

Singh, Angela K (DOA)

From: Fisher, Samantha J (DOA)
Sent: Monday, April 01, 2013 3:38 PM
To: Singh, Angela K (DOA)
Cc: Colombie, Jody J (DOA)
Subject: FW: Hydraulic Fracturing Comments
Attachments: Comments 4-1-13.pdf

Angela,

[Print and save.](#)

Thanks!

From: Martin, David J. [<mailto:David.Martin@klgates.com>]
Sent: Monday, April 01, 2013 3:03 PM
To: Colombie, Jody J (DOA); Fisher, Samantha J (DOA)
Cc: Cutler, Louisiana W.
Subject: Hydraulic Fracturing Comments

Please find attached the written comments of Halliburton Energy Services, Inc. in response to the proposed changes to Title 20, Chapter 25 of the Alaska Administrative Code with regard to hydraulic fracturing.

Thank you

Dave

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April 1, 2013

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Via E-Docket

Commissioner Cathy Foerster, Chair
Commissioner John Norman
Commissioner Dan Seamount
Alaska Oil and Gas Conservation Commission
333 West 7th Avenue Suite 100
Anchorage, Alaska 99501

Re: *Written comments of Halliburton Energy Services, Inc. in response to proposed changes in the regulations of the Alaska Oil and Gas Conservation Commission regarding proposed changes to Title 20, Chapter 25 of the Alaska Administrative Code with regard to hydraulic fracturing*

Dear Commissioners:

Halliburton Energy Services, Inc. (HESI) is one of the largest providers of services to the oil and gas industry. We are proud of our successful history of product innovation, which has played a large role in the development and expansion of our nation's energy resources. Through its proposed regulations, we believe that AOGCC seeks to ensure that the history to date of environmentally sound hydraulic fracturing (HF) operations in Alaska continues long into the future in a manner that provides greater transparency to the public about the chemicals used in HF operations. HESI supports this objective. We respectfully request, however, that AOGCC consider changes to four parts of its draft regulations, and provide suggested language to effect these changes in Exhibit A to these Comments.

First, because we strongly believe that some – though certainly not all – of the information that would be disclosed to AOGCC under proposed 20 AAC 25.283(h) constitutes trade secrets and proprietary information under both Alaska and federal law, we request that such information not be disclosed to AOGCC because of our concern that it could eventually be disclosed to our competitors through a public information request. A useful analogy might be your mother's secret apple pie recipe: disclosing that she uses apples, butter and cinnamon might not easily allow another cook to copy her recipe but if

she disclosed the exact proportions of apples, butter and cinnamon, whether she prefers Gala or Granny Smith apples, whether she uses regular or unsalted butter, and whether she grinds her own cinnamon, *plus* her secret ingredient that makes the pie so uniquely tasty and how much of it she uses, her recipe could be easily reproduced by other cooks.

To be clear: HESI fully supports disclosure of much of the information concerning the fluids it uses in its HF operations and fully supports providing that information to AOGCC. Similarly, we are avid supporters of disclosure on the FracFocus website, routinely provide information about HF operations in Alaska and elsewhere that is then posted to FracFocus, and fully support providing that same information to AOGCC as proposed in the draft regulations. We also have substantial information on our own website about the chemicals and products we advocate using in HF operations which the public can view at

http://www.halliburton.com/public/projects/pubsdata/Hydraulic_Fracturing/index.html. What we do not want to disclose is the subset of HF additive information that we consider proprietary. We have invested millions of dollars in research and development of our HF additives and seek to protect that investment. We have spent over a half of a billion dollars in the last decade on HF R&D. In fact, it is a subset of information about our newest, most innovative and most effective products which provide the most protection to the environment and the public that we seek not to have to disclose. For example, HESI's CleanStim® is a recently developed HF fluid system made entirely of ingredients sourced from the food industry that provides exceptional fracturing and environmental performance as compared to traditional formulations. Its development required many months of research and development. Our industry competitors do not know the particular materials used in this fluid system or its concentrations. If this information were disclosed, HESI would lose the investment in its capital, personnel, and technology. As a leader in product innovation, HESI seeks to maintain our competitive edge, especially since there have been no instances of contamination or any other circumstances in Alaska that warrant risking disclosure to our competitors.

We recognize, however, that there could be rare circumstances when our proprietary information and trade secrets would need to be disclosed and we support such disclosure as long as it occurs with adequate protection from further disclosure to our competitors. Therefore, in Exhibit A at 4-5, we provide language that would require disclosure of such information when needed to respond to an emergency and to AOGCC if necessary to investigate waste under AS 31.05.030(b) or AS 31.05.030(e)(1)(E), or to investigate a release under 20 AAC 25.205.

In short, we embrace the goal of additional transparency for HF operations in Alaska but respectfully request that AOGCC not require us to disclose the secret aspects of our HF additive "recipes" lest our competitors obtain that information and copy the products we have put so much effort, time, resources and money into developing.

HESI's second concern is with 20 AAC 25.283(e) as proposed, which would require that HF fluids be confined to the approved formations in order to maximize fluid containment. Although we always strive to confine fluids to the approved formation to the greatest extent possible, given the complex nature of geological formations, achieving this goal is sometimes not possible. Therefore, we request that the final version of 20 AAC 25.283(e) be amended to clarify that hydraulic fracturing shall not result in the transmission of HF fluids beyond the confining zone. *See Exhibit A at 2.*

HESI's third concern is with the detailed pre-fracturing fluid disclosure requirements in 20 AAC 25.283(a)(14). While operators conduct detailed research prior to starting a hydraulic fracture, situations often arise where different additives or additional fluids have to be used once the process is actually undertaken. Because of this need for flexibility, HESI suggests that this section be removed, and that the post-fracturing reporting provided for in 20 AAC 25.283(h) be relied upon instead.

Our final concern is with proposed 20 AAC 25.283(d) which requires the installation of a pressure relief valve(s) and a remotely controlled shut-in device. In many instances the installation of a pressure relief valve on the treating line between pumps and the wellhead is not recommended. Moreover, a remotely controlled shut-in device could be problematic should the valve accidentally close while pumping at high pressure, potentially causing catastrophic events.

The balance of our comments provides you with additional information about our company, why we believe protection of our trade secrets and proprietary information is required under Alaska law, why trade secret protection will not harm the environment or the public, and additional information we hope you will find useful as you consider our request to amend the proposed regulations as provided for in Exhibit A.

I. Introduction and Background Information

A. HESI's HF Operations in Alaska and Elsewhere

HESI pioneered hydraulic fracturing technology for well stimulation in the late 1940s, with the first commercial HF job occurring in 1949. We first came to Alaska in 1986, conducting HF for various North Slope operators in conventional wells from then until 1996. We returned to Alaska in 2010. We have entered into a technology partnership with Great Bear to explore for, develop and produce shale oil on the North Slope. We are also working with Pioneer using HF in oil production operations at Oooguruk.

HESI's extensive HF research and development focuses on understanding the geological, petrophysical and reservoir parameters of hydrocarbon bearing formations and their surrounding layers, the chemistry of the HF fluids themselves, and ultimately, on designing programs that successfully stimulate a formation in the manner desired, while ensuring the integrity of the production and water-bearing zones. As part of these efforts,

we have devoted significant resources to developing more effective and innovative fracture stimulation fluid systems for a variety of subsurface environments which helps to ensure that oil and gas resources are produced in the most efficient manner possible and in accordance with all applicable environmental requirements.

In addition to CleanStim® discussed above, other examples of innovation that are both environmentally sound and production enhancing are CleanStream® and CleanWaveSM. CleanStream® is a mobile bacteria control service using UV light which reduces the amount of chemical biocides required and in some cases, eliminates the need for biocide altogether. CleanWaveSM is a water treatment service that reduces the amount of water used as well as bacteria and chemicals, while simultaneously improving reservoir performance. Additionally, HESI has developed fluid systems that facilitate the use of produced water rather than relying solely on fresh water as the base HF fluid. The re-use of produced water can have two benefits: it limits the amount of produced water that must be disposed of, while at the same time limiting the amount of fresh water that must be withdrawn from ground or surface water for HF operations in the first place, thereby minimizing any potential impacts on aquatic ecosystems. These innovations will be especially useful if HF is used in conjunction with shale oil and gas production on the North Slope where fresh water is lacking.

B. Current AOGCC Statutes and Regulations Regarding HF

Under AS 31.05.030(e)(1)(B), AOGCC may regulate the perforating, fracture stimulation, and chemical treatment of wells. Additionally, under AS 31.05.030(j)(2)(A), the AOGCC “shall regulate hydraulic fracturing in non-conventional gas wells to ensure protection of drinking water quality.”¹

AOGCC does not currently have any rules regarding disclosure of hydraulic fracturing fluids. Proposed fracturing programs are described in the application for a permit to drill a new well (Form 10-401) or in an Application for Sundry Approvals (Form 10-403) when such work is planned on an existing well. Disclosure of the chemical composition or the anticipated volume of fluid is not currently required for either permit. However, Material Safety Data Sheets (MSDS) are required by federal law to be available on location. In instances where fracturing is proposed in a drilling permit application, volumes may or may not be included because completion interval thickness, permeability and other characteristics that determine required fluid volumes generally are not known before the well is drilled. *See ALASKA OIL AND GAS CONSERVATION COMMISSION,*

¹ AS 31.05.030(j)(2)(A) was originally passed in 2004 as part of House Bill 531. The bill was primarily directed at coal bed methane in the Mat-Su and Kenai Peninsula. STATE OF ALASKA HOUSE RESOURCES COMMITTEE 23RD LEG, HB 531, COMMITTEE MINUTES at number 100 (April 14, 2004).

HYDRAULIC FRACTURING WHITE PAPER, (April 6, 2011) (“AOGCC WHITE PAPER”), <http://doa.alaska.gov/ogc/reports-studies/HydraulicFracWhitePaper.pdf>.

C. Proposed Regulations

Amongst other changes, AOGCC proposes to add section 20 AAC 25.283, which requires operators to provide additional information regarding HF activities in their Form 10-403. HESI has concerns about four aspects of 20 AAC 25.283 as proposed.

