

INAP Op Com Meeting

November 9, 2017

Banff, AB, Canada

Participants: Claudio Andrade – Barrick/Chair of Op Com, Cynthia Parnow – Newmont, Troy Jones – Teck, Rich Borden – Rio Tinto, Bruce Kelley – INAP (go-to-meeting), Dean Williams – Past-Chair (go-to-meeting), Richard Marton – BHP (go-to-meeting), Ben Wither – Newcrest (go-to-meeting), Gilles Tremblay - INAP

Welcome: Claudio Andrade welcomed all participants to the meeting. He then read the following anti-trust statement.

“As a reminder, it is the responsibility of our members to comply in all respects with federal and State antitrust laws. As such, discussion for the purpose of bringing about any understanding or agreement among members to (a) raise, lower, or stabilize prices; (b) regulate production; (c) allocate markets; (d) encourage boycotts; (e) foster unfair trade practices; (f) assist monopolization, or (g) in any way violate federal or State antitrust laws is unacceptable and will not be tolerated.

Any questions regarding the meaning or applicability of this policy, as well as any concerns regarding activities or discussions at INAP meetings, should be promptly brought to the attention of the INAP Chairman.”

Agenda: Gilles Tremblay noted a change to the agenda. The presentation by Al Martin from Lorax on a “Guidance Document Water and Waste Management” originally scheduled for the afternoon was canceled. Lorax had planned to submit a proposal to the Government of Canada’s climate change adaptation initiative and were seeking industry’s support. Unfortunately, another similar proposal was being prepared by the Mining Association of Canada who are seeking support from the same group of companies.

Members also mentioned other initiatives that are currently working on climate change adaptation (e.g. ICMM). Gilles notes a recent report by Natural Resources Canada (NRCan) titled “Economic Impacts of a changing climate on mines in Canada: Assessing proactive adaptation investments against estimated reactive costs”. **ACTION:** Gilles to distribute NRCan report to members.

Action Items from May 11, 2017 Meeting (Denver, CO)

Most of the action items from the May 11, 2017 meeting will be covered during the Technical Manager’s Report.

One item, on the pit lake database, was discussed. Devin Castendyk, Hatch presented a few slides in Denver on funding needs for the pit lake database. He had mentioned “low cost” and we followed-up with him but the proposal submitted was for \$136,351 to support a PhD student for 3.5 years who would be dedicated to this project. Members agreed that the work would be valuable but felt that this was not PhD work and suggested that an intern could be hired to complete the project at a much-reduced price. Details would need to be worked out but it was agreed that money would be allocated in the budget to complete this work in 2018. **ACTION:** Funds to be allocated in 2018 budget and details to be worked out to update the pit lake database in 2018.

