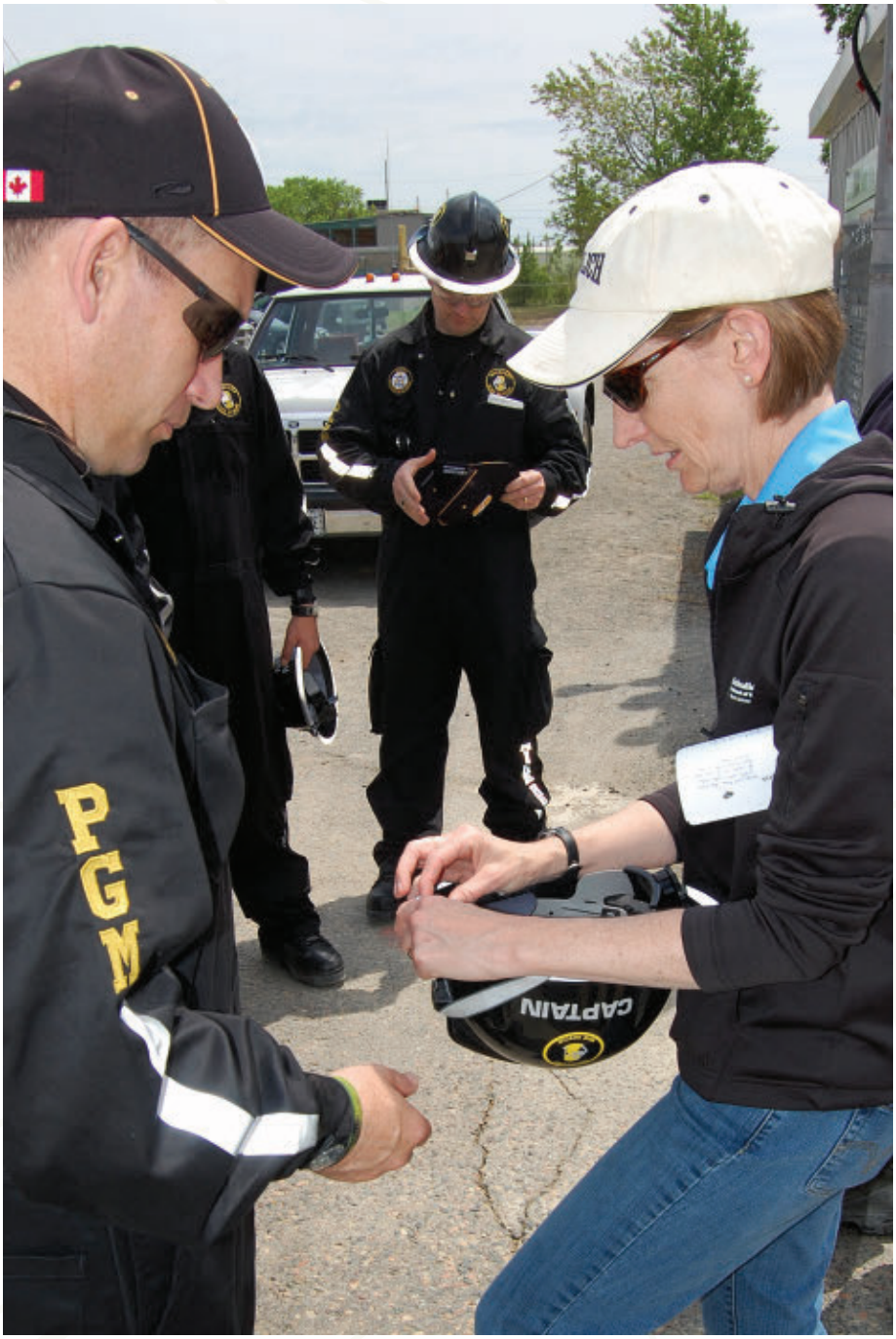
Mining Rescue Communications: A Matter of Life and Death

Mary Waller's latest research project could make the difference between life and death for a trapped miner someday.



Mary Waller is studying communication patterns revealed during the Ontario Mine Rescue Competition.

The Schulich Professor of Organization Studies has initiated a three-year research project with Ontario Mine Rescue and Workplace Safety North to study how mining rescue teams communicate. Waller and her researchers will use computer software to analyze both behaviour and communication patterns revealed in audio recordings of simulated rescue operations by teams competing in Ontario Mine Rescue's annual competition.

