Mining Association of Canada
Towards Sustainable Mining

2012 Post-Verification Review Report

18th Meeting of the
Community of Interest Advisory Panel

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Towards Sustainable Mining
Vers le développement minier durable

Prepared by:

STRATOS

Stratos Inc.
1404-1 Nicholas Street
Ottawa, Ontario
K1N 7B7
tel: 613 241 1001
fax: 613 241 4758
www.stratos-sts.com

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1 Introduction

This report presents the results of the MAC Community of Interest Advisory Panel (COI Panel) post-verification review of Inmet Mining Corporation and Cameco Corporation, and is organized by the following Sections:

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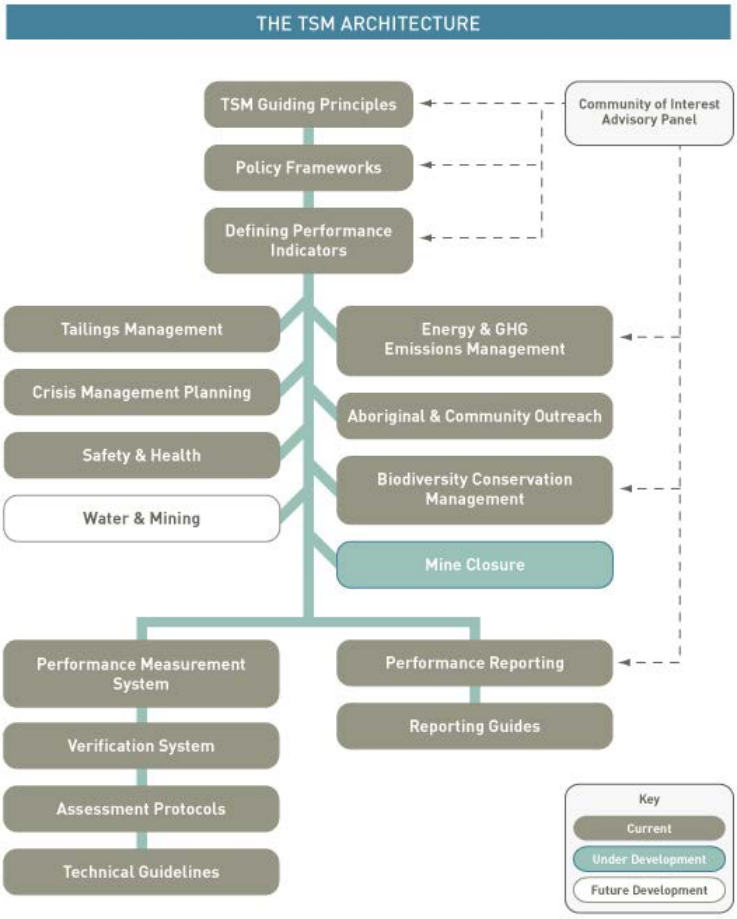
- **Section 3:** Overview of the TSM verification system and COI Panel post-verification review
- **Section 4:** Results and discussion of the 2012 post-verification review
- **Section 5:** Key reflections from the 2012 post-verification review

2 About the Towards Sustainable Mining (TSM) Initiative

Launched in 2004, the Mining Association of Canada's (MAC) *Towards Sustainable Mining* (TSM) initiative aims to enhance the mining industry's reputation by improving its environmental, social and economic performance. Participation in TSM is a condition of membership in MAC, and requires that members subscribe to a set of guiding principles that are supported by specific performance indicators against which member companies must report their results. Performance measurement protocols have been developed for key areas of operational performance as illustrated in Figure 1. MAC released its eighth TSM Progress Report in December 2012, which provides overall industry TSM results and company-specific results for the issues listed in Figure 1. For more information on TSM and industry and company results, please visit the MAC website: http://www.mining.ca/site/index.php/en/towards-sustainable-mining.html.

