

**Alpha Coal West Inc**  
**AngloGold Ashanti (Colorado) Corp.**  
**Anglo American Metallurgical Coal**  
**ArcelorMittal Mines Canada**  
**Barrick Gold Corporation**  
**BHP Billiton Diamonds Inc.**  
**BHP BMA Coal Australia**  
**Canadian Natural Resources Ltd.**  
**Cliffs Natural Resources**  
**De Beers Canada Inc.**  
**Freeport McMoRan Copper & Gold**  
**Goldcorp Canada Ltd.**  
**Imperial Oil Ltd.**  
**Iron Ore Co. of Canada**  
**Kinross Gold Corporation**  
**KMC Mining Corporation**  
**Ledcor CMI**  
**Mitsubishi Development Pty Ltd**



**SMART** Surface Mining Association  
 For Research & Technology

[www.smartmines.com](http://www.smartmines.com)

## SMART Meeting Minutes

**Newmont Mining Corporation**  
**North American Construction**  
**NovaGold Resources Inc.**  
**Peabody Energy Corporation**  
**Prairie Mines & Royalty Ltd.**  
**Queens University**  
**Quadra FNX Mining Ltd**  
**Shell Canada Ltd.**  
**Suncor Energy**  
**Syncrude Canada Ltd.**  
**Teck Resources Limited**  
**Thiess Pty Ltd**  
**Total E&P Canada Ltd**  
**TransAlta Corporation**  
**University of Alberta**  
**University of Arizona**  
**University of British Columbia**  
**URS Corporation, Washington Div.**  
**Walter Energy**

**Date: Sunday May 6, 2012 Hosted by CIM, Edmonton, Shaw Conference Centre**

Gord Winkel (U of A), Tom Demorest (Syncrude), Erika Fretheim (FMI), Mike Lipsett (U of A), Tim Joseph (U of A), Zoli Lukas (KMC), Heather Ednie, Tim Skinner  
 Steve Thornton (Kearl), Paul Graham (Shell), Luis Vega (Total), Ian Parsons (Syncrude), Chris Langmead (Suncor), Andrea Sedwick (TOTAL),  
 Mark Bartlett (Newmont), Mark Wyllie (Syncrude), Richard Paterson (KMC), John Grayson (TransAlta), John Thomas (Syncrude), Mal Carroll (Syncrude),  
 Harold Gudmundsen (NACL), Stan Miller (KMC), Dermont McArdle (KMC), Allan Flemming (KMC), Laeque K. Daneshmend (Queens), Peter Wan (Teck),  
 Mike McDaniel (Leica), Manuel Garbin (Shell).

**Presenters: Randy McDonald Caterpillar, Dave Faber Caterpillar, Paul Blomerus Westport, Tom Stephenson, Bonnie Rose, Mica Endsley**

Distribution List: (135 members)