First, under proposed 20 AAC 25.283(h)(2)(A)-(D), an operator is required to file with the AOGCC a description of the amount and type of material pumped during the HF operation, including an identification of the chemical ingredients in the HF fluid as well as the rate or concentration for each additive. This section does not contain any provision that would allow for the protection of proprietary information and/or trade secrets.²

Second, in addition to the disclosures required post-fracturing, the regulations require that the operator provide a detailed list of hydraulic fluids to be used, including total volumes planned, trade name and generic name of the principal fluids, and the estimated volume of those principal fluids prior to the start of hydraulic fracturing. 20 AAC 25.283(a)(14)(A)-(D).

The proposed regulations also add requirements for the placement of hydraulic fracturing fluids. Specifically, 20 AAC 25.283(e) requires that “all hydraulic fracturing fluids shall be confined to the approved formation during hydraulic fracturing.” In addition, 20 AAC 25.283(a)(13) requires that the operator provide information sufficient to support a determination that any known or suspected faults and fractures will not interfere with containment of the hydraulic fracturing fluid.

Finally, under AOGCC’s proposed 20 AAC 25.283(d), a pressure relief valve must be installed on the treating lines and the well must be equipped with a remotely controlled shut-in device.

II. Disclosure of HESI’s Proprietary Information and/or Trade Secrets Should Not Be Required Under 20 AAC 25.283(h).

² Nor does any other section of AOGCC’s existing statutes or regulations protect HESI’s HF trade secrets. AS 31.05.035 provides that for exploratory or stratigraphic test wells, proprietary engineering or geotechnical information submitted to AOGCC will be kept confidential for 24 months. HESI’s trade secrets in its fluid formulas are neither “engineering” nor “geotechnical” information. Even if AS 31.05.035 did provide trade secret protection for HF fluids, it does not apply to development wells.

As noted above, some of the information that AOGCC would require operators to disclose in proposed 20 AAC 25.283(h) constitutes proprietary information and/or trade secrets.

A. The Alaska Constitution Requires That HESI's Trade Secrets Be Protected.

Article I, sec. 22 of the Alaska Constitution provides: “[t]he right of the people to privacy is recognized and shall not be infringed.” The Alaska courts have long held that this explicit guarantee of privacy provides Alaskan corporations and individuals with greater protection than the federal constitution. *Woods & Rohde, Inc. v. State Dep’t of Labor*, 565 P.2d 138, 150 (Alaska 1977).³ Moreover, our Supreme Court has expressly recognized that in certain circumstances, disclosing information violates the right to privacy under Article I, section 22. *International Ass’n of Fire Fighters, Local 1264 v. Municipality of Anchorage*, 973 P.2d 1132, 1134 (Alaska 1999). In order to determine whether the disclosure of particular records violates an entity’s right to privacy, the Alaska Supreme Court applies the following test:

- (1) Does the party seeking to come within the protection of the right to privacy have a legitimate expectation that the materials or information will not be disclosed?
- (2) Is disclosure nonetheless required to serve a compelling state interest?
- (3) If so, will the necessary disclosure occur in a manner which is least intrusive with respect to the right to privacy?

International Ass’n of Fire Fighters, 973 P.2d at 1134 (Alaska 1999); *see also Doe v. Alaska Superior Court, Third Judicial District*, 721 P.2d 617, 630 (Alaska 1986).

³ In addition to the Court, the Alaska Attorney General’s Office has issued opinions recognizing the importance of commercial privacy. *See e.g.* 1980 Op. Att’y Gen. No. 23 at 11 (the “essence of commercial privacy is that certain information must be protected so it cannot be obtained by a competitor for use as a competitive weapon against the commercial concern involved.”). The Attorney General noted that commercial privacy would be violated by disclosure when disclosure causes “appreciable economic or competitive harm” to an entity. *Id.* *See also* 1983 Inf. Op. Att’y Gen (Nov 3; 366-239-84) (records submitted to DOR mining task force were confidential under Article I, sec. 22 of the Alaska State Constitution); 1986 Inf. Op. Att’y Gen. (Dec 8) (data on fish “volume/species mixes, target areas of the state, and market share information” provided by seafood processors and generally used by the processors to formulate business plans fell within the ambit of the Alaska Constitution’s privacy protections).

Public disclosure of all the chemical ingredients in HESI's additives with no trade secret protection would violate our right to privacy. HESI has a legitimate expectation that it will not have to disclose a subset of this information because it is proprietary. As noted elsewhere in these Comments, HESI has invested a substantial amount of money in developing its proprietary information and takes a number of steps to ensure the information remains a secret and is not easily accessible by its competitors. Moreover, trade secrets are widely protected under state and federal law such that HESI has a legitimate expectation that its trade secrets would be protected from disclosure.

With respect to the second factor, no compelling state interest exists in such disclosure. Disclosure of our trade secrets is not necessary for the protection of drinking water, especially in Alaska where much oil and gas production occurs on the North Slope where drinking water is not an issue. There have been no instances of drinking water contamination from the use of HF fluids in Alaska. Moreover, a wide range of information concerning the makeup of HF fluids is already publicly available from a variety of sources, including company websites such as Halliburton's, the FracFocus.org website, and various government reports. FracFocus.org contains information regarding chemicals used in hydraulically fracturing tens of thousands of wells across the country, including a number of wells in Alaska. Additional information regarding HF fluids used in Alaska would also be made publicly available if AOGCC's proposed regulations were adopted *with* protection of trade secrets. *See* Exhibit A at 3-5.⁴ Moreover, in the event that an emergency occurs in the future, or AOGCC needs HESI's trade secrets to investigate waste or spills, HESI supports disclosure of its trade secrets if necessary for those purposes. *Id.* at 4-5.

Since disclosure must occur in the manner which is least intrusive under the third factor, the full disclosure language in AOGCC's draft regulations would violate HESI's privacy. Rather, disclosure of trade secrets should be limited to instances of emergencies or as needed for waste or release investigations, as provided for in HESI's proposed 20 AAC 25.283(l)-(o). *Id.*

B. Alaska Statutes Require That HESI's Trade Secrets Be Protected From Misappropriation.

Trade secrets are protected from misappropriation under the Alaska Uniform Trade Secrets Act. A.S. §§ 45.50.910 - 45.50.945. AS 45.50.940 provides that a trade secret is information that:

⁴ HESI also suggests amendments to 20 AAC 25.283(h)(2)(B), 20 AAC 25.283(h)(2)(C) and (D), to avoid confusion and possible redundancy about what information will be disclosed. *See* Exhibit A at 3.

- (A) derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by other persons who can obtain economic value from its disclosure or use; and
- (B) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

The first part of the definition asks if the trade secret derives value from its confidentiality, and the second part of the definition asks if the trade secret is actually kept secret. Recently, in *Powercorp Alaska, LLC, v. Alaska Energy Authority*, 290 P.3d 1173 (Alaska 2012), two of three Alaska Supreme Court justices elaborated on this definition by adopting the widely recognized Restatement of Torts six factor test to determine whether information constitutes a trade secret. *Powercorp*, at 1187. The six factors are:

- (1) the extent to which the information is known outside of [the] business;
- (2) the extent to which it is known by employees and others involved in [the] business;
- (3) the extent of measures taken by [the business] to guard the secrecy of the information;
- (4) the value of the information to [the business] and to [its] competitors;
- (5) the amount of effort or money expended by [the business] in developing the information;
- (6) the ease or difficulty with which the information could be properly acquired or duplicated by others.

Powercorp at 1187, citing *Secure Energy, Inc. v. Coal Synthetics, LLC*, 708 F. Supp. 2d 923, 926 (E.D. Mo. 2010) (alterations in original) (internal citations omitted).⁵

There are two aspects of HESI's additive formulas that we regard as trade secrets in some instances: (1) the specific chemicals that are included in any specific fluid mixture and (2) the amount of each chemical in that specific fluid mixture. Both the identity of proprietary ingredients in HESI's additives as well as the concentrations of key ingredients easily meet the six factor Restatement test:

- The proprietary constituents and concentrations are generally not disclosed to anyone outside of HESI and are known only to those who are bound by law and/or confidentiality agreements to keep the information confidential. (1st Factor)

⁵ Most states have adopted some form of the Restatement test for identifying trade secrets and a number of states have specifically incorporated the Restatement test in their HF fluid disclosure regulations. HESI recommends that the AOGCC adopt the test in its regulations. See Exhibit A at 6.

- HESI goes to great lengths to make sure that only those few people who need to know about them do know about them inside the business. (2nd Factor)
- HESI goes to great lengths to guard the secrecy of this product information, carefully limiting access to the information and ensuring that it is not released outside of HESI except where the recipient is under an obligation to keep the information confidential. (3rd Factor)
- HESI's trade secrets are extremely valuable to HESI and certainly would be to HESI's competitors. (4th Factor)
- HESI has spent millions of dollars developing these trade secrets and HF fluids are a key component of HESI's business. (5th Factor)
- HESI's competitors could easily determine the identity and concentrations of HESI's proprietary chemicals and duplicate them if HESI had to disclose them without proper safeguards. (6th Factor)

We believe that protection of our trade secrets is critical to the development and use of ever more effective methods to drill wells, enhance oil and gas production, and protect the environment at the same time. The freedom to innovate while protecting our investment has led to (1) a reduction in overall chemical use; (2) the use of chemicals that provide an extra margin of environmental safety; (3) recycling of wastewater to reduce the use of fresh water and to reduce the amount of wastewater that must be disposed of; (4) reduced truck traffic; (5) less packaging and storage of materials; (6) less reworking of fluids at the well site; and (7) a smaller well pad footprint.

We therefore request that the AOGCC adopt the Restatement test for what constitutes a trade secret in its regulations and provide that trade secrets do not need to be disclosed to AOGCC. *See Exhibit A at 3-6.*

C. Adequate Regulation by AOGCC of HF Does Not Require HESI to Reveal Trade Secrets.

HESI supports the disclosure of all chemical ingredients that are intentionally included in our additives in a single aggregated list. We merely request that the particular ingredients are not tied to particular additives, and that we be able to choose not to disclose the identity of certain of the ingredients which we consider to be proprietary in order to protect our R & D from disclosure to our competitors.

