0.025	4.8	17.0	9.97	0.350	0.013	0.35	1.67	26.34	1.55	0.056	0.89	4.52%	71.17%	0.69	0.020	0.079	0.11	0.08	2.36
16-Sep	6							3.7	20.7	10.09	0.280	0.010	0.28	1.03	27.37	1.32	0.035	0.92	2.78%	73.94%	0.00	0.019	0.098	0.09	0.08	2.39
17-Sep	7	12.3	2.93	9.1	29.5		0.025	5.3	25.9	10.18	0.130	0.015	0.13	0.68	28.06	1.08	0.023	0.94	1.85%	75.79%	0.99	0.018	0.116	0.12	0.09	2.57
20-Sep	10	12.1	2.62	9.7	39.2		0.025	9.5	35.5	10.35	0.120	0.013	0.12	1.14	29.20	0.82	0.038	0.98	3.08%	78.87%	1.32	0.040	0.156	0.22	0.08	2.46
21-Sep	11							4.3	39.8	10.20	0.050	0.013	0.05	0.22	29.41	0.74	0.007	0.99	0.58%	79.45%	0.00	0.018	0.174	0.10	0.09	2.51
22-Sep	12	12.1	3.41	8.6	47.8		0.025	4.3	44.0	10.31	0.050	0.015	0.05	0.21	29.63	0.67	0.007	1.00	0.58%	80.03%	1.61	0.014	0.188	0.10	0.09	2.55
23-Sep	13							4.4	48.4	10.22	0.030	0.015	0.03	0.13	29.76	0.61	0.004	1.00	0.36%	80.39%	0.00	0.015	0.203	0.10	0.09	2.59
24-Sep	14	12.4	3.17	8.9	56.7		0.0250	4.5	52.9	10.32	0.040	0.015	0.04	0.18	29.94	0.57	0.006	1.01	0.48%	80.87%	1.91	0.015	0.218	0.11	0.09	2.62
27-Sep	17	12.1	0.22	12.1	68.9		0.025	12.8	65.7	10.27	0.040	0.013	0.04	0.51	30.45	0.46	0.017	1.03	1.38%	82.25%	2.32	0.054	0.272	0.30	0.09	2.68
28-Sep	18							4.4	70.1	10.07	0.040	0.010	0.04	0.18	30.63	0.44	0.006	1.03	0.48%	82.73%	0.00	0.022	0.295	0.10	0.09	2.71
29-Sep	19	11.6	0.00	12.1	81.0	0.0005	0.083	2.1	72.2	10.21	0.038	0.015	0.04	0.08	30.71	0.43	0.003	1.03	0.22%	82.94%	2.73	0.048	0.342	0.05	0.09	2.64
30-Sep	20							2.4	74.6	10.23	0.040	0.013	0.04	0.10	30.80	0.41	0.003	1.04	0.26%	83.20%	0.00	0.057	0.400	0.06	0.09	2.59
01-Oct	21	12.5	4.74	6.9	87.9	0.0005	0.025	4.4	79.1	10.29	0.035	0.020	0.04	0.16	30.96	0.39	0.005	1.04	0.42%	83.62%	2.96	0.094	0.494	0.10	0.09	2.61
