# BLAST TRAINING
# COURSE GUIDE

ORICA

# ABOUT ORICA'S COMMERCIAL BLASTING COURSES

## COURSE DELIVERY

The presenters and trainers are drawn from Orica's extensive network of Blasting Engineers and Technical Specialists. Many of these are widely acknowledged as "Experts" in their field with collective experience in the explosives/blasting industry of over 100 years of practical blasting experience in most blasting environments. If required, the course can be run for a small group from one organisation at a mine site or at a training venue convenient to the workplace.

## TRAINING AND ASSESSMENT METHODS

The Support Shotfirer and Shotfirer courses involve a theory classroom component as well as a practical component. In the case of surface and underground shotfirer, this includes the completion of a shotfirer's logbook under direct supervision of a qualified, licensed shotfirer. The practical component culminates in the conduct of a holistic practical assessment of competency on the job.

## NATIONAL ACCREDITATION

Upon successful completion of the theory and practical components of the Shotfiring course participants will be issued with a Statement of Attainment that is required to apply for Shotfiring Licence. The course complies with the National Shotfiring Competencies, Regulations, Codes and Standards. A Certificate of Attendance is presented to Safe and Efficient Blasting participants.

Participants should check regional statutory licensing requirements for shotfiring in their particular State or Territory, as licensing requirements for different shotfiring classes vary from state to state.

## WHAT TO BRING

All participants are required to bring a calculator, pencil and ruler. SEB participants are requested to bring a laptop computer and a mouse if they are able to. This will allow installation of a trial version of SHOTPlus™ 5, to be used during the course. There may be a limited number of laptops provided to share amongst the group.

## ENROLMENT

To enrol in one of Orica's blasting courses please register online at orica.com or phone 1300 303 797.

## PAYMENT METHODS

Credit Card, Cheque or Company Order for Orica Customers. For further assistance please contact Customer Service on 1300 303 797, your local Technical Services Engineer or local Orica representative. Orica is a Registered Training Organisation (RTO No. 7113).

## PLEASE NOTE

Orica reserves the right to change the venue or presenters, or postpone the course if applications do not meet minimum requirements. If the course must be postponed all registered participants will be notified. Participant cancellations, two weeks prior to the course, attract cancellation fees. No-shows without notice forfeit the full course fee. Substitution of attendees is accepted. Please advise cancellation or substitutions.

# EXPLOSIVES AWARENESS

## DURATION **4 Hours**

## WHO WILL BENEFIT

Those on a mine site, or in a quarry or construction blast environment will benefit from this course. The course is suitable for a range of roles including equipment operators, supervisory staff, surveyors, and engineers.

## COURSE OBJECTIVE

To provide participants with a basic understanding of the properties and safe handling procedures of explosives and initiating systems. The course material is continuously updated and is at the forefront of product knowledge.

The course is designed to meet industry needs and is based on Orica's extensive knowledge of explosives and safety procedures. It covers the following topics:

- What is an explosive
- What is a detonator
- Properties of explosives
- Firing procedure
- Misfire causes
- Safety and risks

Note, the course provided does not align with any nationally accredited training outcome.

## COURSE OUTCOMES

At the end of the course participants will:

- Have a basic understanding of explosive products
- Be aware of safe handling procedures for explosives

## PARTICIPANTS WILL RECEIVE

- Certificate of Attendance

# SUPPORT SHOTFIRING

## DURATION **1 Day**

## WHO WILL BENEFIT

- Those assisting the shot crew – both experienced and new starters with limited exposure on bench
- Candidates sitting for the Open Cut Examiners ticket

## COURSE OBJECTIVE

To provide participants with a greater understanding of their duties and responsibilities as a Support Shotfirer.

This course delivers the accredited outcomes for the units of competency for support shotfiring (both surface and underground), as defined in the Resources and Infrastructure Industry (RII) Training Package.