"This research project into mining rescue communications blends exceptionally well with Schulich's new MBA specialization in Global Mining Management," said Waller. "I expect the findings will contribute greatly to our understanding of team dynamics within the mining industry, although the findings will apply to other industries as well."

After painstakingly scouring every 10 seconds of recordings to identify and code various behaviours, researchers will use a pattern-recognition algorithm so that the behaviour and communication patterns of the top-performing teams may be identified and analyzed.

Waller and Ontario Mine Rescue plan to report on the research project's preliminary findings in October 2013 at the biennial conference of the International Mines Rescue Body in Niagara Falls, Ontario, hosted by the Canadian mining industry and Canadian mine rescue organizations.

"Many in the academic community are very excited by it," Waller told a writer from Workplace Safety North recently. "Ontario Mine Rescue is like the icing on the cake for me. It is the most complex team setting I have ever studied."

Previously Waller has researched communications and team dynamics in aviation flight crews, nuclear power plant control room crews, military crews, trauma

teams, port and harbor operations, and even a terrorism response operation.

Mine rescue research is unique because the teams have a more complex routine to go through under time constraints and in a harsh environment, Waller said. "They not only need to perform an activity, they also need to get together to problem-solve… They switch back and forth in communication patterns between problem-solving versus short staccato action commands." Making this switch under extreme conditions is exceptionally difficult for teams to do.

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During the June competition, USB key-sized micro-recorders were placed under the rim of each participant's hard hat. The researcher purchased software that synchronizes the recordings to create a master recording for each team, and now the recordings are being reviewed to identify and code the various types of communication – information, commands, questions, affirmations and clarifications.

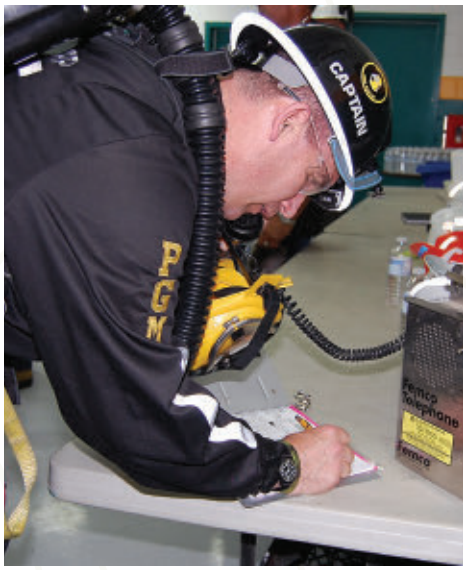
The results will be analyzed by a computer using a pattern-recognition algorithm to identify and analyze the differences in communication patterns between high- and good-performing teams. While one year's competition is enough data to begin analysis, "we need a larger sample size for finding statistically significant results," she said.

"When your sample size increases, you have more power, like using a more powerful microscope. You can see more subtle effects."

Waller and her US-based co-author, Seth Kaplan, a professor at George Mason University, will collect additional data at the 2013 and 2014 provincial competitions, and plan to attend this year's Sudbury district competition to increase the sample size. She expects to eventually collect results from 30 or more teams.

By the time the project is finished in 2014, there will be enough information to research beyond basic team dynamics and communications, and explore the relationship between captains and briefing officers, captains and vice-captains, and other team relationships, Professor Waller said.

Ontario Mine Rescue will benefit from this research gratis as Waller will use an existing $71,000 research grant from Social Sciences and Humanities Research Council to finance the project. ◆



A small micro-reader under the rim of the hard hat records conversations during the Ontario Mine Rescue Competition.

$1-MILLION GIFT FROM INMET MINING CORPORATION

Schulich recently announced a $1-million gift from Inmet Mining Corporation to further the growth and development of Schulich's mining specialization. Richard Ross, Director of the Global Mining Management specialization at Schulich and executive-in-residence, has been appointed as inaugural Inmet Chair in Global Mining Management.

The gift will be fulfilled by four payments of $250,000 each in the years 2012 through 2015.

Inmet's gift will support increased teaching capacity, academic research, industry outreach and scholarships. Graduates are expected to work not only in the mining and resource related sectors, but will also pursue careers with financial institutions, engineering companies, and consulting, accounting, legal firms and other sectors that service the mining industry. Ross said the plan is to use some of the funding to support new research.

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