Explosives Safety Alert 83

Explosives exposed to extreme risk on loaded benches

What happened?

The lead lines of non-electric detonators are being snagged, and boosters and loaded blast holes are being driven over by vehicles. In addition, there have been incidents of blast vehicle impacts involving vehicles not authorised to be on the shot bench. In some cases, spotters, mandated under the safety management system, were not used.

The snagging of lead lines on non-electric detonators can result in the accidental initiation of the detonator when the lead line is broken through a phenomenon known as “stretch-snap-slap-and-shoot”. The detonator in turn detonates explosives in the hole which can contain many tonnes of explosives and also could detonate explosives in adjacent loaded holes. Driving across a loaded hole can cause the hole to collapse, which in turn stretches the lead-lines, which may cause them to snap. Boosters are made from sensitive explosives which can be initiated by friction or impact when crushed by a vehicle. Traffic management plans based on ineffective risk assessments, disregarding traffic management plans and the ignorance of traffic management procedures have contributed to these events.

Recommendations

1. Establish, maintain and control exclusion zones under the blast management plan. Exclusion zones are established for safety and security purposes.
2. Establish precautions at the site during charging operations and around loaded shots to protect explosives from vehicle movements, service and maintenance of plant, and other non-blasting related activities. Implement the use of ‘hole savers’ in unloaded blast holes intentionally straddled during the loading process for mobile explosive processing unit (MPU) accessibility. Allow sufficient area for MPU maneuverability in the load last method.
3. Develop traffic management plans using the hierarchy of controls to isolate explosives on the bench and in loaded holes from vehicles and other hazards. The use of spotters alone is not an effective and reliable risk control measure.
4. Train personnel in the site procedures and precautions for the interaction of explosives, personnel, vehicles and equipment on a bench.
5. Communicate information at suitable times; such as prior to the start of each shift to everyone who will visit or perform activities on the blast pattern, the explosive charging operations and for other operations and locations that may affect each other.
6. Review safety management systems and security plans to ensure suitable controls and procedures are in place to address the recommendations.
7. Ensure everyone involved in these activities comply with the safety management system, security plan, controls and standard operating procedures.

Image 1. Crushed booster close to detonator and other accessories

Image 2. Watertruck tracks over unloaded hole and close to detonators