

# STATE OF ALASKA

SEAN PARNELL, GOVERNOR

## ALASKA OIL AND GAS CONSERVATION COMMISSION

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### ADMINISTRATIVE APPROVAL AIO 34.005

Mr. Dave Hart  
Operations Manager  
Pioneer Natural Resources Alaska, Inc.  
700 G Street, Suite 600  
Anchorage, AK 99501

RE: Oooguruk-Nuiqsut Glycol Injection Waiver Request 2001  
Rule 3 of Area Injection Order No. 34  
Oooguruk-Nuiqsut Oil Pool, Oooguruk Unit

Dear Mr. Hart:

In accordance with Rule 10 of Area Injection Order No. 34 (AIO 34) for the Oooguruk-Nuiqsut Oil Pool, the Alaska Oil and Gas Conservation Commission (Commission) **CONDITIONALLY GRANTS** the request of Pioneer Natural Resources Alaska, Inc. (Pioneer) for administrative approval to temporarily amend Rule 3 of AIO 34 to extend the authorization allowing injection of glycol and water mixtures for enhanced recovery purposes from December 31, 2010 to September 30, 2011 or until the gas injection flowline can be pigged during the scheduled Trans Alaska Pipeline System (TAPS) maintenance shutdown, whichever occurs first.

By application dated and received February 1, 2011, Pioneer requests authority to continue to inject pre-existing entrained glycol and water mixtures for enhanced oil recovery (EOR) purposes in the Oooguruk-Nuiqsut Oil Pool of the Oooguruk Unit. Rule 3 of AIO 34 authorizes injection of specified non-hazardous fluids at Oooguruk for purposes of enhanced oil recovery and reservoir pressure maintenance. Rule 10 of AIO 34 provides for the approval of other fluids by administrative action. On May 19, 2010, the Commission granted temporary authorization to inject pre-existing entrained glycol and water mixtures in the Oooguruk-Nuiqsut Oil Pool. This authorization expired on December 31, 2010.

During 2010 gas was injected into the Oooguruk-Nuiqsut Oil Pool injection wells N-32i and N-34i. Presumably during this gas injection some of the 50/50 glycol and water mixture that remained in the gas injection flowline was also injected into the pool. Neither the quantity of this mixture which was injected nor the volume of the 50/50 glycol / water mixture remaining in the gas injection flowline is known. Pioneer intends to install temporary pigging facilities on the gas injection flowline and purge the line of the remaining volume of glycol-water mixture during a planned maintenance shutdown of TAPS in the summer of 2011. Pioneer requests the temporary authorization to inject the glycol-water mixture be extended so that gas injection into the Oooguruk-Nuiqsut Oil Pool may resume in the interim.

In support of its request, Pioneer submitted injectivity plots for wells N-32i and N-34i which show no obvious signs of harm to injectivity resulting from injection of the glycol-water mixture entrained in the gas injection stream. Pioneer also submitted the results of a laboratory core flood test conducted by Baker Hughes to determine the effects of glycol on injection permeability in the Oooguruk-Nuiqsut Oil Pool. This report concludes: 1) there is no impact on injection permeability for glycol concentrations less than 1.5% of the total injection stream, and 2) above 1.5% glycol concentration, injectivity degrades rapidly. At the proposed gas-injection rates, the volume of the glycol-water mixture entrained in the injection stream would result in a glycol concentration of less than 1.5%. Accordingly, injectivity should not be adversely affected by the resumption of gas injection into the Oooguruk-Nuiqsut Oil Pool. Because, these results clearly indicate concentrations higher than 1.5% glycol will adversely affect injectivity, the Commission denies blanket authorization to allow glycol mixtures to be injected for EOR purposes into the Oooguruk-Nuiqsut Oil Pool.

The Commission has determined that the proposed action does not require notice and public hearing, will 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. Therefore, in accordance with Rule 10 of AIO 34, the Commission temporarily administratively amends Rule 3 of AIO 34 to extend the authorization allowing the injection of glycol-water mixtures for enhanced recovery purposes in the Oooguruk-Nuiqsut Oil Pool.

Rule 3 of AIO 34 is hereby amended to read as follows:

**Rule 3 Authorized Fluids for Enhanced Recovery**

Fluids authorized for injection are:

- a. source water from the Kuparuk or Prudhoe Bay sea water treatment plants;
  - b. injection water provided by the Kuparuk Field;
  - c. produced water from the Oooguruk-Kuparuk and Oooguruk-Nuiqsut Oil Pools;
  - d. tracer survey liquid to monitor reservoir performance;
  - e. biocide-treated and oxygen-scavenged sea water extracted from Harrison Bay, adjacent to the Oooguruk Drill Site (ODS);
  - f. biocide-treated and oxygen-scavenged water from the ODS shallow water source wells;
  - g. biocide-treated and oxygen-scavenged effluent from the ODS reverse osmosis unit;
  - h. mixtures of the fluids described in (e), (f) and (g) above; and
  - i. natural gas provided by the KRU CPF-3.
- j. Injection of glycol and water mixtures is approved within the affected areas of AIO 34 in the Oooguruk-Nuiqsut Oil Pool until September 30, 2011, or until the gas injection flowline can be pigged during the scheduled TAPS maintenance shutdown, whichever occurs first.
- i. Injection is authorized only as to pre-existing, glycol-water mixtures entrained within the gas injection flowline.

- ii. Quarterly injectivity plots must be provided to the Commission for each Nuiqsut well that has received any amount of glycol-water mixture by April 15, 2011, July 15, 2011, and October 17, 2011.
- iii. When the gas injection flowline is pigged, the glycol-water mixture that remains in the line must be captured and disposed of by an appropriate means. This remaining mixture cannot be injected into the Oooguruk-Nuiqsut Oil Pool.
- iv. The volume of the glycol-water mixture recovered during pigging operations must be reported to the Commission, in writing or via email.

The injection of any other fluids, or mixtures of the above fluids, shall be approved by separate administrative action.

This administrative approval does not exempt you from obtaining additional permits or approvals required by law from other governmental agencies.

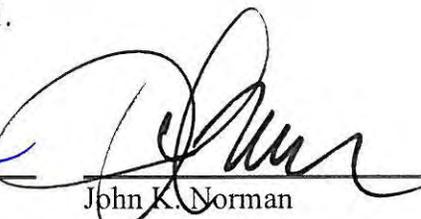
**DONE** at Anchorage, Alaska and dated April 4, 2011.



Daniel T. Seamount, Jr.  
Chair



Cathy P. Foerster  
Commissioner



John K. Norman  
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 Commission grants for good cause shown, a person affected by it may file with the Commission 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 Commission 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 Commission 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 Commission mails, **OR 30** days if the Commission 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 Commission 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 Commission, and it may be appealed to superior court. That appeal **MUST** be filed within **33** days after the date on which the Commission mails, **OR 30** days if the Commission otherwise distributes, the order or decision on reconsideration. As provided in AS 31.05.080(b), "[t]he questions reviewed on appeal are limited to the questions presented to the Commission by the application for 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.