



Seeley, Kenneth <kenneth.seeley@bsee.gov>

[Update] Meeting with DCOR regarding Fracking

1 message

daniel.knowlson@bsee.gov <daniel.knowlson@bsee.gov>

Tue, Feb 12, 2013 at 8:28 AM

Reply-To: "daniel.knowlson@bsee.gov" <daniel.knowlson@bsee.gov>

To: "kenneth.seeley@bsee.gov" <kenneth.seeley@bsee.gov>, "james.salmons@bsee.gov"

<james.salmons@bsee.gov>, "daniel.knowlson@bsee.gov" <daniel.knowlson@bsee.gov>

Cc: kenneth.seeley@bsee.gov, james.salmons@bsee.gov

Not sure if you guys know about this meeting but just a reminder if one of you are interested, trying to get it rescheduled to the training room

Meeting with DCOR regarding Fracking

Dan Knowlson - Meeting with DCOR

When Tue Feb 12, 2013 9am – 12pm Pacific Time

Where BSEE-CAM-Conference Project Room (map)

Who

- Pamela Rados - organizer
- Drew Mayerson
- Jaron Ming
- Nabil Masri
- Daniel Knowlson



Seeley, Kenneth <kenneth.seeley@bsee.gov>

Re: APDs in 2009 or 2010

1 message

Seeley, Kenneth <kenneth.seeley@bsee.gov>
To: "Panzer, David" <david.panzer@boem.gov>
Cc: James Salmons <james.salmons@bsee.gov>

Wed, Feb 27, 2013 at 4:37 PM

(b) (5)

James is going to contact them.

Thanks.

Ken

On Wed, Feb 27, 2013 at 4:30 PM, Panzer, David <david.panzer@boem.gov> wrote:

Hi Ken,

Until the two CERs I wrote in 2010 under the kind tutelage of the Solicitors, I had never written CERs for either APDs or APMs. However, I was aware of the hydraulically fractured well on Gail but only through Nabil and it was not anything of note, mostly information. So, no CER was prepared by me anyway (or anyone in then, OLE) for that well. Recall that on Gail, most if not all the produced water is reinjected, so it is likely that

(b) (5)

(b) (5)

If

On Wed, Feb 27, 2013 at 3:34 PM, Seeley, Kenneth <kenneth.seeley@bsee.gov> wrote:

Dave:

Did you even look at APDs or APMs back in 2009 or 2010? Apparently, according to that article in the VC Reporter, Veneco fracked at Platform Gail in 2009/2010. I'm trying to find out what chemicals they used and how they discharged water...and also whether or not a CER was prepared.

Also, did you ever look at APMs at all? I just realized that there are quite a few of those coming through the District that are never brought to our attention. Not that I really want to start working on all of them or anything like that, but I'd like to be sure we're creating some legal vulnerability.

Ken

-

Kenneth R. Seeley, Ph.D.
Regional Environmental Officer, Pacific OCS Region
Bureau of Safety and Environmental Enforcement
770 Paseo Camarillo
Camarillo, CA 93010
(P): 805-389-7799
(F): 805-389-7592
(C): 805-377-8618
Kenneth.Seeley@BSEE.gov

—
Dave Panzer
Chief, Environmental Analysis Section
805-389-7850
fax-805-389-7874
Bureau of Ocean Energy Management
Pacific OCS Region
770 Paseo Camarillo, 2nd floor
Camarillo, Ca 93010

—
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Kenneth.Seeley@BSEE.gov



Sinkula, Nathan <nathan.sinkula@bsee.gov>

APM FOR SOCKEYE WELL E8 ST 02 2009 AND 2010

1 message

Mayerson, Drew <drew.mayerson@bsee.gov>

Tue, Feb 26, 2013 at 5:07 PM

To: Daniel Knowlson <daniel.knowlson@bsee.gov>, "Masri, Nabil" <Nabil.Masri@bsee.gov>, Kenneth Seeley <kenneth.seeley@bsee.gov>

Cc: Nathan Sinkula <nathan.sinkula@bsee.gov>, "Ming, Jaron" <Jaron.Ming@bsee.gov>, Bobby Kurtz <geokurtz@gmail.com>

All,

Attached is the original APM and two revisions spanning the period from 12-09 to 2-2010. I needed to look up whether it was a Monterey frac or other. It was Monterey. Just thought I'd send these along in case they're needed by your offices.

Drew

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

3 attachments

 **APM E8 ST02 REVISED 1-2010.pdf**
177K

 **APM E8 ST02 REVISED 2-2010.pdf**
834K

 **APM E8 ST02 12-2009.pdf**
1021K



Seeley, Kenneth <kenneth.seeley@bsee.gov>

BLM and Hydraulic fracturing

1 message

Seeley, Kenneth <kenneth.seeley@bsee.gov>

Mon, Mar 11, 2013 at 4:45 PM

To: Jaron Ming <jaron.ming@bsee.gov>, Nabil Masri <nabil.masri@bsee.gov>, Drew Mayerson <drew.mayerson@bsee.gov>

I went to the BLM Bakersfield Office website to see if I could find any links to NEPA documents that cover fracking issues. Fortunately, they had a link to an environmental assessment for their May 22, 2013 oil and gas lease sale right on their home page. The hydraulic fracturing section is short, so I included it here in its entirety. Looks like they've been dealing with many of the same issues.

Hydraulic fracturing

Hydraulic fracturing is a common and important process to stimulate oil and gas well production, and it has been used more than 1 million times for many years all over the world. Fracturing fluid is pumped under high pressure down the wellbore and into the reservoir rock to create fractures (i.e., cracks) in order to increase the immediate production rate and ultimate total recovery of oil and natural gas over the economic life of the well. In a typical fracturing job, approximately 99.5% of what is injected is water and sand.

In FY 2010, the last year for which data was available, only about 5 percent of the federal wells drilled in California (approx. 15 out of 300+) employed fracturing. None of these used diesel as the fracturing fluid, a source of concern to the public. In addition, none of these were in areas where there were fresh water aquifers, another area of concern.

In response to increased public interest, the Bureau of Land Management (BLM) recently proposed a draft rule to regulate hydraulic fracturing (HF) on public land and Indian land. The rule would (1) provide disclosure to the public of chemicals used in hydraulic fracturing on public land and Indian land, (2) strengthen regulations related to well-bore integrity, and (3) address issues related to flowback water. This rule will provide useful information to the public and assure that hydraulic fracturing is conducted in a way that adequately protects the environment. Comments to the draft rule were accepted from the public through September 10, 2012.

According to industry sources, it is likely that more California wells in the future will be fractured because of recent interest in deep shale prospects. Federal regulations currently require no special reviews or approvals for routine fracturing; however, prudent operating practices are required and no new surface disturbance typically occurs. In the future, HF wells will be subject to whatever final regulation is passed. For non-routine fracturing, the operator already needs prior approval.

A typical well in California that is hydraulically fractured (HF) has little to no resemblance to a typical well that is HF elsewhere in the country. Nearly all of the recent growth in HF wells across the country is in horizontally drilled wells in shale gas reservoirs. In contrast, the parcels in this region of the state are virtually all in areas dominated by oil reservoirs, not gas, and the use of long horizontal wells is not prevalent in California as it is elsewhere. Consequently, the issues related to methane emissions elsewhere are not currently relevant in California. Regardless of whether the wells encounter oil or gas, and regardless of whether a well is HF, all operations are subject to strict air, water, and endangered species related requirements.

Historically, a typical HF well in California uses only a small fraction of the water used elsewhere. According to data recently compiled by Western States Petroleum Association (Bakersfield Californian Newspaper Editorial August 23, 2012), a typical HF job in California uses less than 170,000 gallons of water, about 0.5 acre ft of water. The water typically is purchased from a local commercial water source, at prevailing business rates. By contrast, water consumption by agriculture in Kern County alone is more than 1 million acre-ft per year. Even if all

four projected wells are HF, and even if much larger volumes are used, the volume would be minuscule when compared to the large amounts of water used for other purposes in the project area. In any event, BLM continues to encourage operators to reduce water use wherever possible, reuse those fluids that can be reused, and recycle the flowback fluids where feasible.

Other public concerns, such as those regarding the potential for seismic impacts and the final disposition of produced water, are either speculative in nature, beyond the scope of this EA or else they can only be meaningfully analyzed once a specific proposal has been received. In general, for most of the HF jobs occurring on BLM lands, the flowback water is commonly disposed of in commercial UIC Class II water injection wells, along with other wastewater (several orders of magnitude greater volumes) from a multitude of other sources throughout the project area. These UIC wells are under the jurisdiction of the CDOGGR, regulated according to their agreements with EPA. If additional large volumes of produced water (including HF flowback water) need to be disposed of in the future, that would be a separate project and approval would have to come from CDOGGR under their UIC authority. Regarding seismic impacts, the USGS has not found any increased risk of earthquakes from hydraulic fracturing, nor has the recently completed study by the National Research Council Committee on Induced Seismicity Potential in Energy Technologies (2012). Although there have been some studies that link water disposal wells to increased seismic activity, it should be stressed that the RFD is projecting producing wells, not water disposal wells.

As mentioned above, BLM is seeking ways to reassure the American public that fracturing on BLM land is safe and has begun discussions with interested parties on the practice and regulation of fracturing on BLM land. To that end, BLM California will be working closely with the California Division of Oil and Gas and Geothermal Resources (CDOGGR), other Federal and California State agencies, and industry trade groups (such as the Western States Petroleum Association (WSPA), California Independent Petroleum Association (CIPA), and the Independent Oil Producers' Agency (IOPA) to address the issue. When current studies are complete, BLM will implement any new regulations that may be issued, and those new regulations will be incorporated into our standard Conditions of Approval for new wells and workovers of existing wells. In the meantime, many companies in California are already voluntarily posting extensive data regarding their HF wells on the national HF website "<http://fracfocus.org>."

It should be noted here, that no operations are approved in this document. All on the ground operations will be required to go through a site specific NEPA process once a permit application is received. At the leasing stage it is not yet known which, if any, of the parcels will actually be developed, which wells, if any, would be HF, and if wells are HF, what the specific parameters of the HF job would be. At this stage, no meaningful analysis can be conducted that would affect the decision at hand - whether to lease or not, and what stipulations would be applied. Therefore, the site-specific analysis is more appropriately deferred to when development is proposed. The EA acknowledges the indirect impacts from potential lease development activities and provides the appropriate level of analysis for the lease sale.



Sinkula, Nathan <nathan.sinkula@bsee.gov>

Fwd: [CAfrack] Hydraulic fracturing: Halliburton's new technology enables reuse of produced water

1 message

Drew Mayerson <drew.mayerson@bsee.gov>

Fri, Mar 8, 2013 at 5:04 PM

To: Nathan Sinkula <nathan.sinkula@bsee.gov>, Bobby Kurtz <Bobby.Kurtz@bsee.gov>

Nathan has started this already. Let's try to make it look good and informative. Tables showing what wells have been fracked and what kind (ie, frack pack, mini frac, ...), good explanations with links to our sources, etc...

Sent from my iPad

Begin forwarded message:

From: "Ming, Jaron" <jaron.ming@bsee.gov>

Date: March 8, 2013, 9:35:20 AM PST

To: Drew Mayerson <drew.mayerson@bsee.gov>

Cc: Daniel Knowlson <daniel.knowlson@bsee.gov>, Kenneth Seeley <kenneth.seeley@bsee.gov>, Nabil Masri <Nabil.Masri@bsee.gov>, Nicholas Pardi <nicholas.pardi@bsee.gov>, Mary Greene <Mary.Greene@bsee.gov>

Subject: Re: [CAfrack] Hydraulic fracturing: Halliburton's new technology enables reuse of produced water

It looks like with this question, the inquiry from truth out, and the FOIA from EDC all on fracking in the Pacific OCS, it would be in our best interest to develop a standard response, either in Q&A format or just a narrative so that we can use it to answer these questions efficiently. I would even suggest putting something on the webpage for the public to reference.

Nick, can you help us with that? I am also planning to give you a call in response to your other message. Thanks.

On Thu, Mar 7, 2013 at 8:52 PM, Drew Mayerson <drew.mayerson@bsee.gov> wrote:
how do you want to handle this?

Sent from my iPad

Begin forwarded message:

From: Susan Jordan <sjordan@coastaladvocates.com>

Date: March 7, 2013, 11:19:20 AM PST

To: Drew Mayerson <Drew.Mayerson@bsee.gov>

Subject: Fwd: [CAfrack] Hydraulic fracturing: Halliburton's new technology enables reuse of produced water

Hi Drew,

I have been told that some operators have been fracking in the SB Channel.

Can you please let me know if you have any information on this? If they are fracking, can you tell me if they are using seawater and how they are disposing of the fracking fluid?

Thanks!

Susan

Begin forwarded message:

From: Bill Allayaud <bill@ewg.org>
Subject: [CAfrack] Hydraulic fracturing:
**Halliburton's new technology enables reuse of
produced water**
Date: March 7, 2013 8:49:14 AM PST
To: Frack Listserve <cafrackattack@cafrack.org>
Reply-To: bill@ewg.org

Note the bolded statement about currently using seawater for fracking. We understand that are fracking offshore California. They use saltwater? And, what do they do with the produced water?

<http://www.eenews.net/energywire/2013/03/07/5>

**HYDRAULIC FRACTURING:
Halliburton's new technology enables reuse
of produced water**

Nathaniel Gronewold, E&E reporter

Published: Thursday, March 7, 2013

HOUSTON -- Engineers at Halliburton Co. believe they may be on the cusp of a major breakthrough in hydraulic fracturing that could quench the practice's insatiable thirst for water.

During the annual IHS CERA Week convention happening here, the oil field services giant announced the launch of a suite of technologies and services that can allow drillers to use briny, brackish water or nonpotable water produced in oil and gas extraction for hydraulic fracturing operations, without any treatment.

"We feel like they are game-changing," said Walter Dale, a business manager for water solutions at Halliburton. "You look at the rush of people that are trying to treat the water to high quality, to make a frack fluid, and now we're coming to the market saying: 'Look, let's not treat the water, let's not take the salt out. We can make frack fluids out of it.'"

It is well known that hydraulic fracturing, or fracking, requires consuming large volumes of water -- up to 4 million or 5 million gallons per well. Recycling and reuse is beginning to make inroads into the business but has a long way to go. Although recycling rates are thought to be reaching nearly 70 percent in the eastern Marcellus Shale natural gas zone, in other shale fields recycling and reuse rates are put at 10 percent or less.

The standard industry practice is to blend fresh water with sand or ceramic proppants and chemicals to give the frack fluid the precise properties drillers think they'll need to optimize hydrocarbon extraction. The flowback fluid that is returned when production commences is typically discarded, usually in injection wells. The process is expensive and contributes significantly to the trucking traffic that irks people living near wells.

Fracking without fresh water has been an industry goal and a move that Texas state oil and gas officials have been urging it to take. The Railroad Commission of Texas, which regulates oil and gas, is considering voluntary guidelines for water recycling.

Produced water pulled from wells elsewhere in the oil patch can be moved to frack jobs for use in shale and tight rock formations with Halliburton's technology. Or companies can draw from underground brackish water stores and use that, potentially saving millions of dollars on freshwater purchases while avoiding the ire of local landowners concerned about groundwater depletion.

"We see it as a huge change," Dale said in an interview. **"We started by looking out in the ocean. We're making fracks with seawater every day,** so we had some really sharp guys that knew how to do this and started looking at it, saying, 'Do we need to take all these things out?' And the answer is no."

By "things," Dale is referring to total dissolved solids (TDS), water technology parlance for the salt, dirt, brine and other materials that make water unsuitable for use in households or for agriculture. Halliburton's new application, called H2OForward, combines an existing suite of technologies the company is already commercializing for improving the chemistry of the fluid and reducing harmful organisms that develop in fluids underground.

These systems, marketed by the company as CleanStream and CleanWave, help drillers reduce the volume of fresh water they employ for unlocking oil and gas trapped in tight rock and shale formations thousands of feet underground. Dale says operators now have the option to forgo fresh water entirely in the process and just use the water they may have already pulled out of the ground.

H2OForward works "with any waste stream," including brackish or produced water laded with up to 285,000 parts per million of TDS, Dale said. Conventional and marginal oil and gas wells are known to produce more water than oil -- industrywide the ratio is around three to five barrels of water for every barrel of crude oil.

Changing the formulations, and the price

Halliburton believes the system can revolutionize the way operators are developing the United States' booming shale oil and gas reserves, and the company is eager to market and sell its wares. Dale said the use of the briny and brackish mixture the oil patch can produce does not negatively affect hydrocarbon production volumes.

"We've changed the formulations," he added. "It significantly changes the price point, and we hope it will drive further recycling in the industry to less freshwater use."

Halliburton says it has applied its new system to more than 60 wells in the Permian Basin region of west Texas and the Bakken Shale of North Dakota.

The technology may be ideal there because those formations are known to yield lots of water for drillers to deal with. Deploying it to the south Texas Eagle Ford Shale will prove more difficult, Dale explained, because "the Eagle Ford is very thirsty; it doesn't give back water."

No more waste?

Water management specialists in the oil and gas industry say technologies are emerging that may one day see water waste in drilling reduced by 90 percent or more. Whether to treat and recycle frack fluid, and how much, is primarily an economic question and not a regulatory one, but experts say more companies are willing to take on the extra expense.

"We see every day people willing to pay more per barrel," Johan van Thermaat, vice president of investor relations at the water management services firm High Sierra Water Services, said during a discussion of experts at the conference.

Companies are also, in a few cases, pooling their resources to transport the water they need for oil field hydraulic fracturing by pipeline networks, reducing truck hauls that in some cases encompass 60 percent to 80 percent of a company's water management budget.

As far as these new technologies and practices are coming along, experts in water use for oil and gas extraction don't think

they will eliminate the waste stream. There will still be a need for some disposal down injection wells, they said.

"There's always going to be a waste product," said Kevin Molloy, the oil and gas sector leader at CDM Smith, an engineering and consulting firm.

—
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cafrackattack@cafrack.org

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To visit the archive of messages sent prior to 12/6/2012, visit
<http://bit.ly/CAfrackattack>



Seeley, Kenneth <kenneth.seeley@bsee.gov>

Fwd: [CAfrack] Hydraulic fracturing: Halliburton's new technology enables reuse of produced water

1 message

Mayerson, Drew <drew.mayerson@bsee.gov>

Tue, Mar 12, 2013 at 11:05 AM

To: "Ming, Jaron" <Jaron.Ming@bsee.gov>, Kenneth Seeley <kenneth.seeley@bsee.gov>, "Masri, Nabil"

<Nabil.Masri@bsee.gov>, Nicholas Pardi <nicholas.pardi@bsee.gov>

Thoughts on this response:

Susan,

Sorry to take so long to get back to you. I was out last week on Thursday and Friday. Hydraulic fracturing is rare in the Pacific Region although we have had some operators do it in the past and none would rule out doing it in the future. Our Public Affairs office will be putting together a FAQ that addresses your specific question, as well as others pertinent to offshore hydraulic fracturing at some point in the near future. I will make sure that they will forward it to you.

Drew

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

----- Forwarded message -----

From: **Susan Jordan** <sjordan@coastaladvocates.com>

Date: Thu, Mar 7, 2013 at 11:19 AM

Subject: Fwd: [CAfrack] Hydraulic fracturing: Halliburton's new technology enables reuse of produced water

To: Drew Mayerson <Drew.Mayerson@bsee.gov>

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Re: [CAfrack] Hydraulic fracturing: Halliburton's new technology enables reuse of produced water

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Susan Jordan <sjordan@coastaladvocates.com>

Fri, Mar 22, 2013 at 5:17 PM

To: "Mayerson, Drew" <Drew.Mayerson@bsee.gov>

Cc: "Ming, Jaron" <Jaron.Ming@bsee.gov>, Nicholas Pardi <nicholas.pardi@bsee.gov>, "Masri, Nabil" <Nabil.Masri@bsee.gov>

Thanks for getting back to me. I am most interested in who, what, where and when and how the disposal of the fluid was handled.

I look forward to receiving the information the agency is preparing.

Best, Susan

Susan Jordan, Director

California Coastal Protection Network
2920 Ventura Drive
Santa Barbara, CA 93105

Ph: 805-637-3037

Email: sjordan@coastaladvocates.com

"Our lives begin to end the day we become silent about things that matter." - Martin Luther King, Jr.

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United States Department of the Interior

BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT

Pacific OCS Region
770 Paseo Camarillo, 2nd Floor
Camarillo, California 93010 - 6064

July 26, 2012

Memorandum

To: District Manager, California District, POCSR

From: Kenneth R. Seeley, Regional Environmental Officer *KRS*

Subject: Categorical Exclusion Review (CER) – DCOR, LLC's Application for Permit to Drill, Well S-005, Platform Gilda, Santa Clara Unit, Pacific OCS Region

SURNAME
<i>KRS 7/26/12</i>
SURNAME
SURNAME
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SURNAME

I have reviewed DCOR, LLC's Application for a Permit to Drill (APD), dated March 8, 2012 but received in OFO on July 18, 2012), for drilling a sidetracked well (S-005) from Platform Gilda in the Santa Clara Unit. The California District has determined that approval of this APD for a sidetrack well will not require a Worst Case Discharge analysis, since it will be in an already well characterized zone.

Drilling of the proposed well is consistent with the original Plan of Development (POD) for lease OCS P-0216 (approved 12/19/1980). The original S-005 well was initially drilled and successfully completed in 1982. BSEE and the Bureau of Ocean Energy Management (BOEM) are currently working with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service on a programmatic level to update endangered species consultations per the Endangered Species Act for current offshore development and production activities.

Approval of DCOR, LLC's APD for Well S-005 meets the definition of the Categorical Exclusion for "Approval of an Application for Permit to Drill (APD) an offshore oil and gas exploration or development well, when said well and appropriate mitigation measures are described in an approved exploration plan, development plan, production plan, or Development Operations Coordination Document" [516 DM 15.4.C (12)]. We also reviewed the extraordinary circumstances found in the Departmental regulations at 43 CFR 46.215 and found that none exist (Table I). As a result, we have determined that DCOR, LLC's APD for Well S-005 is categorically excluded from further National Environmental Policy Act review.

Table 1. Review of Extraordinary Circumstances (43 CFR 46.215) for DCOR, LLC's APD for Well S-005, Platform Gilda, Santa Clara Unit. The APD has been reviewed to determine whether any of the extraordinary circumstances criteria listed below exist for the categorical exclusion of Approval of an APD an offshore oil and gas exploration or development well, when said well and appropriate mitigation measures are described in an approved exploration plan, development plan, production plan, or Development Operations Coordination Document [516 DM 15.4.C (12)].

EXTRAORDINARY CIRCUMSTANCE CRITERIA	DO THESE EXTRAORDINARY CIRCUMSTANCES EXIST FOR THIS ACTION?
2.1 Have significant impacts on public health or safety.	No: Drilling activities will be conducted offshore under applicable safety and environmental regulations. Drilling of this well is expected to have little or no risk of a blowout that could result in an oil spill.
2.2 Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds; and other ecologically significant or critical areas.	No: Platform Gilda is not located near natural resources considered to be ecologically, historical or culturally important.
2.3 Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources [NEPA Section 102(2)(E)].	No: Controversial environmental effects or unresolved conflicts on available resources are not expected for this area of the Federal OCS.
2.4 Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks.	No: The greatest environmental concern with the proposed activity is the risk of an oil spill. Risk of an oil spill is low for this proposal and any effects of an oil spill that may occur are well documented and have been evaluated in previous environmental reviews.
2.5 Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects.	No: Proposed activities are consistent with existing, approved development and production plans for the area.
2.6 Have a direct relationship to other actions with individually insignificant but cumulatively significant environmental effects.	No: Past, present or reasonably foreseeable oil and gas development in the area have been evaluated and considered in previous environmental reviews.
2.7 Have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places as determined by either the bureau or office.	No: Proposed activities will not occur in the vicinity of properties listed, or eligible for listing, on the National Register of Historic Places.
2.8 Have significant impacts on species listed, or proposed to be listed, on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species.	No: The proposed activity will not have significant impacts on listed species or critical habitat.
2.9 Violate a Federal law, or a State, local, or tribal law or requirement imposed for the protection of the environment.	No: Proposed activities will be conducted in compliance with all applicable laws imposed for the protection of the environment.
2.10 Have a disproportionately high and adverse effect on low income or minority populations (Executive Order 12898).	No: The proposed activity will not disproportionately affect low income or minority populations.
2.11 Limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (Executive Order 13007).	No: Proposed activities will not limit access or ceremonial use of Indian sacred sites.
2.12 Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112).	No: Proposed activities will be conducted on the Federal OCS using existing local vessels (crewboats, workboats, etc.).

bcc: File: 1703-02(a)(1) Santa Clara Unit, Gen. Corres. Platform Gilda (w/attm.)
1101-02(b) Lease OCS P-0216, Well S-05, Gen. Corres.
Chron (w/attm.)

BSEE PAC Managers/Supervisors (electronic copy)

BSEE PAC ROS EC (electronic copy)

EIERU/POCSR KSeeley (electronic copy)

OSRD/PRU COgawa (electronic copy)

PAC/EDD/pf:msoffice:word:Calif.Dist.files:2012/Seeleyfiles:Well S-005 APD CER 7 25 2012.docx





Seeley, Kenneth <kenneth.seeley@bsee.gov>

Fwd: DCOR meeting to discuss fracking and upcoming program at Gilda

1 message

Seeley, Kenneth <kenneth.seeley@bsee.gov>
To: James Salmons <james.salmons@bsee.gov>

Mon, Feb 11, 2013 at 11:16 AM

Do you want to come? One question that came up today is whether or not DCOR discharges fracking compounds from produced water discharges. Is Gilda one of the platforms that discharges? If so, I doubt if

(b) (5)

—— Forwarded message ——

From: **Knowlson, Daniel** <daniel.knowlson@bsee.gov>
Date: Fri, Feb 8, 2013 at 6:46 AM
Subject: Fwd: DCOR meeting to discuss fracking and upcoming program at Gilda
To: Kenneth Seeley <kenneth.seeley@bsee.gov>

—— Forwarded message ——

From: **Jaron Ming** <jaron.ming@bsee.gov>
Date: Thu, Feb 7, 2013 at 11:05 PM
Subject: Re: DCOR meeting to discuss fracking and upcoming program at Gilda
To: Drew Mayerson <drew.mayerson@bsee.gov>
Cc: "Masri, Nabil" <nabil.masri@bsee.gov>, "Knowlson, Daniel" <daniel.knowlson@bsee.gov>, Armen Voskarian <armen.voskarian@bsee.gov>, John Kaiser <john.kaiser@bsee.gov>

I am available Tuesday morning but I am in LA on Monday helping assess PMF candidates. We should find some time to discuss the concerns Margaret expressed. I also agree that Ken Seeley should attend. We will also have Mary Greene here on detail and I would like her to attend as well. Feel free to meet on Monday without me or we can meet on Tuesday at 8:30 am just before the meeting with DCOR. Thanks.

Sent from my iPad

On Feb 7, 2013, at 4:30 PM, Drew Mayerson <drew.mayerson@bsee.gov> wrote:

We should probably meet on Monday to discuss our fracking discussion with the Deputy Director yesterday.

Sent from my iPad

On Feb 6, 2013, at 4:01 PM, "Masri, Nabil" <nabil.masri@bsee.gov> wrote:

Dan

It is preferable to have the meeting on 2/12 in the morning about 9:00 or 10:00 am.
BSEE and BOEM Managers have scheduled a meeting with the new owners of the BETA at 4:00 P.M. on 2/12.
Drew and Jaron will respond to you directly . Thanks.

Nabil F. Masri
Regional Supervisor, Office of Field Operations
Pacific OCS Region
Bureau of Safety and Environmental Enforcement
805.389.7581
nabil.masri@bsee.gov

On Wed, Feb 6, 2013 at 3:20 PM, Knowlson, Daniel <daniel.knowlson@bsee.gov> wrote:

Craig Krummrich called to set up a meeting with us on this topic, the sooner the better for them. How about sometime 2/11 or 2/12?? He is willing to come here or he can provide a meeting space at his office. Please let me know your interest to attend and availability ASAP.

Thank You

—
Daniel R. Knowlson
DOI/BSEE/POCSR
CA District Manager
805-389-7746

—
Daniel R. Knowlson
DOI/BSEE/POCSR
CA District Manager
805-389-7746

—
Kenneth R. Seeley, Ph.D.
Regional Environmental Officer, Pacific OCS Region
Bureau of Safety and Environmental Enforcement
770 Paseo Camarillo
Camarillo, CA 93010
(P): 805-389-7799
(F): 805-389-7592
(C): 805-377-8618
Kenneth.Seeley@BSEE.gov



Sinkula, Nathan <nathan.sinkula@bsee.gov>

DCOR State Waters Fracking

3 messages

Voskanian, Armen <armen.voskanian@bsee.gov>

Thu, Feb 14, 2013 at 4:16 PM

To: Drew Mayerson <drew.mayerson@bsee.gov>

Cc: Nathan Sinkula <nathan.sinkula@bsee.gov>

It turns out that DCOR did stimulus fracking near wellbore as well as hydraulic fracturing of the formation at Ester and Eva platforms. When, what, how much volume, how far fracture length coming soon.

—
Armen Voskanian, P.E.

Reservoir Engineer

Bureau of Safety and Environmental Enforcement

Pacific OCS Region

Office of Production and Development

770 Paseo Camarillo, Second Floor

Camarillo, CA 93010

805.389.7727

armen.voskanian@bsee.gov

Sinkula, Nathan <nathan.sinkula@bsee.gov>

Thu, Feb 14, 2013 at 4:18 PM

To: "Voskanian, Armen" <armen.voskanian@bsee.gov>, Drew Mayerson <drew.mayerson@bsee.gov>

interesting, any chance DCOR can supply all that info for the Nuevo wells also? Or is that info coming from the state?

[Quoted text hidden]

Voskanian, Armen <armen.voskanian@bsee.gov>

Thu, Feb 14, 2013 at 4:50 PM

To: "Sinkula, Nathan" <nathan.sinkula@bsee.gov>

Cc: Drew Mayerson <drew.mayerson@bsee.gov>

It is coming from the State.

[Quoted text hidden]



to: Drew Mayerson <drew.mayerson@bsee.gov>

DCOR/Nuevo Frac'd well graphs and WF info list.

1 message

Sinkula, Nathan <nathan.sinkula@bsee.gov>

Tue, Feb 19, 2013 at 1:49 PM

To: Drew Mayerson <drew.mayerson@bsee.gov>, Armen Voskanian <armen.voskanian@bsee.gov>

Drew and Armen,

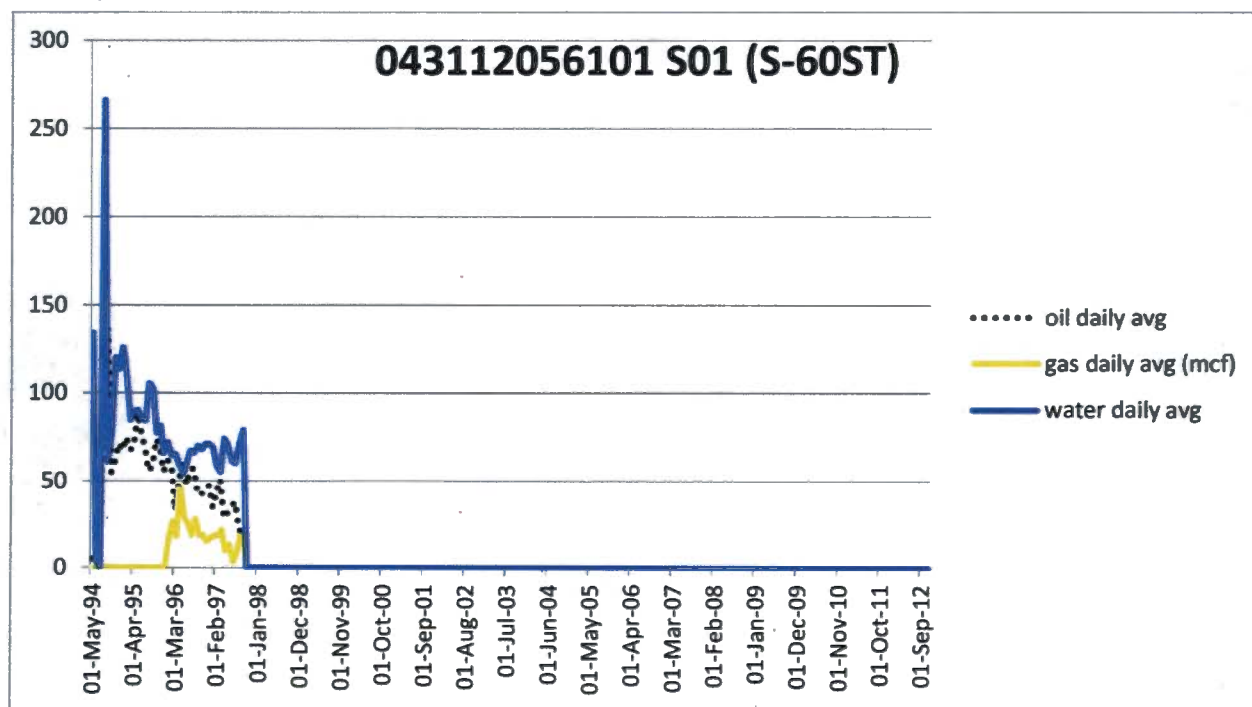
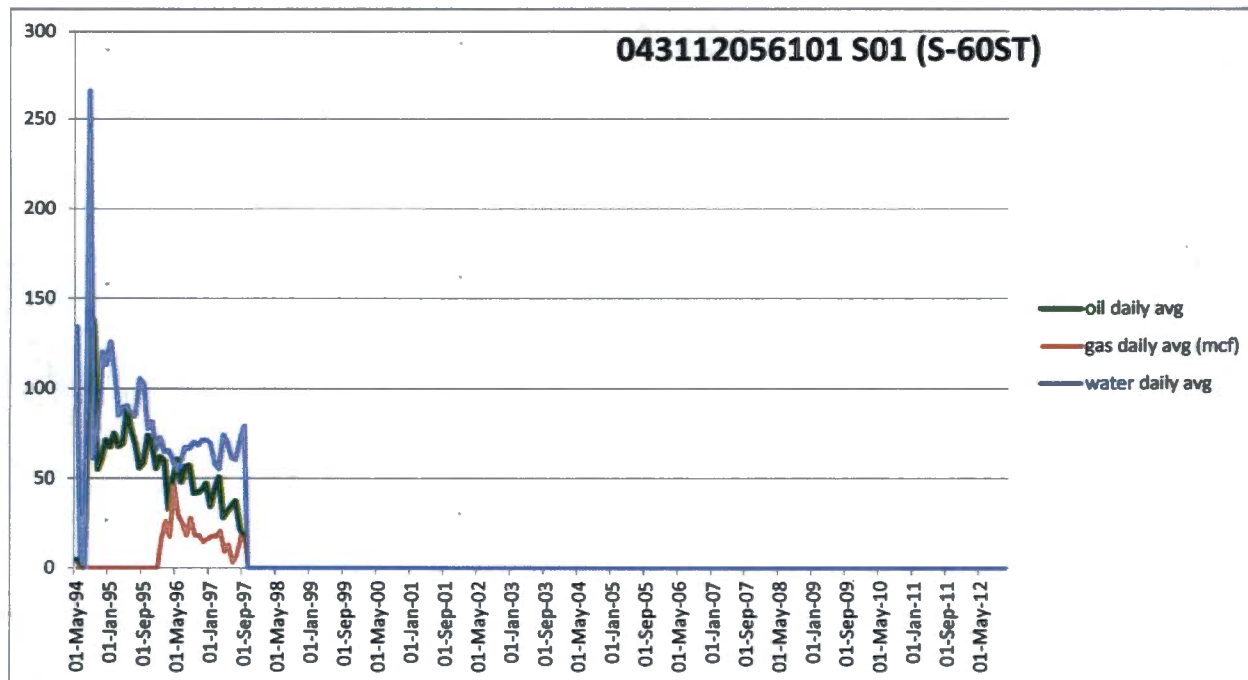
Here are the production graphs from the wells DCOR had listed that Nuevo had Frac'd. The other attachment is any information i could piece together from the well files that may have involved fracking or other procedures that may have influenced production jumps in the graphs.

Nathan

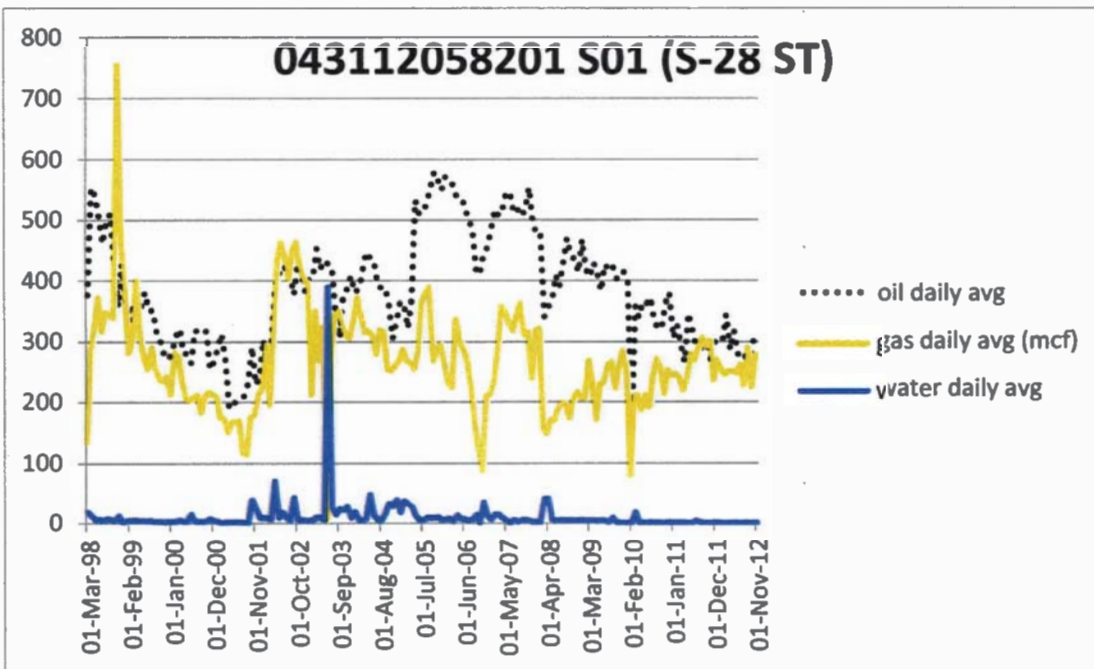
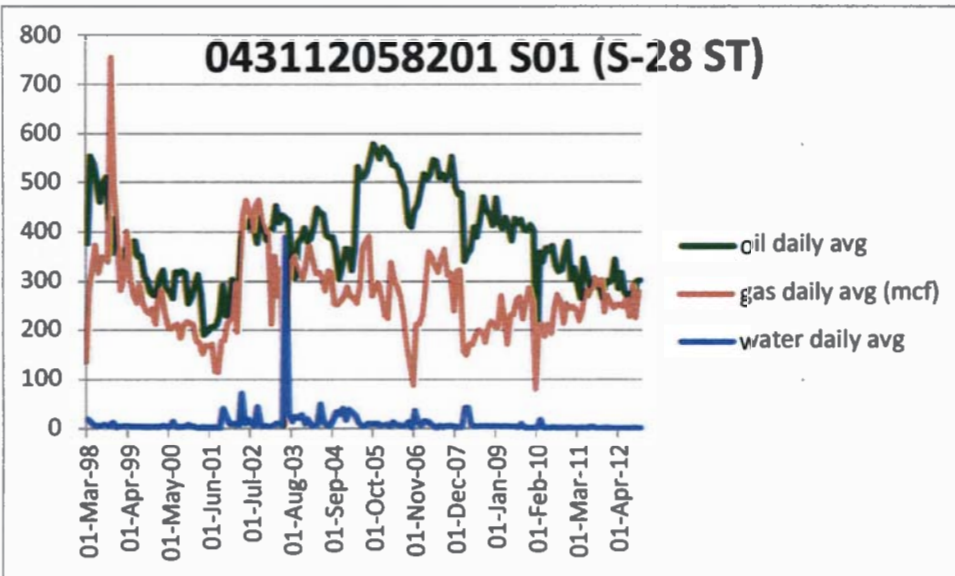
2 attachments

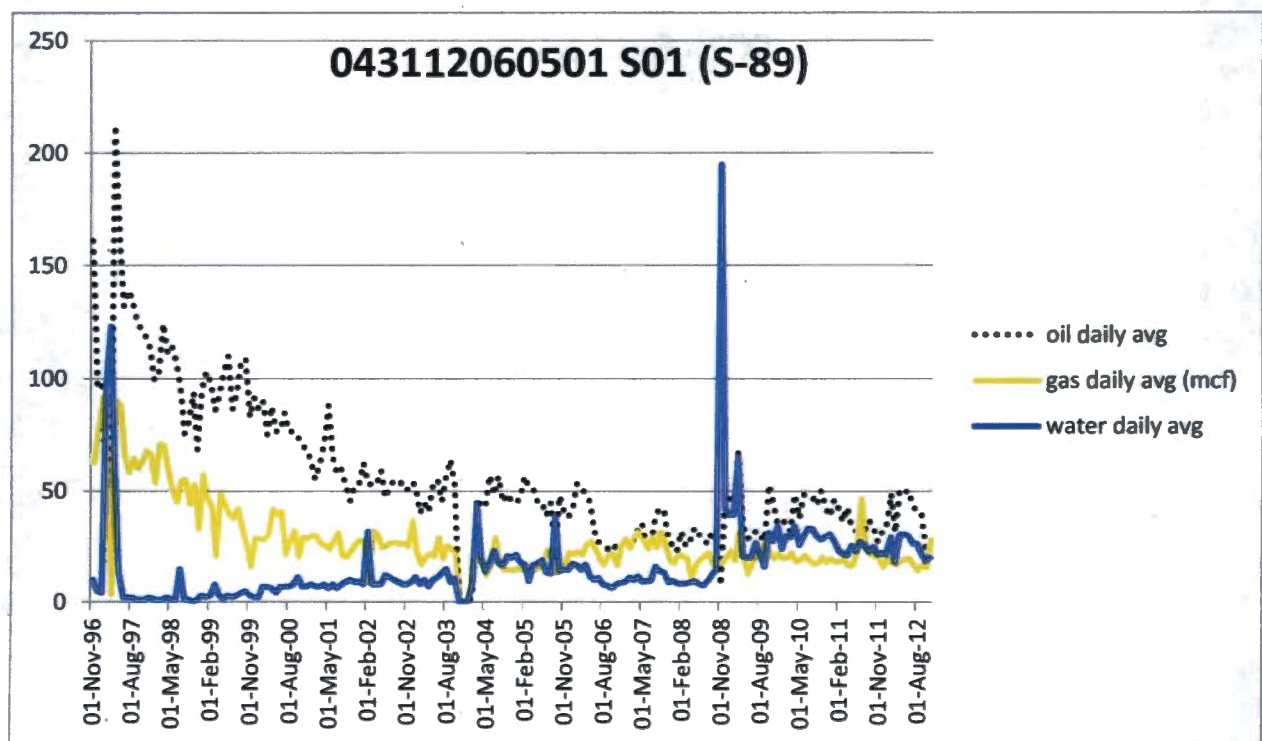
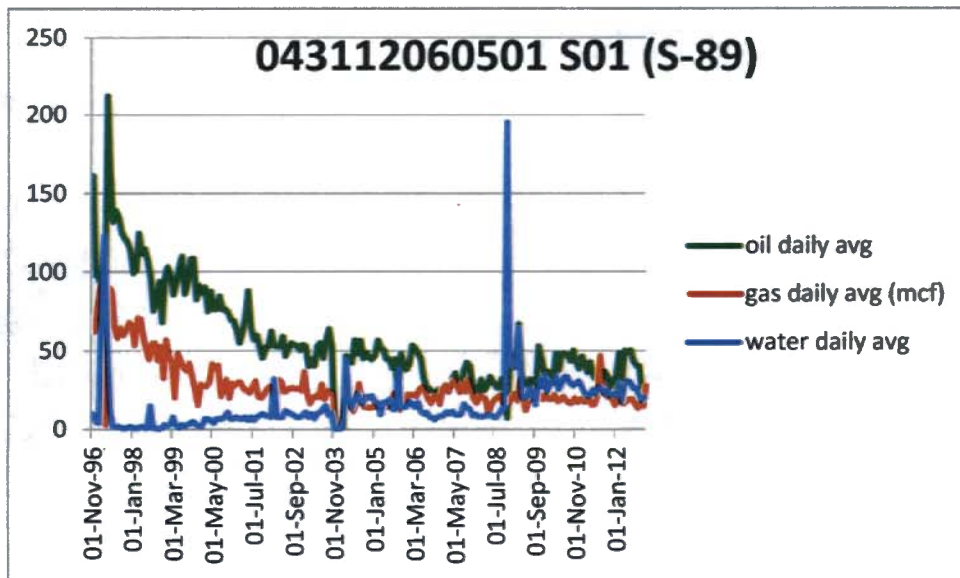
 **Gilda Frac'd wells production graphs.docx**
834K