Technical Manager's Report: Gilles Tremblay

- Much has happened in this reporting period including the evaluations of proposals for first winner of the Best Management Practice Award, the review of GARD Guide chapters and the completion of the Global Cover Design Guidance Document. Membership continues to grow as Detour Gold has joined as the first company in the new tiered membership category and a second has recently confirmed. Increased communications to the member companies continued in the reporting period and INAP is also working with SMI at the University of Queensland on developing a platform for INAP Webinars. Trials are continuing and webinars are planned for Q2 2018. Information on relevant technologies, monthly highlights and the Q3 Newsletter were also distributed.
- Key highlights from the report included:
 - INAP Australia: A brief report was provided by Gilles. Bruce Kelley will be joining the meeting later and will report on INAP Australia activities. Key areas included INAP's participation in the 9th Australian AMD Workshop (Burnie, Tasmania (November 19-23)). INAP's Best Practice Award (Bruce is a member of the evaluation committee), the INAP Webinar series and SMI-ICE-Chile in Santiago which was officially opened on 23 October 2017.
 - Global Alliance Activities
 - ADTI – MMS: Volume 6 of the Series: ADTI-MMS/SME Management Technologies for Metal Mining Influenced Water: Geochemical Modeling for Mine Site Characterization and Remediation Modeling Workbook - Management Technologies for Metal Mining Influenced Water is now available via SME Bookstore.
 - IMWA-PADRE: The 13th International Mine Water Association (IMWA) Congress was held in Rauha – Lappeenranta, Finland in June. A total of 159 oral and 49 poster presentations were given. IMWA 2017 was the largest conference in the 38 years of IMWA's history, attracting 368 delegates from 35 countries. Following the conference in June, more emphasis was placed on ICARD 2018/IMWA 2018.
 - MEND: The report titled "Study of Tailings Management Technologies" (MEND 2.50.1) was released in November, 2017. The 24th Annual BC-MEND ML/ARD Workshop was held on November 29 and 30th in Vancouver. INAP was not present this year but I provided some slides on the INAP program to be included in the MEND/NOAMI presentation. The Proceedings will be posted on the BC-MEND ML/ARD website: www.BC-mlard.ca.
 - SMI: Organized the 9th Australian Workshop on Acid and Metalliferous Drainage "Leading edge practice across resource cycles" in Burnie, Tasmania November 19-23, 2017. INAP enjoyed a high profile through short course participation, key note address, facilitation of closing session and targeted sponsorship.
 - WRC: A new publication titled "Water and Wastewater Management in the Iron and Steel Industry (Edition 1) was recently released. This report reviews the status of the South African iron and steel industry with specific focus on national production capacity, water intake and effluent volumes, energy consumption rates and best practices in the management of water and effluent. And they are also involved in the planning of ICARD 2018/IMWA 2018.
 - Global Cover Guidance Document – O'Kane: The final report was received in September and following some formatting changes, is now available to members via Drop Box. It will be placed on the INAP web site shortly and an announcement to that effect will be distributed via email. The official launch of the report will be during a short course on "An Introduction to INAP's Global Cover System Design Technical Guidance Document" at the AMD 2017 workshop in Burnie by OKC personnel. INAP wished to thank Rens Verburg of Golder and the

member companies who participated in the review of the report since the May meeting. It was also agreed that member companies would be given the electronic files used to create the figures found in Appendix A. ConceptDraw's MINDMAP software program would need to be purchased to use the files. **ACTION:** Electronic files used to create decision tree in report to be sent to member companies.

- ARD Best Practice Award: Two submissions received - Rio Tinto's Iron Ores Pilbara Operations and Kinross' Paracatu Site. Selection committee for the ARD award, comprised of Dean Williams, Bruce Kelley, Robert Kleinmann and Gilles Tremblay, held a teleconference in June. Both submissions, although very different in their approach, were judged to be acceptable and additional information was requested in August and received in October. Results and recommendation for the award to be discussed further during afternoon when both Dean Williams and Bruce Kelley join the meeting.
- GARD Guide update. List of reviewers by chapter was presented and Gilles noted that comments have been trickling in and several reminders were sent out in September and early October. Comments would range from total re-write and re-organization of the GARD Guide to specifics within chapters. It was recommended that Gilles consolidate the comments on a chapter-by-chapter basis including a general overarching section for the next meeting. **ACTION:** Gilles to consolidate comments for next meeting.
- 11th ICARD – 2018: The planning for the 11th ICARD/IMWA 2018 to be held September 10-14, 2018 at the CSIR International Convention Centre in Pretoria, SA is well underway. Close to 300 abstracts from 30 different countries received and 220 accepted for presentations. 10 short course proposals received, 6 accepted. Sponsorship was also discussed and it was agreed that INAP would continue to sponsor the 11th ICARD at the same level as previous ICARDs, that is \$20,000 US. Throughout the reporting period INAP, via the Technical Manager, has expressed concerns to the organizers about the lack of communication between INAP and the organizers. It has improved but more is needed. Several **ACTION** items were identified:
 - INAP will inform the organizers that Gilles will participate in the monthly teleconferences calls with the Local Organizing Committee.
 - INAP will inform the organizers that INAP will sponsor the "Taste of South Africa Dinner.
 - Gilles was asked, based on his experience with the organization of previous ICARDs, to prepare a checklist of the process that could be followed to organize future ICARD conferences. This item would be part of his 2018 deliverables.

Technical Manager's Note: Shortly after the Op Com I had excellent telephone conversation (finally) with Christian Workersdorfer of IMWA to discuss some issues that were identified several times in emails over the past months. Follow-up calls are planned between Christian and I and also my participation in the monthly teleconferences of the Local Organizing Committee was confirmed.

