Virtual Tour

Explosive Research Lab (ERL)

at Colorado School of Mines
Idaho Springs, Colorado USA
Explosive Research and Education Center

Colorado School of Mines

Advanced Explosives Processing Research Group
(AXPRO Group)

Last update: 12/2018
The Explosive Research Laboratory is a 2000 acre property in Idaho Springs, CO. The laboratory consists of one primary test site and 4 secondary test sites. Support facilities include an on-site office, preparation/changing room, type 1 & type 3 magazines, and a machine shop. The laboratory is fully wired for electricity, internet, and phone service.
The Explosive Research Laboratory staff members have many years of experience and are experts in designing and conducting explosive experiments. The primary test site has a permit for up to 20-pounds of explosives per delay. Multiple explosives and initiation systems are available. Data collection capabilities include: fiber optic VOD measurement, high speed imagery, air overpressure measurement, strain measurement, x-ray radiography, and ground vibration and air blast monitoring.

The secondary test sites are permitted for charges of 1-5 pounds per delay. They share data collection capabilities with the primary test site.
Coming into Idaho Springs

Take exit number 240, turn right (north) at the top of the exit ramp, proceed 2 blocks to Colorado Boulevard.

Turn Left (west) onto Colorado Boulevard.
Turn Right (north) onto 8th Avenue

Follow the signs to Edgar Mine
Proceed Through Lower Parking Lot
Turn Left After Entering Mine Parking Lot
Follow the Signs

Sign to ERL

Pass by the underground magazine

Edgar Mine type I underground magazine
Park Before Entering Main Gate

Please park diagonally!
Unisex Bathroom

Located outside the main gate
Classroom & PPE Shed

- Emergency Meeting Point
- Classroom
- PPE Shed
- ERL Office for emergency telephone
Smoke Only in Designated Smoking Area

Smoking area will designated by the blaster in charge at ERL
Leaving the ERL

Follow exit signs and do not block the emergency access road
Please drive slowly and carefully!
5 MPH speed limit
Driving direction from Denver:
• Take I-70 W towards Idaho Springs
• Take exit number 240, turn right (north) at the top of the exit ramp, proceed 2 blocks to Colorado Boulevard
• Turn Left (west) onto Colorado Boulevard, proceed to 8th Avenue
• Turn Right (north) onto 8th Avenue
• The Edger Mine is at the top of the hill.
• Go left when you reach the mine and follow the signs to the ERL

See you there soon!
Protocol for Entering the ERL

- Arrive on scheduled time
- Park in the main ERL visitor upper parking lot.
- Do not block road access going up or down – there is only one emergency access road!
- Push the button on the call box, and wait until the gates are completely open.
- If gates do not open immediately, please do not attempt to breach the secure perimeter.
ERL Office
and Check In Point

Preparation Room

Office

ERL Office

To Preparation Area

To Test Site
Checking Into the ERL Classroom

• Sign into the log-book and receive a visitors badge.
• Be wearing all proper PPE.
• Please bring a pen and/or pencil, 36 inch tape measure, three ring binder, and stop-watch/watch (with digital seconds/sweeping second hand).
• Please **no cell phones**, no airplane mode – leave your phones in your vehicles.
• Be prepared for rapid weather change - we will only shut-down for lightening.
• Do not proceed past the second yellow gate until instructed!
NOTE

Personal Protective Equipment (PPE)

• Steel toed shoes
• Hard hats
• Safety vest
• Safety glasses
• Ear plugs
• Work gloves
Group Security Protocol

• After you check-in you will be placed into four groups of two. (Groups 1 – 4)
• Groups 1 and 2 will crimp caps first. (Station 1 – Preparation Room)
  - Each person will crimp 35 detonators onto 37 inches of safety fuse.
  - Groups 3 and 4, meanwhile, check out fuse lighters, hand-charges, and review the blast report and inventory sheet. (Station 2 – Training Station)
  - 35 fuse lighters will be checked out per person.
  - 15 hand-charges will be checked out per person.
• Groups 1 and 2 will then move to Station 2.
• Groups 3 and 4 will then move to Station 1.
Group Security Protocol (Cont’d…)

