Hydraulic Fracturing
Position Paper

IPAMS

"Hydraulic fracturing…is a valuable tool in reducing our dependence on foreign energy supplies."
Sen. Jeff Bingaman (D-NM)
Chairman, Senate Energy Committee
March 7, 2002

Background

- Hydraulic fracturing is a practice used to stimulate production from natural gas and oil reservoirs. Fracking in shales and tight sands is leading to increased natural gas and oil reserves, as advances in the technology are enabling energy companies to develop reserves not previously possible to exploit.

- In 2007, a record high 46.1 Tcf was added to natural gas proved reserves, a 13% increase from the previous year, according to the Energy Information Agency. For the first time in years, the US reported proved reserve additions of oil greater than domestic production, at 2 billion barrels. These increases in reserves would not be possible without hydraulic fracturing.

- Fracking has enabled the United States to increase its reserves to such an extent that we now have the 6th largest reserves in the world, up from 14th a decade ago.

- At a time when our nation needs more domestic energy to insure greater energy security, fracking is a vital technology for meeting that demand.

Details

- Hydraulic fracturing is a safe, well-tested technology that has been used to develop energy for over 60 years. It is performed thousands of times each year with an exemplary safety record. ***There are no documented cases of contamination to drinking water from fracking***.

- Hydraulic fracturing happens during the completion process, after a well has been drilled. High pressure fluid, mostly water, is pumped down the wellbore and into the gas or oil-bearing rock to break or frac the formation so that the gas or oil can flow from tight (low permeability) reservoirs back into the well and to the surface. Sand or ceramic grains are mixed with the fluid that's pumped down the well to prop the fractures open. Industry is pumping these fluids down steel casing that is cemented in place and carefully designed to protect fresh water aquifers and ***into rocks that contain oil and natural gas!***

- Like all procedures surrounding the development of energy, hydraulic fracturing is already regulated by hundreds of local, state, and federal laws. In spite of the alarmist claims by some in Congress and their allies in the extremist environmental community, there is absolutely no evidence that additional regulations are needed.

- Because the states already regulate the practice of hydraulic fracturing, federal regulation is unnecessary. The Safe Drinking Water Act exemption for hydraulic fracturing does not eliminate the EPA's ability to become involved if necessary. If the practice is subject to another layer of

regulation it will delay natural gas supplies from reaching consumers.

- The Alabama, Oklahoma, North Dakota, Utah and Wyoming legislatures recently passed resolutions that Congress not remove the fracking exemption, thereby enabling the states to retain regulatory primacy. The Texas legislature has introduced a similar resolution.

- The Interstate Oil and Gas Commission, representing all natural gas and oil producing states, recently issued a resolution that Congress not repeal the exemption. IOGCC completed a survey of all producing states in 2002 and found no cases of contamination from fracking.

- EPA has found no evidence that water quality degradation has resulted from fracking.[1]

- Senator Jeff Bingaman (D-NM), Chairman of the Senate Energy and Natural Resources Committee, has recognized the safety of fracking. As he stated in 2002, "hydraulic fracturing … is a valuable tool in reducing our dependence on foreign energy supplies." He further noted that "During both the … Clinton administration, and the current administration, the EPA has maintained that Federal regulation of hydraulic fracturing is not required."[2]

- In a May 5, 1995 letter, then EPA Administrator Carol Browner stated "There is no evidence that the hydraulic fracturing at issue has resulted in any contamination or endangerment of underground sources of drinking water (USDW). Repeated testing, conducted between May 1989 and March 1993 … failed to show any chemicals that would indicate the presence of fracturing fluids."[3]

- Despite the lack of evidence that fracking harms drinking water, environmental groups, led by the Natural Resources Defense Council, have been pushing to repeal the fracking exemption from the Underground Injection Control program of the Safe Drinking Water Act.

- Hydraulic fracking fluids typically consist of 99.5% water and sand. The remaining 0.5% contains three primary additives: 1) a friction reducer, similar to Canola oil, to thicken the liquid; 2) a bactericide like Chlorine used in swimming pools; and 3) a micro emulsion element similar to those found in personal care products.

- Over 95% of IPAMS member production comes from wells that must be fraced. Without this time tested procedure, many wells simply would not be able to produce vital energy resources that enable the United States to achieve greater energy security.

