CONFERENCE REPORT

PDAC 2001 Prospectors and Developers Association of Canada

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About 7000 people from more than 70 countries attended this event at the Metro Toronto Convention Centre. It is always a pleasure to attend meetings as well-organized as this one. One reason for success is that PDAC meetings are audience oriented: despite the huge attendance, the technical program had a minimum of concurrent sessions (three maximum) with a total of only 88 papers (several not given). This makes for a less frantic meeting than a typical GAC or CSPG meeting with its myriad presenters on a multitude of topics. Topics and speakers were carefully chosen to be informative and challenging. The Toronto Stock Exchange was the major convention sponsor with 33 additional sponsors at lesser levels. Many consider the annual PDAC meeting as *the* annual global mining meeting, a view supported by Canada's major international presence in mining.

FORMAT

Fifteen half-day technical sessions made up the formal part of the meeting. Less formal sessions included the 35+ Exchange Forum presentations by mining and related companies. The informal part of the meeting included Core Shack presentations, the Investors Exchange, and the Trade Show, all consistently busy. There were three short courses, two luncheon events, a Student Careers Forum, an Awards Banquet, Mining Night, Gala Evening Dinner, many receptions, and a guest program. **Professional registrants packages** included the well-organized Convention Program; an Abstracts volume for the 88 scheduled technical talks and 26 Core Shack presentations; and the annual PDAC publication, *Exploration and Development Highlights*, covering all of Canada, and including a list of 226 international mineral development projects in which Canadian companies have an interest, in 54 countries from Angola to Zimbabwe. **New/novel features** of the meeting included a speakers corner following technical papers, and the availability of videotapes of all of technical papers for purchase.

MAJOR TECHNICAL SESSIONS

Metals, Minerals and Markets

An opening Sunday afternoon technical session featured papers on each of: gold; platinum, palladium and silver; diamonds; copper; nickel; and zinc. Several speakers mentioned the importance of the United States economic recovery to mineral production/exploration: will recovery take the form of the much-hoped-for V shape, the less desirable U shape, or the dreaded L shape, as has characterized the Japanese economy for the last decade? Whatever recovery model is chosen has a dramatic effect on predictions made. The last 2-3 years have been difficult, but there is cautious optimism that the worst is over.

On gold, although jewelry demand has held up and demand tends to exceed supply, sales by the central banks have more than made up the difference. Barring a major shock, the future looks like the present. There is excitement about platinum group metals (PGMs) where demand exceeds supply, reflected by soaring prices. Canada has many low-grade nickel deposits unsuitable as nickel mines but with PGM potential. Diamonds remain the darling of the exploration community. The United States now consumes about 47% of the highest quality diamond market. Canada is eighth in world production, but by 2006 should be third, after Botswana and Russia. The short-term outlook for copper depends on the nature of the U.S. recovery. Weak demand and low prices are part of the general problem of commodity prices that are those of the 1970s. Of base metals, nickel has fared best. About two-thirds of nickel production is used in making stainless steel, and this market has grown at about 5.5% per year for the past 15 years. Overhanging the market is the enormous volume of Russian nickel-containing scrap material. Zinc is a modern space-age metal with many uses: nevertheless the price has been declining, as for most metals. Although zinc demand is rising at ~4% per annum, for a variety of reasons zinc producers have not had returns to shareholders proportionate to zinc's contribution to the economy, despite a recent 30% reduction in the costs of production. Increasing use of zinc cladding should underlie a rosy future for the metal.

Mining Perspectives

This Keynote Session featured five papers. Continuing problems for the global mining industry are the difficulty of raising capital, the fact that the industry is out of favour, and low commodity prices. One year ago the dot-com mania rocketed the NASDAQ market to a peak over 5000; by March 2001 more than 60% of these gains had been lost in the massive tech stock collapse. So this meant that investors fled the new economy and headed for the safety and comfort of so-called old economy mining stocks? Unfortunately, no. Investors remain skeptical about mining stocks, which collectively, at best, have returned well

below 10% per annum. And mining capitalization sits at less than 1% of global capital markets. What to do? One part of an answer in Canada is to make mining investment more attractive, and that is the goal of the "super" flow through-shares program — the 15% non-refundable tax credit — introduced by the Government of Canada in October, 2000. This seems to be succeeding: investment is up, and there was more media interest at this meeting than usual recently. Programs such as the "Global Mining Initiative," or in Canada "Mining Matters," promote mining, showing that it is an important industry contributing to the economic well-being of many countries, and is now being conducted with minimum environmental disruption. Consolidation should help keep excess capacity down, but a key aspect of consolidation lies in the introduction of financial discipline. Advice to the industry from a capital source: focus on returns, learn to live with consolidation, and manage public perception better!