Figure 1: TSM Architecture

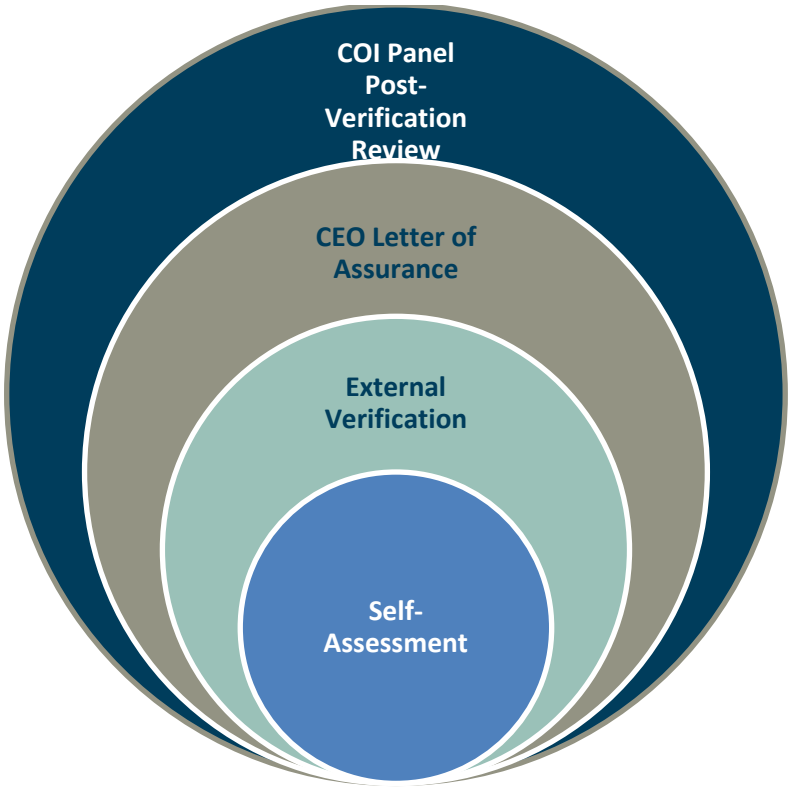


3 TSM Verification System

In order to strengthen the credibility of TSM, a verification system is implemented to give MAC members and their communities of interest confidence in the integrity of self-assessed and reported company results. The TSM verification system includes three components and is also illustrated in Figure 2:

1. Verification of company self-assessment results by an external verifier (on a rotating, three-year cycle for each company);
2. A letter of assurance from a CEO or authorized officer confirming the verified results (posted on the MAC website); and
3. An annual post-verification review of two or three member companies' performance by the COI Panel.

Figure 2: Components of the TSM Verification System



New MAC members have four years to fully implement the self-assessment and external verification system at each of their facilities. More information on the TSM verification system including: terms of reference for verification service providers, CEO letters of assurance and post-verification review reports can be found on the MAC website: http://www.mining.ca/site/index.php/en/towards-sustainable-mining/verification-service-providers.html.

Of the companies that reported 2011 TSM results for the 2012 TSM Progress Report, five underwent external verification. **Annex 1** provides a list of companies that verified their TSM results from 2006 to 2011 and notes which companies completed post-verification reviews in each year.

3.1 COI Panel Post-Verification Review Process

As agreed by the COI Panel at the March 2007 meeting, the purpose of the post-verification review is to:

1. Lend public credibility to the TSM results by improving TSM (including the verification process);
2. Highlight deficiencies and best practices;
3. Bring cohesiveness in the application of the self-assessment and verification;
4. Drive continued performance improvements; and
5. Determine whether the member companies are finding the verification process useful.

The Panel guides the post-verification review through a number of steps including:

- Providing companies with standard guidelines (developed by the COI Panel) to prepare for the post-verification review, including an outline of background information to be provided to the COI Panel in advance of the meeting;
- Formulating specific questions for the companies to use in preparing their post-verification review presentations; and
- Requesting the companies to submit their post-verification presentation and supporting information in time to be included in the Panel meeting materials.

At the March 2012 COI Panel meeting, the Panel selected Inmet Mining Corporation and Cameco Corporation from the list of companies verifying their 2011 TSM results to undergo post-verification review in 2012. This report summarizes the information provided by the companies in their post-verification reviews and the discussion that occurred with the COI Panel in response to presented information.

4 Results and Discussion of the 2012 Post-Verification Review

4.1 Inmet Mining Corporation

Christopher Scholl, Director of Environmental Affairs, and Craig Ford, Vice President, Corporate Responsibility, presented Inmet's post-verification review. Inmet's verification service provider, Robert Duda of Safety Science Management Consulting Inc., was available by phone for the review and answered applicable questions as they arose. A summary of the presentation and the ensuing discussion is provided below.

4.1.1 Context

Inmet Mining Corporation is a global copper and zinc mining company that is headquartered in Canada. Inmet has active operations in Turkey, Spain and Finland; a major development project in Panama; and closed properties in Canada and the U.S.A. Inmet is currently exploring in Chile, Finland, Mexico, Australia and the U.S.A.

4.1.2 Summary of Business Units

Cayeli, Turkey

The Cayeli mine is an underground, copper and zinc mine, located in the foothills of Northeastern Turkey on the Black Sea coast. The mine began operating in 1994 and is currently estimated to operate until 2019. The mine employs 500 employees and 125 contractors and is adjacent to the village of Madenli and 6 km away from the town of Cayeli. Regional commerce includes tea farming and fishing. Key corporate responsibility issues at the mine include:

- **Near mine housing damage:** Some damage, such as cracks in the foundation, has occurred to houses near the Cayeli mine site. Scientific studies were inconclusive about the cause of the damage. Despite this uncertainly, Inmet has worked with the impacted homeowners, and is currently sponsoring the demolition of these homes and replacement with new homes in a nearby, unaffected location.
- **Deep sea tailings discharge:** Inmet discharges tailings at a depth between 250-275 metres in the Black Sea. Inmet explained that there is no negative effect on the Black Sea due to it's unique features, including limited inflow and outflow of water (outflow is restricted through the Bosphorous Strait); limited vertical exchange of water due to

stratification, and a hydrogen sulphide dominant bottom that does not contain sea life. Extensive water quality monitoring has shown that there have been no changes to water quality as a result of the tailings discharge.

