Natural gas and water bores

Australia Pacific LNG Project

Australia Pacific LNG is the leading coal seam gas (CSG) producer in the Queensland natural gas industry. The joint venture between Origin, ConocoPhillips and Sinopec is currently undertaking a major CSG to liquefied natural gas (LNG) project that will supply natural gas to both the domestic and international markets. The Australia Pacific LNG Project involves developing CSG fields in the Surat and Bowen Basins, construction of a 520 km pipeline and a new LNG facility on Curtis Island, off shore from Gladstone.

CSG is a cleaner and greener alternative to many currently used fossil fuels, such as coal and petroleum. Power stations fired by CSG emit around half the greenhouse gases of coal-fired electricity generation and use only a fraction of the water. CSG is emerging as a preferred transition energy source as the world develops its renewable energy capacity. The CSG industry is set to provide Queensland and Australia with huge economic benefits.

CSG is a natural gas, made up of mostly methane, extracted from underground coal measures within the Surat and Bowen Basins. There is some concern that gas extracted from these coal measures has the potential to contaminate water supplies that are used by local communities.

Secure gas wells and infrastructure

Australia Pacific LNG is committed to minimising impacts on the environment. Best practise design and construction technology ensures that installed infrastructure, such as gas wells, are safe and prevent contamination of both land and water.

CSG wells are constructed in accordance with strict codes of practice, encased in both steel and cement. This is done to prevent any substances used in drilling and completion activities, or removed in the production process from entering the surrounding rock formations and aquifers.

CSG wells are constructed in stages and thoroughly integrity tested before being brought on to production.

A steel casing or tube lines the inside of the well, and fully isolates the well. Cement seals the gap between the borehole and the steel casing through to the depth of the coal measures. This cement prevents the movement of groundwater or gas between different geological layers which could lead to contamination.

Naturally occurring methane can be seen producing bubbles in a groundwater monitoring bore — this bore is located in an area where CSG production is not yet taking place.

In the coal measures the steel casing contains holes to allow water and gas to enter the well.

These construction methods mean that water and gas within the well are completely isolated from the rock formations and aquifers around the well outside of the coal measures.

On the surface a fully secure well head caps the system and plugs and valves prevent substances from inside the well from being released to the environment.

Australia Pacific LNG is confident that its wells and infrastructure are designed and constructed in a manner that minimises the potential for extracted or associated gas to enter the surrounding environment. Australia Pacific LNG will continue to monitor for the occurrence of gas in groundwater throughout the period of CSG production.

Natural gas has been recorded in water bores for many years

The presence of gas has been recorded in Surat Basin water bores from early pioneering days. Historical state government records clearly report the presence of natural gas in many bores and in all commonly used Great Artesian Basin aquifers. The gas is usually a result of small coal seams, which occur in most GAB aquifers.

Natural gas is still recorded in many landholder bores today. Due to its odourless and colourless nature, methane often goes undetected and dissipates very quickly once pumped to the surface.

AUSTRALIA PACIFIC LNG

origin | ConocoPhillips

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Plant for separating gas and water, Roma 1906 (John Oxley Library # 29114).

The presence of gas in water bores is particularly common in areas such as Hopelands, where the Walloon Coal Measures (the geological layers that Australia Pacific LNG will access to extract CSG) are shallow and are used for stock water supply. In these areas, heavy water extraction from water bores can replicate the CSG production process, depressurising the coal measures and causing significant amounts of natural gas to flow.

This can cause groundwater to surge in bores, making pumping difficult, and 'gas locking' where large amounts of gas accumulate in the pipeline stopping water from flowing. In some cases separators have had to be fitted to bores to separate the gas from the water, and pumps replaced with different models to cope with gassy conditions.

Australia Pacific LNG has committed to conducting baseline testing of water level and water quality of all accessible landholder bores within its tenements before production commences in their area. This data combined with historical records will provide invaluable information to both landholders and Australia Pacific LNG. It will help determine any pre-existing conditions and provide a baseline to compare with future monitoring results. Tests will include water and pressure levels, water quality and the presence of gas.

Of landholder bores tested so far, more than 80% have recorded various levels of methane within the bores. This is prior to CSG operations taking place in these areas. This further confirms that the presence of natural gas in Surat Basin water bores is common and naturally occurring.

Summary

- Australia Pacific LNG's CSG wells are constructed in accordance with strict codes of practice, encased in both steel and cement. This is done to prevent any substances used in drilling and completion activities, or removed in the production process from entering the surrounding rock formations and aquifers. Water and gas within the well are completely isolated from the rock formations and aquifers around the well outside of the coal measures.
- The presence of natural gas in Surat Basin water bores is common and naturally occurring. Due to its odourless and colourless nature, methane often goes undetected and dissipates very quickly once pumped to the surface.
- Australia Pacific LNG has committed to conducting baseline testing of water level and water quality of all accessible landholder bores within its tenements before production commences in their area and will continue to monitor for the occurrence of gas in groundwater throughout the period of CSG production.

Got a question about Australia Pacific LNG?

For enquiries about the gas fields or pipeline call 1800 526 369 or email contact@aplng.com.au

For enquiries about the Gladstone operations and LNG facility call 1300 776 205 or email aplng.gladstone@conocophillips.com

Or visit our website at www.aplng.com.au

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