

# Las Cruces



*Las Cruces is an open pit mine located in southern Spain.*

Location	Spain
Ownership	70%
Type of mine	open pit
Primary metal	copper
End product	copper cathode
Expected mine life	2024
Average reserve grades	copper – 6.3%
Infrastructure	well maintained all-weather paved roads provide excellent access to the site
Employees	222
Contractors	422

## Key data

Production		2010 objective	2009 results	2009 target
Tonnes of ore processed (thousands)		930	107	479
Tonnes of unprocessed ore (thousands)		129	4	133
Strip ratio		1.3	2.5	0.3
Copper grades	cathode (percent)	6.6	6.3	8.8
	unprocessed ore (percent)	13.9	12.3	14.0
Plant recoveries (percent)		92	82	88
Copper production	cathode (tonnes)	55,000	5,600	37,200
	unprocessed ore (tonnes)	18,000	–	17,400
Cost per tonne of ore processed (subsequent to commercial production) (C\$)		\$ 122	n/a	\$ 167
Capital expenditures (thousands) (C\$)		\$ 75	\$ 139	\$ 133

## Operations review

### 2009 PRODUCTION RAMP-UP

#### Permits

We restarted mining operations at the end of April after authorities lifted a regulatory suspension that had been in effect since May 2008. Ore was delivered to the process plant at the end of May and the first cathodes were extracted in early June.

#### Mining

We mined a total of 6.2 million bank cubic metres of material this year, including 209,000 tonnes of ore grading 6.0 percent copper. Of the ore mined, more than 100,000 tonnes remained in the run of mine stockpile at the end of the year. This will be blended and fed to the plant if mining is interrupted.

### Production

The grinding and leaching areas of the plant performed well throughout the ramp-up, and the agitated leach reactors regularly returned copper recovery values of higher than 90 percent. We tested the electrowinning and cathode stripping operation at the design capacity of 250 tonnes per day and the solvent extraction area operated without any significant issues. Cathode quality reached 99.999 percent copper, exceeding our expectations.

We did not, however, achieve commercial production and produced 5,600 tonnes of copper cathode compared to our estimate of 37,200 tonnes.

A number of equipment failures and operational issues delayed the ramp-up of the plant. Most of these were related to corrosive failure of plant components that were not adequately protected from high temperature and high acidity levels, and have been addressed or will be remediated and resolved in the first quarter of 2010.

## Las Cruces

- One of the reactor agitators failed in early August because corrosion protection failed. As a preventive measure, we removed and inspected all eight of the agitators, and made improvements to the rubber acid protection. We have no indication of any subsequent damage since the repairs and maintenance.
- The leach thickener's corrosion protection failed, causing the drive mechanism to fail completely. As a temporary solution, we cleaned the thickener for repair and inspection, and created a new drive tube with thicker rubber protection. The rubber protection was damaged again in October by flex in the shaft and the thickener structure, causing the shaft and the diffusion cone to come in contact. New stainless steel components and other structural improvements will be installed in the first quarter of 2010.
- There were issues around the proper feeding arrangement of the band filters and the operation of the discharge conveyors that dewater and transport the leach residue before final disposal. Plugging of the fences in one of the SX settlers and initial errors in the installation of the pre-neutralization thickener rakes resulted in additional delays.
- There were pipe leaks and control problems associated with the operation of the grinding and neutralization thickeners.

Both thickeners were eventually drained and cleaned out before

being returned to service with new operating parameters and procedures. They have operated as designed since that time. Filtration and conveyor operation improved by the end of December and we have scheduled additional modifications to the conveyor system to prevent blockages.

Throughput improved significantly in November: we processed 41,000 tonnes of ore, produced 1,500 tonnes of cathode and built up our in-process inventory. We also gained important operating experience over the month as we adjusted the plant to changing conditions and throughput rates.

Because of record high rainfall in the last two weeks of December, we had to use the high density sludge neutralization water treatment plant to reduce the critically high water levels in the process ponds, rather than to treat additional process water, which reduced plant throughput significantly.

