Mining Millennium 2000 Prospectors and Developers Association of Canada and Canadian Institute of Mining, Metallurgy and Petroleum annual convention and trade exhibition

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More than 10,000 delegates convened at this mammoth joint venture of CIM and PDAC, 5-10 March 2000 in Toronto, Canada, the largest mining convention ever held in Canada. The venue, Metro Toronto Convention Centre, is convenient, rooms are large and well-ventilated, acoustics and lighting are excellent, and moving from session to concurrent session is simple. A meeting of this size and complexity requires a large and dedicated organizing committee and generous sponsors: all present. The three Patron sponsors were Caterpillar, Komatsu and Rio Algom: there were a large number of additional sponsors. Co-Chairs Patricia Dillon of the University of Toronto and President-Elect of CIM, and Gerald Harper of Gamah International Limited and President of PDAC, and their dedicated organizing committee deserve much praise for the excellence of the meeting. Conferences of this size, scale, and high degree of success don't just happen, they require enormous effort. Well done all.

FORMAT

The Sunday afternoon before the main meeting featured two concurrent sessions: Orebodies for the New Millennium (Grasberg, Mount Isa, Noril'sk, Witwatersrand, Kidd Creek, Orapa) and Precious and Base Metals Outlook. This focus on success was a good start to the meeting, which took place at the approximate time of the zenith of the dot.com mania, widely disturbing to many because of the flight of capital from mining to the surreal dot.com world. The six deposits featured have unique lessons for those in exploration, and there is optimism among base and precious metals explorers.

Main technical sessions took place from Monday to Friday. Some 260 papers were delivered, with abstracts included in the Convention Program (and abstracts) volume for 236 papers. Each day featured five concurrent sessions with 25-minute papers, usually four in morning sessions and six in afternoon sessions. The sessions were 10:20-12:00 noon, and 2:00-5:00 p.m. Major three-session themes were From Agricola to the Future, Aboriginal/Socio-Economic Issues, and Valuation of Exploration Properties. There were a number of double sessions, including Alternate Geochemical Methods, Environmental Management in Exploration, and New Discoveries and Developments Around the World. A few of the large number of single sessions were Geochemical Processes, Role of the Analyst, The Mining Industry at 2000, Royalties, Funding Sources for Early Stage Projects, Mergers and Acquisitions, Due Diligence, Spatial Information Systems, Canadian Capital Markets, Country Specific Papers, Competitiveness of Nations, Mine 2020, Managing Corporate Risk, Risk Analysis, Industrial Minerals, Oil Sands into the 21st Century, Maintenance Management, Analytical Quality Control, and many others. Sessions were well attended, although questions generally were few, typical of large meetings these days.

Special Events included five Issues Forums and three Luncheons with prominent speakers: these unique, non-concurrent "sessions" are reviewed below. Also, there were five Short Courses, a Core Shack "workshop," Canadian Mining Games, Exchange Forum presentations for investors, and the World Mines Ministries Forum (which required separate registration), as well as an accompanying members program and a "kids program." Many of these activities took place at the Convention Centre, which comfortably accommodated this large group of delegates and guests. There was an impressive social program as well, late afternoons and evenings, and a guest program.

Professional Registrants packages included the Convention Program (and abstracts) volume, the Trade Exhibition Guide, a 164MB CD-ROM with about 140 of the 260 papers delivered (all papers received until the cut-off, end January 2000), and a useful black bag to carry all this and extra materials acquired at the more than 600 exhibits over the five days of the meeting. The Convention Program volume was particularly well-organized. Talks and their locations appeared in clear tabular form, with each speaker's abstract given a unique identity (*e.g.*, TU-44, the 44th paper on Tuesday), such that it was convenient to study the abstract before attending, or not attending, a particular talk. With five concurrent sessions over the five days, this was useful information.