Allan Michael	Garbin Manuel	Obaia Khaled
Andrews Peter	Graham Paul	Osachuk Barry
Arn Do	Gray, Jim	Parsons Ian
Audet Bruno	Grayson John	Paterson Ric
Ball Troy	Greene Todd	Peck Jon
Barnum Brad	Greyvensteyn Rory	Penney Brian
Bartlett Mark	Gudmundsen Harold	Pritchard Ross
Bauer Andrea	Hall Robert	Purdy Dave
Boddy Allan	Hamagami Ronald	Radford Larry
Bowling Mike	Hammel Dan	Richards Mark
Brans Jeremy	Hughes John	Roberts Jeff
Brasfield Craig	Huillery Quentin	Rosenthal Scott
Brian Droyfshyn	Hutton Malcolm	Ross Craig
Brown Al	Ing Andrew	Rosser Jeff
Butcher Bruce	Isidoro Tony	Sagmoen Wayne
Carroll Mal	Javid Salar	Scholz Ben
Carter Andrew	Jerrels Bob	Scott Andrew
Carter Jeffrey	Joseph Tim	Sedgwick Andrea
Chiasson Lyndon	Jungkind Ron	Seppala Vicki
Clark Larry	Keane Joe	Simpson Matt
Coetzee George	Kehler Tyler	Sivils Richard
Colbourne Tom	Kennedy Jim	Skinner Tim
Corriveau David	Kenworthy Stephen	Snodgress Dan
Cox Jim	Kneller Bryan	Stokes Andrew
Cronin Peter	Knight Andrew	Sykes Mark
Daggitt Randy	Krall Clayton	Thompson Dale
Damori Bernie	Langmead Chris	Thornton Steve
Damours Mathieu	Leclerc Normand	Timm Rolf
Daneshmend Laeque	Lipsett Mike	Townley Lloyd
Davis Robert	Little Steve	Tucker Gene
Day Joel	Ludik Ben	Tyler Duncan
Delongchamp Steve	Lukacs Zoltan	VEGA Luis
Desrosiers Yves	MacClean Jeff	Velez Michelle
Dessureault Sean	Makus Lyle	Wan Peter
Di Marco Michael	Martens Ken	Wenger Kevin
Dirk Craig	Mawhinney Darren	Williams Peter
Dirk Robert	McArdle Dermont	(Denver)
Donald Bruce	McClure Dave	Willmer Terry
Dufek Jonathan	Mcleod Sterling	Winkel Gord
Ednie Heather	Meier Troy	Wood Brad
Edwards Brian	Melnyk Lydell	Wooley Brad
Fancey Sean	Miller Tracy	Yakemchuk Kirby
Ferguson Ken	Morash Ed	Zelmer Luke
Flemming Al	Morin Gaston	Zelter Tim
Fretheim Erica	Morris Kevin	
Frizzle Rockie	Morrison Don	

## **Introductions and Agenda Review:**

Gord Winkel welcomed the SMART member representatives and thanked CIM for hosting our meeting.



SMART Agenda  
or May 6, 2012 ..

## **Action Log Review**

Discussed correspondence from Extreme by Devex regarding their proposal to attend a meeting and present their work. Some SMART members have experience with this firm and will keep SMART up to date through those contacts. SMART will not request a presentation by Extreme by Devex at this time.

Other action items were incorporated into the agenda topics.

## **Company Profile-KMC Mining Corporation (Allan Flemming)**

Allan provided an excellent and informative company overview of KMC mining Corporation. His presentation is with the meeting minutes on the SMART web site.

## **Tyre Pressure Monitoring System (Tom Stephenson)**

Tom Stephenson has been working in the tyre industry all his working life, some 30 years. Most of those 30 years has been at the coal face as it were, in the OTR sector, changing tyres. He has an absolute passion for the industry and is always looking for new ideas and technologies to assist companies in reducing tyre related costs. The past five years he has been providing consulting and tyre management services to mining companies globally. Some of these companies include, Goldcorp Penasquito, Barrick Pueblo Viejo, MacMahon Contractors Aust, Komatsu New Zealand, Ports of Auckland New Zealand, McCarthur Coal Aust, OCP mining Morocco to name a few.

Tom was asked in late 2009 to conduct an in-depth cycle and heat study. Transcale Aust was also present conducting a weight study in conjunction. The results were showing consistent differences in weight distribution over a dual pair. The uneven weight distribution was a result of poor tyre pressure maintenance. Results showed up to a 20 metric ton difference in a dual pair of 3700R57 tyres fitted to Komatsu 730 E.

As a result, Tom began working on designing and developing a Dual Tyre Pressure Equalization device that would be a retro fit to a Haul Truck and still work within industry standard valve hardware. 11 months later he tested his first device on a Cat 789 C truck in South America.

Tyre Intelligence or Tyre Pressure Optimization System was fitted to this truck on the 4th October 2010 and to date is still working perfectly. Perfectly balanced pressures all day every day, and of course, even weight distribution. Tyre Intelligence works in such a way that in the event of a Blow Out or deflating tyre, the good tyre stays safe by way of a simple spool or shuttle valve.

Tom provided an overview of the Tyre Pressure Optimization System.