04-Oct	23	9.7	3.77	8.7	96.6	0.0005	0.025	14.9	93.9	10.71	0.036	0.010	0.04	0.54	31.49	0.34	0.018	1.06	1.45%	85.07%	3.25	0.075	0.569	0.35	0.10	2.84
05-Oct	24							3.3	97.3	10.59	0.049	0.010	0.05	0.16	31.65	0.33	0.005	1.07	0.43%	85.51%	0.00	0.017	0.585	0.08	0.10	2.81
06-Oct	25	13.1	4.36	5.4	102.0	0.0005	0.025	4.8	102.0	10.38	0.090	0.013	0.09	0.43	32.08	0.31	0.015	1.08	1.16%	86.67%	3.44	0.020	0.606	0.11	0.10	2.83
07-Oct	26							4.2	106.2	10.37	0.018	0.013	0.02	0.08	32.16	0.30	0.003	1.08	0.20%	86.87%	0.00	0.018	0.623	0.10	0.10	2.84
08-Oct	27	12.8	3.20	9.9	111.9	0.0005	0.025	5.1	111.3	10.38	0.010	0.023	0.01	0.05	32.21	0.29	0.002	1.08	0.14%	87.01%	3.77	0.004	0.627	0.12	0.10	2.86
11/10/2010 ***	30	18.5		12.8	124.7	0.0005	0.025	12.9	124.2	10.70	0.040	0.018	0.04	0.51	32.72	0.26	0.017	1.10	1.38%	88.39%	4.20	0.005	0.632	0.30	0.10	2.88
18-Oct	37			18.5	143.2	0.0050		17.5	141.7	10.38	0.005	0.018	0.00	0.08	32.80	0.23	0.003	1.10	0.21%	88.60%	4.82	0.000	0.632	0.41	0.09	2.66
25-Oct	44	17.6		18.5	161.7	0.0080	0.025	17.1	158.8	10.35	0.008	0.018	0.00	0.05	32.85	0.21	0.002	1.11	0.14%	88.74%	5.45	0.004	0.636	0.40	0.09	2.51
01-Nov	51			17.6	179.3			17.4	176.1		0.018	0.00	0.00	0.00	32.85	0.19	0.000	1.11	0.00%	88.74%	6.04	0.000	0.636	0.41	0.08	2.40
08-Nov	58	18.6		17.6	196.9	0.0080	0.025	17.2	193.3	10.14	0.008	0.018	0.00	0.00	32.85	0.17	0.000	1.11	0.00%	88.74%	6.63	0.005	0.641	0.41	0.08	2.31
12-Nov	65	18.0		18.6	215.4			18.6	211.9	9.86		0.018	0.00	0.00	32.85	0.16	0.000	1.11	0.00%	88.74%	7.26	0.000	0.641	0.44	0.08	2.26
15-Nov	68			18.0	233.4			18.0	229.8	10.09	0.020	0.005	0.01	0.22	33.07	0.14	0.007	1.11	0.58%	89.32%	7.86	-0.031	0.610	0.42	0.08	2.35
															33.07			1.11		89.32%		0.610				