Although ~13% of world mineral exploration dollars are spent in North America, levels of exploration are low compared to elsewhere because of public perceptions against mining, the difficulty of permitting, and political issues such as the Voisey's Bay impasse. Recent corporate priorities have had to focus more on shareholder returns than on production growth, and this should be positive in terms of raising capital. Just before the meeting, Inco, Cameco and Teck reached 52-week highs in stock prices, grounds for optimism. In the developing Americas, all countries are vulnerable to a U.S. economic downturn. Brazil may be most promising for mineral exploration, but disruptive political developments in Argentina, Colombia, Peru, and Venezuela increase the risk level of exploration there. With the change of government in Mexico, the future should be brighter.

Australia is a major mining success story. The government is supportive and there is a favourable tax regime: thus the Australian mining and energy industry is worth about US$90 billion in export earnings. Some 60 % of the world's mining computer software comes from Australia. Australia also supports research on mining and mineral deposits generously. Africa is a land of contradictions. Although ~43% of the world's gold has been produced from Africa, the risks for mining are high, including political unrest, poverty, civil wars, AIDS, limited/no infrastructure, and limited geological information. Yet the prospect of significant discoveries that can change the economic future of individual countries is high: the Orapa diamond deposit in Botswana is responsible for ~65% of the country's gross domestic product. Mining may offer the best long term hope for African prosperity.

New Discoveries and Developments

This full-day session had 13 papers, nine on properties/mines in foreign locations, and four from Canada. Two Canadian papers on VMS Zn-Cu deposits: Perseverance, Matagami, Quebec; and Triple 7, Flin Flon, Manitoba, outlined major new deposits in these mature camps: nothing like exploring in your own backyard! The Hope Bay gold deposit, Nunavut, is a new discovery in a major Archean greenstone belt. The high-grade Snap Lake diamond deposit of the Northwest Territories is hosted by a nearly flat-lying kimberlite dyke, an unusual occurrence. Acquired last year by De Beers Canada, Snap Lake is due to go into production in 2004 as Canada's first underground diamond mine. Most of the nine foreign papers considered large tonnage, high-grade/low production cost deposits in which Canadian-based companies either are operators or have a strong interest. Six of those presented are gold deposits, two in Western Australia including the Carosue Dam deposit, projected to yield an after-tax return on investment of 27%, and the Wallaby deposit, one of the largest gold deposits found in Western Australia recently. Other gold deposits outlined were Veladero from Argentina; Rosia Montana from Romania; Julietta from Russia; and Geita from Tanzania. Other deposits featured were the Koniambo nickel-cobalt laterite deposit from New Caledonia; Tambo Grande, a VMS Cu-Zn-Au-Ag deposit in Peru; and Dairi, a high-grade zinc-lead deposit in Indonesia.

OTHER TECHNICAL SESSIONS

Mining – Socio-economic Challenges for the New Millennium

This full-day session scheduled 12 papers; two were withdrawn. Topics included a global overview of environmental issues, sustainability and risk, social challenges, and examples of how these issues play out locally. Two presentations stood out: One was on the great progress made at Cominco's Red Dog mine in Alaska, the world's largest zinc mine, in working successfully with native communities, which now comprise ~60% of the mine work force. In spite of many setbacks, this project is a model of mining company-native inhabitants co-operation, based on trust. The other presentation considered public understanding of the mining industry. Many assumptions have been wrong here: the public *is* more supportive of mining than generally believed. Focusing on government decision-makers, local communities, and school-aged children is likely to be more successful in improving the mining industry image than costly strategies focussed on the general public.

Diamonds: Canada's New Best Friend

A few highlights from this well-attended half day session: Precise dating of 70+ Canadian kimberlites shows a predominantly Jurassic eastern province, a central Cretaceous corridor, and a western mixed Precambrian to Tertiary province. How kimberlite age may relate to diamond potential is under active study. Micro-diamonds can be used to predict macro-diamond content and grade only as part of the total diamond content, not in terms of numbers of individual microdiamonds. Kimberlite prospects should be evaluated with great care, concentrating on quality of: the data; geological modelling; estimates; and risk, low *versus* high. In the United States, the 45-54 year-old baby-boomer generation makes ~26% of diamond purchases. Although more than 80% of perfumes are sold under a brand name, only about 13% of diamonds are sold as brands, so there is considerable opportunity for brand creation, a strategy being pursued by De Beers.

PGMs: Exploring For and Mining These High-tech Precious Metals

With the dramatic increase in PGM prices there is great interest. Projects producing PGMs at advanced or renewed stages of development include the Stillwater Mine in Montana, where the 22

gm/t combined PGM production is the highest-grade production in the world, and the Bushveld Complex of South Africa, where existing metal mines are being redeveloped as PGM producers. Other areas like Finland and Alaska have potential, but are at early exploration stages. Canada, with one operating mine near Thunder Bay, Ontario (North American Palladium Ltd.) has many prospects, from layered intrusions such as the Muskox Complex in Nunavut and the Fox River Sill in Manitoba, to contact margin settings around mafic/ultramafic intrusions, and certain massive sulphide deposits with PGM enrichment. Here the challenge will be to develop descriptive-genetic geological models/criteria that can reduce the large number of mines/settings/showings to a reasonable number with highest potential. Meanwhile the uses for these metals are growing; prices are predicted to be robust for at least 3-5 years.

