Energy in action.®

Gas Exploration Process

Fact Sheet

Coal seam gas (CSG) will become an increasingly important energy resource as Australia transitions to a lower carbon economy.

Electricity generated from CSG produces up to 55 percent less greenhouse gas emissions and uses up to two thirds less water than conventional coal-fired electricity generation.

The gas exploration process is designed to identify, evaluate and potentially prove that natural gas resources exist and can be commercialised for delivery to gas markets.

The process consists of four main stages:

1. identifying prospects and leads through geological and geophysical desktop studies
2. identifying hydrocarbon accumulations through drilling core and stratigraphic holes
3. evaluating the potential size of the discovery through geophysical surveys such as seismic, magnetic, gravity and further core and stratigraphic drilling where necessary
4. evaluating the gas discovery by gas flow testing the test wells to see if the gas will flow in economic volumes

Gas exploration activities include:

Seismic Surveys.

A seismic survey is like an ultrasound which is used to map the sub-surface structure of the earth. Artificially generated sound waves are created from a vibrating plate which is lowered to the ground from a tractor size truck. The sound waves travel down into the earth and get reflected back to the surface at geological boundaries. The reflected soundwaves are detected by surface receivers, or geophones, which are placed in a grid pattern on the ground.

Results from seismic surveys allow geologists to make an accurate 3D structural model of the sub-surface. The data gathered will also assist in further understanding the hydrological conditions present in the basin.

Core holes.

A core hole is a hole drilled to take a sample of coal, from a coal seam. A core hole is typically 10 cm in diameter and can vary in depth from 300 metres to 1,500 metres, depending on the depth of the coal seams.

^ Drilling rig used for a core hole.

About us

AGL has been operating in Australia for over 170 years and was one of its first listed companies.

AGL is Australia's leading renewable energy company and is Australia's largest private owner, operator and developer of renewable generation assets. AGL also operates retail, merchant energy and upstream gas businesses and has over three million customer accounts.

AGL is taking action towards creating a sustainable energy future for our investors, communities and customers.

^ An example of some of the trucks used to conduct a seismic surveys.

A core sample is typically 5 or 6 cm in diameter and sectioned into 1 metre lengths.

The core samples then undergo a variety of tests to better understand the coal and gas properties including the amount and type of gas contained within the coal.

Stratigraphic holes.

- This involves drilling exploration holes to retrieve and test drill cuttings and complete subsequent down hole logging and analysis. The holes are typically designed to provide geological, permeability and gas composition data.
- Stratigraphic holes are generally cemented, plugged and abandoned in accordance with requirements and rehabilitated, unless the holes are needed for further exploration testing. An instrument may be installed into the hole for ongoing data collection and the hole may be capped and suspended for future testing work.

Exploration test wells.

A test well is a gas well used to investigate the potential gas reserves in an area. It is used to measure the flow of gas and the volume of water produced from the targeted coal seam. A well is drilled down to the coal seam of interest. The well is fully cased with steel and concrete. The casing is perforated at the coal seam to allow the flow of water and gas from the seam.

On the surface, the well head is contained within a small fenced area of approximately 4 metres by 6 metres and is a height of 2 metres. Small pipes flow from the well, one containing gas and the other containing water.

A test well generally operates for several months to collect the necessary data. Once the testing is complete the well may be removed and the site rehabilitated or it may remain in place to allow for testing of other coal seams.

AGL is committed to helping the community understand the gas exploration process and the management measures in place to protect the local environment.

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How to find out more

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