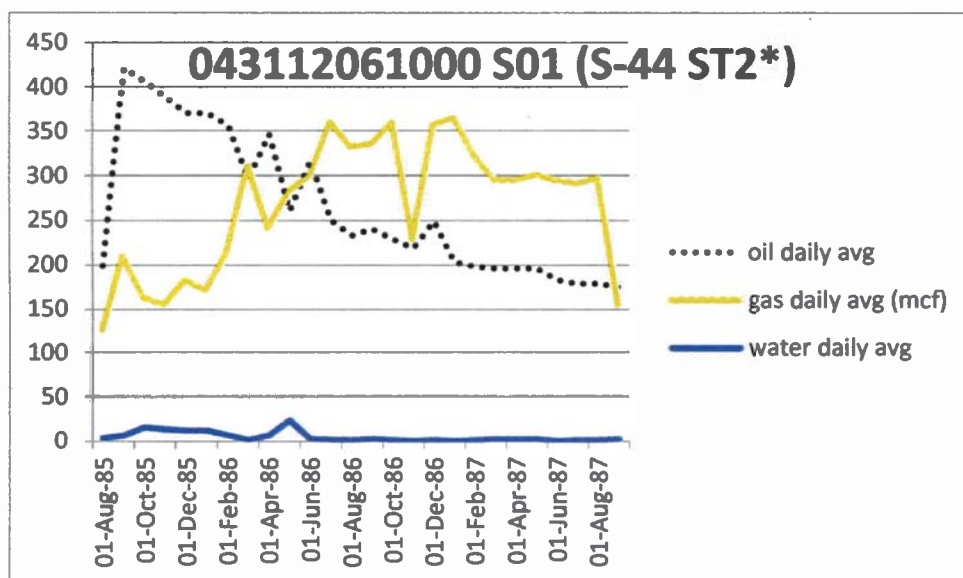
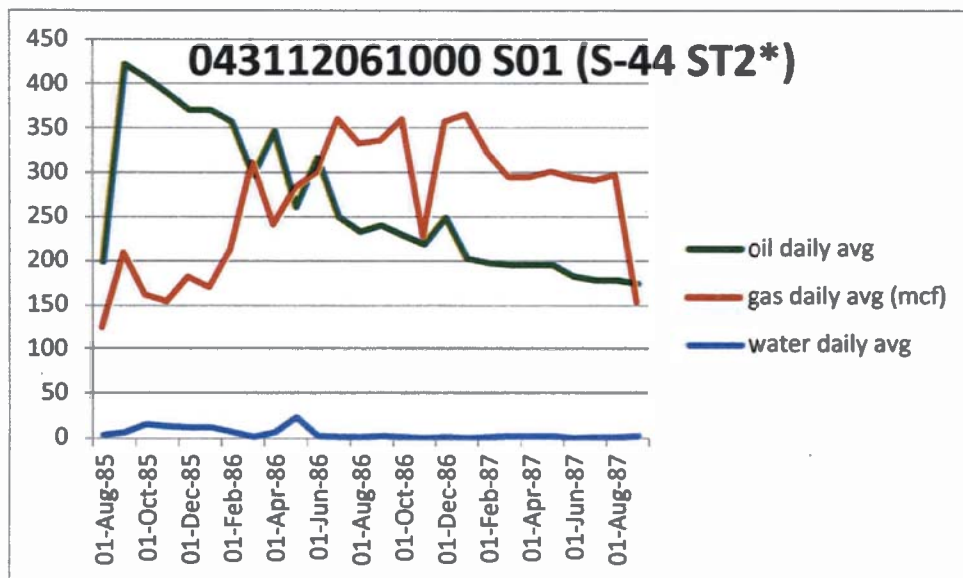
 **Gilda frac'd wells extra sheet.docx**
17K

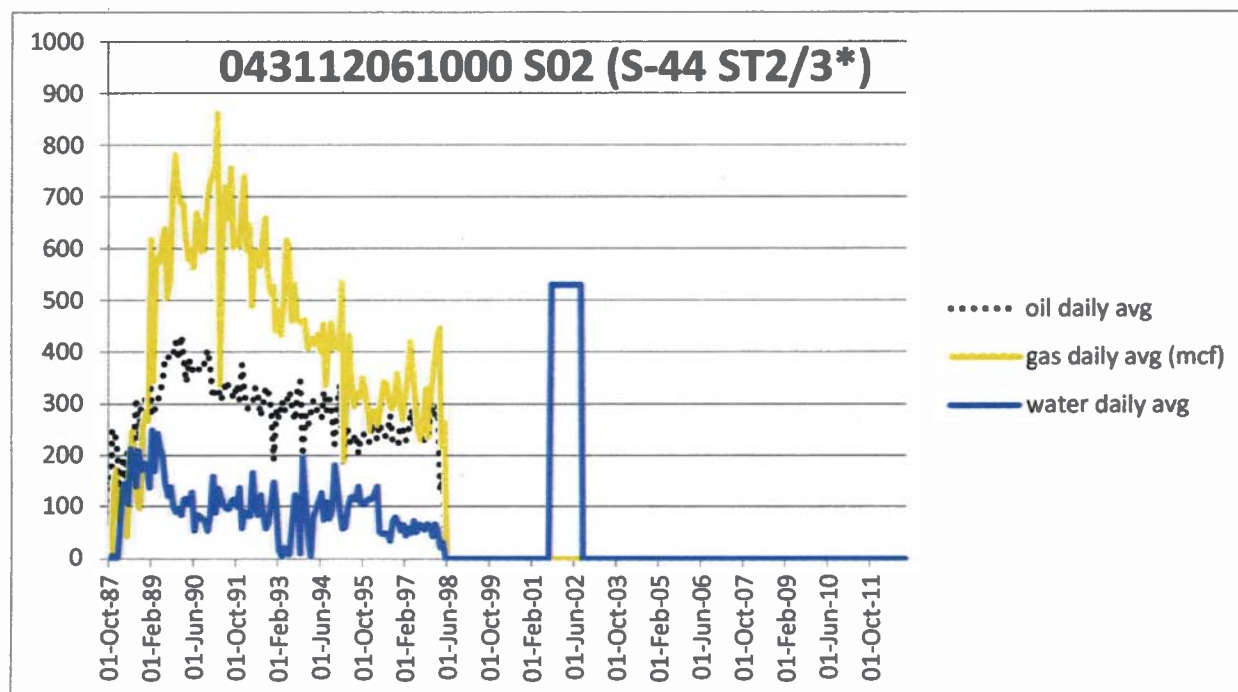
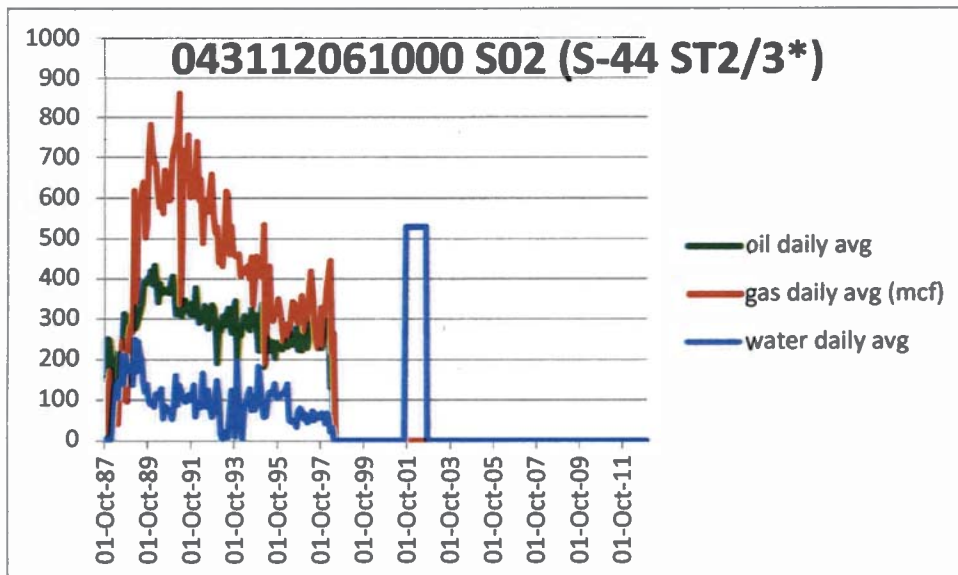


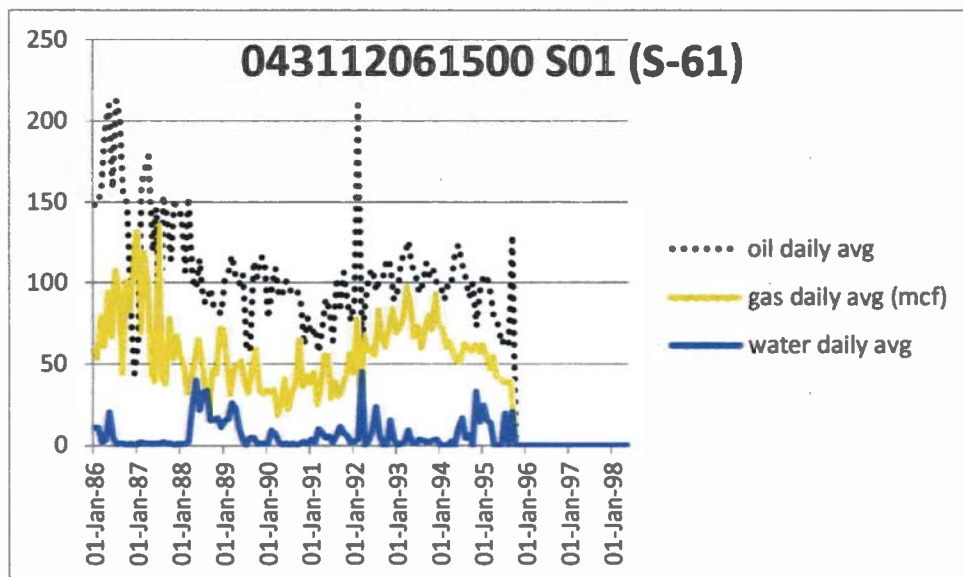
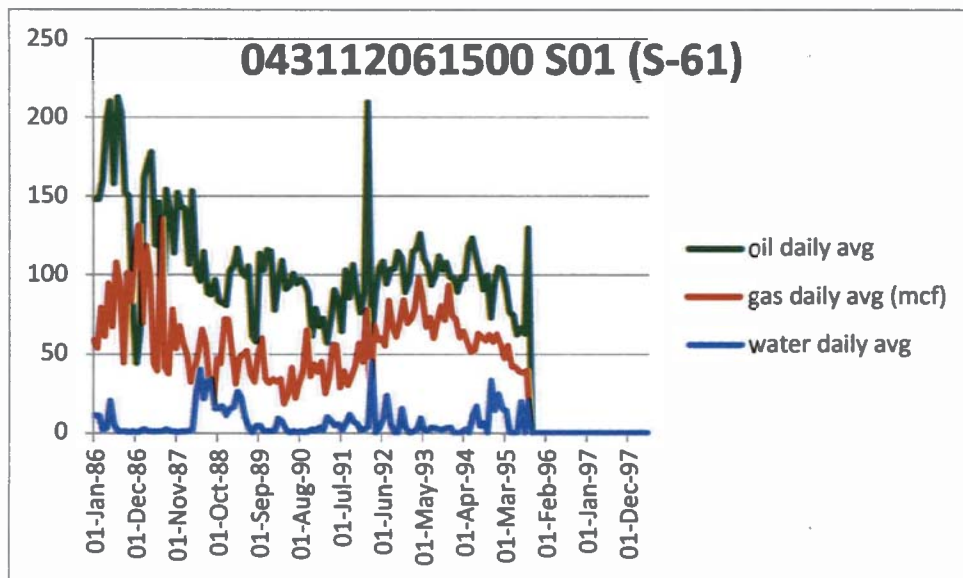
S028 (04311205800) D01, D02, S03 all injection completions

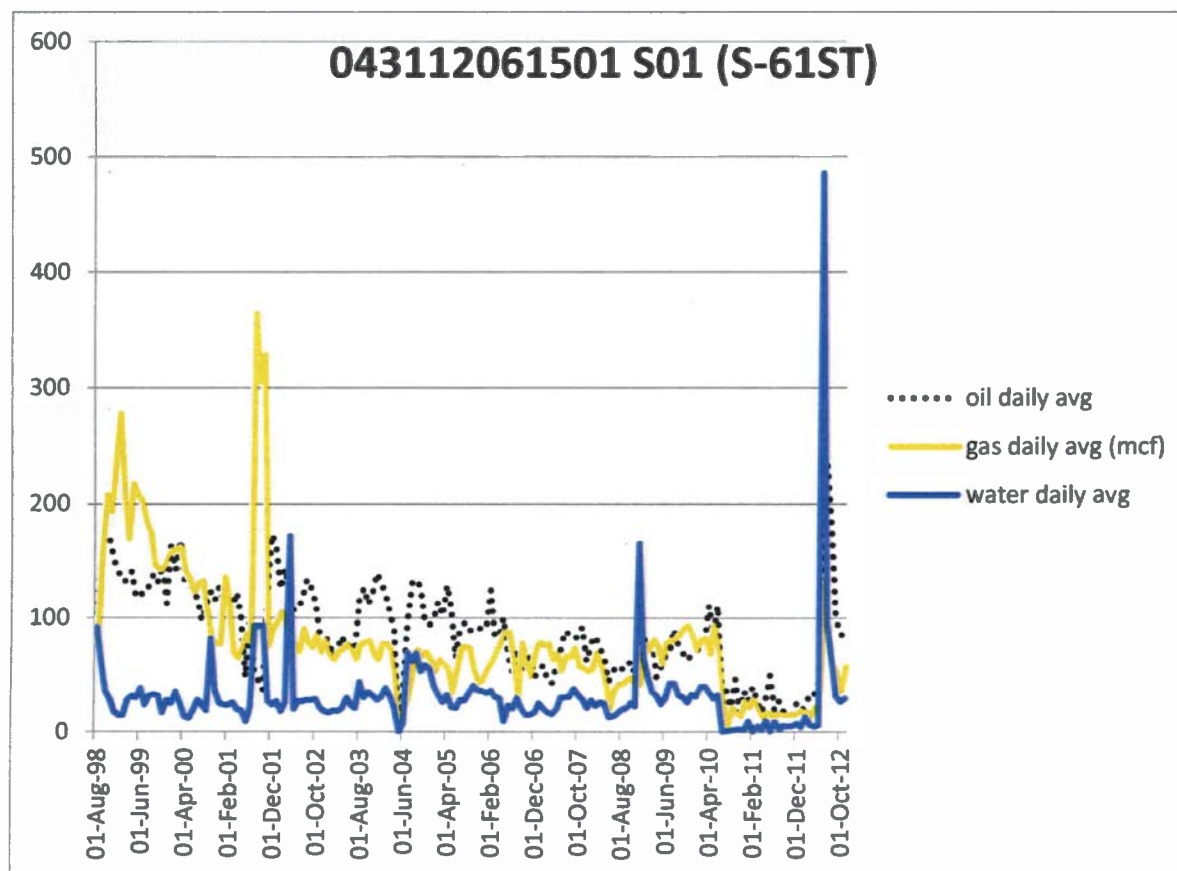
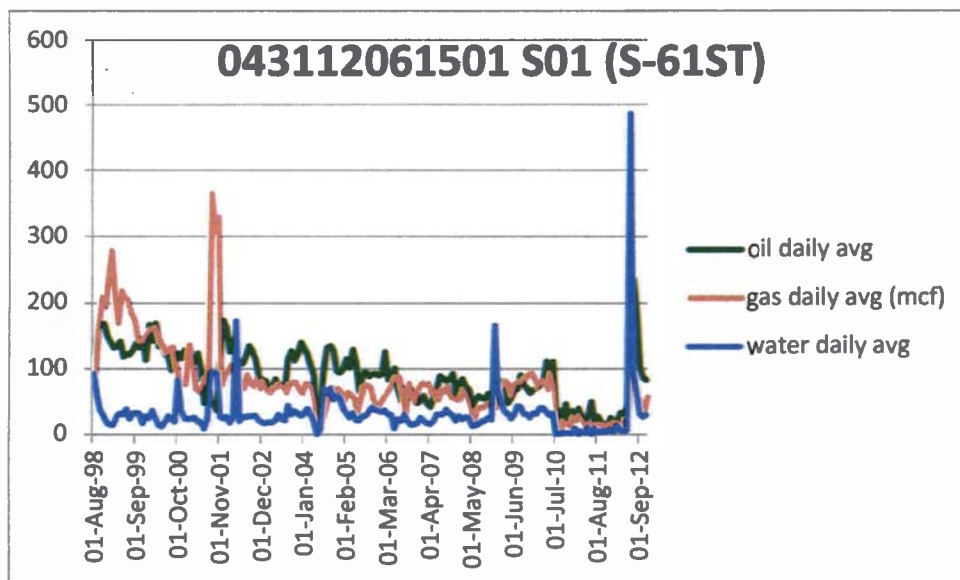


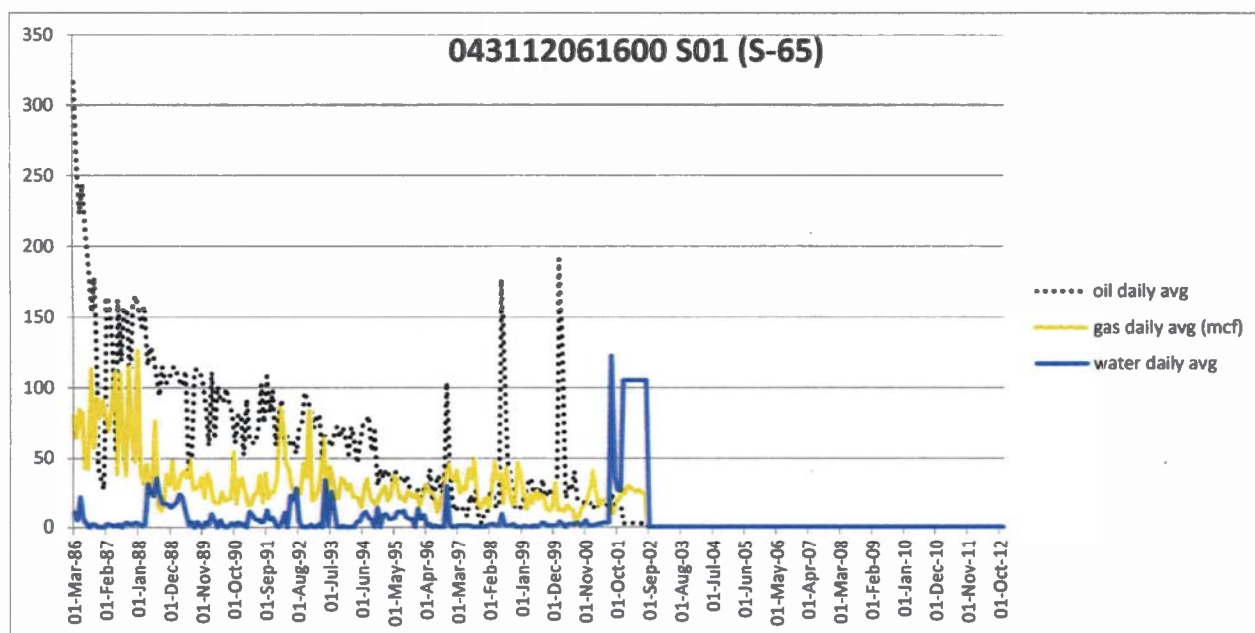
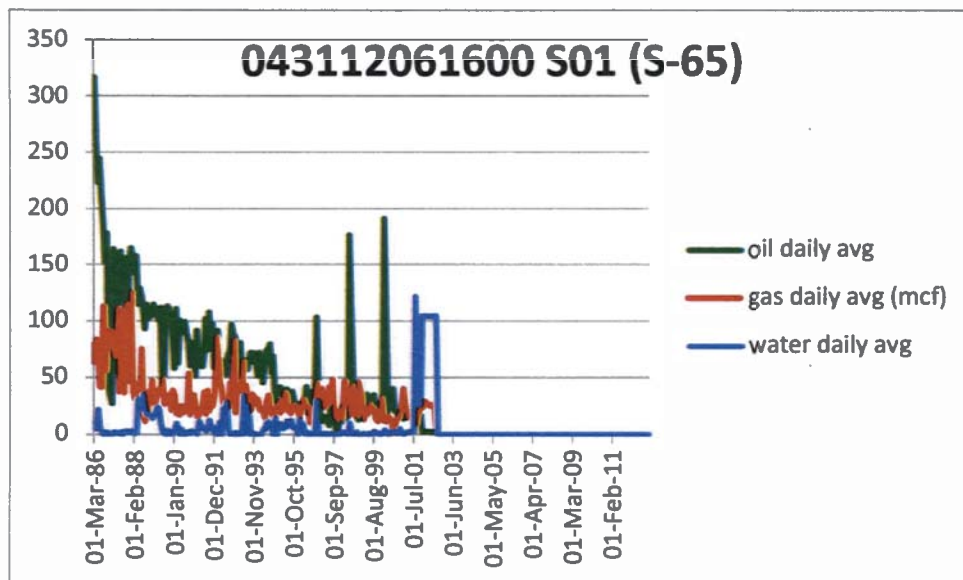


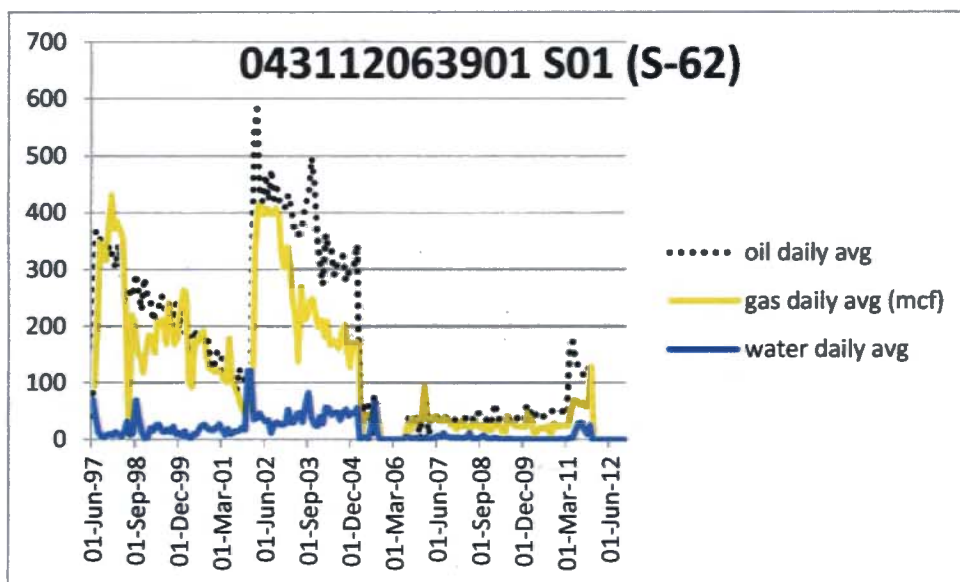
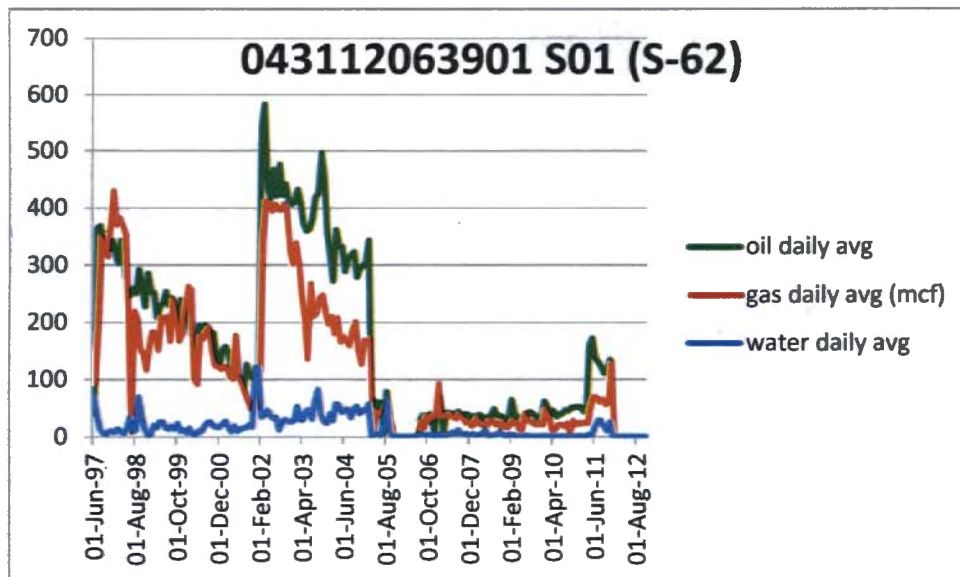


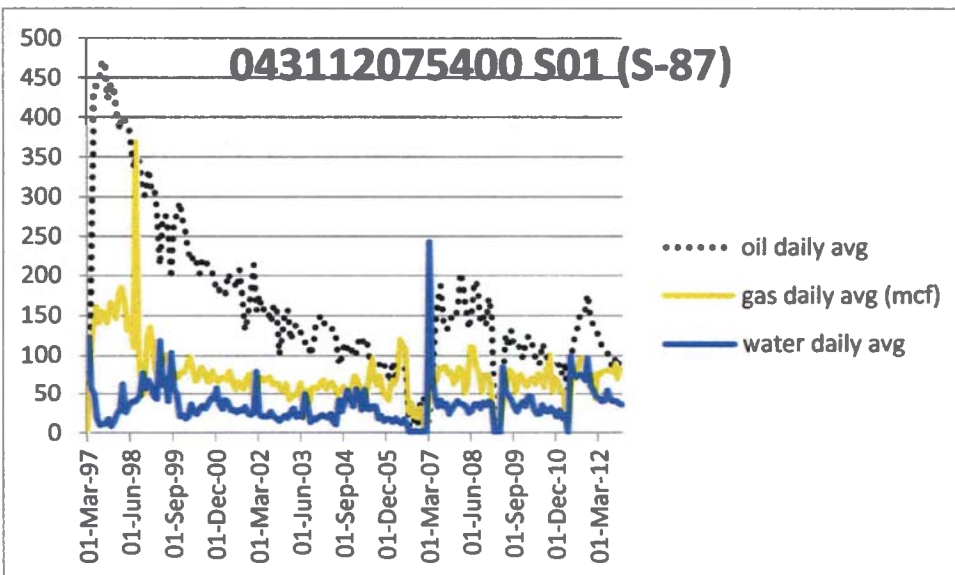
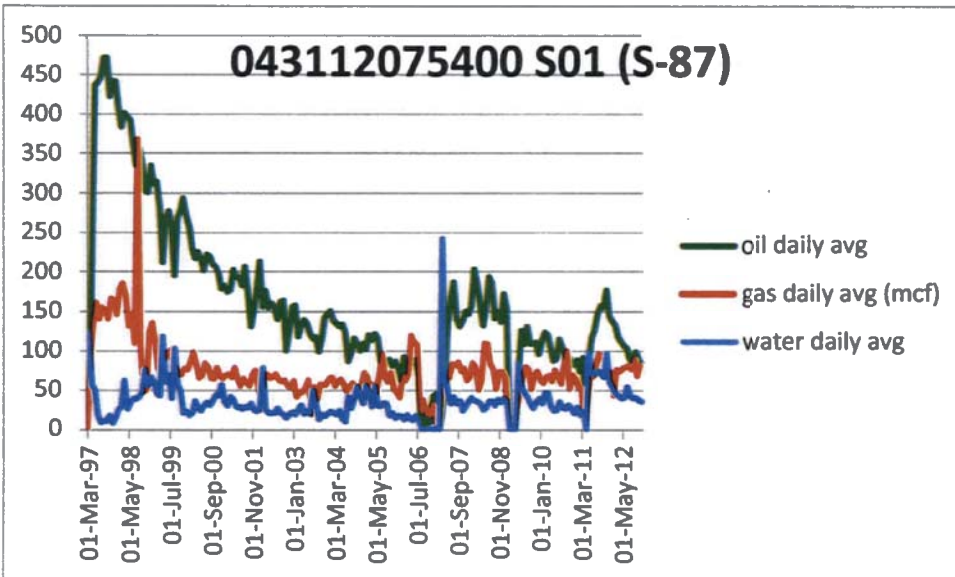












From APOO

- Oct 08, 1996 – Torch
 - o 2 wells planned for capital development of Upper Repetto, redrill of S-53, and new well that are planned with short radius high conductivity frac-packs across the L-PB sands with standard gravel packs across L-PC, and L-PD.
 - o 1 redrill planned for capital development of Lower Repetto, redrill of well S-52. Planned short radius high conductivity frac-pac of the L-PK, L-PL, L-PM, and L-PN zones
- Feb 2, 1998 –Torch on behalf of Nuevo
 - o Drilling program planned depending on production performance states, infill drilling well S-28, S061, S-65 with Lower Repetto Frac Pack, and well S-68 and TBD for Upper Repetto Frac Pack.
- Dec ?, 1999 – Torch on behalf of Nuevo
 - o 4 planned acid stimulations TBD wells
 - o Planned S-44 redrill the M and N zones will be hydraulically fractured and gravel packed.
- Mar. 20 ,2001 – Nuevo
 - o Planned redrill of S44, redrill of S65
 - o Planned perf additions to S50, S62, S64, and S85
- Nov. 20, 2001 - Nuevo
 - o Drilled and completed two Lower Repetto sidetracks (S-65 and S-44),
 - o Pump change on S-23
 - o Planned to convert S-26,S-36,S-42,S-48,S-57, and S-91 to ESP
 - o Planned to add perfs to S-50, S-64, and S-85
- Dec 19, 2002 – Nuevo
 - o S-62 recompletion Upper LP-M (Lower Repetto) had previously been squeezed off because of sand problems and loewer LP-N produced. The Upper LP-M was re-perforated and frac packed with a gravel pack screen and commingled with the LP-N production.
 - o S-28 converted from free flowing to ESP.
 - o ESP changes in S-27, S-23, S-21, S-19, and S-7. S-19 and S-7 were also acidized.

- 043112061500 S01 (S-61) - no frac job, sidetracked and frac'd
- 043112061501 S01 (S-61 ST) – July 2004 pull and replace ESP. Oct. 2000 replace ESP. July/Aug 1998 'data frac #1' from 10470' to btm perfs, and 'frac #2' from 10230-10290' (from drilling weekly activity report, do not have the completion APM/APD in the file)
- 043112061600 S01 (S-65) – sidetracked and frac'd in 2001 – sidetrack not in Tims – Frac job 7000 # sand, 299 BBls Gel.
- 043112061000 S01 (S-44 ST2) – was completed in the LP-N sand of the Lower Repetto formation. acidized
- 043112061000 S02 (S-44 ST2/3*) – was a recomple where additional perfs were added in the Oct 1987 - LP-K, LP-L, and LP-M sections of the Lower Repetto formation. Solvent wash and acidization in March of 1988. Sidetracked and recompleted with a frac job of 83000# in the LP-N, 45000# in the LP-M, and 31,370# in the LP-K in 2001. Notes – in procedure it says they are attempting to create a 69.5 ft frac half-length with Kfw of 6067 md.ft. acidized after frac, and an ESP was put in place downhole. Third sidetracked produced water. 2003 – squeezed top set of perfs, clean and stimulate lower frac completions (acid) and return to production with new ESP planned, encountered issues fishing. Curious as to this action as production shows it was only producing water, so why invest the money?
- 043112063901 S01 (S-62 ST) – originally completed in 1997 with Class G + 2% CC –fracture? With perf intervals at 10,325-10352 & 10,818-11,046. The 10,325-10,352 perfs were squeezed at some pt, trying to figure out when. Then in 2001 dec, recomple (reperf'd) with frac job, 802 bbls slurry and 80,000# proppant over a new perf zone of 10,428-10,474'. Also added ESP and commenced with an acid wash of perforation intervals. In 2005 nitrogen lift with coil tubing. In 2011 New tubing with new ESP.
- 043112060501 S01 (S-89) – Completed in Nov 1996, believe it was frac'd but info in the file is limited. Was recompleted with additional perfs in Mar 1997 with 'appropriate lift equipment' – assuming ESP since an ESP was later replaced. Mar 2004, esp replacement.
- 043112075400 S01 (S-87) – completed upper repetto March 1997 with a frac job containing 44,000 Lbs of sand and 465 bbls slurry and a downhole ESP. July 2004 replaced ESP. In March 2011, worked over the completion with an acid stimulation job.
- 043112056101 S01 (S-60) – April-May of 1994 completed in the Upper Repetto, first performed perforations from 8908 -8913 with an acid wash, then continued with a frac job 20,000# proppant, then per'd from 8812-8817', Frac'd that zone with 143 bbls pad, 131 bbls gel, at 1-14 ppg of sand. An ESP was also installed. In July-Aug of 1994, had to fish out broken ESP, also reperf'd from 8747'-8940'. Not frac'd and added new ESP.
- 04311205821 S01 (S-28 ST) – In 1998 the well was completed over the LP-N interval with a Frac completion, designed and expected for use of 40,000#s proppant (EconoProp 20/40). States the LP-M interval will also be completed with a StimFrac (doesn't state expected amounts used). Later a well summary report (2002) states they Frac'd the LP-M zone from 13,896'-13,956' with 83,000# of 20/40 gravel, and the LP-N zone from 14,349' – 14,409' with 64,000#s of gravel. In 2002 the well was switched from free flowing to an ESP.



Gilda Frac'd well production graphs

Sinkula, Nathan <nathan.sinkula@bsee.gov>

Tue, Feb 12, 2013 at 3:14 PM

To: Drew Mayerson <drew.mayerson@bsee.gov>

Attached are the production graphs for the Gilda frac'd wells (as listed in the presentation from DCOR)

of interest - S-28 ST (prod jump around 2001), S-61 (production increases but before frac programs as listed by DCOR), S-61 ST, S-62 (large prod jump around 2001), S-87 (production jump after frac program time frame)



Gilda Frac'd wells production graphs.docx

343K



weekly

Sinkula, Nathan <nathan.sinkula@bsee.gov>

Thu, Feb 14, 2013 at 10:24 AM

To: Bobby Kurtz <bobby.kurtz@bsee.gov>

- New - Looked up 'Frac'd' well info on Gilda wells S-28, S-44 (ST2/3), S-61, S-62, S-65, S-60St, S-87, S-89. Created production graphs with and analysed well files for any relevant information.

- Continued/New - Started TMS check with Mike that was discussed in previous weeks. Starting with all Well Files associated with Gilda Platform. P-00215 #1,#2,#3,#4, & S-028 WB01, checked.



Sinkula, Nathan <nathan.sinkula@bsee.gov>

DCOR/Nuevo Frac'd well graphs and WF info list.

1 message

Sinkula, Nathan <nathan.sinkula@bsee.gov>

Tue, Feb 19, 2013 at 1:49 PM

To: Drew Mayerson <drew.mayerson@bsee.gov>, Armen Voskanian <armen.voskanian@bsee.gov>

Drew and Armen,

Here are the production graphs from the wells DCOR had listed that Nuevo had Frac'd. The other attachment is any information i could piece together from the well files that may have involved fracking or other procedures that may have influenced production jumps in the graphs.

Nathan

2 attachments



Gilda Frac'd wells production graphs.docx

834K



Gilda frac'd wells extra sheet.docx

17K



Sinkula, Nathan <nathan.sinkula@bsee.gov>

Gilda Frac'd wells info from APOO files

4 messages

Sinkula, Nathan <nathan.sinkula@bsee.gov>

Tue, Feb 19, 2013 at 4:12 PM

To: Drew Mayerson <drew.mayerson@bsee.gov>, Armen Voskanian <armen.voskanian@bsee.gov>

Drew,

not too much useful information in the APOO's but a little. Attached is what i could find for Gilda between the timeframes submitted by DCOR of Nuevos Frac programs.

Nathan

 **From APOO Gilda Frac well info.docx**
15K

Mayerson, Drew <drew.mayerson@bsee.gov>

Tue, Feb 19, 2013 at 5:43 PM

To: "Sinkula, Nathan" <nathan.sinkula@bsee.gov>

When they switch language from frac pack to hydraulic fracturing as they did....is it a different process they're referring to....in other words is the latter more invasive into the formation?

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

[Quoted text hidden]

Sinkula, Nathan <nathan.sinkula@bsee.gov>

Wed, Feb 20, 2013 at 8:06 AM

To: "Mayerson, Drew" <drew.mayerson@bsee.gov>

Not sure, the info. from the APOO's isn't always that in depth about the specific procedure. Since it was only a year after the 1st rd of Frac jobs in 1997, and since I assume they still had the same constraints DCOR stated (smallish sized equipment hindered capabilities) that it was similar to the earlier frac packs that are short radius high conductivity fracs (which I would consider more along the lines of a Frac-Pack than a larger hydraulically stimulated frac wing), however that is not very useful since I'm just assuming. I plan on trying to pick DCORs' brains when they come in next week.

Nathan

[Quoted text hidden]

Sinkula, Nathan <nathan.sinkula@bsee.gov>

Wed, Feb 20, 2013 at 8:07 AM

To: "Mayerson, Drew" <drew.mayerson@bsee.gov>

but yes normally in my understanding a hydraulic stimulation frac usually refers to a larger radius frac wing than a frac-pack completion (more used for sand control and near wellbore stimulation)

[Quoted text hidden]



Gilda frac wells production graphs take 2

Sinkula, Nathan <nathan.sinkula@bsee.gov>
To: Drew Mayerson <drew.mayerson@bsee.gov>

Tue, Feb 12, 2013 at 3:41 PM

attached is the graph with both standard colors and altered colors for ease of use.

Nathan



Gilda Frac'd wells production graphs.docx
834K



Take 3 on Gilda frac'd production graphs

Sinkula, Nathan <nathan.sinkula@bsee.gov>
To: Drew Mayerson <drew.mayerson@bsee.gov>

Tue, Feb 12, 2013 at 4:09 PM

ok this time the attachment has the adjusted colors underneath the normal ones.



Gilda Frac'd wells production graphs.docx
834K

Sinkula, Nathan <nathan.sinkula@bsee.gov>
To: Bobby Kurtz <bobby.kurtz@bsee.gov>

Wed, Feb 13, 2013 at 7:48 AM

[Quoted text hidden]



Gilda Frac'd wells production graphs.docx
834K



Seeley, Kenneth <kenneth.saeley@bsee.gov>

disposal of hydraulic fracturing fluids

1 message

Seeley, Kenneth <kenneth.seeley@bsee.gov>
To: Ramona Sanders <ramona.sanders@bsee.gov>

Tue, Feb 12, 2013 at 3:14 PM

Ramona:

In the Gulf, what happens to flowback water from fracking operations? Does it end up in produced water discharges, injected back into the formation, or treated? We have an operator proposing to use "hydraulic stimulation" (which has not been done very often here) and I'm trying to run through the list of potential concerns. The operator says their produced water is Superclean! but the way they responded to my questions kind of made me think this was worth following up on. Thanks,

Ken

—
Kenneth R. Seeley, Ph.D.
Regional Environmental Officer, Pacific OCS Region
Bureau of Safety and Environmental Enforcement
770 Paseo Camarillo
Camarillo, CA 93010
(P): 805-389-7799
(F): 805-389-7592
(C): 805-377-8618
Kenneth.Seeley@BSEE.gov



Seeley, Kenneth <kenneth.seeley@bsee.gov>

Re: Draft Fracking Language for Carpinteria Re-Development ADEIR/EIS

1 message

Seeley, Kenneth <kenneth.seeley@bsee.gov>

Fri, Feb 1, 2013 at 3:25 PM

To: "Ming, Jaron" <jaron.ming@bsee.gov>

Cc: Susan Zaleski <susan.zaleski@boem.gov>

Sorry for the delayed response. I read the attached section and also talked to Dave about this earlier in the week, and I think this is absolutely the correct approach. Fracking is going to be highly controversial and since it isn't even on the table for the current proposal, I think it would be better left to a separate NEPA assessment when and if an operator actually proposes it. As Jaron said in our meeting, it might even be better to deal with it in a future programmatic document that covers the entire region.

Also, I'll do my best to get comments to Susan on the draft document by the 5th.

Ken

On Wed, Jan 30, 2013 at 4:40 PM, Ming, Jaron <jaron.ming@bsee.gov> wrote:

I don't have any comments on the proposed language, but I am copying Ken to see if he would like to include any further detail regarding the NEPA requirements for a frack job. Thanks.

—— Forwarded message ——

From: **Zaleski, Susan** <susan.zaleski@boem.gov>

Date: Fri, Jan 25, 2013 at 2:11 PM

Subject: Draft Fracking Language for Carpinteria Re-Development ADEIR/EIS

To: Jaron Ming <jaron.ming@bsee.gov>, Joan Barminski <joan.barminski@boem.gov>

Cc: "Panzer, David" <David.Panzer@boem.gov>, Richard Yarde <richard.yarde@boem.gov>

Hi Joan and Jaron,

Please take a look at the attached document with the draft fracking language from CSLC and the two edits I made in track changes. Let me know if the language is ok for both of you or please make edits.

Thanks,
Susan

Susan F. Zaleski

Biological Oceanographer

Pacific Region

Bureau of Ocean Energy Management

770 Paseo Camarillo

Camarillo, CA 93010

Phone #805-389-7558

Fax #805-389-7874

susan.zaleski@boem.gov

—
Kenneth R. Seeley, Ph.D.
Regional Environmental Officer, Pacific OCS Region
Bureau of Safety and Environmental Enforcement
770 Paseo Camarillo
Camarillo, CA 93010
(P): 805-389-7799
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Kenneth.Seeley@BSEE.gov

2.3 PROPOSED PROJECT OVERVIEW

The following section describes details of the proposed Project, including the well development program and changes to the existing operations of the Project facilities.

