

STATE OF ALASKA
ALASKA OIL AND GAS CONSERVATION COMMISSION
333 West 7th Avenue, Suite 100
Anchorage Alaska 99501

Re: THE APPLICATION OF ConocoPhillips) Docket Number: CO-14-003
Alaska, Inc. to modify the descriptions of) Area Injection Order No. 2C
the authorized injection strata and affected)
area for enhanced recovery and authorize) Kuparuk River Field
Viscosity Reducing Water Alternating Gas) Kuparuk River Unit
injection for enhanced recovery in the) Kuparuk River Oil Pool
West Sak Oil Pool, Kuparuk River Field,) Ugnu Formation
North Slope, Alaska) West Sak Oil Pool
) Tabasco Oil Pool
)
) June 19, 2014

IT APPEARING THAT:

1. By application dated January 30, 2014, and received by the Alaska Oil and Gas Conservation Commission (AOGCC) on January 31, 2014, ConocoPhillips Alaska, Inc. (CPAI) requested authorization to vertically expand the injection strata of the West Sak Oil Pool (WSOP) to include the Schrader Bluff N Sands, to modify the northern and eastern extents of the affected area to coincide with the current unit boundaries, and to use viscosity reducing water alternating gas (VRWAG) for enhanced recovery purposes in the WSOP.
2. Pursuant to 20 AAC 25.540, the AOGCC tentatively scheduled a public hearing for April 1, 2014. On February 28, 2014, the AOGCC published notice of the opportunity for that hearing on the State of Alaska's Online Public Notice website and on the AOGCC's website, electronically transmitted the notice to all persons on the AOGCC's email distribution list, and mailed printed copies of the Notice of Public Hearing to all persons on the AOGCC's mailing distribution list. On March 1, 2014, the notice was published in the ANCHORAGE DAILY NEWS. The hearing convened on April 1, 2014, and recessed until April 23, 2014.
3. By letter dated April 22, 2014, and received by the AOGCC on April 23, 2014, CPAI supplemented its application to indicate that the North Slope Borough had been provided a copy of the application, and to revise its proposed rule relating to converting wells to injection service to be consistent with the methodology used throughout the rest of the field.
4. The hearing was reconvened on April 23, 2014, and the AOGCC received testimony from CPAI.
5. The record was held open until May 7, 2014, to allow CPAI an opportunity to respond to questions raised by AOGCC during the hearing.

6. By letter dated and received on May 7, 2014, CPAI responded to those questions.

FINDINGS:

1. CPAI is the operator of the WSOP within the Kuparuk River Unit (KRU).
2. The authorized injection strata covering the WSOP is currently defined as the West Sak Sands that correlate with the "O" Sands in the Schrader Bluff Oil Pools in the adjacent Milne Point, Nikaitchuq, and Prudhoe Bay Units.
3. The Schrader Bluff N Sands are currently defined as part of the authorized injection strata definition for the Ugnu Formation.
4. In the Prudhoe Bay, Milne Point, and Nikaitchuq Units, the Schrader Bluff N Sands and O Sands are being developed together as a single oil pool (collectively called Schrader Bluff Oil Pools or SBOPs). The affected areas for the area injection orders (AIO) that cover the SBOPs are adjacent to the affected area of the existing AIO that covers of the WSOP.
5. The unit boundaries have changed since the WSOP was originally defined in 1997 and now there are areas that are defined as both being part of the WSOP and as part of one of the SBOPs. Likewise there are areas that lie within the current KRU boundaries that should be a part of the WSOP affected area that aren't currently included in the pool description.
6. CPAI conducted a pilot VRWAG injection project in a portion of the WSOP beginning in 2009.
7. Results of the pilot project predict that VRWAG will increase recovery by 3-6% of original oil in place over water injection alone.
8. The pilot project also demonstrated that injection pressures were in accordance with what was predicted prior to commencement of the study and that there was no indication of out of zone injection.

CONCLUSIONS:

1. The existing vertical limits of the authorized injection strata interval that covers the WSOP does not reflect the current understanding of how to effectively develop the Schrader Bluff Formation sands (N Sands and West Sak Sands/O Sands).
2. The existing areal extent of the WSOP creates areas where there are two sets of injection orders covering the same interval and areas where there are no injection orders where they should exist.
3. VRWAG significantly increases recovery over waterflooding alone.

