

OH&S Standard 2.08

Safe Storage, Handling and Use of Explosives**1 Purpose**

To eliminate and control the risks associated with the storage, handling and use of explosives at OTML and to ensure OTML is in compliance with the PNG Explosives Regulation 1956 and Explosives Act 1953.

2 Scope

This standard applies to OTML managed facilities and includes open pit and underground workings.

3 Accountabilities*General Manager
Mining*

accountable for:

- Ensuring there are facilities and resources for the safe storage and handling of explosive materials; audits and training of personnel are carried out and that safe systems of work are in place.

Manager Mining

accountable for:

- adherence to all legal and OTML requirements
- ensuring the application of this standard
- making resources and time available for the practice of emergency exercises and drills
- establishing and maintaining safe systems by:
 - ensuring a manifest of goods is available;
 - ensuring that bulk storage tanks are constructed with spillage control and fire proofing according to appropriate standards;
 - licensing bulk storage tanks with the appropriate authorities
 - complying with legal requirements for bulk storage of flammable and explosive materials;

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- submitting a site plan and building plans to the appropriate authorities before constructing an explosive materials store;
- complying with Environmental Protection Regulations by organising prompt and safe disposal of flammable liquids that have spilled.
- complying with the requirements of PNG Explosives Regulation 1956 and Explosives Act 1953 or OTML requirements whichever is the more stringent.

Superintendent Drill & Blast

accountable for:

- the organisation of, conducting, reviewing and recording of the annual emergency exercise or drill
- ensuring current Material Safety Data Sheets (MSDSs) are available
- providing advice on emergency procedures and requirements
- the safe handling and movement of dangerous goods within their areas of accountability
- ensuring that only trained and competent people are involved with the handling and transport of dangerous goods

All

accountable for;

- following all site requirements and reporting any incident / hazards

4 Standard

4.1 Explosives

4.1.1 The Mining Operations team shall perform risk assessments to identify hazards and control risks associated with explosive storage and use. Risk assessments shall take the following into consideration as a minimum:

- Drill and blast design
- Explosives storage
- Explosives handling and transport
- Training and competency
- Equipment use and maintenance
- Safe systems of work for the use of explosives
- Emergency response
- Explosive license requirements

4.2 Drill and Blast Design

4.2.1 The Superintendent Drill and Blast shall incorporate all critical drill and blast design parameters in the mine planning and design process. Drill and blast design shall be undertaken only by competent persons and shall include the

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provisions necessary to minimise potential adverse impacts on the operation e.g. fly rock, concussion, over-break, ground vibration and misfires

4.2.2 Drill and blast design plans shall include but is not limited to:

- Location
- Hole specifications e.g. length, diameter, inclination, off sets and breakthroughs
- Other relevant hazards e.g. adjacent workings, infrastructure, misfires, hot holes, wet holes, stemming height, powder factor and sulphide holes
- Method of firing

4.3 Explosive Selection, Purchasing, and Receipt Control Systems

4.3.1 Mining Business Unit (BU) shall implement systems for the selection, purchasing, receipt, and inventory control of explosives. The systems shall be in accordance with the OTML Hazardous Materials standard 2.14. Full compliance with the statutory requirements is mandatory

4.4 Operations blasting systems – General Responsibilities and Duties

4.4.1 The Superintendent Drill and Blast shall define the general responsibilities and duties regarding blasting and explosives for relevant employees including blasting crew members, blasting supervisors, and blast guarding personnel. The duties shall be documented and training provided

4.5 Procedures

4.5.1 Safe systems of work and standard operating procedures shall be developed and implemented for all areas where explosives are stored, handled, or used. The following elements of safe systems of work shall be included:

- OPMNPR-DB-6033 Blast Guard Clearance
- OPMNPR-DB-6034 Charging and Firing
- OPMNPR-DB-35 Explosive Storage and Handling
- OPMNPR-DB-36 Explosive Vehicle Operations
- OPMNPR-DB-6037 Handling of Misfires

4.6 Transportation

4.6.1 Transportation of explosives to the site and around the site shall be conducted in accordance with applicable legislative requirements and Australian Standard AS2187 Explosives – storage, transport and use.

4.7 Storage and Inventory Control

4.7.1 Permanent and temporary magazines of all types shall be constructed, maintained and operated in accordance with OTML and local regulations and Australian Standard AS2187 Explosives – storage, transport and use

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- 4.7.2 Induction training in the hazards of explosives shall be included for new personnel, as required by site procedures and the PNG Explosive Regulations 1956/Explosive Act 1953. Training shall include instruction and assessment in explosives hazards and relevant procedures such as the use of signs, accessing charged areas, re-entry procedures after blasting
- 4.7.3 The Superintendent Drill and Blast shall maintain accurate explosives inventory accounting. Explosives shall be stored to prevent unauthorised access and be in compliance with PNG Explosive Regulations 1956 and Explosive Act 1953 requirements.

