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. 2
ALASKA, INC. for an Area)
Injection Order for the) Kuparuk River Unit
Kuparuk River Unit.) Kuparuk River Field

June 6, 1986

IT APPEARING THAT:

1. ARCO Alaska, Inc. requested the Alaska Oil and Gas Conservation Commission to issue an Area Injection Order permitting the underground injection of fluids within the Kuparuk River 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 June 18, 1986 was published in the Anchorage Times on May 12, 1986.

3. Neither a protest nor a request for a public hearing were 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 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 Kuparuk River Unit boundary encompasses a major portion of the Kuparuk River Oil Pool. All existing injection wells and injection well sites planned for this portion of the Kuparuk River Oil Pool enhanced recovery project lie within the Kuparuk River Unit boundary. All existing wells used for the disposal of oil field waste fluids by injection and well sites planned for disposal of oil field waste by injection lie within the Unit boundary.

3. The Kuparuk River Unit boundary encompasses the major portions of accumulations of crude oil within the West Sak Sands and the Ugnu Sands. Injection wells are

currently operated for an enhanced recovery project for West Sak Sands. Sites for injection wells required for expansion of West Sak enhanced recovery and for the initiation of an Ugnu Sands enhanced recovery project all fall within the Unit boundary.

4. The portion of aquifers described by a 1/4 mile area beyond and lying directly below the Kuparuk River Unit are exempted for Class II injection activities by 40 CFR 147.102(b)(3) and 20 AAC 25.440(c).

5. Less stringent requirements for well construction, 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.

6. The vertical limits of injection strata and the confining formations may be defined in the ARCO West Sak River, State Well No. 1 and the ARCO - BP Ugnu Well No. 1.

7. 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.

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.

11. The Kuparuk River Unit constitutes a project area operated by a single operator.

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

T13N	R8E	Section 1, 2, 3, 10, 11, 12, 13, 14, 15, 23, 24, 25, 26, 27, 33, 34, 35, 36.
T13N	R9E	Section 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36.
T12N	R8E	Entire Township.
T12N	R9E	Entire Township.
T12N	R10E	Section 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23,, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36.
T12N	R11E	Section 5, 6, 7, 8, 31.
T11N	R7E	Section 24, 25, 26, 34, 35, 36.
T11N	R8E	Entire Township.
T11N	R9E	Entire Township.
T11N	R10E	Entire Township.
T11N	R11E	Section 5, 6, 7, 8, 16, 17, 18, 19, 20, 21, 22, 27, 28, 29, 30, 31, 32, 33.
T10N	R7E	Section 1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, 21, 22, 23, 24, 25, 26, 27, 28, 33, 34, 35, 36.
T10N	R8E	Entire Township.
T10N	R9E	Entire Township.
T10N	R10E	Entire Township.
T10N	R11E	Section 5, 6, 7, 8, 17, 18, 19, 20, 29, 30, 31, 32.
T9N	R9E	Section 3, 4, 5, 6, 7, 8, 9, 10, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24.
T9N	R10E	Section 1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, 21, 22, 23, 24, 27, 28, 33, 34.

T9N R11E Section 5, 6, 7, 8, 17, 18, 19, 20.

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's West Sak River State Well No. 1 between the measured depths of 3145 feet and 3640 feet; 3744 feet and 4040 feet; 6474 feet and 6880 feet.

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's 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.

Rule 3 Fluid Injection Wells.

Fluids may not be injected underground except through a new well that has been permitted for drilling as a service well for injection in conformance with 20 AAC 25.005, through an existing well that has been approved for conversion to a service well for injection in conformance with 20 AAC 25.280, or existed as a service well for injection purposes on the date of this order.

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 of 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, 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 observances 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 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 June 6, 1986.

ALASKA OIL AND GAS CONSERVATION COMMISSION

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

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