*** Closed Circuit

Balance

Column Leach Test Report

Client : Lydian
 Sample : HWA 150
 Crush size (mm) : 12.0
 Cyanide conc gpl : 0.75
 Start Date: 10-Sep-10
 Date Completed: 15-Nov-10
 Column No. : Col 12 C

Preparation Parameters

Column diam. (mm)	1500.0
Solution Rate (ml/min)	3.0
Sample Wet Wt kg	34.7
Sample Dry Wt kg	34.7
Moisture (%)	
Ca(OH) ₂ kg	
Cyanide concentration gpl	0.75

	g/t	mg Au
Head Assay g/t	1.19	41.26
Extracted g/t	1.18	41.03
Tails Assay g/t	0.07	2.18
Calculated Head g/t	1.25	43.22
Recovery on Head	99%	
Rec on Calc head	95%	

Height Parameters

Final height mm : 1449.0
 Initial height mm : 1449.3
 Slump % : -0.02

Residue

Wet Wt (kg)	36.5
% Solids (wt/wt)	92.1
Moisture (%)	7.9
Dry Wt (kg)	33.6
Assay (mg/kg)	
0.08	0.05

Solution Data

Date	Day	Feed Solution					Pregnant Solution							Gold Extraction				Ratio	NaCN		Flowrate					
		Vol (l).				Au	NaCN	Vol (l).		pH	Au	NaCN	Effective Au	Cum. Au	Ave. Au	Au	Cum. Au	Au	Cum. Au	Solids Solution	Daily**	Cum	Daily**	Average Cum.		
		New	Rem.	Applied	Cum.	(ppm)	%	Daily	Cum.	(ppm)	%	(ppm)	(mg)	(mg)	(ppm)	(g/t)	(g/t)	(%)	(%)	(bch)	(kg/t)	(kg/t)	(l/hr/m ²)	(l/hr/m ²)	(ml/min)	
10-Sep	0	12.4																	0.00%							
13-Sep	3	12.2	1.6	10.8	10.8		0.075	7.8	7.8	10.18	3.360	0.030	3.36	26.19	26.19	3.36	0.756	0.76	60.61%	60.61%		0.101	0.101	0.18	0.06	1.80
14-Sep	4							3.1	10.9	10.54	1.230	0.035	1.23	3.78	29.98	2.76	0.109	0.86	8.75%	69.36%	0.00	0.035	0.137	0.07	0.06	1.89
15-Sep	5	12.1	3.98	8.2	19.1		0.075	4.8	15.7	10.73	0.530	0.045	0.53	2.54	32.51	2.08	0.073	0.94	5.87%	75.23%	0.55	0.041	0.178	0.11	0.07	2.17
16-Sep	6							3.7	19.3	10.75	0.370	0.035	0.37	1.37	33.88	1.75	0.039	0.98	3.16%	78.39%	0.00	0.043	0.221	0.09	0.08	2.24
17-Sep	7	12.4	2.84	9.2	28.3		0.075	5.3	24.6		0.200	0.045	0.20	1.06	34.93	1.42	0.030	1.01	2.44%	80.84%	0.82	0.046	0.266	0.12	0.08	2.44
20-Sep	10	12.2	2.59	9.8	38.1		0.075	9.5	34.2	11.07	0.200	0.078	0.20	1.91	36.84	1.08	0.055	1.06	4.42%	85.25%	1.10	-0.007	0.259	0.23	0.08	2.37
21-Sep	11							4.3	38.5	10.87	0.090	0.020	0.09	0.39	37.23	0.97	0.011	1.07	0.90%	86.15%	0.00	0.069	0.328	0.10	0.08	2.43
22-Sep	12	11.3	3.46	8.7	46.8		0.075	4.3	42.8	10.81	0.070	0.023	0.07	0.30	37.53	0.88	0.009	1.08	0.70%	86.85%	1.35	0.065	0.393	0.10	0.08	2.48
23-Sep	13							4.4	47.2	10.78	0.080	0.033	0.08	0.35	37.89	0.80	0.010	1.09	0.82%	87.66%	0.00	0.054	0.447	0.10	0.09	2.52
24-Sep	14	12.4	4.02	7.3	54.1		0.075	4.4	51.6	10.89	0.050	0.045	0.05	0.22	38.11	0.74	0.006	1.10	0.51%	88.18%	1.56	0.038	0.486	0.10	0.09	2.56
