



22<sup>nd</sup> November, 2004

## **POSITIVE INITIAL RESULTS FROM BOHENA PROJECT AREA WELLS IN THE GUNNEDAH BASIN COAL SEAM GAS PROJECT**

Eastern Star Gas Limited, the operator of the PEL 238 Gunnedah Basin Coal Seam Gas Project, is pleased to announce that early test production results from the three recently fracture stimulated wells within the Bohena Project Area, Bohena-9, Bohena South-1 and Bibblewindi-1 are encouraging. Initial production data indicates that, with a well-managed dewatering plan, these wells have the potential to become commercial coal seam gas ("CSG") producers. The wells were hydraulically stimulated using a programme designed by CSG consultants from the USA, whereby extremely large volumes of sand were pumped into all of the coal seams within the Early Permian Maules Creek Formation in order to establish better communication and to allow for more efficient dewatering and gas production.

Following well completions, each of the three hydraulic fracture stimulated CSG wells is producing water at rates higher than that previously observed within the project area and confirms that the coals are highly permeable and have the potential to produce high volumes of gas upon completion of the dewatering process. In summary:

- Bohena-9: The well has been placed on pump and is producing at a rate of 290 BWPd (barrels of water per day) with the fluid level still high at 750 metres above the Bohena coal seam. Minor (14 thousand cubic feet per day "mcf"), with gradually increasing amounts of gas are being produced.
- Bohena South-1: The pumped rate is 590 BWPd plus minor (15 mcf) but gradually increasing gas flow. Fluid level is near surface with almost a full column of water above the coal seams.
- Bibblewindi-1: The well is on pump and producing at a rate of 716 BWPd plus minor gas (3 mcf) and with almost a full column of water above the coal seams.

The recently drilled horizontal well, Bohena-4L, within the Bohena Project Area has also been under production flow test:

- Bohena-4L: The well has been placed on pump and is producing at a rate of 70 BWPd with the gas rate having gradually increased to 34 mcf per day. The pump engine is being fuelled by gas produced from the well.

A map showing the locations of the wells is attached.



The process of producing gas from coal seams differs from that of conventional reservoirs. The CSG wells first have to be dewatered (of fluid injected during fracking and water from within the coal seams) before gas production can start. CSG wells, under normal conditions, initially produce water (at varying rates depending on coal characteristics) with no or very low amounts of produced gas. Over a period of time (normally months) the water production rates decline and the gas production rates increase. Wells are initially placed into production under free flow and then mechanically pumped to control water production rates and fluid levels within the wellbore. Wells are intentionally produced with high fluid levels (of water above the coal) to minimize blockage of production from coal fines that are formed during the drilling and fracture stimulation processes. The fluid levels are slowly lowered over time (1-3 months) and this explains the longer time frame required for CSG wells, compared to conventional gas wells, before meaningful gas production can be measured and reported.

The initial results recorded from the recent drilling and fracture operations are confirming several key factors relevant to the potential commercial development of the Gunnedah Basin Gas Project. These factors are:

- The Bohena coal seam is thick, permeable, gas bearing and laterally continuous over a large part of the 265 square kilometer Bohena Project Area.
- A sustained production of CSG (rates >250 mcf/d) at all three remotely located pilot sites could result in the confirmation of a large amount of proven and probable CSG reserves.
- The high water rates observed from all the recently completed wells conclusively demonstrate that the type of hydraulic fracture stimulation method used is successful, repeatable and highly effective.
- Early production rates from Bohena-9, Bohena South-1 and Bibblewindi-1 indicate that these wells have the potential to produce CSG at high rates following a controlled dewatering process.
- Horizontal drilling appears to be effective and may be a drilling method that could improve the economics of a larger scale development program.

**About the Gunnedah Basin Gas Project (Coal Seam Gas Joint Venture) - "Delivering Gas Independence to NSW"**

The Project is located in Petroleum Exploration Licence 238 between Narrabri and Gunnedah in New South Wales covering 9,100 kms<sup>2</sup> of the Gunnedah Basin. The PEL contains one of the largest onshore natural gas accumulations in Australia alone totaling 17,000 PJ (17 TCF) of gas-in-place within the two coal seams that are over 10 metres thick in each of two coal bearing formations. The Bohena Project Area covers 265 square kilometres within PEL 238 and contains up to 3,700 PJ (3.7 trillion cubic feet) gas in place within coal seams of the Late Permian Black Jack Formation and the Early Permian Maules Creek Formation. The Project is managed by Eastern Star Gas Limited and is owned by the Gunnedah Basin Gas Project Joint Venture comprising:

Eastern Star Gas Limited (ASX: ESG) – 25% increasing up to 32.5%

Hillgrove Resources Limited (ASX: HGO) – 25% increasing up to 32.5%

Gastar Exploration Limited (TSX: YGA & OTHER OTC: GSREF.PK) – 50% decreasing to 35%

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