Significantly, there is no demonstrated need for AOGCC, the public or HESI's competitors to obtain this information. Contamination of fresh drinking water is not a concern on the North Slope. A thick layer of soil is underlain by permafrost so there is

no liquid water, other than surface water, to a depth of 1000 to 2000 feet. Below the permafrost, only salt water is present, with very few exceptions. *See* AOGCC WHITE PAPER at *1.

Even where HF occurs in areas of the State where drinking water could be impacted, many studies have concluded that HF operations do not contaminate drinking water wells. In 2004, EPA completed a study of the potential impacts of hydraulic fracturing of coalbed methane (CBM) wells on drinking water supplies. *See* “Evaluation of Impacts on Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs,” EPA Office of Water (June 2004)). As part of this study EPA reviewed information about alleged incidents of drinking water well contamination believed by the affected parties to be associated with hydraulic fracturing or other CBM development activities. Based on its review, the Agency found that, although thousands of CBM wells are fractured annually, there were “no confirmed cases that are linked to fracturing fluid injection in CBM wells or subsequent underground movement of fracturing fluids.” *Id.* at ES-1. EPA concluded that hydraulic fracturing of CBM wells poses little or no threat to underground sources of drinking water.⁶

⁶ More recently, the Shale Gas Production Subcommittee of the U.S. Secretary of Energy Advisory Board (“SEAB”) recognized in an August 2011 report that “[r]egulators and geophysical experts agree that the likelihood of properly injected fracturing fluid reaching drinking water through fractures is remote where there is a large depth separation between drinking water sources and the producing zone.” EPA Administrator Lisa Jackson stated in May 24, 2011 testimony before the House Committee on Oversight and Government Reform that she was “not aware of any water contamination associated with the recent drilling” in the Marcellus Shale. She also stated in an April 30, 2012 interview that “in no case has [EPA] made a definitive determination that the fracturing process has caused chemicals to enter groundwater.” BLM Director Bob Abbey has likewise stated that BLM has “... not seen evidence of any adverse effect as a result of the use of the chemicals that are part of ... fracking technology.” State regulators have reached similar conclusions. S.2248, 112th Cong. § 8 (2012). The New York State Department of Environmental Conservation (“NYSDEC”) concluded after extensive study that hydraulic fracturing “does not present a reasonably foreseeable risk of significant adverse environmental impacts to potential fresh water aquifers.” The Department cited the statements of regulatory officials from 15 states – including Alaska, Colorado, New Mexico, Pennsylvania, Ohio, Texas and Wyoming – that hydraulic fracturing operations have not led to groundwater contamination. In a 2012 study commissioned by HESI, Gradient reaffirmed the NYSDEC's conclusions that potential groundwater contamination as a result of migration of fracturing fluid from the underlying fracture zone is not plausible. “Human Health Risk Evaluation for Hydraulic Fracturing Fluid Additives,” Gradient, at ES-8 (January 10, 2012). Gradient further found that even if groundwater migration was hypothetically assumed, the migration would be extremely slow and would dilute the HF fluid constituent concentrations in the overlying aquifer to concentrations well below health-based standards/benchmarks. *Id.* at ES-9.

The lack of demonstrated impact on drinking water as a result of hydraulic fracturing is due to the nature of HF activities and other factors that weigh against any significant migration of fracturing fluids towards drinking water wells. The majority of HF takes place at depths far below any groundwater sources that could reasonably be considered drinking water sources. Additionally, once HF operations are completed, the well operator begins to pump out groundwater as well as oil or gas, removing as much as 82% of the fracturing fluids in the process. As long as oil or gas continues to be pumped out of the well, any remaining fluids within the capture zone of the well will generally be drawn toward the oil or gas well by the pumping and are unlikely to migrate away from the vicinity of the well.

The studies concluding that there is no negative impact on drinking water have been borne out by Alaska's experience. As AOGCC has noted, "[i]n over fifty years of oil and gas production, Alaska has yet to suffer a single documented instance of subsurface damage to an underground source of drinking water. As long as each well is properly constructed and its mechanical integrity is maintained, hydraulic fracturing should have no potential to damage any fresh groundwater." AOGCC WHITE PAPER at *2. In other words, the key to protection of drinking water is well construction and integrity which AOGCC appropriately and adequately regulates through existing statutes and regulations.

D. HESI's Suggested Changes Are Also Consistent with Federal Law.

Numerous federal laws applicable to HF operations recognize the importance of trade secret protection. For example, Material Safety Data Sheets (MSDSs) are already required by federal law to be available on location. AOGCC WHITE PAPER at *1. MSDSs require the identification of hazardous chemicals in the workplace, but not the disclosure of specific chemical constituents or quantities of such chemical constituents if they are a trade secret. *See* 29 C.F.R. § 1910.1200(i). However, this information must be disclosed to health professionals where there is a written statement of medical need for the information and a written agreement requiring the health professional to maintain the confidentiality of the information. 29 C.F.R. § 1910.1200(i)(2).

One draft 2011 EPA study tentatively reached a different conclusion finding that "constituents associated with hydraulic fracturing have contaminated groundwater at and below the depth used for domestic water supply" in Pavillion, Wyoming. *Draft Investigation of Ground Water Contamination near Pavillion, Wyoming* (December 2011). However, BLM pointed out to EPA that the "two rounds of sampling obtained [by EPA] at these two locations are not statistically valid to arrive at any reliable conclusion given potential reservoir complexities" and that "[t]he degree to which the hydrogeologic environment varies spatially and temporally further complicates this reliability." March 1, 2012 letter from BLM to EPA. In light of this feedback (and criticism from the State of Wyoming and other sources), EPA subsequently conducted an additional round of sampling but has not issued a final report, and has extended the public comment period on its study until September 30, 2013.

Similarly, under the Emergency Planning and Community Right-to-Know Act (EPCRA), 42 U.S.C. §§ 11001-11050, an operator is required to submit an emergency and hazardous chemical inventory form. The operator can withhold from submission to local and state authorities the specific identity of a chemical in order to protect trade secret information. 42 U.S.C. § 11042(a)(1). The operator may be required to provide that chemical information to health professionals upon a specific written request showing that the information is needed for the purposes of diagnosis or treatment. *Id.* § 11043(a), (b). The person receiving the information must agree in a written confidentiality agreement that he or she will not use the information for any purpose other than the health needs identified in the statement of need.

Finally, the Freedom of Information Act (FOIA) also requires that trade secrets and commercial or financial information not be disclosed. 5 U.S.C. § 552(b)(4). The two prongs of the exemption – (1) trade secrets and (2) information that is commercial or financial – have been separately analyzed by the courts. Trade secrets are defined as “a secret, commercially valuable plan, formula, process, or device that is used for the making, compounding or processing of trade commodities and that can be said to be the end product of either innovation or substantial effort.” *Public Citizen Health Research Group v. Food and Drug Admin.*, 704 F.2d 1280, 1288-89 (D.C. Cir. 1983). HESI conducts extensive research and development in order to create a new or improved HF fluid that can be applied successfully to address market needs. Once a new product is developed, it undergoes extensive modeling and testing in our laboratories. If it performs well, we conduct field tests. If those are also successful, the new fluid is added to our suite of products and made commercially available. Thus, HESI is creating secret formulas that are used in trade commodities and are the end product of innovation and substantial effort.

HESI’s formulas are also protected as “commercial or financial information” under the second prong of Exemption Four. To qualify as commercial or financial information, the information must be (1) commercial or financial, (2) from a person, and (3) privileged or confidential. In a leading case with respect to the third prong, *National Parks Conservation Ass’n v. Morton*, 498 F.2d 765 (D.C. Cir. 1974) (*National Parks I*), the D.C. Circuit created the following two part test:

To summarize, [a] commercial or financial matter is “confidential” for purposes of the exemption if disclosure of the information is likely to have either of the following effects: (1) to impair the Government’s ability to obtain necessary information in the future; or (2) to cause substantial harm to the competitive position of the person from whom the information was obtained.

National Parks I, 498 F.2d at 770.

HESI's proprietary information meets these criteria as well. As discussed above, our additive formulas are "commercial" because HESI (a "person" under Exemption Four) markets and sells its HF fluids and additives to customers world-wide. With respect to whether the information is "confidential," HESI clearly has competition for such products, and would suffer substantial harm to its competitive position if the full formula was disclosed because competitors could copy its products, effectively eliminating HESI's competitive and commercial advantage.

In sum, many federal laws provide protection similar to what HESI requests in Exhibit A.

E. If HESI's Trade Secrets are Disclosed to AOGCC, AOGCC Must Ensure that Such Trade Secrets are Protected From Disclosure to HESI's Competitors.

HESI's proposed language in Exhibit A represents an appropriate balance between transparency and trade secret protection because disclosure of HESI's proprietary information would occur in the least intrusive manner, making HESI's proprietary information known only to those who need it to address emergencies, spills and waste. It will also enable AOGCC to avoid reprioritization of its resources to trade secret analysis in response to Public Record Act (PRA) requests, and will help shield AOGCC from potential litigation based on trade secret claims and public record requests. By not taking possession of this information, AOGCC would likely not be a party to any potential litigation over any claimed lack of disclosure by an operator.⁷

If, however, AOGCC determines not to adopt HESI's proposals, AOGCC should ensure that HESI's proprietary information and trade secrets are protected from disclosure to HESI's competitors by adopting explicit language in the regulations protecting HESI's trade secrets from disclosure.⁸

⁷ The Wyoming Oil and Gas Conservation Commission takes possession of trade secret information for HF fluids and was recently sued over its trade secret designations. *Powder River Basin Resource Council, et al. v. Wyoming Oil and Gas Conservation Commission*, Civ. Action 94650, Seventh Judicial District, Wyoming.