The Applicants propose redevelopment of State Leases PRC 4000, PRC 7911, and PRC 3133, which are estimated to contain sufficient recoverable reserves to enable commercial production. The Applicants submitted a detailed POD application to the CSLC for the proposed Project and a DPP revision to BOEM in order to enable the use of the Federal platform to access the oil and gas reserves in the State tidelands. The goal of both documents is to make full use of the existing infrastructure and develop the reserves in the most economical way.

The Applicants propose to drill up to 25 new wells (primarily production and some injection), drilling one well at a time. Drilling, completing, and producing the State lease wells would be accomplished from Platform Hogan. Equipment at Platform Hogan would be used for commingling of production from the State and Federal leases. Production would be sent to shore via the existing pipelines and processed at the La Conchita Facility.

The Applicants' proposal does not include hydraulic fracturing (commonly known as fracking) of any wells on Platform Hogan drilled into State waters. Any future proposal by the Applicants for hydraulic fracturing will be subject to additional environmental review in accordance with CEQA and ~~NEPA~~ and all other regulations pertaining to hydraulic fracturing in effect at that time. The Applicants will be required to seek agency approvals from the CSLC and ~~BOEM~~BSEE, among other necessary agency approvals prior to the fracturing of any wells drilled into State waters. Therefore, hydraulic fracturing is not included in the environmental analysis for this project, and the project to be considered by the CSLC and BOEM does not include hydraulic fracturing.



Kurtz, Bobby <bobby.kurtz@bsee.gov>

Fwd: Draft Fracking Regulations from DOGGR

Bobby Kurtz <geokurtz@gmail.com>
To: bobby.kurtz@bsee.gov

Wed, Dec 19, 2012 at 11:40 AM

Sent from my iPhone

Begin forwarded message:

From: "Mayerson, Drew" <drew.mayerson@bsee.gov>
Date: December 19, 2012 9:30:00 AM PST
To: "Masri, Nabil" <Nabil.Masri@bsee.gov>, Michael Mitchell <michael.mitchell@bsee.gov>, "Ming, Jaron" <Jaron.Ming@bsee.gov>
Cc: Bobby Kurtz <geokurtz@gmail.com>, Allan Shareghi <allan.shareghi@bsee.gov>, "Dame, Robert" <Robert.Dame@bsee.gov>, "Michael Brickey" <michael.brickey@bsee.gov>, Armen Voskanian <armen.voskanian@bsee.gov>
Subject: Draft Fracking Regulations from DOGGR

Attached are draft regulations. I suspect that (b) (5) [REDACTED]. As far as we can Venoco fracked well E11 off Gail in August 1992. The target was Upper Sespe and there was a slight bump in production. The Sespe was abandoned in March of 1993 and Venoco moved uphole to the Upper Topanga.

Bobby and Allan also researched and found that well C-11 off of Hidalgo in the Pt. Arguello Field had an attempted Frack in the Monterey in April of 1997. We're still looking into it but per Tom Goeres' memory, Chevron couldn't muster to the pump power to do a complete job and had to abort.

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region



CDOGGER FRACKING DISCUSSION DRAFT.pdf

98K



Sinkula, Nathan <nathan.sinkula@bsee.gov>

drew.mayerson@bsee.gov has shared Is Fracking Endangered by Incessant Studies? – TransCanada Corporation (USA) (TRP), Plains Exploration & Production Company (PXP) - Insider Monkey

1 message

drew.mayerson@bsee.gov <drew.mayerson@bsee.gov>

Wed, Mar 6, 2013 at 3:55 PM

To: nathan.sinkula@bsee.gov, bobby.kurtz@bsee.gov, michael.brickey@bsee.gov

Thought you'd like this.

Is Fracking Endangered by Incessant Studies? – TransCanada Corporation (USA) (TRP), Plains Exploration & Production Company (PXP) - Insider Monkey

<http://www.insidermonkey.com/blog/is-fracking-endangered-by-incessant-studies-transcanada-corporation-usa-trp-plains-exploration-production-company-pxp-80736/2#IOL92E5dCsHCMes.03>

drew.mayerson@bsee.gov shared this using Po.st



Masri, Nabil <nabil.masri@bsee.gov>

Fwd: E-8 Fracture Stimulation Detail

1 message

Knowlson, Daniel <daniel.knowlson@bsee.gov>

Fri, Mar 1, 2013 at 9:18 AM

To: Kenneth Seeley <kenneth.seeley@bsee.gov>, "Masri, Nabil" <Nabil.Masri@bsee.gov>

Not sure how much this helps at this point, we will have to contact BJ and find out what these products are!!

----- Forwarded message -----

From: **Zach Schock** <za.schock@venocoinc.com>

Date: Thu, Feb 28, 2013 at 12:51 PM

Subject: E-8 Fracture Stimulation Detail

To: "Daniel.Knowlson@bsee.gov" <Daniel.Knowlson@bsee.gov>

Cc: Larry Huskins <larry.huskins@venocoinc.com>, Brian Musso <brian.musso@venocoinc.com>, Jon Snyder <jon.snyder@venocoinc.com>

Dan,

Attached is the E-8 Frac Data Summary I was referring to in our phone call yesterday afternoon. Please note the job dates are incorrect on the reports, they should be January 7-12, 2010.

Thanks,

Zach Schock

Petroleum Engineer

Venoco Inc.

office: (805) 745-2172

cell: (303) 330-2939

Daniel R. Knowlson
DOI/BSEE/POCSR
CA District Manager
805-389-7746

E-8 Frac Details.pdf

Frac Data Summary



Customer: Venoco
Customer Rep: Don Schmohr
Well/ Field: E-8ST2
Job Date: January 7, 2009
Job Number: 1001544406

Formation: M2
Interval/Stage: Stage 1 Injection
BHST: 125°F
BJ Rep: Berny Lopez/Chris Smith
TMV: Offshore Unit

Tubulars			
	Size/wt	Length	bbl/ft
Tubulars	3.5"	0	0.0087
Casing	4.5"	9380	0.01522
Surface Line	2.75	30	0.00735
		Volume to Top Perf	143.0
		Flush	138.0

Injection Data	Inj #1	Inj #2	Mini Frac	Main Frac
Volume to fill	0.2	0	-	0
Rate	11.3	17.8	-	18.1
STP	1773	2827	-	3110
FG	0.62	0.64	-	0.68
Volume	16.7	54.1	-	443.6
ET@Startup	6:45 PM	7:48 PM	-	9:20 PM
ET@Shutdown	6:52 PM	7:53 PM	-	9:52 PM
Pump Time	0:07	0:05	-	0:32
ISIP	840	916	-	1100
5 min SIP	721	723	-	925
10 min SIP	666	654	-	849
15 min SIP	598	592	-	787

Step Down Data				
Inj. # 2	1	2	3	4
Rate(bpm)	17.8	14.4	10.6	5.5
STP(psi)	2827	2294	1734	1164

Step Down Data				
Minifrac	1	2	3	4
Rate(bpm)	-	-	-	-
STP(psi)	-	-	-	-

Main Frac				
	1	2	3	4
Rate(bpm)	18.1	16.2	15.1	12.3
STP(psi)	3110	2610	2108	1179

Proppant Type: 20/40 White				
Proppant Type:		Proppant Data		
Program	51,744 lbs	2.65		
Computer	6,323 lbs	928.2 SG		
Blender	7,723 lbs	lbs/bbl		
BH Sand	6,311 lbs	Dirty bbls	515	
Casing	11 lbs			
Placed	12% by design	Clean bbls	508	

Detail	MD	TVD	units
Top Perf	9380	4704	ft
Bottom Perf	9381	4704	ft
Mid Zone	9381	4704	ft
Gross Interval	1	0	ft
Net Interval	1	0	ft
Fluid SG / HH	1.027	2095	psi
Shots/foot	3	3	holes
Size	0.63		inch

Fluid System		SpectraFrac G 3000
Additives		
		Seawater
7.50 GPT		GLFC-1B
3.00 GPT		XLW-56
1.50 GPT		BF-8L
1.00 GPT		Claymaster 5C
2.00 GPT		MA 844W
1.00/2.00 GPT		BC-3
2.00 GPT		GBW-12

Treatment Schedule Slurry Volumes(bbls)				
	Design Treatment bbls	Stage	Actual Treatment bbls	Stage
1	100	Load Hole	0.2	Load Hole
2	100	Injection	16.7	Injection
3	100	Injection 2	54.1	Injection 2
4	30	XO	16.4	XO
5	75	Pad	75.2	Pad
6	10	1 ppa	10.2	2 ppa
7	75	Pad	75	Pad
8	55	2 ppa	59.5	2 ppa
9	57	3 ppa	29.9	3 ppa
10	59	4 ppa	177.4	Overflush
11	61	5 ppa		
12	44	6 ppa		
13	48	8 ppa		
14	7	Sand Plug		
15	138	Flush		
16				
17				
18				
19				
20				

Closure occurred at 459 psi surface, 2553 psi bottomhole with a gradient of 0.543 psi/ft, efficiency of 72.2%, and closure time of 23.6 minutes based on injection #1. During the 3 ppa stage, the proppant silo could not keep up with the pumping rate. The decision to overflush the well with seawater was made by company man.

Frac Data Summary



Customer: Venoco
Customer Rep: Don Schmohr
Well/ Field: E-8ST2
Job Date: January 9, 2009
Job Number: 1001544407

Formation: M2
Interval/Stage: Stage 2
BHST: 125°F
BJ Rep: Chris Zoda/Chris Smith/Mike Sansinena
TMV: Offshore Unit

Tubulars				
	Size/wt	Length	bbl/ft	bbls
Tubulars	3.5"	0	0.0087	0.0
Casing	4.5"	8770	0.01522	133.5
Surface Line	2.75	30	0.00735	0.2
Volume to Top Perf				133.7
Flush				126.0

Injection Data	Inj #1	Inj #2	Main Frac	
Volume to fill	0	-	0	-
Rate	11.7	-	15.8	-
STP	3844	-	3682	-
FG	0.65	-	1.70	-
Volume	64.3	-	524.8	-
ET@Startup	8:25 PM	-	10:46 PM	-
ET@Shutdown	8:35 PM	-	11:35 PM	-
Pump Time	0:10	-	0:49	-
ISIP	942	-	5893	-
5 min SIP	686	-	4389	-
10 min SIP	560	-	3600	-
15 min SIP	473	-	-	-

Step Down Data				
Inj. # 1	1	2	3	4
Rate(bpm)	11.7	10	8.1	2.8
STP(psi)	3844	3140	2509	1191

Step Down Data				
Minifrac	1	2	3	4
Rate(bpm)	-	-	-	-
STP(psi)	-	-	-	-

Main Frac				
	1	2	3	4
Rate(bpm)	-	-	-	-
STP(psi)	-	-	-	-

Proppant Type:		20/40 White	
Proppant Type:		Proppant Data	
Program	53,726 lbs	2.65	
Computer	57,210 lbs	928.2 SG	
Blender	53,874 lbs	lbs/bbl	
BH Sand	37,393 lbs	Dirty bbls	525
Casing	19,817 lbs		
Placed	70% by design	Clean bbls	461

Detail	MD	TVD	units
Top Perf	8770	4702	ft
Bottom Perf	8770	4702	ft
Mid Zone	8770	4702	ft
Gross Interval	0	0	ft
Net Interval	0	0	ft
Fluid SG / HH	1.027	2094	psi
Shots/foot	3	3	holes
Size	0.63		inch

Fluid System		SpectraFrac G 3000	
Additives			
	Seawater		
7.50 GPT	GLFC-1B		
3.00 GPT	XLW-56		
1.50 GPT	BF-8L		
1.00 GPT	Claymaster 5C		
2.00 GPT	MA 844W		
1.00/2.00 GPT	BC-3		
2.00 GPT	GBW-12		

Treatment Schedule Slurry Volumes(bbls)				
	Design	Treatment	Actual	Treatment
	bbls	Stage	bbls	Stage
1	10	Load Hole	0	Load Hole
2	100	Injection	64.3	Injection
3	30	XO	19.8	XO
4	50	Pad	50.1	Pad
5	21	1 ppa	21.4	1 ppa
6	50	Pad	50.3	Pad
7	49	2 ppa	49.7	2 ppa
8	51	3 ppa	51.3	3 ppa
9	41	4 ppa	41.2	4 ppa
10	43	5 ppa	43.2	5 ppa
11	44	6 ppa	44.5	6 ppa
12	34	8 ppa	34.1	8 ppa
13	36	10 ppa	36.9	10 ppa
14	7	Sand Plug	11.2	Sand Plug
15	128	Flush	71.1	Flush
16				
17				
18				
19				
20				

Closure occurred at 547 psi surface, 2640 psi bottomhole with a gradient of 0.56 psi/ft, efficiency of 41.5%, and closure time of 10.44 minutes. The well screened out 71.1 bbl into a 128 bbl flush.

Frac Data Summary



Customer: Venoco
Customer Rep: Don Schmohr
Well/ Field: E-8ST2
Job Date: January 10, 2009
Job Number: 1001544408

Formation: M2
Interval/Stage: Stage 3
BHST: 125°F
BJ Rep: Berny Lopez/Chris Smith
TMV: Offshore Unit

Tubulars			
	Size/wt	Length	bbl/ft
Tubulars	3.5"	0	0.0087
Casing	4.5"	8000	0.01522
Surface Line	2.75	30	0.00735
		Volume to Top Perf	
			122.0
		Flush	
			114.0

Injection Data	Inj #1	Inj #2	Main Frac	
Volume to fill	0	-	0	-
Rate	10.8	-	17.7	-
STP	3146	-	3638	-
FG	0.70	-	0.84	-
Volume	127.8	-	585	-
ET@Startup	12:01 PM	-	2:27 PM	-
ET@Shutdown	12:15 PM	-	3:03 PM	-
Pump Time	0:14	-	0:36	-
ISIP	1164	-	1800	-
5 min SIP	707	-	-	-
10 min SIP	586	-	-	-
15 min SIP	493	-	-	-

Step Down Data				
Inj. # 1	1	2	3	4
Rate(bpm)	10.8	9	4.3	-
STP(psi)	3146	2718	1792	-

Step Down Data				
Minifrac	1	2	3	4
Rate(bpm)	-	-	-	-
STP(psi)	-	-	-	-

Main Frac				
	1	2	3	4
Rate(bpm)	17.7	4.9	-	-
STP(psi)	3638	2073	-	-

Proppant Type: 20/40 White				
Proppant Type:		Proppant Data		
Program	52,122 lbs	2.65		
Computer	53,084 lbs	928.2 SG		
Blender	49,690 lbs	lbs/bbl		
BH Sand	50,181 lbs	Dirty bbls	585	
Casing	2,903 lbs			
Placed	96% by design	Clean bbls	525	

Detail	MD	TVD	units
Top Perf	8000	4603	ft
Bottom Perf	8001	4603	ft
Mid Zone	8001	4603	ft
Gross Interval	1	0	ft
Net Interval	1	0	ft
Fluid SG / HH	1.027	2050	psi
Shots/foot	3	3	holes
Size	0.63		inch

Fluid System		SpectraFrac G 3000	
Additives			
		Seawater	
7.50 GPT		GLFC-1B	
3.00 GPT		XLW-56	
1.00 GPT		BF-8L	
1.00 GPT		Claymaster 5C	
2.00 GPT		MA 844W	
1.00/2.00 GPT		BC-3	
2.00 GPT		GBW-12	

Treatment Schedule				
		Slurry Volumes(bbls)		
		Design Treatment	Actual Treatment	
	bbls	Stage	bbls	Stage
1		Load Hole	0	Load Hole
2		Injection	127.8	Injection
3	30	XO	33.1	XO
4	30	Pad	30.5	Pad
5	16	1 ppa	16.1	1 ppa
6	30	Pad	30.1	Pad
7	16	2 ppa	16.2	2 ppa
8	30	Pad	30	Pad
9	44	2 ppa	44.3	2 ppa
10	45	3 ppa	45.2	3 ppa
11	47	4 ppa	47	4 ppa
12	49	5 ppa	49.2	5 ppa
13	89	6 ppa	89.3	6 ppa
14	27	8 ppa	27.2	8 ppa
15	7	Sand Plug	8.2	Sand Plug
16	114	Flush	118.6	Flush
17				
18				
19				
20				

Closure occurred at 467 psi surface, 2516 psi bottomhole with a gradient of 0.547 psi/ft, efficiency of 45.1%, and closure time of 17.4 minutes. The sand plug was successfully set.

Frac Data Summary



Customer: Venoco
Customer Rep: Don Schmohr
Well/ Field E-8ST2
Job Date: January 10, 2009
Job Number 1001544409

Formation: M2
Interval/Stage: Stage 4
BHST: 125°F
BJ Rep: Chris Zoda/Chris Smith
TMV: Offshore Unit

Tubulars				
	Size/wt	Length	bbl/ft	bbls
Tubulars	3.5"	0	0.0087	0.0
Casing	4.5"	7500	0.01522	114.2
Surface Line	2.75	30	0.00735	0.2
Volume to Top Perf				114.4
Flush				108.0

Injection Data	Inj #1	Inj #2	Inj #3	
Volume to fill	0	-	-	-
Rate	10.6	-	-	-
STP	5671	-	-	-
FG	-	-	-	-
Volume	16.8	-	-	-
ET@Startup	7:19 PM	-	-	-
ET@Shutdown	7:24 PM	-	-	-
Pump Time	0:05	-	-	-
ISIP	-	-	-	-
5 min SIP	-	-	-	-
10 min SIP	-	-	-	-
15 min SIP	-	-	-	-

Step Down Data				
Inj. #1	1	2	3	4
Rate(bpm)	-	-	-	-
STP(psi)	-	-	-	-

Step Down Data				
Minifrac	1	2	3	4
Rate(bpm)	-	-	-	-
STP(psi)	-	-	-	-

Main Frac				
	1	2	3	4
Rate(bpm)	-	-	-	-
STP(psi)	-	-	-	-

Proppant Type:		20/40 White		
Proppant Type:		Proppant Data		
Program	52,122 lbs	2.65		
Computer	- lbs	928.2 SG		
Blender	- lbs	lbs/bbl		
BH Sand	- lbs	Dirty bbls	17	
Casing	- lbs			
Placed	0% by design	Clean bbls	17	

Detail	MD	TVD	units
Top Perf	7500	4563	ft
Bottom Perf	7501	4563	ft
Mid Zone	7501	4563	ft
Gross Interval	1	0	ft
Net Interval	1	0	ft
Fluid SG / HH	1.027	2032	psi
Shots/foot	3	3	holes
Size	0.63		inch

Fluid System		SpectraFrac G 3000		
Additives				
		Seawater		
7.50 GPT		GLFC-1B		
3.00 GPT		XLW-56		
1.00 GPT		BF-8L		
1.00 GPT		Claymaster 5C		
2.00 GPT		MA 844W		
1.00/2.00 GPT		BC-3		
2.00 GPT		GBW-12		

Treatment Schedule Slurry Volumes(bbls)				
	Design Treatment bbls	Stage	Actual Treatment bbls	Stage
1	10	Load Hole	0	Load Hole
2	120	Injection #1	16.8	Injection #1
3	30	XO		
4	30	Pad		
5	16	1 ppa		
6	30	Pad		
7	16	2 ppa		
8	30	Pad		
9	44	2 ppa		
10	45	3 ppa		
11	47	4 ppa		
12	49	5 ppa		
13	89	6 ppa		
14	27	8 ppa		
15	7	Sand Plug		
16	114	Flush		
17				
18				
19				
20				

The well pressured up when a seawater injection was performed.

Frac Data Summary



Customer: Venoco
Customer Rep: Don Schmohr
Well/ Field: E-8ST2
Job Date: January 11, 2009
Job Number: 1001544410

Formation: M2
Interval/Stage: Stage 5
BHST: 125°F
BJ Rep: Berny Lopez/Chris Smith/Mike Sansinena
TMV: Offshore Unit

Tubulars				
	Size/wt	Length	bbl/ft	bbls
Tubulars	3.5"	0	0.0087	0.0
Casing	4.5"	7350	0.01522	111.9
Surface Line	2.75	30	0.00735	0.2
Volume to Top Perf				112.1
Flush				104.0

Injection Data	Inj #1	Inj #2	Main Frac	
Volume to fill	0.3	-	0	-
Rate	11.5	-	15.3	-
STP	3614	-	3351	-
FG	0.71	-	-	-
Volume	27.2	-	487.4	-
ET@Startup	8:08 AM	-	10:03 AM	-
ET@Shutdown	8:12 AM	-	10:54 AM	-
Pump Time	0:04	-	0:51	-
ISIP	1222	-	-	-
5 min SIP	297	-	-	-
10 min SIP	200	-	-	-
15 min SIP	154	-	-	-

Step Down Data				
Inj. # 1	1	2	3	4
Rate(bpm)	11.5	9.5	4.8	-
STP(psi)	3614	3382	2330	-

Step Down Data				
Minifrac	1	2	3	4
Rate(bpm)	-	-	-	-
STP(psi)	-	-	-	-

Main Frac				
	1	2	3	4
Rate(bpm)	-	-	-	-
STP(psi)	-	-	-	-

Proppant Type: 20/40 White				
Proppant Type:			Proppant Data	
Program	52,122 lbs		2.65	
Computer	21,219 lbs		928.2 SG	
Blender	19,829 lbs		lbs/bbl	
BH Sand	9,016 lbs		Dirty bbls	516
Casing	12,202 lbs			
Placed	17% by design		Clean bbls	493

Detail	MID	TVD	units
Top Perf	7350	4555	ft
Bottom Perf	7351	4555	ft
Mid Zone	7351	4555	ft
Gross Interval	1	0	ft
Net Interval	1	0	ft
Fluid SG / HH	1.027	2029	psi
Shots/foot	3	3	holes
Size	0.63		inch

Fluid System		SpectraFrac G 3500	
Additives			
	Seawater		
8.75 GPT	GLFC-1B		
3.00 GPT	XLW-56		
1.00 GPT	BF-8L		
1.00 GPT	Claymaster 5C		
2.00 GPT	MA 844W		
1.00/2.00 GPT	BC-3		
2.00 GPT	GBW-12		

Treatment Schedule Slurry Volumes(bbls)				
	Design Treatment bbls	Stage	Actual Treatment bbls	Stage
1	10	Load Hole	0.3	Load Hole
2	100	Injection	27.2	Injection
3	30	XO	64.7	XO
4	40	Pad	40	Pad
5	16	1 ppa	16	1 ppa
6	30	Pad	30.1	Pad
7	16	2 ppa	16	2 ppa
8	50	Pad	99.9	Pad
9	44	2 ppa	44.1	1 ppa
10	45	3 ppa	44.1	2 ppa
11	47	4 ppa	45.1	3 ppa
12	49	5 ppa	62.4	4 ppa
13	89	6 ppa	25	Flush
14	27	8 ppa		
15	7	Sand Plug		
16	104	Flush		
17				
18				
19				
20				

Closure occurred at 507 psi surface, 2536 psi bottomhole with a gradient of 0.56 psi/ft, efficiency of 24.2 %, and closure time of 1.74 minutes. The pumping schedule was changed during the job to account for high treating pressures. The well screened out approximately 25 bbl into a 104 bbl flush.

Frac Data Summary



Customer: Venoco
Customer Rep: Don Schmohr
Well/ Field: E-8ST2
Job Date: January 12, 2009
Job Number: 1001544411

Formation: M2
Interval/Stage: Stage 6
BHST: 125°F
BJ Rep: Berny Lopez/Chris Smith/Mike Sansinena
TMV: Offshore Unit

Tubulars				
	Size/wt	Length	bbl/ft	bbls
Tubulars	3.5"	0	0.0087	0.0
Casing	4.5"	6741	0.01522	102.6
Surface Line	2.75	30	0.00735	0.2
Volume to Top Perf				102.8
Flush				100.0

Injection Data	Inj #1	Inj #2	Main Frac	
Volume to fill	0	0	1.1	-
Rate	6.6	6.4	-	-
STP	3733	3657	-	-
FG	0.82	0.89	-	-
Volume	84.7	43.7	42.8	-
ET@Startup	7:04 AM	8:29 AM	12:00 PM	-
ET@Shutdown	7:28 AM	8:39 AM	12:29 PM	-
Pump Time	0:24	0:10	0:29	-
ISIP	1690	1982	-	-
5 min SIP	722	836	-	-
10 min SIP	587	693	-	-
15 min SIP	572	-	-	-

Step Down Data				
Injection #2	1	2	3	4
Rate(bpm)	6.6	4.7	3.3	-
STP(psi)	3733	3251	2840	-

Step Down Data				
Injection #2	1	2	3	4
Rate(bpm)	6.4	4.7	1.7	-
STP(psi)	3657	3290	2729	-

Main Frac				
	1	2	3	4
Rate(bpm)	-	-	-	-
STP(psi)	-	-	-	-

Proppant Type:		20/40 White		
Proppant Type:		Proppant Data		
Program	29,484 lbs	2.65		
Computer	- lbs	928.2 SG		
Blender	- lbs	lbs/bbl		
BH Sand	- lbs	Dirty bbls 97		
Casing	- lbs			
Placed	0% by design	Clean bbls 97		

Detail	MD	TVD	units
Top Perf	6740	4472	ft
Bottom Perf	6742	4472	ft
Mid Zone	6741	4472	ft
Gross Interval	2	0	ft
Net Interval	2	0	ft
Fluid SG / HH	1.027	1992	psi
Shots/foot	3	3	holes
Size	0.63		inch

Fluid System		SpectraFrac G 3500		
Additives				
8.75 GPT	GLFC-1B	Seawater		
3.00 GPT	XLW-56			
1.00 GPT	BF-8L			
1.00 GPT	Claymaster 5C			
2.00 GPT	MA 844W			
1.00/2.00 GPT	BC-3			
2.00 GPT	GBW-12			

Treatment Schedule Slurry Volumes(bbls)				
	Design Treatment bbls	Treatment Stage	Actual Treatment bbls	Treatment Stage
1	10	Load Hole	0	Load Hole
2	120	Injection #1	84.7	Injection #1
3	120	Injection #2	43.7	Injection #2
4	30	XO	10.6	XO
5	50	Pad	38	Pad
6	25	1 ppa 100M	4.8	Water
7	50	Pad		
8	26	2 ppa 100 M		
9	40	Pad		
10	10	1 ppa		
11	50	Pad		
12	42	1 ppa		
13	65	2 ppa		
14	68	3 ppa		
15	83	4 ppa		
16	100	Flush		
17				
18				
19				
20				

The original holes were at 6740'. However, after injection #1, new holes were cut at 6741'. Near-wellbore from injection #1 was 1380 psi, perf friction was 475 psi, with a beta factor of 0.77 and 1.37 open holes. Near-wellbore from injection #2 was 982 psi, perf friction was 290 psi, with a beta factor of 0.68 and 1.72 open holes. Closure was not found. The job started to pressure out approximately 38 bbls in the pad, so the company decided to go to water. No frac was performed



Kurtz, Bobby <bobby.kurtz@bsee.gov>

Enhanced-recovery operations

Kurtz, Bobby <bobby.kurtz@bsee.gov>

Fri, Jan 11, 2013 at 10:10 AM

To: bzahner@venocoinc.com

Cc: mcarlsen@venocoinc.com, chris.peltonen@venocoinc.com

Bob,

I am drafting a response for the director of the BSEE (formerly MMS) to the recent VC Reporter article on offshore fracking and was hoping that you (or Monica and Chris) could verify my findings before I pass them along. According to our well files, the VC Reporter claim that Venoco, Inc. performed a fracking procedure on a Platform Gail well in 2009 is inaccurate. The only record we have of fracking by Venoco, Inc. shows that fracking was performed on only one occasion with unfavorable results in well E-11 from Platform Gail, Sockeye Field, in August 1992. Can you please confirm that this information is accurate as soon as possible.

Thank you very much,

—

Bobby Kurtz

Geologist

Production and Development

Pacific OCS Region

Bureau of Safety and Environmental Enforcement

(805)389-7713



Seeley, Kenneth <kenneth.seeley@bsee.gov>

Re: Follow up on Platform Gilda discussion

1 message

Margaret Schneider <margaret.schneider@bsee.gov>

Mon, Feb 18, 2013 at 3:27 PM

To: "Ming, Jaron" <jaron.ming@bsee.gov>

Cc: Chuck Barbee <Chuck.Barbee@bsee.gov>, Kenneth Seeley <kenneth.seeley@bsee.gov>

thanks for the heads up. OK to proceed.

Sent from my iPad

On Feb 14, 2013, at 1:59 PM, "Ming, Jaron" <jaron.ming@bsee.gov> wrote:

Hi Margaret:

I just wanted fill you in on what is occurring here in the Pacific Region on the fracking issue that came up last week.

As we mentioned, one of our operators, DCOR, successfully used hydraulic fracturing in the past to stimulate a well and intends repeat the process on other wells in the future. Representatives from DCOR came to our office this week to meet and discuss the status of one of their APDs that included the use of hydraulic fracturing. The APD received a safety and environmental review and after a categorical exclusion under NEPA, DCOR was given a verbal approval (however a final letter had not been sent). They presented information to us on the process and materials they planned to use in their hydraulic fracturing proposal. We told them that we would get back to them on whether there would be any additional conditions on their APD. Subsequently, the REO, Ken Seeley conferred with EPA and reviewed the proposal to see if any additional NEPA work might be necessary. His discussion and conclusions are included below. Taking his findings into consideration, we would like to advise (b) (5)

Please let me know if you have any objection to proceeding in this manner. I am also available to discuss further over the phone if necessary. Thanks very much.

Jaron

—— Forwarded message ——

From: **Seeley, Kenneth** <kenneth.seeley@bsee.gov>

Date: Thu, Feb 14, 2013 at 10:13 AM

Subject: Follow up on Platform Gilda discussion

To: Jaron Ming <jaron.ming@bsee.gov>, Nabil Masri <nabil.masri@bsee.gov>, John Kaiser <john.kaiser@bsee.gov>, Drew Mayerson <drew.mayerson@bsee.gov>, Daniel Knowlson <daniel.knowlson@bsee.gov>

Hi everyone:

Since we met on Tuesday, I've taken a crash course on fracking and relevant regulations.

Chemicals used in fracking were exempted from requirements of the Safe Water Drinking Act back in 2005. They were not exempted from the Clean Water Act, and EPA could allow discharges of flowback water to surface waters, provided that "treatment" occurred beforehand. I contacted Eugene Bromley of EPA's NPDES program (see below) to get his take on how EPA would handle

chemicals used in fracking in their discharge permits. (b) (5)

Finally, I went back and looked at the APD, and DCOR clearly states in that document that they **do not** intend to discharge ("This will be a closed drilling system with no overboard discharge.").

(b) (5) (b) (5) unless DCOR has indicated they want to change that. So given all of this, and unless DCOR has changed their plan, I think that (b) (5)

From the potential issues that Drew brought up (b) (5)

I think the (b) (5)

Thanks Eugene, that's very helpful. I'm not actually aware of any chemicals being proposed for overboard discharge at this time, but with heightened public attention it's probably a good idea to familiarize myself with all of these issues. (b) (5)

On Wed, Feb 13, 2013 at 3:58 PM, <Bromley.Eugene@epamail.epa.gov> wrote:

Ken,

Our OCS general permit authorizes the discharge of 22 types of discharges from offshore platforms, including well treatment fluids which are defined as:

"Well treatment fluids" shall refer to any fluid used to restore or improve productivity by chemically or physically altering hydrocarbon-bearing strata after a well has been drilled. (40 CFR Part 435.11)

(b) (5) EPA's offshore oil regs include effluent limitations guidelines for well treatment fluids which were finalized in 1993, based on what was known about the discharge at that time (which was before fracking). Our permit authorizes chemicals "ordinarily present" in a discharge, which means chemicals or classes of chemicals recognized as being used for offshore operations in the development document for the 1993 regs.

The definition of produced water in the permit also recognizes that various chemicals may be discharged in produced water, and the permit also recognizes that well treatment fluids may be commingled with produced water.

With regards to special requirements for fracking fluids:

We have broad authority to require an individual permit when the general permit is not appropriate; this could include discharges with chemicals outside the scope of what was intended by the permit, and special effluent limits could be developed, or discharge authorization could be denied altogether.

We could also require an individual permit (or deny any permit authorization) for chemicals which could cause unreasonable degradation of the marine environment (section 403 of the CWA).

Under section 308 of the CWA, we could also ask for more info on fracking chemicals that may be in use.

It would be helpful to let us know of any fracking chemicals you are aware of that are being used and discharged at the platforms that could pose a threat to the marine environment

Eugene Bromley
NPDES Permits Office (WTR-5)
EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105
bromley.eugene@epa.gov
(415) 972-3510
(415) 947-3549 (fax)

From: "Seeley, Kenneth" <kenneth.seeley@bsee.gov>
To: Eugene Bromley/R9/USEPA/US@EPA,
Cc: James Salmons <james.salmons@bsee.gov>
Date: 02/13/2013 01:11 PM
Subject: offshore fracking and NPDES

Hi Eugene:

I'm trying to get a better handle on what authority EPA has regarding discharges of flowback water that might be contaminated with chemicals used in hydraulic fracturing. I understand that these chemicals are exempted from requirements of the Safe Drinking Water Act, but I read on EPA's webpage that flowback water can be discharged with produced water, provided that is treated beforehand.

Would a situation like that be covered under the general NPDES permit, or would an individual permit be required and are discharge limits determined on a case by case basis?

Thanks,

Ken

--

Kenneth R. Seeley, Ph.D.
Regional Environmental Officer, Pacific OCS Region
Bureau of Safety and Environmental Enforcement
770 Paseo Camarillo
Camarillo, CA 93010
(P): 805-389-7799
(F): 805-389-7592
(C): 805-377-8618

| Kenneth.Seeley@BSEE.gov

—
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(P): 805-389-7799
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(C): 805-377-8618
Kenneth.Seeley@BSEE.gov



Seeley, Kenneth <kenneth.seeley@bsee.gov>

Follow up on Platform Gilda discussion

1 message

Seeley, Kenneth <kenneth.seeley@bsee.gov>

Thu, Feb 14, 2013 at 10:13 AM

To: Jaron Ming <jaron.ming@bsee.gov>, Nabil Masri <nabil.masri@bsee.gov>, John Kaiser <john.kaiser@bsee.gov>, Drew Mayerson <drew.mayerson@bsee.gov>, Daniel Knowlson <daniel.knowlson@bsee.gov>

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[REDACTED]

[REDACTED]

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[REDACTED]

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[REDACTED]

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[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED] Eugene, that's very helpful. I'm not actually aware of any chemicals being proposed for overboard discharge at this time, but with heightened public attention it's probably a good idea to familiarize myself with all of these issues. (b) (5)

[REDACTED]

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Eugene Bromley
NPDES Permits Office (WTR-5)
EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105
bromley.eugene@epa.gov
(415) 972-3510
(415) 947-3549 (fax)

From: "Seeley, Kenneth" <kenneth.seeley@bsee.gov>
To: Eugene Bromley/R9/USEPA/US@EPA,
Cc: James Salmons <james.salmons@bsee.gov>
Date: 02/13/2013 01:11 PM
Subject: offshore fracking and NPDES

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Thanks,

Ken

—

Kenneth R. Seeley, Ph.D.
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770 Paseo Camarillo
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(F): 805-389-7592
(C): 805-377-8618
Kenneth.Seeley@BSEE.gov

—

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(C): 805-377-8618
Kenneth.Seeley@BSEE.gov



Sinkula, Nathan <nathan.sinkula@bsee.gov>

Fwd: Frack

4 messages

Mayerson, Drew <drew.mayerson@bsee.gov>
To: Nathan Sinkula <nathan.sinkula@bsee.gov>
Cc: Bobby Kurtz <geokurtz@gmail.com>

Thu, Mar 14, 2013 at 9:08 AM

(b) (5)

[Redacted]

Drew
Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

—— Forwarded message ——

From: **Pardi, Nicholas** <nicholas.pardi@bsee.gov>
Date: Thu, Mar 14, 2013 at 8:36 AM
Subject: Frack
To: Drew Mayerson <drew.mayerson@bsee.gov>

Would you say this is accurate for the Pacific:

(b) (5)

[Redacted]

Sinkula, Nathan <nathan.sinkula@bsee.gov>
To: "Mayerson, Drew" <drew.mayerson@bsee.gov>

Thu, Mar 14, 2013 at 9:21 AM

i think (b) (5)

[Redacted]

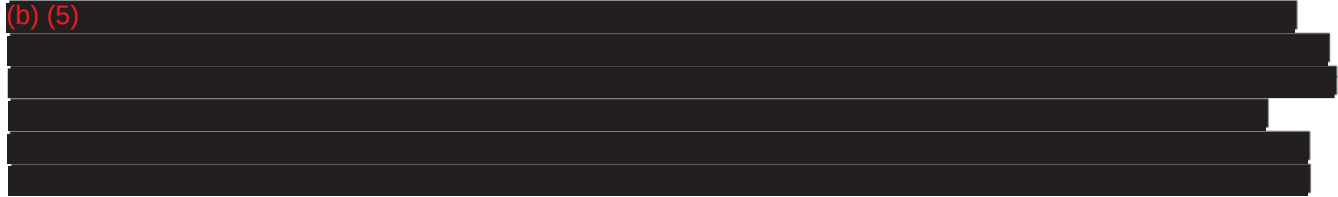
[Redacted]

treatment"

Nathan

as a rewrite,

(b) (5)

A large rectangular area of the document is completely blacked out, indicating redacted content. It spans approximately 10 lines of text.

[Quoted text hidden]

Sinkula, Nathan <nathan.sinkula@bsee.gov>

Thu, Mar 14, 2013 at 9:21 AM

To: Bobby Kurtz <bobby.kurtz@bsee.gov>

[Quoted text hidden]

Sinkula, Nathan <nathan.sinkula@bsee.gov>

Thu, Mar 14, 2013 at 9:39 AM

To: Drew Mayerson <drew.mayerson@bsee.gov>

(b) (5)

A large rectangular area of the document is completely blacked out, indicating redacted content. It spans approximately 8 lines of text.



Mayerson, Drew <drew.mayerson@bsee.gov>

Frack

4 messages

Pardi, Nicholas <nicholas.pardi@bsee.gov>
To: Drew Mayerson <drew.mayerson@bsee.gov>

Thu, Mar 14, 2013 at 8:36 AM

Would you say this is accurate for the Pacific:

(b) (5)

[REDACTED]

Mayerson, Drew <drew.mayerson@bsee.gov>
To: Nathan Sinkula <nathan.sinkula@bsee.gov>
Cc: Bobby Kurtz <geokurtz@gmail.com>

Thu, Mar 14, 2013 at 9:08 AM

What do you think? (b) (5)

[REDACTED]

Drew
Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region
[Quoted text hidden]

Sinkula, Nathan <nathan.sinkula@bsee.gov>
To: "Mayerson, Drew" <drew.mayerson@bsee.gov>

Thu, Mar 14, 2013 at 9:21 AM

i think it (b) (5)

[REDACTED]

Nathan

as a rewrite,

(b) (5)



[Quoted text hidden]

Sinkula, Nathan <nathan.sinkula@bsee.gov>
To: Drew Mayerson <drew.mayerson@bsee.gov>

Thu, Mar 14, 2013 at 9:39 AM

(b) (5)



On Thu, Mar 14, 2013 at 9:21 AM, Sinkula, Nathan <nathan.sinkula@bsee.gov> wrote:
[Quoted text hidden]



Sinkula, Nathan <nathan.sinkula@bsee.gov>

Fwd: Fracking

1 message

Voskanian, Armen <armen.voskanian@bsee.gov>

Tue, Jan 15, 2013 at 3:17 PM

To: Nathan Sinkula <nathan.sinkula@bsee.gov>

FYI

——— Forwarded message ———

From: **Mayerson, Drew** <drew.mayerson@bsee.gov>

Date: Tue, Jan 15, 2013 at 1:10 PM

Subject: Fwd: Fracking

To: BSEE PAC OPD <bseepacopd@bsee.gov>

fyi

Drew Mayerson

Regional Supervisor

Office of Production and Development

Pacific OCS Region

——— Forwarded message ———

From: **Ming, Jaron** <jaron.ming@bsee.gov>

Date: Tue, Jan 15, 2013 at 12:59 PM

Subject: Fracking

To: Daniel Knowlson <daniel.knowlson@bsee.gov>

Cc: "Masri, Nabil" <Nabil.Masri@bsee.gov>, Drew Mayerson <drew.mayerson@bsee.gov>

As you know, fracking has been of great interest to the Department and the general public in recent months. For that reason, I am asking you to pay close attention to any APDs and/or APMs that we receive and let me know if you believe any of them would be considered a "frac job". Thanks and feel free to contact me if you have any questions.

Jaron

—
Armen Voskanian, P.E.**Reservoir Engineer****Bureau of Safety and Environmental Enforcement****Pacific OCS Region****Office of Production and Development****770 Paseo Camarillo, Second Floor****Camarillo, CA 93010****805.389.7727****armen.voskanian@bsee.gov**



Sinkula, Nathan <nathan.sinkula@bsee.gov>

Fracking Article from Dec in VC Reporter

1 message

Mayerson, Drew <drew.mayerson@bsee.gov>

Wed, Feb 27, 2013 at 10:48 AM

To: Bobby Kurtz <geokurtz@gmail.com>, "Dame, Robert" <Robert.Dame@bsee.gov>, Michael Brickey <michael.brickey@bsee.gov>, Armen Voskanian <armen.voskanian@bsee.gov>, Nathan Sinkula <nathan.sinkula@bsee.gov>

As you know yesterday Dan, Nabil, Ken Seeley, and I were asked to provide a point by point response to the comments and allegations made in the subject article.

My assignment was to handle the geologic comments, Dan to handle the drilling and fluid comments, and Ken to handle the environmental aspects of the article.

Attached is my first run through of the article with point by point geo coments. p

Please take a look and see if 1) I missed anything, and 2) I'm in error.

Can I get it back by 2pm today? If you have no comments, please state that.

Thanks,
Drew

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region



Point by point response to VC Reporter Article.docx
41K



Seeley, Kenneth <kenneth.seeley@bsee.gov>

Fracking Fluids Links

1 message

Masri, Nabil <nabil.masri@bsee.gov>

Wed, Mar 6, 2013 at 8:17 AM

To: Kenneth Seeley <kenneth.seeley@bsee.gov>, BSEE PAC OFO <bseepacof@bsee.gov>, Craig Ogawa <craig.ogawa@bsee.gov>, Nathan Sinkula <nathan.sinkula@bsee.gov>

Link "Fracking Fluids-Image Results"

http://search.yahoo.com/r/_ylt=A0oGdV9WZjdRKmQAM4xXNyoA;_ylu=X3oDMTBzY2dhaGs2BHNIYwNzYwRjb2xvA3NrMQR2dGika0RGUjVfODE-/SIG=13o6oecph/EXP=1362613974/**http%3a//images.search.yahoo.com/search/images%3f_adv_prop=image%26fr=yfp-t-900%26va=fracking%2bfluids

Link to "Regulation of Hydraulic Fracturing under the Safe Drinking Water Act"

http://search.yahoo.com/r/_ylt=A0oGdV_4aTdRdy4A_lXNyoA;_ylu=X3oDMTEydXA1YzM3BHNIYwNzcgrwb3MDOQRjb2xvA3NrMQR2dGika0RGUjVfODE-/SIG=13bb12lop/EXP=1362614904/**http%3a//water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/wells_hydroreg.cfm

Nabil F. Masri
Regional Supervisor, Office of Field Operations
Pacific OCS Region
Bureau of Safety and Environmental Enforcement
805.389.7581
nabil.masri@bsee.gov

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Mayerson, Drew <drew.mayerson@bsee.gov>

Re: Fw: Fracking issue

1 message

Ming, Jaron <jaron.ming@bsee.gov>

Thu, Jan 3, 2013 at 9:49 AM

To: "Gregory, John" <john.gregory@bsee.gov>

Cc: Rosalind Barr <Rosalind.Barr@boemre.gov>, Ericka Williams <ericka.williams@boem.gov>

Bcc: drew.mayerson@bsee.gov

BOEM and BSEE in the Pacific are working together to prepare a response. The BOEM POC will be back in the office next week so we can finalize it. Thanks.