27-Sep	17	12.0	0.00	12.4	66.5		0.075	12.4	64.0	10.96	0.050	0.043	0.05	0.62	38.73	0.60	0.018	1.12	1.43%	89.61%	1.92	0.116	0.602	0.29	0.09	2.62
28-Sep	18							4.4	68.4	10.88	0.050	0.050	0.05	0.22	38.95	0.57	0.006	1.12	0.51%	90.12%	0.00	0.032	0.633	0.10	0.09	2.64
29-Sep	19	11.9	4.94	7.0	78.9	0.0005	0.075	2.5	70.9	10.96	0.030	0.058	0.03	0.07	39.02	0.55	0.002	1.13	0.17%	90.29%	2.28	0.012	0.646	0.06	0.09	2.59
30-Sep	20							2.3	73.2	11.00	0.050	0.048	0.05	0.12	39.14	0.53	0.003	1.13	0.27%	90.56%	0.00	0.018	0.664	0.05	0.09	2.54
01-Oct	21	12.1	5.86	6.0	84.9	0.0005	0.070	4.5	77.7	10.79	0.040	0.058	0.04	0.18	39.31	0.51	0.005	1.13	0.41%	90.97%	2.45	0.022	0.687	0.11	0.09	2.57
04-Oct	23	9.7	0.00	12.1	97.0	0.0005	0.075	11.8	89.5	10.77	0.044	0.038	0.04	0.52	39.84	0.45	0.015	1.15	1.21%	92.18%	2.80	0.110	0.797	0.28	0.09	2.70
05-Oct	24							3.3	92.8	10.96	0.053	0.070	0.05	0.18	40.01	0.43	0.005	1.15	0.41%	92.58%	0.00	0.005	0.802	0.08	0.09	2.69
06-Oct	25	12.4	4.26	5.5	102.5	0.0005	0.075	4.7	97.6	11.04	0.027	0.055	0.03	0.13	40.14	0.41	0.004	1.16	0.30%	92.88%	2.96	0.027	0.829	0.11	0.09	2.71
07-Oct	26							4.2	101.8	10.82	0.018	0.055	0.02	0.08	40.21	0.40	0.002	1.16	0.17%	93.05%	0.00	0.024	0.853	0.10	0.09	2.72
08-Oct	27	11.9	2.52	9.9	112.3	0.0005	0.075	5.1	106.8	10.80	0.010	0.060	0.01	0.05	40.26	0.38	0.001	1.16	0.12%	93.17%	3.24	0.022	0.875	0.12	0.09	2.75
11/10/2010 ""	30	18.5		11.9	124.2	0.0005	0.075	11.5	118.3	11.34	0.040	0.055	0.04	0.46	40.72	0.34	0.013	1.17	1.06%	94.23%	3.58	0.014	0.889	0.27	0.09	2.74
18-Oct	37			18.5	142.7	0.0050		17.3	135.6	10.82	0.005	0.055	0.00	0.08	40.80	0.30	0.002	1.18	0.18%	94.41%	4.12	0.000	0.889	0.41	0.09	2.54
25-Oct	44	17.3		18.5	161.2	0.0070	0.075	16.9	152.5	10.32	0.007	0.055	0.00	0.03	40.84	0.27	0.001	1.18	0.08%	94.49%	4.65	0.013	0.901	0.40	0.08	2.41
01-Nov	51			17.3	178.6			17.2	169.7			0.055	0.00	0.00	40.84	0.24	0.000	1.18	0.00%	94.49%	5.15	0.000	0.901	0.41	0.08	2.31
08-Nov	58	18.6		17.3	195.9	0.0080	0.075	17.0	186.6	10.88	0.008	0.055	0.00	0.02	40.85	0.22	0.000	1.18	0.04%	94.53%	5.65	0.014	0.915	0.40	0.08	2.23
12-Nov	65	18.0		18.6	214.5			19.1	205.7	10.90		0.055	0.00	0.00	40.85	0.20	0.000	1.18	0.00%	94.53%	6.19	0.000	0.915	0.45	0.07	2.20
15-Nov	68			18.0	232.5			18.0	223.7	10.71	0.010	0.008	0.01	0.18	41.03	0.18	0.005	1.18	0.42%	94.95%	6.71	-0.040	0.875	0.42	0.08	2.28
															41.03			1.18		94.95%		0.875				