Panel Questions / Commentary

Panel members had the following comments and questions concerning Inmet's Cayeli Mine:

- *What is in the tailings discharge?*
    - Rock, residual metals and floatation chemicals are contained within the discharge. Materials in the discharge include iron, pyrite, silicate minerals and sulphide minerals. Residual copper and zinc are also present.
- *Is deep sea tailings discharge a standard practice in the Black Sea and is there a chance of overloading?*
    - Deep sea tailings discharge is not a common practice in the Black Sea. Deep Sea Tailings Discharge can be controversial, but Inmet believes, based on the studies performed, that this practice has minimal impact in this site specific application. At Cayeli, studies have shown that the amount of tailings discharged will not overload the large and very deep Black Sea.
- *What is the community perspective on deep sea tailings discharge? This is an issue of optics.*
    - Inmet has built capacity with communities to have discussions about this practice and no concerns have been raised by the community. Cayeli is important to the community economically, through jobs, support to local business and tax revenues. Contamination from sources such as community sewage and fishing industry discharges may impact the water quality. Inmet's monitoring program results is communicated to local officials. Also, the Government of Turkey is developing mine waste regulations and Inmet has been providing science to support regulation development.
- *Is deep sea tailings discharge the best option?*
    - While other options were considered, deep sea tailings discharge was deemed the best option. Due to the steep terrain surrounding the mine, there is essentially no land available for tailing storage. The land is also extensively used for tea farming. In addition the high rainfall (2.5 metres annually) increases the needed area for tailings water management. The sub-sea disposal method is not an inexpensive solution, as the installation and operating cost of the pipeline system is significant.

Cobre Las Cruces, Spain

The Cobre Las Cruces mine is an open pit, copper mine located in southern Spain, with an estimated mine life from 2009 to 2022. The mine employs 250 employees and 630 contractors, with the nearest communities 4 km and 20 km away. Regional commerce includes farming and cattle-raising; however, the unemployment rate is high in the area. Obtaining environmental permits in a timely manner has been challenging and there is some negative NGO pressure. Key corporate responsibility issues at the mine include:

- **Water management of the Niebla-Posadas aquifer:** Inmet has committed to preserving water quality and quantity of the aquifer, but this is not without its challenges.
    - Water quality: Inmet returns water to the aquifer that is of better quality than the water that it withdraws. In order to effectively dewater the open pit, Inmet

withdraws groundwater from the aquifer which contains some contaminants (e.g., arsenic), treats the groundwater to drinking water standards through reverse osmosis (RO); and returns the purified water to the aquifer through a series of injection wells.

- Water quantity: Inmet is committed to returning the same amount of water to the aquifer that it withdraws. Through the RO process, the water impurities are concentrated in a sidestream (rafinate) of 10 to 15% of the water flow. This water is not directly returned to the aquifer. The amount of rafinate is minimized through optimization of the RO process, careful water balances, and an added evaporation and recovery process. Additional water make up sources are currently under review.

Panel Questions / Commentary

- *What is the regulatory authority for water at the mine?*
  - The regulatory bodies are local and regional water authorities, but Spain (as the host country) must reflect European Union Directives pertaining to environmental matters into its domestic legislation.
- *How will Inmet address the remaining 10 to 15% of water to be returned to the aquifer?*
  - First, the amount of water removed is minimized through optimization of the RO process. Second, an evaporation system was installed to further recover purified water to return to the aquifer. Third, Inmet is working with local authorities on further solutions such as allowing some groundwater to bypass the RO system, treating discharge water from a local sewage treatment plant and injecting this, and finally to understand the local hydrology to better define if some of the water recovered is not actually from the Niebla-Posadas aquifer.

Pyhäsalmi, Finland

The Pyhäsalmi mine is an underground, copper and zinc mine located in Central Finland that began operating in 1962 and is estimated to continue operating until 2018. The mine employs 230 employees and 75 contractors and is 4 km southeast of the nearest town. Regional commerce includes farming and forestry. Key corporate responsibility issues at the mine include:

- **Water discharge to nearby Lake Pyhäjärvi:** Inmet discharges into the lake. However, water flow in the lake can reverse if the downstream dam stops the water flow to generate hydroelectric power. When the water is reversed and flows south towards a protected area, Inmet is required to stop its discharge. This can be challenging as the site ponds can fill during the rainy season (particularly in the spring). Inmet is trying to coordinate better with the hydroelectric plant and local authorities on this issue.

Cobre Panama, Panama

Cobre Panama is a development project that is currently under construction in Panama and will be an open pit, copper mine with an estimated mine life from 2017 to 2046. There are currently 200 employees and 1400 contractors at the site. There are 22 local communities, comprising 2500 people, in a region characterized by poverty. Regional commerce includes farming and artisanal mining. Key corporate responsibility issues at the project include:

- **Resettlement program:** Inmet has developed a resettlement program for Indigenous people within mine site area and people have agreed to relocation.

