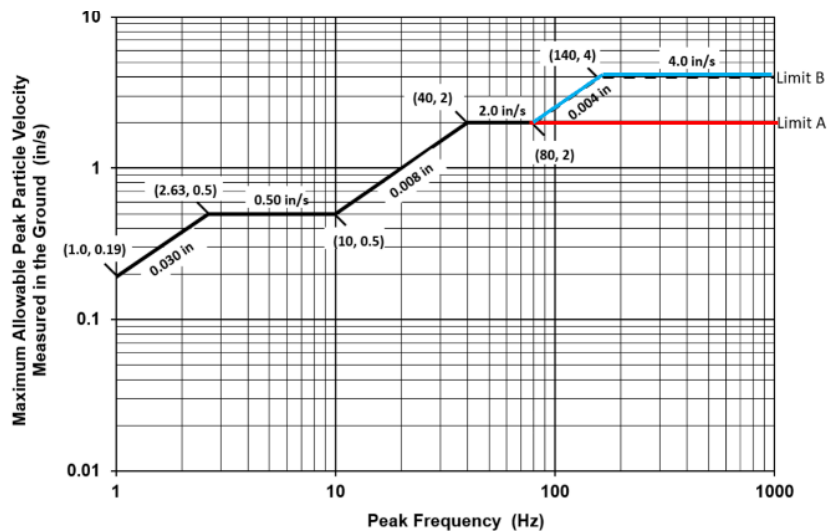






# NEWSLETTER

Volume 13 July, 2023

**Happy Summer 2023 to all!** We enjoyed attending the ISEE Conference in San Antonio, TX this year and seeing many new faces as well as old friends. We are very pleased to report that it's been another great year for Petr Explosives Group. We have been working hard on our academy of online classes, hands-on trainings and more and are very excited to share some updates. We developed two new classes for the New York City explosives unit on general explosive use and environmental effects with vibration monitoring. These classes are approved for continuing education credit to obtain new and renewal licenses in NYC. As you may know, NYC has new vibration regulations and recommendations for blasting near structures. As shown in the graph below, the new vibration limit (blue line) allows for peak particle velocities of 4 inches per second.



	<b>Limit A:</b>	Maximum allowable PPV for any building or structure, except those subject to the higher Limit B or in a fragile or vibration-sensitive condition determined to require a lower limit.
	<b>Limit B:</b>	Maximum allowable PPV for all buildings and structures four stories or taller in height, except those with landmark or historical status or in a fragile or vibration-sensitive condition.

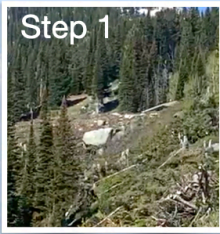
Furthermore, our online PETS license renewal courses are now approved in 13 different states plus a version in Spanish! Even more states will be coming soon. We have seen a growing demand in industry for well-trained new employees. As the former generation of blasters retire, much of the current practical knowledge is leaving with them and therefore leaving the next generation without the hands-on experience needed in industry. To help transition in this new generation of blasters, PetrExplosivesGroup has been working hard to develop new practical, hands-on training academy classes. These academic and practical trainings are 2 to 3 days long, with one day spent on blast



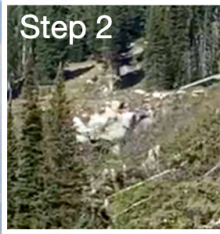
design and Federal and State regulations, and the rest spent with hands-on training exercises in the field. These exercises enable participants to learn and practice safety procedures, loading and blasting procedures, blast design calculations, vibration monitoring, evaluation of blast results, and completing blast report records. Upon completion, the participants have a complete understanding of the blasting process specific to their application.

## ***Hands-On Secondary Blasting***

We recently held a very successful secondary blasting class in Jackson Hole, Wyoming as part of our new series of practical, hands-on training classes. During the course, the participants carried out their blast plan and successfully broke the boulder.



Step 1



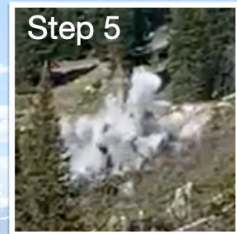
Step 2



Step 3



Step 4



Step 5



Blaster in Charge

## *Secondary Blasting Academy*

June 5-6, 2023 in Jackson Hole ,WY



Before



Classroom Pre-Blast Meeting



After

As part of the course reviews, we asked the participants what they liked most about the class. Here are some of their responses:

*“Hands on learning, questioning and insight into protocols and procedures”*

*“The more in-depth math & technical materials that we as end users do not usually get a lot of info on”*

*“The knowledgeable staff”*

*“The course was tailored to our operation”*

We also asked them if they would recommend this course to others, and 100% of the participants answered yes!



