

Mining Working Group Proceedings

PNWER Annual Summit – Whistler, British Columbia

July 21st, 2014

Co-Chair: Senator John Coghill, Alaska State Legislature

Co-Chair: Karina Briño, President & CEO, Mining Association of B.C.

Speakers

Greg Beischer, President, Millrock Resources

Pierre Lebel, Chair & Director, Imperial Metals

Alan Fryer, Chief Spokesperson, Coal Alliance

Dr. Rajive Ganguli, Department Chair of Mining & Geological Engineering at the University of Alaska Fairbanks

The session began with a brief introduction by Senator John Coghill. He included a description of his background and fascination with the geology of the Pacific Northwest.

Mineral Overview of the Region

Karina Briño opened by stating that mining is a global industry – it's not possible to work in isolation. She touched on the trans boundary issues in mining, and Alaska's concerns with resource development, before emphasizing that we need to find the common ground and opportunities within these challenges.

Karina Briño moved on to discuss the global industry challenges and opportunities that impact the PNWER region. How we can ensure we're ready to act when prices improve in this cyclical industry? How will we deal with issues such as talent, talent mobility, capacity, adequate resources to act, and building stronger partnerships with communities? The biggest opportunity for the industry is to increase the involvement of, and collaboration with, local communities, both 1st Nations and not. She concluded by stating that we're here to talk about

collaboration, innovation and social responsibility. How do we better communicate who we are, and the benefits we bring?

Senator John Coghill provided an overview of the rich mineral resources and current mining operations in Alaska. There are 5 major mining operations, from gold, copper, lignite, zinc to lead, all of which are very large, in part because they are all greenfield sites. These mineral resources are used for everything from wind turbines, to hybrid cars and rechargeable batteries.

From Discovery to Reclamation: the Cost and Value of Building a Mine

Cross-jurisdictional comparison in mine development in the U.S. and B.C./Canada including regulatory framework and financing

Greg Beischer gave a presentation on attracting mineral investment. He began by touching on the attractiveness of the Pacific Northwest for mineral investment, and emphasised the need for mineral resources. Mines provide valuable materials for everything from toothpaste to shingles - much more than just metals. If it can't be grown, it has to be mined! Each stage of the mine development process requires a high level of capital investment. From Exploration, to Development, Construction, Production and Reclamation, each stage requires 10's of Millions to 100's of Millions of dollars of investment.

Greg Beischer moved on to give case studies of highly successful mining operations in Alaska. Red Dog Mine, jointly owned by Teck Resources and NANA (An Alaskan Native Corporation), is a global example of how to resolve aboriginal land claim issues in relation to a mining operation. Land claims were resolved in only 3 years, and the resulting agreement has provided huge benefits to both the local aboriginal community and the State of Alaska in general. NANA Corporation built industries to support the mining operation, leading to over 600 well paid jobs. Starting with the first Man Camp at Red Dog Mine, NANA now owns the 3 Marriot Hotels in Alaska. Green's Creek Mine, the largest silver producer in the US, and one of the lowest-cost silver mines in the world, is a world class operation. All water is controlled, and cleaned before entering the ecosystem.

Greg Beischer moved on to discuss the significance and high potential of mining investment in the PNWER region. Vancouver, BC is the mining venture capital of the world – the downtown core is filled with mining exploration companies. A significant amount of money comes into Vancouver, then flows out to operations around the world. Jurisdictions are evaluated as attractive for mining based on a number of metrics such as: geology, proven deposits, available land, rule of law, infrastructure, strength of opposition, taxation policy, regulatory requirements, information availability, and costs. The Fraser Institute used these metrics to conduct a survey last year of over 690 companies, covering over 112 jurisdictions, to determine

the top jurisdictions in the world for mining. Alaska was #1, BC was #5, and the Yukon, NWT, Saskatchewan and several other PNWER States were also at the top of the list. However, a second survey, evaluating the policy perceptions of these regions, was not as positive. Alaska dropped to #22 due to uncertainty around federal regulations and other policy concerns. A shift in policy can have a huge impact on investment in a region. Greg Beischer concluded with a quote from the Fraser Institute: “If you want to make your jurisdiction attractive, a stable, certain, straightforward mining policy is essential”.

Pierre Lebel began by differentiating his work of building and operating a mine, which requires a very in depth scientific understanding of a small area, from Greg Beischer’s work relating to exploring for new mines, which requires vast areas. He related the odds of a prospect becoming a mine to like looking for a needle in a haystack, but where not every haystack has a needle. Mr. Lebel’s company owns and operates several mines, mostly in B.C., such as Red Chris, Huckleberry, and Mount Polley.