- 12th ICARD – 2021. Patrick Williamson, Intera (ADTI-MMS) presented to the AIMMGM Board (Mexico) on October 26 to gauge their continued interest, which was questionable, but also reached out to the Nicaraguan Chamber of Mining (CAMINIC). After a call with CAMINIC, in which I participated, they seemed interested in submitting a proposal. North/Central America would be favored for the 2021 ICARD since the 2015 (Chile) and planned 2018 (South Africa) were at a distance. It was pointed out that industry members are subject to

additional approvals when travelling to countries where security could be an issue. South Africa, Mexico and Nicaragua all fall into this category. A discussion ensued on other possibilities and it was agreed that a request for proposals be sent out to the general mailing list to gauge interest from member organizations that could be interested in hosting the 2021 ICARD. Proposals would be presented during the closing session at the 2018 ICARD and a decision made after. It was noted that Australia is certainly a possibility and they had previously shown interest in submitting a bid. The last ICARD (6th) in Australia was held in Cairns in 2003. **ACTION:** Request for proposals to host the 2021 ICARD to be distributed via e-mail in January.

- INAP Web site: A work in progress. The plan forward is still to have monthly additions to the site, concentrating on presentations and information on key subject areas for the members section.
- Membership: Tiered membership was approved on a case by case basis at the last Board meeting in May and Detour Gold has received unanimous approval to join as the first member in this category. Received Draft of Participants Agreement and Deed of Appointment from FAL Lawyers. Documents to be reviewed and finalized in the next month and follow-up with Detour will be done. Lundin has also applied for tiered membership category and formal approval from Board members to be sought. And most recently INAP received some interest from Agnico-Eagle and a follow-up meeting is planned in January.
- 2016 / 2017 Budget update and discussion
 - Estimated retained funds at September 30, 2017 \$475,892 USD.

Chairmen's Discussion: Claudio Andrade

- INAP Attributes
 - At the last Op Com meeting in May, a discussion was had on the value of INAP. It was well understood that there was a lack of perceived value by senior executives in the mining industry. Being able to communicate INAP's true value could well translate into additional memberships.
 - To resolve this issue, an action item was for members to provide up to five key "talking points" that summarizes the value of INAP for the mining industry.
 - The suggestions received from members were consolidated in five key attributes and distributed for comments prior to the meeting. The listing was further discussed and a final draft produced.
- ACTION:** Final draft to be circulated to members for final review and approval.

INAP's ARD Best Management Practice Award: Dean Williams / Bruce Kelley (via Go-To-Meeting)

Dean reviewed the selection process and criteria used by the evaluation committee for the award. He mentioned that both companies had submitted excellent applications, with additional information provided following the first review by the committee. Both took different approaches, Kinross focusses on one site while Rio Tinto presented a company-wide approach with many sites included. He then briefly compared both applications versus the criteria and noted that in some cases, Kinross was stronger for certain criteria while Rio was for others.

Being the first awarding of the ARD Best Practice Award, and INAP's objective is to recognize global best practice, it was proposed that both Kinross and Rio Tinto be presented with an award - Kinross for the Paracatu site, in Brazil, and Rio Tinto Iron Ore for best practice by a corporate division. The committee agreed with the recommendation and the 2018 budget will be adjusted to take into account both awards. It was noted that the 2017 budget proposal included \$15k to cover the costs of site visits and this will be no

longer needed. The total amount to be included in the budget will be \$27K and the breakdown would be as follows:

- 2018 - \$15K in honorarium (3 people at \$5K each)
- 2018 - \$1K Award plaque (X2))
- 2018 - \$5K ICARD attendance (X2)

Acknowledgement of corporate wide programs that reach far beyond individual sites is important and going forward, INAP is proposing that two awards would be awarded in the future, one for a specific site and one for corporate, and this to promote best practice. Companies would need to identify which of the award they are applying for.

As a result of this discussion, the following **ACTION** items were identified:

- Letters to the applicants will be prepared and sent. Letters will mention the financial support that INAP is providing to attend the 11th ICARD and that they are expected to present during an INAP Plenary session on their best practices.
- Selection committee to prepare a matrix comparison of the two submissions against the Award criteria.
- Selection committee to prepare draft criteria for both the site award and the corporate award.

Technical Manager's Note: At the Board meeting that followed this meeting, the preparation of a general paper about the award that would be submitted to various international magazines/journals as a way of promoting the awards was mentioned. This will be prepared by the Selection Committee and is noted in the Action Items of the Board meeting.