## PETS Toolbox: Free Blasting Calculator App

We would also like to remind everyone about our free app, PETS Toolbox, which now has even more unique calculators to help blasters with inventory and blasting calculations. We also redesigned the interface to be more user-friendly. As new classes are developed, new related tools are added to our calculator. We now have several new calculations for underground blasting, secondary blasting, fly rock estimation, impedance and coupling, bench blasting cost analysis, underwater blasting, and more.

Dr. Petr has worked for many years with the Colorado Department of Transportation (CDOT) on avalanche mitigation and secondary blasting training, and with this experience Dr. Petr shares his practical, hands-on knowledge. Some clients use low explosives products such as NxBurst®, and we supported our clients by developing a new calculator within the PETS Toolbox specifically for this product. We want to thank Spencer Shand and Donna Whiteside from the Coogar company for providing the technical information on their product for this new calculator.

These new capabilities are being developed so that our blasters can use this quick and practical tool both in the classroom and for everyday work in the field. The PETS Toolbox allows students to work with our instructors on practical examples and better understand the theories applied to these calculations. We have found that it is a very popular application in our explosives industry.

Please visit our website or scan the QR code to download this PETS toolbox on your mobile device or computer (please note this app is not in any app store, it is available exclusively through our website). This mobile application is built in-house, and we are providing it for free (no advertising). Still, if you would like to support our team, we now have a new Education Fund for supporting our future Explosives Education and the PETS Toolbox Application.



Petr Explosives Group  
**Education Fund**

## Petr Explosives Group Education Fund

Petr Explosives Group's Education Fund™ is accepting gifts. Your generosity will help to advance the future of explosives education and the PETS Toolbox app. To support our fund, please visit our website.



## SSOP Review & Hazard Analysis

PetrExplosivesGroup has been working with multiple private companies who are starting new processes to analyze potential hazards and write or review standard safe operating procedures (SSOPs). If you are interested in a third party review of your energetic material procedures, please contact us!



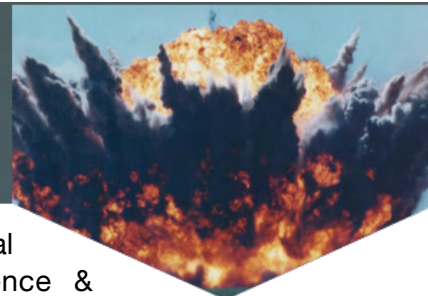
Only YOU  
can prevent  
explosive accidents

## Upcoming In-Person Academy Courses

### Explosives Engineering, Science & Technology



### Explosives Engineering, Science & Technology Comprehensive Short Course



We are excited to announce that we will be hosting our annual comprehensive short course on Explosive Engineering, Science & Technology on **September 26-29, 2023 in Golden, Colorado**. We have seen large support of this type of education in energetic materials. This course is ideal for students, engineers and scientists interested in advancing their knowledge and careers. Topics will include energetic material/explosive applications, chemistry, manufacturing, numerical modeling, detonation & shock wave physics, laboratory/field testing & instrumentation, and safety. The instructors for this course are Dr. Vilem Petr from PetrExplosivesGroup, Dr. Ruth Doherty from Energetics Technology Center, Dr. Kyle Sullivan from Lawrence Livermore National Laboratory (LLNL), and Dr. Tariq Aslam. This unique short course opportunity will include expert guest speakers and will allow participants to advance their careers and expand their networks. This year's guest speakers will include Dr. Kyle Gilroy from Vision Research, Robin Nicolai and Peter Laurence both from Specialised Imaging, and Dr. Stephen Liu from the Colorado School of Mines.

Please note this course is limited to US citizens only and follows ITAR rules. To learn more or to register for this course, please visit us at <https://petrexplosivesgroup.com/explosive-science-engineering-short-course/>.

Here are some of the comments last year's participants wrote about this course:

*"I really enjoyed the variety of the speakers. The breadth of background and skill was admirable"*

*"I liked each instructor's enthusiasm and ability to engage the class with discussion"*

*"The introduction to a wide scope of HE topics"*

*"Variety of subjects covered, with both academic and practical approaches"*

*"This was a great course for someone entering the energetics field + great network opportunity"*

*"I really liked seeing the live demonstration of streak camera software"*

Additionally, **100%** of the participants responded that they would recommend this course to others!