Mining Finance, the New Environment

The problem of raising capital persists. While returns on invested capital remain at 5% or less, as they are for too many projects (particularly gold, with the low gold price), the industry remains unattractive even with the recent dot-com collapse. Messages delivered include: press on with consolidation, adopt financial discipline, shut down unprofitable production, stop competing with each other and collaborate instead, while seniors consolidate to achieve greater capital market recognition, juniors can explore, better research/market support is needed for most mineral commodities. These suggestions seem reasonable: a common view is that much better returns on invested capital could do a great deal to brighten the image of mining.

Geophysics; Open Sessions

Now that deeper targets are sought, geophysical techniques are ever more important. Talks discussed techniques, often EM, IP, and others, but sometimes new approaches like 3D seismic and district-scale gravity surveys. Success stories include the discovery in the Matagami camp of the Perseverance Zn-Cu deposit, only 30 m below surface, using geophysical methods to discover shallow magnetic +/- conductive targets; also use of electromagnetic techniques to discover unconformity-hosted uranium deposits in the Athabasca Basin. Open sessions covered all kinds of topics from diamonds in India to mine financing in these difficult times.

LUNCHEON ADDRESSES

The Mineral Outlook Luncheon featured an address by Gary Ralfe, Managing Director, De Beers Group of Companies, titled "**De Beers in the 21st Century.**" With De Beers becoming a private company on 1 June 2001, controlled by Anglo American, the Oppenheimer family and Debswana (a diamond company owned by De Beers and the Botswana government), De Beers future lies in becoming *the* choice diamond supplier, reflecting the highest quality and ethical standards. De Beers expects to open diamond retail stores within two years, in partnership with the French luxury goods marketing company, Moet Hennessy Louis Vuitton (LVMH), and will focus on sales and marketing. This should position De Beers as "the" major brand name in diamonds. With one of the world's best known advertising slogans, "a diamond is forever," marketing is well underway.

The PDAC-CIM Luncheon featured an address by Jay Taylor, President and CEO of Placer Dome Inc., titled "**Investing in the global mining industry: One company's perspective.**" The fact that mining is out of favour is one indication that our society has become separated from the source of its wealth. Gold has lost about 30% of its value in the last 4 years. Copper prices of 80 cents per pound in 1973 are still 80 cents per pound, because of technological improvements: adjusted for inflation, it should sell at $3.35 per pound. Two factors should underlie a better future: 1) These kinds of commodity prices are unsustainable over the long term; and 2) Minerals are crucial to the welfare of developing countries, as well as to maintain our advanced society. Copper consumption can be seen as a quality-of-life barometer: in richest countries, each person "consumes" about 25 pounds of copper, whereas in India, each person gets by with about a third of a pound. In improving the standard of life on this planet, mining has a critical role to play.

CORE SHACK PRESENTATIONS

Some 26 mining properties/districts were reviewed in two sessions; 16 were Canadian, including: Diamonds: Buffalo Head Hills Kimberlite District of Alberta. Platinum group elements +/- Ni, Cu, Co, Au: Gayot, Midrim, and Raglan, Quebec; Ferguson Lake, Nunavut; and Totten, Ontario. Gold +/- Cu, Zn, Ag: Morrison, Hearne Hill, and Red Mountain, B.C.; Seebee, Saskatchewan; Watts River, Manitoba; and Vault, High Lake, and Hope Bay, Nunavut. Cu-Zn VMS deposits: Triple 7, Manitoba; and Perseverance, Quebec. Tantalum: Lilypad Lakes, Ontario. These informal core shack presentations, meeting highlights, permit first-hand examination of samples, maps and data, and informal discussion with company representatives.

EXHIBITS

The Trade Show had >240 booths representing >200 exhibitors. The PDAC and Noranda-sponsored Investors Exchange had close to 160 booths, many (~136) for the whole meeting, with the remainder exhibiting in either the first or second half of the meeting. Combined with the many Exchange Forum presentations, this format offered opportunities to examine many companies and prospects in detail. One could easily spend all of the meeting in the Exhibits area.

MORE INFORMATION

PDAC's website, www.pdac.ca, has further information on this conference and on all of PDAC's activities. PDAC can also be reached by e-mail at info@pdac.ca. There may be copies available of the Convention Program, Abstracts volume, and Exploration and Development Highlights, given out at the meeting. Further information on the "super" flow-through shares can also be obtained from PDAC. Information on the video cassettes available of all technical talks at PDAC 2001 can be obtained from PDAC, including how to order these. With the high level of interest in platinum group elements, CIM is planning a new volume on PGEs to be published in 2002, and to be edited by Louis Cabri. More information about this volume can be obtained from the CIM Geological Society's website: www.cim.org/geosoc.