

## ADMINISTRATIVE APPROVAL ERO 2.001A

Re: **The application from Forest Oil Corporation** to inject non-hazardous fluids for Class II enhanced oil recovery in the Redoubt Unit, Redoubt Shoal Undefined Oil Pool, Cook Inlet, Alaska.

Mr. Bob Elder  
HSE Manager  
Forest Oil Corporation  
310 K Street  
Anchorage, AK 99501

Dear Mr. Elder:

Forest Oil Corporation ("Forest") requested by letter dated November 5, 2004 authorization to inject non-hazardous fluids from several sources into Class II enhanced oil recovery ("EOR") wells in the Redoubt Shoal Undefined Oil Pool. The Commission may authorize the injection of fluid for EOR purposes if it is appropriate for enhanced recovery. The non-hazardous fluid sources are: treated sanitary waste, treated gray water from camp or platform facilities, produced water from the West McArthur River Unit, and storm water collected in secondary containment areas at the Kustatan and West McArthur River Unit Production Facilities. Forest contends addition of these fluids to EOR injection streams will provide beneficial use for oil recovery.

Additional information regarding fluids compatibility and potential mixing ratios was requested by the Commission and provided by Forest by letter dated May 6, 2005.

An Administrative Approval, Enhanced Recovery Injection Order ("ERO") 2.001 was issued to Forest on June 13, 2005. By supplemental letter dated June 20, 2005 Forest also requested inclusion of deck drainage from the Osprey platform in the list of non-hazardous fluid sources eligible for EOR injection in the Redoubt Shoal Oil Pool.

These fluids would normally be injected into the Class II disposal well (RU D-1). However, the option to mix waste fluids with produced water will not be possible because produced water will be injected as EOR fluid, there is only one injection manifold, and the relatively small volumes of waste that are generated by the sanitary waste treatment and storm water collection systems do not justify a separate manifold.

ERO No. 2 authorized injection of produced water from the Hemlock Formation into the Redoubt Shoal Undefined Oil Pool. Forest conducted tests that mixed proportional amounts of produced indigenous Redoubt Unit Hemlock produced water and the proposed wastewater streams (including deck drainage from the Osprey platform).

Results showed no adverse precipitation occurred with either individual mixtures or a composite of all waters mixed together. The fluid streams will be blended with Redoubt Unit Hemlock Formation water and injected in proportions ranging from approximately 0.2% to 1% (0.002 - 0.01) of the expected total injection volume. The estimated maximum volume of the non-hazardous fluids injected per month would be approximately 4,650 barrels (195,000 gallons) assuming peak seasonal volumes. Forest provided the results of fluid compatibility studies that demonstrate the proposed fluid/seawater mix would not be detrimental to fluids within the Redoubt Shoal Undefined Oil Pool. Treated waste used as a beneficial EOR fluid will reduce logistical problems of handling and disposing waste at the remote facilities operated by Forest.

The Commission agrees with Forest's analysis and assessment that blending the small volumes of treated camp gray water, treated sewage waste water, storm water runoff, deck drainage and other Hemlock Formation waters prior to injection is unlikely to impact the EOR efficiency negatively. The Commission further finds that the blended EOR fluids will not promote waste, will not jeopardize correlative rights, and will not contribute to the potential for fluid movement outside of the injection zone.

Therefore, in accordance with the provisions of ERO No. 2, Rule 9, the Commission approves the injection of the following non-hazardous fluids by blending with produced water from the Redoubt Shoal Undefined Oil Pool (Hemlock formation):

- 1) treated sanitary waste,
- 2) treated gray water from platform and camp living facilities,
- 3) produced Hemlock Formation water from the West McArthur River Oil Pool,
- 4) storm water from secondary containment areas at the Kustatan and West McArthur Production Facilities, and
- 5) deck drainage from the Osprey platform.

As a condition of this approval, Forest must continue to collect and analyze representative samples of the mixed fluid stream at Redoubt Unit injection manifold to demonstrate its non-hazardous characteristics and its continued suitability for EOR injection. Analytical results shall be retained according to the provisions of 20 AAC 25.310. Volumes shall be incorporated into the monthly (Form 10-406) and annual (Form 10-413) injection reports.

This approval amends and replaces the original administrative approval ERO 2.001 dated June 13, 2005.

**DONE** at Anchorage, Alaska and dated July 14, 2005.

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John K. Norman  
Chairman

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Daniel T. Seamount  
Commissioner

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Cathy P. Foerster  
Commissioner