ISSUES FORUMS

These took place each weekday morning from 8:45-10:00 a.m., and were well worth attending. Five major issues were reviewed in the five forums. The format followed was to have a moderator introduce the topic of the day, followed by prepared remarks from three senior experts/practitioners in the topic area, followed by questions from the audience. A novel aspect of all of these forums was the use of individual electronic keypads available to each attendee, such that it was possible to generally identify people in terms of their nationality, profession (geologist, engineer, manager), and age (the gray set, aged 45-54 and more, predominated) and tabulate peoples' opinions and responses to specific questions, and to identify what responses each profession or each age group made, in terms of percentages and histograms. This was interesting! The successful application of this technology depends fundamentally on the use of clear questions, and an informed and willing audience, not always present. This technology has promise for future meetings. Issues forums were as follows:

Survival Strategies for the 21st Century

With mining stock prices at 52-week lows during the meeting, survival seemed an appropriate topic. It was noted here (and elsewhere, several times) that in March 1996 the market capitalization of mining stocks in the TSE 300 was about 22% of the total weighting; by February 2000, this figure had fallen to about 6½%. Against this sober background several

themes emerged: to succeed, the mining industry will have to pay more attention to the triple bottom line: commercial success, environmental management, and social responsibility; the public must be made aware that mining is a global, high-tech industry, not a sunset industry, with much to contribute to economic well-being; and mining will have to compete more aggressively with the dot.com world, probably by more merging and acquisitions: mining companies are small financial players globally, when measured against "new economy" companies with market capitalizations in the hundreds of billions of dollars. The view was expressed strongly that industry consolidation must happen to attain critical mass in the global competition for venture capital. A second view strongly expressed is that the biggest challenge for the mining industry may be social responsibility, particularly on environmental and community-based issues. Although the mining industry has made major progress on these issues, it is too often judged on past performance alone.

Will Land Use Battles Ever End?

This second Issues session focussed on the need for partnerships and consultation among all players, particularly aboriginal groups, local citizenry, and mining interests, if land-use battles are to be resolved. Such partnerships have to be based on trust; disagreements can be seen as challenges, not as obstacles. Governments need to help create environments in which players can work together; uncertainty on land-use policies, aboriginal rights, environmental regulations, *etc.*, are major deterrents to mining exploration. British Columbia was cited as a major example of the negative effect of uncertainty on mineral exploration: a pity, because the mineral potential is high there. Clear and fair policies and regulations are essential.

Rebuilding Investor Confidence: A Report Card

The Mining Standards Task Force (MSTF) document that was released in February 1999, represents a major step forward, as it offers recommendations on disclosure, use of Qualified Persons, better regulations and enforcement, better practices, and other areas (*see* article by Maureen Jensen, this issue). Since this report was released, there has been measurable improvement in operating and regulatory practices: what is needed now is for the investing public to become more aware of these changes. Bre-X, seen as a symbol of cowardice and greed, helped to accelerate the process of change for the better. These changes, combined with better returns on investment, should help to attract the risk capital that is essential to a vibrant mining industry. There was discussion of the role of mining analysts, including the difficulty on the part of the public to distinguish mining analysts from uninformed or biased pundits who may pose as analysts in the media. Again, the new MSTF guidelines should help to clarify whom to trust. Company paranoia sometimes can confuse issues; greater disclosure and transparency is essential. It is reasonable to release material facts as quickly as possible, with judgments and opinions on the meaning or interpretation of these facts available by request or consultation. Views were expressed from Australia also, with expression of support for the MSTF approach, particularly including introduction of the Qualified Person concept. Observing the discussion, one gets the feeling that real progress is being made on these issues, to the betterment (and relief!) of all.

Energy, the Economy, and Kyoto

Some view climate change as the major economic issue of the 21st century. Atmospheric CO_2 content is rising, and the abnormal weather experienced over the past decade seems to be verifying predictions made some time ago. What to do? The point was made that consumption, not simply production, drives emissions. Some view the economy as a wholly owned subsidiary of the environment, which forces a different perspective on the debate. There was agreement that there is a massive knowledge gap in the public, and hence confusion. We consumers need to know what the real costs of consumption are. Some feel that the mining industry needs to recover a greater measure of financial health before it can deal effectively with this large and contentious issue. This session was sparsely attended, perhaps for this reason.