On Thu, Jan 3, 2013 at 9:29 AM, Gregory, John <john.gregory@bsee.gov> wrote:

Hello All,

I have a couple of related letters to the one attached here and was not sure where to task them:

WIC: "Venoco has fracked its oil fields along the Santa Barbara coast, an alarming expansion of this dangerous drilling process (tasked to "BSEE" and "Closed")

&

Concerned about oil company Venoco's use of hydraulic fracturing off coast of California. ("BSEE" "Closed")

I will take them to you in ODM (BOEM) so you can see them and give me an idea what needs to be done.

Thanks,
John

----- Forwarded message -----

From: **Thomas Lillie** <thomas.lillie@bsee.gov>

Date: Fri, Dec 21, 2012 at 10:08 AM

Subject: Fw: Fracking issue

To: jaron.ming@bsee.gov

Cc: james.watson@bsee.gov, margaret.schneider@bsee.gov, Lisa_Cannuscio@ios.doi.gov, douglas.morris@bsee.gov

Jaron: please work with BOEM on drafting a response to this. My note to Walter is an initial read. Not sure if I summarized the approach correctly, but take a look and let us know your thoughts. Happy holidays. Tom

From: Lillie, Thomas [mailto:thomas.lillie@bsee.gov]

Sent: Tuesday, December 18, 2012 10:34 AM

To: Aronson, Ellen <ellen.aronson@boem.gov>

Subject: Re: Fracking issue

Ellen: Here is the letter and my note to Walter. He is out of the office until tomorrow. Tom

Walter: I reviewed the letter regarding fracking offshore California. It alleges that fracking has occurred at a platform operated by Venoco off the Santa Barbara coast. The author makes a statement, but provides no evidence to support it. The response should address: (1) has Venoco or any other operator actually conducted any fracking offshore California as alleged in the letter (a BSEE issue); (2) is the alleged activity being conducted in the Federal OCS or state offshore property (a BOEM issue); (3) has fracking ever been considered in a five-year plan and been assessed in any NEPA document for the area in question (i.e., is it even allowed; a BOEM issue); (4) If so, has Venoco or any other operator ever submitted an application for permit to conduct fracking in the Pacific Region (a BSEE issue). Let me know when you get in. Thanks.

On Tue, Dec 18, 2012 at 1:25 PM, Aronson, Ellen <ellen.aronson@boem.gov> wrote:

Could you send me the letter, please. I cannot seem to download it in the chain of emails. Thank you.

—
Ellen G. Aronson

*Regional Director
Pacific Region, Bureau of Ocean Energy Management
770 Paseo Camarillo
Camarillo, CA 93010
(805) 389-7502
(805) 389-72511 (Direct)*

—
Tom Lillie
Chief of Staff
Bureau of Safety and Environmental Enforcement
(202) 208-6286
thomas.lillie@bsee.gov

—
Tom Lillie
Chief of Staff
Bureau of Safety and Environmental Enforcement
(202) 208-6286
thomas.lillie@bsee.gov



Kurtz, Bobby <bobby.kurtz@bsee.gov>

Fwd: Fracking letter

Bobby Kurtz <geokurtz@gmail.com>
To: bobby.kurtz@bsee.gov

Tue, Jan 8, 2013 at 6:41 PM

Sent from my iPhone

Begin forwarded message:

From: "Mayerson, Drew" <drew.mayerson@bsee.gov>
Date: January 8, 2013 3:06:46 PM PST
To: Bobby Kurtz <geokurtz@gmail.com>
Subject: Fracking letter

Some things to think about:

Fracking is extremely rare in the Pacific OCS having only occurred twice in the last 20 years with the last time in 1998 or 97.

All well operations are reviewed by BSEE engineers prior to approval.

My guess is to (b) (5)

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region



Kurtz, Bobby <bobby.kurtz@bsee.gov>

Fracking response (long draft)

Kurtz, Bobby <bobby.kurtz@bsee.gov>

Fri, Jan 11, 2013 at 12:48 PM

To: Drew Mayerson <drew.mayerson@bsee.gov>

Dear Marie C. Vought,

Dear Leopoldo L. Lopez,

Secretary Salazar has asked that I respond to your concerns on his behalf regarding fracking in oil and gas reservoirs of the Pacific Federal Outer Continental Shelf Region. There have only been two occasions when hydraulic fracturing was utilized as a recovery technique in Federal waters off the California coast. According to the State Lands Commission which governs oil and gas operations in California state waters which extend 3 miles offshore, no fracking has been performed on any wells under their jurisdiction. Onshore fracking activities in California have generally been performed at true vertical depths ranging from 2500-6000' below the Earth's surface. The well casing perforation method described in the VC Reporter article as "drop a bomb" is inaccurate. In reality most oil and gas wells, including those that do not employ hydraulic fracturing, are completed at hydrocarbon-bearing zones by perforating the casing of the well with a lowered tool containing a grid of multiple directional charges designed to blast small, individual holes in the casing for production. Some oil and gas wells still utilize the earlier technology of open-hole completions when productive intervals are thick and reservoir pressures are low.

The only occasion that Venoco, Inc. utilized fracking for reservoir stimulation in the Pacific OCS region was in August 1992 in the Santa Barbara Channel approximately 10 miles off the coast of Oxnard, CA. The frac job was performed on well E-11 (API: 043112068200) off of Platform Gail in the Sockeye Field of the Santa Clara Unit, Federal lease P-205. The target was three intervals which were completed (perforated) in sandstone of the Upper Sespe Formation from: 6,288-6,287', 6,206-6,224', and 6,206-6,224' in measured depth, approximately 5,600' in true vertical depth beneath the drilling deck of the platform. At the location of Platform Gail the water depth is 730'. Oil and gas production from this well had dropped significantly in May 1992 from 2,700bbl/5,300Mcf per month to 1,500bbl/1,300Mcf per month, then steadily declined to 300bbl/4,000Mcf by August prior to the frac job. The hydraulic fracturing was unsuccessful and Venoco was only able to recover production to 833bbl/9,900Mcf per month which was quickly stunted to zero production by February 1993. The target was abandoned in March 1993 and the Sespe Formation intervals of the well were plugged. Venoco moved up hole to the Upper Topanga Formation which they have been producing through traditional recovery techniques for this region, not involving hydraulic fracturing.

The second instance of hydraulic fracturing was in late April 1997 when Chevron attempted to frac well C-11 (API: 560452006701) off Platform Hidalgo in the Pt. Arguello Field, Federal lease P-450 where the water depth is 430' approximately 6 miles offshore Vandenberg Air Force Base. The target was the M-1 zone of the Monterey Formation. They isolated a zone from 10,775' to 11,248' in measured depth at approximately 10,500' in true vertical depth, leaving a deeper Monterey completion unaffected by the frac job. Perforations were added to the isolated zone with 50 holes between 11,051'-11,061' MD. The planned operation was to inject 50,000gals of frac fluid containing 90,000lbs of proppant to maintain void space induced by the procedure at 30-40bpm into the reservoir maintaining a pressure of 5,500-7,500psi. It appears that they underestimated the requisite pressure to perform the job effectively causing the frac fluids to back up in the wellbore. They were only able to inject 62,622gals of frac fluid with 29,736lbs of proppant. The maximum flowback rate achieved after the main frac was 1.1bpm. As a result of the attempted fracking, production was decreased substantially in May and June 1997 from a steady 4,000bbl/mo prior down to 2,800bbl and 842bbl respectively. In June 1997 an enzyme breaker was injected into the reservoir and recovered steady production to approximately 4,000bbl/mo.

Flowback fluids from these frac jobs were cleaned and disposed of according to federal regulations just as any produced water from oil and gas operations. At the time of the oil spill on Platform Gail in 2010 there were no fracking operations being conducted and the claim that fracking had been performed in 2009 is inaccurate. In

the event of an oil spill, detailed spill contingency plans take effect which are required to be submitted, approved, and readied prior to oil and gas operations. On December 18, 2012 the California Division of Oil, Gas, and Geothermal Resources and the Department of Conservation released a draft of onshore regulations that are being developed for governing hydraulic fracturing operations including well design competency testing, well monitoring during and for 5 years following fracking activities, geologic modeling of the propagation of induced fractures, disclosure of operations on the currently active website fracfocusdata.org, the disclosure of frac fluid components, and the storage and handling of frac fluids. The Bureau of Land Management began an overhaul in 2012 of hydraulic fracturing regulations for Federal public and Indian lands that it oversees requiring similar disclosure and operational scrutiny. All regulations and findings determined by these agencies will be carefully evaluated when adopting future policies governing hydraulic fracturing operations in the Federal Pacific Outer Continental Shelf region.

If onshore fracking of the Monterey Formation turns out to be a successful, long-term recovery technique it may follow that operators who produce the Monterey in offshore regions of California may look to fracking as a viable enhanced-recovery technique. I assure you that at such time, the BSEE will treat these applications with the utmost scrutiny and will not allow such operations to be conducted until detailed environmental impact assessments, such as the EPA study of affects on drinking water due in 2014, are conducted and effective operating procedures are determined so that they may be enforced to preserve our environment and natural resources.

--
BSEE Director James Watson



Kurtz, Bobby <bobby.kurtz@bsee.gov>

Fracking response (short draft)

Kurtz, Bobby <bobby.kurtz@bsee.gov>
To: Drew Mayerson <drew.mayerson@bsee.gov>

Fri, Jan 11, 2013 at 12:48 PM

Dear Marie C. Vought,

Secretary Salazar has asked that I respond to your concerns on his behalf regarding fracking in oil and gas reservoirs of the Pacific Federal Outer Continental Shelf Region. There have only been two occasions when hydraulic fracturing was utilized as a recovery technique in Federal waters off the California coast.

The only occasion that Venoco, Inc. utilized fracking for reservoir stimulation in the Pacific OCS region was in August 1992 in the Santa Barbara Channel approximately 10 miles off the coast of Oxnard, CA. The frac job was performed on well E-11 (API: 043112068200) off of Platform Gail in the Sockeye Field of the Santa Clara Unit, Federal lease P-205. The target was approximately 5,600' in true vertical depth beneath the drilling deck of the platform. At the location of Platform Gail the water depth is 730'. The hydraulic fracturing was unsuccessful and the target was abandoned in March 1993 and the Sespe Formation intervals of the well were plugged.

The second instance of hydraulic fracturing was in late April 1997 when Chevron attempted to frac well C-11 (API: 560452006701) off Platform Hidalgo in the Pt. Arguello Field, Federal lease P-450 where the water depth is 430' approximately 6 miles offshore Vandenberg Air Force Base. The target was the M-1 zone of the Monterey Formation. They isolated a zone at approximately 10,500' in true vertical depth, leaving a deeper Monterey completion unaffected by the frac job. As a result of the attempted fracking, production was decreased substantially.

Flowback fluids from these frac jobs were cleaned and disposed of according to federal regulations just as any produced water from oil and gas operations. At the time of the oil spill on Platform Gail in 2010 there were no fracking operations being conducted and the claim that fracking had been performed in 2009 is inaccurate. In the event of an oil spill, detailed spill contingency plans take effect which are required to be submitted, approved, and readied prior to oil and gas operations. On December 18, 2012 the California Division of Oil, Gas, and Geothermal Resources and the Department of Conservation released a draft of onshore regulations that are being developed for governing hydraulic fracturing operations including well design competency testing, well monitoring during and for 5 years following fracking activities, geologic modeling of the propagation of induced fractures, disclosure of operations on the currently active website fracfocusdata.org, the disclosure of frac fluid components, and the storage and handling of frac fluids. The Bureau of Land Management began an overhaul in 2012 of hydraulic fracturing regulations for Federal public and Indian lands that it oversees requiring similar disclosure and operational adherence. All regulations and findings determined by these agencies will be carefully evaluated when adopting future policies governing hydraulic fracturing operations in the Federal Pacific Outer Continental Shelf region.

If onshore fracking of the Monterey Formation turns out to be a successful, long-term strategy it may follow that operators who produce the Monterey in offshore regions of California may look to fracking as a viable enhanced-recovery technique. I assure you that at such time, the BSEE will treat these applications with the utmost scrutiny and will not allow such operations to be conducted until detailed environmental impact assessments, such as the EPA study of affects on drinking water due in 2014, are conducted and effective operating procedures are determined so that they may be enforced to preserve our environment and natural resources.

--

BSEE Director James Watson



Seeley, Kenneth <kenneth.seeley@bsee.gov>

Fwd: Fracking Response

1 message

Mayerson, Drew <drew.mayerson@bsee.gov>

Mon, Feb 25, 2013 at 3:28 PM

To: "Masri, Nabil" <Nabil.Masri@bsee.gov>, Kenneth Seeley <kenneth.seeley@bsee.gov>, Daniel Knowlson <daniel.knowlson@bsee.gov>

THIS IS A DRAFT OF WHAT WAS SENT TO JARON FOR HIS APPROVAL BEFORE SENDING TO TOM LILLIE.

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

----- Forwarded message -----

From: **Mayerson, Drew** <drew.mayerson@bsee.gov>

Date: Wed, Feb 20, 2013 at 5:17 PM

Subject: Fracking Response

To: "Ming, Jaron" <Jaron.Ming@bsee.gov>

Jaron,

I've updated the original paper we sent to Tom Lillie to reflect DCOR's revelations. See what you think. I've also updated the fact sheet. If ok, you can send to Tom or send back to me and I'll do it tomorrow.

Drew

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

2 attachments



Hydraulic Fracturing in the Federal Offshore Facts Revised 2-20-13.docx

18K



Draft secretary response to public comments revised 2-20-13.docx

14K

Hydraulic Fracturing in the Federal Offshore, California Facts and Figures

- The Monterey Shale (Monterey Formation) is present in onshore and offshore California.
- The Monterey Formation is the most prolific oil and gas reservoir in the Pacific Region.
- Approximately 750 million barrels of oil (60% of the Region's production) has been produced from the POCS Monterey Formation. Over 1.2 billion barrels of oil have been produced from all Pacific Region reservoirs, including non-shale reservoirs.
- The Department of Energy estimates that approximately 15 billion barrels of oil are recoverable from the onshore Monterey formation using conventionally available technology.
- Hydraulic fracturing has only occurred 11 times in the last 25 years in the Federal offshore and none of the wells were horizontal (see table below).

Date	Lease & Well	Operator	Comments
1990's	OCS-P 0205	Venoco, Inc.	Not a Monterey formation frac. Upper Sespe formation fracked with limited success.
	Well E-11		
	OCS-P 0450	Chevron	Unsuccessful in increasing production.
	Well C-11		
2001	6 well program	Torch/Nuevo	Short radius "frac-packs." Somewhat successful. Not Monterey.
	3 well program	Torch/Nuevo	1 well very successful. Re-frac of 1 well. Not Monterey.
January 2010	OCS-P 0XXX	Venoco, Inc.	Small increase in production, but not enough to be commercial.
	Well E-8		
	Sidetrack 2		

- Most hydraulic fracturing has been near well "frac-packs" or "mini-fracs" in sandstone with frac wings extending 30 to 50 feet from the well.
- During that time approximately 335 wells have been drilled in the Federal offshore, California.
- A telephone survey of POCS operators revealed that only one operator has plans for hydraulic fracturing in the near future although most did not want to rule out the possibility of hydraulic fracturing in the distant future.
- The POCS is currently reviewing the APD for DCOR, LLC to use hydraulic fracturing in their next sandstone well. This could be termed a "moderate" fracture job in terms of the projected length of fractures (200-300 feet) from the well, and using about 30 to 50 times less water as fracture jobs in the Bakken and Eagle Ford shales onshore.
- Some of the petroleum engineers responding to the telephone survey commented that the offshore Monterey Formation is much more brittle than its onshore counterpart and, as a result, responded to hydraulic fracturing by only fracturing the area nearest the well bore instead of propagating outward from the well bore. Therefore, any increased recovery was short-lived.

Dear _____,

Secretary Salazar asked that I respond to your recent letter regarding hydraulic fracturing of wells in Federal waters offshore California. As the Director of the Bureau of Safety and Environmental Enforcement, the agency that issues drilling permits in Federal waters, it is my responsibility to ensure the enforcement of our nation's environmental laws pertaining to offshore oil and gas exploration, development and production. Oil and gas drilling operations in Federal waters offshore California are administered by our Pacific Region office in Camarillo, California. I spoke with the Regional Director at that office to ascertain the frequency of this operation in this area. He responded that hydraulic fracturing is extremely rare in the Pacific Region, having occurred in very few wells in the last 25 years out of the several hundred wells drilled in the Pacific Region.

Please be aware that all drilling and well workover operations proposed by offshore operators are reviewed by our drilling and/or production engineering staff. Any concerns or questions that we have are fully addressed before the operations can begin.

Thank you for taking the time to express your concerns to the Secretary. At the Department, we are always mindful of the trust the public has placed in us and our obligation to enhance the safety and environmental protection of the operations that we permit.

Sincerely,

James Watson
Director



Sinkula, Nathan <nathan.sinkula@bsee.gov>

Fracking Workshop

1 message

Mayerson, Drew <drew.mayerson@bsee.gov>

Wed, Mar 6, 2013 at 3:32 PM

To: BSEE PAC OPD <bseepacopd@bsee.gov>

I'm checking with Jaron re attendance. There may be more interest from the other offices too, and ordinarily it wouldn't be a problem.

If we have to limit attendance or costs then we could prioritize by those that are/have been dealing with the issue
Those that want to spend the night vs those that will drive
Split between LB and Bakersfield so as not to have all gone at once.

I'll press Jaron next week when I return.

Drew

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region



Seeley, Kenneth <kenneth.seeley@bsee.gov>

Fwd: Fracturing Response for Secretary/Director

1 message

Mayerson, Drew <drew.mayerson@bsee.gov>
To: Kenneth Seeley <kenneth.seeley@bsee.gov>

Mon, Feb 11, 2013 at 2:03 PM

Ken,

Attached are 2 items sent back to HQ in response to about 1200 form letters that were sent to the Secretary after the article(s) were published. You should know that in the letter and the facts and figures are now wrong since DCOR's belated response on Jan 31. After tomorrow we should modify the letter to read correctly that there were 4 frac jobs in the past, one successful, and that DCOR has plans to do more.

We'll find out tomorrow.

PS: According to Tom Lillie, the Director's COS, the letter that we drafted is just sitting in his office right now because the form letters that came in did not request a response.

Drew

Drew Mayerson

Regional Supervisor

Office of Production and Development

Pacific OCS Region

----- Forwarded message -----

From: **Mayerson, Drew** <drew.mayerson@bsee.gov>

Date: Tue, Jan 15, 2013 at 12:10 PM

Subject: Fracturing Response for Secretary/Director

To: "Ming, Jaron" <Jaron.Ming@bsee.gov>

Cc: BSEE PAC Managers/Supervisors <BSEEPACManagers_Supervisors@boemre.gov>, Joan Barminski <Joan.Barminski@boem.gov>

Jaron,

Attached is a draft version of the response to the letters the Secretary has received on POCS hydraulic fracturing. I've also include a Facts and Figures sheet for Tom.

I've made the response from the Director for the Secretary. I hope this is what they want.

Drew

Drew Mayerson

Regional Supervisor

Office of Production and Development

Pacific OCS Region

2 attachments



Draft secretary response to public comments 1.docx

14K



Hydraulic Fracturing in the Federal Offshore Facts and Figures.docx

17K

Dear _____,

Secretary Salazar asked that I respond to your recent letter regarding hydraulic fracturing of wells in Federal waters offshore California. As the Director of the Bureau of Safety and Environmental Enforcement, the agency that issues drilling permit in Federal waters, it is my responsibility to ensure the enforcement of our nation's environmental laws pertaining to offshore oil and gas exploration, development and production. Oil and gas drilling operations in Federal waters offshore California are administered by our Pacific Region office in Camarillo, California. I spoke with the Regional Director at that office to ascertain the frequency of this operation in this area. He responded that hydraulic fracturing is extremely rare in the Pacific Region, having occurred in only 3 wells out of the 300 plus wells drilled in the Pacific (1992, 1997, and 2010). Additionally, a poll taken of the offshore operators in the Pacific Region indicated that none had any plans to pursue hydraulic fracturing in the near future.

Lastly, please be aware that all drilling and well workover operations proposed by offshore operators are reviewed by our drilling and/or production engineering staff. Any concerns or questions that we have are fully addressed before the operations can begin.

Thank you for taking the time to express your concerns to the Secretary. At the Department, we are always mindful of the trust the public has placed in us and our obligation to enhance the safety and environmental protection of the operations that we permit.

Sincerely,

James Watson
Director

Hydraulic Fracturing in the Federal Offshore, California Facts and Figures

- The Monterey Shale (Monterey Formation) is present in onshore and offshore California.
- The Monterey Formation is the most prolific oil and gas reservoir in the Pacific Region.
- Approximately 750 million barrels of oil (60% of the Region's production) has been produced from the POCS Monterey Formation. Over 1.2 billion barrels of oil have been produced from all Pacific Region reservoirs, including non-shale reservoirs.
- The Department of Energy estimates that approximately 15 billion barrels of oil are recoverable from the onshore Monterey formation using conventionally available technology.
- Hydraulic fracturing has only occurred 3 times in the last 21 years in the Federal offshore (see table below).

Date	Lease & Well	Operator	Comments
August 1992	OCS-P 0205 Well E-11	Venoco, Inc.	Not a Monterey formation frac. Upper Sespe formation fracked with limited success.
April 1997	OCS-P 0450 Well C-11	Chevron	Unsuccessful in increasing production.
January 2010	OCS-P 0XXX Well E-8 Sidetrack 2	Venoco, Inc.	Small increase in production, but not enough to be commercial.

- During that time 335 wells have been drilled in the Federal offshore, California.
- A telephone survey of POCS operators (1/14/13) revealed no immediate plans for hydraulic fracturing in the near future although most did not want to rule out the possibility of hydraulic fracturing in the distant future.
- Some of the petroleum engineers responding to the telephone survey commented that the offshore Monterey Formation is much more brittle than its onshore counterpart and, as a result, responded to hydraulic fracturing by only fracturing the area nearest the well bore instead of propagating outward from the well bore. Therefore, any increased recovery was short-lived.



Sinkula, Nathan <nathan.sinkula@bsee.gov>

Fwd: Hydraulic fracturing

5 messages

Mayerson, Drew <drew.mayerson@bsee.gov>
To: Nathan Sinkula <nathan.sinkula@bsee.gov>

Thu, Mar 14, 2013 at 12:31 PM

Let's discuss this about 2pm
Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

—— Forwarded message ——

From: **Pardi, Nicholas** <nicholas.pardi@bsee.gov>

Date: Thu, Mar 14, 2013 at 11:21 AM

Subject: Hydraulic fracturing

To: Jaron Ming <Jaron.Ming@bsee.gov>, Drew Mayerson <drew.mayerson@bsee.gov>, Nabil Masri <Nabil.Masri@bsee.gov>, Eileen Angelico <eileen.angelico@bsee.gov>

We have started to get some questions on hydraulic fracturing and have kicked around the idea of establishing an informational webpage to describe the process. Something basic that we could point folks towards if asked. I will admit to not being a trained geologist or engineer so I won't try and fake it but I did some basic research along with some information I got from you and came up with the following. Please let me know if you have any comments or suggestions.

Though uncommon, hydraulic fracturing does occur from time to time within BSEE's Gulf of Mexico and Pacific Regions.

What is Hydraulic Fracturing?

Hydraulic fracturing produces fractures in the rock formation that stimulate the flow of natural gas or oil, increasing the volumes that can be recovered. Fractures are created by pumping large quantities of fluids at high pressure down a wellbore and into the target rock formation. Hydraulic fracturing fluid commonly consists of water, proppant and chemical additives that open and enlarge fractures within the rock formation. These fractures can extend several hundred feet away from the wellbore. The proppants - sand, ceramic pellets or other small incompressible particles - hold open the newly created fractures.

Once the injection process is completed, the internal pressure of the rock formation causes fluid to return to the surface through the wellbore. This fluid is known as both "flowback" and "produced water" and may contain the injected chemicals plus naturally occurring materials such as brines, metals, radionuclides, and hydrocarbons. The flowback and produced water is then treated and either injected underground for disposal or treated and reused or processed by a wastewater treatment facility and then discharged in accordance with an

Environmental Protection Agency issued discharge permit.

Hydraulic Fracturing Offshore

Within the BSEE Gulf of Mexico Region, hydraulic fracturing is not a widespread operation due to the productive nature of the geologic formations. Operators will occasionally utilize a process called "frac-packing" which is an application for sand control that improves production sustainability and well completion in unconsolidated offshore sand reservoirs. The process creates short, highly-conductive fractures near the wellbore where the proppant interacts with the formation, creating a barrier that prevents sand production. The fractures that are created often do not extend more than a few feet from the well bore.

(b) (5)

BSEE ensures that all drilling operations proposed by offshore operators receive an environmental review in accordance with the National Environmental Policy Act while coordinating with the Environmental Protection Agency and other federal agencies to ensure that proposed activities are consistent with all applicable rules and regulations. Additionally, BSEE drilling and production engineering staff fully review proposals for safety issues.

A Closer Look at Hydraulic Fracturing

View "Breaking Fuel From the Rock," an interactive feature from National Geographic showing the drilling technique that some energy producers have used to unlock natural gas in shale rock. Though this guide covers onshore production, some of the basic drilling techniques are used offshore-

<http://news.nationalgeographic.com/news/2010/10/101022-breaking-fuel-from-the-rock/>

Mayerson, Drew <drew.mayerson@bsee.gov>

Thu, Mar 14, 2013 at 3:38 PM

To: "Pardi, Nicholas" <nicholas.pardi@bsee.gov>

Cc: Nathan Sinkula <nathan.sinkula@bsee.gov>, Bobby Kurtz <geokurtz@gmail.com>, "Ming, Jaron" <Jaron.Ming@bsee.gov>, "Masri, Nabil" <Nabil.Masri@bsee.gov>, Daniel Knowlson <daniel.knowlson@bsee.gov>

Nick,

Attached, in Word, is a rewrite that Nathan (PE), Bobby (Geol.), and I worked on. We've tried to keep it simple but wanted to make sure that we captured the actual methodology. See what you think.

Drew

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

[Quoted text hidden]



Public Affairs Web Explanation.docx
32K

Drew Mayerson <drew.mayerson@bsee.gov>
To: Nathan Sinkula <nathan.sinkula@bsee.gov>
Cc: Robert Dame <Robert.Dame@bsee.gov>

Tue, Mar 26, 2013 at 10:18 AM

The attachment is the corrected version

Sent from my iPad

Begin forwarded message:

From: "Mayerson, Drew" <drew.mayerson@bsee.gov>
Date: March 14, 2013, 3:38:59 PM PDT
To: "Pardi, Nicholas" <nicholas.pardi@bsee.gov>
Cc: Nathan Sinkula <nathan.sinkula@bsee.gov>, Bobby Kurtz <geokurtz@gmail.com>, "Ming, Jaron" <Jaron.Ming@bsee.gov>, "Masri, Nabil" <Nabil.Masri@bsee.gov>, Daniel Knowlson <daniel.knowlson@bsee.gov>
Subject: Re: Hydraulic fracturing

[Quoted text hidden]



Public Affairs Web Explanation.docx
32K

Sinkula, Nathan <nathan.sinkula@bsee.gov>
To: Drew Mayerson <drew.mayerson@bsee.gov>

Tue, Mar 26, 2013 at 4:12 PM

hey thanks sorry got busy with well files.

Did u also have some other write up you did where you had number of wells? I thought i remembered u doing another writeup, not just the correction of the PR webpage one, maybe i am mistaken. Also do u want counts given out to the Coastal Commission, they just called Robbie and asked if they could get something from us, not an official FOIA? Regardless I will send a draft Thursday to you along with Robbie, before we submit to them on Friday, if that works for you?

Thanks

Nathan

[Quoted text hidden]

Drew Mayerson <drew.mayerson@bsee.gov>
To: "Sinkula, Nathan" <nathan.sinkula@bsee.gov>
Cc: Jaron Ming <Jaron.Ming@bsee.gov>, Robert Dame <Robert.Dame@bsee.gov>

Tue, Mar 26, 2013 at 5:06 PM

I think the fracking numbers should be broken out by the type of frack and a definition. All numbers are tentative until Ops goes through the files to determine the actual amount. PA should be brought in on all of these since they're making the AP go through FOIA and everybody should be on the same page. Coastal Commission

should know that although it's been rare, we have had hydraulic fracking in the past and no company would rule it out for the future and that PA is putting together an FAQ that should be out....check with PA.

Sent from my iPad

[Quoted text hidden]



Mayerson, Drew <drew.mayerson@bsee.gov>

Re: Hydraulic fracturing

1 message

Drew Mayerson <drew.mayerson@bsee.gov>

Tue, Mar 26, 2013 at 5:06 PM

To: "Sinkula, Nathan" <nathan.sinkula@bsee.gov>

Cc: Jaron Ming <Jaron.Ming@bsee.gov>, Robert Dame <Robert.Dame@bsee.gov>

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Sent from my iPad

On Mar 26, 2013, at 4:12 PM, "Sinkula, Nathan" <nathan.sinkula@bsee.gov> wrote:

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Thanks

Nathan

On Tue, Mar 26, 2013 at 10:18 AM, Drew Mayerson <drew.mayerson@bsee.gov> wrote:

The attachment is the corrected version

Sent from my iPad

Begin forwarded message:

From: "Mayerson, Drew" <drew.mayerson@bsee.gov>

Date: March 14, 2013, 3:38:59 PM PDT

To: "Pardi, Nicholas" <nicholas.pardi@bsee.gov>

Cc: Nathan Sinkula <nathan.sinkula@bsee.gov>, Bobby Kurtz <geokurtz@gmail.com>, "Ming, Jaron" <Jaron.Ming@bsee.gov>, "Masri, Nabil" <Nabil.Masri@bsee.gov>, Daniel Knowlson <daniel.knowlson@bsee.gov>

Subject: Re: Hydraulic fracturing

Nick,

Attached, in Word, is a rewrite that Nathan (PE), Bobby (Geol.), and I worked on.

We've tried to keep it simple but wanted to make sure that we captured the actual methodology. See what you think.

Drew

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

On Thu, Mar 14, 2013 at 11:21 AM, Pardi, Nicholas <nicholas.pardi@bsee.gov> wrote:

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Though uncommon, hydraulic fracturing does occur from time to time within BSEE's Gulf of Mexico and Pacific Regions.

What is Hydraulic Fracturing?

Hydraulic fracturing produces fractures in the rock formation that stimulate the flow of natural gas or oil, increasing the volumes that can be recovered. Fractures are created by pumping large quantities of fluids at high pressure down a wellbore and into the target rock formation. Hydraulic fracturing fluid commonly consists of water, proppant and chemical additives that open and enlarge fractures within the rock formation. These fractures can extend several hundred feet away from the wellbore. The proppants - sand, ceramic pellets or other small incompressible particles - hold open the newly created fractures.

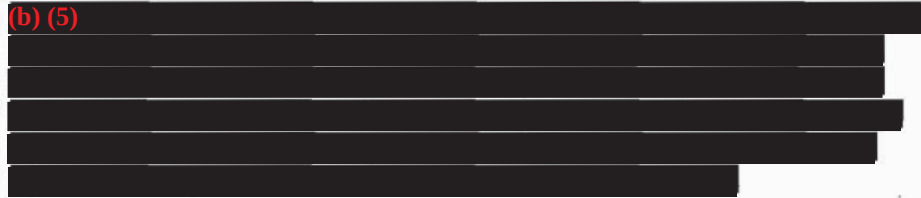
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Hydraulic Fracturing Offshore

Within the BSEE Gulf of Mexico Region, hydraulic fracturing is not a widespread operation due to the productive nature of the geologic formations. Operators will occasionally utilize a process called "frac-packing" which is an

application for sand control that improves production sustainability and well completion in unconsolidated offshore sand reservoirs. The process creates short, highly-conductive fractures near the wellbore where the proppant interacts with the formation, creating a barrier that prevents sand production. The fractures that are created often do not extend more than a few feet from the well bore.

(b) (5)



BSEE ensures that all drilling operations proposed by offshore operators receive an environmental review in accordance with the National Environmental Policy Act while coordinating with the Environmental Protection Agency and other federal agencies to ensure that proposed activities are consistent with all applicable rules and regulations. Additionally, BSEE drilling and production engineering staff fully review proposals for safety issues.

A Closer Look at Hydraulic Fracturing

View "Breaking Fuel From the Rock," an interactive feature from National Geographic showing the drilling technique that some energy producers have used to unlock natural gas in shale rock. Though this guide covers onshore production, some of the basic drilling techniques are used offshore-

<http://news.nationalgeographic.com/news/2010/10/101022-breaking-fuel-from-the-rock/>



Mayerson, Drew <drew.mayerson@bsee.gov>

Fwd: Hydraulic fracturing

1 message

Drew Mayerson <drew.mayerson@bsee.gov>
To: Nathan Sinkula <nathan.sinkula@bsee.gov>
Cc: Robert Dame <Robert.Dame@bsee.gov>

Tue, Mar 26, 2013 at 10:18 AM

The attachment is the corrected version

Sent from my iPad

Begin forwarded message:

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Date: March 14, 2013, 3:38:59 PM PDT
To: "Pardi, Nicholas" <nicholas.pardi@bsee.gov>
Cc: Nathan Sinkula <nathan.sinkula@bsee.gov>, Bobby Kurtz <geokurtz@gmail.com>, "Ming, Jaron" <Jaron.Ming@bsee.gov>, "Masri, Nabil" <Nabil.Masri@bsee.gov>, Daniel Knowlson <daniel.knowlson@bsee.gov>
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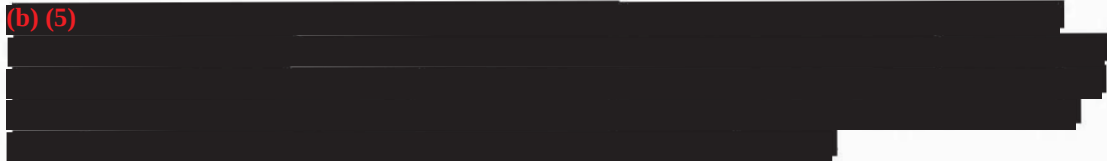
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Once the injection process is completed, the internal pressure of the rock formation causes fluid to return to the surface through the wellbore. This fluid is known as both "flowback" and "produced water" and may contain the injected chemicals plus naturally occurring materials such as brines, metals, radionuclides, and hydrocarbons. The flowback and produced water is then treated and either injected underground for disposal or treated and reused or processed by a wastewater treatment facility and then discharged in accordance with an Environmental Protection Agency issued discharge permit.

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(b) (5)



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Public Affairs Web Explanation.docx

32K

Though uncommon, hydraulic fracturing does occur from time to time within BSEE's on the OCS in the Gulf of Mexico and Pacific Regions, although not to the levels and magnitude seen onshore in areas like North Dakota and Texas.

People (5)
Pardi, Nicholas
BSEE

What is Hydraulic Fracturing?

Show details

Hydraulic fracturing produces fractures in the rock formation that stimulate the flow of natural gas or oil, increasing the volumes that can be recovered. Fractures are created by pumping large quantities of fluids at high pressure down a wellbore and into the target rock formation. Hydraulic fracturing fluid is mostly water with minor amounts of chemical additives. Proppants, such as sand or ceramic pellets are injected with the fluid under high pressures into the target formation. The pressurized slurry fractures the rock with the proppants helping hold open the newly created fractures commonly consists of water, proppant and chemical additives that open and enlarge fractures within the rock formation. These fractures can extend several hundred feet away from the wellbore. The proppants—sand, ceramic pellets or other small incompressible particles—hold open the newly created fractures.

Once the injection process is completed, the internal pressure of the rock formation causes fluid to return to the surface through the wellbore. This fluid is known as both "flowback," and "produced water" and may contain the injected water and the injected chemicals plus naturally occurring materials from the reservoir, including such as brines, metals, radionuclides, and hydrocarbons. The flowback and along with produced water is then treated and either injected underground for disposal or treated and reused or processed by a wastewater treatment facility and then reused or discharged in accordance with an Environmental Protection Agency issued discharge permit.

Hydraulic Fracturing Offshore

Within the BSEE Gulf of Mexico Region, large scale hydraulic fracturing is not a widespread operation due to the productive nature of the geologic formations. However, operators often will occasionally utilize a process called "frac-packing" which is an application mainly used for sand control that improves production sustainability and well completion stability in poorly unconsolidated offshore sand reservoirs. The process creates short, highly-conductive fractures near the wellbore, where the proppant interacts with the formation, creating an barrier interface that prevents minimizes sand production influx into the well. The fractures that are created often do not extend more than a few feet from the well bore.

(b) (5)

[REDACTED]

Within the BSEE Pacific Region, hydraulic fracturing is rarely utilized. When it does occur, operators use hydraulic fracturing for a brief period to stimulate production. The vast majority of these have been "mini-fracs" which occur in the immediate vicinity of the wellbore and are used to cleanup sand that may plug the perforations. A "mini-frac" is performed without a proppant with the intent of breaking down the formation to create a short fracture.

BSEE ensures that all drilling operations proposed by offshore operators receive an environmental review in accordance with the National Environmental Policy Act while coordinating with the Environmental Protection Agency and other federal agencies to ensure that proposed activities are consistent with all applicable rules and regulations. Additionally, BSEE ~~drilling and production engineering engineers and geoscientists staff~~ fully review proposals for safety issues.

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To 

Nathan Sinkula



CeBee

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Send

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Mayerson, Drew <drew.mayerson@bsee.gov>

Hydraulic Fracturing 101 Presentation

1 message

Joe Lima <lima1@slb.com>

Tue, Apr 2, 2013 at 9:24 AM

To: "Drew.Mayerson@bsee.gov" <Drew.Mayerson@bsee.gov>

Drew,

As discussed yesterday, next week looks good for me. My thoughts are sometime on Thursday, Apr 11. How does that work for you? And if it is a good day, is there a time that is best?

Regards, Joe

Joe Lima

Schlumberger

lima1@slb.com

(O) 303-352-1261

(C) 720-281-8699



Mayerson, Drew <drew.mayerson@bsee.gov>

Re: Hydraulic Fracturing 101 Presentation

1 message

Drew Mayerson <drew.mayerson@bsee.gov>
To: Joe Lima <lima1@slb.com>

Thu, Apr 4, 2013 at 7:00 AM

Joe,

We're on the 2nd floor at 770 Paseo Camarillo, Camarillo, CA 93010. When you get off the elevator there is a phone. You can dial ext. 17707 and I'll come and get you. If I don't pick up I'm most likely in our conference room which is through the double doors on your right immediately after you exit the elevator.

Drew

Sent from my iPad

On Apr 4, 2013, at 5:40 AM, Joe Lima <lima1@slb.com> wrote:

Drew,

Can you please send me your office address... I assume we would meet there?

Regards, Joe

From: Joe Lima
Sent: Tuesday, April 02, 2013 7:09 PM
To: Mayerson, Drew
Subject: Re: Hydraulic Fracturing 101 Presentation

Drew

Thursday PM works great. I'll see you then.

Regards, Joe

On Apr 2, 2013, at 6:04 PM, "Mayerson, Drew" <drew.mayerson@bsee.gov> wrote:

Joe,

Thanks for consenting to do this. It will be very helpful. In fact, we just received another FOIA (Freedom of Information Act) request today asking for all of our hydraulic fracturing records, emails, permits, etc.... We're doing our best to respond and the info you provide will help us provide more informed responses.

Thursday will be great. I don't know how long it will take. I've set aside 4 hours but I can go less or more depending on what you think. Afternoon will be best (1-5) but morning could work too.

I also requested respondents to my invitation to provide topics they want covered, such as how much water is used, frac fluid ingredients, proppants, what is a frac pack, etc... I'll try to get those in an email to you by Friday of this week.

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Mayerson, Drew <drew.mayerson@bsee.gov>

Fwd: Hydraulic Fracturing 101 Presentation

1 message

Mayerson, Drew <drew.mayerson@bsee.gov>

Mon, Apr 8, 2013 at 3:53 PM

To: Joe Lima <lima1@slb.com>

Joe,

I asked around about what topics staff had questions about wrt to hydraulic fracturing and received a large list so I'm trying to boil it down:

- What is the difference between a Frac-Pack, Mini-Frac, and a large wing hydraulic fracture?
- Is the process conducted in stages? How does that work? How long for each stage?
- What quantity of fluid is required for each of the above (e.g., mini Frac, large frac, etc...)
- What are the limits on offshore fracking vs. onshore?
- What is the fracking fluid ingredients?
- Is freshwater necessary or can saltwater be used?
- What pressures are needed and how is that calculated?
- What type of equipment is needed? What horsepower? Diesel? Electric?
- How is the frac tested to make sure it did what it was supposed to do?
- Difference between a frac of a gas well vs. an oil well.
- What is the difference between horizontal vs vertical well fracking?
- Do fracked wells need acid stimulation also?
- Are different frac procedures used for sandstone vs shale?
- Much of our area produces from naturally fractured Monterey shale, would a frac be appropriate in a formation that is already highly naturally fractured?
- Proppants...what is used, how are they used, how long do they last?
- How long does it take for the frack fluid to return to the well? How long does it last?
- What part of fracking is considered trade secret?

The questions are not in any particular order. I'm sure they'll be even more questions as the afternoon evolves. I just wanted to let you know what people were curious about here. No need to know all the answers, but we just thought we'd ask.

Drew
Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

—— Forwarded message ——

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4/16/13

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Hydraulic Fracturing in the Federal Offshore, California Facts and Figures

- The Monterey Shale (Monterey Formation) is present in onshore and offshore California.
- The Monterey Formation is the most prolific oil and gas reservoir in the Pacific Region.
- Approximately 750 million barrels of oil (60% of the Region's production) has been produced from the POCS Monterey Formation. Over 1.2 billion barrels of oil have been produced from all Pacific Region reservoirs, including non-shale reservoirs.
- The Department of Energy estimates that approximately 15 billion barrels of oil are recoverable from the onshore Monterey formation using conventionally available technology.
- Hydraulic fracturing has only occurred 11 times in the last 25 years in the Federal offshore and none of the wells were horizontal (see table below).