Pierre Lebel emphasised the key role of mineral exports in the health of BC’s economy, and the importance of the resource sector to the prosperity and wellbeing of BC’s urban areas. 23 of the top 100 companies in BC are resource firms. The mineral resource sector in Vancouver uses a wide variety of services: engineering, consulting, legal, accounting, advertising, finance, environmental and even executive search. It also supports hospitals, schools, cultural events and organizations through their charitable donations. Vancouver’s landmark buildings themselves required minerals in their construction, while BC’s renewable energy projects require metals to manufacture solar panels and wind turbines.

Pierre Lebel then moved on to describe the Red Chris mining operation, located near Dease Lake, BC and the challenges it faced due to unclear policy. Red Chris is the largest mineral deposit in BC, and possibly the world. Even so, it has been a long and difficult process to make it happen. Even though it reached feasibility in 2004, it didn’t obtain a permit until 2012. Construction is projected to be complete in this fall. Mining Watch, an environmental advocacy organization, challenged that the federal government hadn’t dealt properly with the regulation, in regard to the feasibility study. The case went to Supreme Court, taking years to reach a decision. The decision led to an update of the feasibility study, and the mine permit was issued in 2012. The government’s disagreement over how to apply the regulation caused significant headaches and delays for the mining company. Clear mining policy would greatly help business.

Pierre Lebel stated that no mining project is without impact, and emphasised the need to create a clear environmental review process. Environmental assessment is a Brand – getting an EA certificate on a mine project is a stamp of approval, and supports a company’s reputation. However, all the red tape, excessive documentation and decades of meetings isn’t helping

anyone. There needs to be a clear environmental review process. The provincial and federal government are now working with industry to strengthen this process. The goal is: One Project, One Process, One Decision.

Pierre Lebel concluded by discussing the financial benefits that the mineral resource sector brings to the government. More than 60% of the value of a mine project goes to the government. Most of the money spent on mineral exploration is spent on salaries – salaries which provide significant taxes to the government. In comparison, very little money goes back to investors. Investors benefit only if the mine produces and the value of company increases. The government benefits from the money spent exploring for and setting up the mine – regardless of whether or not a mine is built.

Opportunities and challenges in mine development, including innovation and productivity

Alan Fryer began by describing his role as the spokesman for the Coal Alliance, and how the organization came to be. The Coal Alliance, which is made up of major players in the coal industry, was formed in 2012 in response to a growing campaign against the coal industry in B.C.. The industry, including terminals, railways, mines and associations, is very cautious and has traditionally tried to avoid media scrutiny. However the media coverage was becoming very one sided, and so they decided to add their voice to the discussion.

Alan Fryer continued by stating that several events, here in Vancouver, and also in the US, led up to the increasingly negative media coverage. Several environmental advocacy groups started focusing their attention on anti-coal campaigns such as the Wilderness Committee, Voters Taking Action on Climate Change, the Dogwood Initiative, and 350.org. From a climate change perspective, their position is that coal should be left in the ground, along with other fossil fuels. In addition, they also raised concerns around health issues from coal dust, which led to a health scare in the media, and eventually a government study.

Alan Fryer indicated that the Coal Alliance feels that the information about coal and coal dust health impacts in the media is incorrect. They challenged the results from an often quoted health study and also have the Unions supporting their assertions. The Unions indicated that coal dust exposure is not impacting the health of their members, and that if there was any danger, they would be speaking out against it. Unions, rural municipalities in BC, and other organizations, have now spoken out in support of the coal industry, and as a result media coverage of the issue is more balanced. However, getting accurate information into the media is still a challenge, and both environmental and industry groups are now slugging it out in court.

Dr. Rajive Ganguli started by describing several challenges facing the mining industry and the increasing need for research to develop new ways to mine. New mines are increasingly difficult to develop and permit, with only 1 in 5000 deposits becoming a mine. As a result, we are

extracting lower and lower grades from rocks, in order to extend the life of old mines. Mining is increasingly focused on the North, particularly as the polar ice melts. However mining in such cold climates requires new engineering principals – the same mine in Nevada, would not do nearly as well in Alaska. Additionally, mining productivity has dropped significantly since the 70's. Trucks are waiting around unnecessarily, in part due to our overreliance on technology to run our systems. New knowledge is needed to make these northern mines economical. Research can provide significant value to the mining industry – it can provide new, more efficient, ways to do mining.

Dr. Rajive Ganguli moved on to describe how research could help address specific problems the industry faced. Water is a major issue for mines – there's either too little, too much, or you can't discharge it. The solution is to reduce water consumption, and there are academic studies on dry processing. Research discoveries can also help improve mineral recovery – extending the life of existing mines. It can also help improve the economics of cold climate mines, by improving the effectiveness of process plant chemistry under cold conditions. Research can also help reduce environmental impacts, and improve community relationships, by using benign chemical instead of hazardous chemicals like arsenic. Most of the environmental impacts are from the processing, not the mining, so there is an opportunity to reduce these impacts through research.