## In-Person Practical Explosives Training School (PETS) Colorado

PetrExplosivesGroup.com is looking forward to our upcoming Practical Explosives Training School (PETS) 16-hour general explosives courses. This course will be held in-person on November 15-16, 2023 in Golden, CO. Registration is now open at <https://petrexplosivesgroup.com/course-registration/>. This course is for new and current blasters to update their knowledge on the latest explosive practices and regulations and obtain 16-hours of continuing education credit for renewal of their Type 1 Blasters License with the State of Colorado.

Dr. Vilem Petr has been teaching the PETS course for over 10 years in conjunction with the ATF and the Colorado Department of Labor and Employment Office of Public Safety. We would like to thank the Colorado State Explosives Program representatives, Scott Narreau and Candace Garza for their continued support and upcoming guest lectures during these courses.

### New Guest Speakers



These short courses are very popular and we have a new ATF guest speaker, Kathy Curtis, Legal Instruments Examiner at the Federal Explosives Licensing Center (FELC) in Martinsburg, West Virginia. Kathy has more than 15 years of experience with processing ATF applications. Kathy helps our participants to go over the ATF application and better understand the new Employee Possessor questionnaire. Thank you Kathy and the ATF for your support of our classes and participants.

Other our new guest speaker is Gary Kirchoff (formal ATF inspector) who overview ATF history and new regulations. He also helps course participants to better understand the new challenges of the explosives industry and share many of his stories and learning experiences during his ATF career. Gary additionally developed a very useful database of all the ATF newsletters. This database can be found in our PETS Toolbox application under “ATF Regulations.”



As part of the course reviews, we asked the participants what they liked most about the class. Here are some of their responses:

*“I found the course well prepared and I learned a lot about properly handling explosives. I liked the explanation of government and state regulations”*

*“Very informative and industry based for construction”*

*“I liked the knowledge of Dr. Vilem Petr. I would recommend this course to know the laws and have knowledge of resources”*



## Hands-On Surface Blasting Today

We are excited to announce our newest course: Surface Blasting Today. This is a 16-hour, in-person, hands-on course for surface bench blasting.

### HANDS-ON SURFACE BLASTING TODAY

\$925 | OCTOBER 4 -5, 2023 | CRAIG, CO

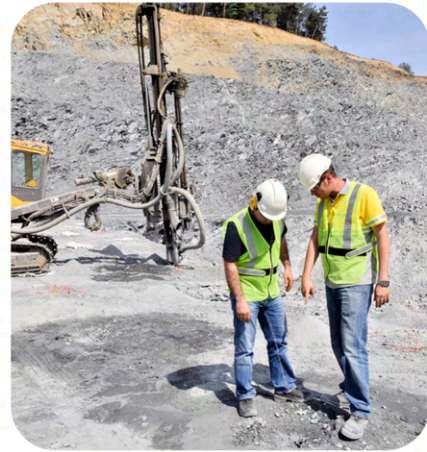
Colorado OPS approved for 16 – hours of continuing education credit

**Register:** [petrexplosivesgroup.com/surface-blasting-today-registration](https://petrexplosivesgroup.com/surface-blasting-today-registration)



#### OVERVIEW

This is a 2-day course on explosives regulations, use, and safety. The first day will be classroom training covering the basics of explosives and initiation systems, federal ATF regulations and safety recommendations. The second day will be practical, hands-on training in the field on drilling and blasting. Participants will learn surface blasting techniques and how to calculate magazine inventory, ATD, drilling parameters, and more.



#### TOPICS



##### Day 1 – Classroom

- General Safety
- Explosives 101 & History
- Initiation Systems
- Secondary Blasting Theory & Calculations
- PPEs, Field Safety Considerations & Risk Assessment Process
- American Table of Distances
- Colorado Regulations
- Homework & Quiz

##### Day 2 – Hands-On

- Magazine Inventory & Record Keeping
- Bench Blast Design
- Drilling, Loading & Blasting
- Blast Evaluation
- Blast Reports
- Final Exam or State Exam





## Hands-On Secondary Blasting Today

Our recently-held Secondary Blasting Today class was very well received and we have been invited back to Jackson Hole to organize this class again next year!

### HANDS-ON SECONDARY BLASTING TODAY

\$925 | TBD, 2024 | JACKSON HOLE, WY

Colorado OPS  
approved for 16 –  
hours of continuing  
education credit

**Register:** [petrexplosivesgroup.com/secondary-blasting-today-registration](http://petrexplosivesgroup.com/secondary-blasting-today-registration)

*Before*



*After*



#### OVERVIEW

This is a 2-day course on explosives regulations, use, and safety. The first day will be classroom training covering the basics of explosives and initiation systems, federal ATF regulations and safety recommendations. The second day will be practical, hands-on training in the field on drilling and blasting. Participants will learn secondary blasting techniques and how to calculate magazine inventory, ATD, drilling parameters, and more.