Date	Lease & Well	Operator	Comments
1990's	OCS-P 0205	Venoco, Inc.	Not a Monterey formation frac. Upper Sespe formation fracked with limited success.
	Well E-11		
	OCS-P 0450	Chevron	Unsuccessful in increasing production.
	Well C-11		
2001	6 well program	Torch/Nuevo	Short radius "frac-packs." Somewhat successful. Not Monterey.
	3 well program	Torch/Nuevo	1 well very successful. Re-frac of 1 well. Not Monterey.
January 2010	OCS-P 0XXX	Venoco, Inc.	Small increase in production, but not enough to be commercial.
	Well E-8		
	Sidetrack 2		

- Most hydraulic fracturing has been near well "frac-packs" or "mini-fracs" in sandstone with frac wings extending 30 to 50 feet from the well.
- During that time approximately 335 wells have been drilled in the Federal offshore, California.
- A telephone survey of POCS operators revealed that only one operator has plans for hydraulic fracturing in the near future although most did not want to rule out the possibility of hydraulic fracturing in the distant future.
- The POCS is currently reviewing the APD for DCOR, LLC to use hydraulic fracturing in their next sandstone well. This could be termed a "moderate" fracture job in terms of the projected length of fractures (200-300 feet) from the well, and using about 30 to 50 times less water as fracture jobs in the Bakken and Eagle Ford shales onshore.
- Some of the petroleum engineers responding to the telephone survey commented that the offshore Monterey Formation is much more brittle than its onshore counterpart and, as a result, responded to hydraulic fracturing by only fracturing the area nearest the well bore instead of propagating outward from the well bore. Therefore, any increased recovery was short-lived.

Hydraulic Fracturing Questions Posed by the Office of Public Affairs – April 2013

1. Has BSEE approved a permit to conduct hydraulic fracturing?

Hydraulic fracturing is extremely rare in the Pacific Region. Our review of well files to date indicates that hydraulic fracturing has occurred in very few wells in the last 25 years out of the several hundred wells drilled in the Pacific Region. A recent poll of POCS operators confirmed this claim however none would rule out hydraulic fracturing as a stimulation technique in the future. In fact, we recently approved an APM for the completion of S-05 on 3-7-13 and the APD on 3-7-13 on Platform Gilda. The well has not been started yet because the platform is down for repairs for the next few weeks.

2. Where is this taking place?

The proposed hydraulic fracturing is on Platform Gilda, well S-05. No others have been submitted or approved.

3. How long will operations occur?

The proposed hydraulic fracture on Platform Gilda will take 2-3-days with lots of down time while changing intervals.

4. Is this the same procedure as occurs onshore?

Many aspects of the actual fracking procedure are identical to those that occur onshore, however due to cost and logistical constraints that occur with offshore platforms, the size of jobs offshore are much smaller than some of the large fracture jobs seen onshore in the Bakken, Marcellus and Barnett shales, for example. The limited number of hydraulic fracture operations in the POCS has been an order of magnitude smaller than those seen in onshore shale plays. Typical proppant amounts used have been between 30,000 and 160,000 pounds while onshore shale developments can reach amounts of up to 5,000,000 pounds of proppant. Typical water usage for offshore hydraulic fracturing is around 50,000-100,000 gallons compared to 1-3 million gallons used in onshore shale fracturing jobs. Most of the hydraulic fracture jobs occurring offshore are of the "Frac-Pack" variety for sandstone formations, which are smaller than those seen in the onshore shales. Fracking has been tried in the offshore shales but with little success to date, due to lithological properties of the Monterey Shale offshore California (it is naturally fractured), and due to equipment and cost constraints of working offshore.

5. Have you conducted the necessary environmental reviews to ensure that the activities are safe?

Approval of the Application for Permit to Drill sidetracked well S-005 at Platform Gilda was a categorically excluded action under NEPA. Specifically, we applied Categorical Exclusion C(12), which covers "Approval of Application for Permit to Drill (APD) an offshore oil and gas exploration or development well when said well and appropriate

mitigation measures are described in an approved exploration plan, development plan, production plan or development operations coordination document. (516 DM 6).

6. What reviews did you conduct?

In order to ensure that this action fell into the excluded category of actions, we determined that none of the extraordinary circumstances that would typically trigger more extensive environmental review existed in the case of Well S-005 at Platform Gilda. These extraordinary circumstances include the following:

- Will the action have significant impacts on public health or safety?
- Will the action have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds; and other ecologically significant or critical areas?
- Will the action have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources [NEPA Section 102(2)(E)]?
Note that in a NEPA context, the issue of whether an action is controversial is based on the degree of conflict or disagreement over the available science, not because issues were raised out of context in a local newspaper article. While it's true that there is considerable controversy over the impacts of some of the fracking that occurs onshore, the type of fracking that has been proposed at Platform Gilda does not appear to have generated the same level of scientific controversy. Therefore, we concluded that this extraordinary circumstance was not triggered.
- Will the action have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?
- Will the action establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?
- Will the action have a direct relationship to other actions with individually insignificant but cumulatively significant environmental effects?
- Will the action have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places?
- Will the action have significant impacts on species listed, or proposed to be listed, on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species?
- Will the action violate a Federal law, or a State, local, or tribal law or requirement imposed for the protection of the environment?

- Will the action have a disproportionately high and adverse effect on low income or minority populations (Executive Order 12898)?
- Will the action limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (Executive Order 13007)?
- Will the action contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112)?

In addition to the categorical exclusion review described above, we contacted the U.S. EPA Region 9 Headquarters in San Francisco to ensure that chemicals used in hydraulic stimulation of wells were covered under EPA's Authorization to Discharge under the National Pollutant Discharge Elimination System for Oil and Gas Exploration, Development, and Production Facilities. In their response, EPA stated that: *"...discharges related to hydraulic fracturing would be considered to be well treatment fluids and authorized for discharge subject to the requirements of our general permit for this discharge; no special requirements or approvals would be needed."* ...thereby resolving any concerns that we had regarding the legality of including chemicals used in hydraulic stimulation in EPA permitted discharges.

Finally, we toured DCOR's Mandalay on-shore treatment facility in order to gain an understanding of their on-shore water treatment processes and assess overall site conditions. Specifically, we wanted to determine how flowback water potentially containing compounds used in hydraulic stimulation would be treated. Essentially, water will be piped from the platform and treated onshore to remove oil and other contaminants before being piped back to the platform for overboard discharge. Furthermore, DCOR will increase water sampling during hydraulic stimulation activities to ensure that these compounds of concern are not present in the discharge. We intend to conduct our own independent sampling and toxicity testing of treated process water from the facility during drilling operations. Results of operator-sponsored third party analysis will be made available to us for review.

7. What will be discharged into the ocean, any chemicals?

As stated above, at this time we believe that DCOR's treatment process will eliminate most or all of the compounds used in hydraulic stimulation prior to overboard discharge. However, the presence of these compounds in the discharge is allowed under the general NPDES permit for OCS oil and gas operations. The primary constituent proposed by DCOR for use in hydraulic stimulation is guar gum (for suspension of the proppant), which is commonly used as an ingredient in a wide variety of food products, such as salad dressings. A review of available toxicity information for guar gum indicates that it is practically non-toxic.

8. Will any of the chemicals injected seep up into the ocean?

This is highly unlikely. The chemicals used in hydraulic fracturing would need a conduit to the sea floor, usually along a fault. Although offshore California is highly faulted, faults are avoided during fracking operations since losing fluids along the fault would compromise the effectiveness of the hydraulic fracture. Fluid and pressure losses are closely monitored during fracking operations. Also the area where the fracking fluids are injected (near wellbore) will be the first areas drained during flowback and production. Leaks through casing are unlikely and are monitored and checked regularly.

9. Will the discharges harm the environment?

We do not believe that the expected discharges will harm the environment.

10. Will this contribute to additional earthquakes in the area?

The scientific community has not come to a consensus on the effect of hydraulic fracturing operations on seismic events. A recent article in the journal 'Geology' indicated that some earthquakes in Oklahoma in November of 2011 were linked to fracking fluid disposal. The authors stated that the actual fracking of the reservoir rock has not been shown to have a great effect on seismic activity; rather it is the disposal of the fracking fluids through injection wells over an 18 year period that was linked to increased seismic activity. However, the Oklahoma Geological Survey, working with the Oklahoma Corporation Commission and the U.S. Environmental Protection Agency recently announced their interpretation that the earthquakes most likely were from natural causes.

11. Is it safe to fish in the same area as these operations are occurring?

We believe that these operations will have no impact on fishing

A contract review meeting is scheduled for 4/09 with Helicopter Express, our new helicopter contractor.

Fracking Information Requests

The Region continues to work to respond to multiple public information requests and FOIA requests for information on hydraulic fracturing offshore California. Request have now come from the Associated Press, Truthout, the California Coastal Commission, and Coastal Advocates; and the Environmental Defense Center.

A representative from Schlumberger will be in the office on Thursday April 11th to provide an overview of hydraulic fracturing technology and to answer the Region's questions regarding the technological aspects of hydraulic fracturing in the offshore.



Seeley, Kenneth <kenneth.seeley@bsee.gov>

link to congressional report on chemicals used in fracking

1 message

Seeley, Kenneth <kenneth.seeley@bsee.gov>

Tue, Mar 5, 2013 at 2:36 PM

To: Nabil Masri <nabil.masri@bsee.gov>

<http://democrats.energycommerce.house.gov/sites/default/files/documents/Hydraulic-Fracturing-Chemicals-2011-4-18.pdf>

—
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**UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON ENERGY AND COMMERCE
MINORITY STAFF
APRIL 2011**

CHEMICALS USED IN HYDRAULIC FRACTURING

PREPARED BY COMMITTEE STAFF FOR:

**Henry A. Waxman
Ranking Member
Committee on Energy
and Commerce**

**Edward J. Markey
Ranking Member
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**Diana DeGette
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TABLE OF CONTENTS

I. EXECUTIVE SUMMARY.....	1
II. BACKGROUND.....	2
III. METHODOLOGY.....	4
IV. HYDRAULIC FRACTURING FLUIDS AND THEIR CONTENTS.....	5
A. Commonly Used Chemical Components.....	6
B. Toxic Chemicals.....	8
V. USE OF PROPRIETARY AND “TRADE SECRET” CHEMICALS.....	11
VI. CONCLUSION.....	12
APPENDIX A.....	13

I. EXECUTIVE SUMMARY

Hydraulic fracturing has helped to expand natural gas production in the United States, unlocking large natural gas supplies in shale and other unconventional formations across the country. As a result of hydraulic fracturing and advances in horizontal drilling technology, natural gas production in 2010 reached the highest level in decades. According to new estimates by the Energy Information Administration (EIA), the United States possesses natural gas resources sufficient to supply the United States for approximately 110 years.

As the use of hydraulic fracturing has grown, so have concerns about its environmental and public health impacts. One concern is that hydraulic fracturing fluids used to fracture rock formations contain numerous chemicals that could harm human health and the environment, especially if they enter drinking water supplies. The opposition of many oil and gas companies to public disclosure of the chemicals they use has compounded this concern.

Last Congress, the Committee on Energy and Commerce launched an investigation to examine the practice of hydraulic fracturing in the United States. As part of that inquiry, the Committee asked the 14 leading oil and gas service companies to disclose the types and volumes of the hydraulic fracturing products they used in their fluids between 2005 and 2009 and the chemical contents of those products. This report summarizes the information provided to the Committee.

Between 2005 and 2009, the 14 oil and gas service companies used more than 2,500 hydraulic fracturing products containing 750 chemicals and other components. Overall, these companies used 780 million gallons of hydraulic fracturing products – not including water added at the well site – between 2005 and 2009.

Some of the components used in the hydraulic fracturing products were common and generally harmless, such as salt and citric acid. Some were unexpected, such as instant coffee and walnut hulls. And some were extremely toxic, such as benzene and lead. Appendix A lists each of the 750 chemicals and other components used in hydraulic fracturing products between 2005 and 2009.

The most widely used chemical in hydraulic fracturing during this time period, as measured by the number of compounds containing the chemical, was methanol. Methanol, which was used in 342 hydraulic fracturing products, is a hazardous air pollutant and is on the candidate list for potential regulation under the Safe Drinking Water Act. Some of the other most widely used chemicals were isopropyl alcohol (used in 274 products), 2-butoxyethanol (used in 126 products), and ethylene glycol (used in 119 products).

Between 2005 and 2009, the oil and gas service companies used hydraulic fracturing products containing 29 chemicals that are (1) known or possible human carcinogens, (2) regulated under the Safe Drinking Water Act for their risks to human health, or (3) listed as hazardous air pollutants under the Clean Air Act. These 29 chemicals were components of more than 650 different products used in hydraulic fracturing.

The BTEX compounds – benzene, toluene, xylene, and ethylbenzene – appeared in 60 of the hydraulic fracturing products used between 2005 and 2009. Each BTEX compound is a regulated contaminant under the Safe Drinking Water Act and a hazardous air pollutant under the Clean Air Act. Benzene also is a known human carcinogen. The hydraulic fracturing companies injected 11.4 million gallons of products containing at least one BTEX chemical over the five year period.

In many instances, the oil and gas service companies were unable to provide the Committee with a complete chemical makeup of the hydraulic fracturing fluids they used. Between 2005 and 2009, the companies used 94 million gallons of 279 products that contained at least one chemical or component that the manufacturers deemed proprietary or a trade secret. Committee staff requested that these companies disclose this proprietary information. Although some companies did provide information about these proprietary fluids, in most cases the companies stated that they did not have access to proprietary information about products they purchased “off the shelf” from chemical suppliers. In these cases, the companies are injecting fluids containing chemicals that they themselves cannot identify.

II. BACKGROUND

Hydraulic fracturing – a method by which oil and gas service companies provide access to domestic energy trapped in hard-to-reach geologic formations — has been the subject of both enthusiasm and increasing environmental and health concerns in recent years. Hydraulic fracturing, used in combination with horizontal drilling, has allowed industry to access natural gas reserves previously considered uneconomical, particularly in shale formations. As a result of the growing use of hydraulic fracturing, natural gas production in the United States reached 21,577 billion cubic feet in 2010, a level not achieved since a period of high natural gas production between 1970 and 1974.¹ Overall, the Energy Information Administration now projects that the United States possesses 2,552 trillion cubic feet of potential natural gas resources, enough to supply the United States for approximately 110 years. Natural gas from shale resources accounts for 827 trillion cubic feet of this total, which is more than double what the EIA estimated just a year ago.²

Hydraulic fracturing creates access to more natural gas supplies, but the process requires the use of large quantities of water and fracturing fluids, which are injected underground at high volumes and pressure. Oil and gas service companies design fracturing fluids to create fractures and transport sand or other granular substances to prop open the fractures. The composition of these fluids varies by formation, ranging from a simple mixture of water and sand to more complex mixtures with a multitude of chemical additives. The companies may use these

¹ Energy Information Administration (EIA), *Natural Gas Monthly* (Mar. 2011), Table 1, U.S. Natural Gas Monthly Supply and Disposition Balance (online at www.eia.gov/dnav/ng/hist/n9070us1a.htm) (accessed Mar. 30, 2011).

² EIA, *Annual Energy Outlook 2011 Early Release* (Dec. 16, 2010); EIA, *What is shale gas and why is it important?* (online at www.eia.doe.gov/energy_in_brief/about_shale_gas.cfm) (accessed Mar. 30, 2011).

chemical additives to thicken or thin the fluids, improve the flow of the fluid, or kill bacteria that can reduce fracturing performance.³

Some of these chemicals, if not disposed of safely or allowed to leach into the drinking water supply, could damage the environment or pose a risk to human health. During hydraulic fracturing, fluids containing chemicals are injected deep underground, where their migration is not entirely predictable. Well failures, such as the use of insufficient well casing, could lead to their release at shallower depths, closer to drinking water supplies.⁴ Although some fracturing fluids are removed from the well at the end of the fracturing process, a substantial amount remains underground.⁵

While most underground injections of chemicals are subject to the protections of the Safe Drinking Water Act (SDWA), Congress in 2005 modified the law to exclude “the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities” from the Act’s protections.⁶ Unless oil and gas service companies use diesel in the hydraulic fracturing process, the permanent underground injection of chemicals used for hydraulic fracturing is not regulated by the Environmental Protection Agency (EPA).

Concerns also have been raised about the ultimate outcome of chemicals that are recovered and disposed of as wastewater. This wastewater is stored in tanks or pits at the well site, where spills are possible.⁷ For final disposal, well operators must either recycle the fluids for use in future fracturing jobs, inject it into underground storage wells (which, unlike the fracturing process itself, are subject to the Safe Drinking Water Act), discharge it to nearby surface water, or transport it to wastewater treatment facilities.⁸ A recent report in the *New York*

³ U.S. Environmental Protection Agency, *Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs* (June 2004) (EPA 816-R-04-003) at 4-1 and 4-2.

⁴ For instance, Pennsylvania’s Department of Environmental Protection has cited Cabot Oil & Gas Corporation for contamination of drinking water wells with seepage caused by weak casing or improper cementing of a natural gas well. See *Officials in Three States Pin Water Woes on Gas Drilling*, ProPublica (Apr. 26, 2009) (online at www.propublica.org/article/officials-in-three-states-pin-water-woes-on-gas-drilling-426) (accessed Mar. 24, 2011).

⁵ John A. Veil, Argonne National Laboratory, *Water Management Technologies Used by Marcellus Shale Gas Producers*, prepared for the Department of Energy (July 2010), at 13 (hereinafter “*Water Management Technologies*”).

⁶ 42 U.S.C. § 300h(d). Many dubbed this provision the “Halliburton loophole” because of Halliburton’s ties to then-Vice President Cheney and its role as one of the largest providers of hydraulic fracturing services. See *The Halliburton Loophole*, New York Times (Nov. 9, 2009).

⁷ See EPA, *Draft Hydraulic Fracturing Study Plan* (Feb. 7, 2011), at 37; *Regulation Lax as Gas Wells’ Tainted Water Hits Rivers*, New York Times (Feb. 26, 2011).

⁸ *Water Management Technologies*, at 13.

Times raised questions about the safety of surface water discharge and the ability of water treatment facilities to process wastewater from natural gas drilling operations.⁹

Any risk to the environment and human health posed by fracturing fluids depends in large part on their contents. Federal law, however, contains no public disclosure requirements for oil and gas producers or service companies involved in hydraulic fracturing, and state disclosure requirements vary greatly.¹⁰ While the industry has recently announced that it soon will create a public database of fluid components, reporting to this database is strictly voluntary, disclosure will not include the chemical identity of products labeled as proprietary, and there is no way to determine if companies are accurately reporting information for all wells.¹¹

The absence of a minimum national baseline for disclosure of fluids injected during the hydraulic fracturing process and the exemption of most hydraulic fracturing injections from regulation under the Safe Drinking Water Act has left an informational void concerning the contents, chemical concentrations, and volumes of fluids that go into the ground during fracturing operations and return to the surface in the form of wastewater. As a result, regulators and the public are unable effectively to assess any impact the use of these fluids may have on the environment or public health.

III. METHODOLOGY

On February 18, 2010, the Committee commenced an investigation into the practice of hydraulic fracturing and its potential impact on water quality across the United States. This investigation built on work begun by Ranking Member Henry A. Waxman in 2007 as Chairman of the Committee on Oversight and Government Reform. The Committee initially sent letters to eight oil and gas service companies engaged in hydraulic fracturing in the United States. In May 2010, the Committee sent letters to six additional oil and gas service companies to assess a

⁹ *Regulation Lax as Gas Wells' Tainted Water Hits Rivers*, New York Times (Feb. 26, 2011).

¹⁰ Wyoming, for example, recently enacted relatively strong disclosure regulations, requiring disclosure on a well-by-well basis and “for each stage of the well stimulation program,” “the chemical additives, compounds and concentrations or rates proposed to be mixed and injected.” See WCWR 055-000-003 Sec. 45. Similar regulations became effective in Arkansas this year. See Arkansas Oil and Gas Commission Rule B-19. In Wyoming, much of this information is, after an initial period of review, available to the public. See WCWR 055-000-003 Sec. 21. Other states, however, do not insist on such robust disclosure. For instance, West Virginia has no disclosure requirements for hydraulic fracturing and expressly exempts fluids used during hydraulic fracturing from the disclosure requirements applicable to underground injection of fluids for purposes of waste storage. See W. Va. Code St. R. § 34-5-7.

¹¹ See *Ground Water Protection Council Calls for Disclosure of Chemicals Used in Shale Gas Exploration*, Ground Water Protection Council (Oct. 5, 2010) (online at www.wqpmag.com/Ground-Water-Protection-Council-Calls-for-Disclosure-of-Chemicals-in-Shale-Gas-Exploration-newsPiece21700) (accessed Mar. 24, 2011).

broader range of industry practices.¹² The February and May letters requested information on the type and volume of chemicals present in the hydraulic fracturing products that each company used in their fluids between 2005 and 2009.

The 14 oil and gas service companies that received the letter voluntarily provided substantial information to the Committee. As requested, the companies reported the names and volumes of the products they used during the five-year period.¹³ For each hydraulic fracturing product reported, the companies also provided a Material Safety Data Sheet (MSDS) detailing the product's chemical components. The Occupational Safety and Health Administration (OSHA) requires chemical manufacturers to create a MSDS for every product they sell as a means to communicate potential health and safety hazards to employees and employers. The MSDS must list all hazardous ingredients if they comprise at least 1% of the product; for carcinogens, the reporting threshold is 0.1%.¹⁴

Under OSHA regulations, manufacturers may withhold the identity of chemical components that constitute "trade secrets."¹⁵ If the MSDS for a particular product used by a company subject to the Committee's investigation reported that the identity of any chemical component was a trade secret, the Committee asked the company that used that product to provide the proprietary information, if available.

IV. HYDRAULIC FRACTURING FLUIDS AND THEIR CONTENTS

Between 2005 and 2009, the 14 oil and gas service companies used more than 2,500 hydraulic fracturing products containing 750 chemicals and other components.¹⁶ Overall, these companies used 780 million gallons of hydraulic fracturing products in their fluids between 2005 and 2009. This volume does not include water that the companies added to the fluids at the well site before injection. The products are comprised of a wide range of chemicals. Some are seemingly harmless like sodium chloride (salt), gelatin, and citric acid. Others could pose a severe risk to human health or the environment.

¹² The Committee sent letters to Basic Energy Services, BJ Services, Calfrac Well Services, Complete Production Services, Frac Tech Services, Halliburton, Key Energy Services, RPC, Sanjel Corporation, Schlumberger, Superior Well Services, Trican Well Service, Universal Well Services, and Weatherford.

¹³ BJ Services, Halliburton, and Schlumberger already had provided the Oversight Committee with data for 2005 through 2007. For BJ Services, the 2005-2007 data is limited to natural gas wells. For Schlumberger, the 2005-2007 data is limited to coalbed methane wells.

¹⁴ 29 CFR 1910.1200(g)(2)(i)(C)(1).

¹⁵ 29 CFR 1910.1200.

¹⁶ Each hydraulic fracturing "product" is a mixture of chemicals or other components designed to achieve a certain performance goal, such as increasing the viscosity of water. Some oil and gas service companies create their own products; most purchase these products from chemical vendors. The service companies then mix these products together at the well site to formulate the hydraulic fracturing fluids that they pump underground.

Some of the components were surprising. One company told the Committee that it used instant coffee as one of the components in a fluid designed to inhibit acid corrosion. Two companies reported using walnut hulls as part of a breaker—a product used to degrade the fracturing fluid viscosity, which helps to enhance post-fracturing fluid recovery. Another company reported using carbohydrates as a breaker. One company used tallow soap—soap made from beef, sheep, or other animals—to reduce loss of fracturing fluid into the exposed rock.

Appendix A lists each of the 750 chemicals and other components used in the hydraulic fracturing products injected underground between 2005 and 2009.

A. Commonly Used Chemical Components

The most widely used chemical in hydraulic fracturing during this time period, as measured by the number of products containing the chemical, was methanol. Methanol is a hazardous air pollutant and a candidate for regulation under the Safe Drinking Water Act. It was a component in 342 hydraulic fracturing products. Some of the other most widely used chemicals include isopropyl alcohol, which was used in 274 products, and ethylene glycol, which was used in 119 products. Crystalline silica (silicon dioxide) appeared in 207 products, generally proppants used to hold open fractures. Table 1 has a list of the most commonly used compounds in hydraulic fracturing fluids.

Table 1. Chemical Components Appearing Most Often in Hydraulic Fracturing Products Used Between 2005 and 2009	
Chemical Component	No. of Products Containing Chemical
Methanol (Methyl alcohol)	342
Isopropanol (Isopropyl alcohol, Propan-2-ol)	274
Crystalline silica - quartz (SiO ₂)	207
Ethylene glycol monobutyl ether (2-butoxyethanol)	126
Ethylene glycol (1,2-ethanediol)	119
Hydrotreated light petroleum distillates	89
Sodium hydroxide (Caustic soda)	80

Hydraulic fracturing companies used 2-butoxyethanol (2-BE) as a foaming agent or surfactant in 126 products. According to EPA scientists, 2-BE is easily absorbed and rapidly distributed in humans following inhalation, ingestion, or dermal exposure. Studies have shown that exposure to 2-BE can cause hemolysis (destruction of red blood cells) and damage to the spleen, liver, and bone marrow.¹⁷ The hydraulic fracturing companies injected 21.9 million gallons of products containing 2-BE between 2005 and 2009. They used the highest volume of products containing 2-BE in Texas, which accounted for more than half of the volume used. EPA recently found this chemical in drinking water wells tested in Pavillion, Wyoming.¹⁸ Table 2 shows the use of 2-BE by state.

Table 2. States with the Highest Volume of Hydraulic Fracturing Fluids Containing 2-Butoxyethanol (2005-2009)	
State	Fluid Volume (gallons)
Texas	12,031,734
Oklahoma	2,186,613
New Mexico	1,871,501
Colorado	1,147,614
Louisiana	890,068
Pennsylvania	747,416
West Virginia	464,231
Utah	382,874
Montana	362,497
Arkansas	348,959

¹⁷ EPA, *Toxicological Review of Ethylene Glycol Monobutyl Ether* (Mar. 2010) at 4.

¹⁸ EPA, *Fact Sheet: January 2010 Sampling Results and Site Update, Pavillion, Wyoming Groundwater Investigation* (Aug. 2010) (online at www.epa.gov/region8/superfund/wy/pavillion/PavillionWyomingFactSheet.pdf) (accessed Mar. 1, 2011).

B. Toxic Chemicals

The oil and gas service companies used hydraulic fracturing products containing 29 chemicals that are (1) known or possible human carcinogens, (2) regulated under the Safe Drinking Water Act for their risks to human health, or (3) listed as hazardous air pollutants under the Clean Air Act. These 29 chemicals were components of 652 different products used in hydraulic fracturing. Table 3 lists these toxic chemicals and their frequency of use.

Chemical Component	Chemical Category	No. of Products
Methanol (Methyl alcohol)	HAP	342
Ethylene glycol (1,2-ethanediol)	HAP	119
Diesel ¹⁹	Carcinogen, SDWA, HAP	51
Naphthalene	Carcinogen, HAP	44
Xylene	SDWA, HAP	44
Hydrogen chloride (Hydrochloric acid)	HAP	42
Toluene	SDWA, HAP	29
Ethylbenzene	SDWA, HAP	28
Diethanolamine (2,2-iminodiethanol)	HAP	14
Formaldehyde	Carcinogen, HAP	12
Sulfuric acid	Carcinogen	9
Thiourea	Carcinogen	9
Benzyl chloride	Carcinogen, HAP	8
Cumene	HAP	6
Nitrilotriacetic acid	Carcinogen	6
Dimethyl formamide	HAP	5
Phenol	HAP	5
Benzene	Carcinogen, SDWA, HAP	3
Di (2-ethylhexyl) phthalate	Carcinogen, SDWA, HAP	3
Acrylamide	Carcinogen, SDWA, HAP	2
Hydrogen fluoride (Hydrofluoric acid)	HAP	2
Phthalic anhydride	HAP	2
Acetaldehyde	Carcinogen, HAP	1
Acetophenone	HAP	1
Copper	SDWA	1
Ethylene oxide	Carcinogen, HAP	1
Lead	Carcinogen, SDWA, HAP	1
Propylene oxide	Carcinogen, HAP	1
p-Xylene	HAP	1
Number of Products Containing a Component of Concern		652

¹⁹ According to EPA, diesel contains benzene, toluene, ethylbenzene, and xylenes. See EPA, *Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs* (June 2004) (EPA 816-R-04-003) at 4-11.

1. Carcinogens

Between 2005 and 2009, the hydraulic fracturing companies used 95 products containing 13 different carcinogens.²⁰ These included naphthalene (a possible human carcinogen), benzene (a known human carcinogen), and acrylamide (a probable human carcinogen). Overall, these companies injected 10.2 million gallons of fracturing products containing at least one carcinogen. The companies used the highest volume of fluids containing one or more carcinogens in Texas, Colorado, and Oklahoma. Table 4 shows the use of these chemicals by state.

Table 4. States with at Least 100,000 Gallons of Hydraulic Fracturing Fluids Containing a Carcinogen (2005-2009)	
State	Fluid Volume (gallons)
Texas	3,877,273
Colorado	1,544,388
Oklahoma	1,098,746
Louisiana	777,945
Wyoming	759,898
North Dakota	557,519
New Mexico	511,186
Montana	394,873
Utah	382,338

2. Safe Drinking Water Act Chemicals

Under the Safe Drinking Water Act, EPA regulates 53 chemicals that may have an adverse effect on human health and are known to or likely to occur in public drinking water systems at levels of public health concern. Between 2005 and 2009, the hydraulic fracturing companies used 67 products containing at least one of eight SDWA-regulated chemicals. Overall, they injected 11.7 million gallons of fracturing products containing at least one chemical regulated under SDWA. Most of these chemicals were injected in Texas. Table 5 shows the use of these chemicals by state.

²⁰ For purposes of this report, a chemical is considered a "carcinogen" if it is on one of two lists: (1) substances identified by the National Toxicology Program as "known to be human carcinogens" or as "reasonably anticipated to be human carcinogens"; and (2) substances identified by the International Agency for Research on Cancer, part of the World Health Organization, as "carcinogenic" or "probably carcinogenic" to humans. See U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program, *Report on Carcinogens, Eleventh Edition* (Jan. 31, 2005) and World Health Organization, International Agency for Research on Cancer, *Agents Classified by the IARC Monographs* (online at <http://monographs.iarc.fr/ENG/Classification/index.php>) (accessed Feb. 28, 2011).

The vast majority of these SDWA-regulated chemicals were the BTEX compounds – benzene, toluene, xylene, and ethylbenzene. The BTEX compounds appeared in 60 hydraulic fracturing products used between 2005 and 2009 and were used in 11.4 million gallons of hydraulic fracturing fluids. The Department of Health and Human Services, the International Agency for Research on Cancer, and EPA have determined that benzene is a human carcinogen.²¹ Chronic exposure to toluene, ethylbenzene, or xylenes also can damage the central nervous system, liver, and kidneys.²²

Table 5. States with at Least 100,000 Gallons of Hydraulic Fracturing Fluids Containing a SDWA-Regulated Chemical (2005-2009)	
State	Fluid Volume (gallons)
Texas	9,474,631
New Mexico	1,157,721
Colorado	375,817
Oklahoma	202,562
Mississippi	108,809
North Dakota	100,479

In addition, the hydraulic fracturing companies injected more than 30 million gallons of diesel fuel or hydraulic fracturing fluids containing diesel fuel in wells in 19 states.²³ In a 2004 report, EPA stated that the “use of diesel fuel in fracturing fluids poses the greatest threat” to underground sources of drinking water.²⁴ Diesel fuel contains toxic constituents, including BTEX compounds.²⁵

EPA also has created a Candidate Contaminant List (CCL), which is a list of contaminants that are currently not subject to national primary drinking water regulations but are known or anticipated to occur in public water systems and may require regulation under the Safe Drinking Water Act in the future.²⁶ Nine chemicals on that list—1-butanol, acetaldehyde, benzyl

²¹ U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry, *Public Health Statement for Benzene* (Aug. 2007).

²² EPA, *Basic Information about Toluene in Drinking Water*, *Basic Information about Ethylbenzene in Drinking Water*, and *Basic Information about Xylenes in Drinking Water* (online at <http://water.epa.gov/drink/contaminants/basicinformation/index.cfm>) (accessed Oct. 14, 2010).

²³ Letter from Reps. Henry A. Waxman, Edward J. Markey, and Diana DeGette to the Honorable Lisa Jackson, Administrator, U.S. Environmental Protection Agency (Jan. 31, 2011).

²⁴ EPA, *Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs* (June 2004) (EPA 816-R-04-003) at 4-11.

²⁵ *Id.*

²⁶ EPA, *Contaminant Candidate List 3* (online at <http://water.epa.gov/scitech/drinkingwater/dws/cc1/ccl3.cfm>) (accessed Mar. 31, 2011).

chloride, ethylene glycol, ethylene oxide, formaldehyde, methanol, n-methyl-2-pyrrolidone, and propylene oxide—were used in hydraulic fracturing products between 2005 and 2009.

3. *Hazardous Air Pollutants*

The Clean Air Act requires EPA to control the emission of 187 hazardous air pollutants, which are pollutants that cause or may cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental and ecological effects.²⁷ Between 2005 and 2009, the hydraulic fracturing companies used 595 products containing 24 different hazardous air pollutants.

Hydrogen fluoride is a hazardous air pollutant that is a highly corrosive and systemic poison that causes severe and sometimes delayed health effects due to deep tissue penetration. Absorption of substantial amounts of hydrogen fluoride by any route may be fatal.²⁸ One of the hydraulic fracturing companies used 67,222 gallons of two products containing hydrogen fluoride in 2008 and 2009.

Lead is a hazardous air pollutant that is a heavy metal that is particularly harmful to children's neurological development. It also can cause health problems in adults, including reproductive problems, high blood pressure, and nerve disorders.²⁹ One of the hydraulic fracturing companies used 780 gallons of a product containing lead in this five-year period.

Methanol is the hazardous air pollutant that appeared most often in hydraulic fracturing products. Other hazardous air pollutants used in hydraulic fracturing fluids included formaldehyde, hydrogen chloride, and ethylene glycol.

V. **USE OF PROPRIETARY AND "TRADE SECRET" CHEMICALS**

Many chemical components of hydraulic fracturing fluids used by the companies were listed on the MSDSs as "proprietary" or "trade secret." The hydraulic fracturing companies used 93.6 million gallons of 279 products containing at least one proprietary component between 2005 and 2009.³⁰

²⁷ Clean Air Act Section 112(b), 42 U.S.C. § 7412.

²⁸ HHS, Agency for Toxic Substances and Disease Registry, *Medical Management Guidelines for Hydrogen Fluoride* (online at www.atsdr.cdc.gov/mhmi/mmg11.pdf) (accessed Mar. 24, 2011).

²⁹ EPA, *Basic Information about Lead* (online at www.epa.gov/lead/pubs/leadinfo.htm) (accessed Mar. 30, 2011).

³⁰ This is likely a conservative estimate. We included only those products for which the MSDS says "proprietary" or "trade secret" instead of listing a component by name or providing the CAS number. If the MSDS listed a component's CAS as N.A. or left it blank, we did not count that as a trade secret claim, unless the company specified as such in follow-up correspondence.

The Committee requested that these companies disclose this proprietary information. Although a few companies were able to provide additional information to the Committee about some of the fracturing products, in most cases the companies stated that they did not have access to proprietary information about products they purchased “off the shelf” from chemical suppliers. The proprietary information belongs to the suppliers, not the users of the chemicals.

Universal Well Services, for example, told the Committee that it “obtains hydraulic fracturing products from third-party manufacturers, and to the extent not publicly disclosed, product composition is proprietary to the respective vendor and not to the Company.”³¹ Complete Production Services noted that the company always uses fluids from third-party suppliers who provide an MSDS for each product. Complete confirmed that it is “not aware of any circumstances in which the vendors who provided the products have disclosed this proprietary information” to the company, further noting that “such information is highly proprietary for these vendors, and would not generally be disclosed to service providers” like Complete.³² Key Energy Services similarly stated that it “generally does not have access to the trade secret information as a purchaser of the chemical(s).”³³ Trican also told the Committee that it has limited knowledge of “off the shelf” products purchased from a chemical distributor or manufacturer, noting that “Trican does not have any information in its possession about the components of such products beyond what the distributor of each product provided Trican in the MSDS sheet.”³⁴

In these cases, it appears that the companies are injecting fluids containing unknown chemicals about which they may have limited understanding of the potential risks posed to human health and the environment.

VI. CONCLUSION

Hydraulic fracturing has opened access to vast domestic reserves of natural gas that could provide an important stepping stone to a clean energy future. Yet questions about the safety of hydraulic fracturing persist, which are compounded by the secrecy surrounding the chemicals used in hydraulic fracturing fluids. This analysis is the most comprehensive national assessment to date of the types and volumes of chemical used in the hydraulic fracturing process. It shows that between 2005 and 2009, the 14 leading hydraulic fracturing companies in the United States used over 2,500 hydraulic fracturing products containing 750 compounds. More than 650 of these products contained chemicals that are known or possible human carcinogens, regulated under the Safe Drinking Water Act, or listed as hazardous air pollutants.

³¹ Letter from Reginald J. Brown to Henry A. Waxman, Chairman, Committee on Energy and Commerce, and Edward J. Markey, Chairman, Subcommittee on Energy and Environment (Apr. 16, 2010).

³² Letter from Philip Perry to Henry A. Waxman, Chairman, Committee Energy and Commerce, and Edward J. Markey, Chairman, Subcommittee on Energy and Environment (Aug. 6, 2010).

³³ E-mail from Peter Spivack to Committee Staff (Aug. 5, 2010).

³⁴ E-mail from Lee Blalack to Committee Staff (July 29, 2010).

Appendix A. Chemical Components of Hydraulic Fracturing Products, 2005-2009³⁵

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
1-(1-naphthylmethyl)quinolinium chloride	65322-65-8	1
1,2,3-propanetricarboxylic acid, 2-hydroxy-, trisodium salt, dihydrate	6132-04-3	1
1,2,3-trimethylbenzene	526-73-8	1
1,2,4-trimethylbenzene	95-63-6	21
1,2-benzisothiazol-3	2634-33-5	1
1,2-dibromo-2,4-dicyanobutane	35691-65-7	1
1,2-ethanediaminium, N, N'-bis[2-[bis(2-hydroxyethyl)methylammonio]ethyl]-N,N'-bis(2-hydroxyethyl)-N,N'-dimethyl-, tetrachloride	138879-94-4	2
1,3,5-trimethylbenzene	108-67-8	3
1,6-hexanediamine dihydrochloride	6055-52-3	1
1,8-diamino-3,6-dioxaoctane	929-59-9	1
1-hexanol	111-27-3	1
1-methoxy-2-propanol	107-98-2	3
2,2'-azobis (2-amidopropane) dihydrochloride	2997-92-4	1
2,2-dibromo-3-nitrilopropionamide	10222-01-2	27
2-acrylamido-2-methylpropanesulphonic acid sodium salt polymer	*	1
2-bromo-2-nitropropane-1,3-diol	52-51-7	4
2-butanone oxime	96-29-7	1
2-hydroxypropionic acid	79-33-4	2
2-mercaptoethanol (Thioglycol)	60-24-2	13
2-methyl-4-isothiazolin-3-one	2682-20-4	4
2-monobromo-3-nitrilopropionamide	1113-55-9	1
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	2
2-phosphonobutane-1,2,4-tricarboxylic acid, potassium salt	93858-78-7	1
2-substituted aromatic amine salt	*	1
4,4'-diaminodiphenyl sulfone	80-08-0	3
5-chloro-2-methyl-4-isothiazolin-3-one	26172-55-4	5
Acetaldehyde	75-07-0	1
Acetic acid	64-19-7	56
Acetic anhydride	108-24-7	7
Acetone	67-64-1	3
Acetophenone	98-86-2	1
Acetylenic alcohol	*	1
Acetyltriethyl citrate	77-89-4	1
Acrylamide	79-06-1	2
Acrylamide copolymer	*	1
Acrylamide copolymer	38193-60-1	1

³⁵ To compile this list of chemicals, Committee staff reviewed each Material Safety Data Sheet provided to the Committee for hydraulic fracturing products used between 2005 and 2009. Committee staff transcribed the names and CAS numbers as written in the MSDSs; as such, any inaccuracies on this list reflect inaccuracies on the MSDSs themselves.