## **R & D with Regard to Rate of Heat & Pressure build in Tire/ Rim Assemblies (Mike Lipsett, Tim Joseph)**

Mike reviewed a proposal for Modeling Heat Generation and Overpressure in Haul Truck Tire. Large pneumatic tires may be subject to explosive over-pressure under certain conditions. The conditions in which a runaway overpressure event can occur are not well understood. An example is recorded in a video of a welding torch held to a truck wheel rim, showing pressure slowly climbing before spiking just before the tire explodes.

Improved understanding of the mechanism of failure for truck tires, especially when subjected to heat near the bead of the rim, would allow for measures to be taken to reduce risk to personnel and equipment when such events are likely to occur. An investigation is proposed to create a computer simulation of the failure event, to understand the underlying failure mechanism.

The following attachment provides additional information.



Mike Lipsett  
es.\_Proposal\_Ide.

Mike also discussed two Environment Canada studies that are coming up: one is a remote sensing survey over the oilsands leases and surrounding areas, and another is a truck emissions monitoring study to look at real-time emissions rather than long-term filter based studies that may over predict the emissions (just the usual five: CO<sub>2</sub>, CO, residual hydrocarbon, NO<sub>x</sub>, and particulates).

He is working with a colleague (Jason Olfert at UofA) and they are looking for at least one test site for early fall. There'd be a few hours to install the gear in the cab of the truck and to run a sample measurement line, but most variables can be taken from on-board engine sensors. The idea would be to do a ride-along and take measurements during different activities.

The results of the testing and analysis will be discussed in detail with the company that provides access to their equipment, to assist them to interpret the results for guiding operating practices. A summary of the study results will be published in late 2012 or early 2013. Other than in-kind contributions, the company would have no costs. Direct costs will be covered by Environment Canada. Timing for the study would preferably be late Summer 2012.

If you are interested in participating in this study, or another study related to vehicle emissions, please contact Jason Olfert (780-492-2341, [jason.olfert@ualberta.ca](mailto:jason.olfert@ualberta.ca)) or Mike Lipsett (780-492-9494, [mlipsett@ualberta.ca](mailto:mlipsett@ualberta.ca)).



Mike Lipsett  
Summary of emissi

## **Use of Natural Gas for Diesel Engines (Dave Faber, Randy McDonald, Caterpillar)**

Dave and Randy provided an update on the work Caterpillar is involved with regards to use of natural gas for engines. The following slides were provided by Dave for distribution in the SMART minutes.



CAT LNG  
am Takeaway (C

## **High Performance Natural Gas Tech. for Surface Mining Engines (Paul Blomerus -Westport Innovations)**

Paul Blomerus of Westport Innovations provided the following presentation Natural Gas Technologies New Choices for Surface Mining.



Blomerus  
RT presentation :

## **CIM Mining Information and Technology Standards and Guidelines Committee (Heather Ednie, Tim Skinner)**

SMART members supported Paul Graham of Shell to fill the position of the Vice Chair SMART on the executive council.

Heather provided the following update on the work of the CIM Mining Information and Technology Standards and Guidelines Committee.



SMART\_CIMStandardsCommittee\_M

## **2012 SMART Learning Seminar (Tim Joseph)**

The 2012 Learning Seminar tentatively scheduled for Saturday May 5th, 2012, was postponed to 2013. Tim Joseph will begin the planning for next's year's topic.

## **CSA Standards in Canadian Mining (Bonnie Rose, Tim Skinner)**

Bonnie Rose, President, Standards, CSA Group provided an overview of CSA. Her presentation is attached and includes:

- A Standards-Based Approach
- Case Studies
- Establishing Sector Solutions
- How A Sector Approach Can Benefit the Mining Sector
- Conclusion



B Rose CIM  
presentation May 2012

## **Large Tire User Group**

The next LTUG meeting will be hosted by Barrick & Newmont, June 25-28, 2012. Troy Meier is the chair of LTUG.

## **Truck Shovel user Group**

The next TSUG meeting will be held May 16th and 17th, 2012 at the Best Western Hotel in Fernie BC. Teck Coal Limited is the sponsor for this meeting. Steve Thornton is the chair of the TSUG.