- **ESIA (environmental social impact assessment) commitments:** Inmet has committed to meeting International Finance Corporation (IFC) performance standards and Panamanian requirements.
- **Biodiversity:** The mine is located in the Mesoamerican Corridor, which is an important migration route from North to South America. In addition, several rare or not well understood species have been identified on the mine area. Inmet has made considerable effort to ensure a net positive impact on the local biodiversity, through management support of local national parks and protected areas, reforestation both within and outside the mine footprint, and individual species protection plans for flora and fauna species of concern.

Panel Questions / Commentary

- *What community relations have Inmet undertaken with this project?*
    - Inmet began community engagement in 2007. The company was initially told that there were no Indigenous people in the area, but discovered that there were 22 local communities, comprising 2500 people. Each community has its own decision-making structure, some structures which are functional and some which are not. Inmet is currently building the capacity of communities to participate, given the limited history of mining in the region.
- *What is the nature of artisanal and small scale mining?*
    - Artisanal gold mining occurs in the region and Inmet is currently working with government to address this issue.
- *What will the mine site look like when it is operational?*
    - The mine will include a camp for employees. Additional staff will be bussed to the site, especially during the construction phase.
- *Will Inmet be involved in community services?*
    - Inmet intends to be involved in public private partnerships that address infrastructure, sanitation and health care needs, but will need to ensure that the right processes are in place, so that the company does not assume the role of government.

Troilus, Quebec

Inmet has six closed properties in Canada and the U.S.A which it actively maintains and reports on. Troilus is a closed open pit gold, copper and silver mine located in northwestern Quebec. The mine was in operation from 1996 to 2010. There are currently five employees at the site which is 120 km from the Cree community of Mistissini and 175 km from Chibougamau. Troilus was one of the first projects in Canada to establish an Impact Benefit Agreement (IBA) signed in 1994. There is a case study on implementation of the IBA on the Inmet website. Ongoing management at the site includes management of tailings pond water and water treatment.

Panel Questions / Commentary

- *How are expenses from closed properties funded?*
    - Expenses are covered from company cash flow. In addition, most provinces and territories require that companies post financial assurance for reclamation and closure, which is returned to the company as closure occurs.
- *What occurs during closure?*
    - Physical closure (i.e., removing buildings, resloping, etc.) and chemical stability (i.e., addressing tailings and water quality) are key components of closure. When

environmental conditions are stable, a company may be able to return the land to the Crown.

- *How long does closure take?*
    - Often times closure can be implemented and stable conditions can be attained reasonably quickly (e.g., less than 10 years). In other situations, there may be water quality issues at the site that require long-term treatment and management (e.g., greater than 30 years).
- *When does the Crown assume responsibility for the site?*
    - This is an unsettled issue for the Troilus property to date.
- *How do energy requirements for water treatment at closed properties fit into Inmet's energy use and greenhouse gas emissions management?*
    - Inmet tracks and reports energy use at all of its sites in accordance with the Global Reporting Initiative (GRI) standard. Inmet's Closed Properties team is diligent in minimizing costs including a rigorous focus on energy conservation.

4.1.3 Approach to Corporate Responsibility

Inmet has four core values that drive ethical business practices by the company (three of which relate to the direct aspects of corporate responsibility): operate safely; make a profit; protect the environment; and treat people and communities well.

Inmet developed new corporate responsibility (CR) Procedures in 2012 that embed international best practice commitments, including meeting a minimum of Level A on TSM indicators. Sites have three years to put these procedures in place, basing their priorities on addressing key risks. Inmet proactively adopts international standards that have business value and incorporates those standards into their CR Procedures. By implementing their CR procedures, Inmet will then be meeting the requirements of the standards that it has subscribed to. This new CR management system framework will be simpler to implement because the requirements are more clear and prescriptive, and will allow for easy reporting from site management to the Board. Additional commentary provided in response to Panel questions include:

- Inmet leadership (including site managers) is very supportive of the new approach.
- Implementation of the CR Procedures has been incorporated into the bonus structure of site managers (i.e., 10% of the bonus is linked to CR).
- CR has made a difference to Inmet's bottom line. Without Inmet's strong reputation in CR, the ESIA for the Cobre Panama project may not have been approved.
- Although each procedure does not necessarily have its own line item in the budget, implementing these procedures is part of doing business and requires manpower. So CR procedure implementation is considered "budgeted".

Inmet adopts Towards Sustainable Mining (TSM) at all of its sites worldwide, including each of its closed properties for the following reasons:

- TSM drives performance improvement.
- Inmet holds its operations to equal expectations regardless of location.
- TSM supports Inmet's focus of carefully managing business risk.
- Implementing TSM is actually more important outside of Canada, where regulatory requirements are less stringent.

