Site Profile
The Jellinbah Coal Mine is located 40 kilometres North-East of Blackwater in Central Queensland. A satellite pit, named Jellinbah Plains, is operated by Comiskey Earthmoving. Effective throw blasting is critical to the success of Jellinbah Plains.

The Situation
The coal deposit at Jellinbah Plains could only be described as difficult. The coal dips at 30% with an 80m change in depth over a strip strike of only 275m. The overburden is made up of 20m of free dig weathered material, followed by layers of sandstone to a maximum depth of 80m which can be massive, or layered and jointed.

The throw blast presented to Orica is generally 200m long, 70m to 90m wide with depths from 40m at one end to 72m at the other. Generally, the blast consists of 12 rows of blast holes with a double-stitched back row to provide an acceptable highwall.

Comiskey Earthmoving utilises dozer push followed by hydraulic excavators and rear dump trucks to uncover the coal.

Technical Solutions
The challenge to Orica at Jellinbah Plains is to provide acceptable throw while maintaining effective fragmentation to the highwall at depth. A profile that allows for efficient dozer stripping is also required.

Blasting has improved for each successive strip using conventional non-electric initiation products, because patterns have been tightened and wall control via double-stitching has been introduced. However, it was recognised that millisecond timing control could improve results. The introduction of i-kon™ Digital Energy Control system, allowed Orica to choose the best combination of timing. The geology present allowed for delays between rows not available with non-electric systems, such that each successive row saw an optimal burden.

Timing between holes in each row could also be adjusted to provide maximum throw at the front of the shot with maximum fragmentation towards the highwall.

The Result
On 11 July, 2003, a total of 781 i-kon™ detonators in 271 holes were fired successfully. Compared to the previous block, an extra 2% or 18,000 BCM was thrown to final position. The swell increased by over 3% and the Centre of Mass towards the low wall was greater by 6m. The blast profile allowed the dozers to push material to final spoil virtually straight away. The consistent grade of the low wall and fragmentation of the material allowed efficient dozing.

The fragmentation presented to the excavators was described as being suitable for road base. It was evident to Joe Comiskey, principal of Comiskey Earthmoving, that i-kon™ could in fact be used to reduce his explosive costs.

He stated:
“If Orica can use their technology to widen my patterns and reduce my powder factors while providing previously seen cast and fragmentation results, then Orica will greatly assist the future viability of Jellinbah Plains”
Acknowledgements

Orica wishes to thank Comiskey Earthmoving for providing the opportunity to trial the i-kon™ system and the Orica blast crew for their commitment.