#### Day 1 – Classroom

- General Safety
- Explosives 101 & History
- Initiation Systems
- Secondary Blasting Theory & Calculations
- PPEs, Field Safety Considerations & Risk Assessment Process
- American Table of Distances
- Colorado Regulations

#### TOPICS

#### Day 2 – Hands-On

- Magazine Inventory & Record Keeping (visit magazine)
- Blast Design for Secondary Blasting
- Drilling, loading & blasting
- Blast evaluation
- Blast reports

For more information, please contact [rob.holbrook@jacksonhole.com](mailto:rob.holbrook@jacksonhole.com)





## Renew Your Explosive License - Nationwide PETS Offerings Online!

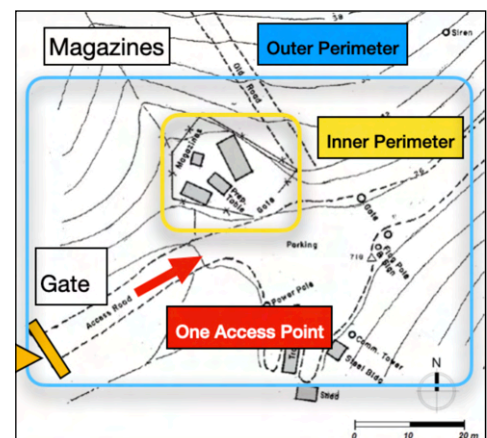
Dr. Vilem Petr has been teaching the Practical Explosives Training School (PETS) course Colorado blasters to renew their license for over 10 years. We thought it was due time to extend our **online license renewal** course offerings nationwide at [PetrExplosivesGroup.com](http://PetrExplosivesGroup.com). All PETS classes are certified with their respective state and pre-approved to fulfill the continuing education requirement. They are also recognized by industry professional associations including the International Makers of Explosives (IME) and the International Society of Explosive Engineers (ISEE). Course fees are \$325 for all 8-hour classes and \$675 for all 16-hour classes. Here is a current list of our online explosive license/certificate of fitness renewal course offerings.



- Alaska** | 8-hours
- Colorado** | 16-hours
- Hawaii** | 8-hours
- Indiana** | 8-hours
- Kentucky** | 8-hours
- Missouri** | 8-hours
- Nebraska** | 16-hours
- New York City** | 8-hours
- NYC Blast Monitoring Specialist** | 8-hours
- Pennsylvania Surface** | 8-hours
- Pennsylvania Underground** | 8-hours
- Tennessee** | 8-hours & 16-hours
- Virginia** | 8-hours
- Washington** | 8-hours
- Wyoming** | 8-hours
- PETS En Español** | 16-hours

Don't see your state listed? We are working hard to add even more states to our list of pre-approved courses. Please send us an email to get notified when your state becomes available.

This list includes our newly-approved Pennsylvania online courses for surface blasting and underground blasting. These courses are approved by the Pennsylvania Department of Environmental Protection (DEP) for blasting at quarries, construction sites, and surface mining blasting. Our **Pennsylvania Surface Blasting** course was developed for blasting on mining permits, mine opening, construction operations, and demolition operations. Our **Pennsylvania Underground Blasting** course was developed for blasting in industrial mineral mines. Both courses include education on explosive loading and blasting, conduct blasting operations under a Blasting Activity Permit (BAP), and surface explosive storage using inner and outer perimeters requirements (right).







Our Pennsylvania Underground Blasting course program was designed to review vital aspects of underground drilling and blasting for industrial miners and facilitate understanding of the elastic cycle and mining process. In addition, this program provides information regarding safe working practices and recommendations when working with explosives. A key focus in this course is to educate users on the safe handling of explosives and prevent injury or damage in efficient ways that optimize blasting performance.



Completion of the Pennsylvania Underground Blasting course will enable participants to:

- Safely work with explosives
- Compare explosive types and understand when to use them
- Correctly prime and charge blast holes
- Select suitable initiation systems
- Identify potential safety hazards relating to blasting in restricted spaces
- Comply with Pennsylvania State Explosives and Mining Regulations pertaining to the use and storage of explosives.

## PEG Education Foundation Scholarship Opportunity!

Petr Explosives Group's Education Foundation™ is now offering \$20,000 in Explosives Engineering Scholarships for the academic year 2022-23 to undergraduate students, graduate students, and education-seeking individuals who wish to advance their understanding of safety regulations and industry applications via The Petr International Explosives Academy™. To apply for this amazing scholarship opportunity, please visit our website at [PetrExplosivesGroup.com](http://PetrExplosivesGroup.com).



