

The Use Of An Ionized Fluid In The Hydraulic Fracturing Of Shale

By Joe Munisteri, a Silver Fox Advisor

For the past four years I have been involved in developing a method and system for generating an ionized fluid and then injecting the ionized fluid into underground fissures, of shale deposits, then pressurizing the ionized fluid, whereby the crystalline structure, of a portion of the shale deposit, located in the fissures, are changed into suspended particles. The depressurization of the ionized fluid, forces the suspended particles out of the fissures, and increases the amount Hydrocarbons contained in and released from the shale formation.

Mitchell Energy, in the mid–nineteen nineties utilized two newly developed technologies that changed the way unconventional, insitu hydrocarbon shale deposits could be produced economically. The first technology utilized the development of steerable and controllable drilling techniques that could change the direction of a drill bit going in a vertical direction and rotating it into a horizontal direction. This rotation could be accomplished easily and the drill bit could then continue to drill horizontally for some considerable distance.

With this in mind, we have continuously been working on enhancements to these hydraulic fracturing technologies to increase the percentage of a larger amount of the contained hydrocarbons in the shale. We have developed and have patented several new technologies to accomplish this goal. Our company, MBJ Water Corporation, has developed these new technologies. We have designed, built and tested transportable modules that can treat the water that is used in the hydraulic fracturing of shale. These portable, modular units are capable of treating up to seven millions gallons of water each day. The first module is an ion generator that produces positive ions at the rate of up to 360 kHz per minute.

The positive ions produced in the first module, changes the crystalline structure of the shale from being a crystal in solution to becoming a particle in suspension. It changes the way calcite, a (calcium carbonate shale) is converted into aragonite, a material in suspension. When the pressurized water is released, the suspended particles are carried away together with the water, released hydrocarbons and other materials. All this is carried into the second module, which is a three phase, four material separator. All the water is recycled in other fracturing operations and the gaseous hydrocarbons, condensable hydrocarbons, and other solid materials are separated simultaneously.

Our new process is called “The Frackwell Process.” It has the following features: All the flow back and produced water is reused in subsequent hydraulic fracturing operations ;we need only ten percent of the water for make-up; proppant is not needed; chemicals are not needed ; and the positive ions act as a corrosion inhibitor. We eliminate the need to transport fracturing water or use disposal wells; all the water, gases, condensable hydrocarbons are separated simultaneously and the rate of hydrocarbon recovery is increased by a factor of two.



Joe Munisteri

We have been encouraged by our progress to date and are getting ready to test the “The Frackwell Process” on location. ♦

