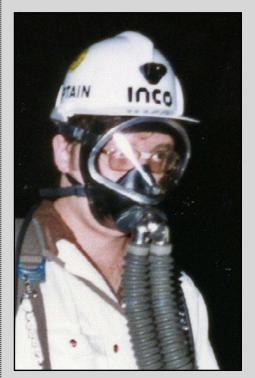
Charlie Burton

Volunteer, Mine Rescue Officer, Supervisor of Mine Rescue, Friend

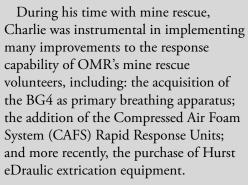


Ontario Mine Rescue is mourning the death of friend and former colleague Charlie Burton.

Burton, or just Charlie, served Ontario miners and Ontario Mine Rescue for more than 40 years, as a mine rescue volunteer, mine rescue officer, and supervisor of mine rescue

Charlie started as a volunteer in 1975 at Inco's Creighton Mine. He competed in district and provincial competitions, and was captain of Inco's provincial winning teams in 1983 and 1984, and a coach of the Ontario team that won the 1986 national competition.

At the end of 1984, Charlie was hired as the Kirkland Lake District mine rescue officer. He moved to Sudbury in 1989 to become Onaping District MRO, and was appointed supervisor of mine rescue in 2003, retiring in 2015.



Many procedural changes were made during his tenure, both to emergency operations and to the conducting of district and provincial competitions. His provincial competition scenarios earned him even more recognition and, occasionally, notoriety.

Charlie will be missed by new and longtime mine rescuers for his willingness to share his broad knowledge and extensive experience.











Issue #34 Fall 2017

Getting to the incident quickly

Vehicle chops Kidd Operations response time

"When do I get to drive the new MRERV?" may be the question at top of mind for some mine rescue volunteers at Glencore's Kidd Operations in Timmins.

The Mine Rescue Emergency Response Vehicle (MRERV) is set to go into action this fall. It will chop more than an hour off the emergency response time to the deepest, farthest part of the expansive mine, three kilometres underground, said Iain McKillip, Kidd's Production Engineering Superintendent.

"There's a lot of excitement about the vehicle," McKillip said. "We've been talking about this project for two to three years. When that happens, it becomes hard to believe that something is really going to happen."

Several years ago, "we had a fairly significant fire at the 94 Level," McKillip said. "It was very deep and required a very long travel time that made . . . it very hard and very hot."

An after-action comment that "we need



RIDING SHOTGUN – Kidd Operations Mine Rescue volunteer Dan Lapointe sits shotgun on the mine's new Mine Rescue Emergency Response Vehicle (MRERV), a modified Toyota Land Cruiser, which will cut more than an hour in response time to the farthest reaches of the mine.

some kind of rescue vehicle that can be moved by cage" started discussions, and the project was signed off in January 2015.

Working with Access Mining Services in Rouyn, a committee set out to design the vehicle, and encountered the first major challenge – what should the vehicle be capable of doing?

McKillip, a member of Ontario Mine Rescue's Technical Advisory Committee,

said there was a lot of interest in the project, not only at Kidd.

Other mining companies and potential suppliers were "looking at the design and the purpose of such vehicles" trying to resolve whether they should be stationed underground or on surface, air pressurized buses or equipment-loaded trucks, and other questions.

See 'DESIGN' Page 6

Mine rescuers share their 'Drägerman Stories'

Ontario Mine Rescue family and families will be part of a video series, Drägerman Stories, produced and released by Dräger Safety later this year.

Earlier this summer a dozen current and former Mine Rescue volunteers and their families in the Sudbury and Timmins areas were filmed during a weeklong shoot by a video crew working for Dräger.

Included in the filming were Mike, Ron and Aaron Boutet, Glen Duffy, Simone Hensher, Jim Lundrigan, John Hagan, Craig Jorgenson, Bryan and Justin Wilson, Joe and Pete Joliat, and various members of their families.

An almost two-minute teaser trailer for the video campaign was played at the International Mines Rescue Body conference in Moscow in September. The trailer is to be released on Dräger's social media sites sometime in October. Links will be available on OMR's website and Facebook page.

