

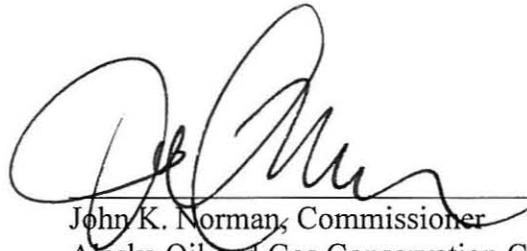
**STATE OF ALASKA**  
**ALASKA OIL AND GAS CONSERVATION COMMISSION**  
**333 W. 7<sup>th</sup> Avenue, Suite 100**  
**Anchorage Alaska 99501-3192**

Re:    Underground injection of Class II fluids for    )        Erratum Notice to  
      enhanced oil recovery and disposal in        )        Area Injection Order No. 4E  
      development wells within the eastern        )  
      operating area of Prudhoe Bay Unit,        )        Prudhoe Bay Unit  
      Arctic Slope, Alaska                        )        July 17, 2009

Area Injection Order (AIO) 4E erroneously changes the due date for annual performance reports covering disposal injection operations from previous Alaska Oil and Gas Conservation Commission (Commission) approvals. Rule 10 of AIO 4E requires report submission on or before July 1 of each year. Administrative Approval AIO 4C.001 dated October 2, 2002 granted BP Exploration (Alaska) Inc. (BPXA)'s request to revise the due date for the annual disposal operations performance report to "on or before November 15" to provide sufficient time to complete an analysis of the disposal operations data. A corrected AIO 4E will be issued by the Commission.

**ENTERED at Anchorage, Alaska, and dated July 17, 2009.**



  
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John K. Norman, Commissioner  
Alaska Oil and Gas Conservation Commission

  
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Cathy P. Foerster, Commissioner  
Alaska Oil and Gas Conservation Commission

**STATE OF ALASKA**  
**ALASKA OIL AND GAS CONSERVATION COMMISSION**  
**333 West 7<sup>th</sup> Avenue, Suite 100**  
**Anchorage, Alaska 99501**

**Re:** Underground injection of Class II ) **Area Injection Order No. 4E**  
fluids for enhanced oil recovery and ) Prudhoe Bay Unit  
disposal within the eastern operating ) Prudhoe Oil Pool  
area of Prudhoe Bay Unit, Arctic ) Put River Oil Pool  
Slope, Alaska ) Lisburne Oil Pool  
 ) Pt. McIntyre Oil Pool  
 ) West Beach Oil Pool  
 ) Stump Island Oil Pool

March 30, 2006

**Corrected July 17, 2009**

**IT APPEARING THAT:**

1. Following written application by BP Exploration (Alaska) Inc. ("BPXA"), public notice, and hearing, the Commission on December 2, 2005, issued Area Injection Order No. 4D, which amended Area Injection Order No. 4C (corrected) to include within authorized injection strata the Put River Sandstone Member of the Kalubik Formation and to revise the language of certain rules relating to pressure monitoring and well integrity
2. In response to a communication treated by the Commission as an application for rehearing with respect to Area Injection Order No. 4D, the Commission reaffirmed Area Injection Order No. 4D on February 6, 2006.
3. By correspondence dated December 8, 2005, BPXA requested that for the purpose of clarity and avoiding confusion, all applicable rules in Area Injection Order No. 4C (corrected) and Area Injection order No. 4D be re-issued in a single order and that the order set out full descriptions of certain authorized injection strata in place of referring to pool definitions that are set out in other orders.
4. The Commission has found several clerical errors in the rules set out in Area Injection Order No. 4D.

**CONCLUSIONS:**

1. It is desirable to incorporate in a single Area Injection Order document all applicable rules governing injection subject to the Area Injection Order.
2. The issuance of this Area Injection Order No. 4E does not make any substantive changes, other than correcting clerical errors, in Area Injection Orders No. 4C

(corrected) or Area Injection Order No. 4D, and it is accordingly appropriate to amend Area Injection Order Nos. 4C (corrected) and 4D by Administrative Action issuing this Area Injection Order No. 4E.