In response to Inmet's commentary on applying TSM to all sites, one Panel member asked which MAC members are applying TSM internationally. In response it was stated that Inmet Mining, Agnico-Eagle Mines and IAMGOLD are all applying TSM internationally. Teck Resources will begin reporting TSM results for its international operations next year and HudBay Minerals has committed to applying TSM to its international operations in the future. Some MAC members are now applying TSM to international operations because they are experiencing global pressure from investors and other stakeholders and as companies have learned more about management systems over time, they have realized that implementing effective management systems produces results. One industry representative noted that for companies headquartered outside Canada, there may be less exposure to TSM and that amidst a world of competing standards, a company would have be to convinced that TSM (a Canadian standard) is the best set of rules to apply to its operations in a variety of different countries.

4.1.4 TSM Verification Process

Robert Duda, Inmet's verification service provider described the approach to external verification with Inmet including:

- Conducting a sampling exercise to broadly screen indicators and look for changes in TSM scores; and
- Examining records and documentation and conducting telephone interviews (as needed) to collect necessary information.

Panel members were particularly interested in whether there is a need to conduct site visits as part of the external verification process. There were differing opinions on the value and need for site visits. Without site visits, assurance that processes are in place is conducted through document reviews. In the Inmet experience, there were some cases where the company was unable to produce documents to verify certain practices, and therefore instead of following-up with a site visit, the verifier simply lowered the score. It was noted by Robert that he also raised the scoring in some instances as a result of his verification. In the Cameco experience, the company thought that external verification without site visits actually required a greater level of effort in order to assemble and provide all of the necessary documentation to the verifier.

A broad range of opinions were also raised by panel members on this issue as described below:

- By talking to people at the site, additional insight on practices is provided. While site visits are not necessary, they may provide a higher level of assurance. TSM is about having systems in place, so examining documentation does not necessarily ensure implementation. Verifiers also need to look for strategies and culture that support the findings of the documentation review.

- Conducting site visits is extremely expensive (particularly for international operations). Site visits may be most valuable when a relationship between a company and verifier is new. Costs could be managed by conducting a site visit to one operation (rather than to all sites) during external verification.

- One Panel member also inquired about the processes in place to ensure consistency in the practices of different verification service providers. MAC requires TSM verifiers to become certified and provides tools and guidance to support consistent practices. MAC also offers training for verifiers, with the next mandatory training workshop to be offered in February 2012.

4.1.5 TSM Results

Inmet's verified 2011 TSM results can be found in the 2012 TSM Progress Report on the MAC website: http://www.mining.ca/site/index.php/en/towards-sustainable-mining/progress-reports.html. The discussion of TSM results in the post-verification review was limited due to timing; however, a few comments on Inmet's TSM results and associated management practices are noted below.

- **Tailings Management:** Inmet recognizes that tailings management is its biggest environmental risk, and acknowledges that there is room to improve its TSM scores in this area. Within the last year, sites have put in place OMS manuals and there have been no incidents.

- **Aboriginal and Community Outreach:** Inmet scored a level A or higher for all indicators for all facilities (with the exception of effective COI engagement and dialogue at Pyhäsalmi mine).

- **Energy Use and GHG Emission Management:** Some of Inmet's TSM scores on these indicators have gone up or down from the previous year. Scores that went up were likely due to Inmet being tougher in its self-assessment. Lower scores are likely a reflection that Inmet has addressed the low hanging fruit, and the next steps require significant investments. Inmet has corporate goals for energy use and GHG emissions, but does not have site specific goals at all facilities.

- **Crisis Management Planning:** All Inmet facilities scored a "yes" on all TSM indicators for this protocol in 2011.

- **Safety and Health:** Inmet put new corporate responsibility (CR) procedures in place in 2012 which increase expectations at the site level. In the case of Cobre Panama, where there are lots of contractors, Inmet is still in the process of enforcing procedures with these contractors, trying to ensure that they are doing what is expected.

- **Biodiversity Conservation:** Inmet has biodiversity plans at most sites, with opportunities to address biodiversity in all operating areas. Inmet's major emphasis is at Cobre Panama, where it has committed to a net positive impact.

4.2 Cameco Corporation

Liam Mooney, Vice-President, Safety, Health, Environment and Quality, Regulatory Relations, and Shane Borchardt, Manager, Environmental Systems, presented Cameco's post-verification review. Cameco's verification service providers, Morry Brown of MORCOM Consultants and Dianne Rubinoff of Rubinoff Environmental, were present for the review and answered applicable questions as they arose. A summary of the presentation and the ensuing discussion is provided below.

4.2.1 Context

Cameco Corporation is one of the world's largest uranium mining companies. Cameco's vision extends beyond its mining operations: "to be a dominant nuclear energy company producing uranium fuel and generating clean electricity". In 2008, Cameco launched its "Double U" strategy to double its annual uranium production to 40 million pounds by 2018. Cameco has mining operations in Canada (Saskatchewan), the U.S.A, Kazakhstan and Australia.