The accredited course is based on the National Competencies:

| | |
|---|---|
| RIIBLA201D | Support Surface Shotfiring Operations |
| RIIBLA202D | Support Underground Shotfiring Operations |

The course covers the following topics:

- State Acts and Regulations
- Australian Standard 2187
- Magazine and Transport of Explosives
- Organise to fire the Shot
- Initiation Systems
- Geology

## COURSE OUTCOMES

At the end of the course participants will be able to:

- Understand and comply with Explosives and Mining Regulations pertaining to explosives
- Apply correct and safe methods for storage and transport of explosives
- Prime and charge blastholes to ensure optimum performance
- Select a suitable Initiation System, delay intervals and hook-up methods

## PARTICIPANTS WILL RECEIVE

- Blasting Guide
- Practical Assessment
- Log Book
- Statement of Attainment (on practical completion review)

# SURFACE SHOTFIRER

DURATION **4 Days**

## WHO WILL BENEFIT

This accredited course is designed for those who have had some association with explosives at an operating mine site. Course development has been driven by industry and caters for:

- Experienced persons seeking to work in surface environments who gained an earlier qualification under an old system and who require an upgrade to the new national certification
- Existing Shotfirers who want to update on blasting technology and methods in surface operations
- Anyone who has assisted or worked around shotfiring operations and wants to apply for a Shotfiring Licence

## COURSE OBJECTIVE

To provide course participants with a qualification towards obtaining their Shotfiring Licence.

This course delivers the accredited outcomes for the skillset for surface shotfirers, as defined in the Resources and Infrastructure Industry (RII) Training Package. The course complies with the National Surface Blasting Competencies, Regulations, Codes and Standards.

| | |
|---|---|
| RIIBLA205D | Store, Handle and Transport Explosives |
| RIIBLA301D | Conduct Surface Shotfiring Operations |
| RIIBLA305D | Conduct Secondary Blasting |
| RIIBLA402D | Monitor and Control Effects of Blasting on the Environment (optional) |

# UNDERGROUND SHOTFIRER

DURATION **3 Days**

## WHO WILL BENEFIT

This accredited course is designed for those who have had some association with explosives at an operating mine site. Course development has been driven by industry and caters for:

- Experienced persons seeking to work in the underground environment who gained an earlier qualification under an old system and who require an upgrade to the new national certification
- Existing Shotfirers who want to update on blasting technology and methods in underground operations
- Anyone who has assisted or worked around shotfiring operations and wants to apply for a Shotfiring Licence

## COURSE OBJECTIVE

To provide course participants with a qualification towards obtaining their Underground Shotfiring Licence.

This course delivers the accredited outcomes for the skillset for Underground Shotfiring – Metalliferous, as defined in the Resources and Infrastructure Industry (RII) Training Package. This course is designed to comply with National Underground Blasting Competencies, Regulations, Codes and Standards.

| | |
|---|---|
| RIIBLA205D | Store, Handle and Transport Explosives |
| RIIBLA303D | Conduct Underground Development Shotfiring |
| RIIBLA304D | Conduct Underground Production Shotfiring |
| RIIBLA305D | Conduct Secondary Blasting |
| RIIBLA402D | Monitor and control the effects on the environment (optional) |

## COURSE OUTCOMES FOR SURFACE AND UNDERGROUND SHOTFIRERS

At the end of these courses, participants will be able to:

- Understand and comply with Explosives and Mining Regulations pertaining to explosives
- Identify potential safety hazards relating to explosives and how to avoid them
- Conduct Job Safety Analysis (JSA) Assessments for common blasting environments
- Compare explosives types and decide a reasonably cost-effective combination, including blast pattern and explosives quantities
- Prime and charge blastholes to ensure optimum performance
- Select a suitable Initiation System, delay intervals and hook-up methods
- Modify blast patterns in difficult or unusual areas to maintain good results
- Control excessive flyrock, ground vibrations and airblast
- Understand and apply correct and safe methods of storing and transport of explosives

## PARTICIPANTS OF SURFACE AND UNDERGROUND SHOTFIRERS COURSES WILL RECEIVE

- Blasting Guide
- Shotfirer's Pocket Guide
- Practical Assessment
- Shotfiring Manual
- Information CD-ROM
- Log Book
- Statement of Attainment (on practical completion review)

# HYPERCHARGE™ UNIT OPERATION

## DURATION **1 Day**

## WHO WILL BENEFIT

- Candidates involved in day to day charging activities
- Those assisting the shot crew
- Drill and Blast Supervisors

## COURSE OBJECTIVE

To provide participants with skills necessary to operate Hypercharge™ Maxiloaders™ and complimentary equipment.