Dr. Rajive Ganguli emphasised that the industry also faces shortages of expertise, particularly in chemistry, and that universities and academics were underutilized resources that could work on needed solutions for the mining industry. These researchers could help improve the 1:5000 odds for deposits to become mines. Dr. Rajive Ganuli also encouraged inter-jurisdictional research partnerships to share expertise between provinces and states. Alaska has substantial cold climate mine engineering knowledge, while BC is ahead on fish habitat mitigation. He summarized that investment in mineral processing knowledge is essential, and that the PNWER jurisdictions must look at Universities as a resource to support the mining industry. Academics are resources, experts and added capacity.

Dr. Rajive Ganguli concluded by stating that the boom/bust cycle in the mining industry has created significant waste and inefficiency. It's easy to buy trucks during a boom, but the industry doesn't take the time to assess if they are needed. Millions of dollars are sitting around being wasted. They are either not hiring mining engineers, or not utilizing the ones they have. A company will spend 2.5 million on a truck, but if they spent a fraction of that on an engineer, the engineer could have created a model that showed the truck was unnecessary. More thought needs to be put into how mining is done.

Remarks by the Honourable Bill Bennett, Minister of Energy and Mines, BC

Minister Bill Bennett began by stating that he did not have a mining background, but had spent a lot of time touring mines in his role as a politician in a coal mining region. There are 5 coal mines in his riding, and over the course of his career, he visited every mine in BC.

Minister Bill Bennett proceeded to provide his thoughts on the previous speakers' comments. Alan Fryer's talk resonated with him – he had also spent a lot of time educating people on coal and mining, and how we use minerals. There is a significant urban vs rural divide on this issue – many urban folks don't know how their gadgets are made. Mining is a \$7 Billion industry in BC and is a major driver of the economy. There are 18 operating mines in BC, and this number is growing rapidly. 3 new mines have opened since 2011, and 3 more are opening soon. It is a very difficult and exhaustive process to build a mine. The permitting system you have is a reflection of the values and priorities of the society you're operating in. He didn't agree with the Fraser Institute's rating for BC in Greg Beischer's talk. BC should be higher up on that list. Mining invested \$1 Billion in BC last year alone. The government built a powerline "to nowhere" in BC with the goal that by providing the power, it would support the growth of mining to that region. That investment is now starting to pay off with the growth of mining in BC. There are also opportunities for cross border collaboration – particularly between Alaska and BC. BC has an excellent mine reclamation industry.

Minister Bill Bennett emphasised the importance of starting the mining process by building relationships with local First Nations, sharing benefits, creating jobs, education, and collaborating. The First Nations make good partners, if you're willing to work at it. He concluded by stating that the economy, and his children's future, is tied to the mining industry in BC.

Action Items Brainstorming

- 1) Andy Belmont (Innovation Working Group) suggested there was an opportunity to collaborate with the Innovation working group to create a map of research knowledge for the mining industry.

Another speaker (Shirley) cautioned against reinventing the wheel. She indicated that the Canadian mining innovation council already had this, but suggested using what they had as a platform to build on.

Dr. Rajive Ganguli suggested modifying suggestion #1. We could find ways to formalize the access to universities. What are the challenges in a state/university partnership, and look for learnings from existing partnerships in the US and Canada.

Pierre Lebel stated that Ministers, 1st nations, and others were collaborating to do neutral, fact based research for the mining industry.

John Coghill stated that independent 3rd party research, university or NGO level, is a key topic, outside of any specific industry.

- 2) Alexa Young from Teck Resources suggested that further discussion was needed in regard to the mining supply chain. The Canada Transportation Act review is underway and we need to let the Federal Government know what the mining industry's needs are.
- 3) Minister Bennett suggested discussing inter-jurisdictional environmental issues between BC and Montana, and BC and Alaska. This is the only forum that gets all these groups together.

John Coghill pointed out that there were other groups that deal with this issue. Alternatively, this group could look at environmental best practice goals.

Karina Briño emphasised the opportunity to compare regulatory best practices on environmental assessments.

Final Action Items:

1. Further the discussion on supply chain with regards to mining, including supply chains in and outside of the provinces, at next year's Summit.
2. Build stronger partnerships with research institutes and universities to create innovative working groups and assets inventory. Formalize relationships between the state and universities as well as independent third-parties (whether it'd be universities or NGOs, for instance, Resource Works)
3. Improve knowledge of the various jurisdiction and environmental issues: create a regulatory and environmental comparison to find best practices throughout the PNWER region.