Immediate family members – spouses and children appearing in the videos, will give voice to their experiences and understanding of the role their family member plays in mine rescue.

See 'VOLUNTEERS' Page 4

We need you!

If you have comments about the newsletter, or suggestions for future articles, please contact Ken Sitter at WSN, (705) 474-7233 ext. 234, or kensitter@workplacesafetynorth.ca



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OMR presents at IMRB Russia 2017

Mine rescuers at the 8th biennial International Mines Rescue Body (IMRB) Conference in Russia last month might be forgiven if, for a brief moment, they thought they were attending a previous international mine rescue event in Ontario.

Four Ontario Mine Rescue (OMR) representatives gave presentations on the same day during IMRC Russia 2017.

Approximately 200 participants from 22 nations attended the conference, which was spread over three cities – Moscow, Novokuznetsk and St. Petersburg, said Alex Gryska, IMRB secretary treasurer and former OMR general manager.

"There was business everywhere," said Gryska, but presentations on mine rescue topics were held in Novokuznetsk, a largescale coal mining centre in southwest Siberia with a population of more than 500,000.

A plenary session in the morning was followed by presentations in five thematic tracks in the afternoon, he said.

OMR presenters included:

- Ted Hanley, OMR General Manager

 Technical Mine Rescue Simulations

 and Evaluation Criteria used during
 IMRC2016;
- Tim Ebbinghaus, OMR's Chief Emergency Services Officer – Mine Rescue Digital Communication: A case study in the use of electronic devices and peripherals for underground Mine Rescue communication;
- Justin Konrad, OMR research student Physiological Effects of Underground Mine Rescue and Recovery Work: Vital Sign Monitoring Data Analysis of Mine Rescue Responders at Work (see 'RESEARCH' Page 7); and
- Michael Krell, Ontario Mine Rescue Officer, on Virtual Mine Rescue Training: NORCAT & Ontario Mine Rescue Partnership in the development of a computer-based Mine Rescue evaluation.

Hanley said notable topics included global mine rescue operations conducted in the past two years; mine rescue transportation; incident command system training; and mine rescue organizational structure used in other jurisdictions.

Those presentations, he said, will provide OMR with invaluable information to make improvements prior to experiencing similar challenges.

A highlight for Ontario Mine Rescue at the conference was the analysis of mine rescue fitness data presented by student researcher Konrad, Hanley said.

The rare and robust sample of live mine rescue field data from IMRC2016 generated significant discussion regarding the risk profile of mine rescue work while wearing



FLAGS FLYING – Ted Hanley, Ontario Mine Rescue General Manager, front, and Tim Ebbinghaus, Chief Emergency Services Officer, listen to a session at IMRB Russia 2017 in St. Petersburg.



International Mines Rescue Body: www.minerescue.org

IMRB Russia 2017: en.imrb2017.ru

breathing apparatus. One organization to take note was Dräger, which is working on a new mine rescue breathing apparatus to reduce the physiological risks identified in the study.

Nickel Rim South Mine Superintendent and Chair of the OMR Technical Advisory Committee Jim Lundrigan attended the conference as the lone mine operator representative from Ontario.

IMRB activities included a visit to subway construction sites and a tour of the National Crisis Management Centre in Moscow; a visit to and demonstration at the Saint-Petersburg Mining University in St. Petersburg; and tour and demonstration at the National Mine Rescue Center in Novokuznetsk.

"I see how much effort they went to for the IMRB, and I believe they will put even more effort into next year's IMRC," Gryska said.

Russia officials did not release any new information on the 2018 International Mines Rescue Competition, but did indicate there would be a significant update this fall, likely before the end of October.

The 9th IMRB conference will be held in Bogota, Colombia, Sept. 7 to 14, 2019.



HONOURED – Alex Gryska, IMRB secretary treasurer and former OMR general manager, was recognized for his service to international mine rescue.

It will be the first major international mine rescue event in Latin America and should help draw those nations into the community, Gryska said.

Despite interests expressed by multiple South American countries, only Colombia has taken an active role in both the IMRB and the IMRC, but interest and involvement across the globe continues to grow, he said.