This course delivers the accredited outcomes for the unit competency for conduct mobile mixing explosives as defined in the Resources and Infrastructure (RII) Training Package.

The accredited course is based on the National Competency:

| | |
|---|---|
| RIIBLA 203D | Conduct Mobile Mixing of Explosives |

The course covers the following topics:

- Australian Legislation
- Raw Materials
- Key Components
- Hazards
- Safety Equipment
- Emergency Situations
- Prepare for Operations
- Load Raw Materials
- Transporting Hypercharge™ Drive unit to worksite
- Operate Hypercharge™ Drive unit
- Basic Maintenance
- Troubleshooting

## COURSE OUTCOMES


At the end of the course participants will be able to:

- Identify key component of the Hypercharge™ Drive unit system
- Identify and manage hazards associated with the unit
- Prepare Hypercharge™ Drive unit for operations
- Load raw materials into Hypercharge™ Drive unit
- Transport a Hypercharge™ Drive unit to charge site
- Deliver mixed explosives product from Hypercharge™ Drive unit into blast holes
- Perform basic maintenance and operational troubleshooting on a Hypercharge™ Drive unit

## PARTICIPANTS WILL RECEIVE

- Course Material
- Theory Assessment
- Practical Assessment
- Log Book
- Statement of Attainment (on practical completion review)

# SAFE & EFFICIENT BLASTING

## DURATION **2 Days**

## WHO WILL BENEFIT

The Safe and Efficient Blasting Course (SEB) is designed to further enhance the skills and knowledge of mining industry personnel including:

- Shotfirers
- Blasting Crew
- Foremen
- Supervisors
- Engineers
- Mine Operations Staff
- Government/Regulatory Inspectors
- Anyone seeking a blasting overview

## COURSE OBJECTIVE

To give course participants a greater understanding of drilling and blasting technology so they can carry out their jobs with greater:

- Safety – without risk of injury or damage
- Efficiency – maximising blast performance while optimising blast costs

Note, the course provided does not align with any nationally accredited training outcome.

## COURSE OUTCOMES

At the end of the course, participants will be able to:

- Compare explosive types for cost-effective blast patterns
- Correctly prime and charge blastholes for optimum performance
- Select a suitable Initiation System, including delay intervals and hook-up methods
- Modify blast patterns in difficult areas to maintain good results
- Control excessive flyrock, vibrations and airblast
- Identify potential safety hazards relating to explosives and how to avoid them
- Comply with explosives and mining regulations
- Evaluate risks associated with blasting
- Analyse the wider operational cost implications of changing blast methods

## PARTICIPANTS WILL RECEIVE

- Certificate of Attendance
- Safe and Efficient Blasting Manual
- Shotfirer's Pocket Guide
- Timing Cards
- Information CD-ROM

## SEB SAMPLE PROGRAM

**Day 1**

| |
|---|
| Introduction & Terminology |
| Workshops – Problem Solving Misfire |
| Explosives Properties |
| Explosives/Rock Interaction |
| Explosives Range & Selection |
| High Speed Films/Blast Videos |
| Priming Options & Effectiveness |
| Workshop – Rules of Thumb for Blast Design |
| Charging Methods |
| Initiation Systems – General |
| Initiation Applications |
| Workshop – Initiation Exercises |
| Workshop – Computerised Initiation SHOTPlus™ 5 |

**Day 2**

| |
|---|
| Blast Design & Geometry Options |
| Workshop – Calculating Drill & Blast Costs |
| Optimisation Techniques & Tools |
| Vibration/Airblast/Flyrock |
| Workshop – Special Blasting Techniques |
| Special Blasting Techniques |
| Safety Awareness Exercise – Who Cares? |
| Workshop – Safety Investigation |
| Safety, Accidents, Destruction of Explosives |

*Safe and Efficient Blasting courses are offered in market-specific formats for Open Cut Coal, Open Cut Metal, Underground and Quarry Services.*