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Acrylate copolymer	*	1
Acrylic acid, 2-hydroxyethyl ester	818-61-1	1
Acrylic acid/2-acrylamido-methylpropylsulfonic acid copolymer	37350-42-8	1
Acrylic copolymer	403730-32-5	1
Acrylic polymers	*	1
Acrylic polymers	26006-22-4	2
Acyclic hydrocarbon blend	*	1
Adipic acid	124-04-9	6
Alcohol alkoxylate	*	5
Alcohol ethoxylates	*	2
Alcohols	*	9
Alcohols, C11-15-secondary, ethoxylated	68131-40-8	1
Alcohols, C12-14-secondary	126950-60-5	4
Alcohols, C12-14-secondary, ethoxylated	84133-50-6	19
Alcohols, C12-15, ethoxylated	68131-39-5	2
Alcohols, C12-16, ethoxylated	103331-86-8	1
Alcohols, C12-16, ethoxylated	68551-12-2	3
Alcohols, C14-15, ethoxylated	68951-67-7	5
Alcohols, C9-11-iso-, C10-rich, ethoxylated	78330-20-8	4
Alcohols, C9-C22	*	1
Aldehyde	*	4
Aldol	107-89-1	1
Alfa-Alumina	*	5
Aliphatic acid	*	1
Aliphatic alcohol polyglycol ether	68015-67-8	1
Aliphatic amine derivative	120086-58-0	2
Alkaline bromide salts	*	2
Alkanes, C10-14	93924-07-3	2
Alkanes, C13-16-iso	68551-20-2	2
Alkanolamine	150-25-4	3
Alkanolamine chelate of zirconium alkoxide (Zirconium complex)	197980-53-3	4
Alkanolamine/aldehyde condensate	*	1
Alkenes	*	1
Alkenes, C>10 alpha-	64743-02-8	3
Alkenes, C>8	68411-00-7	2
Alkoxylated alcohols	*	1
Alkoxylated amines	*	6
Alkoxylated phenol formaldehyde resin	63428-92-2	1
Alkyaryl sulfonate	*	1
Alkyl (C12-16) dimethyl benzyl ammonium chloride	68424-85-1	7
Alkyl (C6-C12) alcohol, ethoxylated	68439-45-2	2
Alkyl (C9-11) alcohol, ethoxylated	68439-46-3	1
Alkyl alkoxylate	*	9
Alkyl amine	*	2

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Alkyl amine blend in a metal salt solution	*	1
Alkyl aryl amine sulfonate	255043-08-04	1
Alkyl benzenesulfonic acid	68584-22-5	2
Alkyl esters	*	2
Alkyl hexanol	*	1
Alkyl ortho phosphate ester	*	1
Alkyl phosphate ester	*	3
Alkyl quaternary ammonium chlorides	*	4
Alkylaryl sulfonate	*	1
Alkylaryl sulphonic acid	27176-93-9	1
Alkylated quaternary chloride	*	5
Alkylbenzenesulfonic acid	*	1
Alkylethoammonium sulfates	*	1
Alkylphenol ethoxylates	*	1
Almandite and pyrope garnet	1302-62-1	1
Aluminium isopropoxide	555-31-7	1
Aluminum	7429-90-5	2
Aluminum chloride	*	3
Aluminum chloride	1327-41-9	2
Aluminum oxide (alpha-Alumina)	1344-28-1	24
Aluminum oxide silicate	12068-56-3	1
Aluminum silicate (mullite)	1302-76-7	38
Aluminum sulfate hydrate	10043-01-3	1
Amides, tallow, n-[3-(dimethylamino)propyl],n-oxides	68647-77-8	4
Amidoamine	*	1
Amine	*	7
Amine bisulfite	13427-63-9	1
Amine oxides	*	1
Amine phosphonate	*	3
Amine salt	*	2
Amines, C14-18; C16-18-unsaturated, alkyl, ethoxylated	68155-39-5	1
Amines, coco alkyl, acetate	61790-57-6	3
Amines, polyethylenepoly-, ethoxylated, phosphonomethylated	68966-36-9	1
Amines, tallow alkyl, ethoxylated	61791-26-2	2
Amino compounds	*	1
Amino methylene phosphonic acid salt	*	1
Amino trimethylene phosphonic acid	6419-19-8	2
Ammonia	7664-41-7	7
Ammonium acetate	631-61-8	4
Ammonium alcohol ether sulfate	68037-05-8	1
Ammonium bicarbonate	1066-33-7	1
Ammonium bifluoride (Ammonium hydrogen difluoride)	1341-49-7	10
Ammonium bisulfate	7783-20-2	3
Ammonium bisulfite	10192-30-0	15

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Ammonium C6-C10 alcohol ethoxysulfate	68187-17-7	4
Ammonium C8-C10 alkyl ether sulfate	68891-29-2	4
Ammonium chloride	12125-02-9	29
Ammonium fluoride	12125-01-8	9
Ammonium hydroxide	1336-21-6	4
Ammonium nitrate	6484-52-2	2
Ammonium persulfate (Diammonium peroxidisulfate)	7727-54-0	37
Ammonium salt	*	1
Ammonium salt of ethoxylated alcohol sulfate	*	1
Amorphous silica	99439-28-8	1
Amphoteric alkyl amine	61789-39-7	1
Anionic copolymer	*	3
Anionic polyacrylamide	*	1
Anionic polyacrylamide	25085-02-3	6
Anionic polyacrylamide copolymer	*	3
Anionic polymer	*	2
Anionic polymer in solution	*	1
Anionic polymer, sodium salt	9003-04-7	1
Anionic water-soluble polymer	*	2
Antifoulant	*	1
Antimonate salt	*	1
Antimony pentoxide	1314-60-9	2
Antimony potassium oxide	29638-69-5	4
Antimony trichloride	10025-91-9	2
a-organic surfactants	61790-29-8	1
Aromatic alcohol glycol ether	*	2
Aromatic aldehyde	*	2
Aromatic ketones	224635-63-6	2
Aromatic polyglycol ether	*	1
Barium sulfate	7727-43-7	3
Bauxite	1318-16-7	16
Bentonite	1302-78-9	2
Benzene	71-43-2	3
Benzene, C10-16, alkyl derivatives	68648-87-3	1
Benzenecarboperoxoic acid, 1,1-dimethylethyl ester	614-45-9	1
Benzenemethanaminium	3844-45-9	1
Benzenesulfonic acid, C10-16-alkyl derivs., potassium salts	68584-27-0	1
Benzoic acid	65-85-0	11
Benzyl chloride	100-44-7	8
Biocide component	*	3
Bis(1-methylethyl)naphthalenesulfonic acid, cyclohexylamine salt	68425-61-6	1
Bis(hexamethylenetriamine) penta methylene phosphonic acid	35657-77-3	1
Bisphenol A/Epichlorohydrin resin	25068-38-6	5
Bisphenol A/Novolac epoxy resin	28906-96-9	1

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Borate	12280-03-4	2
Borate salts	*	5
Boric acid	10043-35-3	18
Boric acid, potassium salt	20786-60-1	1
Boric acid, sodium salt	1333-73-9	2
Boric oxide	1303-86-2	1
b-tricalcium phosphate	7758-87-4	1
Butanedioic acid	2373-38-8	4
Butanol	71-36-3	3
Butyl glycidyl ether	2426-08-6	5
Butyl lactate	138-22-7	4
C10-C16 ethoxylated alcohol	68002-97-1	4
C-11 to C-14 n-alkanes, mixed	*	1
C12-C14 alcohol, ethoxylated	68439-50-9	3
Calcium carbonate	471-34-1	1
Calcium carbonate (Limestone)	1317-65-3	9
Calcium chloride	10043-52-4	17
Calcium chloride, dihydrate	10035-04-8	1
Calcium fluoride	7789-75-5	2
Calcium hydroxide	1305-62-0	9
Calcium hypochlorite	7778-54-3	1
Calcium oxide	1305-78-8	6
Calcium peroxide	1305-79-9	5
Carbohydrates	*	3
Carbon dioxide	124-38-9	4
Carboxymethyl guar gum, sodium salt	39346-76-4	7
Carboxymethyl hydroxypropyl guar	68130-15-4	11
Cellophane	9005-81-6	2
Cellulase	9012-54-8	7
Cellulase enzyme	*	1
Cellulose	9004-34-6	1
Cellulose derivative	*	2
Chloromethylnaphthalene quinoline quaternary amine	15619-48-4	3
Chlorous ion solution	*	2
Choline chloride	67-48-1	3
Chromates	*	1
Chromium (iii) acetate	1066-30-4	1
Cinnamaldehyde (3-phenyl-2-propenal)	104-55-2	5
Citric acid (2-hydroxy-1,2,3 propanetricarboxylic acid)	77-92-9	29
Citrus terpenes	94266-47-4	11
Coal, granular	50815-10-6	1
Cobalt acetate	71-48-7	1
Cocamidopropyl betaine	61789-40-0	2
Cocamidopropylamine oxide	68155-09-9	1

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Coco bis-(2-hydroxyethyl) amine oxide	61791-47-7	1
Cocoamidopropyl betaine	70851-07-9	1
Cocomidopropyl dimethylamine	68140-01-2	1
Coconut fatty acid diethanolamide	68603-42-9	1
Collagen (Gelatin)	9000-70-8	6
Complex alkylaryl polyo-ester	*	1
Complex aluminum salt	*	2
Complex organometallic salt	*	2
Complex substituted keto-amine	143106-84-7	1
Complex substituted keto-amine hydrochloride	*	1
Copolymer of acrylamide and sodium acrylate	25987-30-8	1
Copper	7440-50-8	1
Copper iodide	7681-65-4	1
Copper sulfate	7758-98-7	3
Corundum (Aluminum oxide)	1302-74-5	48
Crotonaldehyde	123-73-9	1
Crystalline silica - cristobalite	14464-46-1	44
Crystalline silica - quartz (SiO ₂)	14808-60-7	207
Crystalline silica, tridymite	15468-32-3	2
Cumene	98-82-8	6
Cupric chloride	7447-39-4	10
Cupric chloride dihydrate	10125-13-0	7
Cuprous chloride	7758-89-6	1
Cured acrylic resin	*	7
Cured resin	*	4
Cured silicone rubber-polydimethylsiloxane	63148-62-9	1
Cured urethane resin	*	3
Cyclic alkanes	*	1
Cyclohexane	110-82-7	1
Cyclohexanone	108-94-1	1
Decanol	112-30-1	2
Decyl-dimethyl amine oxide	2605-79-0	4
Dextrose monohydrate	50-99-7	1
D-Glucitol	50-70-4	1
Di (2-ethylhexyl) phthalate	117-81-7	3
Di (ethylene glycol) ethyl ether acetate	112-15-2	4
Diatomaceous earth	61790-53-2	3
Diatomaceous earth, calcined	91053-39-3	7
Dibromoacetonitrile	3252-43-5	1
Dibutylaminoethanol (2-dibutylaminoethanol)	102-81-8	4
Di-calcium silicate	10034-77-2	1
Dicarboxylic acid	*	1
Didecyl dimethyl ammonium chloride	7173-51-5	1
Diesel	*	1

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Diesel	68334-30-5	3
Diesel	68476-30-2	4
Diesel	68476-34-6	43
Diethanolamine (2,2-iminodiethanol)	111-42-2	14
Diethylbenzene	25340-17-4	1
Diethylene glycol	111-46-6	8
Diethylene glycol monomethyl ether	111-77-3	4
Diethylene triaminepenta (methylene phosphonic acid)	15827-60-8	1
Diethylenetriamine	111-40-0	2
Diethylenetriamine, tall oil fatty acids reaction product	61790-69-0	1
Diisopropylnaphthalenesulfonic acid	28757-00-8	2
Dimethyl formamide	68-12-2	5
Dimethyl glutarate	1119-40-0	1
Dimethyl silicone	*	2
Dioctyl sodium sulfosuccinate	577-11-7	1
Dipropylene glycol	25265-71-8	1
Dipropylene glycol monomethyl ether (2-methoxymethylethoxy propanol)	34590-94-8	12
Di-secondary-butylphenol	53964-94-6	3
Disodium EDTA	139-33-3	1
Disodium ethylenediaminediacetate	38011-25-5	1
Disodium ethylenediaminetetraacetate dihydrate	6381-92-6	1
Disodium octaborate tetrahydrate	12008-41-2	1
Dispersing agent	*	1
d-Limonene	5989-27-5	11
Dodecyl alcohol ammonium sulfate	32612-48-9	2
Dodecylbenzene sulfonic acid	27176-87-0	14
Dodecylbenzene sulfonic acid salts	42615-29-2	2
Dodecylbenzene sulfonic acid salts	68648-81-7	7
Dodecylbenzene sulfonic acid salts	90218-35-2	1
Dodecylbenzenesulfonate isopropanolamine	42504-46-1	1
Dodecylbenzenesulfonic acid, monoethanolamine salt	26836-07-7	1
Dodecylbenzenesulphonic acid, morpholine salt	12068-08-5	1
EDTA/Copper chelate	*	2
EO-C7-9-iso-, C8-rich alcohols	78330-19-5	5
Epichlorohydrin	25085-99-8	5
Epoxy resin	*	5
Erucic amidopropyl dimethyl betaine	149879-98-1	3
Erythorbic acid	89-65-6	2
Essential oils	*	6
Ethanaminium, n,n,n-trimethyl-2-[(1-oxo-2-propenyl)oxy]-,chloride, polymer with 2-propenamide	69418-26-4	4
Ethanol (Ethyl alcohol)	64-17-5	36
Ethanol, 2-(hydroxymethylamino)-	34375-28-5	1
Ethanol, 2, 2'-(Octadecylamino) bis-	10213-78-2	1

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Ethanoldiglycine disodium salt	135-37-5	1
Ether salt	25446-78-0	2
Ethoxylated 4-nonylphenol (Nonyl phenol ethoxylate)	26027-38-3	9
Ethoxylated alcohol	104780-82-7	1
Ethoxylated alcohol	78330-21-9	2
Ethoxylated alcohols	*	3
Ethoxylated alkyl amines	*	1
Ethoxylated amine	*	1
Ethoxylated amines	61791-44-4	1
Ethoxylated fatty acid ester	*	1
Ethoxylated nonionic surfactant	*	1
Ethoxylated nonyl phenol	*	8
Ethoxylated nonyl phenol	68412-54-4	10
Ethoxylated nonyl phenol	9016-45-9	38
Ethoxylated octyl phenol	68987-90-6	1
Ethoxylated octyl phenol	9002-93-1	1
Ethoxylated octyl phenol	9036-19-5	3
Ethoxylated oleyl amine	13127-82-7	2
Ethoxylated oleyl amine	26635-93-8	1
Ethoxylated sorbitol esters	*	1
Ethoxylated tridecyl alcohol phosphate	9046-01-9	2
Ethoxylated undecyl alcohol	127036-24-2	2
Ethyl acetate	141-78-6	4
Ethyl acetoacetate	141-97-9	1
Ethyl octynol (1-octyn-3-ol,4-ethyl-)	5877-42-9	5
Ethylbenzene	100-41-4	28
Ethylene glycol (1,2-ethanediol)	107-21-1	119
Ethylene glycol monobutyl ether (2-butoxyethanol)	111-76-2	126
Ethylene oxide	75-21-8	1
Ethylene oxide-nonylphenol polymer	*	1
Ethylenediaminetetraacetic acid	60-00-4	1
Ethylene-vinyl acetate copolymer	24937-78-8	1
Ethylhexanol (2-ethylhexanol)	104-76-7	18
Fatty acid ester	*	1
Fatty acid, tall oil, hexa esters with sorbitol, ethoxylated	61790-90-7	1
Fatty acids	*	1
Fatty alcohol alkoxylate	*	1
Fatty alkyl amine salt	*	1
Fatty amine carboxylates	*	1
Fatty quaternary ammonium chloride	61789-68-2	1
Ferric chloride	7705-08-0	3
Ferric sulfate	10028-22-5	7
Ferrous sulfate, heptahydrate	7782-63-0	4
Fluoroaliphatic polymeric esters	*	1

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Formaldehyde	50-00-0	12
Formaldehyde polymer	*	2
Formaldehyde, polymer with 4-(1,1-dimethyl)phenol, methyloxirane and oxirane	30704-64-4	3
Formaldehyde, polymer with 4-nonylphenol and oxirane	30846-35-6	1
Formaldehyde, polymer with ammonia and phenol	35297-54-2	2
Formamide	75-12-7	5
Formic acid	64-18-6	24
Fumaric acid	110-17-8	8
Furfural	98-01-1	1
Furfuryl alcohol	98-00-0	3
Glass fiber	65997-17-3	3
Gluconic acid	526-95-4	1
Glutaraldehyde	111-30-8	20
Glycerol (1,2,3-Propanetriol, Glycerine)	56-81-5	16
Glycol ethers	*	9
Glycol ethers	9004-77-7	4
Glyoxal	107-22-2	3
Glyoxylic acid	298-12-4	1
Guar gum	9000-30-0	41
Guar gum derivative	*	12
Haloalkyl heteropolycycle salt	*	6
Heavy aromatic distillate	68132-00-3	1
Heavy aromatic petroleum naphtha	64742-94-5	45
Heavy catalytic reformed petroleum naphtha	64741-68-0	10
Hematite	*	5
Hemicellulase	9025-56-3	2
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine (Triazine)	4719-04-4	4
Hexamethylenetetramine	100-97-0	37
Hexanediamine	124-09-4	1
Hexanes	*	1
Hexylene glycol	107-41-5	5
Hydrated aluminum silicate	1332-58-7	4
Hydrocarbon mixtures	8002-05-9	1
Hydrocarbons	*	3
Hydrosulfurized kerosine (petroleum)	64742-81-0	3
Hydrosulfurized light catalytic cracked distillate (petroleum)	68333-25-5	1
Hydrosulfurized middle distillate (petroleum)	64742-80-9	1
Hydrogen chloride (Hydrochloric acid)	7647-01-0	42
Hydrogen fluoride (Hydrofluoric acid)	7664-39-3	2
Hydrogen peroxide	7722-84-1	4
Hydrogen sulfide	7783-06-4	1
Hydrotreated and hydrocracked base oil	*	2
Hydrotreated heavy naphthenic distillate	64742-52-5	3
Hydrotreated heavy paraffinic petroleum distillates	64742-54-7	1

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Hydrotreated heavy petroleum naphtha	64742-48-9	7
Hydrotreated light petroleum distillates	64742-47-8	89
Hydrotreated middle petroleum distillates	64742-46-7	3
Hydroxyacetic acid (Glycolic acid)	79-14-1	6
Hydroxyethylcellulose	9004-62-0	1
Hydroxyethylethylenediaminetriacetic acid, trisodium salt	139-89-9	1
Hydroxylamine hydrochloride	5470-11-1	1
Hydroxypropyl guar gum	39421-75-5	2
Hydroxysultaine	*	1
Inner salt of alkyl amines	*	2
Inorganic borate	*	3
Inorganic particulate	*	1
Inorganic salt	*	1
Inorganic salt	533-96-0	1
Inorganic salt	7446-70-0	1
Instant coffee purchased off the shelf	*	1
Inulin, carboxymethyl ether, sodium salt	430439-54-6	1
Iron oxide	1332-37-2	2
Iron oxide (Ferric oxide)	1309-37-1	18
Iso amyl alcohol	123-51-3	1
Iso-alkanes/n-alkanes	*	10
Isobutanol (Isobutyl alcohol)	78-83-1	4
Isomeric aromatic ammonium salt	*	1
Isooctanol	26952-21-6	1
Isooctyl alcohol	68526-88-0	1
Isooctyl alcohol bottoms	68526-88-5	1
Isopropanol (Isopropyl alcohol, Propan-2-ol)	67-63-0	274
Isopropylamine	75-31-0	1
Isotridecanol, ethoxylated	9043-30-5	1
Kerosene	8008-20-6	13
Lactic acid	10326-41-7	1
Lactic acid	50-21-5	1
L-Dilactide	4511-42-6	1
Lead	7439-92-1	1
Light aromatic solvent naphtha	64742-95-6	11
Light catalytic cracked petroleum distillates	64741-59-9	1
Light naphtha distillate, hydrotreated	64742-53-6	1
Low toxicity base oils	*	1
Maghemite	*	2
Magnesium carbonate	546-93-0	1
Magnesium chloride	7786-30-3	4
Magnesium hydroxide	1309-42-8	4
Magnesium iron silicate	1317-71-1	3
Magnesium nitrate	10377-60-3	5

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Magnesium oxide	1309-48-4	18
Magnesium peroxide	1335-26-8	2
Magnesium peroxide	14452-57-4	4
Magnesium phosphide	12057-74-8	1
Magnesium silicate	1343-88-0	3
Magnesium silicate hydrate (talc)	14807-96-6	2
Magnetite	*	3
Medium aliphatic solvent petroleum naphtha	64742-88-7	10
Metal salt	*	2
Metal salt solution	*	1
Methanol (Methyl alcohol)	67-56-1	342
Methyl isobutyl carbinol (Methyl amyl alcohol)	108-11-2	3
Methyl salicylate	119-36-8	6
Methyl vinyl ketone	78-94-4	2
Methylcyclohexane	108-87-2	1
Mica	12001-26-2	3
Microcrystalline silica	1317-95-9	1
Mineral	*	1
Mineral Filler	*	1
Mineral/spirits (stoddard solvent)	8052-41-3	2
Mixed titanium ortho ester complexes	*	1
Modified alkane	*	1
Modified cycloaliphatic amine adduct	*	3
Modified lignosulfonate	*	1
Monoethanolamine (Ethanolamine)	141-43-5	17
Monoethanolamine borate	26038-87-9	1
Morpholine	110-91-8	2
Mullite	1302-93-8	55
n,n-dibutylthiourea	109-46-6	1
N,N-dimethyl-1-octadecanamine-HCl	*	1
N,N-dimethyloctadecylamine	124-28-7	3
N,N-dimethyloctadecylamine hydrochloride	1613-17-8	2
n,n'-Methylenebisacrylamide	110-26-9	1
n-alkyl dimethyl benzyl ammonium chloride	139-08-2	1
Naphthalene	91-20-3	44
Naphthalene derivatives	*	1
Naphthalenesulphonic acid, bis (1-methylethyl)-methyl derivatives	99811-86-6	1
Natural asphalt	12002-43-6	1
n-cocoamidopropyl-n,n-dimethyl-n-2-hydroxypropylsulfobetaine	68139-30-0	1
n-dodecyl-2-pyrrolidone	2687-96-9	1
N-heptane	142-82-5	1
Nickel sulfate hexahydrate	10101-97-0	2
Nitrilotriacetamide	4862-18-4	4
Nitrilotriacetic acid	139-13-9	6

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Nitrilotriacetonitrile	7327-60-8	3
Nitrogen	7727-37-9	9
n-Methylpyrrolidone	872-50-4	1
Nonane, all isomers	*	1
Non-hazardous salt	*	1
Nonionic surfactant	*	1
Nonyl phenol ethoxylate	*	2
Nonyl phenol ethoxylate	9016-45-6	2
Nonyl phenol ethoxylate	9018-45-9	1
Nonylphenol	25154-52-3	1
Nonylphenol, ethoxylated and sulfated	9081-17-8	1
N-propyl zirconate	*	1
N-tallowalkyltrimethylenediamines	*	1
Nuisance particulates	*	2
Nylon fibers	25038-54-4	2
Octanol	111-87-5	2
Octyltrimethylammonium bromide	57-09-0	1
Olefinic sulfonate	*	1
Olefins	*	1
Organic acid salt	*	3
Organic acids	*	1
Organic phosphonate	*	1
Organic phosphonate salts	*	1
Organic phosphonic acid salts	*	6
Organic salt	*	1
Organic sulfur compound	*	2
Organic titanate	*	2
Organiophilic clay	*	2
Organo-metallic ammonium complex	*	1
Other inorganic compounds	*	1
Oxirane, methyl-, polymer with oxirane, mono-C10-16-alkyl ethers, phosphates	68649-29-6	1
Oxyalkylated alcohol	*	6
Oxyalkylated alcohols	228414-35-5	1
Oxyalkylated alkyl alcohol	*	1
Oxyalkylated alkylphenol	*	1
Oxyalkylated fatty acid	*	2
Oxyalkylated phenol	*	1
Oxyalkylated polyamine	*	1
Oxylated alcohol	*	1
Paraffin wax	8002-74-2	1
Paraffinic naphthenic solvent	*	1
Paraffinic solvent	*	5
Paraffins	*	1
Perlite	93763-70-3	1

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Petroleum distillates	*	26
Petroleum distillates	64742-65-0	1
Petroleum distillates	64742-97-5	1
Petroleum distillates	68477-31-6	3
Petroleum gas oils	*	1
Petroleum gas oils	64741-43-1	1
Phenol	108-95-2	5
Phenol-formaldehyde resin	9003-35-4	32
Phosphate ester	*	6
Phosphate esters of alkyl phenyl ethoxylate	68412-53-3	1
Phosphine	*	1
Phosphonic acid	*	1
Phosphonic acid	129828-36-0	1
Phosphonic acid	13598-36-2	3
Phosphonic acid (dimethylamino(methylene))	29712-30-9	1
Phosphonic acid, [nitrilotris(methylene)]tris-, pentasodium salt	2235-43-0	1
Phosphoric acid	7664-38-2	7
Phosphoric acid ammonium salt	*	1
Phosphoric acid, mixed decyl, octyl and ethyl esters	68412-60-2	3
Phosphorous acid	10294-56-1	1
Phthalic anhydride	85-44-9	2
Pine oil	8002-09-3	5
Plasticizer	*	1
Poly(oxy-1,2-ethanediyl)	24938-91-8	1
Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched (Nonylphenol ethoxylate)	127087-87-0	3
Poly(oxy-1,2-ethanediyl), alpha-hydro-omega-hydroxy	65545-80-4	1
Poly(oxy-1,2-ethanediyl), alpha-sulfo-omega-(hexyloxy)-, ammonium salt	63428-86-4	3
Poly(oxy-1,2-ethanediyl),a-(nonylphenyl)-w-hydroxy-, phosphate	51811-79-1	1
Poly-(oxy-1,2-ethanediyl)-alpha-undecyl-omega-hydroxy	34398-01-1	6
Poly(sodium-p-styrenesulfonate)	25704-18-1	1
Poly(vinyl alcohol)	25213-24-5	2
Polyacrylamides	9003-05-8	2
Polyacrylamides	*	1
Polyacrylate	*	1
Polyamine	*	2
Polyanionic cellulose	*	2
Polyepichlorohydrin, trimethylamine quaternized	51838-31-4	1
Polyetheramine	9046-10-0	3
Polyether-modified trisiloxane	27306-78-1	1
Polyethylene glycol	25322-68-3	20
Polyethylene glycol ester with tall oil fatty acid	9005-02-1	1
Polyethylene polyammonium salt	68603-67-8	2
Polyethylene-polypropylene glycol	9003-11-6	5

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Poly lactide resin	*	3
Polyoxyalkylenes	*	1
Polyoxyethylene castor oil	61791-12-6	1
Polyphosphoric acid, esters with triethanolamine, sodium salts	68131-72-6	1
Polypropylene glycol	25322-69-4	1
Polysaccharide	*	20
Polyvinyl alcohol	*	1
Polyvinyl alcohol	9002-89-5	2
Polyvinyl alcohol/polyvinylacetate copolymer	*	1
Potassium acetate	127-08-2	1
Potassium carbonate	584-08-7	12
Potassium chloride	7447-40-7	29
Potassium formate	590-29-4	3
Potassium hydroxide	1310-58-3	25
Potassium iodide	7681-11-0	6
Potassium metaborate	13709-94-9	3
Potassium metaborate	16481-66-6	3
Potassium oxide	12136-45-7	1
Potassium pentaborate	*	1
Potassium persulfate	7727-21-1	9
Propanol (Propyl alcohol)	71-23-8	18
Propanol, [2(2-methoxy-methylethoxy) methylethoxy]	20324-33-8	1
Propargyl alcohol (2-propyn-1-ol)	107-19-7	46
Propylene carbonate (1,3-dioxolan-2-one, methyl-)	108-32-7	2
Propylene glycol (1,2-propanediol)	57-55-6	18
Propylene oxide	75-56-9	1
Propylene pentamer	15220-87-8	1
p-Xylene	106-42-3	1
Pyridinium, 1-(phenylmethyl)-, ethyl methyl derivatives, chlorides	68909-18-2	9
Pyrogenic silica	112945-52-5	3
Quaternary amine compounds	*	3
Quaternary amine compounds	61789-18-2	1
Quaternary ammonium compounds	*	9
Quaternary ammonium compounds	19277-88-4	1
Quaternary ammonium compounds	68989-00-4	1
Quaternary ammonium compounds	8030-78-2	1
Quaternary ammonium compounds, dicoco alkyl dimethyl, chlorides	61789-77-3	2
Quaternary ammonium salts	*	2
Quaternary compound	*	1
Quaternary salt	*	2
Quaternized alkyl nitrogenated compound	68391-11-7	2
Rafinates (petroleum), sorption process	64741-85-1	2
Residues (petroleum), catalytic reformer fractionator	64741-67-9	10
Resin	8050-09-7	2

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Rutile	1317-80-2	2
Salt of phosphate ester	*	3
Salt of phosphono-methylated diamine	*	1
Salts of oxyalkylated fatty amines	68551-33-7	1
Secondary alcohol	*	7
Silica (Silicon dioxide)	7631-86-9	47
Silica, amorphous	*	3
Silica, amorphous precipitated	67762-90-7	1
Silicon carboxylate	681-84-5	1
Silicon dioxide (Fused silica)	60676-86-0	7
Silicone emulsion	*	1
Sodium (C14-16) olefin sulfonate	68439-57-6	4
Sodium 2-ethylhexyl sulfate	126-92-1	1
Sodium acetate	127-09-3	6
Sodium acid pyrophosphate	7758-16-9	5
Sodium alkyl diphenyl oxide sulfonate	28519-02-0	1
Sodium aluminate	1302-42-7	1
Sodium aluminum phosphate	7785-88-8	1
Sodium bicarbonate (Sodium hydrogen carbonate)	144-55-8	10
Sodium bisulfite	7631-90-5	6
Sodium bromate	7789-38-0	10
Sodium bromide	7647-15-6	1
Sodium carbonate	497-19-8	14
Sodium chlorate	7775-09-9	1
Sodium chloride	7647-14-5	48
Sodium chlorite	7758-19-2	8
Sodium cocaminopropionate	68608-68-4	2
Sodium diacetate	126-96-5	2
Sodium erythorbate	6381-77-7	4
Sodium glycolate	2836-32-0	2
Sodium hydroxide (Caustic soda)	1310-73-2	80
Sodium hypochlorite	7681-52-9	14
Sodium lauryl-ether sulfate	68891-38-3	3
Sodium metabisulfite	7681-57-4	1
Sodium metaborate	7775-19-1	2
Sodium metaborate tetrahydrate	35585-58-1	6
Sodium metasilicate, anhydrous	6834-92-0	2
Sodium nitrite	7632-00-0	1
Sodium oxide (Na ₂ O)	1313-59-3	1
Sodium perborate	1113-47-9	1
Sodium perborate	7632-04-4	1
Sodium perborate tetrahydrate	10486-00-7	4
Sodium persulfate	7775-27-1	6
Sodium phosphate	*	2

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Sodium polyphosphate	68915-31-1	1
Sodium salicylate	54-21-7	1
Sodium silicate	1344-09-8	2
Sodium sulfate	7757-82-6	7
Sodium tetraborate	1330-43-4	7
Sodium tetraborate decahydrate	1303-96-4	10
Sodium thiosulfate	7772-98-7	10
Sodium thiosulfate pentahydrate	10102-17-7	3
Sodium trichloroacetate	650-51-1	1
Sodium tripolyphosphate	7758-29-4	2
Sodium xylene sulfonate	1300-72-7	3
Sodium zirconium lactate	174206-15-6	1
Solvent refined heavy naphthenic petroleum distillates	64741-96-4	1
Sorbitan monooleate	1338-43-8	1
Stabilized aqueous chlorine dioxide	10049-04-4	1
Stannous chloride	7772-99-8	1
Stannous chloride dihydrate	10025-69-1	6
Starch	9005-25-8	5
Steam cracked distillate, cyclodiene dimer, dicyclopentadiene polymer	68131-87-3	1
Steam-cracked petroleum distillates	64742-91-2	6
Straight run middle petroleum distillates	64741-44-2	5
Substituted alcohol	*	2
Substituted alkene	*	1
Substituted alkylamine	*	2
Sucrose	57-50-1	1
Sulfamic acid	5329-14-6	6
Sulfate	*	1
Sulfonate acids	*	1
Sulfonate surfactants	*	1
Sulfonic acid salts	*	1
Sulfonic acids, petroleum	61789-85-3	1
Sulfur compound	*	1
Sulfuric acid	7664-93-9	9
Sulfuric acid, monodecyl ester, sodium salt	142-87-0	2
Sulfuric acid, mono-octyl ester, sodium salt	142-31-4	2
Surfactants	*	13
Sweetened middle distillate	64741-86-2	1
Synthetic organic polymer	9051-89-2	2
Tall oil (Fatty acids)	61790-12-3	4
Tall oil, compound with diethanolamine	68092-28-4	1
Tallow soap	*	2
Tar bases, quinoline derivatives, benzyl chloride-quaternized	72480-70-7	5
Tergitol	68439-51-0	1
Terpene hydrocarbon byproducts	68956-56-9	3

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Terpenes	*	1
Terpenes and terpenoids, sweet orange-oil	68647-72-3	2
Terpineol	8000-41-7	1
Tert-butyl hydroperoxide	75-91-2	6
Tetra-calcium-alumino-ferrite	12068-35-8	1
Tetraethylene glycol	112-60-7	1
Tetraethylenepentamine	112-57-2	2
Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione (Dazomet)	533-74-4	13
Tetrakis (hydroxymethyl) phosphonium sulfate	55566-30-8	12
Tetramethyl ammonium chloride	75-57-0	14
Tetrasodium 1-hydroxyethylidene-1,1-diphosphonic acid	3794-83-0	1
Tetrasodium ethylenediaminetetraacetate	64-02-8	10
Thiocyanate sodium	540-72-7	1
Thioglycolic acid	68-11-1	6
Thiourea	62-56-6	9
Thiourea polymer	68527-49-1	3
Titanium complex	*	1
Titanium oxide	13463-67-7	19
Titanium, isopropoxy (triethanolamine)	74665-17-1	2
Toluene	108-88-3	29
Treated ammonium chloride (with anti-caking agent a or b)	12125-02-9	1
Tributyl tetradecyl phosphonium chloride	81741-28-8	5
Tri-calcium silicate	12168-85-3	1
Tridecyl alcohol	112-70-9	1
Triethanolamine (2,2,2-nitilotriethanol)	102-71-6	21
Triethanolamine polyphosphate ester	68131-71-5	3
Triethanolamine titanate	36673-16-2	1
Triethanolamine zirconate	101033-44-7	6
Triethanolamine zirconium chelate	*	1
Triethyl citrate	77-93-0	1
Triethyl phosphate	78-40-0	1
Triethylene glycol	112-27-6	3
Triisopropanolamine	122-20-3	5
Trimethylammonium chloride	593-81-7	1
Trimethylbenzene	25551-13-7	5
Trimethyloctadecylammonium (1-octadecanaminium, N,N,N-trimethyl-, chloride)	112-03-8	6
Tris(hydroxymethyl)aminomethane	77-86-1	1
Trisodium ethylenediaminetetraacetate	150-38-9	1
Trisodium ethylenediaminetriacetate	19019-43-3	1
Trisodium nitrilotriacetate	18662-53-8	8
Trisodium nitrilotriacetate (Nitrilotriacetic acid, trisodium salt monohydrate)	5064-31-3	9
Trisodium ortho phosphate	7601-54-9	1
Trisodium phosphate dodecahydrate	10101-89-0	1
Ulexite	1319-33-1	1

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Urea	57-13-6	3
Wall material	*	1
Walnut hulls	*	2
White mineral oil	8042-47-5	8
Xanthan gum	11138-66-2	6
Xylene	1330-20-7	44
Zinc chloride	7646-85-7	1
Zinc oxide	1314-13-2	2
Zirconium complex	*	10
Zirconium dichloride oxide	7699-43-6	1
Zirconium oxide sulfate	62010-10-0	2
Zirconium sodium hydroxy lactate complex (Sodium zirconium lactate)	113184-20-6	2

** Components marked with an asterisk appeared on at least one MSDS without an identifying CAS number. The MSDSs in these cases marked the CAS as proprietary, noted that the CAS was not available, or left the CAS field blank. Components marked with an asterisk may be duplicative of other components on this list, but Committee staff have no way of identifying such duplicates without the identifying CAS number.*



Seeley, Kenneth <kenneth.seeley@bsee.gov>

Fwd: Media Inquiry for PAC region

1 message

Seeley, Kenneth <kenneth.seeley@bsee.gov>

Wed, Feb 27, 2013 at 2:41 PM

To: Drew Mayerson <drew.mayerson@bsee.gov>, Daniel Knowlson <daniel.knowlson@bsee.gov>, Nabil Masri <nabil.masri@bsee.gov>, Jaron Ming <jaron.ming@bsee.gov>

I highlighted the sections of the VC Reporter story that I thought I should address. If anyone thinks there are others let me know.

Ken

----- Forwarded message -----

From: Pardi, Nicholas <nicholas.pardi@bsee.gov>

Date: Tue, Feb 26, 2013 at 8:54 AM

Subject: Re: Media Inquiry for PAC region

To: "Mayerson, Drew" <drew.mayerson@bsee.gov>

Cc: "Ming, Jaron" <Jaron.Ming@bsee.gov>, "Masri, Nabil" <Nabil.Masri@bsee.gov>, Kenneth Seeley <kenneth.seeley@bsee.gov>

For your awareness, this latest inquiry is the result of the following article:

Fracking offshore

Lack of transparency for the controversial practice raises major concerns for locals

http://www.vcreporter.com/cms/story/detail/fracking_offshore/10432/

In the summer leading up to Hurricane Sandy, crowds surrounded the state capitol at Albany, N.Y. They wanted to know what would happen in case of a natural gas leak, or a bigger natural gas disaster, to their drinking water. What sparked them? Many had seen the footage of water so contaminated from natural gas frack drilling that it turned brown or caught fire. These water debacles sparked a nationwide movement against natural gas fracking. Fewer people know about fracking in California, and the anti-fracking movement is smaller, but the tide has turned since the time when natural gas was considered a safer alternative energy.

The days when oil companies could find enough oil through conventional drilling are long over on the Central Coast. Drillers cannot get oil trapped tightly in the shale the older ways. It is trapped in rock and has to be coerced out through fracking. Now they need an Olympic-size pool's worth of water infused with chemicals to splinter the rock and discharge the oil from it. They drill a hole, lay a pipe, and drop a bomb where it explodes and tears into the pipe. Making its way down through the pipe hole are sand and chemical water at such force that it splinters the shale and dislodges the oil from it. Central Coast frack drilling can tunnel down a mile and through the water table. Scientists are split on whether fracking can contaminate our drinking supply or cause earthquakes. Wastewater composed of toxic, safe and unknown chemicals is injected into a well and pushed down thousands of feet, where it builds pressure. That pressure under the earth could be a problem.

Oil company executives can describe the thick and sticky shale oil with the same kind of loving tenderness and

cravings as any Central Coast reckless wine sipper. Washington and Sacramento have simultaneously fed and regulated the thirst for it. The Dick Cheney-created Halliburton loophole made fracking exempt from much EPA regulation and from the Safe Drinking Water Act. This means frackers do not have to disclose the chemicals they use. Drillers in California are not required to notify landowners or residents who utilize nearby water sources of their intent to frack. This lack of transparency has been a sore spot for the often-locked-in-conflict local farmers, commercial fishing industry and environmentalists who now find themselves allied in the battle against fracking's quest for water. Because so little transparency exists, rumors swirl around the where and when of offshore fracking.

The view from McGrath State Beach

Last June, fresh off the primary election, local campaigning Democrats staged a press conference for Oxnard's McGrath Beach, which was reopening after being closed for lack of funding following Department of Parks and Recreation's sordid fund hoarding. Das Williams, D-Santa Barbara, who was running for re-election for the State Assembly district stretching from Santa Barbara to parts of Oxnard, took advantage of the news cameras and changed from an orange T-shirt into a full wetsuit and bright-yellow boogie board, walked into the ocean, and rode the whitewash of the small choppy waves for more shoots. What the camera could not capture was the crossing of slant- and horizontally-laid oil pipes underneath the waves, chemical injection wells on federally regulated oil rigs beyond the white wash, and the Channel Islands thrust fault capable of producing a magnitude 7.2 earthquake. From Williams' vantage point, he could see the reeds and fences hiding more oil company chemically injected and disposal wells. If he had walked south down the beach past McGrath Lake, he would have found Well 1218 producing more than 32,000 barrels so far this year alone.

Williams splashed around over one of the county's major access points to the oil-abundant underground geological development called the Monterey Shale. This now-commercialized piece of geological property encompasses parts of Ventura, Santa Barbara and Monterey counties. Tim Marquez, president of Venoco, told the Oil & Gas Financial Journal that "We knew that our future efforts were going to be focused on the Monterey Shale." Venoco literature claims the company has explored the shale since 1997.

Fracking is a new frontier and Marquez embraces its Wild West nature and its financial and environmental riskiness. The Monterey Shale is about the closest thing an energy company can get to a new oil frontier on the Central Coast in decades. But like the old Wild West, the federal government is still bankrolling while letting companies use its national forests and federal waters.

According to a Venoco report, the company is leasing 380,000 acres in California valued at \$1.4 billion. It claims that it has already devoted millions of dollars into setting up new wells and exploring the shale, including the Sockeye field offshore from McGrath Beach. Evidence points to more local shale in its future. Venoco recently advertised for a Monterey Shale expertise job for its Carpinteria office.

What wells has Venoco fracked so far? The company dodges that question. The anti-fracking movement has grown large enough to put oil companies on edge. Calls to Venoco were not returned. But just two years ago, the mood was different. Scarlett Johansson was not hosting celebrity screenings for Gasland, the anti-fracking movie that had not yet won an Academy Award. New York farmers, chefs, wine connoisseurs and environmentalists had not yet joined to push New York Gov. Andrew Cuomo, Democrat, to regulate fracking. Matt Damon was not releasing an anti-fracking movie called #Promised Land# that he would use as his next Oscar platform.

But in the more frack-friendly year 2010, Venoco's promotional literature claimed it had fracked and horizontally drilled one well and acidized a second to get to the shale offshore from McGrath Beach. Nestled in federal waters between Oxnard and Santa Cruz Island is Platform Gail. The Santa Barbara-based Environmental Defense Center found that Venoco fracked Platform Gail in Sockeye offshore. Where did the wastewater from the offshore frack go? What was the chemical composition? So far, the only two institutions likely to know for certain are Venoco

and a few of the federal regulatory bureaucracies such as the Bureau of Ocean Management or Bureau of Safety and Environmental Enforcement. But none is informing the public.

As for spills and water contamination, frack watchers are still trying to get at the chemical formulas of fracking fluid. A 2005 Venoco document reveals XC polymer, a xanthum gum manufactured by Halliburton. Reporters from the nonprofit investigative unit Propublica found hazardous chemicals such as benzene, formaldehyde, sulfuric acid, kerosene, hydrofluoric acid, hydrochloric acid, formic acid and lead. Researchers at the State University of New York at Albany found radioactive materials such as uranium, radium and radon in tests of fracking wastewater. The National Resources Defense Council found a chemical connected to cancer development, arsenic. The Breast Cancer Fund has reported on the risks for breast cancer from toluene and endocrine-disrupting compounds such as phthalate DEHP found in fracking fluid. EPA studies show that toluene can cause spontaneous abortion. Then there is the question that remains of how the hundreds of thousands of gallons of chemical wastewater are disposed of.

According to the Environmental Defense Center, Venoco fracked platform Gail in Sockeye field in the Santa Barbara Channel.

According to the Ventura County Star, Venoco spilled 63 barrels of oil in 2010 from Platform Gail, the year following the reported frack job. Ordinarily, a 63-barrel leak is not controversial, but if it includes fracking fluid or its waste, a concern exists. A frack spill is not an ordinary oil spill. When the chemicals get into the water they are difficult to get out. They spread fast and easy, do not easily breakdown, and can cause more health hazards than crude oil (So, they don't know what the chemicals are, but they can conclude that they spread fast and easy, don't break down, are more hazardous and harder to clean up. Interesting).

The acidity of carbon waste through oil spills threatens marine life and commercial fishing. Shellfish can be especially vulnerable to the acidic water that comes with fracking. But it's not just commercial fishing that fracking can threaten. Venoco's fracking and well acidization next to the Channel Islands Marine Reserve undermines the mission of protecting marine life and habitats, much as state and national parks protect wildlife on land. Little research exists on the impact of fracking chemicals on ocean life.

Fracking started 60 years ago. So why all the fuss? For many, the newer form of horizontal drilling, that is drilling (that goes down, then across) is what makes the new practices more dangerous than those old Fillmore and Los Padres National Forest frack jobs. With horizontal's criss-crossing through the water table, it is more likely to cause contamination.

Venoco's drilling onshore and offshore from McGrath, with its slant and horizontal drilling, has created a regulatory conundrum. Fracking skeptics argue that it is specifically what makes slant and horizontal drilling so appealing. Horizontal drilling can start onshore, then cross to offshore. If there is another spill like in 2010, who regulates this? The federal government? The state? When asked about who regulates a frack job that burrows underneath both land and ocean, Erin Curtis, Federal Bureau of Land Management's external affairs representative, told me that "Whoever is responsible is who is permitting the oil company. That is who should regulate." But if Venoco should spill again as it did in 2010, and it pollutes both offshore and onshore, who will be in charge of remedying that? There is no clear answer from Venoco's office about this question.

The campaigning Democratic candidates also had a wonderful view of the Santa Clara River running through McGrath State Beach and into the ocean. As of August, conversations with the United Water Conservation District, the local agency regulating drinking water coming from the Santa Clara River, revealed that fracking was

not even on the radar. This is the agency that must divvy out scarce water.

Aera Energy off McGrath Beach

According to interviews with the California Department of Land Conservation, the state agency in charge of regulating the energy industry, fracking waste fluid can end up in either a waterflood injection well or a water disposal well. While oil and gas companies are not required to report on their fracking chemical compositions, or where they have drilled or injected it into the earth, they do have to get approvals to build wells to dispose of the waste. Wherever one can find an injection or a water disposal well, it is likely some fracking happened nearby.

Two of the biggest global oil companies, Shell and ExxonMobil, teamed up to form Aera Energy. Aera has a new waterflow well near McGrath Beach. This well has only August production on record with the California Department of Conservation. In that month, Aera injected 13,262 barrels of waste.

Our region is what seismologists call seismically active. Several earthquakes have been caused by faults that extend into the Santa Barbara-Ventura ocean basin. We have San Andreas and the Santa Ynez River fault zone to the north, the San Cayetano fault to the east, the offshore Pitas Point near Carpinteria, Red Mountain fault to the east, the Oak Ridge lying on both Ventura and Oxnard, and the offshore Santa Cruz Island and Channel Islands faults to the west. Even the Pacific Operators Offshore LLC (PACOPS), a local offshore driller, in a report to the Federal Bureau of Energy Management (BOEM) admits that all these faults can produce shaking around the wells. The cracking of the shale and the reinjection of waste water back to the strata causes pressure. All this happens on these fault systems.

