A Noble Quest: The Search For Gold in Saskatchewan

By Janet MacKenzie

7 March 2003

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Saskatchewan is fortunate to have extensive areas of Precambrian shield from which gold has been extracted for more than a century. The amount† of gold still trapped in these 1.8 billion year old rocks is unknown, but the potential is huge.

Just What Is Gold?

A heavy, dense, soft and malleable yellow metal, gold is relatively rare on the planet. It does not easily combine chemically with other elements and is usually found as microscopic particles within cracks in other minerals such as iron and copper. Its rarity, malleability and special properties have made gold extremely valuable in centuries past. Gold continues to be valued in the present and will certainly play an important role in the future.

What is Gold Used For?

Beyond the attractiveness and value of gold as jewellery, ceremonial artifacts and currency and medals, it is prized for its industrial applications. It is resistant to corrosion, conducts heat and electricity well, and reflects both visible and infra red light, properties which make it very useful in electronic applications and in the space industry.[1] Gold is used for speciality switches and electrical contacts, in dentistry, and for many other uses including decorative gold wire, gold leaf in books, sculpture, and building interiors, reflective coatings on glass, coatings on satellites, spacecraft and aeroplane windows, laboratory equipment and chemical manufacturing.[2]

How is Gold Produced?

Over the years, many family incomes were supplemented by small amounts of placer gold painstakingly panned from the sand and gravel bars of the North Saskatchewan River. A wide dish was filled with sand and agitated under water to remove the lighter sand and gravel, leaving the heavier gold particles behind. Sometimes the gravel was put through a sluice box which sped up operations by allowing a single person to process much more sand and gravel than was possible with a gold pan. As water washed over wooden "riffles" in the box, particles of gold dropped to a catchment below. In both panning and sluicing, mercury was used to attract the minuscule gold flakes isolated from the sand. With the price of gold at $20 per ounce in 1931, a lucky panner could make one or two dollars a day.[3] Dredging of sand and gravel was done is some areas by small outfits. Large amounts could be processed quickly. Methods have changed little over the years, but have become more mechanized and efficient. Panning for gold is now a recreational activity.

In underground mines, tunnels are blasted a few metres at a time and the debris carried away by remote control loaders. When the tunnel reaches the ore containing the gold, the rock is blasted, trucked to the surface, crushed and ground into a fine powder. The fines are then processed to

[1] Saskatchewan Interactive, "Mining: Base and Precious Metals," Gold, University of Saskatchewan, http://interactive.usask.ca/ski/mining/search/mineral_types/base/gold.html

[2] Ibid.

[3] Elk Point Historical Society, "River Gold," http://www.elkpointhistory.ab.ca/Steve/North%20Sask/river_gold.htm

% The term "noble metal" describes a precious metal highly resistant to chemical reactions. Gold and silver are two examples.

separate out the gold particles, which may amount to a quarter of an ounce per tonne of rock. Gold is also produced as a by-product of base metal and uranium mining.

Today, the price of gold has risen above $500 US per ounce. The economic impact of the modern gold mine, and other mines, is spread out across the country, as employees fly in to work 11 hour, seven day shifts for six weeks and then fly home to Newfoundland, British Columbia or La Ronge for their three week break. Most workers are from northern Saskatchewan. Since the days of the mining town are gone, economic losses when a mine shuts down are also shared across the country.

A History of Mining Gold in Saskatchewan

As early as 1859, gold was discovered in the sands and gravels of the North Saskatchewan River and its tributaries by prospectors on their way to the Caribou gold rush area in British Columbia. When the North Battleford bridge was being constructed, tall tales of finds of nuggets heavier than one ounce were the stuff of beer hall boasts.[4] Panning, sluicing and dredging operations produced small amounts of gold from the early 1900s on and was especially popular during the difficult times of the 1930s and early 1940s.[5]

Free gold in quartz veins was discovered in Saskatchewan for the first time in 1910, along the north shore of Pine Channel of Lake Athabaska. Shortly after, in 1914, quartz vein gold was found in eastern Saskatchewan at Amisk Lake near Creighton and Flin Flon. Prospecting in the 1920s and 1930s identified deposits in areas such as La Ronge, Flin Flon and Beaverlodge. Mines of the 1930s and 1940s included the Box Mine near Goldfields on Lake Athabaska and the Prince Albert, Graham and Henning-Maloney mines near Flin Flon.[6] During the war, restrictions on equipment, parts and labour and the low fixed price of gold forced all operators to close.[7]