# SAFE & EFFICIENT BLASTING + EXCAVATION

## DURATION **3 Days**

## WHO WILL BENEFIT

The Safe and Efficient Blasting + Excavation Course (SEB+X) is designed to further enhance the skills and knowledge of mining industry personnel including:

- Shotfirers
- Blasting Crew
- Foremen
- Supervisors
- Engineers
- Technical Managers
- Mine Operations Staff
- Government/Regulatory Inspectors
- Anyone seeking a blasting overview

## COURSE OBJECTIVE

To give course participants a greater understanding of drilling, blasting and excavation so they can carry out their jobs with greater:

- Safety – without risk of injury or damage
- Efficiency – maximising blast performance while optimising overall mining costs

Note, the course provided does not align with any nationally accredited training outcome.

## COURSE OUTCOMES

At the end of the course, participants will be able to:

- Compare explosive types for cost-effective blast patterns
- Correctly prime and charge blastholes for optimum performance
- Select a suitable Initiation System, including delay intervals and hook-up methods
- Modify blast patterns in difficult areas to maintain good results
- Control excessive flyrock, vibrations and airblast
- Identify potential safety hazards relating to explosives and how to avoid them
- Comply with explosives and mining regulations
- Evaluate risks associated with blasting
- Understand how dozers, shovels/excavators and draglines shift waste
- Learn the key drivers, and risks, to equipment productivity
- Analyse the wider operational cost implications of changing blasting methods.

## PARTICIPANTS WILL RECEIVE

- Certificate of Attendance
- Safe and Efficient Blasting Manual
- MEC Mining Excavation Presentation Pack
- Shotfirer's Pocket Blast Guide
- Timing Cards
- Information CD-ROM

## SEB SAMPLE PROGRAM

**Day 1**

| |
|---|
| Introduction & Terminology |
| Explosives Properties |
| Explosives/Rock Interaction |
| Explosives Range and Selections |
| Priming |
| Charging |
| Blast Design + Workshop |
| Initiation Systems |
| Initiation Applications |

**Day 2**

| |
|---|
| Production Dozing |
| Truck and Shovel/Excavator |
| Dragline Systems |

**Day 3**

| |
|---|
| Optimisations and Economics |
| Muckpile Shaping + Workshop |
| Coal Protection + Workshop |
| Wall Control + Workshop |
| Fragmentations Improvement + Workshop |

# APPLIED BLAST ENGINEERING

## DURATION **1 Day**

## WHO WILL BENEFIT

The Applied Blast Engineering course is designed to further enhance the skills and knowledge of mining industry personnel including:

- Experienced Shotfirers
- Foremen
- Supervisors
- Engineers
- Mine Operations Staff
- Government/Regulatory Inspectors

## COURSE OBJECTIVE

To provide participants with knowledge and understanding of blasting applications at a higher level than the Safe and Efficient Blasting course. Topics will be drawn from the list below according to course focus and participant preference.

- Wall Control Techniques
- Delay Timing Principles
- Initiation Exercises – SHOTPlus™ 5
- Risk/Safety Management
- Coal Loss/Ore Dilution
- Through-seam Blasting
- Cast Blasting
- Soft/Hard & Low Density
- Vibration/Airblast Controls
- Digital Blasting & Case Studies
- Misfire & Incident Investigation
- Calculating New Patterns
- Deck Charging Gasbags
- Incidents, Issues, SHE
- Mine Process Modelling – I-mining
- Reactive & Hot Ground
- Rehab Blasting
- Workshop – Caprock Problems
- Workshop – Production Optimisation
- Precision & Construction Blasting

Note, the course provided does not align with any nationally accredited training outcome.

## COURSE OUTCOMES

Completion of the course will equip participants with the necessary understanding to apply the blasting principles presented.

## PARTICIPANTS WILL RECEIVE

- Certificate of Attendance
- Safe and Efficient Blasting Manual
- Shotfirer's Pocket Guide
- Timing Cards
- Information CD-ROM

*Attendance at a Safe & Efficient Blasting Course is highly recommended prior to attending "Applied Blast Engineering".*

## CONTACT INFORMATION

For further assistance please contact Customer Service on 1300 303 797, your local Technical Services Engineer or your local Orica representative.