4.2.2 Cameco's Canadian Operations

Cameco's Canadian operations consist of mining operations in Saskatchewan (i.e., two operating mines, one mill and one development project) and fuel production services in Ontario (i.e., a refinery, conversion facility and fuel manufacturing facility).

1. **McArthur River:** McArthur River is the world's largest high-grade uranium producing mine. Production at the underground mine began in 1999 and is expected to continue to 2034. Mining is challenging due to the geology and Cameco utilizes an extensive system of freezing ground ahead of development to accommodate a raisebore mining method. Milling of the McArthur River ore occurs at Key Lake (80 km away). Cameco owns 70% of the asset and Areva Resources owns 30%.

2. **Key Lake:** Key Lake was initially an open pit mine and a mill when it opened in 1983 and now serves as the largest high-grade uranium milling operation in the world, processing ore from McArthur River. Cameco is seeking regulatory approval to increase annual production capacity at the mill and to increase the capacity of the tailings management facility. Cameco owns 83% of the asset and Areva Resources owns 17%.

3. **Rabbit Lake:** Rabbit Lake is the oldest operating uranium production facility in North America. Production began in 1975 and is expected to continue to 2017. The operation consists of open pit and underground mines and a milling facility. The original mined-out Rabbit lake open pit is now used for the tailings management facility. Cameco owns 100% of the asset.

4. **Cigar Lake:** Cigar Lake is a mine that is currently in development. Mining is expected to begin in 2013 and the ore will be processed at Areva Resources McClean Lake operation (70 km away). Cigar Lake is joint venture between Cameco (50% ownership), Areva Resources (37% ownership), Idemistsu Canada Resources Ltd. (8% ownership) and TEPCO Resources Inc. (5% ownership).

Cameco uses in situ recovery (ISR) mining technique to extract uranium at its two operations in the U.S.A. This technique requires specific geology (i.e., a sand base) and is not applicable to

Cameco's northern Saskatchewan sites which are based in bedrock. Cameco carefully monitors groundwater aquifers near its sites in the U.S.A.

4.2.3 Approach to Corporate Responsibility

Cameco's safety, health, environment and quality (SHEQ) management system is the primary system for managing sustainable development responsibilities at its operations. The management system consists of a corporate SHEQ policy, seven corporate SHEQ programs and corporate requirements for site implementation.

Cameco is committed to TSM and sees TSM as a lens by which to implement its management systems. TSM is driven by Cameco's corporate SHEQ group. Cameco does not intend to report on TSM for its international operations, but will build TSM expectations into corporate programs and procedures.

In addition, Cameco is both federally and provincially regulated, unlike most mines which are provincially regulated. Federal regulation occurs through the Canadian Nuclear Safety Commission.

4.2.4 TSM Verification Process

Morry Brown and Dianne Rubinoff completed Cameco's external verification. The verification occurred without a site visit; however, Cameco indicated that it was time consuming to produce documentation, rather than other kinds of evidence. The key lessons that Cameco learned through the verification process are that documentation of current practices is necessary, better timing for corrective active action may lead to improved TSM scores and site visits are necessary to manage the level of effort required for the verification process.

The verifiers commented that it can be challenging to conduct verification from the corporate office, without visiting the site, as there is a lot of information to review. For companies that are new to TSM, it may be useful to conduct a site visit during the first verification exercise, but not necessary in future verification exercises. Given Cameco's strong regulatory requirements for management systems, the company has a lot of information that is well-documented and aligned with TSM, and there is minimal action required to put a few things in place that will lead to improved TSM scores.

4.2.5 TSM Results and Lessons Learned

Cameco's management systems are federally regulated and audited, so the company aims to integrate both its regulatory requirements and TSM expectations. To date, Cameco's focus has been on meeting regulatory requirements. However, the company has a goal of achieving Level A on all TSM protocols by the end of 2012, with the exception of Energy Use and Greenhouse Gas Management protocol, which is not a material issue (i.e., Cameco's operations are under the 50,000 tonne threshold, which triggers reporting requirements in some provincial jurisdictions and is used by some companies to determine materiality). The value in implementing TSM at Cameco is not from the performance improvements that will result (as the company already has strong management systems driven by regulatory requirements), but from the potential community benefits.

Cameco's verified 2011 TSM results are not publicly available. A summary of Cameco's TSM results and associated commentary are provided below.

- **Biodiversity Conservation:** Cameco is always subject to federal environmental assessment (led by the Canadian Nuclear Safety Commission) and sometimes provincial environmental assessment for mine expansions. Cameco spends roughly $1 million / year on biodiversity conservation including: monitoring, studies for environmental assessment, regulatory requirements (i.e., MMER EEM), capital expenditures (e.g., water treatment facility update to remove selenium from effluent) and research (e.g., in partnership with Ducks Unlimited). When Cameco first began reporting on the biodiversity conservation protocol, it obtained Level C on all indicators; however, Cameco's scores have now improved. Cameco is now achieving a Level A or higher on two indicators and a Level C on the corporate biodiversity conservation policy indicator, because it doesn't have an explicit commitment to avoid exploring or developing mines in World Heritage sites (an issue which the company has not encountered to date). Participation in the MAC biodiversity workshops has helped Cameco to improve its TSM scores.