⁸ This could be accomplished by adding the following subsection after proposed 20 AAC 25.283(h): "(--) if the operator claims that the specific identity of a chemical, the concentration of a chemical, or both the specific identity and concentration of a chemical is a trade secret, the operator of the well must indicate on the Application for Sundry Approvals (Form 10-403) or the Report of Sundry Well Operations (Form 10-404) that the identity of the chemical, the concentration of a chemical or both is claimed to be entitled to trade secret protection. Any information designated as entitled to trade secret protection on the Form 10-403 or the Form 10-404 shall be treated as confidential by AOGCC and shall in no way be construed as publicly available." Additionally, if AOGCC takes this route, it should also consider including the

The PRA prohibits disclosure of records protected from disclosure under federal or state law. AS 40.25.120(a)(4). It would appear that in light of this exception to the PRA, many other State agencies have explicitly protected trade secrets in the agency's possession from public disclosure.⁹ Additionally, to date, every state that has adopted HF fluid disclosure regulations provides some form of trade secret protection as well.¹⁰

III. The AOGCC Should Provide More Flexibility With Respect to Placement of HF Fluids.

Proposed 20 AAC 25.283(e) would require that all HF fluids be “confined to the approved formations during hydraulic fracturing.”

Operators have every incentive to contain fractures and fracturing fluid within the approved formation; any fractures that extend outside the approved formation – and any fluids that enter those portions of the fractures – are likely to represent a waste of resources because they will contribute little to oil and gas production. Accordingly, HESI strives to control the propagation of fractures during hydraulic fracturing operations through a variety of techniques, including modeling of the formation being fractured, design of a fracturing operation through selection of appropriate fracturing fluids as well as the determination of fluid volumes and pumping rates and “real time”

concepts embodied in HESI's proposed language for 20 AAC 25.283(j) – (q) and HESI's proposed definitions in 20 AAC 25.900. *See* Exhibit A to HESI's Comments.

⁹ *See, e.g.*, 2 AAC 12.770 (Chief Procurement Officer may establish procedures to protect the confidentiality of trade secrets and confidential technical data in public contracts); 3 AAC 48.045 (providing for protection of trade secrets provided to the Alaska Regulatory Commission and petition must show the need for confidentiality outweighs the public interest in disclosure); 3 AAC 107.630 (protection for materials submitted to the Alaska Energy Authority Grant Program); 3 AAC 233.950 (Alaska Science and Technology Foundation will not disclose trade secrets); 6 AAC 93.070 (Western Alaska Community Development Quota Program will not disclose trade secrets if the need for confidentiality outweighs the public interest in disclosure); 8 AAC 61.060 (information submitted to OSHA that employer identifies as a trade secret will not be disclosed); 18 AAC 31.015 (Department of Environmental Conservation will keep trade secrets confidential unless the public interest in disclosure outweighs the privacy interest). Additionally, because the provisions of AS 44.62 (Alaska's Administrative Procedure Act) do not apply to the Alaska Aerospace Corporation, *see* AS 26.27.110(b), it has adopted Article 1.220(a) which states that confidential information, including trade secrets and proprietary information, will be held in strict confidence by the corporation and the corporation shall not disclose the information.

¹⁰ *See e.g.* 2 COLO CODE REGS 404-1 s. 205A; LA. ADMIN CODE 43:XIX 118; OKLA. ADMIN. CODE § 165:10-3-10; 28 PA. CODE § 78.122; 16 TEX. ADMIN CODE § 3.29.

monitoring of various aspects of fracturing operations. However, because of the hydrogeologically-complex nature of many formations, fractures at some well sites may not be completely confined to the “approved formations” in all cases.

Given the many diverse hydrogeological environments that may be faced in hydraulic fracturing operations, AOGCC should provide sufficient flexibility that adequately reflects the complexities of the subsurface environments in which HF take place. In order to accomplish AOGCC’s goal of fluid containment while accurately reflecting the difficulties operators face, the language of 20 AAC 25.283(e) should be modified to provide that the placement of all hydraulic fracturing fluids shall not result in the transmission of such fluids beyond the confining zone. Otherwise HESI would have to design stimulation programs more conservatively in order to maximize the likelihood that the stimulation fluids would remain confined to the objective formation, which in turn would result in decreases in production from individual wells. In some cases HESI would not be able to design a stimulation program that would ensure that the stimulation fluids would remain confined to the approved formation and therefore would have to forego stimulating the formation.

Similarly, proposed 20 AAC 25.283(a)(13) requires an applicant to disclose known or suspected faults, and information sufficient to support a determination that any such faults will not interfere with containment of the hydraulic fracturing fluid.¹¹ We support this requirement but are concerned that it is unclear what level of information would be considered “sufficient” to make such a determination. We therefore request that AOGCC clarify what information it seeks.

IV. Pre-Hydraulic Fracturing Disclosure is Unnecessary

HESI also respectfully requests deletion of 20 AAC 25.283(a)(14). Although detailed research and review of every proposed HF operation is conducted before fracturing begins, operators often end up using different additives or different amounts of fluids than what was originally planned once HF actually begins. As AOGCC has noted, interval thickness, permeability and other characteristics that determine required fluid volumes generally are not known before the well is drilled. AOGCC WHITE PAPER at 1. Based on these potential variables, 20 AAC 25.283(a)(14) imposes an unnecessary and

¹¹ Thus, this section will address any concerns regarding potential seismic activity or earthquakes although HESI does not believe that HF activities cause significant seismic disturbances that pose a threat to humans or the environment. HESI’s research has shown that faults do not contribute significantly to subsurface movement of HF fluids. Similarly, the National Research Council found in *Induced Seismicity Potential in Energy Technologies* (June 2012) that the process of hydraulic fracturing a well for shale gas recovery does not pose a high risk for inducing felt seismic events.

burdensome requirement especially since disclosure would also occur after HF operations are completed under 20 AAC 25.283(h). Accordingly, HESI respectfully requests that AOGCC eliminate this requirement.

V. Pressure Relief Valves and Remotely Controlled Shut-In Devices Should Not be Required

Finally, HESI requests that 20 AAC 25.283(d) be deleted in its entirety. Proposed subsection (d) requires a pressure relief valve to limit the line pressure, as well as a remotely controlled shut-in device. However, often times a pressure relief valve is not recommended to limit the treating pressure. Rather, the treating pressure is better controlled by pumps with electronic switches that can be set to stop pumping immediately when a maximum pressure is achieved, and are many times more dependable than pressure relief valves. Similarly, a remotely controlled shut-in device may not be appropriate for the fracture and in certain circumstances could be catastrophic in the event the valve accidentally closes while pumping at high pressure. Because pressure relief valves and a remotely controlled shut-in device can potentially create unnecessary risks, HESI respectfully requests that AOGCC eliminate this section.

VI. Conclusion

For the reasons articulated above, HESI respectfully requests that AOGCC adopt the changes to the draft regulations provided for in Exhibit A to HESI's Comments. In addition to the draft regulations discussed above, HESI also recommends definitions for three terms used in the regulations: "hydraulic fracturing treatment," "additive," and "trade secret."

Very truly yours,



Louisiana W. Cutler, Alaska Bar No. 9106028
Attorneys for Halliburton Energy Services, Inc.

NEW LANGUAGE SHOWN IN RED; DELETED LANGUAGE STRICKEN OUT

20 AAC 25.283. Hydraulic Fracturing. (a) Prior to hydraulic fracturing, the operator must submit an Application For Sundry Approvals (Form 10-403) under 20 AAC 25.280. The application shall include;

(1) an affidavit showing that all owners, landowners, surface owners, and operators within one-quarter mile of the wellbore trajectory have been provided a complete copy of the application for hydraulic fracturing;

(2) a plat showing the well location and identifying any water wells located within a one-quarter mile radius of the well's surface location and further identifying any well penetrations (all well types) within one-quarter mile of the proposed wellbore trajectory and fracturing interval and the sources of the information used in identifying such wells;

(3) identification of freshwater aquifers within the one-quarter mile radius;

(4) whether the well is covered by a Freshwater Aquifer Exemption as per 20 AAC 25.440;

(5) water sampling of water wells. Water sampling consists of collection of baseline water data pre-fracture and follow-up water sampling collected at the same location no sooner than 90 days and no later than 120 days after the conclusion of any hydraulic fracturing operations. The sample parameters shall include pH; Alkalinity; Specific conductance; Major cations/anions (bromide, chloride, fluoride, potassium, sulfate, sodium); Total dissolved solids; BTEX/GRO/DRO (Benzene, Toluene, Ethylene, Xylene/Gasoline Range Organics/Diesel Range Organics); TPH (Total Petroleum Hydrocarbons) or Oil and Grease (HEM); PAH's (Polynuclear Aromatic Hydrocarbons including benzo(a)pyrene); Dissolved Methane, Dissolved Ethane, Dissolved Propane; and Metals (arsenic, barium, boron, cadmium, calcium, chromium, iron, magnesium, manganese, selenium). Current applicable EPA-approved sample custody and collection protocols and analytical methods for drinking water must be used and analyses must be performed by laboratories that maintain nationally accredited programs. Copies of all test results, analytical results and sample locations shall be provided to the commission and to the Alaska Department of Environmental Conservation in an electronic data deliverable format within 90 days of collecting the samples;

(6) detailed casing and cementing information;

(7) an assessment of each casing and cementing operation performed to construct or repair the well with sufficient supporting information, including cement evaluation logs and other evaluation logs approved by the commission, to demonstrate that casing is cemented below the base of the lowermost freshwater aquifer and according to 20 AAC 25.030 and that all hydrocarbon zones penetrated by the well are isolated;

(8) pressure test information if available and plans to pressure test the casings and tubing installed in the well;

(9) accurate pressure ratings and schematics for the wellbore, wellhead, BOPE, and treating head;

(10) data for the fracturing zone and confining zones including lithologic description, geological name, thickness and measured depth (MD) and true vertical depth (TVD), and estimated fracture pressures for the fracturing zone and confining zones;

(11) the geologic name and depth (MD and TVD) to the bottom of all freshwater aquifers;

(12) the location, orientation, and a report on the mechanical condition of each well that may transect the confining zones and information sufficient to support a determination that such wells will not interfere with containment of the hydraulic fracturing fluid;

(13) the location, orientation, and geological data of known or suspected faults and fractures that may transect the confining zones, and information sufficient to support a determination that any such faults and fractures will not interfere with containment of the hydraulic fracturing fluid; *[NOTE: HESI respectfully requests that this section be modified to clarify the type of information that would be "sufficient" to make the determination.]*

(14) a detailed copy of the proposed hydraulic fracturing program by stage including

(A) ~~the estimated total volumes planned;~~

(B) ~~the trade name and generic name of the principle fluids to be used;~~

(C) ~~the estimated amount or volume of the principle fluids to be used including viscosifiers, acids, or gelling agents;~~

(D) ~~the estimated weight or volume of inert substances, including proppants and other substances injected to aid in well cleanup~~

E) the maximum anticipated treating pressure and information sufficient to support a determination that the well is appropriately constructed for the proposed hydraulic fracturing program; and

(F) the designed height and length of the proposed fracture(s), including the calculated MD and TVD of the top of the fracture(s).