Armenia and the United Arab Emirates officials attended their first conference this year, while new countries have stepped up to volunteer to host both the conferences and the competitions scheduled for the next eight to 10 years, he said.

The growth is a factor in the IMRB's plan at the next conference to revise its constitution, written almost 20 years ago when it was a half-dozen nations, to create a slightly more structured organization with two permanent officers.

Gryska, who has served as the IMRB's only permanent officer since 2009, was one of five people recognized with a medal by the Russian government for significant contributions to international mine rescue.

Leaves on the OMR Family Tree

Multiple Generations

- Grandfather Mike, father Ron, & grandson Aaron Boutet
- Grandfather Joe Pacione & grandson Glen Duffy

Fathers & Sons/Daughters

- Mine Rescue Officer Walter & Kevin Adler
 - Denis & Anne Bilodeau
 - Ernie & Gerry Champagne
 - Mike & Kurtis Gillis
 - Jack & Joe & Pete Joliet
 - Craig & Andrew Jorgenson
 - Joe & Jim Lundrigan
 - Stanley & Mitch MacLeod
 - Colin & Ryan Pickett
- Mel & Chief Mine Rescue Officer
 Shawn Rideout
 - Claude & Andre Timony
 - Dave & Brad Towle
 - Bryan & Justin Wilson

Brothers

- Retired Mine Rescue Officer John & Brian Hagan
 - Jack & Roger Joliet
 - Joe & Pete Joliet
 - Rob & Rick Ladouceur
 - Ryan & J.P. Lepage

Couples+

- Frances & Wilfrid Machimity (and nephew Ron)
 - Lynne & Alex Thompson

Father/Sons-in-Laws

- Former Mine Rescue Officer John Hagan & Andrew Jorgenson
 - Gabe Larouche & Rob Ladouceur
 - Guy Sabourin & Jim Lundrigan

Brothers-in-Law

• Chris Horde & Dan Kuppinen

Cousins

• Chris Horde & Ryan & J.P. Lepage

Uncle/Nephews

• Roger & Joe & Pete Joliet

Uncle-in-law/Nephew

• Leo-Paul Seguin & Jim Lundrigan

Did we miss someone?
Please let us know - email
kensitter@workplacesafetynorth.ca



LIGHTS, CAMERA, ACTION – Three-generation Ontario Mine Rescue family the Boutets – Aaron, Mike and Ron, discuss mine rescue mementos while being filmed for a video series to be produced and released by Dräger Safety later this year.

Volunteers proud of family, respond to info request

Continued from Page 2

Most of the participants responded to an email from Chief Mine Rescue Officer Shawn Rideout seeking Mine Rescue volunteers with multiple generations or multiple family members involved in mine rescue in Ontario or elsewhere.

Many more volunteers responded, and many were contacted by Draeger, which faced time, travel and other constraints in selecting mine rescuers to include in the series.

Ron Boutet, whose father Mike and son Aaron appear with him in the project, said the family was delighted and honoured to be asked to participate. The trio was filmed at the family's Sudbury area home, Fraser Mine where all three once worked, and the Onaping Mine Rescue Station.

"This is certainly special for us," said Ron, who like Mike is a retired Mine Rescue volunteer. Grandson and son, Aaron is a current volunteer. The three-generation OMR family was profiled in the Winter 2014 Link Line.

"Not just for us as a family, but to help represent (Ontario) Mine Rescue, and mine rescuers," he said.

The Boutets are one of two known families whose relationship with mine rescue spans three generations, but the only family with three generations with Ontario Mine Rescue. Vale volunteer Glen Duffy, profiled in the Spring 2013 Link Line, is the grandson of Timmins volunteer Joe Pacione. Glen's uncle, Joe's son, was a mine rescuer in the Yukon.

But the Boutets are not the family with the most Ontario Mine Rescue connections. That honour is shared by several families, though on a blood relation basis, the Joliats of Timmins win. There, brothers Jack and Roger Joliet were followed by Jack's sons, Joe and Pete.