Aera is no stranger to fracking. Last May, Aera fracked in the mountains above Ventura Avenue. This job used 32,004 gallons of water and drilled down 4,960 feet. Aera admits to using methanol, a common chemical used in fracking and also found in fuel, antifreeze and paint solvent. Inhaling methanol can cause eye irritation, headaches and can be fatal. Ingesting it can produce eye damage or death. Aera's chemical cocktail also included, boric acid, insecticide and flame retardants.

According to a joint study by the U.S. Department of Energy, the National Academy of Sciences, the Institute of Medicine and the National Research Council, fracturing of rock has a lower risk of earthquake, but the disposal of the waste fluid into a well is high risk. Where lies an injection well also lies an earthquake risk. According to this study, the hundreds of thousands of gallons of waste do not simply disappear in the earth's strata. Underground, the waste builds pressure and causes more cracks in the already cracked earth. Conducting the frack jobs on fault zones just exacerbates the earthquake risk.

What makes this study unique is that its researchers and peer reviewers did not possess ties to energy companies. This is not as common as one might expect. A Plains Exploration study claimed fracking in the Baldwin Hills in Los Angeles was safe, but community groups complained that the peer reviewer had connections to oil and gas. Plains Exploration reportedly paid a Texas geologist \$400,000 to write a study that showed that fracking did not contaminate ground water. The oil and gas industry gave State University of New York at Buffalo's geology department \$6 million. A new term has been coined to describe these Ph.D.s: frackademics.

Greka's Rincon

Nestled between Carpinteria and Ventura is the Rincon oil field, the desirable piece of ocean property with

legendary breaks that has surfers, environmentalists and oil interests competing for its future. Where the state's Conservation Department gave Venoco safety awards in spite of its 32 violations for not following operating procedures from 2005 to 2010, Greka, with its perishing pipelines and rusting facilities, has the opposite reputation with 21 separate crude oil spills in Santa Barbara waterways from 2005 through 2010. One of the spills included a 67,000-gallon oil spill in early December 2007 followed by an 84,000-gallon spill in 2008. Greka's poor public image prompted a name change to HVI Canyon Cat last year. The Santa Barbara Independent reported that the U.S. Department of Justice alleges that HVI Cat Canyon failed to implement adequate plans to prevent spills, which is required by the Clean Water Act.

Photo by Matthew Hill

Venoco has operations on the pier off the coast in Carpinteria, where, apparently, work has ramped up recently.

In 2002, the company acquired Rincon Island Partnership. According to California Department of Conservation records, Rincon Island Partnership has at least five waterflood injection wells. Two are drilled either on a slant or horizontally. **Greka has a thing for horizontal drilling. One of its holdings is Horizontal Ventures, so it is likely that some of its wells are horizontally drilled.** (Using that logic, you could also say it is likely that they sell mattresses).

Venoco and Carpinteria's uneasy relationship

Venoco has operations in Carpinteria right near the beach and leases the pier that the city owns. Former Carpinteria mayor Richard Weinberg has witnessed increased Venoco activity near his house, a short distance from the pier — "Trucks go by day and night," he says. Miguel Checa, a member of the board of directors of the advocacy organization, the Carpinteria Valley Association, once only saw a few trucks a day going to the pier a day. Now he notices "six to eight." Some question whether this means offshore fracking is a fixation of many Carpinteria residents. Buzz spreads around Carpinteria environmental circles that Venoco could slant-drill offshore to get entrance to oil under the city limits, but Nathan Alley, a staff attorney with the Environmental Defense Center, claims that would be a feat of engineering.

Carpinteria resident Ted Rhodes has had Venoco in his sites since the company created Carpinteria's 2010 Measure J that would have produced more drilling in the city near the aquifer. His mind is on the municipal water and he has no reservoir of good will for Venoco. The company can bypass local laws by going through federal land management instead of the city.

Weinberg thinks Venoco's plan is to drill slant or horizontal to reach the oil under the city without having to abide by local laws or answer to local activists. The last time Venoco wanted to dramatically increase drilling through city legislation, environmentalists staged a paddling protest. They jumped in the water and paddled out to sea. The paddlers included Rhodes and Weinberg.

Weinberg calls federal and state land management "weak." Federal and state land management will not be as open to citizens' participation. Weinberg may be correct. In October, Alley found that Venoco will drill just north of the city and slant-drill to the oil underneath the city.

The Carpinteria Valley Association hired hydrogeologist from UCSB Hugo Loáiciga to defend against Measure J. Loáiciga publicly testified drilling beneath the city would be detrimental to the aquifer. Although environmentalists point to the dishonesty of oil companies, the prediction tools that oil companies use could be a factor. Sophisticated oil company mapping has provided innumerable safety gains by predicting a picture of the underground. But all these layers might be more fractured and uniform than the technology shows. The

assumption of safety depends on the premise that layers of underground rock tightly hold the injected chemicals. But the underground may be more fractured and cracked than these programs predict. More cracks mean more chemicals moving about.

UCSB: gas to the south, oil to the north

Venoco has had its share of Southern California controversy. It had a run-in with famous local environmentalist Erin Brockovich over fracking at Beverly Hills High right next to the track. Where Pennsylvania may allow fracking right on public university campuses, UCSB has the status of having likely oil fracking directly north and PG&E gas south of the campus. Entering the campus on Highway 217, you can see the natural gas field. It is estimated that 90 percent of natural gas wells are fracked.

Elwood lies just north of the campus. Venoco claims, in a 2010 business magazine, to have been drilling to the Monterey Shale at Elwood since 1999. It only took a few short years for this exploration to transform into abundant shale oil collection. In 2007, Venoco wrote to the California Department of Conservation to say it will be injecting waste from the Elwood well offshore to platform Holly. In that letter, Venoco writes, "We have three wells injecting the produced water back to the Monterey Shale." Produced water is the wastewater that is laden with chemicals. Venoco also claims to have injected this produced water on Holly beginning April 2006. Platform Holly has been productive. The state lands commission filed a lawsuit last year claiming Venoco owes the state \$9.5 million in royalties.

Venoco ships some of this waste to a water disposal well north of UCSB, in between the posh Bacara resort and the Sandpiper Golf Course. The company has another water disposal well offshore in front of UCSB. It has disposed of 1.3 million barrels of wastewater from the beginning of 2012 through August.

The EPA classifies an oil company's waste disposal well as class II disposal. If some of the fracking chemicals were to be used instead in manufacturing or farming, the EPA would give it a more hazardous classification. Oil and gas companies have exceptions other industries do not.

Bureaucracy and politicians

Checa and Weinberg joined 173 other people in a May 20 meeting at Ventura County Government Center on fracking, organized by the state's Department of Conservation. It was public comment time before the state came out with a draft of fracking rules to be passed around to various environmental groups and the industry. Erin Curtis, the spokeswoman from Federal Bureau of Land Management, says, "We are in rule-making on hydraulic fracturing." Like the state Department of Conservation, that office is inviting public input before making draft regulations. Alley recommends that locals get involved and work toward making fracking transparent. Of course it is much easier to be part of the rulemaking process if you are a mover and shaker at environmental organizations. For ordinary folks, like those at Albany, N.Y., protesting is the only way to get their voice heard.

Ventura County will have to address protecting agriculture, water and property despite the revenues received from oil companies. As for rising oil prices, more local drilling does not translate into cheaper prices at the pump for Ventura County residents. The fracked oil from underneath our feet gets traded to the highest bidder on the international market just like any other oil.

As for local electoral connections to fracking, only state Sen. Fran Pavely, D-Agoura Hills, has put fracking front and center on her agenda, going as far as writing a bill requiring drillers to notify nearby property owners before fracking. Though one bill died earlier this year, Pavley has reintroduced another bill this month that would regulate fracking, which includes advance notice to neighbors of planned fracking and disclosure of the chemicals used in the process. State Assemblyman Jeff Gorell, R-Camarillo, had Venoco as a client during his lobbyist days.

Venoco later joined ExxonMobile in contributing to his campaign. Recently retired Carpinteria City Councilman Joe Armendariz started a consulting firm. His new client is Western Petroleum Association. Councilwoman Carmen Ramirez, who also attended the McGrath Beach opening, might be the next local leader likely to take this up as an agenda item. The Sierra Club adores her. She earned their admiration for fighting to keep development off Ormond Beach.

On the federal level, ProPublica found that Exxon is pushing for legislation so it does not have to reveal fracking chemicals, but federal regulators have their own agenda. John Romero at the Bureau of Ocean Energy Management said that office will not be issuing any more federal offshore permits, but is working on environmental studies for offshore wind power. Even if the local and state governments conflict on offshore agendas, the feds are installing more alternative energy regardless of who is in office. As for when this will happen, UCSB biologist Milton Love is already conducting an environmental impact study for the federal government to bring offshore wind power to our region. The Department of Defense has already made plans to develop more wind power on San Nicolas Island.

A few months after the Democratic candidate at McGrath Beach, I asked a ranger about the fracking rumors. "I have heard them," he says, "but we have cameras. Cameras are all over the park." But the cameras do not show everything behind the walls of the rigs and wells. So I ask him if he sees anything else bad happening in the park. "Yes," and then he laughs.

On Mon, Feb 25, 2013 at 5:03 PM, Mayerson, Drew <drew.mayerson@bsee.gov> wrote:

Is 1:30 pm pst ok? or anytime thereafter.

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

On Mon, Feb 25, 2013 at 1:39 PM, Nicholas Pardi <nicholas.pardi@bsee.gov> wrote:

Sure, what works for you?

From: Mayerson, Drew [mailto:drew.mayerson@bsee.gov]
Sent: Monday, February 25, 2013 01:28 PM
To: Pardi, Nicholas <nicholas.pardi@bsee.gov>
Cc: Ming, Jaron <jaron.ming@bsee.gov>; Masri, Nabil <Nabil.Masri@bsee.gov>; Kenneth Seeley <kenneth.seeley@bsee.gov>
Subject: Re: Media Inquiry for PAC region

Any chance we can move it to the afternoon here? I was just informed I have a contractor coming to our house and I have to be there to guide him in the morning.
Drew

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

On Mon, Feb 25, 2013 at 12:36 PM, Pardi, Nicholas <nicholas.pardi@bsee.gov> wrote:

Thanks! (b) (5)

On Mon, Feb 25, 2013 at 3:26 PM, Ming, Jaron <jaron.ming@bsee.gov> wrote:

Just FYI, Platform Holly is a State facility. We are aware of this issue and should be able to provide you a response. Thanks.

On Mon, Feb 25, 2013 at 11:58 AM, Pardi, Nicholas <nicholas.pardi@bsee.gov> wrote:

Of note, he added Platform Holly to that list, another Venoco platform. So that's Platforms Holly, Gail and Grace.

On Mon, Feb 25, 2013 at 2:43 PM, Pardi, Nicholas <nicholas.pardi@bsee.gov> wrote:

Hi Jaron,

I got an inquiry from a news organization on the following:

- BSEE permits and operational/inspection documents for drilling operations on Venoco's Platform Gail and Platform Grace off the California coast in the Monterey Shale play. Gail produces from the Sockeye Field and Grace produces in the Santa Clara field.

- Injection well permits for these platforms, if any, and any information on offshore injection well programs, if any.

- Here's why - There are concerns that hydraulic fracturing operations on Platform Gail in 2009 and 2010 produced wastewater, and the disposal of this wastewater was not tracked by BOEM or BSEE, or that BOEM/BSEE are not informing the public.

Here's from the VC Reporter - "The Santa Barbara-based Environmental Defense Center found that Venoco fracked Platform Gail in Sockeye offshore. Where did the wastewater from the offshore frack go? What was the chemical composition? So far, the only two institutions likely to know for certain are Venoco and a few of the federal regulatory bureaucracies such as the Bureau of Ocean Management or Bureau of Safety and Environmental Enforcement. But none is informing the public."

Do you have a minute today or tomorrow to chat about this?

cheers,
Nick

—
Nicholas Pardi
Press Secretary
Bureau of Safety and Environmental Enforcement
U.S. Department of the Interior
Direct (202) 208-7746.
Main (202) 208-3985
nicholas.pardi@bsee.gov

—
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—
Kenneth R. Seeley, Ph.D.

Regional Environmental Officer, Pacific OCS Region

Bureau of Safety and Environmental Enforcement

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Camarillo, CA 93010

(P): 805-389-7799

(F): 805-389-7592

(C): 805-377-8618

Kenneth.Seeley@BSEE.gov



Seeley, Kenneth <kenneth.seeley@bsee.gov>

Fwd: Media Inquiry for PAC region

1 message

Seeley, Kenneth <kenneth.seeley@bsee.gov>

Wed, Feb 27, 2013 at 10:07 AM

To: Chuck Barbee <chuck.barbee@bsee.gov>

Cc: Tiffany Parson <tiffany.parson@bsee.gov>, Ramona Sanders <ramona.sanders@bsee.gov>, "Missal, Jeffrey H" <Jeffrey.Missal@bsee.gov>, "T.J. Broussard" <t.j.broussard@bsee.gov>, Daniel Leedy <daniel.leedy@bsee.gov>

Chuck:

This is related to the meeting I told you about with Margaret, Jaron, Nick Pardi, Nabil and others yesterday. Even though fracking is not a big issue here in the Pacific, it's being pushed by some local environmental groups and an article in a local paper (linked below) has created a good bit of attention, even though the article is full of inaccuracies and distortions. The timing is interesting because even though the article below discusses frack jobs from 2010, we are currently reviewing an APD/APM that would involve well-conditioning/hydraulic stimulation (which is basically fracking). However, the issues on the outer continental shelf are very different than those onshore, where most of the controversy is being generated - there's no chance for contamination of drinking water, most areas don't really lend themselves to fracking, and the area that is fractured is not nearly as large. I can call you to fill you in on the meeting, but it was driven by the fact that an investigative journalist that works with Truth Out.org liked the article and intends to follow up on it. We've been asked to go through the article linked below and prepare talking points/responses to any of the accusations. Just wanted to give you a heads up in case Margaret or anyone else raises the issue with you. Also, Ramona and I have talked about this at length a couple of times to make sure we're being consistent.

Ken

----- Forwarded message -----

From: **Pardi, Nicholas** <nicholas.pardi@bsee.gov>

Date: Tue, Feb 26, 2013 at 1:32 PM

Subject: Re: Media Inquiry for PAC region

To: "Mayerson, Drew" <drew.mayerson@bsee.gov>

Cc: "Ming, Jaron" <Jaron.Ming@bsee.gov>, "Masri, Nabil" <Nabil.Masri@bsee.gov>, Kenneth Seeley <kenneth.seeley@bsee.gov>

Call in number is 866-819-6658
code 2988276

On Tue, Feb 26, 2013 at 4:10 PM, Mayerson, Drew <drew.mayerson@bsee.gov> wrote:

Nick, do you have a dial-in number.

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

On Tue, Feb 26, 2013 at 8:54 AM, Pardi, Nicholas <nicholas.pardi@bsee.gov> wrote:

For your awareness, this latest inquiry is the result of the following article:

Fracking offshore

Lack of transparency for the controversial practice raises major concerns for locals

http://www.vcreporter.com/cms/story/detail/fracking_offshore/10432/

In the summer leading up to Hurricane Sandy, crowds surrounded the state capitol at Albany, N.Y. They wanted to know what would happen in case of a natural gas leak, or a bigger natural gas disaster, to their drinking water. What sparked them? Many had seen the footage of water so contaminated from natural gas frack drilling that it turned brown or caught fire. These water debacles sparked a nationwide movement against natural gas fracking. Fewer people know about fracking in California, and the anti-fracking movement is smaller, but the tide has turned since the time when natural gas was considered a safer alternative energy.

The days when oil companies could find enough oil through conventional drilling are long over on the Central Coast. Drillers cannot get oil trapped tightly in the shale the older ways. It is trapped in rock and has to be coerced out through fracking. Now they need an Olympic-size pool's worth of water infused with chemicals to splinter the rock and discharge the oil from it. They drill a hole, lay a pipe, and drop a bomb where it explodes and tears into the pipe. Making its way down through the pipe hole are sand and chemical water at such force that it splinters the shale and dislodges the oil from it. Central Coast frack drilling can tunnel down a mile and through the water table. Scientists are split on whether fracking can contaminate our drinking supply or cause earthquakes. Wastewater composed of toxic, safe and unknown chemicals is injected into a well and pushed down thousands of feet, where it builds pressure. That pressure under the earth could be a problem.

Oil company executives can describe the thick and sticky shale oil with the same kind of loving tenderness and cravings as any Central Coast reckless wine sipper. Washington and Sacramento have simultaneously fed and regulated the thirst for it. The Dick Cheney-created Halliburton loophole made fracking exempt from much EPA regulation and from the Safe Drinking Water Act. This means frackers do not have to disclose the chemicals they use. Drillers in California are not required to notify landowners or residents who utilize nearby water sources of their intent to frack. This lack of transparency has been a sore spot for the often-locked-in-conflict local farmers, commercial fishing industry and environmentalists who now find themselves allied in the battle against fracking's quest for water. Because so little transparency exists, rumors swirl around the where and when of offshore fracking.

The view from McGrath State Beach

Last June, fresh off the primary election, local campaigning Democrats staged a press conference for Oxnard's McGrath Beach, which was reopening after being closed for lack of funding following Department of Parks and Recreation's sordid fund hoarding. Das Williams, D-Santa Barbara, who was running for re-election for the State Assembly district stretching from Santa Barbara to parts of Oxnard, took advantage of the news cameras and changed from an orange T-shirt into a full wetsuit and bright-yellow boogie board, walked into the ocean, and rode the whitewash of the small choppy waves for more shoots. What the camera could not capture was the crossing of slant- and horizontally-laid oil pipes underneath the waves, chemical injection wells on federally regulated oil rigs beyond the white wash, and the Channel Islands thrust fault capable of producing a magnitude 7.2 earthquake. From Williams' vantage point, he could see the reeds and fences hiding more oil company chemically injected and disposal wells. If he had walked south down the beach past McGrath Lake, he would have found Well 1218 producing more than 32,000 barrels so far this year alone.

Williams splashed around over one of the county's major access points to the oil-abundant underground geological development called the Monterey Shale. This now-commercialized piece of geological property encompasses parts of Ventura, Santa Barbara and Monterey counties. Tim Marquez, president of Venoco, told the Oil & Gas Financial Journal that "We knew that our future efforts were going to be focused on the Monterey Shale." Venoco literature claims the company has explored the shale since 1997.

Fracking is a new frontier and Marquez embraces its Wild West nature and its financial and environmental riskiness. The Monterey Shale is about the closest thing an energy company can get to a new oil frontier on the Central Coast in decades. But like the old Wild West, the federal government is still bankrolling while letting companies use its national forests and federal waters.

According to a Venoco report, the company is leasing 380,000 acres in California valued at \$1.4 billion. It claims that it has already devoted millions of dollars into setting up new wells and exploring the shale, including the Sockeye field offshore from McGrath Beach. Evidence points to more local shale in its future. Venoco recently advertised for a Monterey Shale expertise job for its Carpinteria office.

What wells has Venoco fracked so far? The company dodges that question. The anti-fracking movement has grown large enough to put oil companies on edge. Calls to Venoco were not returned. But just two years ago, the mood was different. Scarlett Johansson was not hosting celebrity screenings for Gasland, the anti-fracking movie that had not yet won an Academy Award. New York farmers, chefs, wine connoisseurs and environmentalists had not yet joined to push New York Gov. Andrew Cuomo, Democrat, to regulate fracking. Matt Damon was not releasing an anti-fracking movie called #Promised Land# that he would use as his next Oscar platform.

But in the more frack-friendly year 2010, Venoco's promotional literature claimed it had fracked and horizontally drilled one well and acidized a second to get to the shale offshore from McGrath Beach. Nestled in federal waters between Oxnard and Santa Cruz Island is Platform Gail. The Santa Barbara-based Environmental Defense Center found that Venoco fracked Platform Gail in Sockeye offshore. Where did the wastewater from the offshore frack go? What was the chemical composition? So far, the only two institutions likely to know for certain are Venoco and a few of the federal regulatory bureaucracies such as the Bureau of Ocean Management or Bureau of Safety and Environmental Enforcement. But none is informing the public.

As for spills and water contamination, frack watchers are still trying to get at the chemical formulas of fracking fluid. A 2005 Venoco document reveals XC polymer, a xanthum gum manufactured by Halliburton. Reporters from the nonprofit investigative unit Propublica found hazardous chemicals such as benzene, formaldehyde, sulfuric acid, kerosene, hydrofluoric acid, hydrochloric acid, formic acid and lead. Researchers at the State University of New York at Albany found radioactive materials such as uranium, radium and radon in tests of fracking wastewater. The National Resources Defense Council found a chemical connected to cancer development, arsenic. The Breast Cancer Fund has reported on the risks for breast cancer from toluene and endocrine-disrupting compounds such as phthalate DEHP found in fracking fluid. EPA studies show that toluene can cause spontaneous abortion. Then there is the question that remains of how the hundreds of thousands of gallons of chemical wastewater are disposed of.

According to the Environmental Defense Center, Venoco fracked platform Gail in Sockeye field in the Santa Barbara Channel.

According to the Ventura County Star, Venoco spilled 63 barrels of oil in 2010 from Platform Gail, the year

following the reported frack job. Ordinarily, a 63-barrel leak is not controversial, but if it includes fracking fluid or its waste, a concern exists. A frack spill is not an ordinary oil spill. When the chemicals get into the water they are difficult to get out. They spread fast and easy, do not easily breakdown, and can cause more health hazards than crude oil.

The acidity of carbon waste through oil spills threatens marine life and commercial fishing. Shellfish can be especially vulnerable to the acidic water that comes with fracking. But it's not just commercial fishing that fracking can threaten. Venoco's fracking and well acidization next to the Channel Islands Marine Reserve undermines the mission of protecting marine life and habitats, much as state and national parks protect wildlife on land. Little research exists on the impact of fracking chemicals on ocean life.

Fracking started 60 years ago. So why all the fuss? For many, the newer form of horizontal drilling, that is drilling (that goes down, then across) is what makes the new practices more dangerous than those old Fillmore and Los Padres National Forest frack jobs. With horizontal's criss-crossing through the water table, it is more likely to cause contamination.

Venoco's drilling onshore and offshore from McGrath, with its slant and horizontal drilling, has created a regulatory conundrum. Fracking skeptics argue that it is specifically what makes slant and horizontal drilling so appealing. Horizontal drilling can start onshore, then cross to offshore. If there is another spill like in 2010, who regulates this? The federal government? The state? When asked about who regulates a frack job that burrows underneath both land and ocean, Erin Curtis, Federal Bureau of Land Management's external affairs representative, told me that "Whoever is responsible is who is permitting the oil company. That is who should regulate." But if Venoco should spill again as it did in 2010, and it pollutes both offshore and onshore, who will be in charge of remedying that? There is no clear answer from Venoco's office about this question.

The campaigning Democratic candidates also had a wonderful view of the Santa Clara River running through McGrath State Beach and into the ocean. As of August, conversations with the United Water Conservation District, the local agency regulating drinking water coming from the Santa Clara River, revealed that fracking was not even on the radar. This is the agency that must divvy out scarce water.

Aera Energy off McGrath Beach

According to interviews with the California Department of Land Conservation, the state agency in charge of regulating the energy industry, fracking waste fluid can end up in either a waterflood injection well or a water disposal well. While oil and gas companies are not required to report on their fracking chemical compositions, or where they have drilled or injected it into the earth, they do have to get approvals to build wells to dispose of the waste. Wherever one can find an injection or a water disposal well, it is likely some fracking happened nearby.

Two of the biggest global oil companies, Shell and ExxonMobil, teamed up to form Aera Energy. Aera has a new waterflow well near McGrath Beach. This well has only August production on record with the California Department of Conservation. In that month, Aera injected 13,262 barrels of waste.

Our region is what seismologists call seismically active. Several earthquakes have been caused by faults that extend into the Santa Barbara-Ventura ocean basin. We have San Andreas and the Santa Ynez River

fault zone to the north, the San Cayetano fault to the east, the offshore Pitas Point near Carpinteria, Red Mountain fault to the east, the Oak Ridge lying on both Ventura and Oxnard, and the offshore Santa Cruz Island and Channel Islands faults to the west. Even the Pacific Operators Offshore LLC (PACOPS), a local offshore driller, in a report to the Federal Bureau of Energy Management (BOEM) admits that all these faults can produce shaking around the wells. The cracking of the shale and the reinjection of waste water back to the strata causes pressure. All this happens on these fault systems.

Aera is no stranger to fracking. Last May, Aera fracked in the mountains above Ventura Avenue. This job used 32,004 gallons of water and drilled down 4,960 feet. Aera admits to using methanol, a common chemical used in fracking and also found in fuel, antifreeze and paint solvent. Inhaling methanol can cause eye irritation, headaches and can be fatal. Ingesting it can produce eye damage or death. Aera's chemical cocktail also included, boric acid, insecticide and flame retardants.

According to a joint study by the U.S. Department of Energy, the National Academy of Sciences, the Institute of Medicine and the National Research Council, fracturing of rock has a lower risk of earthquake, but the disposal of the waste fluid into a well is high risk. Where lies an injection well also lies an earthquake risk. According to this study, the hundreds of thousands of gallons of waste do not simply disappear in the earth's strata. Underground, the waste builds pressure and causes more cracks in the already cracked earth. Conducting the frack jobs on fault zones just exacerbates the earthquake risk.

What makes this study unique is that its researchers and peer reviewers did not possess ties to energy companies. This is not as common as one might expect. A Plains Exploration study claimed fracking in the Baldwin Hills in Los Angeles was safe, but community groups complained that the peer reviewer had connections to oil and gas. Plains Exploration reportedly paid a Texas geologist \$400,000 to write a study that showed that fracking did not contaminate ground water. The oil and gas industry gave State University of New York at Buffalo's geology department \$6 million. A new term has been coined to describe these Ph.D.s: frackademics.

Greka's Rincon

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Photo by Matthew Hill

Venoco has operations on the pier off the coast in Carpinteria, where, apparently, work has ramped up recently.

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Carpinteria resident Ted Rhodes has had Venoco in his sites since the company created Carpinteria's 2010 Measure J that would have produced more drilling in the city near the aquifer. His mind is on the municipal water and he has no reservoir of good will for Venoco. The company can bypass local laws by going through federal land management instead of the city.

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Weinberg calls federal and state land management "weak." Federal and state land management will not be as open to citizens' participation. Weinberg may be correct. In October, Alley found that Venoco will drill just north of the city and slant-drill to the oil underneath the city.

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The EPA classifies an oil company's waste disposal well as class II disposal. If some of the fracking chemicals were to be used instead in manufacturing or farming, the EPA would give it a more hazardous classification. Oil and gas companies have exceptions other industries do not.

Bureaucracy and politicians

Checa and Weinberg joined 173 other people in a May 20 meeting at Ventura County Government Center on fracking, organized by the state's Department of Conservation. It was public comment time before the state came out with a draft of fracking rules to be passed around to various environmental groups and the industry. Erin Curtis, the spokeswoman from Federal Bureau of Land Management, says, "We are in rule-making on hydraulic fracturing." Like the state Department of Conservation, that office is inviting public input before making draft regulations. Alley recommends that locals get involved and work toward making fracking transparent. Of course it is much easier to be part of the rulemaking process if you are a mover and shaker at environmental organizations. For ordinary folks, like those at Albany, N.Y., protesting is the only way to get their voice heard.

Ventura County will have to address protecting agriculture, water and property despite the revenues received from oil companies. As for rising oil prices, more local drilling does not translate into cheaper prices at the pump for Ventura County residents. The fracked oil from underneath our feet gets traded to the highest bidder on the international market just like any other oil.

As for local electoral connections to fracking, only state Sen. Fran Pavely, D-Agoura Hills, has put fracking front and center on her agenda, going as far as writing a bill requiring drillers to notify nearby property owners before fracking. Though one bill died earlier this year, Pavley has reintroduced another bill this month that would regulate fracking, which includes advance notice to neighbors of planned fracking and disclosure of the chemicals used in the process. State Assemblyman Jeff Gorell, R-Camarillo, had Venoco as a client during his lobbyist days. Venoco later joined ExxonMobile in contributing to his campaign. Recently retired Carpinteria City Councilman Joe Armendariz started a consulting firm. His new client is Western Petroleum Association. Councilwoman Carmen Ramirez, who also attended the McGrath Beach opening, might be the next local leader likely to take this up as an agenda item. The Sierra Club adores her. She earned their admiration for fighting to keep development off Ormond Beach.

On the federal level, ProPublica found that Exxon is pushing for legislation so it does not have to reveal fracking chemicals, but federal regulators have their own agenda. John Romero at the Bureau of Ocean Energy Management said that office will not be issuing any more federal offshore permits, but is working on environmental studies for offshore wind power. Even if the local and state governments conflict on offshore agendas, the feds are installing more alternative energy regardless of who is in office. As for when this will happen, UCSB biologist Milton Love is already conducting an environmental impact study for the federal government to bring offshore wind power to our region. The Department of Defense has already made plans to develop more wind power on San Nicolas Island.

A few months after the Democratic candidate at McGrath Beach, I asked a ranger about the fracking rumors. "I have heard them," he says, "but we have cameras. Cameras are all over the park." But the cameras do not show everything behind the walls of the rigs and wells. So I ask him if he sees anything else bad happening in the park. "Yes," and then he laughs.

On Mon, Feb 25, 2013 at 5:03 PM, Mayerson, Drew <drew.mayerson@bsee.gov> wrote:
Is 1:30 pm pst ok? or anytime thereafter.

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

On Mon, Feb 25, 2013 at 1:39 PM, Nicholas Pardi <nicholas.pardi@bsee.gov> wrote:
Sure, what works for you?

From: Mayerson, Drew [mailto:drew.mayerson@bsee.gov]
Sent: Monday, February 25, 2013 01:28 PM
To: Pardi, Nicholas <nicholas.pardi@bsee.gov>
Cc: Ming, Jaron <jaron.ming@bsee.gov>; Masri, Nabil <Nabil.Masri@bsee.gov>; Kenneth Seeley <kenneth.seeley@bsee.gov>
Subject: Re: Media Inquiry for PAC region

Any chance we can move it to the afternoon here? I was just informed I have a contractor coming to our house and I have to be there to guide him in the morning.
Drew

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

On Mon, Feb 25, 2013 at 12:36 PM, Pardi, Nicholas <nicholas.pardi@bsee.gov> wrote:

Thanks! The VC article is (b) (5)

[REDACTED]

[REDACTED]

[REDACTED]

On Mon, Feb 25, 2013 at 3:26 PM, Ming, Jaron <jaron.ming@bsee.gov> wrote:

Just FYI, Platform Holly is a State facility. We are aware of this issue and should be able to provide you a response. Thanks.

On Mon, Feb 25, 2013 at 11:58 AM, Pardi, Nicholas <nicholas.pardi@bsee.gov> wrote:

Of note, he added Platform Holly to that list, another Venoco platform. So that's Platforms Holly, Gail and Grace.

On Mon, Feb 25, 2013 at 2:43 PM, Pardi, Nicholas <nicholas.pardi@bsee.gov> wrote:

Hi Jaron,

I got an inquiry from a news organization on the following:

- BSEE permits and operational/inspection documents for drilling operations on Venoco's

Platform Gail and Platform Grace off the California coast in the Monterey Shale play. Gail produces from the Sockeye Field and Grace produces in the Santa Clara field.

- Injection well permits for these platforms, if any, and any information on offshore injection well programs, if any.

- Here's why - There are concerns that hydraulic fracturing operations on Platform Gail in 2009 and 2010 produced wastewater, and the disposal of this wastewater was not tracked by BOEM or BSEE, or that BOEM/BSEE are not informing the public.

Here's from the VC Reporter - "The Santa Barbara-based Environmental Defense Center found that Venoco fracked Platform Gail in Sockeye offshore. Where did the wastewater from the offshore frack go? What was the chemical composition? So far, the only two institutions likely to know for certain are Venoco and a few of the federal regulatory bureaucracies such as the Bureau of Ocean Management or Bureau of Safety and Environmental Enforcement. But none is informing the public."

Do you have a minute today or tomorrow to chat about this?

cheers,
Nick

—
Nicholas Pardi
Press Secretary
Bureau of Safety and Environmental Enforcement
U.S. Department of the Interior
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Main (202) 208-3985
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—
Kenneth R. Seeley, Ph.D.

Regional Environmental Officer, Pacific OCS Region

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Kenneth.Seeley@BSEE.gov



Seeley, Kenneth <kenneth.seeley@bsee.gov>

[Update] Meeting with DCOR regarding Fracking

1 message

daniel.knowlson@bsee.gov <daniel.knowlson@bsee.gov>

Tue, Feb 12, 2013 at 8:28 AM

Reply-To: "daniel.knowlson@bsee.gov" <daniel.knowlson@bsee.gov>

To: "kenneth.seeley@bsee.gov" <kenneth.seeley@bsee.gov>, "james.salmons@bsee.gov"

<james.salmons@bsee.gov>, "daniel.knowlson@bsee.gov" <daniel.knowlson@bsee.gov>

Cc: kenneth.seeley@bsee.gov, james.salmons@bsee.gov

Not sure if you guys know about this meeting but just a reminder if one of you are interested, trying to get it rescheduled to the training room

Meeting with DCOR regarding Fracking

Dan Knowlson - Meeting with DCOR

When Tue Feb 12, 2013 9am – 12pm Pacific Time

Where BSEE-CAM-Conference Project Room ([map](#))

Who

- Pamela Rados - organizer
- Drew Mayerson
- Jaron Ming
- Nabil Masri
- Daniel Knowlson



Seeley, Kenneth <kenneth.seeley@bsee.gov>

My additions to the VC Reporter article comments

1 message

Seeley, Kenneth <kenneth.seeley@bsee.gov>

Fri, Mar 1, 2013 at 11:51 AM

To: Nabil Masri <nabil.masri@bsee.gov>, Drew Mayerson <drew.mayerson@bsee.gov>, Daniel Knowlson <daniel.knowlson@bsee.gov>, James Salmons <james.salmons@bsee.gov>

Here's what I have. I think it's possible to (b) (5)

[REDACTED]
[REDACTED]
[REDACTED] Let me know if you have any questions or concerns about my responses -
they are all highlighted in yellow.

Ken

—
Kenneth R. Seeley, Ph.D.
Regional Environmental Officer, Pacific OCS Region
Bureau of Safety and Environmental Enforcement
770 Paseo Camarillo
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(C): 805-377-8618
Kenneth.Seeley@BSEE.gov



Point by point response to VC Reporter Article (1).docx

45K

Fracking offshore

Lack of transparency for the controversial practice raises major concerns for locals

http://www.vcreporter.com/cms/story/detail/fracking_offshore/10432/

In the summer leading up to Hurricane Sandy, crowds surrounded the state capitol at Albany, N.Y. They wanted to know what would happen in case of a natural gas leak, or a bigger natural gas disaster, to their drinking water. What sparked them? Many had seen the footage of water so contaminated from natural gas frack drilling that it turned brown or caught fire. These water debacles sparked a nationwide movement against natural gas fracking. Fewer people know about fracking in California, and the anti-fracking movement is smaller, but the tide has turned since the time when natural gas was considered a safer alternative energy.

The days when oil companies could find enough oil through conventional drilling are long over on the Central Coast. Drillers cannot get oil trapped tightly in the shale the older ways. It is trapped in rock and has to be coerced out through fracking. Now they need an Olympic-size pool's worth of water infused with chemicals to splinter the rock and discharge the oil from it. They drill a hole, lay a pipe, and drop a bomb where it explodes and tears into the pipe. Making its way down through the pipe hole are sand and chemical water at such force that it splinters the shale and dislodges the oil from it. Central Coast frack drilling can tunnel down a mile and through the water table. Scientists are split on whether fracking can contaminate our drinking supply or cause earthquakes. Wastewater composed of toxic, safe and unknown chemicals is injected into a well and pushed down thousands of feet, where it builds pressure. That pressure under the earth could be a problem.

Oil company executives can describe the thick and sticky shale oil with the same kind of loving tenderness and cravings as any Central Coast reckless wine sipper. Washington and Sacramento have simultaneously fed and regulated the thirst for it. The Dick Cheney-created Halliburton loophole made fracking exempt from much EPA regulation and from the Safe Drinking Water Act. This means frackers do not have to disclose the chemicals they use. **This is true under the Safe Drinking Water Act, but that does not apply in the case of OCS operations. Discharges of fracking fluids are covered under EPA's General Discharge Permit for OCS oil and gas operations.** Drillers in California are not required to notify landowners or residents who utilize nearby water sources of their intent to frack. This lack of transparency has been a sore spot for the often-locked-in-conflict local farmers, commercial fishing industry and environmentalists who now find themselves allied in the battle against fracking's quest for water. Because so little transparency exists, rumors swirl around the where and when of offshore fracking.

The view from McGrath State Beach

Last June, fresh off the primary election, local campaigning Democrats staged a press conference for Oxnard's McGrath Beach, which was reopening after being closed for lack of funding following Department of Parks and Recreation's sordid fund hoarding. Das Williams, D-Santa Barbara, who was running for re-election for the State Assembly district stretching from Santa Barbara to parts of Oxnard, took advantage of the news cameras and changed from an orange T-shirt into a full wetsuit and bright-yellow boogie board, walked into the ocean, and rode the whitewash of the small choppy waves for more shoots. What the camera could not capture was the crossing of slant- and horizontally-laid oil pipes underneath the waves, chemical injection wells on federally regulated oil rigs beyond the white wash, and the Channel Islands thrust fault capable of producing a magnitude 7.2 earthquake. **ACCORDING TO REPORTS FROM THE CALIFORNIA DIVISION OF MINES AND GEOLOGY AND THE USGS IN 1996 (OFR 96-08**

AND 96-706, RESPECTIVELY), THE CHANNEL ISLANDS THRUST IS APPROXIMATELY 65 KM LONG AND CAN PRODUCE A MAX MAGNITUDE 7.4 EARTHQUAKE. AN EARLIER PAPER FROM SHAW AND SUPPE (1994 IN THE GEOLOGICAL SOCIETY OF AMERICA BULLETIN) ESTIMATED A MAGNITUDE 7.2 WAS POSSIBLE. From Williams' vantage point, he could see the reeds and fences hiding more oil company chemically injected and disposal wells. If he had walked south down the beach past McGrath Lake, he would have found Well 1218 **THIS IS A STATE WELL**, producing more than 32,000 barrels so far this year alone.

Williams splashed around over one of the county's major access points to the oil-abundant underground geological development called the Monterey Shale. This now-commercialized piece of geological property encompasses parts of Ventura, Santa Barbara and Monterey counties. Tim Marquez, president of Venoco, told the Oil & Gas Financial Journal that "We knew that our future efforts were going to be focused on the Monterey Shale." Venoco literature claims the company has explored the shale since 1997. **THE MONTEREY SHALE IS ONE OF THE PRIMARY PRODUCING FORMATIONS IN CALIFORNIA. IT IS PROLIFIC ONSHORE AS WELL AS OFFSHORE. IN THE OCS IT ACCOUNTS FOR ABOUT 40,000 BARRELS PER DAY OF THE 54,000 BARRELS PRODUCED. NONE OF THE OIL IS THE RESULT OF HYDRAULIC FRACTURING. IN THE OFFSHORE, THE MONTEREY IS NATURALLY FRACTURED.**

Fracking is a new frontier **HYDRAULIC FRACTURING HAS BEEN AROUND FOR 60 YEARS** and Marquez embraces its Wild West nature and its financial and environmental riskiness. The Monterey Shale is about the closest thing an energy company can get to a new oil frontier on the Central Coast in decades. **THE MONTEREY SHALE FIRST PRODUCED IN CALIFORNIA ABOUT 1902. BY 1956 ALMOST 300,000,000 BARRELS OF OIL HAD BEEN PRODUCED FROM THE MONTEREY IN THE ONSHORE SANTA MARIA AREA AND SAN JOAQUIN BASIN IN THE CENTRAL VALLEY. THE MONTEREY IS HARDLY A NEW FRONTIER HOWEVER; THE AUTHOR MAY BE REFERRING TO BAKKEN LIKE HYDRAULIC FRACTURING AS A NEW FRONTIER THAT COULD BE APPLIED TO THE MONTEREY FORMATION.** But like the old Wild West, the federal government is still bankrolling while letting companies use its national forests and federal waters.

According to a Venoco report, the company is leasing 380,000 acres in California valued at \$1.4 billion. **VENOCO HAS 5 OCS BLOCKS TALLING ABOUT 29,000 ACRES.** It claims that it has already devoted millions of dollars into setting up new wells and exploring the shale, including the Sockeye field offshore from McGrath Beach. **PER VENOCO'S OPERATIONS MANAGER, THEIR 2010 FRAC WAS NOT VERY SUCCESSFUL AND ALTHOUGH THEY DIDN'T WANT TO RULE OUT A FRAC AGAIN THEY INDICATED THEY DID NOT HAVE PLANS TO FRAC IN THE NEAR FUTURE.** Evidence points to more local shale in its future. Venoco recently advertised for a Monterey Shale expertise job for its Carpinteria office. **THIS WOULD NOT BE UNUSUAL....VENOCO PRODUCES FROM NATURALLY FRACTURED MONTEREY ON THE OCS AND FROM THE PLATFORM IN STATE WATERS.**

What wells has Venoco fracked so far? **WELL E-11 DURING THE 1990's (note: this was a frac in the Sespe sandstone, not Monterey) & WELL E-8 SIDETRACK 2 IN 2010.** The company dodges that question. The anti-fracking movement has grown large enough to put oil companies on edge. Calls to Venoco were not returned. But just two years ago, the mood was different. Scarlett Johansson was not hosting celebrity screenings for Gasland, the anti-fracking movie that had not yet won an Academy Award. New York farmers, chefs, wine connoisseurs and environmentalists had not yet joined to push New York Gov. Andrew Cuomo, Democrat, to regulate fracking. Matt Damon was not releasing an anti-fracking movie called #Promised Land# that he would use as his next Oscar platform **HOW'D THAT WORK OUT?.**

But in the more frack-friendly year 2010, Venoco's promotional literature claimed it had fracked and horizontally drilled one well and acidized a second to get to the shale offshore from McGrath Beach. Nestled in federal waters between Oxnard and Santa Cruz Island is Platform Gail. The Santa Barbara-based Environmental Defense Center found that Venoco fracked Platform Gail in Sockeye offshore. **Where did the wastewater from the offshore frack go? What was the chemical composition?** Still waiting on this information from Venoco, but it appears that only 941 gallons of water were discharged under the general discharge permit during February, March and April of 2010 and these discharges were related to maintenance activities. So far, the only two institutions likely to know for certain are Venoco and a few of the federal regulatory bureaucracies such as the Bureau of Ocean Management or Bureau of Safety and Environmental Enforcement. But none is informing the public actually, EPA would be the appropriate agency to ask, since the discharges would have been under their authority.