## **Items for Information Sharing - (SMART Members)**

Information Sharing continues to be a successful item. Many topics have been shared. Attached is a list of all items covered with the Information Sharing topic. New topics can be initiated at any time. Contact Tom Demorest with your topic idea for sharing. The most recent Information Sharing topic was Mobile Equipment Telemetry Survey. Ian Parsons of Syncrude Canada Ltd. presented the results of the survey.



SMART  
Telemetry Survey 2012

1. Equipment Top 10 downtime Reasons (Shovels, Trucks, Dozers, Loaders)	2002
2. Communication and Safety Meetings (On site / Off site, agenda, frequency)	2002
3. Mining Organization Structure	2003
4. Shift Change and Coffee Breaks	2007
5. Equipment Replacement Strategy (Truck and Shovel Life)	2004
6. Support Equipment Requirements	2004
7. Top Safety Items	2005
8. Engine Life Tier 1	2005
9. Key Research Items	2007
10. Heavy Hauler Fueling	2006
11. Shovel PM Strategy	2006
12. Lockout Procedures	2007
13. Fatigue Management	2007
14. Collision Avoidance	2008
15. Diesel Additive	2008
16. Lightning	2008
17. Fire Suppression	2008
18. Washbays	2008
19. Shovel De-Decking	2008
20. Mine Equipment Re-Fueling (updated)	2009
21. Update to Equipment Replacement Strategy (item 5)	2009
22. Integrating New Equipment (Technology Committee)	2010
23. GIS Geographical Information Systems	2010
24. Tire Pressure Monitoring	2011
25. Maintenance Process & Efficiencies (Consultant used)	2011
26. Mobile equipment Telemetry Survey	2012

## **EMESRT Update, Oilsands & SMART Involvement (John Thomas, Mal Carroll)**

John gave a brief update on EMESRT. Their website has been updated, and they are phasing from 15 design philosophies to 8. John is retiring from Syncrude and Mal Carroll will be replacing John as our interface between SMART and EMESRT.

## **CMIC update and Interfaces with other Groups (Gord Winkel)**

Gord provided a unique presentation on the interfaces of Surface Mining organizations. Attached.



photo.JPG (100  
KB)

## **SA Technologies Topic Introducing Situation Awareness. (Mark Bartlett)**

Mark provided the following presentation Situation Awareness - Have We Thought About Our Designs.

His presentation is with the meeting minutes on the SMART web site.

## **Surface Mining Association Developments update (Zoli Lucas)**

Zoli reviewed the attached presentation on Asset Management Working Group for CIM Mining Information and Technology Standards and Guidelines Committee and the presentation Reliability Round Table.



Asset



Reliability Round

ment Working G Table Propos...

## **Next SMART Meeting**

Our next meeting was discussed and SMART members supported having this meeting in Denver, Colorado, hosted by Mark Bartlett and Larry Clark of Newmont. As this is our first meeting in the US, Mark will also invite US other mining firms to our meeting. The date for the meeting is currently set for October 25, 2012.

### ACTION LOG - May 6, 2012

DATE OF ACTION		NAME	DESCRIPTION	DATE REQ'D
Oct. 14, 2011	Action Item	Steve Thornton	Steve is preparing a charter for the TSUG that he will bring to a SMART meeting for review.	Next meeting agenda topic.
Oct. 14, 2011	Action Item	Zoli Lukas	Prepare a template for Tire Information Sharing to support U of A Tire Project.	Next meeting agenda topic.
Oct. 14, 2011	Action Item	Tim Skinner	Tim to provide Mike Lipsett with a contact for nano technology.	Next meeting agenda topic.
Oct. 14, 2011	Action Item	Tim Joseph	Draft a recommendation on behalf of SMART related to tire service work.	Next meeting agenda topic
May 6, 2012	Action Item	Mike Lipsett	Continue to work a recommendation on what R&D could be undertaken with regard to the Rate of Heat & Pressure Build Up in Tire / Rim assemblies. Follow up with Caterpillar.	Open
May 6, 2012	Action Item	Tim Joseph	Learning Seminar for 2013	Next meeting agenda topic.