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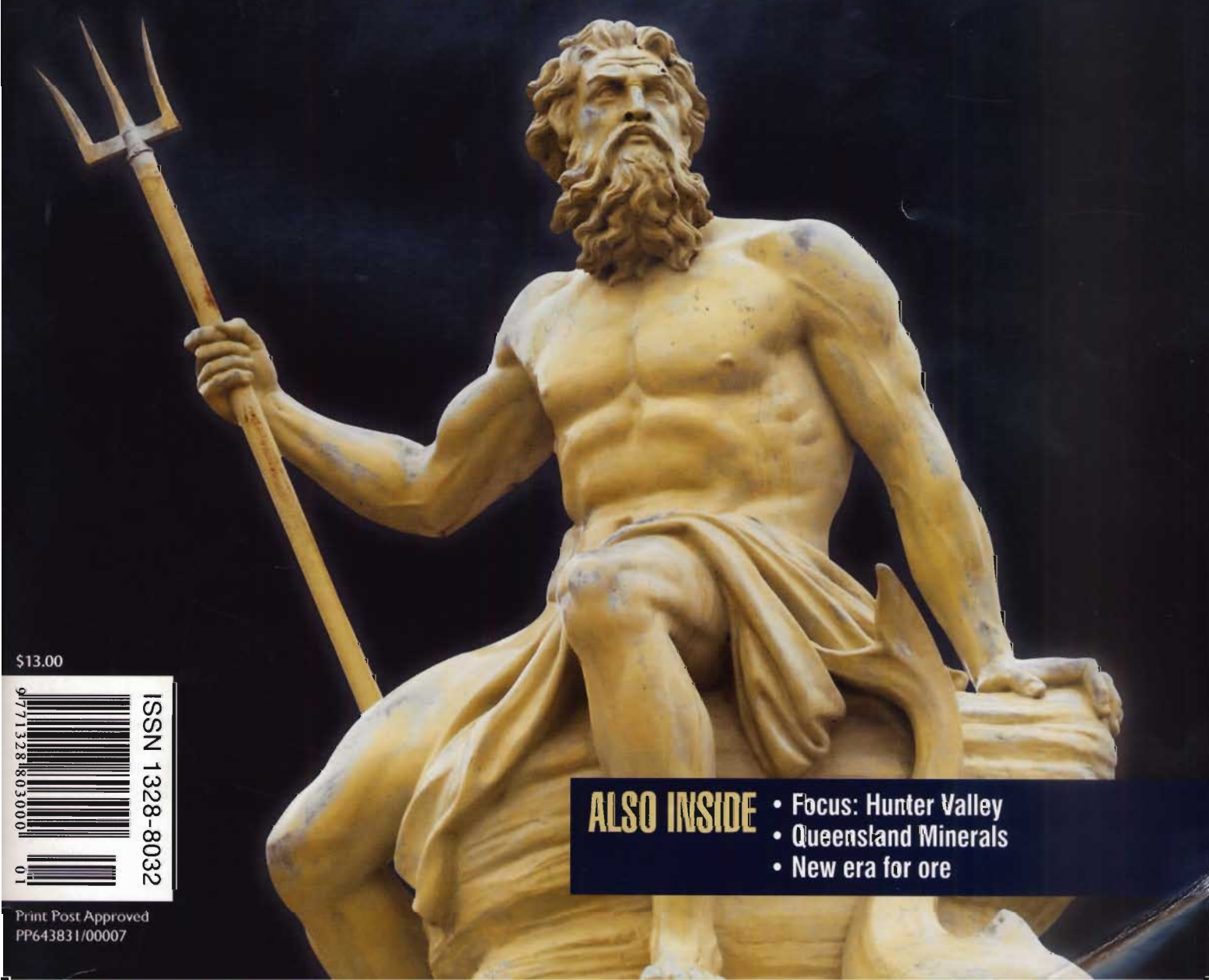

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Boart Longyear's SSUMX diamond core bit.

Diamond in the rough

Difficult ground conditions presented the greatest challenge to a company working in Queensland's Galilee Basin. By **Alison Middleton**

A change of drill bit enabled a contract drilling firm to overcome arduous conditions in Queensland – without losing core recovery.

L2 Drilling decided to switch to Boart Longyear's SSUMX bit while performing surface coring exploration for coal in the Galilee Basin.

Varying ground formations consisted of fractured and broken sedimentary formations, swelling clay and shale, and porous sandstone.There was also gravel and bands of quartz up to 3m thick.

The unconsolidated ground caused severe stress on the equipment, including hydraulic locking, differential sticking and loss of circulation while drilling, leading to more stress and increased wear on the bit.

As a result, the company had to change bits frequently in order to cope with varying hardness in the ground.

L2 decided to use a diamond core bit with the aim of reducing costs and increasing bit life and penetration rates, without losing core recovery.

The move to the SSUMX resulted in an 80% increase in bit life, according to L2 Drilling manager Trevor Edwards.

"With the SSUMX, we experienced a faster penetration rate and a longer bit life with no trade off on the recovery rate," he said.

"We now require fewer bits to cover more ground conditions, reducing our cost of inventory," he said.

"The SSUMX is so versatile that we changed our drilling methods instead of switching out the bit through various ground conditions.

"Some of our drillers, that were loyal to surface set bits, have converted to the SSUMX."

With large synthetic diamonds and a free cutting matrix, the SSUMX bit resulted in a significant reduction in overall operating costs, an 80% increase in bit life and a core recovery rate of 97.5%.

Boart Longyear diamond product technical representative Luke Jones said the challenge was to increase bit life and penetration rates in difficult ground conditions.

"L2 Drilling was able to overcome the difficult ground conditions in the Galilee Basin with the Boart Longyear SSUMX diamond core bit," he said.

"The SSUMX bit excels through various ground conditions, reducing the amount of times the drill string had to be tripped out to change bits.

"Very little outside diameter wear was discovered on the SSUMX when compared to the amount of reaming that was done.

"The SSUMX also held up well when ground conditions demanded less than optimum water flows.

"SSUMX bits with 12mm crown heights were used to achieve an 80 per cent gain in bit life while increasing bit penetration rate per minute by 187 per cent," Jones added.

"Other advantages were seen through a 44 per cent reduction in per bit cost and a consistent core recovery rate of 97.5 per cent.

"These benefits resulted in a significant reduction in operating costs for L2 Drilling."

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