- If any fire occurs, your CDOT instructor will make the decision when/if to evacuate.
- Review the Accessories Checklist before proceeding through the second yellow gate.
- Begin your mission with CDOT instructor and AXPRO support member.
- A CDOT instructor will provide instructions for the Hand Charge Station A or B.
- At the Hand Charge Station, the group will prepare and assemble all hand-charges under the supervision of the CDOT instructor.
- Each group member must request authorization 5 minutes prior to first initiation.
- A maximum of 5 hand-charges can be thrown/detonated before consulting with your CDOT instructor. Each throw will be recorded in the Blast Report (AXPRO member will evaluate completion/failure).
- Each team is responsible for cleaning up all debris at the Station before returning to the classroom.
Station 1 - Preparation Room
Groups 1 and 2 in the Preparation Room
Safety Fuse Assembly Supervised by Instructors
Preparation Room
Station 2 – Training Station
Training Station at ERL Classroom
The Yellow Gate Entering into the Hand Charge Stations – Do Not Proceed Without Instructor Approval
Hand Charge Stations
Ariel View of Hand Charge Stations

Hand Charge Station A
Station A Target Area

Hand Charge Station B
Station B Target Area
Hand Charge Station A and Target Area at Explosives Research Lab (ERL) in Idaho Springs
Hand Charge Station B at Explosives Research Lab in Idaho Springs
Team Preparation of Hand Charges for Deployment at Station B
# Hand Charge Training Checklist

<table>
<thead>
<tr>
<th>Safety Fuse</th>
<th>Calculated burn time for hand charges:</th>
<th>Verbal Commands/Communication</th>
<th>Throwing/Hitting Target</th>
<th>Detonation</th>
<th>Comments</th>
<th>No</th>
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</tbody>
</table>

- **Charge 1**: [ ] [ ] [ ] [ ] [ ] [ ] [ ]
- **Charge 2**: [ ] [ ] [ ] [ ] [ ] [ ] [ ]
- **Charge 3**: [ ] [ ] [ ] [ ] [ ] [ ] [ ]
- **Charge 4**: [ ] [ ] [ ] [ ] [ ] [ ] [ ]
- **Charge 5**: [ ] [ ] [ ] [ ] [ ] [ ] [ ]
- **Charge 6**: [ ] [ ] [ ] [ ] [ ] [ ] [ ]
- **Charge 7**: [ ] [ ] [ ] [ ] [ ] [ ] [ ]
- **Charge 8**: [ ] [ ] [ ] [ ] [ ] [ ] [ ]
- **Charge 9**: [ ] [ ] [ ] [ ] [ ] [ ] [ ]
- **Charge 10**: [ ] [ ] [ ] [ ] [ ] [ ] [ ]
- **Charge 11**: [ ] [ ] [ ] [ ] [ ] [ ] [ ]
- **Charge 12**: [ ] [ ] [ ] [ ] [ ] [ ] [ ]
- **Charge 13**: [ ] [ ] [ ] [ ] [ ] [ ] [ ]
- **Charge 14**: [ ] [ ] [ ] [ ] [ ] [ ] [ ]
- **Charge 15**: [ ] [ ] [ ] [ ] [ ] [ ] [ ]

**Total # of passing hand charges:** [ ] [ ] [ ] [ ] [ ] [ ] [ ]

**Student passed (minimum of 13 charges hit target):** Yes [ ] No [ ]

**Signatures:**
- **Instructor Evaluator:**
- **Student:**

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**Student's Name:**

**Instructor's Name:**

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**Date:**

**CDOT**

**AXPRO GROUP**

**Advanced Explosive Processing Research Group**

**Colorado**

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**Advanced Explosive**

**Processing Research Group**

**Colorado**

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Any Comments/Questions?