- **Crisis Management Planning:** The TSM self-assessments highlighted some simple steps that Cameco could take to improve its management systems in the area of crisis management and planning. This includes putting a process in place to ensure that new crisis team members are trained on their duties related to the plan within two months of joining the team. Cameco is in the process of addressing this gap. The external verification process also illustrated that the crisis management plan at Key Lake was not current.

- **Energy Use and GHG Emission Management:** Cameco is a small producer of GHG emissions and user of energy, and consequently this issue is not considered material by the company and not integrated into Cameco's management systems. Cameco carefully monitors its emissions and energy use, looks for opportunities to make improvements and has addressed the "low hanging fruit" to date, but does not address this issue as systematically as other issues. Some of the actions Cameco has taken to improve energy use and reduce emissions include designing new buildings to Leadership in Energy and Environmental Design (LEED) standards and incorporating heat recovery at the Key Lake acid plant. 6% of Cameco's operational costs is attributed to energy use. Cameco is connected to the grid (primarily coal, with some hydro), but is required to pay for infrastructure development for new mines. One of the benefits of Cameco's development in northern Saskatchewan is that it has resulted in access to electricity and improved roads for northern communities.

- **Safety and Health:** Cameco is achieving a Level A or higher on all indicators at all facilities, except on the policy, commitment and accountability indicator. This result is due to the fact that Cameco is not communicating policy requirements to a small segment of contractors who spend a few hours on site (i.e., small delivery contracts). While Cameco has not addressed this gap yet, it plans to do so in the future.

- **Tailings Management:** Cameco's deals with its tailings and waste rock in a similar way to other mines. Cameco's tailings facilities are mined out pits. Expansion plans for tailings facilities will create a "deeper" footprint, rather than a "wider" footprint. Cameco's TSM scores are low in this area due to a lack of a management system approach. To improve its scores in this area, Cameco will need to: commit to following MAC's Guide to the

Management of Tailings Facilities; adjust language to indicate that an executive officer has overall accountability for tailings management; undertake a management system review, rather than just a technical review; and create Operation, Maintenance and Surveillance Manuals for non-operational sites, which have not yet been decommissioned.

- **Aboriginal and Community Outreach:** Cameco's operations are located in Saskatchewan's Northern Administration District (NAD). The NAD has 37,000 people and is characterized by a young demographic, 85% self-identified as Aboriginal and the high school graduation rate is 50% on average, but less in some communities (e.g., 15%). Cameco has Surface Lease Agreements with the province, which include seven socio-economic commitments. Cameco has a Northern Strategy with five pillars which wholly integrated these seven commitments. The strategy includes a 60% employment target for residents of Saskatchewan's north (RSN), with Cameco currently reaching 50%. Cameco is Canada's largest employer of Aboriginal people. The company has low employee turnover due to the local workforce and third generation employees. The TSM self-assessment process helped Cameco to improve its TSM scores by documenting its engagement activities and improving COI identification and reporting. Cameco currently channels all community concerns to a single place, has an ethics hotline and has an open exchange between the community and senior management, but has identified that it needs better documentation of its response mechanism. Further information provided in response to COI Panel questions included the following:
    - The Government of Saskatchewan does not currently report on RSN employment statistics; however the mining industry is encouraging government to do so and the Saskatchewan Mining Association speaks to these numbers.
    - All employees work on a week on / week off rotation, except for management.
    - Cameco's operations are fly-in / fly-out, with designated pick-up locations.
    - With respect to providing family level support to communities with week on / week off employment rotations, Cameco has an employee assistance program and undertakes community investment, but Cameco tries to distinguish between responsibilities that are the role of the company and those that are the role of governments. Cameco has elders on site that play a counseling role for employees.
    - Aboriginal communities at Cameco's sites do not form a distinct group. Typically when Aboriginal employment is high, integration is effective. In addition, Cameco's sites are unionized, with one collective bargaining agreement pertaining to all employees.
    - Cameco has identified seven communities of interest (four reserves and three villages) and engages with Chiefs, municipalities and councils. Cameco asked its COI how they would like to be engaged.
    - Cameco does not report its TSM results to communities, but instead focuses on issues of importance to communities.
    - To encourage social outcomes, Cameco has placed a big emphasis on supporting programs that promote successful completion of high school education, youth engagement and career development.
    - There is a lot of interest in participating in site tours. In one instance, Cameco flew some Australian community members to Saskatchewan to show them what the mines look like.