Australian INAP Report: Bruce Kelley (via Go-To-Meeting)

- Bruce provided notes prior to the meeting and these are available on request. Key highlights included:
 - 9th Australian AMD Workshop to be held in Burnie, Tasmania, November 19-23.
 - Represented INAP on the Organizing Committee
 - Bruce and Gilles presenting at ARD Fundamentals short course, O'Kane short course on covers document, Gilles doing a key note address, Bruce facilitating closing session and targeted sponsorship (logo prominently displayed on workshop satchel and sun hats).
 - Closing session to be used to generate project ideas and opportunities for possible key areas for future work.
 - INAP Meeting in Australia
 - A full day INAP meeting with companies, consultants, regulators and research providers will be held in Perth on November 28. SMI, INAP's GA Australia will also be present. An INAP members meetings will also be held, Rio Tinto, BHP, Newmont and Newcrest confirmed.
 - SMI-ICE Chile
 - The new office of SMI-ICE-Chile in Santiago was officially opened on 23 October 2017
 - A recognized Chilean ARD expert, Jacques Wiertz, was appointed into a full-time research/research co-ordination position, on December 4. In his position description: "Organize, implement and administrate the South American Network on Acid Prevention (SANAP) and fully integrate it as part of the Global Alliance. Organize SANAP activities such as workshops and professional training."
 - Once the centre is up and running, this will be an active GA partner for INAP in South America.

- Australian Op Com and Board Meeting
 - Excellent news that the Q2 2018 meetings are planned for Australia. Possible field trip and special presentations by Australian consultants could be part of meeting program.
- 2021 ICARD in Australia
 - Last ICARD in Australia was in Cairns, 2003. There is general interest to host an ICARD in the future in Australia and discussions to this effect could be held at AMD workshop and INAP Australia meeting.
 - At this time, it is understood that no decision has been made, gaging interest in preparing a bid to be presented at 2018 ICARD.

ACTION: While in Australia, 1) Gilles to follow-up and organize the Q2 2018 Op Com and Board meetings, and 2) to follow-up with SMI and others on the possible interest in preparing a bid to host the 2021 ICARD in Australia.

Chairmen's Discussion: Claudio Andrade (continued)

- Review of 2018 Technical Manager's Duties
 - INAP members pleased with work duties completed in 2017. A question on the Technical Manager's true level of effort was brought up considering that the position is "part-time". Gilles mentioned that the overall level of effort was maybe slightly more than the 50% and added that everything was fine.
 - Expected key outputs were mentioned during the meeting and are summarized here.

ACTION: The 2018 work plan to be circulated for approval in early January.

 - GARD Guide Review
 - Consolidate the comments for next meeting
 - Develop an action plan for the review of priority chapters.
 - 2018 ICARD
 - Work closely with the Local Organizing Committee to ensure IINAP's input
 - Organize the INAP Plenary session, including the presentations by the award recipients of the Best Management Practice Award.
 - Prepare a checklist of the process that could be followed to organize future ICARDs
 - Organize the Start-up of the INAP Webinar Series
 - Finalize platform in Q1. Organize a test trial for the Op Com members.
 - First INAP webinar and list of topics in Q2
 - Continue keeping members informed on INAP activities (web site, monthly highlights, Newsletters etc).
- Tiered Membership
 - Approach for a tiered membership was approved by the Board in May. Jenni (FAL Lawyers) was asked to amend the existing key documents to allow companies to join INAP in the tiered membership category.
 - Draft of the following documents were received in early November:
 - Deed of Variation of Participants Agreement
 - Participants Agreement – as varied by Deed
 - Deed of Appointment – Detour Gold

ACTION: Documents to be reviewed and finalized. Once finalized, complete applications for tiered membership with Detour Gold and Lundin.

