

STATE OF ALASKA
ALASKA OIL AND GAS CONSERVATION COMMISSION
3001 Porcupine Drive
Anchorage, Alaska 99501-3192

Re: THE REQUEST OF ARCO ALASKA,) Area Injection Order No. 4
INC. for an Area Injection)
Order for that portion) Eastern Operating Area
of the Prudhoe Bay Unit) Prudhoe Bay Unit
commonly known as the)
Eastern Operating Area)

July 11, 1986

IT APPEARING THAT:

1. ARCO Alaska, Inc. (ARCO) requested the Alaska Oil and Gas Conservation Commission to issue an Area Injection Order permitting the underground injection of fluids within the Eastern Operating Area of the Prudhoe Bay Unit for purposes of enhanced hydrocarbon recovery and the disposal of non-hazardous oil field waste fluids.
2. Notice of an opportunity for a public hearing on July 16, 1986 was published in the Anchorage Times on June 9, 1986.
3. Neither a protest nor a request for a public hearing was timely filed. Accordingly, the Commission will, in its discretion, issue an order without a public hearing.

FINDINGS:

1. An order permitting the underground injection of non-hazardous fluids on an area basis, rather than for each injection well individually, provides for efficiencies in the administration and surveillance of underground fluid injection operations. 20 AAC 25.460 provides the Commission with the authority to issue an order governing underground injection operations on an area basis.
2. The Eastern Operating Area constitutes a compact "project area" for the operation of a portion of the Prudhoe Bay Unit and can readily be described by governmental subdivisions. The Project Area is operated by a single operator.
3. The Project Area encompasses approximately the eastern one-half of the Prudhoe Oil Pool and all of the Lisburne Oil Pool. The Project Area includes all existing injection wells and injection well sites planned for enhanced recovery from this portion of the

Prudhoe Oil Pool, and from all of the Lisburne Oil Pool. The Project Area includes all existing injection wells and injection well sites planned for disposal by injection into Cretaceous and Tertiary strata of oil field waste fluids developed from the operation of this portion of the Prudhoe Bay Unit.

4. The vertical limits of injection strata and the confining formations may be defined in the ARCO (Atlantic Richfield-Humble) Prudhoe Bay State Well No. 1 and the ARCO Sag River State Well No. 1.
5. Within the Project Area, injection into, through, or above a fresh water aquifer or underground source of drinking water will not occur.
6. The strata into which fluids are to be injected will accept fluids at injection pressures which are less than the fracture pressure of the injection strata and their confining formations.
7. Less stringent requirements for well construction, operation, monitoring and reporting of injection operations may be more appropriate than would be required when injection occurs into, through or above portions of aquifers not exempted.
8. Statewide regulations and conservation orders govern field operations except as modified by this order.
9. To ensure that fluids injected are confined to injection strata, the mechanical integrity of an injection well should be demonstrated periodically and monitored routinely for disclosure of possible abnormalities in operating conditions.
10. Injection wells existing on the date of this order were constructed and completed in accordance with regulations which conform to the requirement of 20 AAC 25.412.

NOW, THEREFORE, IT IS ORDERED THAT the rules hereinafter set forth govern Class II underground injection operations in the following described area referred to in this order as the affected area:

UMIAT MERIDIAN

T12N R14E

Sections 22, 23, 24, 25, 26, 35 and 36

T12N R15E	Sections 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 $\frac{1}{2}$, SW $\frac{1}{2}$, SW $\frac{1}{2}$ SE $\frac{1}{2}$
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 $\frac{1}{2}$ NW $\frac{1}{2}$, SW $\frac{1}{2}$, S $\frac{1}{2}$ SE $\frac{1}{2}$ Sections 3, 4, 5, 6, 7, 8, 9, 10, 11 Section 12: NW $\frac{1}{2}$, S $\frac{1}{2}$ NE $\frac{1}{2}$, SE $\frac{1}{2}$, SW $\frac{1}{2}$ 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.

Rule 1 Authorized Injection Strata for Enhanced Recovery

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 ARCO (Atlantic Richfield-Humble) Prudhoe Bay State No. 1 between the measured depths of 8110 feet and 8680 feet for the Prudhoe Oil Pool and between the measured depths of 8790 feet and 10,440 feet for the Lisburne Oil Pool.

Rule 2 Authorized Injection Strata for Disposal

Within the affected area, non-hazardous oil field fluids may be injected for the purpose of fluid disposal into strata defined as those strata which correlate with the strata found in ARCO Sag River State Well No. 1 between the measured depths of 1900 feet and 6750 feet.

Rule 3 Fluid Injection Wells

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

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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. Pumping of excess non-hazardous fluids that are developed solely from well operations, or necessary to control the fluid level of reserve pits, into surface/production casing annuli is exempted from the above requirements.

Rule 4 Monitoring The Tubing/Casing Annulus Pressures

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 the Tubing/Casing Annulus Pressure Variations

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

Rule 6 Demonstration of Tubing/Casing Annulus Mechanical Integrity

A schedule must be developed and coordinated with the Commission 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. The Commission must be notified at least 24 hours in advance to enable a representative to witness pressure tests.

Rule 7 Well Integrity Failure

Whenever operating pressure observations or pressure tests indicate pressure communication or leakage of any casing, tubing or packer, the operator must immediately cease injection, notify the Commission, and obtain approval for corrective action.

Rule 8 Plugging and Abandonment of Fluid Injection Wells

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 Relief

Upon request, the Commission may administratively amend any rule stated above as long as the operator demonstrates to the Commission's satisfaction that sound engineering practices are

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maintained and the amendment will not result in an increased risk of fluid movement into an underground source of drinking water.

DONE at Anchorage, Alaska and dated July 11, 1986.



C. V. Chatterton, Chairman
Alaska Oil and Gas Conservation Commission

Lonnie C. Smith, Commissioner
Alaska Oil and Gas Conservation Commission

William W. Barnwell Commissioner
Alaska Oil and Gas Conservation Commission