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## ASX Announcement

20<sup>th</sup> May 2008

### TWIN HILLS MINE UPDATE – TEXAS SILVER PROJECT

The Twin Hills Silver Mine continues to progress towards increased silver production.

A second crusher is now installed and operating. This contract crushing circuit is additional to the previously announced upgrade of Macmin's existing crushing circuit. At present this contract crusher is crushing 100,000t medium grade ore which is on stockpile, to a size grade of 100% minus 20mm. When the upgraded Macmin crushing circuit is completed this product will be fed into the upgraded circuit, with the minus 4mm material being directly screened out and placed on the heaps and the remaining product will be further crushed to 100% minus 4mm and then placed on the heaps.

The Macmin crusher upgrade is proceeding, but as previously announced this will not be completed until the end of June and it is unlikely that full capacity will be reached until late July or early August.

The Macmin crushing circuit is presently crushing in excess of 20,000t/month to the required minus 4mm. Planning is proceeding to move to extended crushing hours, probably two eight hour shifts, but is still restricted by difficulty in hiring suitable personnel.

The initial batch of silver powder has been upgraded by removing impurities and is presently being converted to silver dore bars. Further batches of silver powder will be upgraded on a regular/semi continuous basis.

Heap Leach Pad One is now effectively completed with approximately 220,000 tonnes of ore stacked to an average height of 8 metres. This pad is approximately 55% under cyanide irrigation and is expected to progress to 100% under irrigation over the next few weeks. This should result in a substantial increase in silver leaching and subsequent silver powder production. Although this pad has been under construction for more than 12 months and has been partially leached of silver, irrigation and leaching, for various reasons, has not been continuous. To achieve continuous and complete irrigation of Pad One is a significant milestone.

Heap Leach Pad Two is approximately four weeks behind schedule and is presently being covered with a protective layer of fine material and a coarse drainage layer. Stacking of crushed ore will commence in the near future. This pad has a capacity to an 8 metre height of approximately 440,000 tonnes of ore. Irrigation and leaching of this pad cannot commence until a significant part of the pad has been built to the 8 meter height which may take two months.

The Merrill Crowe plant is presently being commissioned and initially will produce approximately one tonne of silver as a commissioning exercise to determine quality and characteristics of the product.



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Bob McNeil Chairman and CEO commented:

*“Firstly I would like to welcome Ian Gibson to the position of Chief Operating Officer. I am sure that Ian, together with other dedicated staff including John Magnussen, Warren Beynon, Mark Morrison and all the supervisors and employees at the Twin Hills site are making every effort to increase silver production at the mine. I thank them for their efforts and dedication.*

*We have had numerous requests by phone and email for details of the Twin Hills progress. Although these have been reported before we have described all aspects of the progress at the mine and the process including problems that have developed during commissioning, below. Firstly a brief description of heap leaching is probably appropriate.*

*Heap leaching was introduced in the 1970's as a means to drastically reduce gold recovery costs. It is also effective with silver in certain circumstances. This process has literally made many mines by taking low grade resources and transforming them into a viable mine.*

*Heap leaching involves placing crushed or run of mine ore in a pile built upon an impervious liner. Cyanide solution is distributed across the top of the pile and the solution percolates down through the pile and leaches out the silver/gold. The silver/gold laden pregnant solution drains out from the bottom of the pile and is collected for recovery by either carbon adsorption, zinc precipitation (Merrill Crowe), or in Macmin's case by Electrowinning. The barren solution is then recycled to the pile.*

*Heap leaching generally requires 60 to 150 days for processing ore that could be leached in 24 hours in a conventional agitated leach process. Recovery is typically about 70% as compared with 90% in an agitated leach plant. Even with this lower recovery performance, the process has found wide favour, due to the vastly reduced processing costs compared with agitated leaching.”*

### **1. Resources/Grade Control**

Resources were defined by earlier drilling and were used as part of the feasibility study. Grade Control drilling is/has been carried out to guide the accurate mining of silver ore. In some projects there are significant differences between original resources and mined ore. In the case of Twin Hills grade control drilling and mining has confirmed the original estimates of silver content of the ore. No problems have been identified with the resource.

### **2. Mining**

Mining is carried out using hired equipment operated, supervised and directed by Macmin Staff. Mining of ore and waste is proceeding to plan and there are no problems in this department.

### **3. Crushing, Agglomerating and Stacking**

To achieve satisfactory leaching/recovery of silver from the rock, the ore must be crushed or converted to size fractions of 100% minus 4mm size, including 50% minus 1mm size, **either by crushing or during blasting of the ore prior to mining.** At this ore sizing, feasibility studies suggested that 70/72% of the silver would be recovered. The minus 4mm fraction is then agglomerated or mixed with cement and lime to achieve a better product for leach solution percolation and the required pH of 10. It is then stacked on the heap or heaps for leaching.

