



EXCERPT FROM THE MAY 16, 2011 ISSUE

SHALE FRACTURING – WATER, NITROGLYCERINE OR A NUCLEAR BOMB

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Prior to the use of **hydraulic fracturing** with water and sand in about **1952**, geologists had discovered years before that setting off explosives at the bottom of a well would shatter the surrounding rock and could stimulate the flow of oil and gas. Tight **oil & gas formations** were '**fractured**' with **nitroglycerine** in the range of about 80 – 100 quarts. One old well we know of had **400 quarts** shot across the formation. The half a century of using those large quantities of nitroglycerine did not create fractures around the small 'caves' beyond about 100 feet. There were no unusual complaints of nitroglycerine use and fresh water contamination. Quite a few were killed handling and transporting the nitroglycerine. The problem with **nitroglycerine** was that being **omni-directional**, it **sometimes opened up remnants of old geological seas, directly above or below the target formation, causing salt water to pour into the well bore killing the well and causing it to be plugged and abandoned.**

On **December 10, 1967**, less than 60 miles from Farmington, New Mexico, the **Atomic Energy Commission (AEC)** explored peaceful uses of **atomic bombs** by seeing if a **small underground nuclear explosion would stimulate the release of natural gas trapped in shale deposits**. Participants in **Project Gasbuggy** included the **Atomic Energy Commission (AEC)**, the **Bureau of Mines** and the **El Paso Natural Gas Company (EPNG)**. The goal of the Farmington blast was to see if a smaller **underground nuclear explosion** would **stimulate** the release of natural gas trapped in dense **shale deposits**. Gasbuggy called for a **29 kiloton** warhead to be set off **four thousand feet underground** in an existing, low-productivity gas well. (As a comparison, the atomic bomb used in WWII at **Hiroshima** was **20 kilotons**.) It was believed a **nuclear device** would simply provide a '**bigger bang for the buck**' than **nitroglycerine**, as the **29 kiloton** warhead would be **equal to 3,500 quarts of nitroglycerine** which would be used in a **single shot**. Reporter Wade H. Nelson reported that the "The Gasbuggy blast created an underground cavern approximately **160 feet in diameter by 333 feet tall**--imagine putting an oversized football field on a stick like a popsicle, pushing it 3,800 feet down into solid rock, and twirling it. A few seconds after the explosion the molten glass-lined cavern collapsed, creating a chimney filled with rubble and debris. Geologists later estimated that **fractures extended out from the cavern a few hundred feet in all directions.**" The amount of gas released was 205 - 295 million cubic feet, about six times its previous production before the blast. It all had to be flared but it still released some radioactive particles, primarily Tritium and Krypton-85. Nationally, it was reported by Reporter Wade H. Nelson, that **it was hoped nuclear stimulation of gas wells might result in the recovery of as much as ten times the amount of natural gas as was then being recovered and help relieve the nation's energy crisis.**

Hydraulic fracturing has long since replaced **explosive stimulation of natural gas wells** and has been used on an estimated 1,000,000 wells without a **single case of drinking water contamination ever being substantiated in the U.S.** Hydraulic fracturing consists of pumping a mixture of fluid and sand down a well at surface high pressure and squirting it through 1/3" perforations (holes in the casing, cement and about 10" into the shale), causing natural fissures in the rocks to expand and lengthen within the target formation by monitoring rate and pressure.

Hydraulic fracturing using precise-sized sand or ceramics as a proppant has been used for the last 60 years without any scientific evidence that pumping water from **1 - 2 miles deep (or deeper)** into any formation through casing with holes about 1/3 of an inch in

diameter could ever **extend more than a hundred feet** or so vertically. By controlling pumping rate and volume of water, hydraulic fracturing allows for control so as not to create fractures into the formation 50 – 100 feet directly **above or below** the target shale. When that happens, such as in the **Barnett Shale** in North Texas, it will open salt water from the deeper **Ellenberger dolomite**, or if above, the **Marble Falls Limestone** allowing water to pour into the perforations and well-bore, killing any hydrocarbon production. It is impossible to create enough continuous pressure to cause fractures to extend up more than 150 feet without exceeding the bursting point of the deep production casing **ruining the well**.

Anti-drilling activists, and some who believe ‘shock jock’ headlines, would lead you to believe that hydraulic fracturing causes fractures to be created from deep in the bowels of the earth laid down over 325+ million years and that those fractures extend to the fresh water zones within a few hundred feet of the surface. No one can explain after penetrating many geological formations and their impermeable shale ‘tops’ and many remnants of oceans of salt water, what causes the fractures to always stop just below the surface where there is no resistance. If the activists’ theory was true that hydraulic fracturing could reach that far, we would have billions of fractures, at the surface, surrounding the million plus wells that have been hydraulically fractured in the last 60 years and would have spewed quadrillions of cubic feet of gas into the atmosphere. **That is not the case and no wells have ever been documented that hydraulic fracturing causes any contamination of shallow fresh water zones.**

Pennsylvania & West Virginia in the Marcellus Shale have **extensive coal beds near the surface** which are the primary contributor of methane in fresh water formations near the surface and have been **for centuries**. Remember, there are also **very shallow hydrocarbon formations** in **Pennsylvania/West Virginia/New York** as well as Texas and other states. Example: **Colonel Edwin Drake drilled the first oil well in America on August 27, 1859 (before the Civil War) in Titusville, Pennsylvania, hitting oil at 69 ½ feet deep which produced about 20 barrels oil per day. It did not have to be hydraulically fractured!**

The recent **Duke University Report** of April 14, 2011 titled **“Methane Contamination of Drinking Water Accompanying Gas-Well Drilling and Hydraulic Fracturing”** only looked at a very small sampling in a small area and none showed methane levels in the water wells before area hydraulic fracturing; therefore there was **no baseline** in the ‘study’. Many of the water wells studied in areas of no hydraulic fracturing had methane gas from unknown sources. If methane in the shallow fresh water formations was caused by the hydraulic fracturing of deep gas shales more than a mile deep, then how come no traces of the fracturing chemicals or salt water from the ruminant seas below were found in the water wells? All they found was methane. The study needed to decide on whether the methane is of **thermogenic or biogenic origin**. It did not. It is most likely to be biogenic. The study did **not** include the **Nitrogen and Oxygen fingerprinting** of the methane used by **Dr. Mark McCaffrey** and accepted by the **Railroad Commission of Texas** in 2011 in determining the source of methane gas in fresh water wells, now considered the **DNA of natural gas** by many. [RRC 7B-0268629 Dr Mark McCaffrey Study 01-19-2011 Range Case.](#)

As **Railroad Commission of Texas Chairman Elizabeth Ames Jones** said in testimony before the **U.S. House Committee on Science, Space, and Technology** on their review of **Hydraulic Fracturing Technology** in Washington, D.C. on May 11, 2011, **“You have a better chance of hitting the moon with a Roman candle than fracturing into fresh water formations by hydraulic fracturing a shale.”**