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**FLAC Simulation of Split Pipe Tests on the Instrumented King Wire of a Cable Bolt**

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*by Lewis Allen Martin, NIOSH*

**CoAuthors:** *Marc Ruest, ITASCA*

Marc Ruest Itasca Consulting Group, Inc. 708 South Third Street,  
Suite 310 Minneapolis, Minnesota 55415 USA

Lewis Martin National Institute for Occupational Safety and Health  
(NIOSH) Spokane, Washington

A new instrumented cable bolt has been developed by NIOSH at the Spokane Research Laboratory in Spokane WA. Although various instruments are available to measure load distribution and magnitude along a grouted cable, this concept is innovative in that it uses strain gauge technology internal to the cable for the load-measuring sensor. The instrument has proven successful in early underground field trials at the FMC Granger Mine, Meikle Mine, and Getchell Mine.

A "split-pipe" laboratory pull test was performed on each of three instrumented cable bolts. Each split pipe consists of a 6-ft cable grouted within a 6-ft Schedule 80 pipe.

A numerical analysis was conducted in which the laboratory boundary conditions were simulated. When an attempt is made to reproduce laboratory results using a numerical model, it is important to reproduce the original laboratory boundary conditions. In the lab, the ends of the split pipe are pulled apart in increments of displacement or strain, resulting in a build-up of load in the cable and in the test apparatus. This same procedure will be applied in the experiment. The model will be calibrated so that loads measured in the laboratory are reproduced. The resulting input parameters can then be used to interpret future field-scale analyses.

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