## Petr International Explosives Academy Overview

Our **Petr International Explosives Academy (PIEA)™** is a 3-tiered, practical and academic program with both in-person and online course offerings, has been designed to prepare participants with the requisite technological skills necessary for today's generation of blasters, explosive scientists and engineers.

The first tier consists of our PETS certificate courses for blasting licenses/certificates of fitness and is intended for blasters and other end users. The second tier is academic focused and is targeted for students and professionals seeking continuing education or university credits. The third and final tier is a highly specialized training and focuses on practical and cutting-edge technologies of explosives and related applications.



This unique program is designed to accommodate a broad range of backgrounds, including the new generation who wishes to obtain basic knowledge in explosives science, those interested in applying for a blasting license, and/or students interested in advancing their knowledge or careers. In addition, experts interested in advancing experience/knowledge in world-class cutting edge technologies such as high-speed, ultra-high speed, flash x-ray, detonation phenomena, shock wave physics, will obtain the skills and technological tools required to advance in science and engineering fields.

## **Courses Available Online**

### **Tier I | Blasters & End Users**

- PETS Practical Explosives Training School

### **Tier II | Academics**

- Introduction to Explosives, Products & Commercial Applications
- Explosives Science & Technology

### **Tier III | Special Uses**

- Avalanche Mitigation
- Surface Blasting
- Underground Blasting
- Secondary Blasting
- Environmental Effects & Vibration Monitoring
- Introduction to UXO Removal
- Industrial Explosive Cleaning
- *More coming soon!*

## **Courses Available In-Person**

### **Tier I | Blasters & End Users**

- PETS Practical Explosives Training School  
Colorado (*November 15-16, 2023 in Golden, CO*)

### **Tier III | Special Uses**

- Explosives Engineering, Science & Technology (*September 26-29, 2023 in Golden, CO*)
- Hands-On Surface Blasting Today  
(*October 4-5, 2023 in Craig, CO*)
- Hands-On Secondary Blasting Today  
(*TBD, 2024 in Jackson Hole, WY*)
- High-Speed Imaging for Explosive & Ballistic Applications (*TBD*)

If you have 6 or more employees who require training, we can organize an in-person class specific to your needs! Please contact Dr. Vilem Petr at [vpetr@petrexplivesgroup.com](mailto:vpetr@petrexplivesgroup.com) to inquire.



For more information about all our upcoming classes or to register for a course, please visit [PetrExplosivesGroup.com](https://PetrExplosivesGroup.com). We are also happy to develop new specialized trainings specific to your business. To learn more about new course development opportunities or to request an in-person training, please contact Dr. Vilem Petr at [vpetr@petrexplivesgroup.com](mailto:vpetr@petrexplivesgroup.com).

**Learn Better with Petr!**

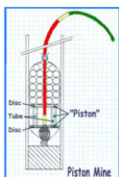


## Specialized Course for Law Enforcement

We have an upcoming unique 2-day short course for Hawaii law enforcement on the safe handling and storage of high and low explosives. This training course was requested by Hawaii due to the large amounts of illegal fireworks that are being confiscated. If you are interested in organizing a similar training course, please contact us.

### HAWAII TRAINING COURSE HIGH & LOW EXPLOSIVES FOR LAW ENFORCEMENT

AUGUST, 2023 | HONOLULU, HI



State of Hawaii-approved 16-hour course. This course is excellent for both new and experienced law enforcement officers. Day 1 will focus on explosive safety and regulations and Day 2 will cover handling fireworks and low explosives. This section will address five main areas of pyrotechnic materials with an emphasis on safety:

- Class 1.4 (old class “C”)
- Class 1.3 (old class “B”)
- “M-80” and similar explosive devices
- Friction sensitive pyrotechnics
- Bulk precursor chemicals used in manufacturing



#### Day 1 – High Explosives

History of Explosives  
Explosives 101 & Definitions  
Hawaii Explosive Regulations  
Initiation Systems Overview  
Explosive Storage Magazines  
Blast Reports & Records  
Explosive Transportation

#### Day 2 – Low Explosives

Introduction to Low Explosives (Fireworks)  
Firework Safety Rules: ATF vs. OSHA  
Accident case study review & lessons learned  
Inherent Hazards & PPE  
Recognizing Types of Pyrotechnic Materials  
Safe Destruction/Disposal of Fireworks  
Laws Governing Pyrotechnics  
Pyrotechnic Material Transportation

**Follow Us!** *Be the first to know about new classes and updates*



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Petr Explosives Blog | <https://petrexplosivesgroup.com/blog/>

**Thank You,  
Petr Explosives Group**