Also noteworthy, among many noteworthy connections, are:

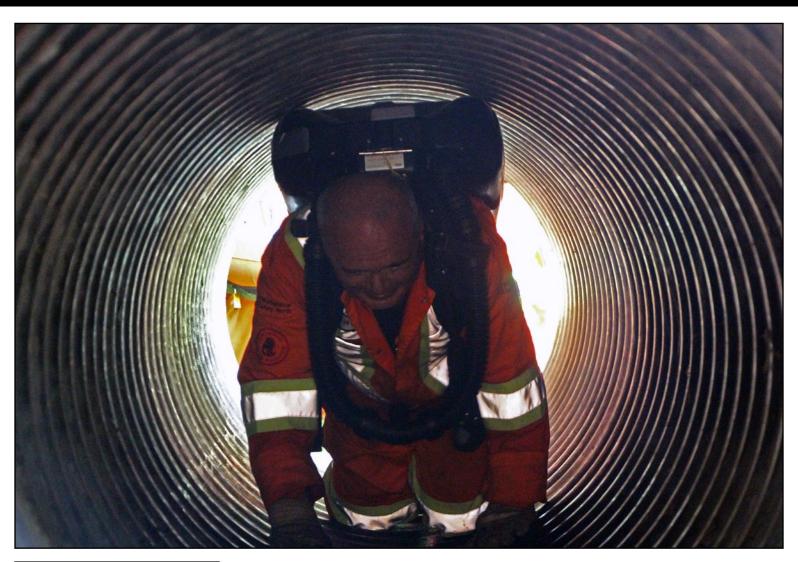
The Hagan/Jorgensons – brothers John and Brian Hagan were joined by John's son-in-law Andrew Jorgenson and his father Craig. John, who recently retired as a Mine Rescue Officer, trained Craig.

The Lepage/Horde/Kuppinens – Brothers Ryan and J.P. Lepage, their cousin Chris Horde and his brother-in-law Dan Kuppinen, all work and volunteer at Goldcorp's Musselwhite Mine.

The Lundrigan/Sabourin/Seguins – Jim Lundrigan, mine superintendent at Glencore - Sudbury Integrated Nickel Operations, followed his father Joe into OMR, as well as his father-in-law Guy Sabourin, and uncle-in-law Leo-Paul Seguin.

Among the oldest known OMR family connections belong to the Pacione/
Duffy, Champagne and Boutet families.
Pacione competed in the early 1960s and volunteered in the 1965 McIntyre Mine
Fire. About that time, Ernie Champagne competed for Dension Mines, helping them win the 1967 provincial competition, while Mike Boutet joined in the late 1960s.

Other and older family mine rescue connections are likely but may be lost to time and memory.





MRO Summer Camp

Ontario Mine Rescue Officers (MROs) spent their July training session on a weeklong mine firefighting course at the custom designed facilities of West Virginia University. The program, which included theory as well as practical exercises, had MROs practise gas monitoring and ventilation restoration strategies; mine rescue team procedures; first aid; arduous physical labour under breathing apparatus; as well as firefighting procedures and equipment use in low visibility atmospheres. The WVU Mining Extension staff rewarded the MROs with a custom BG4 backplate painted to commemorate the collaboration between OMR and the university's mine rescue trainers – a BG4 custom painted with the OMR logo and a Canadian flag.





Design overcomes practical challenges

Continued from Page 2

A range of concepts and ideas resulted in multiple design iterations, which forced Kidd to focus on its needs. "We had to decide what the (primary) capability of the vehicle would be," McKillip said. "It turned out to be transporting a basic mine rescue team to the incident as quickly as possible."

With more than 50 cage accessible working levels, and no way to effectively guarantee available on-level transportation, deciding on a dedicated, cage accessible vehicle stationed on surface set the stage for practical design considerations, notably how to fit the vehicle on Kidd's cage.

"Our cage isn't large enough for a regular Toyota Land Cruiser," he said. "They had to take a regular Land Cruiser and cut the frame to shorten it."

Ensuring a casualty would rest horizontally in a stretcher meant the frame could not simply be cut from the back. The cab was cut away and shortened, doors and windshield removed, the cab seats replaced, and occupant protection guards installed.

The design not only allows a five- or sixman team to transport a casualty, McKillip said, but the vehicle can be reconfigured to carry the team, additional firefighting equipment and a compressed air foam generator.