Until the 1980s about 90% of Saskatchewan's production was harvested as a by-product of copper-zinc mining by the Hudson Bay Mining and Smelting Company at Flin Flon.[8] Then the first major gold exploration initiatives got underway, resulting in new detailed maps and many new discoveries. Old mines were also redeveloped. At Cluff Lake, gold was extracted as a byproduct of uranium mining. By 1988, exploration investment peaked at $55 million, focussing on the La Ronge volcanic belt and the Glennie Domain.[9] In 1987 the Star Lake Mine, the first mine devoted exclusively to gold in 50 years, began production in the La Ronge belt. By 1989, after producing almost 77,000 ounces, the deposit was mined out.[10] The Jolu Mine produced more than 200,000 ounces from 1988 to 1991.[11]

[4] Canoe Saskatchewan, "A Brief Description of Major Gold Deposits of Saskatchewan," http://canoesaskatchewan.rkc.ca/geology/gold.htm

[5] Elk Point Historical Society

[6] Saskatchewan Interactive.

[7] Ibid.

[8] Saskatchewan Industry and Resources, "Gold," http://www.ir.gov.sk.ca/Default.aspx?DN=3552,3541,3538,3385,2936,Documents

[9] Ibid.

[10] Saskatchewan Interactive.

[11] Ibid.

† The most common unit of measurement for gold, and other precious metals, is the troy ounce. In the troy system of weight there are 12 ounces to the pound rather than 16, and while a regular ounce weighs 28.34953 grammes a troy ounce weighs 31.10348 grammes.

The deposits at Contact Lake, in Lac La Ronge Provincial Park, is estimated to contain over 337,000 ounces.[12] The first gold pour was in 1995. The project is a good example of modern mining in the province, where environmental concerns dictate construction. The mine and its buildings were hidden from view amongst the trees. The mill was built partly underground to contain the noise. The few trees that were removed were used for firewood in the park When the deposit was mined out in 1998, decommissioning procedures were undertaken to return the area to its natural state.

Saskatchewan's most famous gold mine, the Seabee Mine located 120 kilometres northeast of La Ronge on Lake Laonil, began operations in 1991, producing over 718,000 ounces to date.[13] Recently, the underground mine had reached depths of 800 metres. Previously accessible only by ramp, with the installation of a shaft and hoist capacity was increased to 800 tonnes per day and costs were reduced by 22% between 1997 and 1998. A record 60,200 ounces of gold were produced in 1998. Since production began, more than 2.1 million tonnes of ore have been processed at an average 92.1% recovery rate, resulting in more than 500,000 ounces of gold. At present, Seabee is extracting high grade ores in the lower levels of its mines and is planning work on the nearby Currie Rose discovery which has higher gold content per tonne than the Seabee.

As of 2003, Seabee is still going strong. Despite the fact that it is one of the lower cost producers in North America, Seabee and other companies involved in gold mining in the province were adversely affected by the low gold prices at the turn of the century. Due to the higher price of gold over the last few years the gold industry in the province has seen increased production capabilities and the growth of exploration.

The major environmental concerns in gold mining come from the use of cyanide in the processing phase and the heavy metals present in the extracted ore. These hazardous materials are contained in trailing ponds. Here they can be safely monitored. The surrounding areas are also carefully monitored for any signs of contamination.

How Much Gold Does Saskatchewan Produce?

Canada ranks fourth in world gold production, behind South Africa, the United States and Australia. These countries, with Indonesia, account for about 55% of the world's production. Saskatchewan's production, though rather small at present, has great potential. In 1997, the province produced 131,500 ounces of gold, with a value of $67.5 million.[14] The depressed gold prices at the beginning of the new millennium adversely affected both production and exploration. In 2000, Saskatchewan produced 1,863 kg. of gold, valued at $24,788,000.[15] However with the resurgence in the price of gold the industries future in the province is once again looking bright.

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[12] Ibid.

[13] Claude Resources, "Corporate Profile," http://www.clauderesources.com/html/profile.html

[14] Saskatchewan Industry and Resources, "Annual Report," http://www.ir.gov.sk.ca/adx/asp/adxGetMedia.asp?DocID=4157,3088,2936,Documents&MediaID=15406&Filename=05-06+SIR+Annual+Report.pdf. Page38

[15] Statistics Canada, Manufacturing, Construction and Energy Division, "Canada's Mineral Production: Preliminary Estimates 2001," Catalogue No. 26-202-XIB, 2002. Page 15.