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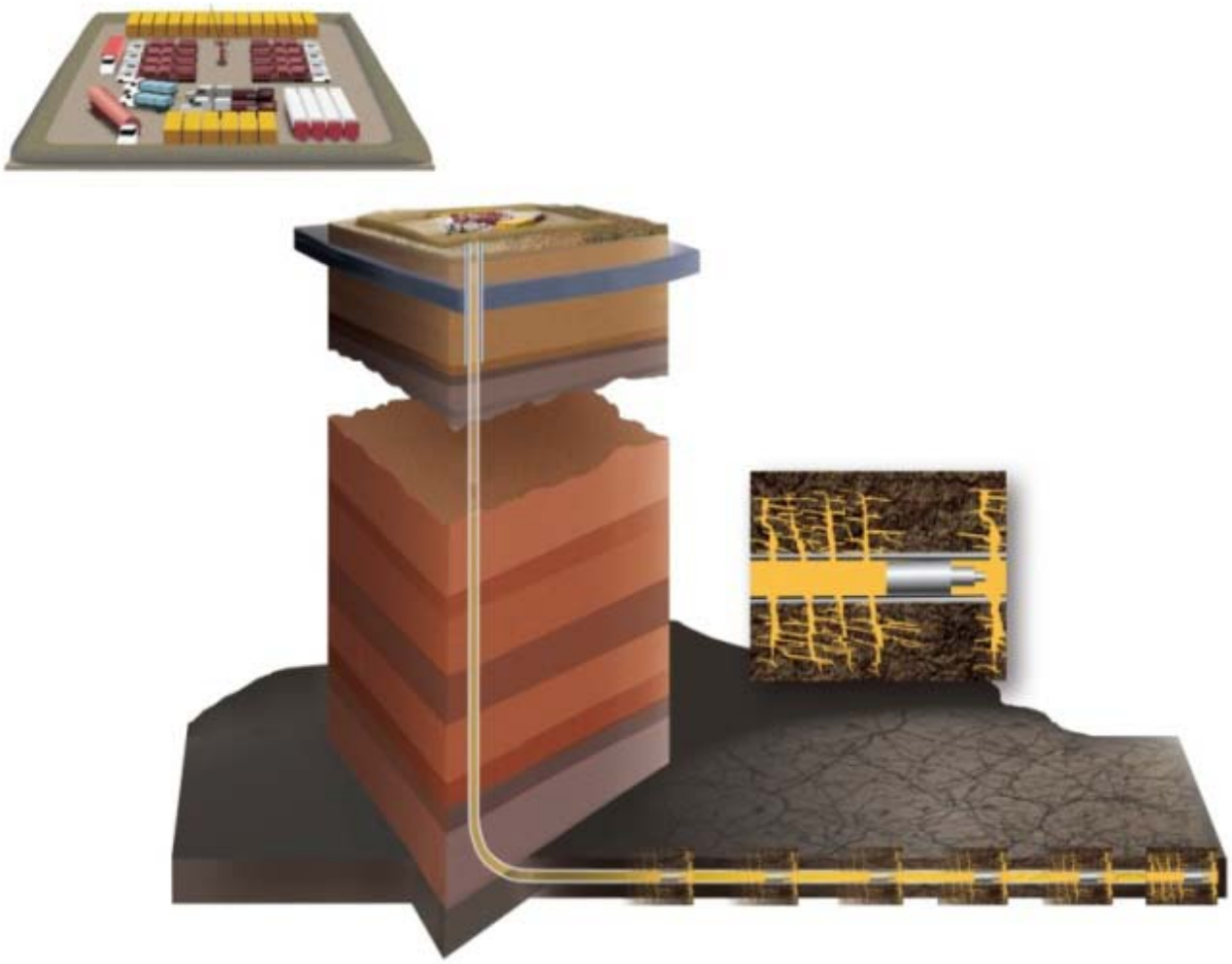
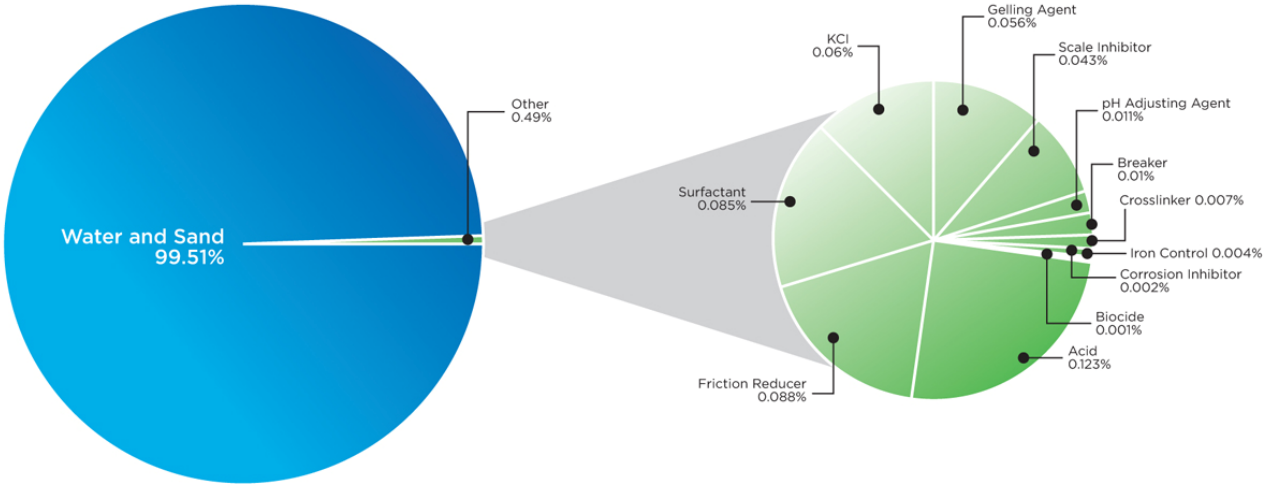
[1] *Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs*, Final Report, US Environmental Protection Agency, June 2004, page ES-13.
[2] *Congressional Record – Senate*, March 7, 2002, page S1633.
[3] Letter dated May 5, 1995, from Carol Browner, EPA Administrator, to David Ludder, general counsel for the Legal Environmental Assistance Foundation, denying a petition for EPA to regulate hydraulic fracturing based on a case in Alabama. The EPA determined state law is appropriate for regulating hydraulic fracturing and there is no need to supplant these efforts.



