



NSW DEPARTMENT OF
PRIMARY INDUSTRIES

SAFETY ALERT

Blast Control – Flyrock Incident

INCIDENT

During a quarry blast under the control of a contractor, flyrock was projected more than 500 metres onto the Pacific Highway.

A rock of approximately 100mm diameter was also projected onto a nearby property where it caused damage to a shed and parked vehicle.

In addition, the windscreen of a front end loader in the quarry was broken but there was no other damage or personal injury.

CIRCUMSTANCES

The drilling and blasting was carried out some 36 metres below the top level of the pit.

While drilling the thirty-two 89mm holes the driller reported difficulty as his rig was losing air pressure on a number of holes. As such, four of the holes at the northern end of the shot were left undrilled.

During loading the contractor expressed some concern that a number of holes were 'getting away on them'. The theoretical loading of the 12 metre holes was 80kg of explosives with a 2 metre stem height. In 9 holes, 90kg of explosives were used without achieving the stemming depth, possibly due to leakage through fissures in the rock mass. This was consistent with the geology of the pit.

INVESTIGATION

The three experienced shotfirers confirmed all holes as having fired with no cut-offs.

Most of the fired holes on the southern end pushed forward in the designed manner with good fragmentation and heave. This ground had not exhibited any anomalies during loading or drilling.

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The northern end had a lot of blocky oversize which was expected after loading due to increased stemming heights. This section had hardly moved forward and the energy released up, rather than out.

The additional explosives added by the shotfirers to adjacent holes may have combined, through voids in the ground, to increase the slurry concentration and contributed to the resulting flyrock.

A risk assessment had been prepared by the contractor but this was considered generic in nature without taking into consideration specific unique features outside of the lease.

RECOMMENDATIONS

Changes in procedures should be implemented:

- Where there is a potential for the explosives to run through the cracks in the rock mass, a procedure should be followed to deal with the loss of explosives. E.g. an alternative method such as a packaged product should be used.
- Profile and boretrack methods should be applied where there is a potential for drill wander due to cracked ground.
- Where anomalies occur during loading, shotfirers must determine the causes and take action to ensure overloading does not occur.
- Careful consideration should be given to the orientation of quarry faces to ensure appropriate safe firing direction.
- Stemming heights could be increased.
- The risk assessment should take into account the unique quarry location and external areas that come under the influence of the blast.
- The risk management procedure should allow for reassessment of risks if significant changes in circumstances occur.

Signed



Rob Regan
DIRECTOR
MINE SAFETY OPERATIONS BRANCH
NSW DEPARTMENT OF PRIMARY INDUSTRIES

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