

Nomination for the Syd S. Peng Ground Control in Mining Award – Dr. Thomas M. Barczak

I would like to nominate Dr. Thomas M. Barczak for the Syd S. Peng Ground Control in Mining Award. Tom has made significant contributions to understanding ground control issues in metal/nonmetal/ and coal mines and his work has affected mining operations located throughout the world. He has long been considered an International expert in standing supports and longwall shields and summarized his years of research by developing the STOP (Support Technology Optimization Program). STOP is a revolutionary interactive software package that is designed to assist mine operators in making engineering decisions regarding the selection and placement strategy of various standing roof support technologies. STOP provides an engineering foundation to ensure that inadequate support designs as well as ultra conservative support applications are avoided. Safety will be improved by proper matching of the support performance to the mine conditions that will reduce the likelihood of roof falls and blocked escapeways. STOP can help to define the material handling advantages of alternative support technologies that use lighter weight materials or systems that can be installed with the aid of mechanical assist to reduce material handling injuries. In addition to these performance and material handling measures, STOP can be used to compare support installation costs.

Tom has over 30 years of research experience and is probably known best for his design of experiments utilizing the MRS (Mine Roof Simulator) at the NIOSH Pittsburgh Research Laboratory. He has a strong background in geomechanics and physics which has led to the development of innovative solutions for complex rock mechanics problems. He has been instrumental in both the design and experimental evaluation of engineered and standing supports throughout the world and his ground reaction models are changing the way that numerical solution failure criteria are being utilized to solve complex problems. Historically, standing support, including shield supports, have been designed based on a simplistic model requiring the support to have sufficient capacity to support the gravity loading of a perceived detached rock mass. This approach ignores the stiffness of the support and the resulting ground deformation that is known to be critical to roof stability. Tom developed an innovative new approach based on the ground reaction concept to account for the interaction of the support with the rock mass behavior in achieving ground stability. In addition to gateroad support design, this concept has ramifications for shield capacities, setting pressures, and recovery room support design that challenge current practices in these areas.

Tom has been the recipient of several awards through his employment as a Federal employee that started in 1976. He became the technical manager of the Safety Structures Testing Laboratory and Principal Investigator for the U. S. Bureau of Mines (USBM) in 1982 and continued his research with NIOSH when the USBM was closed. He currently serves as Team Leader of the Geotechnical Engineering Section which includes a multidisciplinary group of researchers that are charged with addressing critical ground control safety issues for mine workers.

AWARDS

- Federal Design Achievement Award - Mine Roof Simulator, 1988.
- Outstanding Publication of the Year - 1989.
- Technology Transfer Person of the Year - 1990.
- US Department of the Interior Superior Performance Award, 1991.
- Federal Executive Board -- Silver Award for Outstanding Contribution to Science -- 1994.
- Outstanding Publication of the Year -- 1994.
- Federal Executive Board -- Gold Award for Outstanding Contribution to Science -- 1996.

While it is important to complete research, it is more important to ensure that the work is transferred and disseminated to those who will utilize the advancements to make mining safer and more economical. Tom has been a prolific writer with more than 100 technical conference papers and peer reviewed journal articles. Moreover, he has the distinction of attending the First International Ground Control Conference in Mining at West Virginia University and co-authored a paper for that historic event. Since that time, he has authored and co-authored 30 papers for the conference and his presentations are often a highlight of the technical program.

Here is brief list of selected publications that provides a vignette of the breath and impact of Tom's research:

Barczak T.M., Chen, J., Bower, J. [2003]. Pumpable Roof Supports: Developing Design Criteria by Measurement of the Ground Reaction Curve. In: Proceedings of 22nd International Conference on Ground Control in Mining, pp. 283-294.

Barczak T.M. [2003]. Longwall Tailgates: The Technology for Roof Support Has Improved But Optimization Is Still Not There. In: Proceedings of Longwall USA, pp. 105-131.

Barczak TM [2002]. The NIOSH Shield Hydraulics Inspection and Evaluation of Leg Data (SHIELD) Computer Program. In: Proceedings of 21st International Conference on Ground Control in Mining, pp. 27-38.

Barczak TM [2001]. Updating the NIOSH Support Technology Optimization Program (STOP) with New Support Technologies and Additional Design Features. In: Proceedings of 20th International Conference on Ground Control in Mining, pp. 337-347.

Barczak TM [2000]. NIOSH Safety Performance Testing Protocols for Standing Roof Supports and Longwall Shields. US Department of Health and Human Services, Public Health Service, Center for Disease Control and Prevention, National Institute for Occupational Safety and Health, IC 9453, pp. 207-223.