- Path Forward – Projects
 - Brief update presented on projects that had not been discussed previously during meeting.
 - Towards Environmentally Responsible Resource Extraction Network – NSERC -TERRE-NET
 - First Annual General Meeting was held planned at the campus of the Université du Québec en Abitibi-Témiscamingue (Rouyn-Noranda) on June 27. After a welcoming by university officials and Denis Kemp, Chair of the Board of Directors for TERRE-NET, A series of presentations were completed on each theme by the team leader and on selected projects (electronic abstracts distributed earlier this year). The Board meeting was held in Malartic on June 28 and this was followed by a visit to Canadian Royalties' Canadian Malartic Mine.
 - Network approval was received in late June 2016 which made 2016 field season impossible to complete since students had to be recruited. Year 1 budget underspent considerably but money transferred to Year 2. Good progress in Year 2 field season.
 - Diavik Waste Rock Project
 - Still uncertainties by Rio Tinto (Diavik) with respect to funding for 2018.
 - No funds committed by INAP for 2018.
 - Project has resulted in a significant financial benefit, it was reported that the bond value was reduced by CAN \$40M (from \$200 M to \$160M) as a result of this scale-up project at Diavik. The key is that there will be no water treatment required on site at closure. There will be no presence of a mine on this remote site.

2018 Budget

- 2018 Budget was adjusted taking into account discussions that took place during the meeting.
 - Best Management Practice Award doubled to account for two awards
 - Technical Manager's Travel budget increased to account for trips to Australia (Op Com and Board meetings), South Africa (ICARD) and possibly Chile (SMI-ICE, SANAP).
 - Line object added for possible GA meeting at ICARD
 - Project amount for GARD update and Pit Lake project added
 - Outstanding final invoice for Covers Document also included
- If all expenditures are completed, the budgeted amount will exceed the expected revenues for the year. Extra funds may be required from the ANZ Term Deposit. **ACTION:** Op Com to question Graeme during the Board Meeting regarding the approach needed to obtain additional funding from the existing term deposit.
- An updated 2018 budget was prepared and distributed to Board members prior to the Board meeting for further discussion and approval.

Next Op Com Meeting

- The next Op Com and Board meetings are planned for Australia. Late May or early June 2018 mentioned. Possible site visits are also being discussed.

Claudio Andrade thanked all in attendance, formally closed the Op Com meeting and moved on to the Board Meeting.

ACTION ITEMS

- 1.** Gilles Tremblay to distribute the report to members from Natural Resources Canada (NRCan) titled “Economic Impacts of a changing climate on mines in Canada: Assessing proactive adaptation investments against estimated reactive costs”.
- 2.** Pit Lake database Project: Funds to be allocated in 2018 budget and details to be worked out to update the pit lake database in 2018.
- 3.** Global Cover Guidance Document – Electronic files used to create decision tree in report to be sent to member companies.
- 4.** GARD Guide update: Gilles to consolidate comments by chapters for next meeting.
- 5.** 11th ICARD/2018 IMWA/
 - a. INAP will inform the organizers that Gilles will participate in the monthly teleconferences calls with the Local Organizing Committee.
 - b. INAP will inform the organizers that INAP will sponsor the “Taste of South Africa Dinner.
 - c. Gilles was asked, based on his experience with the organization of previous ICARDs, to prepare a checklist of the process that could be followed to organize future ICARD conferences. This item would be part of his 2018 deliverables.
- 6.** 12th ICARD 2021: Request for proposals to host the 2021 ICARD to be distributed via e-mail in January.
- 7.** INAP Attributes: Final draft to be circulated to members for final review and approval.
- 8.** ARD Best Management Practice Award
 - a. Letters to the applicants will be prepared and sent. Letters will mention the financial support that INAP is providing to attend the 11th ICARD and that they are expected to present during an INAP Plenary session on their best practices.
 - b. Selection committee to prepare a matrix comparison of the two submissions against the Award criteria.
 - c. Selection committee to prepare draft criteria for both the site award and the corporate award.
- 9.** Australia 2017. While in Australia to attend AMD 2017 in Burnie
 - a. Gilles to follow-up and organize the Q2 2018 Op Com and Board meetings
 - b. Follow-up with SMI and others on the possible interest in preparing a bid to host the 2021 ICARD in Australia.
- 10.** Technical Manager’s 2018 work plan to be circulated for approval in early January.
- 11.** Tiered membership: Documents to be reviewed and finalized. Once finalized, complete applications for tiered membership with Detour Gold and Lundin.
- 12.** Funds for 2018 Budget: Op Com to question Graeme during the Board Meeting regarding the approach needed to obtain additional funding from the existing term deposit.