(15) a detailed description of the plan for post fracture wellbore cleanup and fluid recovery through to production operations.

(b) When hydraulic fracturing through production casing or through intermediate casing, the casing must be tested to 110% of the maximum anticipated surface treating pressure. If the casing fails the pressure test it must be repaired or the operator must use a temporary casing string (fracturing string).

(c) When hydraulic fracturing through a fracturing string, the fracturing string must be stung into a liner or run on a packer set not less than 100 ft TVD below the cement top of the production or intermediate casing and tested to not less than 110% of the maximum anticipated treating pressure minus the annulus pressure applied between the fracturing string and the production or intermediate casing.

~~(d) A pressure relief valve(s) must be installed on the treating lines between pumps and wellhead to limit the line pressure to the test pressure determined in (a)13 (E) of this section; the well must be equipped with a remotely controlled shut in device unless the operator requests and obtains a waiver from the commission.~~

(e) The placement of all hydraulic fracturing fluids shall **not result in the transmission of such fluids beyond the confining zone.** ~~be confined to the approved formations during hydraulic fracturing.~~

(f) The surface casing valve must remain open while hydraulic fracturing operations are in progress; the annular space between the fracturing string and the intermediate or production casing must be continuously monitored; the pressure in such annular space may not exceed the pressure rating of the lowest rated component that would be exposed to pressure should the fracturing string fail.

(g) During hydraulic fracturing operations, all annulus pressures must be continuously monitored and recorded. If at any time during hydraulic fracturing operations the annulus

pressure increases more than 500 psig the operator must notify the commission as soon as practicable, but no later than twenty-four (24) hours following the incident and shall implement corrective action or increased surveillance as the commission requires. Within fifteen (15) days after the occurrence, the operator shall submit a Report of Sundry Well Operations Form 10-404 giving all details, including corrective actions taken.

(h) The operator shall file with the commission, within 30 days after completion of hydraulic fracturing operations, on a Report of Sundry Well Operations (Form 10-404), a complete record of the work performed and the tests conducted, and a summary of daily well operations as described in 20 AAC 25.070(3). The operator shall also file with the commission a copy of the daily record required by 20 AAC 25.070(1), for each hydraulic fracturing interval. The information will include:

(1) a description of the actual treated interval including measured and true vertical depth of perforations; and

(2) the amount and types(s) of material pumped during each treatment stage and the total amount and types of material pumped including;

(A) a description of the hydraulic fracturing fluid pumped identified by additive type (e.g. acid, biocide, breaker, brine, corrosion inhibitor, crosslinker, de-emulsifier, friction reducer, gel, iron control, oxygen scavenger, pH adjusting agent, proppant, scale inhibitor, surfactant);

~~(B) the chemical ingredient name and the Chemical Abstracts Service (CAS) Registry number, as published by the Chemical Abstracts Service, a division of the American Chemical Society (www.cas.org), for each ingredient of the additive used. The rate or concentration for each additive shall be provided in appropriate measurement units (pounds per gallon, gallons per thousand gallons, percent by weight or percent by volume, or parts per million);~~

(B) each chemical ingredient used in the hydraulic fracturing treatment(s) of the well that is subject to the requirements of 29 Code of Federal Regulations §1910.1200(g)(2), as provided by the chemical supplier or service company or by the operator, if the operator provides its own chemical ingredients, **and the Chemical Abstracts Service (CAS) Registry Number, a division of the American Chemical Society (www.cas.org), where applicable; and**

(C) a supplemental list of all chemicals and their respective CAS numbers, **where applicable**, not subject to the requirements of 29 Code of Federal Regulations §1910.1200(g)(2), that were intentionally included in and used for the purpose of creating the hydraulic fracturing treatments for the well.

(i) **If the operator claims that the specific identity of a chemical, the concentration of a chemical, or both the specific identity and concentration of a chemical is a trade secret, the operator of the well must indicate on the Application for Sundry Approvals (Form 10-403) or the Report of Sundry Well Operations (Form 10-404) that the identity of the chemical, the concentration of a chemical or both is claimed to be entitled to trade secret protection and will not be disclosed. If the identity of the chemical, the concentration of a chemical or both is claimed to be entitled to trade secret protection, the chemical family or other similar description associated with such chemical ingredient shall be disclosed.**

(j) **A service provider who performs any part of a hydraulic fracturing treatment or a vendor who provides hydraulic fracturing additives directly to the operator for a hydraulic fracturing**

treatment shall, with the exception of information claimed to be a trade secret, furnish the operator with the information required by subsection 20 AAC 25.283(h)(2), as applicable.

(k) A vendor, service provider, or operator is not required to disclose chemicals that (i) are not disclosed to it by the manufacturer, vendor or service provider; (ii) were not intentionally added to the hydraulic fracturing fluid; or (iii) occur incidentally or are otherwise unintentionally present in trace amounts, may be the incidental result of a chemical reaction or chemical process, or may be constituents of naturally occurring materials that become part of a hydraulic fracturing fluid.

(l) Operators, service providers and/or vendors shall disclose the specific identity and amount of any chemicals claimed to be a trade secret to a health professional or emergency responder that requests such information provided that the health professional or emergency responder provides:

(1) a written statement of need that the health professional or emergency responder has a reasonable basis to believe that:

(A) the information is needed for purposes of diagnosis or treatment of an individual;

(B) the individual being diagnosed or treated may have been exposed to the chemical concerned; and

(C) knowledge of the information will assist in such diagnosis or treatment

(2) a confidentiality agreement that states:

(A) the health professional or emergency responder shall not use the information for purposes other than the health needs asserted in the statement of need; and

(B) the health professional or emergency responder shall otherwise maintain the information as confidential.

(m) a written statement of need and confidentiality agreement is not required under (l) of this section when a health professional or emergency responder determines that a medical emergency exists and the specific identity and amount of any chemicals claimed to be a trade secret is necessary for emergency treatment. An operator, service provider and/or vendor shall immediately disclose the information to the health professional or emergency responder upon

(1) a verbal acknowledgment by the health professional or emergency responder that such information shall not be used for purposes other than the health needs asserted; and

(2) a verbal acknowledgment that the health professional or emergency responder shall otherwise maintain the information as confidential.

(n) A vendor, service provider, or operator, as applicable, shall provide the specific identity of a chemical, the concentration of a chemical, or both the specific identity and concentration of a chemical claimed to be a trade secret to the Commission upon receipt of a communication from the Commission stating that such information is necessary to investigate a release reported to the Commission under 20 AAC 25.205 or to investigate any allegation of waste presented to or initiated by the Commission under AS 31.05.030(b) or AS 31.05.030(e)(1)(E). Upon receipt of such a communication from the Commission, such information shall be disclosed by the vendor, service provider, or operator, as applicable, directly to the Commission or its designee and shall in no way be construed as publicly available.

(o) The Commission or its designee may disclose information provided to it under 20 AAC 25.283(n) to the Alaska Department of Environmental Conservation (ADEC) only to the extent

that such disclosure is necessary to allow ADEC to respond to a release and to otherwise carry out its duties and responsibilities under AS 46.03 or AS 46.04, provided that such information shall not be disseminated any further. Any information so disclosed to ADEC shall at all times be considered confidential and shall in no way be construed as publicly available.

(p) Prior to the submission of Form 10-404 under subsection (h), the operator must post the information required by the Interstate Oil and Gas Compact Commission/Groundwater Protection Council hydraulic fracturing web site (<http://fracfocus.org/>). A hardcopy and electronic copy of this information shall be filed as an attachment with the Form 10-404. (Eff. ___/___/___, Register __.)

(q) For purposes of this section “confining zone” means a geological formation or group or part of a formation capable of limiting fluid movement out of an injection zone.