4.7 Training and Competency

- 4.7.1 Induction training in hazards of explosives shall be included for new personnel where there is a potential to come into contact with/or exposure to explosive products. Training shall include instruction and assessment in explosives hazards, inspections, and the use of relevant procedures (e.g. use of signs, accessing charged areas, re-entry after blasting).
- 4.7.2 Manager Mining shall provide training and assess competency in the following:
- Explosives storage, handling, and use;
 - Safe and efficient use of explosives (e.g. Explosive supplier training programs).
 - Training for persons who perform maintenance on equipment or operate equipment involved in the handling, transport and use of explosives
 - Training for persons who are involved in the charging and firing of explosives
 - Training in the method of charging and firing of explosives;
 - Recording of all training and competency assessments; and
 - Regular re-assessment of competencies for shot firers.
- 4.7.3 The Superintendent Drill and Blast shall ensure that personnel who fire explosives have the required qualifications and certifications required by statutory requirements
- 4.7.4 Practical training and written examinations in standard operating procedures shall be provided by Superintendent Drill and Blast to personnel involved in the loading, transporting, use, warehousing, handling, charging and firing of explosives (e.g. Shot Firers).
- 4.7.5 Superintendent Drill and Blast shall ensure that personnel who fire explosives (Shot Firers) have statutory required qualifications and current shot firer license. Orica Mining Services provide and conduct explosive training i.e. Shot firers course. Shot firers must be tested annually by the PNG Inspectorate.
- 4.7.6 All training and competency assessments shall be recorded.

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4.8 On-Site Manufacturing Facilities for Explosives

4.8.1 The Manager Mining shall ensure that on-site manufacturing of explosives complies with Australian Standards AS2187.2:2006 and all applicable statutory requirements

4.9 Signage

4.9.1 The Superintendent Drill and Blast shall ensure that appropriate signage exists as a control of the hazards associated with explosives. The following signs are suggested as guidelines.

| Sign | Description | Control |
|--|---|--|
| <ul style="list-style-type: none"> Charging In Progress | <ul style="list-style-type: none"> This means that personnel are currently in the process of charging. It shall be placed a minimum of 6m from the charging equipment. | <ul style="list-style-type: none"> Any person may pass this sign. Smoking is not permitted beyond the sign. |
| <ul style="list-style-type: none"> Charged Face / Bench | <ul style="list-style-type: none"> This means that explosives have been charged or partly charged and no personnel are present other than possibly the designated shot-firer and persons under the direct supervision of the shot-firer. It shall be erected a minimum of 6 m from the charged face or at each access point to a bench or stope. | <ul style="list-style-type: none"> No personnel other than the shot firer or persons under their direct control, or the blast supervisor shall pass this sign. |
| <ul style="list-style-type: none"> Firing In Progress | <ul style="list-style-type: none"> This means that firing is imminent, the initiating device has been engaged and the explosives beyond this point are ready for detonation or the explosives have been detonated and No one is to entry the blast area until the Shot firer has given the all clear | <ul style="list-style-type: none"> No personnel are to go past the designated Blast Guard until shot firer has given the all clear Only the designated shot firer can release the blast guards and clear the shot. |

4.10 Equipment Maintenance

4.10.1 The equipment used to manufacture, transport, utilise explosives shall be included in the preventive maintenance program

4.10.2 Preventive maintenance shall address specific hazards associated with explosives such as the remaining traces of explosives on equipment

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4.11 Auditing

4.11.1 Audits and inspections shall be carried out periodically against the requirements of all elements of this standard, the relevant local statutory requirements and Australian Standard AS2187 Explosives – storage, transport and use.

4.11.2 Key findings and actions identified in the audits/inspections shall be recorded and closed out in a timely manner to enable a proactive management and reduction of significant safety and environmental risks.

5 References & Links to Associated Documents

| # | Description | Author |
|---|--|----------------------|
| 1 | OPMNPR-DB-6033 Blast Guard Clearance | OTML Drill & Blast |
| 2 | OPMNPR-DB-6034 Charging and Firing | OTML Drill & Blast |
| 3 | OPMNPR-DB-35 Explosive Storage and Handling | OTML Drill & Blast |
| 4 | OPMNPR-DB-36 Explosive Vehicle Operations | OTML Drill & Blast |
| 5 | OPMNPR-DB-6037 Handling of Misfires | OTML Drill & Blast |
| 6 | AS2187 Explosives – storage, transport and use | Australian Standards |
| 7 | OTML Hazardous Material Standard 2.14 | OTML OH&S Department |

6 Document Control History

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