Not to scale. The space indicated in the break between layers is usually 4,000 to 12,000 feet. If this graphic was shown with a vertical scale of 500 feet per inch (assuming a 12,000-foot-deep wellbore), this drawing would be 2 feet long!



Example of a Shale Frac Fluid Makeup

A representation showing the volumetric disposition of deep shale gas hydraulic fracture components reveals that 99.5% of fracturing fluids are comprised of freshwater and sand. These compounds are injected into deep shale gas formations and are typically confined by many thousands of feet of rock layers.

FRACTURING FLUID ADDITIVES, MAIN COMPOUNDS AND COMMON USES			
Additive Type	**Main Compound**	**Purpose**	**Common Use of Main Compound**
Acid	Hydrochloric acid or muriatic acid	Helps dissolve minerals and initiate cracks in the rock	Swimming pool chemical and cleaner
Biocide	Glutaraldehyde	Eliminates bacteria in the water that produce corrosive by-products	Disinfectant; Sterilizer for medical and dental equipment
Breaker	Sodium chloride	Allows a delayed break down of the gel polymer chains	Table salt
Corrosion inhibitor	n,n-dimethyl formamide	Prevents the corrosion of the pipe	Used in pharmaceuticals, acrylic fibers and plastics
Crosslinker	Borate salts	Maintains fluid viscosity as temperature increases	Used in laundry detergents, hand soaps and cosmetics
Friction reducer	Petroleum distillate	“Slicks” the water to minimize friction	Used in cosmetics including hair, make-up, nail and skin products
Gel	Guar gum or hydroxyethyl cellulose	Thickens the water in order to suspend the sand	Thickener used in cosmetics, baked goods, ice cream, toothpaste, sauces, and salad dressings
Iron control	Citric acid	Prevents precipitation of metal oxides	Food additive; food and beverages; lemon juice ~7% citric acid
KCl	Potassium chloride	Creates a brine carrier fluid	Used in low-sodium table salt substitute, medicines and IV fluids
Oxygen scavenger	Ammonium bisulfite	Removes oxygen from the water to protect the pipe from corrosion	Used in cosmetics, food and beverage processing and water treatment
pH adjusting agent	Sodium or potassium carbonate	Maintains the effectiveness of other components, such as crosslinkers	Used in laundry detergents, soap, water softener and dish washers
Proppant	Silica, quartz sand	Allows the fractures to remain open so the gas can escape	Drinking water filtration, play sand, concrete and brick mortar
Scale inhibitor	Ethylene glycol	Prevents scale deposits in the pipe	Used in household cleansers, de-icer, paints and caulk
Surfactant	Isopropanol	Used to increase the viscosity of the fracture fluid	Used in glass cleaner, multi-surface cleansers, antiperspirant, deodorants and hair color

Source: Chesapeake Energy, Hydraulic Fracturing Fact Sheet, February 2009.