Authority: AS 31.05.030

Additional definitions proposed by HESI

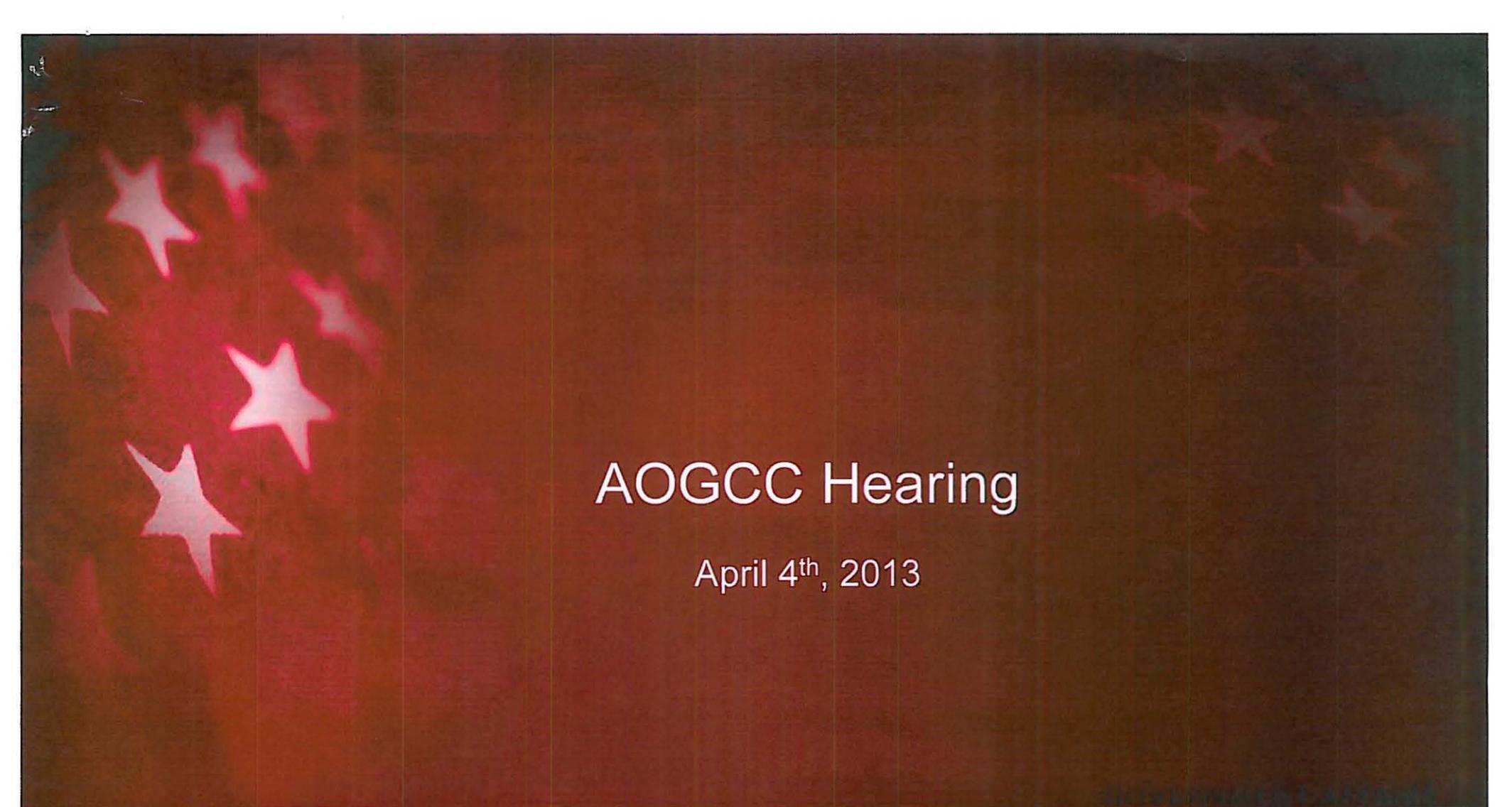
20 AAC 25.990. Definitions

(34) "Hydraulic Fracturing Treatment" means all stages of the treatment of a well by the application of hydraulic fracturing fluid under pressure that is expressly designed to initiate or propagate fractures in a target geological formation to enhance production of oil and natural gas.

(35) "Additive" means any chemical substance or combination of substances, including a proppant, contained in a hydraulic fracturing fluid that is intentionally added to a base fluid for a specific purpose whether or not the purpose of any such substance or combination of substances is to create fractures in a formation.

(36) "Trade Secret" means any formula, pattern, device, or compilation of information that is used in a person's business, and that gives the person an opportunity to obtain an advantage over competitors. The six factors considered in determining whether information qualifies as a trade secret, in accordance with the definition of "trade secret" in the Restatement of Torts, Comment B to Section 757 (1939), as discussed in *Powercorp Alaska, LLC v. Alaska Energy Authority*, 209 P.3d 1173 (Alaska 2012) include:

- (A) the extent to which the information is known outside of the company;
- (B) the extent to which it is known by employees and others involved in the company's business;
- (C) the extent of measures taken by the company to guard the secrecy of the information;
- (D) the value of the information to the company and its competitors;
- (E) the amount of effort or money expended by the company in developing the information; and
- (F) the ease or difficulty with which the information could be properly acquired or duplicated by others.



AOGCC Hearing

April 4th, 2013

HALLIBURTON

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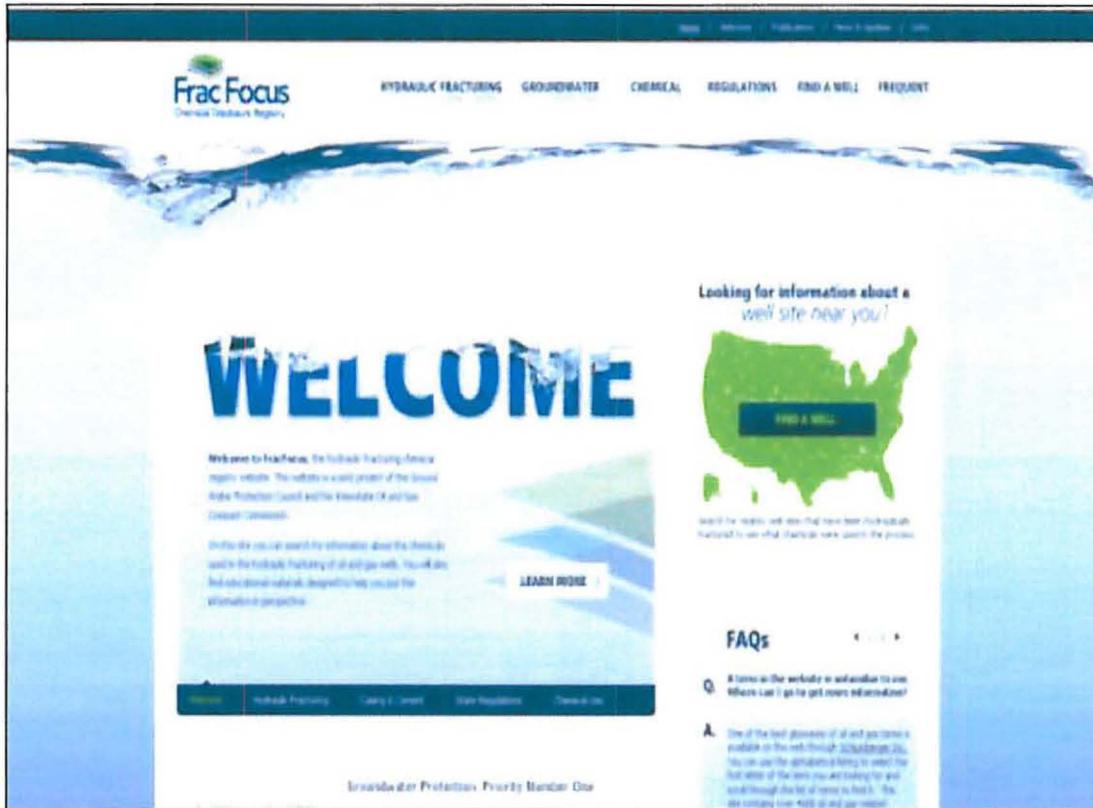
APR 04 2013

AOGCC

Mike Watts
Fracture Stimulation Affairs

FracFocus

Chemical Disclosure Registry



- Publicly available information on a well by well basis
- Standardizes reporting for all fracturing operations
- Supports multiple state disclosure efforts
- Provides information on state regulations and educational material

www.FracFocus.org

FracFocus – Deeper Look

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/9/2012
Job End Date:	12/6/2012
State:	Pennsylvania
County:	Bradford
API Number:	97-015-22148
Operator Name:	VE Producer
Well Name and Number:	Test Well #1
Longitude:	-76.22389500
Latitude:	41.80361300
Datum:	NAD27
Federal Well:	NO
Total Base Water Volume (gal):	6,290,802
Total Base Non Water Volume:	

**Chemical
Description**

**Maximum
Concentration**

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**
water	VE Chem	carrier				
			H2O	7732-18-5	100.00	90.59700
sand	VE Chem	proppant				
			crystalline silica	14808-80-7	100.00	8.48850
15% HCl	Veil Chem	acid				
			hydrochloric acid	7647-01-0	15.00	0.13219
FRA-405	Clearwater	Friction reducer				
			petroleum distillates	64742-47-8	27.50	0.02385
			sodium chloride	7647-14-5	7.50	0.00651
			ammonium chloride	12125-02-9	5.00	0.00434

Additional Resources

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[Fluids Disclosure](#)

[Fracturing 101](#)

[Glossary](#)

Hydraulic Fracturing

An "overnight" triumph of science and engineering, 60-plus years in the making. Today, it's being used to redefine what's possible in accessing clean-burning energy resources deep underground. What will it help us do tomorrow? Click around to find out.



Hydraulic Fracturing 101

Sand, water and pressure: the basic components of building a great sandcastle, and the same ones being used today to spur a revolution in the way Americans access and utilize clean-burning energy resources confined deep underground.

At the forefront of this revolution is a technology known as hydraulic fracturing, a well stimulation practice first pioneered by Halliburton in the 1940s –

In-Focus: What's in the Fluids?

Even though sand and water typically comprise more than 99.5 percent of the fluid system used in fracturing, getting that fluid to formations thousands of feet underground requires advanced chemistry and engineering to do things like:

- Fight the growth and buildup of bacteria in the fluid and the wellbore

CleanSuite™ Technologies

Halliburton invests considerable time, energy and resources in engineering solutions that set new standards for environmental safety – all while helping our customers do more by using less.

- CleanStim™ Formulation, a fracture fluid system comprised of materials sourced entirely from the food industry.

www.Halliburton.com/HydraulicFracturing

Fluid Technology

CleanStim™ Formulation

Sand, water, pressure and ... food? Meet Halliburton's new CleanStim™ formulation, a first-of-its-kind fracturing system made from materials sourced entirely from the food industry.



- A clean, low-impact fracturing fluid system
- All ingredients sourced from the food industry

Mechanical Solutions

CleanStream® Service

Controlling the growth of bacteria is key to promoting the flow of energy and preventing corrosion. Thanks to CleanStream® service, now it's a job that can be done by using UV-light instead of additives.