Toward the Zero Discharge Mine

Is this possible? What would such a mine look like? Speakers felt that this goal, zero discharge mines, is a worthwhile model to work toward. Meanwhile the industry continues to be judged on the impact of past practices and failures. Tailings dam failures releasing acid waters such as that in Rumania earlier this year create high levels of public distrust, and occur all too frequently. Because of the impact of the Internet and cable news networks, such events are instantaneously in the public eye. Mining is a waste management process, both solid and liquid wastes, and has to be viewed in these terms. The technology exists to deal effectively with most problems, but costs, and the failure to recognize just how damaging inaction is to mining's public profile, tend to limit necessary actions. The fact that these issues are being discussed and debated is positive in itself.

LUNCHEON ADDRESSES

The Mineral Outlook Luncheon featured an address by Pierre Lassonde, President of Franco-Nevada Mining Corporation Ltd., "Mining in a Dot.Com World." The market capitalization of the entire world mining industry is less than about 200 billion dollars, well below that of one high-tech company such as Microsoft. Thus mergers are inevitable if competition for funds is to succeed. Mergers need to take place to create market leaders, not just to get rid of companies. A model in which companies transform themselves into dot.com ventures won't work as a general model (and in any case has been significantly discredited by the Nasdaq market fall of April 2000). Mineral products are underpriced, and therefore undervalued by society. The mining industry's perverse approach seems to be to bankrupt the competition by low-cost production and flooding the market with cheaply priced mineral commodities, rather than acting to preserve the long-term health of the industry as a whole. Some form of price setting, as established by aluminum producers, and by OPEC for oil, is essential. These kinds of changes will benefit industry, shareholders and society. Lassonde is also concerned at the lack of support of universities: the most valuable resource a country has is its people, particularly young people.

The Millennium Luncheon had an address by Christopher Thompson, a

Canadian who is now Chairman of Gold Fields Limited of South Africa. Titled "The New South African Producers– Their Coming Impact on the Global Gold Scene," this talk complemented South Africa's major exhibit at the CIM Tradex Exhibition during the second half of the meeting. Thompson began his talk by noting that if the Voisey's Bay nickel deposit had been found in South Africa, it would be in production by now, and from this, he expressed the further opinion that mining faces much higher political risks in North America than in South Africa, despite the fact that the perception is the reverse. He identified the present South African approach to mining regulation as pragmatic first, and bureaucratic second, the reverse of many other jurisdictions. This contributes to his attitude of being bullish on South Africa, and cautious on North America, including Canada. In his company, headquarters staff have been reduced by 80%, and management positions from 14 to 6, evidence of pragmatism at the corporate level. It is well to remember that close to one-half of the world gold production between 1887 and 1998 came from Witwatersrand, and with improved deep-level mining and further exploration, the region may be productive for some time. Meanwhile Gold Fields has an exploration budget of $40 million for exploration outside Africa.

The Market Outlook Luncheon featured an address by Barbara Stymiest, President and CEO of the Toronto Stock Exchange: "Capital Markets in the Next Millennium." The Toronto Stock Exchange is dealing with record high volumes in 2000, with 13 days of record high trading in the first two months of the year. This is partly because of the more than one million on-line trading accounts that exist in Canada, a number that pundits expected to take 5 years to reach instead of about a year. The aim of TSE is to remain the premier exchange for senior Canadian-based mining companies, with the new Calgary-based Canadian Venture Exchange (CDNX) the preferred exchange for juniors. An important goal is to make the newly privatized TSE Inc. the market of choice for the financing of mining ventures the world over. Key aspects of this goal include ease of access, credibility, liquidity, visibility and low fees: all-around good service to all business communities, including mining. The TSE already has a clear cost advantage over both the New York Stock Exchange and Nasdaq. Integrity is a prime factor: a TSE listing should signify credibility and approval, because market integrity = investor confidence. Society will need more of what can only be produced by mining, and venture capital will continue to be key. Changes in mining exploration and operation resulting from the Mining Standards Task Force Report underlie new and better approaches in the mining sector.