Pond level management and the capacity of the neutralization plant limited production in early January. The re-direction of the neutralization plant solids to one of the tailings filters removed the water treatment bottleneck and allowed the treatment plant to operate at designed levels. Additional filter capacity will be needed to increase overall plant throughput above an estimated two-thirds rate later in the year and both temporary and permanent solutions are under investigation. We are confident that we can add temporary filter capacity to reach our stated ramp-up goals.

### CAPITAL UPDATE

The following table shows total spending for the project to the end of December 2009 and our capital objective for 2010:

	Up to December 31, 2008	January to December 2009	Total project at December 31, 2009	Objective 2010
(millions)				
Construction capital	€ 448	€ 56	€ 504	€ –
Mine development	6	14	20	13
Permanent water treatment plant	–	5	5	12
Sustaining capital and plant improvements	–	9	9	35
Capitalized interest	18	6	24	–
Pre-operating costs capitalized, net of sales, working capital and other	30	(2)	28	(11)
Capital expenditures	€ 502	€ 88	€ 590	€ 49

### Outlook for 2010

We believe that our ability to dewater the solids from the neutralization plant is a bottleneck to throughput. Solids are dewatered in a filter press and stored in the residue tailings facility as stackable filter cakes. The filter has not been performing at designed rates because of the nature of the material. Additional filter capacity will be added to ensure we can reach full plant capacity later in the year. We estimate we are lacking approximately 10 tonnes per hour of capacity for the neutralization plant sludge that we will add on a temporary basis until the permanent equipment is installed.

The maintenance shutdown in March is expected to last 14 days and involves 800 contract workers to complete a large number of projects geared towards improving plant reliability and throughput. Most importantly, failures associated with thickener corrosion and plugging of the plant discharge conveyor will be corrected permanently.

We now expect to reach commercial production (about 60 percent of design capacity) in May 2010 and design capacity (72,000 tonnes of copper cathode per year) by August 2010. We plan to produce 55,000 tonnes of copper cathode and 18,000 tonnes of copper contained in ore to ship directly to smelters, as long as market conditions persist and permits are in place.

We have developed a plan leading to full production rates in August that incorporates the above plant improvements, as well as operational and reliability-centered improvements. As well as addressing technical improvements, we are committed to improving overall performance through operator training and the organization of project execution teams. Our available resources include a comprehensive group of outside experts assisting in our ramp-up program.

A substantial capital spending program is planned for 2010. Many of the planned expenditures will be one-time charges with ongoing benefits to the operation. In total capital spending of €60 million is forecast to:

- complete the permanent water purification plant
- complete phase two of the DRS system
- advance stripping in the pit
- complete a series of plant improvements to enhance reliability and ensure design throughput.

## 2010 OUTLOOK FOR OPERATING EARNINGS AND OPERATING CASH FLOW

Las Cruces did not achieve commercial production in 2009 and as a result has no operating earnings to report.

Based on our production objectives, market factor assumptions found on page 27 and assuming we achieve commercial production in May 2010, we expect operating earnings and operating cash flows to be:

100% Objective 2010

(millions of Canadian dollars unless otherwise stated)

### SALES ANALYSIS

Copper sales during commercial production (tonnes)	67,000
Gross copper sales	\$ 465
Smelter processing charges and freight	(34)
Net sales	\$ 431

### COST ANALYSIS

Tonnes of ore milled (thousands)	810
Direct production costs (per tonne)	\$ 122
Direct costs of production	\$ 98
Depreciation and other non-cash costs	66
Operating costs	\$ 164
<b>Operating earnings</b>	<b>\$ 267</b>
<b>Operating cash flows</b>	<b>\$ 323</b>

## Planning for the future

Implementation of the provisions of the Global Plan will significantly assist both the plant and the mine in meeting their objectives. The additional dewatering wells, and the water management flexibility, approved in the plan will reduce the quantity of water flowing into the pit and the resultant water treatment load in both the plant and in the permanent water purification facility. The permanent water purification plant itself will supplement the neutralization plant and provide treatment flexibility during maintenance periods.