- Uses ultraviolet light to control bacteria in fracturing fluid
- Minimizes or even eliminates biocides

Water Life Cycle Management

CleanWaveSM Water Treatment System

A new water treatment service that goes where our customers go – and helps them recycle their water while it's there



- Electrocoagulation process increases recycling and re-use
- Reduces volume of fresh water required for fracs

Frac of the Future - Today

- Reduced pad footprint with improved rig-up speed and safety
- Solar Powered
- Improved logistics flow
- Improved environmental performance



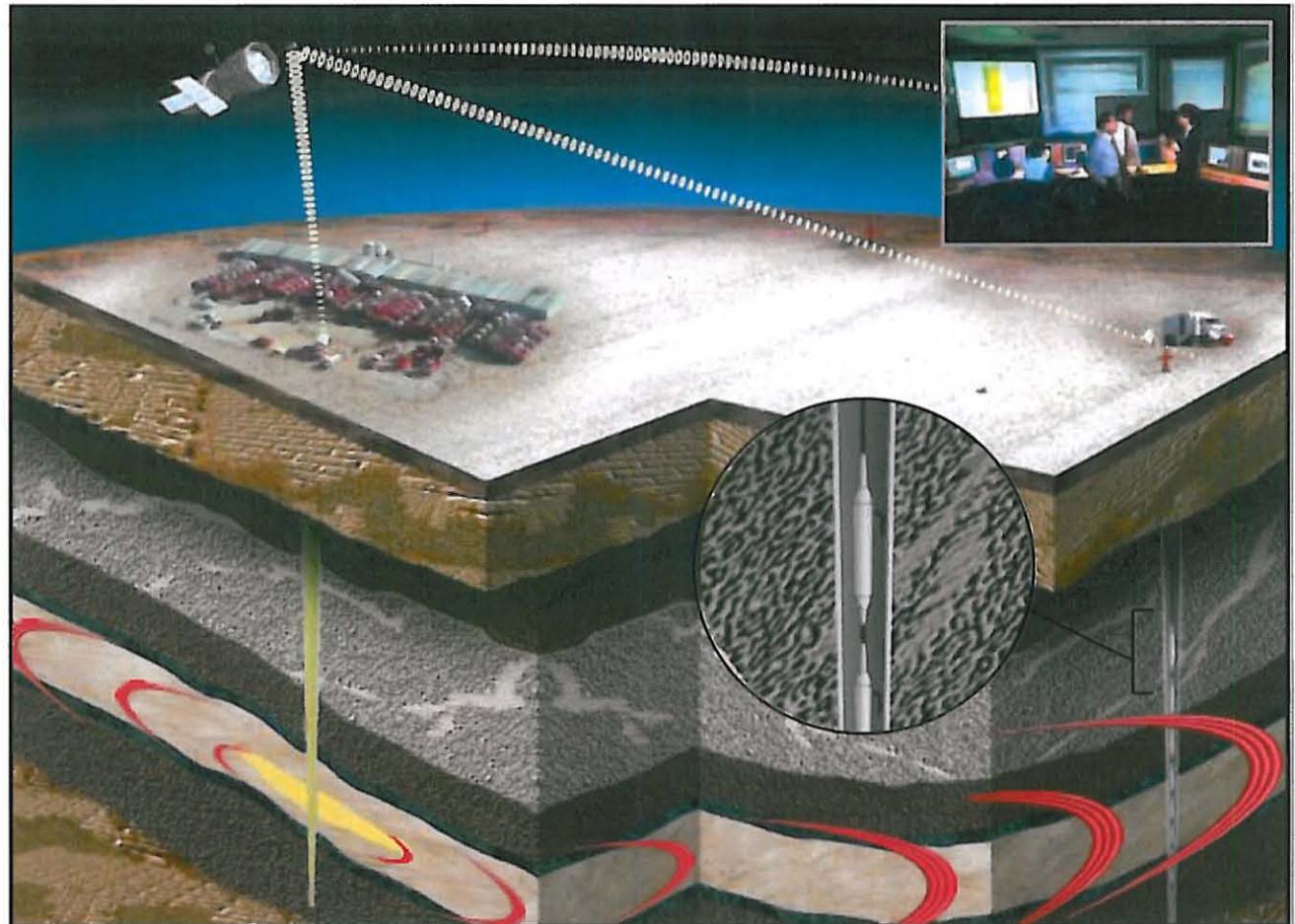
Frac of the Future – Alaska Today



Fracture Evaluation

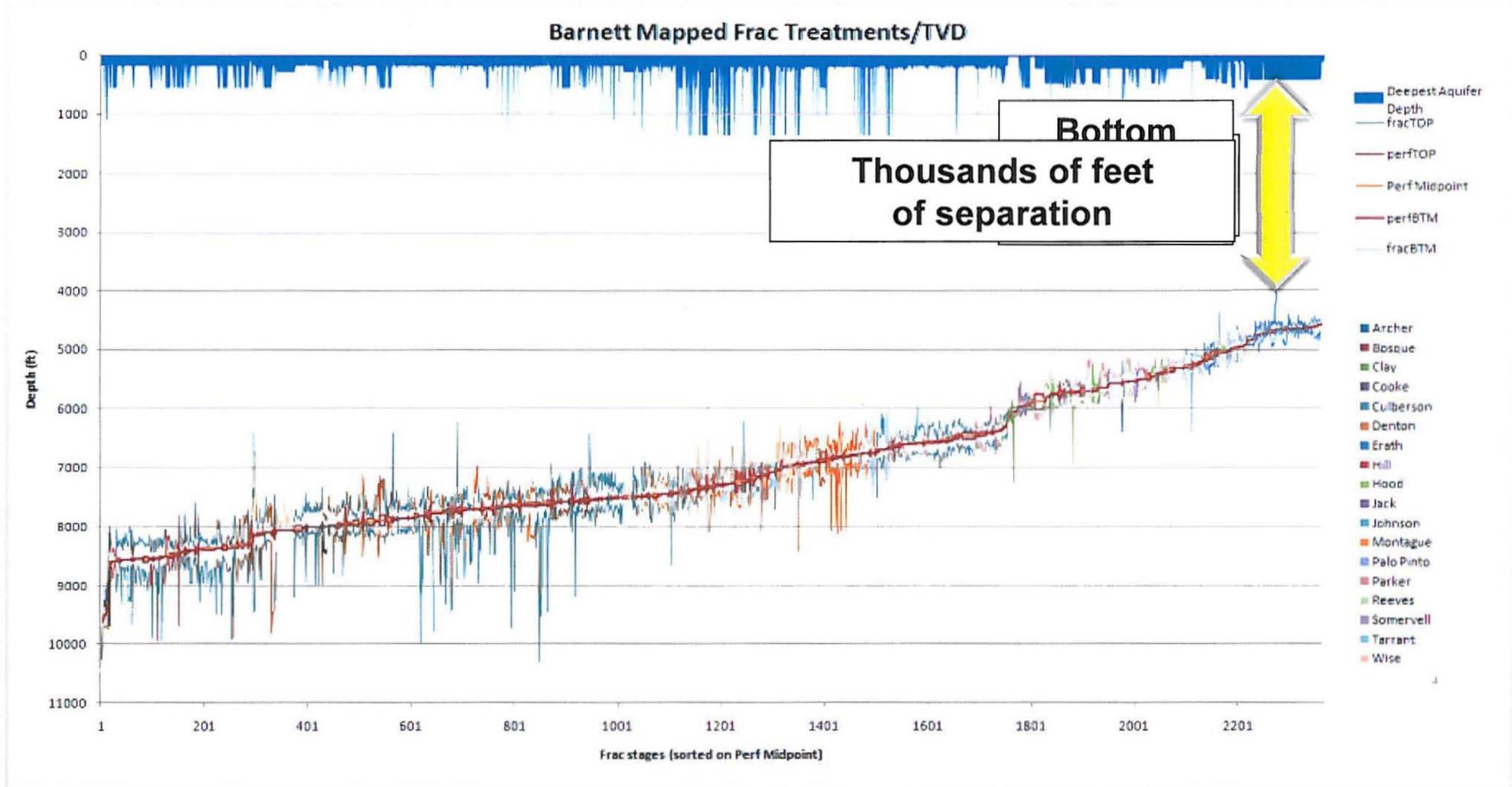
Microseismic Monitoring

- Fracturing process generates “nano” level microseismic events
- Geophones in monitor well identify and map location of events



