

Stellar Resources

Metallurgy Activities-May 2012 to April 2013

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Previous work

There has been a significant amount of metallurgical test work performed by Stellar and by the previous owners of the deposit (Aberfoyle Ltd) over an approximately 40 year period.

For the period of the previous report metallurgical work was focused on ore from the upper sections of the Queen Hill orebody (Composites 1 and 2 from table 1.1 below).

This work by Stellar was aimed at increasing both recoveries and grades of tin in concentrate from the Upper Queen Hill ore. The unit processes used in the test programs have included; Natural gravity, flotation and in Aberfoyle's case, fuming.

With the exception of fuming, acceptable grades and recoveries on the upper Queen Hill ores have not been consistently achieved with any combination of these processes. Some improvements to methods and chemical regimes have been made in the more modern testing and results improved marginally.

Current period (May 2012 to April 2013)

In the early part of the current period the focus was on further improving recoveries and grades achievable by gravity and flotation for the Upper Queen Hill ores.

The performance of each of the unit processes included in the process flowsheet; Heavy Media Separation (HMS), Sulphide Flotation, Gravity Separation and Tin Flotation were reviewed during the period. In most cases changes were made and tested to gauge their effect on grades and/or recoveries of tin into concentrate. Some improvements in performance were noted, particularly in terms of tin recovery from sulphide flotation. Achieving acceptable final tin concentrate grade continued to be a problem when treating the Upper Queen Hill ore.

At the completion of this part of the testing samples of Upper Queen Hill ore for lab testing were almost exhausted, consequently testing was moved on to the Severn ore (Composites 1, 2, 3 and 4 in table 1.1). Severn ore was also known to Aberfoyle and was identified as being easier to successfully treat than Queen Hill.

During the period the Severn ore was tested against the same flowsheet as Queen Hill. Results were superior in terms of grade and recovery of tin to concentrate from all of the unit processes, except tin flotation.

Four composites of Severn ore were tested over the period. During the testing some optimization of the chemicals and procedures was done. This included the use of more re-grinding and cleaning in sulphide flotation and the use of different collectors and depressants in both sulphide and tin

flotation. The results showed above target performance for grades and recoveries for the Severn ores.

Other methods of separating unwanted mineral species from tin bearing minerals were also tested including pre-flotation, complexing ions and separating ultra fine particles from tin flotation feed. Some of these alternative approaches yielded good results and will be followed up in the next period.

In the final part of the period another parcel of Queen Hill core became available (See ZQ125 in Table 1.1). This time the core was drilled from the lower part of the Queen Hill orebody. In earlier testing by Aberfoyle it was postulated that this ore would be easier to treat than the upper portion of the orebody. Current testing is underway to test that assertion.

TABLE 1.1 Drill Core Details

Diamond Drill Hole	BRL Project	Sample Numbers		Interval		Metres	Weight kg	Grade %Sn
		From	To	From	To			
QUEEN HILL Composite 1	Upper Tin Load							
ZQ93	T0587/T0630	94327	94332	75.7	80.0	4.3	25.4	0.92
ZQ94	T0587/T0630	94360	94365	64.0	70.0	6.0	37.8	1.30
ZQ95	T0587/T0630	94385	94385	62.0	62.7	0.7	3.8	0.60
ZQ97	T0587/T0630	94466	94467	57.0	58.2	1.2	3.2	0.70
QUEEN HILL Composite 2	Lower Tin Load							
ZQ96	T0587/T0630	94423	94444	85.5	107.0	21.5	77.5	0.90
ZQ98	T0587/T0630	94504	94509	95.0	100.0	5.0	28.7	1.56
QUEEN HILL Composite 3	Clarke's Load							
ZQ96	T0587	94405	94412	68.0	76.0	8.0	23.3	0.71
QUEEN HILL Composite 4	Lower Tin Load							
ZQ125	T0819	573371	573390	201.0	220.0			
QUEEN HILL Composite 5	Lower Tin Load							
ZQ125	T0819	573391	573612	221.0	232.0			
QUEEN HILL Composite 6	Lower Tin Load							
ZQ125	T0819	573613	573637	233	258			
SEVERN Composite 1								
ZS107W	T0714	94974	94979	531.0	537.0	6.0	10.4	1.09
SEVERN Composite 2 and Composite 4								
ZS110	T0714	5695	5762	255.0	263.0	8.0	20.2	0.92
	T0714	5809	5815	324.0	331.0	7.0	10.0	0.80
	T0714	5821	5828	336.0	344.0	8.0	12.3	1.77
ZS110W	T0714	5855	5861	324.0	331.0	7.0	6.6	1.20
	T0714	5885	5890	361.0	367.0	6.0	5.1	1.21
SEVERN Composite 3								
ZS113	T0714	6072	6099	276.0	304.0	28.0	40.5	1.46