**NOW, THEREFORE, IT IS ORDERED THAT:**

In addition to statewide requirements under 20 AAC 25 (to the extent not superseded by these rules), the following rules govern Class II injection operations in the affected area described below and supersede and replace the rules adopted in Conservation Orders Nos. 4C (corrected) and 4D:

UMIAT MERIDIAN

T12N	R14E	Sections 3, 4, 9, 10, 13, 14, 15, 16, Section 17: NE $\frac{1}{4}$ , N $\frac{1}{2}$ SE $\frac{1}{4}$ , E $\frac{1}{2}$ E $\frac{1}{2}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ , Section 21: N $\frac{1}{2}$ NE $\frac{1}{4}$ , Sections 22, 23, 24, 25, 26, 35, and 36.
T12N	R15E	Sections 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, and 36.
T12N	R16E	Sections 28, 29, 30, 31, 32, 33, and Section 34: W $\frac{1}{2}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ , and SW $\frac{1}{4}$ SE $\frac{1}{4}$
T11N	R14E	Sections 1, 2, 9, 10, 11, 12, 13, 14, 15, 16, 21, 22, 23, 24, 25, 26, 27, 28, 33, 34, 35, and 36.
T11N	R15E	Entire Township.
T11N	R16E	Section 2: SW $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ , S $\frac{1}{2}$ SE $\frac{1}{4}$ , Sections 3, 4, 5, 6, 7, 8, 9, 10, 11, Section 12: NW $\frac{1}{4}$ , S $\frac{1}{2}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$ , and SW $\frac{1}{4}$ Sections 13, 14, 15, 16, 17, 18, 19, 20, 21, 28, 29, 30, 31, 32, and 33.
T10N	R14E	Sections 1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, 21, 22, 23, 24, 25, 26, 27, 28, and 36.
T10N	R15E	Entire Township.
T10N	R16E	Sections 4, 5, 6, 7, 8, 9, 16, 17, 18, 19, 20, 29, 30, and 31.

Those Lands in Block 605 lying northerly of the north boundary of Section 3, T12N, R14E, UM, AK (identical with line 4-5 on block 605) and lying easterly of the west boundary of sections 2 and 11, T12N, R14E, UM, AK (identical with line 5-6 on Block 605) and lying northerly of the south boundary of Section 11 and 12, T12N, R14E, UM, AK, and lying northerly of the south boundary of Section 7, T12N, R15E, UM, AK (identical with line 6-7 on block 605), within the offshore three-mile arc lines listed as State Area on the "Supplemental Official O.C.S. Block Diagram," approved 12/9/79, containing 1457.32 hectares.

**Rule 1 Authorized Injection Strata for Enhanced Recovery (AIO4C, AIO4D)**

Within the affected area, authorized fluids may be injected for purposes of pressure maintenance and enhanced recovery into strata defined as follows:

The Prudhoe Oil Pool strata defined as (i) the accumulations of oil that are common to and that correlate with the accumulations found in the Atlantic Richfield - Humble Prudhoe Bay State No. 1 well between the depths of 8,110 feet and 8,680 feet, and (ii) the accumulation of oil that is common to and correlates with the interval from 9,638 to 9,719 measured feet on the Borehole Compensated Sonic Log, Run 2, Dated September 28, 1975, in the Atlantic Richfield-Exxon NGI No. 1 well, and that is in hydraulic communication with the gas cap of the former accumulations in the Sag River Formation. The latter accumulation is found within the following area:

Umiat Meridian.

T11N R14E: Sections: 1, 2, 11(N/2 and SE/4), 12, 13, 14(E/2), 23(NE/4), 24, 25(N/2); T11N R15E: Sections: 6, 7, 8, 17, 18, 19, 20, 29(N/2), 30(N/2);  
T12N R14E: Sections 35, 36

The Put River Oil Pool strata defined as the sandstone reservoirs in the Southern, Central and Western lobes that correlate with the interval 9,638 to 9,719 measured feet on the Borehole Compensated Sonic Log, Run 2, Dated September 28, 1975, in the Atlantic Richfield-Exxon NGI No. 1 well, but excluding the Northern Lobe reservoirs that are in pressure communication with the Prudhoe Oil Pool gas cap in the Sag River Formation. The Put River Oil Pool is found within the following area:

Umiat Meridian.

T11N R14E Sections: 3, 4, 9, 10, 11(SW/4), 14(W/2), 15, 16, 21, 22, 23(W/2 and SE/4), 25(S/2), 26, 27, 28, 33, 34, 35, 36; T11N R15E Sections: 29(S/2), 30(S/2), 31, 32;  
T10N R14E Sections: 1, 2, 3, 11, 12, 13, 14;  
T10N R15E Sections: 5, 6, 7, 8, 17, 18

The Lisburne Oil Pool strata, which correlate with and are common to the formations found in the ARCO Prudhoe Bay State No. 1 well between the measured depths of 8,790-10,440.

The Pt. McIntyre Oil Pool strata, which correlate with and are common to the formations found in the Pt. McIntyre No. 11 well between the measured depths of 9,908-10,665 feet.

The West Beach Oil Pool strata, which correlate with and are common to the formations found in the West Beach No. 4 well between the measured depths of 14,458-14,781 feet.