Additional features include:

- multi-purpose storage compartments;
- seats that can be configured for use with or without BG4s;
- positionable scene lights;
- a centrifuge air treatment system to allow the diesel engine to work in poor air environments; and
- a vehicle/team tracking system.

"Our briefing officer can see exactly where the truck is and where the team is at all times," McKillip said.

NOT QUITE FINISHED YET

And there'll be a few more features added

"We're getting a lot of suggestions (from mine rescue volunteers) for little details that will help to optimize the vehicle."

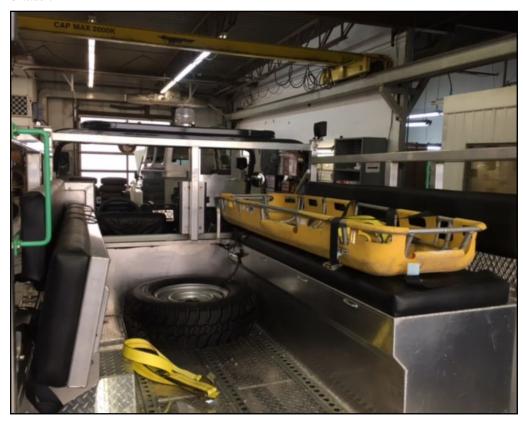
The vehicle was delivered in May, shortly after the district mine rescue competition, for a trial period "of adjusting and fine tuning details like how door closures would work," he said, and some mine rescue volunteers have gotten their hands on the steering wheel.

"We have to qualify people to drive the vehicle on the cage, potentially with a mask on their face."

All Kidd mine rescuers, who will ride in the MRERV in the cage, will be qualified to



SOLVING THE PUZZLES – Fitting the Mine Rescue Emergency Response Vehicle (MRERV) on the cage at Kidd, keeping the stretcher in a horizontal position, and providing room for a six-man mine rescue team were among the design considerations Glencore's Kidd Operations amd Access Mining Services had to achieve in modifying a Toyota Land Cruiser.



drive the vehicle. The vehicle fits snugly on the cage, McKillip said, leaving about two feet of space on both sides and six inches front and back.

Most impressive, though, McKillip believes, is "we've significantly improved our response time to get to the deepest reaches of the mine."

A time trial to reach a point on the 94 Level showed an improvement of 1.2 hours, he said, "and that's just in getting there," noting the improvement also means shorter return travel time and a longer availability on an incident scene.

McKillip said he's received enquiries about the final product, which cost about \$100,000, adding that Access Mining Services plans to have that type of vehicle available for purchase to other mines.

"Its capabilities for its cost should make it attractive for smaller mines and mines with shorter lifespans."

Anyone looking to test drive Kidd's MRERV will likely have to wait until all their mine rescue volunteers have had a turn.

Research highlights importance of fitness

By Justin Konrad

Mine rescue emergency response is undoubtedly one of the most physically demanding occupations, as rescuers are required to perform arduous work for long periods of time.

Current research has shown peak heart rates of nearly 100 per cent of their age predicted maximum heart rate (APMHR), which is a common method to classify difficult of work. Therefore, the Centre of Research in Occupational Safety and Health (CROSH) and Ontario Mine Rescue (OMR) teamed up to explore the physical demands of mine rescue workers during simulated mine rescue emergencies.

At the 2016 International Mine Rescue Competition (IMRC2016), participants were recruited to wear a physiological monitoring device and/or thermometric core temperature capsules. These devices documented readings such as heart rate, respiration rate, heart rate variability (HRV), and core body temperature during the two-hour underground scenario. Further analysis of the HRV data can estimate the energy expenditure and estimated maximal oxygen consumption (VO₂ max) values.

The project was a speculative study of the physical demand of the main tasks performed for the underground scenario, as well as outline any differences between appointed positions of the mine rescue

Consistent with current literature on physical demands of mine rescue volunteers, it is clear these rescuers were under extreme physical demand while performing rescue work. For example, at IMRC2016 the average heart rate over the entire two-hour competition was 153 beats per minute (bpm), which corresponds to an APMHR of 79 per cent. An APMHR of 79 per cent corrolates to a vigorous physical workload according to the Centers for Disease Control (CDC), a leading national public health institute in the U.S.