The commissioning showed that the crushing circuit as specified by the feasibility study, and operated on a single shift basis was inadequate to achieve sufficient crushed material. The reasons were: maintenance problems with the crushing circuit; the inability to hire sufficient trained operators to run more than a single day shift; and inadequate screens to remove the fine fraction early in the crushing process. For example, when blasted, the ore contains 15 to 30% of the required size (i.e. less than 4mm) which does not require further crushing. However, the present circuit required all that material to traverse the crushing circuit as the size screens incorporated in the current circuit were inadequate to remove the fines at an early stage in crushing. This resulted in “clogging up” of the circuit and maintenance problems. Alternatively, if crushing could have been

maintained on a 24 hour basis this problem could have been partly offset. Because of intense competition for trained operators in the mining industry at present, we can not hire sufficient trained personnel and consequently we have had to train our own operators. This is time consuming. A further unanticipated problem is that the ore is harder and more abrasive than predicted.

These problems have been resolved in several ways:

- a Macmin crusher upgrade is underway whereby major additional screening capacity has been incorporated into the circuit. Unfortunately it has taken more than 6 months from when a decision to proceed with the upgrade was taken, to completion due to the general shortage of equipment for the mining industry.
- a second contract crusher has been added to the circuit to provide an initial crush size of 100% minus 20mm.
- closer drill and blast patterns have been incorporated in the mine plan to produce as much minus 4mm product as possible without crushing.
- initially move to a 10/12 hour day crushing shift, and to two by 8/10 hour shifts in the near future.
- install a contract crushing supervisor on site from contract crushing organisation Pacrim.

Our initial target is to place 60,000 tonnes of minus 4mm material on heaps/month, moving to 100,000/120,000 tonnes/month as ore grades decrease. This latter target may require further crushing capacity.

The timing of achieving the initial objective of 60,000 tonnes/month on to the heaps is difficult to predict, but unlikely to occur before August 2008.

Stacking of ore on the heaps using conveyers and “grasshoppers” was found to be unsatisfactory, and we have moved to stacking by trucks. This does not appear to impede solution circulation.

#### **4. Heap Leaching**

After being placed on heaps 8 metres high, the ore is saturated with cyanide leaching solution which dissolves the silver. The solution (pregnant solution) with the dissolved silver is collected and stored in specially constructed and covered ponds.

To date, leaching has not been continuous. This was caused by several factors: the fact that Leach Pad One is only now being completed; because of experimentation with various ways of applying the leach solution such as sprinklers and drippers; use of different volumes of solution; accumulation of silt in the ponds caused by early rain events; and other minor factors.

All these factors have now been remedied and we will commence complete and continuous leaching of Pad One within the next two weeks.

Leach rates are still uncertain because of the irregular irrigation of parts of Heap One, however, tests suggest that leaching rates will be slower than predicted in the feasibility study and it may take more than the six months predicted in the Feasibility Study to extract the predicted 70/72% silver from the heaps. At this stage we have no evidence to suggest that recoveries of 70/72% will not be ultimately achieved. The problem in slower leach rates is that we will not be able to proceed with a second lift to the pads, as originally planned, as early as anticipated (to a height of say 16 metres). Thus additional leach pads may need to be constructed for continued silver production.

## 5. Silver Powder Production

The silver is extracted from pregnant solutions using an electrowinning process. This EMEW plant contains 180 cells, is modular, and can be relatively easily increased in capacity.

The EMEW plant is now running on a 24 hour/7day schedule. Each cell in the plant has not produced at the rate specified by the manufacturers, Electrometals Ltd, but by experimentation, its capacity is gradually being increased. Problems have also arisen with the coatings on some anodes and these have now been replaced. As the plant was designed with at least 50% overcapacity, the reduced capacity of each individual EMEW cell is not expected to be a problem with production in the near term, but could restrict expansion.

The leaching solutions from the heap carry 60 to 90g/t silver. The EMEW plant has shown to be inefficient in extracting or reducing the silver in leach solutions below 40g/t silver. These "barren" solutions which still contain 40g/t silver are then recycled to the heap, with further dissolved silver rebuilding the solutions to 60 to 90g/t silver. There is a concern that it is inefficient to recycle solutions with as much as 40g/t contained silver. Consequently a Merrill Crowe plant has been installed to remove further silver to much lower concentrations. The intent is that silver will be reduced to 40g/t by electrowinning, then pass through the Merrill Crow which will reduce silver content to less than 10g/t. This "barren" solution will then be recirculated to the heaps.

Alternatively, at present, as we ramp up irrigation, the barren solution is diluted with additional fresh water to reduce the silver content to acceptable levels.

The Merrill Crowe plant is presently being commissioned and should be "on line" in the near future.

## 6. Marketing

The silver powder produced is very fine grained with a size range of 72% less than 20 microns.

Some of the silver powder is presently being sold "as is" for specific applications. However an unexpected side effect of the EMEW plant is that it also extracts some other metals and the silver powder produced to date contains contaminants which are unacceptable to some buyers. These are removed before smelting and this being done successfully in Melbourne, Australia. The silver powder can then be smelted, refined and sold.

Alternatively we are still discussing offers to purchase the powder "as is". In this matter we are attempting to maximise the return to the Company.

Yours faithfully,  
**MACMIN SILVER LTD**



R.D. McNeil  
**CEO/CHAIRMAN**

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