TRI-STAR
AUSTRALIAN COAL SEAM GAS PIONEERS

FACTSHEET ONE

2019

FRACKING

Hydraulic fracturing is an established oil and natural gas extraction method that has been used throughout the world for more than 60 years.

TRI-STAR GROUP RESPONSIBLY MANAGES HYDRAULIC FRACTURING OPERATIONS IN AUSTRALIA AND IN THE US, WHILE FOCUSING ON MINIMISING ITS IMPACT ON THE ENVIRONMENT AND PROTECTING THE HEALTH AND SAFETY OF ITS WORKERS AND THE COMMUNITIES IN WHICH IT OPERATES.

WHAT IS HYDRAULIC FRACTURING?

Hydraulic fracturing, or fracking, is a technique used to extract oil or natural gas from a well. It involves injecting highly pressurised liquids into a well to create fractures in deep-rock formations, thereby increasing the flow of the oil or gas trapped underground. Fracking is commonly used in low permeability rocks like tight sandstone, shale and some coal. Fracking was first used in the United States in the 1940s and since then, has been used safely around the world in more than 2 million wells.

WHY DO YOU NEED TO USE FRACTURE STIMULATION?

Fracking enables the recovery of oil and gas that are trapped in tight rock formations deep below the earth's surface and are otherwise inaccessible.

The process also increases the volume of oil and gas that can be extracted from a well, making it a more efficient and economic method of production for mining and exploration companies.

As a result of fracking, global production of oil and natural gas has increased significantly and energy prices are more affordable for the consumer. Fracking also increases economic activity, employment, and income in the areas in which mining and exploration companies operate wells.

HOW DOES HYDRAULIC FRACTURING WORK?

A deep vertical well is drilled into the target rock layer containing oil or natural gas. The well is then turned at a 90 degree angle and drilled horizontally for hundreds of metres into the rock formation that is believed to contain the trapped natural gas or oil.

Fluid is pumped down the well at high pressure into the rock layer. This fracking fluid is usually a combination of water, sand and some chemicals. The pressure of the fluid fractures the target layer to produce tiny cracks or enlarge existing cracks. The sand in the fluid helps prop the tiny cracks open to increase permeability and allow the gas or oil to flow more easily. Through the cracks, the oil or natural gas is released into the well and pumped back to the surface.

The natural gas or oil is then processed, refined and shipped to market.

WHAT'S IN FRACKING FLUID?

Fracking fluid is a chemical mixture comprised of 99.5% water and sand. However, some chemical compounds are added to the mixture help initiate cracks in the rock layer, reduce friction, prevent clogs, remove bacteria, and prevent corrosion of the well.

The chemicals used in fracture stimulation can be found in common household products including detergents, soap, ice cream, food additives, baked goods, pet litter, toothpaste and bleach.

WHAT HAPPENS TO THE FRACKING FLUID AFTER IT IS PUMPED INTO THE ROCK LAYER?

After the fracking process is complete, some fracking fluid returns to the surface. The recovered fluid is stored in tanks or pits, and then transferred to a water treatment facility. Sometimes the wastewater is recycled for additional fracking.

The small amount of fracking fluid that remains in the rock layer degrades over time and turns into water similar to the salty water already present. The sand remains in the rock fractures to keep them open.

HOW ARE UNDERGROUND AQUIFERS PROTECTED?

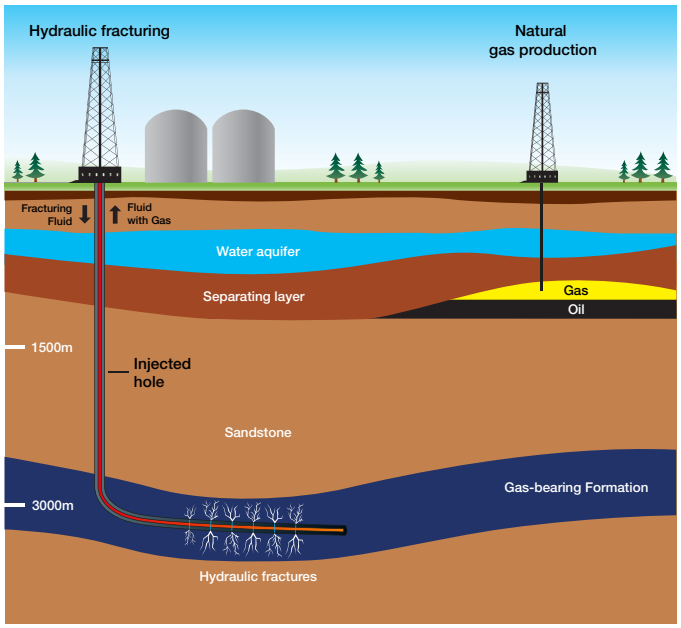
Wells are designed and constructed to the highest standard, and monitored on an ongoing basis to prevent leakage to underground aquifers.

Once the wells are drilled, they are lined with a steel casing. Cement is then poured in between the space between the casing and the drilled hole.

The casing provides a barrier between the well and adjacent aquifers, and prevents leakage and contamination of fluids into the surrounding rock and groundwater. It also provides structural support for the well, ensuring it can withstand high pressures.

Prior to operation, the well is pressure tested vigorously to ensure it isn't leaking. Fracking does not take place if the well does not meet regulations.

Regular monitoring for leakages continues during the operation of the well. The content of the fracking fluid is also monitored closely for changes in composition. If changes in the fluid's composition are detected and there are concerns that the well integrity has been compromised, all operations are suspended until the issue is addressed.



REHABILITATION OF WELLS

Once fracking is completed, the wells are capped and the site is rehabilitated. Rehabilitation works include reinstatement of top soil and revegetation, soil sampling and pond rehabilitation.

Tri-Star acknowledges the concerns in some communities about the perceived effects of oil and gas exploration and development on water quality and supply. Tri-Star operates in compliance with all relevant State, Territory and Australian government legislation and maintains close relationships with its stakeholders to keep them informed of its activities.

LINKS

For more information on fracking, visit APPEA (The Australian Petroleum Production and Exploration Association) at www.appea.com.au