Other alarming findings were related to core body temperature, in which some participants documented values above 39°C, meaning they are experiencing heat strain and approaching dangerous levels.

It is important to note when core temperature values increase beyond 38°C, reaction time and judgment may become impaired. This is relevant for captains, as they are responsible to make decisions that may mean life or death.

These preliminary findings suggest that mine rescue volunteers should participate



Justin Konrad

in regular physical activity, as well as have healthy eating and social habits (e.g. non-smoking). These suggestions are based on the physical demands to perform a rescue requires volunteers to sustain a heart rate of 153 bpm for up to two hours.

A specific suggestion is active volunteers should work to increase their aerobic and anaerobic physical capacity and physical strength to meet the high demands to perform these rescues.

Aerobic capacity, which could be referred to as physical endurance, is recommended as volunteers work for lengthy periods of time. Anaerobic capacity is recommended as volunteers work at nearly 100 per cent of their APMHR at times. Physical strength is recommended as volunteers are required to carry heavy equipment and casualties.

Future research may recommend a standardized physical test that evaluates mine rescue volunteers prior to becoming active.

For example, Queensland, Australia requires mine rescuers to achieve an estimated VO₂ max value of 40ml of oxygen/kg/min to remain active. This value estimates the efficiency of the cardiovascular system by measuring one's uptake of oxygen per kg of body weight per min, as a way to evaluate physical endurance. Therefore, it may be beneficial to consider a test that evaluates aerobic and anaerobic ability, as well as one's physical strength based on results from previous competitions.

Justin Konrad, a student intern with Ontario Mine Rescue and a Masters graduate in Human Kinetics at Laurentian University, presented a summary of this research at the International Mines Rescue Russia 2017 conference. He can be reached at justinkonrad@workplacesafetynorth.ca.

Mine Rescue appointment

Ontario Mine Rescue, a part of Workplace Safety North, welcomes the addition of new Mine Rescue Officer-Emergency Services Specialist Jeff Farquharson.

A mine rescue volunteer since 2011, Farquharson holds Technician and Advanced Mine Rescue Certifications, and is an active volunteer firefighter with



eff Farquharson

the Greater Sudbury Fire Service.

Farquharson, most recently based at Vale's Totten Mine, was captain of the Vale Canada mine rescue team at this year's provincial competition in Goderich, and a member of the 2015 provincial championship team.

Farquharson, based in the Sudbury Mine Rescue Station, is joining OMR's Emergency Services Training Division, and will will share responsibility for emergency services training and consulting throughout Ontario.

He will report to Chief Emergency Services Officer Tim Ebbinghaus.

Job opening for a volunteer

Wanted: A volunteer's volunteer.

Ontario Mine Rescue's Technical Advisory Committee is looking for a volunteer to represent mine rescue volunteers on the committee.

Applicants must be active mine rescue volunteers, but can be from any mine in Ontario.

The TAC meets four times annually in locales across the province, and members customarily serve on subcommittees on issues pertinent to mine rescue.

The committee provides advice to OMR on training, equipment, research and the mine rescue handbook.

Those interested in the position can contact Chief Mine Rescue Officer Shawn Rideout – shawnrideout@ workplacesafetynorth.ca, or TAC Chairman Jim Lundrigan – jim. lundrigan@glencore-ca.com, by Nov. 31.



Who is That?

We know who they are, the 1993 Red Lake District champions Dona Lake Mine mine rescue team at the provincial competition in Thunder Bay, but we don't know who is who. If you can identify members of the team, please email kensitter@ workplacesafetynorth.ca.



Say, isn't that . . .

Perhaps because they weren't wearing pink sunglasses, only Cal Martin recognized his teammates on the 1987 Southern District champions Sifto Canada team at the 1987 Provincial Mine Rescue Competition in Timmins. Back row, left: #2 Cal Martin, spare Danny Boyce, #3/4 Colin Chisholm, #3/4 Brian Schultz. Front row left:Captain Jeff Sowerby, #6 Pete Vanderheyden, and Briefing Officer Dan Rivera. The team, not expecting to win at their first provincial, was very relaxed, Martin said, and wore pink sunglasses much to the chagrin of then Southern District Mine Rescue Officer Charlie Burton.

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