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# AXPROGROUP NEWSLETTER

AXPROGROUP. Com (AXPRO) is proud to have held another successful **Practical Explosives Training School (PETS)** 16-hour general explosives course this past November. Dr. Vilem Petr has been teaching this course for over 10 years. Previously under the Colorado School of Mine's, these courses are now being offered independently though AXPRO. This course is taught in conjunction with the ATF and the Colorado Department of Labor and Employment Office of Public Safety and we would like to thank ATF representatives from the Denver Office Rebecca Solis, Ryan Sprett, and Nathan Johnson as well as Colorado State Explosives Program representatives Scott Narreau and Candace Garza for their support and guest lectures during the course. Industry members from companies and groups including Colorado State University, Henderson Mine, Sierra Nevada, HEI Civil Construction, Sunlight Mountain Resort, and 3 Rivers Drilling and Blasting attended our course to update their knowledge on the latest explosive practices and regulations and to renew their Type 1 Blasters License with the State of Colorado. AXPRO is looking forward to teaching this class again on February 24-25, 2020 and November 16-17, 2020.

AXPRO additionally provided an 8-hour refresher course on avalanche mitigation at Henderson Mine for their avalanche blasting team. This is a yearly, in-house class provided by AXPRO to give the avalanche blasting team up-to-date information on mitigation methods, procedures, and safety. We would again like to thank our guest speakers from the ATF and Colorado State who provided regulatory information during this course. This regulatory information included information regarding the recent ATF change that now requires all unexploded avalanche mitigation charges to be reported as lost and stolen within 24 hours.



*Henderson Mine employee Shane Robinson tying detonating cord and explaining conical shaped charge assembly used by the mine.*

AXPRO offers UXO removal training including safe removal of avalanche mitigation misfires and duds. Once successfully destroyed, ATF lost and stolen reports can be updated to account for the found explosives.



*From Left to Right: Former ATF agent Steve Beggs providing practical demonstration on UXO removal; Howitzer 105-mm round UXO removal set-up; Unexploded avalauncher charge; Unexploded booster hand charges.*

AXPRO is looking forward to continue working with industry leaders to offer both classroom and practical trainings. These include hands-on training for secondary rock blasting techniques and procedures using conical shaped charges (pictured below).



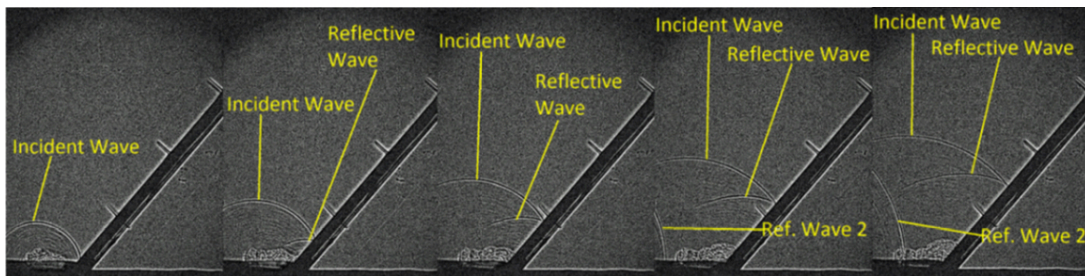
*Top Left: Cone charges on boulders. Top Right: Post blast fragmentation results. Bottom: High-speed imaging of a boulder and cone detonation.*

AXPRO additionally offers specialized practical training for the National Forest and Park Services. During these trainings Forest Service employees are taught about the various explosive applications for park services, including tree removal (shown below).



*National Forest and Park Services explosive tree removal exercise at the ERL, Idaho Springs.*

Every year AXPRO offers a High-Speed Imaging for Explosive Applications short course in partnership with Phantom Academy and the Missouri University of Science and Technology (MS&T) This new class will be offer in Summer 2020. This course allows graduate students to gain practical knowledge and experience in explosives applications and high-speed imaging techniques. This course is taught in conjunction with Mr. Frank Mazella who has been the Learning Products Manager for Vision Research since 2002. Vision Research is a worldwide leader in high-speed digital imaging systems, and their Phantom cameras have continually been on the leading edge of high-speed imaging technology. During this course, students work on specific technical problems of high- speed imagery and camera setups including the principles of the Schlieren method and shadow graph technique for explosive applications.



*Experiments conducted during the short course including Schlieren NONEL shock tube experiments and shadow graph images of Mach stem reflection on a 40° slope.*

For more information about all our upcoming classes or to register for a course, please visit [AXPROGROUP.COM](http://AXPROGROUP.COM). We are also happy to develop new specialized trainings specific to your business. To learn more, please contact Dr. Vilem Petr at [vpetr@icloud.com](mailto:vpetr@icloud.com).

Thank You,

AXPRO Group