TECHNICAL SESSIONS

With five sessions running concurrently, and one person writing this account, I can offer only a few insights on what I found instructive and interesting, in no particular order:

- The Noril'sk area, Siberia, rivals Sudbury as the largest accumulation of nickel sulphides in the world, far larger than Voisey's Bay, and has high potential for greater PGE production, given the current market.
- Our own Kidd Creek massive Cu-Zn deposit in Ontario is one of the 10 largest massive sulphide deposits in the world, and is now interpreted as the product of venting in a sub-seafloor regime.
- The Orapa diamond deposit, Botswana, is a major producer, with diamond production of a value of US$1.9 billion in 1998, 65% of the GDP of Botswana.
- The public lack of knowledge of mining and minerals is astounding: some adults do not know that most knives and forks are made of metals! This must be remedied! Public initiatives such as "Mining Works for Canada," the "Global Mining Initiative," and "Mining Matters" are essential to better inform the public, including politicians.
- The climate in which mining operates has changed fundamentally. Old approaches were: Responsibility, the state; Culture, "trust me"; Profits, value. New approaches are: Responsibility, individuals; Culture, "show me"; Profits, triple bottom line [which was defined by the speaker as "profit," "planet" (minimize impact of mining), and "people"].
- Is mining a sunset industry, as too widely viewed by some politicians and members of the public, or is it a sunrise industry? What is mining's place in the new economy? It ought to be what the industry chooses to make it, but this will require new and novel approaches. Many speakers touched on this issue over the course of the meeting (*see* Comment by Vivian Danielson, this issue).
- The Fraser Institute's annual survey of mining companies continues to reveal that regions of high mineral potential may rank very low on investment attractiveness, or policy potential, because of adverse political conditions. It seems that politicians must be educated as well as the public.
- This was the third annual meeting at which there was a "Mine 2020" session. Issues discussed here, and in many other sessions as well, included tailings safety, waste management, water availability and quality, pressure on local land masses, particularly on biodiversity, and customer and regulatory restrictions. Actual or potential "threats" to the mining industry include the view that everything can be recycled, which is clearly impossible; that the uses of all materials including metals and minerals should be rigorously regulated; and that mining is somehow responsible for over-consumption of materials, which is more accurately viewed as a contemporary problem of western society. The typical mine of 2020 will be very different from most mines of the past and many of those of today: it will be efficient and safe, will have a small footprint, and it will be in harmony with local communities.

These issues of environment, mining footprint, waste management, and community and aboriginal involvement were a major focus of many of the technical sessions at this meeting.

- Tailings dam failures, unstable mining-related slope failure, rock bursts, mine fires, *etc.* are all elements of risk in the mining industry. Analysis of many such failures over more than 100 years indicates that these events may all be viewed not as isolated events but as examples of organizational failure. Complex management systems with bureaucratic levels such that no one person oversees or is responsible for a complex operation are a major reason

why such events happen, especially when combined with the fact that "bad news" tends to be kept from senior managers, and we humans commonly operate on optimism rather than reality. Our strengths of organizing for and carrying out complex operations are also our weaknesses. The "what if" question needs to be asked continually.

- One speaker mused that the mining industry, given all the problems it faces, along with low commodity prices and a limited market capitalization when compared with "new economy" high-tech companies, might just disappear as a distinct entity, becoming instead a wholly owned sub-set of manufacturing.
- Contrary to popular opinion, there has been significant productivity growth in Canada's mining industry. Between 1984 and 1995 total productivity grew at an average of 4% per year, while in manufacturing it grew at 0.7%. The leading industry in productivity growth was the coal industry. Three of the 10 leading industries in total productivity growth over the past decade were coal mines, non-metal mines, and metal mines. Average weekly earnings of miners are more than double the level in the service sector and 50% greater than the level in the manufacturing industries. These productivity gains have enabled Canada's mining industry to remain competitive in international mineral and metal markets. These findings need to be more widely broadcast and understood.
- Attending presentations on mining of the oil sands was like being on another planet, in terms of activity and enthusiasm! Currently there are 59 oil sands projects in the construction, design or conceptual stage, representing $33.4 billion dollars of announced investments, of which $6.6 billion has been spent, and $11.4 billion has been approved for 1996-2010. Oil sands production currently represents about 34% of Canada's crude oil production, and is expected to reach 50% or more by 2007. All this development will provide many permanent jobs, and enormous amounts of revenue, particularly to the Government of Alberta. The industry has been characterized by enormous pressure to reduce the costs of production, which have fallen from about $25 per barrel in 1981, and therefore not competitive with normal crude, to about $12 per barrel today, which is clearly competitive.

