Site Profile
Resolute Mining’s Mt. Wright Operation is an underground gold mine located approximately 12 kms north of the town of Ravenswood in Northern Queensland. The orebody is predominately Rhyolite and Marcasite Pyrite, which being reactive, requires the use of inhibited explosive products in the blasting cycle.

The Situation
Pentex™ D is a purposely designed cast booster for use in small diameter development blastholes (32mm to 48mm) when loaded with bulk emulsion. A specifically designed hose end applicator to be used in conjunction with Pentex™ D is also supplied with the booster. A trial program was conducted at Mt Wright to test its suitability for the operation, required outcomes included:

- Quantify the performance of the Pentex™ D booster to ensure it’s comparability to other currently available boosters.
- Perform Velocity of Detonation (VoD) testing to verify rate of detonation.
- Assess impact on both advance and overbreak.
- Determine “ease of use”.

The System
Pentex™ D is a plastic encapsulated cast booster manufactured from 25g of Pento-lite, which is a PETN and TNT composition. The dimensions of the booster are 21mm dia x 138mm in length. It has a single pass detonator well and contains a secure locking tab to avoid separation of the primer within the blasthole.

The applicator is a unique Orica design which is fitted to the end of the charge hose and picks up the primer at the collar of the hole, then securely holds it in place while the charge hose is inserted to the toe.

Delivery Nozzle and applicator
Delivery of the EP through the nozzle is offset, so the primer can be effectively held at the toe while charging commences, allowing ejection of any water and reducing the potential of “floating” primers, especially in wet holes.

Rather than initially placing the primer into the blast hole any holes slightly out of reach can be safely charged by inserting the primer directly into the applicator first.

Charging holes otherwise out of reach
The Outcomes
During the trial, the Pentex™ D booster was found to be securely set at the toe with no incidence of “floating”. Advance rates and the amount of overbreak seen was excellent. Comparative testing between a 110g Pentex™ G and D booster indicated that the Pentex™ D had similar properties in both detonation ramp-up time and VOD. The small physical size and the design of the applicator makes it easy to deliver the booster to the toe of the hole, even in broken ground. Also, retrieval from a charged hole if required is also quite simple. Additional advantages of its small size include the high case count, low NEQ (net explosive quantity) of a case and increased safety in case of a misfires. The high visibility Orange shell is appropriate for the underground environment, as was the ease of making up the primer with the single pass detonator well. The system was well received by all charge crews during the trial for its ease of use.

Conclusion
Pentex™ D has fulfilled all requirements from the Trial scope, and as such has been commercialized for use. The system is ideally suited to the Hypercharge™ market and makes a valuable contribution to ensuring best possible outcomes when Development charging.

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