Fracture Location Determination

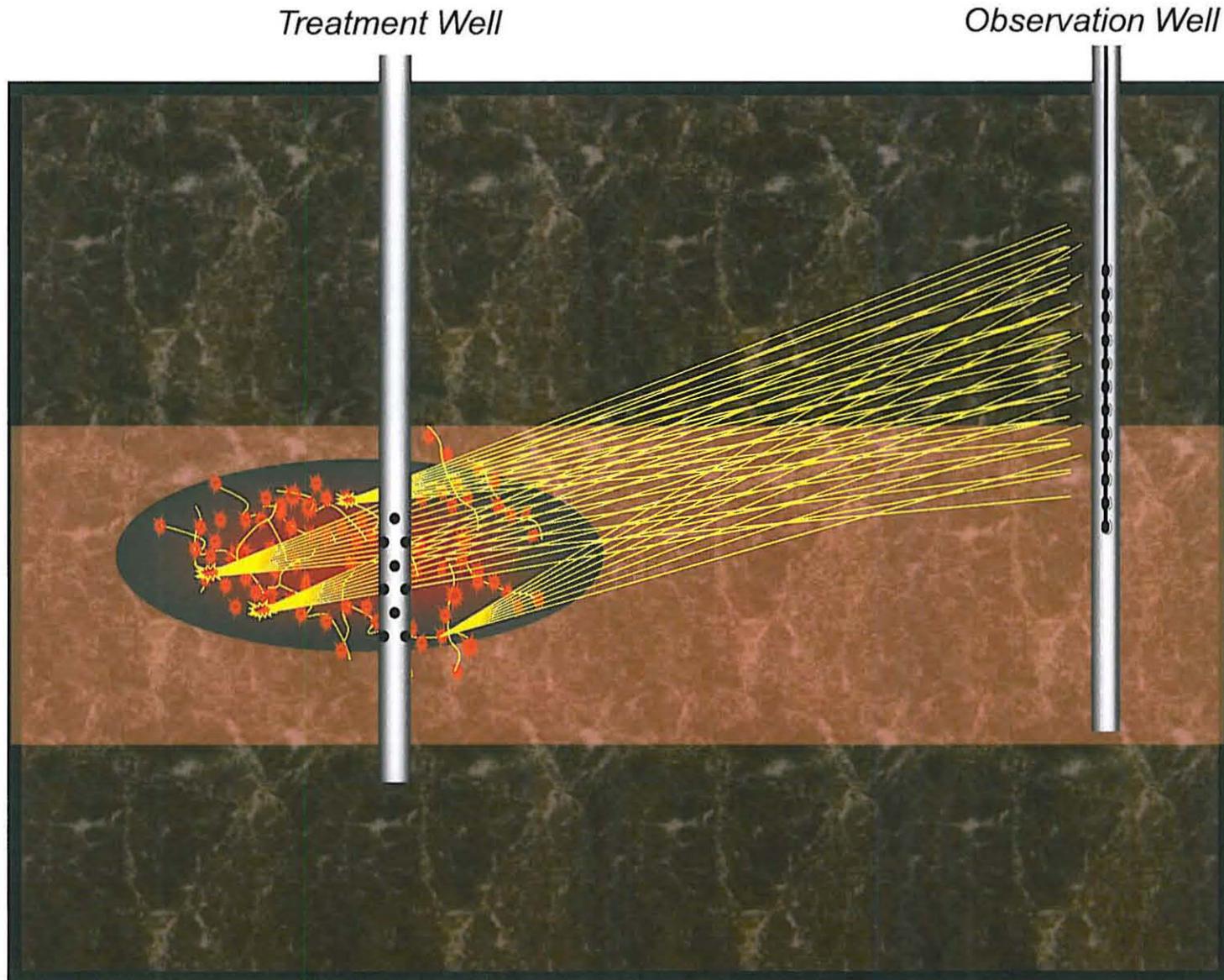
Barnett Study



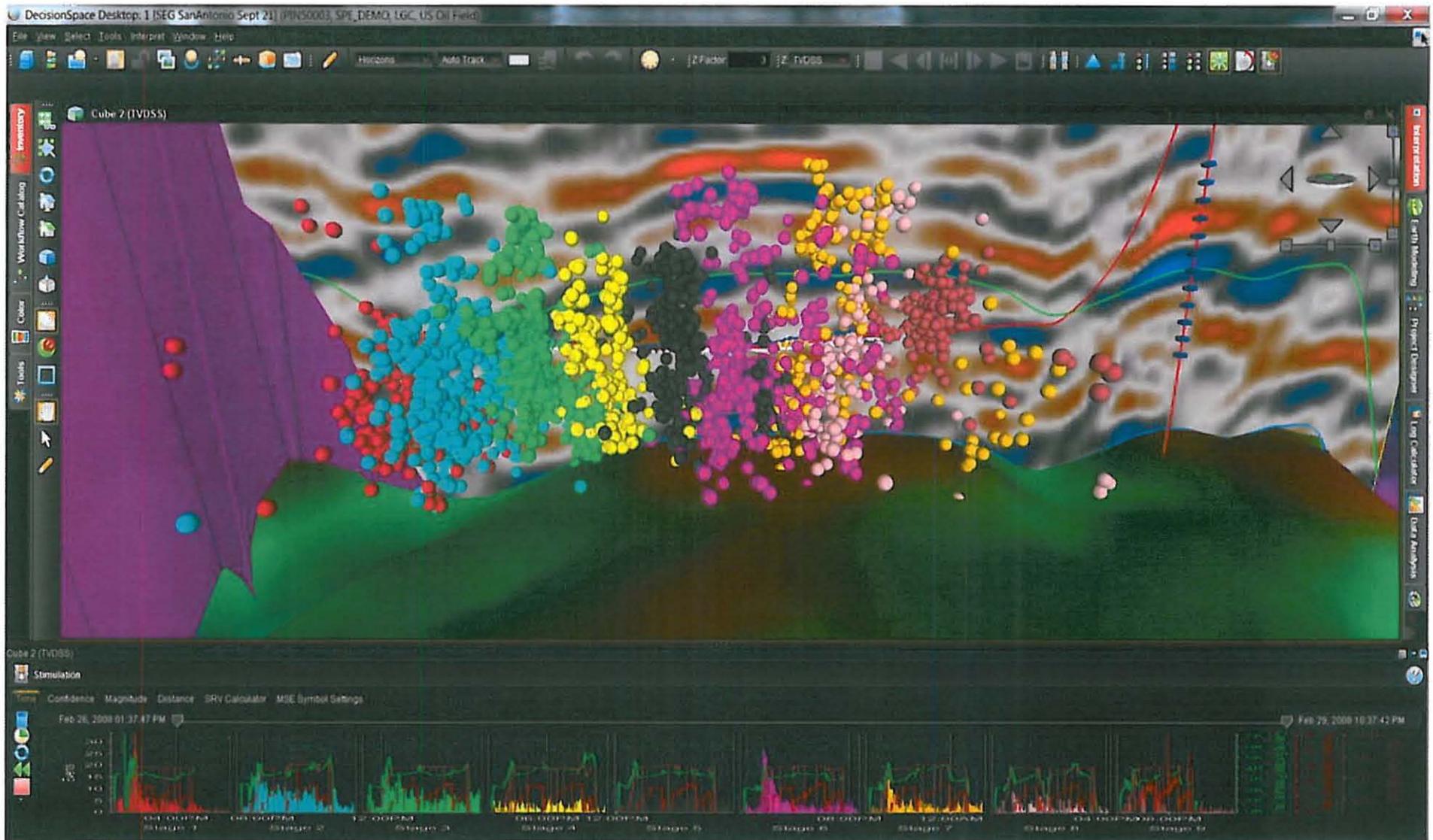
Kevin Fisher, "Data Confirm Safety of Well Fracturing,"
The American Oil & Gas Reporter – July 2010

Closer Look

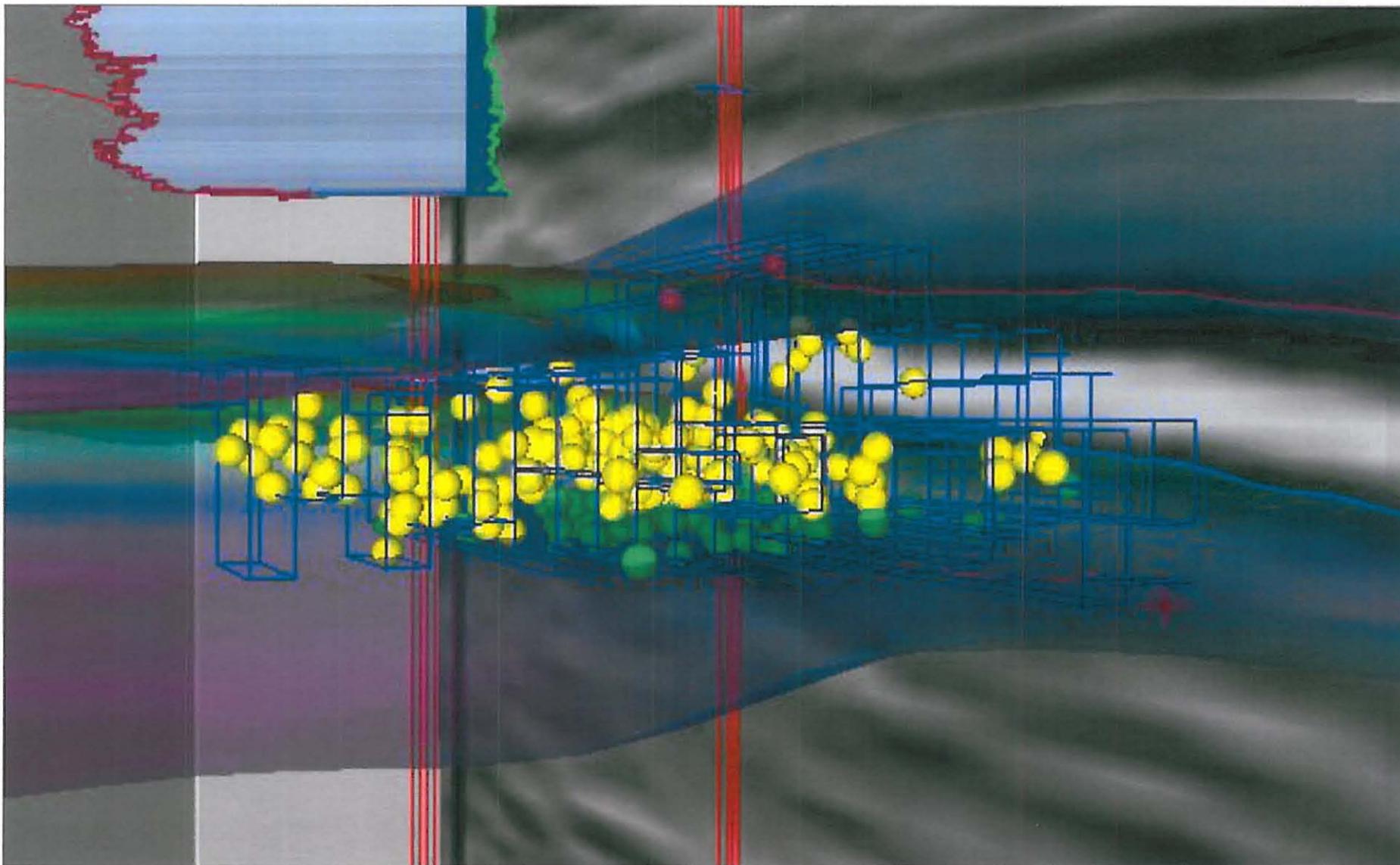
Microseismic Monitoring



Fracture Location



Fracture Optimization



Your Energy Future

Depends on Informed Decisions