The Stump Island Oil Pool enhanced recovery plans will be evaluated on a well-by-well basis in conjunction with Pt. McIntyre Oil Pool development.

**Rule 2 Authorized Injection Strata for Disposal (AIO 4C)**

Within the affected area, Class II waste fluids may be disposed by injection into strata defined as those which correlate with and are common to the strata found in the ARCO Sag River State No. 1 well between the measured depths of 3,607-6,750 feet.

Class II slurry injection from the Grind and Inject processes may be disposed into strata defined as those which correlate with and are common to the strata found in the ARCO Sag River State No. 1 well between the measured depths of 4,270-6,750 feet.

**Rule 3 Fluid Injection Wells (AIO 4C)**

The injection of fluids must be conducted: 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.

**Rule 4 Monitoring the Tubing-Casing Annulus Pressure Variations (AIO4D)**

The tubing and casing annuli pressures of each injection well must be monitored at least daily, except if prevented by extreme weather condition, emergency situations, or similar unavoidable circumstances. Monitoring results shall be documented and made available for Commission inspection.

**Rule 5 Reporting the Tubing-Casing Annulus Pressure Variations (Revoked AIO4D)**

**Rule 6 Demonstration of Tubing/Casing Annulus Mechanical Integrity (AIO4D, corrected this order)**

The mechanical integrity of an injection well must be demonstrated before injection begins, and before returning a well to service following a workover affecting mechanical integrity. A Commission-witnessed mechanical integrity test must be performed after injection is commenced for the first time in a well, to be scheduled when injection conditions (temperature, pressure, rate, etc.) have stabilized. Subsequent tests must be performed at least once every four years thereafter (except at least once every two years in the case of a slurry injection well). The Commission must be notified at least 24 hours in advance to enable a representative to witness mechanical integrity tests. Unless an alternate means is approved by the Commission, mechanical integrity must be demonstrated by a tubing/casing annulus pressure test using a surface pressure of 1500 psi or 0.25 psi/ft multiplied by the vertical depth of the packer, whichever is greater, that shows stabilizing pressure and does not change more than 10 percent during a 30-minute

period. Results of mechanical integrity tests must be readily available for Commission inspection.

**Rule 7 Well Integrity Failure (AIO4D, corrected this order)**

Whenever any pressure communication, leakage or lack of injection zone isolation is indicated by injection rate, operating pressure observation, test, survey, log, or other evidence, the Operator shall notify the Commission by the next business day and submit a plan of corrective action on a Form 10-403 for Commission approval. The Operator shall immediately shut in the well if continued operation would be unsafe or would threaten contamination of freshwater, or if so directed by the Commission. A monthly report of daily tubing and casing annuli pressures and injection rates must be provided to the Commission for all injection wells indicating well integrity failure or lack of injection zone isolation.

**Rule 8 Plugging and Abandonment of Injection Wells (AIO 4C)**

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

**Rule 9 Administrative Action (AIO 4D)**

Unless notice and public hearing are otherwise required, the Commission may administratively waive or amend any rule stated above 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 fluid movement outside of the authorized injection zone.

**Rule 10 Surveillance (AIO 4C)**

For slurry injection wells, a baseline temperature survey from surface to total depth, initial step rate test to pressures equal or exceeding maximum injection pressure and pressure falloff are required prior to sustained disposal injection. Regular fill depth tags are required at least once annually or as warranted following consultation with the Commission. Operating parameters including disposal rate, disposal pressure, annulus pressures and volume of slurry pumped must be monitored and reported according to the requirements of 20 AAC 25.432.

Also for slurry injection wells, an annual performance report will be required including rate and pressure performance, surveillance logging, fill depth, survey results, and volumetric analysis of the disposal storage volume, estimate of fracture growth, if any, and updates of operational plans. Report submission must be on or before November 15.

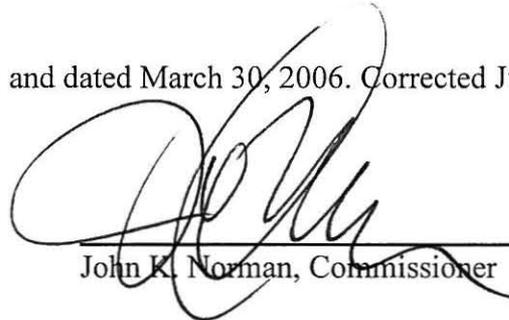
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**Rule 11 Notification (AIO 4C)**

The operator must notify the Commission if it learns of any improper Class II injection. Additionally, notification requirements of any other State or Federal agency remain the operators' responsibility.

ENTERED at Anchorage, Alaska, and dated March 30, 2006. Corrected July 17, 2009.



  
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John K. Norman, Commissioner

  
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Cathy P. Foerster, 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.