NOW THEREFORE IT IS ORDERED:

Area Injection Order 2B is hereby superseded and its record incorporated by reference into this order. The following rules apply to Class II injection operations within the following affected area:

Umiat Meridian

| Township | Range | Sections |
|----------|-------|----------------------------------------------------------------------|
| T8N | R7E | Sections 1-18 |
| T9N | R11E | Sections 5-8, 17-20, 29-32 |
| T9N | R10E | All |
| T9N | R9E | All |
| T9N | R8E | All |
| T9N | R7E | All |
| T10N | R11E | Sections 3-10, 15-22, 29-32 |
| T10N | R10E | All |
| T10N | R9E | All |
| T10N | R8E | All |
| T10N | R7E | All |
| T11N | R11E | Sections 5-8, 16-22, 27-34 |
| T11N | R10E | All |
| T11N | R9E | All |
| T11N | R8E | All |
| T11N | R7E | All |
| T12N | R11E | Section 31 |
| T12N | R10E | Sections 3-10, 14-23, 25-36 |
| T12N | R9E | All |
| T12N | R8E | All |
| T12N | R7E | All |
| T13N | R9E | SW1/4 Section 2, W1/2& SE1/4 Section 11, Sections 3-10, 15-22, 25-36 |
| T13N | R8E | Sections 1-3, 10-12, 13-15, 19-36 |
| | | |

Rule 1. Authorized Injection Strata for Enhanced Recovery (Revised this Order)

Within the affected area, non-hazardous fluids may be injected for purposes of pressure maintenance and enhanced oil recovery into strata defined as those strata which correlate with the strata found in the ARCO West Sak River State Well No. 1 between the measured depths of 3145 feet and 3552 feet; 3552 feet and 4156 feet; 4591 feet and 5324 feet; and 6474 feet and 6880 feet.

Rule 2. Authorized Injection Strata for Disposal (Restated from AIO 2B.003)

Within the affected area, Class II oil field fluids may be injected in conformance with 20 AAC 25 for the purpose of fluid disposal into strata defined as those strata which correlate with the strata found in ARCO West Sak River State Well No. 1 between the measured depths of 3390 feet and 3640 feet; and with the strata found in ARCO/BP Ugnu Well No. 1 between the measured depths of 8370 feet and 8800 feet; within tract ADL 25648 (Sections 3, 4, 9, and 10, T11N, R10E, UM) into the zone which correlates with the strata found in ARCO West Sak River State Well No. 1 between the measured depths of 3145 feet and 3390 feet; within portions of

tracts ADL 355023, ADL 355024, and ADL 373301 (Sections 3, 4, 5, 8, 9 and 10, T13N, R9E) into the non-hydrocarbon bearing portions of the zone which correlates with the strata found in ARCO Oliktok Point Well No. 2 between the measured depths of 2937 feet and 3544 feet; and within portions of tracts ADL 25660 and ADL 25661 (Sections 26,27,34 and 35, T11N, R10E) into the non-hydrocarbon bearing portions of the zone which correlates with the strata found in ARCO West Sak River State Well No.1 between the measured depths of 3145 feet and 3390 feet.

Rule 3. Fluid Injection Wells (Restated from AIO 2B)

The underground injection of fluids must be: 1) through a new well that has been permitted for drilling as a service well for injection in conformance with 20 AAC 25.005; 2) through an existing well that has been approved for conversion to a service well for injection in conformance with 20 AAC 25.280; or 3) through a well that existed as a service well for injection purposes on the date of this order. The pumping away of drilling mud, rock cuttings and other-waste as provided for in 20 AAC 25.080 into an exploratory or stratigraphic test well, or into the annuli of any well approved in accordance with 20 AAC 25.005, is an operation incidental to the drilling of the well, and is not considered a disposal operation subject to regulation as an injection well (Class II or otherwise) under authority of the UIC program.

Rule 4. Monitoring the Tubing/Casing Annulus Pressures (Restated from AIO 2B)

The tubing/casing annulus pressure of each injection well must be checked weekly, as a routine duty, to ensure there is no leakage and that it does not exceed a pressure that will subject the casing to a hoop stress greater than 70% of the casing's minimum yield strength.

Rule 5. Reporting of Tubing/Casing Annulus Pressure Variations (Restated from AIO 2B)

Tubing/casing annulus pressure variations between consecutive observations need not be reported to the AOGCC.