One Panel member inquired whether Cameco found the self-assessment process burdensome. Cameco indicated that it's not TSM in itself that is burdensome, but the cumulative impact of multiple standards, regulatory requirements and corporate procedures. Other Panel members reflected on the topic of multiple standards and what this means for TSM branding:

- From an investment perspective, investors will only endorse and recognize TSM if it is applied across the industry, because otherwise the financial community will not be able to make a fair assessment.
- If the market distinguishes between those companies that apply TSM and those that don't, there will be pressure for those who don't and this will drive action.
- Applying a single standard within the mining industry is important, and whether TSM is "the standard" that is applied, is a question for the COI Panel. TSM has given some companies the tools to achieve recognition (e.g., the DOW Jones Sustainability Index).
- Improved branding and TSM certification might help to address the awareness and relevance of TSM.
- The direction MAC takes with branding and certification depends on which problems the industry is hoping to solve and which audiences the industry is seeking to address. These features dictate the solution, and the same scheme may not address all challenges. Is MAC trying to reach communities or investors through TSM? There are lots of lessons that can be applied from other industries and it might be helpful for a COI Panel work group to address this topic. MAC needs to identify the right compliment of activities to address all interests.

Responses to COI Panel Post-Verification Review Working Group Questions

In advance of the COI Panel meeting, a COI Panel post-verification review working group reviewed background information provided by both companies and posed a set of questions that they'd like the companies to address at the meeting. Many of the questions were addressed through both presentations; however, Cameco addressed some of these topics at the end of its presentation. This information is provided below and is in response to questions about a) public perceptions of social acceptance of uranium mining, including lessons learned in risk management; and b) the development and implementation of policies and procedures for the safe transportation of uranium products.

- **Social acceptance of the use of fracking in uranium mining:** Panel members were surprised to learn that fracking was being used as a uranium mining method given the controversy concerning its use for natural gas extraction. Cameco responded that some of these practices have been in place for 20 years, without affects to groundwater, but this issue is currently being examined by the Environmental Protection Agency in the U.S.A. Panel members indicated that there is a perception of risk due to using this technique in uranium mining.
- **Risk Management:** Cameco has a corporate risk standard and corrective action process.
- **Transportation:** Cameco has been operating since 1975, has an exemplary track record due to systematic management which includes: check points on transportation routes; training on transportation routes; designated geographic response teams; and full-scale transportation exercises. Cameco's product is mostly transported by truck, and some through rail.

5 Key Reflections from the 2012 Post-Verification Review

- **Post-verification review process:** In the past, post-verification reviews spent a great deal of time on TSM results, but then the COI Panel asked companies to provide more context. This leads to interesting conversations, but it may be necessary to modify the process for the future. For example, it may be better to focus on a couple of operations in depth, rather than to cover every operation and issue in a superficial way. It may also be more appropriate to take an issue-centric approach, rather than operation-centric approach.

- **Site visits during external verification:** Different perspectives exist on whether site visits are necessary for external verification. For companies new to TSM, it may be appropriate to conduct at least one site visit during the first verification exercise.

- **International application of TSM:** Panel members continue to be interested in why and how some companies apply to TSM to international operations while other companies do not, and what this means for the overall branding and application of TSM as a standard.

Annex 1: List of Companies That Verified Their TSM Results

2007 Review (2006 Results)

Albian Sands Energy Inc.
BHP Billiton Diamonds Inc.
Breakwater Resources Ltd.
CVRD Inco Ltd. (excluding Voisey's Bay Nickel)
Diavik Diamond Mines Inc.
HudBay Minerals Inc.
Inmet Mining Corporation
Iron Ore Company of Canada
Suncor Energy Inc.
Syncrude Canada Ltd.
Teck Cominco Limited

2008 Review (2007 Results)

ArcelorMittal Mines Canada
Barrick Gold Corporation (a sample of facilities)
Syncrude Canada Ltd.
Teck Cominco Limited (a sample of facilities)
Xstrata Copper Canada
Xstrata Nickel
Xstrata Zinc Canada

2009 Review (2008 Results)

BHP Billiton Diamonds Inc. – EKATI Diamond Mine
IAMGOLD
Inmet Mining Corporation

2010 Review (2009 Results)

Shell Canada Energy – Shell Albian Sands
Vale
Breakwater Resources Ltd.
HudBay Minerals Inc.
Iron Ore Company of Canada
Suncor Energy Inc.
Teck Resources Limited – Highland Valley Copper

2011 Review (2010 Results)

ArcelorMittal Mines Canada
Barrick Gold Corporation
De Beers Canada Inc.
Diavik Diamond Mines Inc.
Iron Ore Company of Canada
Syncrude Canada Ltd.
Xstrata Copper Canada
Xstrata Nickel
Xstrata Zinc Canada

2012 Review (2011 Results)

BHP Billiton Diamonds Inc. – EKATI Diamond Mine
Cameco Corporation
IAMGOLD
Inmet Mining Corporation
Suncor Energy Inc.

Note: *Suncor Energy Inc. and Inmet Mining Corporation participated in a pilot post-verification review process (i.e., a "pre-verification review") in 2006.*

Underlining denotes which companies completed post-verification reviews in each year.