"" Closed Circuit

APPENDIX 4

Column Tailings Fraction Assays

Wardell Armstrong International Ltd

Column Tailings Size Fraction Assays

Project Amulsar
 Client Lydian
 Sample HWA 150

Col 4 (-38mm, 0.05%)

Product (mm)	Weight (%)	Assay Au (ppm)	Distribution Au (%)	Cum Dist. (%) Au
-38 +25	14.92	0.14	19.7	80.28
-25 +12	58.96	0.11	61.2	19.09
-12 +5	15.17	0.07	10.0	9.07
-5 +0.125	8.11	0.08	6.1	2.95
0-125	2.84	0.11	2.9	
Head	100.00	0.106	100.00	

Col 5 (-25mm, 0.05%)

Product (mm)	Weight (%)	Assay Au (ppm)	Distribution Au (%)	Cum Dist. (%) Au
-25 +19	32.47	0.12	36.5	63.55
-19 +12	23.53	0.09	19.8	43.73
-12 +5	23.02	0.11	23.7	20.04
-5 +0.125	15.91	0.09	13.4	6.64
-0.125	5.07	0.14	6.6	
Head	100.00	0.107	100.00	

Col 6 (-25mm, 0.075%)

Product (mm)	Weight (%)	Assay Au (ppm)	Distribution Au (%)	Cum Dist. (%) Au
-19 +12	49.61	0.13	58.8	41.18
-12 +5	27.16	0.09	22.3	18.89
-5 +1	12.56	0.08	9.2	9.73
-1 +0.125	7.28	0.1	6.6	3.09
-0.125	3.39	0.1	3.1	
Head	100.00	0.110	100.00	

Col 7 (-19mm, 0.025%)

Product (mm)	Weight (%)	Assay Au (ppm)	Distribution Au (%)	Cum Dist. (%) Au
-19 +12	63.05	0.12	69.0	31.01
-12 +5	22.55	0.09	18.5	12.50
-5 +1	9.07	0.09	7.4	5.05
-1 +0.125	2.20	0.11	2.2	2.84
-0.125	3.12	0.1	2.8	
Head	100.00	0.110	100.01	

Column Tailings Size Fraction Assays

Project Amulsar
 Client Lydian
 Sample HWA 150

Col 8 (-19mm, 0.05%)

Product (mm)	Weight (%)	Assay Au (ppm)	Distribution Au (%)	Cum Dist. (%) Au
-19 +12	56.48	0.09	46.4	41.51
-12 +5	22.03	0.1	20.1	21.42
-5 +1	11.93	0.08	8.7	12.71
-1+0.125	4.70	0.09	3.9	8.85
-0.125	4.85	0.2	8.9	
Head	100.00	0.096	87.87	

Col 9 (-19mm, 0.075%)

Product (mm)	Weight (%)	Assay Au (ppm)	Distribution Au (%)	Cum Dist. (%) Au
-19 +12	47.53	0.11	47.7	41.16
-12 +5	25.43	0.09	20.9	20.29
-5 +1	15.69	0.08	11.4	8.84
-1 +0.125	5.15	0.08	3.8	5.09
-0.125	6.20	0.09	5.1	
Head	100.00	0.097	88.84	

Col 10 (-12mm, 0.025%)

Product (mm)	Weight (%)	Assay Au (ppm)	Distribution Au (%)	Cum Dist. (%) Au
-12 +5	59.78	0.1	54.5	29.64
-5 +1	26.47	0.08	19.3	10.33
-1 +0.5	3.37	0.08	2.5	7.87
-0.5+0.125	3.27	0.09	2.7	5.19
-0.125	7.11	0.08	5.2	
Head	100.00	0.092	84.16	

Col 11 (-12mm, 0.05%)

Product (mm)	Weight (%)	Assay Au (ppm)	Distribution Au (%)	Cum Dist. (%) Au
-12 +5	64.95	0.11	65.2	22.88
-5 +1	24.01	0.07	15.3	7.55
-1 +0.5	2.78	0.07	1.8	5.78
-0.5 +0.125	2.74	0.07	1.8	4.02
-0.125	5.52	0.08	4.0	
Head	100.00	0.097	88.03	

Column Tailings Size Fraction Assays

Project Amulsar
Client Lydian
Sample HWA 150

Col 12 (-12mm, 0.075%)

Product (mm)	Weight (%)	Assay Au (ppm)	Distribution Au (%)	Cum Dist. (%) Au
-12 +5	70.25	0.08	73.5	26.50
-5 +1	20.57	0.06	16.1	10.35
-1 +0.5	2.26	0.07	2.1	8.28
-0.5 +0.125	1.96	0.07	1.8	6.49
-0.125	4.96	0.1	6.5	
Head	100.00	0.076	100.00	

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