



## **SIGNIFICANT INCIDENT REPORT NO: 126**

### **ACCIDENTAL INITIATION OF EXPLOSIVES DURING BLASTING IN A DEVELOPMENT HEADING**

#### **Incident:**

Extensive damage occurred to ventilation ducting, water and air services and electrical cables after a development heading was fired underground. The damage was sustained over approximately 180 metres of drive.

Significant damage was sustained to support mesh in the vicinity of the face and many of the plates holding the mesh had been blown off the friction rock anchors used for ground support. The PED firing tube was also damaged during the firing process.

No personnel were injured in this incident, due to the practice of employee evacuation to surface during remote PED system firing, which was employed at the mine.

#### **Contributing Factors:**

It was estimated that the charge-up vehicle used to charge the heading was carrying some 300 kg of explosives prior to the charge up operation and approximately 200 kg of explosives were used to charge the face.

Due to time constraints and the necessity for the charge-up vehicle to be taken to the maintenance workshop for service, the excess ANFO left on the charge-up vehicle was emptied out of the kettles onto the floor at the face. The quantity of unconfined ANFO dumped at the face was estimated potentially to be in the order of 50 – 100 kg.

A high priority had been placed on the heading advance and a variety of different people were involved in the charge up process due to this.

Interruptions to the ventilation in the area delayed and slowed down the charge-up operations, further increasing the pressure to complete the charging operation.

The charge-up crew made the decision to dump the explosives at the face and misjudged the quantity of explosives remaining in the kettle.

The heading and face was not checked by the firing crew prior to blasting. This resulted in a failure to identify the hazard of unconfined explosives left by the charge-up crew.

#### **Comments:**

It is a common practice for charge-up crews to empty small, residual quantities of ANFO from kettles and hoses at the face at the end of the charging process.

However, where larger quantities of unconfined explosives are left in the area, it is evident from this incident that a significant amount of damage may be sustained due to the energy release from such explosive, should it be initiated during firing.

The shockwave or air blast created by this inadvertent release of energy significantly increases the risk of damage occurring and may potentially cause a serious injury where local firing methods are being utilised underground and personnel are located close to the blast area in a position considered safe under normal charging/firing conditions.

A similar incident in Canada in May 2001 resulted in 19 lengths of ventilation ducting being brought down as a result of the presence of unconfined ANFO in the area. In this incident the ANFO loader was also required to be taken to the maintenance workshop for servicing at the end of the shift. The initiation of the blast was undertaken underground and the concussion from the blast was sufficient to push one worker up against the sidewall and subject him to high levels of dust.

Mine sites which employ centralised surface firing as opposed to local firing underground have a much lower risk exposure, due to the lower potential for an adverse consequence with respect to the potential for injury. However, damage to ground support and services (and consequent exposure to other risks during repair work) may still be unavoidable in an incident such as the one described here.

**Preventative Actions:**

Employers and managers should be aware of the high potential hazard levels associated with excessive amounts of explosives left in the workplace.

- ° Explosives should not be left at the face but should be returned to the magazine as required by regulation 8.14(2) of the Mines Safety and Inspection Regulations 1995 or be disposed of in an appropriate manner in accordance with good practice.
- ° Surface or remote firing of underground blasts may be preferable to local firing underground from a position in relatively close proximity to the blast.

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