



July 14, 2011

Orica USA Inc  
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Watkins, CO 80137

**RE: i-kon™ System Incident Advisory**

On Tuesday July 12, 2011, an unexpected detonation of one or more holes containing i-kon™ and Exel™ detonators occurred at a customer site in the United States.

The explosion occurred during the *programming* phase of the i-kon™ System. The team firing the shot followed standard i-kon™ System procedures - the pattern was cleared and all personnel were at a place of safety before commencing programming. No people were injured or assets damaged as a result of this incident.

MSHA was appropriately notified. After consultation at the mine, MSHA approved a remediation plan aimed at safely gaining access to the covered holes, testing all the i-kon™ detonators, repriming holes where necessary, and firing the shot.

The investigation is ongoing, but preliminary findings are as follows:

Lightning was detected by the mine earlier in the day at some distance from the blast site. Based on previous investigations of the potential effects of remote lightning on i-kon™ detonators, the probability that lightning caused this incident is negligible.

There were two separate i-kon™ blasts patterns being fired. One blast was fired successfully. However, a problem was experienced with the remote firing unit (SURBS) on the second blast. The blast was correctly aborted and immediately reprogrammed. After about a minute of programming the detonators (with no errors shown), and with about 3 ½ minutes of programming time remaining, one or more holes were observed by the blasters to have fired prematurely. Preliminary investigation of this communication issue suggests that it was not responsible for the uncommanded firing. (The FIRE command for an i-kon™ detonator is always, and only, a global command, meaning that if one detonator receives a FIRE command from the control equipment, then all detonators receive it).

Two independent seismographs were in operation at the time of the incident. They both show that 3 holes fired, with the delay between holes 1 and 2 and between hole 2 and 3 each being close to 340ms. Since this corresponds almost exactly to the delay of the Exel™ shock tube backup detonator, it is concluded that one i-kon™ detonator fired prematurely due to a latent electronic defect and that 2 more holes fired sympathetically via the effect of the dynamic shock on the Exel™ downlines.

This conclusion of premature firing due to a latent electronic defect is the same as that concluded after an exhaustive investigation of the only other i-kon™ premature firing incident, which occurred in June 2005. At that time 2.5M i-kon™ detonators had been fired. As a result of the incident additional screening tests to identify and cull detonators with potentially “weak” electronics were introduced. Over 15M more i-kon™ detonators have been sold since June 2005 with no further incident until this one. It therefore appears that the new culling tests have significantly reduced the probability of an incident of this kind but have not eliminated it.

Orica’s formal incident investigation will continue. Nothing in this or previous i-kon™ system incidents suggests that the safety of blast pattern operations is compromised or that i-kon™ detonators can fire during normal operations on the pattern. This incident highlights the importance of following the established safe working practice that all personnel must be in a place of safety with the blast area cleared and guarded before sufficient energy to fire the detonators is supplied to the blasting circuit.

Orica’s record with electronic detonators is 11 years and 32 million units sold with no injury in manufacture or use; it is concluded that the safety of i-kon™ detonators has not been compromised by this incident and that their use should continue.

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