As for spills and water contamination, frack watchers are still trying to get at the chemical formulas of fracking fluid. **A 2005 Venoco document reveals XC polymer, a xanthum gum manufactured by Halliburton.** It's not clear what this report from 2005 is about, or if it is related to 2010 fracking at Gail, in which case, it's not clear why a 2005 report would be relevant. Xanthum gum is used in large quantities in the oil industry, usually to thicken drilling mud. It is also commonly used as a food additive, for example, as a thickening agent in salad dressings. Discharge of XC polymer is covered under EPA's general NPDES discharge permit for OCS oil operations (as Discharge 001: Drilling Fluids and Cuttings). **Reporters from the nonprofit investigative unit Propublica found hazardous chemicals such as benzene, formaldehyde, sulfuric acid, kerosene, hydrofluoric acid, hydrochloric acid, formic acid and lead. Researchers at the State University of New York at Albany found radioactive materials such as uranium, radium and radon in tests of fracking wastewater.** This statement is too general and vague to respond to – these reports could be about anything, but we have no evidence to suggest that similar chemicals have been discharged at Gail, although if they had been, it would have fallen under EPA's purview under the Clean Water Act, and they would have had to determine if a violation of the general discharge permit had occurred. The National Resources Defense Council found a chemical connected to cancer development, arsenic. The Breast Cancer Fund has reported on the risks for breast cancer from toluene and endocrine-disrupting compounds such as phthalate DEHP found in fracking fluid. EPA studies show that toluene can cause spontaneous abortion. Then there is the question that remains of how the hundreds of thousands of gallons of chemical wastewater are disposed of. Again, we have no evidence to support or refute this claim, but the mere presence of a contaminant in a permitted discharge does not constitute a violation of the discharge permit. EPA sets discharge limits based on the toxicity of the chemicals of concern. During the period in question, we do know that Venoco was reinjecting produced water from Gail back into the formation for the waterflood program.

According to the Environmental Defense Center, Venoco fracked platform Gail in Sockeye field in the Santa Barbara Channel.

According to the Ventura County Star, **Venoco spilled 63 barrels of oil in 2010 from Platform Gail**, the year following the reported frack job. Ordinarily, a 63-barrel leak is not controversial, but if it includes fracking fluid or its waste, a concern exists. A frack spill is not an ordinary oil spill. When the chemicals get into the water they are difficult to get out. They spread fast and easy, do not easily breakdown, and can cause more health hazards than crude oil. This could probably be easily refuted if we had information on the chemicals used by Venoco.

The acidity of carbon waste through oil spills threatens marine life and commercial fishing.⁴ Shellfish can be especially vulnerable to the acidic water that comes with fracking. But it's not just commercial fishing that fracking can threaten. Venoco's fracking and well acidization next to the Channel Islands Marine Reserve undermines **I think the author is trying to imply that the mere presence of these activities near the marine reserve undermines its mission, but there is no evidence to support that activities at Platform Gail have negatively impacted that mission to date. Furthermore, the spill volume mentioned above is grossly exaggerated (the volume reported is approximately 126 times greater than the actual volume and there's no acknowledgement that the spill was cleaned up before significant impacts were allowed to occur), finally, there is no evidence or reason to believe that fracking fluids in any significant quantities, if at all, were in the oil that was spilled** the mission of protecting marine life and habitats, much as state and national parks protect wildlife on land. Little research exists on the impact of fracking chemicals on ocean life. **THE FOLLOWING WERE EXCERPTED FROM 15 CFR PART 922.71-74, THE GOVERNING REGULATIONS FOR THE CHANNEL ISLANDS NATIONAL MARINE SANCTUARY**

§ 922.72 Prohibited or otherwise regulated activities—Sanctuary-wide.

(1) Exploring for, developing, or producing hydrocarbons within the Sanctuary, except pursuant to leases executed prior to March 30, 1981, and except the laying of pipeline pursuant to exploring for, developing, or producing hydrocarbons. THE VENOCO LEASES IN FEDERAL WATERS WERE ISSUED IN 1968 (LEASE SALE P4).

(2) Exploring for, developing, or producing minerals within the Sanctuary, except producing byproducts incidental to hydrocarbon production allowed by paragraph (a)(1) of this section.

(3)(i) Discharging or depositing from within or into the Sanctuary any material or other matter except:

(E) Effluent routinely and necessarily discharged or deposited incidental to hydrocarbon exploration, development, or production allowed by paragraph (a)(1) of this section; or

(4) Drilling into, dredging, or otherwise altering the submerged lands of the Sanctuary; or constructing or placing any structure, material, or other matter on or in the submerged lands of the Sanctuary, except as incidental to and necessary to:

(i) Anchor a vessel;

(ii) Install an authorized navigational aid;

(iii) Conduct lawful fishing activity;

(iv) Lay pipeline pursuant to exploring for, developing, or producing hydrocarbons; or

(v) Explore for, develop, or produce hydrocarbons as allowed by paragraph (a)(1) of this section.

Fracking started 60 years ago. So why all the fuss? For many, the newer form of horizontal drilling, that is drilling (that goes down, then across) is what makes the new practices more dangerous than those old Fillmore and Los Padres National Forest frack jobs. With horizontal's criss-crossing through the water table, it is more likely to cause contamination. **THE E8 WELL WAS HORIZONTAL AT THE DEPTHS WHERE FRACKING WAS DONE, THE E11 WELL WAS NOT.**

Venoco's drilling onshore and offshore from McGrath, with its slant and horizontal drilling, has created a regulatory conundrum. **McGRATH IS IN STATE TIDELANDS.** Fracking skeptics argue that it is specifically what makes slant and horizontal drilling so appealing. Horizontal drilling can start onshore, then cross to offshore. If there is another spill like in 2010, who regulates this? The U.S. Coast Guard would lead a response to a spill in Federal waters, with the State responding to any spills that impact State waters or resources. If the spill is the result of an unauthorized discharge from a permitted produced water discharge, EPA would have jurisdiction under the Clean Water Act. The federal government? The state? When asked about who regulates a frack job that burrows underneath both land and ocean, Erin Curtis, Federal Bureau of Land Management's external affairs representative, told me that "Whoever is responsible is who is permitting the oil company. That is who should regulate." That's misleading and it is not clear why the author would have approached BLM on this issue, rather than BOEM or BSEE, or EPA or the U.S. Coast Guard. But if Venoco should spill again as it did in 2010, and it pollutes both offshore and onshore, who will be in charge of remedying that? There is no clear answer from Venoco's office about this question. Spill response plans are in place and response drills take place regularly; there's no real mystery regarding which agency will lead spill response efforts.

The campaigning Democratic candidates also had a wonderful view of the Santa Clara River running through McGrath State Beach and into the ocean. As of August, conversations with the United Water Conservation District, the local agency regulating drinking water coming from the Santa Clara River, revealed that fracking was not even on the radar. This is the agency that must divvy out scarce water. Drinking water aquifers in this area are not impacted by offshore drilling activities on the Pacific OCS.

Aera Energy off McGrath Beach

According to interviews with the California Department of Land Conservation, the state agency in charge of regulating the energy industry, fracking waste fluid can end up in either a waterflood injection well or a water disposal well. While oil and gas companies are not required to report on their fracking chemical compositions, or where they have drilled or injected it into the earth, they do have to get approvals to build wells to dispose of the waste. Wherever one can find an injection or a water disposal well, it is likely some fracking happened nearby. **THIS IS A GROSS EXAGGERATION. THERE ARE NO DISPOSAL WELLS AT SOCKEYE AND ABOUT 12 WATER INJECTION WELLS THAT ARE USED FOR PRESSURE SUPPORT OF THE RESERVOIR (this is standard conservation practice). THE INJECTED WATER HAS TO BE COMPATIBLE WITH THE WATER IN THE RESERVOIR TO AVOID VARIOUS MALADIES THAT MIGHT INHIBIT INJECTION (E.G., BACTERIAL GROWTH, SCALE FORMATION, CLAY SWELLING, ETC...). THE ENTIRE POCS HAS ABOUT 70 WATER INJECTION WELLS ONGOING AT ANY ONE TIME, MOSTLY TO PROVIDE PRESSURE SUPPORT FOR THE RESERVOIR. FRACKING HAS BEEN RARE, OCCURRING ONLY ABOUT 11 TIMES IN THE LAST 20+ YEARS, MOST BEING "MINI FRACKS" IN THE IMMEDIATE VICINITY AROUND THE WELLBORE TO CLEAN UP SAND THAT MAY PLUG THE PERFORATIONS.**

Two of the biggest global oil companies, Shell and ExxonMobil, teamed up to form Aera Energy. Aera has a new waterflow well near McGrath Beach. This well has only August production on record with the California Department of Conservation. In that month, Aera injected 13,262 barrels of waste.

Our region is what seismologists call seismically active. **TRUE.** Several earthquakes have been caused by faults that extend into the Santa Barbara-Ventura ocean basin **EARTHQUAKES OCCUR ON FAULTS.** We have San Andreas and the Santa Ynez River fault zone to the north, the San Cayetano fault to the east, the offshore Pitas Point near Carpinteria, Red Mountain fault to the east, the Oak Ridge lying on both Ventura and Oxnard, and the offshore Santa Cruz Island and Channel Islands faults to the west. Even the Pacific Operators Offshore LLC (PACOPS), a local offshore driller, in a report to the Federal Bureau of Energy Management (BOEM) admits that all these faults can produce shaking around the wells. The cracking of the shale and the reinjection of waste water back to the strata causes pressure. **WATER INJECTION FOR WATERFLOOD PROGRAMS REPLACES THE PRESSURE THAT HAS BEEN BLED OFF THROUGH OIL AND GAS DEVELOPMENT. THE IDEA IS TO MATCH THE ORIGINAL RESERVOIR PRESSURE AND AVOID INADVERTANTLY FRACTURING THE FORMATION, THEREBY POSSIBLY NEGATING THE BENEFITS OF REPRESSURIZATION OR SENDING THE INJECTED WATER INTO THE OIL AND CHOKING OFF OIL PRODUCTION IN THE WELLS THAT WERE TO BE THE BENEFICIARY OF RESTORED PRESSURE. FOR THIS REASON ALL WATER INJECTION WELLS ARE MONITORED CAREFULLY TO SEE THAT THIS DOES NOT HAPPEN.** All this happens on these fault systems.

Aera is no stranger to fracking. Last May, Aera fracked in the mountains above Ventura Avenue. This job used 32,004 gallons of water and drilled down 4,960 feet. Aera admits to using methanol, a common chemical used in fracking and also found in fuel, antifreeze and paint solvent. Inhaling methanol can cause eye irritation, headaches and can be fatal. Ingesting it can produce eye damage or death. Aera's chemical cocktail also included, boric acid, insecticide and flame retardants.

According to a joint study by the U.S. Department of Energy, the National Academy of Sciences, the Institute of Medicine and the National Research Council, fracturing of rock has a lower risk of earthquake, but the disposal of the waste fluid into a well is high risk. Where lies an injection well also lies an earthquake risk. According to this study, the hundreds of thousands of gallons of waste do not simply disappear in the earth's strata. Underground, the waste builds pressure and causes more cracks in the already cracked earth. Conducting the frack jobs on fault zones just exacerbates the earthquake risk. **THE FOLLOWING IS THE PRESS RELEASE FROM THE NAS DATED 6/15/2012**

*Hydraulic Fracturing Poses Low Risk for Causing Earthquakes,
But Risks Higher for Wastewater Injection Wells*

WASHINGTON — Hydraulic fracturing has a low risk for inducing earthquakes that can be felt by people, but underground injection of wastewater produced by hydraulic fracturing and other energy technologies has a higher risk of causing such earthquakes, says a new report from the National Research Council. In addition, carbon capture and storage may have the potential for inducing seismic events, because significant volumes of fluids are injected underground over long periods of time. However, insufficient information exists to understand the potential of carbon capture and storage to cause earthquakes, because no large-scale projects are as yet in operation. The committee that wrote the report said continued research will be needed to examine the potential for induced seismicity in large-scale carbon capture and storage projects.

The report examines the potential for energy technologies — including shale gas recovery, carbon capture and storage, geothermal energy production, and conventional oil and gas development — to cause earthquakes. Hydraulic fracturing, commonly known as fracking, extracts natural gas by injecting a mixture of water, sand, and chemicals in short bursts at high pressure into deep underground wells. The process cracks the shale rock formation and allows natural gas to escape and flow up the well, along with some wastewater. The wastewater can be discarded in several ways, including injection underground at a

separate site. Carbon capture and storage, also known as carbon capture and sequestration, involves collecting carbon dioxide from power plants, liquefying it, and pumping it at high rates into deep underground geologic formations for permanent disposal. Geothermal energy harnesses natural heat from within the Earth by capturing steam or hot water from underground.

Although induced seismic events associated with these energy technologies have not resulted in loss of life or significant damage in the United States, some effects have been felt by local residents and have raised concern about additional seismic activity and its consequences in areas where energy development is ongoing or planned. While scientists understand the general mechanisms that induce seismic events, they are unable to accurately predict the magnitude or occurrence of these earthquakes due to insufficient information about the natural rock systems and a lack of validated predictive models at specific energy development sites.

The factor most directly correlated with induced earthquakes is the total balance of fluid introduced or removed underground, the committee said. Because oil and gas development, carbon capture and storage, and geothermal energy production each involve net fluid injection or withdrawal, all have at least the potential to induce earthquakes that could be felt by people. However, technologies designed to maintain a balance between the amounts of fluid being injected and withdrawn, such as most geothermal and conventional oil and gas development, appear to produce fewer induced seismic events than technologies that do not maintain fluid balance.

A number of federal and state agencies have regulatory oversight related to different aspects of underground injection activities associated with energy technologies. Responses from these agencies to energy development-related seismic events have been successful, the report says, but interagency cooperation is warranted as the number of earthquakes could increase due to expanding energy development.

The study was sponsored by the U.S. Department of Energy. The National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and National Research Council make up the National Academies. They are independent, nonprofit institutions that provide science, technology, and health policy advice under an 1863 congressional charter. Panel members, who serve pro bono as volunteers, are chosen by the Academies for each study based on their expertise and experience and must satisfy the Academies' conflict-of-interest standards. The resulting consensus reports undergo external peer review before completion. For more information, visit <http://national-academies.org/studycommitteeprocess.pdf>.

What makes this study unique is that its researchers and peer reviewers did not possess ties to energy companies. This is not as common as one might expect. A Plains Exploration study claimed fracking in the Baldwin Hills in Los Angeles was safe, but community groups complained that the peer reviewer had connections to oil and gas. Plains Exploration reportedly paid a Texas geologist \$400,000 to write a study that showed that fracking did not contaminate ground water. The oil and gas industry gave State University of New York at Buffalo's geology department \$6 million. A new term has been coined to describe these Ph.D.s: frackademics.

Greka's Rincon

Nestled between Carpinteria and Ventura is the Rincon oil field, the desirable piece of ocean property with legendary breaks that has surfers, environmentalists and oil interests competing for its future. Where the state's Conservation Department gave Venoco safety awards in spite of its 32 violations for not following operating procedures from 2005 to 2010, Greka, with its perishing pipelines and rusting facilities, has the opposite reputation with 21 separate crude oil spills in Santa Barbara waterways from 2005 through 2010. One of the spills included a 67,000-gallon oil spill in early December 2007 followed by an 84,000-gallon spill in 2008. Greka's poor public image prompted a name change to HVI Canyon Cat last year. The Santa Barbara Independent

reported that the U.S. Department of Justice alleges that HVI Cat Canyon failed to implement adequate plans to prevent spills, which is required by the Clean Water Act.

Photo by Matthew Hill

Venoco has operations on the pier off the coast in Carpinteria, where, apparently, work has ramped up recently.

In 2002, the company acquired Rincon Island Partnership. According to California Department of Conservation records, Rincon Island Partnership has at least five waterflood injection wells. Two are drilled either on a slant or horizontally. Greka has a thing for horizontal drilling. One of its holdings is Horizontal Ventures, so it is likely that some of its wells are horizontally drilled.

Venoco and Carpinteria's uneasy relationship

Venoco has operations in Carpinteria right near the beach and leases the pier that the city owns. Former Carpinteria mayor Richard Weinberg has witnessed increased Venoco activity near his house, a short distance from the pier — "Trucks go by day and night," he says. Miguel Checa, a member of the board of directors of the advocacy organization, the Carpinteria Valley Association, once only saw a few trucks a day going to the pier a day. Now he notices "six to eight." Some question whether this means offshore fracking is a fixation of many Carpinteria residents. Buzz spreads around Carpinteria environmental circles that Venoco could slant-drill offshore to get entrance to oil under the city limits, but Nathan Alley, a staff attorney with the Environmental Defense Center, claims that would be a feat of engineering.

Carpinteria resident Ted Rhodes has had Venoco in his sites since the company created Carpinteria's 2010 Measure J that would have produced more drilling in the city near the aquifer. His mind is on the municipal water and he has no reservoir of good will for Venoco. The company can bypass local laws by going through federal land management instead of the city.

Weinberg thinks Venoco's plan is to drill slant or horizontal to reach the oil under the city without having to abide by local laws or answer to local activists. The last time Venoco wanted to dramatically increase drilling through city legislation, environmentalists staged a paddling protest. They jumped in the water and paddled out to sea. The paddlers included Rhodes and Weinberg.

Weinberg calls federal and state land management "weak." Federal and state land management will not be as open to citizens' participation. Weinberg may be correct. In October, Alley found that Venoco will drill just north of the city and slant-drill to the oil underneath the city.

The Carpinteria Valley Association hired hydrogeologist from UCSB Hugo Loáiciga to defend against Measure J. Loáiciga publicly testified drilling beneath the city would be detrimental to the aquifer. Although environmentalists point to the dishonesty of oil companies, the prediction tools that oil companies use could be a factor. Sophisticated oil company mapping has provided innumerable safety gains by predicting a picture of the underground. But all these layers might be more fractured and uniform than the technology shows. The assumption of safety depends on the premise that layers of underground rock tightly hold the injected chemicals. But the underground may be more fractured and cracked than these programs predict. More cracks mean more chemicals moving about.

UCSB: gas to the south, oil to the north

Venoco has had its share of Southern California controversy. It had a run-in with famous local environmentalist Erin Brockovich over fracking at Beverly Hills High right next to the track. Where

Pennsylvania may allow fracking right on public university campuses, UCSB has the status of having likely oil fracking directly north and PG&E gas south of the campus. Entering the campus on Highway 217, you can see the natural gas field. It is estimated that 90 percent of natural gas wells are fracked.

Elwood lies just north of the campus. **THE ELWOOD FIELD (PLATFORM HOLLY) IS IN STATE WATERS.** Venoco claims, in a 2010 business magazine, to have been drilling to the Monterey Shale at Elwood since 1999. It only took a few short years for this exploration to transform into abundant shale oil collection. In 2007, Venoco wrote to the California Department of Conservation to say it will be injecting waste from the Elwood well offshore to platform Holly. In that letter, Venoco writes, "We have three wells injecting the produced water back to the Monterey Shale." Produced water is the wastewater that is laden with chemicals. Venoco also claims to have injected this produced water on Holly beginning April 2006. Platform Holly has been productive. The state lands commission filed a lawsuit last year claiming Venoco owes the state \$9.5 million in royalties.

Venoco ships some of this waste to a water disposal well north of UCSB, in between the posh Bacara resort and the Sandpiper Golf Course. The company has another water disposal well offshore in front of UCSB. It has disposed of 1.3 million barrels of wastewater from the beginning of 2012 through August.

The EPA classifies an oil company's waste disposal well as class II disposal. If some of the fracking chemicals were to be used instead in manufacturing or farming, the EPA would give it a more hazardous classification. Oil and gas companies have exceptions other industries do not.

Bureaucracy and politicians

Checa and Weinberg joined 173 other people in a May 20 meeting at Ventura County Government Center on fracking, organized by the state's Department of Conservation. It was public comment time before the state came out with a draft of fracking rules to be passed around to various environmental groups and the industry. Erin Curtis, the spokeswoman from Federal Bureau of Land Management, says, "We are in rule-making on hydraulic fracturing." Like the state Department of Conservation, that office is inviting public input before making draft regulations. Alley recommends that locals get involved and work toward making fracking transparent. Of course it is much easier to be part of the rulemaking process if you are a mover and shaker at environmental organizations. For ordinary folks, like those at Albany, N.Y., protesting is the only way to get their voice heard.

Ventura County will have to address protecting agriculture, water and property despite the revenues received from oil companies. As for rising oil prices, more local drilling does not translate into cheaper prices at the pump for Ventura County residents. The fracked oil from underneath our feet gets traded to the highest bidder on the international market just like any other oil. **43 USC 1354 PLACED LIMITATIONS ON THE EXPORT OF OIL OR GAS. IT READS IN PART AS FOLLOWS. I DON'T KNOW IF THIS HAS CHANGED:**

(a) Application of Export Administration provisions

Except as provided in subsection (d) of this section, any oil or gas produced from the outer Continental Shelf shall be subject to the requirements and provisions of the Export Administration Act of 1969.

(b) Condition precedent to exportation; express finding by President of no increase in reliance on imported oil or gas

Before any oil or gas subject to this section may be exported under the requirements and provisions of the Export Administration Act of 1969, the President shall make and publish an express finding that such exports will not increase reliance on imported oil or gas, are in the national interest, and are in accord with the provisions of the Export Administration Act of 1969.

As for local electoral connections to fracking, only state Sen. Fran Pavley, D-Agoura Hills, has put fracking front and center on her agenda, going as far as writing a bill requiring drillers to notify nearby property owners before fracking. Though one bill died earlier this year, Pavley has reintroduced another bill this month that would regulate fracking, which includes advance notice to neighbors of planned fracking and disclosure of the chemicals used in the process. State Assemblyman Jeff Gorell, R-Camarillo, had Venoco as a client during his lobbyist days. Venoco later joined ExxonMobile in contributing to his campaign. Recently retired Carpinteria City Councilman Joe Armendariz started a consulting firm. His new client is Western Petroleum Association. Councilwoman Carmen Ramirez, who also attended the McGrath Beach opening, might be the next local leader likely to take this up as an agenda item. The Sierra Club adores her. She earned their admiration for fighting to keep development off Ormond Beach.

On the federal level, ProPublica found that Exxon is pushing for legislation so it does not have to reveal fracking chemicals, but federal regulators have their own agenda. John Romero at the Bureau of Ocean Energy Management said that office will not be issuing any more federal offshore permits, but is working on environmental studies for offshore wind power. **THIS PASSAGE LEAVES THE IMPRESSION THAT THE GOVERNMENT WILL NOT BE ISSUING ANY MORE OFFSHORE PERMITS SINCE MOST READERS WON'T KNOW BOEM FROM BSEE. CLARIFY THAT THIS RESPONSIBILITY LIES WITH BSEE AND THAT PERMITS WILL BE ISSUED.** Even if the local and state governments conflict on offshore agendas, the feds are installing more alternative energy regardless of who is in office. As for when this will happen, UCSB biologist Milton Love is already conducting an environmental impact study for the federal government to bring offshore wind power to our region. The Department of Defense has already made plans to develop more wind power on San Nicolas Island.

A few months after the Democratic candidate at McGrath Beach, I asked a ranger about the fracking rumors. "I have heard them," he says, "but we have cameras. Cameras are all over the park." But the cameras do not show everything behind the walls of the rigs and wells. So I ask him if he sees anything else bad happening in the park. "Yes," and then he laughs.

On Mon, Feb 25, 2013 at 5:03 PM, Mayerson, Drew <drew.mayerson@bsee.gov> wrote:
Is 1:30 pm pst ok? or anytime thereafter.

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

On Mon, Feb 25, 2013 at 1:39 PM, Nicholas Pardi <nicholas.pardi@bsee.gov> wrote:
Sure, what works for you?

From: Mayerson, Drew [mailto:drew.mayerson@bsee.gov]
Sent: Monday, February 25, 2013 01:28 PM
To: Pardi, Nicholas <nicholas.pardi@bsee.gov>
Cc: Ming, Jaron <jaron.ming@bsee.gov>; Masri, Nabil <Nabil.Masri@bsee.gov>; Kenneth Seeley <kenneth.seeley@bsee.gov>
Subject: Re: Media Inquiry for PAC region

Any chance we can move it to the afternoon here? I was just informed I have a contractor coming to our house and I have to be there to guide him in the morning.
Drew

Drew Mayerson
Regional Supervisor
Office of Production and Development
Pacific OCS Region

On Mon, Feb 25, 2013 at 12:36 PM, Pardi, Nicholas <nicholas.pardi@bsee.gov> wrote:
Thanks! (b) (5)

On Mon, Feb 25, 2013 at 3:26 PM, Ming, Jaron <jaron.ming@bsee.gov> wrote:
Just FYI, Platform Holly is a State facility. We are aware of this issue and should be able to provide you a response. Thanks.

On Mon, Feb 25, 2013 at 11:58 AM, Pardi, Nicholas <nicholas.pardi@bsee.gov> wrote:
Of note, he added Platform Holly to that list, another Venoco platform. So that's Platforms Holly, Gail and Grace.

On Mon, Feb 25, 2013 at 2:43 PM, Pardi, Nicholas <nicholas.pardi@bsee.gov> wrote:
Hi Jaron,

I got an inquiry from a news organization on the following:

- BSEE permits and operational/inspection documents for drilling operations on Venoco's Platform Gail and Platform Grace off the California coast in the Monterey Shale play. Gail produces from the Sockeye Field and Grace produces in the Santa Clara field.
- Injection well permits for these platforms, if any, and any information on offshore injection well programs, if any.
- Here's why - There are concerns that hydraulic fracturing operations on Platform Gail in 2009 and 2010 produced wastewater, and the disposal of this wastewater was not tracked by BOEM or BSEE, or that BOEM/BSEE are not informing the public.

Here's from the VC Reporter - "The Santa Barbara-based Environmental Defense Center found that Venoco fracked Platform Gail in Sockeye offshore. Where did the wastewater from the offshore frack go? What was the chemical composition? So far, the only two institutions likely to know for certain are Venoco and a few of the

federal regulatory bureaucracies such as the Bureau of Ocean Management or Bureau of Safety and Environmental Enforcement. But none is informing the public."

Do you have a minute today or tomorrow to chat about this?

cheers,
Nick



Seeley, Kenneth <kenneth.seeley@bsee.gov>

Fwd: offshore fracking and NPDES

1 message

Seeley, Kenneth <kenneth.seeley@bsee.gov>
To: Ramona Sanders <ramona.sanders@bsee.gov>

Fri, Feb 22, 2013 at 12:53 PM

here's the e-mail exchange I had with EPA.

—— Forwarded message ——

From: **VON VACANO, MARCELA** <VonVacano.Marcela@epa.gov>

Date: Wed, Feb 20, 2013 at 5:01 PM

Subject: RE: offshore fracking and NPDES

To: "Seeley, Kenneth" <kenneth.seeley@bsee.gov>, "Bromley, Eugene" <Bromley.Eugene@epa.gov>

Cc: "Smith, DavidW" <Smith.DavidW@epa.gov>

(b) (5) . Eugene, what do you think?

From: Seeley, Kenneth [mailto:kenneth.seeley@bsee.gov]

Sent: Wednesday, February 20, 2013 3:18 PM

To: Bromley, Eugene

Cc: Smith, DavidW; VON VACANO, MARCELA

Subject: Re: offshore fracking and NPDES

(b) (5)

Thanks again,

Ken

On Wed, Feb 13, 2013 at 3:58 PM, <Bromley.Eugene@epamail.epa.gov> wrote:

Ken,

Our OCS general permit authorizes the discharge of 22 types of discharges from offshore platforms, including well treatment fluids which are defined as:

"Well treatment fluids" shall refer to any fluid used to restore or improve productivity by chemically or physically altering hydrocarbon-bearing strata after a well has been drilled. (40 CFR Part 435.11)

(b) (5). EPA's offshore oil regs include effluent limitations guidelines for well treatment fluids which were finalized in 1993, based on what was known about the discharge at that time (which was before fracking). Our permit authorizes chemicals "ordinarily present" in a discharge, which means chemicals or classes of chemicals recognized as being used for offshore operations in the development document for the 1993 regs.

The definition of produced water in the permit also recognizes that various chemicals may be discharged in produced water, and the permit also recognizes that well treatment fluids may be commingled with produced water.

With regards to special requirements for fracking fluids:

We have broad authority to require an individual permit when the general permit is not appropriate; this could include discharges with chemicals outside the scope of what was intended by the permit, and special effluent limits could be developed, or discharge authorization could be denied altogether.

We could also require an individual permit (or deny any permit authorization) for chemicals which could cause unreasonable degradation of the marine environment (section 403 of the CWA). Under section 308 of the CWA, we could also ask for more info on fracking chemicals that may be in use.

It would be helpful to let us know of any fracking chemicals you are aware of that are being used and discharged at the platforms that could pose a threat to the marine environment

Eugene Bromley
NPDES Permits Office (WTR-5)
EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105
bromley.eugene@epa.gov
(415) 972-3510
(415) 947-3549 (fax)

From: "Seeley, Kenneth" <kenneth.seeley@bsee.gov>
To: Eugene Bromley/R9/USEPA/US@EPA,
Cc: James Salmons <james.salmons@bsee.gov>
Date: 02/13/2013 01:11 PM
Subject: offshore fracking and NPDES

Hi Eugene:

I'm trying to get a better handle on what authority EPA has regarding discharges of flowback water that might be contaminated with chemicals used in hydraulic fracturing. I understand that these chemicals are exempted from requirements of the Safe Drinking Water Act, but I read on EPA's webpage that flowback water can be discharged with produced water, provided that is treated beforehand. Would a situation like that be covered under the general NPDES permit, or would an individual permit be required and are discharge limits determined on a case by case basis?

Thanks,

Ken

—
Kenneth R. Seeley, Ph.D.
Regional Environmental Officer, Pacific OCS Region
Bureau of Safety and Environmental Enforcement
770 Paseo Camarillo
Camarillo, CA 93010
(P): 805-389-7799
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(C): 805-377-8618
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Seeley, Kenneth <kenneth.seeley@bsee.gov>

Re: offshore fracking and NPDES

1 message

Seeley, Kenneth <kenneth.seeley@bsee.gov>
To: "Bromley, Eugene" <Bromley.Eugene@epa.gov>

Fri, Feb 22, 2013 at 3:50 PM

Thanks Eugene. That's very helpful.

On Fri, Feb 22, 2013 at 3:21 PM, Bromley, Eugene <Bromley.Eugene@epa.gov> wrote:

Ken,

We have checked with our HQ and found that discharges related to hydraulic fracturing would be considered to be well treatment fluids and authorized for discharge subject to the requirements of our general permit for this discharge; no special requirements or approvals would be needed.

Note also the following Q&A which indicates this wastestream and the pollutants which may present were considered in the development documents for the existing effluent limitations guidelines for this industry.

http://www.epa.gov/npdes/pubs/hydrofracturing_faq.pdf

So where our general permit only authorizes chemicals recognized to be "ordinarily present" by the development document for the effluent guidelines, this would include chemicals associated with hydraulic fracturing, and such materials would be authorized for discharge.

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From: Seeley, Kenneth [mailto:kenneth.seeley@bsee.gov]
Sent: Wednesday, February 20, 2013 3:18 PM
To: Bromley, Eugene
Cc: Smith, DavidW; VON VACANO, MARCELA

Subject: Re: offshore fracking and NPDES

(b) (5)

Thanks again,

Ken

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It would be helpful to let us know of any fracking chemicals you are aware of that are being used and discharged at the platforms that could pose a threat to the marine environment

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To: Eugene Bromley/R9/USEPA/US@EPA,
Cc: James Salmons <james.salmons@bsee.gov>
Date: 02/13/2013 01:11 PM
Subject: offshore fracking and NPDES

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Kenneth.Seeley@BSEE.gov



Seeley, Kenneth <kenneth.seeley@bsee.gov>

Re: offshore fracking and NPDES

1 message

Sanders, Ramona <ramona.sanders@bsee.gov>
To: "Seeley, Kenneth" <kenneth.seeley@bsee.gov>

Fri, Feb 22, 2013 at 4:50 PM

Ken,

Classifying fracking fluid as well treatment fluid is consistent with the guidance I received from BOEM today. The only other thing I would ask about is whether the operator intends to add a propping agent in addition to the well treatment fluid as part of the hydraulic fracking operations. If so, what is the composition and does it meet the NPDES permit definition for produced sand? For Region 4 and 6 permits, the definition of produced sand includes, but is not limited to, slurred particles (i.e. propping agent) used in hydraulic fracturing which is prohibited from discharge and must be transported to shore.

On Fri, Feb 22, 2013 at 6:11 PM, Seeley, Kenneth <kenneth.seeley@bsee.gov> wrote:

Hi Everyone:

I've had a number of e-mail exchanges with EPA's NPDES group in Region 9 regarding discharge of fracking chemicals in produced water discharges. As you can see below, their latest position is that discharge of fracking chemicals would be allowed under the general discharge permit, and apparently without further consideration. That's changed somewhat from their initial statements, but apparently that's the answer they got back after discussions with their headquarters.

So given that, I believe this action (approval of the APD) is still covered under the original categorical exclusion. However, in my last e-mail, I based that opinion primarily on the operator's statement that they did not intend to discharge. Now we know that they do intend to discharge and that EPA believes that such discharges are already covered under the general permit. So, I don't know if Margaret's original concerns would still be relevant here, considering that discharges will occur, but I can't think of any other NEPA issues that would keep this from moving forward.

I do have one question for Dan. Based on a conversation I had with my counterpart in GOMR, I was wondering if the fracking portion of this project would normally be dealt with in an APM, instead of including it in the APD like DCOR did in this case? I don't know if that matters, but I was wondering if that would explain their original statement about a closed drilling loop that would not require discharges.

Let me know if you need an additional write up from me. I assume the original CER is adequate though.

Ken

----- Forwarded message -----

From: **Bromley, Eugene** <Bromley.Eugene@epa.gov>
Date: Fri, Feb 22, 2013 at 3:21 PM
Subject: RE: offshore fracking and NPDES
To: "Seeley, Kenneth" <kenneth.seeley@bsee.gov>
Cc: "Smith, DavidW" <Smith.DavidW@epa.gov>, "VON VACANO, MARCELA" <VonVacano.Marcela@epa.gov>

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Note also the following Q&A which indicates this wastestream and the pollutants which may present were considered in the development documents for the existing effluent limitations guidelines for this industry.

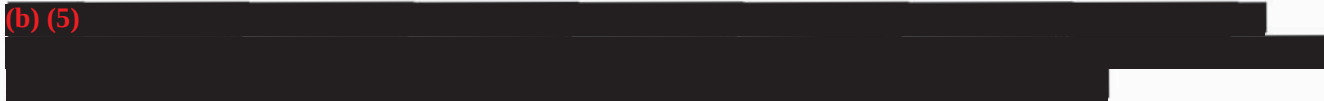
http://www.epa.gov/npdes/pubs/hydrofracturing_faq.pdf

So where our general permit only authorizes chemicals recognized to be "ordinarily present" by the development document for the effluent guidelines, this would include chemicals associated with hydraulic fracturing, and such materials would be authorized for discharge.

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Sent: Wednesday, February 20, 2013 3:18 PM
To: Bromley, Eugene
Cc: Smith, DavidW; VON VACANO, MARCELA
Subject: Re: offshore fracking and NPDES

(b) (5)



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Subject: offshore fracking and NPDES

Hi Eugene:

I'm trying to get a better handle on what authority EPA has regarding discharges of flowback water that might be contaminated with chemicals used in hydraulic fracturing. I understand that these chemicals are exempted from requirements of the Safe Drinking Water Act, but I read on EPA's webpage that flowback water can be discharged with produced water, provided that is treated beforehand. Would a situation like that be covered under the general NPDES permit, or would an individual permit be required and are discharge limits determined on a case by case basis?

Thanks,

Ken

—

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—
Regards,

Ramona Sanders

Chief, Environmental Inspection and Enforcement Unit
Environmental Enforcement Branch
Bureau of Safety and Environmental Enforcement
1201 Elmwood Park Blvd.
New Orleans, LA 70123
ramona.sanders@bsee.gov
504.736.2504



Seeley, Kenneth <kenneth.seeley@bsee.gov>

Re: offshore fracking and NPDES

1 message

Knowlson, Daniel <daniel.knowlson@bsee.gov>

Sat, Feb 23, 2013 at 12:39 PM

To: "Seeley, Kenneth" <kenneth.seeley@bsee.gov>

Cc: Jaron Ming <jaron.ming@bsee.gov>, Nabil Masri <nabil.masri@bsee.gov>, Chuck Barbee <chuck.barbee@bsee.gov>, James Salmons <james.salmons@bsee.gov>, Ramona Sanders <ramona.sanders@bsee.gov>

Ken, thanks for the followup, once again I'll try to explain DCOR's statement in their APD:

This will be a closed drilling system with no overboard discharge.

Note that this statement refers to the 'drilling system'. Well-completions are a separate function of well operations. With this particular operation (i.e. sidetrack) drilling will almost immediately occur within a hydrocarbon bearing formation, therefore DCOR is referring to mud and cuttings which would most likely not pass the sheen test per the NPDES permit. The frac-ing fluids are not part of this equation because they are part of the final well-completion phase of this operation. The frac fluids would be recovered along with completion fluids mainly when the well is initially placed on production. All production fluids are piped to the gross fluids pipeline to shore, where they are processed, filtered and returned to the platform for disposal. The statement that DCOR makes in their APD does not refer to completion and production fluids, only drilling fluids and cuttings. Also, even if you did consider frac fluids as part of the drilling system they would be mixed with hydrocarbons and not pass the sheen test as they are initially injected into the perforated pay-zone (i.e. hydrocarbons are present in hopefully great quantities).

As far as the approval goes, 30CFR250.513(a) states:

§ 250.513 Approval and reporting of well-completion operations.

(a) No well-completion operation may begin until the lessee receives written approval from the District Manager. If completion is planned and the data are available at the time you submit the Application for Permit to Drill and Supplemental APD Information Sheet (Forms BSEE-0123 and BSEE-0123S), you may request approval for a well-completion on those forms (see §§ 250.410 through 250.418 of this part). If the District Manager has not approved the completion or if the completion objective or plans have significantly changed, you must submit an Application for Permit to Modify (Form BSEE-0124) for approval of such operations.

Also, please see DCOR's additional statement on page 27 of the APD regarding detailed Completion Procedure. An APM may also be required prior to completion if conditions or plans change, or if additional information is needed. If you have any further questions or concerns please don't hesitate to contact me.

Thank You

On Fri, Feb 22, 2013 at 4:11 PM, Seeley, Kenneth <kenneth.seeley@bsee.gov> wrote:

Hi Everyone:

I've had a number of e-mail exchanges with EPA's NPDES group in Region 9 regarding discharge of fracking chemicals in produced water discharges. As you can see below, their latest position is that discharge of fracking chemicals would be allowed under the general discharge permit, and apparently without further consideration. That's changed somewhat from their initial statements, but apparently that's the answer they

got back after discussions with their headquarters.

So given that, I believe this action (approval of the APD) is still covered under the original categorical exclusion. However, in my last e-mail, I based that opinion primarily on the operator's statement that they did not intend to discharge. Now we know that they do intend to discharge and that EPA believes that such discharges are already covered under the general permit. So, I don't know if Margaret's original concerns would still be relevant here, considering that discharges will occur, but I can't think of any other NEPA issues that would keep this from moving forward.

I do have one question for Dan. Based on a conversation I had with my counterpart in GOMR, I was wondering if the fracking portion of this project would normally be dealt with in an APM, instead of including it in the APD like DCOR did in this case? I don't know if that matters, but I was wondering if that would explain their original statement about a closed drilling loop that would not require discharges.

Let me know if you need an additional write up from me. I assume the original CER is adequate though.

Ken

----- Forwarded message -----

From: **Bromley, Eugene** <Bromley.Eugene@epa.gov>

Date: Fri, Feb 22, 2013 at 3:21 PM

Subject: RE: offshore fracking and NPDES

To: "Seeley, Kenneth" <kenneth.seeley@bsee.gov>

Cc: "Smith, DavidW" <Smith.DavidW@epa.gov>, "VON VACANO, MARCELA" <VonVacano.Marcela@epa.gov>

Ken,

We have checked with our HQ and found that discharges related to hydraulic fracturing would be considered to be well treatment fluids and authorized for discharge subject to the requirements of our general permit for this discharge; no special requirements or approvals would be needed.

Note also the following Q&A which indicates this wastestream and the pollutants which may present were considered in the development documents for the existing effluent limitations guidelines for this industry.

http://www.epa.gov/npdes/pubs/hydrofracturing_faq.pdf

So where our general permit only authorizes chemicals recognized to be "ordinarily present" by the development document for the effluent guidelines, this would include chemicals associated with hydraulic fracturing, and such materials would be authorized for discharge.

Eugene Bromley
NPDES Permits Office (WTR-5)
EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

bromley.eugene@epa.gov
(415) 972-3510
(415 947-3549 (fax)

From: Seeley, Kenneth [mailto:kenneth.seeley@bsee.gov]
Sent: Wednesday, February 20, 2013 3:18 PM
To: Bromley, Eugene
Cc: Smith, DavidW; VON VACANO, MARCELA
Subject: Re: offshore fracking and NPDES

(b) (5)

Thanks again,

Ken

On Wed, Feb 13, 2013 at 3:58 PM, <Bromley.Eugene@epamail.epa.gov> wrote:

Ken,

Our OCS general permit authorizes the discharge of 22 types of discharges from offshore platforms, including well treatment fluids which are defined as:

"Well treatment fluids" shall refer to any fluid used to restore or improve productivity by chemically or physically altering hydrocarbon-bearing strata after a well has been drilled. (40 CFR Part 435.11)

(b) (5). EPA's offshore oil regs include effluent limitations guidelines for well treatment fluids which were finalized in 1993, based on what was known about the discharge at that time (which was before fracking). Our permit authorizes chemicals "ordinarily present" in a discharge, which means chemicals or classes of chemicals recognized as being used for offshore operations in the development document for the 1993 regs.

The definition of produced water in the permit also recognizes that various chemicals may be discharged in produced water, and the permit also recognizes that well treatment fluids may be commingled with produced water.

With regards to special requirements for fracking fluids:

We have broad authority to require an individual permit when the general permit is not appropriate; this could include discharges with chemicals outside the scope of what was intended by the permit, and special effluent limits could be developed, or discharge authorization could be denied altogether.

We could also require an individual permit (or deny any permit authorization) for chemicals which could cause

unreasonable degradation of the marine environment (section 403 of the CWA). Under section 308 of the CWA, we could also ask for more info on fracking chemicals that may be in use.

It would be helpful to let us know of any fracking chemicals you are aware of that are being used and discharged at the platforms that could pose a threat to the marine environment

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(415) 947-3549 (fax)

From: "Seeley, Kenneth" <kenneth.seeley@bsee.gov>
To: Eugene Bromley/R9/USEPA/US@EPA,
Cc: James Salmons <james.salmons@bsee.gov>
Date: 02/13/2013 01:11 PM
Subject: offshore fracking and NPDES

Hi Eugene:

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Daniel R. Knowlson
DOI/BSEE/POCSR
CA District Manager
805-389-7746



Mayerson, Drew <drew.mayerson@bsee.gov>

OPD Weekly Report: April 7-13, 2013

1 message

Mayerson, Drew <drew.mayerson@bsee.gov>

Thu, Apr 11, 2013 at 5:41 PM

To: BSEE PAC OPD <bseepacopd@bsee.gov>, BSEE PAC Managers/Supervisors
<BSEEPACManagers_Supervisors@boemre.gov>**Weekly Report: April 7-13, 2013****Items for the Regional Director****Conservation Related**

Non-relevant

Two representatives from Schlumberger visited the POCSR and provided a primer they called "Hydraulic Fracturing 101." About 20 BSEE staff attended. The presentation lasted about 3 hours and many of the region's questions were answered. The information will be used to respond to public inquiries regarding hydraulic fracturing in the offshore.

Non-relevant