Rule 6. Demonstration of Tubing/Casing Annulus Mechanical Integrity (Restated from AIO 2B)

A schedule must be developed and coordinated with the AOGCC, which ensures that the tubing/casing annulus for each injection well is pressure tested prior to initiating injection and at least once every four years thereafter. A test surface pressure of 1500 psi or 0.25 psi/ft multiplied by the vertical depth of the packer, whichever is greater, but not to exceed a hoop stress greater than 70% of the casing's minimum yield strength, must be held for 30 minutes with no more than a 10 percent decline. Alternative EPA methods may also be used with AOGCC approval, including but not limited to timed-run radioactive tracer survey (RTS), oxygen activation logs, temperature logs and noise logs. Wells with tubing-to-casing communication must be surveyed or logged every other year and wells which demonstrate mechanical integrity every fourth year. The AOGCC must be notified at least 24 hours in advance to enable a representative to witness pressure tests or the application of alternative methods.

Rule 7. Well Integrity Failure (Restated from AIO 2B)

Whenever operating pressure observances or pressure tests indicate pressure communication or leakage of any casing, tubing or packer, the operator must notify the AOGCC on the first working day following the observation, obtain AOGCC approval of a plan for corrective action, and when an USDW is not endangered, obtain AOGCC approval to continue injection.

Rule 8. Plugging and Abandonment of Fluid Injection Wells (Restated from AIO 2B)

An injection well located within the affected area must not be plugged or abandoned unless approved by the AOGCC in accordance with 20 AAC 25.105.

Rule 9. Viscosity Reducing Water Alternating Gas Injection in the West Sak Oil Pool (New This Order)

VRWAG is authorized in the West Sak Oil Pool; VRWAG must be conducted in accordance with the process described in the VRWAG Application (incorporated into this AIO by reference).

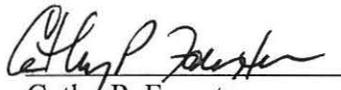
Rule 10. Recompletion of Wells for VRWAG Injection in the Schrader Bluff N Sands (New this Order)

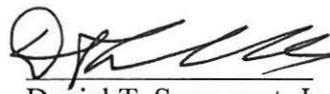
Prior to commencement of VRWAG gas injection activities in an injection well recompleted in the Schrader Bluff N Sands, the operator must submit an Application for Sundry Approvals (AOGCC Form 10-403).

Rule 11. Administrative Relief (Revised this order and Renumbered this Order)

Unless notice and public hearing is otherwise required, upon proper application, the AOGCC may administratively waive the requirements of any rule stated herein or administratively amend this order as long as the change does not promote waste or jeopardize correlative rights, is based on sound engineering and geoscience principles, and will not result in an increased risk of fluid movement into freshwater.

DONE at Anchorage, Alaska and dated June 19, 2014.


Cathy P. Foerster
Chair, Commissioner


Daniel T. Seamont, Jr.
Commissioner



RECONSIDERATION AND APPEAL NOTICE

As provided in AS 31.05.080(a), within **20** days after written notice of the entry of this order or decision, or such further time as the AOGCC grants for good cause shown, a person affected by it may file with the AOGCC an application for reconsideration of the matter determined by it. If the notice was mailed, then the period of time shall be **23** days. An application for reconsideration must set out the respect in which the order or decision is believed to be erroneous.

The AOGCC shall grant or refuse the application for reconsideration in whole or in part within 10 days after it is filed. Failure to act on it within 10-days is a denial of reconsideration. If the AOGCC denies reconsideration, upon denial, this order or decision and the denial of reconsideration are **FINAL** and may be appealed to superior court. The appeal **MUST** be filed within **33** days after the date on which the AOGCC mails, **OR 30** days if the AOGCC otherwise distributes, the order or decision denying reconsideration, **UNLESS** the denial is by inaction, in which case the appeal **MUST** be filed within **40** days after the date on which the application for reconsideration was filed.

If the AOGCC grants an application for reconsideration, this order or decision does not become final. Rather, the order or decision on reconsideration will be the **FINAL** order or decision of the AOGCC, and it may be appealed to superior court. That appeal **MUST** be filed within **33** days after the date on which the AOGCC mails, **OR 30** days if the AOGCC otherwise distributes, the order or decision on reconsideration.

In computing a period of time above, the date of the event or default after which the designated period begins to run is not included in the period; the last day of the period is included, unless it falls on a weekend or state holiday, in which event the period runs until 5:00 p.m. on the next day that does not fall on a weekend or state holiday.