CORE SHACK PRESENTATIONS

Some 26 mining properties were reviewed in two "rounds," during the first three days of the meeting. Ten were from Canada, including Caber North Zn-Cu, and Meadowbank, Monument Bay, Red Lake, Clavos, Eau Claire, Meliadine, Pickel Crow and Scheelite Dome Au deposits, as well as Snap Lake diamond deposit. Some 16 were from elsewhere in the world, lending a strong international flavour. Informative extended abstract descriptions of these deposits are included in the Convention Program (and abstracts) volume.

EXHIBITS

The PDAC Trade Show and Investors Exchange from Sunday to Wednesday noon had close to 300 exhibitors, and about 140 booths in the Investors Exchange: details are published in the Trade Exhibition Guide given to registrants. An additional feature was a PDAC–CIM High-Tech Pavillion, with 3M, the Canadian Space Agency, Mira Geoscience Ltd., Noranda Inc., Norcat, Quantec Geoscience Ltd., Reduct and Lobbe Inc., and The Great Canadian Mine Show offering examples of the latest in mining-related technology and innovation. The CIM Tradex Exhibition operated from Wednesday afternoon to Friday afternoon, with about 350 exhibitors. This is also a virtual trade show: until November 2000, exhibitors can be seen on-line at www.cim.org/tradex2000. Everybody who is anybody in the mining services and equipment world seems to have exhibited at MM 2000.

MORE INFORMATION

- The convention has a Web site that still operates: www.miningmillennium.com
- The CIM Web site is: www.cim.org
- The PDAC Web site is: www.pdac.ca.
- PDAC can also be reached by e-mail at:info@pdac.ca
- For access to the CIM Tradex Exhibition virtual trade show, until November 2000: www.cim.org/tradex2000

The 164MB Mining Millennium CD-ROM should be available for purchase from CIM or PDAC in June 2000, with a price in the region of $20.00-$25.00. Copies of the Convention Program (and abstracts) volume, as well as the Trade Exhibition Guide, may be available from PDAC free of charge.

Meanwhile papers from the meeting are appearing in the CIM Bulletin. We expect several more papers from the meeting in forthcoming issues of Geoscience Canada.

The next main meeting of the Prospectors and Developers Association will take place at Metro Convention Centre in Toronto 11-14 March 2001. The next CIM annual meeting will take place in Quebec City, 29 April-2 May 2001.

SOME PERSONAL OBSERVATIONS

The winds of change are blowing strongly through the mining world. Ten or 12 years ago, concepts such as triple bottom line, social license, zero mine discharge, and Mine 2020, so prominent at this meeting, either did not exist or were little noticed. Despite all these problems, more optimistically and perhaps correctly identified as challenges, the industry does survive, and parts of it, diamonds, platinum group elements, oil sands, even thrive. It seems that there is much more change ahead, in environmental and social issues, and mergers and acquisitions, that likely will change the face of the industry forever, hopefully for the better. Public education is needed now more than ever on mining and its contribution to our economic and material well-being (name any area where this isn't so: in the Internet age, we seem awash in information yet bereft of knowledge). There were few young people in the technical sessions at this meeting: what does this mean? When I was an undergraduate more than 40 years ago, attendance at such meetings was almost mandatory; heck, I got my first geological summer job, with Anaconda Canada Ltd., at a PDAC meeting. Where are the students who will be the geologists, engineers, and leaders of tomorrow?

But finally, and most emphatically, any industry that can put on a meeting as good as this one is a very long way from extinction.